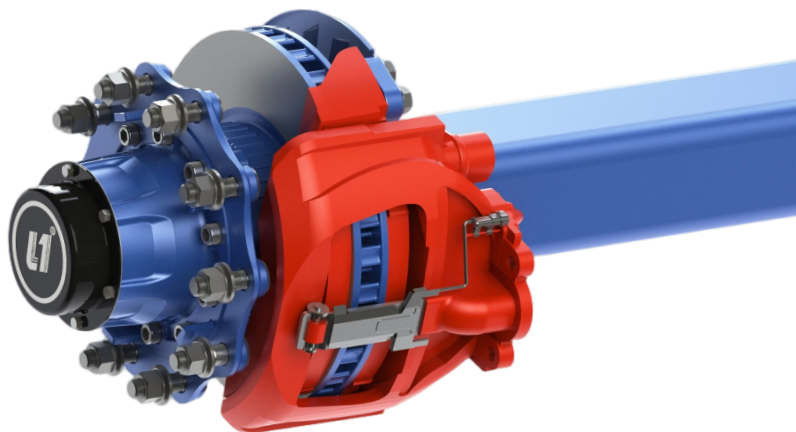




User Manual for Disc Brake Axle

2026A0

FOSHAN YONGLITAI AXLE CO.,LTD.

Table of Contents

Preface	01
Driver Instructions	03
Safety Guidelines	04
Disc Brake Axle Selection Requirements	06
I. Overview of the Disc Brake Axle	07
1. Exploded View	07
2. Main Technical Specifications	10
3. Disc Brake Caliper Components	11
II. Installation Instructions	13
1. Installation Direction of Axle	13
2. Welding of Suspension Upper/Bottom Plates to Axle	13
3. Wheelbase Adjustment	14
4. Air Brake Chamber Installation	15
4.1 Precautions	15
4.2 Air Brake Chamber Installation Diagrams	15
4.3 Air Brake Chamber Requirements	15
4.4 Installation Procedures	16
III. Maintenance	17
1. Pre-Maintenance Preparations	17
2. Brake System Maintenance	19
2.1 Periodic Inspection	19
2.1.1 Brake Pad Inspection	19
2.1.2 Brake Rotor Inspection	21
2.1.3 Adjuster Mechanism Function Check (Chain-type Assembly)	21
2.1.4 Adjuster Mechanism Function Check (Gear-type Assembly)	22
2.1.5 Brake Caliper Sliding Function Check	23

2.1.6 Guide Pin Clearance Inspection	23
2.2 Removal and Installation	23
2.2.1 Brake Pad Removal & Installation (Chain-type Assembly)	24
2.2.2 Brake Pad Removal & Installation (Gear-type Assembly)	25
2.2.3 Air Brake Chamber Removal	26
2.2.4 Brake Assembly Removal	26
2.2.5 Brake Assembly Installation	26
2.2.6 Brake Rotor Removal	26
2.2.7 Brake Rotor Installation	27
3. Wheel End System Maintenance	27
3.1 Periodic Inspection	28
3.1.1 Wheel Nut Inspection	28
3.1.2 Bearing Inspection	28
3.2 Removal and Installation	29
3.2.1 Hub/Brake Rotor Assembly Removal	29
3.2.2 Hub/Brake Rotor Assembly Installation	29
3.2.3 Hub Removal	30
3.2.4 Hub Installation	30
3.2.5 Wheel Stud Removal	31
3.2.6 Wheel Stud Installation	31
4. Important Torque Specifications	31
5. Common Faults, Causes, and Troubleshooting Methods	32
IV. After-Sales Service Provisions	34
1. Service Guidelines	34
2. Service Precautions	35
3. Warranty Period and Coverage	36
4. Conditions Not Covered by Warranty Service	38

Preface

After-Sales Service Commitment & Warranty Terms

Thank you for choosing L1 Yonglitai products. All L1 Yonglitai series products undergo strict factory inspection and full traceability management. For any product inquiries, please contact our After-sales Service Department. To ensure safe operation, please read this User Manual thoroughly before installation and use.

Based on our product quality confidence and customer responsibility, we make the following after-sales commitments:

1. We have established a complete nationwide sales and service network to provide users with prompt, high-quality services.

2. This product User Manual is available via the official L1 Yonglitai WeChat account and website (WWW.LTCMC.COM). Users must strictly follow the Manual's requirements for installation, operation, maintenance and repair. **Unauthorized modification of L1 Yonglitai products is strictly prohibited**. Only genuine L1 Yonglitai original parts shall be used for maintenance; otherwise, the warranty will be invalid, and we will not be liable for any resulting consequences.

3. During the warranty period (see details on Page 36), we will provide free repair or replacement for product damage caused by manufacturing defects that impede normal use. To claim free warranty service, users shall provide valid proof of the product within the warranty period (trailer registration document, purchase invoice, etc.). If no such proof is available, our internal quality records or the vehicle manufacturer's factory records shall prevail.

4. For products beyond the warranty period that cannot operate normally or meet performance requirements, we will provide paid upon-request services, with parts charged at cost price plus relevant service fees.

5. Product after-sales service is under the unified management of our After-sales Service Department, with nationwide service outlets. For the full service outlet directory, please refer to the official Yonglitai website and WeChat account.

6. In case of product quality issues or related quality accidents, users may file a complaint directly with our After-sales Service Department or local L1 Yonglitai branches/service outlets, with detailed product and fault information. For major

accidents that may cause heavy economic losses or civil/criminal liability and are potentially related to our products, users shall NOT dispose of the relevant L1 Yonglilai products without our written consent, and must properly protect the accident scene while notifying us; otherwise, the user shall bear all resulting consequences.

7. After receiving a user's quality complaint or service request, we will respond with a handling solution within 2 hours. If on-site service is required, we will arrange dispatch immediately:

- Within 24 hours for locations within 300 km of our company or the nearest service station

- Within 48 hours for locations over 300 km

For remote areas, dispatch time will be determined based on actual circumstances

For non-on-site service requests, our Marketing Department lead or After-sales Service Department will respond with professional guidance and explanations.

8. Warranty service will NOT be provided under the following circumstances:

- Failure to select, install, operate or maintain the product in accordance with this User Manual;

- Product damage caused by unauthorized modification, welding or part disassembly by the user;

- Product damage caused by improper or abnormal use;

- Product damage caused by overloading, exceeding rated limits, or use in extreme road conditions;

- Product damage caused by the trailer itself or other non-genuine accessories;

- Consequential faults or part damage caused by unauthorized disassembly or part replacement after a fault occurs;

- Disputes arising from false publicity (including exaggerated product performance or extended warranty period) by the vehicle manufacturer or sales unit;

- Does not comply with the "Disc Brake Axle Selection Requirements" (see Page 6).

- Products beyond the valid warranty period.

9. We implement a regular user return visit system to collect valuable user feedback, ensuring users have a worry-free purchase and use experience.



10. L1 Yonglitai After-Sales Service Contact Information:

- After-Sales Service Hotline: 400-668-9027
- For one-click repair service, please scan the QR code on the right.

Driver Instructions

1. Maximum vehicle speed must not exceed 105 km/h.
2. Operate strictly within the rated axle load limits.
3. Perform safety checks before each trip. Driving with faults is strictly prohibited.
4. When using new brake pads, avoid continuous downhill braking and unnecessary emergency braking. (Optimal performance is achieved only after a bedding-in period of several braking applications).
5. Avoid brake overheating, which will significantly reduce braking performance.
6. Do not apply the parking brake immediately when the brakes are hot. Thermal expansion followed by cooling can cause the brake discs to crack.
7. Use only genuine Yonglitai original parts to ensure optimal axle performance.
8. Routine inspections and maintenance must be performed as prescribed. Troubleshooting and part replacement must be conducted by qualified professionals. Otherwise, our company shall not be held liable for any quality accidents arising from improper maintenance.



Note: For a new vehicle on its first loaded journey, or after 15 days of operation, inspect all wheel nuts and suspension system fasteners to ensure they are tightened to the specified torque.

Safety Guidelines

Responsibilities and Obligations

1. During axle maintenance and repair, L1 Yonglitali shall not be liable for any property loss, damage or personal injury caused by failure to follow the safety guidelines and specifications in this manual, or by operational negligence.

2. Additional safety instructions may apply based on trailer type, repair/maintenance tasks, workshop conditions, operating environment and cargo load. As these variables are beyond L1 Yonglitali's direct control, repair workshops must ensure all safety guidelines comply with local occupational health and safety regulations to prevent accidents.

Nameplates and Labels on the Axle

Nameplates and labels affixed to the axle are integral safety components. They must not be covered, defaced or removed, and must remain in their original position for the full service life of the axle.

Maintenance and Repair

1. To ensure safe operation and vehicle performance, all maintenance work must be performed in accordance with L1 Yonglitali's established maintenance schedule and the vehicle manufacturer's technical specifications.

2. Every time a wheel is removed, check the tightening status of wheel nuts to confirm they meet the specified torque.

3. All maintenance work, whether performed in-house or entrusted to a repair station/garage, must follow the requirements of this manual. Otherwise, our company shall not be liable for quality accidents caused by improper maintenance.

4. Only trained and qualified technicians are permitted to perform maintenance and repair operations.

Before Starting Work

1. Ensure the trailer is secured against movement.

2. Keep unauthorized personnel out of the work area.

3. Ensure the work area has sufficient lighting and ventilation.

4. Wear appropriate protective clothing; loose, torn clothing, jewelry, watches and similar items are prohibited.

5. Wear safety shoes, and tie back long hair.

During Work

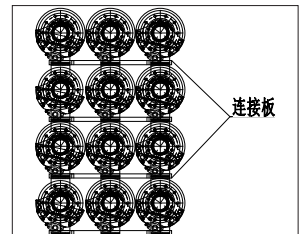
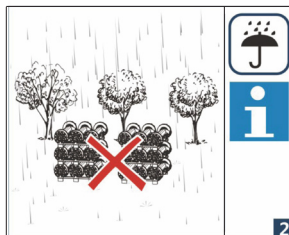
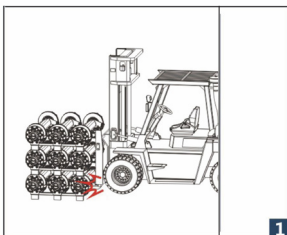
1. Always stay alert and follow safe working practices. Do not operate the axle when fatigued, after drinking alcohol, or after taking medication that impairs operation. Smoking is strictly prohibited during work.
2. Use certified lifting equipment for heavy objects over 25 kg. Only experienced personnel may perform rigging work, and must give instructions to the equipment operator within their visual and auditory range.
3. Only use tools, parts, materials and grease approved by L1 Yonglitali. Contaminated or reused grease is prohibited. Used grease, cleaning agents and replaced old parts must be disposed of in a safe, environmentally friendly manner.
4. Avoid direct skin contact with grease.
5. Do not use worn or damaged tools, and never leave tools on the axle or trailer.
6. No modification or welding on the trailer axle is allowed without written consent from L1 Yonglitali.
7. Self-locking fasteners must not be reused; they must be replaced after each disassembly.

After Work is Completed

1. Inspect the axle for damage, brake air leaks, or other quality abnormalities.
2. All parts removed during maintenance or repair must be reinstalled and inspected after all work is finished.

Transport and Storage of Axle

1. During transport, loading and unloading, prevent collisions with brake discs, brake assemblies, and their rubber and plastic parts.
2. The axles must be stored in a well-ventilated, dry warehouse. Exposure to rain and open-air storage is strictly prohibited.





Note: The stacking height in the warehouse shall not exceed four layers. Excessive stacking may cause the axles to tip over, resulting in axle damage.

Disc Brake Axle Selection Requirements

Three Mandatory Requirements

1. The tractor must be equipped with a retarder that meets the relevant standards.
2. The trailer must be equipped with brake pad wear warning devices.
3. Yonglitai specified parts must be used for axle maintenance and servicing.

Three Prohibitions

1. Water-sprinkling devices must not be installed on the trailer.
2. While driving, the tractor brake system must not be disengaged, and EBS/ABS or the retarder system must not be switched off.
3. Operation under severe operating conditions and overloading is prohibited.

Three Recommendations

1. The tractor and trailer should be equipped with EBS.
2. The tractor should preferably use disc brakes throughout.
3. The vehicle should be equipped with air suspension.

** Type II A Test Requirements of GB 12676-2014 Technical Requirements and Test Methods for Braking Systems of Commercial Vehicles and Trailers.

Tractor		Trailer	
		Disc Brake + EBS	Drum Brake +ABS
Disc Brake	+EBS	Excellent	Good
	+ABS	Excellent	Good
Drum Brake	+EBS	Good	Not Recommended
	+ABS	Prohibited	Not Recommended



Note: If the vehicle falls under any of the “Three Prohibitions” conditions or any prohibited configurations listed in the table, or fails to comply with the “Three Mandatory Requirements”, Yonglitai warranty coverage will no longer apply.

Important:

Air suspension and disc brake axle assembly may not be suitable for certain road and operating conditions.

Unsuitable operating conditions include muddy & unpaved roads, potholed & rough roads, mines & quarries, overloading & uneven loading.



Muddy & Unpaved Roads



Potholed & Rough Roads



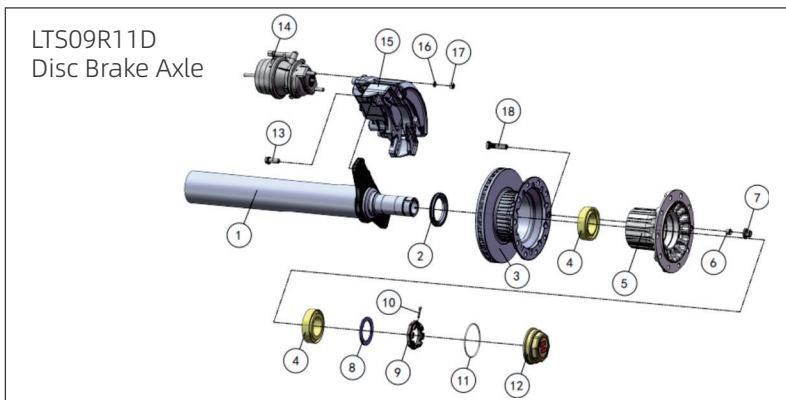
Mines & Quarries



Overloading & Uneven Loading

I. Overview of the Disc Brake Axle

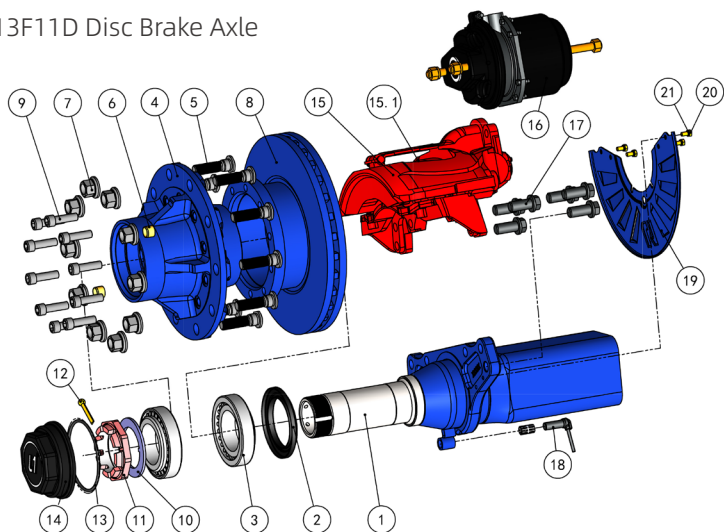
1. Exploded View



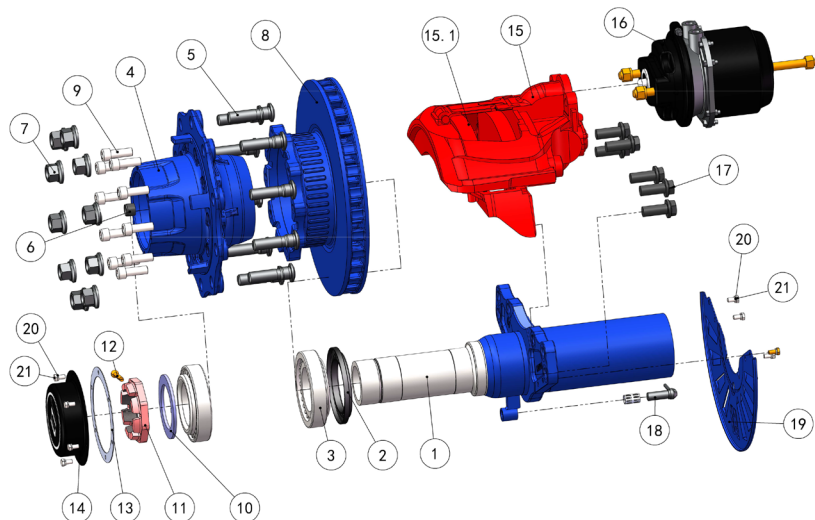
LTS09R11D Bill of Materials

Item No.	Part Name	Model No.	Qty
1	Axle Beam Assembly	S09R11D-11000	1
2	Hub Seal	D12Y11-41004D	2
3	Brake Disc	S09R11D-41002	2
4	Bearing	HM518445/10	4
5	Hub	S09R11D-41001	2
6	Wheel Stud Bushing	GS09W11-41006	4
7	Flanged Nut	GD09W11D-41104	20
8	Lock Washer	D13F28-10003	2
9	Axle End Locknut	D13F28-10004E	2
10	Split Pin	7K0008-002	2
11	O-Ring	GB3452.1-145x5.3	2
12	Hub Cap	D13F28W-41003A-LT-001	2
13	Lock Bolt	D13F11D-30007	12
14	Air Brake Chamber	/	2
15	Brake Caliper, Right	D13F11D-38000(R)	1
	Brake Caliper, Left	D13F11D-38000(L)	1
16	Spring Washer	GB93-M16	4
17	Hex Nut Type I	GB6170-M16	4
18	Wheel Stud	GD09W11D-41101	20

LTD13F11D Disc Brake Axle



LTD10Y11D Disc Brake Axle



LTD13F11D、LTD10Y11D Bill of Materials

Item No.	Part Name	LTD13F11D Model No.	Qty	LTD10F11D Model No.	Qty
1	Axle Beam Assembly	D13F11D-11000	1	D10Y11D-11000	1
2	Hub Seal	D12Y11-41004D	2	D12Y11-41004D	2
3	Bearing	HM518445/10	4	HM518445/10	4
4	Hub	D13F11D-41001	2	D10Y11D-41001C	2
5	Wheel Stud	D13F11D-41001(L)	20	D13F11D-41001(L)	20
6	Wheel Stud Bushing	D13F11-41006	4	D13F11-41006	4
7	Flanged Nut	GD09W11D-41104	20	GD09W11D-41104	20
8	Brake Rotor	D13F11D-41002C	2	D10Y11D-41002	2
9	Brake Rotor Lock Bolt	D13F11D-30008\T1	20	D13F11D-30008\T1	20
10	Lock Washer	D13F28-10003	2	D13F28-10003	2
11	Axle End Lock Nut	D13F28-10004E	2	D13F28-10004E	2
12	Split Pin	7K0008-002	2	7K0008-002	2
13	Hub Cap Washer	-----	2	D10Y11D-41007	2
13	O-Ring	GB3452.1-145×5.3	2	-----	2
14	Hub Cap	D13F28W-41003A-LT-001	2	D10Y11D-41003A	2
15	Brake Caliper	D13F11D-38000(L/R)	1 Left, 1 Right	D13F11D-38000(L/R)	1 Left, 1 Right
15.1	Brake Pad Repair Kit	D13F11D-38100	2	D13F11D-38100	2
16	Air Brake Chamber	D10Y11D-61624C	2	D10Y11D-61624C	2
17	Lock Bolt	D13F11D-30007	12	D13F11D-30007	12
18	ABS Sensor Kit	D10Y11D-05001/T1	2	D10Y11D-05001/T1	2
19	Dust Cover	D13F11D-41005B	2	D10Y11D-41005	2
20	Hex Head Bolt	GB/T5783-M8*16	8	GB/T5783-M8*16	20
21	Spring Washer	GB/T 93-8	8	GB/T 93-8	20

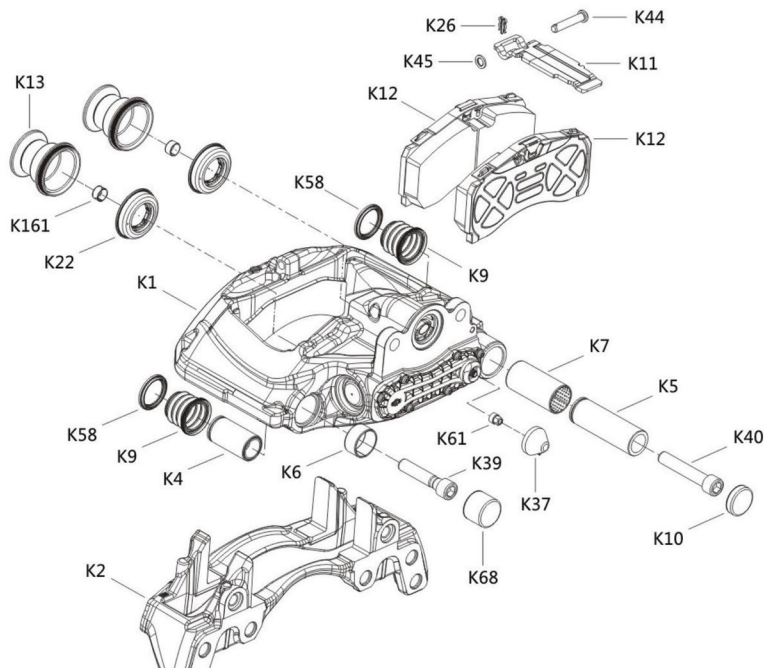
2. Main Technical Specifications

Item	Max capacity at 105 km/h	Axle beam (mm)	Track distance (mm)	Brake size	distance of spring center (mm)	Total length (mm)	Wheel
LTD13F11D	13 t	□ 150	1840	22.5"	900	2190	≥ 8.00-20
LTD10F11DL	10 t	□ 150	1840	22.5"	900	2138	≥ 8.00-20
LTD10Y11DL	10 t	Φ127	1840	22.5"	900	2138	≥ 8.00-20
LTD10R11DL	10 t	Φ146	1840	22.5"	900	2138	≥ 8.00-20

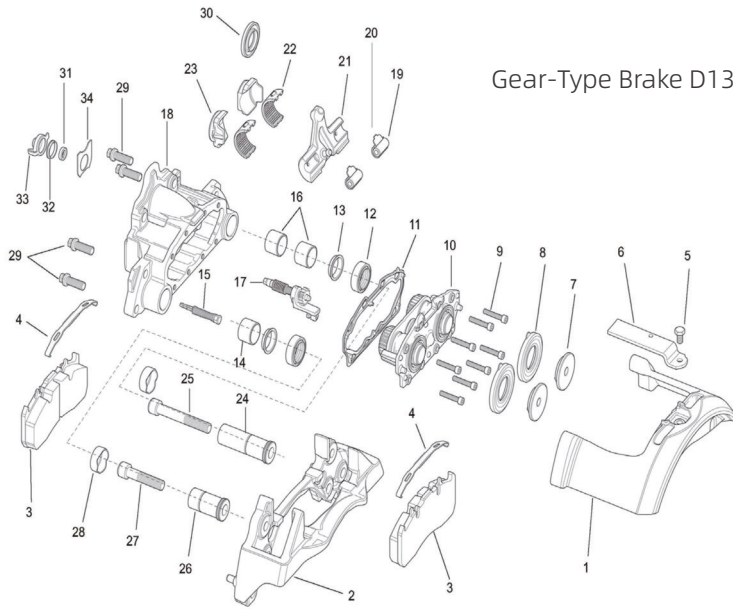
Note: For other specifications, please contact the sales representative.

3. Disc Brake Caliper Components

Chain-Type Brake D13F11DF-38000



K1	Brake Caliper	K11	Brake Pad Retainer	K44	Brake Pad Retainer Pin
K2	Bracket	K12	Brake Pad	K45	Washer
K4	Guide Pin	K13	Thrust Plate Assembly with Boot	K58	Retaining Ring
K5	Guide Pin	K22	Inner Seal Boot	K61	Torque Limiter
K6	Guide Bushing	K26	Spring Clip	K68	Sealing Cap
K7	Bronze Bushing	K37	Adjuster Cap	K161	Thrust Plate Bushing
K9	Inner Dust Boot	K39	Hex head Bolt		
K10	Dust Cap	K40	Hex head Bolt		



Gear-Type Brake D13F11DH-38000

1	Caliper Housing	13	Guide Pin Dust Boot Seat Ring	24	Guide Pin - Long
2	Bracket	14	Guide Pin Bushing - Oval	25	Bolt (Long Guide Pin)
3	Brake Pad	15	Visible Wear Indicator	26	Guide Pin - Short
4	Brake Pad Retaining Spring	16	Guide Pin Bushing - Round	27	Bolt (Short Guide Pin)
5	Bolt	17	Manual Adjuster	28	Cap
6	Brake Pad Retaining Plate	18	Brake Insert	29	Caliper Mounting Bolt (4 pcs)
7	Piston Cap	19	Roller	30	Seal Ring (Air Brake Chamber)
8	Piston Dust Cap	20	Bearing Shell	31	Seal Ring (Manual Adjuster)
9	Bolt	21	Actuating Lever	32	Dust Cap Seat Ring (Manual Adjuster)
10	Piston Assembly with Housing	22	Needle Roller Bearing	33	Dust Cap (Manual Adjuster)
11	Sealing Gasket	23	Bearing Seat	34	Nameplate
12	Guide Pin Dust Boot				

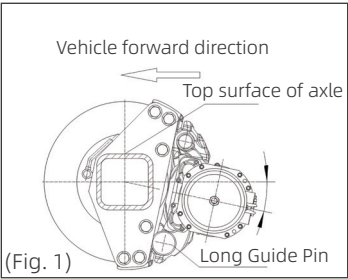
II. Installation Instructions

1. Installation Direction of Axle

Option 1:

Air Brake chamber faces rearward, opposite direction of travel.

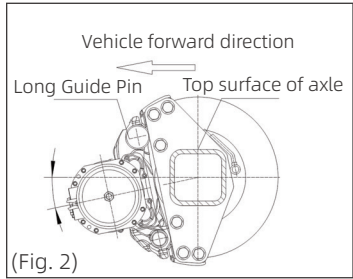
For disc brake axles with leaf spring suspensions.



Option 2:

Air Brake chamber faces forward, same as direction of travel.

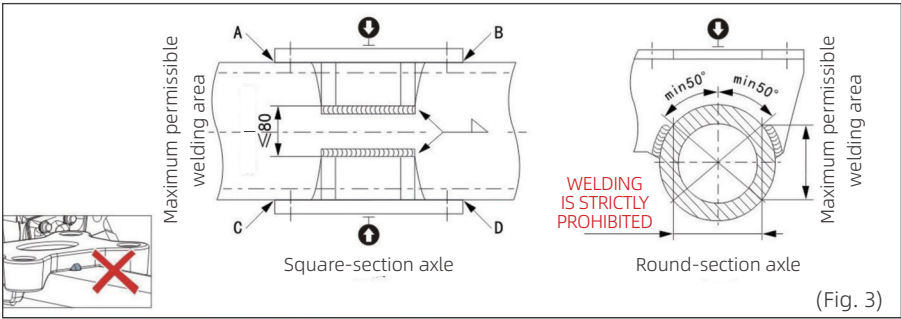
For disc brake axles with air suspensions.



2. Welding of Suspension Upper/Bottom Plates to Axle

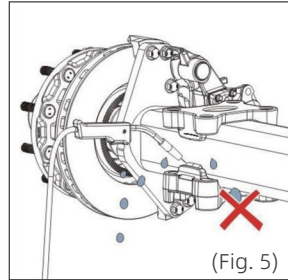
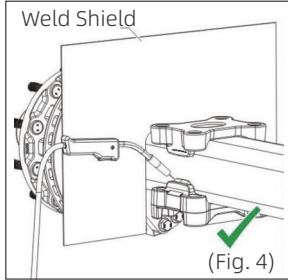
Apply sufficient pressure to ensure proper seating of the upper and lower suspension seat plates against the axle tube.

No welds are allowed outside the designated weld area of the axle (such as positions A, B, C and D on square axles). Otherwise, fatigue cracking and reduced service life may result.



As shown in Fig. 4, install a weld shield before welding to protect the brake caliper and brake rotor.

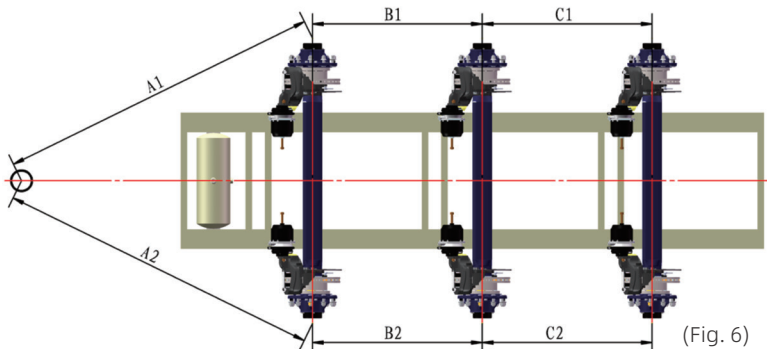
Without protection, welding spatter and slag may damage the brake rotor, caliper and oil seal, as shown in Fig. 5.



Notes: During any welding operation, including welding on the axle, do not ground through the brake caliper, brake rotor, wheel end or wheel. Otherwise, the wheel hub bearings and brake components may suffer electrical arcing damage.

3. Wheelbase Adjustment

Adjust the wheelbase within the specified range. Using the king pin center and the second axle as references, and the hub cap central bore as the datum, ensure: $A1=A2\pm 2$, $B1=B2\pm 1$, $C1=C2\pm 1$.

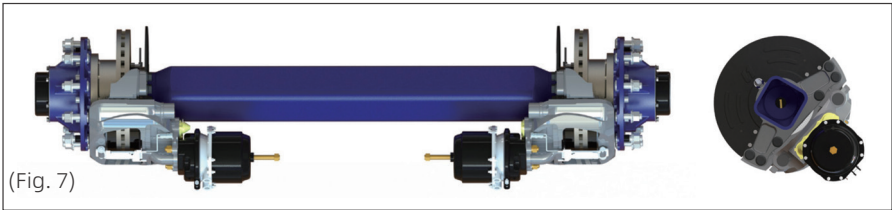


4. Air Brake Chamber Installation

4.1 Precautions

- The air brake chamber is not installed at the factory.
- Install it strictly according to the following procedure.
- The recommended air chamber specification is T16 or T16/24.

4.2 Air Brake Chamber Installation Diagram



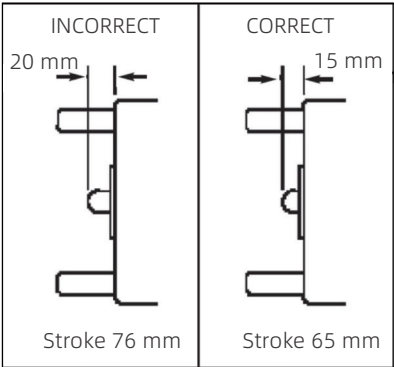
4.3 Air Chamber Requirements

Verify the air brake chamber conforms to the installation status shown in the right figure before installation:

- (1) Air Chamber stroke: 64 mm
- (2) Initial pushrod setting: 15 mm (non-braking state)



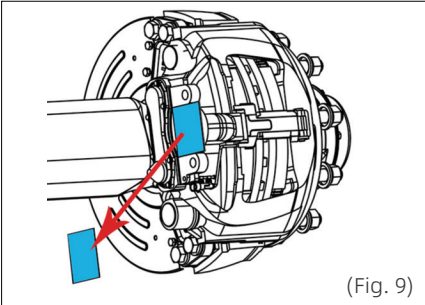
Note: Improper air chamber installation may lead to brake drag or insufficient braking force.



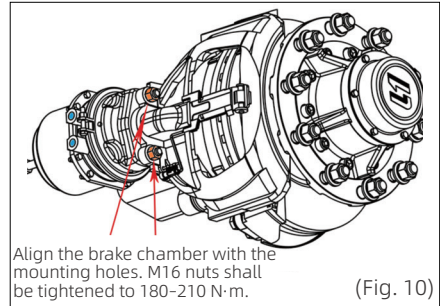
(Fig. 8)

4.4 Installation Procedure

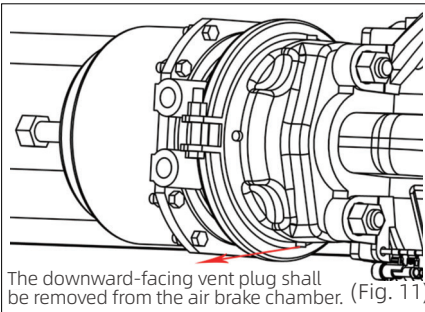
① Remove the dust sticker



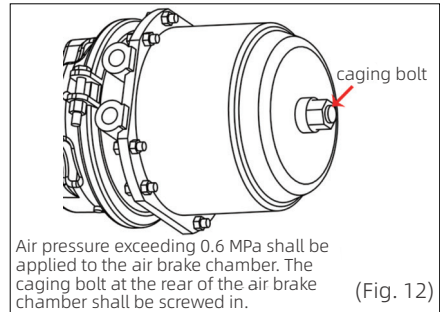
② Tighten the locknut



③ Remove the downward-facing vent plug from the air brake chamber



④ Screw in the caging bolt



Notes: When tightening the locknut, the tightening torque is 180-210 N·m.



After installing the air brake chamber, remove the downward-facing vent plug. Failure to do so may cause brake drag or rotor overheating and damage. Do not remove vent plugs in other positions, as this may allow water ingress and result in air brake chamber or brake damage.

III. Maintenance

1. Pre-Maintenance Preparations

(1) Prevent Trailer Movement: Park the unloaded trailer on a flat and solid surface. Block the wheels to prevent vehicle movement.

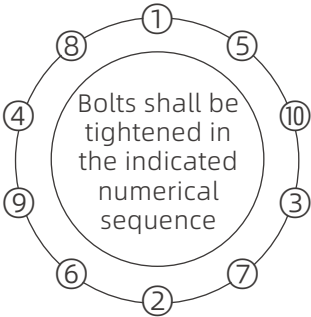
(2) Lift the Axle: Support the trailer at the leaf spring seat using a jack. Do not support the axle at the center section.

(3) Remove the Wheel: Remove all wheel nuts using a 32 mm socket, then remove the wheel.

(4) Wheel Installation:

- a. Clean the contact surfaces between the wheel rim and hub before installation.
- b. Install the wheel nuts and tighten in the specified sequence using a torque wrench.

Tightening torque: 570-630 N·m. Wheel nuts must be tightened in the specified crisscross sequence.



(Fig. 13)

Important Notes:



Do not allow dirt, burrs or excessive paint buildup on the wheel-to-hub mounting surfaces. Otherwise, uneven preload may occur, leading to: loose wheel nuts, broken wheel studs, wheel shifting, hub wear, bearing seat wear, irregular tire wear.

When tightening wheel nuts:

- The wheel must be off the ground.
- The brake must be released.
- The elastic bushing is critical for wheel stud safety. Do not lose it during wheel installation or replacement.

Maintenance Schedule

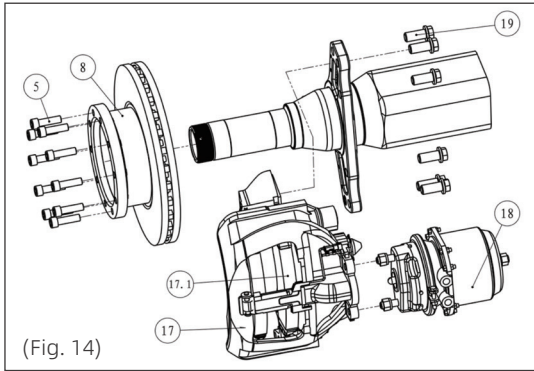
Maintenance Item	Maintenance Interval
Wheel hub bearing grease replacement	● Every 6 months or 150,000 km ● After hub or brake rotor replacement
Wheel hub bearing end play inspection	● After first loading ● Every 3 months or 25,000 km ● After hub or brake rotor replacement
Wheel nut torque inspection	● Initial operation ● After first loading ● Every 6 months or 150,000 km ● After wheel removal
Flange bolt tightening inspection	● After first loading ● Every 6 months or 150,000 km ● After hub or brake rotor replacement
Brake pad wear inspection	● Every 3 months or 25,000 km ● After wheel removal ● After hub or brake replacement
Brake rotor wear inspection	● Every 3 months or 25,000 km ● After brake pad replacement
Automatic Adjuster Function Inspection	● Every 12 months or 150,000 km ● After brake pad replacement
Brake caliper sliding function inspection	● Every 12 months or 150,000 km ● After brake pad replacement
Brake caliper rubber dust boot inspection	● Every 12 months or 150,000 km ● After brake pad replacement
Guide pin clearance measurement	● After brake pad replacement
Wheel hub cap security inspection	● Initial operation ● After hub or brake rotor replacement



Note: Road conditions and axle operating conditions vary by region. The maintenance cycles provided above are for reference only.

2. Brake System Maintenance

Brake System Exploded View (Fig. 14)



(Fig. 14)

5	Brake Rotor Retaining Bolts
8	Brake Rotor
17	Brake Caliper
17.1	Brake Pads
18	Air Brake Chamber
19	Brake Assembly Lock Bolts

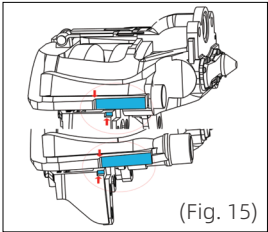
2.1 Periodic Inspection

2.1.1 Brake Pad Inspection

Visually inspect brake pad wear condition every 3 months or 25,000 km, and after every wheel removal.

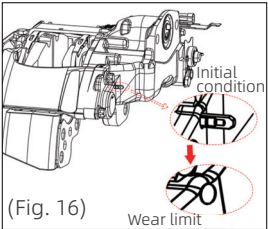
Chain-type Brake Assembly:

Check the brake caliper. The bracket has a marked position. When the position indicated by the arrow approaches or aligns with the mark, check the thickness of the brake disc and brake pads (Fig. 15).

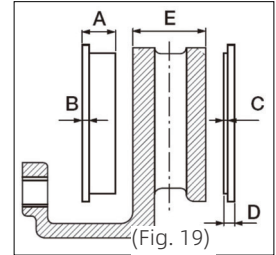
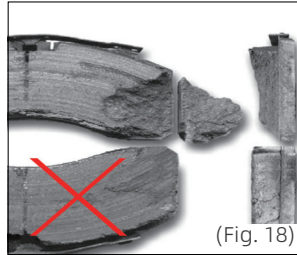
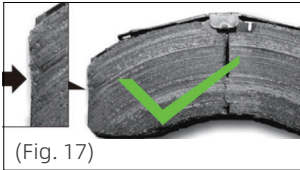


Gear-type Brake Assembly:

① Check the length of the wear indicator. When the end of the wear indicator approaches or enters the caliper body, check the thickness of the brake rotor and brake pads (Fig. 16);



- ② Small chipping around the edges of brake pads is acceptable (Fig. 17);
- ③ Large-area chipping on the brake pad surface is not allowed (Fig. 18);
- ④ To protect the brake caliper and brake rotor, brake pads must be replaced immediately when the friction material wears down to approximately $C=2$ mm at any point (Fig. 19).



Notes:



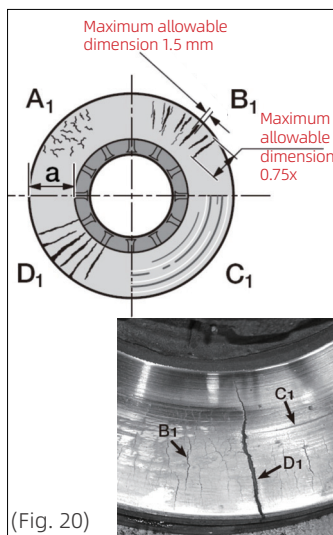
- Even if the vehicle is equipped with a fully functional wear indicator, routine inspection must still be performed every 3 months.
- Brake pads must be replaced immediately if they are damaged, burned, glazed (shiny surface) or oil-contaminated.
- All brake pads on the same axle must be replaced at the same time.
- After installing new brake pads, do not perform prolonged braking or unnecessary hard braking.

2.1.2 Brake Rotor Inspection

(1) The new brake rotor has a thickness of $E=45$ mm. It must be replaced when worn down to the minimum thickness of 37 mm (Fig. 19).

(2) Possible conditions of brake rotors:

- A1 = Minor cracks present.
- B1 = Radial cracks with width or depth < 1.5 mm and length < 130 mm ($a=174$).
- C1 = Surface runout < 1.5 mm.
- D1 = Cracks extending into the cooling grooves or reaching the inner/outer edges of the brake rotor friction ring.



(Fig. 20)



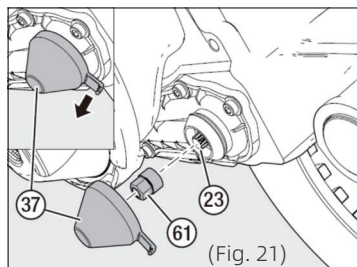
Note: Brake rotors showing conditions A1, B1 or C1 are acceptable for continued use until they wear down to the minimum thickness $E=37$ mm (Fig. 20). If condition D1 occurs, replace the brake rotor immediately.

2.1.3 Adjuster Mechanism Function Check (Chain-type Brake Assembly)

(1) Pull the tab to remove the adjuster cap ③⑦ . Do not lose the torque protector ⑥① .

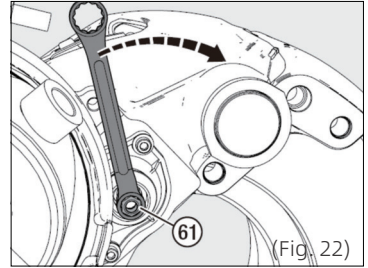
(2) After replacing the brake pads, use a 10 mm box wrench to turn adjuster ②③ counter clockwise through the torque protector until 3 distinct clicks are heard (this establishes a 2-3 mm running clearance).

(3) Apply the brakes 5-10 times slowly and light. If the automatic adjuster is operating properly, the box wrench will rotate clockwise slightly (viewed from the air brake chamber side).



(Fig. 21)

(4) After verifying proper operation, reinstall the torque protector ⑥1 and press the adjuster cap ③7 firmly back into place.



2.1.4 Adjuster Mechanism Function Check (For Gear-type Brake Assembly)

(1) Remove the dust cap from the manual adjuster.

(2) Use a 10 mm box wrench to manually rotate the adjuster counterclockwise by one turn (to set the running clearance to 2-3 mm). The maximum torque must not exceed 40 N·m.

(3) Apply the brakes 5-10 times slowly and light. If the automatic adjuster is operating properly, the box wrench will rotate clockwise slightly (viewed from the air brake chamber side).

(4) After inspection is complete, press the adjuster dust cap firmly back into place.

Notes:



If the box wrench does not rotate during braking or rotates back and forth with each brake application, the automatic adjuster mechanism is damaged and the brake caliper must be replaced.

Only use a 10 mm box wrench or 10 mm hex socket wrench to turn the adjuster. The use of power tools and open-end wrenches is strictly prohibited.

2.1.5 Brake Caliper Sliding Function Check

(1) Remove the brake pads.

(2) Use a 10 mm box wrench to rotate the adjuster counterclockwise until the thrust plate is fully retracted.

(3) Push and pull the brake caliper by hand along the axial direction. If the caliper binds, does not slide smoothly or the travel is less than 25 mm, inspect the guide pins and bushings.

2.1.6 Guide Pin Clearance Inspection

(1) Remove the brake pad retaining clip; install new brake pads to ensure accurate measurement.

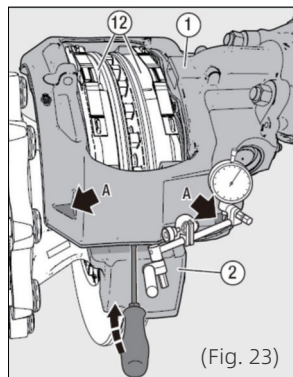
(2) Move the brake caliper outward as far as possible.

(3) Secure the magnetic base of the dial indicator to the bracket ② on the short-pin side of the brake caliper ①. Use the cast tab of brake caliper ① as the measuring point (see Arrow A).

(4) Zero the dial indicator needle.

(5) Insert a suitable tool (e.g., a 200-mm-long screwdriver) between the bracket and brake caliper. Pry the caliper and bracket apart with approximately 120 N of hand force.

(6) Read the maximum clearance value shown on the dial indicator (maximum theoretical clearance: 2 mm).



Note: If the measured clearance exceeds 2 mm, the guide pin bushings are excessively worn and must be replaced.

2.2 Removal and Installation

2.2.1 Brake Pad Removal and Installation

(Chain-type Brake Assembly)

(1) Pull out the spring clip ②⑥, remove the washer ④⑤ that secures the brake pad retaining plate ①①, and extract the pin ④④ (Fig. 24).

(2) Lift the brake pad retaining plate out of the groove in the brake caliper body.

(3) Remove the brake pads and clean their support areas (Fig. 25).

(4) Fit a 10 mm socket wrench onto the torque protector ⑥① and turn the wrench counterclockwise (viewed from the brake chamber side) until the thrust plate retracts sufficiently to install new brake pads. The rotation torque must not exceed 40 N·m (Fig. 26).

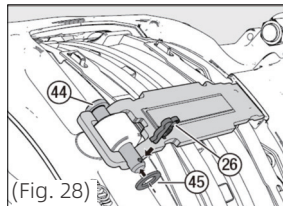
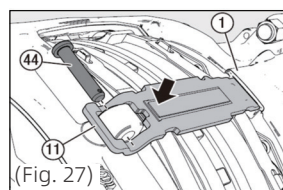
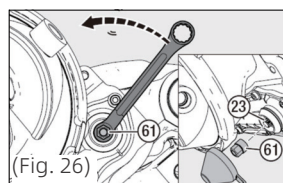
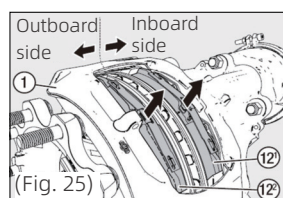
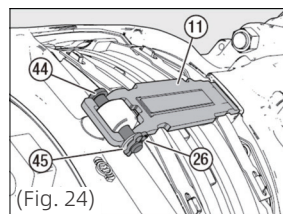
(5) Install new brake pads, ensuring correct orientation of inner and outer pads.

(6) Turn the torque protector clockwise until the brake pads lightly contact the brake rotor. Do not overtighten the adjuster. Then back off the adjuster until 3 distinct clicks are heard. Verify the running clearance.

(7) Insert the brake pad retaining plate ①① into the brake caliper groove ①, press it firmly into place, and insert the new brake pad retaining plate pin ④④ (Fig. 27).

(8) Install the new washer ④⑤, then insert the new spring clip ②⑥ through the hole in the brake pad retaining plate pin ④④ (Fig. 28).

(9) Finally, reinstall the adjuster cap ③⑦.



2.2.2 Brake Pad Removal and Installation (Gear-type Brake Assembly)



Note: Release brakes fully before disassembly.

(1) Remove the pad retainer bolt.

(2) Lift the pad retainer out of the caliper groove and remove the brake pad springs (Fig. 29).

(3) Remove old brake pads and clean the abutment surfaces (Fig. 30).

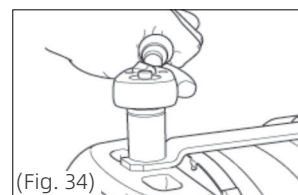
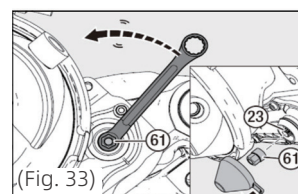
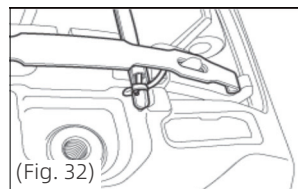
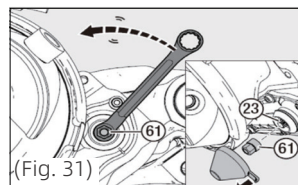
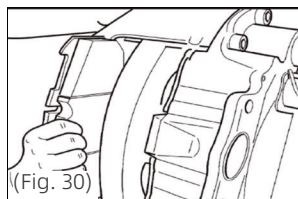
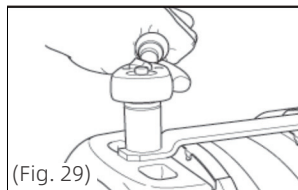
(4) Use a 10mm socket on the adjuster ②③. Turn counterclockwise (viewed from brake chamber side) until fully retracted. Max torque: 40 N·m (Fig. 31).

(5) Install new brake pads.

(6) Install two new pad springs, ensuring they seat correctly in the pad backing plates (Fig. 32).

(7) Reinsert the pad retainer into the groove. Install a new retainer bolt and tighten to 33-40 N·m (Fig. 33).

(8) Turn adjuster ②③ clockwise (viewed from air brake chamber side) until pads touch the disc. Back off 1/2 turn to set running clearance. Verify brake rotor rotates freely. Max torque: 40 N·m (Fig. 34).



2.2.3 Air Brake Chamber Removal

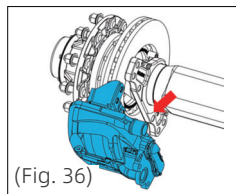
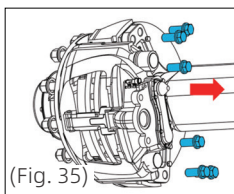
- (1) Disconnect the air line from the air brake chamber.
- (2) Unscrew the caging bolt at the rear of the dual chamber until the brake is fully released. Max extension: 85 mm. (Not required for single chambers)
- (3) Remove the mounting nuts, washer and air brake chamber.



Note: Dual chamber parking brake cavities contain powerful compressed springs. Disassembling any internal chamber components is strictly prohibited and highly dangerous.

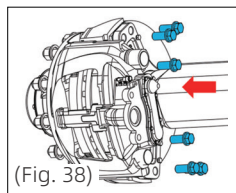
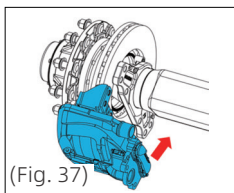
2.2.4 Brake Assembly Removal

- (1) Remove the brake caliper flange bolts.
- (2) Remove the brake caliper.



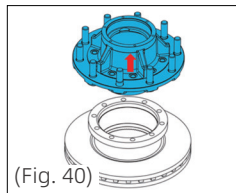
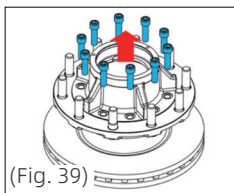
2.2.5 Brake Assembly Installation

- (1) Install the brake caliper.
- (2) Install the flange bolts and tighten to 475-525 N·m.



2.2.6 Brake Rotor Removal

- (1) Remove the brake rotor locking bolts.
- (2) Remove the brake rotor.

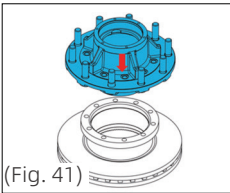


Note: Do not remove the brake rotor locking bolts unless replacing the brake disc.

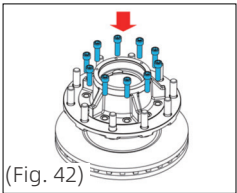
2.2.7 Brake Rotor Installation

(1) Hub and brake rotor mounting mating surfaces shall be inspected and cleaned. Brake rotor shall be installed and fully seated.

(2) New brake disc Lock Bolts shall be fitted with a 14 mm hex key. Tighten to 400-450 N·m.



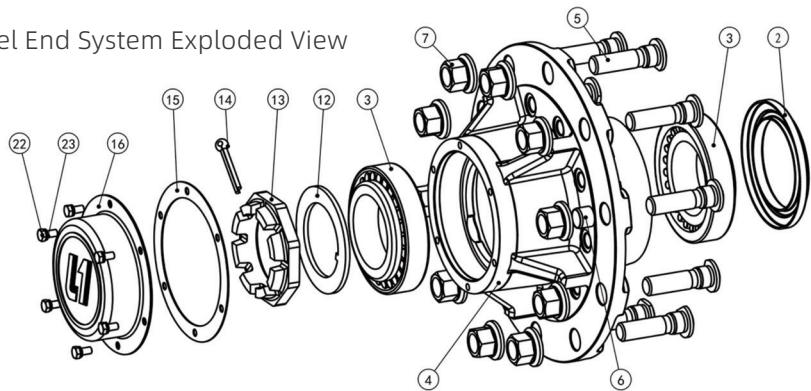
(Fig. 41)



(Fig. 42)

3. Wheel End System Maintenance

Wheel End System Exploded View



2	Hub Seal	13	Bearing Lock Nut
3	Bearing	14	Split Pin
4	Hub	15	Hub Cap Washer
5	Wheel Stud	16	Hub Cap
6	Wheel Stud Bushing	22	Hex Head Bolt
7	Flange Nut	23	Spring Washer
12	Lock Washer		

3.1 Periodic Inspection

3.1.1 Wheel Nut Inspection

(1) All wheel nuts shall be inspected for presence before each trip.

(2) Wheel nut tightness shall be verified after initial operation, first loading, and every wheel removal. Tighten to the specified torque of 570-630 N·m.

3.1.2 Bearing Inspection

Hub bearing end play shall be inspected periodically. Smooth wheel rotation and absence of abnormal noise shall be confirmed.

(1) Inspection Method

Raise the axle until tires are off the ground. Insert two pry bars between tires and ground to check bearing rotation. If rotation is abnormal, adjust the bearing.

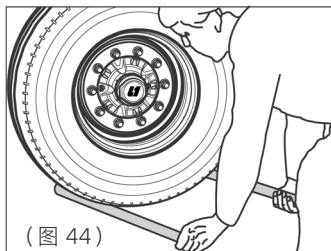
(2) Adjustment Procedure

The hub cap shall be removed. (Drain lubricating oil first for oil-lubricated axles.)

The split pin shall be removed from the axle end.

Tighten the bearing lock nut to 375 ± 25 N·m. Rotate the hub and brake disc in the opposite direction during tightening. Back off the lock nut one full turn (360°). Retighten to 375 ± 25 N·m. Back off the nut again to align with the split pin hole. Install the split pin. Verify bearing end play is within 0.025-0.25 mm. (Reference back-off angle: 22° - 45° .) Bend cotter pin ends to 30° - 45° .

After installation, hub and brake rotor shall rotate freely. No abnormal noise, binding, or reverse rotation shall occur when rotation stops.

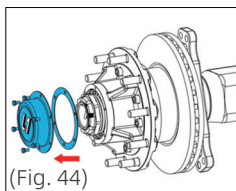


3.2 Removal and Installation

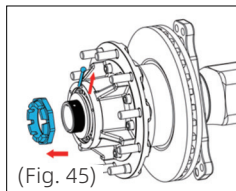
Note: The brake caliper shall be removed first before any wheel end disassembly.

3.2.1 Hub/Brake Rotor Assembly Removal

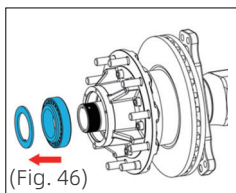
(1) Remove the hub cap bolts and washers, then remove the hub cap and hub seat washer. (Fig. 44).



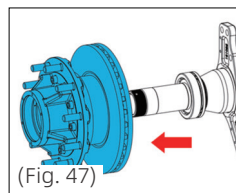
(2) Loosen the axle end lock nut (Fig. 45).



(3) Remove the lock washer and outer bearing (Fig. 46).

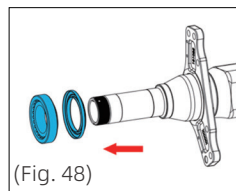


(4) Pull off hub / brake rotor assembly (Fig. 47).



(5) Remove the Inner bearing and hub seal (Fig. 48).

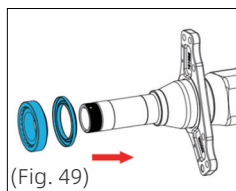
(6) Clean the axle spindle and inspect the spindle bearing journal.



(7) Bearing journal shall be cleaned and inspected for cavitation, peeling, wear and other defects. Defective bearings shall be replaced.

3.2.2 Hub/Brake Rotor Assembly Installation

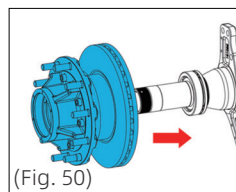
(1) Apply an adequate amount of grease to the axle spindle (Fig. 49).



(2) Install the new hub seal.

(3) Install the greased inner bearing (Fig. 49).

(4) Apply adequate grease inside the hub cavity, then install hub/brake rotor assembly onto the spindle.



(5) Install the greased outer bearing and lock washer into position (Fig. 51).

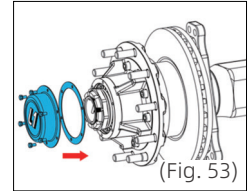
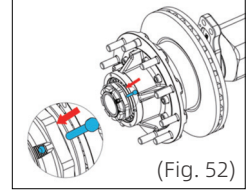
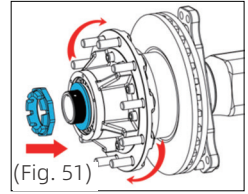
(6) Install axle end lock nut . Bearing end play shall be adjusted per procedure 3.1.2.

(7) Align the slot in the axle nut with the spindle pin hole. Insert split pin then bend the split pin ends 30° - 45° (Fig. 52).

(8) Clean hub and end hub mating surfaces, then install hub seal washer. Tighten bolts to 18-24 N·m (Fig. 53).



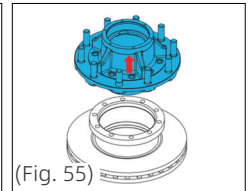
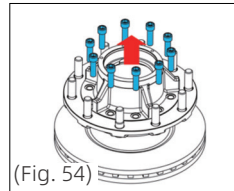
Note: Only YONGLITAI specified grease shall be used. Mixing of different grease brands is strictly prohibited.



3.2.3 Hub Removal

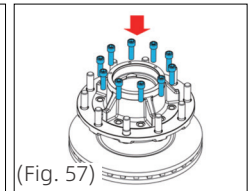
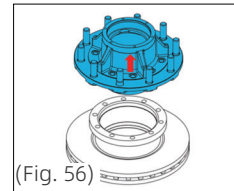
(1) Remove the brake rotor locking bolts (Fig. 54).

(2) Remove the hub assembly (Fig. 55).



3.2.4 Hub Installation

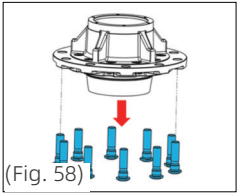
(1) Inspect and clean the hub/brake rotor mounting surfaces. Place the hub assembly onto the brake rotor (Fig. 56).



(2) Install the new brake rotor Lock Bolts and tighten to 400-450 N·m. Apply high-temperature anaerobic threadlocker (e.g., GY-340). (Fig. 57).

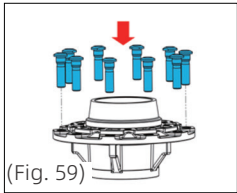
3.2.5 Wheel Stud Removal

- (1) Press out wheel studs (Fig. 58).
- (2) Inspect the hub and bearing outer race for defects.



3.2.6 Wheel Stud Installation

- (1) Press in new wheel studs (Fig. 59).
- (2) Inspect the clearance between stud end face and hub mounting surface with a feeler gauge. Clearance shall be less than 0.05 mm.



4. Important Torque Specifications

Bolt/Nut	Specification	Tightening Torque (N·m)
Flange Nut	M20×1.5	570-630
Brake Rotor Locking Bolt	M16×2-55	400-450
Brake Rotor Locking Bolt	M16×1.5-55	400-450
Bearing Lock Nut	3.48"-12UNS-2B	350-400
Brake Assembly Lock Bolt	M20×1.5-49	475-525
Hex Head Bolt	M8-16	18-24
Air Brake Chamber Mounting Nut	M16	180-210
Gear-type Brake Assembly Plate Mounting Bolt	M10×1.25-20	33-40

Notes: For gear-type brake assembly adjusters: Use a 10 mm socket wrench or hex key to adjust. Adjustment torque shall not exceed 40 N·m. Power tools and open-end wrenches are strictly prohibited.

For chain-type caliper adjusters: Clearance adjustment shall be performed only through the torque protector. Use a 10 mm socket wrench or hex key to adjust. Power tools and open-end wrenches are strictly prohibited.

5. Common Faults, Causes, and Troubleshooting Methods

Fault Phenomenon	Cause Analysis	Troubleshooting Method
Abnormal brake pad wear	1. Prolonged heavy-load operation, poor road conditions 2. Excessive braking causing high brake pad temperature 3. Cracked brake rotor	1. Operate within rated load 2. Use brakes properly 3. Replace brake rotor
Brake rotor cracking	1. Prolonged heavy-load operation, poor road conditions 2. Thermal cracking from prolonged braking 3. Water cooling while brake rotor is hot 4. Tractor not equipped with retarder	1. Operate within rated load 2. Use brakes properly 3. Water cooling of brake rotor is prohibited 4. Equip tractor with retarder as required
No braking or poor braking performance	1. Brake pads worn smooth 2. Incorrect brake pad-to-disc clearance 3. Damaged brake rotor 4. Abnormal brake chamber air pressure 5. Drain plug not removed from air brake chamber	1. Replace brake pads 2. Reset clearance and perform function check 3. Replace brake rotor 4. Refer to vehicle manufacturer's manual 5. Remove drain plugs facing downward on both chambers
Brake pulling / uneven braking	1. One side brake pad worn out 2. Brake pads cannot move normally 3. Incorrect brake pad-to-rotor clearance 4. Both brake rotors not replaced at the same time 5. Uneven air pressure in both air brake chambers 6. Different model brake chambers on both sides 7. Drain plug not removed on one side	1. Replace brake pads 2. Remove and clean brake pads, secure brake spider and caliper 3. Reset clearance and perform function check 4. Replace both brake rotor on same axle simultaneously 5. Refer to the vehicle manufacturer's manual 6. Replace with same model air brake chambers on same axle 7. Remove drain plugs facing downward on both chambers

Fault Phenomenon	Cause Analysis	Troubleshooting Method
Brake dragging	1. Air brake chamber push rod not returning normally when service brake is released 2. Insufficient air pressure to compress parking brake spring when releasing parking brake 3. Incorrect brake pad-to-rotor clearance 4. Brake pads cannot move freely 5. Abnormal brake caliper sliding 6. Abnormal wheel bearing end play 7. Abnormal valve/brake force distribution	1. Refer to vehicle manufacturer's manual 2. Refer to vehicle manufacturer's manual 3. Reset clearance and perform function check 4. Remove and clean brake pads, secure brake spider and caliper 5. Replace guide pins, bushings, and dust covers 6. Readjust bearing end play 7. Refer to vehicle manufacturer's manual
Brake noise / vibration	1. Brake caliper and components not secured to axle per requirements 2. Cracked or grooved brake disc 3. Brake rotor runout not within specification 4. Permanent deformation of brake pad springs 5. Brake pads cannot slide freely on bracket 6. Non-Yonglitai-specified brake pads used	1. Adjust per manual requirements 2. Replace or resurface brake rotor 3. Replace or resurface brake rotor 4. Replace brake pad springs 5. Clean brake pads, secure brake spider and caliper 6. Replace with Yonglitai-specified brake pads
Brake smoking	1. Damaged hub seal 2. Insufficient brake pad-to-disc clearance 3. Excessive lubricating oil (oil-lubricated axles) 4. Non-Yonglitai-specified brake pads used 5. Abnormal high temperature caused by brake dragging	1. Replace hub seal 2. Perform initial clearance adjustment 3. Adjust oil quantity per manual requirements 4. Replace with Yonglitai-specified brake pads 5. Troubleshoot according to the "Brake dragging" section

Fault Phenomenon	Cause Analysis	Troubleshooting Method
Hub overheating	1. Bearing adjusted too tight 2. Bearing wear 3. Insufficient or improper bearing grease	1. Readjust bearing end play 2. Replace bearing 3. Add appropriate amount of correct grease
Premature bearing failure	1. Severe overloading 2. Bearing adjusted too tight or too loose 3. Insufficient bearing grease 4. Excessive impact loads	1. Operate within axle rated load 2. Adjust bearing as specified 3. Add appropriate amount of grease 4. Avoid impact loads as much as possible
Wheel stud damage	1. Improper tightening torque 2. Severe overloading 3. Deformed wheel rim or uneven stud hole distribution	1. Tighten to specified torque 2. Operate within axle rated load 3. Replace wheel rim
Excessive tire wear	1. Improper tire inflation pressure 2. Deformed wheel rim 3. Mismatched tires 4. Bearing adjusted too loose 5. U-bolt loosening or suspension component wear/deformation causing axle misalignment	1. Inflate tires as specified 2. Replace wheel rim 3. Select tires as specified 4. Adjust bearing as specified 5. Align axles; replace worn parts; tighten U-bolts
ABS malfunction	1. Sensor not properly installed 2. Sensor damaged 3. Tone ring damaged	1. Push sensor firmly against tone ring surface 2. Replace sensor 3. Replace tone ring or brake rotor

VI. After-Sales Service Provisions

Foshan Yonglitali Axle Co., Ltd. is a professional manufacturer of semi-trailer axles and related components. Our products have won multiple National Science and Technology Progress Awards. All products are designed, manufactured, and inspected in strict accordance with the IATF16949 quality system requirements. Our company has always adhered to the corporate culture of "Customer First, Pursuit of Excellence".

We have established sales outlets and after-sales service networks nationwide to provide high-quality and efficient services, and we make the following commitments and provisions for product after-sales service:

1. Service Guidelines

1.1 For L1 Yonglital axles, if any product quality issue occurs within the warranty period from the date of vehicle purchase by the user, our company is responsible for providing free repair and necessary replacement.

1.2 All products from our company are supplied with a Product User Manual at the time of delivery. Users shall strictly follow the instructions specified in the Product User Manual for operation, maintenance, and repair.

1.3 When a product quality issue occurs, users may directly file a complaint, consult, or request service with our company's Marketing Department, or with the local distributor of L1 Yonglital axles, or the local after-sales service station. L1 Yonglital Company ensures that a response with a proposed solution will be provided to the user within 2 hours. After receiving a user complaint or service request, if on-site service is required, our company will arrange the service as quickly as possible. Generally, if the service location is within 300 km of our company or the nearest service station, we commit to arriving within 24 hours; if it exceeds 300 km, within 48 hours; for remote areas, the response time will be determined based on actual conditions.

For issues that do not require dispatching personnel to the site, the After-Sales Service Department will directly guide the user to adopt a quicker and more convenient solution.

2. Service Precautions

2.1 Products must be used and maintained correctly according to the User Manual provided by our company. When replacing parts, genuine L1 Yonglital original parts or company-approved substitutes should be used. Our company is not responsible for any consequences caused by the use of non-approved parts.

2.2 Vehicle manufacturers should provide the User Manual supplied by our company to end users along with the vehicle and remind users to read it carefully.

2.3 When requesting free service from L1 Yonglitali, users must provide proof that the product is still within the warranty period, along with trailer information and contact details (including photos of the trailer registration certificate, overall vehicle photos, odometer reading, product nameplate, fault area, and a continuous video recording of the above).

2.4 For major accidents that may cause serious economic loss or civil/criminal liability and may be related to our products, users must not handle or dispose of the L1 Yonglitali product without our company's consent. The scene must be properly protected while notifying our company or service station. Otherwise, all consequences shall be borne by the user.

3. Warranty Period and Coverage

3.1 The after-sales warranty period for L1 Yonglitali axles is 3 years or 500,000 km (whichever comes first). This applies to the main structural components. Warranty terms for other components are detailed in the Product Warranty Parts List.

3.2 Wear parts are covered according to the time or mileage limits specified in the Product Parts Warranty List (whichever comes first). Service for wear parts is based on product failure and does not cover normal wear or minor defects that do not affect normal use. If failure to replace a wear part in time causes damage to other components, the warranty period for those components shall follow the wear part's warranty period.

3.3 In the spirit of providing lifetime service to users, for products beyond the warranty period, if the product performance fails to meet the requirements and repair or maintenance is needed, our company will provide paid service upon user request and charge only the cost of parts and related expenses.

3.4 This standard applies to current product specifications. Future product additions or specification changes shall still be governed by this standard, based on product name.

3.5 The warranty period for wear parts is determined by whichever comes first – time or mileage – and is based on actual product failure. It does not include normal wear or minor cosmetic defects that do not affect normal function.

3.6 If damage to other components results from failure to promptly replace a

wear part, the warranty period for the affected components shall be calculated in accordance with the warranty period of the wear part.

3.7 If a wear part has reached the end of its warranty period but continues to be used, or when the product is operated under extremely harsh conditions, mountainous roads, or heavy overload conditions, there is no guarantee that the product will meet the service life specified in this standard. Users should closely monitor the condition of wear parts, appropriately increase inspection and maintenance frequency, and replace them promptly when necessary.

Product Warranty Parts List (After-Sales Service)

Note: Parts marked with “*” are wear parts.

Part Name	After-Sales Service	
	Warranty Period (Time)	Mileage
Brake Caliper	24 months	200,000 km
Arc Spring *	12 months	100,000 km
Brake Pad *(Tractor with retarder)	12 months	100,000 km
Brake Pad *(Tractor without retarder, flat roads)	6 months	100,000 km
Brake Pad *(Tractor without retarder, mountainous roads)	3 months	30,000 km
Sensor Assembly *	6 months	50,000 km
Brake Assembly * Other Consumables	6 months	50,000 km
Brake Rotor *	12 months	150,000 km
Disc Hub	24 months	200,000 km

Part Name	After-Sales Service	
	Warranty Period (Time)	Mileage
Hub Seal *	12 months	100,000 km
Air Brake Chamber *	12 months	100,000 km
Wheel Stud Assembly *	12 months	100,000 km
Brake Rotor Lock Bolt *	12 months	100,000 km
Lock Bolt *	12 months	100,000 km
Hub Seal Seat *	12 months	150,000 km
Axle End Locknut *	12 months	150,000 km
Rubber Parts *	6 months	60,000 km
ABS Sensor *	12 months	150,000 km
Dust Cover *	12 months	150,000 km
Others	12 months	150,000 km

4. Conditions Not Covered by Warranty Service

4.1 Failure to follow the requirements of our company's User Manual for model selection, installation, use, or maintenance.

4.2 Damage caused by unauthorized modification, welding, or removal of parts by the user.

4.3 Damage caused by improper or abnormal use by the user.

4.4 Damage caused by overloading, exceeding legal limits, or operation under severe road conditions.

4.5 Damage to our products caused by the trailer or other accessories.

4.6 Continuing faults or component damage caused by unauthorized handling or replacement of parts without our company's consent.

4.7 Disputes arising from incorrect promotion by the vehicle manufacturer or seller.

4.8 Non-compliance with "Disc Brake Axle Selection Requirements" (see Page 6).

4.9 Failures occurring beyond the warranty period.



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