YONGLITAI

User Manual for German-Type Drum Brake Axle

2026A0

FOSHAN YONGLITAI AXLE CO., LTD.

YONGLITAI

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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 33), 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 Yonglitai 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;

○ 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:

- Tire pressure within normal range
- All main bolts in wheel and suspension systems properly tightened
- No abnormalities in leaf springs and main beams

4. Brakes shall not overheat. Overheating reduces braking performance.

5. Parking brake shall not be applied immediately after brakes are hot. Thermally expanded brake drums may develop cracks during subsequent cooling.

6. To ensure L1 Yonglitai axle performance, use Yonglitai original parts only.

7. Daily inspections and maintenance shall be performed as required to ensure normal vehicle operation and traffic safety. Troubleshooting and parts replacement shall be performed by professional maintenance departments. The company shall not be liable for quality accidents caused by 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 Yonglitai 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 Yonglitai'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 Yonglitai'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 Yonglitai. 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 Yonglitai.

7. Self-locking fasteners must not be reused; they must be replaced after each disassembly.

After Work is Completed

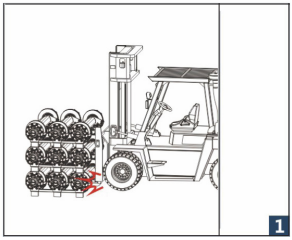
1. Inspect the axle for damage, brake air leaks, or other quality abnormalities.

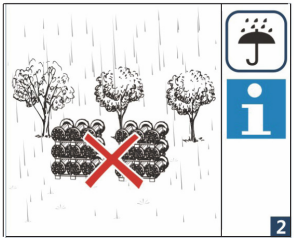
2. All parts removed during maintenance or repair must be reinstalled and inspected after all work is finished.

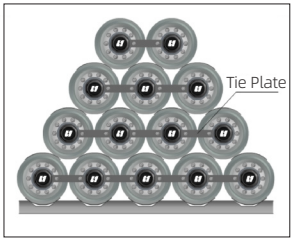
Transport and Storage of Axle

1. During transport, loading and unloading, prevent collisions with brake drums, 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.



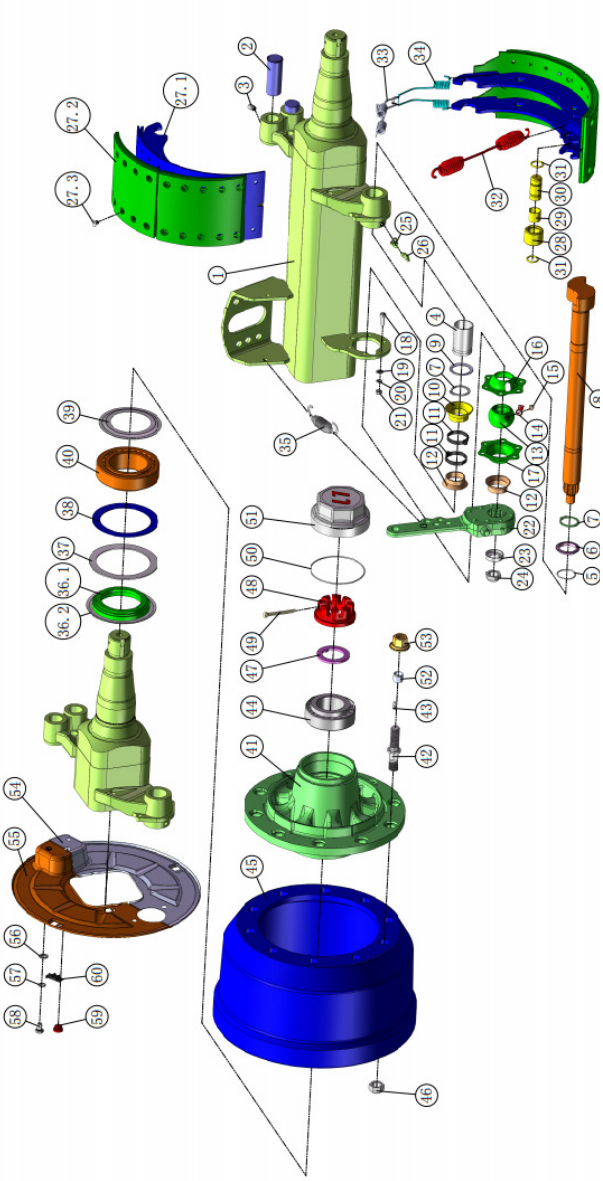




Note: Warehouse stacking shall not exceed 4 layers. Excessive stacking may cause local stress deformation or cracking of brake drums.

I. German-Type Axle Exploded Views

LTD12F11G German Square-Section Drum Brake Series

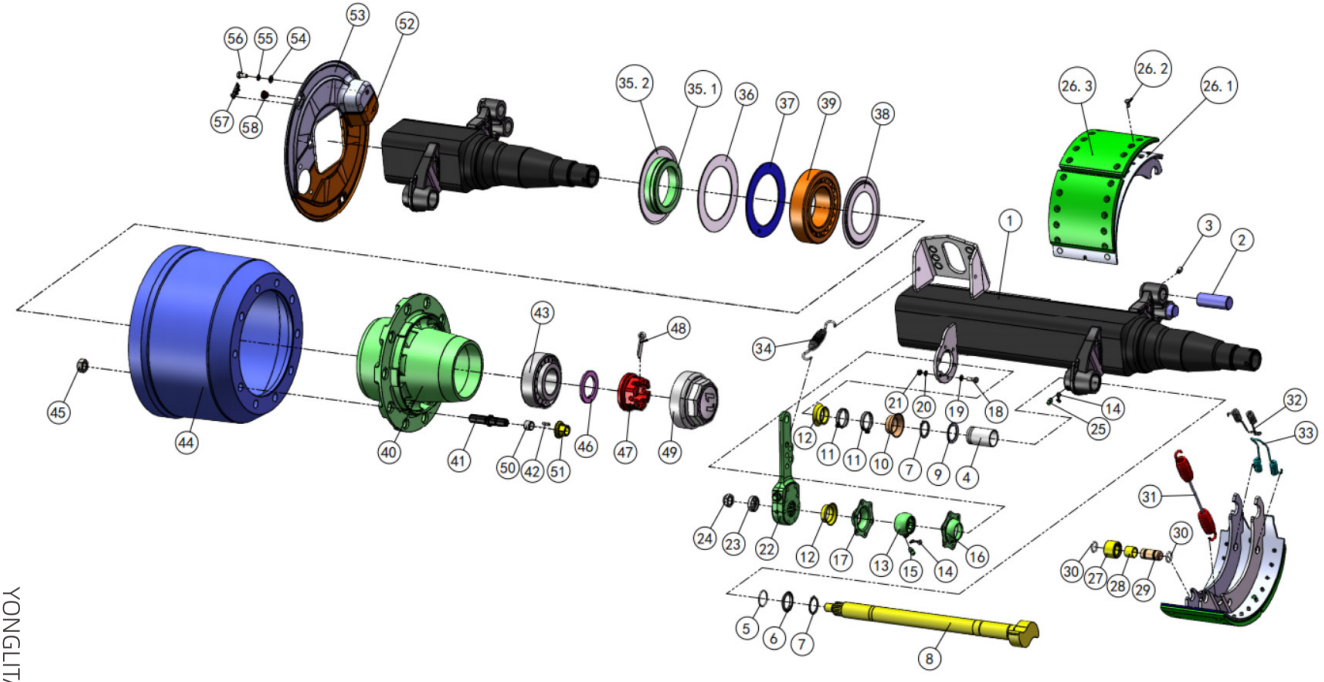


LTD12F11G Bill of Materials

Item No.	Part Name	Qty
1	Axle Beam Assembly	1
2	Anchor Pin	4
3	Inner Hexagon Bolt	4
4	Cam Bushing	2
5	O-Ring	2
6	Thrust Ring	2
7	Circlip	4
8	Camshaft (RH)	1
8	Camshaft (LH)	1
9	Nylon Ring	2
10	Large Dust Cover	2
11	Clamp	4
12	Medium Dust Cover	4
13	Spherical Bearing	2
14	Grease Nipple Cap II	2
15	45° Grease Nipple	2
16	Spherical Bearing Bracket II	2
17	Spherical Bearing Bracket I	2
18	Hex Head Bolt	12
19	Washer	12
20	Spring Washer	12
21	Type I Hex Nut	12
22	Slack Adjuster	2
23	Locknut Washer	2
24	Cam Locknut	2
25	Grease Nipple	2
26	Grease Nipple Cap I	2
27	Brake Shoe Assembly	4
27.1	Brake Shoe Bracket	4
27.2	Brake Lining	8
27.3	Tubular Rivet	80
28	Cam Roller	4
29	Bushing	4
30	Cam Roller	4

Item No.	Part Name	Qty
31	Roller Lock Ring	8
32	Return Spring	2
33	Hold-Down Spring I	2
34	Hold-Down Spring II	2
35	Slack Adjuster Return Spring	2
36	Conical Ring Assembly	2
36.1	Conical Ring	2
36.2	Conical Ring Guard Collar	2
37	Inner Hub Seal	2
38	Outer Hub Seal	2
39	Bearing Oil Baffle	2
40	Bearing	2
41	Hub	2
42	Wheel Stud	20
43	Anti-rotation Pin	20
44	Bearing	2
45	Brake Drum	2
46	Lock Nut	20
47	Lock Washer	2
48	Spindle Nut	2
49	Split Pin	2
50	O-Ring	2
51	Hub Cap	2
52	Wheel Sleeve Elastic Sleeve	4
53	Flanged Nut	20
54	Dust Cover (LL)	1
	Dust Cover (LR)	1
55	Dust Cover (UL)	1
	Dust Cover (UR)	1
56	Washer	8
57	Spring Washer	8
58	Bolt	8
59	Seal Ring	2
60	Sight Hole Rubber Plug	4
☆	Mobil Grease	2kg

LTD16F11G German Square-Section Drum Brake Series



LTD16F11G Bill of Materials

Item No.	Part Name	Qty
1	Axle Beam Assembly	1
2	Anchor Pin	4
3	Inner Hexagon Bolt	4
4	Cam Bushing	2
5	O-Ring	2
6	Thrust Ring	2
7	Circlip	4
8	Camshaft (RH)	1
8	Camshaft (LH)	1
9	Nylon Ring	2
10	Big-dust Wrapper	2
11	Clamp	4
12	Medium Dust Cover	4
13	Spherical Bearing	2
14	Grease Nipple Cap II	2
15	45° Grease Nipple	2
16	Spherical Bearing Bracket II	2
17	Spherical Bearing Bracket I	2
18	Hex Head Bolt	12
19	Washer	12
20	Spring Washer	12
21	Type I Hex Nut	12
22	Slack Adjuster	2
23	Locknut Washer	2
24	Cam Locknut	2
25	Grease Nipple	2
26	Brake Shoe Assembly	4
26.1	Brake Shoe Bracket	4
26.2	Tubular Rivet	80
26.3	Brake Lining	8
27	Cam Roller	4
28	Bushing	4
29	Cam Roller	4
30	Roller Lock Ring	8

Item No.	Part Name	Qty
31	Return Spring	2
32	Hold-Down Spring I	2
33	Hold-Down Spring II	2
34	Slack Adjuster Return Spring	2
35	Conical Ring Assembly	2
35.1	Conical Ring	2
35.2	Conical Ring Guard Collar	2
36	Inner Hub Seal	2
37	Outer Hub Seal	2
38	Big Bearing Oil Baffle	2
39	Bearing	2
40	Hub	2
41	Wheel Stud	20
42	Anti-rotation Pin	20
43	Bearing	2
44	Brake Drum	2
45	Lock Nut	20
46	Lock Washer	2
47	Spindle Nut	2
48	Split Pin	2
49	Hub Cap	2
50	Wheel Sleeve Elastic Sleeve	4
51	Flanged Nut	20
52	Dust Cover (LL)	1
	Dust Cover (LR)	1
53	Dust Cover (UL)	1
	Dust Cover (UR)	1
54	Washer - Chamfered Type	8
55	Spring Washer	8
56	Hex Head Bolt	8
57	Seal Ring	2
58	Sight Hole Rubber Plug	4
☆	Mobil Grease	1.5kg

II. Installation and Use Instructions

1. Welding of Spring Seat to Axle

The spring seat is located at the maximum bending stress zone of the axle. Strict adherence to proper welding procedures is critical, as weld quality directly affects axle performance.

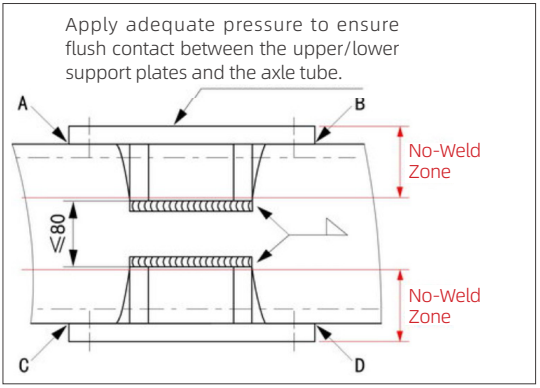
Observe the following requirements when welding the spring seat to the axle beam:

(1) The upper and lower support plates are located at the maximum bending moment and stress concentration zones. Proper welding technique is essential. Incorrect welding procedures or excessive welds increase the risk of axle fracture.

Prior to welding, verify that the support plates are in full contact with the axle tube. If a gap exists, apply pressure to ensure a flush fit before welding.

(2) 150×150 Square Axle Welding Requirements:

Welds or tack welds are strictly prohibited at contact surfaces A, B, C, and D, and within the No-Weld Zones (Fig. 1). Non-compliance will result in axle fatigue fracture and reduced service life.

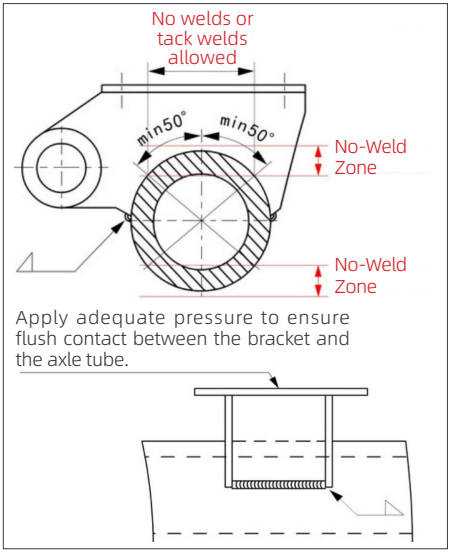


(Fig. 1)

(3) Round Axle Beam Welding Requirements:

Welds or tack welds are strictly prohibited on both sides of the spring seat-to-axle contact surface (Fig. 2). Non-compliance will result in axle fatigue fracture and reduced service life.

(4) During any welding operation, never ground the welding equipment through the axle assembly or its rotating components. Improper grounding will cause electrical arcing damage to the bearing and cam bushing.



(Fig. 2)

Note: Welding on the upper and lower surfaces of the axle is strictly prohibited. Contact the manufacturer if welding in these areas is unavoidable.

2. Wheel Installation

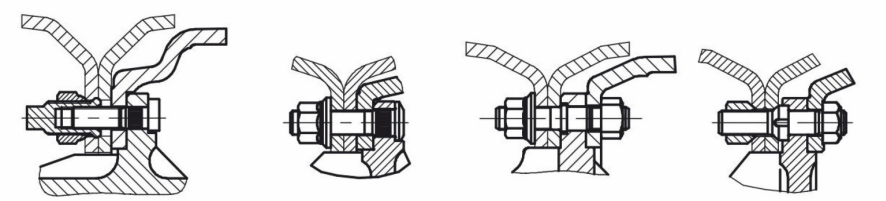
2.1 Wheel Stud Fastening Configurations

(1) Outboard brake drum, ball-seat piloted wheel mounting. (Fig. 3)

(2) Outboard brake drum, hub-piloted wheel mounting. (Fig. 4)

(3) Inboard brake drum, hub-piloted wheel mounting. (Fig. 5)

(4) Inboard brake drum, cone-seat piloted wheel mounting. (Fig. 6)



(Fig. 3) (Fig. 4) (Fig. 5) (Fig. 6)

2.2 Wheel Inspection

The following requirements shall be met:

(1) Wheel disc face deviation: ≤ 0.15 mm.

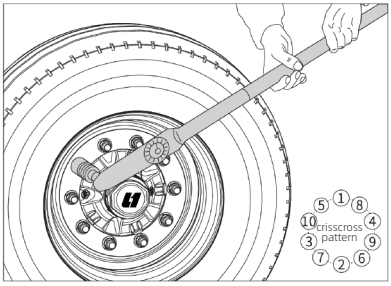
(2) Bolt hole positional tolerance ≤ 0.30 mm.

(3) Center bore diameter: $\phi 221\ {}_{0}^{+0.2}$(8-hole), $\phi 281\ {}_{0}^{+0.3}$(10-hole).

2.3 Wheel Installation Procedure

(1)Clean all mounting surfaces thoroughly before installation. Remove dirt, burrs and other foreign materials. Pre-tighten the wheel nuts using a suitable nut socket and calibrated torque wrench. Refer to Fig. 8 for nut tightening torque values.

(2) Tighten wheel nuts in crisscross pattern (see Fig. 7) to the torque values specified in the table below.



(Fig. 7)

Bolt Type	Tightening Torque	Figure
Stud-Piloted Wheel JIS M20 × 1.5	400 ~ 440 N·m	
Stud-Piloted Wheel BSF 7/8"-11	450 ~ 500 N·m	
Stud-Piloted Wheel ISO M22 × 1.5	670 ~ 730 N·m	
Hub-Piloted Wheel ISO M24 × 1.5	820 ~ 900 N·m	

(Fig. 8)

Precautions

(1) For JIS ball-seat bolts: Tighten the inner cup nut to the specified torque first, then tighten the outer spherical wheel nut to the specified torque.

(2) For ISO 10-hole wheel stud systems: Ensure two elastic sleeves are symmetrically installed among the 10 wheel studs on each wheel side.

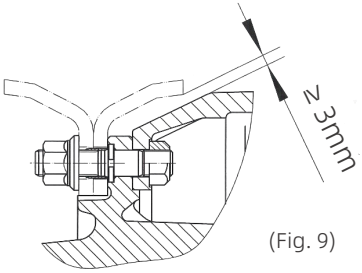
Note:

Elastic sleeves are critical to wheel bolt safety. Do not lose during wheel installation or replacement.

(3) Wheels must be raised off the ground and brakes released during nut tightening. Follow the specified tightening sequence (see Fig. 7).

(4) Lock nuts for inboard brake drum systems are self-locking. Maximum two installation/removal cycles. Replace after two cycles.

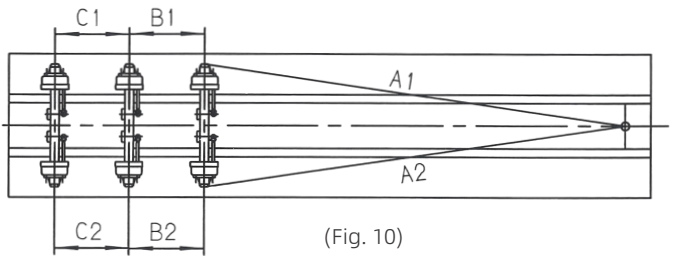
(5) Radial clearance between wheel disc and brake drum shall be as shown in Fig. 9. Do not allow contact between components.



(Fig. 9)

3. Axle Installation Requirements on Frame

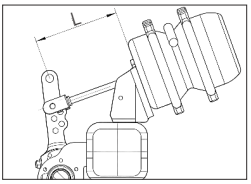
Refer to Figure 10. The dimensional tolerance between the king pin and the first axle (A1, A2) must not exceed 3 mm. The dimensional tolerance between the first and second axles (B1, B2), as well as between the second and third axles (C1, C2), must not exceed 2 mm.



(Fig. 10)

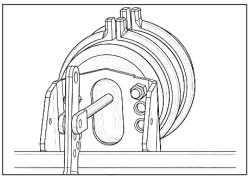
4. Air Brake Chamber

The air brake chamber push rod L for Yonglitai axles must comply with the jointly approved technical drawings. The effective stroke of the push rod must be at least 64 mm.



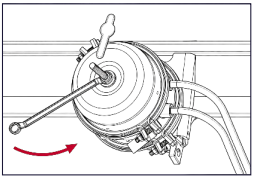
(Fig. 11)

Install the air brake chamber onto holes A-D of the axle chamber bracket. Tighten the mounting nuts to a torque of 200 N·m.



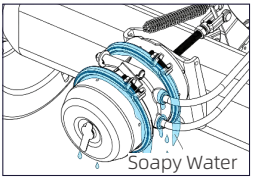
(Fig. 12)

In an emergency, release the parking brake by tightening the nut on the caging bolt to compress the parking spring in the rear chamber.



(Fig. 13)

During routine axle maintenance, apply a soapy water solution to the chamber clamp bands and air line fittings to inspect for air leaks.



(Fig. 14)

5. Trailer ABS System Installation

According to GB 7258 requirements, trailers shall be equipped with an anti-lock braking system compliant with GB 13594. The axles are supplied with ABS tone ring and sensor provisions.The users are responsible for installing the ABS ECU, electromagnetic relay valves, and remaining system components.

Sensor Installation Procedure:

(1) Apply grease inside the elastic bushing.

(2) Press the elastic bushing into the bracket hole.

(3) Push the sensor into the elastic bushing until the sensor head contacts the tone ring.

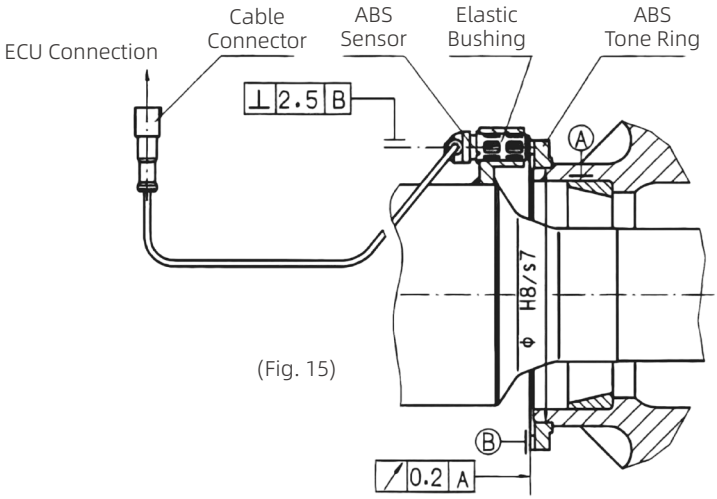
(4) Secure the cable to the axle and chassis using clamps or cable ties.

Routine Maintenance:

Inspect and clean any debris accumulated in the teeth of the tone ring. Check and tighten loose cables, and replace any damaged cables immediately.

System Recommendations:

- ○ 4S/2M system configuration is recommended for 2-axle trailers.
- ○ 4S/3M system configuration is recommended for 3-axle trailers.
- ○ Standard 100-tooth tone rings are used for vehicles fitted with 20"–22.5" tires.



(Fig. 15)

III. Maintenance

1. Pre-Maintenance Preparations

(1) Maintenance and inspection shall be carried out with the vehicle unloaded. Ensure the vehicle cannot move during maintenance.

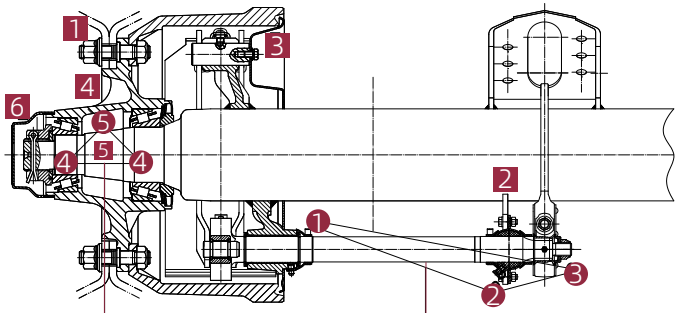
(2) When lifting the vehicle, all axles shall be lifted simultaneously. If a jack is used, the lifting point shall be positioned close to the leaf spring area. A steel plate shall be placed between the jack and axle to prevent excessive local stress.

(3) If the vehicle operates under severe conditions, lubrication intervals shall be increased and maintenance intervals shall be shortened.

(4) The grease used shall be No.2 lithium complex grease suitable for temperatures from -30° C to 180° C. L1 Yonglitai special grease pack or Mobil XHP222 grease is recommended. Grease quantity per axle is approximately 1.5 kg.

(5) During grease replacement or lubrication, ensure the grease fitting and surrounding area remain clean.

Lubrication points are shown in Fig.16.



(Fig. 16)

(Replace the Grease) Bearing ④ & Hub Cavity ⑤	(Lubricate) Grease Fittings ①②③
Every 1 year / 150,000 km	After initial break-in
Whenever the hub is replaced	Every 3 months
After extended vehicle storage	After extended vehicle storage

Lubrication and Maintenance Schedule

Maintenance Operation	Initial Service	Every 10-20 Days	Every 3 Months	Every 6 Months	At Brake Lining Replacement or Every 150,000 km
Legend: ○ Lubrication ☐ Inspection Refer to Fig.16 for lubrication and maintenance points of the axle.					
○ LUBRICATION					
① Cam Bushing / ② Spherical Bearing	○		○		
③ Slack Adjuster	○		○		
Replace the grease in the ④ bearings and ⑤ hub cavity					○
☐ INSPECTION & MAINTENANCE					
1 Inspect wheel nut torque	☐				
2 Inspect brake clearance		☐			
3 Inspect brake lining thickness			☐		
4 Inspect brake drum wear			☐		
5 Inspect wheel bearing condition				☐	
6 Inspect hub cap tightness				☐	
I Inspect tire wear pattern			☐		
II Visually inspect all components for wear and damage				☐	

Note: Different brands of grease shall never be mixed.

2. Wheel End System Maintenance

2.1 Wheel Nut Inspection

After the vehicle is initially loaded and operated, after 15 days of operation, or after each tire replacement, tighten the wheel nuts in crisscross pattern (refer to Fig.7) using a torque wrench. Specified tightening torque shall comply with Fig.8 requirements.

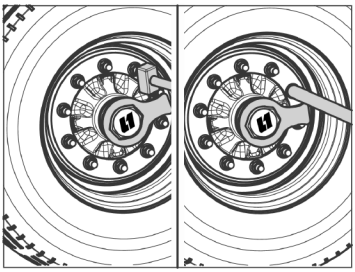
2.2 Hub Cap Tightening Inspection

Inspect the hub cap for looseness every 6 months using a dedicated socket and torque wrench. Adjustment specifications:

A. Threaded hub cap Series (Non-O-Ring Type) : 280 ± 20 N·m

B. Threaded hub cap Series (O-Ring Type) :

220 ± 20 N·m



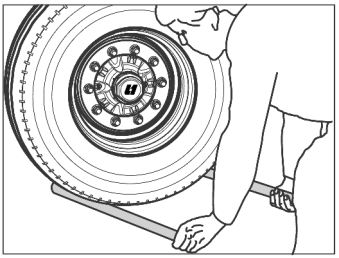
(Fig. 17)

2.3 Bearings Inspection

Inspect bearing operation periodically or every 6 months.

Raise the axle until the tires are off the ground and fully release the brakes. Insert two pry bars between the tire and the ground to check bearing rotation (Fig. 18).

Pry the tire to check for end play. Noticeable movement indicates excessive bearing clearance requiring adjustment. Spin the tire to verify smooth rotation. If noise increases with rotational speed or abnormal rotation is detected, adjust or replace the bearing.



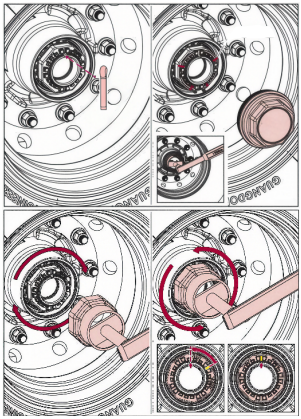
(Fig. 18)

2.4 Bearings Adjustment Procedure

(1) Remove the hub cap.

(2) Remove the split pin from the spindle.

(3) Use a dedicated spindle nut socket and torque wrench. Rotate the hub while tightening the nut to the specified torque: 350~400 N·m. Back off the nut one full turn, then retighten to the specified torque: 325~375 N·m. If a torque wrench is unavailable, hand-tighten until a slight drag is felt during hub rotation, then back off the nut 22.5 ° to 45° and align the nut slot with the pin hole.



(Fig. 19)

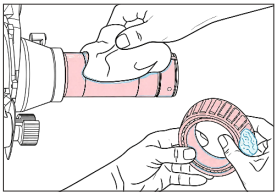
Note: Rotate the hub by hand while tightening the spindle nut to ensure all wheel end components are properly seated.

(4) Install the split pin and bend the ends slightly.

(5) Install the hub cap. Tightening torque shall comply with Section 2.2 on Page 18.

2.5 Wheel End Grease Replacement

Disassemble components in sequence during every brake lining replacement, at least annually, or every 150,000 km.

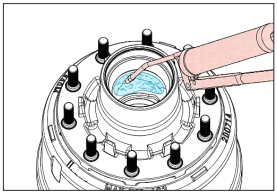


(Fig. 20)

Thoroughly clean bearings and seals using diesel fuel and inspect for wear.

Replace failed components immediately.

Clean the hub cavity and hub cap cavity thoroughly before adding grease.



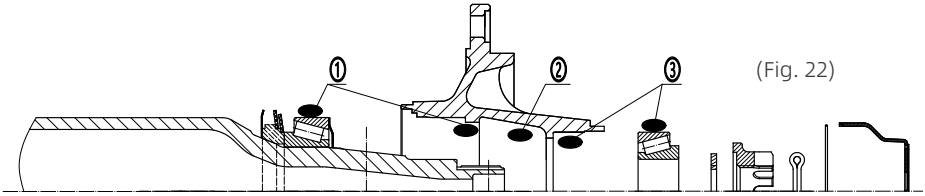
(Fig. 21)

Grease application requirements:

Apply 3–5 mm grease layer inside the hub cavity.

Apply 6–10 mm grease layer on bearing raceways.

Fill all roller cavities inside the bearing completely with grease.



(Fig. 22)

Lubrication Points	Inner Bearing ❶	Hub Cavity ❷	Outer Bearing ❸

Note: Always replace the hub seal with a new component whenever the wheel bearings are removed to ensure reliable sealing.

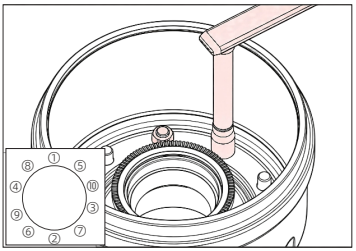
2.6 Wheel End Disassembly and Assembly

Remove the lock nuts from the wheel end assembly in a crisscross pattern. Separate the brake drum from the hub assembly.

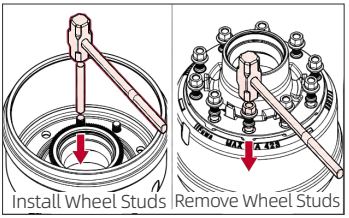
When installing the brake drum, tighten the lock nuts in a crisscross pattern to a torque of 600 N·m. For spoked hubs and brake drums, the M20×2 connecting bolts must be tightened to a torque of 450 N·m in a crisscross pattern.

If the bolts need to be replaced, drive the wheel studs out of the hub using a copper hammer.

When installing wheel studs, align the flat edge on the bolt shoulder with the clearance on the hub. Drive the wheel stud fully into position using a copper hammer.



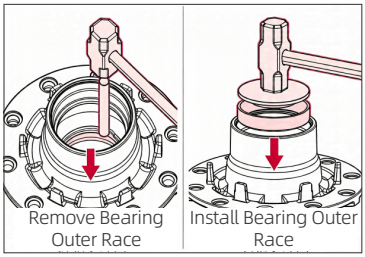
(Fig. 23)



(Fig. 24)

Use a hammer and pry bar to tap lightly and alternately several times at the notches on the hub bearing seat shoulder to remove the bearing outer race from the hub end.

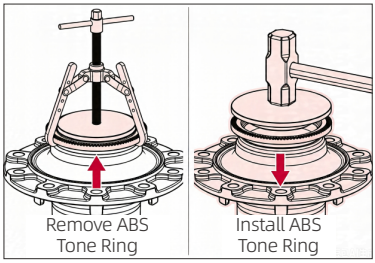
When installing the bearing outer race, place it on the hub bearing seat. Place a suitable backing plate over the bearing outer race and tap the plate evenly with a hammer to ensure the bearing outer race is fully seated.



(Fig. 25)

Removal: Remove the tone ring using a puller and washer as shown in Fig. 26.

Installation: When installing the ABS tone ring, place it on the hub mounting surface. Place a suitable backing plate over the ABS tone ring and tap the plate evenly with a hammer to ensure the ABS tone ring is installed flat and fully seated.



(Fig. 26)

2.7 Inspection of Other Components

Visually inspect all components for damage and wear. Inspect for uneven tire wear every 3 months. Inspect all parts for damage and wear every 6 months. Replace bearings if any of the following conditions exist:

(1) Severe roller wear.

(2) Cracks or corrosion on bearing races, cages, or rollers.

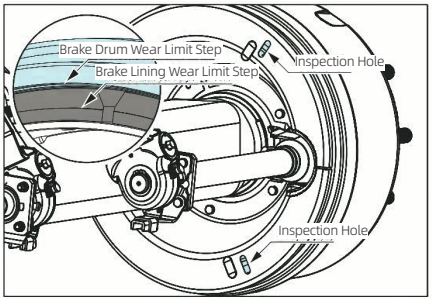
(3) Spalling or burn marks on bearing races or rollers.

3. Brake System Maintenance

3.1 Brake Assembly Maintenance

3.1.1 Brake Lining Thickness Inspection

Inspect brake lining thickness through the dust cover inspection hole periodically or every 3 months. Replace linings immediately if the thickness is reduced to 6 mm (wear limit step reached) or if the linings are loose.



(Fig. 27)

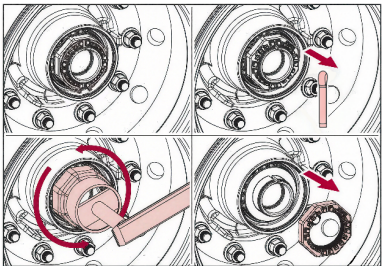
3.1.2 Brake Lining Replacement

Removal

Park the vehicle on a level surface and chock the wheels to prevent vehicle movement. Release the parking brake. Raise the axle with a suitable jack until the wheel is completely clear of the ground.

Remove the hub cap using the hub cap wrench. Remove the lock retainer and unscrew the axle spindle nut.

Remove the lock washer, outer bearing, and wheel end assembly in sequence.

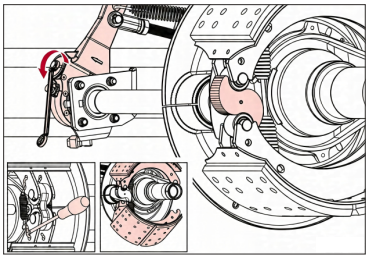


(Fig. 28)

Note: Pneumatic impact wrenches are strictly prohibited for disassembly

Rotate the slack adjuster counterclockwise until the brake shoe rollers rest at the lowest point of the S-cam.

Pry off the brake shoe hold-down springs using a screwdriver, then remove the brake shoe assemblies and return spring.

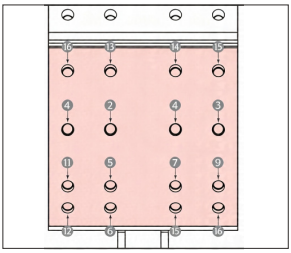


(Fig. 29)

Brake Lining Replacement

Use a hydraulic press to remove the lining rivets. Remove the worn brake lining. Clean the brake shoe lining seat thoroughly. Inspect the brake shoe for deformation, excessive wear, cracks, or other damage. Replace if necessary.

Position the new brake lining on the brake shoe and install all rivets. Using a riveting machine, rivet the lining in the specified sequence. After riveting, the lining rotational torque shall be 2.5–5 N·m.



(Fig. 30)

Inspection

After riveting, perform the following inspections:

■ Check the brake lining for cracks or damage.

■ Verify that all rivet heads are properly formed and evenly seated.

■ Measure the gap between the brake lining and brake shoe using a feeler gauge.

Requirements:

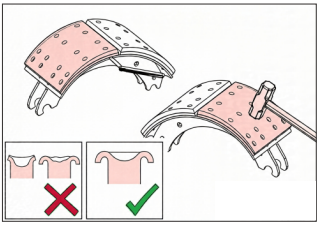
■ Maximum allowable gap: 0.15 mm

■ Feeler gauge insertion depth shall not exceed 20 mm

Lightly tap the brake lining with a hammer:

■ A clear metallic sound indicates proper bonding.

■ A dull sound indicates poor rivet seating or inadequate lining contact.



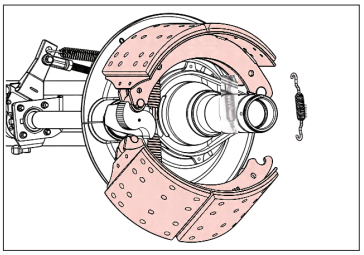
(Fig. 31)

Installation

Install the brake shoe return spring onto the anchor pins of both brake shoes. Position the brake shoes onto the S-camshaft and anchor pin in the correct installation sequence.

Install the brake shoe retaining springs using a screwdriver. Reinstall the wheel end assembly.

Complete wheel end installation according to Section 2.4 on Page 19.

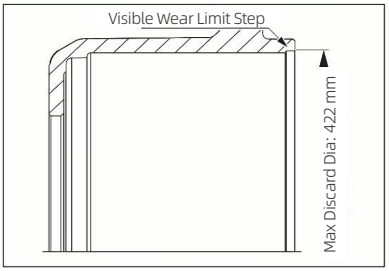


(Fig. 32)

3.2 Brake Drum Wear Inspection

According to operating conditions or every three months, inspect brake drum wear condition.

Replace the brake drum immediately if cracking occurs or wear reaches the service limit.

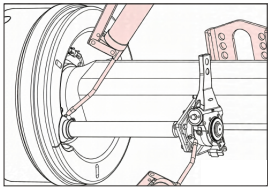


(Fig. 33)

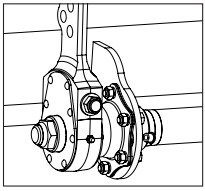
Note: Do not rapidly cool overheated brake drums with water after long-duration or long-distance braking.

3.3 Camshaft Assembly Maintenance

Inject No. 2 lithium grease every 3 months via the grease nipples into the cam bushing and spherical bearings until fresh grease purges from the lubrication points.



(Fig. 34)

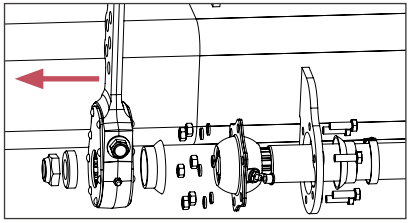


(Fig. 35)

3.3.1 Camshaft Assembly Disassembly and Installation

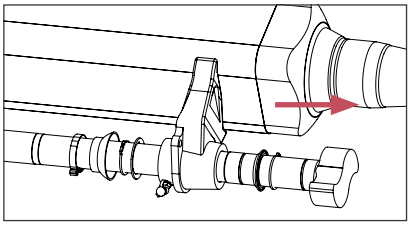
Loosen the camshaft lock nut and remove the lock washer, slack adjuster, and slack adjuster return spring.

Loosen the mounting bolts of the spherical bearing and remove the spherical bearing assembly.



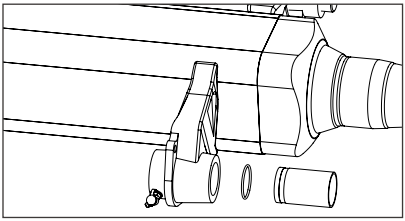
(Fig. 36)

Loosen the clamp securing the camshaft dust cover. Remove the dust cover, camshaft circlip, nylon ring, and O-ring, then withdraw the camshaft.



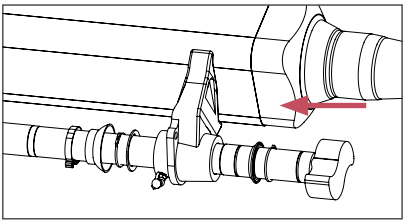
(Fig. 37)

Using the designated service tool, drive out the camshaft thrust ring and bushing. During assembly, use the same tool to install the new thrust ring and bushing into position.



(Fig. 38)

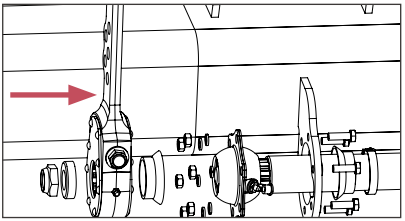
Install the camshaft, thrust ring, nylon ring, camshaft circlip, camshaft dust cover, and clamp in sequence.



(Fig. 39)

Install the spherical bearing assembly. Tighten the M8 mounting bolts and nuts to 22 N·m.

Install the slack adjuster return spring, slack adjuster, washer, and slack adjuster circlip in sequence.



(Fig. 40)

3.3.2 Slack Adjuster

3.3.2.1 Slack Adjuster Maintenance

(1) Lubricate with No. 2 lithium grease every 3 months (shorten intervals for severe operating conditions). Inject grease through the nipple until fresh grease purges. Refer to Fig.34.

(2) If brake performance is weak, check the counterclockwise torque of the automatic slack adjuster (ASA) adjusting nut. Rotate one full turn. If torque is < 18 N·m, or if the ratcheting sound is not continuous, not crisp, or absent, the ASA is damaged and must be replaced.

(3) Air brake chamber pushrod effective stroke must be ≧ 64 mm. The clevis opening depth must accommodate full slack adjuster rotation without interference.

(4) For overloaded vehicles or vehicles operating in mountainous regions, extreme brake heat may cause the automatic slack adjuster to over-adjust, resulting in severe brake drag. Consult the trailer manufacturer and our company before utilizing ASAs in these applications.

3.3.2.2 Slack Adjuster Installation and Adjustment Procedure

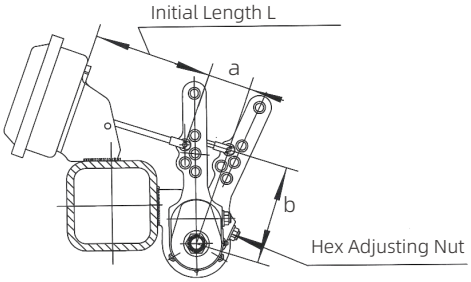
Manual Slack Adjuster:

Adjust every 15~30 days or 5,000~10,000 km depending on usage conditions.

If the pushrod stroke "a" exceeds 35 mm when pulling the slack adjuster by hand (Fig. 41), the brake clearance requires readjustment.

Adjust the hex nut to set stroke "a" to 10%~12% of the slack adjuster length "b". Example: If "b" = 152.4 mm, set "a" = 15~18 mm. If "b" = 165 mm, set "a" = 16~20 mm.

Standard Procedure: Turn the adjusting hex nut clockwise until the brakes lock. Back off 3~4 clicks (90° to 120°) counterclockwise, ensuring the locking sleeve springs back to engage the hex head.

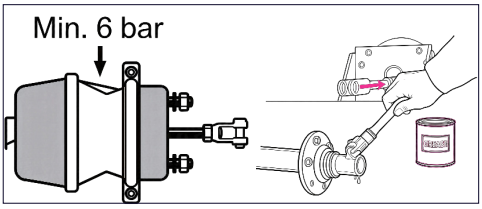


(Fig. 41)

Automatic Slack Adjuster:

Preparation: Ensure the air brake chamber pushrod is fully retracted (0 mm stroke). Dual-chamber brake chamber require a minimum of 6 bar system pressure to ensure 0 mm stroke.

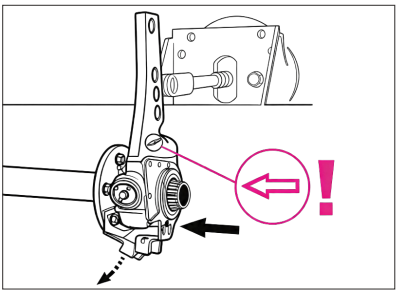
Clean the camshaft splines and apply grease.



(Fig. 42)

Installation Steps(ASA):

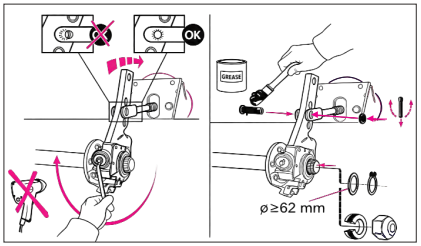
Slide the ASA onto the camshaft. Ensure the arrow on the ASA points in the direction of the pushrod extension.



(Fig. 43)

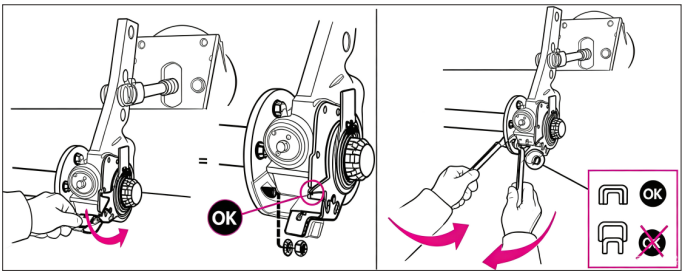
Install the slack adjuster stop onto the axle beam. Ensure the extended tongue engages the notch on the ASA actuating arm (U-shaped slot). Do not tighten the slack adjuster stop yet.

Rotate the adjusting nut clockwise to accurately align the ASA hole with the clevis hole. Insert the clevis pin and secure with a split pin. Install the camshaft washer and circlip.



(Fig. 44)

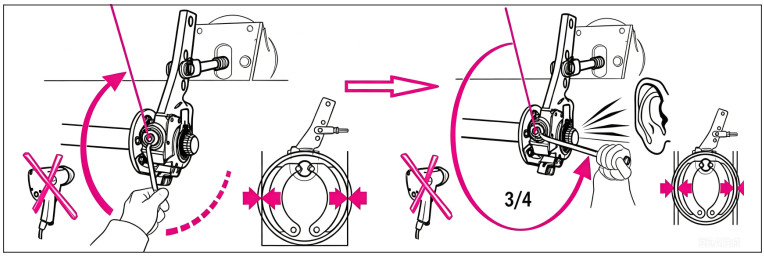
Rotate the actuating arm and slack adjuster stop together away from the adjusting nut until the preset initial position is reached (at this point, high resistance will be felt, and the actuating arm cannot be rotated by hand). Tighten the mounting bolts. Ensure the tongue remains fully seated in the notch.



(Fig. 45)

Continue turning the adjusting nut clockwise until the linings lightly contact the drum. Back off the nut counterclockwise approximately 270° to 360° (a ratcheting

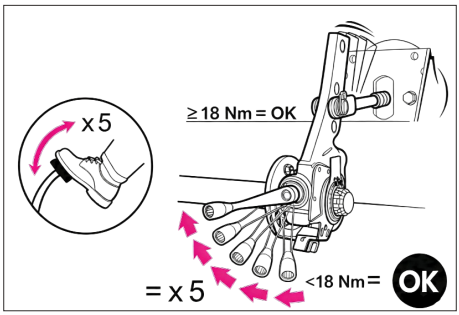
sound will be heard with high rotational resistance) to establish operational clearance.



(Fig. 46)

System Verification: After installation, apply and release the brakes 30~60 times. Place a hex wrench loosely on the adjusting nut during this process. If the wrench rotates clockwise with each brake application, the auto-adjustment function is operating normally.

It is recommended to perform 30~60 continuous service brake applications while driving to bed in the linings and drum, allowing the ASA to commence normal operation.



(Fig. 47)

Notes

(1) Use manual tools only during ASA installation. Impact wrenches or power tools are strictly prohibited and will damage the ASA.

(2) Pushrod effective stroke must be ≥64 mm. The clevis must not interfere with ASA rotation.

(3) Install the ASA only when the pushrod is fully retracted (0 mm stroke).

(4) Readjust brakes after replacing brake linings or air brake chambers. Following adjustment, 3~5 brake applications are sufficient for the ASA to function normally.

4. Common Faults, Causes, and Troubleshooting Methods

Fault Phenomenon	Cause Analysis	Troubleshooting Method
Axle Beam Damage	1. Severe overload or excessive impact load. 2. Spring seat welded improperly. 3. Defective or severely deformed leaf spring.	1. Operate within rated load, minimize severe impacts. 2. Replace axle beam, weld spring seat to specifications. 3. Replace leaf spring.
Hub Overheating	1. Improper bearing clearance adjustment. 2. Bearing or hub wear. 3. Insufficient grease, excessive grease in hub cavity, or improper grease specification. 4. Brake drag.	1. Readjust the bearings. 2. Replace bearing or hub. 3. Apply the correct quantity and type of grease. 4. Inspect brake clearance and pneumatic components.
Premature Bearing Failure	1. Improper bearing clearance adjustment. 2. Insufficient grease or incorrect grease specification. 3. Water or debris ingress. 4. Excessive impact loads.	1. Replace and readjust the bearing. 2. Apply the correct quantity and type of grease. 3. Inspect seals, maintain cleanliness during servicing. 4. Operate within rated load, minimize impacts.
Brake Drum Fracture	1. Prolonged heavy-load operation or poor road conditions. 2. Heat cracking from prolonged braking. 3. Rapid cooling with water while brakes are hot.	1. Operate within rated load, minimize impacts. 2. Employ proper braking techniques. 3. Correctly operate water cooling systems.
Wheel Stud Damage	1. Excessive impact loads. 2. Wheel rim out of flat or distorted. 3. Threads damaged during assembly. 4. Wheel nuts not tightened to specified torque.	1. Operate within rated load, minimize impacts. 2. Replace wheel rim. 3. Replace stud. 4. Retorque wheel nuts to specifications.

Fault Phenomenon	Cause Analysis	Troubleshooting Method
Abnormal Tire Wear	1. Improper tire pressure. 2. Loose U-bolts, suspension component wear, distortion, or shifting causing axle misalignment. 3. Distorted wheel rim. 4. Mismatched tires. 5. Bearing adjusted too loose.	1. Operate within rated load, minimize impacts. 2. Align suspension, replace worn/ distorted parts, tighten U-bolts. 3. Replace wheel rim. 4. Match tires per specifications. 5. Adjust bearings properly.
Poor Braking / Brake Drag / Wheel Lockup	1. Failed brake return spring. 2. Faulty emergency relay valve, quick release valve, or air brake chamber; low air pressure. 3. Damaged pneumatic control system or air leaks. 4. Improper slack adjuster or brake clearance adjustment. 5. Unbalanced braking. 6. Bent camshaft or brake bracket from impact.	1. Replace return spring. 2. Inspect valve/air brake chamber operation and pressure. 3. Inspect and repair pneumatic system and lines. 4. Readjust slack adjuster and brake clearance. 5. Inspect camshaft and bushing for wear. 6. Repair or replace damaged components.

IV. After-Sales Service Provisions

Foshan Yonglitai 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 Yonglitai 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 Yonglitai axles, or the local after-sales service station. L1 Yonglitai 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 Yonglitai 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 Yonglitai, 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 Yonglitai 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 Yonglitai axles is 3 years or 500,000 km (whichever comes first). This applies to the main structural components(axle beam/camshaft). 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		
	Remarks	Warranty Period (Time)	Mileage
Axle Beam Assembly	All Models	36 Months	500,000 km
Hub	All Models	12 Months	150,000 km
Brake Drum *	All Models	12 Months	100,000 km
Camshaft	All Models	36 Months	500,000 km
Bearing *	All Models	12 Months	150,000 km
Brake Lining *	All Models (Severe/Mountainous Duty)	6 Months	60,000 km
	All Models (Standard/Highway Duty)	8 Months	100,000 km
Slack Adjuster *	Automatic Slack Adjuster (ASA)	12 Months	120,000 km
	Manual Slack Adjuster	12 Months	100,000 km
Hub Seal *	All Models	6 Months	80,000 km
Wheel Stud Assembly *	All Models	12 Months	100,000 km
ABS Sensor *	All Models	12 Months	150,000 km
ABS Tone Ring *	All Models	12 Months	150,000 km
Brake Shoe Bracket	All Models	24 Months	200,000 km
Brake Shoe Spring *	All Models	12 Months	150,000 km
Cam Roller *	All Models	12 Months	150,000 km
Hub Seal *	All Models	12 months	150,000 km
Spindle Nut *	All Models	12 months	150,000 km
Anchor Pin	All Models	12 Months	150,000 km
Rubber Parts *	All Models	6 Months	80,000 km
Hub Cap *	All Models	12 Months	150,000 km
Dust Cover *	All Models	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 Failures occurring beyond the warranty period.

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