

# INSTALLATION, MAINTENANCE & SERVICE BULLETIN

## AXLE MAINTENANCE



This bulletin covers the standard **adjustable TP** and **TN** bearing styles.

For ConMet **Preset** bearing-hub information, please use also Bulletin:

**ConMet SERVICE MANUAL 10084476REV10**

Condensed version: KPM-002-0519

For SKF **Unitised** bearing-hub information, please use also Bulletin:

**KPM-005-0310**

# INSTALLATION, MAINTENANCE & SERVICE BULLETIN

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### Wheel bearing Identification:



#### TP

Tapered roller bearings fitted to a **parallel** spindle.  
Inner and outer bearing are the same.  
Single-nut wheel bearing adjustment.

**KPM-004-0310**

#### TN

Tapered roller bearings fitted to a **tapered** spindle.  
Inner and outer bearing are **NOT** the same.  
Two-nut wheel bearing adjustment.

**KPM-004-0310**

#### Unitised

Sealed SKF bearing cartridge.  
Not adjustable.  
High torque nut for bearing cartridge retention.

**KPM-005-0310**

#### ConMet

Tapered roller bearings fitted to a **parallel** spindle.  
Inner and outer bearing are pre-set by a spacer.  
Not adjustable.  
Only use semi fluid grease.

**ConMet Service Manual 10084476Rev10**



**For Product Support call: 03 9369 0000 | 07 3372 2223 | 08 9350 6470**

[www.khitch.com.au](http://www.khitch.com.au) Uncontrolled document when printed! **Bulletin No: KPM-004-0310 Rev18 2**

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## 1.0 Service Intervals

### **1<sup>st</sup> Trip (80-160km):**

Check wheel nuts! (see 8.0 for torque values)

### **At or before 10,000 km (1<sup>st</sup> service):**

Check wheel bearing end float and adjust as required. (see 5.0)

### **Every 45,000km (On-Hwy), 25'000km (Off-Hwy):**

Check wheel bearing rotation\*\* and end float, adjust as required. (see 5.0)

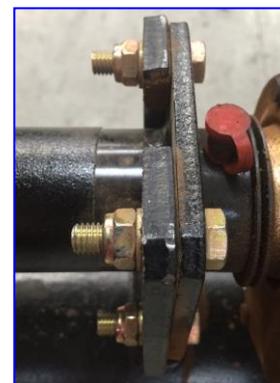
Check and adjust brakes as required (see 6.0 for more information).  
 Brake adjustment may have to be more frequent, depending on the brake wear.

Lube all the axle grease nipples (as per the 2.0)

Check the s-cam bracket fasteners for any damage and proper torque setting.

8 bolts            M8            25Nm (18lb/ft)

                         M10          50Nm (37lb/ft)



### **Between 90,000 and 100,000 Km\*:**

1. Check & adjust wheel bearings, repack or replace lubricant (if contaminated or past service life).
2. Check all axle and brake components and repair or replace as required. Ensure braking system is functional with all plumbing and valving operating correctly.

\*: Trailers which travel less then 100,000km per year (seasonal usage etc), should be inspected and serviced at least annually. Contamination and/or condensation may compromise the lube in the bearings.

**Note:** The above intervals may have to be increased, depending on the severity of the application the trailer operates in.

\*\* : Listen for any audible sounds coming from the wheel bearing, while the hub and wheel assembly is rotated. If any sounds can be detected, remove the wheels and brake drums and check it again. Without the weight of the wheels and the brake drum, it should be possible to determine if the sound emanating from the bearing is "normal" or it is a **noise** caused by rollers rumbling over a pitted, brinelled or spalled surface of the bearing race.

#### **Replace any wheel bearings with that type of noise.**

A "normal" sound: It is possible due to the clearance of the rollers, that the rollers move axially away from the inner ring flange in the unloaded zone. Then when the rollers move into the loaded zone again, they touch the inner ring flange and this may create a "clicking sound". This is of no concern, as long as the end float is within the allowable tolerance.

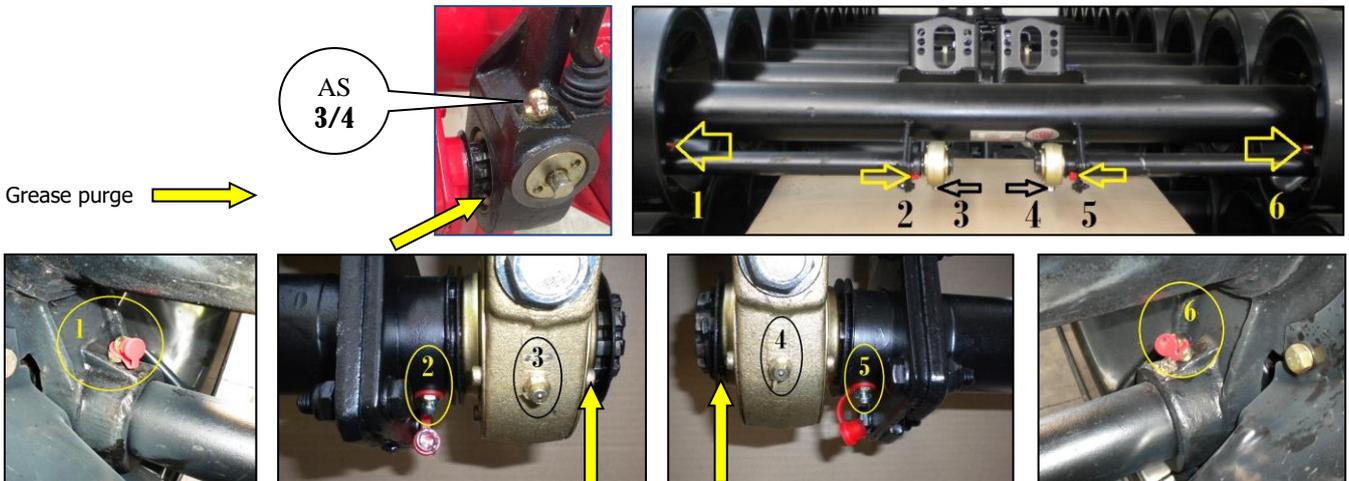
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## 2.0 Lubricating the axle

At Pre-Delivery (PD) or after new parts have been installed, it is very important to make sure that all the grease channels and lube cavities are filled with grease as per below.

### Drum brake axle

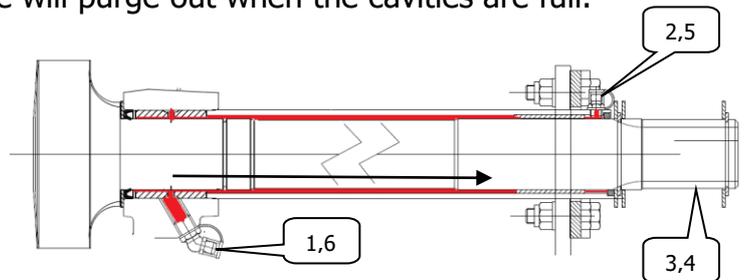
Lubricate **all** the grease nipples on the axle (S-cam and tube/bushes, slack adjuster). Ensure that the brakes are **not** applied when pumping grease in to the grease nipples (chock the wheels). Most FKH axles have 6 grease nipples (including the Manual/Auto Slack adjusters)



**Note:** When greasing the 6 grease nipples the very 1<sup>st</sup> time it is important to **fill** the grease channels and cavities.

For grease nipple 2,3,4 & 5 excess grease will purge out when the cavities are full.

Grease nipple 1 & 6 will not only deliver grease to the outside s-cam bush it will also fill the cavity between the s-cam and the s-cam tube all the way to inside s-cam bush. Therefore it will require several pumps to fill that cavity the 1<sup>st</sup> time.



### Disc brake axle

There are no grease nipples to lubricate on a disc brake axle.

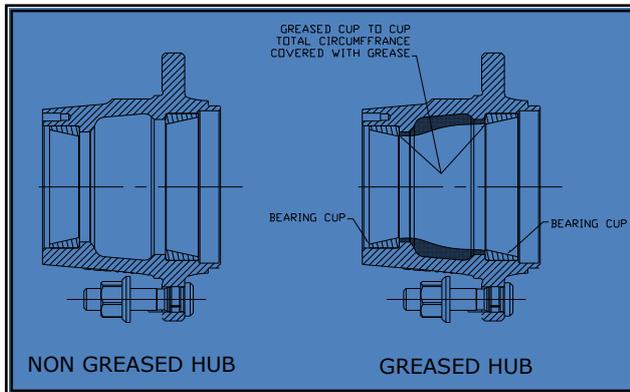
The internal moving components on a disc brake calliper are lubricated for life and all calliper sealing components are maintenance free unless damaged.



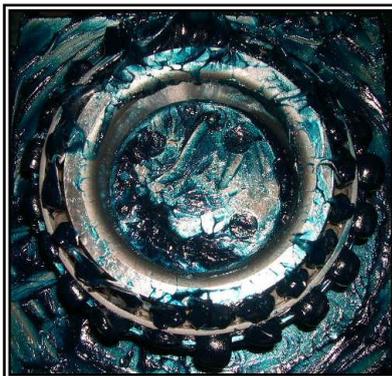
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## Greasing hubs and bearings

Before applying fresh grease, make sure that all the components are 100% clean!



TP hub: approx. 610gr of grease.      TN hub: approx. 510gr of grease.



## 3.0 Type of Lube

**3.1 Grease:** A Castrol LMX (NLGI 2, or equivalent) should be used for the greaseable wheel bearings.

3.1.1 Grease: A Castrol LMX (or equivalent) can also be used for the grease nipples (s-cam bushes, slack adjuster), however for severe applications a Castrol Ultratak (or equivalent) may be a better lube for s-cam bushes (grease nipples).

**3.2 Oil:** A Castrol EPX85W-140 (or equivalent) should be used for oil filled hubs.

**Note:** Do not mix lubricants (Oil & Grease)!

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### **4.0 Inspection**

After an axle wheel end has been disassembled and all the parts have been cleaned, inspected the following items.

**Brake Calliper:** WABCO brake calliper, see 6.0 for the correct bulletin.

**Seal:** Never reuse a wheel seal – after the hub has been removed – replaced the seal!

Note: Use the correct seal installation tool (they are available from the seal suppliers)

**Bearings:** Inspect for pitting, grooving, roller damage and cage damage.  
If the cone needs replacing the cup needs to be replaced also.

Note: Use the correct bearing cup installation tool.

**Hub:** Inspect the bearings seats, mounting surfaces (rust damage etc) and studs.

**Axle Spindle:** Check seal surface, thread and bearing journals for damage and excess wear.

- Bearing journal wear:**
1. Measure the journal in location from 3 to 9 o'clock (record the measurement)
  2. Measure the journal in location from 12 to 6 o'clock (record the measurement).
  3. Subtract "12-6" from "3-9" and if the difference is greater than 0.008" (0.2mm) the spindle/axle may need to be replaced.

**Note:** That tolerance may be extended to 0.014" (0.35mm) depending on the application.

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## **5.0 Wheel bearing adjustment**

### **5.1 TN - *Tapered roller bearings fitted to a tapered spindle: Double Nut***

1. Install inner nut with dowel facing outwards, torque nut to 270Nm (200 lb/ft) while rotating the hub in both directions.
2. Back off nut one full turn.
3. Re-torque to 68Nm (50 lb/ft) while rotating the hub in both directions.
4. Back off the nut 1/4-1/3 turn. Do not include the socket back lash.
5. Install the lock washer ensuring the inner tab is aligned with the key way in the axle spindle. If the holes in the lock washer do not align with the dowel, remove the lock washer, reverse and re-install. The lock washer should now align with the key and the dowel. If not, select the side of the washer that requires the least amount of movement and adjust the inner nut to suit.
6. Install the lock tab and the outer jam nut and torque to 405-540Nm (300-400 lb/ft) and fold 2 opposite tabs over the jam nut.
7. Check that the hub rotates freely.
8. Bearing end float should be 0.025 – 0.127mm (0.001 – 0.005"). For longer bearing life, keep it to the lower end of the tolerance – 0.025 (0.001").
9. The above procedures are recommended installation procedures however it is paramount that point 8 is the final outcome.
10. Ensure the hub cap is in good order and replace the gasket if required. The six hub cap bolts need to be torque to: 16-22Nm (12-16 lb/ft)

See the YouTube "Fuwa Bearing" on the FKH web site for visual aid.

### **5.2 TP - *Tapered roller bearings fitted to a parallel spindle: Single Nut***

*(The single nut system is also used for axle models KF75, 85, FB24)*

1. Install the thrust washer and the castellated nut, torque the nut to 270Nm (200 lb/ft) while rotating the hub in both directions.
2. Back off nut one full turn.
3. Re-torque to 68Nm (50 lb/ft) while rotating the hub in both directions.
4. Back off the nut 1/6-1/4 turn. Do not include socket back lash.
5. Turn nut to nearest slot and install a new cotter (split pin) in the axle spindle hole.
6. Check the hub rotates freely.
7. Bearing end float should be 0.025 – 0.127mm (0.001 – 0.005"). For longer bearing life, keep it to the lower end of the tolerance – 0.025 (0.001").
8. The above procedures are recommended installation procedures however it is paramount that point 7 is the final outcome.
9. Ensure the hub cap is in good order and replace the O-ring if required. The hub cap is screwed on to: 70-100Nm (52-74 lb/ft)...there is no need to over torque the hubcap!

See the YouTube "Adjusting a single nut wheel bearing" on the FKH web site for visual aid.

#### **IMPORTANT:**

**Check the end float with a Dial Indicator, if not correct repeat the above, reducing or increasing the amount of back off applied after re-torque to 68Nm (50ft/lbs).**

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## **6.0 Brake Information for FKH axles**

Bulletin KPM-008-0410	General information
Bulletin KPM-001-1016	Manual slack adjuster/Brake Chambers
Bulletin KPM-001-0312	Auto slack adjuster
Bulletin PAN19-1-Service Manual	WABCO Pan19 Calliper
Bulletin PAN22-1-Service Manual	WABCO Pan22 Calliper
Bulletin KPM-001-0311	Pan19/Pan22 Calliper & Rotor Info.

**Important Note:** When replacing worn bushes in the spider, do not hit the spider with excessive force as it may bend the spider and the brake shoes will no longer be aligned properly!  
Use the proper c-frame press tool. (OTC 5038, EUCLID E-2654 etc)

## **7.0 Hub & Wheel Installation**

Bulletin KPM-003-0310	General information
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## **8.0 Torque table**

Mounting Type	Thread	lb/ft	Nm
Flanged Wheel Nut Steel & Alu Rims	M22 x 1.5	450-500	610-680
Hub pilot	M24 x 1.5	600-660	820-900
Inboard drum stud nut	M22 x 1.5	450-500	610-680
Rim Clamp Nut	3/4" x 10	200-250	270-340
Drum to Spoke hub	3/4"	280-313	380-425
Hub cap bolts TN	-	12-16	16-22
Hub cap TP – screw on	-	52-74	70-100
Calliper Bolts	M16	200-230	270-310
Disc Rotor to Hub	M12x1.75	100	135
Disc Rotor to Hub	M14x2	160	215
Disc Rotor to Hub	M14x1.5	170	230
Disc Rotor to Hub	M16x2	245	330
Disc Rotor to Hub	3/4" UNF	240	320

Note: For more specific torque values check the appropriate Bulletin.

### **NOTE:**

All the Bulletins are on [www.khitch.com](http://www.khitch.com) and go to the “Installation & Service information” tab.