DT SWISS HUBS

Ratchet Hubs [180, 240, 350, 540]

Technical Manual

V2016.01 EN

1 General

Validity

This manual describes the component specified on the front page and the footer. It is valid for the construction level of the component on the 2016-01-13. Deviations are possible and all items are subject to technical changes.

Safety

The safety instructions are classified as follows:

> **DANGER**
>
> **...indicates a hazardous situation that, if not avoided, will result in death or serious injury.**

> **CAUTION**
>
> **...indicates a hazardous situation that, if not avoided, could result in a minor or moderate injury.**

> **NOTICE**
>
> **...indicates information considered important, but not hazard-related.**

...characterizes further information, or information which supplement the respective steps.

Target Group

This manual is intended for end users and dealers.
It offers the possibility for experienced users to carry out small maintenance works on their own. If there are any doubts concerning the own skills, a DT Swiss service center should be contacted.
Warranty will expire if works are not done properly.

Layout

The cover page and the footing provide information about the type of product and manual as well as the version of the manual.

The backside provides a list of the DT Swiss service centers. A list of all DT Swiss service centers can be found at www.dtswiss.com.

This manual is intended for being printed as an A5 booklet. Only print this manual if electronic usage is not possible.

DT Swiss Manual Concept

The DT Swiss manuals are split into the following types of manuals:

- User Manual
  Information for the end user on how to install and use the component.
- Technical Manual
  Detailed information for the end user and the dealer on how to maintain the component, spare parts and technical data.

How to Use this Manual

The steps described in this manual must be carried out in the order they are shown. If steps are ignored or executed in a wrong order, the function of the component cannot be guaranteed.

Instructions begin with the table «Preparatory Steps» and end with the table «Closing Steps». The instructions in these tables must be carried out.

Moving parts, threads, O-rings and sealings must be greased before assembling.

Cross References

In order to simplify the use of this manual, some text is edited as hypertext. Whenever the text is formatted blue and underlined, it is a reference to a chapter. If the text is formatted black and underlined, it is a reference to a figure. After clicking you will be automatically redirected to the target of the reference.
Example: Click here: chap. 1, page 4 to jump to the beginning of this chapter.

Warranty (Europe)

In addition to the general guarantee required by law, DT Swiss AG based in Biel/Switzerland, provides a guarantee for 24 months from the date of purchase. DT Swiss AG shall reject any liability for both indirect damage caused by accidents and consequential damage.

Any contradictory or extended national rights of the purchaser are not affected by this warranty. Place of performance and jurisdiction is Biel/Switzerland. Swiss law shall apply.

Submit any warranty claims to your retailer or a DT Swiss service center. Any defects recognized by DT Swiss AG as a warranty claim will be repaired or replaced by a DT Swiss service center.

Warranty and guarantee claims can only be made by the original purchaser with a valid sales receipt.

There shall be no claim under the guarantee for:

- Normal wear and tear caused by use of the components
- Incorrect assembly
- Incorrect or nonexistent maintenance
- Incorrectly completed repairs
- Use of unsuitable products
- Modification of components
- Incorrect use or misuse
- Carelessness
- Leasing, commercial use or use in competitions
- Damage caused by accidents
- Delivery and transport damage
- Modification, defacing or removal of the serial number

Limited Equipment Warranty USA

DT Swiss LTD makes every effort to assure that its product meets high quality and durability standards and warrants to the original retail consumer/purchaser of our product that each product is free from defects in materials and workmanship as follows:

2 YEAR LIMITED WARRANTY ON THIS DT SWISS PRODUCT. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities or to a lack of maintenance.

DT SWISS LTD LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD OF TWO YEARS FROM THE DATE OF INITIAL PURCHASE AT RETAIL. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS ARE EXCLUDED. SOME STATES MAY NOT ALLOW LIMITATIONS ON HOW LONG THE IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. DT SWISS LTD SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PEOPLE OR PROPERTY OR FOR INCIDENTAL, CONTINGENT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS. SOME STATES MAY NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

To take advantage of this warranty, the product or part must be returned for examination, postage prepaid, to the dealer where you bought the product or to a DT Swiss service center. Proof of purchase date and an explanation of the complaint must accompany the product. If our inspection discloses a defect, DT Swiss will either repair or replace the product or refund the purchase price, if we cannot readily and quickly provide a repair or replacement. DT Swiss will return repaired product or replacement at DT Swiss expense, but if it is determined there is no defect, or that the defect resulted from causes not within the scope of this warranty, then the user must bear the cost of shipping. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Legal venue and place of performance is Biel (Switzerland). Swiss law shall apply. Subject to technical changes. Please keep the user manual and warranty for future use.

1.1 General Maintenance Information

Cleaning

For an optimal result of the maintenance works, every component that will be disassembled must be cleaned. Only cleaners which do not damage the components may be used. Especially the cleaning of O-rings and sealings requires mild cleaners. Always consider the instructions of the respective cleaner.

DT Swiss recommends the following cleaners:

- Motorex Rex
- Motorex Swissclean
- Motorex OPAL 2400, OPAL 3000, OPAL 5000

Use soap water or similar mild cleaners for external cleaning.

Tools

To ensure a damage-free mounting and dismounting of the components, only use the tools which are mentioned in this manual. The tools must be in good order and condition.
The usage of differing tools is up to the user. If components are being damaged by the usage of differing tools, the user is liable.

DT Swiss special tools are precision tools. Damage-free mounting and dismounting of the components can only be ensured, if the tools are working properly and if the conditions of the tools are perfect.
Always keep the tools in their original packaging or adequate devices to save them from damages.

Expendable Material

If special materials like grease or oil are needed, they will be specified in the table «Required Material» at the beginning of a chapter. The symbol «🛠» refers to the table «Required Material» in the respective steps.

Environmental Protection

Whenever possible, waste has to be avoided. Waste, especially carbon, lubricants, cleaners and any other fluids must be disposed in an environmentally compatible manner.

Only print this manual if electronic usage is not possible.

Disclaimer

The operations described in this manual should only be performed by experts. The user is liable for any damage or consequential damage caused by wrong maintained or wrong installed components. If you have doubts, please contact a DT Swiss service center.

2 Safety

DANGER

Risk of death caused by incorrect assembly or faulty wheels and hubs!

- Check that the wheel is connected correctly before every use.
- Check the function of the rear wheel hub before every use.
  If the freewheel or the engagement does not work perfect, the rear wheel hub must not be used.
- Check the wheel for damage before and after each ride.
- Regularly check the spoke tension, rotation and wear of the wheel.

DANGER

Incorrect handling, installation, maintenance or servicing can lead to accidents causing severe injuries or death!

- Compliance with the following provisions is a prerequisite for accident-free use and faultless functioning.
- Assembly and maintenance of the component requires a basic knowledge of handling bicycle components. If in any doubt, consult your retailer.
- Components should only be used in accordance with their intended use, otherwise the user shall assume full responsibility.
- The component must be compatible with all parts of the bicycle.
- Only use original spare parts.
- The components must not be changed or modified.
- The component must not be used if it is damaged or there are any signs of damage. If in any doubt, consult a DT Swiss service center.

DANGER

Danger to life due to incorrect maintenance!

Wrong maintenance or assembly can lead to unpredictable errors.

- Maintenance must only be done by professionals.
- In case of any doubts, contact a DT Swiss service center.

CAUTION

Danger of injury due to false spare parts!

Usage of false spare parts can lead to unpredictable errors.

- Only use original spare parts or spare parts released by DT Swiss.

3 Conversion Options

The information in the following table is valid for hubs of model year 2016.
The conversion options of hubs from previous model years may differ. All conversion options are summarized in the DT Swiss Techbooks or catalogs at www.dtswiss.com.

		front wheel						rear wheel									free hub			
	built-in width [mm]	5/100 mm (RWS/QR)	9/100 mm (Thru Bolt)	12/100 mm (Thru Axle)	15/100 mm (Thru Axle)	15/110 mm (PS*)	20/110 mm (Thru Axle)	5/130 mm (RWS/QR)	5/135 mm (RWS/QR)	5/145 mm (540 tandem)	10/135 mm (Thru Bolt)	12/135 mm (Thru Axle)	12/142 mm (Thru Axle)	12/148 mm (Thru Axle Boost)	12/150 mm (Thru Axle)	12/157 mm (Thru Axle)	Shimano 9/10/11, Sram 9/10	Shimano 11 Road	Campagnolo 9/10/11	Sram XD
180 Carbon Ceramic																				
Non Disc	100	●																		
	130							●									❍	●	❍	❍
ROAD Center Lock	100	❍	❍	❍	●															
	142								❍		❍	❍	●				❍	●		❍
MTB Center Lock	100	●																		
	100	❍			●															
	135								●			❍	❍				●			❍
	142								❍			❍	●				❍			●
240s Straightpull																				
Non Disc	100	●																		
	130							●									❍	●	❍	❍
ROAD Center Lock	100	❍	❍	❍	●															
	142								❍		❍	❍	●				❍	●		❍
MTB Center Lock	100	●			❍															
	100	❍			●															
	PS*					●														
	135								●			❍	❍				●			❍
	142								❍			❍	●				●			●

		front wheel						rear wheel									free hub			
	built-in width [mm]	5/100 mm (RWS/QR)	9/100 mm (Thru Bolt)	12/100 mm (Thru Axle)	15/100 mm (Thru Axle)	15/110 mm (PS*)	20/110 mm (Thru Axle)	5/130 mm (RWS/QR)	5/135 mm (RWS/QR)	5/145 mm (540 tandem)	10/135 mm (Thru Bolt)	12/135 mm (Thru Axle)	12/142 mm (Thru Axle)	12/148 mm (Thru Axle Boost)	12/150 mm (Thru Axle)	12/157 mm (Thru Axle)	Shimano 9/10/11, Sram 9/10	Shimano 11 Road	Campagnolo 9/10/11	Sram XD
MTB IS	100	●			❍															
	100	❍			●															
	110	❍			❍		●													
	135								●			❍	❍				●			❍
	142								❍			❍	●				●			●
	150														●	❍	●			❍
240s Classic																				
Non Disc	100	●																		
	130							●									●	●	❍	❍
ROAD Center Lock	100	❍	❍	❍	●															
	142								❍		❍	❍	●				❍	●		❍
MTB Center Lock	100	●			❍															
	100	❍			●															
	135								●			❍	❍				●			❍
	142								❍			❍	●				●			●
MTB IS	100	●																		
	100	❍			●															
	110	❍			○		●													
	135								●			❍	❍				●			❍
	142								❍			❍	●				●			●
	150														●	❍	●			❍
single speed	135								●											

		front wheel						rear wheel									free hub			
	built-in width [mm]	5/100 mm (RWS/QR)	9/100 mm (Thru Bolt)	12/100 mm (Thru Axle)	15/100 mm (Thru Axle)	15/110 mm (PS*)	20/110 mm (Thru Axle)	5/130 mm (RWS/QR)	5/135 mm (RWS/QR)	5/145 mm (540 tandem)	10/135 mm (Thru Bolt)	12/135 mm (Thru Axle)	12/142 mm (Thru Axle)	12/148 mm (Thru Axle Boost)	12/150 mm (Thru Axle)	12/157 mm (Thru Axle)	Shimano 9/10/11, Sram 9/10	Shimano 11 Road	Campagnolo 9/10/11	Sram XD
350 Straightpull																				
Non Disc	100	●																		
	130							●									❍	●	❍	
ROAD Center Lock	100	●																		
	100	❍	❍	❍	●															
	142								❍		❍	❍	●				●			❍
MTB Center Lock	100	●																		
	100	❍			●															
	135								●			❍	❍				●			❍
	142								❍			❍	●				●			●
MTB IS	100	●																		
	100	❍			●															
	110						●													
	135								●			❍	❍				●			❍
	142								❍			❍	●				●			●
350 Classic																				
Non Disc	100	●																		
	130							●									❍	●	●	
ROAD Center lock	100	❍	❍	❍	●															
	142								❍		❍	❍	●				❍	●		❍
MTB Center Lock	100	❍			●															
	100	●																		
	135								●			❍	❍				●			❍
	142								❍			❍	●				●			●
	148													●						

		front wheel						rear wheel									free hub			
	built-in width [mm]	5/100 mm (RWS/QR)	9/100 mm (Thru Bolt)	12/100 mm (Thru Axle)	15/100 mm (Thru Axle)	15/110 mm (PS*)	20/110 mm (Thru Axle)	5/130 mm (RWS/QR)	5/135 mm (RWS/QR)	5/145 mm (540 tandem)	10/135 mm (Thru Bolt)	12/135 mm (Thru Axle)	12/142 mm (Thru Axle)	12/148 mm (Thru Axle Boost)	12/150 mm (Thru Axle)	12/157 mm (Thru Axle)	Shimano 9/10/11, Sram 9/10	Shimano 11 Road	Campagnolo 9/10/11	Sram XD
MTB IS	100	●																		
	100	❍			●															
	110						●													
	135								●			❍	❍				●			❍
	142								❍			❍	●				●			●
	150														●	❍	●			❍
540 tandem																				
IS	100	●																		
	135								●								●			
	145									●							●			

● Standard: The hub is available in this version or can be converted to this version.

❍ Option: The hub is not available in this version, but can be converted to this version.

* Predictive Steering

4 Maintenance of the Hub

This chapter describes a big hub service. A big service includes:

- disassembly of the hub and dismounting the bearings
- cleaning and greasing all parts
- mounting new bearings and assembly of the hub

Maintenance Intervals

The following periodic maintenance and service works are recommended by DT Swiss:

Action	Interval
Maintenance of the Hub	
• use under normal conditions	annual
• use in extreme conditions (frequent use in rain, mud, snow)	as required
• in event of a fault (e.g. high bearing resistance, unusual freewheel sound)	as required
Check the hub for damages and faults.	before and after each ride
Cleaning with a soft sponge and an appropriate cleaner. Do not use high pressure cleaners or aggressive cleaners!	after each ride

4.1 Maintenance of the Front Wheel Hub

Front wheel hubs are available in different versions. The following table shows the different versions and the corresponding maintenance chapters:

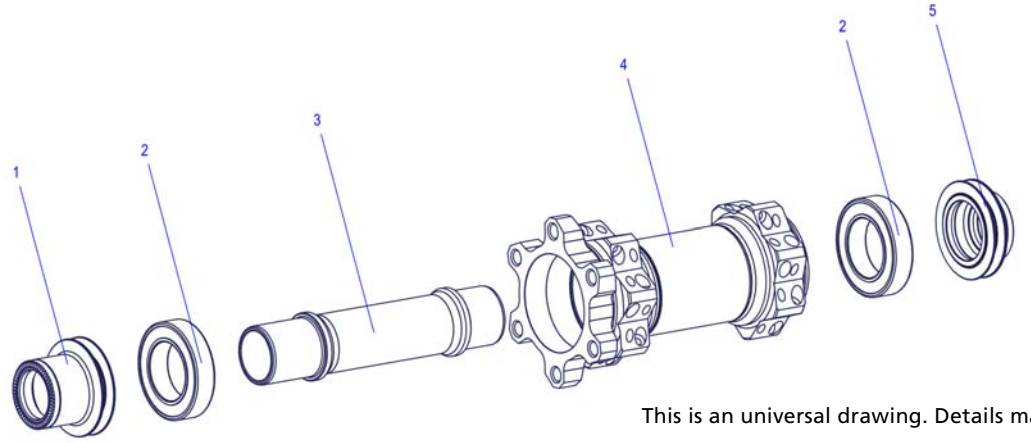
Hub Version	Axle Diameter / Built-in Width [mm]					Link
	Ø5 / 100	Ø9 / 100	Ø15 / 100	Ø15 / 110	Ø20 / 110	
MTB						
180	●	●	●			chap. 4.1.1, page 15
240	●	●	●			chap. 4.1.1, page 15
240 Predictive Steering				●		chap. 4.1.2, page 22
240 Oversize	●	●	●		●	chap. 4.1.3, page 28
350	●					chap. 4.1.4, page 34
350			●	●		chap. 4.1.5, page 39
540 tandem	●					chap. 4.1.4, page 34
ROAD						
180	●					chap. 4.1.1, page 15
240	●					chap. 4.1.1, page 15
350	●					chap. 4.1.4, page 34
350			●		●	chap. 4.1.5, page 39

4.1.1 Maintenance of the Front Wheel Hub [180, 240]

This chapter is valid for the following front wheel hubs:

MTB CLASSIC				MTB SPLINE				ROAD CLASSIC			ROAD SPLINE			
180	240	240 Oversize	540 tandem	240	240 PS	350 QR	350 Ø15 / 20	180	240	350 QR	240 QR	240 Ø15	350 QR	350 Ø15
●	●			●				●	●		●	●		

Preparatory Steps	Link
Dismount the brake disc	
Clean the hub	



This is an universal drawing. Details may differ slightly.

Figure 4-1: 180, 240 front wheel hub

1 adapter left
2 ball bearing
3 axle
4 hub shell
5 adapter right

Required Material	Specification	Amount
spare parts, see chap. 5, page 58		
tools, see chap. 6, page 59		
DT Swiss multi-purpose grease	 HXTXXX00NMG20S	20 g

NOTICE

Risk of damaging the adapters!

To avoid damages, only use grind clamping jaws, aluminum clamping jaws or special tools to clamp the adapters.

Removing the Adapter

1. Clamp one of the adapters (fig. 4-1/1, 5) into a vice.
2. Pull off the wheel, respectively the hub.
3. Clamp the second adapter into the vice.
4. Pull off the wheel, respectively the hub.

Dismounting the Bearings and the Axle

1. Slide the disassembly tool onto the axle (fig. 4-1/3).

2. Tap the first bearing (fig. 4-1/2) out of the hub shell using the disassembly tool and a hammer.

3. Put the axle into the hub shell.

4. Put the dismounting tool onto the axle.

5. Tap out the second bearing (fig. 4-1/2) using the disassembly tool and a hammer.

Cleaning and Degreasing all Parts

1. Clean all parts of the hub (see Cleaning, page 7).

Mounting Bearings and Axle

1. Slightly grease the seating of the bearings and the inner surface of the hub shell using multi-purpose grease.

2. Put the mounting tool into the vice.

3. Put the axle (fig. 4-1/3) onto the mounting tool.

4. Put the non disc side of the hub shell onto the tool and the axle.

5. Slightly grease the bearing (fig. 4-1/2) and put it onto the disc side with the colored side facing outwards.

6. Put the mounting tool onto the bearing.

7. Tap the bearing into the hub shell with slight hammer strokes.

8. Remove the tool from the hub.

9. Put the disc side of the hub with the axle onto the mounting tool.

10. Slightly grease the bearing (fig. 4-1/2) and put it with its colored side facing outwards onto the non disc side.

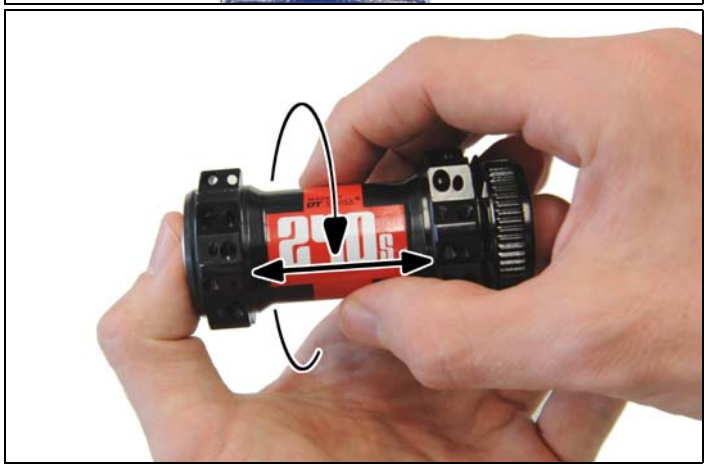
11. Put the dismounting tool onto the axle.

12. Put the mounting tool onto the bearing.
⇨ The dismounting tool centers the mounting tool on the axle.

13. Tap the second bearing into the hub shell with slight hammer strokes.

14. Remove the tool from the hub.

15. Check the bearing.
⇨ The hub must turn smoothly.
⇨ The hub must not have axial play.



16. If necessary, tap in the bearing on the non disc side or loosen the bearing.

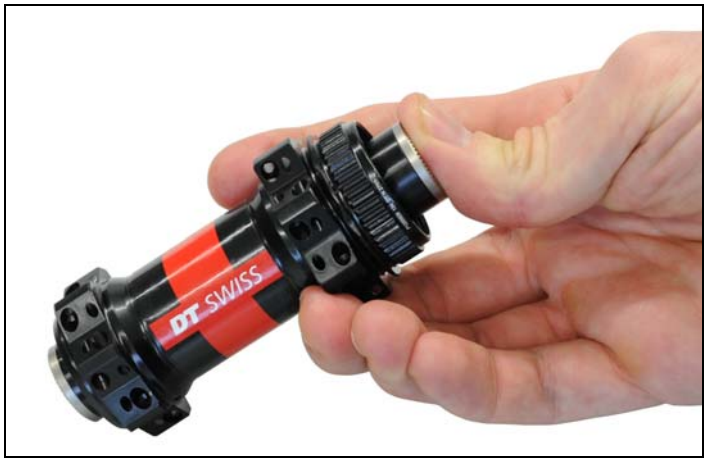
17. Repeat previous steps until the hub is turning smoothly.

Putting on the Adapters

1. Grease the bearings and the inner surface of both adapters (fig. 4-1/1, 5).

2. Put both adapters (fig. 4-1/1, 5) onto the hub by hand.

Caution: If the adapters have different lengths, the longer adapter must be put to the brake side.



Closing Steps	Link
Mount the brake disc	

4.1.2 Maintenance of the Front Wheel Hub [240 MTB Predictive Steering]

This chapter is valid for the following front wheel hubs:

MTB CLASSIC				MTB SPLINE				ROAD CLASSIC			ROAD SPLINE			
180	240	240 Oversize	540 tandem	240	240 PS	350 QR	350 Ø15 / 20	180	240	350 QR	240 QR	240 Ø15	350 QR	350 Ø15
					●									

Preparatory Steps	Link
Dismount the brake disc	
Clean the hub	

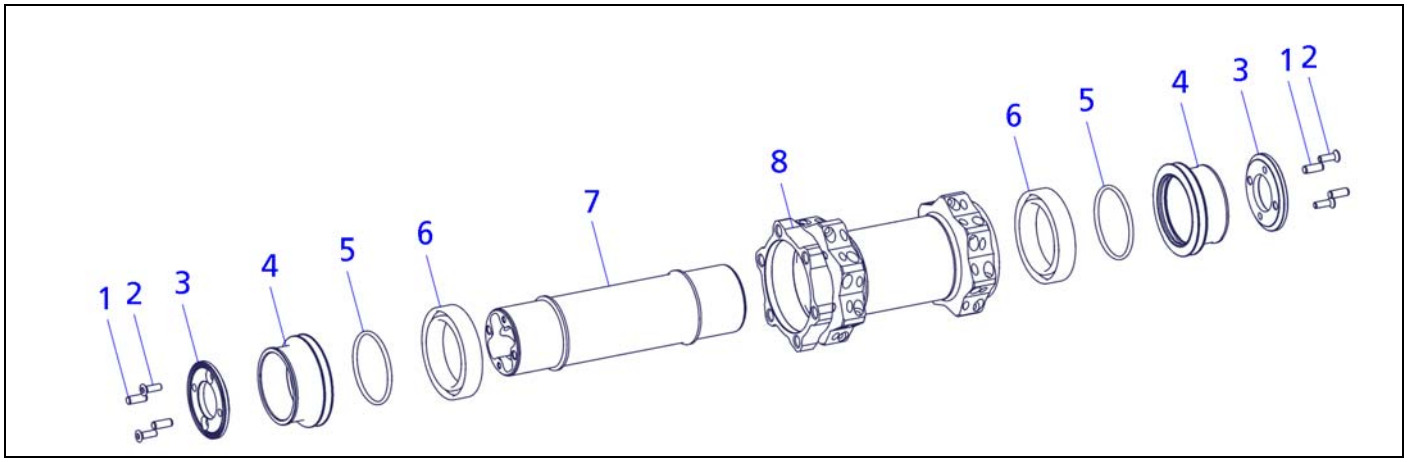


Figure 4-2: 240 Predictive Steering

1 pin
2 fixing screw
3 knurled disc
4 end cap
5 O-ring
6 ball bearing
7 axle
8 hub shell

Required Material	Specification	Amount
spare parts, see chap. 5, page 58		
tools, see chap. 6, page 59		
DT Swiss special grease	 HXTXXX00NMG20S	20 g

Removing the Knurled Discs

1. Unscrew both fixing screws of the knurled discs on both sides using a T8 Torx key.

2. Loosen both knurled discs carefully using a punch.
   - ⇨ Two pins are fixing the knurled discs on the axle.
   - ⇨ Take care not to damage the end caps and the axle.
3. Remove both knurled discs.

Dismounting the End Caps, the Bearings and the Axle

1. Put the dismounting tool onto one side of the axle.
2. Tap out the bearing and one of the end caps with slight hammer strokes.

3. Remove the axle and one of the end caps.

4. Open the clamping jaws of the vice that much that the bearing rests on the jaws, but the axle is not clamped.

5. Put the dismounting tool into the axle.

6. Tap the end cap and the bearing from the axle.

7. Put the axle into the second bearing.

8. Put the dismounting tool into the axle.

9. Tap out the bearing with slight hammer strokes.

10. Remove the bearing from the axle by hand.

Cleaning and Degreasing all Parts

1. Clean all parts of the hub (see Cleaning, page 7).

Mounting Bearings and Axle

1. Put the axle in one of both mounting tools.

2. Put the bearing seat of the non brake side of the hub onto the mounting tool and the axle.
   ⇨ The mounting tool must rest fully on the bearing seat.

3. Slightly grease the new bearing and put it with the sealed (colored) side outwards onto the hub shell.

4. Put the second mounting tool onto the brake side of the hub.

5. Tap the bearing into the hub shell with slight hammer strokes.
   ⇨ Take care that the bearing does not wedge.

6. Remove the mounting tool.

7. Put the brake side of the hub with the axle onto the mounting tool.

8. Slightly grease the second new bearing and put it with the sealed (colored) side outwards onto the non brake side of the hub shell.

9. Put the second mounting tool onto the bearing on the non brake side.

10. Tap the bearing into the hub shell with slight hammer strokes.
⇨ Take care that the bearing does not wedge.

11. Remove the mounting tool.

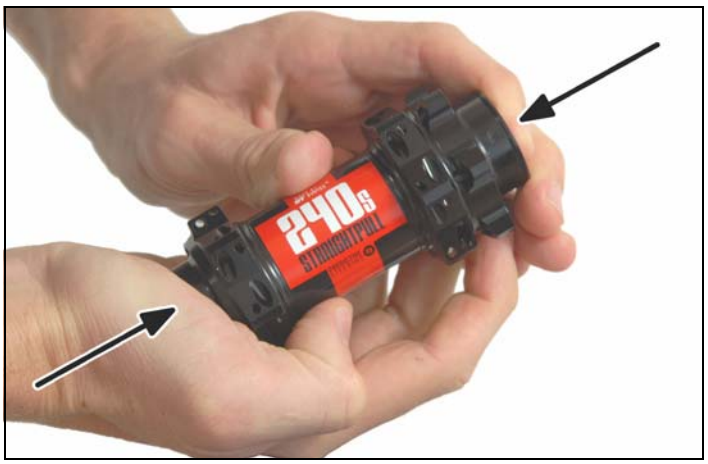
12. Check the bearing.
⇨ The hub must turn smoothly.
⇨ The hub must not have axial play.

13. If necessary, tap in the bearing on the non disc side or loosen the bearing.

14. Repeat previous steps until the hub is turning smoothly.

Putting on the Adapters

1. Put the end caps onto the axle.



2. Put on the knurled discs.

3. Screw in the fixing screws of the knurled discs using a T8 Torx key.

4. Tighten the fixing screws with a torque of 0.7 Nm.

Closing Steps	Link
Mount the brake disc	

4.1.3 Maintenance of the Front Wheel Hub [240 MTB Oversize]

This chapter is valid for the following front wheel hubs:

MTB CLASSIC				MTB SPLINE				ROAD CLASSIC			ROAD SPLINE			
180	240	240 Oversize	540 tandem	240	240 PS	350 QR	350 Ø15 / 20	180	240	350 QR	240 QR	240 Ø15	350 QR	350 Ø15
		●												

Preparatory Steps	Link
Dismount the brake disc	
Clean the hub	

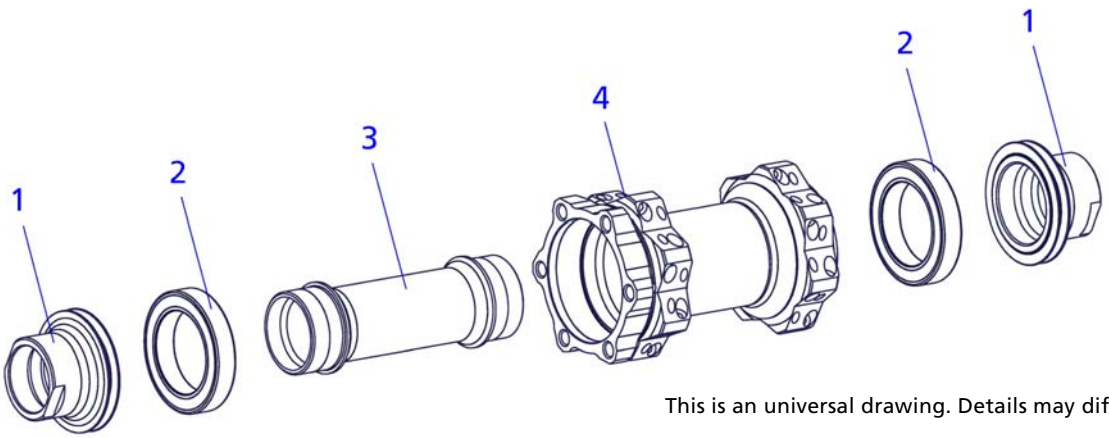


Figure 4-3: 240 Oversize

1 adapter
2 ball bearing
3 axle
4 hub shell

Required Material	Specification	Amount
spare parts, see chap. 5, page 58		
tools, see chap. 6, page 59		
DT Swiss multi-purpose grease	 HXTXXX00NMG20S	20 g

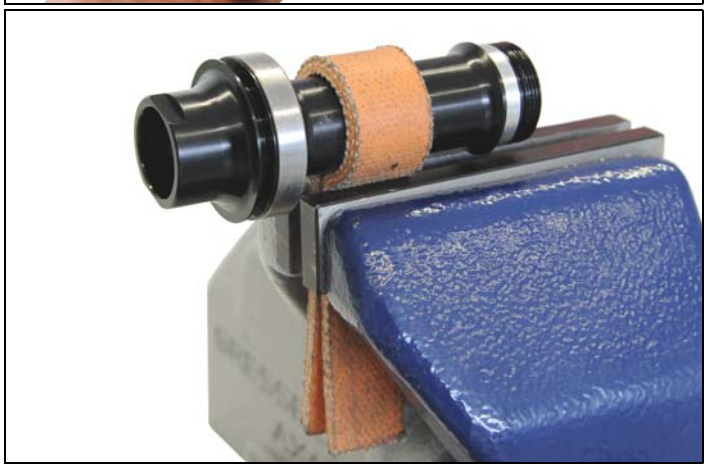
Removing Adapters, Axle and Bearings

1. Loosen the adapter (fig. 4-3/1) using a wrench and remove it from the axle.
- ⇨ 20 mm, 15 mm und 9 mm end caps: 22 mm open-end wrench
- ⇨ QR end caps: 5 mm Allen key

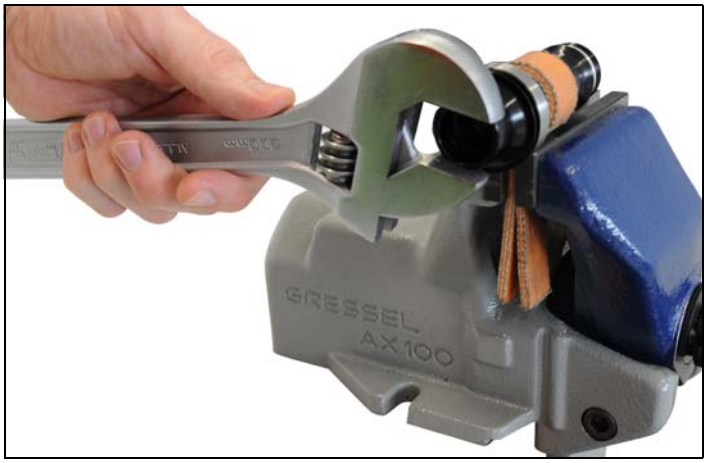
2. Slide the disassembly tool onto the axle (fig. 4-3/3).

3. Tap the bearing (fig. 4-3/2) and the axle out of the hub shell using the disassembly tool and a hammer.

4. Clamp the axle with the special strap into the vice.



5. Unscrew the end cap and remove it.



6. Remove the bearing from the axle.

7. Put the axle into the hub shell.

8. Tap out the second bearing (fig. 4-3/2) using the disassembly tool and a hammer.

Mounting Bearings and Axle

1. Slightly grease the seating of the bearings and the inner surface of the hub shell using multi-purpose grease.

2. Put the axle (fig. 4-3/3) onto the mounting tool.

3. Put the non disc side of the hub shell onto the tool and the axle.

4. Slightly grease the bearing (fig. 4-3/2) and put it onto the disc side with the colored side facing outwards.

5. Put the dismounting tool onto the axle.

6. Put the mounting tool onto the bearing.
⇨ The dismounting tool centers the mounting tool on the axle.

7. Tap the bearing into the hub shell with slight hammer strokes.
⇨ The lower mounting tool must lay on an even surface.

8. Remove the tool from the hub.

9. Put the disc side of the hub onto one of both mounting tools.

10. Slightly grease the bearing (fig. 4-3/2) and put it onto the non disc side.

11. Put the dismounting tool onto the axle.

12. Put the mounting tool onto the bearing.

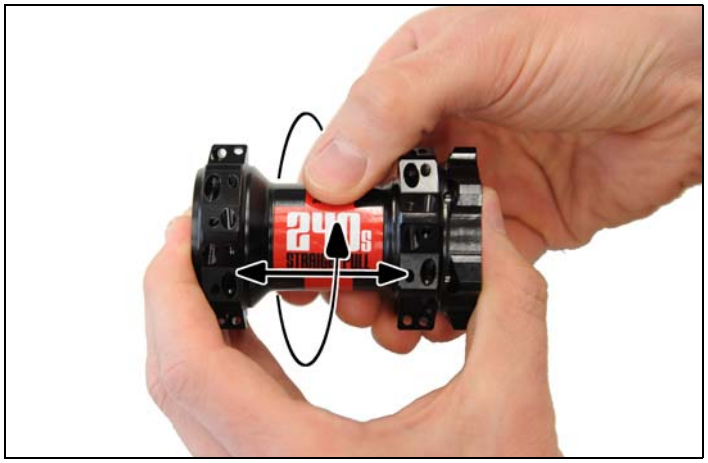
13. Tap the second bearing into the hub shell with slight hammer strokes.
⇨ The lower mounting tool must lay on an even surface.

14. Remove the tool from the hub.

15. Check the bearing.
⇨ The hub must turn smoothly.
⇨ The hub must not have axial play.

16. If necessary tap in the bearing on the non disc side or loosen the bearing.

17. Repeat previous steps until the hub is turning smoothly.



Putting on the Adapters

1. Grease the bearings and the inner surface of both adapters (fig. 4-3/1).

2. Screw on both end caps (fig. 4-3/1) by hand.

3. Tighten the adapter (fig. 4-3/1) with 15 Nm using a wrench.
⇨ 20 mm, 15 mm und 9 mm end caps: 22 mm open-end wrench
⇨ QR end caps: 5 mm Allen key

Closing Steps	Link
Mount the brake disc	

4.1.4 Maintenance of the Front Wheel Hub [350 QR, 540 QR]

This chapter is valid for the following front wheel hubs:

MTB CLASSIC				MTB SPLINE				ROAD CLASSIC			ROAD SPLINE			
180	240	240 Oversize	540 tandem	240	240 PS	350 QR	350 Ø15 / 20	180	240	350 QR	240 QR	240 Ø15	350 QR	350 Ø15
			●			●				●			●	

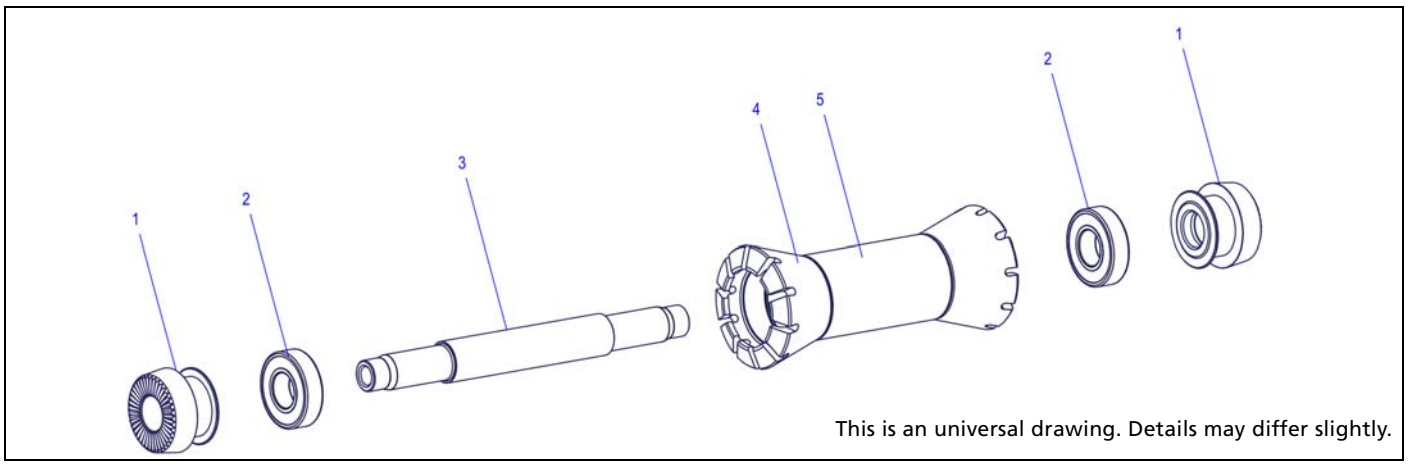


Figure 4-4: 350 QR, 540 QR front wheel hub

1 adapter
2 ball bearing
3 spacer
4 hub shell
5 sticker

Preparatory Steps	Link
Clean the hub	

Required Material	Specification	Amount
spare parts, see chap. 5, page 58		
tools, see chap. 6, page 59		
DT Swiss multi-purpose grease	 HXTXXX00NMG20S	20 g

Removing the Adapters

1. Remove the adapters (fig.4-4/1) by hand.

Dismounting the Bearings and the Axle

1. Hit the axle (fig.4-4/3) with a plastic hammer and tap out the first bearing (fig.4-4/2).

2. Pull the bearing (fig.4-4/2) off the axle (fig.4-4/3).

3. Slide the axle (fig.4-4/3) through the second bearing (fig.4-4/2).

4. Repeat steps to tap out the second bearing.

Cleaning and Degreasing all Parts

1. Clean all parts of the hub (see Cleaning, page 7).

Mounting the Bearings and the Axle

1. Grease the bearing seats and the inner surface of the hub shell (fig.4-4/4).

2. Slide the axle (fig.4-4/3) into the installation tool.

3. Slide the hub shell (fig.4-4/4) onto the installation tool and the axle (fig.4-4/3).

4. Put a new bearing with the colored side outwards onto the axle and the hub shell.

5. Put the second installation tool onto the bearing (fig.4-4/2) and tap in the bearing using a plastic hammer.

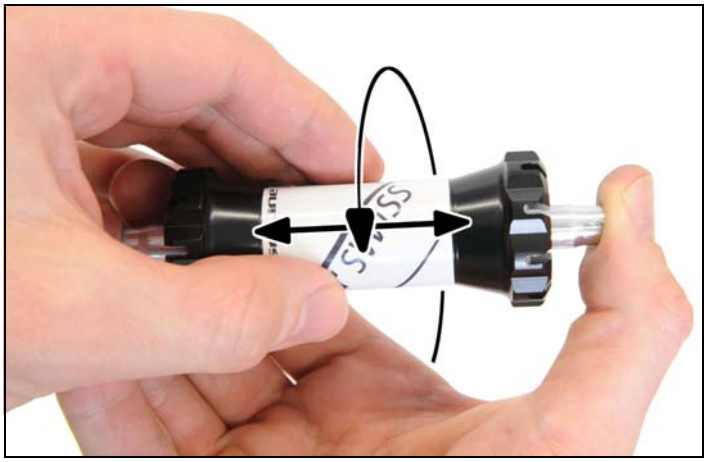
6. Turn the hub 180° and repeat steps to tap in the second bearing.

7. Check the play of the hub. Therefore, hold the axle and move the hub axial.
⇨ The hub must not have play.

8. If there is play, tap in the bearing.
⇨ If you are using a disc-brake-hub, tap in the bearing on the disc side first.

9. Check the running of the bearings. Therefore hold the axle and turn the hub.
⇨ The hub must turn smoothly.

10. If the hub turns stiff, slightly loosen the bearings by hitting the axle with slight hammer strokes.
⇨ If you are using disc brake hubs, first loosen the bearing on the non disc side.



Mounting the Adapters

1. Grease the bearings and the inner surface of both adapters (fig.4-4/1).

2. Put the adapters (fig.4-4/1) onto the hub by hand.

Closing Steps	Link
not required	

4.1.5 Maintenance of the Front Wheel Hub [350 Thru Axle]

This chapter is valid for the following front wheel hubs:

MTB CLASSIC				MTB SPLINE				ROAD CLASSIC			ROAD SPLINE			
180	240	240 Oversize	540 tandem	240	240 PS	350 QR	350 Ø15 / 20	180	240	350 QR	240 QR	240 Ø15	350 QR	350 Ø15
							●							●

Preparatory Steps	Link
Dismount the brake disc	
Clean the hub	

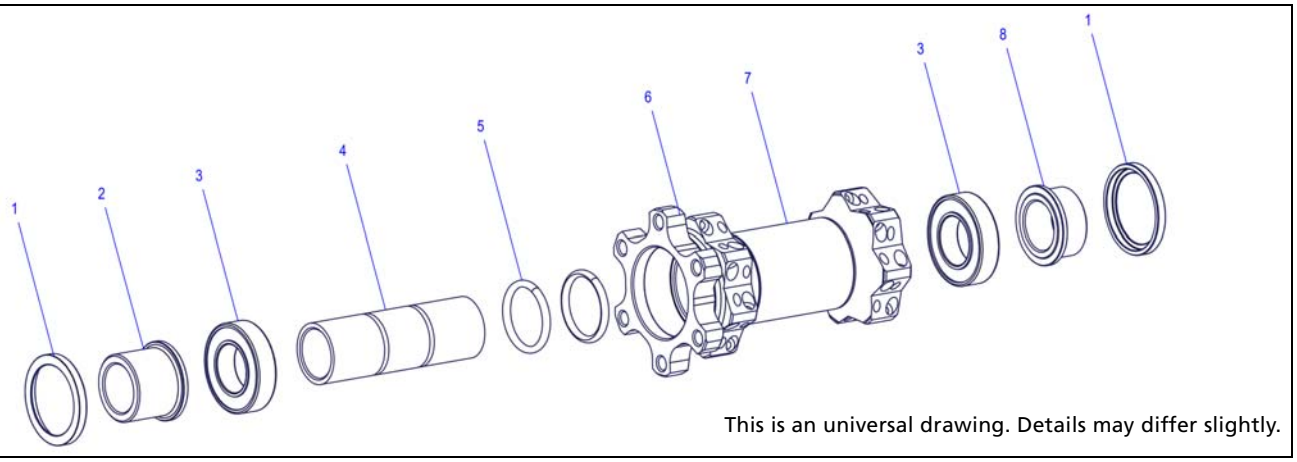


Figure 4-5: 350 thru axle front wheel hub

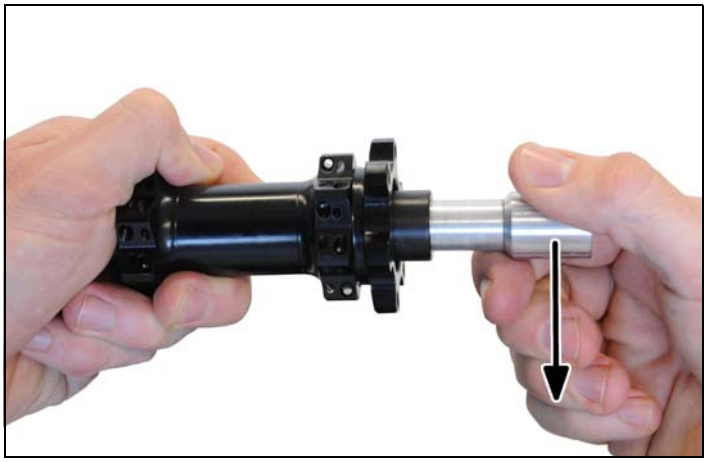
1 cover
2 adapter left
3 ball bearing
4 spacer
5 O-ring
6 hub shell
7 sticker
8 adapter right

Required Material	Specification	Amount
spare parts, see chap. 5, page 58		
tools, see chap. 6, page 59		
DT Swiss multi-purpose grease	 HXTXXX00NMG20S	20 g

Removing the Adapters

> NOTICE
>
> **Risk of damaging the adapters and the ball bearings!**
>
> The mounting pin must not touch the ball bearing while disassembling the adapters.

1. Plug the mounting pin into one of the adapters (fig.4-5/2 or 8).
2. Push the mounting pin downwards (see picture).

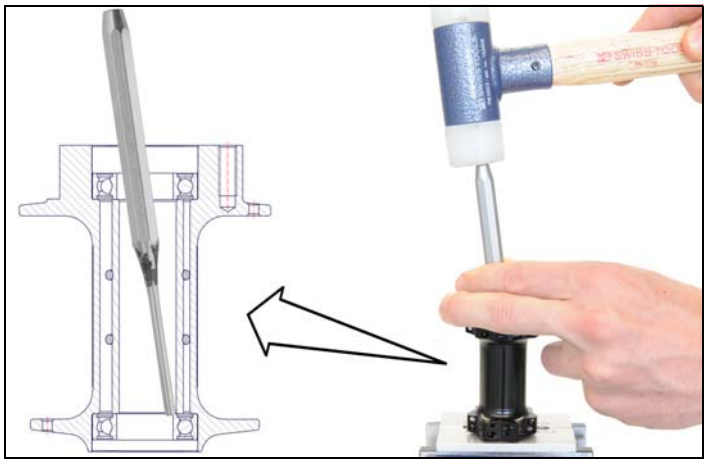


3. Remove the adapter (fig.4-5/2 or 8) and the cover (fig.4-5/1).

4. Repeat steps on the second adapter.

Dismounting the Bearings and the Axle

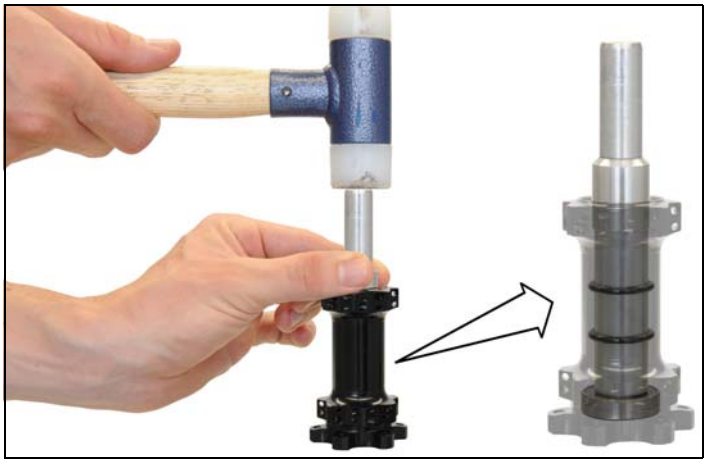
1. Push the spacer (fig.4-5/4) beside and place a spin drift on the edge of the ball bearing (fig.4-5/3).
2. Slightly tap out the ball bearing opposite the disc side.



3. Turn the hub 180°.

4. Put the mounting pin with its big diameter onto the spacer.

5. Tap out the bearing (fig.4-5/3) on the disc side.



Cleaning the Parts

1. Clean all parts of the hub (see Cleaning, p.7).

Mounting the Bearings and the Axle

1. Grease the bearing seats and the inner surface of the hub shell (fig.4-5/6).

2. Put a new bearing (fig.4-5/3) with its colored side facing outwards onto the bearing seat on the disc side.

3. Put the installation tool into a vice.

4. Slide the non disc side of the hub shell onto the tool.

5. Put the second installation tool onto the disc side of the hub shell.

6. Tap in the bearing using a plastic hammer.

7. Turn the hub 180°.

8. Slide the spacer (fig.4-5/4) with the O-rings (fig.4-5/5) into the hub.

9. Put a new bearing (fig.4-5/3) with the colored side facing outwards onto the bearing seat.

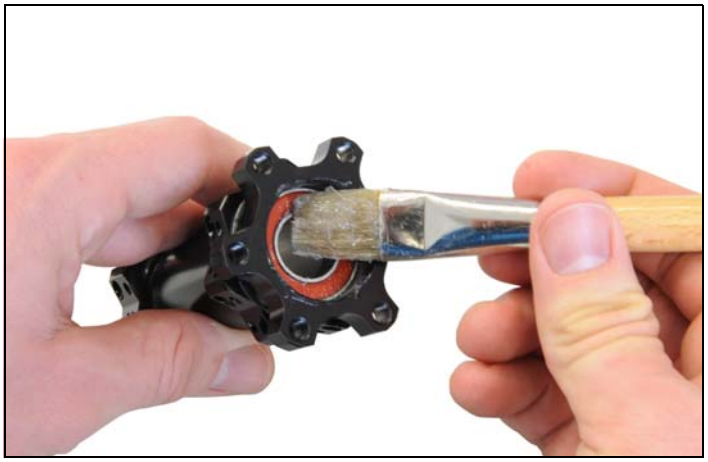
10. Put the installation tool into a vice.

11. Slide the disc side of the hub shell onto the tool.

12. Put the second installation tool onto the non disc side of the hub shell.

13. Tap in the bearing (fig.4-5/3) using a plastic hammer.

14. Grease both bearings (fig.4-5/3).



Mounting the Left Adapter

1. Put the left adapter (fig.4-5/2) and the cover (fig.4-5/1) onto the hub.

2. Put the small diameter of the mounting sleeve onto the left adapter (fig.4-5/2).

3. Slide the mounting pin into the mounting sleeve.

4. Tap the cover (fig.4-5/1) onto the hub.

Mounting the Right Adapter

1. Put the right adapter (fig.4-5/8) and the cover (fig.4-5/1) onto the hub.

2. Put the big diameter of the mounting sleeve onto the right adapter (fig.4-5/8).

3. Slide the mounting pin into the mounting sleeve.

4. Tap the cover (fig.4-5/1) onto the hub.

Closing Steps	Link
Mount the brake disc	

4.2 Maintenance of the Rear Wheel Hub with Ratchet System®

This chapter is valid for all rear wheel hubs with ratchet system®.

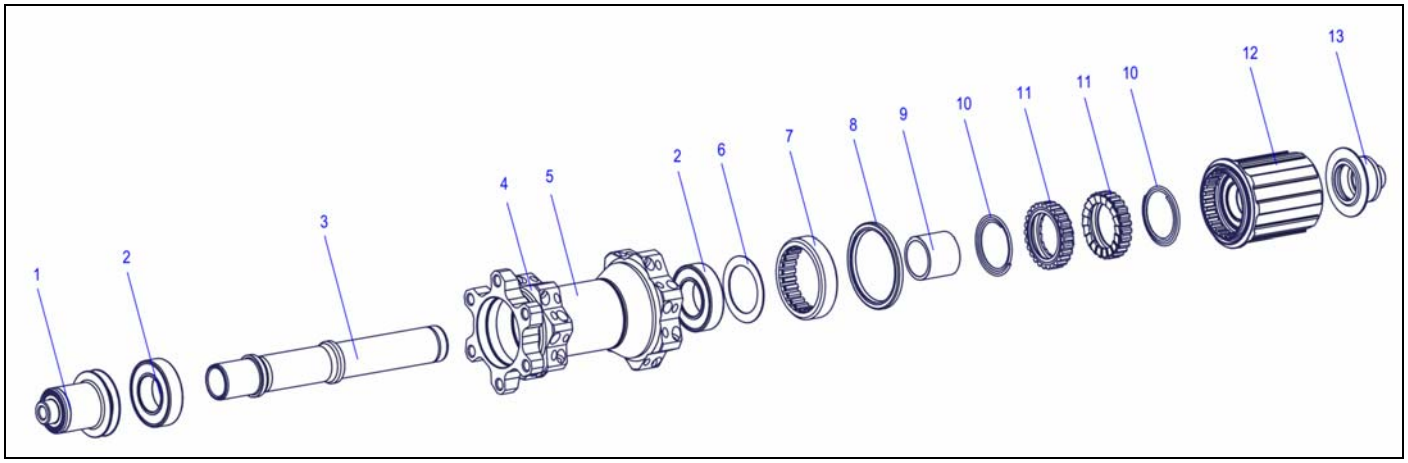


Figure 4-6: Overview: Ratchet System®

1 adapter left
2 ball bearing
3 axle
4 hub shell
5 sticker
6 shim ring
7 ring nut
8 seal hub shell / rotor
9 spacer
10 spring
11 star ratchet
12 rotor
13 adapter right

Preparatory Steps	Link
Dismount the cassette	
Dismount the brake disc	
Clean the hub	

Required Material	Specification	Amount
spare parts, see chap. 5, page 58		
tools, see chap. 6, page 59		
DT Swiss multi-purpose grease	 HXTXXX00NMG20S	20 g
DT Swiss special grease for ratchet system®	 HXTXXX00NSG20S	20 g

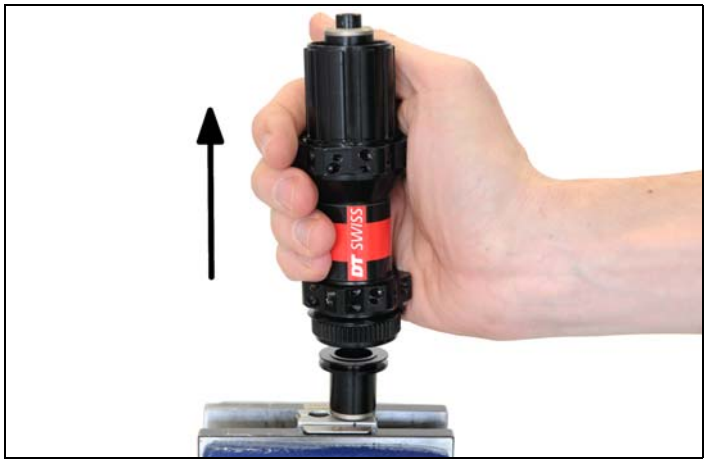
NOTICE

Risk of damaging the adapters!

To avoid damages, only use grind clamping jaws, aluminum clamping jaws or special tools to clamp the adapters.

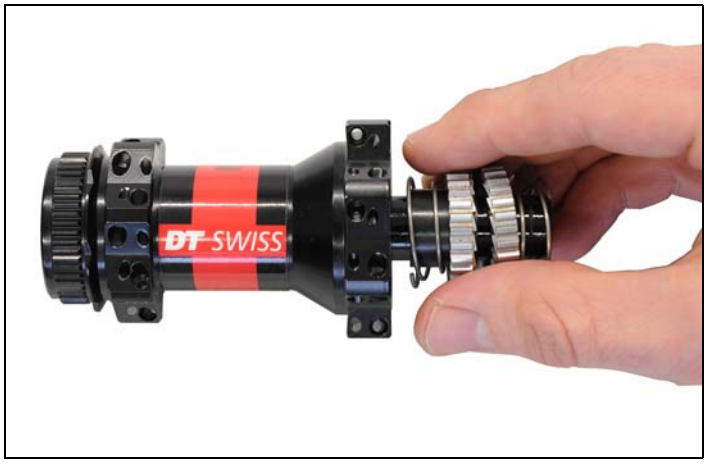
Removing Adapters, Rotor and the Ratchet System®

1. Clamp the left adapter (fig. 4-6/1) into a vice.
2. Pull off the wheel, respectively the hub.
3. Clamp the left adapter (fig. 4-6/13) into a vice.
4. Pull off the wheel, respectively the hub.
   > Take care that the rotor does not fall off.



5. Pull the rotor (fig. 4-6/12) off the hub.

6. Take the springs (fig. 4-6/10), the star ratchets (fig. 4-6/11) and the spacer (fig. 4-6/9) off the hub.



Checking the Hub Version

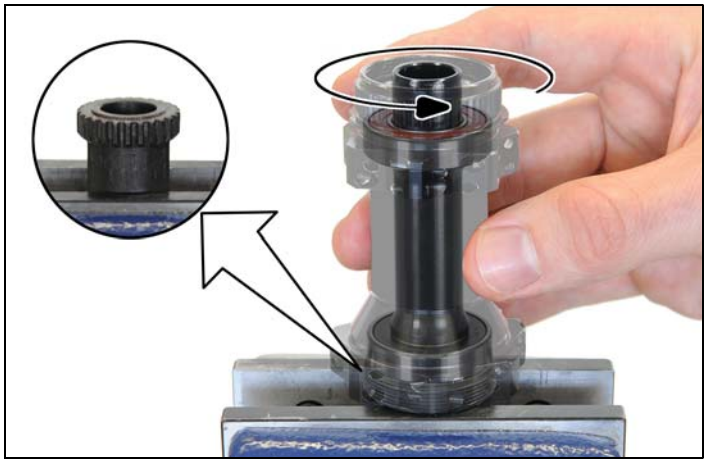
Some hubs from model year 2015 on, are using ball bearings with a smaller outer diameter on the drive side. The bearing on the drive side can be changed without dismounting the ring nut (see section „Dismounting the Ring Nut“, page 48).
On all further hubs, the ring nut must be dismounted the change the bearing.
Check the hub version before starting further maintenance works.

1. Check, if the shim ring can be removed.
   > If the shim ring cannot be removed, the ring nut has to be dismounted to change the bearing.
   > If the shim ring can be removed, the ring nut doesn't have to be dismounted to change the bearing.

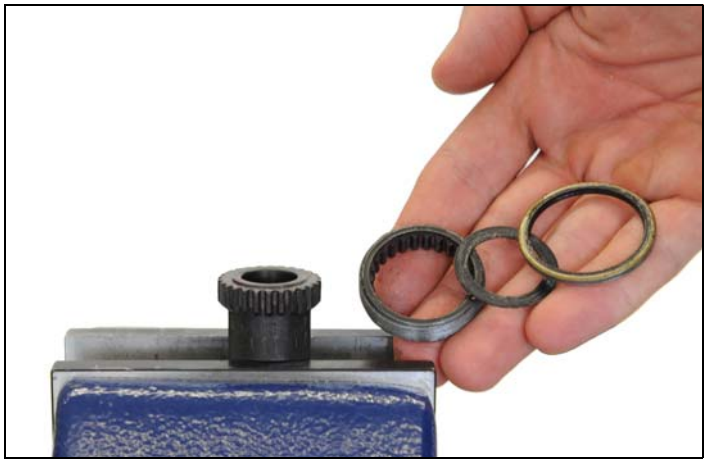
Dismounting the Ring Nut

The ring nut gets tightened while pedaling. Because of this it might be very hard to loosen the ring nut. It is recommended to loosen the ring nut only when the wheel is complete.

1. Clamp the ring nut tool into the vice in its high position.
2. Put the drive side of the hub onto the tool.
3. Turn the hub counter clockwise and unscrew the ring nut (fig. 4-6/7).
   The sealing (fig. 4-6/8) sitting in front of the ring nut will be released from its press fit while unscrewing the ring nut.
4. Remove the hub from the tool.



5. Remove the ring nut (fig. 4-6/7), the sealing (fig. 4-6/8) and the shim ring (fig. 4-6/6).



Dismounting the Bearing on the Disc Side

1. Tap out the bearing on the disc side (fig. 4-6/2) with slight hammer strokes onto the axle.

2. Remove the bearing from the axle.

Dismounting the Bearings

1. Slide the short end of the axle (fig. 4-6/3) into the bearing (fig. 4-6/2) on the drive side.
2. Slide the short installation cylinder onto the axle.
   > When using the installation cylinder, the bearing cannot cant. Thus the bearing seat will not get damaged.
3. Tap out the bearing with slight hammer strokes.
4. Remove the installation cylinder from the hub.

5. Remove the bearing from the axle.

Cleaning and Checking the Parts

The wear of the star ratchet starts at its outer diameter. If there is only low wear, the star ratchets can be further used. In this case the start ratchets must be checked regularly in short intervals.
In case of heavy wear, the star ratchets must be changed immediately.

1. Clean the star ratchets, check for wear and change them if necessary.

2. Check the rotor (fig. 4-6/12) for damages.
   > Grooves from the cassette are no damages. These are normal signs of usage.
3. Remove bad notches from the rotor using a file.
4. Clean the rotor. Metal filings must be removed completely.

Mounting the Bearings on the Drive Side

Some hubs from model year 2015 on, are using ball bearings with a smaller outer diameter on the drive side. The bearing on the drive side can be changed without dismounting the ring nut.

The ball bearing on the drive side must always be mounted first.

If the ring nut is dismounted (model year < 2015):

1. Grease the bearing seats and the thread of the ring nut.

If the ring nut is not dismounted (model year ≥ 2015):

2. Grease the bearing seat beneath the ring nut.
   > There must be no grease on the toothing of the ring nut!

3. Clamp the installation cylinder into the vice.
4. Slide the axle (fig. 4-6/3) with its long side downwards into the installation cylinder.
5. Slide the hub shell onto the installation cylinder.
6. Put a new ball bearing (fig. 4-6/2) with the colored side facing outwards onto the hub shell.

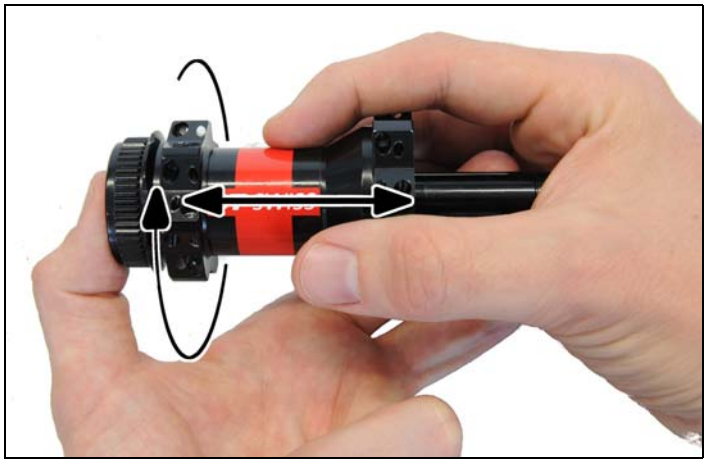
7. Put the second installation cylinder onto the bearing.
8. Tap in the bearing with slight hammer strokes.
9. Remove the tool and the axle from the hub.

Mounting the Bearing on the Brake Side

1. Clamp the installation cylinder into the vice.
2. Put the hub shell with the drive side onto the tool.
3. Slide the axle (fig. 4-6/3) with its long end downwards into the tool.
4. Put a new bearing (fig. 4-6/2) with the colored side facing outwards onto the hub shell.

5. Put the installation cylinder onto the bearing.
6. Tap in the bearing with slight hammer strokes.

7. Check the bearing.
   - The hub must turn smoothly.
   - The hub must not have axial play.
8. If necessary tap in the bearing on the disc side or loosen the bearing.
9. Repeat previous steps until the hub is turning smoothly.



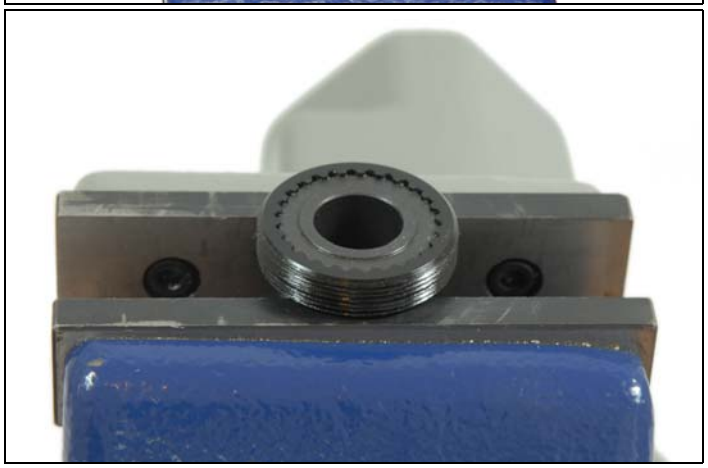
Mounting the Ring Nut, the Sealing and the Shim Ring

All hubs model year <2015:

1. Put the tool for the ring nut in its lower position into the vice.
2. Put the ring nut (fig. 4-6/7) onto the tool with its recess facing upwards.
3. Put the shim ring (fig. 4-6/6) into the recess of the ring nut.

Hubs with smaller bearing on the drive side (section „Checking the Hub Version“, page 48):

1. Put the tool for the ring nut in its lower position into the vice.
2. Put the ring nut onto the tool.



3. Grease the bearing on the drive side using multi-purpose grease.
4. Put the hub onto the assembly and screw on the ring nut for about 2 turns.

5. Release the ring nut tool, turn it 90° and clamp it into the vice in its high position.
6. Put the hub shell with the ring nut onto the tool again and tighten the ring nut as tight as possible by hand.

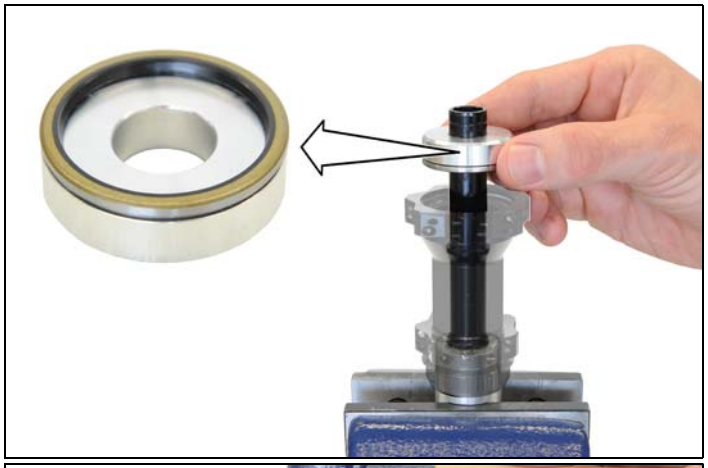
Hubs with smaller bearing on the drive side (section „Checking the Hub Version“, page 48):

7. Put the shim ring onto the bearing on the drive side.

Mounting the Seal

The seal only has to be changed if the ring nut was dismounted.

1. Clamp the installation cylinder into the vice.
2. Slide the axle (fig. 4-6/3) with its short end downwards into the installation cylinder.
3. Slide the brake side of the hub shell onto the installation cylinder.
4. Put the seal (fig. 4-6/8) onto the installation tool for the seal.
5. Slide the installation tool, and the seal onto the axle.



6. Put on the second installation cylinder and tap in the seal.

Putting on the Ratchet System®

DANGER

Danger of injury by limited function of the freewheel due to incorrect lubrication!

If too much grease is applied on the star ratchets, the actuation of the star ratches may not work.

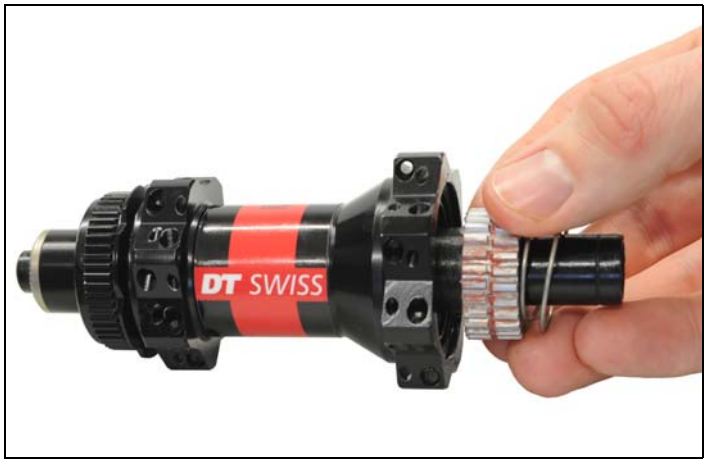
- Only apply a thin, even layer of grease.
- Only use the red DT Swiss special grease.

1. Apply DT Swiss special grease evenly to the outer and the inner toothing of the star ratchets (fig. 4-6/11) using a fine brush.
> For an optimal functionality, a thin layer of grease is sufficient.

2. Grease the toothing of the rotor using DT Swiss special grease.

3. Put on the spacer (fig. 4-6/9) and the first spring (fig. 4-6/10).
> The big diameter of the spring must be placed on the bearing of the hub.

4. Put on both star ratchets (fig. 4-6/11) and the second spring (fig. 4-6/10).
   > The small diameter of the spring must be placed on the star ratchet.

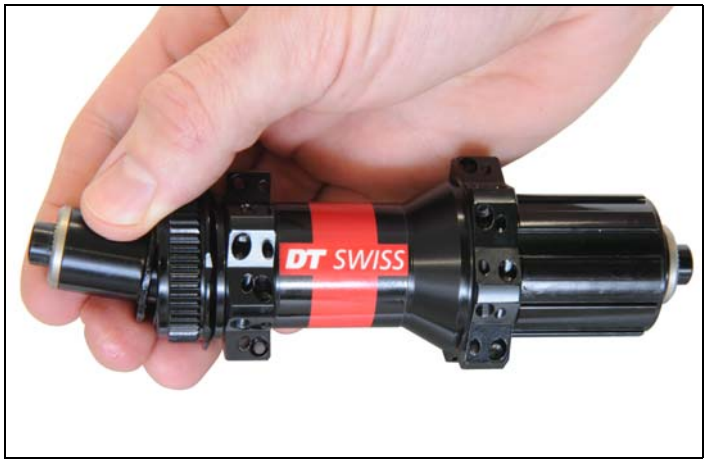


Putting on the Rotor and the Adapters

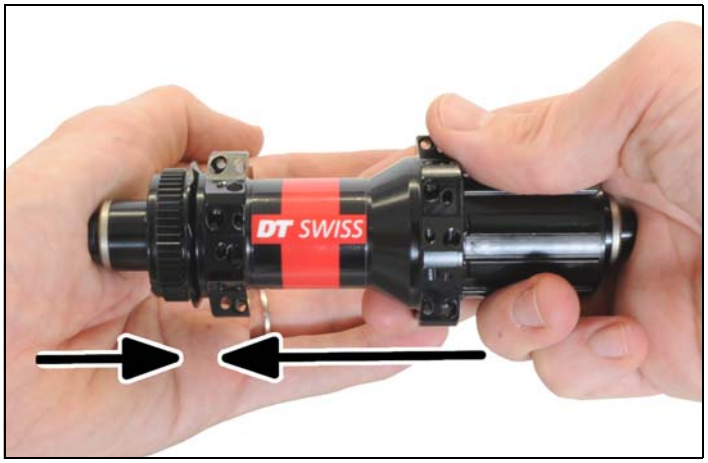
1. Put the rotor (fig. 4-6/12) onto the hub.
2. Check if the rotor can be turned easily and if the star ratchets engage.

3. Grease both bearings and the contact surface of the adapters (fig. 4-6/1/13).

4. Put both adapters (fig. 4-6/1/13) onto the hub.
   > The shorter adapter must be placed on the drive side.



5. Push in the adapters (fig. 4-6/1/13) by hand.



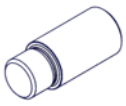
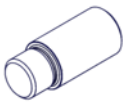
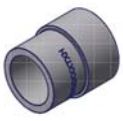
Closing Steps	Link
Mount the cassette	
Mount the brake disc	

5 Spare Parts

Due to the high amount of different hub versions, it does not make sense to list all different spare parts. For spare parts, please contact your dealer or your local service center. To clearly identify the hub and its parts, every hub has a code lasered on the hub shell.

6 Tools

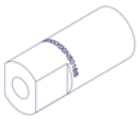
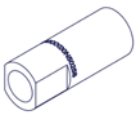
6.1 Tool Sets

Tool	Specification	Amount
Tool Set 240 Radial	HWTXXX00NTKRAS	1
• disassembly tool for axle	 Ø17 mm HXTXXX00N5067S	1
• installation cylinder for ball bearings	 Ø17 / 26 mm HXTXXX00N5068S	2
tool set 180, 240 Ø15	HWTXXX00NTK15S	1
• disassembly tool for axle	 Ø18 mm HXTXXX00N5168S	1
• installation cylinder	 Ø18 / 30 x 40 mm HXTXXX00N5167S	2
tool set 240 Predictive Steering	HWTXXX00NTKPSS	1
• disassembly tool for axle	 Ø18 mm HXTXXX00N5168S	1
• installation cylinder for ball bearings	 Ø37 / 25 mm HXTXXX00N5307S	2
tool set 240 Oversize	HWTXXX00NTKFRS	1
installation cylinder for ball bearings	 HXTXXX00N5038S	2
disassembly tool for axle	 HXTXXX00N5046S	1
tool set 350 Ø15 mm	HWTXXX00N5290S	1
• mounting pin	 Ø15 mm	1
• mounting sleeve	 Ø28 mm	1

Tool	Specification	Amount
tool set 350 Ø20 mm	HWTXXX00N5292S	1
• mounting pin	 Ø20 mm	1
• mounting sleeve	 Ø37 mm	1

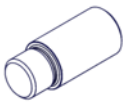
6.2 Tools for Ball Bearings

For the choice of the fitting tool, measure the inner and outer diameter of the ball bearing. These measurements must fit with the measurements in the table.

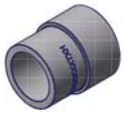
Tool	Specification	Amount
short installation cylinder for ball bearings	 Ø10 / 26 mm x 35 mm HXTXXX00N5016S	2
long installation cylinder for ball bearings	 Ø10 / 26 mm x 60 mm HXTXXX00N5017S	2
installation cylinder for ball bearings	 Ø15 / 24 x 60 mm HXTXXX00N5025S	2
installation cylinder for ball bearings	 Ø15 / 28 x 35 mm HXTXXX00N5024S	2
installation cylinder for ball bearings	 Ø17 / 26 mm x 35 mm HXTXXX00N5068S	2
installation cylinder for ball bearings	 HXTXXX00N5038S	2
installation cylinder for ball bearings	 Ø37 / 25 mm HXTXXX00N5307S	2
installation cylinder for ball bearings 350 FW Road	 HXTXXX00N5023S	2

6.3 Tools for Axles

For the choice of the fitting tool, measure the inner and outer diameter of the axle. These measurements must fit with the measurements in the table.

Tool	Specification		Amount
disassembly tool for axle		Ø15 mm HXTXXX00N5031S	1
disassembly tool for axle		Ø15 / 17 mm HXTXXX00N5067S	1
disassembly tool for axle		Ø15 / 18 mm HXTXXX00N5168S	1
disassembly tool for axle		Ø20 mm HXTXXX00N5046S	1

6.4 Tools for End Caps

Tool	Specification		Amount
Tool Set for 350 Ø15 mm	HWTXXX00N5290S		1
• mounting pin		Ø15 mm	1
• mounting sleeve		Ø28 mm	1
Tool Set for 350 Ø20 mm	HWTXXX00N5292S		1
• mounting pin		Ø20 mm	1
• mounting sleeve		Ø37 mm	1
special textile fabric strap		HXTXXX00N5139S	1

6.5 Tool for Ring Nut

Tool	Specification		Amount
tool for ring nut		HXTXXX00N5027S	1

6.6 Tool for Hub Seal

Tool	Specification		Amount
installation tool for hub seal		HXTXXX00N5026S	1

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