

DT SWISS

R 535 / R 535 ONE

TECHNICAL MANUAL

V2023.06

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1. GENERAL

1.1 VALIDITY

This manual describes the component specified on the front page and the footer. It is valid for the technical condition of the component at the Juni 19, 2023. Design changes are reserved.

1.2 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 hazard with a medium level of risk which, if not avoided, may result in minor or moderate injury.



NOTE

... indicates a potentially hazardous situation that may result in damage to property.

1.3 TARGET GROUP

This manual is intended for the user of the component and dealers. This manual offers the experienced user the possibility to carry out minor service work himself. If you have any doubts about your own abilities, you should definitely contact a specialist or a DT Swiss Service Center. Any warranty claims will lapse if work is not carried out properly.

1.4 HOW TO USE THE 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.

1.5 GENERAL MAINTENANCE INFORMATION

Unless otherwise specified, O-rings and seals must be greased before assembly.

CLEANING

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

DT Swiss recommends the following cleaners:

- Motorex Rex
- Motorex Swissclean
- Motorex OPAL 2400, 3000 OPAL, 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. Special tools are indicated at the beginning of a chapter in the table "Required material".

The use of different tools is at the discretion of the user. If components are 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 condition of the tools are perfect. Always keep the tools in their original packaging or adequate devices to prevent damage.

1.6 ENVIRONMENTAL PROTECTION

The statutory regulations shall apply. Whenever possible, avoid creating waste. 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.

1.7 EXCLUSION OF LIABILITY

The activities listed in this manual may only be carried out by persons with sufficient specialist knowledge. The user is liable for any damage or consequential damage caused by wrongly maintained or installed components. If you have doubts, please contact your region's DT Swiss pro level service center.

1.8 WARRANTY (EUROPE)

Warranty conditions can be found at www.dtswiss.com.

2. TROUBLE SHOOTING

Issue	Reason	Solution
Air loss after long term storage or riding.	Normal effect. The shock can lose about 1-2 bar per month.	Inflate the air chamber and perform standard set up.
Air loss after short time.	Quadring, wiper or guide band of the air chamber is worn.	Change the sealings of the air chamber seal kit. See "3.5 Small Service" on page 9.
	Wrong grease used.	Disassemble and clean the inner surface of the air chamber and the oil chamber tab. Grease the inner surface of the air chamber, the oil chamber tab and the wiper using Slick Honey Bike Grease. See "3.5 Small Service" on page 9.
	Air chamber is damaged.	Change the air chamber.
	The outer surface of the oil chamber is damaged / scratched.	Full service necessary. Contact a DT Swiss service center.
Tiny amounts of oil or grease on the outside.	Normal residue from installation or operation.	Clean the shock with a damp cloth after each ride.
Tiny amounts of oil on the rebound wheel or on the end cap.	None - normal residue from assembly.	Clean the area and check again after a while. If this area is oily again, a full service is necessary. Contact a DT Swiss service center.
Shock loses oil in the area of the rebound wheel.	O-ring of the lockout pin is damaged.	Full service necessary. Contact a DT Swiss service center.
Shock makes slight flowing sound (effect changes depending on the rebound adjustment).	Normal effect (damping effect of oil and bores).	
Shock makes "smacking" sound.	Air inside the oil chamber.	Full service necessary. Contact a DT Swiss service center.
The rebound does not work.	The rebound pin is stuck.	Full service necessary. Contact a DT Swiss service center.
The lockout does not work.	The remote cable is not adjusted correctly.	Adjust the remote cable via the knurled wheel.
	The sealing of the damping piston is worn or damaged.	Full service necessary. Contact a DT Swiss service center.
	The lockout cap does not close completely.	
	Only trunnion mount shocks: Dirt between lockout shaft and rebound wheel or between rebound wheel and end cap.	

Issue	Reason	Solution
The shock cannot be inflated (air escapes immediately when the pump is unscrewed).	Valve or valve insert of the shock is damaged.	Change or retighten the valve inserts (max. 0.4 Nm).
	Leakage.	Check in a water bath where the shock is leaking. Contact your dealer or a DT Swiss Service Center to solve the problem.
The pressure indicated on the pressure gauge rises rapidly while pumping.	Valve does not open.	Check the positioning of the pump on the shock or change the pump.
Shock has noticeable play at the spherical bearings / DU bushings.	Wrong mounting hardware, incorrect tightened screws or wear.	Check whether the correct mounting hardware was used or the screws are tightened correctly. If necessary, replace ball joints / DU bushings (see "5. Replacing spherical bearings" on page 22, or "4. Replacing DU bushings" on page 17).
Loss of oil at the oil chamber (noticeable when the air chamber is removed).	Sealings are at their wear limits.	Full service necessary. Contact a DT Swiss service center.
Oil sprays out of the valve while deflating the air chamber.		
Noise while compressing the shock after about 10 mm of the stroke.	Normal sound of the air balance between the positive and the negative air chamber.	
Clacking noise when compressing.	Defective lockout cap.	Full service necessary. Contact a DT Swiss service center.
	IFP not in correct position.	Full service necessary. Contact a DT Swiss service center.
Shock squeaks while riding, when the shock gets hot.	Wiper seal is dry.	Small service necessary. See "3.5 Small Service" on page 9.
Shock gets hot while riding.	The shock can get very hot on long downhills. This does not affect the performance of the shock.	

3. CARE AND MAINTENANCE

3.1 SAFETY



DANGER

DANGER TO LIFE DUE TO WRONG MAINTENANCE OF THE SHOCK!

Incorrect maintenance or assembly of the shock can lead to incorrect function!

- Maintenance and assembly may only be done by a skilled professional.
- In case of any doubt, contact a DT Swiss service center.
- Only use original spare parts.

3.2 CARE

The following care and cleaning instructions must be observed:

- Clean the shock with a damp cloth after each ride. Remove dirt accumulations in the area of the wiper seal.
- Never use aggressive cleaners that damage the wiper seal.
- Never use high pressure cleaners. Water and dirt can get into the shock and damage it!
- Remove all visible, dried dirt from the area of the wiper seal. This will prevent dirt from getting into the shock.
- It is not necessary to grease the shock in the area of the wiper seal.
- After cleaning, lubricate the sliding surface of the remote lever on the handlebar.

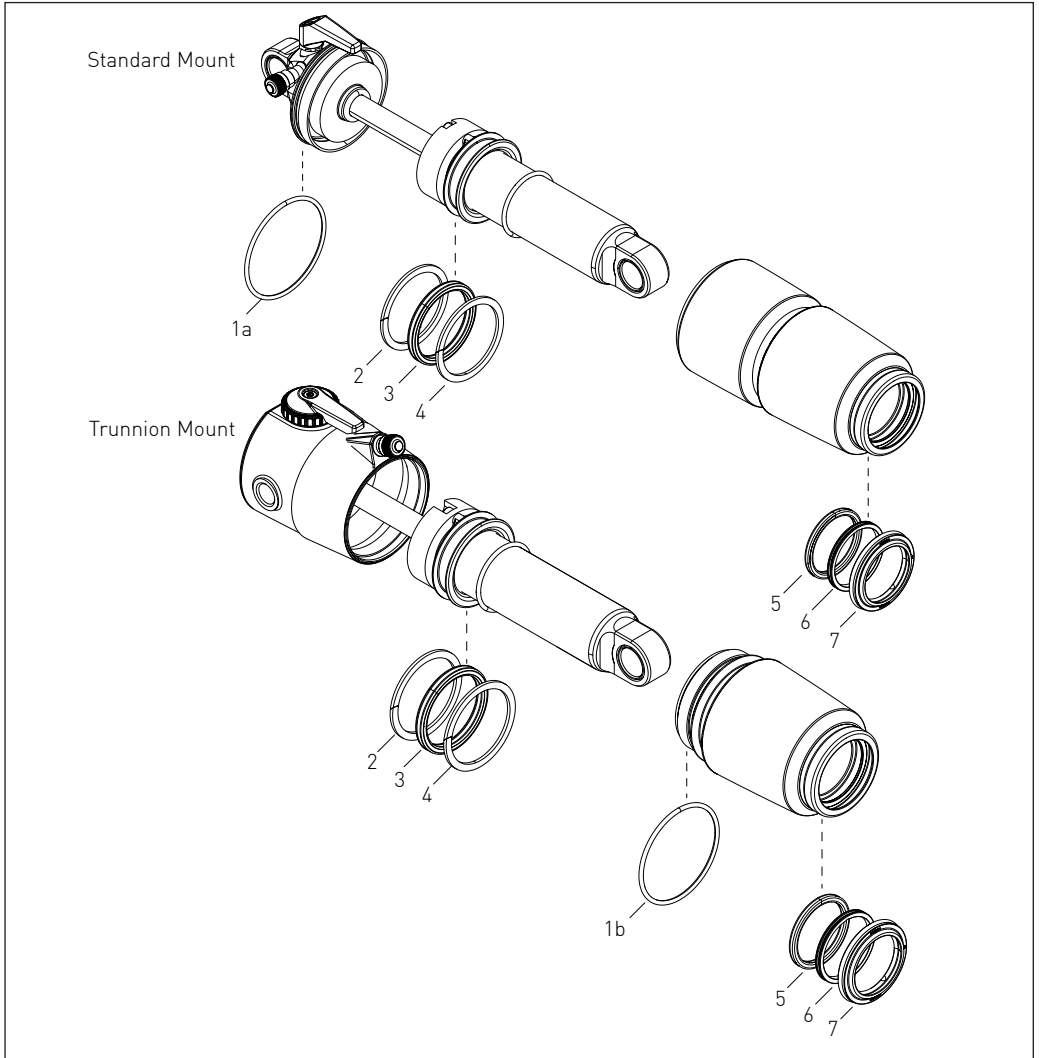
3.3 SERVICE INTERVALS

If service intervals are not respected, any warranty claims can be denied.

Task	Interval
Small Service	<ul style="list-style-type: none">• intensive use: 40 operating hours• normal use: 100 operating hours• or as required
Full service carried out by a DT Swiss service center	Annually or after 200 operating hours
Check the shock for damage	Before and after each ride
Check the fastening is correct	Before each ride
Check the functionality	Before each ride
Clean with a soft sponge and a suitable cleaning agent, especially in the area around the wiper seal. Do not use high pressure cleaners or aggressive cleaning agents!	After each ride

3.4 OVERVIEW SEAL KIT AIR CHAMBER

The seal kit includes all parts needed for a small service. All of these parts can be changed without using special tools.



1a	O-ring air chamber standard mount	4	support ring
1b	O-ring air chamber trunnion mount	5	quad-ring
2	support ring	6	support ring
3	quad-ring	7	wiper seal


3.5 SMALL SERVICE

This chapter describes a small service. Further service works will be carried out by a DT Swiss service center.

A small service should be carried out in the following cases:

- The interval for a small service is expired (see table at the beginning of this chapter).
- Leakage that becomes apparent through repeated air loss. The shock must be inflated regularly.
- Unusual sounds (squeaking).
- Other defects or malfunctions.

PREPARATORY STEPS	Link
Dismount the shock from the bike.	
Dismount the shock hardware.	
Clean the surface of the shock.	see "1.5 General Maintenance Information" on page 4

REQUIRED MATERIAL	Specification	Quantity
service kit air chamber	Gen1 (grooves on air chamber): <ul style="list-style-type: none"> • standard mount: CWXXXXXX10095S • trunnion mount: CWXXXXXX23788S Gen2 (no grooves on air chamber): <ul style="list-style-type: none"> • standard mount: CWXXXXXX37898S • trunnion mount: CWXXXXXX37893S 	1
grease	 Buzzy's Slick Honey 4.7 dl: 40341000AD02000001 or 20 ml: TZXXXXXXNSLICKS	as required



NOTE

RISK OF DAMAGING THE SHOCK!

To avoid damages, always clamp the shock or parts of the shock into ground clamping jaws, aluminum clamping jaws or plastic clamping jaws.

RELEASING THE AIR



DANGER

RISK OF INJURY FROM PRESSURIZED COMPONENTS!

During the disassembly of the shock, compressed air can escape uncontrolled or pressurized components can be ejected.

- Release the air before carrying out any work on the shock.



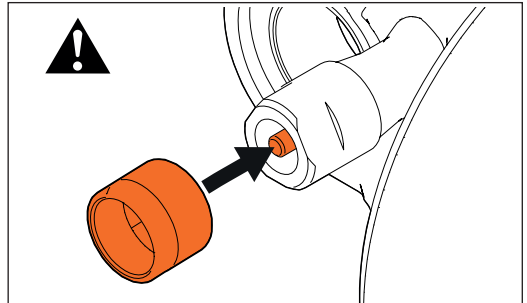
DANGER

SHOCK OIL MAY BE FATAL IF SWALLOWED AND ENTERS AIRWAYS!

Oil mist might escape through the valve while releasing the air from the air chamber.

- If the air is released without using a shock pump, place a cloth over the valve while the air is being released.
- The valve must face down, away from your body while releasing the air.
- Immediately call a doctor if shock oil was swallowed or entered airways.

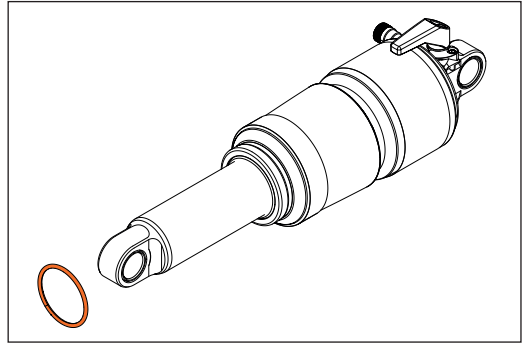
1. Set the shock to "OPEN" mode.
2. Unscrew the valve cap on the shock.
3. If the air is released without using a shock pump, place a cloth over the valve.
4. **GRADUALLY** press the valve insert with the back of the valve cap.
or
Screw on the shock pump and **GRADUALLY** reduce the air pressure by pressing the release valve on the shock pump.



The shock can compress up to the point at which the equalization of the positive and negative air chambers occurs.

REMOVING THE AIR CHAMBER

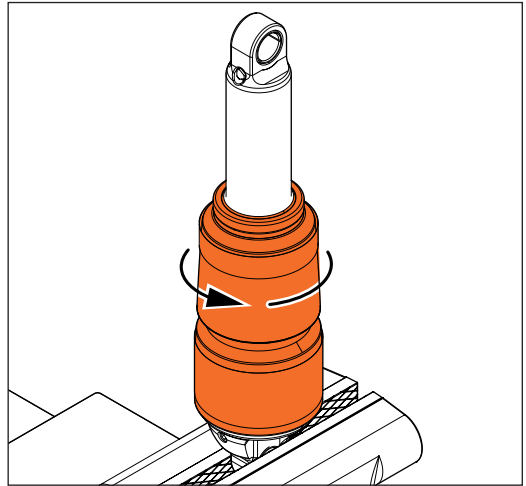
1. Remove the SAG O-ring from the oil chamber.



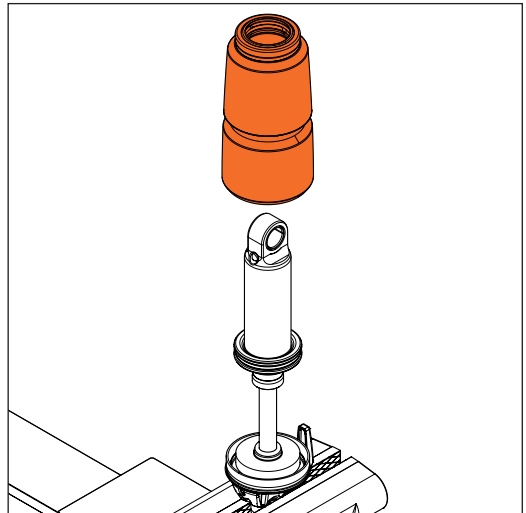
2. Clamp the shock into a vice vertically.

3. Unscrew the air chamber by hand.

4. If the air chamber can not be loosened by hand, unscrew the air chamber using a strap wrench.



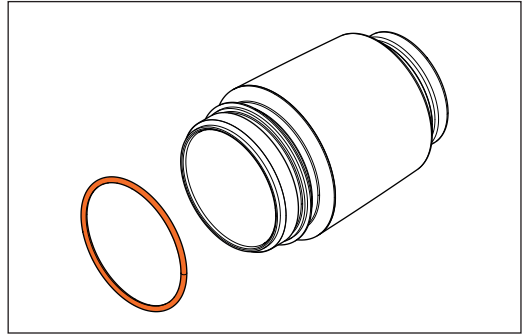
5. Slide off the air chamber.



REPLACING THE O-RING OF THE AIR CHAMBER, QUAD-RING AND SUPPORT RING

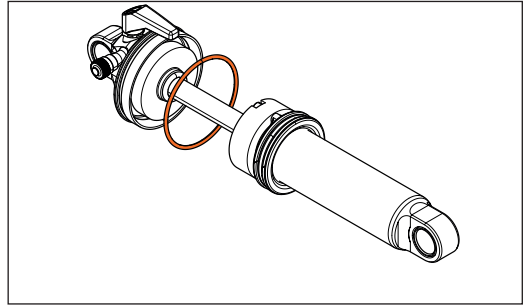
Only shock with trunnion mount:

1. Remove the O-ring from the air chamber.
2. Clean the seat of the O-ring on the air chamber.
3. Slightly grease the new O-ring and fit it onto the air chamber.

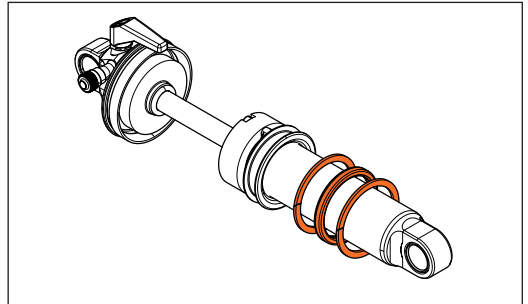


Only shock with standard mount:

1. Remove the O-ring from the air chamber cap.
2. Clean the seat of the O-ring on the air chamber cap.
3. Check the air chamber cap for damages in the area of the O-ring.
4. Slightly grease the O-ring and put it back onto the air chamber cap.

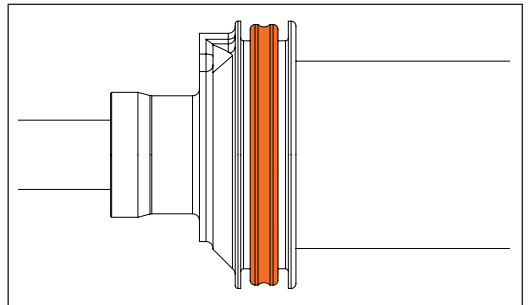


5. Remove both support rings from the oil chamber tap.
6. Remove the quad-ring from the oil chamber tap.
7. Clean the seat of the quad-ring and the support ring,

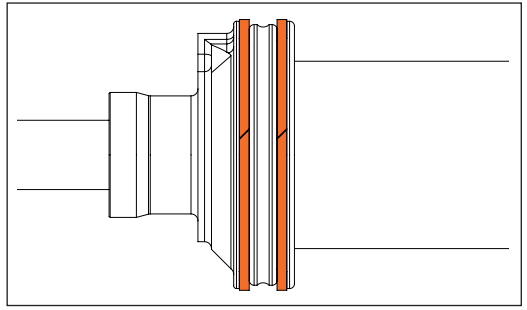


8. Slightly grease the new quad-ring and fit it onto the oil chamber tap.

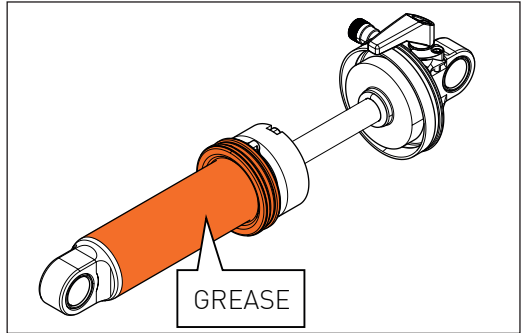
→ Ensure that the quad-ring is not twisted.



9. Put both support rings on both sides of the quad ring onto the oil chamber tap.



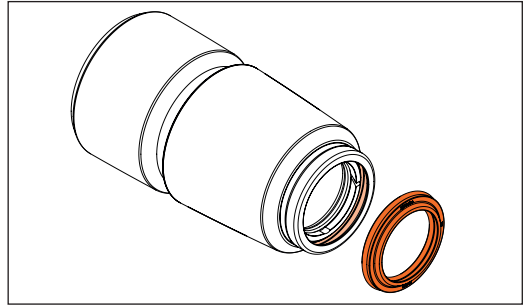
10. Slightly grease the oil chamber.



REPLACING THE WIPER SEAL

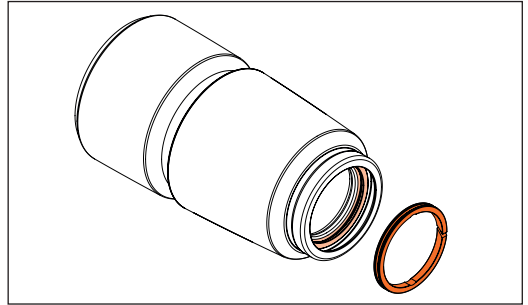
1. Carefully remove the wiper seal from the air chamber using plastic forceps.

- Do not damages the air chamber housing!
- Do not re-use the wiper seal!



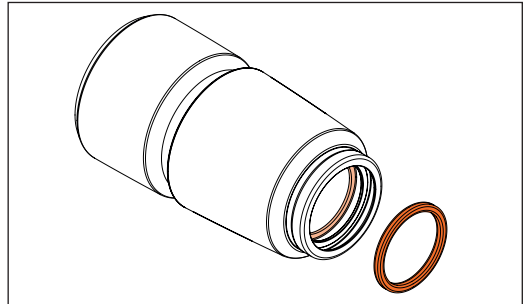
2. Remove the support ring from the air chamber housing by hand.

- Do not re-use the support ring!



3. Remove the quad-ring from the air chamber housing by hand.

- Do not re-use the quad-ring!



NOTE

RISK OF DAMAGE DUE TO WRONG CLEANERS!

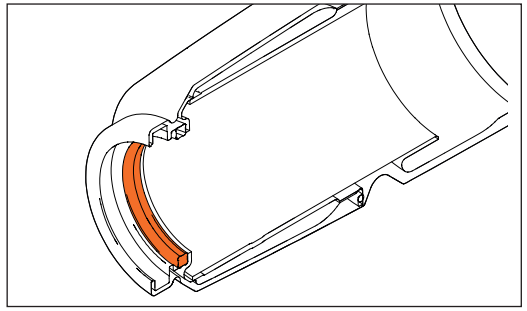
Aggressive cleaners can cause damages to the wiper seal. A damaged wiper seal is the reason for air leakages of the shock.

- Only use cleaners mentioned in section "Cleaning" on page 4.

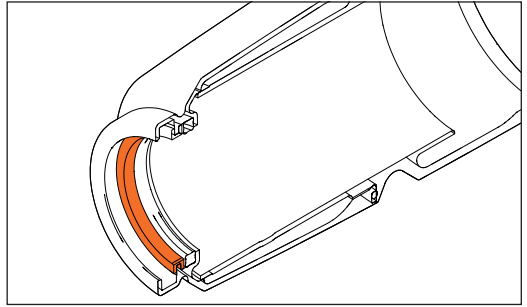
4. Clean the air chamber housing with a clean, lint-free and dry cloth.
There must be no lint and no residuals of grease after cleaning!

5. Slightly grease the new quad-ring and put it into the inner groove of the air chamber (see figure).

→ Ensure that the quad-ring is not twisted.

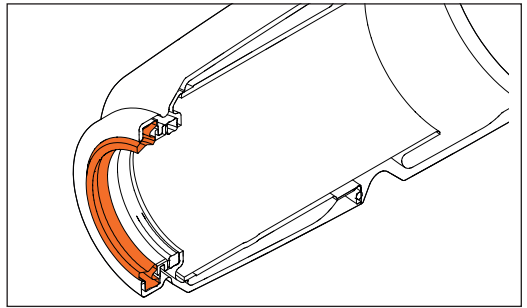


6. Put a new support-ring onto the web between both grooves of the air chamber (see figure).



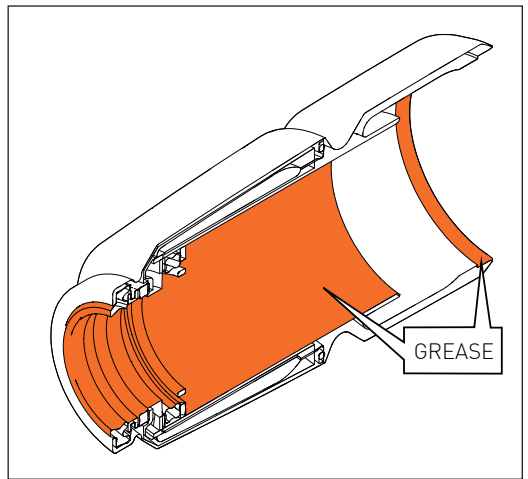
7. Slightly grease the new wiper seal and put it into the outer groove of the air chamber (see figure).

→ Ensure, the wiper seal lays evenly all around the groove.



8. Slightly grease the inner surface of the air chamber housing and the thread. Grease the wiper seal generously.

→ Required grease, see table "Required Material" on page 9.

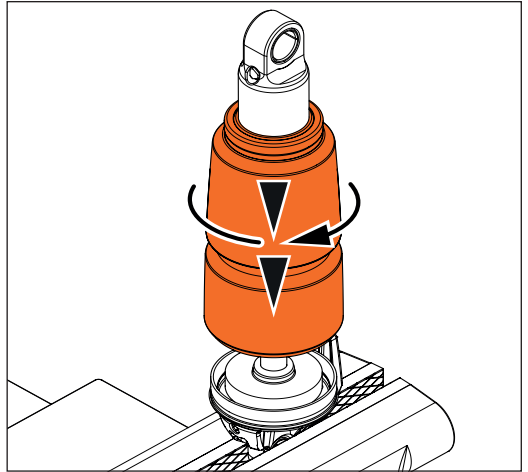


9. Clamp the shock into the vice.

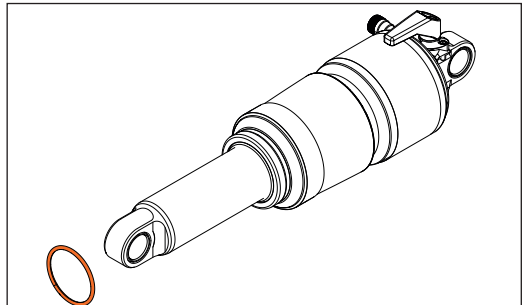
10. Slide on the air chamber and tighten it by hand.

→ Ensure, that the O-ring and the support ring does not get jammed.

11. Take the shock out of the vice.



12. Put the SAG O-ring onto the oil chamber.



Closing steps.

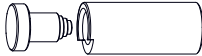


Link

Mount the shock hardware.

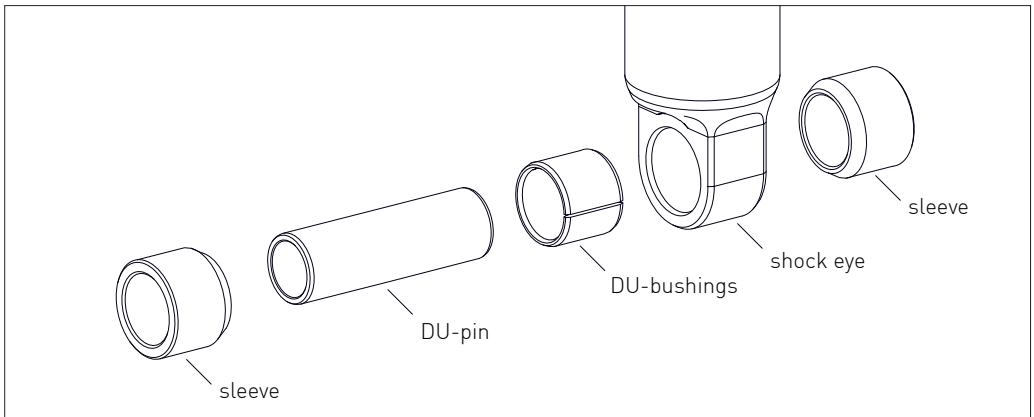
Mount the shock.

4. REPLACING DU BUSHINGS

DT Swiss shocks use DU bushings or spherical bearings. These two types, as well as their hardware and tools, are not compatible with each other.

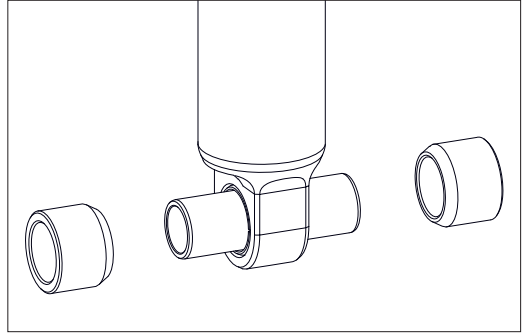
Preparatory Steps	Link	
Dismount the shock from the bike.		
Clean the surface of the shock.	see "Cleaning" on page 4	
Required tools and materials	Specification	Quantity
cleaner / degreaser	see "Cleaning" on page 4	as required
grease	Buzzy's Slick Honey	as required
Tool kit for dismounting the DU pin	CWTXX10031935S 	1
Tool kit for dismounting the DU bushing	CWTXX10031927S 	1
Tool kit for mounting the DU bushing	CXTXX10031928S 	1

OVERVIEW



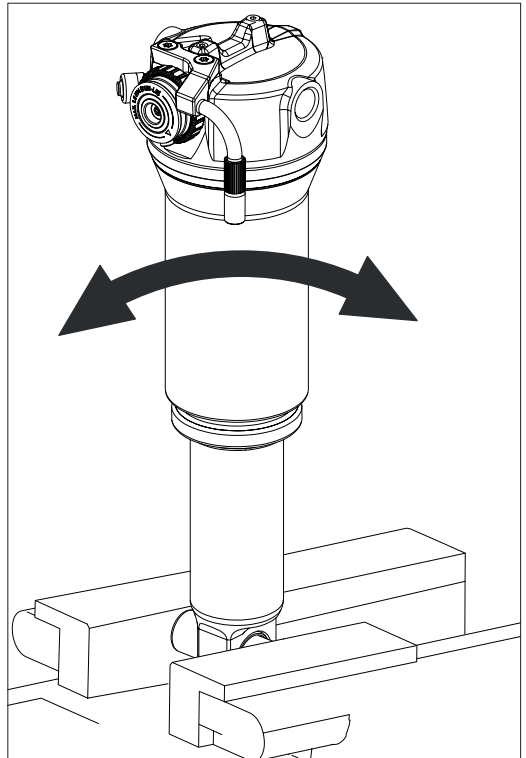
REMOVING THE SLEEVES

1. Remove the sleeves by hand.



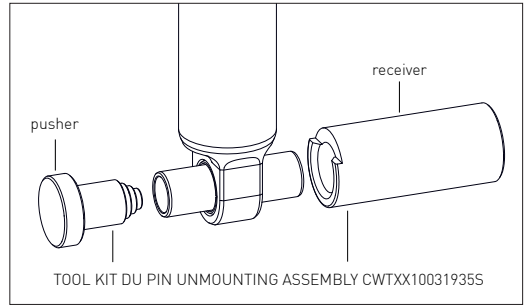
TESTING THE DU BUSHINGS

1. Clamp the DU pin into a vice.
2. Rotate the shock on the pin to check the DU bushing.
 - If the shock can be rotated without resistance, the DU Bushings must be changed. See following.
 - If the shock can be rotated with resistance, the DU bushing must not be changed. Check the DU bushing again within the next small service. Mount the sleeves and the O-rings again (see "Mounting the sleeve" on page 21).

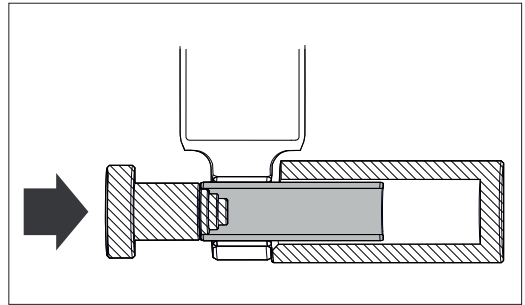


REMOVING THE DU-PIN

1. Slide the pusher into the DU pin.
2. Align the receiver like shown in the picture.

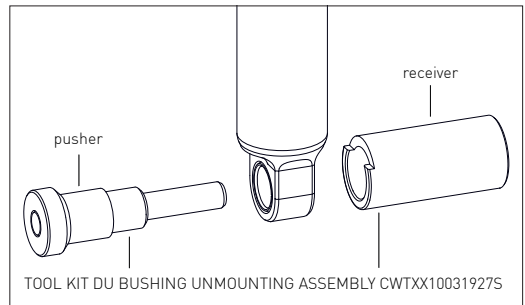


3. Push out the DU pin using a press or a bench vise.

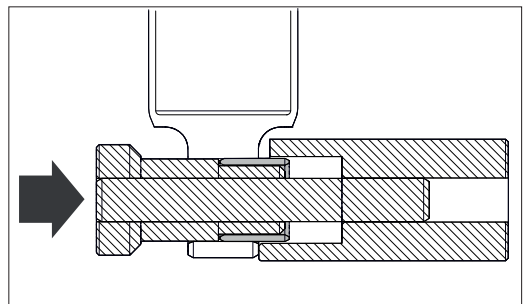


REMOVING THE DU-BUSHING

1. Slide the pusher into the DU bushing.
2. Align the receiver like shown in the picture.

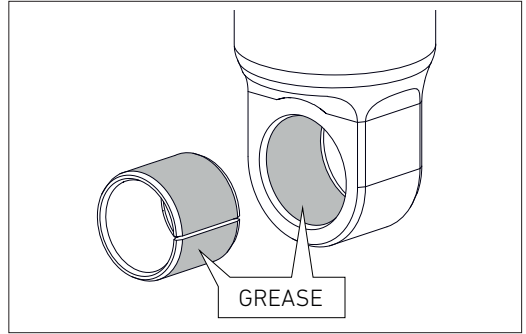


3. Push out the DU bushing using a press or a bench vise.



MOUNTING THE DU BUSHINGS

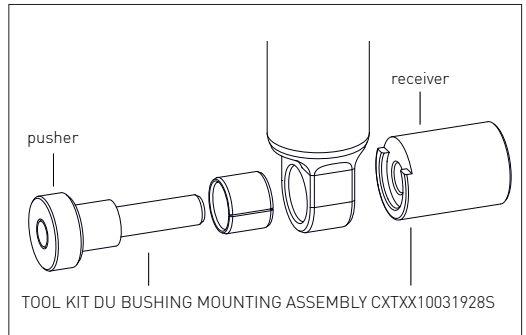
1. Slightly grease the inner surface of the shock eyelet and the outer surface of the bushing.



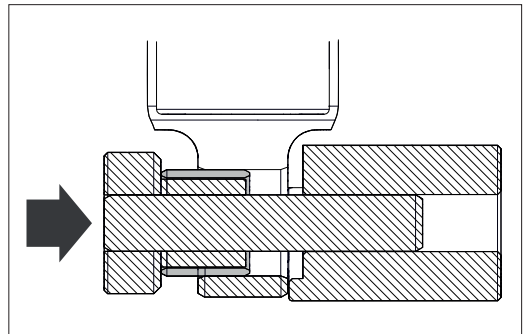
2. Put the bushing onto the pusher.

3. Position the bushing to the shock eyelet that the gap is oriented 90° to the axis of movement of the shock.

4. Align the receiver like shown in the picture.

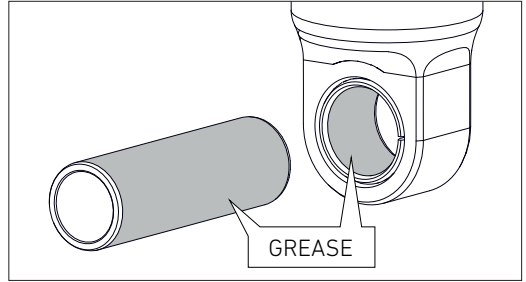


5. Push in the bushing using a press or a bench vise.

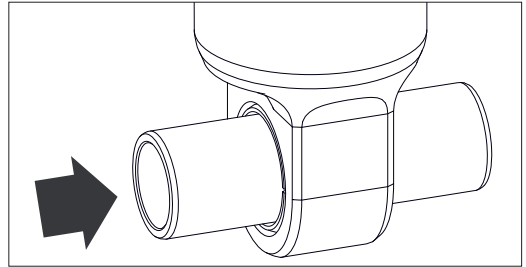


MOUNTING THE DU-PIN

1. Slightly grease the inner surface of the DU bushing and the outer surface of the DU pin.

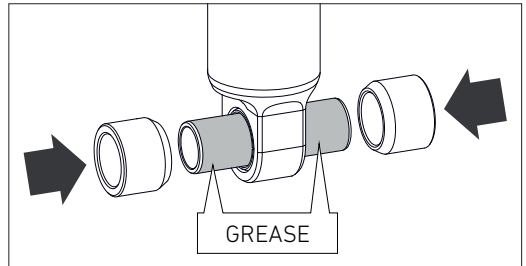


2. Push in the DU pin by hand.
3. Position the pin centrally by clamping the pin in the vice and while turning the shock, pushing it to the center.
4. Wait a few minutes and check the DU bushing again (see "Testing the DU bushings" on page 18).
If this test fails a second time, contact a DT Swiss service center.



MOUNTING THE SLEEVE

1. Slightly grease the DU pin.
2. Slide the O-rings onto the sleeves.



Closing Steps

Dispose all waste in an environmentally compatible manner.

Assemble the shock to your bicycle.

Link

"1.6 Environmental protection" on page 4

5. REPLACING SPHERICAL BEARINGS

DT Swiss shocks use DU bushings or spherical bearings. These two types, as well as their hardware and tools, are not compatible with each other.

Preparatory Steps

Dismount the shock from the bike.

Clean the surface of the shock.

Link

see "Cleaning" on page 4

Required tools and materials

cleaner / degreaser

thread locker

tool kit spherical bearings

Specification

see "Cleaning" on page 4

high-strength

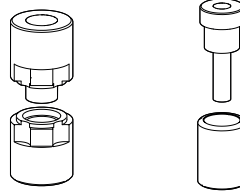
CWTXX10028914S

Quantity

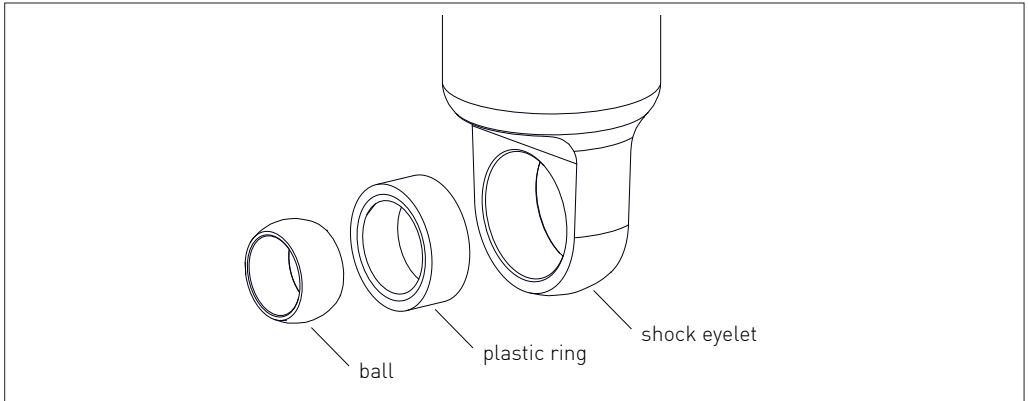
as required

as required

1



OVERVIEW



CHECKING THE SPHERICAL BEARINGS

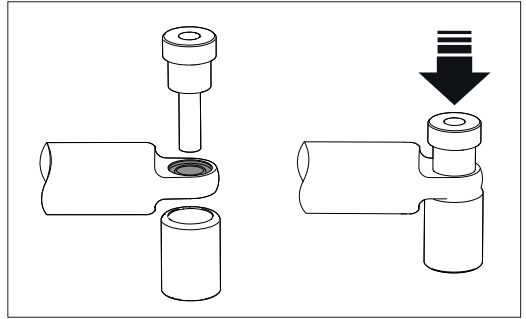
1. Check the play of the spherical bearing by hand.

→ If the spherical bearing can be moved without resistance, the spherical bearing should be replaced.

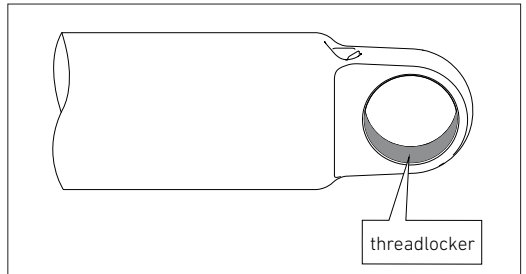
CHANGING THE SPHERICAL BEARINGS

1. Put the pin of the disassembly tool from one side into the spherical bearing.
2. Push the counter sleeve of the disassembly tool on the other side of the spherical bearing onto the pin of the disassembly tool.

3. Press out the spherical bearing by compressing the disassembly tool.
A vice, a hand press or the like can be used for pressing.



4. Clean the eye of the shock with a degreaser and put a small amount of high-strength thread locker onto the inner surface of the shock's eye.

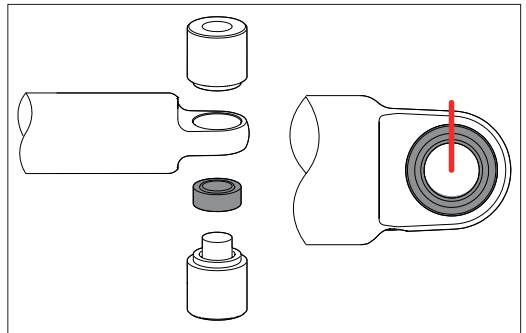


5. Position the spherical bearing in the shock eye so that the gap in the plastic ring is offset by 90° to the axis of motion of the shock.

6. Press in the new spherical bearing using the assembly tool.
A vice, a hand press or the like can be used for pressing in.

7. Take the tools and the shock out of the vice.

8. Remove excess threadlocker with a degreaser.



9. Check whether the spherical bearing is in the middle of the shock eye.

10. Check the spherical bearing again (see "Checking the spherical bearings" on page 23).

Closing Steps

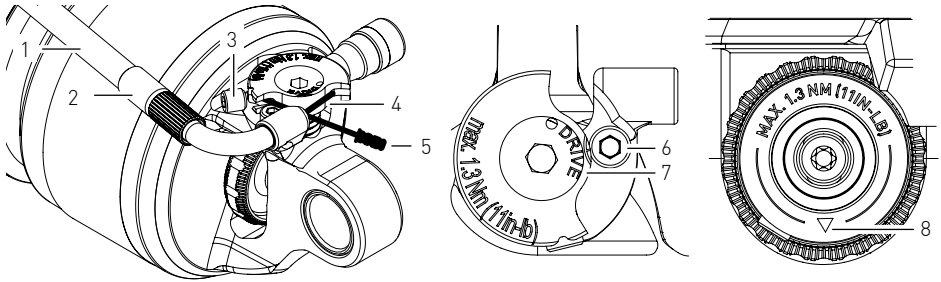
Dispose all waste in an environmentally compatible manner.

Assemble the shock to your bicycle.

Link

"1.6 Environmental protection" on page 4

6. ATTACHING THE REMOTE CABLE



1. Insert the cable housing (1) into the remote lever on the handlebars and into the cable adjuster (2) on the shock.
 - Only use cable housings with an outer diameter of 4 mm.
 - The cable housing must be long enough to allow the handlebars to turn fully in both directions. The shock and other components must function properly at all times.
2. Switch the remote lever to the "OPEN" position and route the cable (4) through the cable housing (1).
3. Place the cable (4) around the remote wheel on the shock and clamp it using the clamping screw (3). When tightening the clamping screw, do not exceed a tightening torque of 1.3 Nm.
4. Shorten the cable housing (4) and press on the cable end crimp (5).
5. Adjust the cable tension of R 535 ONE shock: Switch to "DRIVE" mode and adjust the cable tension.
 - Shock with standard mount: The "DRIVE" marking (7) on the remote wheel must face the stop screw (6).
 - Shock with trunnion mount: The "DRIVE" marking (8) on the remote wheel must face the valve.
 - If necessary, adjust the cable via the cable adjuster (2) until both markings are correct.
6. Adjust the cable tension of R 535 shock: Switch to "LOCK" mode and adjust the cable tension.
 - If necessary, adjust the cable tension using the cable tension adjuster (2) until the shock locks in the „LOCK" position.

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