Particulars

Use of an <u>enclosed chainguard.</u>

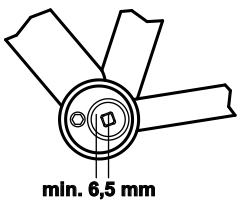
The chainguard <u>must not</u> rub against the hub shell. This rubbing effect could result in deep brush marks upon the hub shell, possibly eventually wearing completely through it! This damage could lead to accidents through oil leakage or even a complete blockage of the gear unit itself.

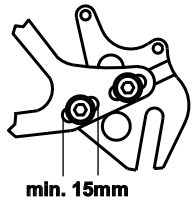
Use of a <u>carbon handlebar</u> in conjunction with the *Rohloff* shifter

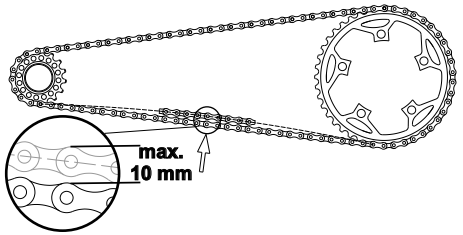
The Rohloff Shifter is not approved for installation on any sort of carbon handlebar. **The Rohloff AG will not be held responsible for accidents resulting from the mounting of the Rohloff shifter on carbon handlebars.**

<u>Eccentric BB</u> or <u>adjustable dropouts</u> on frames with the *Rohloff SPEEDHUB*

It is especially important to use a concentric mounted chainring when utilizing an eccentric BB or adjustable dropouts, otherwise the chain tension could vary extremely. The chain tension should be set so that the chain has approximately 10mm play when lightly pushed from underneath and under no pressure.
If using adjustable dropouts in collaboration with the internal gear mech, then it is important to check that there is enough room for the cable adjusters to accomodate the moving of the rear wheel as the chain wears/stretches.(if not, the housing may have to be shortened).







Usage of <u>Tuning parts</u>

Twist shifter (Imperial) with engraved gear indicator from "**Toxoholics**" is 100% compatible with the Rohloff twist shifter housing, it can be shortened to the desired length and is delivered with a corresponding left grip.
Titanium sprockets from "**Singlestar**" are compatible. Make sure to check the min. chainring/sprocket ratios
Titanium Twist shifter from "**Rewel**" rotates over 360° and does not incorporate a bedstop**.**
Titanium axle plates from "**Rewel**" are not appropriate for tandem use or for fully loaded touring bikes.

Further information over these parts is available on our homepage under: **www.rohloff.de > FAQs**

Rohloff chain tensioner (Art.No. 8250)
Tension capacity of 10 links

Rohloff chain guide CC (Art.No. 8290)

Mounting

The following sequences are useful for the mounting of the *Rohloff SPEEDHUB 500/14*

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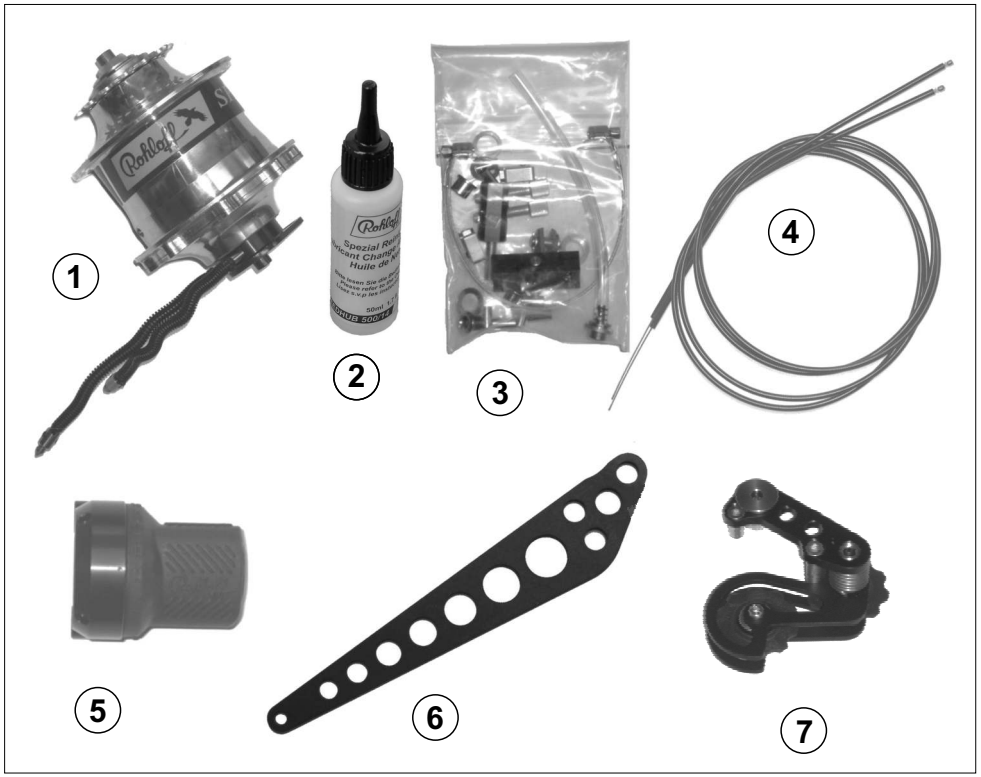
1.1 Checking the package contents

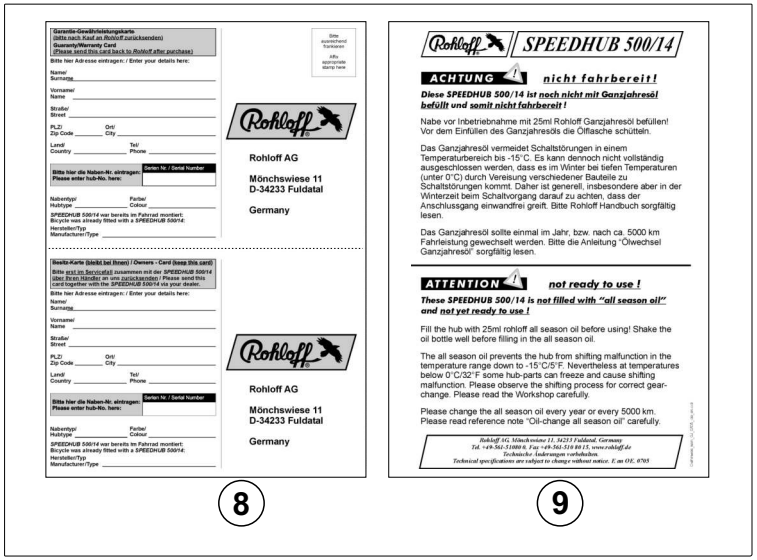
In the *Rohloff SPEEDHUB 500/14* package will be:

- *Rohloff SPEEDHUB 500/14* Handbook (Art.Nr. 8295)
- *Rohloff SPEEDHUB 500/14* in the desired version **1**
- Bottle of *Rohloff SPEEDHUB OIL* **2**
- Small parts bag **3**
- Two shifter cables consisting of bowden cable, nylon liner and cable housing **4**
- Twist shifter **5**
- Guarantee card **8**
- Oil fill reminder **9**

In the package could also be a long torque arm and/or a *Rohloff* chain tensioner. The following table shows in which *Rohloff SPEEDHUB 500/14* package these could be found.

	CC	CC OEM	CC DB	CC DB OEM	CC EX	CC EX OEM	TS	TS OEM	TS DB	TS DB OEM	TS EX	TS EX OEM
Long torque arm **6**	●		●		●		●		●		●	
Chain tensioner **7**	●		●		●							





1.2 Checking the contents of the small parts bag

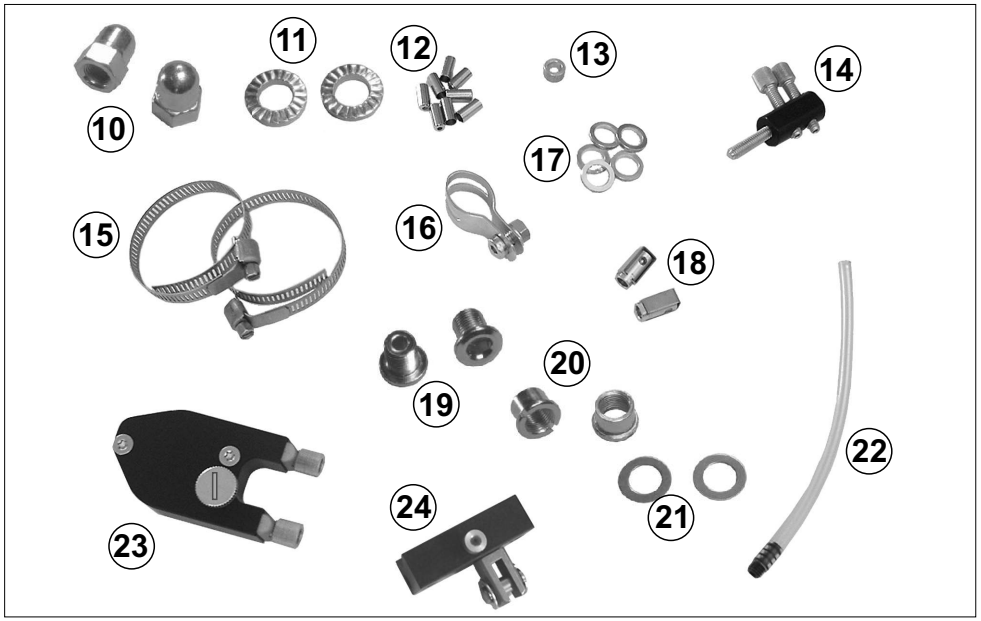
There is a bag of small parts within the *Rohloff SPEEDHUB 500/14* package. These will be needed in order to mount the *Rohloff SPEEDHUB 500/14* to the bike itself. The contents of the bag depend upon which version of the *Rohloff SPEEDHUB 500/14* is contained within the package.

All the possible parts in this bag are shown with a number on the following side . Under that is a table showing which parts are to be found in the bag depending upon which version of the *Rohloff SPEEDHUB 500/14* is contained within the package.

Example:

Rohloff SPEEDHUB 500/14 CC EX OEM:

In this bag there will be eight cable housing caps (#12), five chainring washers (#17), an oil filling tube (#22) and an EX cable box (#23).



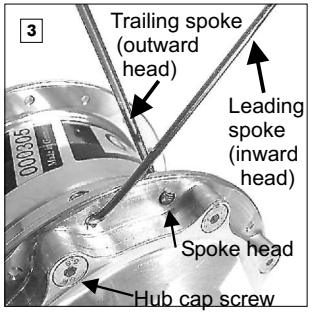
#	Parts	CC	CC OEM	CC DB	CC DB OEM	CC EX	CC EX OEM	TS	TS OEM	TS DB	TS DB OEM	TS EX	TS EX OEM
10	2 Axle nuts M10x1							●	●	●	●	●	●
11	2 Washers for the TS axle							●	●	●	●	●	●
12	8 Cable housing caps	●	●	●	●	●	●	●	●	●	●	●	●
13	1 Spacer 6,5x10x5,5 for the cable guide	●	●					●	●				
14	1 Cable guide 13° with adjusters & mounting bolt	●	●					●	●				
15	2 Clamps	●		●		●							
16	1 Torque arm clamp							●		●		●	
17	5 Chainring spacers	●	●	●	●	●	●	●	●	●	●	●	●
18	2 Female bayonet connectors	●	●					●	●				
19	2 Mounting bolts M8x0,75	●				●		●				●	
	4 Mounting bolts M8x0,75				●						●		
	6 Mounting bolts M8x0,75			●						●			
20	2 Threaded bushes M8x0,75	●		●		●		●		●		●	
21	2 Washers	●		●		●		●		●		●	
22	1 Oil filling tube	●	●	●	●	●	●	●	●	●	●	●	●
23	1 EX cable box			●	●	●	●			●	●	●	●
24	1 Quick release block & locating fork for torque arm	●		●		●							

2. The wheel

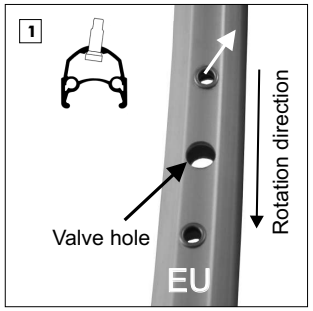
Wheel lacing

The number of times that the spokes are crossed over depends entirely upon the size of the rim.
All rims **larger than 24"** in diameter **must be laced in a two cross** pattern. All **24" and smaller sized** wheels must be laced **up in a one cross** pattern.
Due to the high torsional strength of the hub casing, the use of a reversed lacing pattern on the brake disk side (DB versions) is not necessary.

Further detailed information with regards to wheel lacing can be found in the Appendix.



The leading spokes are laced so that the spoke head always faces inwards.The trailing spokes are laced so that the spoke head always faces outwards. All spokes should be crossed over each other.



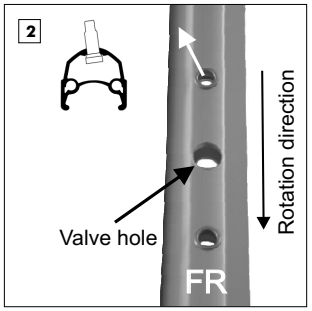
Rims are manufacturered in different ways. The type of nipple hole pattern must be determined before lacing the wheel as this will require a different lacing method to be followed. In picture 1 the European nipple hole pattern (EU) is shown. The first spoke hole behind the valve hole lies to the direction of the right hand hub flange (pay attention to the rotational direction of the rim).

ATTENTION

The wheel lacing method is determined by the nipple hole pattern. The correct lacing method for both types of hole pattern can be found in the appendix.

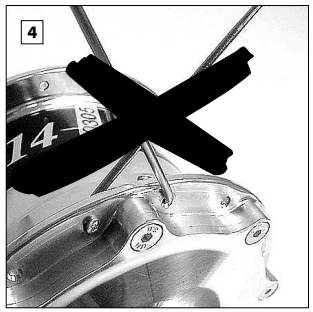
POINTER

Rotating the hub whilst wheelbuilding will be easier when the Rohloff SPEEDHUB 500/14 is in gear #11. This gear can be selected by pulling the hub cables (internal gear mech), or turning the hexagonal peg on the gear transfer box with an 8mm wrench (external gear mech).



In picture 2 the French nipple hole pattern (FR) is shown. The first spoke hole behind the valve hole lies to the direction of the left hand hub flange (pay attention to the rotational direction of the rim).

If the spoke holes of the rim are all centrally drilled, then the lacing method for a European nipple hole pattern should be followed (see appendix).



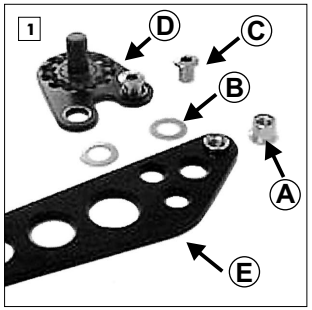
Spokes must not cross directly over the hub cap fixing screws on wheels which are 24” or smaller in diameter!

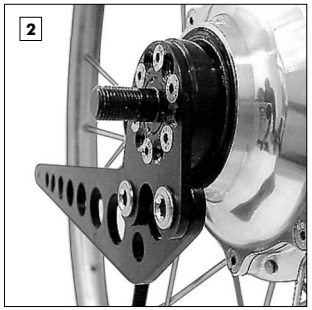
3. Mounting additional parts

The *Rohloff SPEEDHUB 500/14* comes with additional parts according to the corresponding version. These parts must be mounted first.

3.1 Standard long torque arm

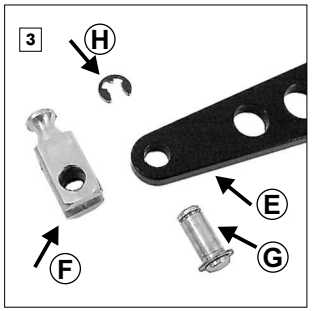
All *Rohloff SPEEDHUB 500/14* versions not carrying the codes OEM or OEM2 come included with the long torque arm for supporting the torque. This must be mounted to the axle plate.





Push the threaded bushes through the torque arm from behind. Place a washer over each of the bushes and then the axle plate over these washers (pictures 1 and 2 show the TS version). Secure the two parts together with the mounting bolts. (M8x0.75 - 5mm allen key, tightening torque: 7Nm/61in.lbs.).

A Threaded bush
B Washer
C Mounting bolt
D Axle plate (CC or TS)
E Long torque arm



On the CC versions, the locating fork must also be attached to the torque arm. Place the forked end over the torque arm, push the securing pin through the two parts and secure the other end in place with the circlip. TS Versions must have a torque arm clamp mounted instead of the locating fork.

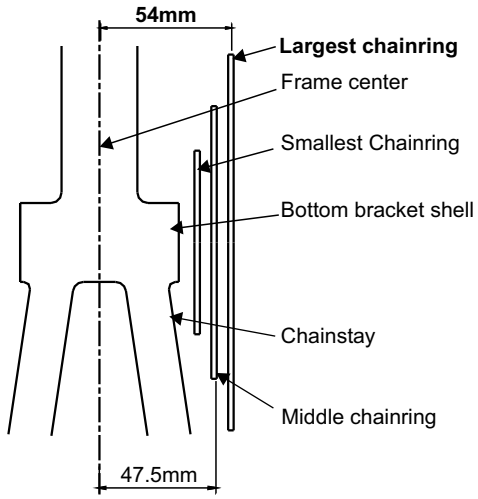
F Locating fork
G Securing pin with circlip
H Circlip

ATTENTION

Make sure that both circlips sit correctly onto the securing pin.

3.2 Crankset

The *Rohloff SPEEDHUB 500/14* requires a chainline of 54mm. On bikes with three-ring cranksets, the middle chainring sits on a chainline of 47.5mm (measured from the frame center). The largest chainring has a chainline of 54mm. On most MTB and Trekking bike cranksets, the largest chainring and bottom bracket can normally be reused in conjunction with the *Rohloff SPEEDHUB 500/14.*



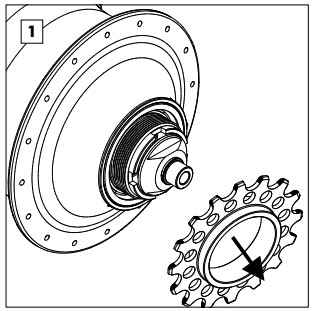
When disassembling the crankset for use with the *Rohloff SPEEDHUB 500/14,* the middle and smallest chainring will not need to be used, so they must be removed from the crankset. The chainring threaded bushes will be too long, because they are no longer securing two chainrings. For this reason there are five chainring spacers included in the small parts bag (to be found in every package). These should be placed over the threaded bushes before reassembling the crankset, so that the single chainring can be properly and tightly secured. (chainrig bolts: 5mm allen key, lightly greased, tightening torque: 7Nm/61in.lbs.).

3.3 *Rohloff* DH chain guide (accessory for downhill)

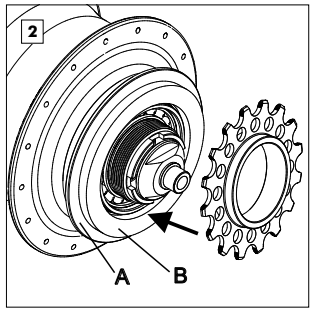
The *Rohloff* DH chain guide (Art.No. 8291) for the *Rohloff SPEEDHUB 500/14* prevents the possibility of the chain springing off the sprocket and onto the hub casing under extreme riding conditions.

POINTER

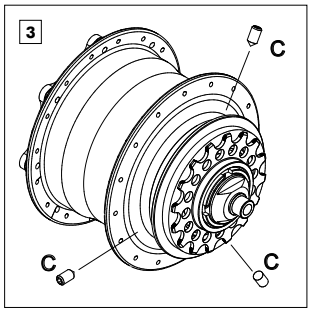
The *Rohloff* DH chain guide can only be used in conjunction with 15, 16 and 17 tooth sprockets.



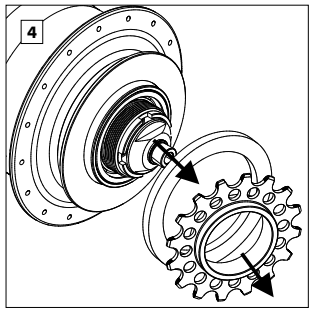
Remove the sprocket (see chapter "Service", paragraph 3. “Sprocket reversing/replacing”). Clean the sprocket and regrease the thread.



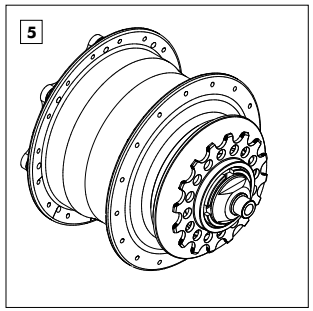
Place chain guide **A** and the mounting ring **B** onto the hub casing as shown above, screw the sprocket back on hand-tight. The mounting ring holds the DH chain guide the correct distance away from the sprocket.



The three grub screws **C** (M4x8 - 2mm allen key) should be screwed in evenly until they all touch the hub casing. Then tighten up all three screws in rotational order one complete turn at a time until they drill their way into the hub casing itself. During this process, the mounting ring will be trapped between the sprocket and the chain guide.



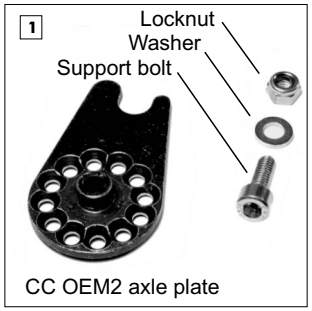
Unscrew each of the grub screws half a turn, this loosens the mounting ring so that the sprocket can now be removed. Make sure the pointed ends do not loosen out of the holes they drilled into the hub casing. Remove the mounting ring and tighten up all three grub screws ¾ of a turn.

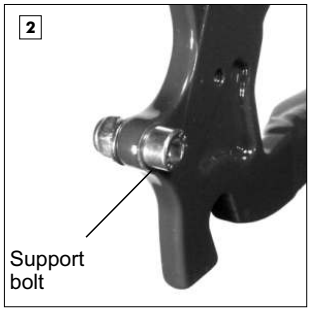


Lastly regrease the sprocket thread and screw the sprocket back onto the driver.

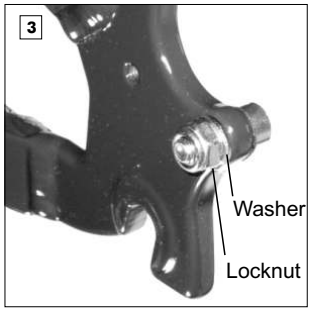
3.4 OEM2 mounting with a support bolt

The support bolt assembly for OEM2 mounting consists of a bolt (M6x16), a washer and a locknut. It is secured through the disc brake mounting hole of the dropout from the inside (tightening torque: 8Nm/71in.lbs.).





Mounted support bolt, view from inside the frame.



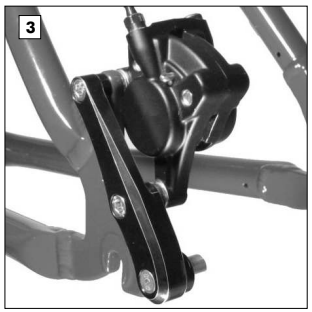
Mounted support bolt, view from outside the frame.

3.5 OEM2 mouting with a *Rohloff SPEEDBONE*

The *Rohloff SPEEDBONE* is mounted from the outer side of the frame and secured through the disc brake mounts into the brake caliper (paying attention to the brake manufacturers tightening torques). The original caliper securing bolts will be too short to mount through the *Rohloff SPEEDBONE* and should, therefore, be replaced by the long *Rohloff SPEEDBONE* securing bolts.

Rohloff SPEEDBONE (Art.No. 8550) with securing bolts.

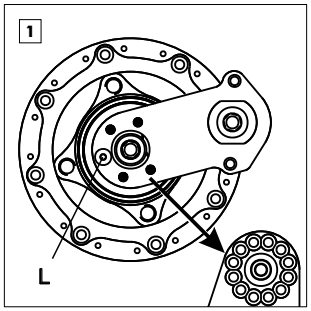
Mounted *Rohloff SPEEDBONE,* view from inside the frame.



Mounted *Rohloff SPEEDBONE,* view from outside the frame.

3.6 Brake discs

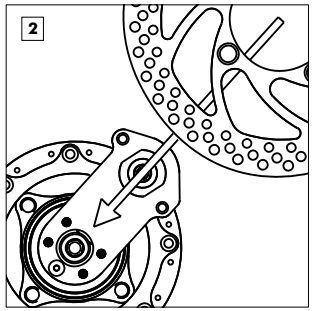
The *Rohloff SPEEDHUB 500/14* uses a disc mount with a central diameter of 52mm and a stable four bolt mounting system which in turn has a diameter of 65mm. The special *Rohloff* brake disc must be additionaly ordered.



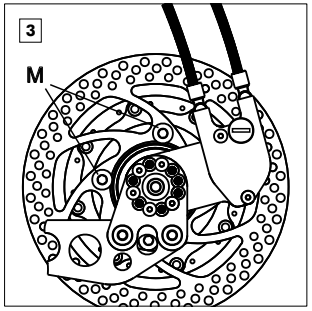
Remove the five axle plate screws (M4x25 - Torx TX20) along with the axle plate. Secure the external transfer box in place with one of these axle plate screws **L**.

ATTENTION

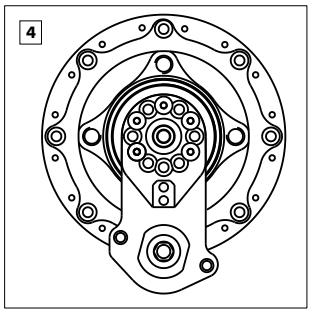
The external transfer box should not be removed as the gears within could fall out of synchronisation. See chapter “Service”, paragraph 5. "Exchanging of the gear mech".



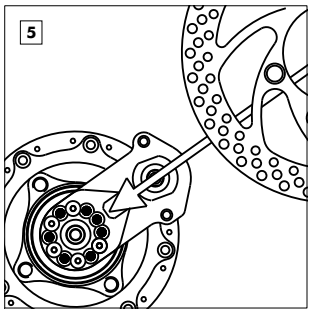
Place the brake disc over the external transfer box and locate over the center disc mounting. Pay close attention to the directional rotation of the brake disc!



Place the four mounting bolts **M** into position and screw them in tightly (M8x0.75x8.5 - 5mm allen key, tightening torque: 7Nm/61in.lbs.). Remove the axle plate screw **L** from the external transfer box and then replace all five axle plate screws through the axle plate itself and secure them back tightly into the hub axle (M4x25 - Torx TX20, tightening torque:



On OEM versions, the removal of the axle plate is not necessary when the axle plate lies direcly over the external transfer box (Pic 4). The brake disc can be mounted directly over these two components (Pic 5).



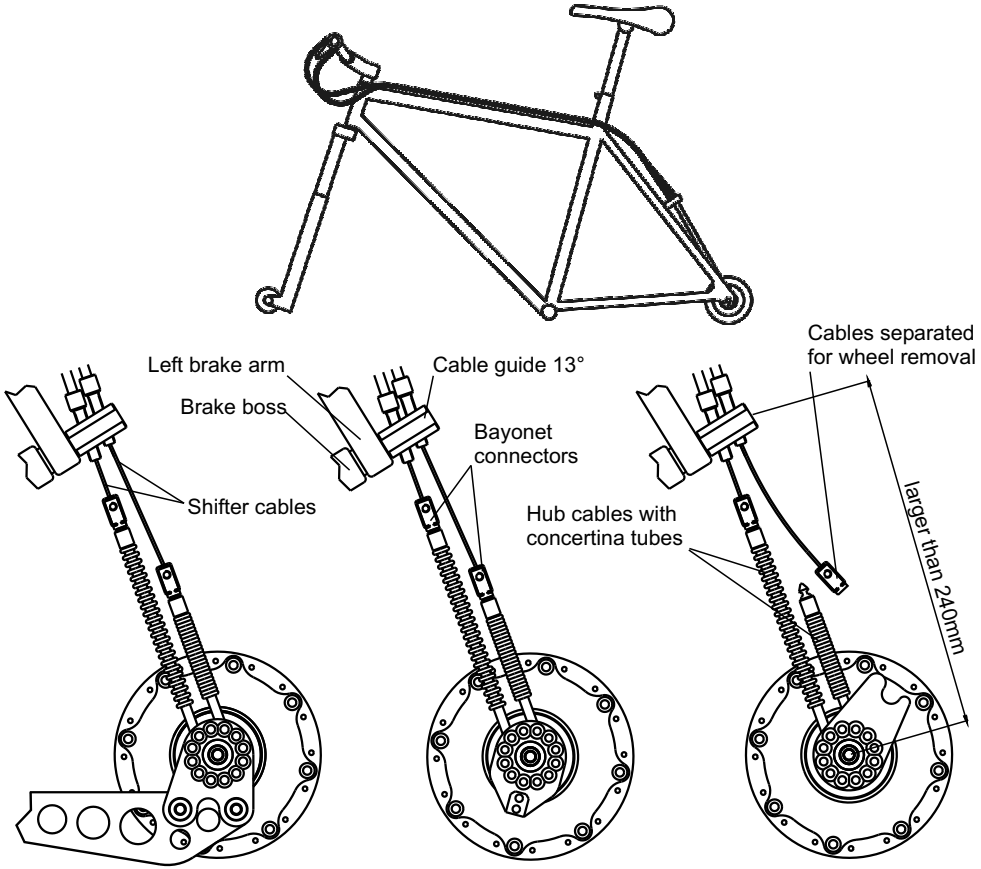
4. Cable routing and axle plate alignment

The alignment of the axle plate relies upon how the shifter cables are routed. The axle plate can be rotated in steps of 30° to find the optimum position for cable routing.

An optimum cable routing requires:
- less bending of the shifter cables
- the most direct route
- no kinks in the cables and housings

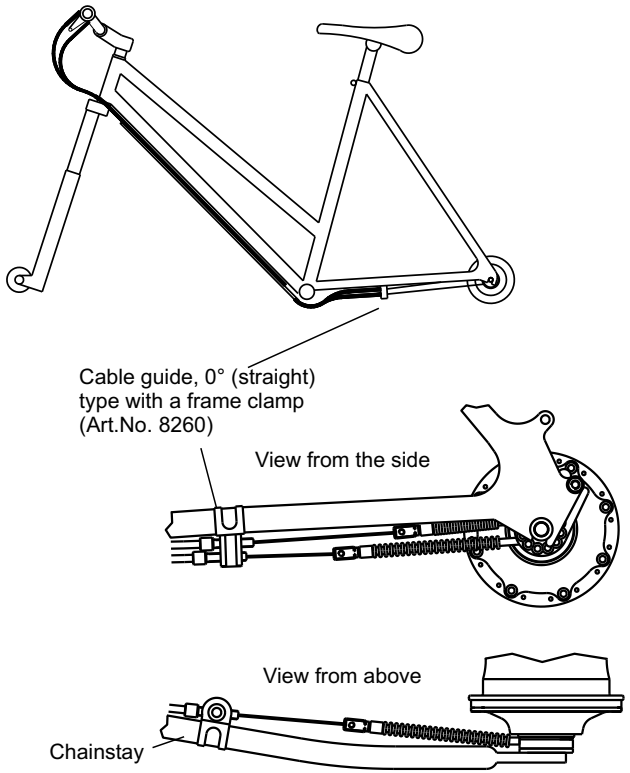
The following are examples of suitable cable routings. Of course, it is possible to select an alternative routing. To achive this, however, the axle plate must be aligned accordingly.

4.1.1 Internal gear mech via brake boss

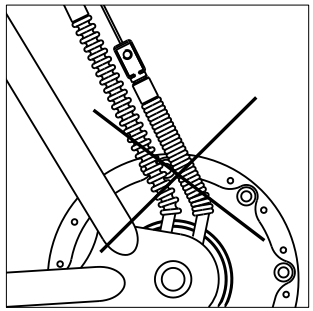


The diagrams show examples of the internal gear mech with the cable guide secured to the brake boss for the standard, the OEM and the OEM2 axle plates.

4.1.2 Internal gear mech via chainstay



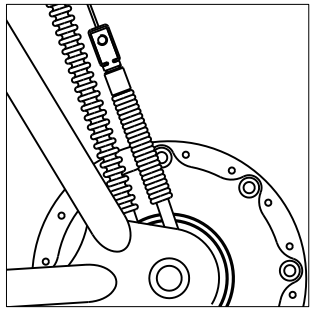
The diagrams show an example of the internal gear mech with the straight type cable guide secured to the chainstay.



Incorrect axle plate alignment

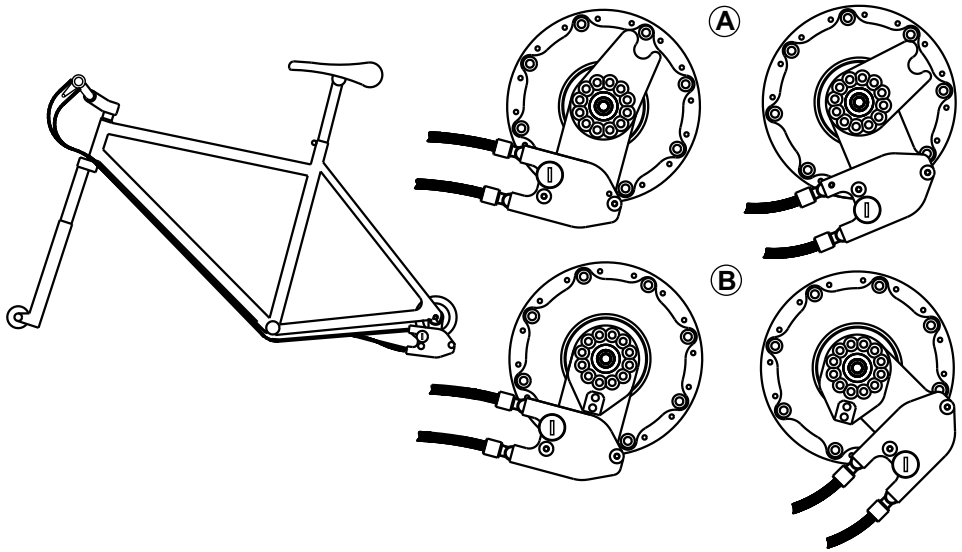
ATTENTION

When aligning the axle plate, make sure that the hub cables run in the straightest line possible to limit the amount of rub and friction against the cable guides.



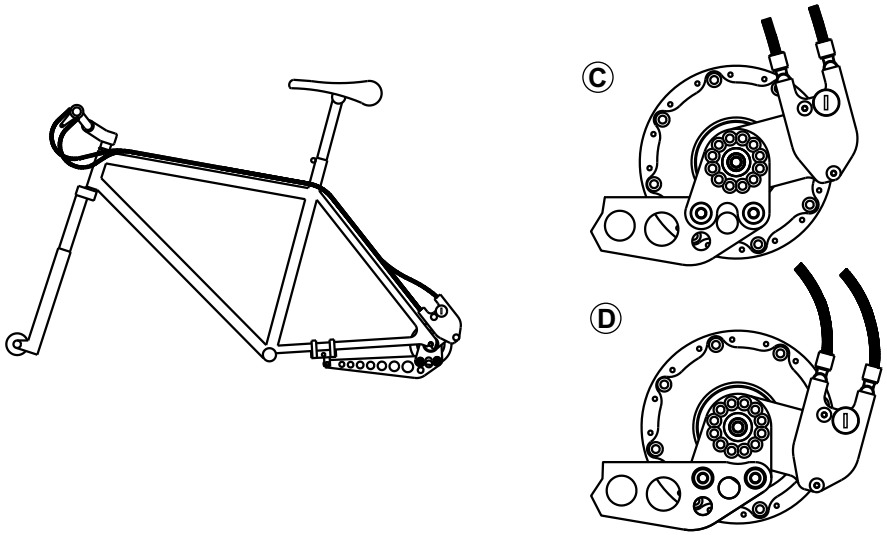
Optimum axle plate alignment

4.2.1 External gear mech OEM/OEM2



The diagrams above show the external gear mech with the cable routing via the chainstay for use with the OEM2 axle plate **A** and the OEM axle plate **B**.

4.2.2 External gear mech with long torque arm

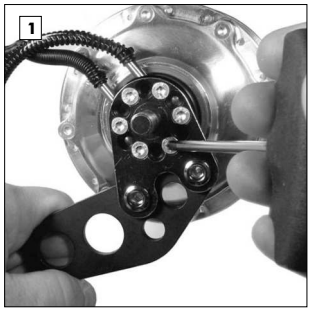


The diagrams above show the external gear mech in combination with the standard axle plate and the long torque arm. When the external transfer box needs to be in the position shown in diagram **D**, then the axle plate must be secured to the inside of the long torque arm.

4.3 Aligning of the axle plate

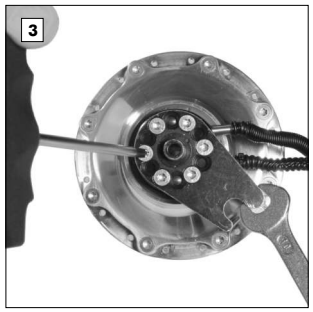
To align (rotate) the axle plate, all axle plate screws (M4x25, Torx TX20) must first be removed. Rotate the axle plate into the desired position and then reinsert the axle plate screws through the axle plate into the hub axle. Secure them tightly (tightening torque: 3Nm/25in.lbs.).

To hold the axle in position (when removing the axle plate screws), use a 10mm wrench on the OEM and OEM2 versions or simply hold the long torque arm tightly on the standard axle plate versions (see pictures below).



Standard axle plate with long torque arm: Hold the torque arm tightly while loosening/tightening the axle plate screws.

OEM axle plate: Hold the support block with a 10mm wrench while loosening/tightening the axle plate screws.



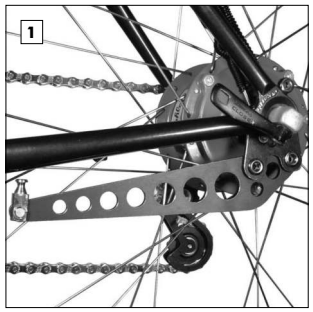
OEM2 axle plate: Hold the fork leg with a 10mm wrench while loosening/tightening the axle plate screws.

5. Mounting the wheel

5.1.1 *Rohloff SPEEDHUB 500/14* with long torque arm

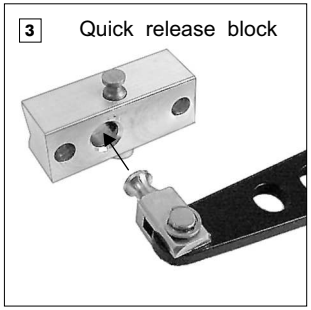
Mounting (CC versions)

The *Rohloff SPEEDHUB 500/14* CC versions are equipped with a quick release block for the long torque arm to enable a quick wheel removal. The quick release block must be secured to the chainstay.

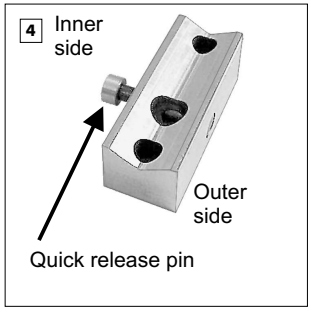


Place the rear wheel into the dropouts and rotate the axle, so that the long torque arm sits just underneath the chainstay. Close the quick release lever.

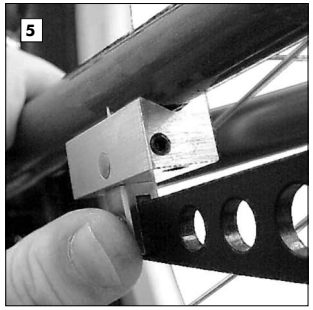
Bend the long torque arm sideways until the small end sits directly underneath the chainstay.



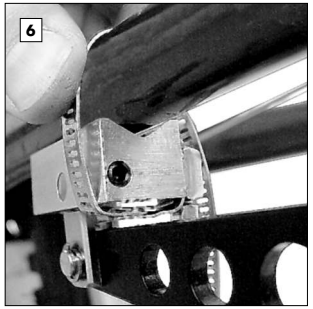
Insert the locating fork into the quick release block and push the quick release pin in. To ease this process, pull the torque arm down, away from the chainstay.



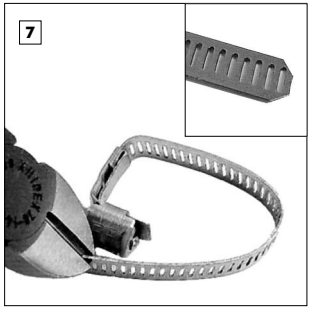
Closed position: The quick release pin is flush with the outer side of the quick release block (Pic 5). To open: Push the quick release pin from the inner side.



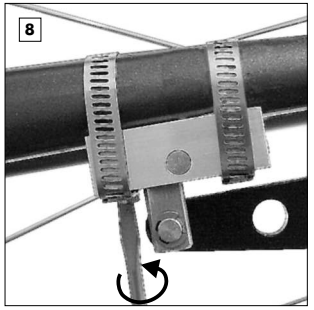
Push the long torque arm with the attached quick release block against the underside of the chain stay. The protuding side of the quick release pin must face inwards. With the axle quick release lever closed, check that the quick release block sits directly under the chainstay. If not, bend the torque arm into the correct position.



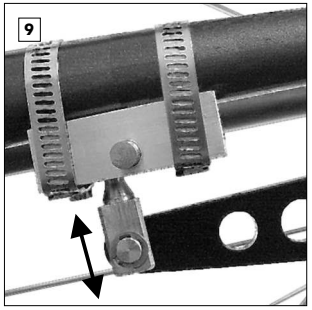
Both clamps should be bent around the chainstay into position as shown in the picture above. The securing bolts of the clamps must sit on the inside of the frame facing downwards.



Remove the clamps and (using wire cutters) trim them to the correct length. Small photo: Remove the sharp edges (Risk of injury).



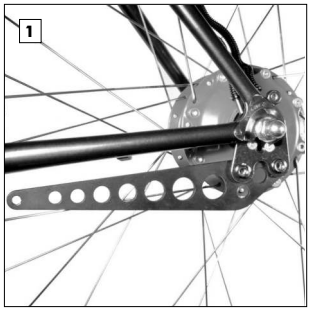
Fit both clamps and tighten the securing bolts evenly (tightening torque: 5Nm/43in.lbs.).



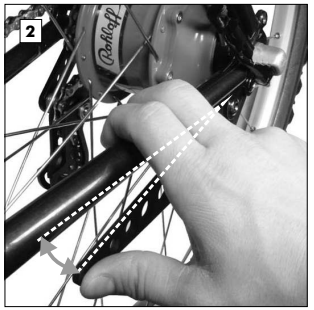
Open the quick release pin and the axle quick release lever, check that the locating fork can be easily swung in and out of the quick release block. If not, the clamps must be loosened and quick release block relocated accordingly.

Mounting (TS versions)

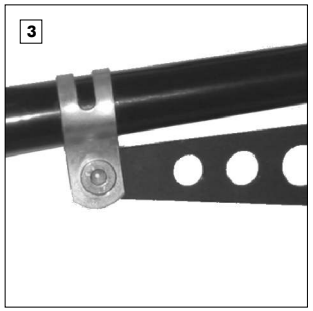
The *Rohloff SPEEDHUB 500/14* TS versions are equipped with a frame clamp for the long torque arm. This consists of a metal clamp, nut, bolt and washer.



Place the rear wheel into the dropouts and rotate the axle, so that the long torque arm sits just underneath the chainstay. Tighten the axle nuts.



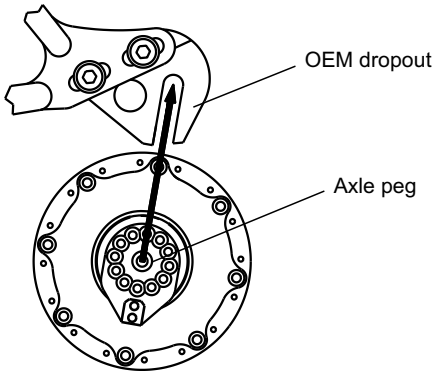
Bend the long torque arm sideways until the end sits directly underneath the chainstay.



Place the metal clamp over the chainstay and secure to the end of the long torque arm with the supplied bolt. (10mm wrench and 4mm allen key - tightening torque: 6Nm/51in.lbs.).

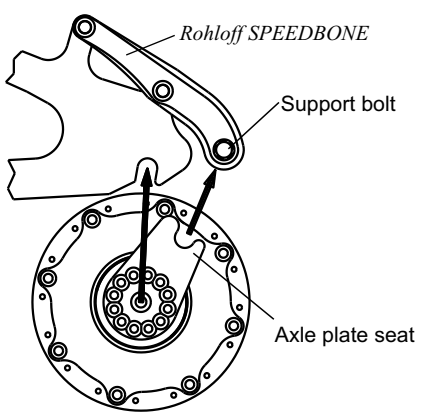
5.1.2 *Rohloff SPEEDHUB 500/14* with OEM axle plate

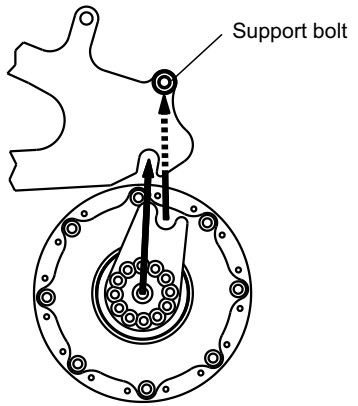
When mounting the wheel, the axle peg must be inserted into the long dropout slot first, followed by the support block. Before closing the quick release lever (CC versions) or tightening the axle nuts (TS versions), check that both axle pegs are sitting correctly within the dropout slots.



5.1.3 *Rohloff SPEEDHUB 500/14* with OEM2 axle plate

When mouting the wheel, the OEM2 axle plate seat must locate itself around the support bolt or the support peg of the *Rohloff SPEEDBONE*. Before closing the quick release lever (CC versions) or tightening the axle nuts (TS versions), check that both axle pegs are sitting correctly within the dropout slots and that the axle plate seat sits correctly around the support bolt/peg.



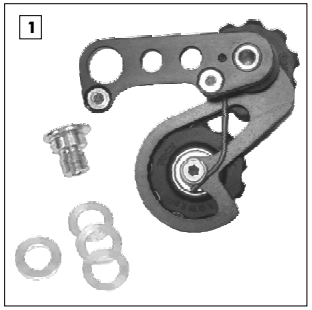


5.2 Chain tensioner

5.2.1 *Rohloff* chain tensioner (Art.No. 8250)

The *Rohloff* chain tensioner has a tension capacity of 10 chain links. It is mounted to the derailleur hanger. The appropriate chainline is adjusted by the use of the supplied washers.

1



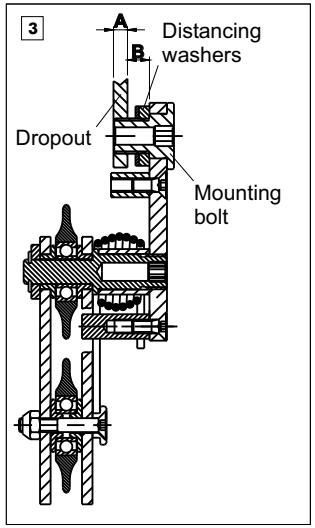
The *Rohloff* chain tensioner comes with a mounting bolt and four distancing washers (3 x 1mm, 1 x 3mm). With the distancing washers, it is possible to distance the *Rohloff* chain tensioner 1mm to 6mm away from the frame.

2

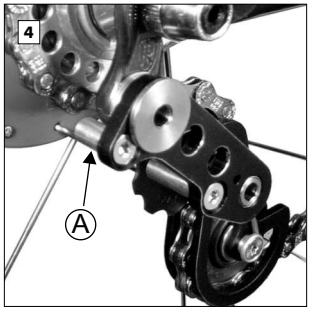
Dropout thickness	Chainline 54mm	Chainline 58mm
A [mm]	B [mm]	B [mm]
4	6	10
5	5	9
6	4	8
7	3	7
8	2	6
9	1	5
10	0	4

The table shows the required distance **B** to be filled by distancing washers in relation to the dropout thickness and the chainline used. When mounting the *Rohloff* chain tensioner in this correct distance from the dropout, it is guaranteed that the jockey wheels sit directly underneath the sprocket.

3

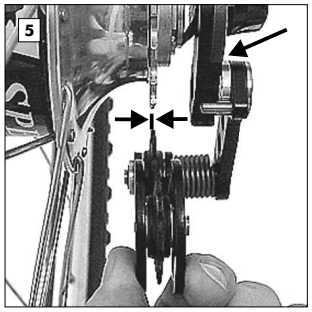


4



Secure the *Rohloff* chain tensioner, so that the end stop peg **A** sits against the back of the gear hanger. (5mm allen key, tightening torque: 8Nm/70in.lbs., lightly grease the mounting bolt).

5



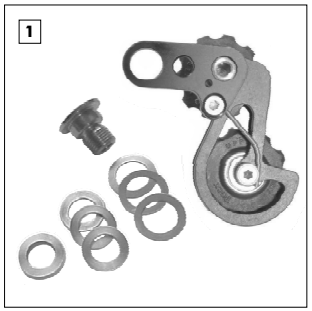
Make sure that the upper jockey wheel is correctly spaced with the distancing washers, so that it sits directly underneath the sprocket (arrowed).

ATTENTION

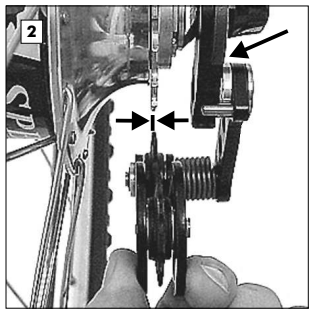
On dropouts thinner than 7mm, the use of the 13 tooth sprocket (chainline 58mm) will require the use of the longer mounting bolt. This is available separately (Art.No 8255).

5.2.2 *Rohloff* DH chain tensioner (accessory for downhill) (Art.No. 8245)

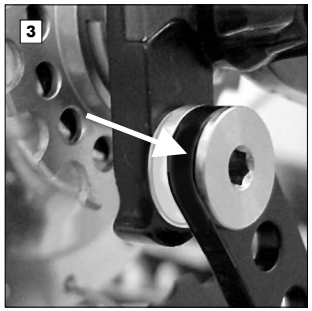
The *Rohloff* DH chain tensioner is specially designed for downhill use. It has a tension capacity of 10 chain links. In contrast to the regular *Rohloff* chain tensioner, it has a shorter swing arm that is restricted from moving. This feature ensures that the upper jockey wheel runs very close to the sprocket. This forced guide guarantees a positive run of the chain onto the sprocket even under extreme riding conditions. To remove the wheel, the chain tensioner mounting bolt must be loosened.



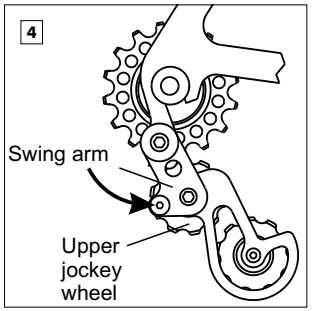
The *Rohloff* DH chain tensioner comes with a mounting bolt and seven distancing washers (3 x 1mm, 1 x 3mm, 3 x 0.2mm) or (1 x 0,5mm)

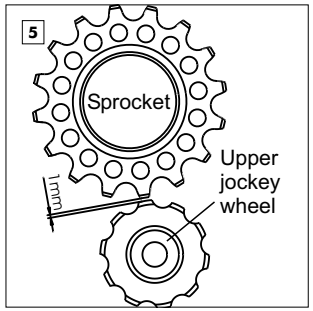


The position of the *Rohloff* DH chain tensioner must be mounted in line with the sprocket by the use of the distancing washers. Mounting procedure: See chapter "Mounting", paragraph 5.2.1. "*Rohloff* chain tensioner".



Place all three 0.2mm or one 0,5mm distancing washers between the outer side of the swing arm and the mounting bolt. This will guarantee that the swing arm is prevented from moving. Mount the *Rohloff* DH chain tensioner with the correct amount of distancing washers, so that the jockey wheels sit directly underneath the sprocket for the correct chain line.





Adjust the position of the upper jockey wheel. To do this, loosen the mounting bolt and swing the chain tensioner in the arrowed direction until there is approx. 1mm space between the jockey wheel and the sprocket. Retighten the mounting bolt (5mm allen key, tightening torque 8Nm/70in.lbs.).

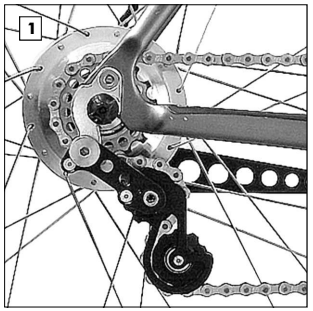
On dropouts thinner than 7mm, the use of the 13 tooth sprocket (chainline 58mm) will require the use of the longer mounting bolt. This is available separately (Art.No. 8255).

5.3 The chain

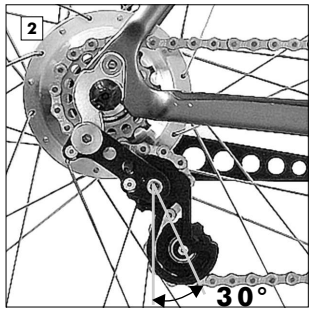
If the frame does not have *Rohloff* OEM dropouts, horizontal dropouts or an excentric bottom bracket enabling the chain to be tensioned, then a chain tensioner must be mounted.

5.3.1 Mounting with a chain tensioner

After mounting the chain tensioner (chapter 5.2) the chain line will be correct. Now the chain has to be mounted at the correct length.

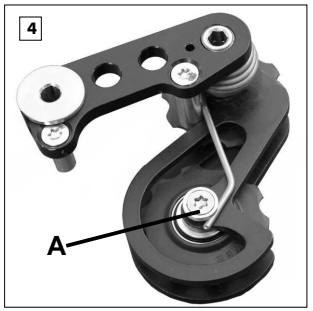


Fit the new chain over the chainring and sprocket and thread it through the chain tensioner.



On hardtail frames the chain length should be adjusted, so that the chain tensioner cage lies between 30° and the vertical position.

On rear suspension frames, check that the chain tensioner is not over-tensioned when the rear triangle moves the full amount of travel. The amount of chain links needed varies, depending on the position of the pivot point of the rear triangle. To check: swing the rear triangle to its end position (eg remove the rear shock spring). If the lower jockey wheel is higher than the upper jockey wheel, or if the chain tensioner cage is against the chain stay, then the chain must be lengthened.



POINTER

The *Rohloff* chain tensioner can be detensioned simply by releasing the spring from the concave washer **A**. This eases the mounting of the chain.

5.3.2 Mounting without a chain tensioner

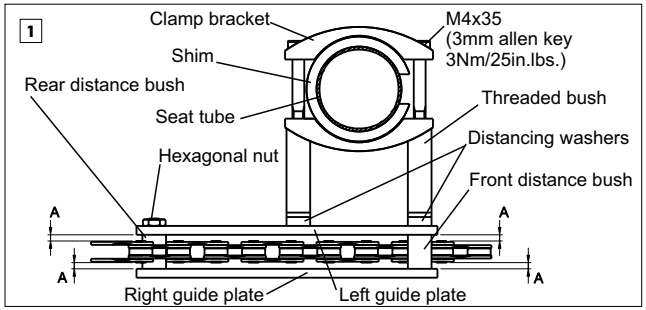
To mount a new chain, the distance between the bottom bracket and the axle must be set to the minimum.

Place the chain over the chainring and the sprocket. Remove the required amount of chain links, so that the chain is at the minimum possible length. Join the chain together following the manufacturers instructions.

Tension the chain by moving the wheel/bottom bracket until the chain no longer sags. This tension should be Regularly checked and if needed, appropriately adjusted.

5.4 *Rohloff* chain guide CC (Art.No. 8290)

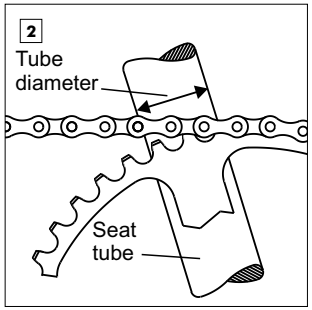
The *Rohloff* chain guide CC prevents the chain from springing off the chainring. The *Rohloff* chain guide CC is adjustable for chainlines (distance between frame center and chain center) from 52mm to 62mm.



The diagram above shows the *Rohloff* chain guide CC mounted with all mounting parts shown. The number/type of distancing washers and shims required varies depending on the frame. Therefore, a few measurements must be taken in order to mount the *Rohloff* chain guide CC correctly.

POINTER

For the extreme downhill use, a special downhill chain guide for the hub sprocket is recommended (Art.No. 8291).

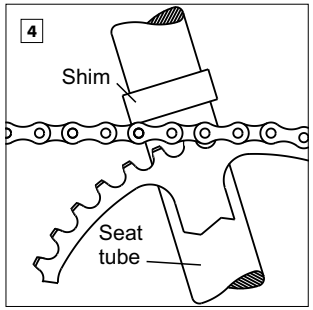


Firstly the seat tube diameter has to be measured at the point level with the top of the chainring.

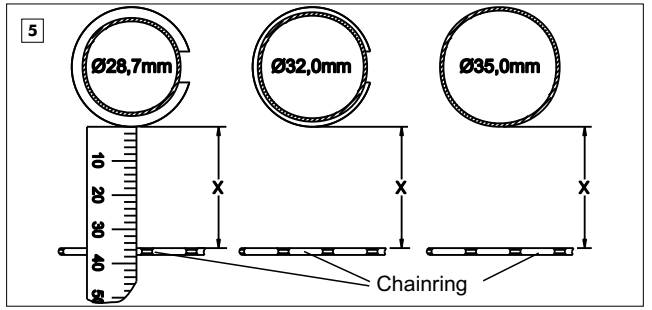
3

Tube diameter	Shim
Ø28,7	Ø28,7
Ø32	Ø32
Ø35	Ø35

To mount the *Rohloff* chain guide CC to a seat tube with a diameter smaller than 36mm, one of the three supplied shims will have to be used. The table shows the correct shim for the different seat tube diameters.



Clip the shim over the seat tube at the position level with the top of the chainring.



The distance X between the seat tube with shim and the inner side of the chainring determines how many distancing washers will need to be fitted. This is shown in the table.

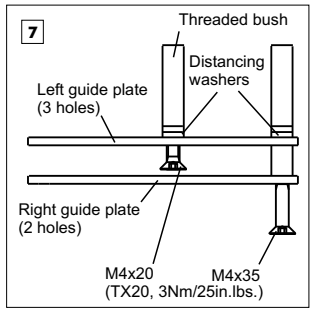
Example: X=35mm

A 1mm distancing washer and a 2mm distancing washer are needed between the front and the rear threaded bushes and the left guide plate.

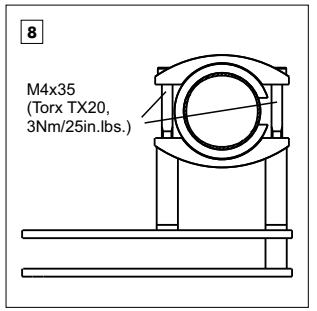
X (mm)	1mm distancing washer	2mm distancing washer
33	1	0
34	0	1
35	1	1
36	0	2
37	1	2
38	0	3
39	1	3
40	0	4
41	1	4
42	2	4

ATTENTION

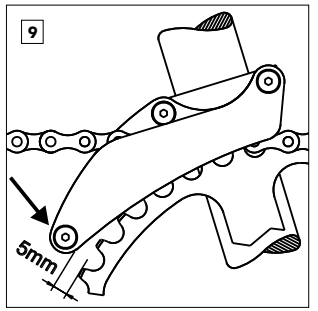
The number and thickness of the distancing washers must be the same on both threaded bushes.



The chainguide is mounted with the appropriate number and size of distancing washers up to the point shown in the diagram above. (M4x20 and M4x35 - Torx TX20, tightening torque: 3Nm/25in.lbs.).



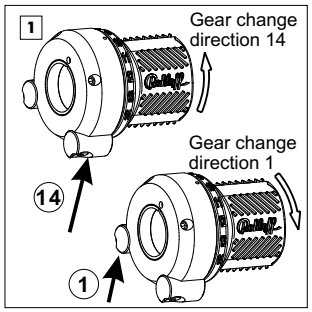
Mount the clamp brackets either side of the seat tube by screwing the bolts (M4x35 - Torx TX20) through the clamp brackets into the lightly greased threaded bushes of the pre-assembled chain guide. Locate the gap of the shim between the two clamp brackets.



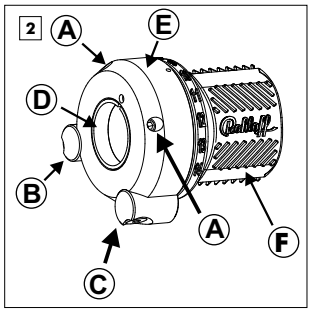
The rear distance bush (arrowed) can now be mounted using a lightly greased countersunk head bolt (M4x20 - Torx TX20, tightening torque 3Nm/25in.lbs.) and secured into the hexagonal nut below the upper chain run. Slide the chain guide down the seat tube until there is approx. 5mm between the rear distance bush and the teeth of the chainring. Make sure the chain runs parallel and central between the two guide plates (distances **A**, Pic 1).

6. Twist shifter

Fitting of the twist shifter

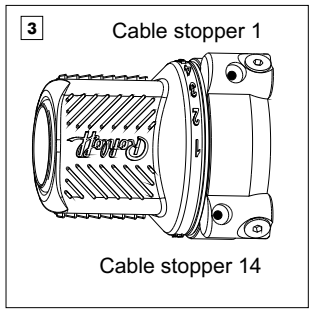


The twist shifter works with two shift cables. When the twist shifter is rotated forward (direction gear #14), than the rear shift cable 14 is pulled. When the twist shifter is rotated backward (direction gear #1), than the front shift cable 1 is pulled.



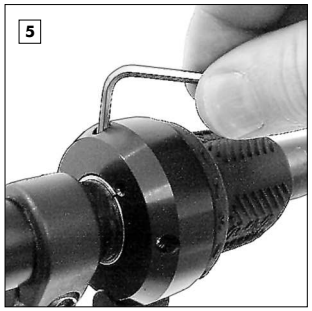
Twist shifter parts:

A Clamp screws
B Cable stopper 1
C Cable stopper 14
D Clamp ring
E Twist shifter casing
F Grip rubber

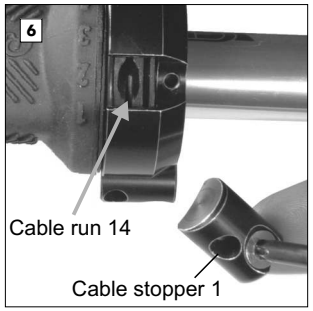


The cable stoppers 1 and 14 are fitted, so that the shift cables run parallel out of the twist shifter. The cable stopper 1 has its cable exit hole directly in the middle. The cable stopper 14 has its cable exit hole positioned to the side.

Slide the twist shifter onto the right hand side of the handlebars (diameter 22,0-22,3 mm) and turn the shifter casing, so that the two cable stoppers sit evenly on both sides of the brake lever.



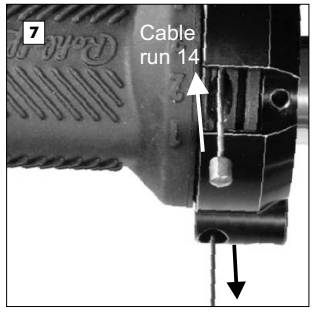
Remove the clamp screws (M5x8 - 2.5mm allen key), lightly grease them and refit them to clamp the twist shifter to the handlebars (tightening torque: 1Nm/8 in.lbs.).



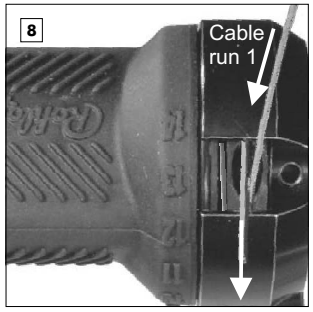
Remove cable stopper 1. Twist the grip rubber, so that the cable nipple seat of cable run 14 becomes visible (at the position of gear #2).

POINTER

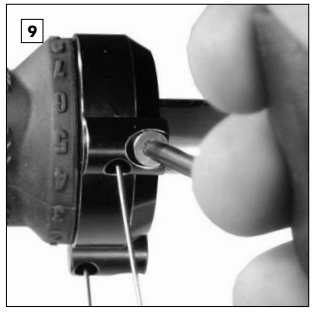
It is possible to mount both of the gear cables through the same hole of one of the cable stoppers.



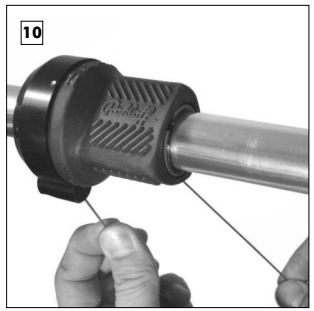
Insert the first shifter cable (shifter cable 14) into cable run 14 from below until cable appears out of cable stopper 14. Pull the cable until the nipple sits firmly in the cable nipple seat.



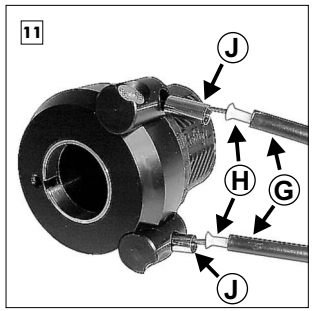
Twist the grip rubber, so that the cable nipple seat of cable run 1 becomes visible (at the position of gear #13). Insert the second shifter cable (shifter cable 1) into cable run 1 from above until the cable appears out of cable feed 1. Pull cable until the nipple sits firmly in the cable nipple seat.



Insert shifter cable 1 into the cable stopper 1 that was removed. Refit cable stopper 1 to the twist shifter casing (M4x16 - Torx TX20, tightening torque: 3 Nm/25 in.lbs.).



Now control that the twist shifter rotates freely by grabbing both shifter cables and pulling them in turn, so that the grip rubber rotates from just before the number 1 to just past number 14.



The flaired end to the liners **H** must be mounted between the cable housing **G** and the housing caps **J** at the twist shifter. This is important to prevent the liner from being pulled into the cable run itself.

ATTENTION

Mount the cables dry, without the use of grease or oil.

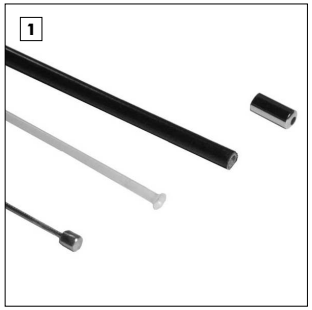
It may be necessary to adjust the angle of the twist shifter now that the cables are fitted, so that the cables don't touch the brake lever.

ATTENTION

Clamp the twist shifter only so tight that it is not possible to move the twist shifter casing by hand.

7. Cable routing

7.1 Shifter cables (Set 1,8m Art.No. 8268 / 2,5m Art.No. 8267)



The shifter cables each comprise of a spiraled outer housing (diameter 4.7mm), an inner nylon liner (diameter 2.4/1.9mm), a 1.1mm stainless steel shifter cable with a cylindrical nipple (diameter 4x5mm) and four cable housing caps.

The nylon liner is fitted into the cable housing, so that the flared end of the nylon liner is mounted at the twist shifter end. The cable housing cap is mounted over the flared end of the nylon liner to prevent it from entering into the twist shifter.

When mounting, make sure that the nylon liner flows from the twist shifter all the way through the housing and protudes out the other end at the gear mech. This way, the shifter cables are completely protected from moisture and dirt.

ATTENTION

The shifter cables are to be mounted dry (free from oil or grease). The nylon-stainless steel combination runs service free.

Cable clip (Art.Nr. 5200)

For problem-free cable routing, a special cable clip that holds both shifter cables neatly in position is available from *Rohloff*. It is suitable for frame tubes up to 35mm in diameter. It provides a tidy method of holding the shifter cables even on frames without cable guides. The clip can be easily opened and closed when replacing cables.

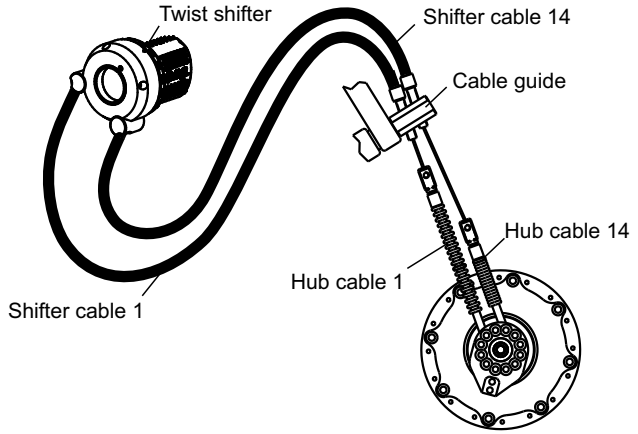
POINTER

The spiral housing of the shifter cables gives a positive feeling to the gear change through the twist shifter. Other shifter cable housings (eg SIS cables) reduce this positive feeling.

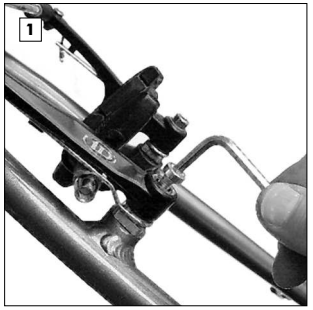
7.2 Internal gear mech

7.2.1 Cable routing via the brake boss

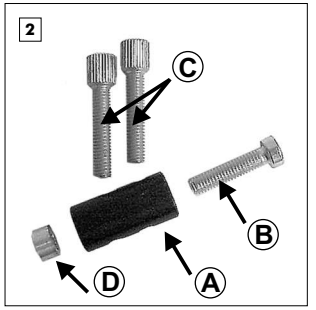
With the internal gear mech, the shifter cables run from the twist shifter to the cable guide. This could be located on the brake boss or by frame clamp on the chainstay. The minimum distance from the axle to the cable guide is 240mm.



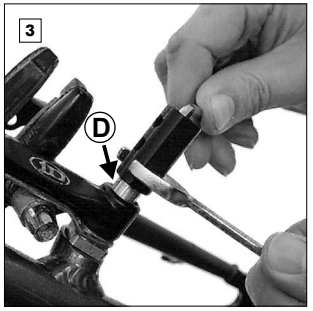
When pulling the shifter cable 1, lower gears are engaged. When pulling the shifter cable 14, higher gears are engaged.
Gear cable 1 lies to the front of the twist shifter as well as to the front of the cable guide. Gear cable 14 lies to the back of the twist shifter as well as to the back of the cable guide.



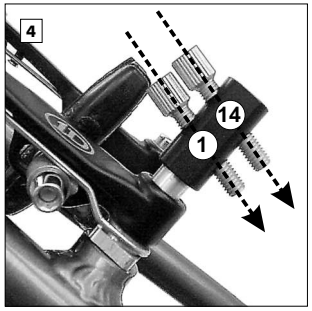
When routing the shifter cables of the internal gear mech along the top tube, the cable guide is mounted to the brake boss. Prior to routing the cables, the cable guide must be secured to the left side brake boss. The original brake boss securing bolt must be removed (this will be replaced with the new bolt supplied). All other parts of the brake remain in place.



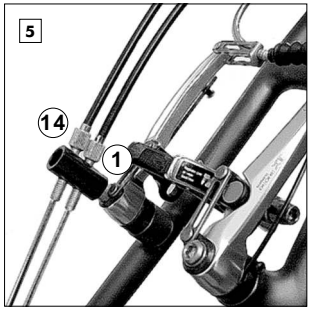
Cable guide 13°:
A Cable guide
B Mounting bolt (M6x25)
C Cable adjuster (2x)
D Spacer
Spacer **D** must be used when:
- Mounting bolt is too long for securing to the brake boss
- Cable guide **A** interferes with the smooth running of the brake operation (eg parallel push linkage certain types of V-brake system).



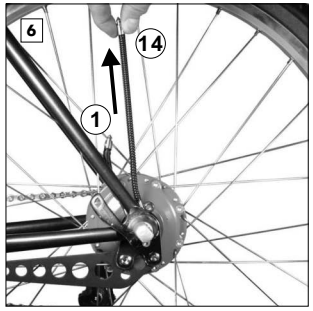
Fit the mounting bolt through the cable guide (and spacer, when necessary) and screw into the brake boss with a little grease (4mm allen key, tightening torque: 6Nm/51in.lbs.). Hold the cable guide in position with a 13mm wrench.



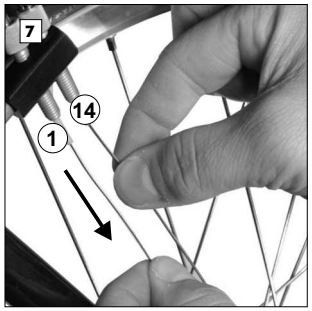
With a little grease on the bolt, screw the cable stop onto the brake boss. The cable stop should be held in position with a 13mm wrench during this process. This ensures that the cable adjusters face in the correct position once the cable stop is secure.



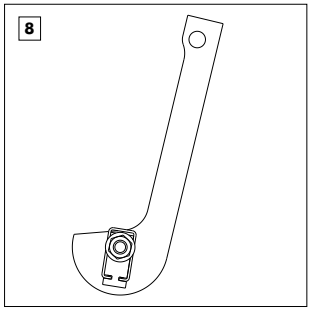
Thread shifter cable 1 from the twist shifter into the cable adjuster 1 at the cable guide. Do the same for shifter cable 14 into cable adjuster 14.



Select gear #14. Do this by holding the rear hub cable 14 by the bayonet connector and pulling this through all the gears until the end stop is reached (end position = gear #14).



Pull both shifter cables to the end stop in turn to make sure that the cable housings sit correctly in the cable stops. When pulling shifter cable 14, the twist shifter should turn in the direction of gear indicator #1. When pulling shifter cable 1 the twist shifter should turn in the direction of gear indicator #14. Should this not be the case, switch over the cables within the cable guide.

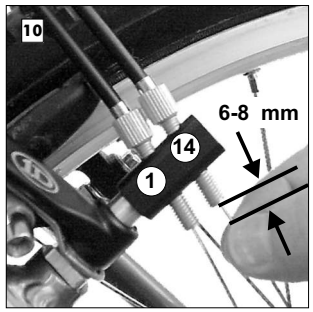


POINTER

The shifter cable measurement tool (Art.No. 8506) can be used for easy and precise measurement of the shifter cable length.

The following steps show how to correctly measure the shifter cable length without the help of this special tool.

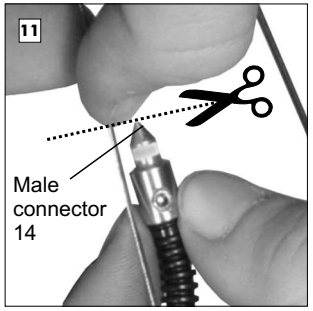
Pull shifter cable 1 to the end stop. The twist shifter will turn over gear indicator #14 to its end stop and shifter cable 14 gets pulled back.



Pull shifter cable until the gear indicator #14 on the twist shifter meets up with the red dot of the twist shifter body.

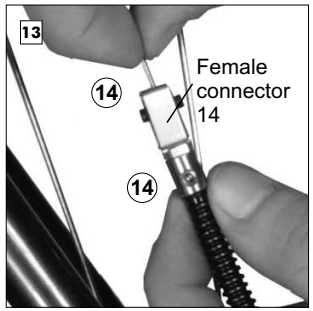
POINTER

Both cable adjusters must be unscrewed approx. two turns from the cable guide.

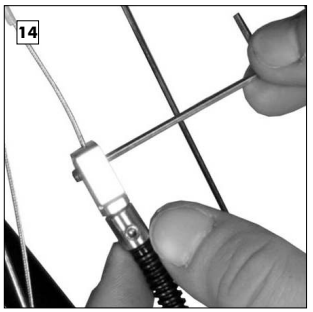


Pull hub cable 14 out by the bayonet connector until its end stop and hold it up against shifter cable 14. Cut the shifter cable at the point level with the top of the bayonet connector.

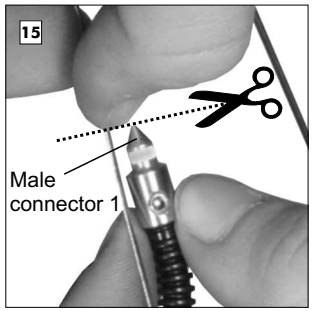
Unscrew both the headless screws of the female connector by approx. 2mm. Place the female connector over the male bayonet connector.



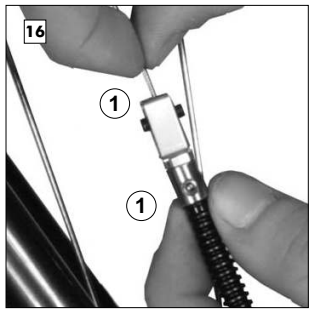
Thread the shortened shifter cable 14 fully into the hole of bayonet connector 14 (approx. 10mm deep).



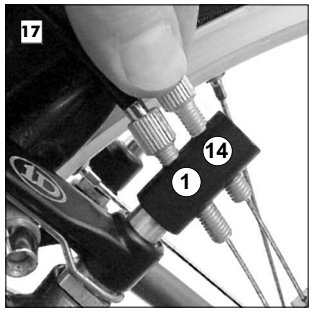
Tighten up one of the headless screws until it is flush with the outside of the female connector. Now tighten up the other headless screw. (M4x4 - 2mm allen key, tightening torque 1.5Nm/12in.lbs.).



Pull hub cable 1 out by the bayonet connector until its end stop. The connected shifter cable 14 will automatically be pulled in the other direction. Pull shifter cable 1 tight, so that the cable is tensioned and hold it up against hub cable 1. Cut the shifter cable at the point level with the top of the bayonet connector.



Open the male/female connectors of cables 14, so that joining shifter cable 1 with a female connector becomes easier. Place the female connector over the male bayonet connector and thread the shortened shifter cable 1 fully into the hole of the bayonet connector 1 (10mm deep), tighten up the headless screws. Rejoin the disconnected cables 14.

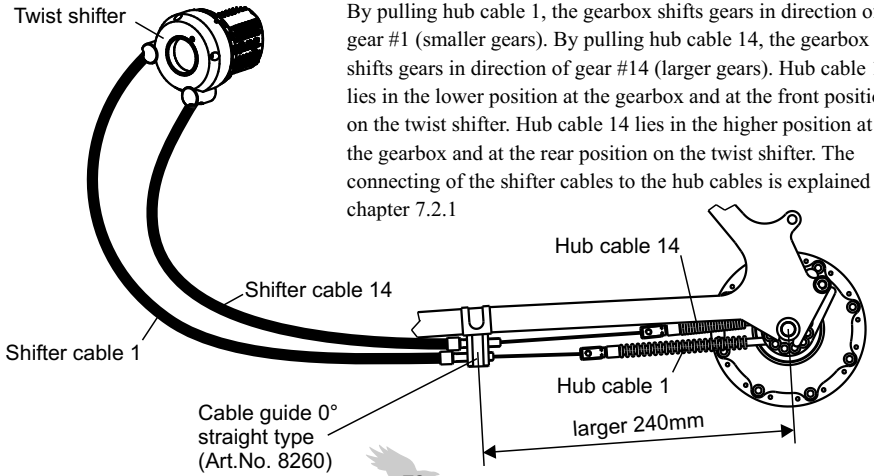


Turn the twist shifter back and forth several times to make sure that the shifter cables are sitting correctly within the cable guides. **For a lighter shifting, set the cable tension (by the use of the cable adjusters), so that the twist shifter has about 2mm play.** Winding out the cable adjusters increases the shifter tension, winding the cable adjusters in decreases the shifter tension.

Check that all 14 gears are available (14 gears = 13 clicks of the twist shifter) by rotating the twist shifter forwards to the end stop (gear #14) and backwards to the end stop (gear #1).

7.2.2 Cable routing via the chainstay

When routing the shifter cables via the chainstay, the straight type cable guide (Art.No. 8260) must be mounted at a minimum distance of 240mm away from the hub's axle. This should be mounted in a position, so that the hub cables run in the straightest line possible towards the shifter cables.

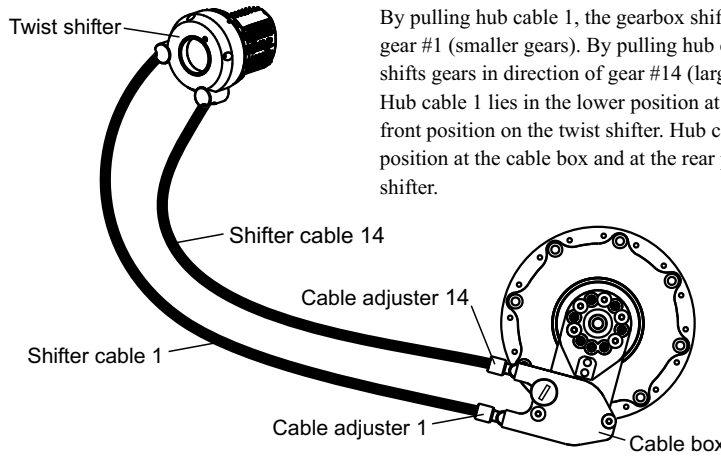


By pulling hub cable 1, the gearbox shifts gears in direction of gear #1 (smaller gears). By pulling hub cable 14, the gearbox shifts gears in direction of gear #14 (larger gears). Hub cable 1 lies in the lower position at the gearbox and at the front position on the twist shifter. Hub cable 14 lies in the higher position at the gearbox and at the rear position on the twist shifter. The connecting of the shifter cables to the hub cables is explained in chapter 7.2.1

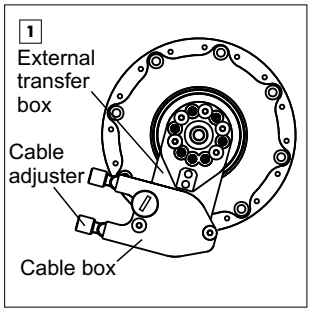
7.3 External gear mech

With the external gear mech, the shifter cables run uninterrupted from the twist shifter to the the cable box, for this reason, there is no need for a separate cable guide. The gear mechanism is controlled by the cable box which sits on the external transfer box, mounted directly on the hub.

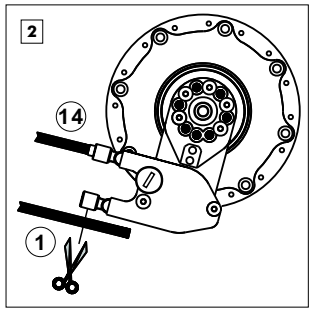
7.3.1 Cable routing via the chainstay



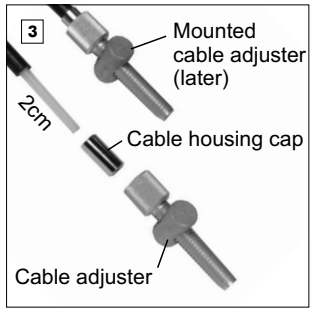
By pulling hub cable 1, the gearbox shifts gears in direction of gear #1 (smaller gears). By pulling hub cable 14, the gearbox shifts gears in direction of gear #14 (larger gears).
Hub cable 1 lies in the lower position at the cable box and at the front position on the twist shifter. Hub cable 14 lies in the higher position at the cable box and at the rear position on the twist shifter.



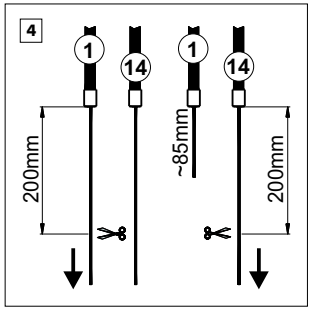
Secure the cable box to the external transfer box (which should be in the correct, pre-adjusted position) with the knurled headed screw. Insert the two cable adjusters into the cable box. The diagram shows the gear transfer box mounted in line with an OEM axle plate but the type and position of axle plate can vary from that illustrated.



Remove the nylon liner from the cable housing, route the shifter cables from the twist shifter in the direction of the cable box and cut the housing to the appropriate length. Replace the nylon liner into the cable housing from the twist shifter end and mount a cable housing cap on each end.



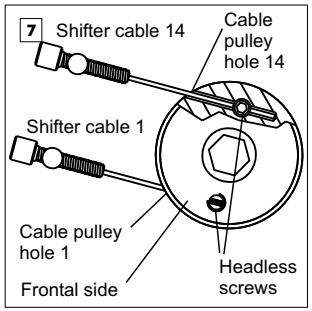
Cut the nylon liner at approx. 2cm past the end of the cable housing (the cable adjuster will sit over this later). Insert the shifter cable completely into the cable housing and check that the cable housing is sitting correctly in all cable stops. Do not mount the cable adjuster yet.



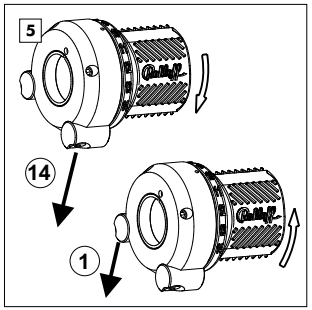
Pull shifter cable 1 completely out of the cable housing and cut the cable at a distance of 200mm from the end of the housing cap. Do the same for cable 14 (cable 1 automatically returns into the cable housing to a pertruding length of 85mm).

POINTER

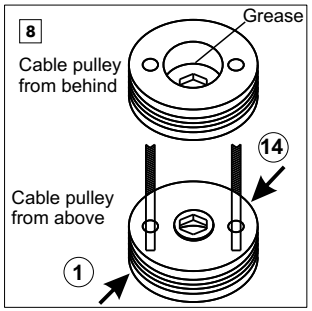
The 200mm measuring pipe (Art.No. 8712) can be used for quick and precise measurement of the shifter cables.



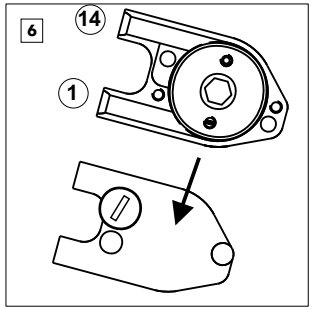
Loosen both headless screws approx. three turns (2mm allen key). Insert shifter cable 1 fully into cable pulley hole 1 and shifter cable 14 fully into cable pulley hole 14. Make sure that the front side of the cable pulley is facing upwards during this process (as in the diagram).



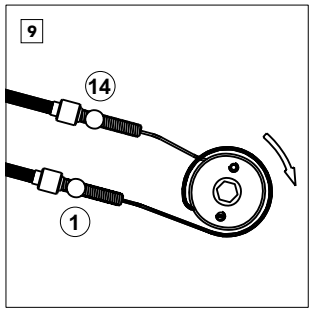
Insert the shifter cables into the cable adjusters. Pull out shifter cable 14 as far as possible, the twist shifter will rotate in the direction of end stop 1. Pull out shifter cable 1 as far as possible, the twist shifter will rotate in the direction of end stop 14. To make sure that the gear display doesn't get reversed, check that the lower shifter cable on the twist shifter is fed into the top adjuster on the cable box.



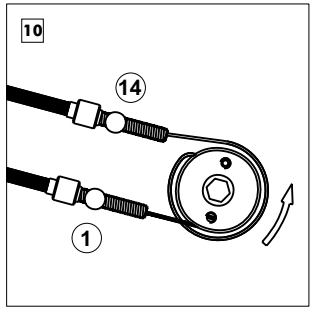
Tighten up the headless screw 1 from behind and the headless screw 14 from the front (M4x4 - 2mm allen key, tightening torque 1,5Nm/12in.lbs.).



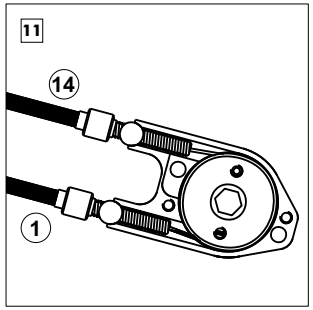
Remove the cable box from the external transfer box. Remove both torx screws (M4x10 - Torx TX20). Remove the cover of the cable box and remove the cable pulley.



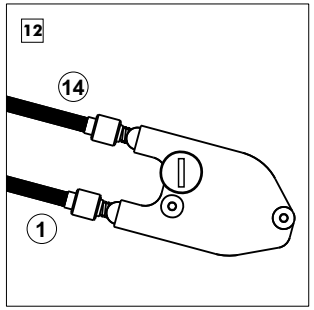
Wind shifter cable 1 clockwise around the cable pulley (making sure that the cable sits correctly within the cable runs).



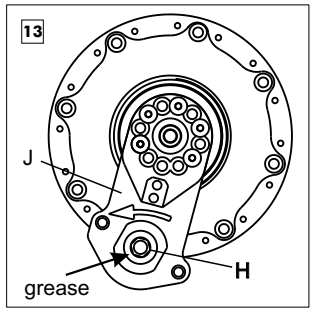
Wind shifter cable 14 anticlockwise around the cable pulley (making sure that the cable sits correctly within the cable run). **The cable pulley runs must be completely filled by the gear cables.**



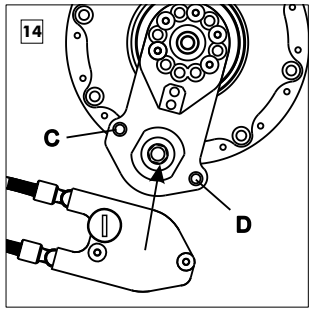
Place the cable pulley with the cable adjusters back into the cable box. Rotate the twist shifter from gear position 1 to gear position 14 and back to check that the cable pulley rotates freely.



With a little grease, use both torx screws (M4x10 Torx TX20) to reattach the cable box cover to the cable box (tightening torque: 3Nm/25in.lbs.).



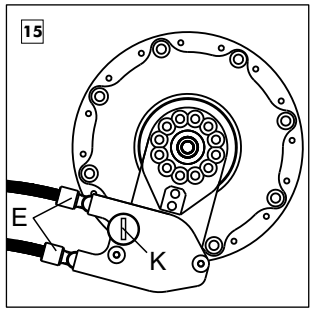
Turn the hexagonal peg **H** on the external transfer box **J** in an anticlockwise direction with the use of an 8mm wrench. This will put the gearbox into gear #14. Lightly grease the brass bearing ready for the cable pulley.



Rotate the twist shifter into gear position 14 and using the two locating pegs **C** and **D**, place the cable box over the external transfer box.

POINTER

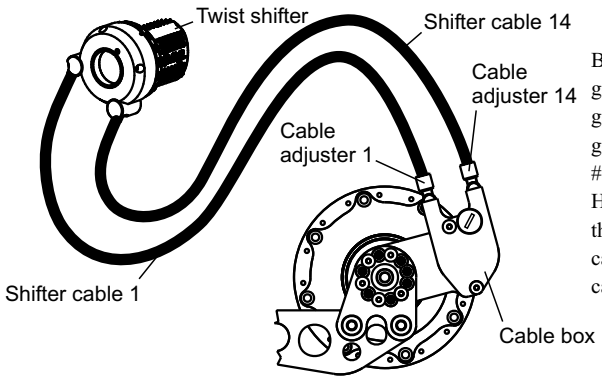
Rotate the twist shifter around the gear position 14 to ease the connection of the cable box to the external transfer box.



Connect the cable box securely to the gear transfer box and tighten up the knurled head screw **K**. **For a lighter shifting between gears, set the cable tension (by the use of the cable adjusters E), so that the twist shifter has about 2mm of play for a lighter shifting between gears.**

7.3.2 Cable routing via the top tube

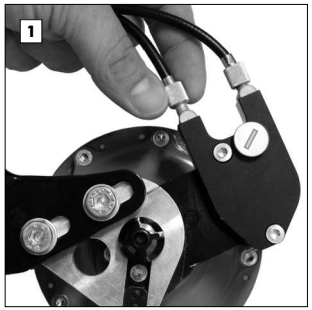
The cutting of the shifter cables, nylon liner and the cable housing as with the mounting of the cable pulley are to be carried out the same as in chapter 7.2.1.



By pulling hub cable 1, the gearbox shifts gears in direction of gear #1 (smaller gears). By pulling hub cable 14, the gearbox shifts gears in direction of gear #14 (larger gears).
Hub cable 1 lies in the front position at the cable box and on the twist shifter. Hub cable 14 lies in the rear position at the cable box and on the twist shifter.

7.4 Adjusting the gear display

The gear display is to be found on the body of the twist shifter. The twist shifter rubber itself has the numbers 1 - 14. The gear display can be correctly aligned with the help of the cable adjusters on the cable guide (internal gear mech) or on the cable box (external gear mech).



After the cable tension has been correctly adjusted, the gear display can be adjusted by winding one cable adjuster in and the other outwards by equal amounts.

Check that all 14 gears are available (14 gears = 13 clicks of the twist shifter) by rotating the twist shifter forwards to the end stop (gear #14) and backwards to the end stop (gear #1).

ATTENTION

If all 14 gears are not reachable after connecting the cable box to the external transfer box, then the gearbox or the twist shifter were not in gear position 14 while connecting. To correct this, see chapter "Service", paragraph 2. "Maintenance and care".

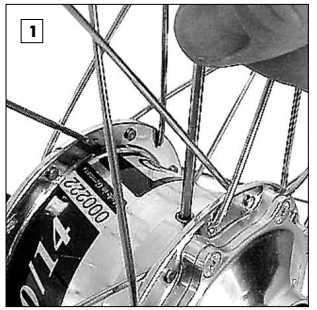
8. First oilfill

Filling with oil

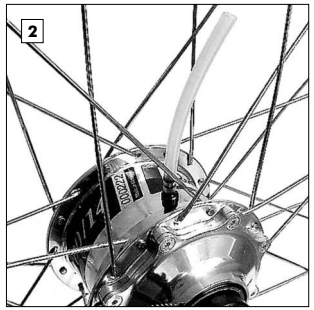
When the *Rohloff SPEEDHUB 500/14* is delivered as a complete wheel or fitted in a complete bike, then it is already filled with oil. When not, it will need to be filled with 25ml *Rohloff SPEEDHUB OIL* before usage. A 25mm bottle of *Rohloff SPEEDHUB OIL* is included in the package.

POINTER

For a quick and clean filling of the oil or when changing the oil, we recommend the use of the *Rohloff* Oil Change Kit (Art.No. 8410).



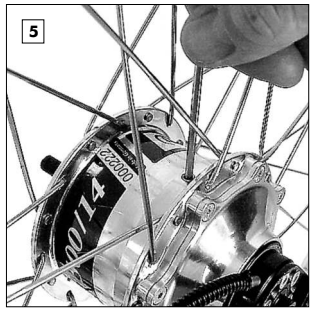
Turn the hub so that the drain screw can be seen on the top. Remove drain screw (3mm allen key).



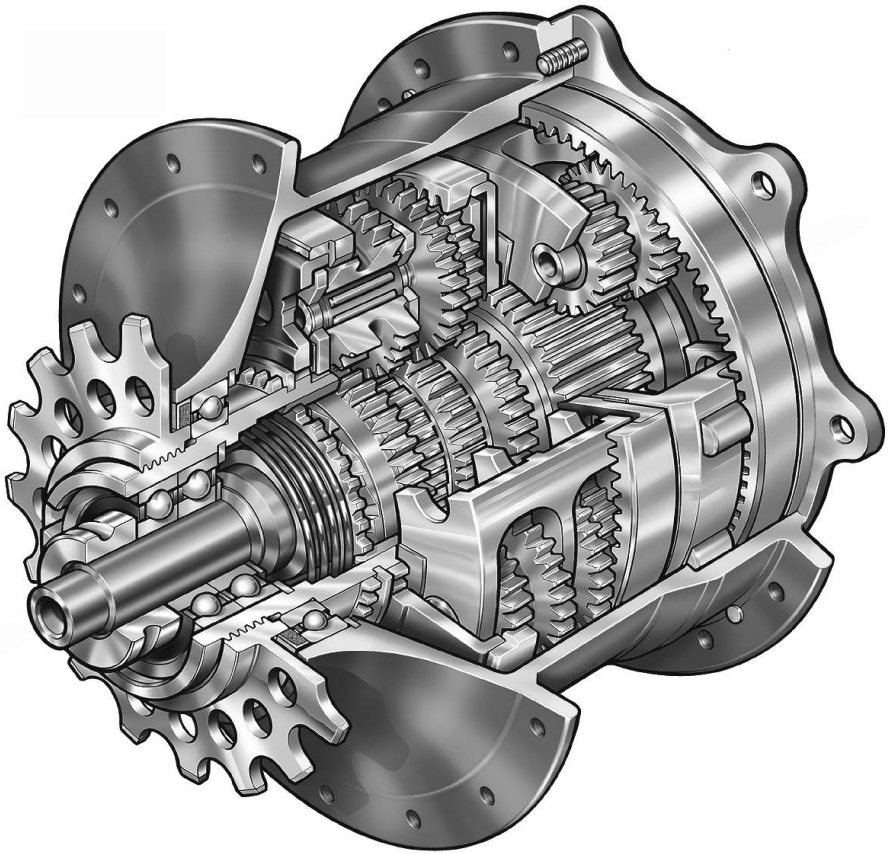
Screw the oil filling tube into the oil drain hole and insert the nozzle of the oil bottle into the filling tube. Continually squeeze the oil bottle until the contents has been completely filled into the gearbox.

To fill the hub via syringe, fasten the oil filling tube to the syringe and secure it with a drop of superglue before use. Draw the *SPEEDHUB OIL* into the syringe, then screw the tube into the drain hole.

Squeeze the *Rohloff SPEEDHUB OIL* into the gearbox. To equalize the air pressure within the hub, approx. 25ml of air should be drawn back into the syringe. This will prevent the oil from leaking out of the hub, when removing the filling tube.



Replace the oil drain screw and tighten this up securely (3mm allen key, tightening torque: 0,5Nm/4in.lbs.).



Rohloff SPEEDHUB 500/14 in cutaway view