WORKSHOP 2002

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Rotes Garantiekarten-Anforderungsblatt beachten!

Read red sheet and order warranty card!

Lisez la feuille rouge et commandez la carte de garantie!

H 33 S

FIRM TECH

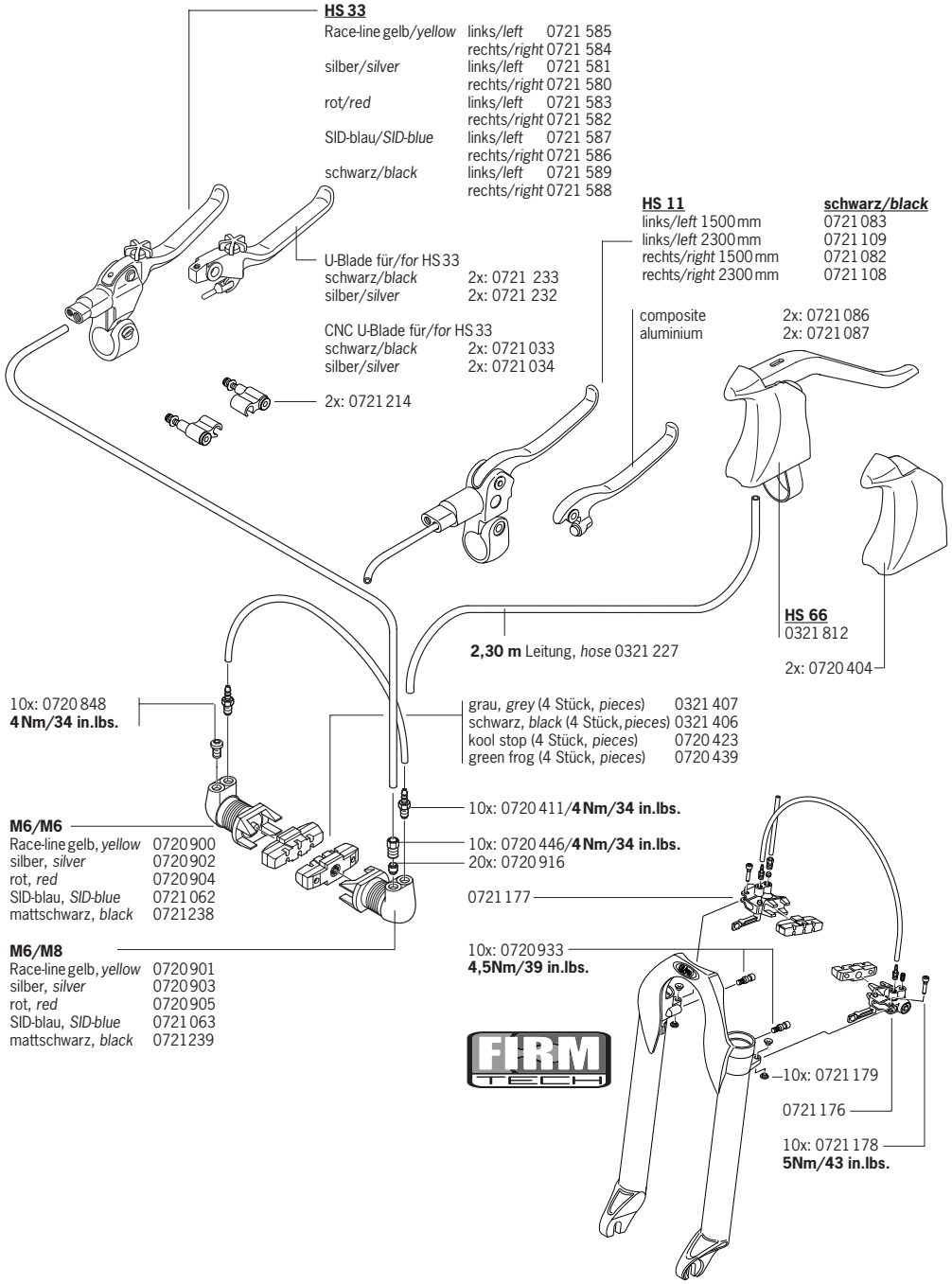
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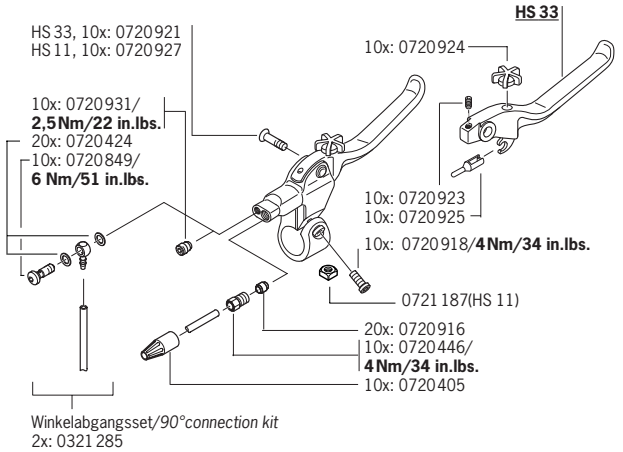
hs 66

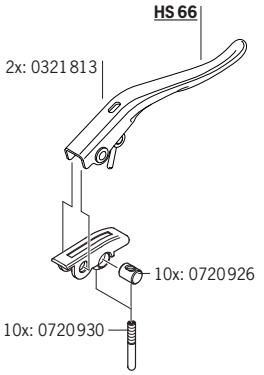
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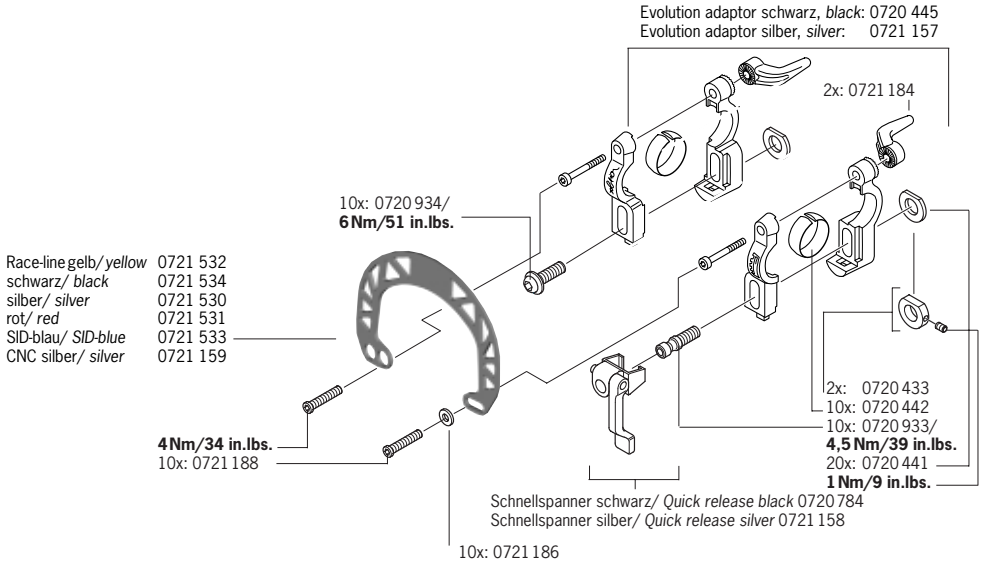
Available spare parts 2002/max. tightening torques

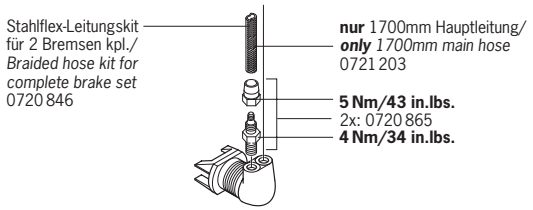
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1. Brake Mounting

Attention! For your own safety you should not overestimate your technical skills! We advise you to leave the following works in case of any doubts to a professional bike mechanic.

Check before every ride:

-Make sure that the brake system does not have any mechanical damage.
-Make sure that the brake system does not have any leaks by activating the lever blade, holding it and checking the tubing connections for eventual leaks.
-Make sure that the brake lever pressure is o.k. by pulling the lever blade and ensuring that full braking performance is achieved before the lever blade touches the handlebar.
-Make sure before every ride that the quick release is closed and that the quick release tension is correct (see page 18 paragraph.10)
-Check the thickness of your brake pads and change them on time. (c.f. chapter 4 maintenance and brake pad change)
-Check your rims (subject to wear). Read carefully the safety instructions from the wheel or rim manufacturer.
-Make sure that the rim and the brake pads are free of oil and grease.
-It is important to completely understand the operation of your brakes. Improper use may result in loss of control or an accident, which could lead to severe injury. Be sure to learn proper braking techniques and the operation of your bicycle. Consult your professional bicycle dealer and your owner's manual for this.

■ Tools for mounting (+maintenance)



- Allen key 2*, (3), and 5mm
- 8mm open end wrench
- sharp knife

(*delivered with the brake)

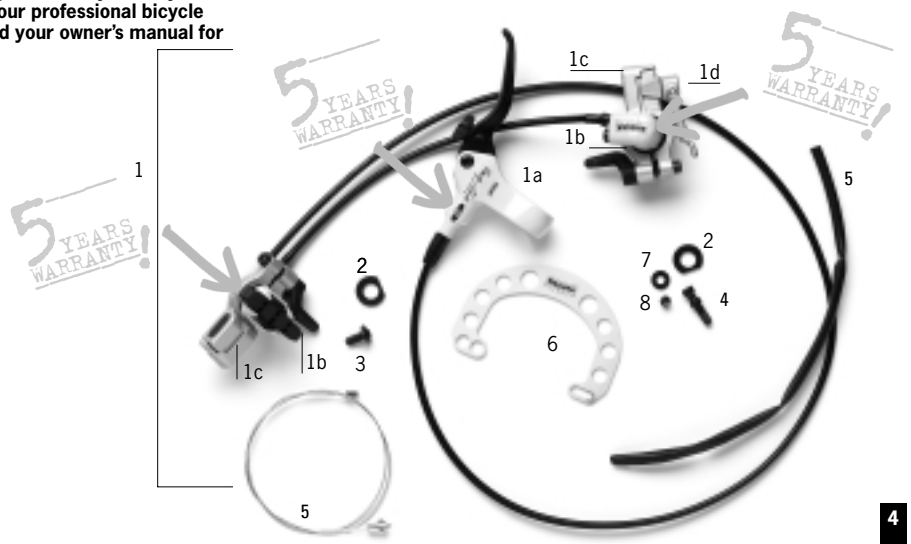
Please insert the allen key completely to avoid damaging the bolts.

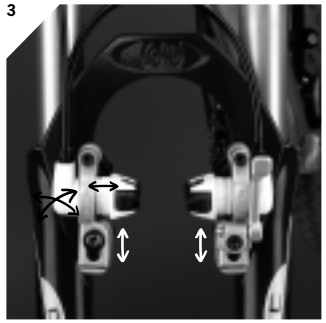
1 Unpack your MAGURA brake and arrange all parts (The quantities mentioned here refer to after-market sales boxes including a complete brake set)

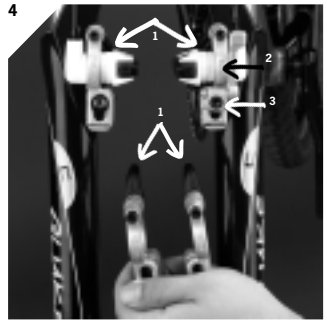
- 1 Preassembled brake, filled and bled, ready for mounting (2 pieces)
  - 1a brake lever (or master cylinder)
  - 1b brake cylinder (or slave cylinder)
  - 1c evolution adaptor
  - 1d quick release
- 2 cantistud U-washers (4 pieces)
- 3 fitting bolt for evolution adaptor (2 pieces)
- 4 quick release (or hourglass) bolt (2 pieces)
- 5 hose installation kit (1 piece)
- 6 brake booster (only HS 33 models, 2 pieces)
- 7 washer for brake booster (2 pieces)
- 8 olives (2 pieces)

Contents in the sales box may vary, mainly in the US!

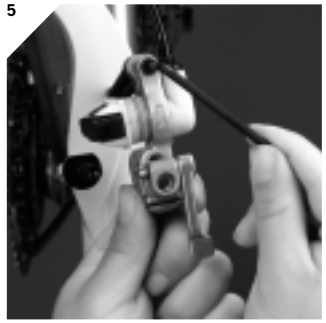
2 Mount the brake lever onto the handlebar. **(Tightening torque 4Nm/34 in.lbs)**
The following pictures show the installation of the brake with the wheel removed to show some details better. Leaving your wheel on your bike when you mount your MAGURA brake will make the installation much easier.




3



4

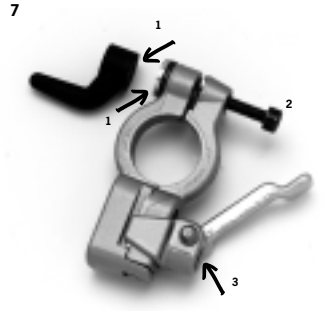

5

3 **Now a few fundamentals.** Please note that the slave cylinders can be adjusted in several positions in the evolution adaptor brackets before the fitting bolts and quick release are tightened (black arrows). Loosen the screws to position the slave cylinders, to either move the whole adaptor up and down (white arrows), or to move them closer to or further away from the rim. The evolution adaptor offers ample adjustment possibilities which are necessary because rim and frame dimensions can vary a lot between different bikes.

4 **In some cases (e.g. extremely narrow rims) it might be better to change the adaptors from one side to the other. The MAGURA embossed side (arrow 2) is interchanged with the Evolution embossed side. The quick release (arrow 3) must be mounted on the right side (your are standing in front of the brake and facing it). The quick release lever points up in the closed position. The black elbows (arrow 1) are adjustable and point preferably downwards (for better tire clearance!). They must always block against the fork or frame.**

5 Loosen the bolts (allen key 5mm) slightly to adjust the slave cylinder. Remove the bolts if you have to switch the sides of the evolution adaptor brackets.


6



7

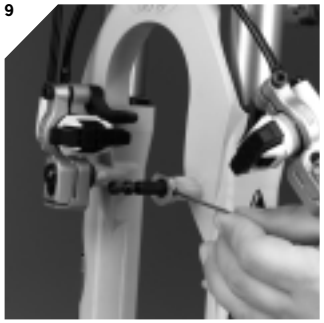

8

6 This is a good time to see how easy it is to change MAGURA brake pads. Simply click them in!

7 **Evolution adaptor details.** The black elbow can be adjusted with the toothed washers (arrows 1) as long as the fitting bolt (2) is not tightened. The elbow points preferably downwards (for better tyre clearance).
The elbows must always block against the fork or frame.
The quick release (arrow 3) is held into the evolution adaptor bracket so that it cannot get lost. It is always mounted on the right side (your are standing in front of the brake and facing it).

8 Mount a canti-stud U-washer on both canti-studs, flat side pointing up.
Tip: to prevent losing the washers if the wheel is removed, use silicon glue to semi-permanently fix them on the studs. Fit left evolution adaptor side on the canti stud by using the 5mm allen bolt. **Black elbow must block against the fork or frame!** Position the brake cylinder in the adaptor bracket so that the pads are **parallel** to the rim. **Distance rim/pad 2mm**. **Do not yet fully tighten the bolts.** Partially screw the quick release hourglass bolt (arrow) into the canti-stud (5mm allen key).

9



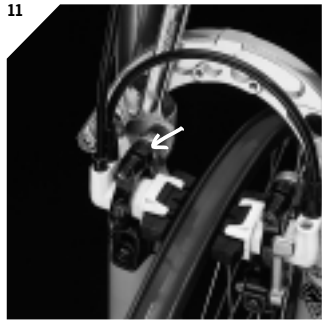
9 When installing a MAGURA on a suspension fork, some fork boosters may cause clearance problems. The suspension spacers (available as an accessory) move the adaptors forward for better clearance of the black elbows. They are installed **instead** of the U-washers and come with a 2mm allen set screw to fix them to the cantistuds, thereby eliminating the chance of losing one when the quick release is open.

10



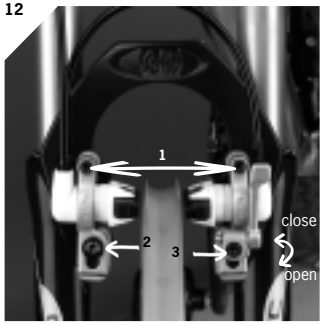
10 Adjust the black elbow of the right adaptor side accordingly. Mount the right adaptor. Pass the quick release **over** the quick release screw. **Position the brake cylinder in the adaptor bracket so that the pads are parallel to the rim.** Distance rim/pad 2mm**. Black elbow must block against the fork or frame!** Close the quick release. It points up when closed. **The quick release tension is adjusted by turning in the hourglass bolt clockwise when the quick release is closed.**

11



11 Former MAGURA models came with a silver elbow. You need a 13mm open end wrench for correct adjustment (arrow). **The black and silver elbows are not inter-compatible!**

12

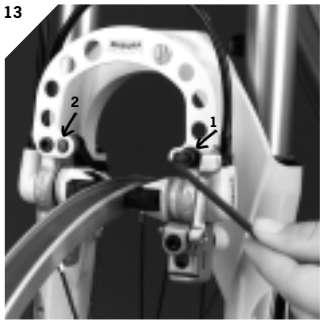


12 A perfect aligned MAGURA brake:
- brake pads **parallel** to the rim, distance pad/rim 2mm on both sides.
- Connection hose between the brake cylinders points inboard, i.e. frame/fork. - Black elbows block against the fork or frame.
-Quick release points up when it is closed. Check the quick release tension when it is closed and increase it, if necessary, by turning in the hourglass bolt (3) clockwise.

Now tighten the fitting bolts (allen key 5mm):

upper bolts 1:
(Tightening torque 4Nm/34 in.lbs)
center bolt 2:
(Tightening torque 6Nm/51 in.lbs)
hourglass bolt 3:
(Tightening torque 4,5Nm/39 in.lbs)

13



13 Installation of a brake booster. The side with the single wide hole is mounted on the quick release side of the adaptor. Do not forget the washer under the head of the fitting bolt (arrow 1). **(Tightening torque 4Nm/34 in.lbs).** On the opposite side one of the round holes just slips over the existing bolt. If ever your tyre should touch the booster here (arrow 2) just cut it off with a wire-cutter.

2. Installation of FIRM-tech models

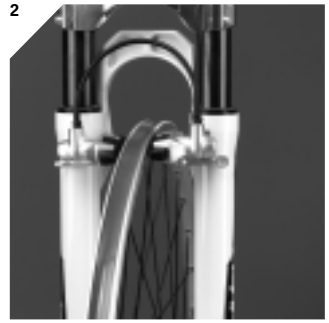
If you are the proud owner of a MAGURA suspension fork with FIRM-tech equipment, the installation is a snap. Install the fork and mount the brake lever to the handlebar as described above.

1



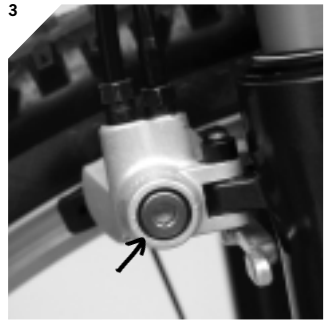
1 Check out the double quick release comfort! To **open** it push the quick release in direction of the wheel; you can now move the brake cylinder to change your wheel or the brake pads.

2



2 Close the quick release: Push the brake cylinder back towards the fork. Close the quick release by doing the same. That's all!
A booster is not necessary with FIRM-tech and not foreseen either. It is not possible to mount one!

3



3 Adjust the brake pads to the rim width with the 5mm allen screw which is integrated in the brake cylinder. By turning the screw clockwise the pad approaches to the rim.

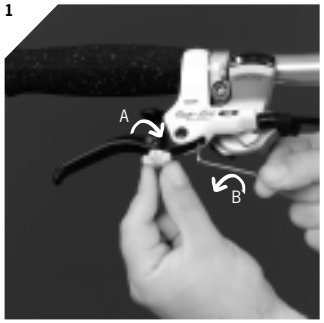
4



4 With FIRM-tech you adjust the brake pad to the rim on both sides with the 5mm allen screw.
Shorten the hose and pad wear adjustment as described in the respective chapters!

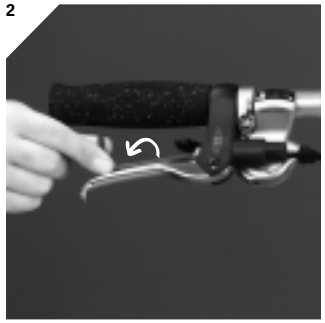
3. Shorten and route the hose

1



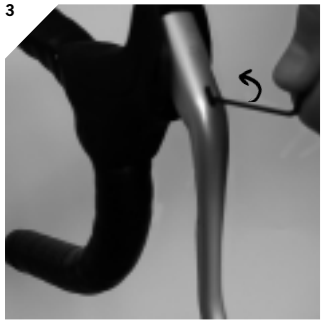
1 HS 33 models
Turn the red Turbo Pad Adjuster (TPA) **fully** clockwise. Turn the 2mm reach adjust setscrew B fully counterclockwise (2mm allen screw).

2



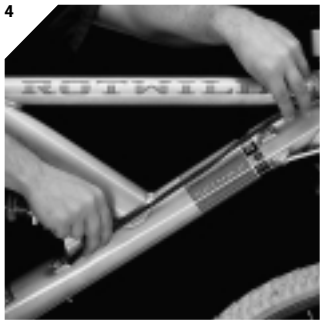
2 HS 11
Turn the 4mm allen bolt **fully** counterclockwise.

3



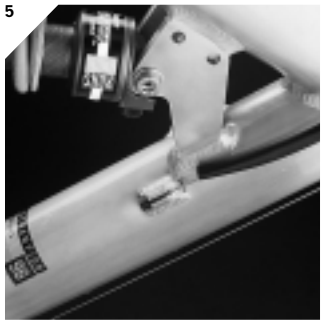
3 HS 66
Turn the 2mm allen bolt **fully** counterclockwise.

4



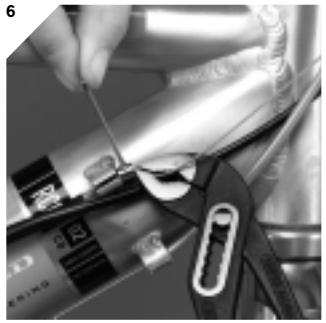
4 Mount the hose installation kit for the rearbrake. Measure the distance between both cablestops. **Due to shrinkage, cut a length of heatshrink tube that is 10mm longer than the measured distance.**

5



5 Slide the fixed barrel of the carrier cable into the rear cablestop. Slide the heatshrink tube over the cable.

6



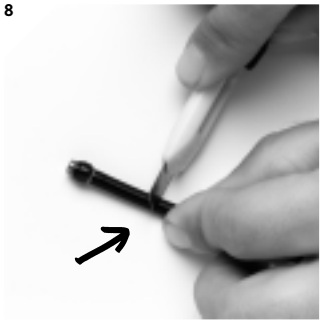
6 Slide the adjustable barrel over the cable and pull the cable **firmly** through the other cablestop with pliers. Push, with the pliers, the adjustable barrel against the cablestop and tighten the 2mm bolt with an allen key. Cut off the remaining cable so that it is flush with the barrel.

7



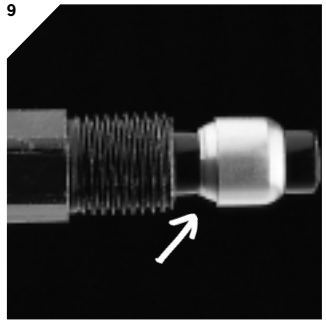
7 Unscrew the 8mm sleeve nut at the slave cylinder and pull out the hose **carefully**. **Never activate the lever blade with the system open! Hold the tubing carefully in order to avoid any loss of oil!**

8



8 Put the hose on a hard surface. Cut the hose squarely just behind the olive using a cutter, never use pliers or a saw. **The olive must be replaced! Hold the hose carefully so that it cannot spring away! Cut squarely and on a hard surface to achieve a clean cut. Never use pliers or a saw!** Throw away the hose piece with the fitted olive. Slide off the sleeve nut. Slide the hose **carefully** through the heatshrink tube. Measure the correct length of the hose (don't forget to turn the handlebars!) and cut the tubing as described.

9



9 Slide the sleeve nut and a **new** olive on the hose. **When you use old, brass colored olives, the grooved side (arrow) points toward the sleeve nut.**

10



10 The black olive cannot be mounted incorrectly, as it is symetrical. Push the hose **all the way** into the slave cylinder.

11 Do not crossthread! After initial start by hand use an 8mm open end wrench. **(Tightening torque 4Nm/34 in.lbs).**

11



13



12

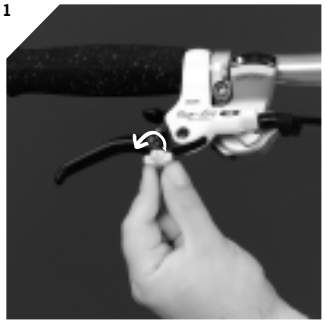


12 Always check for correct installation by pulling on the hose Make sure that the system has no leaks by activating the levers and checking all connections.

13 Use an extra piece of heatshrink tube which you slide over the exposed end of the carrier cable. Shrink the heatshrink tube over its entire length with a hairdryer. **Only use a hairdryer! Never use a lighter or a heatgun. Protect your frame and decals with carton before.**

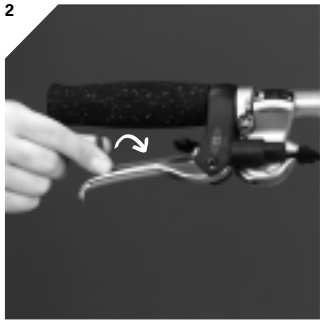
4. Maintenance / brake pad change

1



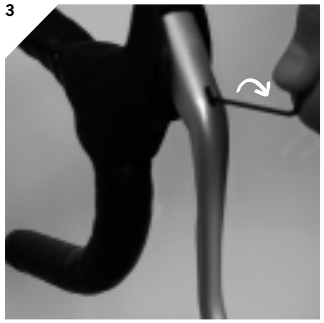
brake pad wear adjustment HS 33 models

2



brake pad wear adjustment HS 11

3



brake pad wear adjustment HS 66

1 MAGURA brakes do not need any special maintenance after correct installation. Regular bleeding is absolutely not necessary, because the MAGURA Blood mineral oil does not contract water like DOT brake liquid used in cars, on motorcycles and competitors' products.

■ brake pad wear adjustment as shown.

■ **When**
-the red TPA (HS 33 models) is turned all the way in
-the 4mm allen bolt is in flush with the lever blade (HS 11)
-the 2mm allen bolt is in flush with the barrel,

it is time to change the pads.

■ **Before changing the pads you must always screw back the adjusting screws to their start position!**

4



4 New (1) and worn (2) brake pad. When your brake pads are worn as shown it is time to change them.

5



5 To change the brake pads; open the quick release, remove the brake from the cantistud, pull out the old pad and then just snap in a new one. After removing the wheel, pull out the old pad and snap in a new one on the other side. That's all!

5. Filling and bleeding



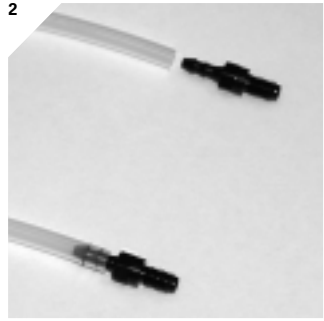
The filling and bleeding of a MAGURA brake is not a routine work. This is due to the fact that the biodegradable MAGURA Blood hydraulic oil does not absorb water like DOT brake liquid in cars and on motorcycles. A filling and bleeding of a MAGURA is therefore only necessary in case of an incorrect installation or a tubing change after this has been damaged. Only use MAGURA Blood hydraulic oil, never DOT brake liquid.

1



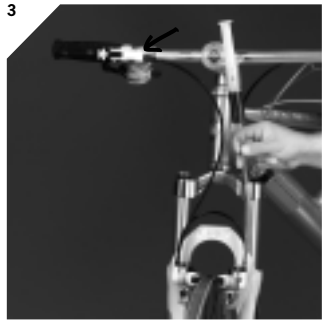
1 The service kit contains everything you need which you need for bleeding or repairing your MAGURA brake.

2



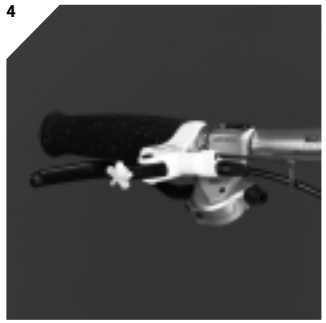
2 Push (by hand) a barbed fitting into **both** the transparent filler and vent tubes.

3



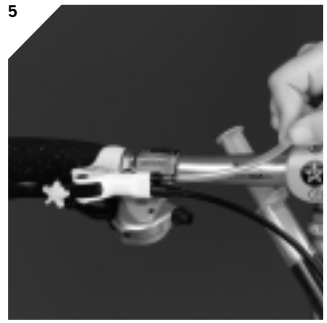
3 - Put the filler tube on the syringe and fill **completely** with MAGURA BLOOD mineral oil. In the case of an emergency, cooking oil will work, but needs to be flushed out after the return to civilization. **Never use DOT brake liquid! Pay close attention not to have any air in the tube or syringe.**
- Remove bleed screw (5mm allen screw) at the slave cylinder.
- Fit filled syringe and filler tube and **fix it** with an 8mm open end wrench.

4



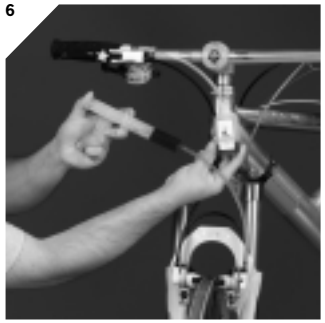
4 Turn the brake lever (HS 33/11) horizontal on the handlebar so that the bleed bolt is at the highest position. Turn back **fully** the TPA knob or allen adjustment bolt in the brake lever. Remove the bleed screw in the brake lever.

5



5 Install the vent tube and hold its end into the oil bottle.

6



6 Push the oil through the system. **Use the whole content of the syringe.** You can see air in the form of small bubbles in the vent tube.The bleed is completed when no more air bubbles can be seen in the vent tube.Remove the vent tube and replace the bleed screw. **(Tightening torque 4Nm/34 in.lbs).**Remove syringe from slave cylinder and replace the bleed screw. **(Tightening torque 4Nm/34 in.lbs).** Return brake lever to its normal riding position, and clamp correctly. **(Tightening torque 4Nm/34 in.lbs).**

They system is correctly bled when the pads move immediately upon activating the lever-blade. Adjust the pad/rim clearance with the TPA or the allen adjustment bolts (see chapter maintenance/pad change). Check the entire system for oil leaks. Check the flawless performance, high power and excellent modulation.

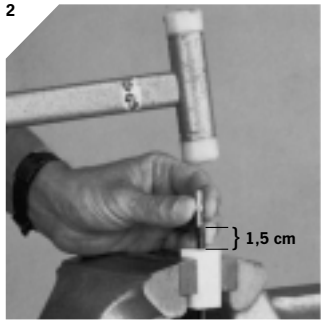
6. Repairs

1



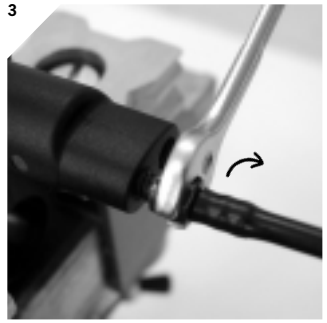
1 Repair of a HS 11 main hose with barbed adaptor connection.

2



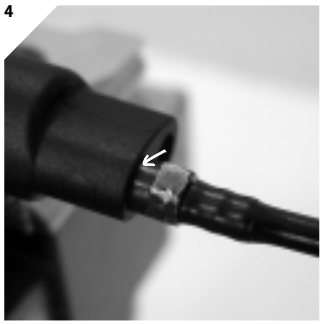
2 To do this clamp the hose as shown with the help of the two clamping jaws into a vice. 1,5cm of the hose have to stick out of the clamp. Use a nylon mallet to tap the barbed fitting into the tubing
The barbed fitting must be installed as shown. Never use a lighter or a heatgun to soften the hose

3



3 Screw the repaired hose into the prepared thread.

4



4 Correctly installed repaired hose on an HS 11. The barbed fitting is **flush** with the brake lever (arrow). The brake now has to be re-filled as described in the chapter 'filling and bleeding'.

Further repair tips

In case of a damaged brake-cylinder crossover-hose, proceed as described above from points 1 to 4.

Spare brake levers and slave cyclinders are delivered „dry". If you have to replace a brake lever or slave cylinder, the MAGURA system has to be bled **twice** after changing the defective item. Activate the lever blade after the first bleed to chase all air bubbles and to make sure that the oil is well distributed in the new part.

Leaking brake levers and slave cylinders have to be replaced as complete units. Due to product liability reasons MAGURA neither offers spare pistons nor internal seal repair kits.

7. brake pads

1 MAGURA offers four different brake pad compounds for different riding styles and rim surfaces

■ **black (0321 406):**
standard brake pad for polished rim surfaces. **Series pad on all brake models.**



■ **red KOOLSTOP (0720 423):**
race oriented brake pad for polished rim surfaces. **Excellent for trials!**



1



■ **grey (0321 407)**
standard brake pad for hard anodized (black) and ceramic coated rims.



■ **green GREENFROG (0720 439)**
race-oriented brake pad for hard anodized (black) and ceramic coated rims.



1



All brake pads are sold as a complete set of 4 pieces.

8. accessories

1



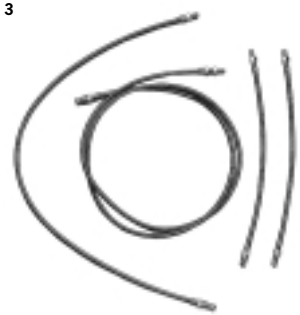
1 Suspension spacers (0720 433) When installing a MAGURA on a suspension fork, some fork boosters may cause clearance problems. The suspension spacers (available as an accessory) move the adaptors forwards for better clearance of the black elbows. They are installed **instead** of the U-washers and come with a 2mm allen set screw to fix them to the canti-studs, thereby eliminating the chance of losing one when the quick release is open.

2



2 MAGURA brake booster come with all HS 33 models. Superstiff steel. Better modulation and power increase guaranteed. Available in all MAGURA colors. 50 grams.

3



3 MAGURA stainless steel hose-kit. Cool looks and totally bomb-proof. Available as kit for a complete brake-set **(0720 846)** and as single hose in a 1700mm length **(0721 203).**

4



4 MAGURA hose guides (0721 214)
for all those who care for a clean and esthetic hose routing along the toptube. Installation is a snap. The guides are just screwed into the cablestops. The hydraulic hose is simply clipped in.
2 pieces.

5



5 MAGURA 90° hose fitting kit (0321 285)
makes the necessary 90° hose connection possible onto brake levers for recumbents, HPV's or on time trial bars.
Only compatible with HS 33 and HS 66. 2 pieces.

6



6 MAGURA CNC lever blades HS 33 (top) and aluminium blades (HS 11).
You can save another few grams on your HS 33's by using the **tasty CNC-lever blades**. **Available in black (0721 033) or silver (0721 034).**
On a lot of bikes which come with MAGURAs as OE equipment you often find „simple" composite lever blades. The Brake People offer a large range of tuning lever blades in quality aluminium, for example the lever blades for the HS 11. **Available in silver (0721087).**
All lever blades are sold in a set of 2 pieces.

For the latest news and hottest tips around the complete MAGURA range stay tuned with our website magura.com

