# **WORKSHOP 2003**



# Deutsch English Français Nederlands Italiano Español



Rotes Garantiekarten-Anforderungsblatt beachten!

Read red sheet and order warranty card!

Lisez la feuille rouge et commandez la carte de garantie!









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### **WARNING:**

This symbol means possible danger for your health and even life if you do not follow the instructions given resp. if the necessary safety measures are not followed.



### **ATTENTION:**

This symbol warns you of inappropriate handling that might cause heavy damage to the material and/or the environment.



#### NOTE:

This symbol is giving you additional information about the general handling of the product or gives hints to paragraphs of this manual which have to be read carefully.



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.



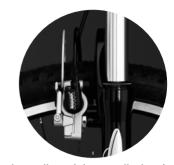


# 1. Welcome to the Brake People!



Brake lever (master cylinder) MAGURA HS 33

Congratulations! You have purchased a fully hydraulic MAGURA rim brake proudly "Made in Germany". You will be enthusiastic about the awesome braking power and the very little maintenance that is necessary on our stoppers. Good to know that you are not alone, millions of users worldwide rely on them and every day we're becoming more.



Brake caliper (slave cylinders) MAGURA HS 33

On the fully hydraulic MAGURA rim brake systems HS 33, HS 11 and HS 66 the braking force is transmitted to the braking surface by a mineral oil column. The movement of the lever blade moves a piston, which is integrated in the brake lever (master cylinder). The piston pushes the mineral oil column through the brake hose in the direction of the brake caliper (slave cylinders), where two pistons, on which the brake pads are clipsed, are pushed out. The friction between the brake pads and the rim is slowing down the bicycle and causes a heating of the rim.

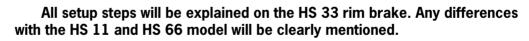


### Never touch the rim after long braking as this may cause serious burns

You will be pleased to find out that the MAGURA rim brakes offer a superior braking power even with little hand force applied, no matter what the weather conditions should

Our rim brakes cause a wear of your rims. So do not forget to check regularly your rims!

This manual contains important information about the safe installation. operation and maintenance of your MAGURA rim brakes. We urge you to read it carefully, become familiar with its contents and follow our recommendations to help make your new braking experience enjoyable and trouble free.





Although the MAGURA rim brake systems are relatively simple you should not overestimate your technical skills! We therefore advise you to leave the following works to a trained technician of a professional bike shop.

In case of any further questions or problems we warmly recommend to visit our website www.magura.com where you will always find the newest and hottest tips about all our products. Stay tuned with the Brake People! Thank you for your confidence in our products, enjoy your ride and your new MAGURA stoppers!

Happy trails!

### 2. Before the first ride

1. Are you already familiar with hydraulic rim brakes? Our brakes might be much more powerful than the stoppers on which you relied so far. Take your bicycle to a safe area to learn the proper braking technique and operation of your new brakes and your bike.



2. Check whether you activate the front brake with the brake lever, which you are used to braking on the front. If ever this is not the case you will have to train your new setup because any unintended braking might cause an accident with possible heavy bodily injury! Make change the hose connection by a trained technician in case of any doubts.

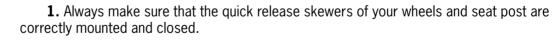
Further hints concerning the swapping of the brake hose see page 11 onwards.



- 3. In case of extreme riding conditions (total weight of bike plus rider over 100kg and/or a gradient of more than 15%) always use both brakes simultaneously to brake your bike down.
- **4. Do not use a MAGURA rim brake for downhill sport!** Any misuse might cause heavy accidents with fatal injuries for you and others!
- **5.** Are you familiar with the other components on your bike such as shifting, clipless pedals and suspension units? Always train the perfect handling of your bike in a safe area before using it in the public traffic. Consult the user's manual of your bike to learn more about this.
- **6.** For your own safety always wear a helmet when you ride a bicycle. Make sure as well that your clothing and footwear are suitable.

### 3. Before every ride

always check carefully the following points:





incorrectly installed quick release skewers might cause the fixed items to get loose. Serious falls with heavy bodily injury might be the result!!

**2**. Always 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 handlebars. If this is not the case, pull the lever blade several times (pump) until the brake pads touch the rotor.

In case, of changing pressure points during a ride you might have air in the brake system.

See hints about filling and bleeding from on pages 15/16.

- **3**. Always make sure that the brake system does not have any leaks by activating the lever blade, holding it and checking the hose connections and brake lever for eventual leaks. (Also see page 11)
- **4.** Always protect your rims and brake pads from oil and lubricants (e.g. by lubricating your chain).



nglish

Contaminating the pads with oil and lubricants will cause a permanent loss of braking power. Clean contaminated rims and pads with isopropyl alcool or with warm dishwater.

See further hints about the brake pad change on page 13.

- **5**. Release your brake lever and check whether your wheel moves freely and without drag. Check eventually whether the wheels are correctly mounted and if the quick release skewers are sufficiently tightened.
- **6.** Are your tires in a good condition, and are they sufficiently pressurized? Test this with your fingers. Lift up your bike and turn the wheels of your bike. An insufficient rotation might be due to damaged tires, broken axles and/or broken spokes.
- **7.** Pick up your bike and let it drop from a moderate height. Be careful in case of any rattling noise. Check the bearings and all screwed connections.
  - **8.** Always follow the instructions given in the owner's manual of your bicycle.



Never use your bicycle if ever a proper function of the points mentioned above is not guaranteed. Consult a professional bike mechanic if you feel unsure. A faulty bicycle might cause serious accidents with possible fatal injuries of the rider!

# 4. Transport of the bicycle

For a transport in an aircraft you can leave your brake as it is, e.g. you do not have to empty it.

Beside of this there are no further activities necessary. Always make sure that the hose is not snapped or damaged during transport!

# 5. Warranty

MAGURA is giving a **5 years leak proof warranty** on brake levers (master cylinder) and brake calipers. Watch out for the red order form of the warranty card in this manual and order your warranty certificate!

This warranty is void when damage to the brake has occurred from the following:

abuse

mixing and matching the brake with parts from other manufacturers damage of the exterior finish caused by improper use any attempt to disassemble the whole brake modifications non-factory changes or improper service shipping damages or loss (purchase of full value insurance is recommended).

# 6. Brake Mounting

### 1. Tools for mounting (+maintenance)

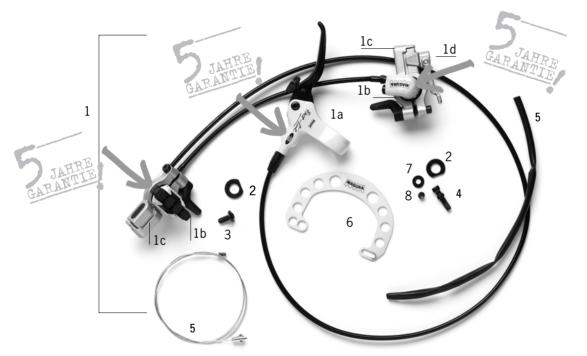
Allen key 2\*, (3), and 5mm 8mm open end wrench sharp knife

(\*delivered with the brake)



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





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. STANDARD 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!



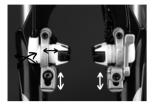






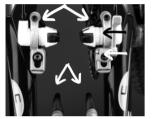


Mount the brake lever onto the handlebar. (Tightening torque 4Nm/34 in.lbs)
The following pictures show the installation of the brake with the wheel removed to show some details better. Leaving your wheel on your bike when you mount your MAGURA brake will make the installation much easier.



#### 2. 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.



3. 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.



**4.** 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.



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



**6. 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).



7. 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).



**8.**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 canti-studs, thereby eliminating the chance of losing one when the quick release is open.



**9.** 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.

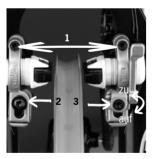
The quick release tension is adjusted by turning in the hourglass bolt clockwise, preferably when the quick release is CLOSED.



**10.** 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!



### 11. 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)



12. Installation of the STANDARD 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.

# 7. Brake Booster für Manitou Reverse Arch System



1. For Manitou forks with "Reverse Arch Technology" (fork brace BEHIND the upper legs) the standard booster does NOT fit. You need for this at any rate the "RAT-booster" available separately as accessory.



2. Replace the elbows by the threaded caps delivered with the RAT booster (tightening torque 4Nm/34 in.lbs.) Begin with the LEFT slave cylinder.



**3.** Place the RAT booster as shown against the adaptor.



**4.** Mount the unit onto the canti stud.



5. Tightening torque: 6 Nm/51 in.lbs.



**6.** Proceed on the opposite side similarily and close the quick release as described on page 8. The setup tricks mentioned on page 7 and 8 are valid with the RAT-booster, too.



7. Correctly mounted RAT-booster.

The caps must fit the drills of the RAT booster.

IMPORTANT: the RAT booster can only be mounted with the adaptor position shown here (MAGURA logo is on the RIGHT side!).



### 8. 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. 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. Quick release tension is adjusted similar to standard version (c.f. page 8)



**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!



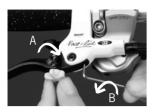
**3.** Adjust the brake pads to the rim width with the 5mm allen screw which is integrated in the brake cylinder. By turning the screw clockwise the pad approaches to the rim.



**4.** 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!

### 9. Shorten and route the hose



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



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



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



**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.



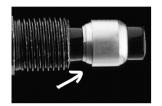
7. Unscrew the 8mm sleeve nut at the slave cylinder and pull out the hose carefully. Never activate the lever blade with the system open! Hold the tubing carefully in order to avoid any loss of oil!



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



**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).** 



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.

# 10. 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

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



**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!



### 11. Filling and bleeding



The filling and bleeding of a MAGURA brake is not a routine work. This is due to the fact that the MAGURA Royal 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 Royal Blood hydraulic oil, never DOT brake liquid!



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



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



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



**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 <u>and</u> excellent modulation.

# 12. Repairs



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



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.** Screw the repaired hose into the prepared thread.



**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.

# 13. brake pads



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!





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.



ATTENTION: Do not forget that the brake pads are subject to an increased wear if you use ceramic coated rims, so check them regularly!

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



### 14. accessories



### 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. MAGURA brake booster

come with all HS 33 models. Superstiff steel. Better modulation and power increase guaranteed. Available in all MAGURA colors. **weight: 50 grams.** 



#### 3. MAGURA stainless steel hosekit.

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. 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. 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.** 

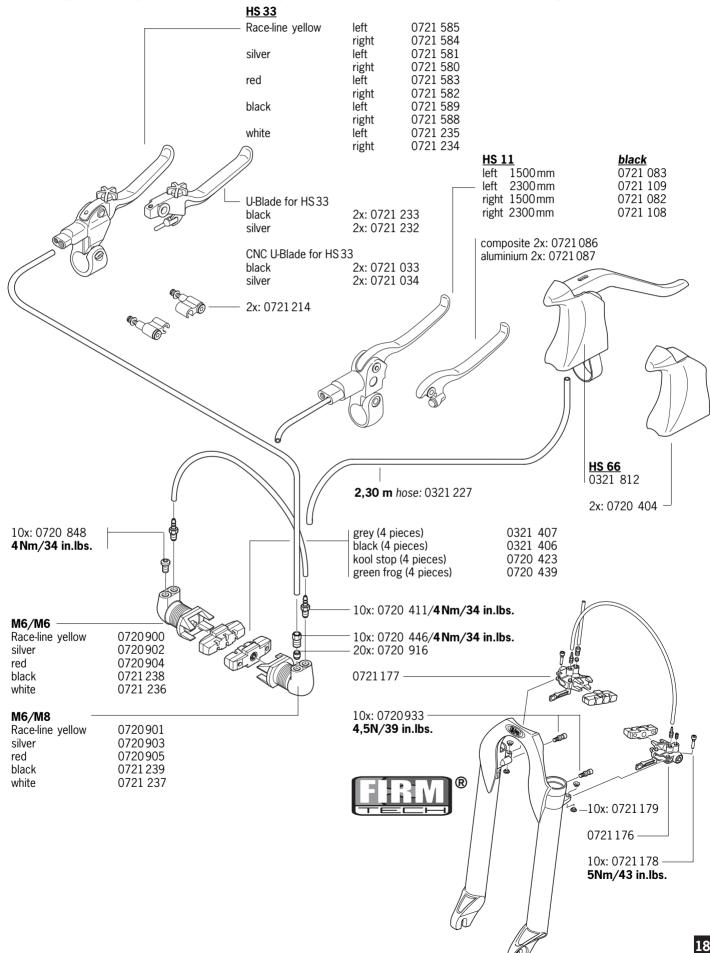


**6. MAGURA CNC lever blades HS 33 (top) and aluminium blades (HS 11).** You can save another few grams on your HS 33's by using the **tasty CNC-lever blades**. **Available in black (0721 033) or silver (0721 034).** On a lot of bikes which come with MAGURAs as OE equipment you often find "simple" composite 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.

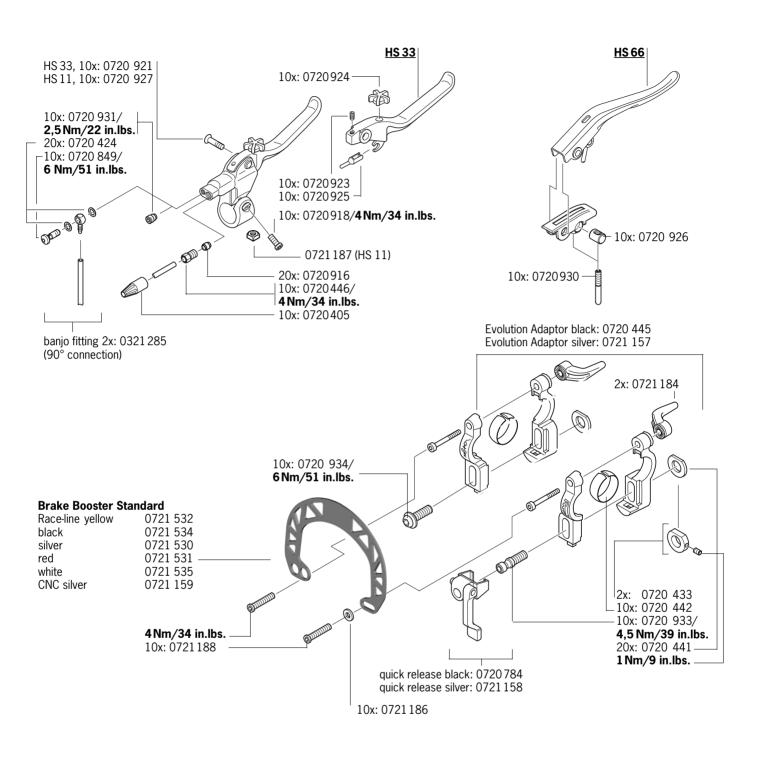


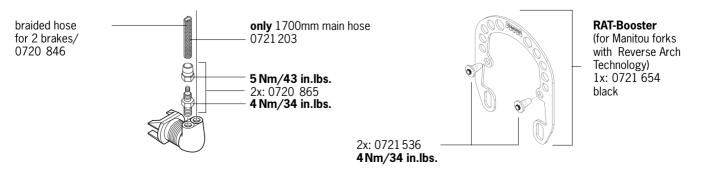
7. RAT-booster for Manitou forks with Reverse Arch System (0721 654). Fits to all Manitou forks with forkbrace behind the upper legs. weight: 80 grams.

# 15. spare parts 2003/max. tightening torques











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