instruction manual

FIFTY YEARS OF SUSPENSION INNOVATION
50
SINCE 1949

BAM
BOMBER AEROSPACE MATERIAL

ORIGINAL
OPEN BATH
DESIGN

MR.T
DUAL CLAMP

bomber

MARZOCCHI SINCE 1949 MARZOCCHI SINCE 1949 MARZOCCHI

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The figures and descriptions in this pamphlet are provided as a guide.
We reserve the right to make changes to the products without notice in line with our policy of continuous improvement.

Always respect Nature when riding !

OWNER'S INFORMATION

IMPORTANT: Installing a Marzocchi suspension system is a very delicate operation that must be carried out with extreme care. These installation and maintenance instructions are designed for experienced bicycle mechanics and must be followed exactly as written and specified. Failure to precisely follow these instructions could cause damage to one or more components of the Marzocchi suspension system. This damage may not be readily visible or apparent and could lead to unexpected failure on one or more components of your suspension to such extent that the rider may loose control of the bicycle and suffer severe injury.

The responsibility of the owner

1) The Marzocchi suspension system is designed to absorb the shocks of an uneven road surface in order to give the rider more control over this bicycle. It is not designed to absorb the forces generated by jumps or other acrobatic maneuvers. If you subject the Marzocchi suspension system to repeated jumps or other acrobatic maneuvers, you could cause one or more of the components of the suspension system to unexpectedly break, resulting in a loss of bicycle control and serious injury to the rider.
2) Some of the parts of the bicycle, such as the brakes, steering, tires, wheel assembly and shifters may not have been adjusted at the time the Marzocchi suspension system was installed on the bicycle. Before you ride the bicycle, be sure all the parts of the bicycle were properly adjusted and functioning properly.
3) All of the components of the suspension system must be correctly assembled and tightened exactly to the specified torque values. Periodically check the torque of these components to insure that they are correct. Failure to properly assemble and tighten the components could cause one or more of the components to unexpectedly break, resulting in a loss of bicycle control and serious injury to the rider.
4) There are obvious risks associated with mountain biking and other types of bicycle riding. Despite the use of all safety equipment for the bicycle and the rider, either injuries or damages may occur. This is the responsibility of the rider. To reduce the risk of injury, all activities must be under proper supervision and only after proper training and experience. Good physical condition of the rider and the good state of the bicycle are essential to be a safe and successful rider.
5) Be sure to read and follow all the instructions and warnings which originally accompanied your bicycle. In addition, it is recommended for added safety and protection while riding that a good quality bicycle helmet be worn and that other safety devices such as lights, reflectors, or reflective clothing be used. Some cities and states may require the use of a helmet and other safety equipment. Follow all traffic rules and all other laws about safety equipment and use your bicycle where you are permitted to ride.
6) For any further information you might need, please call or write to this addresses:

LARM
Via Ca' dell'Orbo, 36 -
40055 Villanova di Castenaso (Bologna) - Italy
✎ ++51/6053460 - Fax ++51/6053411

MSC CORPORATION USA
28231 Avenue Crocker - Unit 100
VALENCIA CA, 91355
✎ +1 (805) 257-6630 - Fax +1 (805) 257-6636

It is your responsibility to make sure the assembly instructions in this book are precisely followed.

Always ride safely and carefully.

GENERAL SPECIFICATIONS

- The Mr. T triple clamp fork is specifically designed for Downhill use. Damped by two sealed hydraulic cartridges and sprung by a mechanical coil spring system.
- Stanchion tube secured to the crown and upper plate. The system is equipped with full length slider bushings giving this fork an incredibly smooth stiction free stroke, in addition to the unmatched structural strength.
- Parts subjected to friction are cooled and lubricated by a specially formulated oil.
- Spring pre-load adjustment and rebound damping controlled via external top mount adjusters.
- Both sliders are equipped with boss's for standard cantilever brake mounts. Left slider comes with brake caliper support.
- Brake cable support kit available on request (bolts onto arch).

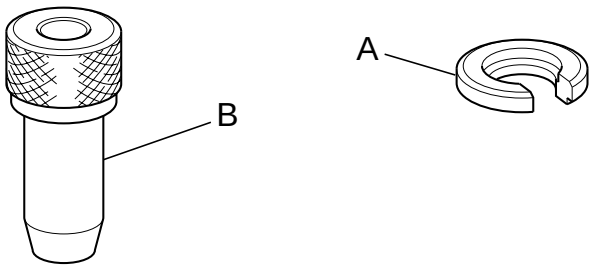
Steer tube: EASTON aluminum steer tubes available for 1 1/8" x273 mm, non threaded
Crown: Forged and CNC-machined T6-6082 aluminum alloy
Upper plate: Forged and CNC-machined T6-6082 alloy
Arch: Forged and CNC-machined T6-6082 alloy.
Stanchions: Anodized EASTON aluminum with variable butting.
Springs: with variable pitch.
Sliders: Cast and CNC-machined alloy
Pilot bushing: Full length bushing composed of a copper base and impregnated with an anti-friction coating.
Seals: Computer designed oil seals guarantee the highest quality seals available.
Oil: Specially formulated oil which eliminates foaming and viscosity breakdown while providing complete stiction-free performance.
Fork leg oil: 160 cc each leg, type EBH 16- SAE 7.5.

This fork is supplied with:
– Warranty card
– Owners manual
– Technical Specifications

Size:
– travel: 130 mm (5.1 inches)
– crown to axle length: 504.2 mm
– crown to upper plate length: 276.8 mm
– stanchions outer diameter: 30 mm
– fork leg distance between centers: 130 mm
– cantilever boss distance between centers: 80 mm
– pilot bushing length: 92 mm

SPECIFIC MARZOCCHI TOOLS

Ref.	Item./Art.	Description and use
A	536003AB	Slider protector: to remove the oil seal from the slider
B	R 5068	Oil seal press: to press the oil seal into the slider



These are the specific tools necessary for an overhaul, you may find it necessary to use common tool found in your shop.

GENERAL RULES FOR CORRECT OVERHAULING AND MAINTENANCE

1. Where specified, assemble and disassemble the shock absorption system only using the LARM or MARZOCCHI special tools, as shown in the table below.
2. On reassembling the suspension system, always use new seals.
3. If two screws are close one to the other, always tighten using a 1-2-1 sequence. In short, screw the first screw just up to the point it is well tightened, then tighten the second screw and then go back to the first one and screw it tighter.
4. Clean all metal parts with a special, preferably biodegradable solvent, such as trichloroethane or trichloroethylene.
5. Before reassembling, lubricate all parts in contact with each other using silicone fat spray.
6. Always grease the conic seal rings before reassembling.
7. Use wrenches with metric size only. Wrenches with inch size might damage the fastening devices even when their size is similar to that of the wrenches in metric size.

FAILURES, CAUSES AND REMEDIES

This paragraph reports some failures that may occur when using the fork. It also indicates possible causes and suggests a remedy. Always refer to this table before doing any repair work.

FAILURES	CAUSES	REMEDIES
Excessive oil build up on stanchions	1. Oil seal is worn out 2. Stanchion tube is scored 3. Excessive dirt on oil seal	1. Replace oil seal 2. Replace oil seal and stanchion tube 3. Clean the oil seal seat and replace it
Oil leaking through the bottom of slider	O-ring on the cartridge nut is damaged	Replace the O-ring
Fork has not been used for some time and is locked out	Oil seals and dust seals tend to stick to stanchion tube	Raise dust seal and lubricate stanchion tube, dust seal and oil seal with silicone grease
Fork rebounds too fast even though the adjuster is on the max. damping position	Cartridge is faulty	Replace hydraulic cartridge
Excessive play of stanchions into the sliders	Pilot bushings worn out	Replace pilot bushings

RECOMMENDATIONS FOR MAINTENANCE

MARZOCCHI forks are based on advanced technology, supported by year-long experience in the field of professional mountain biking. In order to achieve best results, we recommend to check and clean the area below the oil seal and the stanchion tube after each use and lubricate with silicone oil.
Polished forks should be cleaned with bodywork polish at regular intervals in order to preserve their original finish.

INSTALLATION

Installing the Mr. T fork on a bicycle is a very delicate operation that should be carried out with extreme care.
A threadless steer tube is pre-installed on the fork from the factory. It will need to be cut to the required length for a proper fit.
The installation should always be checked by one of our Technical Service Centers.

WARNING: “A-Head Set” headset/steer tube mounting and adjustment must be carried out in compliance with the headset manufacturer’s instructions. Improper installation may jeopardize the safety of the rider.

After any installation always check for the following:
– proper torque of bolts fastening stanchion tube onto lower crown and upper plate;
– proper torque of bolts fastening brake arch onto slider.

For recommended torque settings, see the table below:

Thread diameter	Tightening torque	
	Nm	lb ft
M4	4	2.9
M5	9	6.6
M6	11	7.5

MOUNTING THE FORK ON THE FRAME

FIG. A
Remove the upper plate (28) from steer tube and fork legs by loosening the 3 fastening bolts (29).

FIG. A

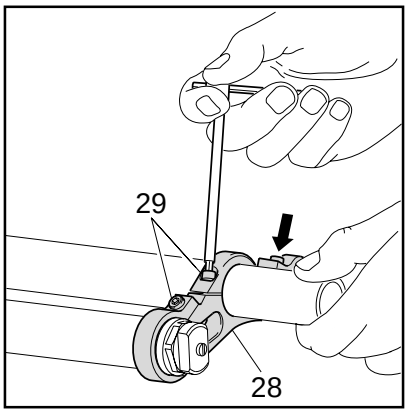


FIG. B
Assemble the fork to the frame complete with headset. Fit the upper plate (28) into the upper stanchions and the steer tube.

FIG. B

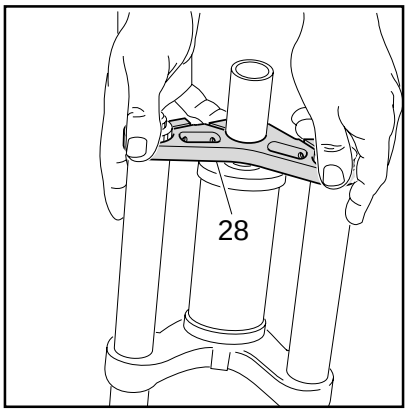


FIG. C
The stanchions edge (13) must be aligned with or slightly lower than the upper plate (28).
If fork legs overprotrude, fit some spacers to the plate close to the steer tube (26).

FIG. C

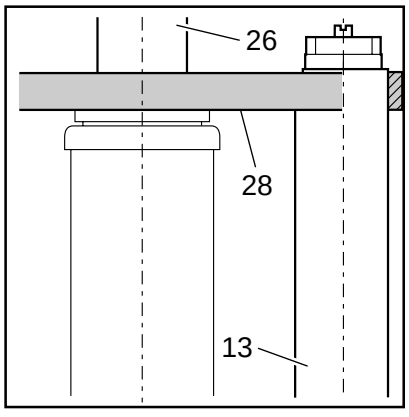


FIG. D
Fit the handlebar support and the A-Head Set cap over the upper plate (28) and then adjust the steering.
Now finally tighten the 3 bolts (29) on the upper plate.

IMPORTANT: Loosen the 3 screws (29) on the upper plate before adjusting the steering. Tighten the above bolts at the required torque when finished.

FIG. D

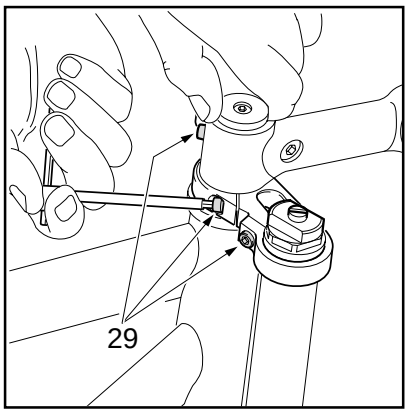


FIG. E
If the crown (26) position with respect to the stanchion tubes (13) has been changed for any reason, adjust the original distance.
– Distance "H" between crown and tyre edge (when inflated) should not be lower than total travel (130 mm) + 3 mm.

WARNING: if steering crown is improperly matched with stanchions, it may touch the tyre and cause severe injuries to the rider.

FIG. E

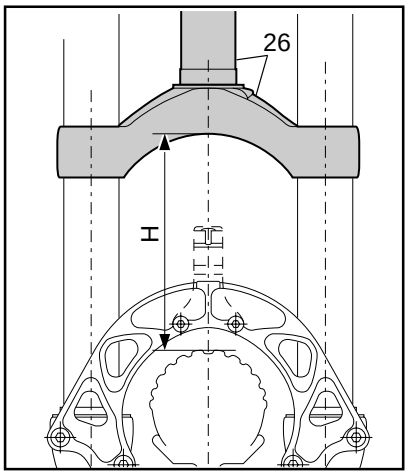
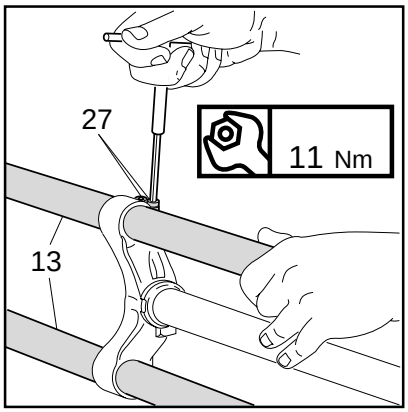


FIG. F
Tighten the 4 stanchions fastening screws (27) onto the crown at 11 Nm.

WARNING: do not overtighten the screws holding the stanchions to the crown as this may distort the stanchion tubes and weaken the whole structure.

FIG. F



DISC BRAKE SYSTEM ASSEMBLY

Assembling the brake caliper onto the slider is a very delicate operation that should be carried out with extreme care. Improper assembly might overstress the caliper supports which might break.
This system should be assembled by specialized technicians in a position to fully understand and properly follow the instructions given by the manufacturer.

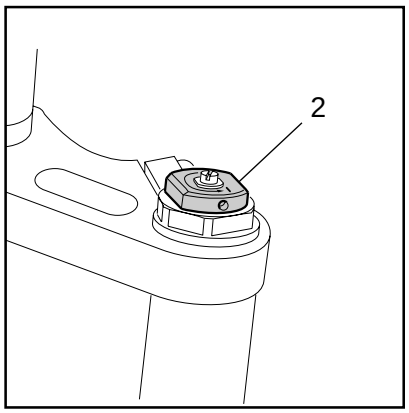
ADJUSTMENTS

IMPORTANT: both fork legs should be adjusted on the same position.

SPRING PRELOAD (FIG. G)

The spring preload determines COMPRESSION damping and is adjusted by turning the adjuster knob (2) on top of fork legs. From the factory the Mr.T is set with the minimum preload, i.e. adjuster knob completely unscrewed counterclockwise. However, the springs are slightly preloaded to help counteract static loads. By turning the adjuster knob clockwise, the preload is increased up to the maximum value equal to 15 mm's of spring preload. This adjustment is essential in order to have the right Mr. T response for the rider's weight and riding style.

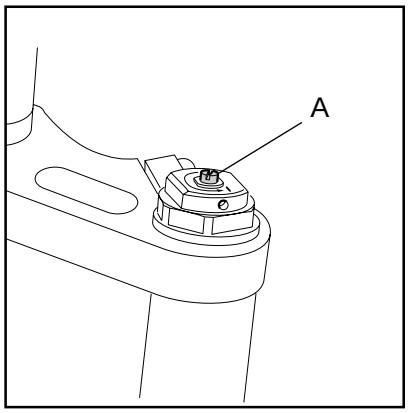
FIG. G



REBOUND & COMPRESSION ADJUSTMENT (FIG. H)

Each fork leg is equipped with an adjuster screw (A) for COMPRESSION or REBOUND damping. When turning this adjuster clockwise into the cartridge rod - the damping for compression & rebound increases. In short, the amount of adjustment applied on the piston in the fluid determines the rate of compression & rebound damping.
To adjust, always start from the minimum damping setting, i.e. unscrew completely counterclockwise. Adjustment range is about 8 turns - abt. 4 mm.

FIG. H

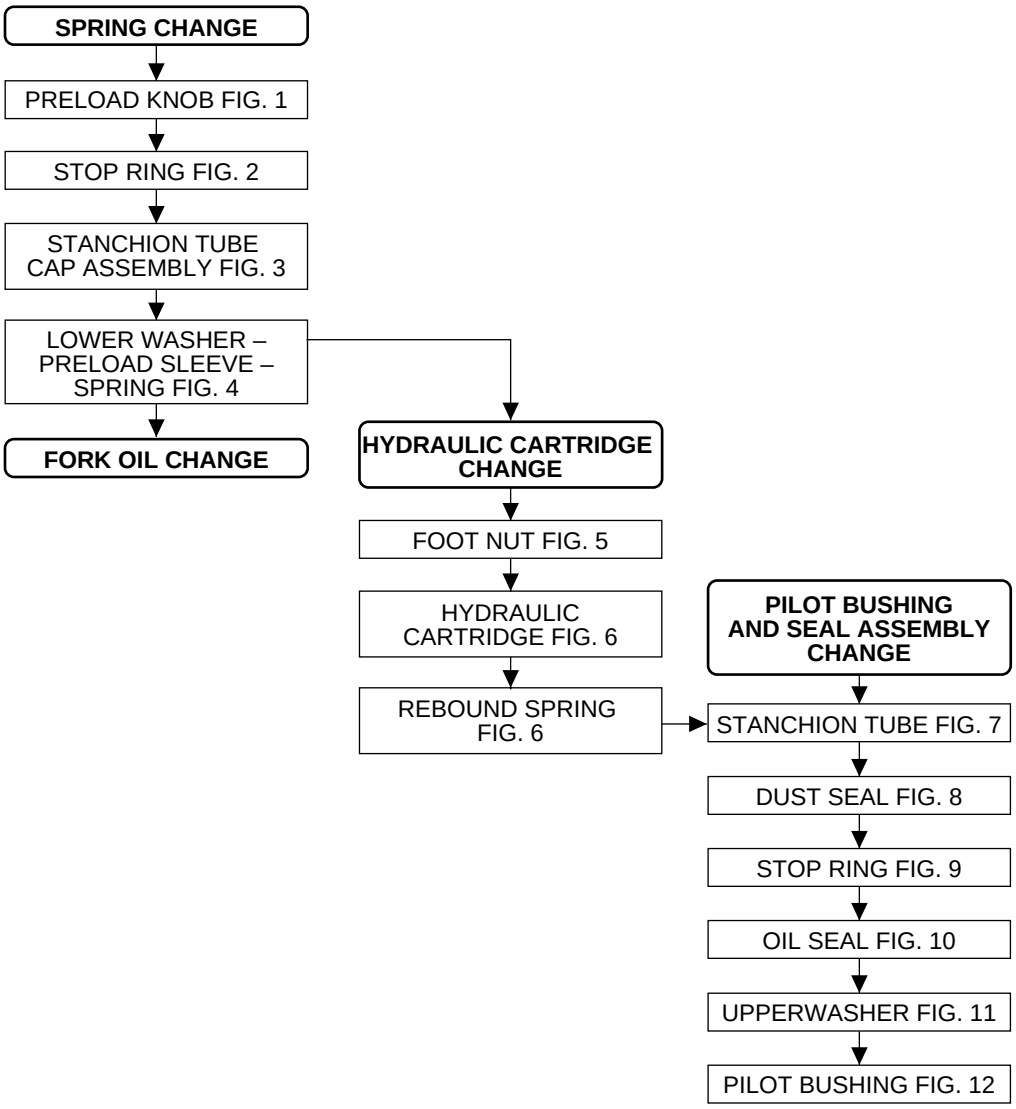


DISASSEMBLY

GENERAL

– The reference numbers given in this section relate to the components shown in the forks exploded view on page 15.
– These operations refer to the fork legs having already been removed from the crown and disassembled from the brake arch.
– Before starting any operation. please read the diagram below. It shows the quickest procedure and the exact sequence in which it should be disassembled. Start from the part first to be disassembled and then follow the arrows to remove the remaining parts.

DISASSEMBLY DIAGRAM



SPRING CHANGE

FIG. 1

Move the knob (2) to the minimum preload position.
Loosen the small Allen bolt (3) fastening the preload knob (2) by means of a 1.5 mm Allen wrench. Remove it from the cap assembly.

FIG. 1

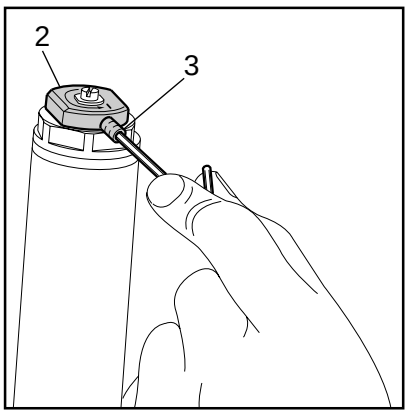


FIG. 2
Remove the stop ring (4) from the top of the preload knob support with a small screwdriver.

FIG. 2

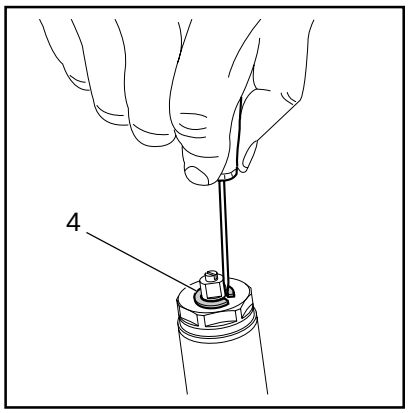


FIG. 3
Place the stanchion tube in a vice making sure it is not damaged or dented in the process and unscrew the cap (5) with a 26 mm open end wrench.
Remove the cap complete with O-ring (6) from the stanchion tube.

FIG. 3

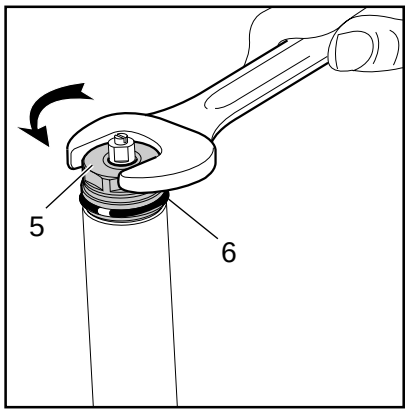
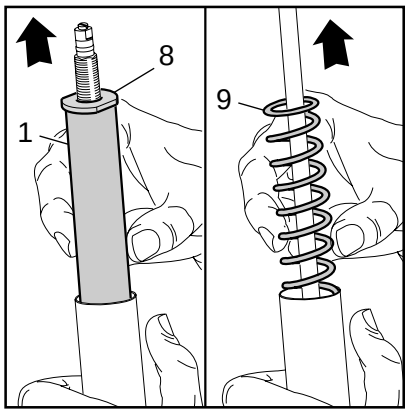


FIG. 4
Push the stanchion tube into the slider and remove the lower washer (8), the preload sleeve (1) and the spring (9).
Let all the oil drain into the fork leg. By following this procedure, there is no need to check the oil level. Make all necessary changes.

FIG. 4



HYDRAULIC CARTRIDGE CHANGE
FIG. 5
Let all the oil drain out.

WARNING: Remember to always recycle any used oil.

To change the fork leg oil follow the procedure as described in section “REASSEMBLY” from FIG. 21 to FIG. 26.
Turn the fork leg upside-down and unscrew the foot nut (22) complete with O-ring (21) by the use of a 15 mm socket wrench.

FIG. 5

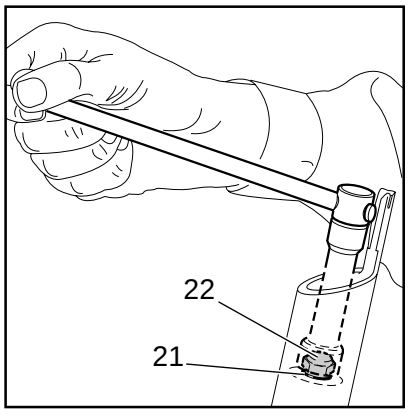
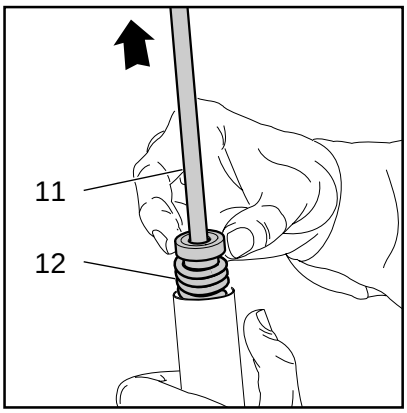


FIG. 6
Pull the hydraulic cartridge (11) complete with rebound spring (12) out of the stanchion tube.
Replace the whole hydraulic cartridge.

FIG. 6



PILOT BUSHING AND SEAL ASSEMBLY CHANGE
FIG. 7
Pull the stanchion tube (13) completely out of the slider.

FIG. 7

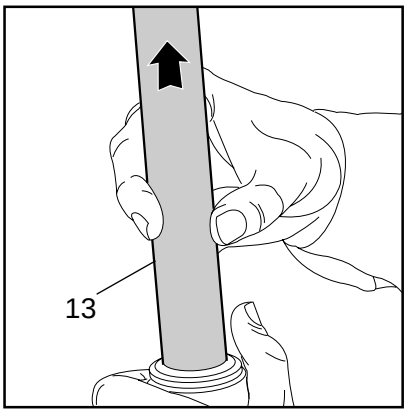


FIG. 8
Use a small screwdriver and remove the dust seal (14) from the slider.

FIG. 8

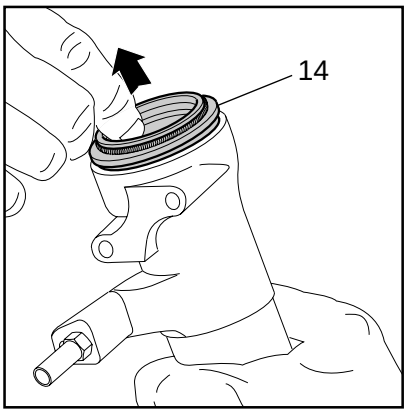


FIG. 9
Remove the stop ring (15) from the slider by placing the screwdriver bit in one of the three openings on the stop ring and carefully lifting the ring out of place.

IMPORTANT: when removing the stop ring, make sure not to damage its seat.

FIG. 9

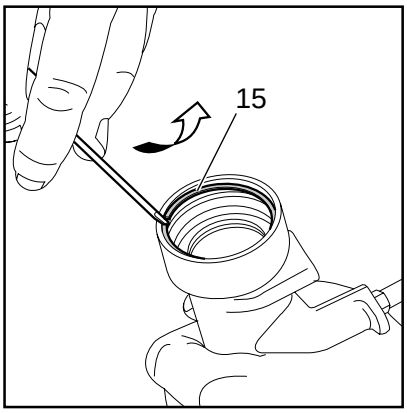


FIG. 10
Fit the slider protector (A) onto the slider and remove the oil seal (16) using a large slot screwdriver.

IMPORTANT: when removing the oil seal, make sure not to damage its seat. Once removed the oil seals should not be used again.

FIG. 10

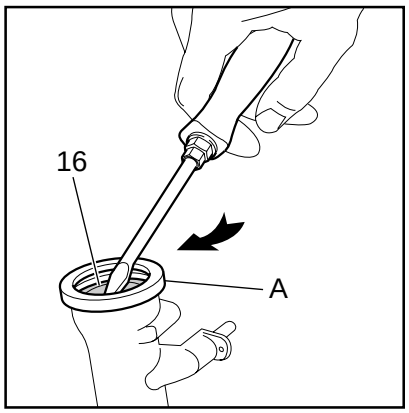


FIG. 11
Remove the upper washer (17) from the slider.

FIG. 11

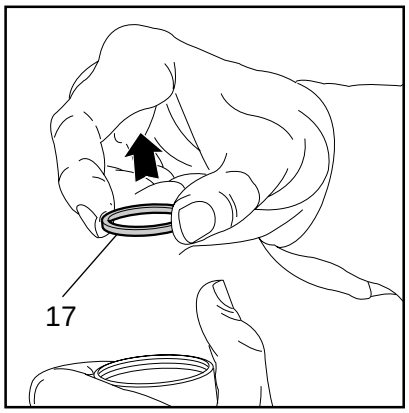
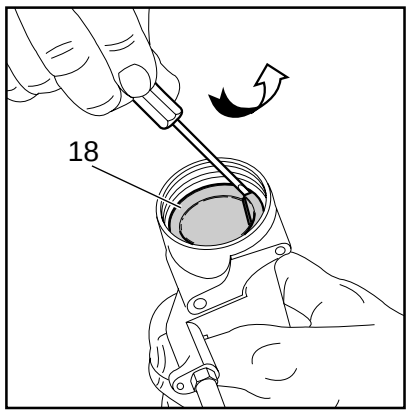


FIG. 12
Fit the bit of a small screwdriver into the upper edge slot of the pilot bushing (18) and lift gently. Pull the bushing out of the slider and make all necessary changes.

FIG. 12



REASSEMBLY

CAUTION: before reassembling, all components should be washed carefully with inflammable and biodegradable solvent and dried with compressed air.

PILOT BUSHING AND SEAL ASSEMBLY
FIG. 13
Check that no dirt or debris is between slider and bushing. Insert the pilot bushing (18) into place so that it adheres to the slider.

FIG. 13

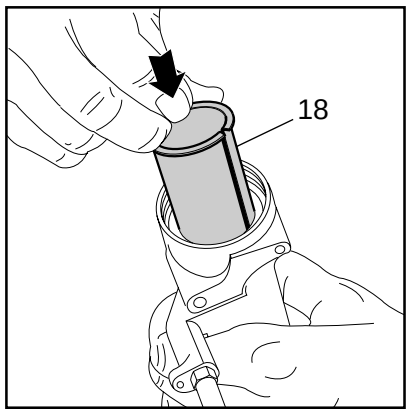


FIG. 14
Fit the upper washer (17) into the slider so that it touches the pilot bushing.

FIG. 14

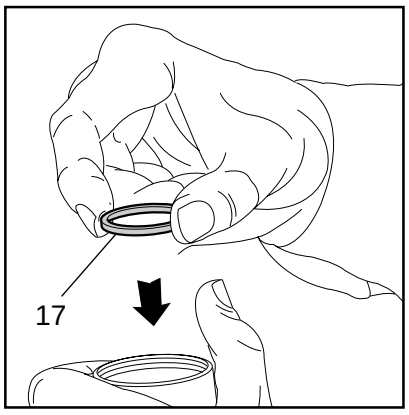


FIG. 15
Lubricate the oil seal (16) and place it onto the seal press (B) with the hollow side toward the slider.
Press the oil seal into place until it touches the lower washer by using the above seal press.

FIG. 15

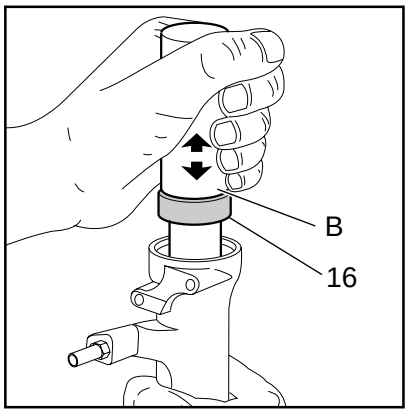


FIG. 16
Insert the stop ring (15) making sure it is properly seated into place.

FIG. 16

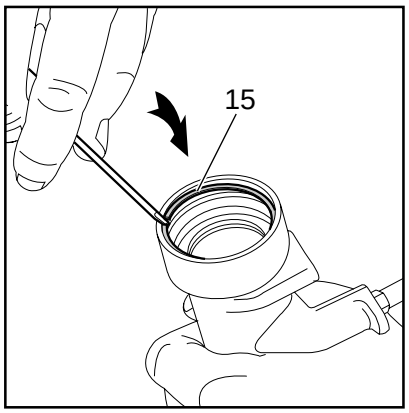
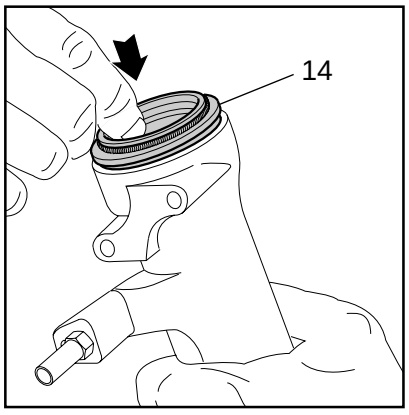


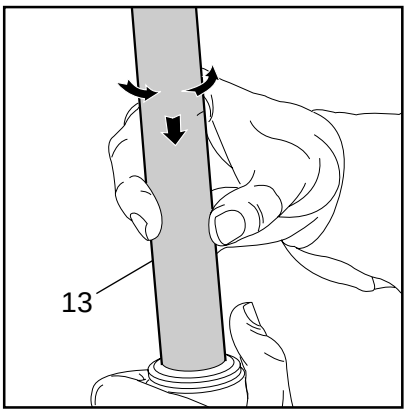
FIG. 17
Lubricate the dust seal (14) and insert it into the top of the slider.

FIG. 17



STANCHION TUBE
FIG. 18
Insert the stanchion tube (13) gently into the dust seal from the non threaded side. Rotate the stanchion tube while inserting it into the seal to facilitate installation and reduce the chance of damaging the seals. Check to see that the stanchion tube slides unrestricted by cycling the fork up and down several times. The tube should slide freely inside the seal assembly without any side play. In the event it is too hard or too soft, repeat the previous steps described above checking to ensure that components are not damaged.

FIG. 18



HYDRAULIC CARTRIDGE
FIG. 19
Fit the rebound spring (12) into the hydraulic cartridge. Insert the complete hydraulic cartridge (11) by compressing the stanchion tube completely to the bottom of its stroke.

FIG. 19

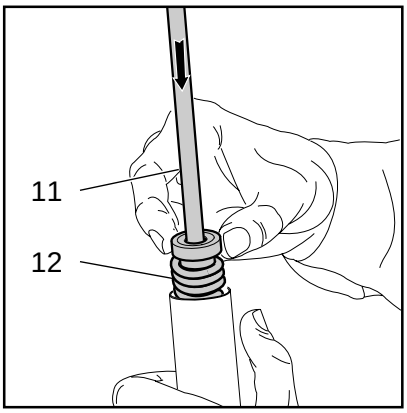
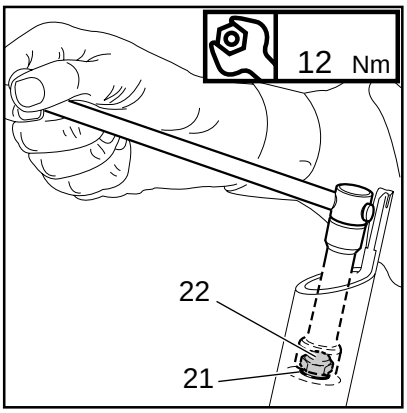


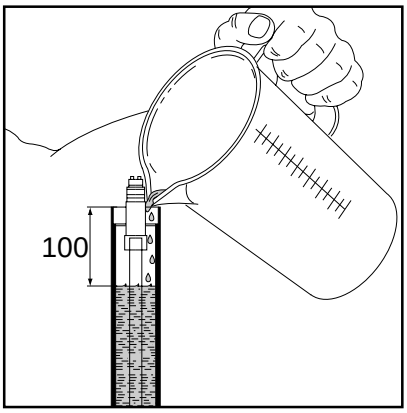
FIG. 20
Grease the O-ring (21) on the foot nut (22) and screw the nut on the hydraulic cartridge threaded end.
Tighten at 12 Nm.
Check to verify that the stanchion tube slides properly through the stroke by pumping it up and down several times.

FIG. 20



HOW TO FILL WITH OIL
FIG. 21
Pour the oil little by little when the stanchion tube is fully down and then pump with the cartridge (11) rod so as to have a better filling. Cartridge is full when no air is detected when pumping, in the completely closed position. Check that the oil level is 100 mm/3.93 in. from the top of the stanchion tube.

FIG. 21



SPRING AND CAP

FIG. 22

Fit the spring (9), the preload sleeve (1) and the lower washer (8) into the stanchion tube.
Lubricate the O-ring (10) on the top of the preload knob support and the O-ring (6) on the cap (5).

FIG. 22

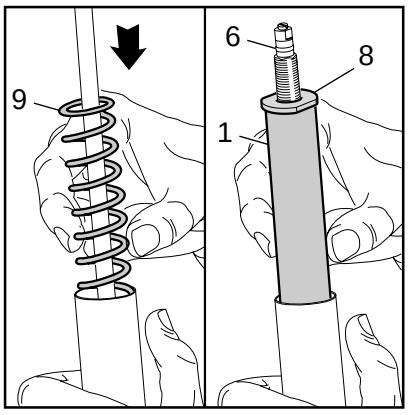


FIG. 23

Move the preload adjuster (7), in the cap, to the minimum preload position.
Screw the complete cap (5) onto the cartridge (11) rod. Screw cap all the way in.

FIG. 23

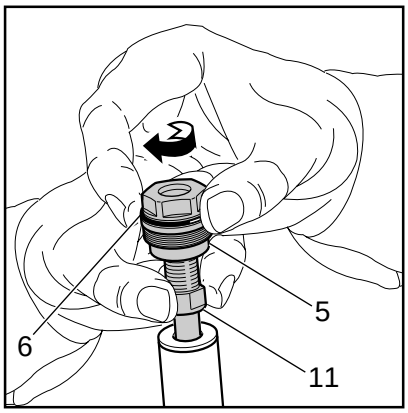


FIG. 24

Take the stanchion tube and fit the cap (5) by hand. Place the stanchion tube in a vice making sure it is not damaged or dented in the process and tighten the cap at 12 Nm.

FIG. 24

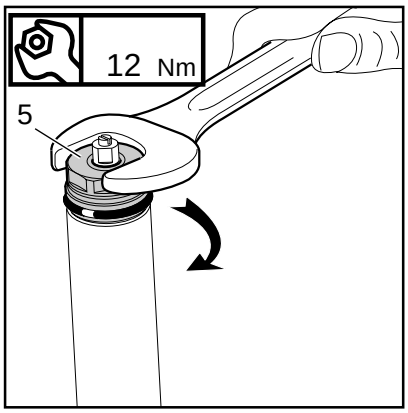


FIG. 25

Fit the stop ring (4) of the preload knob support and make sure it is properly seated into place.

FIG. 25

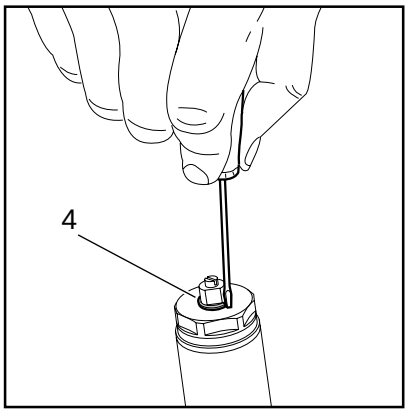
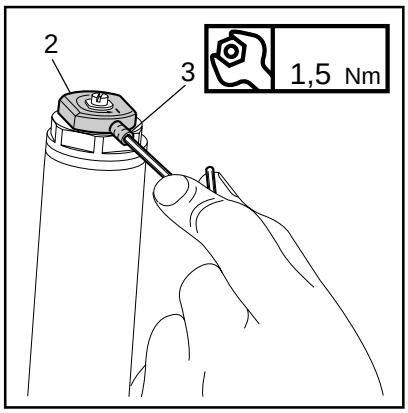


FIG. 26
Fit the preload knob (2) and secure it on the support by tightening the Allen bolt (3).at 1.5 Nm
At this point the brake arch can be assembled with the fork legs, which should be fitted onto the crown and onto the upper plate as specified in the section “INSTALLATION”.

FIG. 26



FORK EXPLODED VIEW

Ref.	Description
1	Preload sleeve
2	Preload knob
3	Allen bolt
4	Stop ring
5	Cap
6	O-ring
7	Preload adjuster
8	Lower washer
9	Spring
10	O-ring
11	Hydraulic cartridge
12	Rebound stop spring
13	Stanchion tube
14	Dust seal
15	Stop ring
16	Oil seal
17	Upper washer
18	Pilot bushing
19	R.H. slider
20	L.H. slider
21	O-ring
22	Foot nut
23	Cantilever boss
24	Arch
25	Screw
26	Crown with steer tube
27	Screw
28	Upper plate
29	Screw
30	L.H. sticker
31	R.H. sticker
32	Sticker

