instruction manual

FIFTY YEARS OF SUSPENSION INNOVATION
50
SINCE 1949

BAM
BOMBER AEROSPACE MATERIAL

ORIGINAL
open bath
DESIGN

ALLOY
z.2

ATOM BOMB
z.2

BAM
z.2

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

- Special cross-country fork whose legs are damped by a differentiated system.
- The left leg is sprung by a mechanical coil spring system, whereas the right leg is sprung by a mechanical coil spring system and damped by a hydraulic cartridge as well.
- Oversized 30 mm stanchions and full length guide bushings for superior rigidity.
- Parts subjected to friction are cooled and lubricated by a specially formulated oil.
- Spring pre-load adjustment (in both legs) and rebound damping (right leg only) controlled via external top mount adjusters.
- Stanchions designed with a special safety feature to eliminate any chance of the stanchions becoming separated from the crown.
- Brake cable support kit available on request.
- Stanchion protection standard.

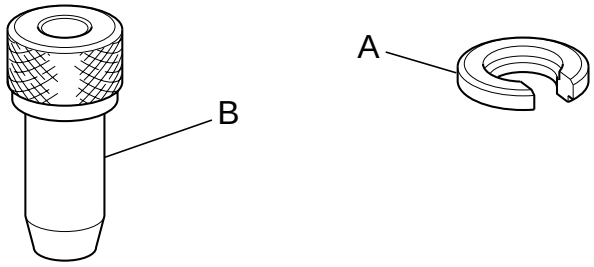
Z2 ATOM BOMB - Z2 BAM Disc Brake
Steer tube: EASTON aluminum steer tubes available for 1 1/8" diameter in non threaded or in CrMo steel with variable butting. Several lengths available in threaded or non threaded 1 1/8" and 1 1/4" diameters.
Crown: Forged and CNC-machined. BAM* aluminum alloy.
Arch: Forged and CNC-machined "BAM" aluminum alloy.
Stanchions: EASTON aluminum with variable butting.
Sliders: Cast and CNC-machined "BAM" aluminum alloy. Left slider equipped with disc brake adapter (Z2 BAM D.B.).
Slider bushing: Full length guide 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: type EBH 16 - SAE 7.5.
– Z2 ATOM BOMB: right leg 75 cc, left leg 85 cc.
– Z2 BAM: right leg 90 cc, left leg 100 cc.

* **BAM: Bomber Aerospace Material.**
Special alloy developed from aerospace material.

Z2 Alloy
Steer tube: EASTON aluminum steer tubes available for 1 1/8" diameter in non threaded or in CrMo steel with variable butting. Several lengths available in threaded or non threaded 1 1/8" and 1 1/4" diameters.
Crown: Forged and CNC-machined. BAM* aluminum alloy.
Arch: Forged and CNC-machined "BAM" aluminum alloy.
Stanchions: EASTON aluminum with variable butting.
Sliders: Cast and CNC-machined aluminum alloy. Left slider equipped with disc brake adapter.
Slider bushing: Full length guide 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: type EBH 16 - SAE 7.5.
– right leg: cc 80.
– left leg: cc 90.

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 tools found in your shop.

Size:
– travel:
  Z2 Alloy-Z2 ATOM BOMB = 65 mm (2.5 inches)
  Z2 BAM = 80 mm (3.1 inches)
– crown to axle length:
  Z2 Alloy-Z2 ATOM BOMB = 430 mm
  Z2 BAM = 445 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

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

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 seal nut and/or pumping rod 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 (right leg)	Cartridge is faulty	Replace hydraulic cartridge
Excessive play of stanchions in the sliders	Pilot bushings are worn	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 treated with bodywork polish at regular intervals in order to preserve their original finish.

INSTALLATION

Installing the BOMBER Z2 fork on a bicycle is a very delicate operation that should be carried out with extreme care. The installation should always be checked by one of our Technical Service Centers.

⚠ **WARNING**: Steer tube/headset mounting and adjustment must be carried out in compliance with the headset manufacturer's instructions either when a threaded steer tube or an "A-Head Set" steer tube is installed. Improper installation may jeopardize the safety of the rider.
The steer tube is interchangeable in Z2 crown as it is secured to the crown by a clamp fastened with two screws. This allows the interchanging of different diameters by using special reduction bushes. Steer tubes should be changed following installation instructions completely. Be sure to install correct steer type (A-Head Set or threaded), diameter and length for the frame on which it should be fitted. If necessary check with one of our Technical Service Centers for proper fit.

⚠ **WARNING:** In case of improper installation of the steer tube into the crown, the rider might lose control of his/her bicycle, thus jeopardizing his/her safety.

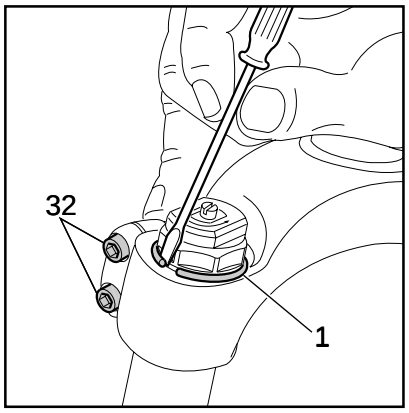
Check the torque of the bolts fastening the stanchions to the crown and attaching the arch to the sliders. For recommended torque settings, see the table below:

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

To remove the fork legs from the crown, loosen the bolts (32, FIG. A) and remove the safety ring (1, FIG. A). For easier removal, insert a small screwdriver between the ring and its seat and then remove the complete fork legs.

⚠ **WARNING: B**e sure to install the fork legs safety rings when reassembling, so that the fork legs do not become separated from the crown even though the bolts have become loose.

FIG. A



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.

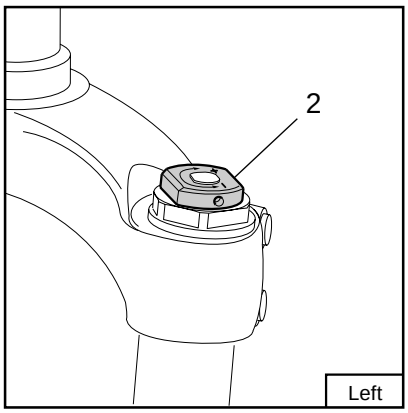
ADJUSTMENTS

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

SPRING PRELOAD (FIG. B)

The spring preload determines COMPRESSION damping and can be adjusted by turning the knob (2) on top of the fork legs. From the factory the Z2 is set with the minimum preload, i.e. the adjustment knob is completely unscrewed counterclockwise. However, the springs are slightly preloaded to help counteract static loads. By turning the adjustment 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 Z2 response for the rider's weight and riding style.

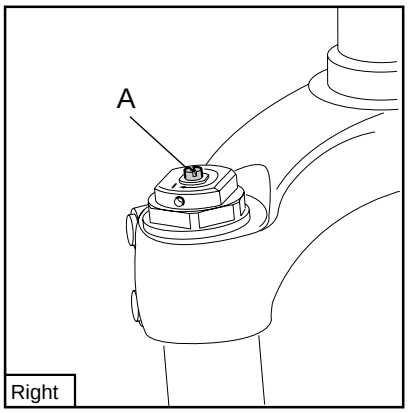
FIG. B



REBOUND & COMPRESSION ADJUSTMENT (FIG. C)

The right fork leg is equipped with an adjuster screw (A) for 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 – i.e. abt. 4 mm.

FIG. C

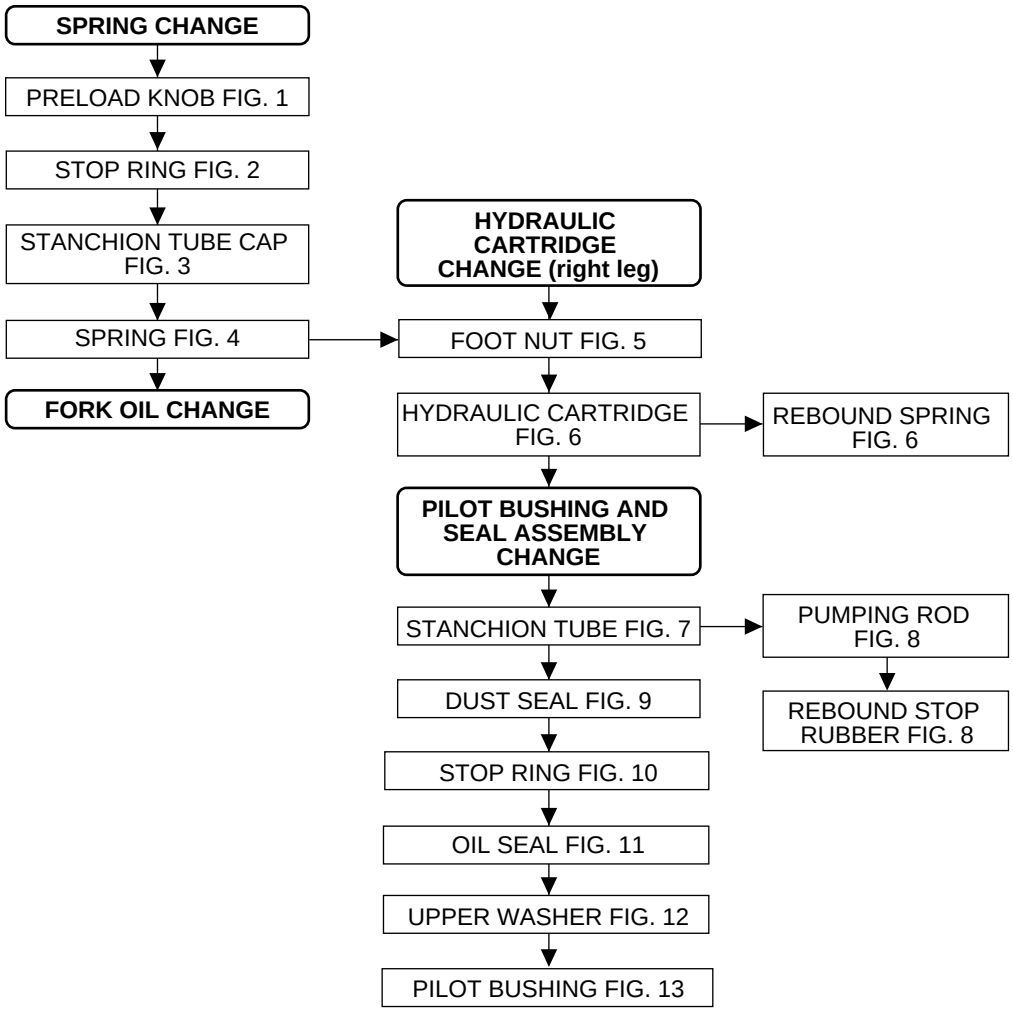


DISASSEMBLY

GENERAL

– The reference numbers given in this section relate to the components shown in the forks exploded view on page 15-16-17.
– 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. Locate the part you need to remove in the diagram, then look at the arrows to determine which other parts you will need to remove first.

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 by means of a 1.5 mm Allen wrench. Remove the knob from the cap assembly.

FIG. 1

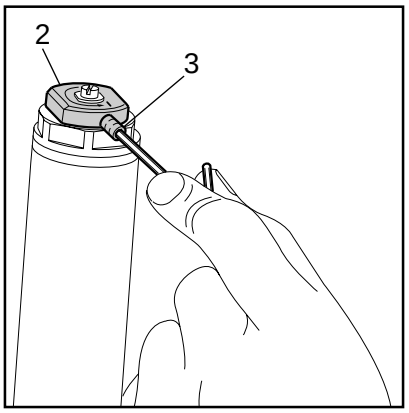


FIG. 2
Remove the stop ring (4) from the top of the preload knob support with a small screwdriver.

FIG. 2

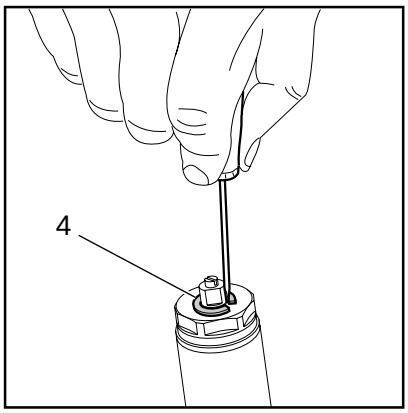


FIG. 3
Place the stanchion tube (13) in a vice making sure it is not damaged or dented in the process and unscrew the cap (5) with a 26 mm open end wrench.
Remove the cap complete with O-ring (6) from the stanchion tube.

FIG. 3

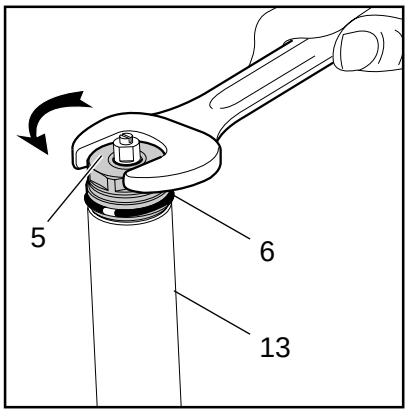
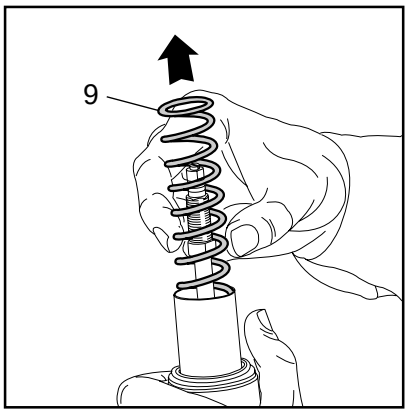


FIG. 4
Push the stanchion tube into the slider and remove the spring (9).
Let all the oil drain into the fork leg. By following this procedure, there is no need to check the oil level.
Make all necessary changes.

FIG. 4



HYDRAULIC CARTRIDGE CHANGE
(right fork leg only)
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. 22 to FIG. 27.
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

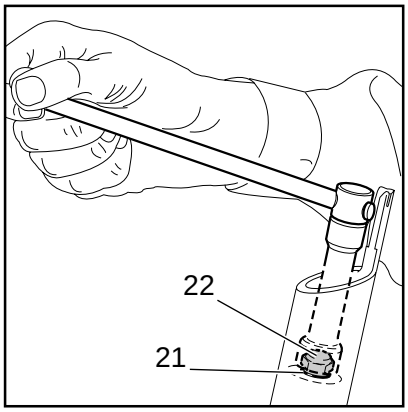
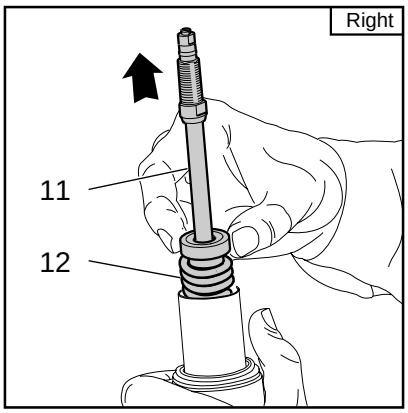


FIG. 6
Pull the hydraulic cartridge (11) complete with rebound spring (12) out of the stanchion tube.
Replace the whole hydraulic cartridge.

FIG. 6



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

FIG. 7

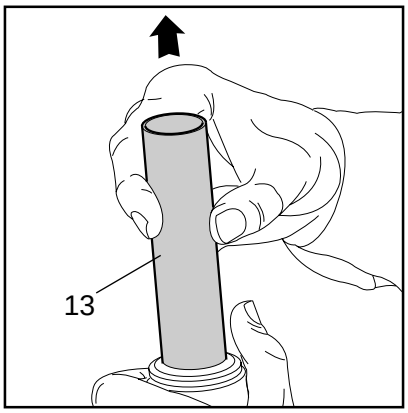


FIG. 8
A pumping rod (36) complete with rebound spring (12) is fitted into the L.H. leg, inside the stanchion. Withdraw the above parts from the tube top.

FIG. 8

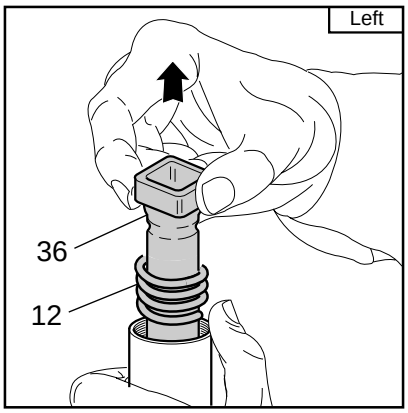


FIG. 9
Use a small screwdriver and remove the dust seal (14) from the slider.

FIG. 9

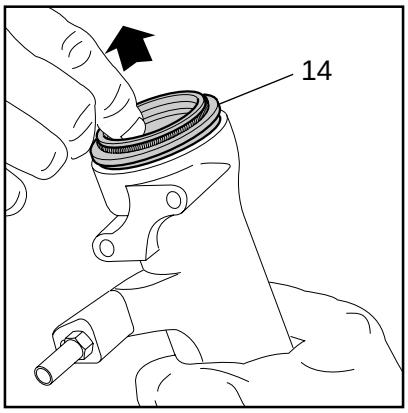


FIG. 10
Remove the stop ring (15) from the slider by placing the screwdriver bit in one of the openings on the stop ring and carefully lifting the ring out of place.

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

FIG. 10

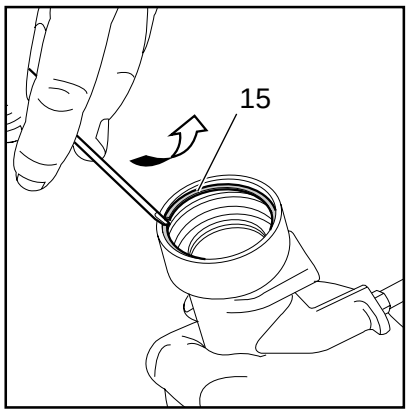


FIG. 11
Fit the slider protector (A) onto the slider and remove the oil seal (16) with the help of a large slot screwdriver.

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

FIG. 11

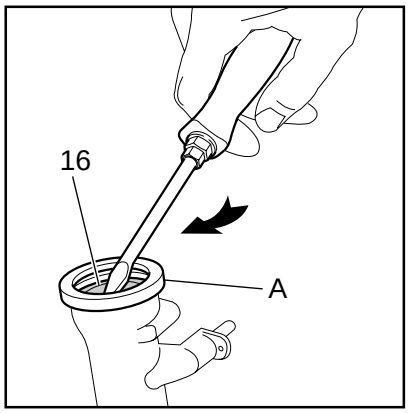


FIG. 12
Remove the upper washer (17) from the slider.

FIG. 12

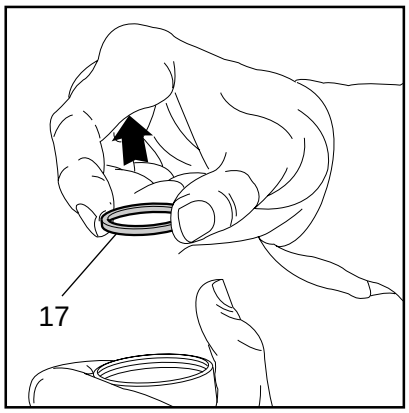
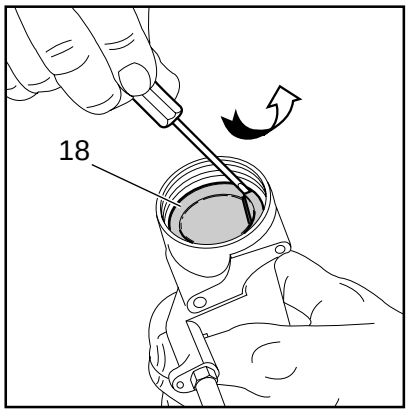


FIG. 13
Fit the bit of a small screwdriver into the upper edge slot of the pilot bushing (18) and lift gently. Pull the bushing out of the slider and make all necessary changes.

FIG. 13



REASSEMBLY

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

PILOT BUSHING AND SEAL ASSEMBLY
FIG. 14
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. 14

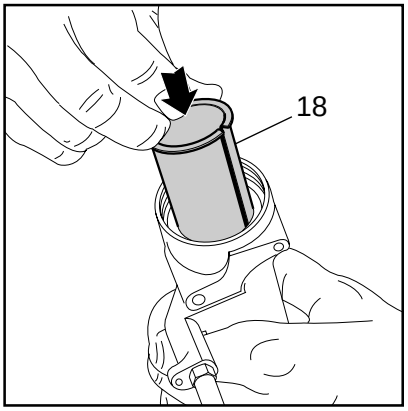


FIG. 15
Fit the upper washer (17) into the slider so that it touches the pilot bushing.

FIG. 15

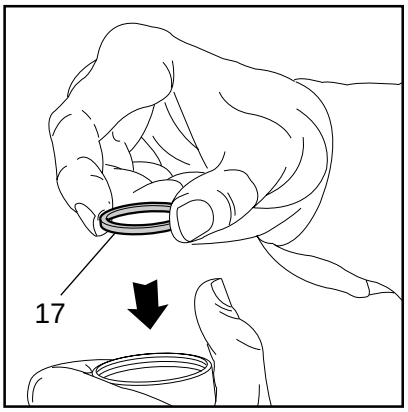


FIG. 16
Lubricate the oil seal (16) and place it onto the seal press (B) with the hollow side toward the slider.
Press the oil seal into place until it touches the lower washer by using the above seal press.

FIG. 16

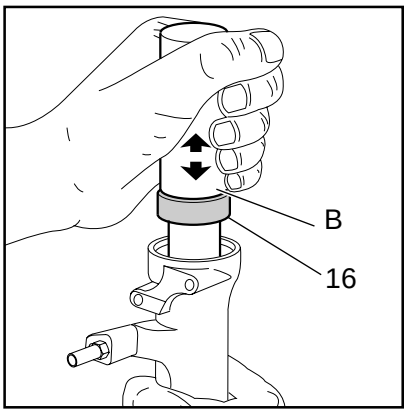


FIG. 17
Insert the stop ring (15) making sure it is properly seated into place.

FIG. 17

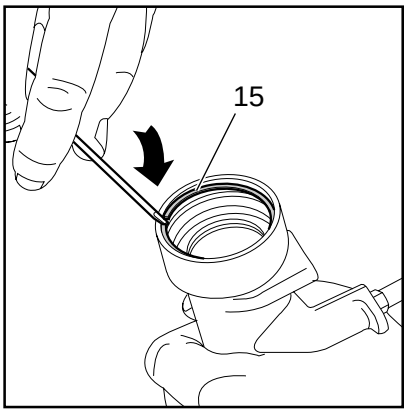
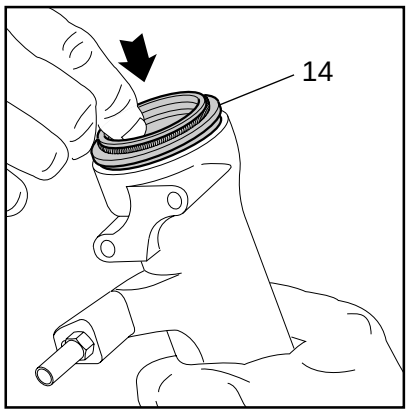


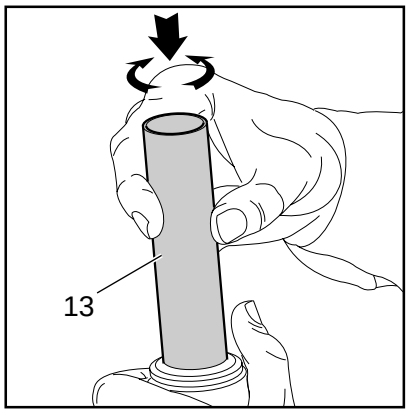
FIG. 18
Lubricate the dust seal (14) and fit it into the top of the slider.

FIG. 18



STANCHION TUBE
FIG. 19
Fit the stanchion tube (13) gently into the dust seal, from the unthreaded end. 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 and check components to ensure they are not damaged.

FIG. 19



HYDRAULIC CARTRIDGE (right leg) AND PUMPING ROD (left leg)
FIG. 20
Push the stanchion up to slider bottom.
Fit the hydraulic cartridge (11) complete with the rebound spring into the R.H. stanchion and push until it reaches the bottom. Fit the pumping rod (36) complete with rebound spring (12) into the L.H. stanchion and push to the bottom.

FIG. 20

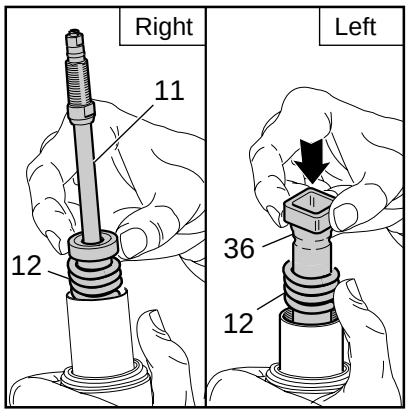
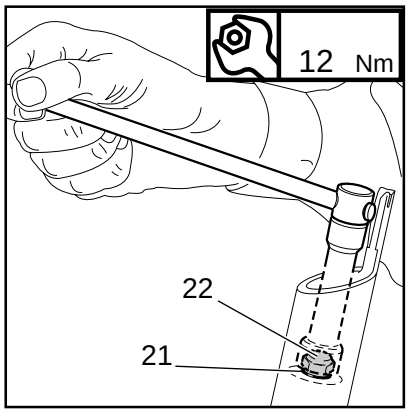


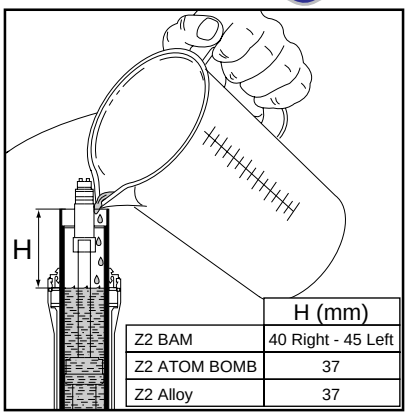
FIG. 21
Grease the O-ring (21) on the foot nut (22) and screw the nut on the threaded end of both the hydraulic cartridge and the pumping rod.
Tighten at 12 Nm.
Check to verify that the stanchion tube slides properly through the stroke by pumping it up and down several times.

FIG. 21



HOW TO FILL WITH OIL
FIG. 22
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 oil level is at the recommended distance (H) from the top of the stanchion tube.

FIG. 22



	H (mm)
Z2 BAM	40 Right - 45 Left
Z2 ATOM BOMB	37
Z2 Alloy	37

SPRING AND CAP
FIG. 23
Fit the spring (9) into the stanchion tube.
Move the preload adjuster (7), in the cap, to the minimum preload position.
Lubricate the O-ring (10) on the top of the preload knob support (right slider only) and the O-ring (6) on the cap (5).

FIG. 23

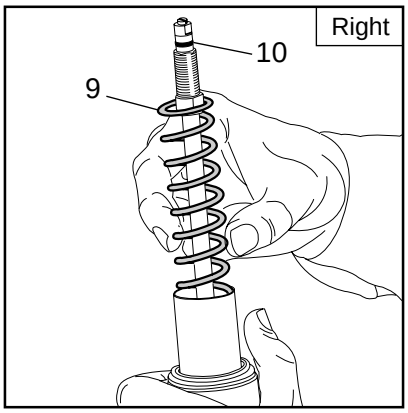


FIG. 24 (right leg only)
Screw the cap (5) complete with preload adjuster (7) and lower washer (8) onto the cartridge (11) rod. Screw cap all the way in.

FIG. 24

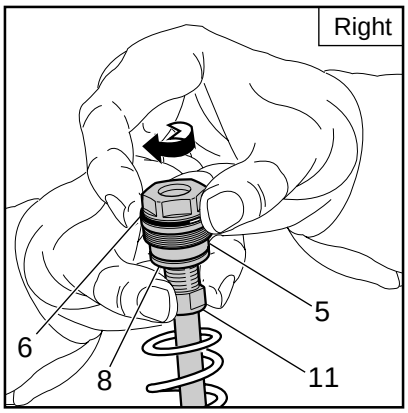


FIG. 25
Take the stanchion tube and fit the cap (5) by hand. Place the stanchion tube in a vice making sure it is not damaged or dented in the process. Tighten the cap at 12 Nm.

FIG. 25

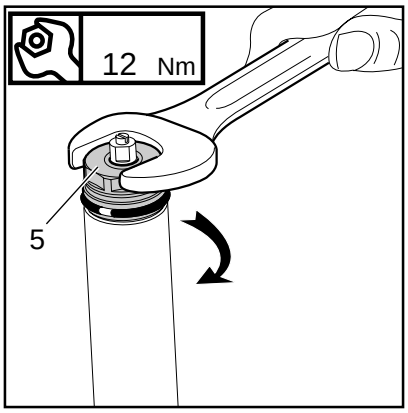


FIG. 26
Fit the stop ring (4) of the preload knob support and make sure it is properly seated into place.

FIG. 26

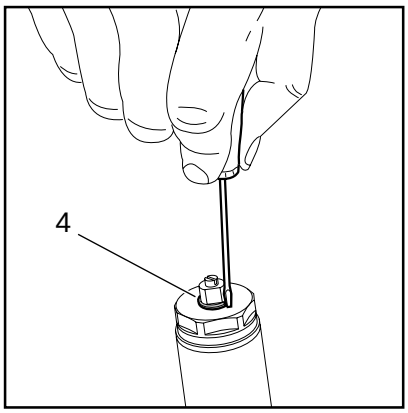
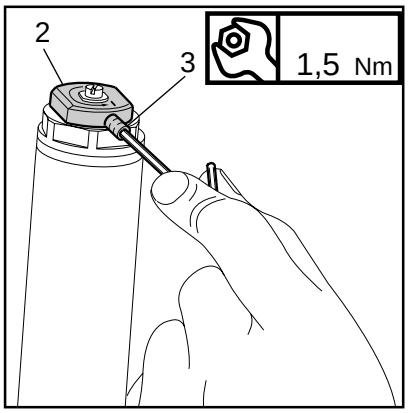


FIG. 27
Fit the preload knob (2) and secure it on the support by tightening the Allen bolt (3) at 1.5 Nm.
At this point the brake arch can be assembled with the fork legs, which should be fitted onto the crown as specified in section “INSTALLATION”.

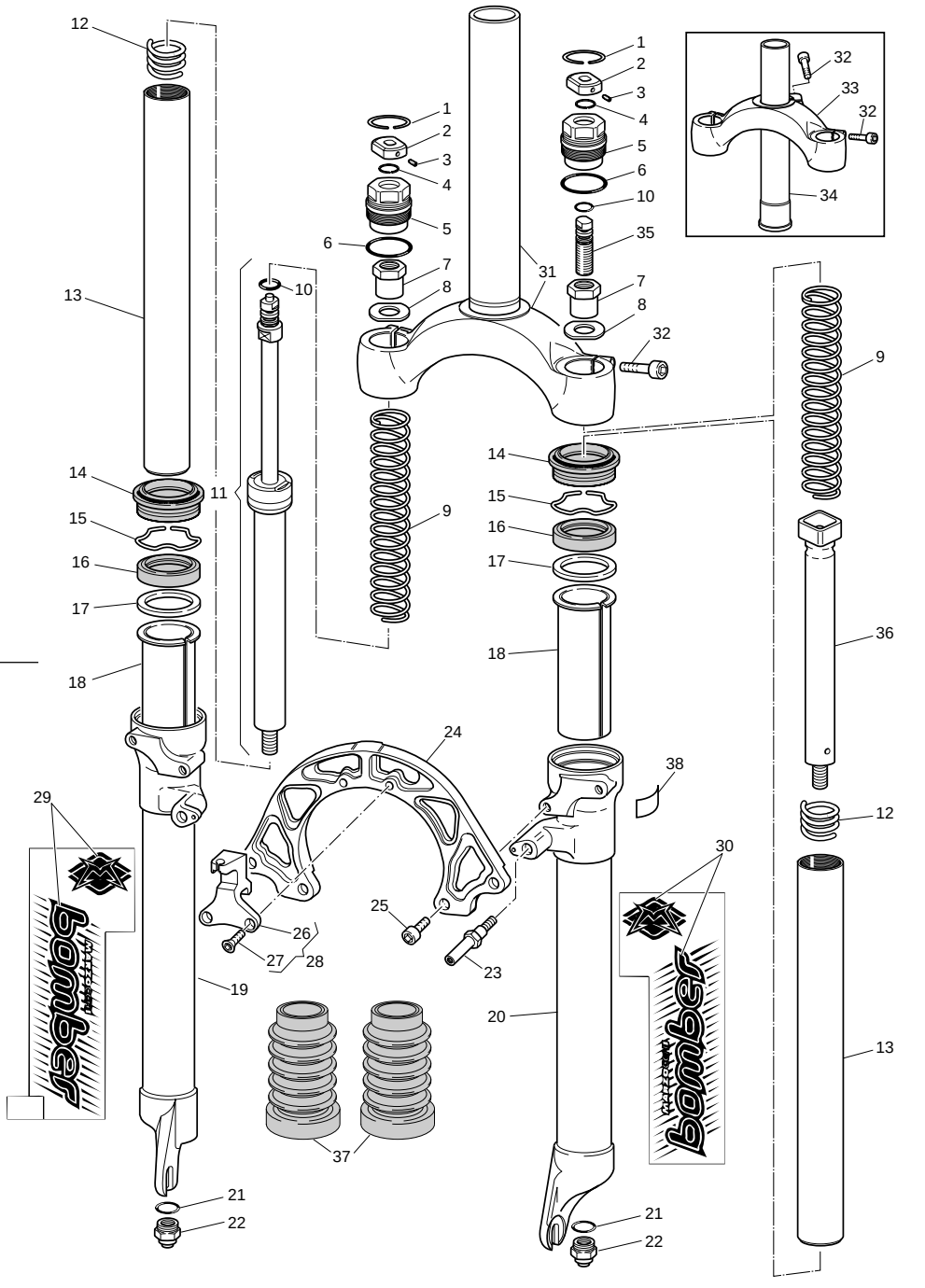
FIG. 27



FORK EXPLODED VIEW

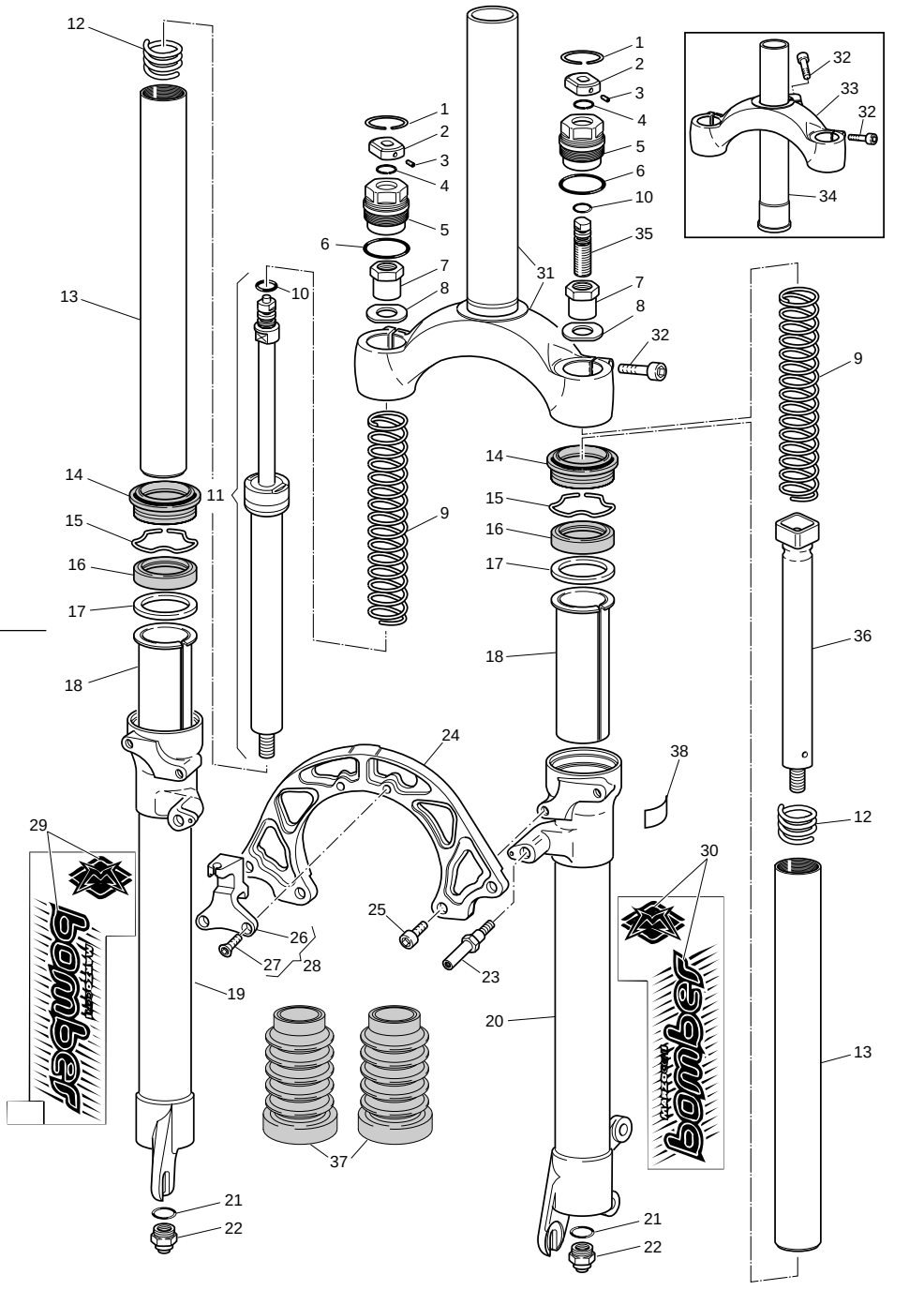
Ref.	Description
1	Safety ring
2	Preload knob
3	Allen bolt
4	Stop ring
5	Cap
6	O-ring
7	External preload adjuster
8	Lower washer
9	Spring
10	O-ring
11	Hydraulic cartridge
12	Rebound spring
13	Stanchion tube
14	Dust seal
15	Stop ring
16	Oil seal
17	Upper washer
18	Pilot bushing
19	R.H. slider
20	L.H. slider
21	O-ring
22	Foot nut
23	Cantilever boss
24	Arch
25	Screw
26	Brake cable support
27	Screw
28	Brake cable support kit
29	R.H. sticker
30	L.H. sticker
31	Crown with steer tube
32	Screw
33	Crown
34	Steer tube
35	Internal preload adjuster
36	Pumping rod
37	Stanchion protections
38	Sticker

Z2 ATOM BOMB



Ref.	Description
1	Safety ring
2	Preload knob
3	Allen bolt
4	Stop ring
5	Cap
6	O-ring
7	External preload adjuster
8	Lower washer
9	Spring
10	O-ring
11	Hydraulic cartridge
12	Rebound 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	Brake cable support
27	Screw
28	Brake cable support kit
29	R.H. sticker
30	L.H. sticker
31	Crown with steer tube
32	Screw
33	Crown
34	Steer tube
35	Internal preload adjuster
36	Pumping element
37	Stanchion protections
38	Sticker

Z2 BAM Disc Brake



Ref.	Description
1	Safety ring
2	Preload knob
3	Allen bolt
4	Stop ring
5	Cap
6	O-ring
7	External preload adjuster
8	Lower washer
9	Spring
10	O-ring
11	Hydraulic cartridge
12	Rebound 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	Brake cable support
27	Screw
28	Brake cable support kit
29	R.H. sticker
30	L.H. sticker
31	Crown with steer tube
32	Screw
33	Crown
34	Steer tube
35	Internal preload adjuster
36	Pumping element
37	Stanchion protections
38	Sticker

Z2 Alloy

