

SERVICE & TRAVEL CHANGE GUIDE

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INTRODUCTION

This manual is intended to guide the user through the steps necessary to fully service and maintain the Markhor suspension fork.

WARNING We highly recommend that service to this fork be performed by a certified bicycle mechanic. Failure to follow instructions presented in this manual could lead to serious injury or death. Any questions about the servicing of this fork or the manual itself should be directed to Manitou Customer Support at:
Phone: 888-686-3472
Email: techsupport@hayesbicycle.com

WARNING Suspension forks by design can contain preloaded springs, gases and fluids under extreme pressures. Warnings contained in this manual must be observed to avoid damage to fork, serious injury or even death.

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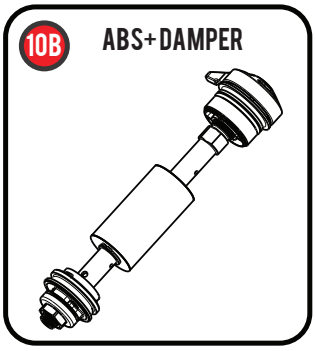
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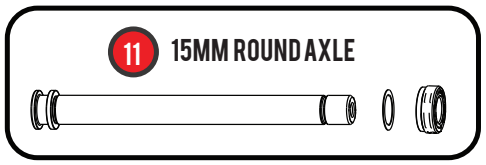
REQUIRED TOOLS

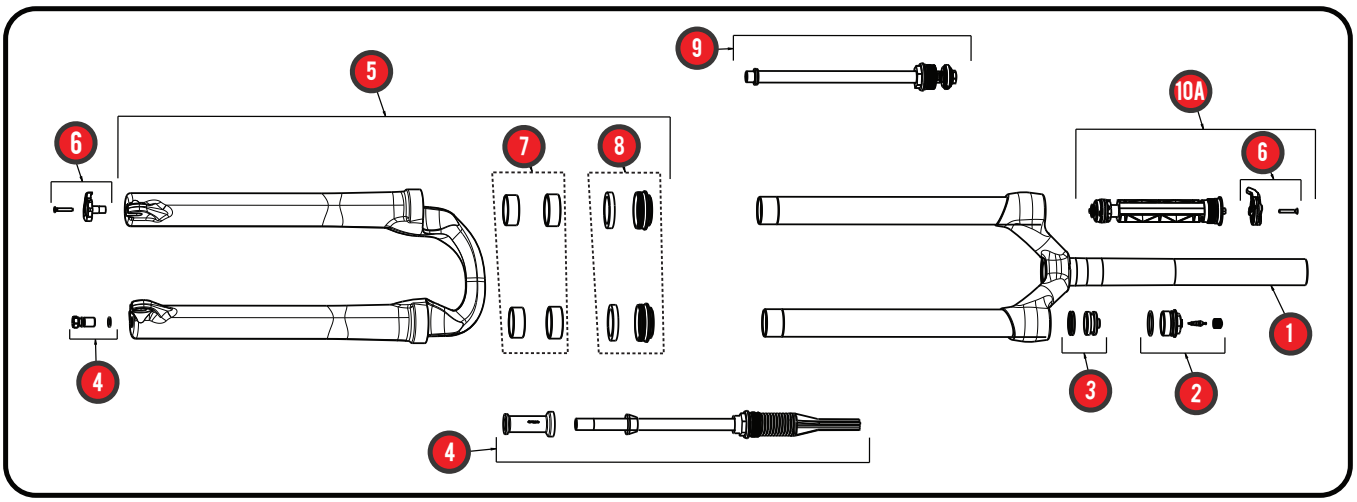
Below is a list of tools necessary for servicing the Markhor fork.

- Safety Glasses
- Nitrile Gloves
- Lint-Free Rags
- Torque Wrench
- Slickoleum Grease
- Semi-bath Oil, 5/40w Synthetic - Manitou part number 85-0022
- 5wt Maxima Fork oil - Manitou part number 85-0023
- Standard Cassette Spline Tool
- 8mm Hex Socket
- 2mm Hex Wrench
- 20mm Socket
- 24mm Socket
- 22mm Box end Wrench
- 12mm Box End Wrench
- 12mm Socket
- Ratchet
- 22mm Crow's Foot
- Fork/Shock Pump
- Pick
- Adjustable Wrench
- Downhill tire lever or flat blade screwdriver

MARKHOR 29 & 27.5 EXPLODED VIEW





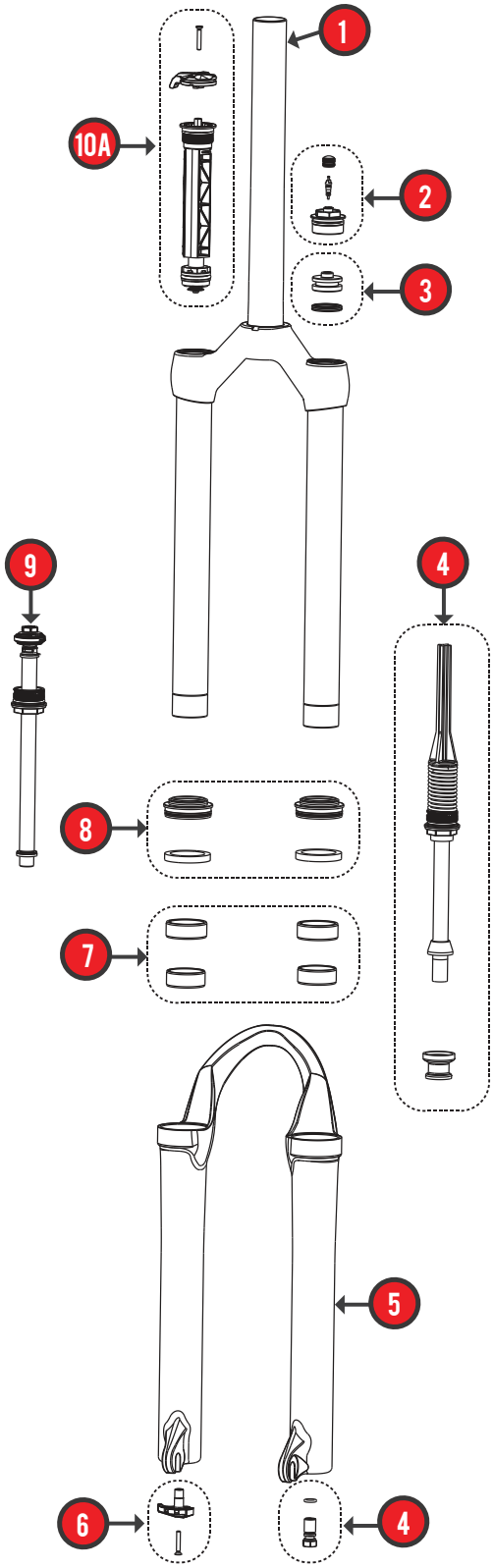


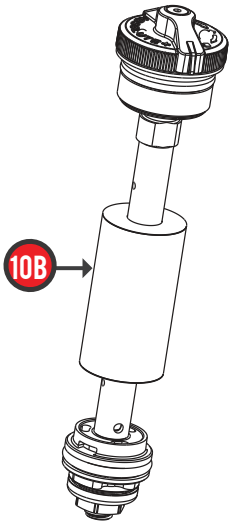
ITEM	MARKHOR 27.5 PART DESCRIPTION 100 & 110 MM AXLE	PART NUMBER
1	CSA, **100**, 1-1/8 STRAIGHT STEER, 41 OS, BLK	141-333382-B711
	CSA, **100**, 1-1/2 TAPER STEER, 44 OS, BLK	141-333382-B721
	CSA, **110**, 1-1/8 STRAIGHT STEER, 44 OS, NAT	141-34004-K711
	CSA, **110**, 1-1/2 TAPER STEER, 44 OS, NAT	141-34004-K721
	CSA, **110**, 1-1/8 STRAIGHT STEER, 44 OS, BLK	141-34004-B711
	CSA, **110**, 1-1/2 TAPER STEER, 44 OS, BLK	141-34004-B721
2	AIR CAP	83-2654
3	AIR PISTON	82-2669
4	COMPRESSION ROD 80/100/120, M26.5X1	141-31870-K009
5	OUTER CASTING (INCLUDES SEALS AND BUSHINGS) **100**	141-27200-K012
	OUTER CASTING (INCLUDES SEALS AND BUSHINGS) **110**	141-34006-K012
6	KNOB KIT	141-27177-K003
7	BUSHING KIT	85-5321
8	SEAL KIT	85-5281
9	REBOUND DAMPER ASSEMBLY, M26.5X1, **100**	141-33456-K002
	REBOUND DAMPER ASSEMBLY, M26.5X1, **110**	141-31870-K008
10A	KWIK TOGGLE DAMPER (KNOB INCLUDED)	141-33385-K001
10B	ABS+ DAMPER (OPTIONAL UPGRADE, REPLACES 10A)	141-26532-K001
	DECAL KIT	141-34007-K001
	REBUILD KIT	141-28528-K004

ITEM	MARKHOR 29 PART DESCRIPTION 100 & 110 MM AXLE	PART NUMBER
1	CSA, **100**, 1-1/8 STRAIGHT STEER, 48 OS, BLK	141-333382-B911
	CSA, **100**, 1-1/8 STRAIGHT STEER, 51 OS, BLK	141-333382-B912
	CSA, **100**, 1-1/2 TAPER STEER, 48 OS, BLK	141-333382-B921
	CSA, **100**, 1-1/2 TAPER STEER, 51 OS, BLK	141-333382-B922
	CSA, **110**, 1-1/8 STRAIGHT STEER, 51 OS, NAT	141-34004-K911
	CSA, **110**, 1-1/2 TAPER STEER, 51 OS, NAT	141-34004-K921
	CSA, **110**, 1-1/8 STRAIGHT STEER, 51 OS, BLK	141-34004-B911
	CSA, **110**, 1-1/2 TAPER STEER, 51 OS, BLACK	141-34004-B921
2	AIR CAP	83-2654
3	AIR PISTON	82-2669
4	COMPRESSION ROD 80/100/120, M26.5X1	141-31870-K009
5	OUTER CASTING (INCLUDES SEALS AND BUSHINGS) **100**	141-27200-K013
	OUTER CASTING (INCLUDES SEALS AND BUSHINGS) **110**	141-34006-K013
6	KNOB KIT	141-27177-K003
7	BUSHING KIT	85-5321
8	SEAL KIT	85-5281
9	REBOUND DAMPER ASSEMBLY, M26.5X1, **100**	141-33456-K003
	REBOUND DAMPER ASSEMBLY, M26.5X1, **110**	141-31870-K008
10A	KWIK TOGGLE DAMPER (KNOB INCLUDED)	141-33385-K001
10B	ABS+ DAMPER (OPTIONAL UPGRADE, REPLACES 10A)	141-26532-K001
11	15MM ROUND AXLE, **110**	141-34005-K001
	DECAL KIT	141-34007-K001
	REBUILD KIT	141-28528-K004

MARKHOR 26 EXPLODED VIEW

ITEM	PART DESCRIPTION	PART NUMBER
1	CROWN/STEER/LEG 26" 80/100 1-1/8", NAT	141-33382-K611
	CROWN/STEER/LEG 26" 80/100 1.5", NAT	141-33382-K621
	CROWN/STEER/LEG 26" 80/100 1-1/8", BLK	141-33382-B611
	CROWN/STEER/LEG 26" 80/100 1.5", BLK	141-33382-B621
2	AIR CAP	83-2654
3	AIR PISTON	82-2669
4	COMPRESSION ROD 80/100	141-31870-K003
5	OUTER CASTING - QR, MATTE BLACK	141-27200-K011
6	KNOB KIT	141-27177-K003
7	BUSHING KIT	85-5321
8	SEAL KIT	85-5281
9	REBOUND DAMPER ASSEMBLY	141-33456-K001
10A	KWIK TOGGLE DAMPER (KNOB INCLUDED)	141-33385-K001
10B	ABS+ DAMPER (OPTIONAL UPGRADE, REPLACES 10A)	141-26532-K001
	DECAL KIT	141-31870-K007
	REBUILD KIT	141-28528-K004





ABS+ DAMPER (OPTIONAL)

HAYES PERFORMANCE SYSTEMS WARRANTY

Limited Warranty:
HAYES warrants its products to be free from defects in materials or workmanship under normal intended use for a period of one year (two years in European Union countries) from the date of purchase, subject to normal wear and tear. Unless otherwise prohibited by law, any such defective products will be repaired or replaced at the option of HAYES when received with proof of purchase, freight prepaid. This warranty does not cover breakage, bending, or damage that may result from crashes or falls. This warranty does not cover any defects or damage caused by alterations or modifications of HAYES products or by normal wear, accidents, improper maintenance, damages caused by the use of HAYES products with parts of different manufacturers, improper use or abuse of the product, application or uses other than those set forth in the HAYES instruction manual or failure to follow the instructions contained in the applicable HAYES instruction manual. Instruction manuals can be found on-line at www.hayescomponents.com. Any modifications made by the BUYER or any subsequent user will render the warranty null and void. This warranty does not apply when the serial number or production code has been deliberately altered, defaced or removed from the product. The cost of normal maintenance or replacement of service items, which are not defective, shall be the BUYER's responsibility. If permitted by local law, this warranty is expressly in lieu of all other warranties (except as to title), express or implied, and in particular and without limitation HAYES disclaims the implied warranties of merchantability or fitness for purpose If for any reason warranty work is necessary, return the component to the place of purchase or contact your dealer or local HAYES distributor. In the USA, contact HAYES for a return authorization number (RA#) at (888) 686-3472. At that time, instructions for repair, return, or replacement shall be given. Customers in countries other than the USA should contact their dealer or local HAYES distributor.

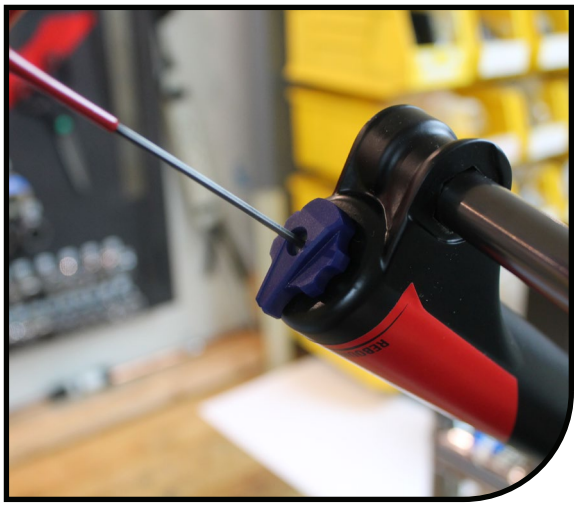
Limitation of Liability.
Unless required by mandatory law, HAYES shall not be liable for any incidental, indirect, special or consequential damages.

This warranty does not apply to normal wear and tear. Wear and tear parts are subject to damage through normal use, failure to service according to recommendations or riding in conditions other than recommended. The cost of normal maintenance or replacement of service items, which are not defective, shall be paid for by the original purchaser. Wear and tear parts that will not be replaced under warranty include but are not limited to the following:

- Bushings
- Rear Shock Mount Hardware
- Handlebar grips
- Tubeless Valves
- Dust Seals
- Fork and Shock air Seals and/or O-rings
- Bearings
- Upper Stanchion Tubes
- Stripped or worn bolts
- Remote Lockout Cable
- Gloves
- Lower Stanchion Tubes(Dorado)

CASTING REMOVAL & SERVICE

1 Remove rebound knob using a 2mm hex wrench.



2 Insert an 8mm hex wrench into the end of the rebound damper rod and turn the rod **clockwise** until it is disengaged from the casting and can be pushed into the casting.



3 Use a 12mm wrench to remove the compression rod bolt.



4 Remove casting from fork. It is recommended this be done over a drain pan as the lower casting contains semi-bath oil. Allow oil in casting to drain out before continuing to next step.



5 Using a downhill tire lever or similar tool, gently pry the dust seals out of the casting.

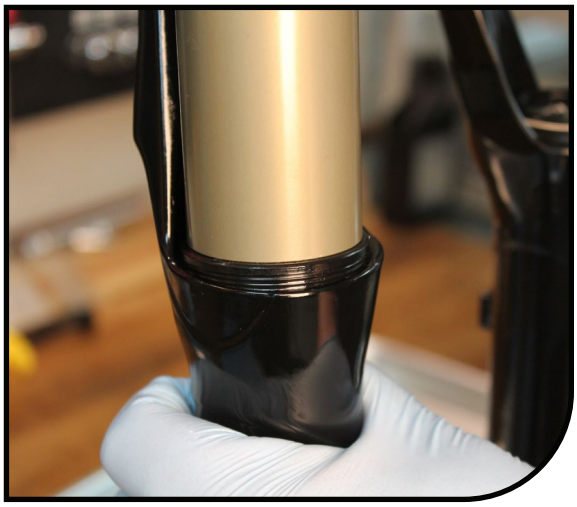


6 Remove old foam wiper rings. Apply semi-bath fluid to the new foam wiper rings and install into fork casting.



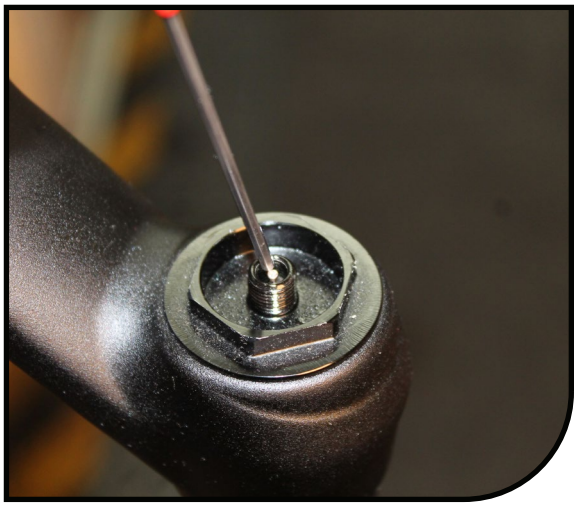
CASTING REMOVAL & SERVICE

7 Remove springs from lip of dust seals. Using the Manitou 30mm Seal Press or large socket press in the dust seals. Reinstall springs onto seals.



AIR SPRING SERVICE

1 Release air from the fork. Depress Schrader valve a few times to ensure all air is released.



2 Remove air cap using a 20mm socket.

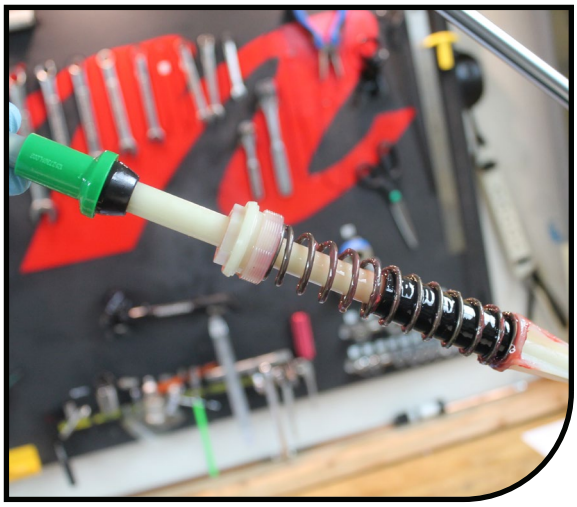


3 Invert the fork and use a 22mm box end wrench to unthread the air spring assembly from the stanchion.

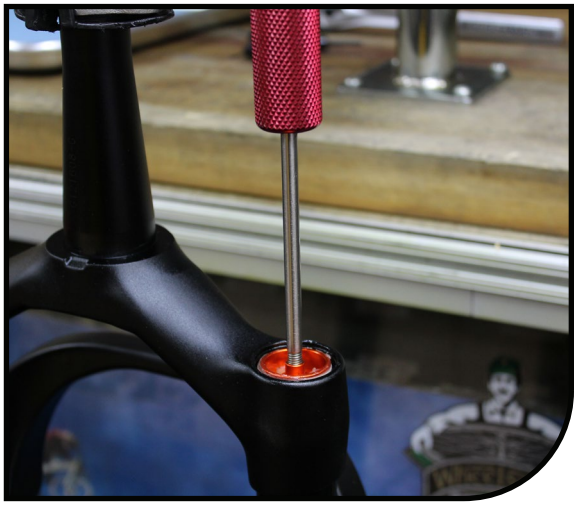


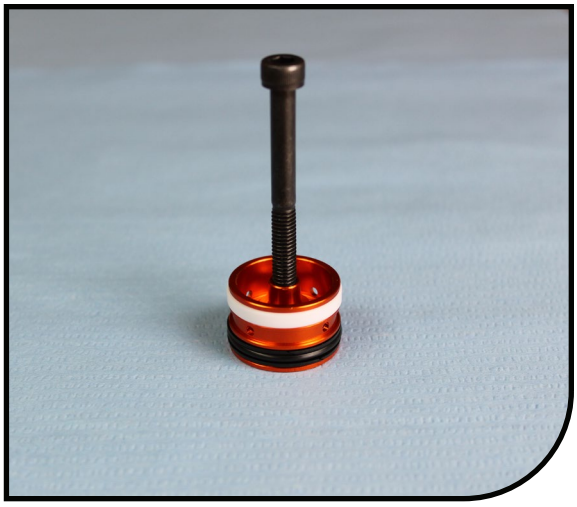
AIR SPRING SERVICE

4 Remove air spring assembly from the stanchion. Clean spring and rod assembly and re-grease.
TIP: Ensure grease is worked into the ID of the rubber top-out bumper to improve ride quality and topping feel.



5 Thread a piston removal tool (or a long M6 bolt as seen in the bottom photo) into the air piston and remove it from the stanchion . Once the piston is removed clean the inside of the stanchion with isopropyl alcohol and a lint free towel. Inspect the inside and outside of the stanchion for scratches or other damage.



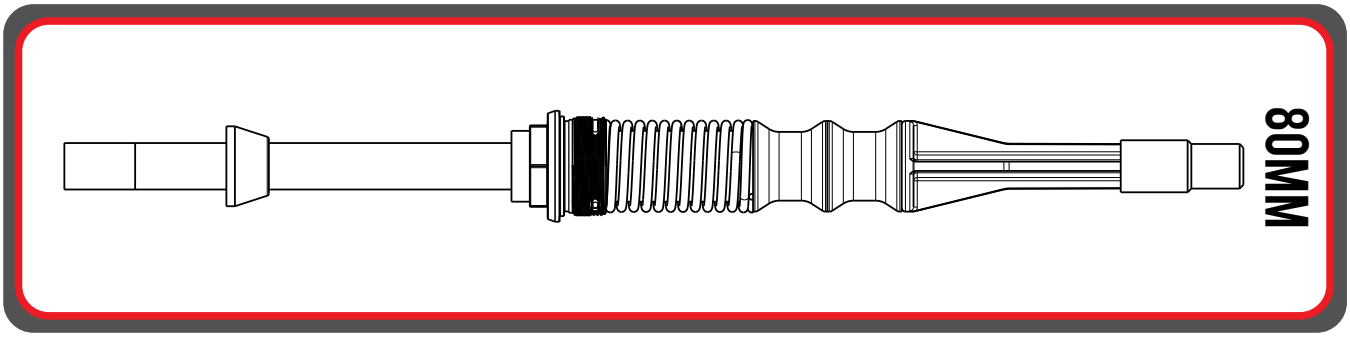


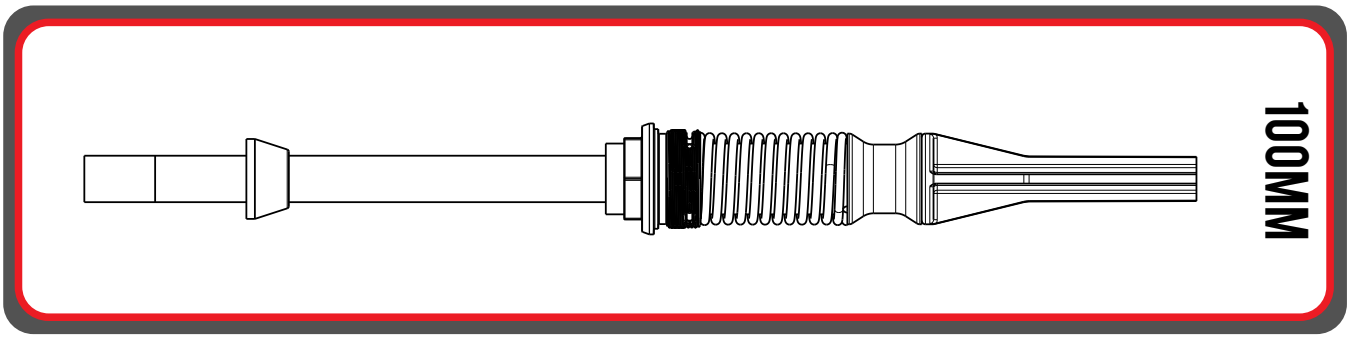
AIR SPRING SERVICE/TRAVEL CHANGE

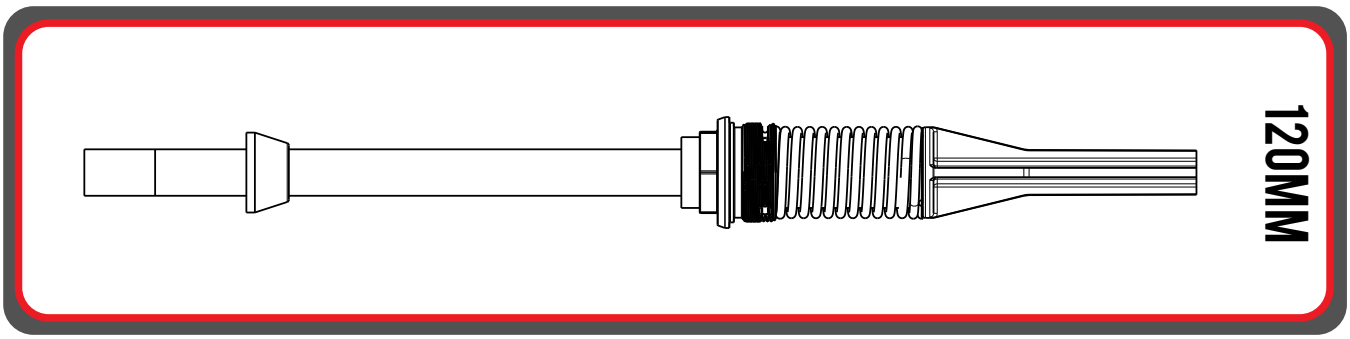
Optional

To change fork travel to 80mm or 100mm add or remove spacers and compression rod extender as seen below. This is the same for the 27.5 and 29 version of the fork.

		WHEEL SIZE		
		26”	27.5	29
TRAVEL	80	YES	YES	YES
	100	YES	YES	YES
	120	NO	YES	YES





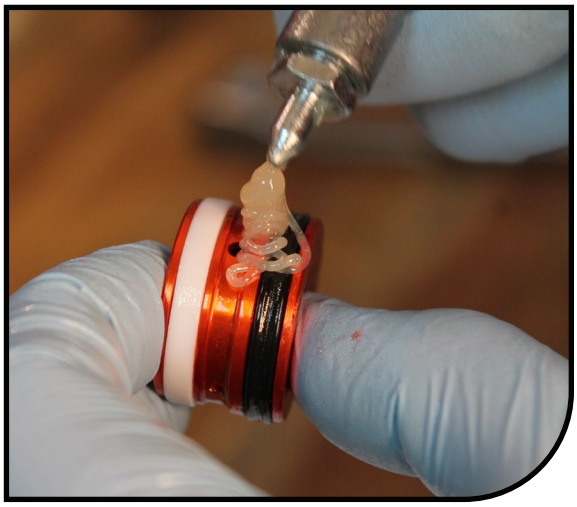


Note*

The comp rod service kit for Markhor, Manitou part number 141-31870-K009, includes all the necessary components to make any travel version for either 27.5 or 29.

AIR SPRING SERVICE

6 Liberally grease the piston quad seal and outer surface with Slickoleum™ grease.



7 Install greased air piston into the top of the stanchion and push it down past the threads.



8 Add 8cc's of Slickoleum™ grease to the top of the air piston.

AIR SPRING SERVICE

9 Install air cap onto stanchion. Tighten to 60-80 in lb [6.8-9.0 N m].



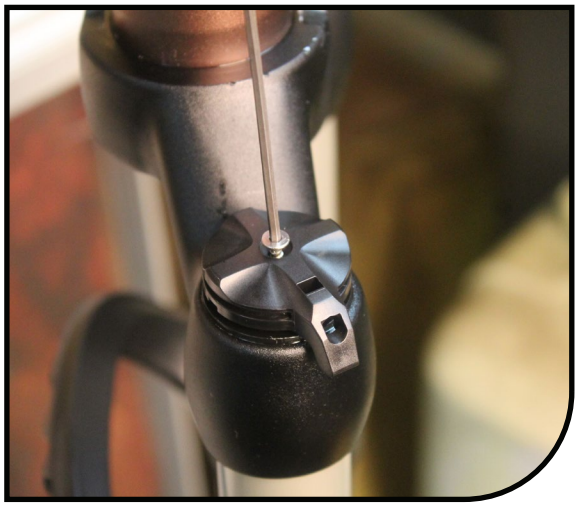
10 Install air spring assembly into stanchion. Using a 22mm crow's foot, tighten assembly end cap to 80-100 in lb [9.0-11.3 N m].



DAMPER SERVICE

1

The Markhor fork can have two compression damper configurations, ABS+ or Kwik Toggle. The following instructions will work for both. Remove ABS+ or Kwik Toggle knob using a 2mm hex wrench. If the fork has ABS+, remove knob carefully as there are two detent ball bearings on springs below the knob.



KWIK TOGGLE
(Kwik Toggle compression damper without knob)



ABS+
(ABS+ knob detent ball and springs.)



DAMPER SERVICE

2

KWIK TOGGLE

Unthread the Kwik Toggle compression damper from the fork. You will need to use the cassette tool and 1” wrench or socket to remove the damper.



ABS+

Unthread the ABS+ compression damper form the fork using a 24mm socket.



3

KWIK TOGGLE

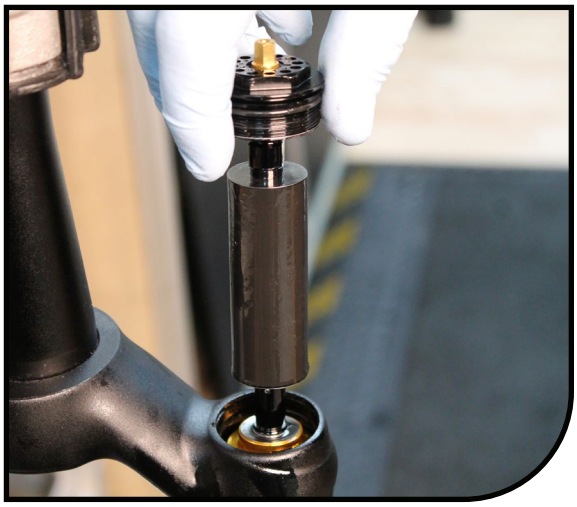
Remove Kwik Toggle compression damper assembly from the stanchion.



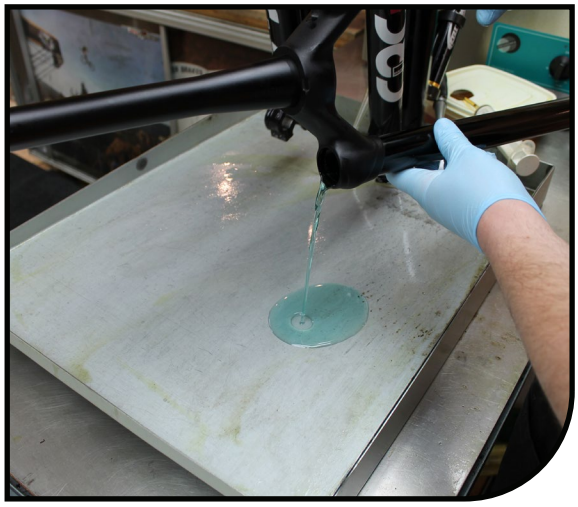
DAMPER SERVICE

ABS+

Remove ABS+ compression damper assembly from the stanchion.



4 Pour damper oil into a catch pan.



5 Using a 22mm box end wrench, unthread the rebound damper assembly from the fork stanchion.



DAMPER SERVICE

6 Remove rebound damper assembly from the fork. Once the damper assembly is removed, clean the inside of the stanchion with isopropyl alcohol and a lint free towel. Inspect the inside and outside of the stanchion for scratches and other damage. Inspect rebound damper for damage as well. Replace if necessary.



7 Install rebound damper into stanchion. Using a 22mm crow's foot and torque wrench, tighten the rebound damper assembly end cap to 80-100 in lb [9.0-11.3 N m].

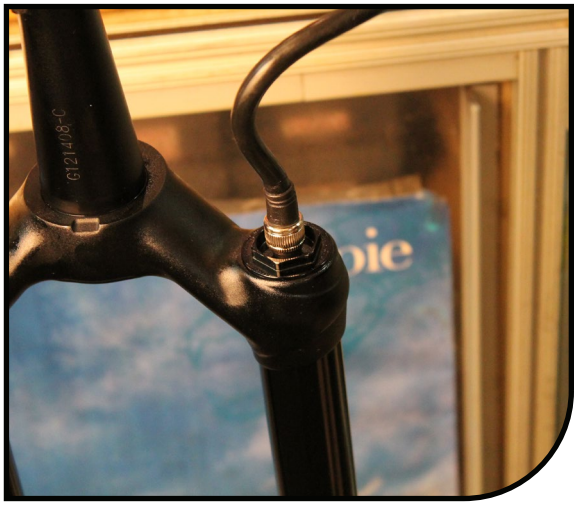


CASTING INSTALL

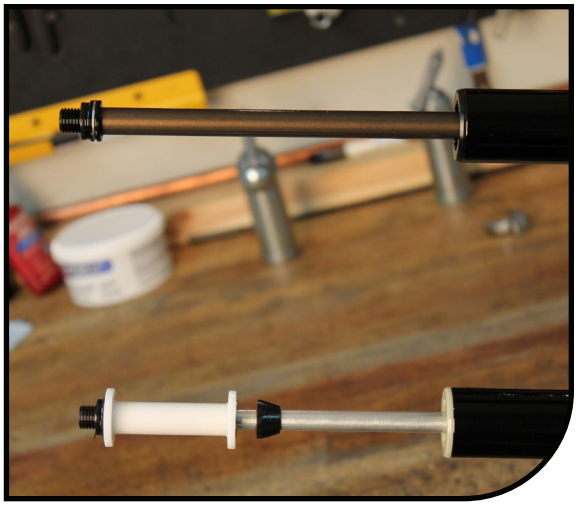
1 Before filling the fork with fork oil and installing the ABS+ compression damper, the casting must first be installed. This ensures correct oil level. First apply a generous amount of grease to the oil seal/dust seal area of the casting.



2 Fill the air chamber with a small amount of air (30-50PSI). This will extend the air spring assembly and make casting installation easier.



3 Fully extend the rebound damper rod.



CASTING INSTALL

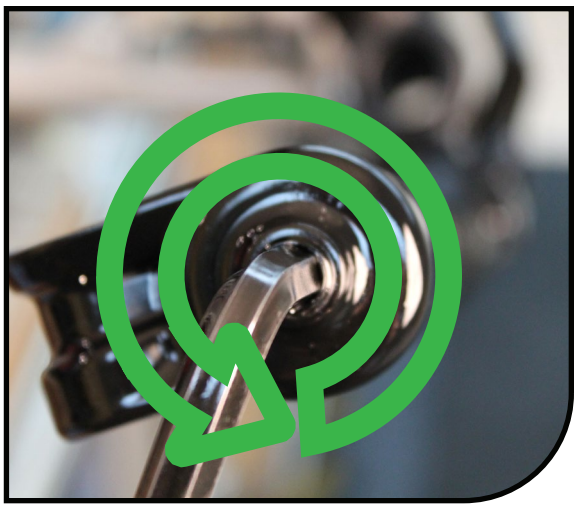
4 Slide casting onto the stanchion assembly. Only slide the casting down about halfway at this point. Take care that the seals do not get folded upon installation.



5 Insert 15cc's (15ml) of semi-bath into each casting leg. Once the semi-bath is in the legs slide the casting the rest of the way onto the stanchion assembly.

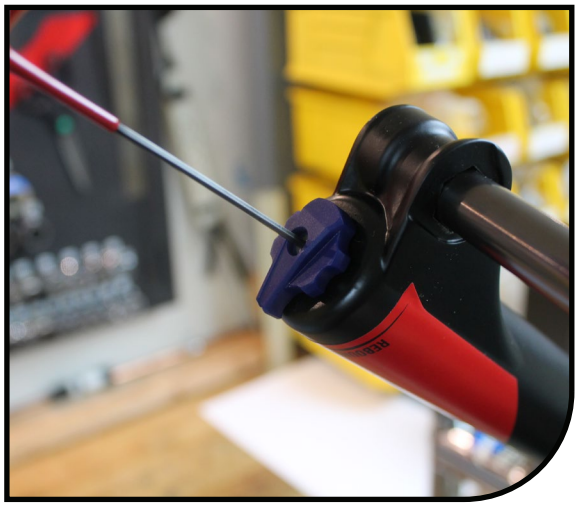


6 Using an 8mm hex wrench tighten the rebound damper rod and air spring assembly to 35–40 in lb [3.95–4.5 N m] by turning them **counter-clockwise.** Do not overtighten, doing so can damage the end of the rods.



CASTING INSTALL

7 Install the rebound knob using a 2mm hex wrench. Add a small drop of blue Loctite to the screw before installation to prevent the screw from backing out during riding.



8 Install compression rod bolt. It helps to have at least 50psi in the air chamber when tightening down the bolt to the proper torque. Use a 12mm socket and torque wrench and tighten to 45–55 in lb [5.1–6.2 N m].



COMPRESSION DAMPER INSTALL

1 Pour 5wt Maxima fork oil into the damper leg. Fill it up ¾ of the way.



2 Place a lint-free towel over the opening in the damper leg and compress the fork 10-15 times.

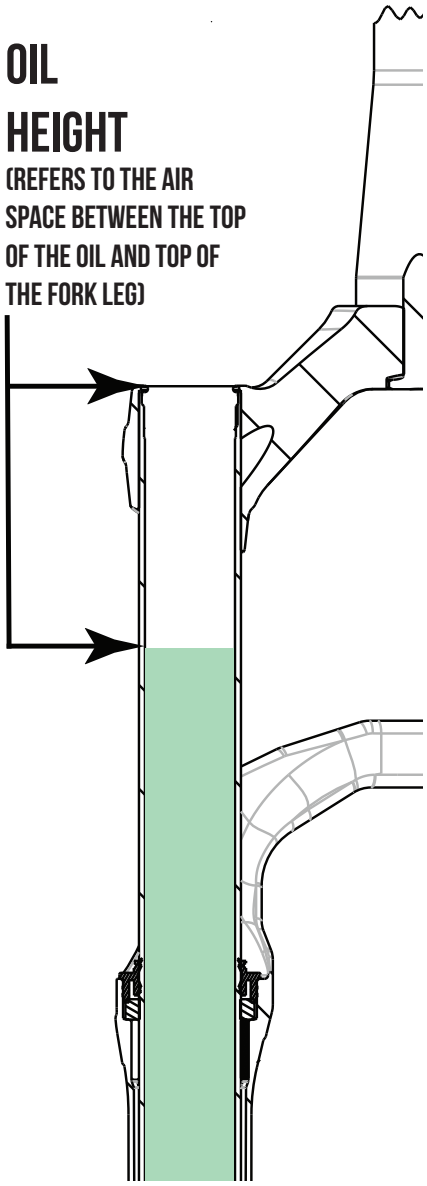


3 Pour additional 5wt fork oil into the damper leg until the oil height (space from the top of the damper leg to the top of the oil) is set at the proper level. See following page for the correct oil height depending on compression damper type and fork travel. An oil height setting tool used for motorcycle forks similar to the one pictured makes this job easier.



COMPRESSION DAMPER INSTALL

FORK MODEL	OIL HEIGHT
MASTODON PRO	75MM
MASTODON COMP	87MM
MARKHOR (80/100MM)	92MM
MARKHOR (120MM)	97MM
MATTOC PRO	75MM
MATTOC COMP	87MM
MACHETE (ABS+)	87MM
MACHETE (KWIK TOGGLE, 90-120MM)	87MM
MACHETE (KWIK TOGGLE, 130-140MM)	91MM
CIRCUS COMP/EXPERT	87MM
CIRCUS SPORT (FFD)	83MM
R7 PRO	83MM
DORADO (SEE DORADO SERVICE GUIDE)	180-190MM



NOTE

1. OIL HEIGHT IS SET WITH COMPRESSION DAMPER REMOVED.
2. OIL HEIGHT IS SET WITH FORK FULLY EXTENDED AND CASTING INSTALLED.

ALL FORKS LISTED US 5W SYNTHETIC OIL FOR THE DAMER, MANITOU PART NUMBER 85-0023.
ALL FORKS LISTED US 5W40 SYNTHETIC OIL FOR THE LOWERS, MANITOU PART NUMBER 85-0024.

COMPRESSION DAMPER INSTALL

4 Insert the Kwik Toggle or ABS+ compression damper into the damper leg. Ensure the damper is set in the unlocked position when installing.



5 If installing an ABS+ damper use a 24mm socket and torque wrench, tighten the damper to 60–80 in lbs [6.8–9.0 NM]. If installing a Kwik Toggle damper use a 1” socket or crow’s foot, the cassette tool, and a torque wrench to tighten down the damper to the same torque specification.



6 If the damper is an ABS+, install springs and ball bearings into ABS+ top cap. A small dab of grease on top of the spring can help hold the ball bearings in place.

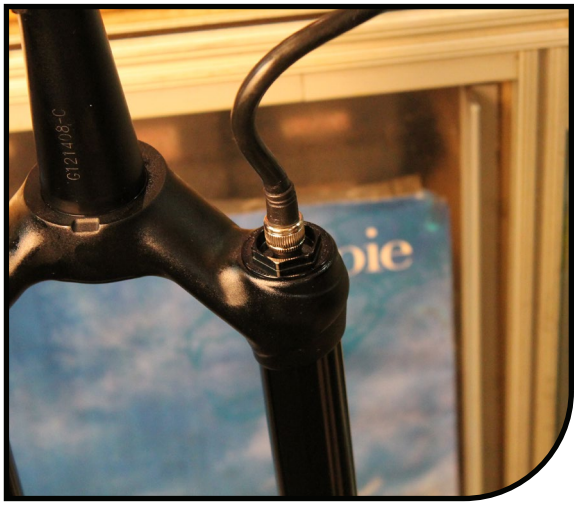


COMPRESSION DAMPER INSTALL

7 Using a 2mm hex wrench, install the ABS+ or Kwik Toggle knob.



8 Clean fork and use a shock pump to set to desired pressure. Pressure chart below for reference.



RIDER WEIGHT		AIR PRESSURE
LBS	KGS	
220	99.8	95-120 PSI (6.6-8.2 BAR)
200	90.7	90-110 PSI (6.2-7.6 BAR)
170	77.1	85-100 PSI (5.8-6.9 BAR)
140	63.5	80-95 PSI (5.5-6.6 BAR)
120	54.4	70-90 PSI (4.8-6.2 BAR)

MAX PRESSURE NOT TO EXCEED 150PSI (10.23 BAR)





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