



03 SWINGER SERVICE MANUAL

PN 85-4421, REV NC

03 SWINGER SERVICE MANUAL INDEX

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INTRODUCTION

This manual is intended to guide the user through basic service of Manitou Swinger rear shocks. Service is supported by the identification of common parts and assemblies that have been assembled into Service Kits. The purpose of this manual will be to describe conditions that may drive the need for service and to provide installation instructions for the kits.

Due to the time-consuming nature rear shock service, at this time our primary focus is to offer service kits that minimize the amount of downtime and labor involved. As the program matures, and we are able to gather feed back from our customers, we may offer kits to a more detailed level.

Important information is highlighted in this manual by the following notations:

WARNING

Failure to follow **WARNING** instructions could result in severe injury or death to the person inspecting or repairing the shock absorber or the shock absorber operator

CAUTION

A **CAUTION** a caution indicates special precautions that must be taken to avoid damage to the shock absorber.

NOTE

A **NOTE** provides key information to make procedures easier or clearer

GENERAL WARNING: Rear shocks by design contain gases and fluids under extreme pressure and warnings contained in this manual must be observed to reduce the possibility of injury or possible death. Following these instructions can help you reduce the risk of being injured. Any questions in regards to the information in this manual should be directed to Answer Products Customer Service at (661) 257-4411.

WARNING: The Swinger Shock uses compressed air to provide fluid pressure in the damping system and spring resistance in Air models. **BOTH** systems must be relieved of pressure prior to servicing these systems. Failure to relieve air pressure could result in injury or possible death.

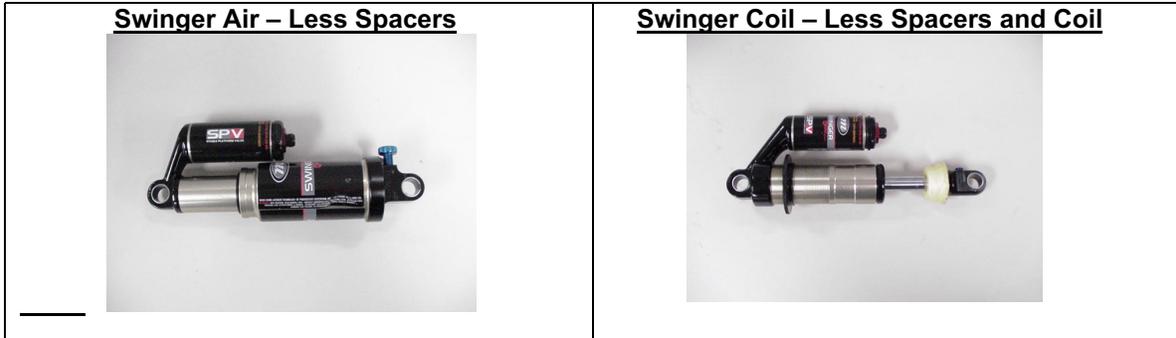
CAUTION: The Swinger Shock uses precision machined aluminum and other soft alloy components. Using correct tools for assembly is essential to prevent damage.

SETUP, TUNING, PERIODIC MAINTENANCE

Instructions for shock setup, tuning, and periodic rider maintenance is not covered in detail in this manual. Please refer to the Manitou Swinger Rear Shock Owner's Manual (PN 042105) for that information. If you did not receive a manual, you can download one at www.answerproducts.com or contact Answer Products Customer Service at (661) 257-4411.

COMPLETE SHOCK LESS SPACERS AND COIL SPRING - See Kit B

The highest-level kit offered will be a complete shock, without spacers (mounting hardware) or coil springs for coil forks. This kit is offered as a fast replacement where all that is need is to change out the spacers and spring and then reinstall the shock.



SPACER REMOVAL AND INSTALLATION- (See Kit D)

Spacers, sometimes called mounting hardware, are used to mount shocks to the various frame configurations. Over time, spacers may wear between the mounting bolts or DU Bushing which will result in play in the connection.

Remove spacers using pliers as shown in Figure 1



Figure 1

DU Bushing Eyelet

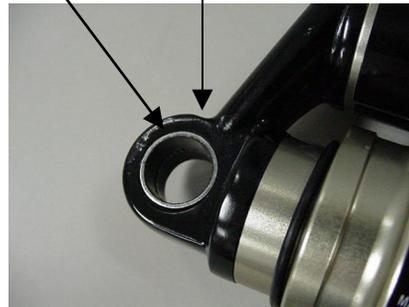


Figure 2

SPACER REPLACEMENT

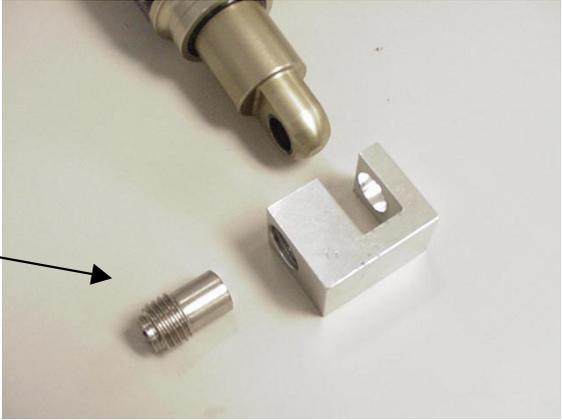
Spacers should have a slight press fit into the DU bushing and can be tapped in place with a rubber mallet or soft jaws in a vise. Apply a small amount of thick grease such as Motorex Bike Grease 2000 (PN 85-0033) to the spacer before installation.

There are virtually an infinite number of spacer combinations in use on bikes today. When ordering spacers from Answer Products, it will be necessary to identify the eyelet width, overall width and mounting hole diameter.

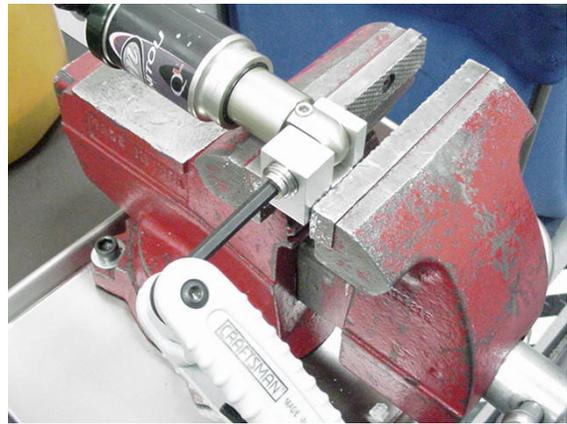
<p>1. Measure the eyelet width.</p> 	<p>2. Measure hole size. Current spacers are designed to accept a 6mm or 8mm fastener.</p> 
<p>3. Measure eyelet width.</p> 	

DU BUSHING REMOVAL AND INSTALLATION - See Kit E

DU bushings are press fit into the shock eyelets at each end of the shock. The spacers fit into the bushings and will rotate slightly within the bushing during suspension compression. DU Bushings, like spacers, may wear over time. Removal and installation is accomplished using tool PN 85-6075.

<p>REMOVAL</p> <ol style="list-style-type: none"> 1. Remove spacers from the shock. 2. Insert unthreaded end of punch into the removal tool first and screw in about half a turn. 	
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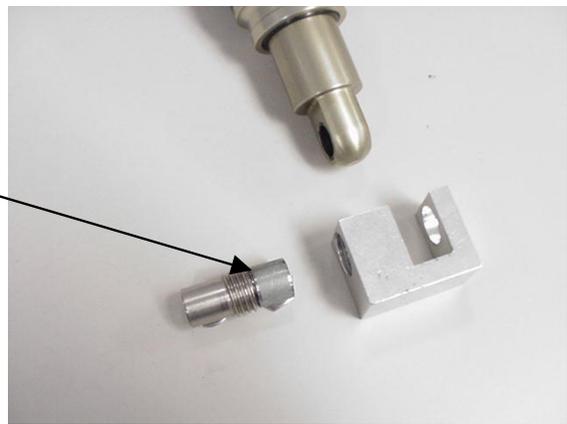
3. Clamp removal tool in vise.
4. Insert eyelet into tool.
5. Use 6mm hex wrench to screw in punch, making sure that it is centered on the bushing. This will press out the bushing.



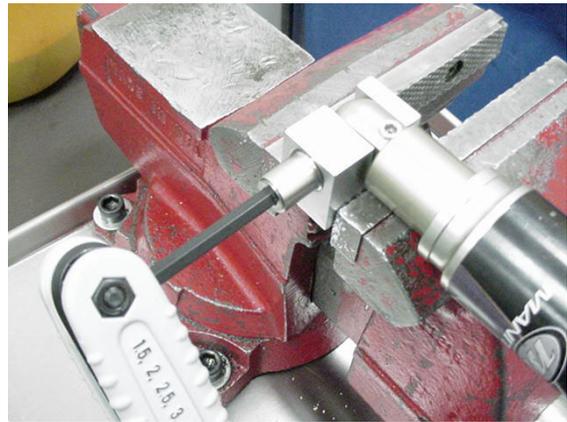
INSTALLATION

1. Place a bushing onto the threaded end of the punch and into the removal tool; screw in about half a turn.

Bushing



2. Clamp removal tool in vise.
3. Insert eyelet into tool.
4. Use 6mm hex wrench to screw in punch, making sure that it is centered on the bushing and that the bushing is centered to the eyelet. This will press in the bushing.



RIDE KITS - See Kit G

Ride kits (Coil Swinger only) consist of a replacement spring of a specific spring rate that is firmer or softer depending on the rider's preference. Most manufacturers using Swinger Coil shocks vary the stock spring rate that is the standard offering based on frame size. Larger frame sized have higher spring rates to accommodate bigger riders. Due to the wide variety of frame geometry in use, it is left to the rider to determine if they are satisfied with their stock spring rate.

Spring rates and travel are marked on the outside of each spring.

Example: "300 X 2.75" Is a 300lb spring for a 2.75" Travel Shock

To change out the coil spring:

1. Turn the spring preload adjustment ring to release any preload and back it away from the spring as far as possible.
2. Remove the retaining collar.
3. Slide spring over eyelet. You may need to turn the rebound control knob to its fully closed position.
4. Slide the new spring over the eyelet.
5. Reinstall the spring collar so that it butts against the eyelet, and the spring nests in the appropriate groove.
6. Turn the spring preload adjustment ring until it contacts the spring and then apply 1mm of preload.



Figure 11

Retaining Collar

Spring Preload Adjustment Ring

BOTTOMOUT BUMPER REPLACEMENT, SWINGER COIL - See Kit G

WARNING: The Swinger Shock uses compressed air to provide fluid pressure in the damping system. The damping system must be relieved of pressure prior to servicing. Failure to relieve air pressure could result in injury or possible death.

1. Remove spacers as shown under SPACER REMOVAL and remove Spring as shown under RIDE KIT Section.
2. Release reservoir pressure from the air preload.



Air Reservoir Preload

BOTTOMOUT BUMPER REPLACEMENT, SWINGER COIL - (CONT.)

<ol style="list-style-type: none">3. Extend and clamp damper shaft in a vise using 12.7mm (.500) soft jaws, Answer PN 85-51484. Remove eyelet using adjustable open-end wrench.	
<ol style="list-style-type: none">5. Slip off old bumper.6. Install new bumper, Larger diameter face of the bumper should face the eyelet7. Clean damper shaft threads with alcohol and apply red Locktite 262.8. Install damper shaft in vise using soft jaws as shown above and tighten to 100 KgCm (87inlbs).9. Add air to re-pressurize the air preload reservoir per instructions in the Owner's Manual.	

AIR SPRING SYSTEM, SWINGER AIR

WARNING: The Swinger Air uses compressed air to provide resistance to compression in place of a coil spring. You must be certain that the air canister is relieved of all pressure prior to servicing the air system. Failure to relieve air pressure could result in injury or possible death.

Sealing of the shock is accomplished through a series of o-rings, quad seals, and wipers. When the air canister is removed, these seals can be replaced from Seal Kit C.

Seal Descriptions:

O-Rings: Black synthetic rubber with a round cross section. Used for fluid sealing.

Quad Seals: Black synthetic rubber with an "X" cross section, used for sealing air.

Wipers: White Teflon, used for keeping debris out of quad seals.

1. Failure of an air shock to maintain air pressure is usually the result of defective or worn seals. If there is suspicion of an air leak, pressurize the air canister to 150psi from the adjuster eyelet Schrader Valve. Locate the leak by spraying the air canister joints with a mild solution of dish soap and water. Bubbles will form in from the area of leakage. You can also immerse the shock in water to locate a leak.

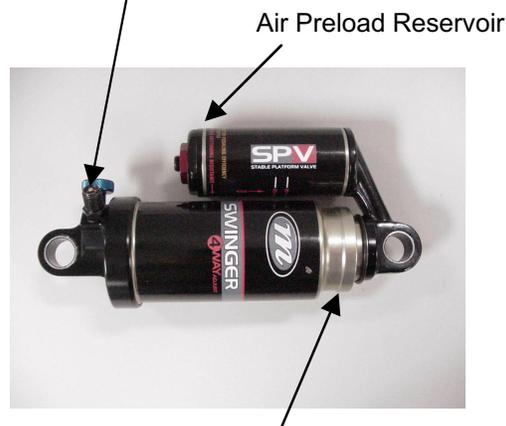


2. For leaks at the adjuster eyelet or damper end of the air canister, refer to the detailed disassembly instructions contained in the section on **DAMPING SYSTEM BLEEDING - Swinger Air**. This will guide you on how to replace the applicable o-rings and seals.

Adjuster Eyelet Schrader

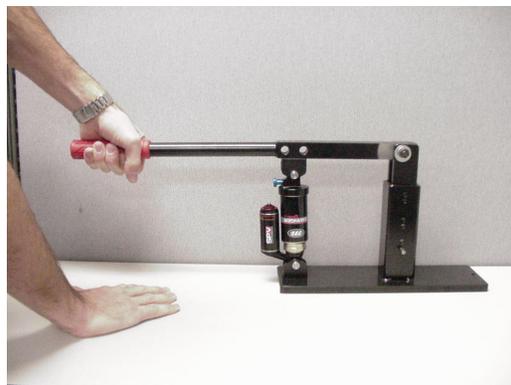
3. For leaks at the Schrader valve, release all air pressure and replace the Schrader valve core or assembly as needed.

4. For leaks in the air preload reservoir area, release all pressure replace the preload adjuster o-ring, Schrader valve core, or Schrader assembly as needed.



Shock in Shortest Travel Position

5. If when you pressurize the air canister the shock collapses to its shortest travel position, the shock has an air piston leak into the negative chamber. Place the shock in the shock tester and extend it to its full travel. Depress the adjuster eyelet Schrader while the shock is extended under load. If it remains in the full travel position, refer to the section on **DAMPING SYSTEM BLEEDING - Swinger Air** for instructions on servicing the air canister and piston seals.



6. If the shock returns to the short travel position, it is not serviceable and the entire shock must be replaced.

WARNING: Attempting to service a shock with this condition could result in injury or possible death.

DAMPING SYSTEM

The damping system controls compression and rebound rate (speed). The system also provides the peddling platform unique to shocks with the SPV technology. The two main conditions requiring service you may encounter in regards to the damping system are leaks and a suspect SPV.

1. If you are unable to achieve the peddling platform after adjusting the shock per the Owner's Manual, you will need to inspect the SPV. Follow the instructions under the damping bleeding section for the shock in question in order to inspect the SPV.
2. If oil is found to be leaking from the shock, the seals and/or o-rings that seal that suspect joint must be serviced. Once the system has lost oil, the faulty seals must be replaced and the shock bled to restore the shock to full performance. Follow the instructions under the damping bleeding section for the shock in question.

NOTE: Leaks from Low/High Speed Adjusters on Swinger 6 Way Shocks. The 6 Way adjuster knobs are adjusted using a 4mm hex. If too much force is applied then the knob is adjusted counterclockwise, the adjuster needles may strip out and result in an oil leak. If this occurs during adjustment and the shock has not been compressed, the adjusters can be replaced without a complete teardown and bleeding of the shock. Follow the instructions in Step 10 under **DAMPING SYSTEM BLEEDING - Swinger Coil**.

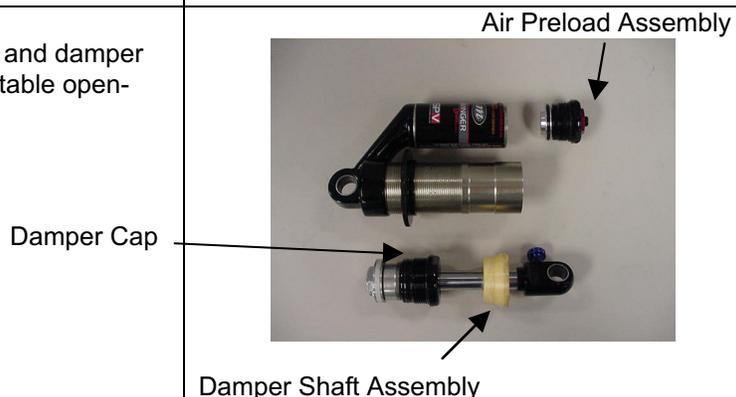
DAMPING SYSTEM BLEEDING - Swinger Coil

WARNING: The Swinger Shock uses compressed air to provide fluid pressure in the damping system. The damping system must be relieved of pressure prior to servicing. Failure to relieve air pressure could result in injury or possible death.

1. Remove spacers as shown under SPACER REMOVAL and remove Spring as shown under RIDE KIT Section
2. Release reservoir pressure from the air preload.



3. Unscrew air preload assembly and damper shaft assembly using an adjustable open-end wrench.

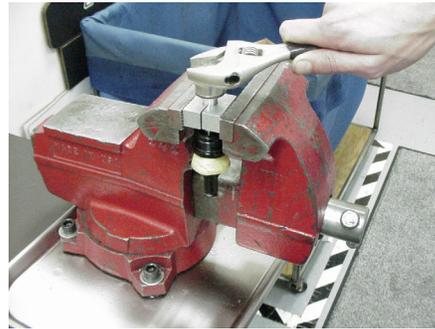


DAMPING SYSTEM BLEEDING - Swinger Coil (CONT.)

4. Inspect SPV valve, there should be a .025 (.6mm) gap as shown in the photograph adjacent to the damper piston. If the gap is on the opposite side, the valve is defective and will need to be serviced.



5. If it is necessary to remove the valve, clamp the damper shaft using soft jaws and loosen the damper piston bolt. Grasp the damper bolt, piston, SPV, and SPV backing plate and remove as a set from the damper shaft.



6. Remove the SPV backing plate and SPV. It is best to replace a defective valve.

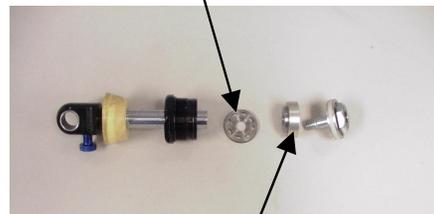
If a replacement SPV is not immediately available you can attempt to service the defective one. However, since the valve has already failed once, there is no guarantee how long a repaired valve will remain functional.

Separate the two halves as shown. Inspect the two seals for signs of damage. Grease seal surfaces and reassemble.

When reassembled, the valve will trap air inside and keep the two halves from nesting completely. A good valve when fully compressed to a flat condition will smoothly return to its original state .025 (.6mm) offset when released.

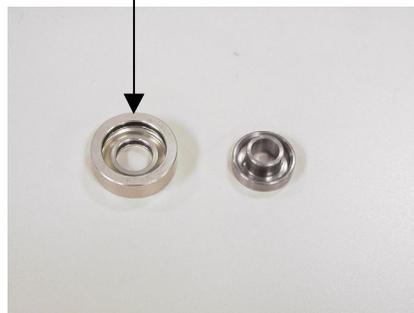
7. Reassemble in reverse order and apply green Loctite #262 to damper piston bolt and torque to 50 KgCm.

Backing Plate



SPV

Inspect two seals for damage



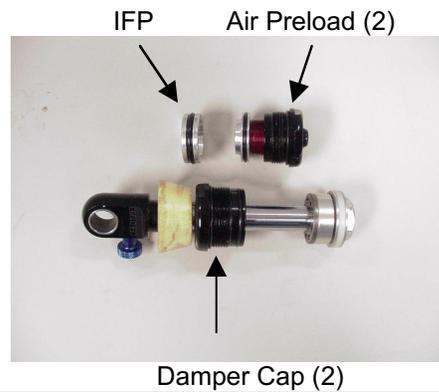
DAMPING SYSTEM BLEEDING - Swinger Coil (CONT.)

8. Remove IFP (Internal Floating Piston) using IFP removal tool. Insert the removal tool into the top of the damper body. Cover hole in tool with your thumb. Point the reservoir body away from you and push the tool to the bottom of the damper body.

WARNING: This action creates backpressure behind the IFP to eject it. The reservoir body should not be pointed at anyone during this step.

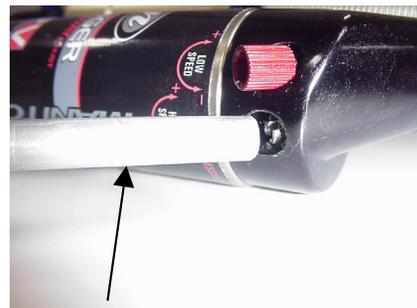
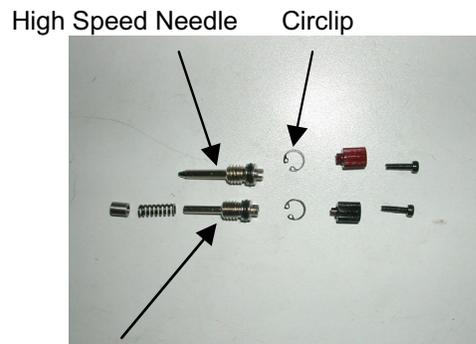


9. Replace o-rings on damper cap, IFP, and air preload assembly as shown. Grease with a thick grease such as Motorex Bike Grease 2000.



10. If oil was leaking from one of the high or low speed compression adjusters on a 6 Way Swinger, the adjusters should be replaced, Do Not remove unless a leak was detected. Remove the knob using a 1.5mm hex. Remove the circlip using circlip pliers or a thick needle hooked into one of the circlip eyelets. Unscrew the adjuster needle. Pour a small amount of damping oil in each hole prior to replacing the needles. Replace in reverse order. Before attaching the knobs adjust each one counterclockwise to make sure the circlip is properly installed and will stop the needle. When installing the knobs, make sure that the two protrusions in the needle and knob nest within each other. Apply blue locktite #242 to the 1.5mm hex screws prior to installation.

NOTE: Each adjuster needle is unique; replace one at a time to avoid confusion. Another method that can be used to install the circlips is to adjust the needles to just below the circlip groove, then use a piece of 1/4"OD metal tubing to push the clip in place.



1/4"OD Tubing

DAMPING SYSTEM BLEEDING - Swinger Coil (CONT.)

11. Remove Eyelet as shown under the section on BOTTOMOUT BUMPER REPLACEMENT



12. Using pliers, remove the rebound adjuster needle from end of the damper shaft.



Damper Needle

NOTE: Damping oil that would be in the bleed container is not shown in these steps to provide clarity.

13. Place damper body, damper shaft assembly and IFP into damping oil. With the open end of the damper body pointing slightly up, gently tap the body to dislodge any entrapped air and set down. Do the same with the damper assembly, pointing the damper shaft slightly up to remove any air bubbles.



14. Under oil, insert the IFP into the air reservoir using the Swinger Air IFP removal tool. Only press the piston in just beyond the reservoir threads.



Swinger Air IFP Removal Tool

DAMPING SYSTEM BLEEDING - Swinger Coil (CONT.)

15. Using a 6mm hex wrench, adjust the IFP Locating Tool so that the indicated travel matches the shock travel.

Adjust so that travel indicator line is flush to the top of the tool

Travel Indicator lines



16. Under oil, screw in the IFP locating tool into the air reservoir body. This will press the IFP deeper into the reservoir body to the required depth.

Screw in hand tight until the flange is flush to the air reservoir body



17. Under oil, screw in the damper assembly hand tight until damper cap is flush with the damper body.



18. Remove the assembly from the oil, keeping the open end of the damper shaft pointing up. Using soft jaws to protect the eyelet, clamp the reservoir eyelet and tighten the damper cap to 150KgCm (130inlbs).



DAMPING SYSTEM BLEEDING - Swinger Coil (CONT.)

19. Holding the assembly over the oil container, Install rebound adjuster needle, pointed end first. Push until the needle o-ring seats in the damper shaft.



20. Install eyelet as shown under the section on BOTTOMOUT BUMPER REPLACEMENT.



21. Remove the IFP location tool. Once the tool is removed DO NOT move the damper shaft



22. Apply blue locktite #242 to air preload adjuster threads and grease threads. Install the air preload adjuster and tighten to 43KgCm (50 inlbs)

23. Add air to re-pressurize the air preload reservoir per instructions in the Owner's Manual.

24. Reinstall spring using the instructions under RIDE KITS.



DAMPING SYSTEM BLEEDING - Swinger Air

WARNING: The Swinger Air uses compressed air to provide resistance to compression in place of a coil spring. You must be certain that the air canister is relieved of all pressure prior to servicing the air system. Failure to relieve air pressure could result in injury or possible death.

1. Release All air pressure from air canister and air preload reservoir.

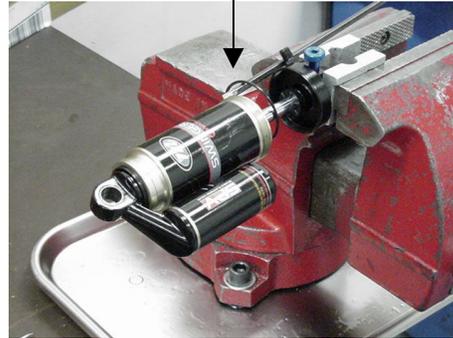
2. Remove spacers as shown under SPACER REMOVAL. Place adjuster eyelet in a vise using soft jaws. Using a rubber strap wrench to prevent damage, loosen the air canister completely. Pull back the air canister to expose the 10mm damper shaft.

Note: If the only service necessary is to repair a leak from the adjuster end of the air canister, replace the air canister o-ring that is found inside the adjuster eyelet. Reassemble the shock as described at the end of this section

Air release Schrader valve
Air Reservoir Schrader Valve



Air Canister O-Ring



3. Unscrew air preload assembly



DAMPING SYSTEM BLEEDING - Swinger Air (CONT.)

4. Using 10mm soft jaws, clamp the damper shaft and remove the eyelet as shown.



5. Clamp the damper body eyelet in a vise using soft jaws and remove the damper assembly using a 31mm socket as shown.
- Remove from vise and drain damper oil into a container and discard.



6. Clamp the damper body eyelet in a vise using soft jaws and remove the air canister



DAMPING SYSTEM BLEEDING - Swinger Air (CONT.)

7. Remove air piston from canister

NOTE: Apply grease to the open canister end prior to removing the air piston, this will assist removal. You can also use a hex socket and extension to help push out the piston:

1. Select a socket with an outside diameter of 1.025 - 1.045" (26.0 - 26.5mm) and add an extension to make it longer than the air canister.
2. Install into air canister
3. Hold air canister and lightly tap socket extension on a soft surface.



Air Piston



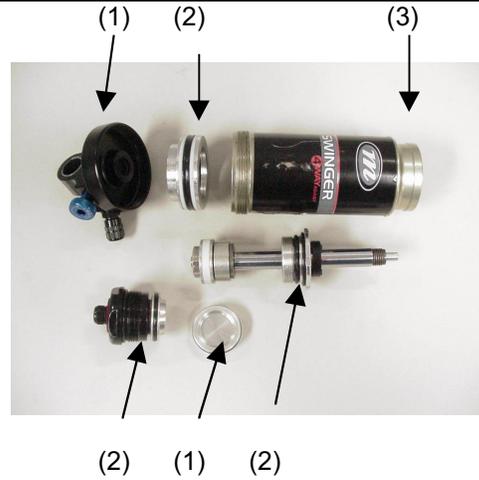
8. Remove IFP (Internal Floating Piston) using IFP removal tool. Insert the removal tool into the top of the damper body. Cover hole in tool with your thumb. Point the reservoir body away from you and push the tool to the bottom of the damper body.

WARNING: This action creates backpressure behind the IFP to eject it. The reservoir body should not be pointed at anyone during this step



DAMPING SYSTEM BLEEDING - Swinger Air (CONT.)

9. Change out o-rings and seals where indicated (#of o-rings/seals in each assembly noted in photo) and grease with a thick grease such as Motorex Bike Grease 2000



10. Install Air Canister Seal Guide onto damper body. Lightly grease damper body and slide air canister over body. Remove guide.

Air Canister Seal Guide



11. Grease inside of air canister and install air piston in air canister as shown. The seal end of the air piston is installed first.



DAMPING SYSTEM BLEEDING - Swinger Air (CONT.)

NOTE: Damping oil that would be in the bleed container is not shown in these steps to provide clarity.

12. Place damper body, damper shaft assembly and IFP into damping oil.
13. With the open end of the damper body pointing slightly up, gently tap the body to dislodge any entrapped air and set down.
14. Do the same with the damper assembly, pointing the damper shaft slightly up to remove any air bubbles.



15. Under oil, insert the IFP into the air reservoir using the Swinger Air IFP removal tool. Only press the piston in just beyond the reservoir threads.



16. Using a 6mm hex wrench, adjust the IFP Locating Tool so that the indicated travel matches the shock travel.

Adjust so that travel indicator line is flush to the top of the tool



17. Under oil, screw in the IFP locating tool into the air reservoir body. This will press the IFP deeper into the reservoir body to the required depth.

Screw in hand tight until the flange is flush to the air reservoir body



DAMPING SYSTEM BLEEDING - Swinger Air (CONT.)

18. Under oil, screw in the damper assembly hand tight until damper cap is flush with the damper body.



19. Remove the assembly from the oil, keeping the open end of the damper shaft pointing up. Using soft jaws to protect the eyelet, clamp the reservoir eyelet and tighten the damper cap to 150KgCm (130inlbs).



20. Holding the assembly over the oil container, install rebound adjuster needle, pointed end first. Push until the needle o-ring seats in the damper shaft.



21. Clean damper shaft threads with alcohol and apply red Locktite 262.

22. Install damper shaft in vise using soft jaws as shown and tighten to 100 KgCm (87inlbs).



DAMPING SYSTEM BLEEDING - Swinger Air (CONT.)

23. Remove the IFP location tool. Once the tool is removed DO NOT move the damper shaft



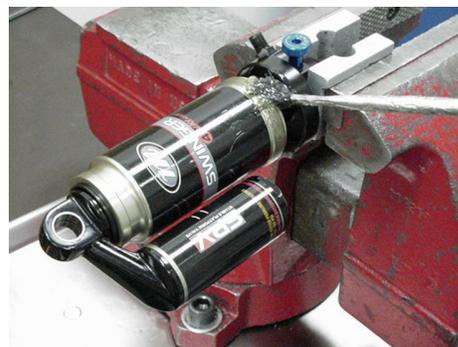
24. Apply blue locktite #242 to air preload adjuster threads and grease threads. Install the air preload adjuster and tighten to 43KgCm (50 inlbs)



25. Clamp adjuster eyelet in soft jaws. Grease air canister threads, and screw canister onto eyelet. Tighten using strap wrench on canister.

26. Add air to re-pressurize the air preload reservoir per instructions in the Owner's Manual.

27. Reinstall shock mounting hardware and install in bike per manufacturers instructions. Add air to air canister per the Setting Sag instructions in the owner's manual.



03 SWINGER REAR SHOCK SERVICE KITS

Kit Description Detail	Kit	Answer Kit Part Number
Air Canister	A	85-6037
Air Valve Assembly, Air Canister and Air Preload	A	85-5435
4 Way Air Shock, No Spacers, 190mm Eye to Eye, 50mm Travel	B	85-6090
4 Way Coil Spring Shock, No Spacers, No Coil, 190mm Eye to Eye, 50mm Travel	B	85-6091
4 Way Coil Spring Shock, No Spacers, No Coil, 230mm Eye to Eye, 70mm Travel	B	85-6092
4 Way Coil Spring Shock, No Spacers, No Coil, 240mm Eye to Eye, 76mm Travel	B	85-6093
6 Way Coil Spring Shock, No Spacers, No Coil, 190mm Eye to Eye, 50mm Travel	B	85-6094
16 Way Coil Spring Shock, No Spacers, No Coil, 230mm Eye to Eye, 70mm Travel	B	85-6095
6 Way Coil Spring Shock, No Spacers, No Coil, 240mm Eye to Eye, 76mm Travel	B	85-6096
Swinger Air SPV Valve	B	85-6097
Swinger Coil SPV Valve	B	85-6098
6 Way Low and High Speed Compression Adjuster Kit	B	85-5438
Seal Kit – Air	C	85-6099
Seal Kit – Coil	C	85-6135
Spacers - *(Contact Answer for correct mounting hardware part numbers)	D	*
DU Bushing Kit - *(Contact Answer for correct mounting hardware part numbers)	E	*
Sticker Kit, Swinger 4-Way Air	F	85-6108
Sticker Kit, Swinger 4-Way Coil	F	85-6109
Sticker Kit, Swinger 6-Way Coil	F	85-6110
Spring for Swinger Coil, 7.5 Eye to Eye, 2" Travel, Rate: 300	G	85-5431
Spring for Swinger Coil, 7.5 Eye to Eye, 2" Travel, Rate: 350	G	85-6111
Spring for Swinger Coil, 7.5 Eye to Eye, 2" Travel, Rate: 400	G	85-6112
Spring for Swinger Coil, 7.5 Eye to Eye, 2" Travel, Rate: 450	G	85-6113
Spring for Swinger Coil, 7.5 Eye to Eye, 2" Travel, Rate: 500	G	85-6114
Spring for Swinger Coil, 7.5 Eye to Eye, 2" Travel, Rate: 550	G	85-6136
Spring for Swinger Coil, 9" Eye to Eye, 2.75 & 3.00" Travel, Rate: 300	G	85-6137
Spring for Swinger Coil, 9" Eye to Eye, 2.75 & 3.00" Travel, Rate: 350	G	85-6117
Spring for Swinger Coil, 9" Eye to Eye, 2.75 & 3.00" Travel, Rate: 400	G	85-6118
Spring for Swinger Coil, 9" Eye to Eye, 2.75 & 3.00" Travel, Rate: 450	G	85-6119
Spring for Swinger Coil, 9" Eye to Eye, 2.75 & 3.00" Travel, Rate: 500	G	85-6120
Spring for Swinger Coil, 9" Eye to Eye, 2.75 & 3.00" Travel, Rate: 550	G	85-5432
Spring Retaining Collar	G	85-5437
Bottom out bumper for 2" travel coil shocks	G	85-5433
Bottom out bumper for 3" travel coil shocks	G	85-5434
DU Bushing Tool	H	85-6075
1/2" Soft Jaw	H	85-4158
10mm Soft Jaw	H	85-4406
Air Canister Installation tool	H	85-4430
Swinger Air Reservoir Volume Tool	H	85-3007
Swinger IFP Locating	H	85-6107

Swinger Air IFP Removal Tool	H	85-4413
Swinger Coil IFP Removal Tool	H	85-4423
Swinger Bleed Tool	H	85-4414
Rear Shock Compression Test Fixture	H	85-3008
1/2" Soft Jaws	H	85-5148
10mm Soft Jaws	H	85-4406
Motorex Bike Grease 2000	H	85-0033
Motorex 5wt Damping Oil	H	85-0023

03 Swinger Rear Shock Service Kits - Description



A - Air Canister



A - Air Valve Assembly



B - Air Shock, No Spacers



B - Coil Shock, No Spacers, No Coil



B - Low and High Speed Adjuster Kit



C - Seal Kit

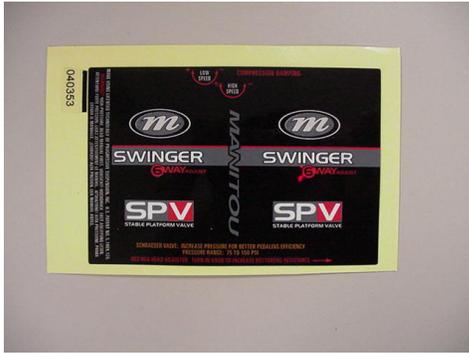


D - Spacers



E - DU Bushing Kit

03 Swinger Rear Shock Service Kits - Description



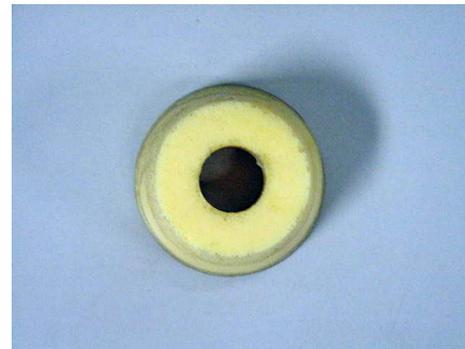
F - Sticker Kit



G - Ride Kits



G - Spring Collar



G - Bottomout Bumper



H - DU Bushing Tool



H - Swinger Air Reservoir Volume Tool



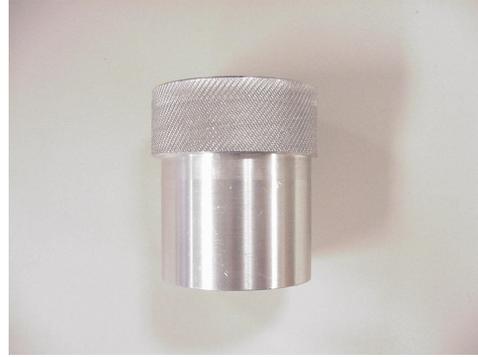
H - Swinger IFP Locating Tool



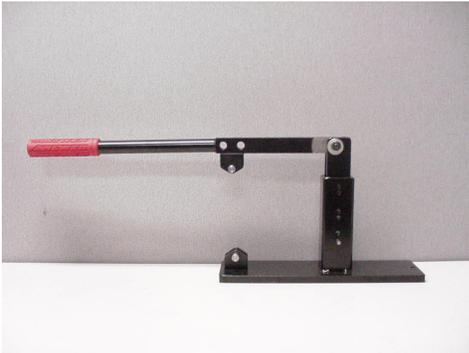
H - Swinger Air IFP Removal Tool



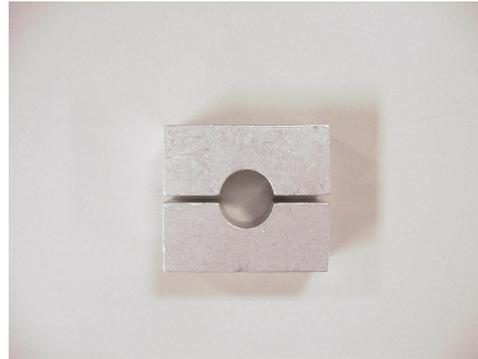
H - Swinger Coil IFP Removal Tool



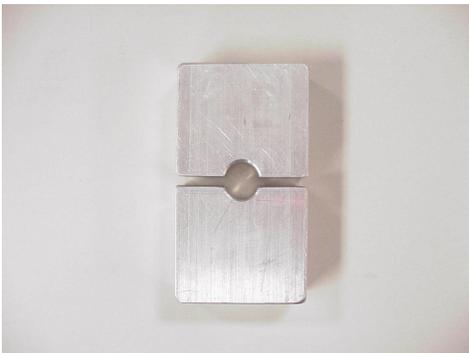
H - Swinger Bleed Tool



H - Rear Shock Compression Test Fixture



H - 1/2" Soft Jaws



H - 10mm Soft Jaws