# Mega Air Pull-Shock Service Manual



# SHOCK DISAS-**SEMBLY AND ASSEMBLY**

#### In this section:

- Tools needed
- **Shock Design** Overview
- Shock Disassembly
- Shock Assembly

12mm Shock Tools

#### Tools needed

12mm shaft clamps vise (brass or alum jaws) philips head screwdriver adjustable wrench small screwdriver plastic hammer 15mm crows foot wrench (for end mount)

12mm bullet tool pressure piston set tool bearing installation tool Noleen 808 Shock Oil Rebuild Parts Kit high pressure air pump

Torque wrench



CAUTION: K2 strongly recommends that your shock be serviced by a K2 / Noleen dealer or other qualified technician. These instructions are for a qualified technician who possesses proper training and tools. Improperly serviced shocks can be extremely dangerous, and can result in failure during use and severe injury.

In the event of a crash, there could be damage to your Noleen shock that may not be visible. Damaged shocks can be extremely dangerous, and can result in failure during use and severe injuries. After a crash, take your bicycle to an authorized K2 /Noleen dealer or qualified technician to verify its integrity.

#### Shock Design Overview:

Review this information to understand the shock design prior to actual service. Always use these disassembly and assembly steps and order for the main load carrying shock components.

- With the end mount fixed, and no pressure in chamber, the air chamber bolt is removed first.
- When the shaft assembly is removed from the body and the rebound shaft is in clamps in vise, use the end mount to untorque the shafts from each other. The steel shaft stud will remain in the lockout shaft.
- When the lockout shaft is in clamps in vise, the end mount can be removed.

The steel shaft stud should always remain in the lockout shaft. If it is removed, replace the lockout shaft, If the disassembly order does not proceed as described, retorque, then untorque the intended part to be removed. Torque levels and Loctite bonding are critical for proper shock assembly. Always use a torque wrench when servicing this shock. Under-torqueing can result in part separation and failure. Over-torqueing can result in part damage in the piston/valving area or cause the shafts to separate prior to the chamber bolt removal.

# Air pull shock disassembly:

- Before you start working on the shock check how much pressure is in the shock and record.
- Release the cable from the lockout actuator. Loosen the two bolts on the strut and remove the bolt that mounts the shock to the frame. Remove the shock from the frame.
- Clean the shock thoroughly.



Warning - Release the air pressure before servicing shock.

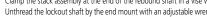
- Clamp the shock in a vise by the end mount.
- Remove the rebound adjuster knob.
- Remove set screw, spring and ball, with the small wrench in the rebuild kit. If it is not accessible, preform the next step first. If the set screw will not come out, it is possible to remove and replace the bolt without removing the set screw. Hold the shock upside down and don't loose the bearing during bolt removal.

There's a spring loaded bearing to give the adjuster clicks. Pay attention when you remove the cylinder retaining bolt. If you loose the small bearing, it's very difficult to find.

- Hold air chamber by hand to resist torque and remove the chamber retaining bolt that holds air chamber to the shaft.
- Remove the air cylinder and the bottom out bumper.
- Clamp the shock body at the wrench flats in the vise.
- Remove the top seal head.
- By now stroking the shock up and down carefully you will push out the floating piston, together with the two disc
- Take the shock out of the vise, turn it upside down and stroke it through full travel to remove all the oil.
- Lightly clamp the shock body in a vise at the flats of the body.
- Untorque and unthread the lockout seal head from the body.
- Remove from vise and pull the shaft assy out of the body. If it is stuck, give it a slight wiggle to remove.

Always clean and inspect any shaft clamps before using. Always clamp the shaft as close as possible to the rebound needle, this in order to keep possible shaft damage in a less critical location.

- Clamp the stack assembly at the end of the rebound shaft in a vise with the 12mm shaft clamps.
- Unthread the lockout shaft by the end mount with an adjustable wrench and be careful not to loose any of the small
- Remove the rebound needle from the rebound shaft.



#### Part cleaning and inspection, Rebuild component replacement:

This section should be completed prior to assembly. Inspect all components for signs of damage.

- Clean seal head threads on seal head and inside body, aluminum chips could be present.
- Check the bushings for wear or damage and replace if necessary. Replace unless very new, they will increase
  the seal life as they will center the shafts.
- Use grease when installing bearings, this will ease friction. The side of the bearing at the top of the printing should be installed as the leading edge, it has a slight radius.
- The bearing mount bearing should be driven through the part and replaced by a new bearing. A flat surface can press the bearing into center. Clean any chips on the outside of bearing mount or end of bearing.
- To remove the rebound seal head bearing, find the split line in the metal backing of the bearing. Use a sharp
  screwdriver or punch and collapse the bearing inward on one side of the split line. Continue to fold the bearing until
  it can be removed. Remove any burrs created.
- Install the bearing into the rebound seal head with the leading edge first and remove any burrs on the part.



#### Warning - Do not damage o-ring or quad ring grooves while removing rings. Inspect grooves.

- To remove the quad rings inside the pressure piston and rebound seal head, use a plastic or dull metal tool to pull out
  the ring. A dull corkscrew can work well to grab the middle section of the quad ring, without risking damage to the
  deepest section of the groove.
- Install the new quad rings into the two components and ensure the rings are seated properly. Use a dull tool to fully seat the part if necessary. These two quad rings are the same.
- Replace the o-rings on the pressure piston and rebound seal head. They are a different size.
- Replace the o-ring and dirt wiper on the lockout seal head.
- Remove the 12mm seal on the lockout seal head.
- Replace valving piston guad ring and Teflon band.

Note: Ensure main piston quad ring is properly orientated in the groove. The two ribs on the quad ring should protrude equal amounts. If the ring is fully seated, but 90 degrees twisted, one rib will stick out farther and cause sealing issues later.

- The lockout needle o-ring can be changed out ever other servicing since it involves removing the end
  mount from the lockout shaft. Change the lockout needle o-ring if it is leaking or under extreme use. To remove
  the o-ring, clamp the lockout shaft in the shaft clamps and remove the end mount. Remove the lockout
  needle and replace the o-ring.
- Add grease to the inside of the lockout shaft, so that it fills the needle shaft gap up the shaft when the needle is installed. This removes air which is very difficult to remove during the oil fill stage.
- Install the needle and leave 8-10mm of needle protruding from the lockout shaft.
- Fully clean and degrease the 12mm thread on the lockout shaft. Clean and degrease the end mount thread.
- Apply 1 drop of Loctite 271 to the end mount and 2 drops to the lockout shaft.
- Mount the end mount and torque to 15 ft-lbs (180 in-lbs).
- Do not compress the lockout actuator, air will fill the gap that grease occupied when it is reset to the open position
  and cause air in the build. A spare top out o-ring can be pulled over the end mount and underneath the
  actuator to prevent it from closing by accident during shock assembly.





Shaft / End mount

Warning - Do not damage the body grooves while removing the seal and wiper.

- Carefully remove the air seal and dirt wiper from the shock body. Inspect grooves. Do not install new air seal and dirt wiper until shock rebuild is complete to prevent damage. Installation is covered in final assembly.
- Replace the o-ring in the top of the air chamber.
- Unless the Schrader valve is leaking between the chamber and valve, the valve o-ring does not need replacement.
- Replace the Schrader valve o-ring every time the valve is installed. Do not use grease at this location.
- The torque for the Schrader valve mounting is 60 in-lbs. The valve core torque is 12 in-lbs.
- Remove all uncured Loctite on shaft threads. Clean and degrease all threads which use Loctite.



Warning - Failure to fully clean and degrease parts could prevent full Loctite bonding and could cause shock failure.



Shaft / End mount Exploded



Rebound Shaft Spring



Assembled coil spring and blow-off valve



Shaft / Piston Assembly



Stage 1 stuffing



Cycling shock body

#### Air pull shock assembly:

Use grease on all seals and o-rings. Use Noleen SF3 grease on hydraulic seals and K2 Goo on air seals.

Clean parts of all old, cured Loctite, then with degreaser, before fresh Loctite application. Old cured Loctite could cause valving to stick.

Warning - Contaminated Loctite will not cure and could lead to failure.

Make sure the lockout ports are open throughout the shock build, closing the actuator will cause the lockout needle block the lockout ports will result in trapped air and give poor damping performance. A spare top out o-ring can be pulled over the end mount and underneath the actuator to prevent it from closing by accident during shock assembly. Refer to **Shaft / End Mount** picture on previous page.

- Clamp the assembled lockout shaft by the end mount in the vise. Make sure the lockout ports are open. This can be
  done by pushing a small tool down through the lockout shaft and push the lockout needle down.
  - Install the top out bumper o-ring onto the lockout shaft.
- Install the dirt wiper and o-ring onto lockout seal head. Leave the 12mm seal out for now.
- Install the lockout seal head assembly onto lockout shaft.
- Grease the 12mm seal and completely fill the seal cavity, leave no air in the cavity. Install the seal onto the shaft.

Pass the 12mm bullet tool through the bearing mount and the rebound seal head to size the bearings or bearing damage could occur.

- Mount the bushing holder and use it to install the seal into the seal head. Grease should squeeze out from the two
  parts. The grease should hold the bearing mt to the seal head.
- Install the rebound washer, and rebound shim stack onto the lockout shaft. Rebound shim stack in order of installtion
  is: 14, 16, 16, 18, 18 listed by outside diameter in mm.
- Install the main piston onto the lockout shaft with the quad-ring is facing towards the rebound shims and the teflon
  band away from shims. Ensure main piston quad ring is properly orientated in the groove. Always make
  sure the largest diameter shim sits against the piston.
- Remove the lockout shaft from the vise and put the rebound shaft in the clamps, with the piston end up.

Loctite is critical for the assembly. Use the directed amount in the proper locations. Excess Loctite can jam the rebound check valve.

- Install valve spring and rebound check valve into rebound shaft. Add one drop of Loctite 271 to the internal rebound shaft thread.
- Install spring support onto the rebound shaft.
- Install coil spring on spring support and blowoff valve in spring.
- Apply 2 drops of Loctite 271 (red) to the lockout shaft stud threads.

While threading the two shafts together watch to see that the blowoff valve on the spring pilots over the spring support on the rebound shaft. Manually align if necessary.

Start threading the two shafts together and continue to thread together until seated.

Note: Over-torqueing can cause damage and shaft misalignment. Slight bowing of the rebound shims is common, sealing with still be present. Excessive bowing of the rebound shims or rebound washer is an indication of overtorqueing. Roll the rebound shaft on a clean flat plate with the other end of the assembly off the plate to check for visual shaft alignment. Rotating can also be done by supporting the shaft assembly at each end with the two clamps.

Maintain zero bending on shafts by supporting head of wrench while torqueing.

- Torque the two shafts to 150 in-lbs.
- Apply some grease on the o-ring of the rebound needle and install the rebound needle in the rebound shaft.

The first stage of the stuffing process is required to remove air from the large piston ports which are blocked by the blow off valve and heavy spring. If air is introduced in the second stage, it is impossible to remove without repeating the first stage.

#### Stage 1 Stuffing:

- Fully close the rebound needle.
- Move bearing mount and lockout seal head fully towards end mount. Make sure the bearing mount stays stuck to the lockout seal head by the grease.
  - Apply some grease to the Teflon band and the quad-ring on the main piston and partially install into the body. Make sure the body is installed with the flats towards the end mount. Leave an 8-10mm gap between the bearing mount and the body.
- Mount the rebound shaft in the vise with the help of the shaft clamps, shafts in vertical position.
- Fill the body with oil to the top. No oil should leak from the bottom of the body.



Installing pressure piston



Insert pressure piston





Install Belville washers



Install rebound seal head



Rebound seal head

installed

Note: The level of oil in the body should not drop over time. If there is a sealing problem it will be in one or more of the five following areas:

- Piston guad ring sealing check orientation and ring damage
- 2. Rebound needle fully closed sealing check rebound needle tip damage
- 3. Rebound check valve / shaft stud sealing check for valve or shaft stud damage
- 4. Rebound shim stack sealing bent shims, non-seating, piston orientation
- 5. Blow off valve sealing non-seating, scratches, damage, piston orientation
- Tap the body on all sides at the piston location with a plastic hammer. Air bubbles will rise from the compression
  ports. Continue the tapping until no more air bubbles escape.

The seal head must move towards the piston during this stage, or air will be introduced. Do not stroke the shock at all until further assembly, as air will be introduced in the shock.

- Install the bearing mount and the seal head into the body. Allow the oil to overflow while threading in the seal head.
- When the seal head is fully installed clamp the body in the vise and torque down the seal head to 100 inlbs. A small gap between the lockout seal head and body is acceptable. The bearing mount is clamped to the body by the seal head, the gap is a possible result.

Note: Do not clamp body in vise at wrench flats until bearing mount and seal head are fully seated, the vise will clamp the body to the bearing mount and seal head. A very light vise force could be used on body.

• Flip the shock over and clamp end mount in the vise. Fill the shock body to the top with oil immediately.

#### Stage 2 Stuffing:

Remove the rebound needle and install some oil in the rebound shaft. Re-install the rebound needle and set to one turn from full close.

The first stroke of the cycling should be up. Filling the oil to the top of the body will help prevent oil from splashing out during cycling. A few second delay at the end of the stroke will help the small bubbles rise and not be sucked back down. Twisting the body on the shafts while cycling will release bearing and shock seal static friction and ease cycling. Slight drag is typical and will break-in. Do not cycle in the downward direction too fast or air could be introduced and oil could splash.

- In order to lose all the trapped air that sits inside the shock porting you will need to move the shock through its travel until no more air bubbles appear. This will take many strokes.
- Pull the shock upwards until you reach the end of the stroke
- Mount the body in the vise at the wrench flats.
- Unscrew the rebound needle and remove it from the shaft.
- Top up the body with oil and mount the floating piston on the rebound shaft using the 12mm bullet tool.

Set the pressure piston using only the pressure piston set tool.

Use the floating piston tool to set the floating piston at the correct depth.

The set tool will move during rebound needle installation, apply pressure on the tool, but allow it to move.

- Apply hand pressure to the set tool and install the rebound needle.
- Install the rebound needle to one turn from full close.
- Install the two disc spring washers into the body. The first installed should contact the floating piston with the
  outside diameter. The second installed should contact the first disc spring washer with the inside diameter and
  contact the seal head with the outside diameter.
- Now install the rebound seal head onto the rebound shaft with the bullet tool and thread into the shockbody.
- Torque the seal head down to 100 in-lbs.

#### **Actuator Force (Internal Pressure) Adjustment:**

After initial stuffing of the air lockout pullshock, the actuator force should be measured to determine if the force level is within the proper range. Too high of a force will not allow the lockout shifter to hold the cable tension. Too low of a force indicates low internal pressure and will cause cavitation.

Specific equipment is required to measure this force. In the absence of the equipment, other means to determine the force are necessary. Dead weights of exact high and low range could be used to gauge the actuator force. Develop a manual feel for the proper force range of the actuator.

The rebound needle should be set to 1 turn from fully closed for testing, it can affect pressure slightly. Test the actuator force without the cable screw and washer.

#### The range for the actuator for at 1.0 mm from full travel is 10-15lbs, measured perpendicular to the shock shafts.

If the lockout actuator force is with the range of 3.0 to 10.0 lbs, proceed as follows:

- 1. Unthread rebound seal head completely. Leave on shaft.
- 2. Compress the lockout actuator, the full travel. Pressure piston will move.
- Slowly remove the rebound needle.
- 4. Top off inside of shaft with oil.
- 5. Insert a long 1.5mm diam tool inside shaft assy to move actuator to full open position, remove tool slowly.
- 6. Slowly insert rebound needle.
- 7. Retorque seal head to 100 in-lbs.
- 8. Force should increase approximately 5 lbs.

If the lockout actuator force is with the range of 15.0 to 22.0 lbs, proceed as follows:

- Unthread rebound seal head completely. Leave on shaft.
- 2. Slowly remove the rebound needle o-ring from its bore.
- 3. Compress the lockout actuator, the full travel. Oil will rise in the shaft and might pass the o-ring.
- 4. Do not reset actuator position. It will open when re-torqued.
- Slowly insert rebound needle.
- Retorque seal head to 100 in-lbs.
- 7. Force should decrease approximately 5 lbs.

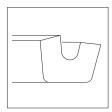
If the force of the actuator is significantly high or low, the stuffing process should be repeated to remove possible air in the shock.

# Final Assembly:

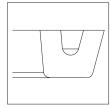
- Mount the shock in the vice by clamping the end mount and push the shock fully down to zero travel.
- Install the bottom out bumper, small end facing towards the seal head and big end facing up.
- Use K2 Goo for the air seals and chamber. Apply a light coat of grease in the body seal and wiper groove.

The dirt wiper and seal are similar, but have different features as described.

- The dirt wiper has a flat surface across the cup, and goes in the groove closer to the end mount and the cup
  faces the end mount.
- The air seal has the inside lip taller and an angled surface, and the cup faces into the air chamber.



Air seal



Dirt wiper

In order not to damage any of the seals during installation, apply grease. The only grease suited for this purpose is K2 Goo.

Lightly grease the seal and wiper for easier installation and mount the seals into the grooves.

Pinch the seal and wiper as shown in the picture to create a loose section to help with installation. Feed the loose section into the groove all the way around the shock.

- Apply a light coat of grease on the inside of the air chamber.
- Put a light coat of grease on the outside of the seal and wiper.
- Carefully install the air chamber onto the air seal. Position the air chamber halfway over the band groove.
- The teflon band should be put in place into the groove and held by the chamber.
- Fully mount the chamber over the wiper and seat the rebound shaft in the cavity of the chamber.
- Clean oil from rebound shaft threads.
- Do not use any Loctite on the chamber bolt.

Note: The rebound needle must be zero to one turns from fully closed or bolt could damage needle and shaft.

If the set screw and spring is already in place in the chamber bolt, proceed as follows: Apply some grease to a small screwdriver and stick the small bearing to the tip of the screwdriver. Insert the tip of the screwdriver into the cylinder retainer bolt. Push the small bearing in the hole where the spring sits. Install the chamber retainer bolt onto the rebound needle while holding the small bearing in place with the screwdriver.



Installing wiper



Press wiper in groove



Seal / Wiper on body



Install teflon band



Can installed on shock

Install the chamber retaining bolt into the rebound shaft.

The rebound detent hardware can sometimes be blocked by the air valve mount. Install the hardware prior to final bolt torque to eliminate chance of access blockage.

- If not done, install the rebound detent ball, spring, and set screw and torque to 2in-lbs.
- Torque the chamber bolt to 100 in-lbs.

Make sure the rebound needle is not bottomed at full close when screw is torqued or damage to needle could occur. Hold rebound knob tight while torqueing.

- Mount the rebound adjuster knob onto the rebound needle. Use Loctite 242 (blue) to secure the screw and torque
  to 10 in-lbs.
- Torque Schrader valve core to 12 in-lbs.
- Fill the shock with air until the proper pressure is reached. Use the air pressure selection table.

Note: Submersion in water is recommended to check for any air leakage. No air should bubble from the shock.

- Mount shock in bike using proper torques.
- The lockout cable bolt torque is 20 in-lbs. Allow the actuator to bottom while torqueing. Excessive torque can damage the actuator.
- Activate the lockout shifter and confirm proper lockout function, adjust the cable if necessary.

#### Air pull shock air seal change:

If air seal failure occurs, and the damper unit does not need service, you can use the following steps to rebuild the air spring. If you decide just to replace the air seals make sure you check that damping and lockout are working. This can eliminate wasted time and effort if one of the two is not working after the shock is mounted in the bike.

- Release the cable from the lockout actuator. Loosen the two bolts on the strut and remove the bolt that mounts the shock to the frame. Remove the shock from the frame.
- Clean the shock thoroughly.



#### Warning - Release the air pressure before servicing shock.

- Clamp the shock in a vise by the end mount.
- Remove the rebound adjuster knob.
- Remove set screw, spring and ball, with the small wrench in the rebuild kit. If it is not accessible, preform the next step first. If the set screw will not come out, it is possible to remove and replace the bolt without removing the set screw. Hold the shock upside down and don't loose the bearing during bolt removal.

There's a spring loaded bearing to give the adjuster clicks. Pay attention when you remove the cylinder retaining bolt. If you loose the small bearing, it's very difficult to find.

 Hold air chamber by hand to resist torque and remove the chamber retaining bolt that holds the air chamber to the shock body and remove the air cylinder.



Warning - Do not damage the body grooves while removing the seal and wiper.

Carefully remove the air seal and dirt wiper from the shock body.

Refer to Final Assembly section for completion of service.

#### Air pressure selection table:

# SUSPENSION TUNING

Consult the table below to select the air pressure that's best for you. Remember, these are recommendations. You may wish to try a higher or lower pressure than recommended due to your riding style, personal preference, or the terrain you ride. As little as 2 psi can make a difference in rider set.

#### In this section:

On the first ride only of a new seal, it is typical to have a loss of 5 psi due to seal "seating". Repressurize your shock after the first ride.

#### Air Pressure Chart

RIDER WEIGHT IN KG	RIDER WEIGHT IN LBS	RAZORBACK RS SMALL & MEDIUM SPRING RATE IN PSI	RAZORBACK RS LARGE & WAY BIG SPRING RATE IN PSI
50 - 60	110 - 132	100	95
60 - 70	132 - 154	125	115
70 - 80	154 - 176	140	130
80 - 90	176 - 198	155	150
90 - 100	198 - 220	170	160

# Note: Optimal rider set for Mega Air Pull-shock: 4-6mm

# **Troubleshooting:**

# AIR SHOCK TROUBLESHOOT-ING

## Shock loses air pressure

- Inspect all O-rings and seals for damage.
- Check if all the parts are torqued down properly.
- Check the Schräder valve core for looseness.
- Check the air cylinder for scratches or burrs.
- Check the top of the rebound shaft for damage.

#### Lockout does not work.

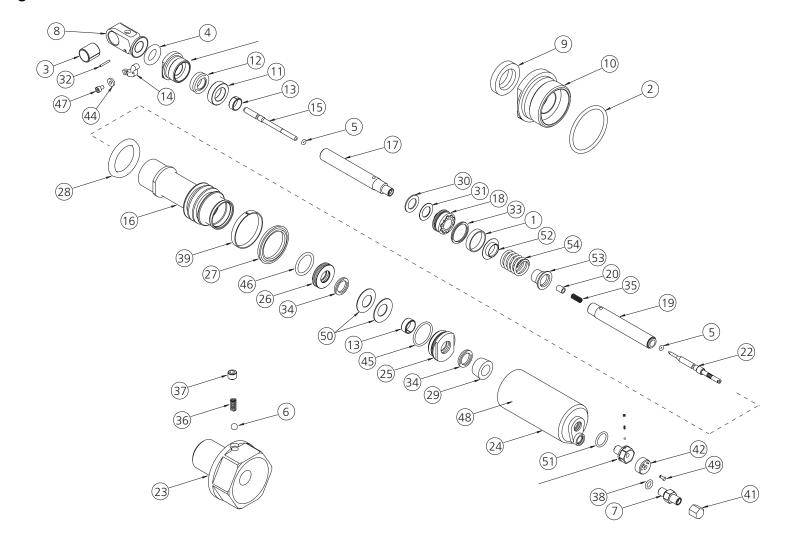
- · Check if the shifter cable is installed properly.
- · Check if the internal pressure is too high.
- Check if the stack assembly is installed correctly and free of damage.

#### Lockout does not stay on while riding.

• Internal pressure inside the shock body is too high, let out some oil using actuator force adjustment.

#### Shock makes a sucking sound in rebound or lockout won't shut off.

Floating piston is set too deep. The internal pressure is too low, causing the cavitation you hear. Use actuator force
adjustment for correction.



1 • 15821 1 Teflon Band 2 • 16054 1 O-ring, Seal Head, 99 3 • 16126 1 Bushing, End Mount 4 • 16191 1 Top Out Bumper 5 • 16250 2 O-ring, needle 6 • 16408 1 Ball 7 • 16414 1 Schrader valve 8 16418 1 End Mount, Air Lockout 9 • 16419 1 Dirt Wiper, 12mm 10 16420 1 Seal Head, Lockout shaft 11 16421 1 Bearing Mount 12 • 16422 1 Seal, 12mm 13 • 16423 2 Bushing, Seal Head 14 16424 1 Lockout Actuator 15 16425 1 Lockout Needle 16 16426 1 Body 17 16566 1 Shaft Assembly, lockout 18 16428 1 Piston, air pull 19 16534 1 Spring/Needle Guide (installed in # 19) 12 • 16433 1 Spring/Needle Guide (installed in # 19) 12 • 16436 1 Cylinder, air 14 16436 1 Pressure Piston 15 16437 1 Seal head, rebound shaft 16 16438 1 Pressure Piston 27 • 16439 1 Seal, cylinder	ITEM #	PART #	QTY.	DESCRIPTION
3 • 16126	1 •	15821	1	Teflon Band
4 •         16191         1         Top Out Bumper           5 •         16250         2         O-ring, needle           6 •         16408         1         Ball           7 •         16414         1         Schrader valve           8         16418         1         End Mount, Air Lockout           9 •         16419         1         Dirt Wiper, 12mm           10         16420         1         Seal Head, Lockout shaft           11         16421         1         Bearing Mount           12 •         16422         1         Seal, 12mm           13 •         16423         2         Bushing, Seal Head           14         16424         1         Lockout Actuator           15         16425         1         Lockout Needle           16         16426         1         Body           17         16566         1         Shaft Assembly, lockout           18         16428         1         Piston, air pull           19         16534         1         Shaft Assembly, rebound           20         16431         1         Rebound Valve           21         16433         1         Spring/Needl	2 •	16054	1	O-ring, Seal Head, 99
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7 •         16414         1         Schrader valve           8         16418         1         End Mount, Air Lockout           9 •         16419         1         Dirt Wiper, 12mm           10         16420         1         Seal Head, Lockout shaft           11         16421         1         Bearing Mount           12 •         16422         1         Seal, 12mm           13 •         16423         2         Bushing, Seal Head           14         16423         2         Bushing, Seal Head           15         16425         1         Lockout Actuator           15         16425         1         Lockout Needle           16         16426         1         Body           17         16566         1         Shaft Assembly, lockout           18         16428         1         Piston, air pull           19         16534         1         Shaft Assembly, rebound           20         16431         1         Rebound Valve           21         16433         1         Spring/Needle Guide (installed in # 19)           22         16434         1         Needle, rebound           23         16435	5 •	16250	2	O-ring, needle
8         16418         1         End Mount, Air Lockout           9 •         16419         1         Dirt Wiper, 12mm           10         16420         1         Seal Head, Lockout shaft           11         16421         1         Bearing Mount           12 •         16422         1         Seal, 12mm           13 •         16423         2         Bushing, Seal Head           14         16424         1         Lockout Actuator           15         16425         1         Lockout Needle           16         16426         1         Body           17         16566         1         Shaft Assembly, lockout           18         16428         1         Piston, air pull           19         16534         1         Shaft Assembly, rebound           20         16431         1         Rebound Valve           21         16433         1         Spring/Needle Guide (installed in # 19)           22         16434         1         Needle, rebound           23         16435         1         Bolt, cylinder retainer           24         16436         1         Cylinder, air           25         16437	6 ●	16408	1	Ball
9 • 16419 1 Dirt Wiper, 12mm  10 16420 1 Seal Head, Lockout shaft  11 16421 1 Bearing Mount  12 • 16422 1 Seal, 12mm  13 • 16423 2 Bushing, Seal Head  14 16424 1 Lockout Actuator  15 16425 1 Lockout Needle  16 16426 1 Body  17 16566 1 Shaft Assembly, lockout  18 16428 1 Piston, air pull  19 16534 1 Shaft Assembly, rebound  20 16431 1 Rebound Valve  21 16433 1 Spring/Needle Guide (installed in # 19)  22 16434 1 Needle, rebound  23 16435 1 Bolt, cylinder, air  24 16436 1 Cylinder, air  25 16437 1 Seal head, rebound shaft  26 16438 1 Pressure Piston	7 •	16414	1	Schrader valve
10 16420 1 Seal Head, Lockout shaft 11 16421 1 Bearing Mount 12 • 16422 1 Seal, 12mm 13 • 16423 2 Bushing, Seal Head 14 16424 1 Lockout Actuator 15 16425 1 Lockout Needle 16 16426 1 Body 17 16566 1 Shaft Assembly, lockout 18 16428 1 Piston, air pull 19 16534 1 Shaft Assembly, rebound 20 16431 1 Rebound Valve 21 16433 1 Spring/Needle Guide (installed in # 19) 22 16434 1 Needle, rebound 23 16435 1 Bolt, cylinder, air 24 16436 1 Cylinder, air 25 16437 1 Seal head, rebound shaft 26 16438 1 Pressure Piston	8	16418	1	End Mount, Air Lockout
11       16421       1       Bearing Mount         12 •       16422       1       Seal, 12mm         13 •       16423       2       Bushing, Seal Head         14       16424       1       Lockout Actuator         15       16425       1       Lockout Needle         16       16426       1       Body         17       16566       1       Shaft Assembly, lockout         18       16428       1       Piston, air pull         19       16534       1       Shaft Assembly, rebound         20       16431       1       Rebound Valve         21       16433       1       Spring/Needle Guide (installed in # 19)         22       16434       1       Needle, rebound         23       16435       1       Bolt, cylinder retainer         24       16436       1       Cylinder, air         25       16437       1       Seal head, rebound shaft         26       16438       1       Pressure Piston	9 •	16419	1	Dirt Wiper, 12mm
12 •       16422       1       Seal, 12mm         13 •       16423       2       Bushing, Seal Head         14       16424       1       Lockout Actuator         15       16425       1       Lockout Needle         16       16426       1       Body         17       16566       1       Shaft Assembly, lockout         18       16428       1       Piston, air pull         19       16534       1       Shaft Assembly, rebound         20       16431       1       Rebound Valve         21       16433       1       Spring/Needle Guide (installed in # 19)         22       16434       1       Needle, rebound         23       16435       1       Bolt, cylinder retainer         24       16436       1       Cylinder, air         25       16437       1       Seal head, rebound shaft         26       16438       1       Pressure Piston	10	16420	1	Seal Head, Lockout shaft
13 •       16423       2       Bushing, Seal Head         14       16424       1       Lockout Actuator         15       16425       1       Lockout Needle         16       16426       1       Body         17       16566       1       Shaft Assembly, lockout         18       16428       1       Piston, air pull         19       16534       1       Shaft Assembly, rebound         20       16431       1       Rebound Valve         21       16433       1       Spring/Needle Guide (installed in # 19)         22       16434       1       Needle, rebound         23       16435       1       Bolt, cylinder retainer         24       16436       1       Cylinder, air         25       16437       1       Seal head, rebound shaft         26       16438       1       Pressure Piston	11	16421	1	Bearing Mount
14         16424         1         Lockout Actuator           15         16425         1         Lockout Needle           16         16426         1         Body           17         16566         1         Shaft Assembly, lockout           18         16428         1         Piston, air pull           19         16534         1         Shaft Assembly, rebound           20         16431         1         Rebound Valve           21         16433         1         Spring/Needle Guide (installed in # 19)           22         16434         1         Needle, rebound           23         16435         1         Bolt, cylinder retainer           24         16436         1         Cylinder, air           25         16437         1         Seal head, rebound shaft           26         16438         1         Pressure Piston	12 •	16422	1	Seal, 12mm
15         16425         1         Lockout Needle           16         16426         1         Body           17         16566         1         Shaft Assembly, lockout           18         16428         1         Piston, air pull           19         16534         1         Shaft Assembly, rebound           20         16431         1         Rebound Valve           21         16433         1         Spring/Needle Guide (installed in # 19)           22         16434         1         Needle, rebound           23         16435         1         Bolt, cylinder retainer           24         16436         1         Cylinder, air           25         16437         1         Seal head, rebound shaft           26         16438         1         Pressure Piston	13 •	16423	2	Bushing, Seal Head
16         16426         1         Body           17         16566         1         Shaft Assembly, lockout           18         16428         1         Piston, air pull           19         16534         1         Shaft Assembly, rebound           20         16431         1         Rebound Valve           21         16433         1         Spring/Needle Guide (installed in # 19)           22         16434         1         Needle, rebound           23         16435         1         Bolt, cylinder retainer           24         16436         1         Cylinder, air           25         16437         1         Seal head, rebound shaft           26         16438         1         Pressure Piston	14	16424	1	Lockout Actuator
17       16566       1       Shaft Assembly, lockout         18       16428       1       Piston, air pull         19       16534       1       Shaft Assembly, rebound         20       16431       1       Rebound Valve         21       16433       1       Spring/Needle Guide (installed in # 19)         22       16434       1       Needle, rebound         23       16435       1       Bolt, cylinder retainer         24       16436       1       Cylinder, air         25       16437       1       Seal head, rebound shaft         26       16438       1       Pressure Piston	15	16425	1	Lockout Needle
18         16428         1         Piston, air pull           19         16534         1         Shaft Assembly, rebound           20         16431         1         Rebound Valve           21         16433         1         Spring/Needle Guide (installed in # 19)           22         16434         1         Needle, rebound           23         16435         1         Bolt, cylinder retainer           24         16436         1         Cylinder, air           25         16437         1         Seal head, rebound shaft           26         16438         1         Pressure Piston	16	16426	1	Body
19       16534       1       Shaft Assembly, rebound         20       16431       1       Rebound Valve         21       16433       1       Spring/Needle Guide (installed in # 19)         22       16434       1       Needle, rebound         23       16435       1       Bolt, cylinder retainer         24       16436       1       Cylinder, air         25       16437       1       Seal head, rebound shaft         26       16438       1       Pressure Piston	17	16566	1	Shaft Assembly, lockout
20         16431         1         Rebound Valve           21         16433         1         Spring/Needle Guide (installed in # 19)           22         16434         1         Needle, rebound           23         16435         1         Bolt, cylinder retainer           24         16436         1         Cylinder, air           25         16437         1         Seal head, rebound shaft           26         16438         1         Pressure Piston	18	16428	1	Piston, air pull
21       16433       1       Spring/Needle Guide (installed in # 19)         22       16434       1       Needle, rebound         23       16435       1       Bolt, cylinder retainer         24       16436       1       Cylinder, air         25       16437       1       Seal head, rebound shaft         26       16438       1       Pressure Piston	19	16534	1	Shaft Assembly, rebound
22     16434     1     Needle, rebound       23     16435     1     Bolt, cylinder retainer       24     16436     1     Cylinder, air       25     16437     1     Seal head, rebound shaft       26     16438     1     Pressure Piston	20	16431	1	Rebound Valve
23     16435     1     Bolt, cylinder retainer       24     16436     1     Cylinder, air       25     16437     1     Seal head, rebound shaft       26     16438     1     Pressure Piston	21	16433	1	Spring/Needle Guide (installed in # 19)
24         16436         1         Cylinder, air           25         16437         1         Seal head, rebound shaft           26         16438         1         Pressure Piston	22	16434	1	Needle, rebound
25         16437         1         Seal head, rebound shaft           26         16438         1         Pressure Piston	23	16435	1	Bolt, cylinder retainer
26 16438 1 Pressure Piston	24	16436	1	Cylinder, air
	25	16437	1	Seal head, rebound shaft
27 • 16439 1 Seal, cylinder	26	16438	1	Pressure Piston
	27 •	16439	1	Seal, cylinder

ITEM #	PART #	QTY.	DESCRIPTION
28 •	16440	1	Wiper
29 •	16443	1	Bumper Stop
30	16447	1	Rebound washer
31	16450-01	1	Rebound Shim Washer stack (see pg. ??)
32	16451	1	Roll pin
33 •	16452	1	Quad ring, Main piston
34 •	16454	2	Quad-ring, Press. Piston / Reb. Seal head
35	16455	1	Valve spring
36 •	16457	1	Spring
37 ●	16458	1	Set Screw
38 •	16459	1	O-ring, Schrader-valve
39 •	16460	1	Teflon Band
40	16462	1	Lockout/Shift lever
41 •	16469	1	Schrader cap
42	16494	1	Rebound Knob
43	16500	1	Stud, shaft (Installed in #17, Part 16566)
44	16501	1	Clamp, cable
45 ●	16502	1	O-ring, Reb. Seal Head
46 •	16503	1	O-ring, Pressure piston, Outer
47	16506	1	Screw, M3 x .5 x 5 SHCS
48	16507	1	Label (not shown)
49	16509	1	Screw, Phillips #2-56 1/4" Countersunk
50	16510	2	Belville washer, Pressure piston
51 •	16521	1	O-ring, Air chamber
52	16522	1	Blow Off Valve
53	16523	1	Spring Support
54	16524	1	Coil Spring

Note: • - included in Rebuild Kit, Part # K007003