REPAIR and REPLACEMENT SERVICE INSTRUCTIONS

Lid, Filter Media and Muffler (Bulldog and Bison Models)
Oil Reservoir Switches (Standard and Bison Models)
Oil Reservoir (All Models)
Recirculation Kits (Standard Models)

STANDARD MODELS

- **550**
  (955.xxxx.xxx)
- **1400**
  (914.xxxx.xxx)

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*Note: Instructions relating to Standard 1400 models also apply to Standard 1200 and 2800 models.

BULLDOG MODELS

- **550**
  (855.xxxx.xxx)
- **QT**
  (809.xxxx.xxx)
- **QT E**
  (809E.xxxx.xxx)

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BISON MODELS

- **BISON**
  (818.xxxx.xxx)
  (826.xxxx.xxx)
- **BISON E**
  (818E.xxxx.xxx)
  (826E.xxxx.xxx)

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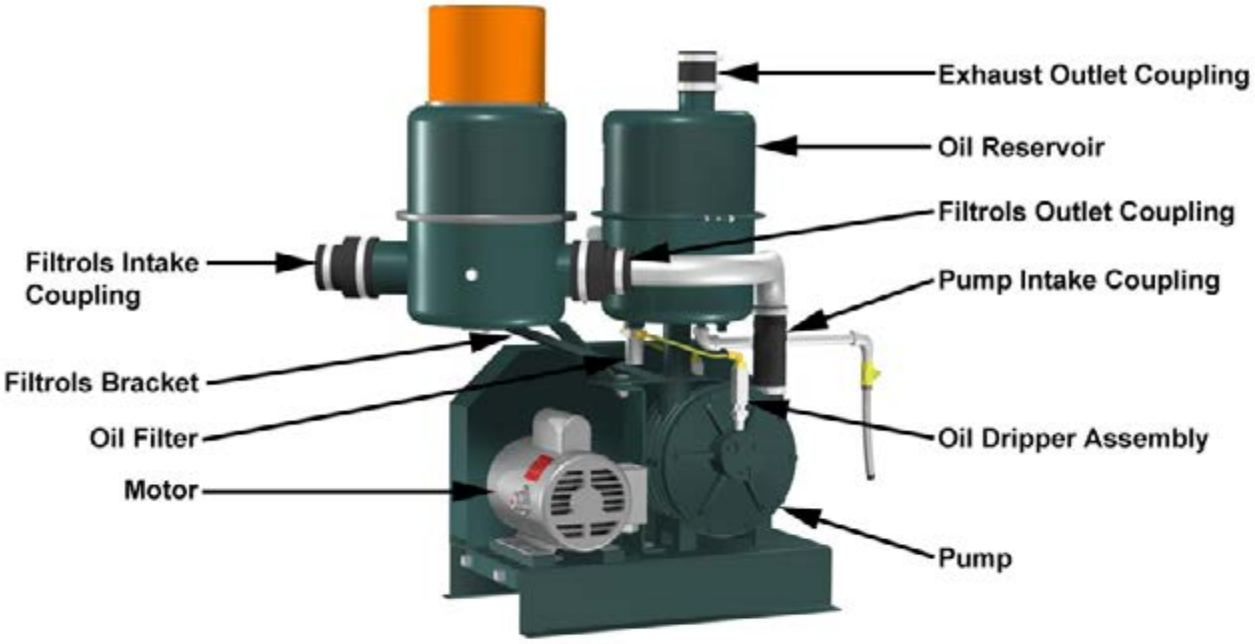
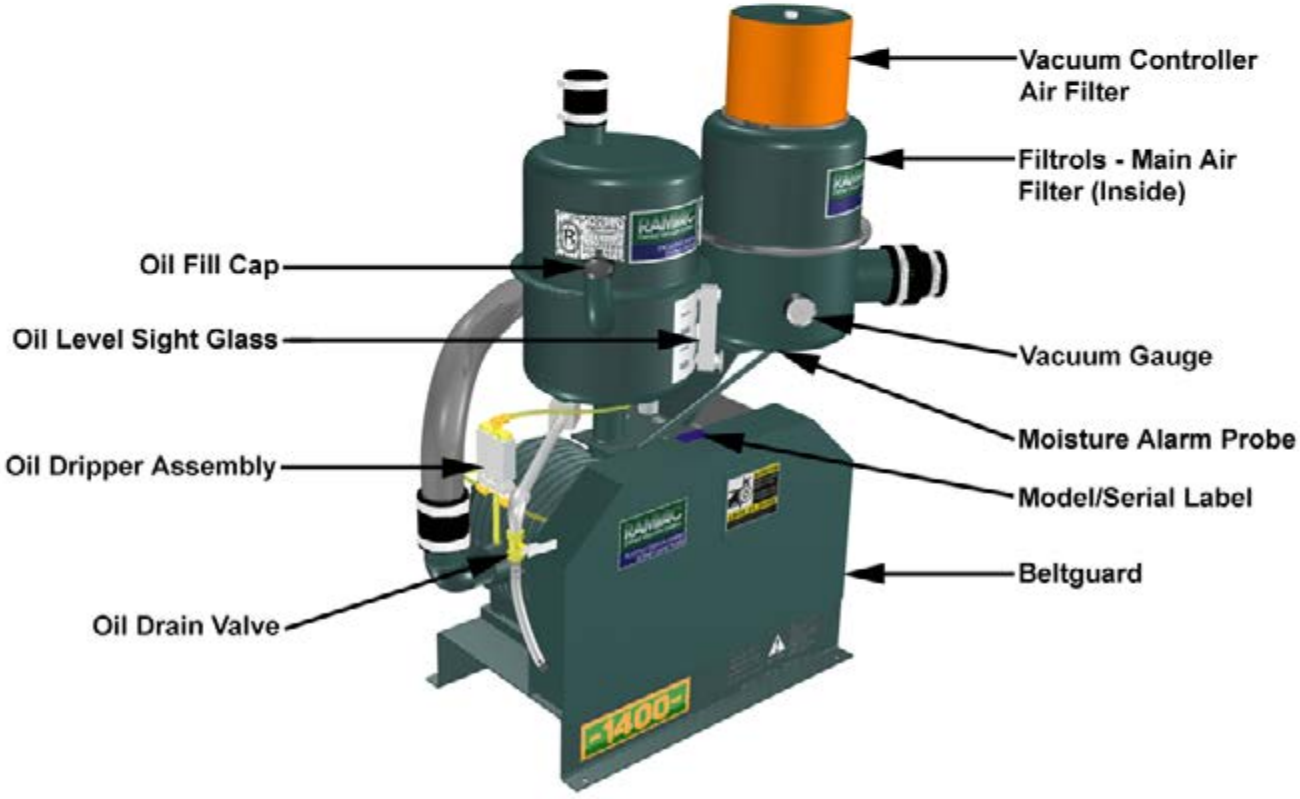
Standard Models Important Features



Standard 550



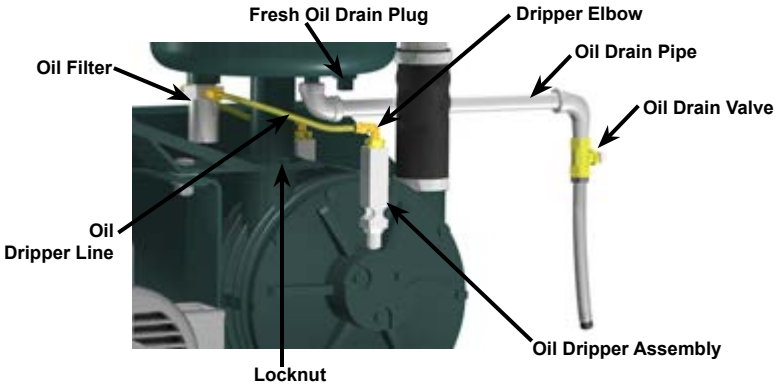
Standard 1400

Oil Reservoir Replacement

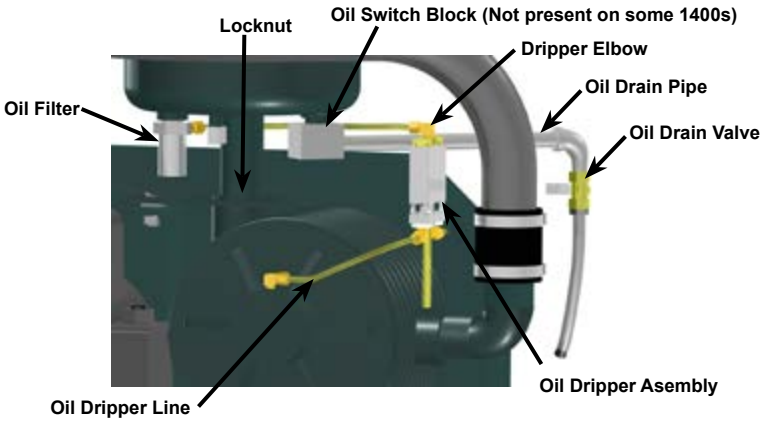
How to replace the oil reservoir on Standard Models

1. Secure Disconnect.
2. Move vacuum unit into an open area if needed.
3. Loosen pump intake and Filtrols outlet coupling. Remove Filtrols intake pipe.
4. Disconnect the moisture probe and oil switch (if present).
5. Remove Filtrols and set aside.
6. CAUTION: Be prepared for the entire fresh oil supply of 2 to 3 gallons. Drain fresh and used oil from oil reservoirs.
7. Remove oil drain pipe. Plug to prevent oil drips
8. Disconnect oil line(s) from oil filter assembly.
9. Loosen 2" locknut at oil reservoir / pump junction. A Dremel tool with cutting blade or chisel may be needed to break weld.
10. Using a long pry bar, unscrew oil reservoir from pump, keeping oil reservoir upright to minimize oil drips.
11. Thoroughly clean threads and apply Loctite 565 to bottom 1" of oil reservoir pipe threads.
12. Thread oil reservoir pipe into pump exhaust and tighten until oil filter is centered over Filtrols support bracket.
13. Apply Loctite 565 to threads and tighten down locknut.
14. Apply Loctite 565 to drain pipe threads and install. Be sure oil drain hose is plugged and valve is closed.
15. Reconnect oil line(s) to oil filter assembly on oil reservoir.
16. Install Filtrols onto support bracket.
17. Install moisture probe and reconnect oil switch (if present).
18. Install Filtrols intake pipe between Filtrols outlet coupling and pump intake coupling. Tighten clamps.
19. Close oil drain valve and fill oil reservoir to proper level.
20. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

Standard 550 Oil Assembly



Standard 1400 Oil Assembly



Oil Recirculation Kit Installation Without Oil Switch

How to install oil recirculation kit without oil switch on Standard Models.

1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Drain used oil using drain valve “D”.
4. Remove street elbow “E” with oil drain valve “D” from drain pipe “C” and save. Remove drain pipe “C”. Remove elbow “A”. Be prepared for residual oil to drain out.
5. CAUTION: Be prepared for the entire fresh oil supply of 2 to 3 gallons. Place a container suitable for holding the entire fresh oil supply under the fresh oil drain plug “B”. Remove the fresh oil drain plug, “B” and drain.

“For the next steps, thoroughly clean threads and apply Loctite 565 to the threaded parts.”

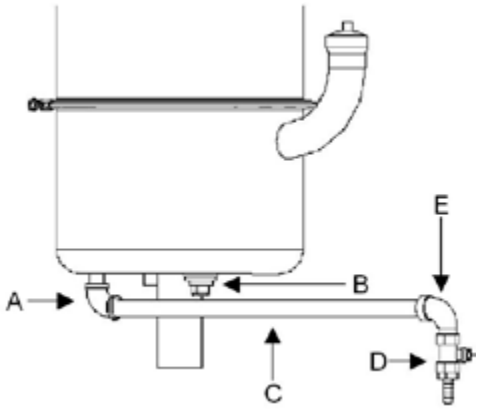
Note: Do not completely tighten “L”, as later alignment is necessary.

6. Install the bushing and pipe nipple “P” and the pipe tee “L” into the oil reservoir.
7. Install the bell reducer “F” onto the oil reservoir.

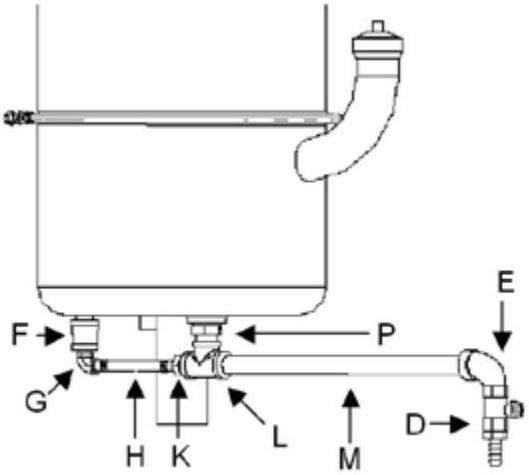
Note: Do not completely tighten “G”, as later alignment is necessary.

8. Install hose barb 90° “G” into bell reducer “F”.
9. Install hose barb “K” into the pipe tee “L”.
10. Rotate hose barb 90° “G” and pipe tee “L” as necessary to allow the hose, with clamps “H” to be installed. Reposition to create a straight line and secure the hose clamps.
11. Install pipe nipple “M”, street elbow “E” and oil drain valve “D”.
12. Close oil drain valve and fill oil reservoir to proper level.
13. Please print the letter “R” after the model # on the model ID tag affixed to belt guard.
14. Affix “Recirculating” label to oil reservoir.
15. Replace original User Guide with “Recirculating” version.
16. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

Before Installation



After Installation



Legend

A. elbow: 3/8” fpt
B. fresh oil drain plug: 3/4”
C. pipe nipple: 3/8” x 14” long
D. oil drain valve
E. street elbow: 3/8”
F. bell reducer: 3/8” fpt x 1/4” fpt
G. hose barb 90°, 1/4” mpt x 1/4” hose
H. hose, oil rated, 1/4” x 2 3/4” with 2 hose clamps
K. hose barb: 3/8” mpt x 1/4” hose
L. pipe tee, 3/8”
M. pipe nipple: 3/8”x 11” long
P. bushing: 3/4” mpt x 3/8”fpt

not shown:
3/8” close nipple:

Oil Recirculation Kit Installation With Oil Switch

How to install oil recirculation kit with oil switch on Standard Models.

1. Secure disconnect.
2. Move vacuum unit into open area if needed.
3. Drain used oil using oil drain valve “D”.
4. Disconnect Oil Level Switch wires.
5. Remove elbow “E” with oil drain valve “D” from drain pipe “C”. Remove drain pipe “C” from elbow “A”. Remove elbow “A”. Save these parts. Be prepared for residual oil to drain out.
6. CAUTION: Be prepared for the entire fresh oil supply of 2 to 3 gallons. Place a container suitable for holding the entire fresh oil supply under the oil switch bushing assembly “B”. Remove the oil switch bushing assembly “B” and drain.

“For the next steps, thoroughly clean threads and apply Loctite 565 to the threaded parts.”

7. Final assembly on oil switch block assembly “L”
   a. Remove retaining clip and float from switch post.
   b. Remove close nipple from switch block. Apply Locktite 565.
   c. Install close nipple into switch block.

Note: Float must be correctly orientated for proper operation.

8. Correctly orientate float. Install float and retaining clip on oil switch post. See “Orientation of Reservoir Switch Floats” procedure.

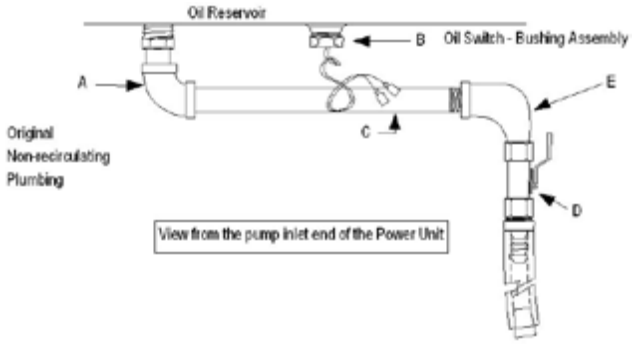
Note: Do not completely tighten “L”, as later alignment is necessary.

9. Install the oil switch block assembly “L” into the oil reservoir.
10. Install the bell reducer “F”.

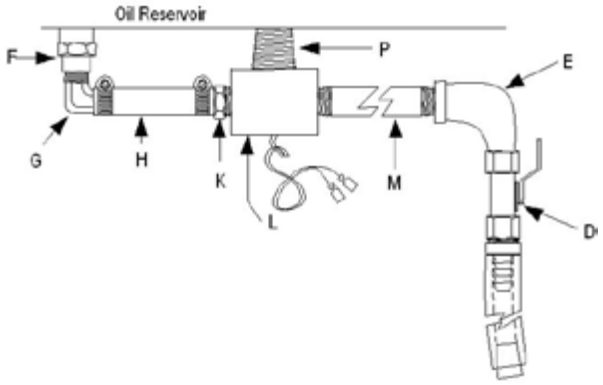
Note: Do not completely tighten “G”, as later alignment is necessary.

11. Install hose barb 90° “G” into the bell reducer “F”.
12. Install hose barb “K” into the oil switch block assembly “L”.
13. Rotate the hose barb 90° “G” and oil switch block “L” as necessary to allow the hose with clamps “H” to be installed. Reposition to create a straight line and secure the hose clamps.
14. Install pipe nipple “M”, street elbow “E” and oil drain valve “D”.
15. Reconnect oil switch wires.
16. Close oil drain valve and fill oil reservoir to proper level.
17. Please print the letter “R” after the model # on the model ID tag affixed to top of belt guard.
18. Affix “Recirculating” label to oil reservoir.
19. Replace original user guide with “Recirculating” version.
20. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

Before Installation



After Installation



Legend

A. elbow: 3/8” fpt
B. oil switch bushing assembly
C. pipe nipple: 3/8” X 14” long
D. oil drain valve
E. street elbow: 3/8”
F. bell reducer 3/8” fpt x 1/4” fpt
G. hose barb 90°: 1/4” mpt x 1/4” hose
H. hose, oil rated, 1/4” x 2 3/4” long with 2 hose clamps
K. hose barb: 3/8” mpt x 1/4” hose
L. oil switch block assembly
   not shown:
   coupler: 1/4” fpt
   pipe nipple: 1/4” X 2” long
   oil switch assembly
M. pipe nipple, 3/8” x 11” long
P. close nipple, 3/4”

Oil Switch Replacement Recirculating Models

How to replace the oil switch on Standard Recirculating Systems.

1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. CAUTION – Be prepared for the entire fresh oil supply of 2 to 3 gallons . Place a container suitable for holding the entire fresh oil supply under drain valve and drain oil.
4. Remove drain pipe and oil drain valve from oil switch block. Remove hose (if present) from oil switch block assembly. Be prepared for oil drip.
5. Disconnect oil switch wires and cut spade terminals from oil switch block assembly.

Note orientation of oil switch block for proper installation later.

6. Remove oil switch block and close nipple from oil reservoir.

CAUTION: If 3/4 close nipple separates from oil switch block it must be removed from reservoir before lowering assembly.

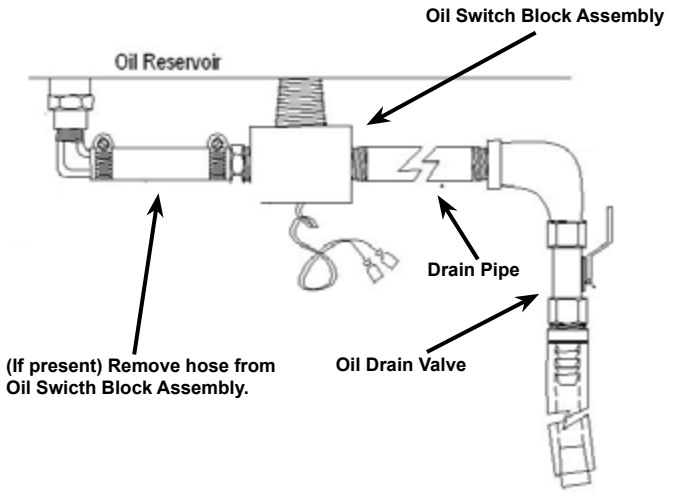
7. Remove retaining clip and float.
8. Remove oil switch post from 1/8" pipe coupling in oil switch block assembly and discard.

"For the next steps, thoroughly clean threads and apply Loctite 565 to the threaded parts."

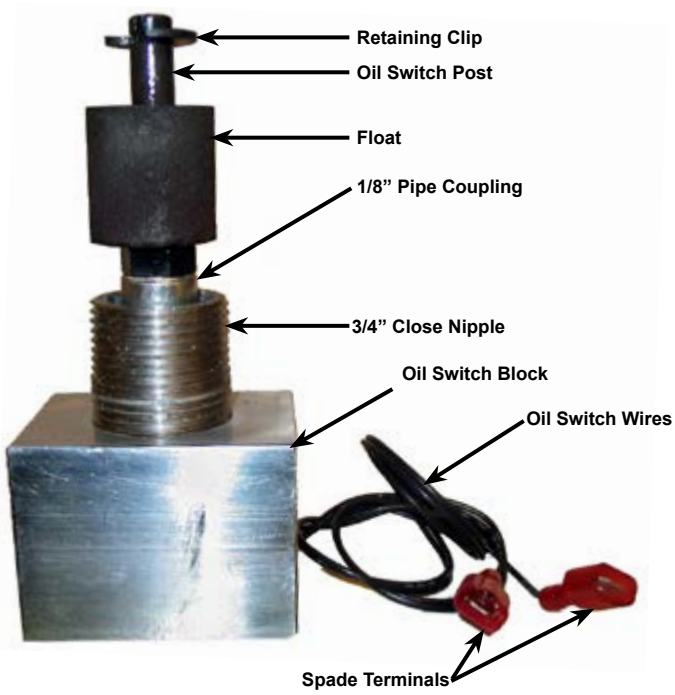
9. Thread oil switch wires through 1/8" pipe coupling, install oil switch post in 1/8" pipe coupling, and tighten.
10. If 3/4" close nipple seperated from oil switch block, install 3/4" close nipple over oil switch post into oil switch block.

Note: Float must be correctly orientated for proper operation.

11. Correctly orientate float. Install float and retaining clip on oil switch post. See "Orientation of Reservoir Switch Floats" procedure.
12. Install oil switch block assembly into oil reservoir. If hose is present, correctly orientate and install hose.
13. Install drain pipe and and oil drain valve.
14. Strip insulation and crimp male spade terminals to wire ends.
15. Reconnect oil switch wires.
16. Close oil drain valve and fill oil reservoir to proper level.
17. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

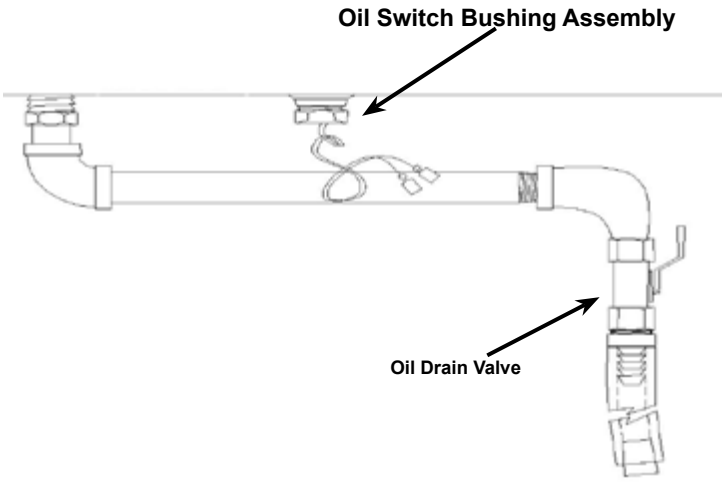


Oil Switch Block Assembly



Oil Switch Replacement Non-Recirculating Models

How to replace the oil switch on Standard Non-Recirculating Systems.



1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Disconnect oil switch wires and cut spade terminals from oil switch bushing assembly.
4. CAUTION – Be prepared for the entire fresh oil supply of 2 to 3 gallons. Place a container suitable for holding the entire fresh oil supply under oil switch bushing assembly.
5. Remove oil switch bushing assembly and drain oil.
6. Remove retaining clip and float.
7. Remove oil switch post from oil switch bushing assembly and discard.

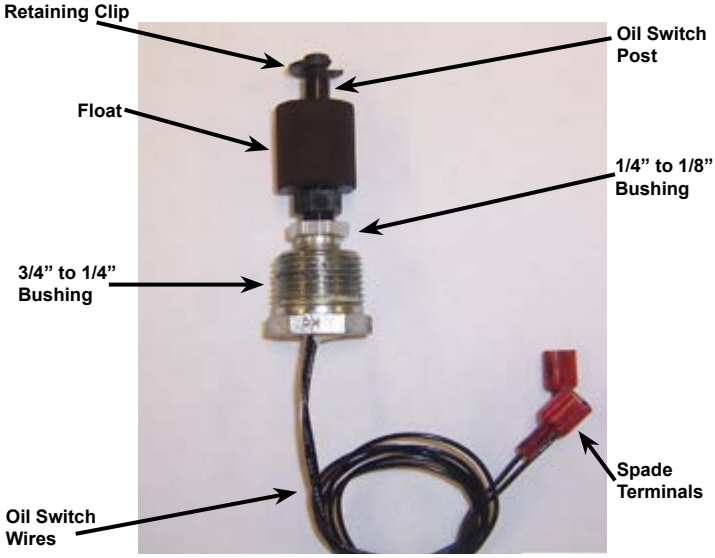
"For the next steps, thoroughly clean threads and apply Loctite 565 to the threaded parts."

8. Thread oil switch wires through bushing, install oil switch post, and tighten.

Note: Float must be correctly orientated for proper operation.

9. Correctly orientate float. Install float and retaining clip on oil switch post. See "Orientation of Reservoir Switch Floats" procedure.
10. Install oil switch bushing assembly into oil reservoir.
11. Strip insulation and crimp male spade terminals to wire ends.
12. Reconnect oil switch wires.
13. Close oil drain valve and fill oil reservoir to proper level.
14. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

Oil Switch Bushing Assembly



NOTES

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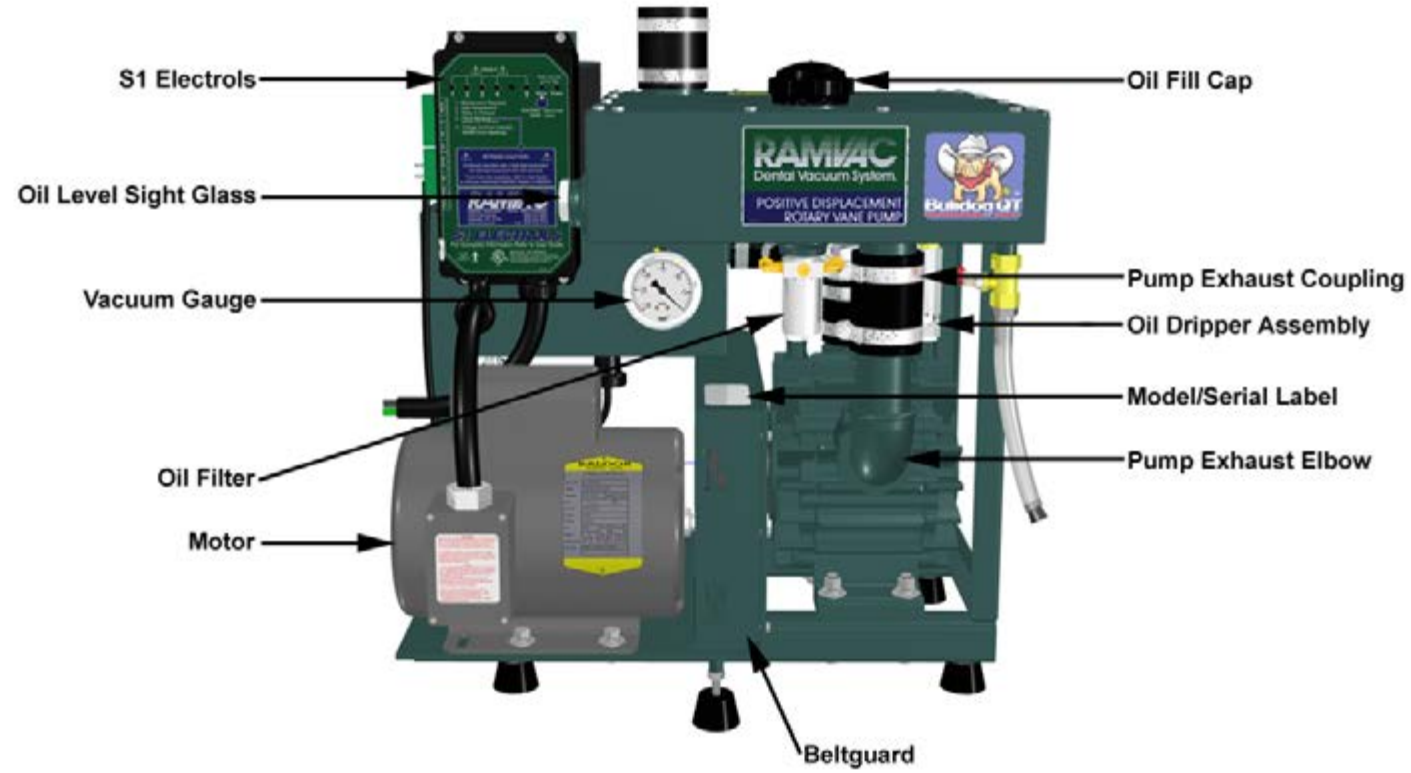
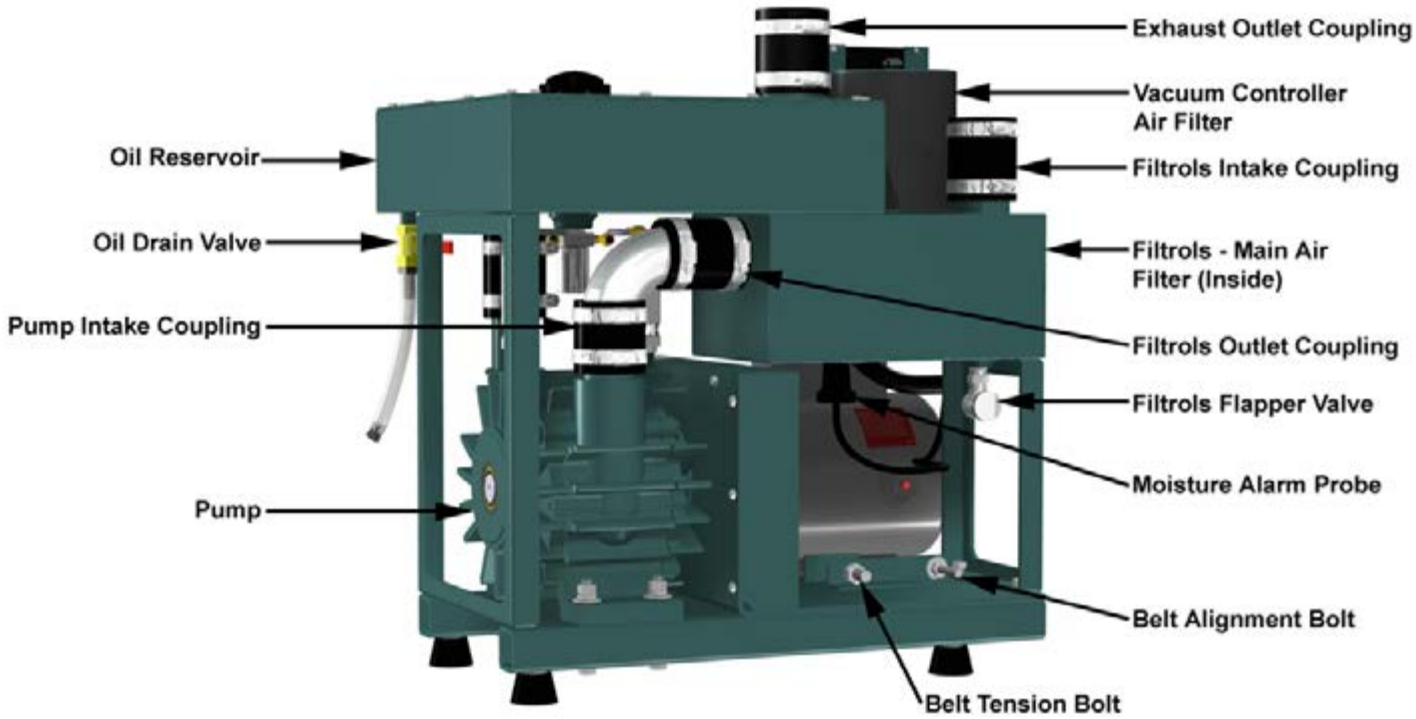
Bulldog Models Important Features





Lid Replacement

How to replace the oil reservoir lid on Bulldog 550, Bulldog QT, and Bulldog QT E Models.

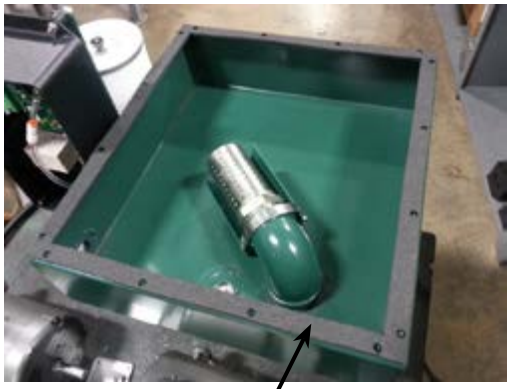
1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Loosen exhaust outlet coupling and separate from power unit.
4. Drain oil, then close oil drain valve and replace plug.
5. Remove lid screws. Earlier model Bulldog units use sheet metal screws to fasten the lid onto the oil reservoir while more recent models have threaded pem-nuts that use machine screws. This kit has been shipped with both types of screws for use on the appropriate model being serviced. Take care to use the correct fasteners.

CAUTION: DO NOT PRY LID OFF!

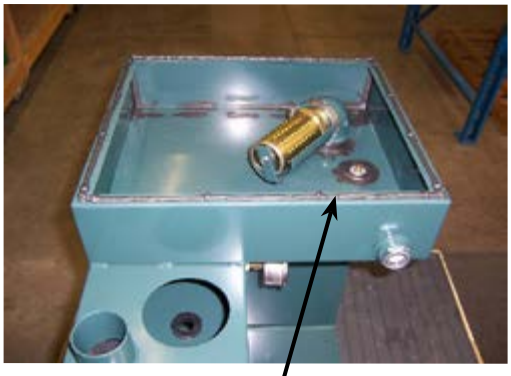
Note exhaust and oil fill orientation before lifting lid off.

6. Use utility knife to cut sealant that bonds lid and oil reservoir together. (See top photo at right.)
7. Remove lid.
8. Remove RTV on oil reservoir lip and lid edge. This is important for an oil tight seal upon reassembly.
9. Clean out all debris from oil reservoir.
10. A new foam gasket has been supplied as well as Loctite instant gasket sealer.
    One OR the other may be used, but not both. Place the new foam gasket on the reservoir opening so the holes are aligned.
    NOTE:If instant gasket is to be used instead of the foam gasket, carefully apply 1/8" bead of the supplied Loctite Instant Gasket to the oil reservoir top lip and generous bead around screw holes.
11. Properly orientate exhaust and oil fill, place lid onto oil reservoir.
12. Install screws, tighten completely. Be careful not to strip out holes!
13. Trim excess gasket material.
14. Close oil drain valve and fill oil reservoir to proper level.
15. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

Use utility knife to cut sealant



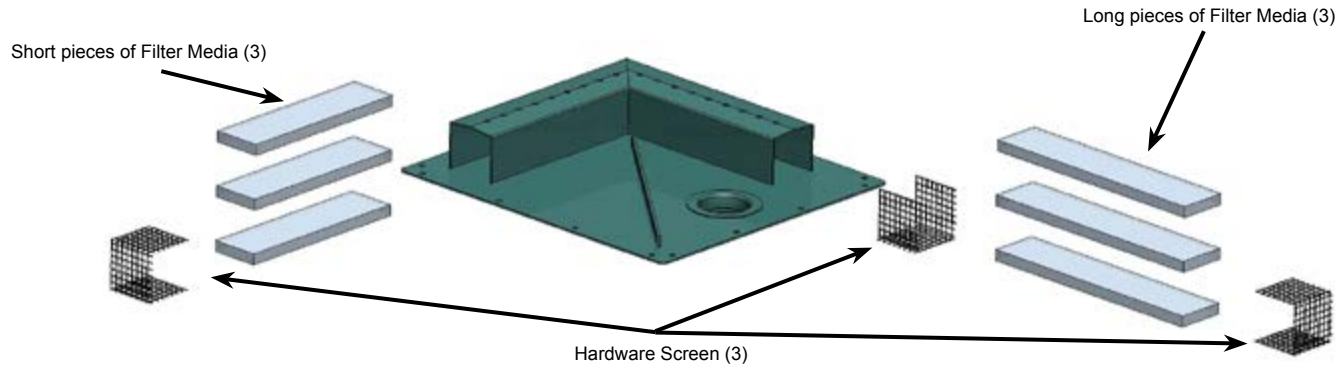
New Foam Gasket



1/8" bead of Loctite Instant Gasket

Lid Filter Media Replacement

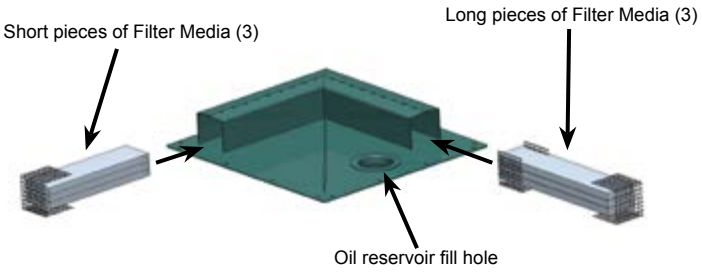
How to replace the lid filter media on all Bulldog Models.

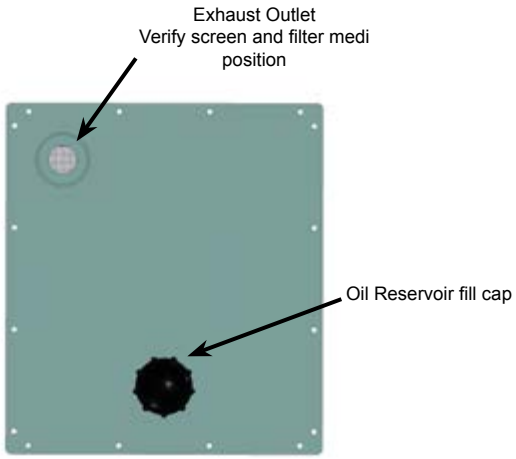


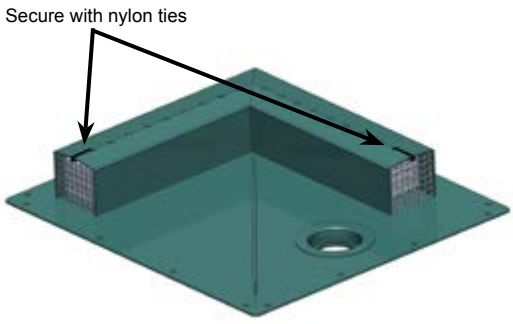
1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Loosen exhaust outlet coupling and separate from power unit.
4. Remove lid per “Lid Replacement” procedure.
5. Remove the old lid filter media and all the old hardware screen(s) from the lid channels.

Note: The lid filter media is packaged partially assembled for ease of installation.

6. Insert the longer filter media assembly into the channel on the lid closest to the oil reservoir fill hole.
7. Insert the shorter filter media assembly into the remaining lid channel.
8. Turn reservoir lid over. Verify the hardware screen and filter media covers the exhaust outlet.
9. With nylon ties, secure both outside end hardware screens through a hole in the lid channels.
10. Install lid per “Lid Replacement” procedure.
11. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.







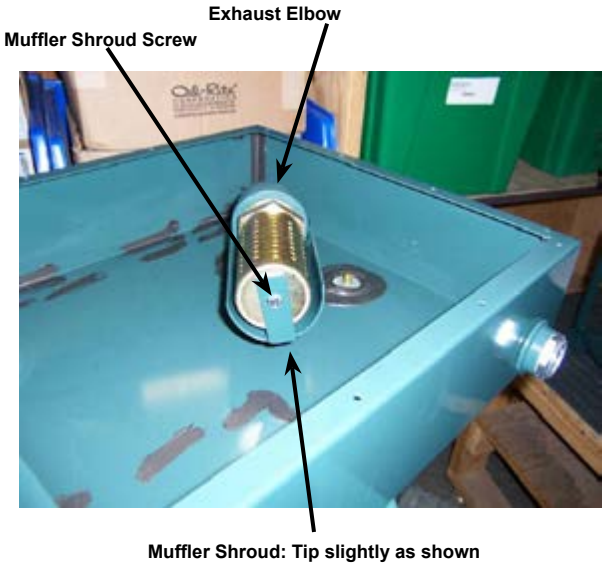
Muffler Replacement

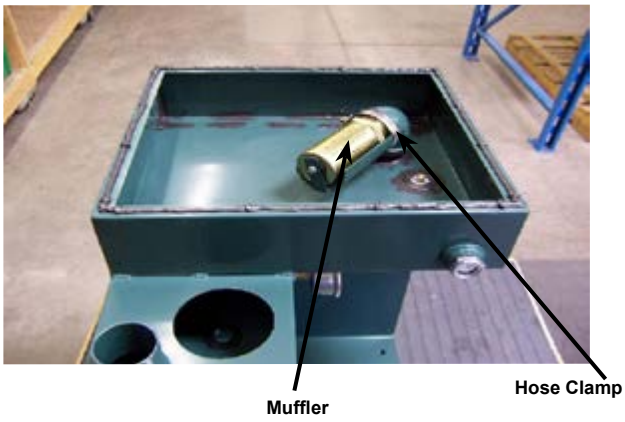
How to replace the oil reservoir muffler on Bulldog QT and Bulldog QT E Models.

1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Loosen exhaust outlet coupling and separate from power unit.
4. Drain oil and remove lid per “Lid Replacement” procedure.
5. Remove hose clamp from exhaust elbow.

Note orientation of muffler shroud for proper installation later.

6. Remove muffler shroud screw and muffler shroud.
7. Remove muffler with two large pipe wrenches:
   a. One to remove muffler.
   b. One for counter force to avoid breaking welds.
8. Scrape RTV off exhaust elbow and muffler shroud.
9. Clean out all debris from oil reservoir.
10. Hand tighten muffler into exhaust elbow. Do not use thread sealant.
11. Properly orientate shroud under muffler (tipped slightly) as illustrated.
12. Apply Loctite 243 to muffler shroud screw. Attach shroud to muffler.
13. Install hose clamp over muffler shroud and exhaust elbow.
14. Install lid per “Lid Replacement” procedure.
15. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.





Oil Reservoir Replacement

How to replace the oil reservoir on Bulldog 550, Bulldog, and Bulldog QT E Models.

1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Remove Filtrols intake and exhaust outlet couplings and separate from power unit.
4. Remove moisture alarm probe from Filtrols.
   a. Bulldog QT E Models: Remove nuts securing the S1 Electrols and set S1 Electrols aside.
5. Drain oil from oil reservoir, then close oil drain valve and replace plug.
6. Loosen pump intake and exhaust coupling hose clamps.
7. Disconnect oil lines from oil filter assembly.
8. Remove vacuum controller assembly, for re-use.
9. Remove main air filter from inside Filtrols, for re-use.
10. Remove all oil reservoir leg bolts.
11. Remove defective oil reservoir.
12. Reverse steps to replace oil reservoir.
13. Close oil drain valve and fill oil reservoir to proper level.
14. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

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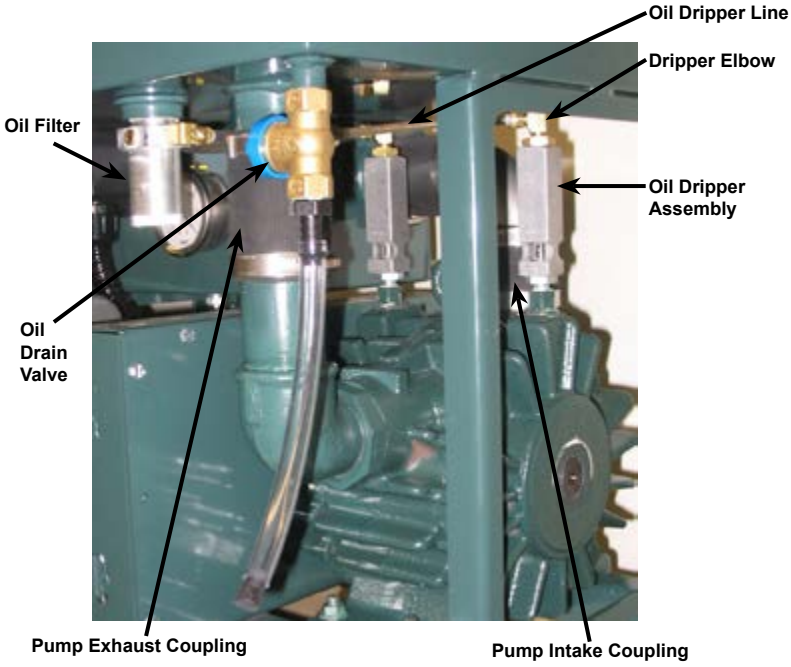
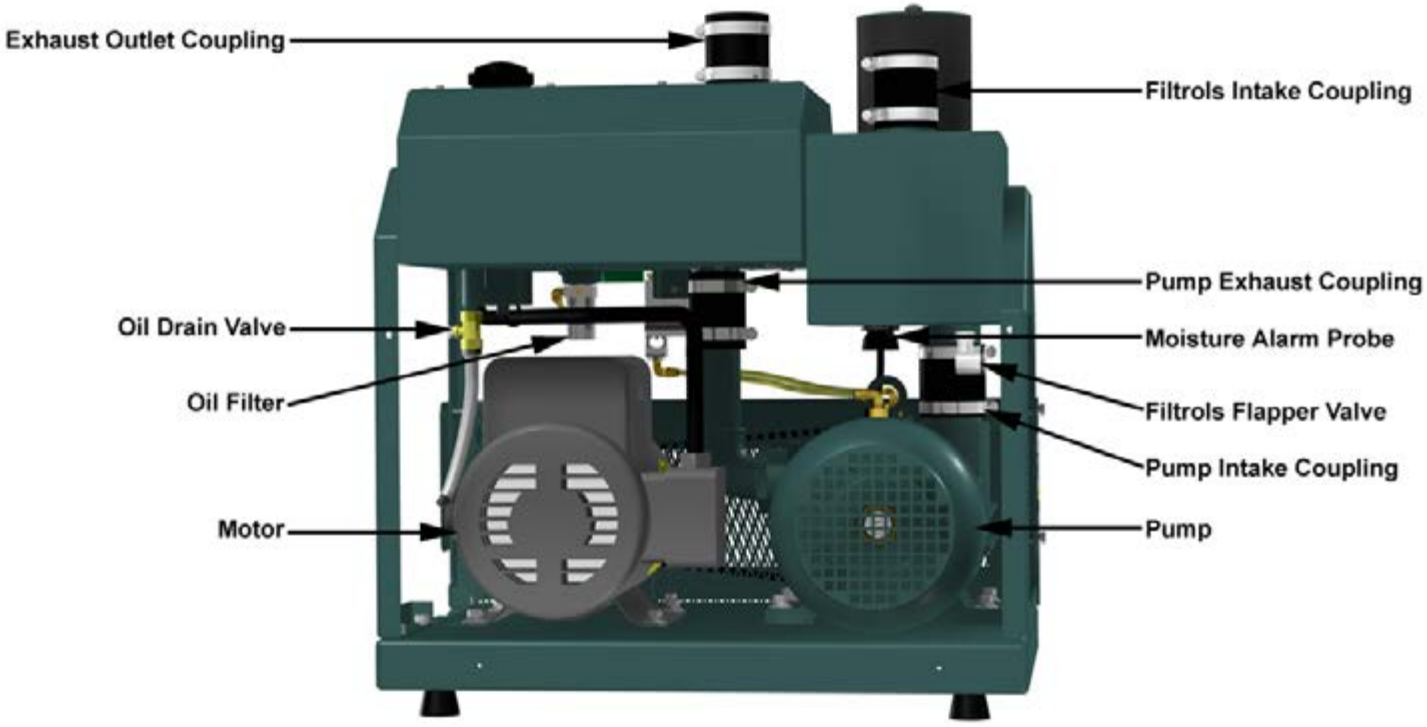


Bison Models Important Features



Lid Replacement

How to replace the oil reservoir lid on Bison and Bison E Models.

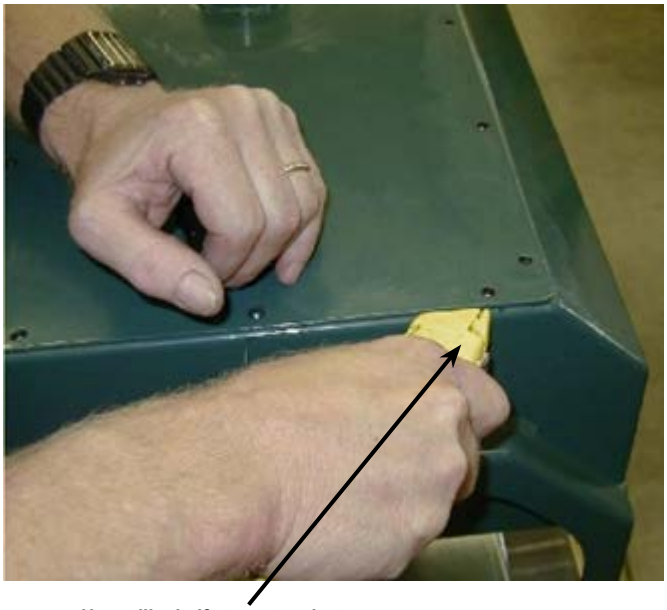
1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Loosen exhaust outlet coupling and separate from power unit.
   a. Power Units equipped with S-Type Filter:
      i. Loosen S-Type Filter exhaust inlet coupling and remove S-type filter from power unit.
4. Drain oil, close oil drain valve, and replace plug.

CAUTION: DO NOT PRY LID OFF!

5. Remove lid screws.
6. Use utility knife to cut sealant that bonds lid and oil reservoir together. (See top photo at right.)

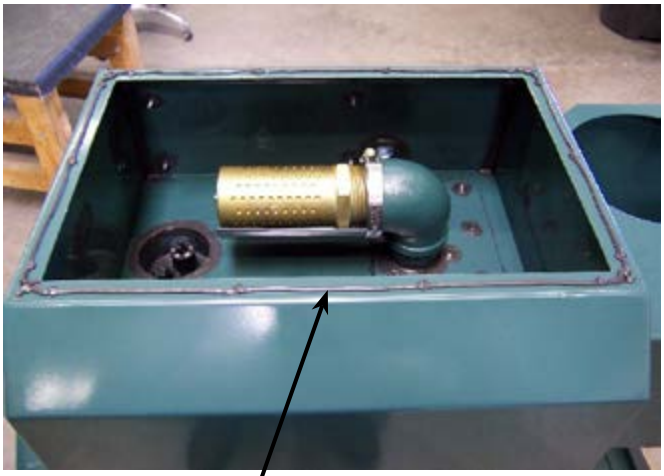
Note exhaust and oil fill orientation before lifting lid off.

7. Remove lid.
8. Remove RTV on oil reservoir lip and lid edge. This is important for an oil tight seal upon reassembly.
9. Clean out all debris from oil reservoir.
10. A new foam gasket has been supplied as well as Loctite instant gasket sealer.
    One OR the other may be used, but not both. Place the new foam gasket on the reservoir opening so the holes are aligned.
    NOTE: If instant gasket is to be used instead of the foam gasket, carefully apply 1/8" bead of the supplied Loctite Instant Gasket to the oil reservoir top lip and generous bead around screw holes.
11. Properly orientate exhaust and oil fill. Place lid onto oil reservoir.
12. Install screws, tighten completely. Be careful not to strip out holes!
13. Trim excess gasket material.
14. Close oil drain valve and fill oil reservoir to proper level.
15. Re-install S-type filter (if present).
16. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.



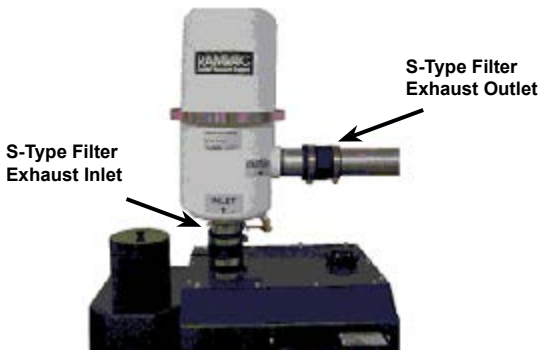
Use utility knife to cut sealant

New Foam Gasket



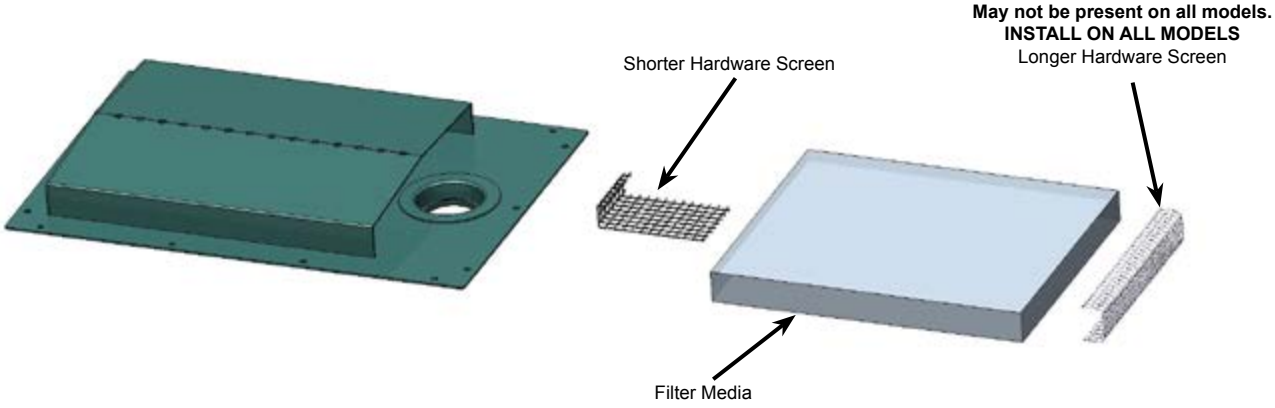
1/8" bead of Loctite Instant Gasket

S-Type Filter



Lid Filter Media Replacement

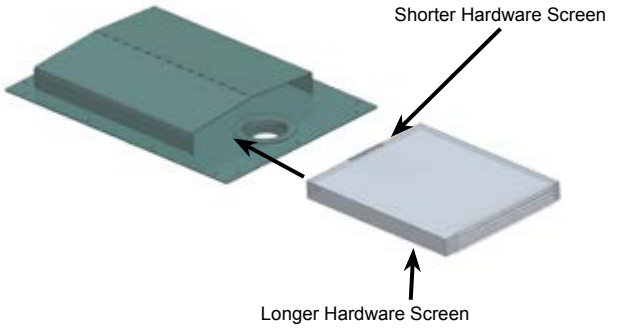
How to replace the lid filter media on Bison Models.

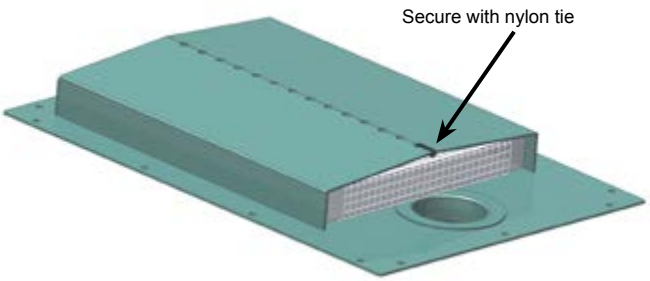


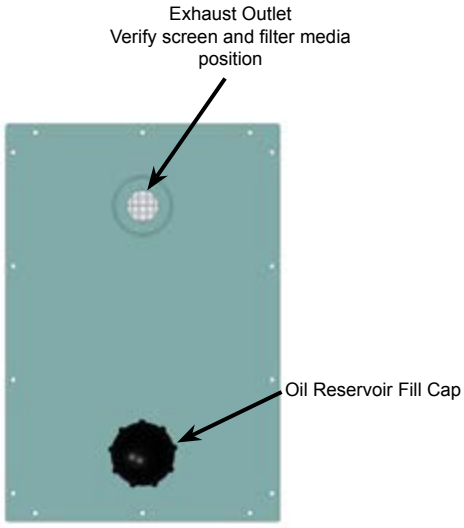
1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Loosen exhaust outlet coupling and separate from power unit.
4. Remove lid per “Lid Replacement” procedure.
5. Remove the old lid filter media and all the old hardware screens from the lid channel.

Note: The lid filter media may be packaged partially assembled for ease of installation.

6. Insert the shorter hardware screen and filter media assembly into the lid channel.
7. Turn reservoir lid over. Verify the hardware screen and filter media covers the exhaust outlet.
8. With a nylon tie, secure the outside end hardware screen to the lid , through a hole in the lid channel.
9. Install reservoir lid per “Lid Replacement” procedure.
10. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.







Muffler Replacement

How to replace the oil reservoir muffler(s) on Bison and Bison E Models.

1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Loosen exhaust outlet coupling and separate from power unit.
   a. Power Units equipped with S-Type filters:
      i. Loosen S-Type Filter exhaust inlet coupling and remove S-type filter from power unit.
4. Drain oil and remove lid per “Lid Replacement” procedure.

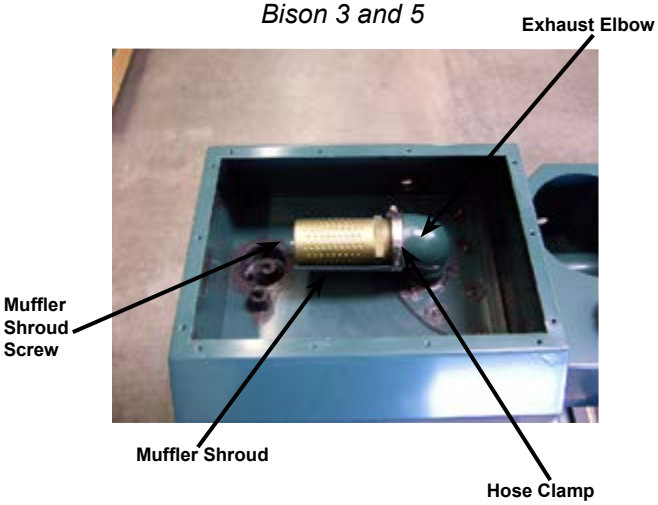
Bison models 7 and 9: Following steps apply to both mufflers. Always replace both mufflers.

5. Remove hose clamp from exhaust elbow.

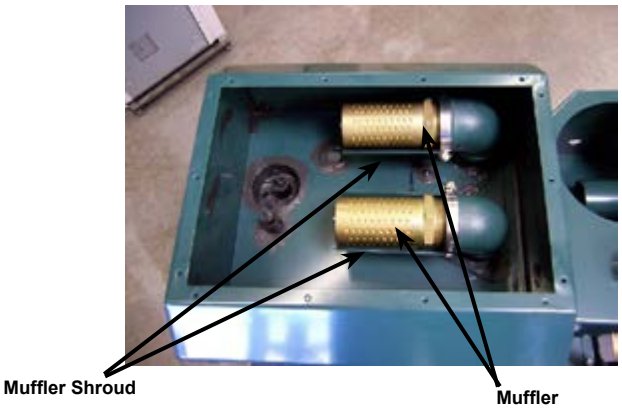
Note orientation of muffler shroud for proper installation.

6. Remove muffler shroud screw and muffler shroud.
7. Remove muffler with two large pipe wrenches:
   a. One to remove muffler.
   b. One for counter force to avoid breaking welds.
8. Scrape RTV off exhaust elbow and muffler shroud.
9. Clean out all debris from oil reservoir.
10. Hand tighten muffler into elbow. Do not use thread sealant.
11. Properly orientate muffler shroud under muffler.
12. Apply Loctite 243 to muffler shroud screw. Attach muffler shroud to muffler.
13. Install hose clamp over muffler shroud and exhaust elbow.
14. Install reservoir lid per “Lid Replacement” procedure.
15. Re-install S-type filter (if present).
16. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

Bison 3 and 5



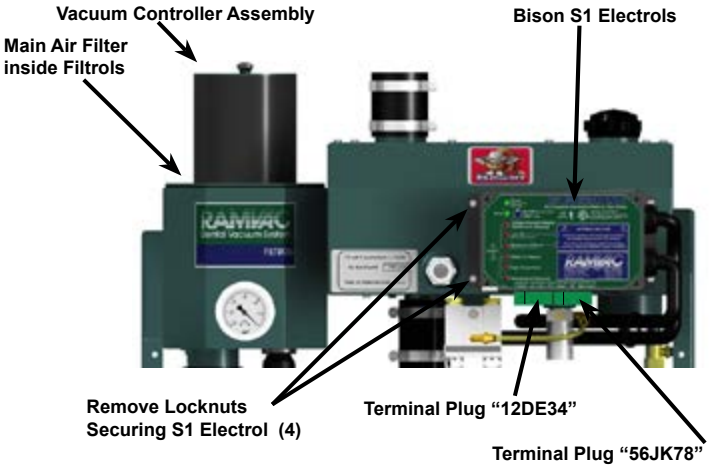
Bison 7 and 9

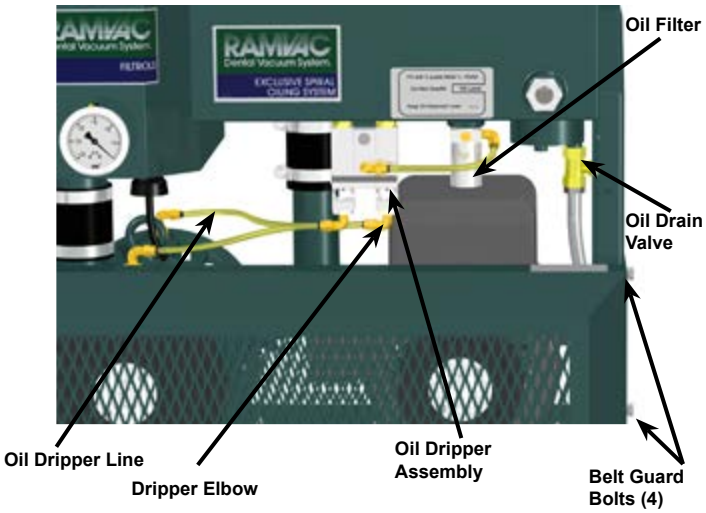


Oil Reservoir Replacement

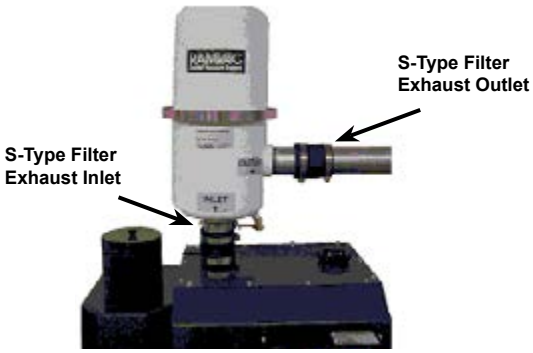
How to replace the oil reservoir on Bison and Bison E Models.

1. Secure Disconnect.
2. Move vacuum unit into an open area, if needed.
3. Loosen exhaust outlet coupling and separate from power unit.
   a. Power Units equipped with S-Type filters:
      i. Loosen S-Type Filter exhaust inlet coupling and remove S-type filter from power unit.
4. Bison Models with gray box Electrols:
   a. Remove moisture alarm probe from Filtrols and disconnect spade terminals.
5. Bison Models with S1 Electrols:
   a. Remove 6-pin terminal plug labeled “12DE34” from S1 Electrols.
   b. Remove 6-pin terminal plug labeled “56JK78” from S1 Electrols.
   c. Unscrew four locknuts holding the S1 Electrols. Remove S1 Electrols and set aside.
6. Drain oil from oil reservoir, then close valve and replace plug.
7. Loosen pump intake and exhaust coupling hose clamps.
8. Disconnect oil line from oil filter assembly.
9. Remove oil dripper assembly and set aside.
10. Remove vacuum controller assembly, for re-use.
11. Remove main air filter from inside Filtrols, for re-use.
12. Remove beltguard.
13. Remove oil reservoir leg bolts.
14. Remove defective oil reservoir.
15. Reverse steps to replace oil reservoir.
16. Re-install S-type filter (if present).
17. Close oil drain valve and fill oil reservoir to proper level.
18. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.





S-Type Filter



Bison Oil or Water Switch Replacement

How to replace the Oil or Water Switches on Bison and Bison E Models.

Caution: Oil and water floats are not interchangeable!

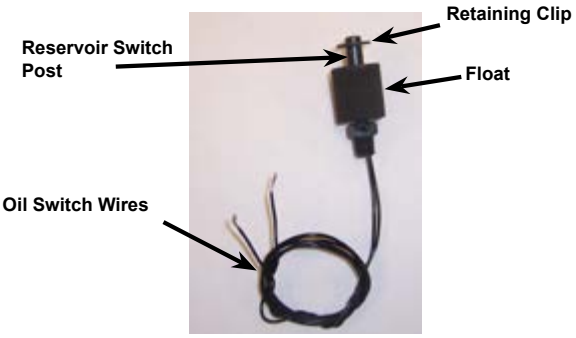
1. Secure Disconnect.
2. Move vacuum unit into open area if needed.
3. Drain oil and remove lid per “Lid Replacement” procedure.
4. Disconnect faulty switch’s wires.
   a. Bison models with gray box Electrols:
      i. Cut wire tie holding switch wires together.
      ii. Cut the spade lugs from the end of switch wires.
   b. Bison models with S1 Electrols:
      i. Unplug terminal plug “12DE34” from Electrols.
      ii. Disconnect the faulty switch’s wires from terminal plug “12DE34”.
         a. Disconnect oil float switch wires from terminals 1 and 2.
         b. Disconnect water switch wires from terminals 3 and 4.
5. Remove retainer clip and float from faulty switch post.
6. Remove faulty switch post from oil reservoir fitting.
7. With float removed, apply Loctite 565 to threads of new switch post and thread wires down through fitting in oil reservoir.
8. CAUTION: DO NOT OVERTIGHTEN. Tighten switch post into fitting.

Note: Float must be correctly orientated for proper operation.

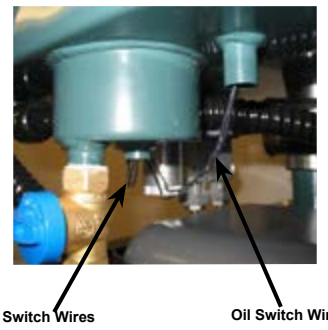
9. Correctly orientate float. Install float and retaining clip on oil switch post. See “Orientation of Reservoir Switch Floats” procedure.
10. Connect replacement switch wires.
    a. Bison models with gray box Electrols:
       i. Connect one wire from the oil switch and one wire from the water switch to a spade terminal.
       ii. Connect the remaining wire from the oil switch and water switch to a spade terminal.
    b. Bison models with S1 Electrols:
       i. Connect replacement switch’s wires to terminal plug “12DE34”.
          a. Connect oil switch wires to terminals 1 and 2.
          b. Connect water switch wires to terminals 3 and 4.
          c. Plug terminal plug “12DE34” into S1 Electrols slot labeled “12DE34”.
11. Wire tie switch wires together.
12. Install reservoir lid per “Lid Replacement” procedure.
13. Replace vacuum unit in original spot. Reattach exhaust outlet and Filtrols intake hose couplings. Reconnect wiring.

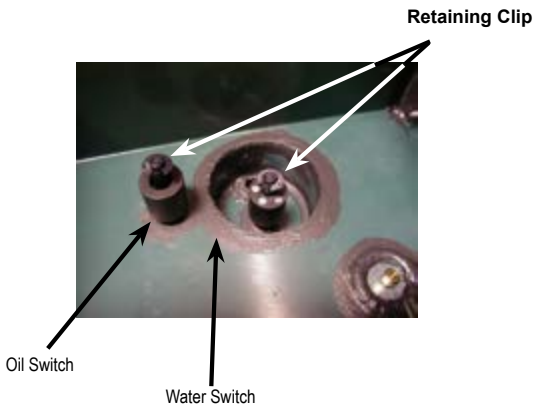
S1 Electrols

Reservoir Switch Assembly



Bison Reservoir Switches





NOTES

RESERVOIR SWITCH FLOATS

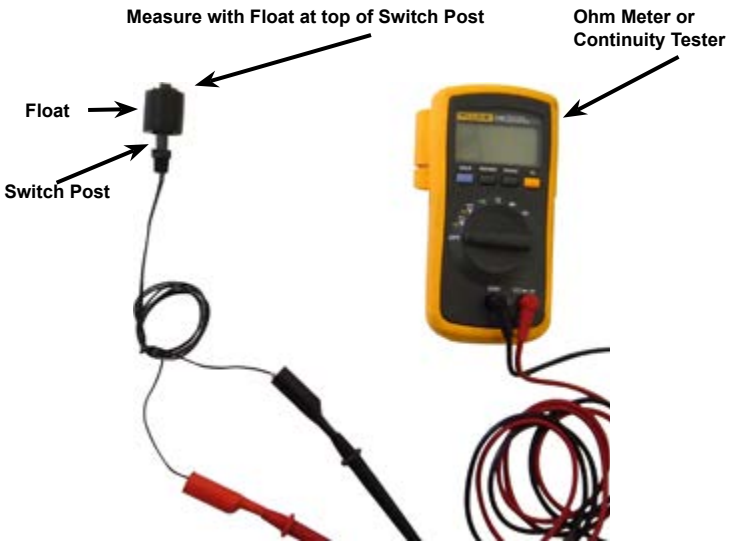
Orientation of Reservoir Switch Floats

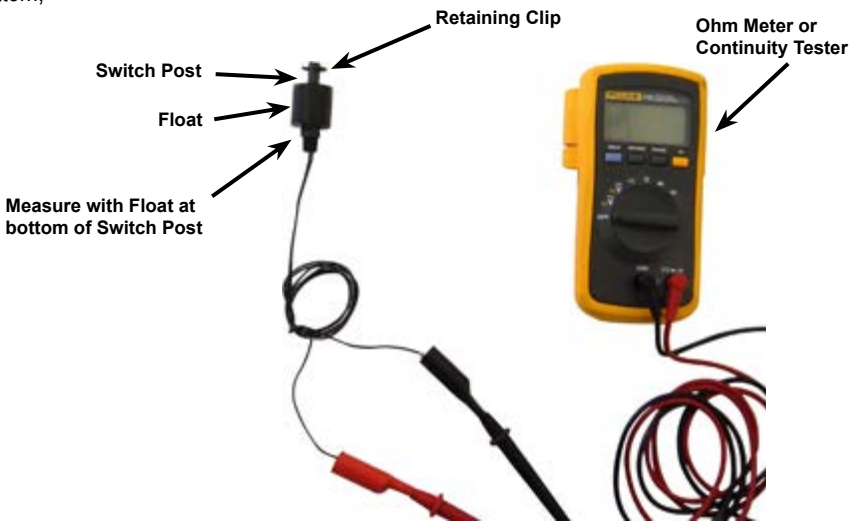
How to correctly orientate Reservoir Switch floats on all Standard and Bison Models.

Caution: Oil and Water floats are not interchangeable!

Note: Float must be correctly orientated for proper operation.

1. Oil switch:
   a. Attach ohm meter (continuity tester) leads to switch wires.
   b. Lift float to top of oil switch post.
   c. If meter display reflects a closed circuit (continuity), remove retaining clip, invert float, and repeat step b.
   d. If meter display reflects an open circuit with float at top of oil switch post and closed circuit with float at bottom, float is properly orientated.
2. Water switch:
   a. Attach ohm meter (continuity tester) leads to float wires.
   b. Lift float to top of water switch post.
   c. If meter display reflects an open circuit (no continuity), remove retaining clip, invert float, and repeat step b.
   d. If meter display reflects a closed circuit with float at top of water switch post and an open circuit with float at bottom, float is properly orientated.





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