

Volumetric Injectors

Maintenance Manual

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SuperDos & MiniDos

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SuperDos & MiniDos Troubleshooting - General



If left outdoors fluid can freeze inside the injector causing permanent damage.

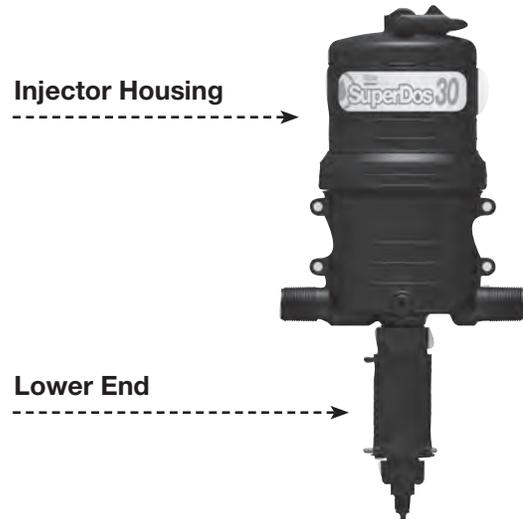
-----> Allow the fluid inside the injector to thaw before troubleshooting to minimize potential damage.



Always shut off the water and depressurize the injector before doing any repair work on unit.



First, determine if the problem is with the injector housing or the lower end.



IS IT "CLICKING"?

YES

Problem is in Lower End

NO

Problem is in Injector Housing

If the Injector does not click, or no water flows through the unit:

1. Check water flow (GPM) and line pressure to the injector and installation.
2. Check to see if the arrow on the front of the unit is in the same direction of the flow.
3. Check motor piston assembly. If wear or damage has occurred replace the motor piston assembly.

If the Injector is clicking, but is not pulling chemical:

1. Replace the dosing piston in the lower end and check the inner cylinder for wear.
2. Replace the inner cylinder if wear has occurred.

If the unit leaks from upper or lower housing:

1. Replace the upper or lower housing body.
2. Replace the mixing chamber gasket.

If the injector leaks from top part of lower end:

1. Unscrew the lower end from the lower housing and check the gasket for wear.
2. Replace entire lower end.

If the Injector leaks from bottom part of lower end:

1. Unscrew the check valve and check for unwanted debris.
2. Replace check valve, o-rings and inner cylinder below the dosing adjustment sleeve.

SuperDos & MiniDos Troubleshooting - General

New Install - always pressure up slowly		
Problem	Cause	Solution
No clicking sound	Fluid not flowing through unit	<ul style="list-style-type: none"> • Are the red plugs at the inlet, outlet and suction tube fitting openings removed? • Is the unit installed backward? The arrow on the unit must point in the direction of the fluid flow. • Has the new injector been stored for an extended period? If so, submerge the injector in room temperature water for 24 hours so that the working parts can reabsorb fluid and swell back to the proper size. • If still not clicking, do not open the upper body. Call Hydro Systems customer service at 800.543.7184.
	Fluid flowing through unit	<ul style="list-style-type: none"> • Fluid rate is below or exceeds rated service flow of injector. • If below the rated service flow then increase flow rate. If above, reduce flow rate. • Operating pressure exceeds maximum limit. Install a pressure reducer valve. • On/off lever in off position. Place the on/off lever switch to the on position. • By-pass valve not closed. Check and set valve to the off position.



SuperDos & MiniDos Troubleshooting - General

Injector in Operation or After Scheduled Maintenance		
Problem	Cause	Solution
No clicking sound	Main piston assembly #9 worn	Replace #9 main piston assembly. Clean fluid filter.
	Cover #1 or main body #40 worn or scored	Replace and install or clean fluid filter.
	On/off lever in off position	Place the On/Off lever switch to the ON position.
	By-pass valve not closed	Set Valve to the closed position.
	Dirty or plugged inlet filter	Ensure mesh size is correct for proper filtration. Clean filter.
	#17 Worn or not seated properly	Re-seat #17 or replace.
Clicking sound, no suction of solution	Suction tube #25 (#60 - 20%) or suction tube fitting #11 cracked, loose, leaking or clogged suction tube filter	Check for proper fit, replace and/or clean as necessary.
	Dosage piston #44 worn or installed incorrectly, inner cylinder #37 (#68 - 1% & #7 - 20%) worn	Replace. Ensure during maintenance replacement that #44 dosage piston was installed correctly flared-end up.
	O-ring retainer #82 (#15 - 10% & 20%) installed incorrectly	Install correctly.
	O-ring seat #14 or dosage piston #44 damaged or worn	Replace. On 0.4% models replace #51 shaft assembly.
	Check valve #13 (#60 - 20%) leaking	Clean & replace as necessary.
Clicking sound, under injecting	#44 dosage piston worn	Replace, on 0.4% models replace #51 Shaft Assembly.
	#37 (#7 - 20%) inner cylinder worn	Replace.
	Unit operates at high-flow and not at low-flow	Replace #17 o-ring.
	Main piston assembly #9 worn	Replace #9 main piston assembly. Clean fluid filter.
	Cover #1 or main body #40 worn or scored	Replace and install or clean fluid filter.
Fluid re-filling solution tank	Suction tube #25 (#60 - 20%) or suction tube fitting #11 cracked, loose, leaking or clogged suction tube filter	Check seat area on suction tube fitting #11. Check valve and seal must fit loose in the suction tube fitting. Check seal and inside fitting for debris.
	Dosage piston #44 worn or installed incorrectly, inner cylinder #37 (#68 - 1% & #7 - 20%) worn	Replace with new check valve assembly.
	O-ring retainer #82 (#15 - 10% & 20%) installed incorrectly	Replace.

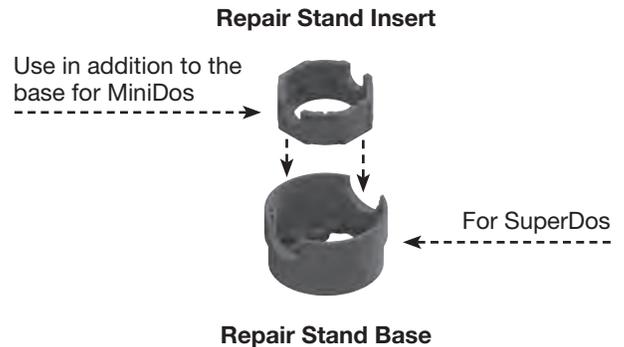
SuperDos & MiniDos Repair -

Disassembly of SuperDos & MiniDos Lower End & Injector Motor

Tools You Will Need:



1. Channel-lock wrench
2. Needle nose pliers
3. Black plastic wrench
4. Red plastic 6-way wrench
5. 7/16 wrench
6. 1/4 inch nut driver
7. O-ring removal tool
8. Housing wrenches
9. Flat-head screwdriver
10. Phillips-head screwdriver
11. Water line
12. Drain
13. Work bench
14. One repair stand (*supplied to dealer* by Hydro Systems Company)



Your Work Space Should Be:

1. An area large enough to lay out the disassembled parts.
2. An area with running water to test the rebuilt unit.

I. Section One – Lower End - assumed to have unit in an upright, hard mounted position

Step 1: Check Valve Assembly (*Instructions do not include the MicroDos, MiniDos 0.4% HAC or the SuperDos 45*)

1. Unscrew the first nut at the bottom of the lower end.
2. Remove nipple from the nut.
3. Remove the o-ring from the nipple.
4. Take needle nose pliers and twist the two tabs that stick up counter-clockwise (should feel it snap).
5. Remove twist lock and check valve poppet with spring.
6. Remove spring from poppet hooks located on the cross-hair of the poppet.

Step 2: Cylinder Assembly (*Does not include MicroDos, MiniDos 20% or SuperDos 10%*)

1. Remove metal u-pin from lower end (and black u-pin for SuperDos).
2. Take adjustment sleeve and turn to the right until the inner cylinder is more exposed, and easier to grasp.
3. Grab inner cylinder and pull down and out of the unit.

A. For MiniDos

1. Use the channel-lock wrench to unscrew the outer cylinder. There are flat areas on the inner cylinder where the wrench fits.
2. Unscrew the outer cylinder from the unit.
3. To remove the adjustment sleeve, rotate the sleeve clockwise (if viewing from the bottom).

B. For SuperDos

1. Unscrew the outer cylinder from the lower body.
2. Screw the adjustment sleeve up to the top of the outer cylinder.
3. Take the o-ring removal tool and remove the o-ring from the outer cylinder.
4. Unscrew the adjustment sleeve back down to remove it.

SuperDos & MiniDos Repair - Disassembly of SuperDos & MiniDos Lower End & Injector Motor

Step 3: Dosing Shaft Assembly (*Does not include MicroDos, MiniDos 20% or SuperDos 10%*)

A. For Two-part Shafts (MiniDos 1, 2.5% and SuperDos 0.3%)

1. Quarter-turn the lower shaft assembly, and pull down to remove.
2. Quarter-turn the upper shaft, and pull down.
3. Remove gasket (MiniDos only), white spacer and #17 o-ring.

B. For Single-part Shafts

1. Quarter-turn the shaft, and pull down.
2. Remove gasket (MiniDos only), spacer and #17 o-ring from either shaft or housing.
3. Take needle nose pliers to pinch the dosing piston locks.
4. Pull off dosing piston while the dosing piston locks are suppressed.

II. Section Two – Motor



***The motor is very fragile:
Use caution!***

1. Flip injector upside-down and place top of injector into the repair stand.
2. Firmly grab the inlet and outlet on the lower body and turn counter-clockwise. Unscrew until injector comes apart.
3. Flip injector back over and replace into the repair stand.
4. Remove the top cap (with the motor still attached).
5. Remove the one-way mixing chamber gasket from either the lower body or the motor.
6. Take the cotter ring and remove it from the on/off switch pin.
7. Remove the on/off shaft pin.
8. Grasp the motor and quickly pull out the motor.



SuperDos in Stand



MiniDos in Stand

SuperDos & MiniDos Repair -

Reassembly of SuperDos & MiniDos Injector Motor & Lower End

Tools & Supplies You Will Need:



1. Channel-lock wrench
2. Needle nose pliers
3. 7/16 Wrench
4. 1/4" nut driver
5. O-ring removal tool
6. Housing wrenches
7. Flat-head screwdriver
8. Phillips-head screwdriver
9. Water line
10. Drain
11. Work bench
12. Silicone lubricant
13. Rubber mallet

I. Section One – Motor Installation:



***The motor is very fragile:
Use caution!***

1. Grab the red or black by-pass shaft with the o-ring attached.
2. Place by-pass shaft in top of motor and cycle motor to down position.
3. Take a rubber mallet and tap by-pass shaft into motor with caution.
4. Cycle motor up and down to ensure it is functioning properly.
5. Put some silicone lubricant on the by-pass shaft o-ring.
6. Cycle by-pass shaft into up position.
7. Carefully fish the by-pass shaft into upper housing top bore.
8. Once the by-pass shaft is centered, tilt the motor piston so that one edge of the flange is inserted into the upper housing.
9. Rotate motor while slowly pushing it into the upper housing.



***The flange is very fragile:
Use caution!***

10. Once the motor is all the way in the upper housing, press on the bottom of the motor (on the shaft socket-lock).
11. Press on the bottom of the motor and the upper part of the upper housing until you feel it “pop” into place (takes quite a bit of force).
12. Rotate the on/off switch on the upper housing until the holes line up for the pin.
13. Insert the pin through the slot in the top.
14. Put cotter ring on to hold the pin in place.
15. Grasp the motor and cycle it to the down position. Be careful not to damage the upper flange of the motor!

A. For MiniDos

1. Put silicone lubricant on the mixing chamber gasket (on the flat side).
2. Place the mixing chamber gasket into the lower housing, making sure that the duck bills are facing down, and are not being pinched by the support structure of the lower body.
3. Slowly insert the motor at a tilt, making sure not to damage the flange. Once the flange is all the way into the cylinder of the lower body, the upper housing can be pushed down to meet the lower housing.

SuperDos & MiniDos Repair - Reassembly of SuperDos & MiniDos Lower End & Injector Motor

I. Section One – Motor Installation: (continued)

B. For SuperDos

1. Put silicone lubricant on the mixing chamber gasket (on the flat side inner and outer rim).
2. Place the mixing chamber gasket around the lower part of the motor, with the gasket duck bills facing away from the upper housing.
3. Grasp the motor by the lower part of the piston and tilt the motor to insert one flange edge at a time, making sure not to damage the flange.
4. Once the flange is all the way into the cylinder of the lower body, the upper housing can be pushed down to meet the lower housing.
5. First, using only hand force, screw the upper housing on to the lower housing (be careful not to cross-thread).
6. Use the proper wrench to tighten the upper housing until the mold seams on the upper and lower housing match up.

II. Section Two – Lower End Assembly:

Step 1: Dosing Shaft Assembly

A. For Two-part Shafts:

1. Place #17 o-ring on top shaft.
2. Insert top shaft into unit under the lower body.
3. Turn the shaft a 1/4 turn to lock it in place.
4. Place the white spacer (MiniDos) and gasket parts on the shaft (hold them in place).
5. Insert the lower shaft into the bottom part of upper shaft (make sure there is a dosing piston on the shaft).
6. While holding the upper shaft (so it does not rotate), 1/4 turn the lower shaft to lock it into place.
7. Check both the upper and lower shafts to ensure that they are locked in.
8. Keep holding the spacer and gasket in place as you install the lower end cylinders (next step).

B. For One-part Shafts:

1. Install an o-ring at the base of the shaft along with the dosing piston.
2. Place the white gasket loosely on the shaft along with the spacer(s) and the #17 o-ring.
3. Insert shaft into lower body and 1/4 turn to lock it into place.
4. Ensure that the shaft is locked in.

Step 2: Lower End Cylinder Assembly

A. For MiniDos:

1. Take the outer cylinder and put on the white o-ring in the groove (larger diameter side).
2. Insert outer cylinder (smaller diameter side) into the adjustment sleeve (at the bottom of the numbers).
3. Screw adjustment sleeve on to the outer cylinder until the 4 flat slots are visible.
4. Take the inner cylinder and make sure that the o-rings have silicone lubricant on them.
5. Insert inner cylinder into bottom of the cylinder assembly.
6. Line up the inner cylinder slot with the adjustment sleeve holes.
7. Install the metal u-pin into the holes.
8. Prepare to install the cylinder into the lower body.
9. Make sure there is a white gasket to seal the outer cylinder to the lower body.
10. First, hand tighten the lower end cylinder assembly.
11. Then, use the channel-lock wrench to finish tightening the lower end cylinder assembly.

SuperDos & MiniDos Repair -

Reassembly of SuperDos & MiniDos Lower End & Injector Motor

II. Section Two – Lower End Assembly: (continued)

B. For SuperDos:

1. Insert the outer cylinder (bottom of numbers) into the top of the adjustment sleeve (where a + and – can be seen).
2. Screw on the adjustment sleeve until there is a visible groove sticking out of the bottom of the adjustment sleeve.
3. Install the outer cylinder o-ring in the groove, followed by silicone lubricant.
4. Take inner cylinder and put lubricant on the o-ring at the top (side without threads).
5. Insert the top of the inner cylinder into the outer cylinder all the way.
6. While grasping the outer cylinder at the very top, rotate adjustment sleeve until the inner cylinder is matched up with the adjustment sleeve.
7. Then, rotate the adjustment sleeve until the holes line up with the slots.
8. Insert the metal u-pin into the two holes.
9. Prepare to attach the lower end cylinder assembly to the lower body.
10. Make sure there is a white gasket and the white spacer is installed on the shaft assembly.
11. Screw on the outer cylinder on the lower housing and hand-tighten.
12. Install the plastic u-pin in the upper slots in the adjustment sleeve.

Step 3: Check Valve Assembly

1. Take check valve poppet and install the spring on the upper (flat) portion of the poppet.
2. There are two little hooks where the spring sits into on the cross-hair.
3. Insert the poppet and spring assembly into the wide part of the nipple, spring side up.
4. Take the twist-lock part and insert it into the nipple with the two tabs in the up position.
5. Using either your fingers or a pair of needle nose pliers, twist the two tabs on the twist lock in a clockwise direction until they pop into place.
6. Install the o-ring on the outer rim of the nipple.
7. Insert nipple and o-ring assembly (point first) into the wide rim side of the check valve nut.
8. Screw on the check valve assembly to the lower end cylinder assembly.
9. Hand tighten the nut.



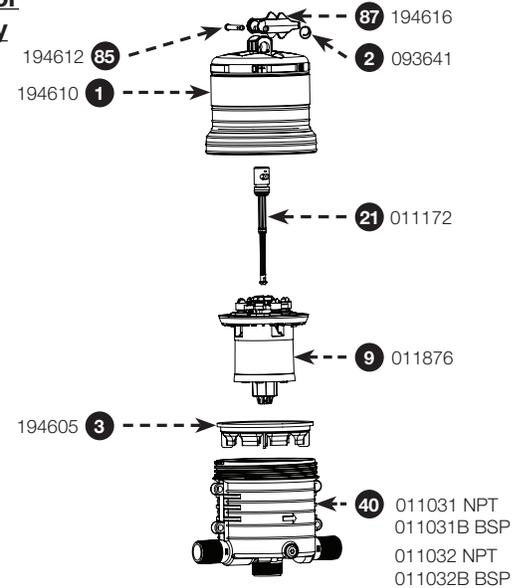
SuperDos & MiniDos Parts - SuperDos Lower End Repair Parts - 0.3%, 0.4%, 2.5% & 5%

Manual Reference	Part #	Description
SuperDos 15, 20, 30, 45		
1	194610	Upper Body
2	193641	Cotter Ring
3	194605	Mixing Chamber Gasket
9	011876	Piston Assembly
21	011172	Shaft Assembly
40	011031	Lower Body NPT 1"
	011031B	Lower Body BSP 1"
40	011032	Lower Body NPT 1-1/4"
	011032B	Lower Body BSP 1-1/4"
85	194612	Upper Shaft Pin
87	194616	On/Off Handle

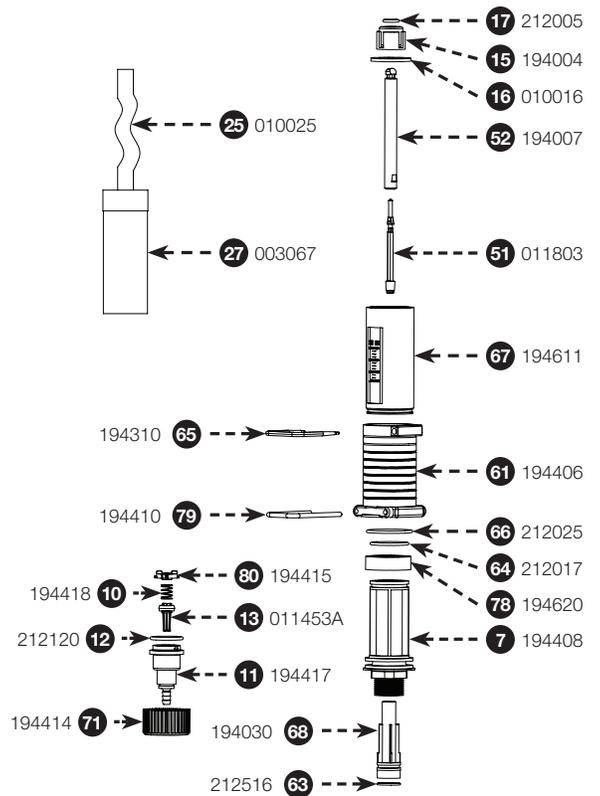
Manual Reference	Part #	Description
Lower End 0.3%		
7	194408	Cylinder, Inner
10	194418H	Spring
11	194417	Fitting, Suction Tube, 1/4"
12	212120*	O-ring
13	011453A	Check Poppet
15	194004	Seal Retainer, O-ring
16	010016*	Lower End Gasket
17	212005*	O-ring
25	010025	Suction Tube, 1/4"x5"
27	003067	Foot Valve 1/4" ID
51	011803*	Lower Shaft Assembly
52	194007	Upper Shaft
61	194406P	Ratio Adjustment Sleeve
63	212516*	O-ring, Outer Cylinder (#68)
64	212017*	O-ring, Inner Cylinder, Lower End
65	194310D	Interlock Pin
66	212025*	O-ring, Outer Cylinder, Lower End
67	194611	Cylinder, Outer
68	194030	Cylinder, Inner for #7
71	194414	Nut, Suction Tube Fitting
78	194620	Lower End Stop
79	194410SS	Retainer Clip, Bottom
80	194415	Twistlock

* Must specify material

Motor Body



Lower End 0.3%



SuperDos & MiniDos Parts -

SuperDos Lower End Repair Parts - 0.3%, 0.4%, 2.5% & 5%

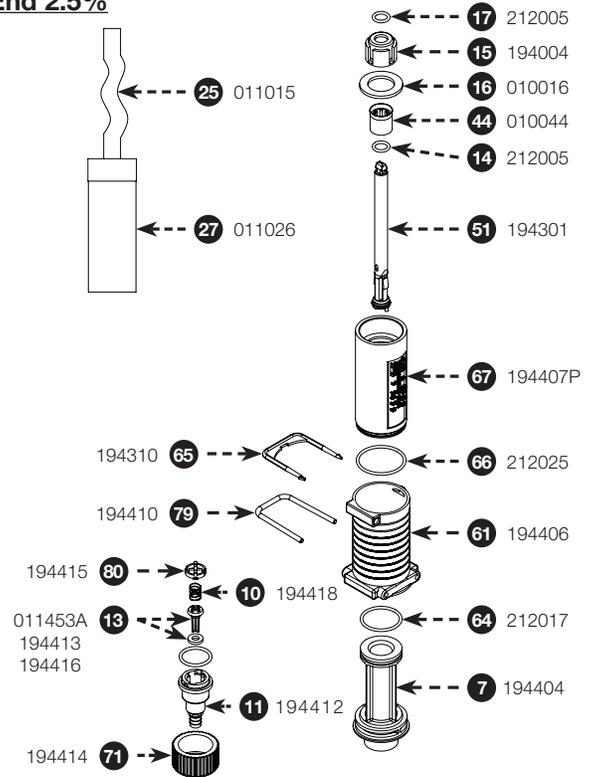
Manual Reference	Part #	Description
Lower End 2.5%		
7	194404P	Cylinder, Inner
10	194418H	Spring
11	194412	Fitting, Suction Tube, 3/8"
12	212120*	O-ring
13	011453A	Check Poppet
14	212005*	O-ring
15	194004	Seal Retainer, O-ring
16	010016*	Lower End Gasket
17	212005*	O-ring
25	011015	Suction Tube, 3/8"x5'
27	011026	Filter, for Suction Tube
44	010044P	Dosage Piston
51	194301F	Shaft
61	194406P	Ratio Adjustment Sleeve
64	212017*	O-ring, Inner Cylinder, Lower End
65	194310D	Interlock Pin
66	212025*	O-ring, Outer Cylinder, Lower End
67	194407P	Cylinder, Outer
71	194414	Nut, Suction Tube Fitting
79	194410SS	Retainer Clip, Bottom
80	194415	Twistlock

* Must specify material

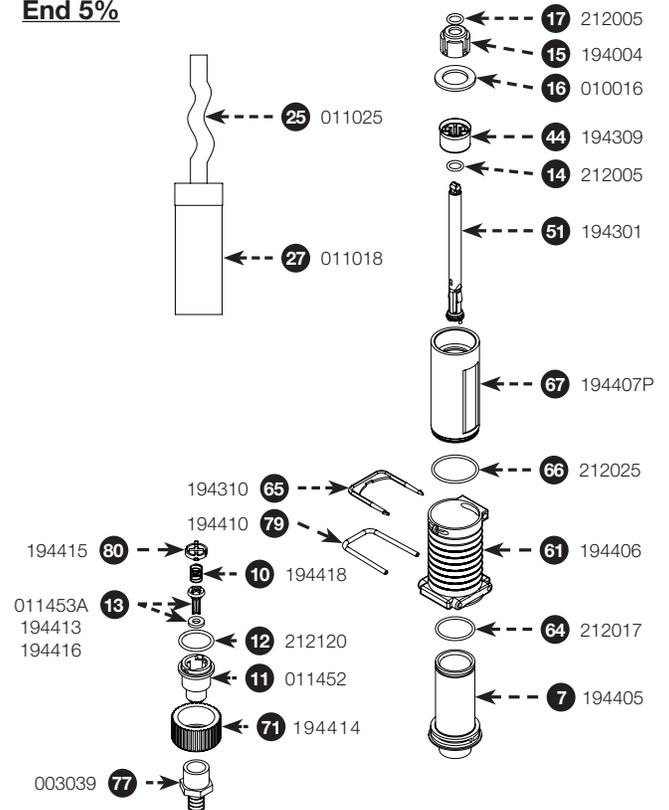
Manual Reference	Part #	Description
Lower End 5%		
7	194405P	Cylinder, Inner
10	194418H	Spring
11	011452	Fitting, Suction Tube, 1/2"
12	212120*	O-ring
13	011453A	Check Poppet
14	212005*	O-ring
15	194004	Seal Retainer, O-ring
16	010016*	Lower End Gasket
17	212005*	O-ring
25	011025	Suction Tube, 1/2"x5'
27	011018	Filter, for Suction Tube, 1/2" ID
44	194309	Dosage Piston
51	194301F	Shaft
61	194406P	Ratio Adjustment Sleeve
64	212017*	O-ring, Inner Cylinder, Lower End
65	194310D	Pin, Upper Interlock
66	212025*	O-ring, Outer Cylinder, Lower End
67	011918P	Cylinder, Outer
71	194414	Nut, Suction Tube Fitting
77	003039	Hose Barb 1/2"x3/8"
79	094410SS	Retainer Clip, Bottom
80	194415	Twistlock

* Must specify material

Lower End 2.5%



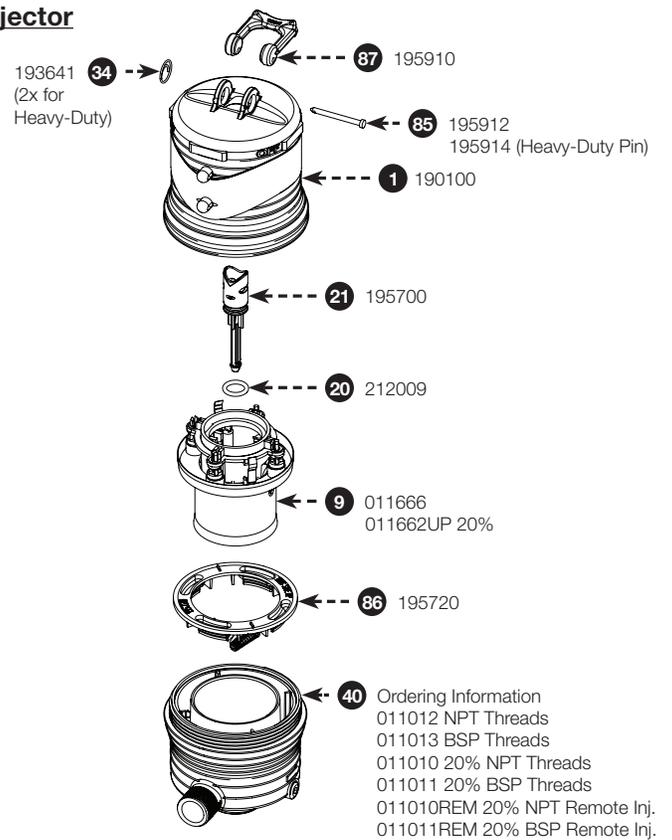
Lower End 5%



SuperDos & MiniDos Parts - MiniDos Lower End Injector & Wear Parts Kits 0.4%

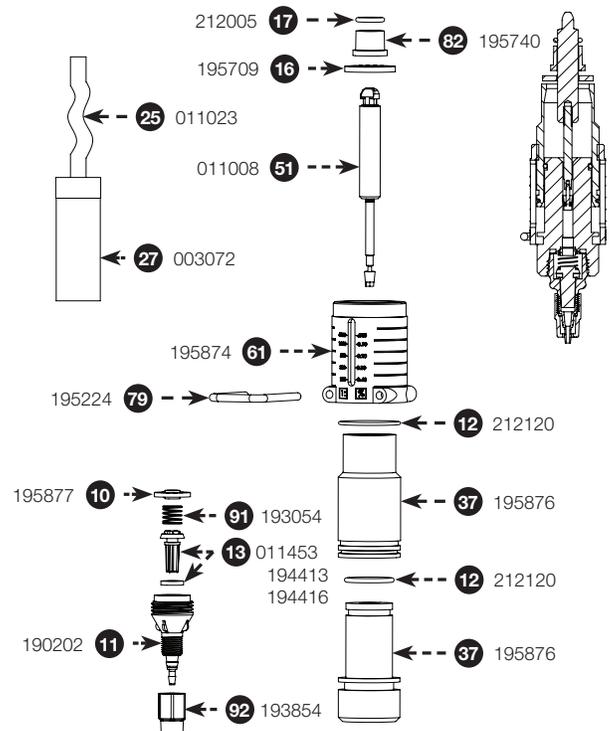
Manual Reference	Part #	Description
Injector Repair Parts		
1	190100	Upper Body
9	011666 011662UP 20%	Motor Piston
20	212009	O-ring
21	195700	Bypass Shaft
34	093641	Cotter Ring
40	011012 011013 011010 011011 011010REM 011011REM	NPT Lower Body BSP Lower Body 20% NPT 20% BSP 20% NPT Remote Inj. 20% BSP Remote Inj.
85	195912 195914 (Heavy-Duty Pin)	Upper Shaft Pin
86	195720	Mixing Chamber Gasket
87	195910	On/Off Handle

Injector



Manual Reference	Part #	Description
Lower End Injector & Wear Parts Kits 0.4%		
7	190031	Outer Cylinder
10	195877	0.4% Spring
11	190202	Suction Tube Fitting, 1/8"
12	212120*	O-ring
13	011453A	Check Poppet with washer
16	195709	Gasket
17	212005*	O-ring
25	011023	Suction Tube 1/8" x 3'
27	003072	Filter For Suction Tube 1/8"
37	195876	0.4% Inner Cylinder
51	011008	0.4% Shaft Assembly
60	212517W	O-ring
61	195874	0.4% Ratio Adjuster
79	195224	Interlock Pin
82	195740	Shaft Seal Spacer
91	193054	Seal, Check Valve
92	193854	Hose Nut 1/8"

Lower End Assembly



* Must specify material

SuperDos & MiniDos Parts -

MiniDos Lower End Injector & Wear Parts Kits 1% & 2.5%

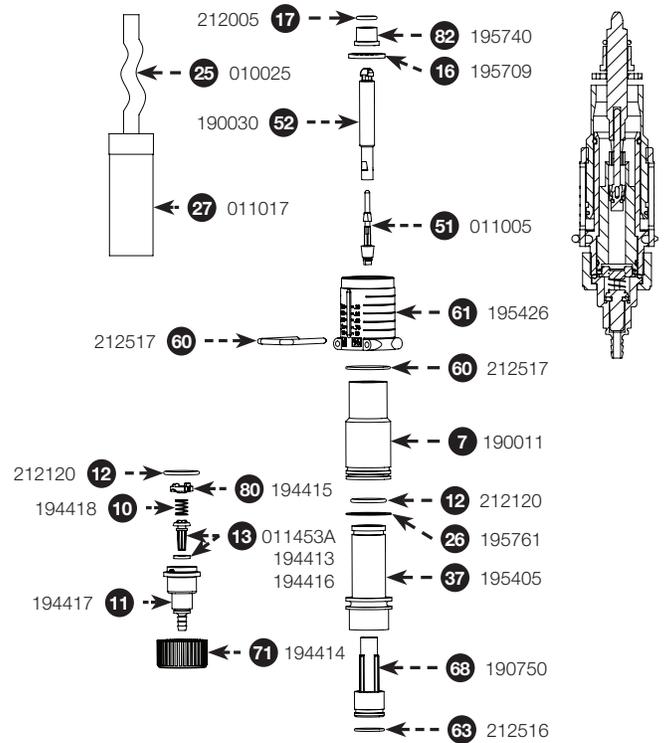
Manual Reference	Part #	Description
Lower End Injector & Wear Parts Kits 1%		
7	190011	Cylinder, Outer
10	194418H	Spring
11	194417	Suction Tube Fitting
12	212120*	O-ring
13	011453A	Check Poppet with Washer
16	195709	Gasket
17	212005*	O-ring
25	010025*	Suction Tube 1/4" x 5'
26	195761	Anti-Lock Gasket
27	011017	Filter For Suction Tube, 1/4" ID
37	195405	Inner Cylinder
51	011005	Lower Shaft Assembly
52	190030	Shaft, Upper
60	212517W	O-ring
61	195426	Ratio Adjuster
63	212516*	O-ring, Inner Cylinder
68	1950750	Inner Cylinder for #37
71	194414	Nut, Suction Tube Fitting
79	195224	Interlock Pin
80	194415	Twistlock
82	195740	Shaft Seal Spacer

* Must specify material

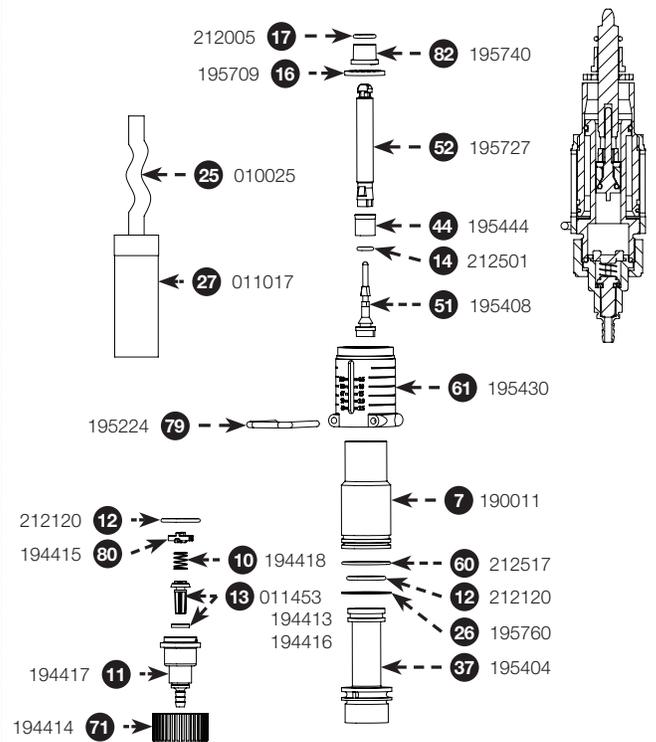
Manual Reference	Part #	Description
Lower End Injector & Wear Parts Kits 2.5%		
7	190011	Cylinder, Outer
10	194418H	Spring
11	194417	Suction Tube Fitting
12	212120*	O-ring
13	011453A	Check Poppet with washer
14	212501*	O-ring
16	195709	Gasket
17	212005*	O-ring
25	010025	Suction Tube, 1/4"x5'
26	195760	Anti-Lock Gasket
27	011017	Filter For Suction Tube, 1/4" ID
37	195404	Inner Cylinder
44	195444P	Dosage Piston
51	195408	Shaft, Lower
52	195727	Shaft, Upper
60	212517W	O-ring
61	195430	Ratio Adjuster
71	194414	Nut, Suction Tube Fitting
79	195224	Interlock Pin
80	194415	Twistlock
82	195740	Shaft Seal Spacer

* Must specify material

Lower End Assembly



Lower End Assembly



SuperDos & MiniDos Parts - MiniDos Lower End Injector & Wear Parts Kits 5% & 10%

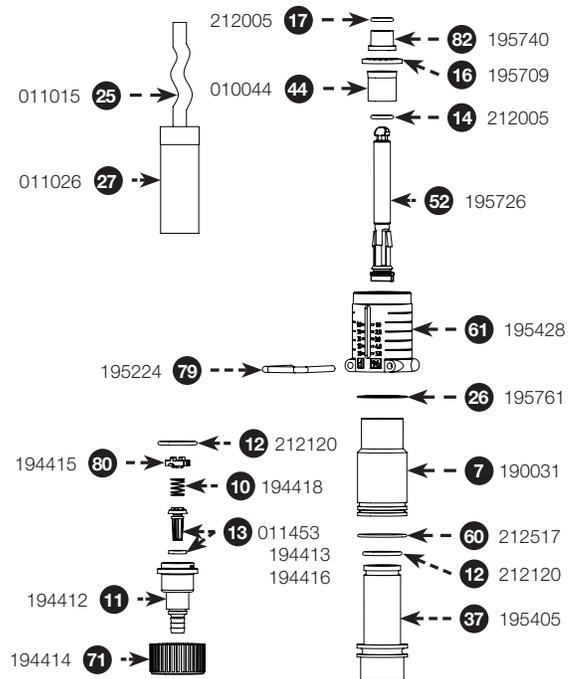
Manual Reference	Part #	Description
Lower End Injector & Wear Parts Kits 5%		
7	190031	Cylinder, Outer
10	194418H	Spring
11	194412	Fitting, Suction Tube, 3/8"
12	212120*	O-ring
13	011453A	Check Poppet with Washer
14	212005*	O-ring
16	195709	Gasket
17	212005*	O-ring
25	011015	Suction Tube, 3/8" x 5'
26	195761	Anti-Lock Gasket
27	011026	Filter for Suction Tube, 3/8" ID
37	095405	Inner Cylinder
44	010044P	Dosage Piston
52	195726	Shaft
60	212517W	O-ring
61	195428	Ratio Adjuster
71	194414	Nut, Suction Tube Fitting
79	195224	Interlock Pin
80	194415	Twistlock
82	195740	Shaft Seal Spacer

* Must specify material

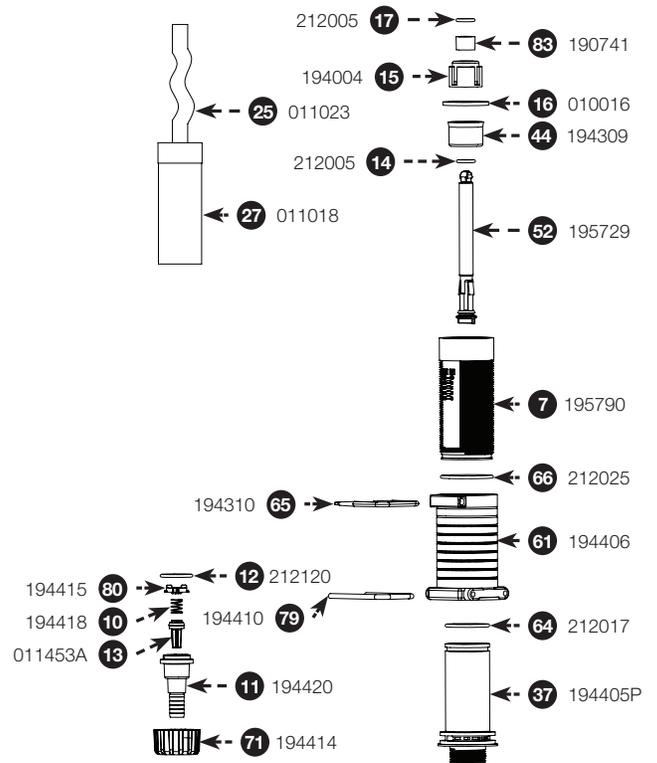
Manual Reference	Part #	Description
Lower End Injector & Wear Parts Kits 10%		
7	195790	Cylinder, Outer
10	194418H	Spring
11	194420	Suction Tube Fitting
12	212120*	O-ring
13	011453A	Check Poppet with washer
14	212005*	O-ring
15	194004	Seal Retainer, O-ring
16	010016S	Gasket
17	212005*	O-ring
25	011025	Suction Tube, 1/2" x 5'
27	011018	Filter for Suction Tube, 1/2" ID
37	194405P	Inner Cylinder
44	194309	Dosage Piston
52	195729	Shaft
61	194406P	Ratio Adjustment Sleeve
64	212017*	O-ring, Outer Cylinder, Lower End
65	194310D	Interlock Pin
66	212025*	O-ring, Outer Cylinder, Lower End
71	194414	Nut, Suction Tube Fitting
79	194410SS	Retainer Clip Bottom
80	194415	Twistlock
83	190741	Shaft Seal Spacer

* Must specify material

Lower End Assembly



Lower End Assembly



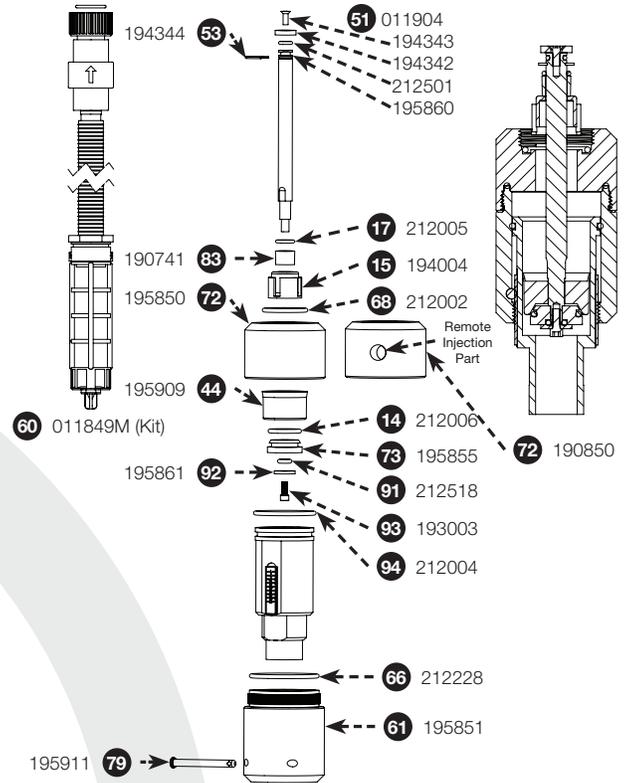
SuperDos & MiniDos Parts -

MiniDos Lower End Injector & Wear Parts Kits 20%

Manual Reference	Part #	Description
Lower End Injector & Wear Parts Kits 20%		
7	011913P	Inner Cylinder
14	212006*	O-ring
15	194004	Seal Retainer O-ring (Retainer Quad Ring)
17	212005*	O-ring
44	195909	Dosage Piston
51	011904	Shaft Assembly
53	194344	Klipring
60	011849M*	Hose Kit
61	195851	Outer Cylinder
66	212228*	O-ring
68	212002*	O-ring
72	195850	Adapter
72	190850	Remote Adapter
73	195855	Dosage Piston Guide
79	195911	Ratio Locking Pin
83	190741	Shaft Seal Spacer
91	212518*	O-ring
92	195861	Shaft Cap
93	193003	Capscrew 10-32x1/2" Ss Hex Head
94	212004*	O-ring

* Must specify material

Lower End Assembly



Remote Injection Kit (#012706)

