SPARE AIR

SERVICE MANUAL
FOR ALL MODELS

SUBMERSIBLE SYSTEMS, INC.
THERE WHEN YOU NEED IT

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THERE WHEN YOU NEED IT

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INTRODUCTION

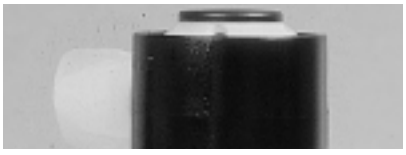
This manual is intended as a guide for experienced repair personnel with **SPARE AIR** repair certification. It is required that specific training by Submersible Systems, Inc. in repair of **SPARE AIR** is obtained prior to attempting to perform repairs.

This manual is a guide for servicing out of warranty **SPARE AIR** units only! Units under warranty (within 1 year of purchase date) must be returned to Submersible Systems, Inc. for service. For warranty instructions refer to our “Repair Policy”. Performing an un-authorized warranty service will void warranty of the unit.

NOTE: This manual includes references to current models (300, 170, 600-T & 300-N) and discontinued models (176C, 270C, 170F, 270F, 170K and 200K).

SYSTEM DESCRIPTION AND SPECIFICATIONS

SPARE AIR is a complete mini SCUBA system, all in one unit. It is composed of a balanced single stage demand regulator, high-pressure cylinder, check valve and pressure indicator.

Model Specification	170K	200K	170F	270F	176C	270C	600-T	300 / 300-N	170
Tank Pressure	1800 psi / 124 bar	1800 psi / 124 bar	1800 psi / 124 bar	3000 psi / 200 bar	3000 psi / 200 bar	3000 psi / 200 bar	3000 psi / 200 bar	3000 psi / 200 bar	3000 psi / 200 bar
Burst Disc	1800 psi / 124 bar	1800 psi / 124 bar	1800 psi / 124 bar	3000 psi / 200 bar	3000 psi / 200 bar	3000 psi / 200 bar	3000 psi / 200 bar	3000 psi / 200 bar	3000 psi / 200 bar
Diameter	2" / 5.08 cm	2" / 5.08 cm	2" / 5.08 cm	2 1/4" 5.71 cm	2 1/4" / 5.71 cm	2 1/4" / 5.71 cm	2 1/4" / 5.71 cm	2 1/4" / 5.71 cm	2 1/4" / 5.71 cm
Length	13 3/8" / 33.97 cm	15 1/2" / 39.37 cm	13 3/8" / 33.97 cm	11 3/4" / 29.85 cm	8 3/4" / 22.23 cm	11 3/4" / 29.85 cm	15 1/10" / 38.35 cm	13 2/5" / 34 cm	8 3/4" / 22.23 cm
Weight (full)	1 1/3 lbs / 2.94 kg	1 1/2 lbs / 3.31 kg	1 1/3 lbs / 2.94 kg	1 3/4 lbs / 3.86 kg	1 1/2 lbs / 3.31 kg	1 3/4 lbs / 3.86 kg	4 2/5 lbs / 9.70 kg	2 1/5 lbs / 4.85 kg	1 1/2 lbs / 3.31 kg
Dates Manf.	1979 - 1989		1990		1991 - 1999		2000-2002	2000-Present	
Cylinder Rating	DOTE7737-1800 **Exempt from Hydro Testing**			DOT3AL3000 **Hydro Test every 5 years**			DOT3AL3000 / TC-3ALM-207 **Hydro Test every 5 years**		
Buoyancy	Nearly neutrally buoyant						Nearly neutrally buoyant		
Type of Regulator	ORIGINAL REGULATOR 						NEXT GENERATION REGULATOR 		

DO YOU HAVE THE PERFECT TOOLS FOR A SUCCESSFUL REPAIR?

→ Purchase the Authorized **SPARE AIR** Tool Kit. Part #710NX

→ Purchase the **SPARE AIR** Repair Video to follow along with the **SPARE AIR** Service Manual and refresh your skills or use to train new employees. Part #RVIDEO

→ Send your Technical Questions to us via E-mail: info@submersiblesystems.com or call us at (800) 648-3483

SPECIAL INSTRUCTIONS FOR OVERHAULING SPARE AIR NITROX:

SPARE AIR Nitrox

SPARE AIR Nitrox is Nitrox Ready up to 40% EAN. If SPARE AIR Nitrox is used with equipment or connected to air supply systems which are not rated for Oxygen Service, it will be considered contaminated and will require cleaning for Oxygen Service prior to use again with Nitrox.

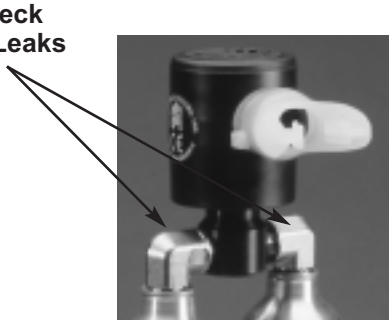
Follow the overhaul procedures in this manual **except** for:

1. Use the Nitrox Overhaul Kit (part #094NTRX).
2. Use a halocarbon based lubricant such as Christo-Lube MCG 111.

SPECIAL INSTRUCTIONS FOR OVERHAULING SPARE AIR TWIN:

Follow the overhaul procedures in this manual **except** for:

1. Use the **SPARE AIR** Overhaul Kit #094X plus three extra Tank O-rings (#027), size 016. During Reassembly install one Tank O-ring on each elbow and one on the Regulator.
2. When performing the water leak test, also check the connection between the elbow joint and manifold. If any leaks are detected, send unit to SSI for repair. DO NOT attempt to repair the manifold yourself.



SPARE AIR Twin

HOW SPARE AIR WORKS

SPARE AIR is a balanced single stage regulator. Current model **SPARE AIR** units are always on and ready for use. (See Figure 1) The discontinued Flip Lever (Models 170F, 1800 psi and 270F, 3000 psi) was designed to allow positive pressure into the regulator even in the off position. Unlike the current system that is ready for use, the Flip Lever must be flipped up before use of the system. (See Figure 2) The discontinued On/Off Knob (Models 170K and 200K) must be turned counter clockwise before the system is ready for use. (See Figure 3)

For all models, upon inhalation the Diaphragm depresses the lever pressing the Poppet Assembly down and away from the Poppet Seat. This action allows air to flow from the Tank into the Regulator Chamber and out of the Mouthpiece. On exhalation, the Diaphragm is forced upward; the Poppet Assembly and Seat are forced closed by a spring. Air exits the Regulator Chamber through the exhaust ports at bottom of Regulator.

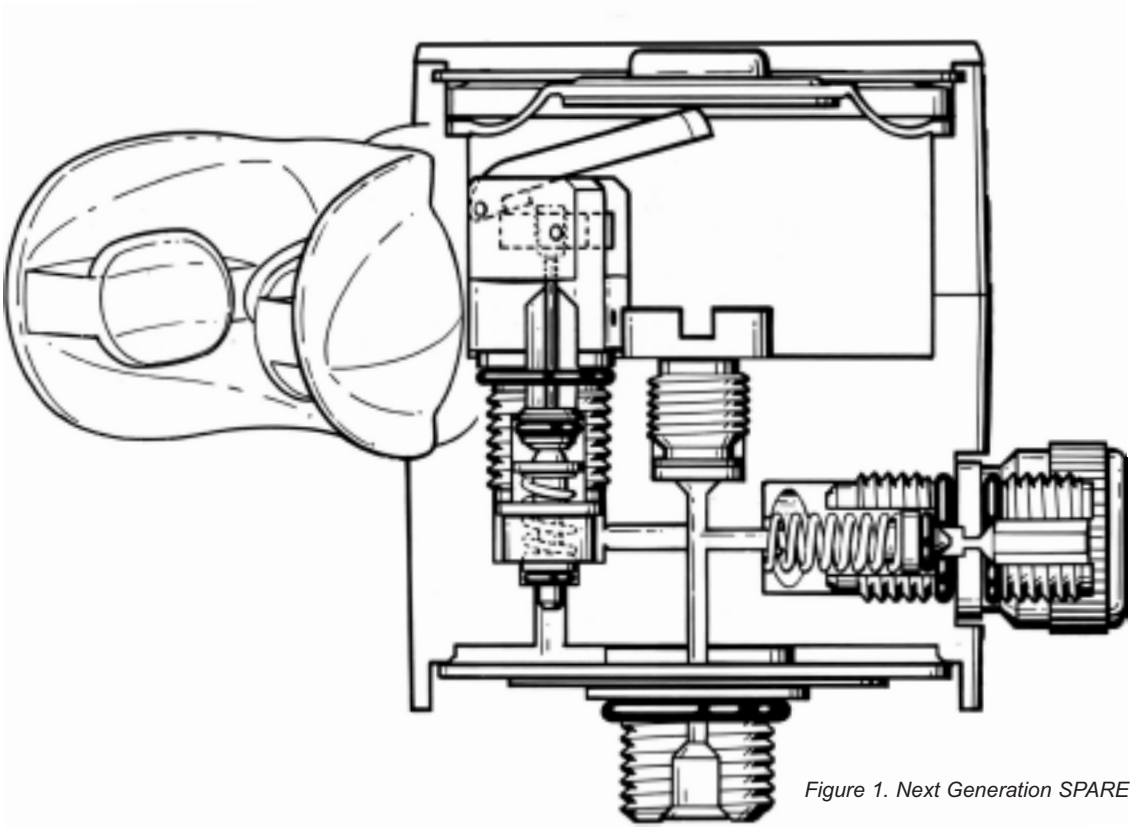


Figure 1. Next Generation SPARE AIR Model

Figure 2. Flip On-Off Lever, Discontinued Model

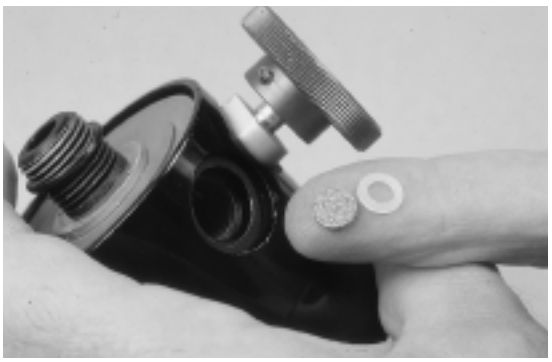


Figure 3. Knob On-Off Valve, Discontinued Model

GENERAL INFORMATION

ROUTINE CARE:

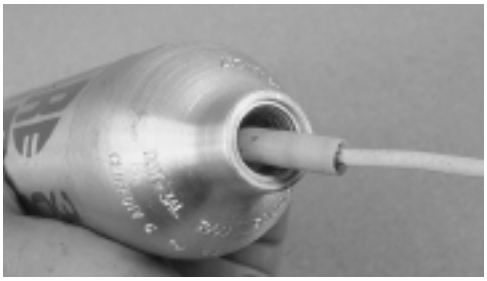
Corrosion resistant materials are used in all parts of **SPARE AIR**. The **SPARE AIR** system should be filled and pressurized before external rinsing. This allows the area inside the Regulator Chamber to be cleaned without contaminating the air passageways and damaging important sealing surfaces. If the system is not pressurized, **DO NOT** depress Purge Button while soaking. Depressing the Purge Button opens the valve assembly, which may allow water or foreign particles to contaminate the poppet-seating surface causing corrosion that will create leaks. **We recommend that the unit be soaked in clean, fresh water, dried and the unit filled before storage, to insure maximum performance and reliability.**

SERVICE:

We recommend that **SPARE AIR** be overhauled on a yearly basis; however, do not wait for an annual check up if leaking or damage is observed.

VISUAL INSPECTION:

All systems, both 1800 psi and 3000 psi, need to have a visual inspection of the cylinder along with an annual overhaul. Make sure cylinder is completely empty of air before removal of the regulator from cylinder. Insert “Inspection Light” (can be purchased at Hydro Test Products, Inc. (800) 225-9488), into cylinder and look for any salt corrosion and/or pitting on the inside wall of cylinder. If there is any sign of dirt or salt residue the cylinder should be thoroughly cleaned. We recommend (based on DOT Standards) if any pitting on cylinder is more than 0.030", then the tank should be condemned. Any cylinder that shows signs of corrosion, pitting or damage during visual inspection (internal or external) should be hydro tested prior to reassembly.



Annual Visual Inspections Are Required
For All SPARE AIR Models

HYDRO TESTING:

SPARE AIR current models utilize a 3000 psi DOT3AL / TC-3ALM-207 cylinder. With this rating, **SPARE AIR** cylinders **ARE REQUIRED** to be hydro tested every five years and visually inspected annually. DOT also requires that any cylinder exposed to fire or heat in excess of 350° F be condemned.

The cylinder thread size is a standard 5/8" 18 UNF-2B thread. The **SPARE AIR** Hydro Adapter #704 may be purchased from SSI. Most local hydro testing facilities will have the ability to hydro test **SPARE AIR** cylinders or you can send them directly to SSI. Models for the European market have British cylinder approvals BS5045: PART6: 1987. Contact the local authorities for instructions on recertifying the cylinders.

NOTE: 1800 psi SPARE AIR Units utilize a cylinder with a DOT-E 7737 rating which is exempt from Hydro Testing. Annual Visual Inspections are required.

SERIALIZATION:

All **SPARE AIR** systems are identified with individual serial numbers 6 digits long. Serial numbers are located on the Regulator Main Body (#0013 for Original Regulators, #0013NX for Next Generation Regulators) to the right of the Mouthpiece.

ANNUAL OVERHAUL

Annual overhaul of **SPARE AIR** involves Disassembly, Cleaning, Inspection, Lubrication, Reassembly and Adjustment steps. O-ring seals are used throughout the Regulator. Cleanliness is of the utmost importance in obtaining effective O-ring seals. **Never install new parts into a dirty or corroded Regulator.**

NOTE: Overhaul Kit contains minimum parts required, additional parts may be needed if they are damaged, corroded or lost. Refer to diagram on back for part numbers. **DO NOT reuse defective parts!**

PRIOR TO DISASSEMBLY:

- Determine which model you are working on using grid on page 4.
- Prepare workspace and lay out tools (see below).
- Lay out Overhaul Kit - minimum parts required, additional parts may be needed (see page 11 for description of parts included in Overhaul Kit).

REQUIRED TOOLS: (See Figure 4)

Items contained in SSI Tool Kit #710NX:
1/16 inch Hex Key
Large flat head screwdriver (1/8" thick blade)
Lever Height Gauge / Inner Ring Assembly Tool
Poppet Housing Removal Tool
Flow/No Flow Gauge

Suggested Additional Tools:
Small flat head screwdriver (3/16" wide blade)
Dental pick/O-ring tool
3/16 inch Hex Key

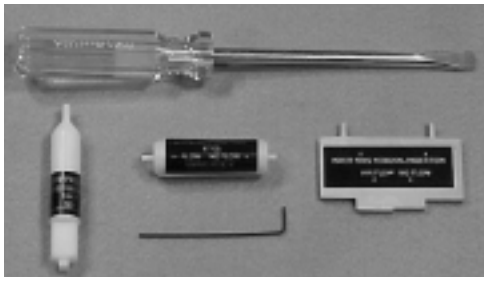


Figure 4. Required Tools: Available in the SPARE AIR Next Generation Tool Kit #710NX

TO LOCATE LEAKS:

Before you begin disassembling the unit it is important to locate where the unit is leaking from and at what volume. Do this by filling the unit, submerging it in water and rotating it to release the trapped air. Next, check O-ring seals for leaks. It is important to distinguish between trapped air and a real leak. Trapped air will produce bubbles that are sporadic and usually go away after a few seconds. A real high-pressure leak will form bubbles at a continuous steady rate. For example the rate may be a bubble every 1 second, or a bubble every 10 seconds but it will be steady and consistent.

Figure 5. Snap Ring Removal, Original Regulator

Knowing where a unit is leaking from is useful, as it will determine the area of the Regulator that is having the problem. Therefore, if the unit has a leak from the Pressure Indicator initially and after performing the service the unit has a leak from the Tank O-ring then you can determine this leak was probably caused during servicing and does not indicate a defective fitting but more likely a contaminated (dirty) O-ring.

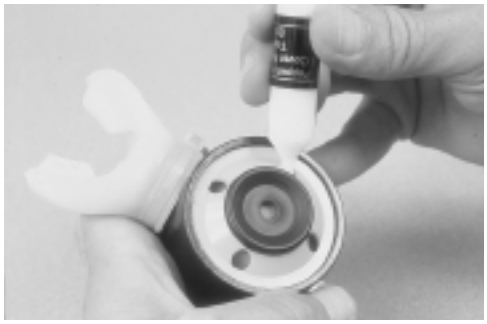


Figure 6. Purge Cover Removal, Original Regulator

For Original Regulators:

1. Remove Snap Ring (#004) with small flat head screwdriver by gently lifting one end of Snap Ring. (See Figure 5)

2. Place a blunt awl tool or the blunt end of Poppet Housing Removal Tool into one of the holes of Purge Cover (#005Y) and lift upward. (See Figure 6)

3. Remove Diaphragm (#006).

4. If the SPARE AIR is empty, fill unit and submerge underwater.

5. Check for leaks around all O-ring sealed areas as well as through the center of Pressure Indicator, Burst Disc and Check Valve.

NOTE: An alternate method for visual detection of leaks is to apply a soapy water solution to the possible leaking area using a small brush. A steady continuous bubble stream will pin point the location of the leak.

For Next Generation Regulators:

1. Place palm on Purge Button, push down and turn counter clockwise, removing Outer Ring (#004NX-O). (See Figure 7)

Figure 7. Outer Ring Removal, Next Generation Regulator

2. Using Inner Ring Assembly Tool place the two pins of the tool in two of the slots of the Inner Ring (#004NX-I). Turn tool counter-clockwise and remove Inner Ring and Purge Button (#005NX). (See Figure 8)

3. Remove Diaphragm (#006).

4. If the SPARE AIR is empty, fill unit and submerge underwater.

5. Check for leaks around all O-ring sealed areas as well as through the center of Pressure Indicator, Burst Disc and Check Valve.

Figure 8. Inner Ring and Purge Cover Removal, Next Generation Regulator

DISASSEMBLY:

NOTE: DO NOT force any parts. Parts may be seized or frozen due to corrosion from improper preventative maintenance. If parts are frozen, soak in a one to one vinegar/water solution before disassembly.

1. Purge air from system.

2. Unscrew Burst Disc Plug (#00731) with large flat head screwdriver.

3. Turn **SPARE AIR** upside down. Burst Disc (#008 for 1800 psi, #0083000 for 3000 psi) and Nylon Washer (#009) should drop out. If Nylon Washer doesn't drop out, carefully remove it with a dental pick or O-ring tool without scratching surface of the Main Body under the Nylon Washer.

4. Remove Poppet Housing & Lever Assembly (#010 for 1800 psi, #0103 for 3000 psi) with Poppet Housing Removal Tool, unscrewing it counter-clockwise. (See Figure 9) Lift out Poppet Assembly (#017). Once removed, make sure O-ring (#020) on the bottom of Poppet Assembly is removed.
   CAUTION: Never use a screwdriver on Poppet Housing & Lever Assembly. This will cause damage preventing the free movement of the lever and damage to the set screw.

Figure 9. Poppet Housing Removal

5. To remove Poppet Seat (#014X): Strip the spring, washer and O-ring from the Poppet Assembly (do not worry about re-assembling, a new one is included in Overhaul Kit) that was just removed in step 4. Insert the plastic stem of the Poppet into the Poppet Housing & Lever Assembly and wiggle out Seat. (See Figure 10) This will ensure that the insides of the lever assembly are not scratched. **DO NOT** use a metal tool to remove Seat!

6. Remove Filter (#020X) by turning **SPARE AIR** upside down. The Filter should drop out. If it doesn't fall out on its own, blow out with air gun. **DO NOT** use a metal tool to remove Filter - it may scratch the inside of the port.

7. Remove Pressure Indicator assembly (#003 for 1800 psi, #00327 for 3000 psi) with large flat head screwdriver.

NOTE: For units built prior to serial #207000, the Filter is located behind the Pressure Indicator. (See Figure 11) Remove the obsolete Filter (#028) and Nylon Washer by placing small flat head screwdriver directly in the center of the Filter and tapping lightly. Rotate screwdriver to break Filter loose and discard.

8. Remove Check Valve Assembly (#030CK-2S) with large flat head screwdriver or a 3/16 hex key depending upon the opening of the Check Valve. (See Figure 12)
   CAUTION: Be careful to not strip the Check Valve opening.

NOTE: Models 170K and 200K employed an On/Off Knob assembly. Models 170F and 270F employed a Flip Valve assembly. Both are removed with a 1/2-inch wrench.

9. While **SPARE AIR** is in an upright position, unscrew cylinder from Regulator Main Body.

10. Remove Tank O-ring (#027), Tank Washer (#026) and both Exhaust Discs (#025 for Original Regulators, #025NX for Next Generation Regulators) with fingers.
    CAUTION: If a tool is used to remove Tank Washer due to corrosion, DO NOT damage Regulator threads or Exhaust Discs.

    This concludes the disassembly of the **SPARE AIR** System.

DEGREASING AND CLEANING OF PARTS:

NOTE: DO NOT use solvents, acids or other chemical cleaners on the SPARE AIR system.

1. Degrease all reusable parts (including Regulator) in a hot soapy water solution. Rinse. (See Figure 13)

2. To remove corrosion use an ultra sonic cleaner with 1 to 1 vinegar / water solution. If this is not available, use a hot water and vinegar solution.

3. After soaking, rinse parts with fresh water and remove any residual grease or grime.

Figure 10. Poppet Seat Removal

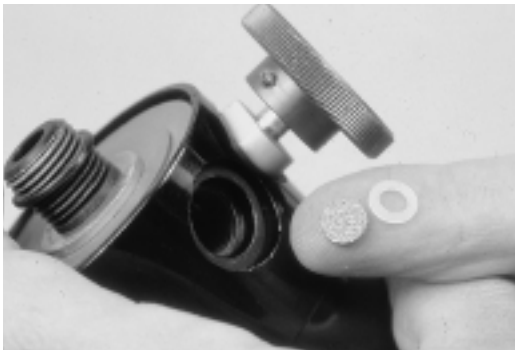


Figure 11. Obsolete Filter

Figure 12. Check Valve Removal

Figure 13. Recommended Cleaners

4. Blow Regulator portholes clean and dry with low-pressure air. Internal passages must be free of all foreign particles before reassembly. If any particles impact the new Poppet Assembly, they may cause damage and leaking. Be sure that Regulator Body is completely dry before replacing any parts.

5. Blow clean and dry all parts and O-rings.

INSPECTION:

NOTE: Additional parts may be needed if they are damaged, corroded or lost. Refer to diagram on back for part numbers.

1. Key components that should be replaced during the overhaul process are sold in the **SPARE AIR** Overhaul Kit - #094X for 3000 psi models (See Figure 14), #092X for 1800 psi models and #094NTRX for Nitrox models (see page 3 for special instructions) which include:

4 - O-rings (size 013) for replacement on:
Both sides of Check Valve
Pressure Indicator
Poppet Housing & Lever Assembly
1 - Tank O-ring (size 016)
1 - Check Valve Stem O-ring (size 004)
1 - Poppet Assembly
1 - Poppet Seat with O-ring
1 - Nylon Washer
1 - Filter
1 - Burst Disc

Figure 14. SPARE AIR Overhaul Kit #094X

2. **DO NOT** reuse defective parts. Inspect all parts not being replaced for flaws or damage. Check for the following:

- O-rings - Check for tears, cuts, flat spots and contamination. These flaws will cause leaks.
- O-ring sealing surfaces on Regulator Main Body - Inspect all surfaces that make contact with O-rings for nicks, scratches and contamination.
- Mouthpiece - Inspect for deterioration and cuts.
- Cylinder - Perform annual VIP and hydro test if necessary. When unscrewing Cylinder from Regulator Main Body, always replace Tank O-ring.

LUBRICATION:

We recommend using a high quality, non-toxic, food grade silicone spray such as Sprayon 503 on all metal threads and O-rings before reassembly. (See Figure 15) **DO NOT** lubricate Diaphragm. If lubricated, the edge becomes slippery and it is possible that the Diaphragm could slip out of its groove.

NOTE: We DO NOT recommend using silicone grease since large amounts of grease can attract dirt and dust and prevent parts from sealing. However, if you do use it, it is important to apply a very thin layer.

Figure 15. Thread Lubrication

REASSEMBLY:

1. Place the large then small Exhaust Discs over the threads of Regulator Main Body.

2. Install Tank Washer. **DO NOT** pinch Exhaust Discs against the base of Regulator. Install new Tank O-ring.

3. Lightly lubricate the threads on Regulator Main Body and screw Cylinder to Main Body. Torque to 60±5 inch pounds.

4. Install new O-ring (#015) on Pressure Indicator, lubricate threads and screw into right hand port on Regulator. Torque to 60±5 inch pounds with large blade screwdriver or Torque Wrench. (See Figure 16)

5. Remove Check Valve delrin stem O-ring and discard. Replace with new O-ring. Place the delrin stem on the spring and install into the open round end of the Check Valve Assembly. (See Figure 17) Install new O-ring (#015) on internal and external threads of Check Valve, lubricate threads and install Check Valve Assembly into the left hand porthole to 60±5 inch pounds.

   NOTE: For models 170K and 200K with On/Off Knob Assemblies, torque to 60+5 inch pounds using a 1/2 inch wrench. For model 170F and 270F Flip Valve Assemblies, turn the valve hand tight and gently torque until the lever is vertical. ALL OLDER MODELS MAY BE RETROFITTED WITH CHECK VALVES USING CHECK VALVE RETRO-FIT KIT #095.

6. Drop Filter (#020X) into bottom of the poppet port with lip of Filter facing up. Filter must lay flat. (See Figure 18)

7. Lightly lubricate the O-ring of Poppet Assembly (#017). When installing new Poppet Assembly, hold it by the pin and insert it straight up into Main Body through the center of Filter. (See Figure 19)

   NOTE: To install Poppet Seat, push into place with a wood dowel or Poppet Housing and Removal Tool. (See Figure 20) DO NOT USE old Poppet, an eraser, cotton swab, or anything else that may leave debris on the seating surface or damage the Seat.

8. Blow out inner cavity of Poppet Housing. Install new Poppet Seat (#014X) and lubricate the threads and new O-ring. Screw Poppet Housing down into Regulator Main Body with Poppet Housing Removal Tool. The Housing should rotate about 5 1/2 turns before it stops. Back off Poppet Housing until the end of the long lever is directly centered over Burst Disc Plug port hole. (See Figure 21)

9. Install new Nylon Washer (#009) and then new Burst Disc (#008 for 1800 psi, #0083000 for 3000 psi) in Burst Disc Plug porthole.

10. Lubricate and install Burst Disc Plug (#00731). Torque to 60±5 inch pounds.

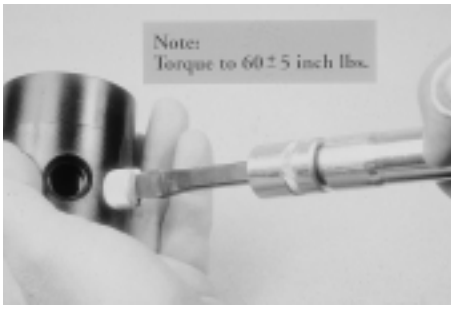


Figure 16. Pressure Indicator Installation


Figure 17. Check Valve Assembly

Figure 18. Filter Installation


Figure 19. Poppet Assembly Installation


Figure 20. Poppet Seat Installation

11. **VERY IMPORTANT STEP! For a successful repair, it is important to stop and refill SPARE AIR at this point to 1000 psi. Then hold lever all the way down until empty (do not tap lever)! Tapping the lever may result in debris or particles damaging the Poppet and Seat, causing the unit to leak. Repeat one more time and then refill until full. This allows any debris caught in the system to be blown out.**

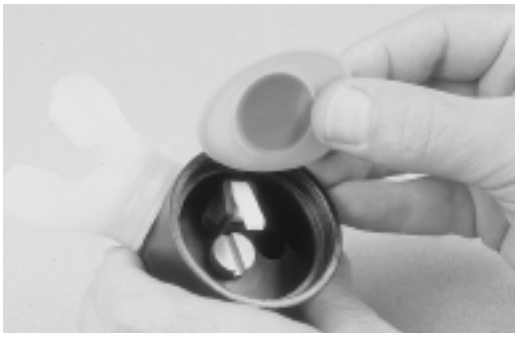


Figure 21. Back Off Poppet Housing

ADJUSTMENTS:

1. Use Lever Height Gauge to check that the lever height is 1/8 inch below the top edge of Regulator Body. The Lever Height Gauge has two steps for fine adjustments. (See Figure 22) To use gauge place it long ways across the long lever. The first step should let no air escape from system. Slide gauge across lever. The second step should allow air to slowly flow from system. Make necessary adjustments using a 1/16 hex key to the raise or lower the lever to give the results as described (See Figure 23). Turn the set screw clockwise to raise lever height, counter clockwise to lower the lever height.

Figure 22. Checking Lever Height

2. Submerge **SPARE AIR** under water to leak test and check O-ring seals. (See Figure 24) Hold under water for at least 30 seconds, checking all threaded ports (see “Trouble Shooting” section if any steady leaks are found). A leak is defined as a steady continuous stream of bubbles. Initially upon placing the unit in the water, there will be some air bubbles. This is called trapped air and will stop as soon as it escapes.

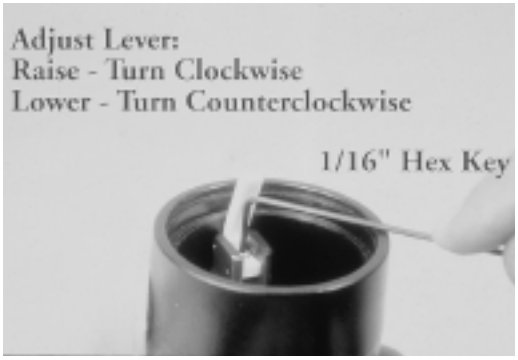


Figure 23. Lever Height Adjustment

For Original Regulators:

3. Place Diaphragm (#006) onto the inner top ledge of Regulator Main Body (#013) followed by the Purge Cover (#005Y). Press down with palm of hand to snap Cover into place.

4. Place one end of Snap Ring (#004) into the groove of Plastic Housing and continue around in a circular motion. When in place, push down hard on Cover to seal and lock Cover and Diaphragm into place. Repeat.

NOTE: Current standard is to install a second Snap Ring on all Original Regulators. The second ring is installed over the first, with its opening 180° from the first Snap Ring.

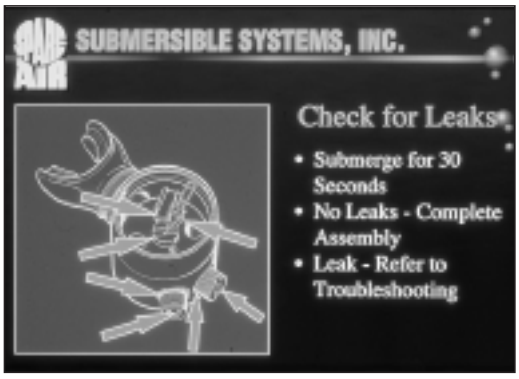


Figure 24. Check For Leaks

5. Check again for the correct adjustment of the lever height with the Flow/No Flow Gauge. Diaphragm should have free travel 1/32 inch to 3/32 inch before air starts to flow. The lower the lever the harder it is to breath, the higher the lever the easier it is to breathe. Flow/No Flow Gauge has two stems, a short stem and a long stem. When the short stem is placed in the center hole of the Purge Button (#005X), no air should be released. (See Figure 25) When the long stem is placed into the hole on the Purge Button air should be released. If these results do not occur remove the Snap Rings, Purge Cover and Diaphragm and adjust the lever.

   NOTE: Do not adjust lever too high. If lever is too high, Regulator will Free-Flow.

Figure 25. Final Lever Height Check with Flow/No Flow Gauge, Original Regulator

For Next Generation Regulators:

3. Place Diaphragm (#006) onto the inner top ledge of Regulator Main Body (#0013NX) followed by Purge Button.

4. Thread Inner Ring (with slots up) clockwise over the Purge Button using the Inner Ring Assembly Tool. Turn ring until contact is made with the Diaphragm, then turn 1/8" turn more. (See Figure 26)

5. Install Outer Ring by placing over top of regulator and turning clockwise with the palm of your hand. There should be no gap between regulator housing and outer ring if installed correctly. If there is a gap, remove and tighten Inner Ring another 1/8" and re-install.

6. Check again for the correct adjustment of the lever height with the Flow/No Flow Gauge. Diaphragm should have free travel 1/32 inch to 3/32 inch before air starts to flow. The lower the lever the harder it is to breath, the higher the lever the easier it is to breathe. Flow/No Flow Gauge has two stems, a short stem and a long stem. When the short stem is placed in the center hole of the Purge Button (#005NX), no air should be released. (See Figure 27) When the long stem is placed into the hole on the Purge Button air should be released. If these results do not occur remove Inner & Outer Rings, Purge Button and Diaphragm and adjust the lever.

Figure 26. Inner Ring Installation, Next Generation Regulator

Figure 27. Final Lever Height Check with Flow/No Flow Gauge, Next Generation Regulator

FINAL OPERATION INSPECTION:

1. Depress Purge Button (#005X for Original Regulators, #005NX for Next Generation Regulators) to check for correct Diaphragm travel (1/32" to 3/32").

2. Test inhalation for ease of breathing.

3. Refill SPARE AIR to 3000 psi or 1800 psi depending on model.

4. Put back on check valve cap.

TROUBLESHOOTING GUIDE

CONDITION	PROBABLE CAUSE	REMEDIES
Check Valve Assembly (#030CK-2S) -If the leak is from the center of the Check Valve	Check Valve failure	Replace Check Valve Assembly
-If the leak is between Check Valve Assembly and the Regulator Main Body (#0013 for Original Regulators, #0013NX for Next Generation Regulators)	Outer O-ring failure	Clean Check Valve Assembly and install new O-ring (#015)
Pressure Indicator Assembly (#003 for 1800 psi, #00327 for 3000 psi) -If leak is between the Pressure Indicator stem and the Pressure Indicator	Inner O-ring failure	Replace Pressure Indicator
-If the leak is between the Pressure Indicator and the Regulator Main Body (#0013 for Original Regulators, #0013NX for Next Generation Regulators)	Outer O-ring failure	Clean Pressure Indicator and install new O-ring (#015)
Burst Disc Plug (#00731) -If the leak is out of the center of Burst Disc Plug at high volume while filling	Burst Disc blown	Replace Burst Disc (#008 for 1800 psi, #0083000 for 3000 psi), and Nylon Washer (#009)
-If the leak is around Burst Disc Plug at low volume	Burst Disc Plug and Nylon Washer contaminated or Burst Disc Plug loose	Blow out Burst Disc Plug port hole with air gun, replace Nylon Washer (#009), Burst Disc (#008 for 1800 psi, #0083000 for 3000 psi) and clean and/or tighten Burst Disc Plug
Poppet Housing Assembly (#010 for 1800 psi, #0103 for 3000 psi) -If the leak is from the port hole on the side of the Poppet Housing	Poppet, Poppet Seat, and filter contaminated or damaged	Replace Poppet Assembly (#017) Poppet Seat (#014X) and Filter (#020X)
-If the leak is between Poppet Housing and Regulator Main Body (#0013 or #0013NX)	Outer O-ring failure	Blow off Poppet Housing body and replace O-ring (#015)
Lever Height Adjustment -Free flow with Diaphragm (#006) and Cover in place	Lever height is too high	Adjust set screw counter clockwise to lower lever
-Inhalation effort is hard	Lever height is too low	Adjust set screw clockwise to raise lever
Cylinder -If the leak is between Cylinder and Regulator Main Body (#0013 for Original Regulators, #0013NX for Next Generation Regulators)	Cylinder O-ring failure	Replace Tank O-ring (#027)
-If leak is under the exhaust disc (#025 for Original Regulators, #025NX for Next Generation Regulators) at 1/8” hole	Poppet O-ring failure or contamination	Replace Poppet Assembly (#017) and Filter (#020X)

SPARE AIR PARTS DIAGRAM
NEXT GENERATION MODEL

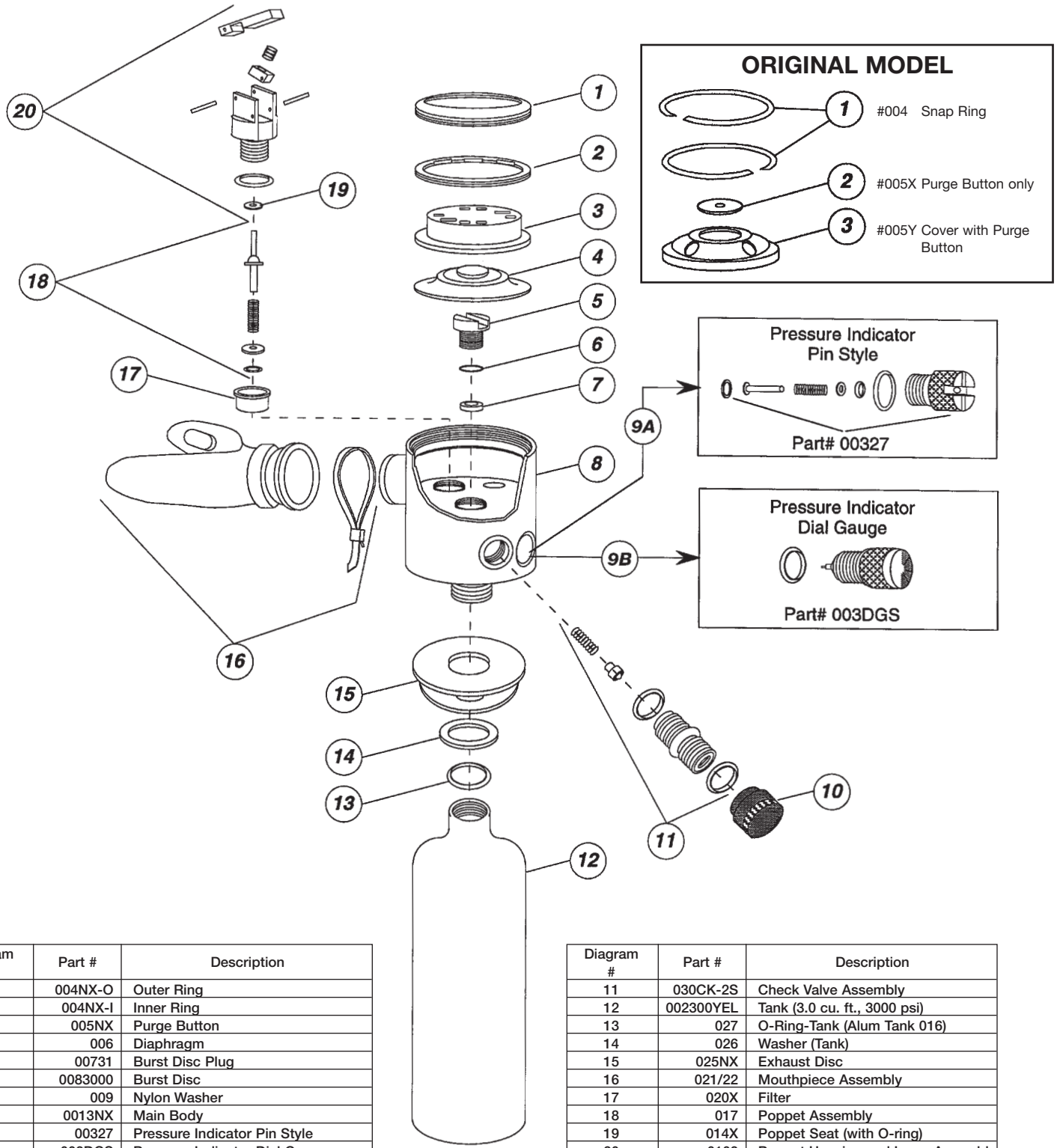


Diagram #	Part #	Description
1	004NX-O	Outer Ring
2	004NX-I	Inner Ring
3	005NX	Purge Button
4	006	Diaphragm
5	00731	Burst Disc Plug
6	0083000	Burst Disc
7	009	Nylon Washer
8	0013NX	Main Body
9A	00327	Pressure Indicator Pin Style
9B	003DGS	Pressure Indicator Dial Gauge
10	030CAP	Check Valve Cap

Diagram #	Part #	Description
11	030CK-2S	Check Valve Assembly
12	002300YEL	Tank (3.0 cu. ft., 3000 psi)
13	027	O-Ring-Tank (Alum Tank 016)
14	026	Washer (Tank)
15	025NX	Exhaust Disc
16	021/22	Mouthpiece Assembly
17	020X	Filter
18	017	Poppet Assembly
19	014X	Poppet Seat (with O-ring)
20	0103	Poppet Housing and Lever Assembly

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