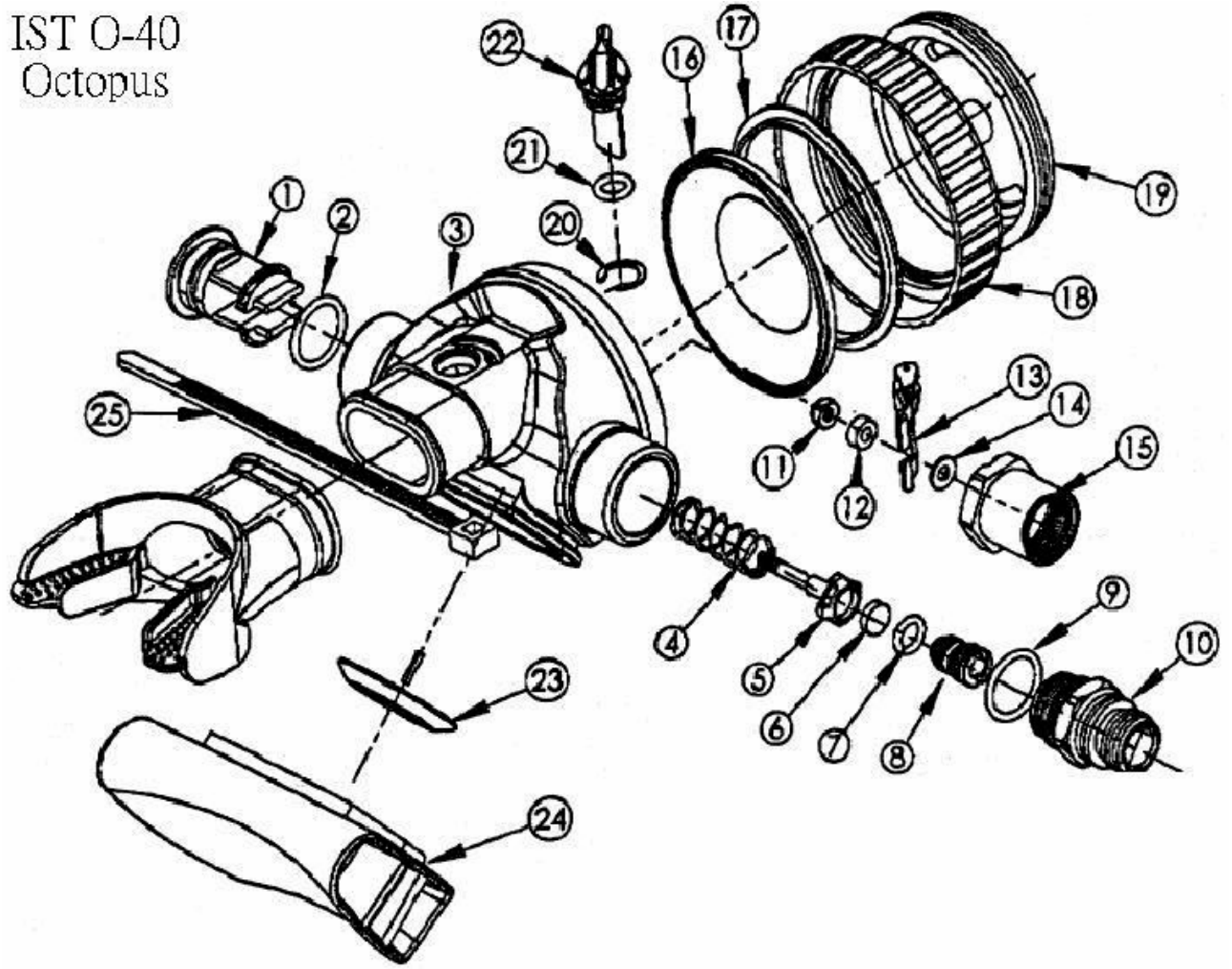
IST SPORTS CORP.

O40 2ND STAGE / OCTOPUS

Ver. 2005 12



1	A-02-01O-08	Side plug	14	C-02-010-04	Washer (thin)
2	O-AS568-015	O-ring	15	C-02-010-03	Brass valve housing
3	A-02-010-01	Main housing	16	B-02-010-01	Diaphragm
4	D-02-010-01	Spring	17	A-02-010-10	Diaphragm washer
5	C-02-010-02	Poppet	18	A-02-010-04	Bezel
6	A-02-010-07	LP seat	19	A-02-010-05	Purge cover
7	O-AS568-010	O-ring	20	P-02-010-02	Deflector cir-clip
8	A-02-010-08	Orifice	21	O-As568-010	O-ring
9	O-AS568-015	O-ring	22	A-02-010-09	Deflector knob
10	C-02-010-01	Orifice seat screw	23	A-02-010-02	Exhaust valve
11	C-02-010-06	Nut screw	24	A-02-010-03	Exhaust cover
12	C-02-010-05	Washer (thick)	25	A-02-010-12	Zip tie
13	S-02-010-01	Lever			

1. The tools shown above are the ones needed to perform the servicing operation of the O40 2nd stage / octopus: 6mm socket (with screw driver type handle), a pair of pliers, 4-slot 2nd stage tool and an adjustable spanner. If a certain tool(s) is difficult to obtain, appropriate improvisation can be considered, as long as there is no extraneous / unusual stress to cause damage to the 2nd stage.

   It can not be overemphasized enough the servicing area of the work shop must be clean, dry, free of particles that can impede / damage O40.

   * Important – Please read and familiarize with the manual before proceeding with servicing!

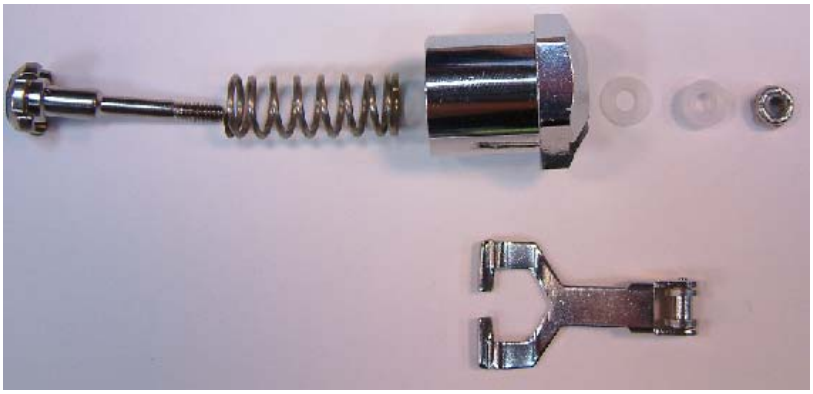
2. To remove, firstly, rotate counter-clock wise to remove the metal bezel (part 18) and purge cover (part 19).

3. Remove the diaphragm washer (part 17) and then the diaphragm (part 16).

4. Use the adjustable spanner to loosen and remove the orifice seat screw (part 10).

5. Take the lever and brass valve housing (containing part 4~6, 11~15) out of the main housing (part 3)

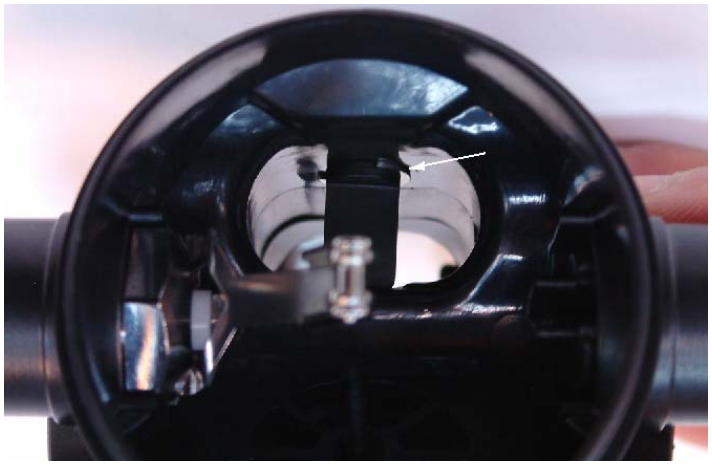
6. Count the number of threads of the poppet (part 5) that is exposed and use this information for reassembling.



7. To dismantle the lever and valve assembly for servicing, use the 4 notch 2nd stage tool to hold the bottom of the poppet (part 5) and the 6mm socket to unscrew the nut (part 11). Be careful not to lose any part when the nut is coming undone as the spring (part 4) will exerts force to restore its original shape.

8. Should there be a need to remove the exhaust cover (part 24) for inspection / servicing of the exhaust valve (part 23), soak it in hot water until the material softens, then simply peel it away from the main housing (part 3).

   To remove the exhaust valve, simply pull it off.



9. The air stream deflector (part 22) is shown in the picture. It is held by a cir clip and sealed by an o-ring (part 21). In the unlikely event of leaking through the deflector, the cir clip (part 20), as indicated by an arrow, can be pulled off to enable the replacement of the o-ring. A simple visual check for this part's sealing capability during annual servicing is sufficient.

10. The side plug (part 1) can be removed simply by squeezing its two arms together.

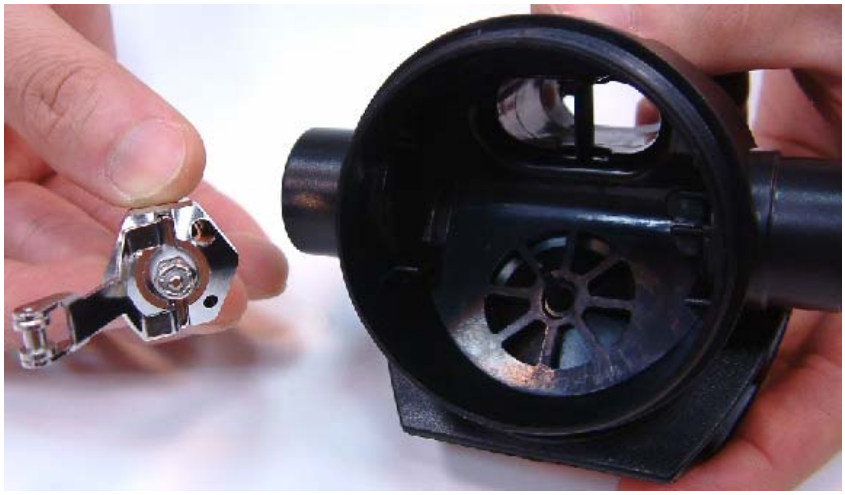
11. Should it be necessary to replace the mouthpiece, simply cut off the zip tie (part 25) so the mouthpiece can be removed. Use a new zip tie after the replacement mouthpiece is in situ.

*** At this point, all of the O40 2nd stage / octopus' serviceable parts are completely stripped. Please check all o-rings (part 2, 7 & 9), orifice (part 8) and the low pressure seat (part 6) for wear, and the spring (part 4) and all metal parts for corrosion. Replace any part if its serviceability is in doubt. Clean the rest of the parts with water. Air dry before reassembly.

*** The recommended servicing schedule is at least once per year, even when the 2nd stage / octopus is not used regularly. The frequency should be increased to 2 or 3 times per year if O40 is heavily used on a regular basis.

*** To reassemble, reverse the procedures described above but please pay attention to the following points:

12. If it is necessary to install a new exhaust valve, please check it for imperfections (such as pinholes, cuts or damaged valve stalk) before pulling the stalk through the hole in the main hosing to secure



13. When assembling the lever / valve unit, the lever (part 13) should point away from those 2 smaller holes in the brass valve housing (part 15) and the exhaust valve.

14. To adjust the 2nd stage's air output, it can be achieved by either of the following methods: a) with the side plug (part 1) removed, use the 6mm socket to tighten / loosen the nut (part 11); b) tighten / loosen the orifice (part 8) in the orifice seat screw (part 10 – as shown) to increase or relax the lever tension. The later method (b) is the preferred method as it is easier to fine tune.

15. The groove around the inside of the diaphragm (part 16) must sit perfectly on the lip of the main housing (part 3) to create a strong seal

16. This side of the diaphragm washer (part 17 – as shown) is the side that will make contact with the diaphragm (part 16), not the flat side. The flat side will be in contact with the bezel (part 18) and purge cover (part 19).

17. When reassembled, fully immerse O40 in water to check for air leak and water leak. Continue to check the cracking effort (it is the 2nd stage's ability to detect pressure change – the lighter the effort, the easier it will supplier air). It should be tuned to a state that when O40 is half submerged in water (with its purge cover (part 19) facing the bottom of the container / sink), a very slight hiss can be heard through the mouthpiece but not overflowing once removed from water. Check the in-line pressure with an IST CT-5 in-line adjuster to perform a final check on the out put pressure (recommended @ 9.5bar ~ 10bar).

Trouble shooting / important note

Listed below are some problems that may be encountered during the servicing of IST's O40 2nd stage / octopus.

- The O40 2nd stage / octopus is factory-tuned to be coupled with either IST's R1 balanced piston or R2 balanced diaphragm 1st stage. When using O40 with another make's 1st stage, it may be necessary to recalibrate the O40 or the 1st stage or both air output setting before the combination can function properly.

- If sticky / wet exhalation is experienced check and / or replace the exhaust valve (part 23) and clean the mating area.

- If water enters O40, check:
  1) the exhaust valve's (part 23) condition or the fitting and replace if necessary.
  2) the integrity or the fitting of the diaphragm and / or mouthpiece. Replace if necessary.
  3) if the housing (part 3) is cracked or distorted.
  4) the condition of the o-rings and their sealing areas or their fitting. Replace if necessary.

- If high inhalation resistance is experienced, check / adjust:
  1) the remaining air in the tank and refill tank if necessary.
  2) the 1st stage intermediate pressure and adjust if necessary.
  3) the orifice (part 8) to regain the correct output - but if the orifice is adjusted to a level that O40 starts to overflow, then it must be dismantled to check whether the assembly is correct or the orifice (part 8) and / or low pressure seat (part 6) is worn. Reassemble / replace the parts immediately and recalibrate according to point 14 above.
  4) Inspect diaphragm for stiffness and replace if necessary (it should be in a supple state).

- If there is an air / water leak, immerse O40 in water to isolate the cause and:
  1) change the o-ring(s) if worn.
  2) clean the 2nd stage so all sealing surfaces are clean.
  3) make sure that O40 is properly and securely assembled and tightened.

- If O40 overflows, firstly, check the 1st stage's intermediate pressure output (IST's R1 and R2 are both factory set at 9.5bar) and adjust if necessary. If the problem persists, adjust O40's output as described. When both methods fails, it is necessary to dismantle and check:
  1) whether the orifice's (part 8) contacting edge with the low pressure seat is still keen and not corroded. Replace if in doubt and recalibrate.
  2) whether the low pressure seat (part 6) is worn. Replace if in doubt and recalibrate.
  3) whether the internal workings of O40 is clean and free of particles. Clean as necessary.