COLTRI-SUB C60 BALANCED DIAPHRAGM FIRST STAGE

MAINTENANCE INSTRUCTIONS

Tools required

"C spanner" (Part No RE/01335000/301), balance chamber tool (Part No RE100600), interstage pressure gauge (Part No RE100260 or RE100265), 25mm ring spanner, vice - with soft jaws, 14mm, 15mm and 22mm open end spanners, 4mm hex key.

Disassembly

1. Remove all hoses using 14mm wrench for 3/8 connections and 15mm wrench for 7/16 connections. Using a 4mm hex key remove any blanking plugs (18) and (19). Remove O rings (17) and (20).
2. Holding the valve body (16) in a soft jawed vice with the diaphragm end facing upwards, use a "C spanner" to remove the end cap (26).
3. Using a 6mm hex key remove the adjusting screw (27) from the end cap (26).
4. Remove the main spring (25) and spring support pad (24).
5. Remove the thrust washer (23) and diaphragm (22) from the valve body (16), taking care not to damage the sealing surface in the valve body (50).
6. Lift out the needle support pad (21) and valve needle (15).
7. Reverse the valve body (16) in the vice so that the yoke (02) is facing upwards.

For the "A" clamp version:

8. Using a 25mm ring spanner remove the yoke bolt (06), take off the yoke (02) and unscrew the hand wheel (01).
9. Remove O ring (07), snap ring (03), conical filter (04) and O ring (05) from the yoke bolt (06).

For the DIN Connector version:

8. Using a 6mm hex wrench remove hand wheel connector (21), O rings (41) and (42). Pull off the hand wheel (23) using a 22mm spanner; remove the hand wheel post (24).
9. Remove filter (23) and O ring (40).
10. Using the special tool, unscrew and remove the balance chamber (08), remove O ring (10) and backup ring (09), taking care not to damage the internal sealing surface of the balance chamber (08).
11. Remove the O ring bush (11), control spring (12) and piston assembly (13) and (14).
12. Remove the guide bush (13) from the piston (14).

The regulator is now completely disassembled.

Cleaning

All plastic and rubber parts should be washed in a warm, mild detergent and then be rinsed and dried thoroughly.

All metal parts should be cleaned in an ultra sonic cleaner using a mild degreaser followed by a mild acid (e.g. citric 5% solution), rinsing thoroughly between baths (optimum bath temperature 60^{o} C).

Note: Protect critical surfaces such as valve orifices and piston knife-edges from contact with other components (and the cleaning container if not plastic) during ultrasonic cleaning. Rinse all components thoroughly and blow dry in a clean dry air stream.

Inspection

Check the valve orifice in the body (16) for wear and/or damage. Check all sealing surfaces for scratches. Check that the needle (15) is straight.

Replacement parts

Install a service kit, which contains: all “o rings, back up ring (09), piston (14), diaphragm (22), and thrust washer (23). Inspect all other components paying particular attention to the valve orifice inside the valve body. Replace any damaged or worn parts including the valve needle (15) if it is not absolutely straight.

Lubrication

Lightly lubricate all O rings, sliding surfaces and any threads exposed to the ingress of water.

Reassembly

1. Clamp the valve body (16) in a soft jawed vice with the balance chamber end facing upwards.
2. Fit the guide bush (13) to the piston (14) making sure that the bush encloses the large end but leaves the sealing surface exposed.
3. Put the piston assembly (13 & 14) into the valve body (16), making sure that the large end of the piston faces the valve orifice and that it is straight.
4. Push the bush (11) into the control spring (12) then place it into the valve body (16) with the bush (11) uppermost.
5. Push the backup ring (09) and O ring (10) into the balance chamber.
6. Screw the balance chamber (08) into the valve body (16) locking firmly using the special tool.

For the “A” clamp version:

7. Fit O rings (07) and (05) to the yoke bolt (06), push the filter into the face seal end and fit the snap ring (03) to the yoke bolt (06)
8. Pass the yoke bolt assembly (06) through the yoke (02), then screw it into valve body (16) and tighten with 25mm spanner to 37 – 42 Nm.

9. Screw hand wheel (01) into yoke (02). Fit the dust cap assembly (00).

For the DIN version:

7. Fit O ring (40) to the hand wheel post (24), then screw the hand wheel post (24) into the valve body (50) and tighten with 22mm spanner to 37 –42 Nm.

8. Push filter (23) into hand wheel post (24), slide the hand wheel (22) with its thread facing upwards over the hand wheel post (24). Fit O rings (41) and (42) to the hand wheel connector (21) then screw into hand wheel post (24), locking firmly with 6mm hex key.

10. Reverse the valve body (16) in the vice so that the diaphragm end is facing upwards.

11. Push the valve needle (15) through the central hole and into piston (14). Place the needle support pad (21) over the valve needle (15).

12. Insert the diaphragm (22) and thrust washer (23) into the valve body (16) ensuring that they are pushed under the lower lip.

13. Place and centralise the spring support pad (24) onto the diaphragm (22). Place the main spring (25) onto the support pad (24).

14. Screw the adjuster (27) into the end cap (26) leaving two threads showing.

15. Screw the end cap (26) into valve body (16) taking care not to disturb the position of the spring (25) and support pad (24).

16. Fit O rings (17) and (20) to the hoses or blanking plugs as appropriate. Install into required outlets and lock firmly into place.

The valve is now fully assembled.

Final adjustment and testing

1. Connect the regulator to a 200 bar supply and connect an intermediate pressure (IP) gauge to a low-pressure port.

2. Turn the air supply on slowly while watching the I.P. Gauge.

3. Set intermediate pressure to 9.5 bar with a supply pressure of 200 bar by turning the adjuster (27) clockwise to increase and anti-clockwise to decrease the I.P. There should be no creeping.

4. Turn the air off and purge the regulator then turn the air supply on again. Repeat once more then readjust the interstage pressure if necessary to 9.5 bar.

5. Reduce the supply pressure to 20 bar, the intermediate pressure should not be less than 9 bar.

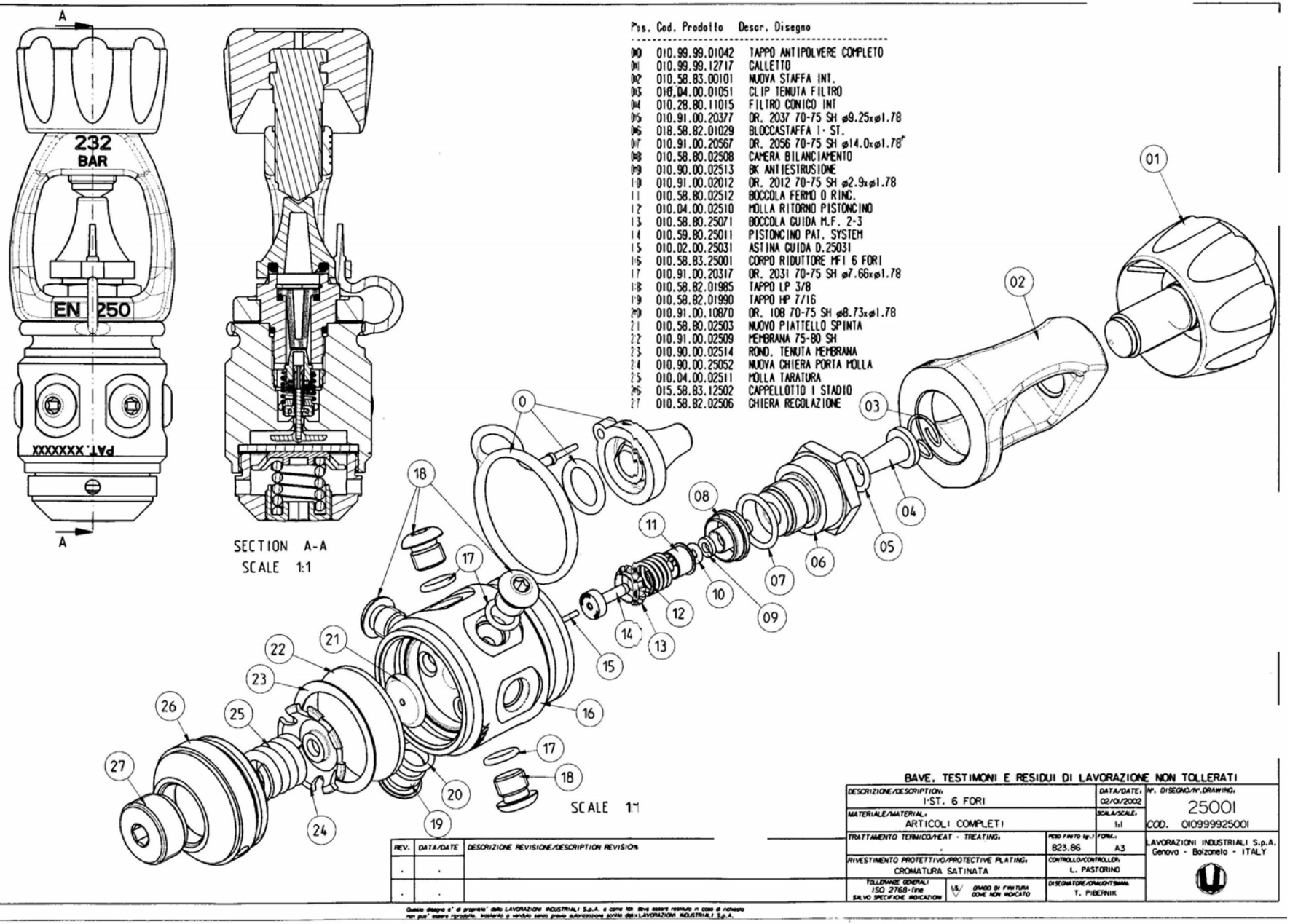
6. Return the supply pressure to 200 bar, watch the I.P. gauge for thirty seconds; the I.P. should not creep.

7. Purge the regulator fully, the I.P. should not drop more than X bar.
8. If all is satisfactory, disconnect the test equipment, ensure all connections are tight and all ports are plugged.

The regulator is now ready for use.

COLTRI-SUB C60 FIRST STAGE

Italiano		English	
No. Codice	**Denominazione**	**Position number**	**Name**
00	Tappo antipolvere completo	0	Dust cap assembly
01	Galletto	01	Hand wheel
02	Nuevo Staffa Int	02	Yoke
03	Clips tenuta filtro	03	Snap ring
04	Fitro conico int	04	Conical filter (“A” clamp)
05	O ring 9.25 X 1.78 mm	38	O ring 9.25 X 1.78 mm
06	Bloccastaffa	05	Yoke bolt
07	O ring 14 X 1.78 mm	07	O ring 14 X 1.78 mm
08	Camera billanciamento	08	Balance chamber
09	BK anello antiestrus	09	Backup ring
10	O ring 2.90 X 1.78 mm	10	O ring 2.90 X 1.78 mm
11	Boccola fermo O ring	11	O ring bush
12	Molla ritorno	12	Control spring
13	Boccola guide	13	Guide bush
14	Pistoncino (pat system)	14	Piston (patented)
15	Astina guida	15	Valve needle
16	Corpo riduttore	16	Valve body
17	O ring 7.66 X 1.78 mm	17	O ring 7.66 X 1.78 mm
18	Tappo LP	18	LP plug
19	Tappo HP	19	HP plug
20	O ring 8.73 X 1.78 mm	20	O ring 8.73 X 1.78 mm
21	Nuevo piattello spinta	21	Needle support pad
22	Membrana	22	Diaphragm
23	Rondella membrana	23	Thrust washer
24	Ghiera app.molla	24	Spring support pad
25	Molla taratura	25	Main spring
26	Cappellotto	26	End cap
27	Ghiera regolazione	27	Adjuster
DIN connector version			
	Raccordo volantino		Hand wheel connector
	Volantino DIN 200 Bar		Hand wheel (200 bar DIN)
	Filtro conico DIN		Conical filter DIN
	Fermo Volant 200 bar		Hand wheel post (DIN 200 bar)
	O ring 115 11.91 X 2.63 mm		O ring 115 11.91 X 2.63 mm
	O ring 2043 10.82 X 1.78 mm		O ring 2043 10.82 X 1.78 mm
	Cappellotto		End cap



Pos.	Cod. Prodotto	Descr. Disegno
00	010.99.99.01042	TAPPO ANTIPOLVERE COMPLETO
01	010.99.99.12717	CALLETTO
02	010.58.83.00101	NUOVA STAFFA INT.
03	010.04.00.01051	CLIP TENUTA FILTRO
04	010.28.80.11015	FILTRO CONICO INT
05	010.91.00.20377	OR. 2037 70-75 SH ø9.25xø1.78
06	018.58.82.01029	BLOCCASTAFFA 1° ST.
07	010.91.00.20567	OR. 2056 70-75 SH ø14.0xø1.78
08	010.58.80.02508	CAMERA BILANCIAMENTO
09	010.90.00.02513	BK ANTIESTRUSIONE
10	010.91.00.02012	OR. 2012 70-75 SH ø2.9xø1.78
11	010.58.80.02512	BOCCOLA FERMO O RING.
12	010.04.00.02510	MOLLA RITORNO PISTONCINO
13	010.58.80.25071	BOCCOLA GUIDA M.F. 2-3
14	010.59.80.25011	PISTONCINO PAT. SYSTEM
15	010.02.00.25031	ASTINA GUIDA D.25031
16	010.58.83.25001	CORPO RIDUTTORE MF1 6 FORI
17	010.91.00.20317	OR. 2031 70-75 SH ø7.66xø1.78
18	010.58.82.01985	TAPPO LP 3/8
19	010.58.82.01990	TAPPO HP 7/16
20	010.91.00.10870	OR. 108 70-75 SH ø8.73xø1.78
21	010.58.80.02503	NUOVO PIATTELLO SPINTA
22	010.91.00.02509	MEMBRANA 75-80 SH
23	010.90.00.02514	ROND. TENUTA MEMBRANA
24	010.90.00.25052	NUOVA CHIERA PORTA MOLLA
25	010.04.00.02511	MOLLA TARATURA
26	015.58.83.12502	CAPPELLOTTO 1 STADIO
27	010.58.82.02506	CHIERA REGOLAZIONE

BAVE, TESTIMONI E RESIDUI DI LAVORAZIONE NON TOLLERATI

DESCRIZIONE/DESCRIPTION: 1°ST. 6 FORI	DATA/DATE: 02/01/2002	N°. DISEGNO/N°.DRAWING: 25001
MATERIALE/MATERIAL: ARTICOLI COMPLETI	SCALA/SCALE: 1:1	COD. 010999925001
TRATTAMENTO TERMICO/HEAT - TREATING: -	PESO FINITO kg./ FORM.: 823.86 A3	LAVORAZIONI INDUSTRIALI S.p.A. Genova - Bolzoneto - ITALY
RIVESTIMENTO PROTETTIVO/PROTECTIVE PLATING: CROMATURA SATINATA	CONTROLLO/CONTROLLER: L. PASTORINO	
TOLLERANZE GENERALI ISO 2768-fine SALVO SPECIFICHE INDICAZIONI	GRADO DI FINITURA DOVE NON INDICATO	DISEGNATORE/DRAUGHTSMAN: T. PIBERNIK

REV.	DATA/DATE	DESCRIZIONE REVISIONE/DESCRIPTION REVISION
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ADDENDUM

Low Pressure Air Supply Additional Components

Pressure Relief Valve

Manufactured by: Undersea - Verwood

In order to release any overpressure when the regulator is not fitted with a conventional second stage regulator (breathing), a pressure relief valve is fitted.

The safety valve can be set to release over pressure within the range 0 – 10 bars by turning the adjuster inside the body of the valve; anticlockwise to reduce the setting, clockwise to increase it. The valve should be set to 10% above the desired release pressure as Follows:

Set the intermediate pressure of the regulator to the required relief pressure. Adjust the safety valve until it leaks by turning the adjuster anticlockwise, and then turn the adjuster clockwise until the leak just stops. The safety valve is now set. Readjust the regulator to its normal working pressure.

Note: If after adjustment the safety valve leaks at the normal working pressure, replace the complete safety valve.

Bleed Valve

Manufactured by: Undersea - Verwood

High Pressure Gauge

Manufactured by: Varies

Pressure range 0 – 400 bar.
Adaptor 3/8” UNF Male to ¼” NPT Female

Note: These Items are considered non-serviceable; each should be replaced as an individual unit should any or all become worn or unserviceable.