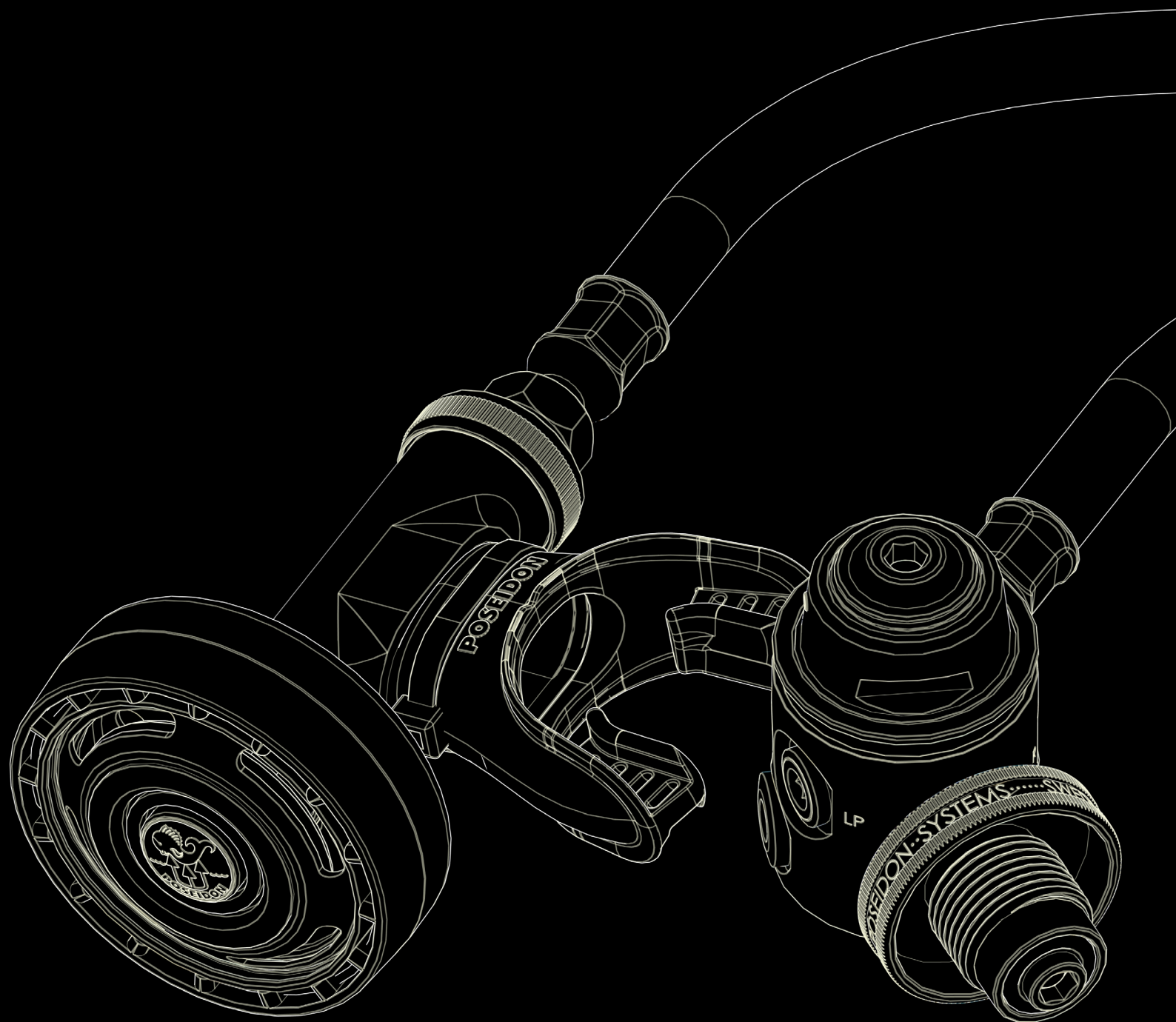


# CYKLON 5000 ART. NMBR 2950

SERVICE MANUAL V1.0



# CYKLON 5000 - Article number 2950



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## IMPORTANT

This manual contains preliminary servicing instructions for the Poseidon breathing regulators. It is intended to serve as a guide for repairs and servicing carried out by Poseidon Diving Systems. The instructions given in this manual are based on the assumption that special tools are used and are based on our experience. The work should be done in the same order as shown in these instructions.

## TYPE DESIGNATIONS

In all correspondence concerning breathing regulators, indicate the type designation and serial number. All products in this servicemanual that requires a CE-approval are of course CE-approved. CE approval represents only a minimum level of product quality and manufacturing standards. At Poseidon we put each new addition through rigorous testing procedures ourselves. This is the only proper method to ensure that your equipment will live up to our claims.

## CLEANING

If corrosion or salt deposits occurs, place all metal parts in concentrated Hempocid\* or 15% Hydrochloric acid for about 10 minutes. If available, all metal parts can be placed in an ultrasonic washer and cleaned in accordance with the instructions of the cleaning solution used.

Then, rinse the parts thoroughly and blow dry with air. The synthetic parts in the second stage must not be treated with solvent. They shall be cleaned in freshwater only.

*\*Hempocid = Acid Liquid Detergent Containing phosphoric acid (5 - 10%) and bactericid for disinfectant cleaning.*

## LUBRICANTS USED

The following lubricant/oil are used:

**Regulator Lubricant:** Art no 8516

**Oil:** Silicon oil Art no 3139

## SERVICE KITS

The following service kits should be used:

**Second stage No. 1133, 3224, 3354, 3354 M, 3536 :** Service kit no. 3551

**First stage No. 3257, 3585:** Service kit no. 3891

**FUNCTION**

POSEIDON breathing regulator is a two-stage regulator where the first stage is a diaphragm-actuated reducing valve, which reduces the primary pressure (Cylinder pressure) to approx. 167 PSI/11,5 BAR. The reduced pressure (the secondary pressure) then goes via the regulator hose to the second stage where the air supply is automatically regulated to the convenience of the diver.

The first-stage always holds the adjusted pressure above the ambient pressure which is necessary to the function of the breathing regulator. This is brought about, the outer springloaded diaphragm being in contact with the ambient pressure. It automatically responds to this pressure acting it and thereby regulates all changes in pressure.

During diving in cold water, i.e, temperatures lower than +10°C (+50°Fahrenheit ), the outer spring housing of the first stage may be provided with an anti-freeze cap in order to prevent direct contact with the water. This is necessary as the considerable cooling that takes place when the primary air expands in the secondary chamber can otherwise cause ice to form and thereby prevent the springs and diaphragm from functioning.

The second-stage functions in such a way that the underpressure created in the regulator housing during each inhalation influences a diaphragm actuated valve system, which will supply the necessary air as long as the inhalation phase lasts. The automatic pressure compensation takes place in the same way as in the first stage, the outer diaphragm surface being in direct contact with ambient pressure, and the pressure on the inside of the diaphragm must correspond to ambient pressure before the diaphragm can return to its position. The diaphragm returns to its rest position and shuts off the air flowing in as soon as the inhalation phase has been broken off and the air pressure in the regulator housing has become equal to ambient pressure.

The second stage has been provided with an ejector system for the purpose of keeping inhalation effort to a minimum.


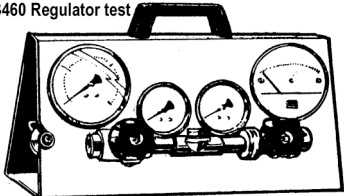
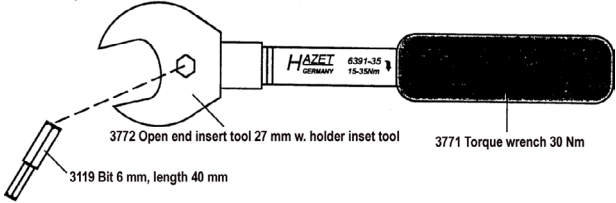
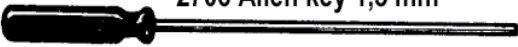
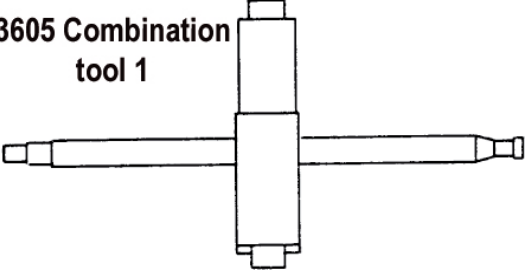
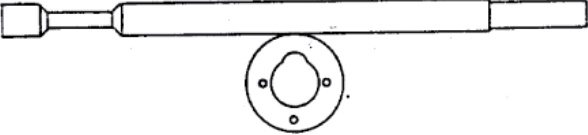
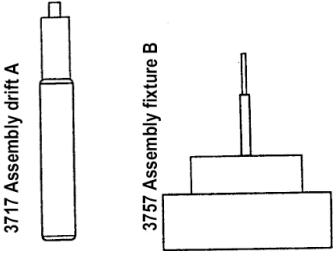
During the exhalation phase, the exhaled air goes out through the exhalation diaphragm on the opposite side of the inhalation diaphragm into the ambient medium. The exhalation diaphragm closes automatically when exhalation stops. Also, the exhalation diaphragm regulates the necessary pressure compensation by closing when the ambient pressure is equal. The special construction of the exhalation section of the regulator has been designed to obtain high capacity with low exhalation effort.

The second stage has a built in purge button, for manual purging.

**TOOLS**

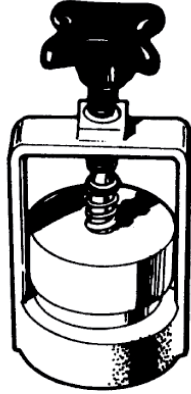

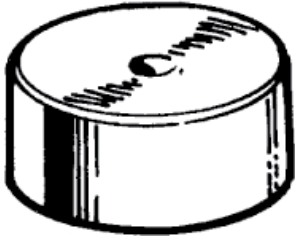

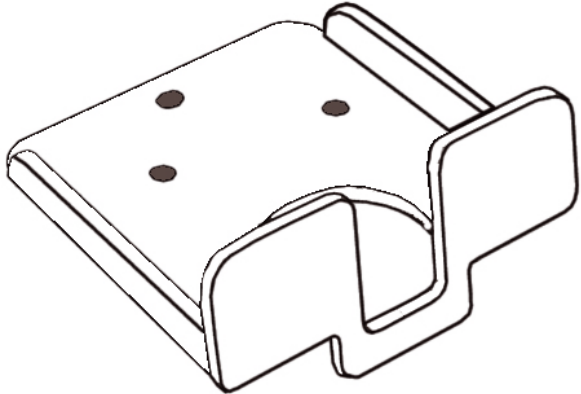
To service Poseidon Cyklon regulators, a mix of standard tools and specific Poseidon special tools are needed. The list below shows what specific Poseidon tools and what standard tools are needed.

**Poseidon specific tools**

Article nمبر.	Description	Picture
2297	O-ring remover	<p><b>2297 O-ring remover</b></p> 
3460	Regulator test	<p>3460 Regulator test</p> 
3773	Torque wrench set	<p>3773 Torque wrench set, incl 3771, 3772, 3119</p>  <p>3772 Open end insert tool 27 mm w. holder inset tool      3771 Torque wrench 30 Nm 3119 Bit 6 mm, length 40 mm</p>
2706	Allen key 1,5 mm	<p><b>2706 Allen key 1,5 mm</b></p> 
3605	Combination tool 1	<p><b>3605 Combination tool 1</b></p> 
3606	Combination tool 2	<p><b>3606 Combination tool 2</b></p> 
3879	Tool kit	<p>3879 Tool kit first stage</p>  <p>3717 Assembly drift A      3757 Assembly fixture B</p>

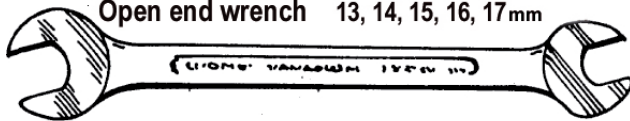

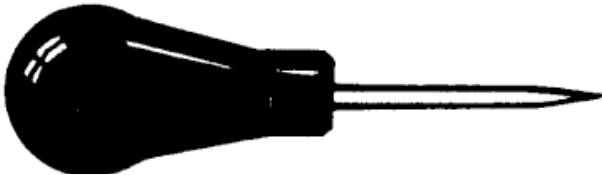

**TOOLS**

Poseidon specific tools continues.

Article nمبر.	Description	Picture
2112	Assembly tool	<p style="text-align: center;">2112 Assembly tool</p> 
2299	Drift	<p style="text-align: center;">2299 Drift for LP-valve</p> 
3138	Holder for drift	<p style="text-align: center;">3138 Holder for 2299</p> 
8516	Regulator lubricant	<p style="text-align: center;">8516 Regulator grease</p> 
3397 10	Fixture for first stages	

**TOOLS**

**Standard tools**

Article nمبر.	Description	Picture
	Open end wrenches	 <p>Open end wrench 13, 14, 15, 16, 17mm</p>
	Screwdriver, flat	
	Awl	
	Allen keys, 4, 5, 6 mm	

**CYKLON 5000**

**Art No 2950**

**BREATHING REGULATOR**

Primary pressure.....Max 4351 PSI / 300 BAR  
 Secondary pressure.....Max 174 PSI/ 12 BAR  
 Airflow.....Approximately 1050l/min  
 Inhalation resistance at 115 l/min.....Max. 40 mm of water  
 Exhalation resistance.....Max. 20 mm of water  
*The above data apply when measuring at atmospheric pressure*

**FIRST STAGE VALVE**

**Art No 3257, 3585**

Description.....Diaphragm-actuated, balanced.  
 Connection threads for primary pressure.....G5/8-max 4350 PSI/300 bar accord.  
 SS 2600/K and DIN 477/5 or  
 yoke connection accord. SS 2603  
 and ANSI/CGA VI: 1987

Outlet connections:

One outlet marked R for second stage (max airflow).....UNF 3/8" - secondary pressure  
 Three outlets marked LP for drysuits, buoyancy  
 compensators, safety second stage etc.....UNF 3/8" -secondary pressure  
 drysuits, buoyancy compensators, Octopus, etc .....UNF 3/8" -secondary pressure  
 One outlet marked HP.....UNF 7/16"-primary pressure  
 One outlet marked S has restricted airflow  
 and therefore is intended only for dry-suit or stabjacket .....Intended for first stage No. 3585  
 UNF 3/8" -secondary pressure  
 One outlet marked HP for pressure gauge.....UNF 7/16" -primary pressure

**SECOND STAGE VALVE**

**Art No 1133, 3224, 3354, 3354 M, 3536**

Description.....Downstream type, diaphragm actuated.  
 Integral safety valve opens at  
 approximately 203 PSI / 14 bar.  
 Purge button for clearing.

**REGULATOR HOSE**

**Art No 2946**

Length.....28 inch / 70 cm

**TIGHTENING TORQUE**

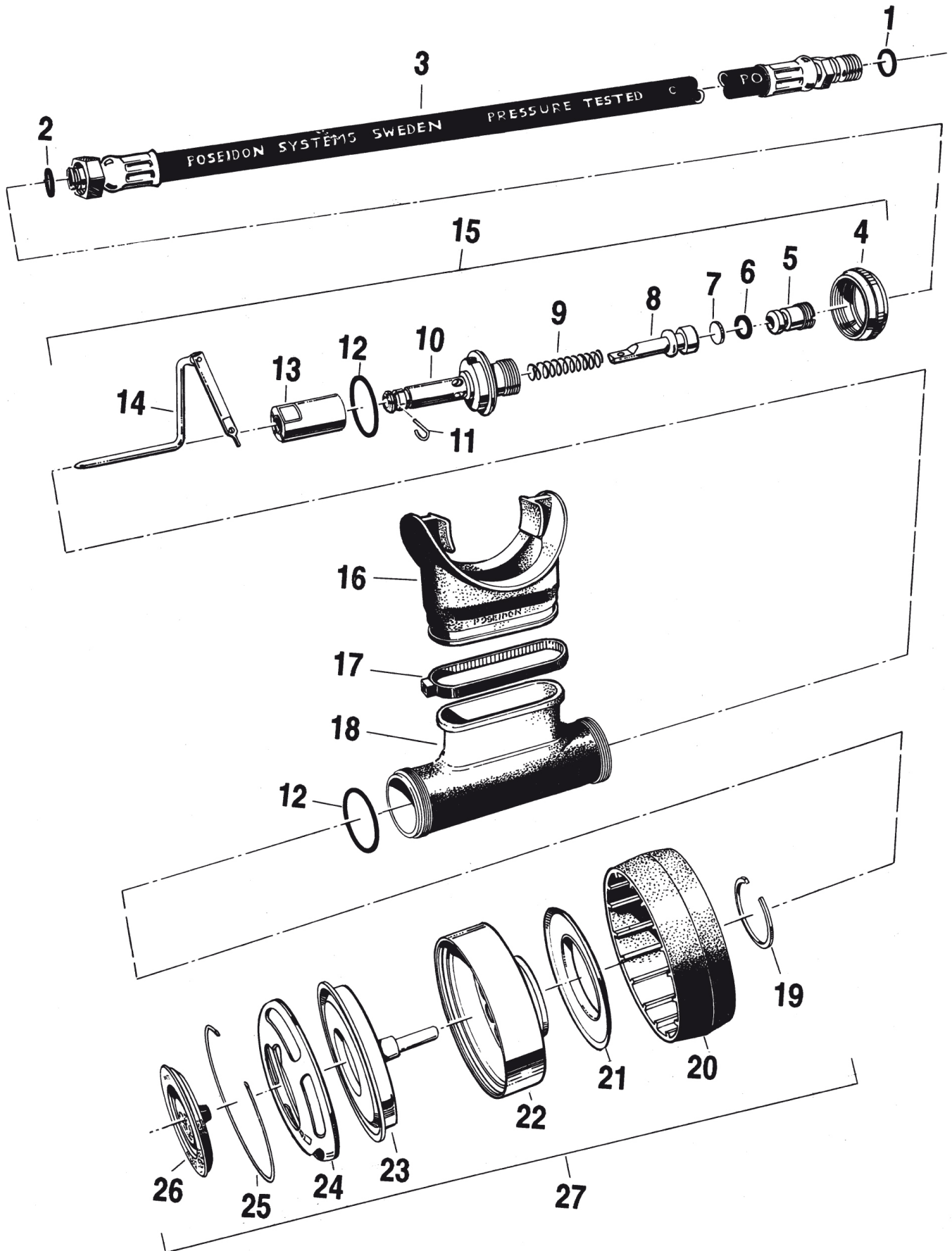
Primary DIN connection.....20-22 lbf.ft / 28-30 Nm  
 Valve cover.....20-22 lbf.ft / 28-30 Nm  
 Connections marked LP-HP.....6 lbf.ft / 8 Nm

**ANTI-FREEZE PROTECTION**

**Art No 1286**

Type .....Rubber cap

Exploded view: 2nd stage 1133, 3354, 3354 M, 3536 - Cyklon 5000 / Diveair

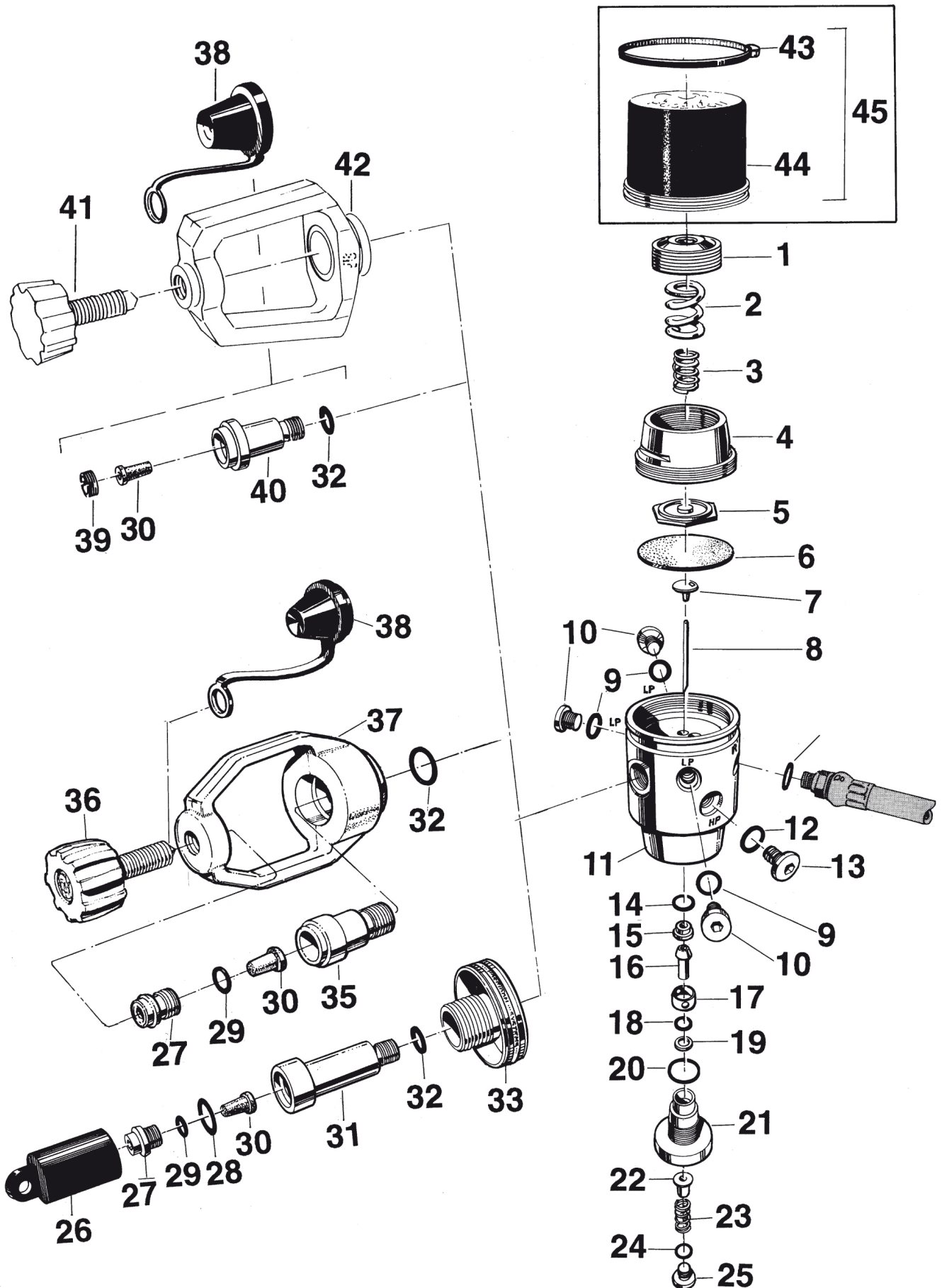


**Parts list: 2nd stage 1133, 3354, 3354 M, 3536 - Cyklon 5000 / Diveair**

Art. Nbr.	Description
1	0010-353 (2782) O-ring
2	0010-009 (1156) O-ring
3	2946 LP hose 70 cm Cyklon UNF 3/8"
	2947 LP hose 90 cm Cyklon UNF 3/8"
4	1166 Locking nut
5	1165 Valve seat
6	0010-347 (1164) O-ring
7	1162 Rubber plate
8	2429 Valve piston
9	1157 Pressure spring
10	1163 Valve housing
11	1155 Lever pin
12	0010-025 (1145) O-ring
13	2307 Ejector sleeve
14	1151 Control lever
15	1150 LP valve, complete (5-14)
16	3202 Mouthpiece**
17	1167 Locking strap
18	3200 10 Mouthpiece tube, black w. logo
	3200 30 Mouthpiece tube, yellow w. logo
	1146 Mouthpiece tube, metal
19	1144 Locking ring
20	1999 10 Cover for exhale diaphragm, black
	1999 30 Cover for exhale diaphragm, Yellow
21	2579 Exhalation diaphragm, Silicone
22	1141 membrane housing
23	2577 Inhalation diaphragm
24	2001 Inhalation cover
	2001 77 Inhalation cover, Cyklon Metal**
25	1140 Locking ring
26	2004 Purge button
27	2000 10 Diaphragm housing compl. Black (19-26)
	2000 30 Diaphragm housing compl. Yellow (19-26)
	2000 77 Diaphragm housing compl. Metal (19-26)**

\*\*No longer available as a spare part

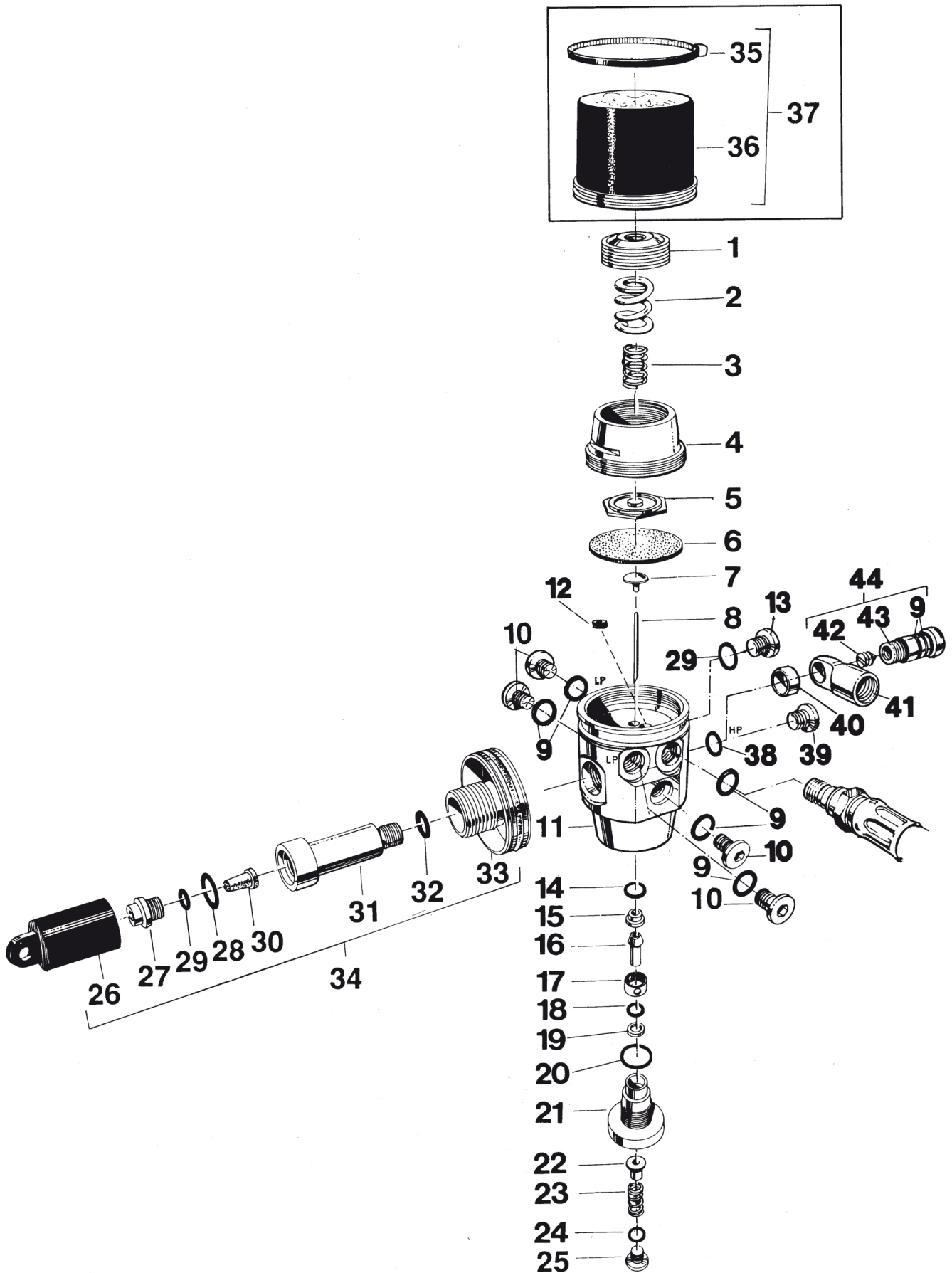
**Exploded view: 1st stage 3257 / 3257 10 - Cyklon 5000 / Diveair**



**Parts list: 1st stage 3257 / 3257 10 - Cyklon 5000 / Diveair**

Art. Nbr.	Description	Art. Nbr.	Description		
1	3417	Adjusting screw	41	1227	Knob**
2	2802	Secondary spring	42	1841	Yoke**
3	3418	Inner secondary spring	43*	2778	Locking strap
4	2814	Cover for valve housing	44*	1287	Anti freeze cap
5	3419	Upper diaphragm centre	45*	1286	Anti freeze cap with locking strap
6	1189	Diaphragm			
7	2816	Diaphragm centre lower			*Accessories
8	2817	Valve needle			**No longer available as a spare part
9	0010-353	(2782) O-ring x 4			
10	2679	Blanking plug UNF 3/8" x 3			
11	3258	Valve housing, for 3257**			
12	0010-354	(2918) O-ring			
13	2680	Blanking plug UNF 7/16"			
14	0010-009	(1156) O-ring			
15	2803	Valve seat			
16	2820	Valve piston			
17	2821	Spacing sleeve			
18	0012-126	(1368) O-ring			
19	2822	Support washer			
20	0010-015	(2809) O-ring			
21	2823	Balanced housing**			
22	3388	Spring guidance			
23	3387	Pressure spring			
24	0010-010	(1562) O-ring			
25	2807	Blanking plug G 1/8"***			
26	2402	Protective cap for 1st stage			
27	3096	Locking screw			
28	0012-028	(1007) O-ring			
29	0010-006	(2656) O-ring			
30	1377	Cup filter			
31	2827	Connection stem, Cyklon			
32	0010-013	(1839) O-ring			
33	2828	Connection wheel G5/8"			
34	2966	Reconstruction set Jetstream (27-33)			
35	3472	Connection, Yoke			
36	2922	Yoke handle (New model)			
37	3473	A-clamp, Yoke.			
38	2277	1st stage cover, Yoke			
39	1183	Locking screw**			
40	2825	Connection**			

**Exploded view: 1st stage 3585 / 3585 10 - Cyklon 5000**



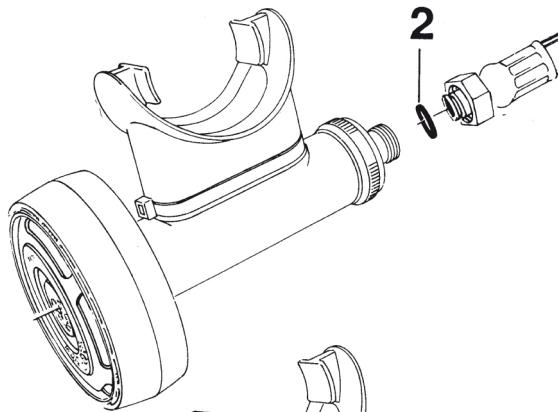
**Parts list: 1st stage 3585 / 3585 10 - Cyklon 5000**

Art. Nbr.	Description	Art. Nbr.	Description	
1	3417	Adjusting screw	41* 3293	Banjo housing
2	2802	Secondary spring	42* 1095	Throttle screw
3	3418	Inner secondary spring	43* 3292	Banjo screw
4	2814	Cover for valve housing	44* 3291	Swivel coupling 30 bar, UNF 7/16". Incl. 9, 38, 40-43
5	3419	Upper diaphragm centre		
6	1189	Diaphragm		
7	2816	Diaphragm centre lower		
8	2817	Valve needle		
9	0010-353	(2782) O-ring x 4		
10	2679	Blanking plug UNF 3/8" x 4		
11	3581	Valve housing, for 3585**		
12	3587	Restrictor screw for 1st stage 3585 Cyklon 5000		
13	3024	Blanking plug M7x1		
14	0010-009	(1156) O-ring		
15	2803	Valve seat		
16	2820	Valve piston		
17	2821	Spacing sleeve		
18	0012-126	(1368) O-ring		
19	2822	Support washer		
20	0010-015	(2809) O-ring		
21	2823	Balanced housing**		
22	3388	Spring guidance		
23	3387	Pressure spring		
24	0010-010	(1562) O-ring		
25	2807	Blanking plug G 1/8"***		
26	2402	Protective cap for 1st stage		
27	3096	Locking screw		
28	0012-028	(1007) O-ring		
29	0010-006	(2656) O-ring		
30	1377	Cup filter		
31	2827	Connection stem, Cyklon		
32	0010-013	(1839) O-ring		
33	2828	Connection wheel G5/8"		
34	2966	Reconstruction set Jetstream (27-33)		
35	2787	Locking strap*		
36	1287	Anti freeze cap		
37	1286	Anti freeze cap incl. 35-36*		
38	0010-354	(2918) O-ring		
39	2680	Blanking plug UNF 7/16"		
40	3294*	Spacer		

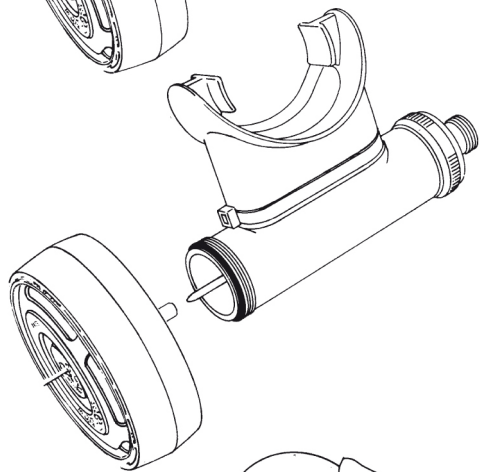
\*Accessories

\*\*No longer available as a spare part

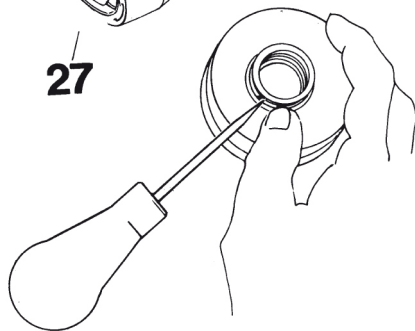
**DISASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**



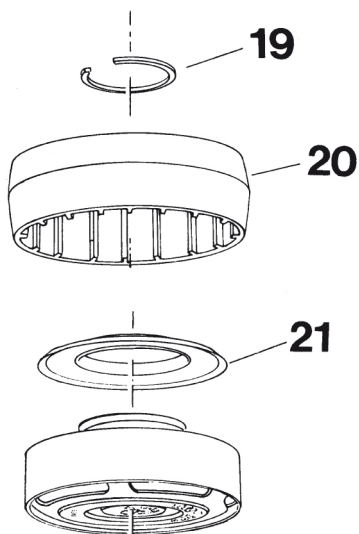
Disconnect the low pressure hose from the second stage with a 17 mm. open wrench. Remove the oring (2) with an o-rings remover.



Remove the diaphragm housing (27) from the mouth piece tube.

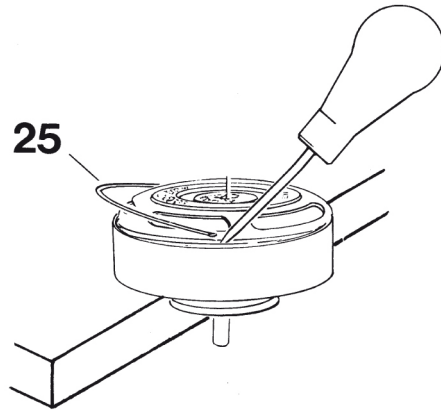


To release the exhalation cover, remove the locking ring with a small screwdriver.

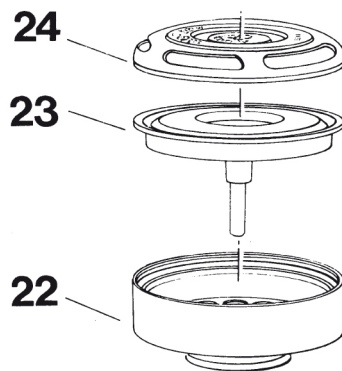


Remove the exhalation diaphragm (21).

**DISASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**

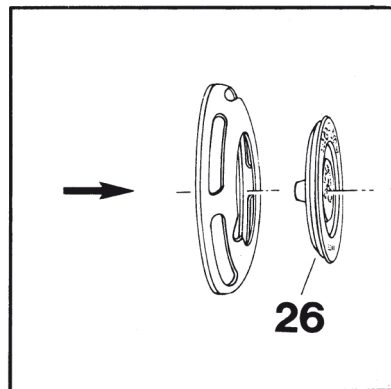


Remove the locking ring (25) with an awl. Support the diaphragm house, see diagram. Make sure that the sealing surface for the exhalation diaphragm is not damaged.

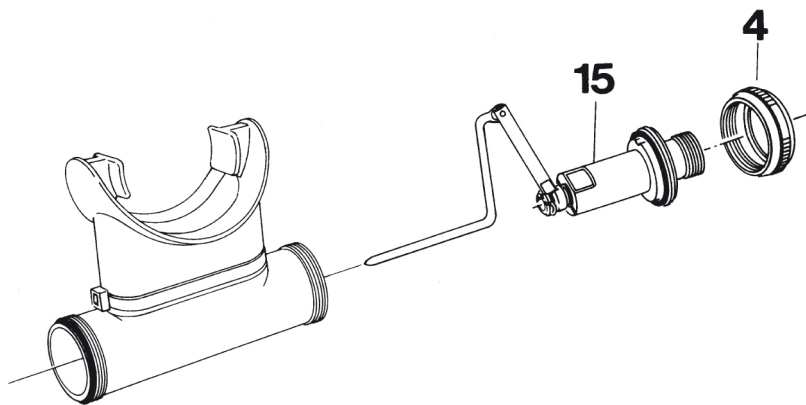


Remove the cover (24) and the inhalation diaphragm (23).

**Removal:** Push out the purge button

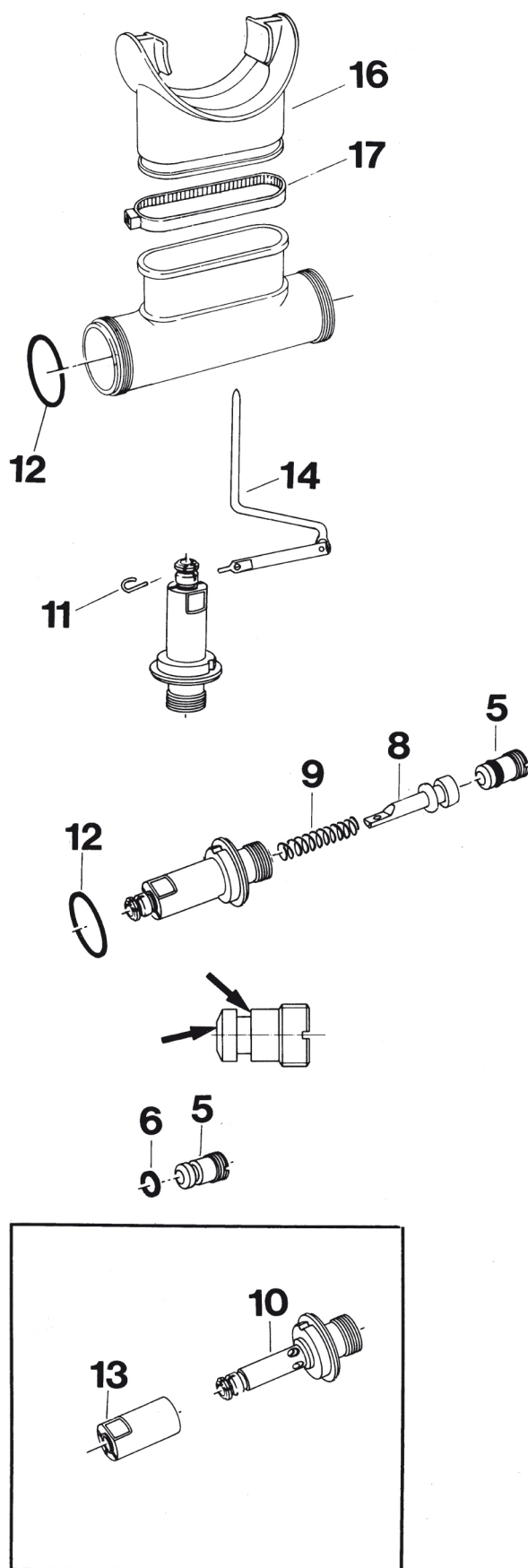


**IMPORTANT!** The purge button (26) should not be removed if it is undamaged



Remove the connecting ring (4) and the low pressure valve (15).

**DISASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**



Cut off the locking strap (17) with cutting pliers.

Remove the mouth-piece (16) and the o-ring (12).

Remove the lever pin (11).

Remove the operating device (14).

Remove the o-ring (12).

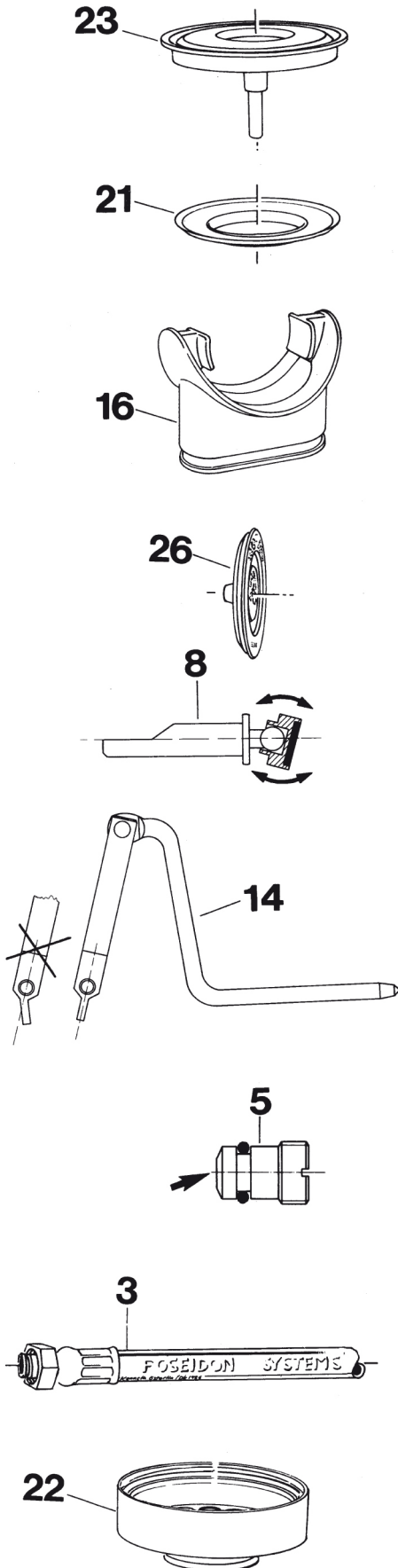
Unscrew the valve seat (5) with an 8.5 mm screwdriver. **NOTE!** the valve seat has a very fragile sealing edge; put the seat with the edge upwards.

Remove the valve piston (8) and the spring (9). In order to protect the piston bond, the old rubber plate should be kept until the new shall be fixed.

Remove the o-ring (6) with an oring remover. Make sure the sealing surfaces are not damaged.

**IMPORTANT!** The ejector sleeve should not be removed if it is functional and undamaged. Check to see that the sleeve can be rotated to any position, but that it does not rotate freely.

**DISASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**



When servicing the regulator the following parts should be replaced:

- All o-rings, including the one in the low-pressure hose.
- Rubber plate.

**CLEANING:**

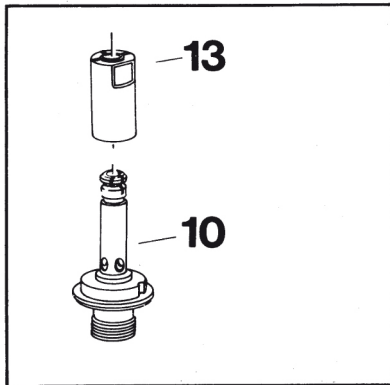
If corrosion or salt deposits occurs, place all metal parts in an ultra-sonic washer or in 15% Hydrochloric acid solution for about 10 minutes. Then, rinse the parts thoroughly and blow dry with air. The synthetic parts in the second stage must not be treated with solvent. They shall be cleaned in freshwater only.

*\*Hempocid = Acid Liquid Detergent Containing phosphoric acid (5 - 10%) and bactericid for disinfectant cleaning.*

**BEFORE INSTALLING CHECK THE FOLLOWING:**

- Diaphragms (21) (23). Check the sealing surface of the diaphragm to see if it is even and uncracked.
- The mouth-piece (16). Make sure that there are no cracks.
- The purge button (26). Make sure there are no cracks.
- Valve piston (8). Ensure that the ball joint is working correctly by manipulating and rotating the joint.
- Operating device (14). Make sure that the joint articulates smoothly. Important: The operating device must be replaced, if the lever tab is bent. The tab should not be straightened, as this would weaken it and make subsequent failure possible.
- Valve seat (5). Check to make sure the sealing surfaces are undamaged.
- Low pressure hose (3). Check to make sure that the sealing surface is undamaged, and that the rubber does not show any flaws.
- Diaphragm housing (22). Make sure that the sealing surfaces are free from defects and that the track for the inhalation diaphragm is absolutely clean and free from lubricant.



**ASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**



**Assembly:**

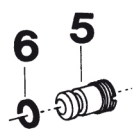
*This step is only performed if the ejector sleeve has been removed.*  
 Install the ejector sleeve (13) on the valve housing (10). Press the sleeve into the low pressure valve so the slits of the sleeve are exceedingly small.

**Lubricate:**

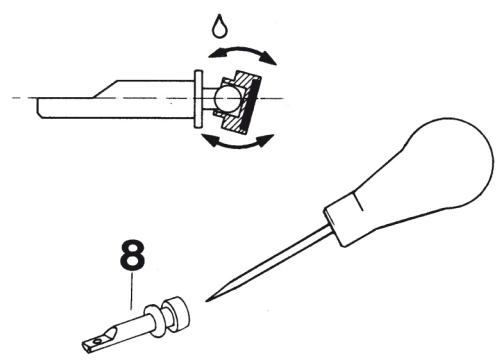
Grease:   
 Oil: 



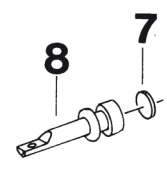
Install the o-ring (6) on the valve seat (5). Make sure that the sealing surface is not damaged.



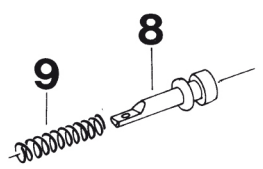
Lubricate the ball joint. Tilt the position head according to the figure to ensure that it rotates and articulates smoothly.



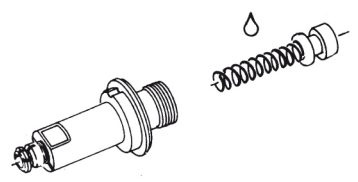
Remove the rubber plate (7) with an awl and make sure the sealings surface on the valve is clean. Install the new rubber plate.



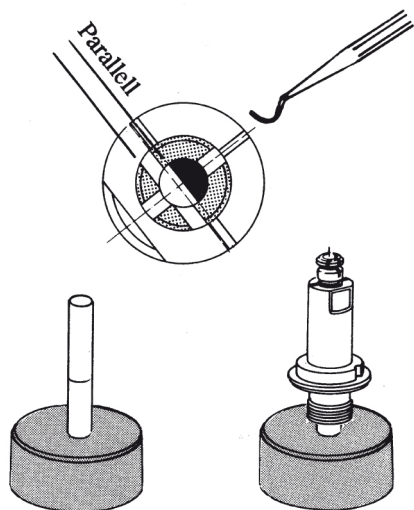
Put the spring (9) on the valve piston (8).  
 Lubricate the spring



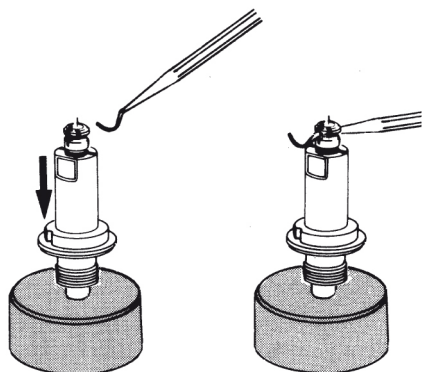
Install the valve piston/spring in the valve housing with the flat part of the valve piston upwards.



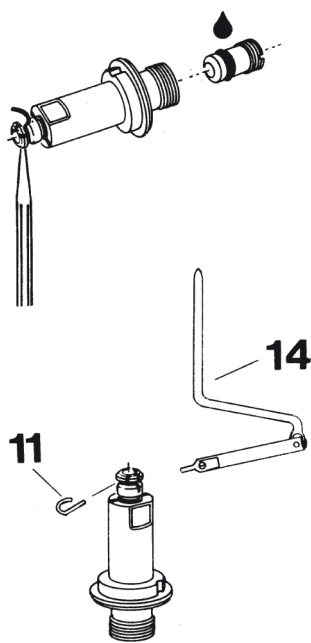
**ASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**



Place the valve housing on a drift seated on a block. Press the valve housing down, compressing the spring. Keep the flat part of the valve piston parallel with the horizontal slot in the end of the valve housing. Move the valve piston up and down a few times to check for freedom of movement.



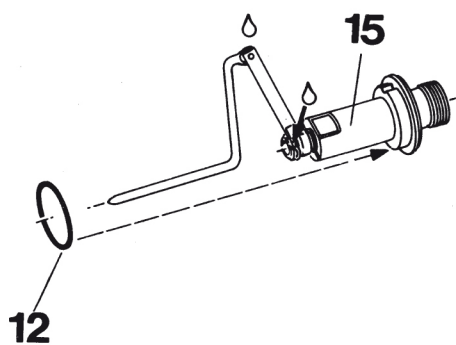
Press the valve housing down and slide an o-ring remover through the hole in the valve piston.



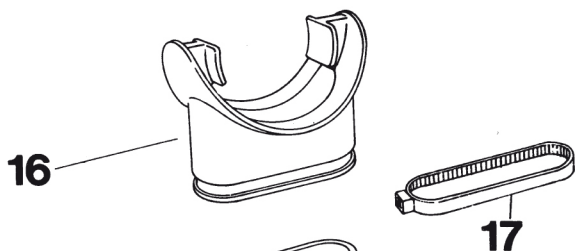
Lubricate the o-ring and the thread of the valve seat. Screw in the valve seat with an 8.5 mm screw driver until the o-ring remover comes loose.

Install the operating device (14). Insert the lever pin (11) through the slot, engaging the hole in the operating device. Rotate the lever pin 90 degrees to lock it in place.

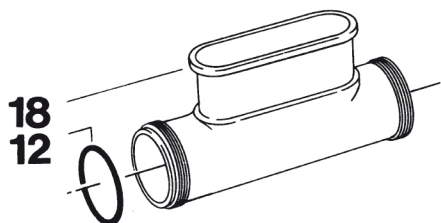
**ASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**



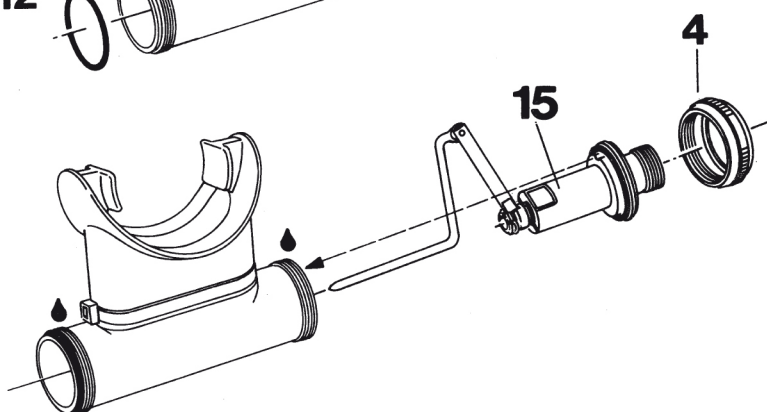
Install the o-ring (12). Lubricate. See diagram.



Install the mouth piece (16) and the plastic band (17). Tighten and cut off plasticband with a plier.

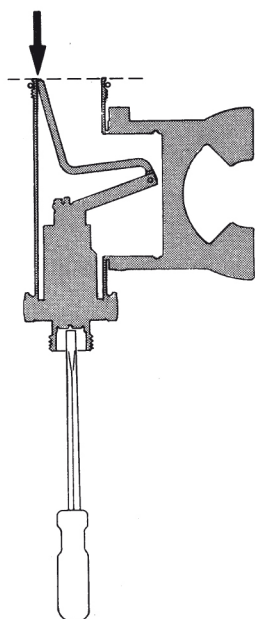


Install the o-ring (12)



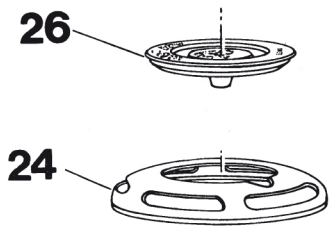
Lubricate the threads on the mouth piece

Install the low pressure valve (15) in the mouth piece tube. Set the indent notch at the top of the valve housing against the key at the top of the mouth piece tube. Screw on the connecting ring (4).

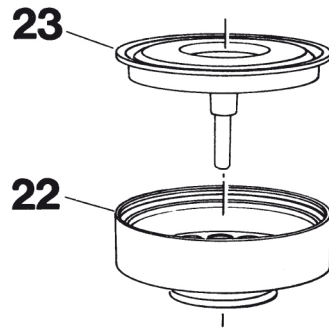


Screw the valve seat down until the highest part of the operating device is even with the level of the opening of the mouth piece tube. Hold the second stage valve vertically. See fig.

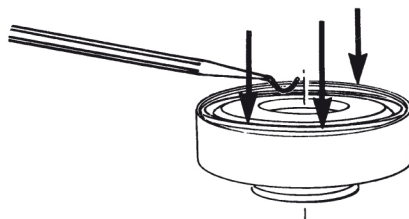
**ASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**



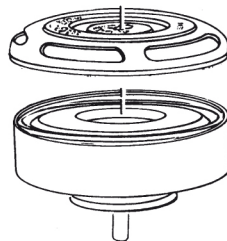
Install the purge button (26) in the cover (24). Screw the button in the cover-cavity



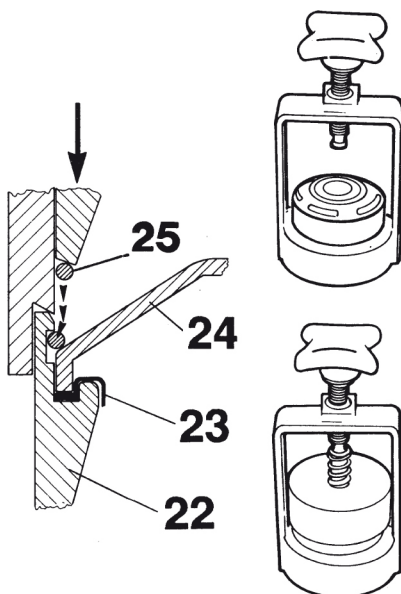
Install the inhalation diaphragm (23) on the diaphragm housing (22).



Seat the lip on the diaphragm into the recess on the inner rim of the diaphragm housing. Use an o-ring remover or other blunt pointed instrument.



Set the inhalation cover (24) on the diaphragm housing over the diaphragm.



Place the diaphragm housing complete with diaphragm and cover into the frame of the assembly tool.

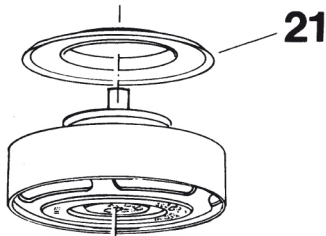
Insert the locking ring (25) into the upper groove of the press of the assembly tool. See diagram

Place the press on top on the diaphragm housing.

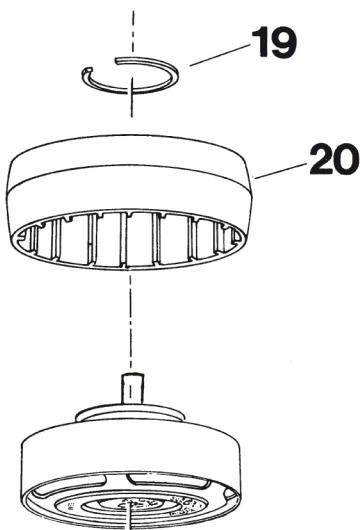
Turn the knob until you hear or feel a slight click. Continue turning until you encounter resistance, then back off the knob to release the housing.

Check the locking ring placement to make sure that it has completely entered the groove.

**ASSEMBLY - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**



Install the exhalation diaphragm (21) on the diaphragm housing. Make sure that the diaphragm is laying flat on the diaphragm housing.

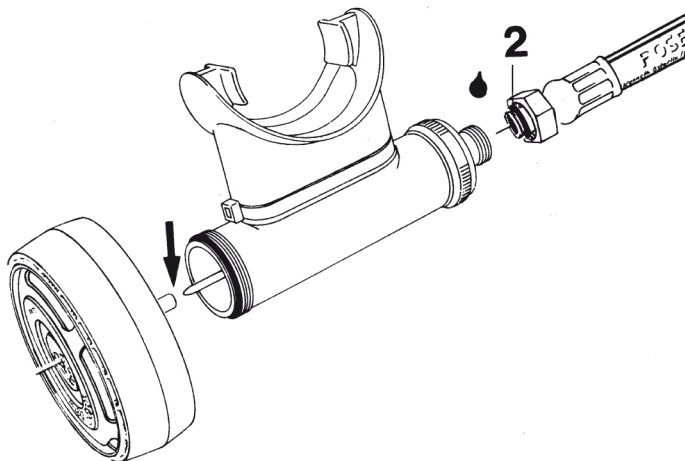


Install exhalation diaphragm cover (20) and locking ring (19).

Install the diaphragm housing on the mouthpiece tube. Be sure to slip the operating device into the diaphragm guide sleeve.

Checking the second stage for leaks: Place the mouth piece against your lips the low pressure hose correction with your thumb and inhale lightly. This will create a partial vacuum inside the second stage. If the pressure does not equalize in 5 seconds the second stage leaks.

See chapter Fault-tracing scheme.



Install the o-ring (2) on the LP hose and lubricate

Screw on the LP-hose. Do not tighten the connecting ring until after the function test.

**ADJUSTMENT - 2nd STAGE 1133, 3224, 3354, 3354 M, 3536**

Open the LP valve. Check the secondary pressure. It should be between 12 and 12.5 bar (174 - 181 psi). Max tank pressure should be used.

Check to make sure that the clearance between the control unit and the low pressure valve is approximately 1mm. See ill. A. If the clearance is too small, do not seal the second stage valve. If the clearance is too large, reduce the flow of air and the inhalation resistance will increase.

**Adjustment of the clearance:**

Close the LP valve, and empty the regulator completely by means of the purge button.

Unscrew and remove the low pressure hose from the second stage valve.

If the clearance is too small, screw the valve seat inwards (clockwise) using an 8.5 mm screwdriver. If the clearance is too large, screw the valve seat outwards (counterclockwise). NOTE that the adjustment torque is very sensitive, so you should screw carefully. The clearance can be checked only when the secondary pressure is between 10 and 12.5 bar. (145 - 181 psi)

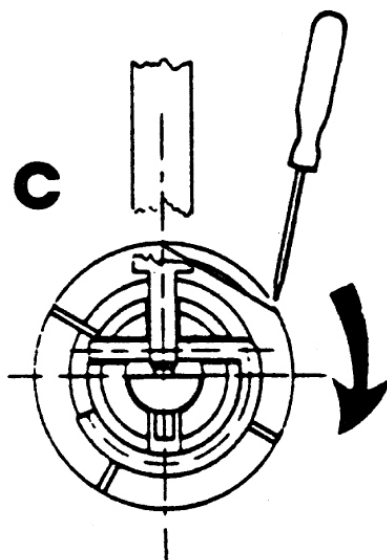
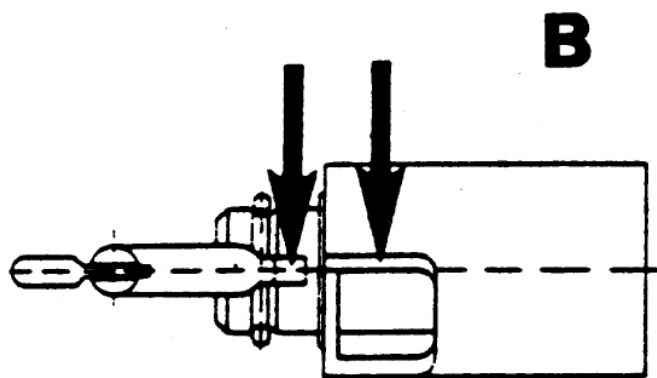
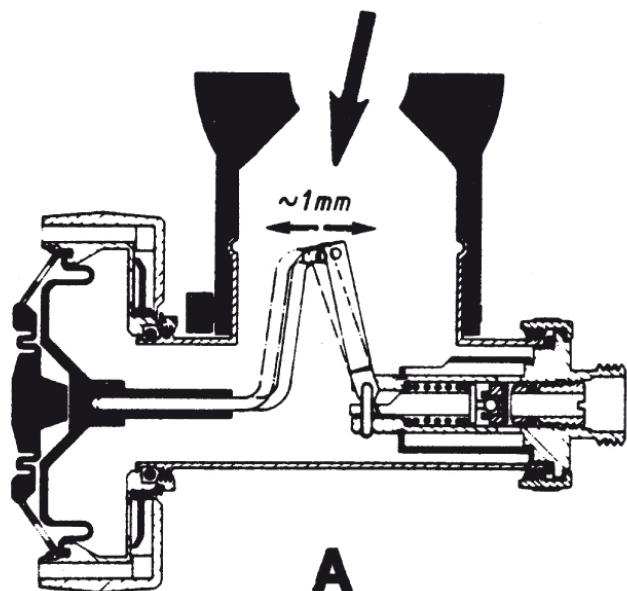
Fit the hose and open the LP valve. Check the clearance once again.

**Adjustment of ejector sleeve:**

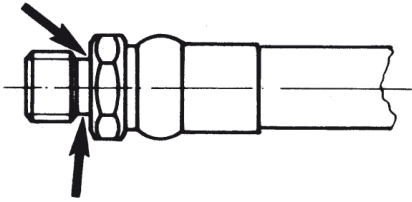
Open the HP valve.

Turn the ejector sleeve using a 3.5 mm screwdriver as shown in ill. B so that the edge of the hole is opposite the slit in the low pressure valve. See ill. C. Hold the second stage valve upright, press the button so that the valve will give a maximum flow of air, and then release the button. If the valve continues to blow itself, stop the air flow using your hand. Turn the ejector sleeve in the direction of the arrow, see ill. B, and make a new test using the button. The opening of the hole should be turned to face upwards as much as possible, that is, close to the limit where the valve blows itself. The regulator will then give a maximum flow of air and the inhalation resistance is minimal.

Close the HP valve and purge fully with the purge button. Tighten the nut moderately.



**DISASSEMBLY - 1st STAGE 3257, 3585**

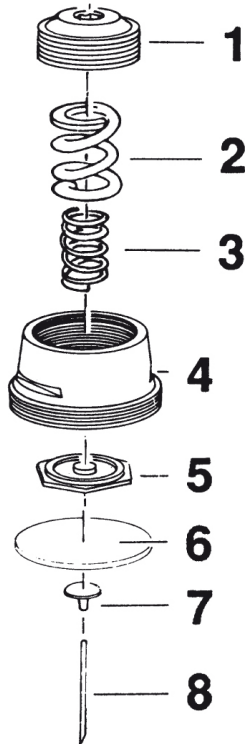
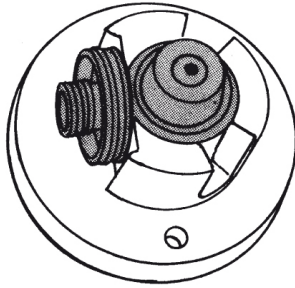


Disconnect the low pressure hose from the first stage valve using a 13 mm open end wrench.

Remove the o-ring from the low pressure hose. Make sure the sealing surfaces are not damaged.

**Removal:**

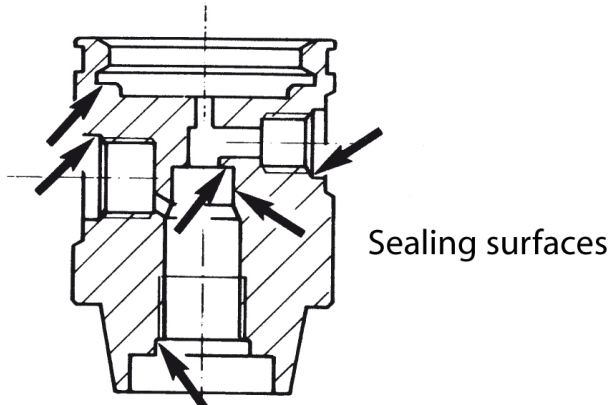
Place the first stage valve with the secondary side facing upwards in a fixture/vise. If you are using a vise, make sure not to damage the first stage housing.



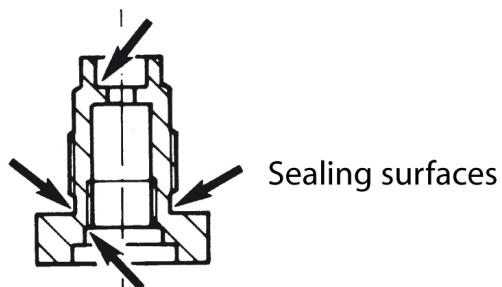
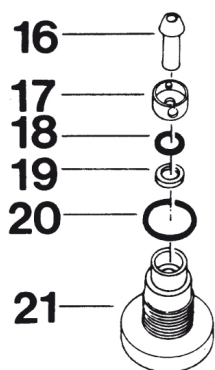
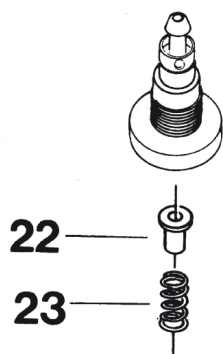
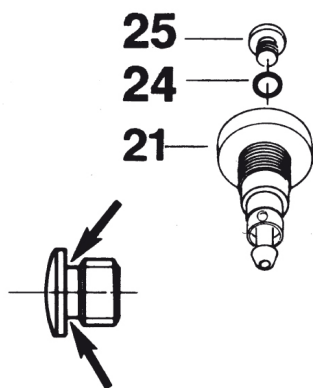
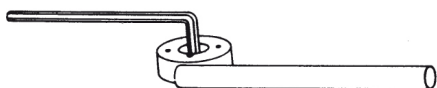
Remove the pressure adjusting screw (1) with a 6 mm Allen wrench and remove the spring (2) and (3).

Remove the cover (4) using a 27 mm crowsfoot and the upper diaphragm centre (5).

Remove the diaphragm (6). Make sure the sealing surface is not damaged. Remove the lower diaphragm centre (7) and the valve needle (8).



**DISASSEMBLY - 1st STAGE 3257, 3585**



**BALANCE HOUSING**

**Removal:**

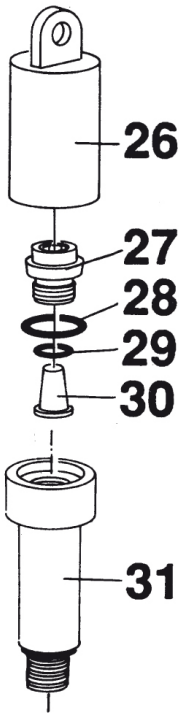
Place the first-stage valve with the balanced housing facing upwards.

Steady the balance housing with a special wrench. Then remove the blind screw (25) with a 5 mm Allen wrench. Remove the o-ring(24) with an o-ring remover. Remove the balance housing (21) with the special wrench.

Remove the spring (23) and the spring guidance (22).

Remove the valve piston (16) and the spacing sleeve (17). Remove the o-ring (18) with an o-ring remover. Remove the washer (19) and the o-ring (20). Use an o-ring remover for this also. Make sure the sealing surfaces are not damaged.

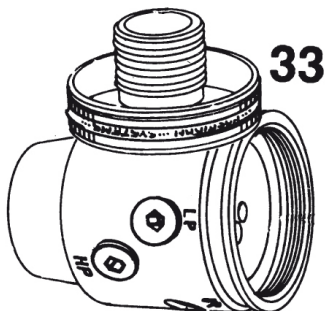
**DISASSEMBLY - 1st STAGE 3257, 3585**



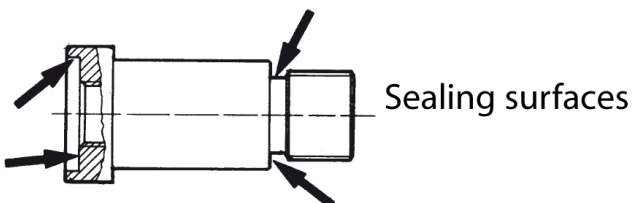
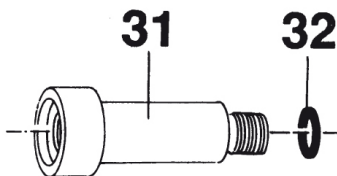
Remove the protective cap (26).

Remove the locking screw (27) with a 6 mm Allen wrench. Remove the o-ring (28) and the cupfilter (30).

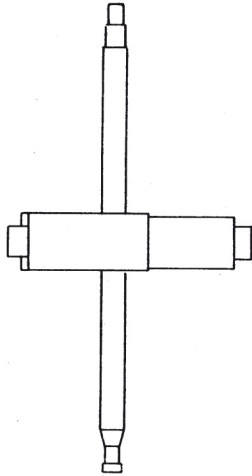
Place the first stage in the fixture. Remove the connecting (31) with a 6 mm Allen wrench.



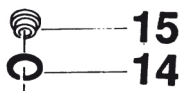
Remove the wheel (33) and the o-ring (32) with an o-ring remover. Make sure the sealing surfaces are not damaged.



**DISASSEMBLY - 1st STAGE 3257, 3585**

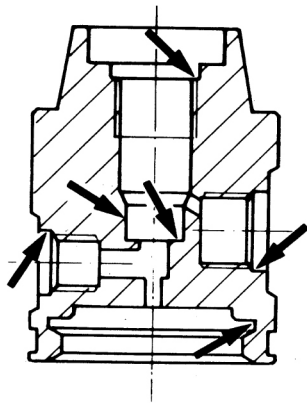
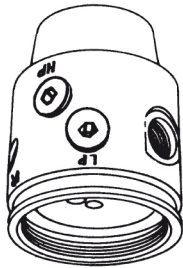


Remove the valve seat (15) with a valve seat remover.

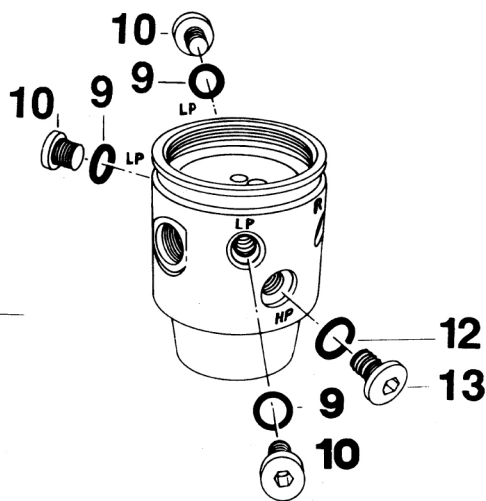


Remove the o-ring (14) with an o-ring remover. Make sure the sealing surface is not damaged.

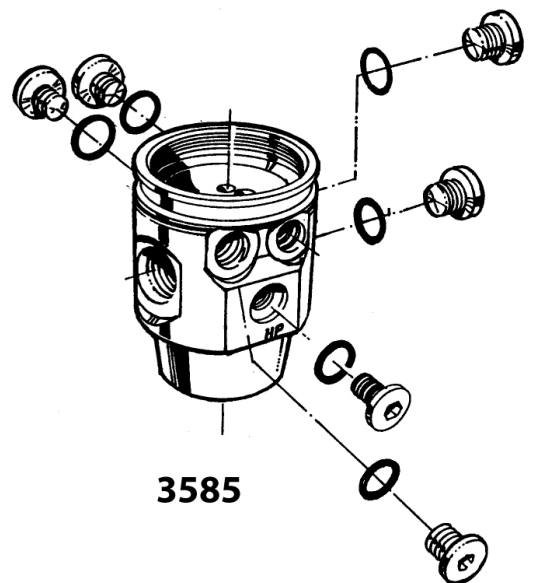
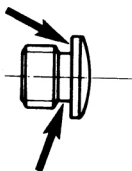
Remove the valve housing from the fixture.



Remove the blind screw (10 and 13) with a 5 mm and 3= Allen wrench. Remove the o-rings (9 and 12) with an o-ring remover. Make sure the sealing surfaces are not damaged.



Sealing surfaces

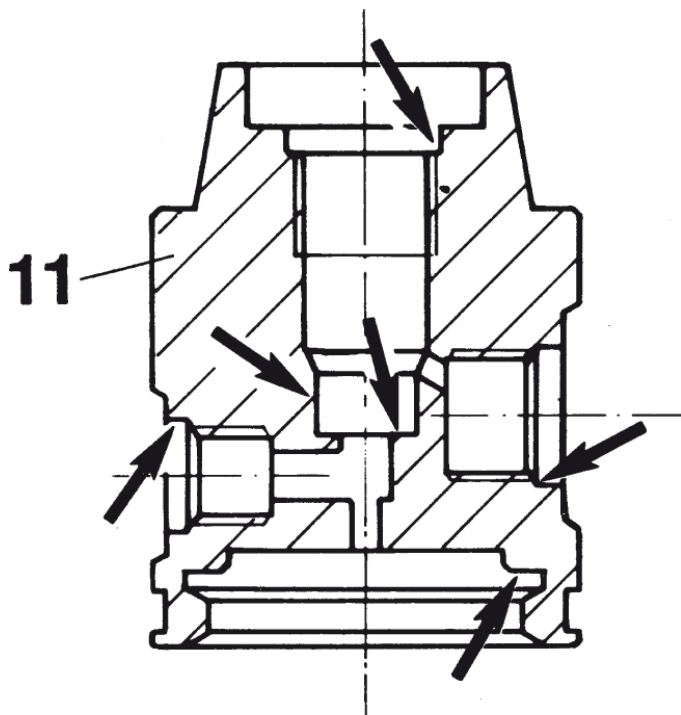
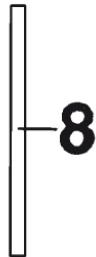


3585

**DISASSEMBLY - 1st STAGE 3257, 3585**

When servicing the regulator the following parts should be replaced:

1. All o-rings
2. Diaphragm
3. Cup filter
4. Valve seat
5. Washer



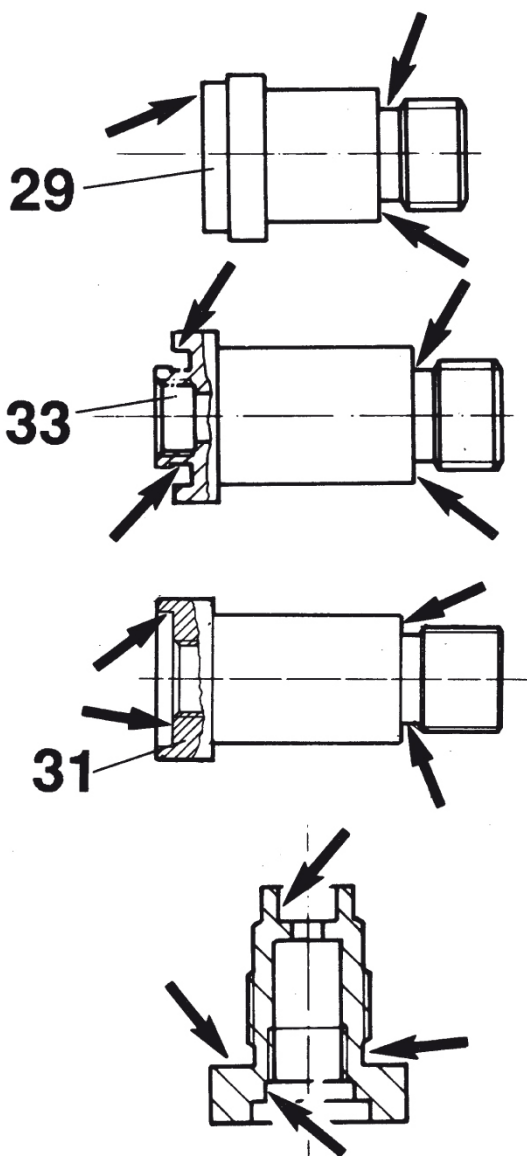
**CLEANING**

If corrosion or salt deposits occurs, place all metal parts in an ultra-sonuic washer or in a 15% Hydrochloric acid solution for about 10 minutes. Then, rince the parts thoroughly and blow dry with air. The synthetic parts in the second stage must not be treated with solvent. They shall be cleaned in freshwater only.

**CHECKING**

Check the following parts very carefully. Replace even if only slightly damaged.

- Valve needle (8). Check to make sure that the needle is straight.
- The blind screws (10 and 13). Check to make sure the sealing surfaces are undamaged. Also check that the threads are not damaged.
- The valve housing (11) Check to make sure the threads and also the sealing surfaces for the o-rings are undamaged.

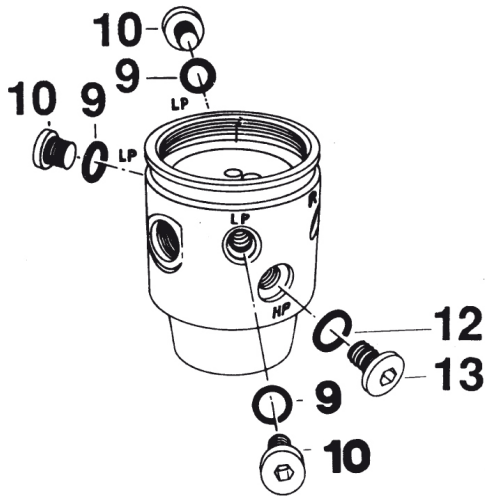
**DISASSEMBLY - 1st STAGE 3257, 3585**

- The connections (29,31 or 33). Check to make sure the sealing surfaces for the o-rings are undamaged.

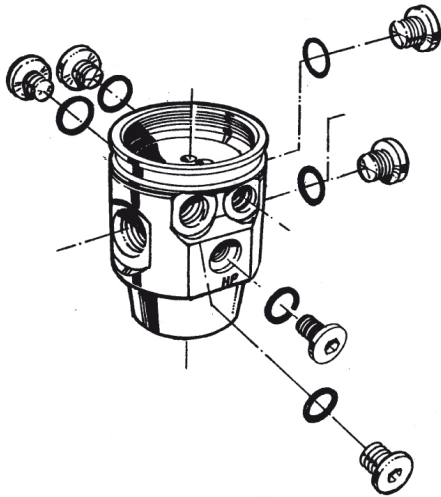
- 5. Balanced housing (21). Check to make sure the threads and also the sealing surfaces for the o-rings are undamaged.

**ASSEMBLY - 1st STAGE 3257, 3585**

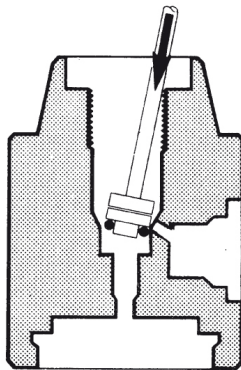
**ASSEMBLY**



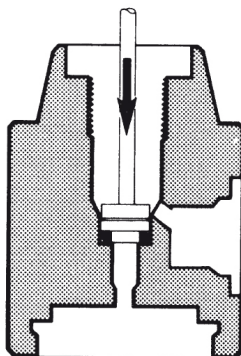
Install the o-rings (9) and (12) on the blind screws (10) and (13). Lubricate through the outlets.



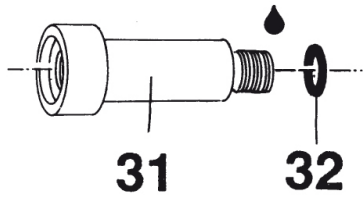
Screw in the blind screws in the LP- HP outlets. Use a 5 mm Allen wrench and tighten up by hand.



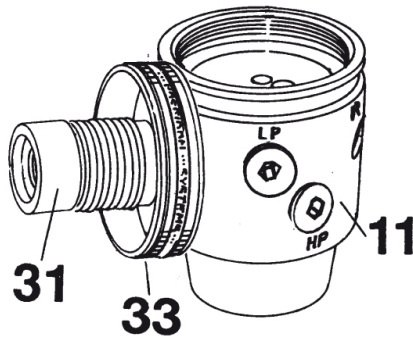
Install the o-ring (14) on the valve seat (12) and the install the valve seat with a seat drift. Press the drift diagonally as shown in the diagram and the "rock" it to the vertical while pressing down. The seat and o-ring should pop into place. This procedure avoids damage to the o-ring from the high pressure supply outlet.



**ASSEMBLY - 1st STAGE 3257, 3585**

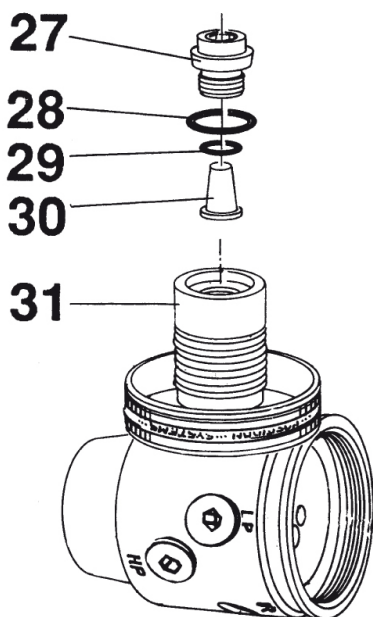


Install the o-ring (31) on the connection (30). Lubricate the o-ring and the thread.



Install the wheel (33) on the connection.

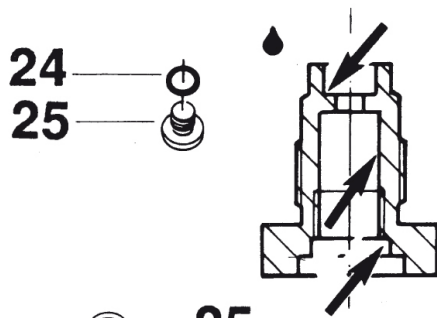
Screw the wheel connection assembly into, the valve housing assembly with a 6 mm Allen wrench.



Place the valve housing (11) in a fixture. Tighten with a torque wrench to 28 - 30 Nm (20-22 lbf.ft.).

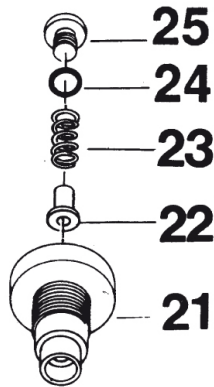
**IMPORTANT!** Use bits No 3119 (L = 40 mm). Put o-ring (29) on the cup type filter (30). Install these and o-ring (28) and the locking screw (27) in connection (31). Tighten with a Allen wrench 6 mm.

**ASSEMBLY - 1st STAGE 3257, 3585**

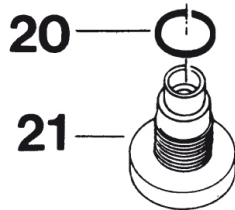


Install the o-ring (24) on the blind screw G 1/8" (25).

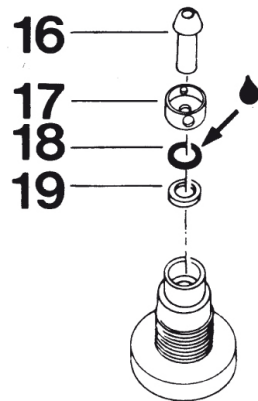
Grease the inside of balanced housing (21).



Install the spring guide (22) and the spring (23). Screw in the blind screw (11) with a 5 mm Allen wrench. The blind screw should be tightened while the balanced housing is held in the valve housing.



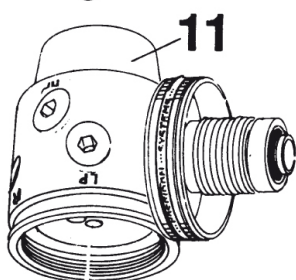
Install the o-ring (20) at the balanced housing .



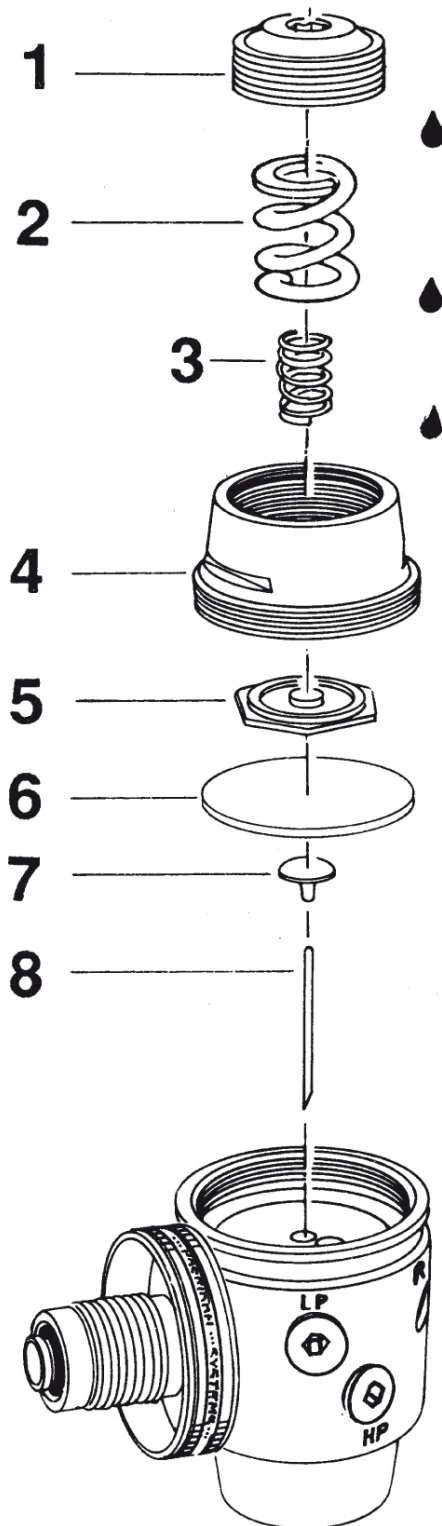
Install the washer (19) and the o-ring (18). Grease the inside of o-ring and the washer. Install the spacing sleeve (17) and the valve piston (16).



Install the balanced housing (21) in the valve housing (11) and tighten the blind screw with a 5 mm Allen wrench.



**ASSEMBLY - 1st STAGE 3257, 3585**



Turn the valve housing with the secondary side upwards.

Install the valve needle (8). At previous models the needle was beveled in one edge. The bevel should in these cases be pointed downwards.

Install the lower diaphragm centre (7) and the diaphragm (6), which must be pushed into the groove in the valve housing. Check to make sure that this is correctly installed by pressing it downwards. It should move approximately 2 mm (1/16").

Install the upper diaphragm centre (5).

Install the cover (4) and tighten with a torque wrench to 28 - 30 Nm. (20-22 lbf.ft).

Install the spring (2) and (3), lubricate both ends of the spring and the thread on pressure adjusting screw, and tighten 5 turns with a 6 mm Allen wrench.

Assembly completed.

## ADJUSTMENTS AND SETTINGS - 1st STAGE 3257, 3585

### Preparing the first stage for adjustment

Before starting the process of setting the intermediate pressure of the first stage, it's recommended that you do the following steps.

- Un-screw the adjustment screw to the point where there is no tension on the adjustment spring.
- Connect the first stage to a regulator test box.
- Open the left hand side valve (Low Pressure) on the regulator test box and check for leaks. The intermediate pressure gauge should show 0 bar/psi intermediate pressure.
- If no leaks are found, open the right hand side valve (high pressure) and check the intermediate pressure gauge. It should still show 0 bar/psi intermediate pressure.
- Allow the first stage to sit, under high pressure, for one minute.
- Then start turning the adjustment screw, so that there is an intermediate pressure shown on the intermediate pressure gauge.
- Turn off both valves on the regulator test box.
- Depressurize the regulator.

You are now ready for the next step: Setting the intermediate pressure.

### Setting the intermediate pressure

Connect the regulator to the test equipment.

Connect the regulator test low pressure gauge hose to one of the low pressure outlets.

Open the LP valve (=20 bar).

Set the secondary pressure at 10,5 bar / 152 psi, and intermittently purge the second stage by means of the purge button. NOTE that the second stage valve must be fully tight during this test. When the pressure gauge needle stops at the preset pressure, a maximum rise in pressure of 1 bar is allowed before the needle finally stops. Adjust the pressure to 11,5 bar/167 psi (the correct pressure) taking into account any rise in pressure. If the needle continues to move to a higher pressure reading there is a fault in the seal between the valve seat and piston, or the O-ring.

Close the LP valve, and open the HP valve (=200/300 bar - 2900/4350 psi). Purge intermittently with the purge button and check the intermediate pressure. It must not decrease or increase more than 1,5 bar. / 22 psi.

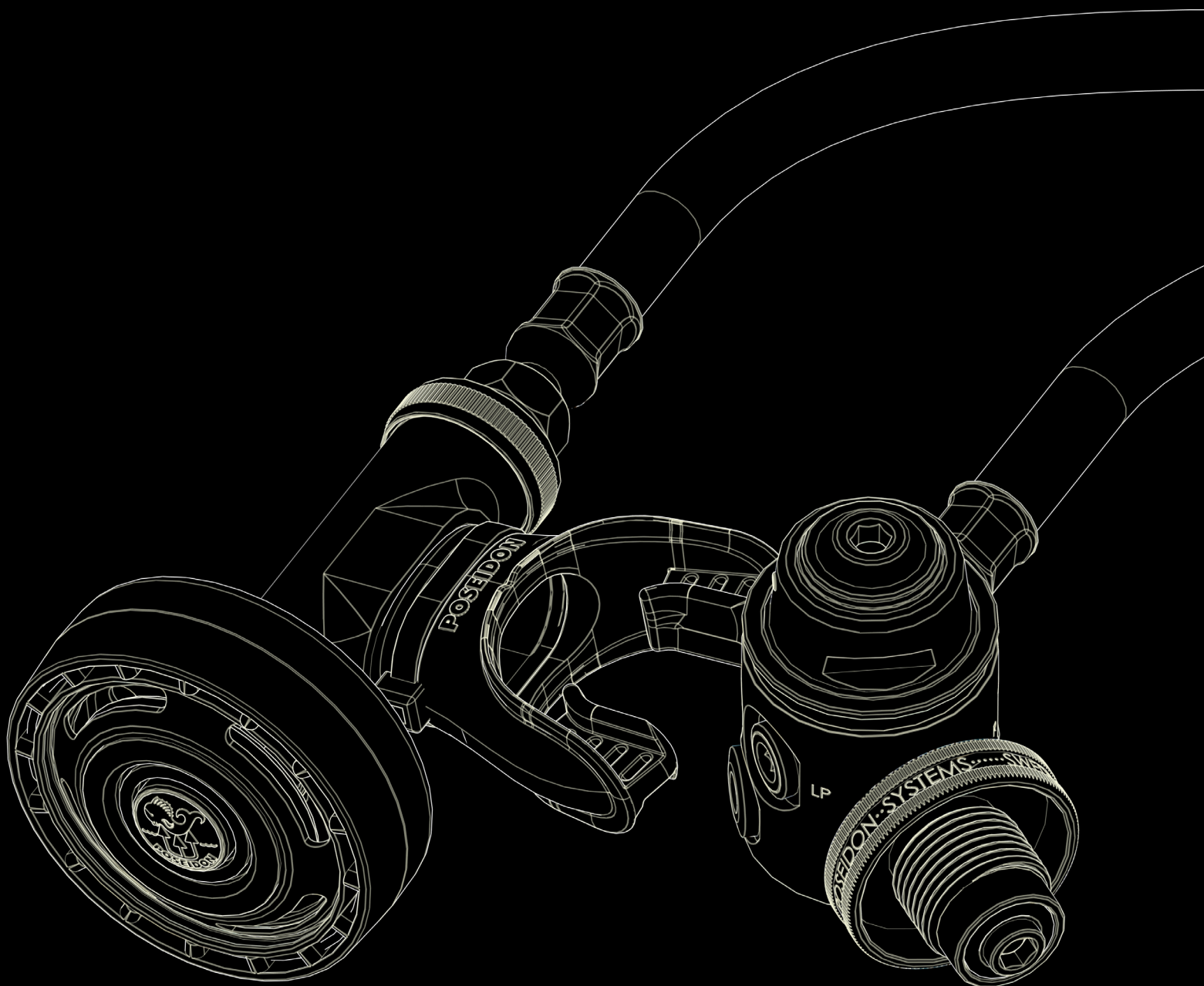
Close the HP valve and purge it fully.

The first stage intermediate pressure has now been set.

### Intermediate pressure quick reference table.

1st stage model	TANK PRESSURE		Notes
	20 bar	M.T.P*	
3257	11,5 bar / 167 psi	+/- 1,5 bar / 22 psi	Balanced 1st stage
3585	11,5 bar / 167 psi	+/- 1,5 bar / 22 psi	Balanced 1st stage

\* Max Tank Pressure = Full tank



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