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O-RING REFERENCE CHART

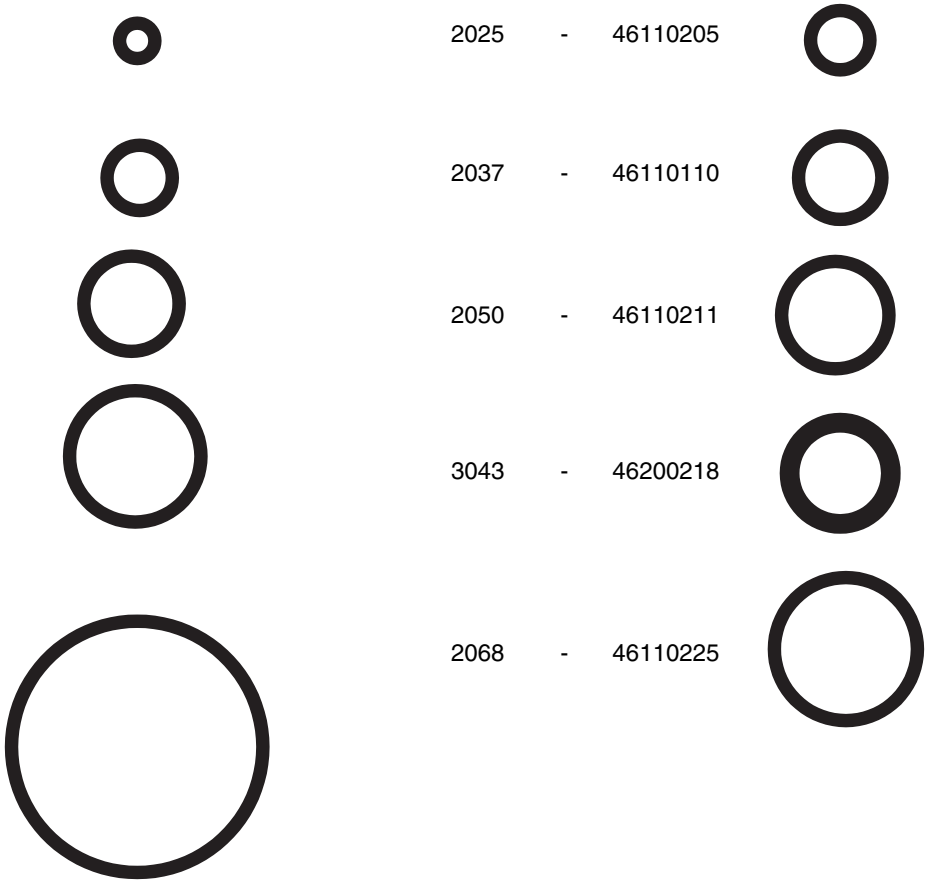
FIRST STAGES

O-RING TYPE - REFERENCE			O-RING TYPE - REFERENCE		
2012	-	46110101	2018	-	46110203
106	-	46110106	2031	-	46110107
108	-	46110108	2037	-	46110110
115	-	46110117	2043	-	46110215
2068	-	46110225	2050	-	46110211
2100	-	46110224	3118	-	46110176

O-RING REFERENCE CHART

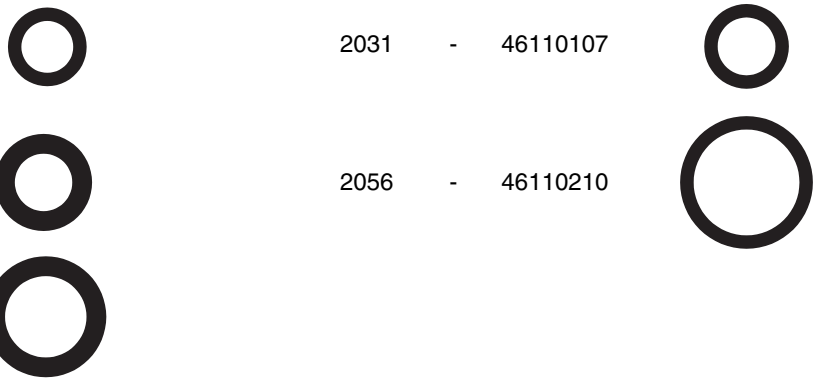
SECOND STAGES

O-RING TYPE - REFERENCE			O-RING TYPE - REFERENCE		
2012	-	46110101	2025	-	46110205
106	-	46110106	2037	-	46110110
2043	-	46110215	2050	-	46110211
2062	-	46110220	3043	-	46200218
2125	-	46110175	2068	-	46110225



INFLATORS

O-RING TYPE - REFERENCE			O-RING TYPE - REFERENCE		
106	-	46110106	2031	-	46110107
2-109	-	46110241	2056	-	46110210
3043	-	46200218			



O-RING REFERENCE CHART

H.U.B. - HOSES / MANIFOLDS

O-RING TYPE - REFERENCE			O-RING TYPE - REFERENCE		
2-003	-	46110242	106	-	46110106
2025	-	46110205	108	-	46110108
2031	-	46110107	114	-	46110114
2043	-	46110215			

H.U.B. ORAL INFLATOR

O-RING TYPE - REFERENCE			O-RING TYPE - REFERENCE		
3100	-	47110271	2056	-	46110210

DEPTH GAUGE

O-RING TYPE - REFERENCE			O-RING TYPE - REFERENCE		
108	-	46110108	2-003	-	46110242

O-RING REFERENCE CHART

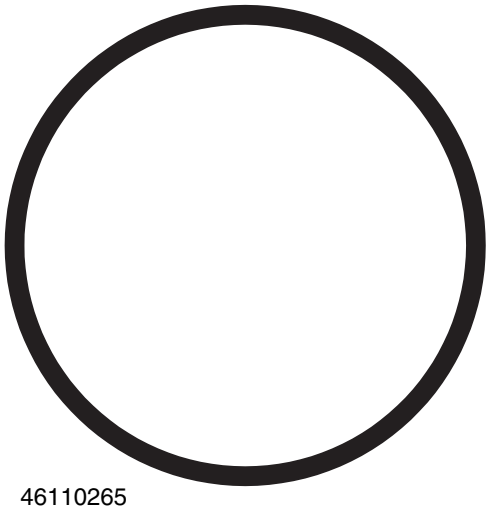
H.U.B. AIR TRIM - PNEUMATICAL INFLATOR

O-RING TYPE - REFERENCE

3X1 - 46110265

2015 - 46110102

106 - 46110106

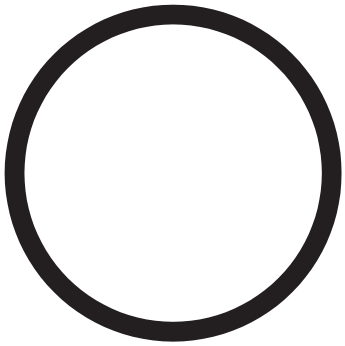


3231 - 46110265

O-RING TYPE - REFERENCE

2007 - 46110213

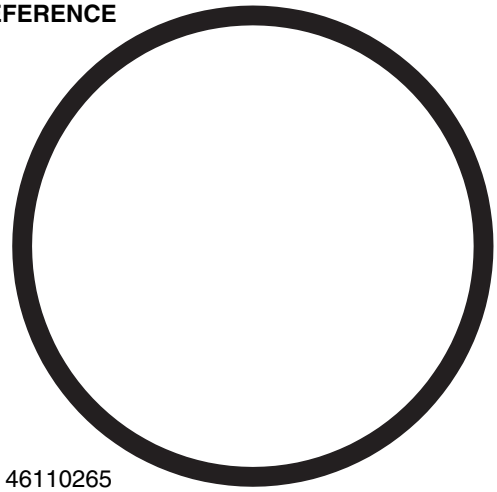
2050 - 46110211



3156 - 47110270

H.U.B. AIR TRIM - PNEUMATICAL DUMP VALVES

O-RING TYPE - REFERENCE



3231 - 46110265

O-RING TYPE - REFERENCE

3X1 - 47110272

2015 - 46110102

2037 - 16110110

Table No. 1	**D 16 FIRST STAGE**	Drawing reference No.: 1 Table updated on: 30/10/2001

Ref.No.	Code	Description
1	A	1ST stage body
2	46185015	Snap ring Int. D. 13
3	46187003	Yoke
4	D	H.P. chamber
5	46185038	Backup ring
6	46110101	OR 2012
6	46110401	OR 2012 Viton 006-9707
7	46186241	Yoke retainer nut
8	46185011	Poppet spring
9	46185002	1st Stage poppet
12	46186214	Poppet pin
13	46185032	Poppet button
14	46185022	Diaphragm
15	46185034	Spring base plate
16	46185023	Diaphragm spring
17	46184510	Retaining nut
18	46184511	Spring adjuster nut
19	46110106	OR 106
19	46110402	OR 106 Viton 610-9707
20	46185204	3/8" UNF Port plug
22	46186202	Tapered sintered filter
23	46110117	OR 115
23	46110406	OR 115 Viton 614-9707
24	46187011	Dust cap
25	46187007	Dacor Yoke knob
48	F	300 BAR DIN connector body
49	F	Blocking ring nut (DIN) 300 BAR
48	F	200 BAR DIN connector body
49	F	Blocking ring nut (DIN) 200 BAR
52	46110108	OR 108
52	46110404	OR 108 Viton 008-9707
53	46185205	H.P. 7/16" UNF closing plug
56	46183053	DIN connector filter D.9
57	I	A.E.R. body
58	46185301	A.E:R. diaphragm
59	I	A.E.R.. locking ring
61	46185013	Filter spring
62	46183013	DIN connector dust cap
68	46183052	Pentagonal spring for DIN connector D. 9

Ref.No.	Code	Description
71	46110211	OR 2050
71	46110413	OR 2050 Viton 014-9707
74	46110107	OR 2031
74	46110403	OR 2031 Viton 011-9707
75	46186216	Seat connector
76	46186210	H.P. chamber spring
79	F	DIN connector spacer bushing
80	46186206	Anti-drag head
81	46186208	Port plug
107	46187013	Yoke knob sticker
110	46187012	Dust cap
153	46110176	OR 3118
154	46187016	Dacor yoke body connector
155	46187015	1st Stage drilled plug
		ASSEMBLIES
A	46187235	1st Stage assembly D 16
A	<46187239>	1st Stage assembly D 16 DIN
D	46186259	H.P. chamber assembly (4-5-6) Viton
D	46185210	H.P. chamber assembly (4-5-6)
F	436909	Connector Assembly DIN 300 BAR Viton
		(23-48-49-56-62-68-71-79)
F	436905	Connector Assembly DIN 200 BAR Viton
		(23-48-49-56-62-68-71-79)
I	436903	D 16 A.E.R. KIT
***	46187224	1st Stage service kit D 16 INT
		(2-5-6-19-22-23-52-71-74)
***	46187225	1st Stage service kit D 16 DIN
		(5-6-19-23-52-56-68-71-74)
***	46187226	Service kit 1st stage D 16 Viton
		(2-5-6-19-22-23-52-71-74)
***	46187227	Service kit 1st stage D 16 DIN Viton
		(5-6-19-23-52-56-68-71-74)

NOTES

In the Kit (cod. 46187224 and 46187225) the OR (74) of the poppet seat is also in Viton

Table No. 2	**D 12 FIRST STAGE**	Drawing reference No: E 2 Table updated on: 30/10/2001

Ref.No.	Code	Description
1	A	1st stage body
2	46185015	Snap ring INT.D. 13
3	46187003	Yoke
4	D	H.P. chamber
5	46185038	Backup ring
6	46110101	OR 2012
6	46110401	OR 2012 Viton 006-9707
7	46185212	Yoke retainer nut
8	46185011	MR12 valve spring
9	46185002	MR 12 1st stage poppet
12	46186303	V 12 poppet pin
13	46185032	Poppet button
14	46185022	Diaphragm
15	46185034	Spring base plate
16	46185023	Diaphragm spring
17	46184510	Retaining nut
18	46184511	Spring adjuster nut
19	46110106	OR 106
19	46110402	OR 106 Viton 610-9707
20	46185204	3/8" UNF Port plug
22	46185014	Sintered filter
23	46110117	OR 115
23	46110406	OR 115 Viton 614-9707
24	46187011	Dust cap
25	46187007	MR12 yoke nut
48	F	Connector body (DIN) 300 BAR
49	F	DIN 300 BAR threaded locking ring
48	F	Connector body (DIN) 200 BAR
49	F	DIN 200 BAR threaded locking ring
50	46110203	OR 2018
50	46110409	OR 2018 Viton 008-9707
51	F	Connector coupling (DIN) 300 BAR
51	F	Connector coupling (DIN) 200 BAR

Ref.No.	Code	Description
52	46110108	OR 108
52	46110404	OR 108 Viton 611-9707
53	46185205	7/16" HP port plug
57	I	A.E.R. body
58	46185301	A.E:R. diaphragm
59	I	Ring nut
62	46183013	DIN connector dust cap
74	46110107	OR 2031
74	46110403	OR 2031 Viton 011-9707
75	46186216	1st stage poppet seat
107	46187013	Knob sticker
110	46187012	Dust cap
		ASSEMBLIES
A	46187236	1st Stage assembly D 12
A	<46187240>	1st Stage assembly D 12 DIN 300 BAR
D	46185210	H.P. chamber assembly (4-5-6)
D	46186259	H.P. chamber assembly (4-5-6) Viton
F	436908	DIN connector assembly 300 BAR Viton D20/D12/D2
		(23-48-49-50-51-62)
F	436904	DIN connector assembly 200 BAR Viton D20/D12/D2
		(23-48-49-50-51-62)
I	436903	A.E.R. kit D 12
***	46187220	1st stage service kit D 12 INT/DIN
		(2-5-6-19-22-23-50-52-74)
***	46187221	Service kit D 12 INT/DIN Viton
		(2-5-6-19-22-23-50-52-74)
		ACCESSORIES
----	46179257	CPL. INT/DIN yoke connector
----	46179260	Port plug external DIN thread

Table No. 3	**D 2 FIRST STAGE**	Drawing reference No.: E 3 Table updated on: 30/10/2001

Ref.No.	Code	Description
1	A	1st stage body
2	46185015	Snap ring D. 13
3	46187003	Yoke
7	46185212	Yoke retainer nut
8	46186220	Piston spring
19	46110106	OR 106
19	46110402	OR 106 Viton 610-9707
20	46185204	3/8" UNF Port plug
22	46185014	Sintered filter
23	46110117	OR 115
23	46110406	OR 115 Viton 614-9707
24	46187011	Dust cap
25	46187007	Yoke knob
48	F	Connector body (DIN) 300 BAR
49	F	DIN 300 BAR threaded locking ring
48	F	Connector body (DIN) 200 BAR
49	F	DIN 200 BAR threaded locking ring
50	46110203	OR 2018
50	46110409	OR 2018 Viton 008-9707
51	F	Connector coupling (DIN) 300 BAR
51	F	Connector coupling (DIN) 200 BAR
52	46110108	OR 108
52	46110404	OR 108 Viton 611-9707
53	46185205	H.P. 7/16" UNF port plug

Ref.No.	Code	Description
61	46185013	Filter spring
62	46183013	DIN connector dust cap
82	46186221	Spring washer
84	46186228	Piston body
85	46187057	1st stage dust cap D2 sand-blasted
86	46110224	OR 2100
86	46110419	OR 2100 Viton 022-9707
88	46186223	Piston seat
89	46184354	1ST stage label D2
107	46187013	1st stage knob sticker
158	46187010	Dust cap
		ASSEMBLIES
A	46200130	1st Stage assembly D2
F	436908	DIN connector assembly 300 BAR Viton D20/D12/D2
		(23-48-49-50-51-62)
F	436904	DIN connector assembly 200 BAR Viton D20/D12/D2
		(23-48-49-50-51-62)
***	46200133	INT/DIN 1st stage service kit
		(2-19-22-23-50-52-86-88)
***	46200134	INT/DIN Viton 1st stage service kit
		(2-19-22-23-50-52-86-88)

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SECTION 1

FIRST STAGE REGULATOR

D 20
FIRST STAGE

Drawing No. E 4	**D 20 - D20 GOLD FIRST STAGE**	Drawing updated on: 30/10/2001

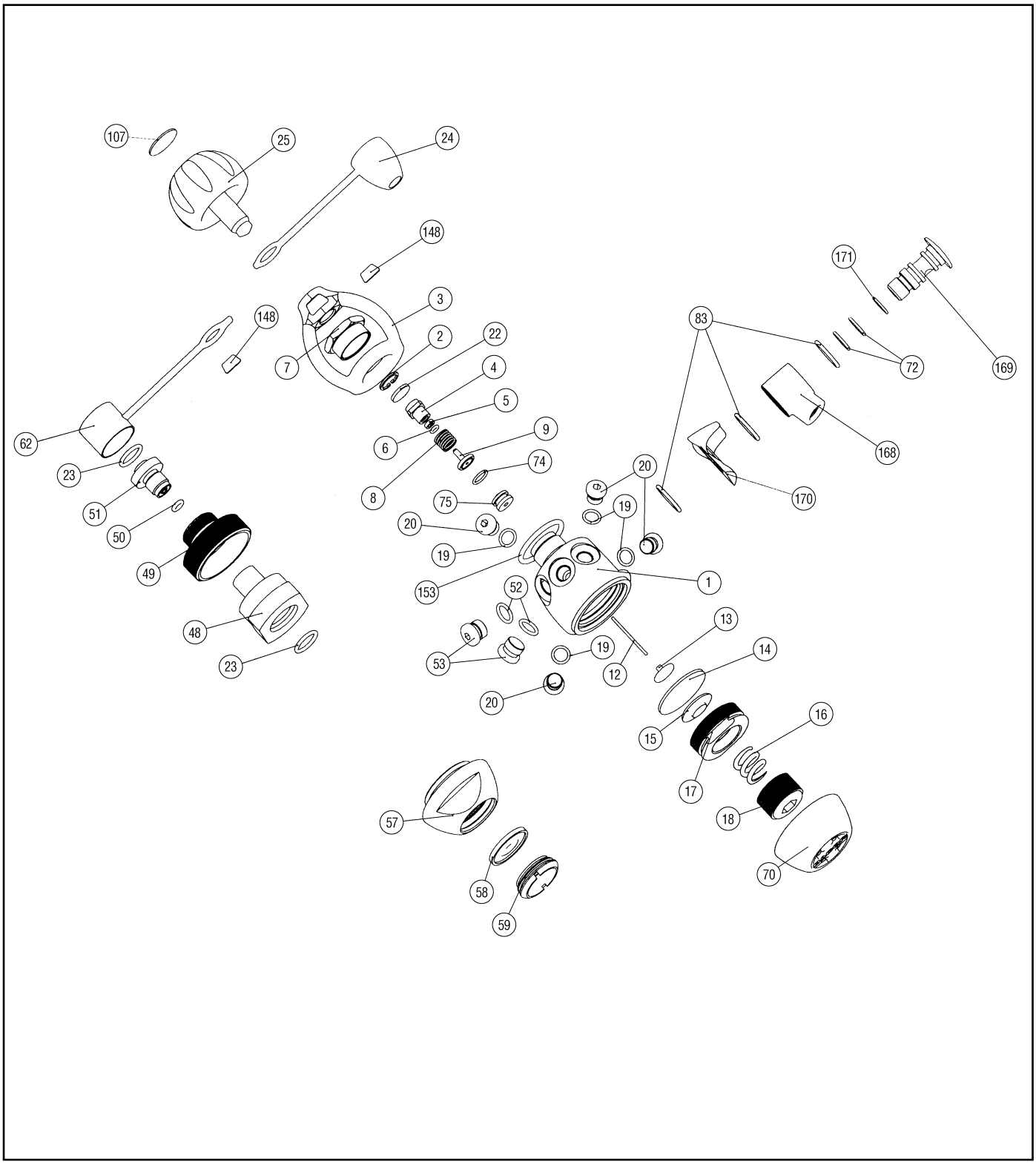


Table No. 5	**D 20 METAL FIRST STAGE**	Drawing reference No.: E 4 Table updated on: 30/10/2001

Ref.No.	Code	Description
1	A	D20 1st stage body
2	46185015	Snap ring INT. D. 13
3	46186270	Yoke
4	D	H.P. chamber
5	46185038	Backup ring
6	46110101	OR 2012
6	46110401	OR 2012 Viton 006-9707
7	46185212	Yoke retainer nut
8	46185011	MR 12 valve spring
9	46185002	MR 12 1st stage poppet
12	46186303	V 12 poppet pin
13	46185032	Poppet button
14	46185022	Diaphragm
15	46185034	Spring base plate
16	46185023	Diaphragm spring
17	46184510	Retaining nut
18	46184511	Spring adjusting nut
19	46110106	OR 106
19	46110402	OR 106 Viton 610-9707
20	46185204	3/8" UNF port plug
22	46185014	Sintered filter
23	46110117	OR 115
23	46110406	OR 115 Viton 614-9707
24	46187011	Dust cap
25	46187007	MR 12 yoke nut
48	F	Connector body (DIN) 300 BAR
49	F	Threaded locking ring (DIN) 300 BAR
48	F	Connector body (DIN) 200 BAR
49	F	Threaded locking ring (DIN) 200 BAR
50	46110203	OR 2018
50	46110409	OR 2018 Viton 008-9707
51	F	Connector coupling (DIN) 300 BAR
51	F	Connector coupling (DIN) 200 BAR
52	46110108	OR 108
52	46110404	OR 108 Viton 611-9707
53	46185205	HP 7/16" port plug
57	I	A.E.R. body
58	46185301	A.E.R. diaphragm
59	I	A.E.R. locking ring

Ref.No.	Code	Description
62	46183013	Dust cap (DIN)
70	46200221	D20 1st stage protection cap
72	46110215	OR 2043
72	46110415	OR 2043 Viton 013-9707
74	46110107	OR 2031
74	46110403	OR 2031 Viton 011-9707
75	46186216	1st stage poppet seat
83	46110225	OR 2068
83	46110420	OR 2068 Viton 017-9707
107	46187013	Knob sticker
148	46184315	"EN - 250 - 200 bar" sticker
153	46110229	OR 3118
168	46200189	D20 swivel coupling
169	46200192	D20 swivel locking pin
170	46200239	Swivel coupling saddle
171	46110110	OR 2037
171	46200298	OR 2037 Viton
		ASSEMBLIES
A	46200285	CPL. D 20 1st stage
A	<46200284>	CPL. D 20 1st stage DIN 300 BAR
D	46185210	H.P. chamber assembly (4-5-6)
D	46186259	H.P. chamber assembly (4-5-6) Viton
F	436908	DIN connector assembly 300 BAR Viton D20/D12/D2
		(23-48-49-50-51-62)
F	436904	DIN connector assembly 200 BAR Viton D20/D12/D2
		(23-48-49-50-51-62)
I	436907	D 20 A.E:R. kit
***	46200281	1st stage service kit D 20/D20 Gold INT/DIN
		(2-5-6-19-22-23-50-52-72-74-83-153-171)
***	46200280	Service kit D 20/D20 Gold INT/DIN Viton
		(2-5-6-19-22-23-50-52-72-74-83-153-171)
		ACCESSORIES
----	46179257	CPL. INT/DIN yoke connector
----	46179260	Port plug external DIN thread

Table No. 6	**D 20 GOLD FIRST STAGE**	Drawing reference No.: E 4 Table updated on: 30/10/2001

Ref.No.	Code	Description
1	A	D 20 Gold 1st stage body
2	46185015	Snap ring INT.D. 13
3	46200257	Yoke
4	46185209	H.P. chamber
5	46185038	Backup ring
6	46110101	OR 2012
6	46110401	OR 2012 Viton 006-9707
7	46185212	Yoke retainer nut
8	46185011	MR12 valve spring
9	46185002	MR 12 1st stage poppet
12	46186303	MR 12 poppet pin
13	46185032	Poppet button
14	46185022	Diaphragm
15	46185034	Spring base plate
16	46185023	Diaphragm spring
17	46184510	Retaining nut
18	46184511	Spring adjuster nut
19	46110106	OR 106
19	46110402	OR 106 Viton 610-9707
20	46185204	3/8" UNF port plug
22	46185014	Sintered filter
23	46110117	OR 115
23	46110406	OR 115 Viton 614-9707
24	46187011	Dust cap
25	46187007	MR12 yoke nut
48	F	Connector body (DIN) 200 BAR Gold
49	F	Threaded locking ring (DIN) 200 BAR Gold
50	46110203	OR 2018
50	46110409	OR 2018 Viton 008-9707
51	F	Connector coupling (DIN) 200 BAR Gold
52	46110108	OR 108
52	46110404	OR 108 Viton 611-9707
53	46185205	HP 7/16" port plug
57	I	A.E.R. body
58	46185301	A.E:R. diaphragm
59	I	A.E.R.. locking ring

Ref.No.	Code	Description
62	46183013	Dust cap (DIN)
70	46200221	D20 1st stage protection cap
72	46110215	OR 2043
72	46110415	OR 2043 Viton 013-9707
74	46110107	OR 2031
74	46110403	OR 2031 Viton 011-9707
75	46186216	1st stage poppet seat
83	46110225	OR 2068
83	46110420	OR 2068 Viton 017-9707
107	46187013	Knob sticker
148	46184315	"EN - 250 - 200 bar" sticker
153	46110229	OR 3118
168	46200258	D20 swivel coupling
169	46200192	D20 swivel locking pin
170	46200188	D20 rotation stop
171	46110110	OR 2037
171	46200298	OR 2037 Viton
		ASSEMBLIES
A	46200283	CPL. D 20 Gold 1st stage
D	46185210	Complete H.P. chamber (4-5-6)
D	46186259	Complete H.P. chamber (4-5-6) Viton
F	436906	DIN connector assembly 200 BAR Viton D20 Gold
		(23-48-49-50-51-62)
I		D20 Gold A.E.R. kit
***	46200281	1st stage service kit D 20/D20 Gold INT/DIN
		(2-5-6-19-22-23-50-52-72-74-83-153-171)
***	46200280	Service kit D 20/D20 Gold INT/DIN Viton
		(2-5-6-19-22-23-50-52-72-74-83-153-171)
		ACCESSORIES
----	46179257	CPL. INT/DIN yoke connector
----	46179260	Port plug external DIN thread

D 20 FIRST STAGE

DISASSEMBLY

1. Using a 14 mm open-end wrench (B-18) unscrew the hose from the 1st Stage.
2. Using a 6 mm hex wrench (B-8), unscrew the D20 swivel locking pin (169), to release the D20 swivel coupling (168) and the D20 rotation stop coupling (170).
3. Pull out the locking pin (169) from the swivel coupling (168).
4. Remove O-Ring (83) from the D20 rotation stop coupling (170), remove O-Rings (83) from the D20 swivel coupling (168), and remove O-Ring (171) and O-Rings (72) from the D20 swivel locking pin (169).
5. Screw the first stage disassembly tool (B-5) into a low pressure port (3/8").
6. Using a small flat head screwdriver, remove the protection cap (70).
7. Using the special tool (B-1) back off the yoke retainer nut (7), thereby releasing the yoke (3) and the yoke knob (25). (Fig. 1)

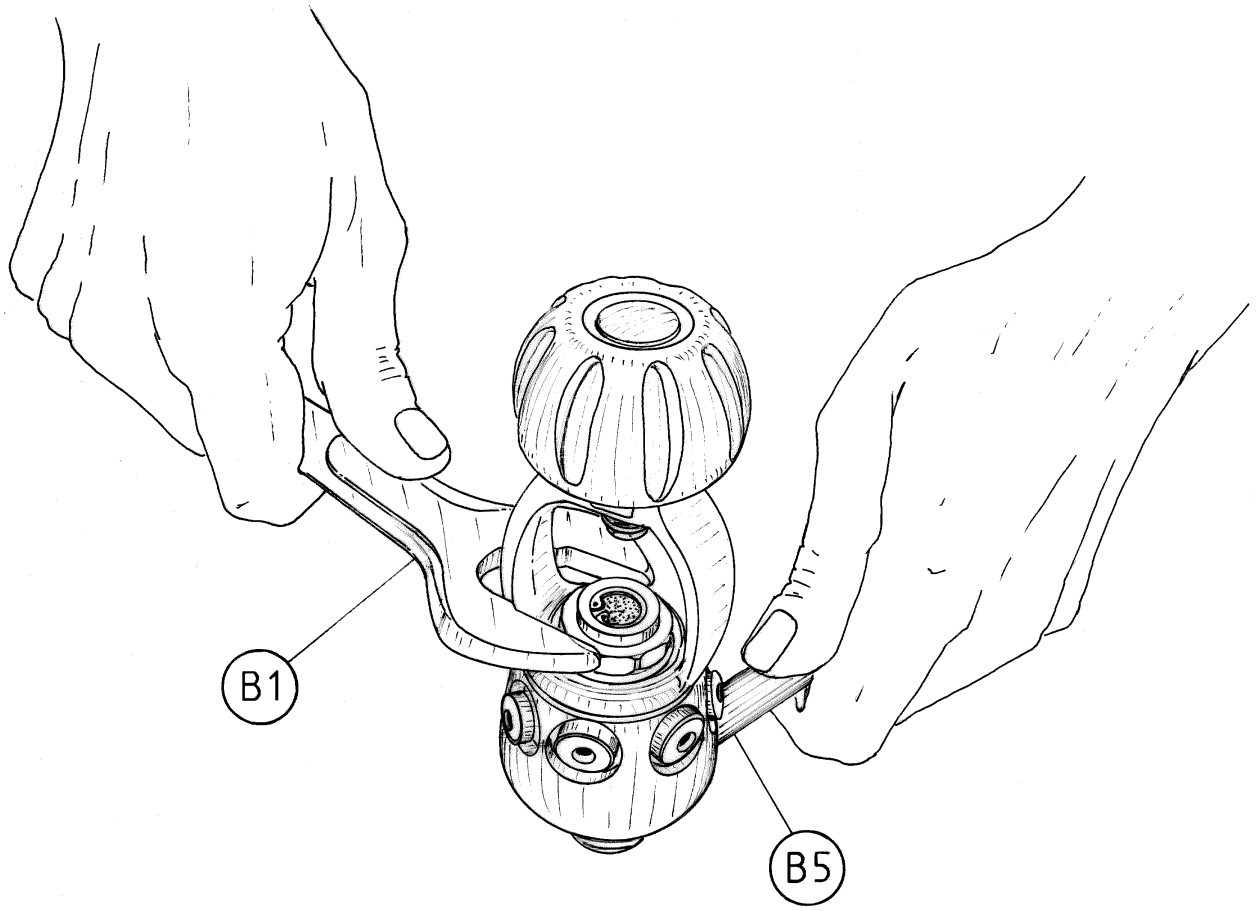


FIG. 1

DIN VERSION

DISASSEMBLY:

(instead of step 7)

A. Using the 6-mm hex wrench (B-8), unscrew the DIN connector coupling (51) and remove O-Rings (23) and (50) from it.
B. Remove the threaded locking ring (49).
C. Using the 28-mm open end wrench (B-16), unscrew the DIN connector body (48) and remove O-Ring(23).

8. Remove the O-Ring(153) from the 1st Stage body.
9. Using the snap ring pliers (B-14), remove the following from the 1st stage body (1): the snap ring (2), the sintered filter (22), the HP chamber assembly (4+5+6), the spring (8), the poppet (9) and the poppet pin (12). (Fig. 2).

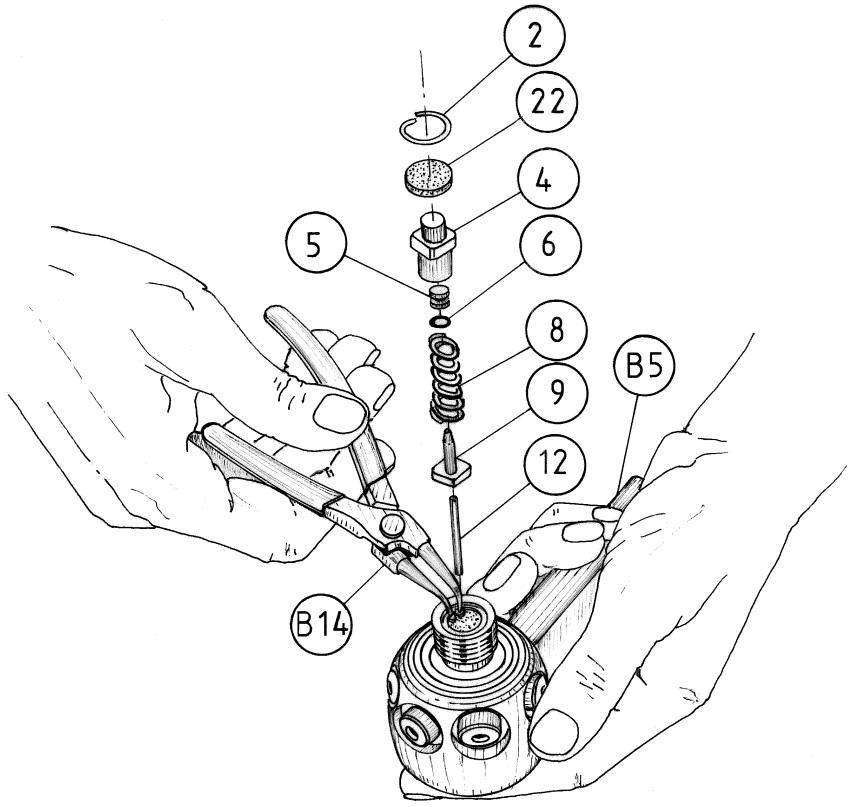


FIG. 2

10. Remove the O-Ring(6) from the HP chamber.

WARNING ⚠

REMOVE THE BACKUP RING (5) FROM THE HP CHAMBER (4) ONLY IF IT NEEDS TO BE REPLACED.

11. Position the special tool (B-21) on the 1st Stage poppet seat (75) and exert a slight pressure on it. Supply with compressed air (110 p.s.i. - less than 7 BAR) through a low pressure port. (Fig. 3)

WARNING ⚠

WHEN THE COMPRESSED AIR CAUSES THE POPPET SEAT TO MOVE, REDUCE THE PRESSURE EXERTED ON THE SPECIAL TOOL (B-21).

WARNING ⚠

DO NOT ATTEMPT TO REMOVE THE POPPET SEAT USING SHARP OR POINTED TOOLS; SCRATCHES ON THE SURFACE OF THE SEAT MAY RESULT IN MALFUNCTION.

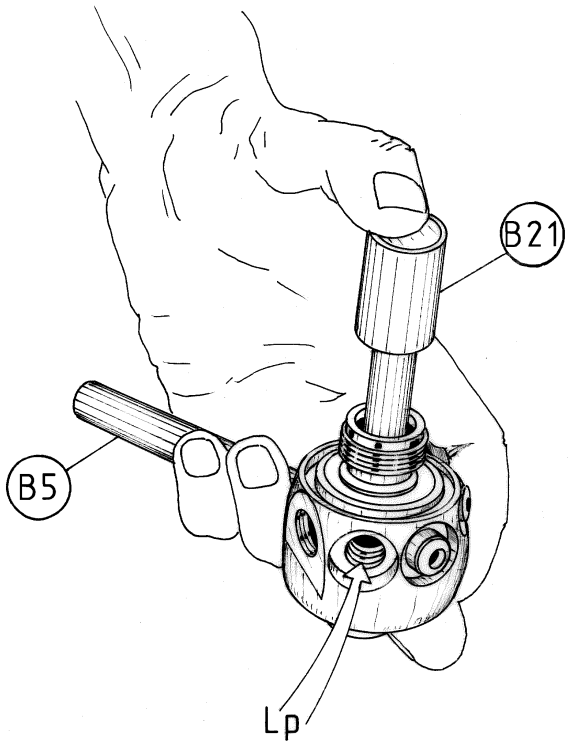


FIG. 3

12. Remove the poppet seat (75) from the 1st Stage body and remove the O-Ring(74).
13. Using the 10-mm hex wrench (B-13) back off the adjusting nut (18) and remove the spring (16). (Fig. 4)

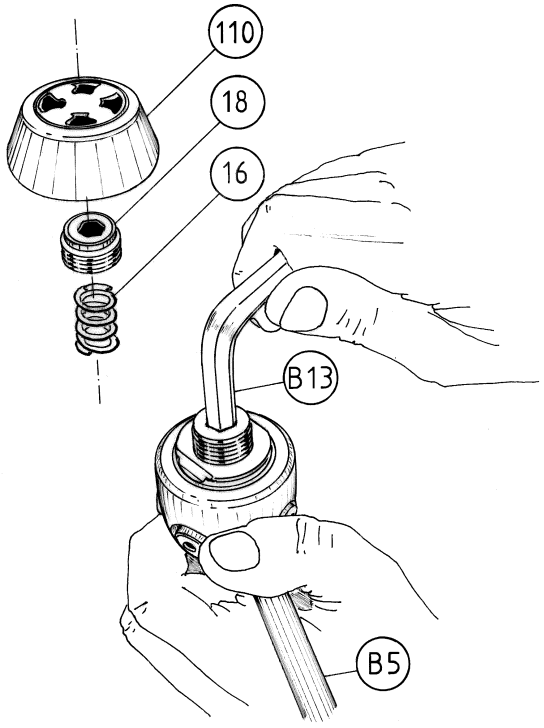


FIG. 4

14. Back off the retaining nut (17) using the 28-mm open end wrench (B-2) and remove the spring base plate (15). (Fig. 5).

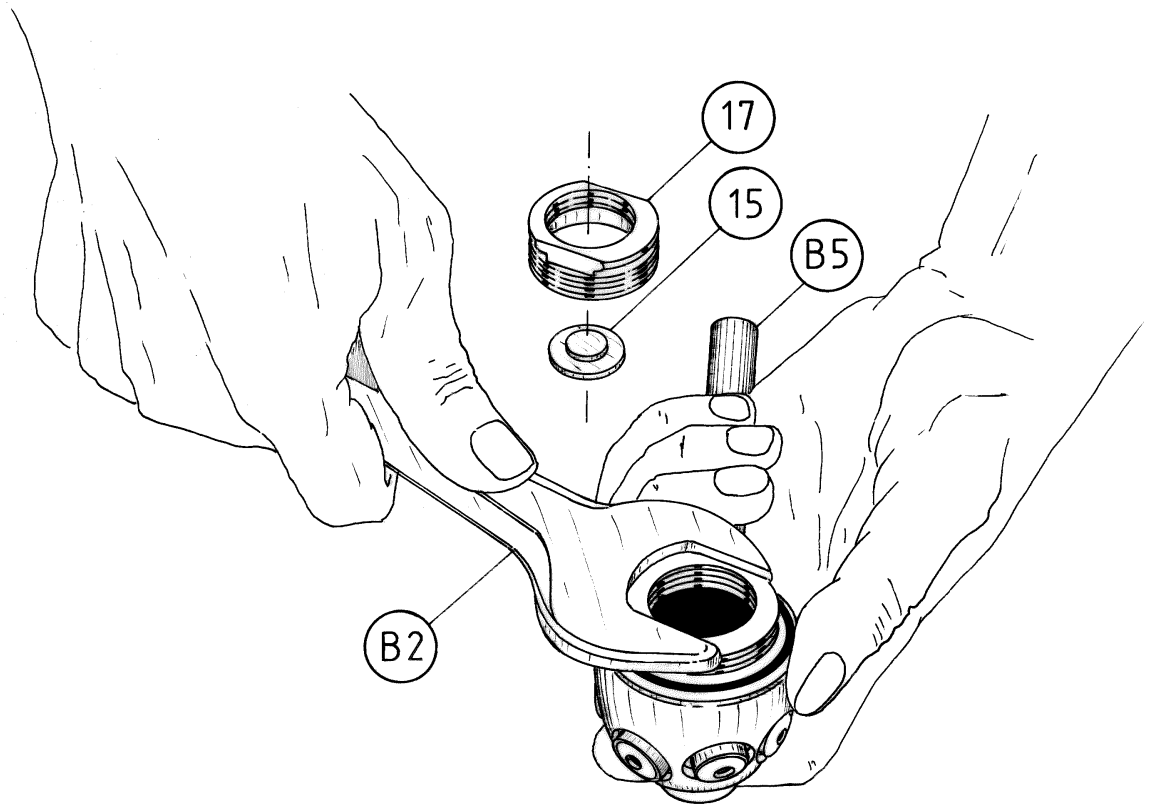


FIG. 5

15. Supply compressed air (110 p.s.i. - less than 7 bar) through a low pressure port (3/8") and remove the diaphragm (14) and the poppet button (13).

WARNING ⚠

TO FACILITATE REMOVING THE DIAPHRAGM, IT IS RECOMMENDED TO CLOSE OFF (FOR EXAMPLE USING A FINGER) THE INLET TO THE HIGH PRESSURE CHAMBER (FIG. 6)

WARNING ⚠

DO NOT ATTEMPT TO REMOVE THE DIAPHRAGM USING SHARP OR POINTED TOOLS; SCRATCHES ON THE SURFACE OF THE DIAPHRAGM OR IN THE FIRST STAGE BODY SEAT MAY RESULT IN AIR LEAKS.

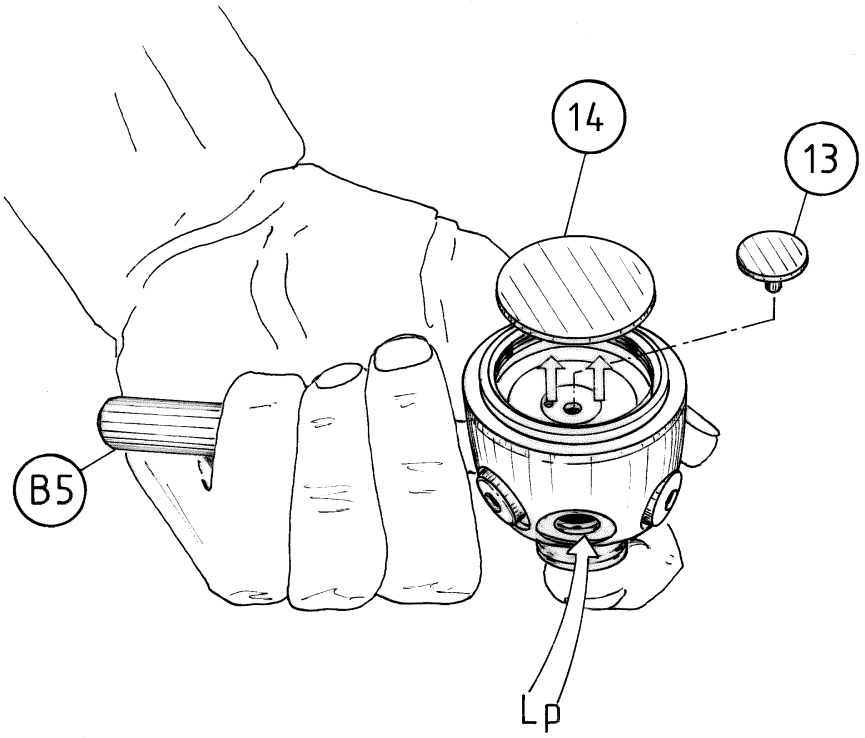


FIG. 6

16. Unscrew the high (53) and low (20) pressure port plugs from the 1st stage body, removing their respective O-Rings (52) and (19).
17. Unscrew the disassembly tool (B-5) from the 1st stage body.

CLEANING

WARNING ⚠

WHEN WORKING WITH ANY KIND OF ACID, WEAR ADEQUATE PROTECTIVE GEAR FOR EYES AND SKIN.

For routine cleaning of reusable rubber components, wash all parts in a mixture of hot water and mild detergent, scrubbing if necessary with a soft brush. Do not use solvents or acids to clean the rubber components. Chrome plated brass and stainless steel parts can be cleaned with an ultrasonic cleaner in fresh water or, if the necessary equipment is not available, in a mild acid solution (for example white vinegar, diluted with hot water as necessary). Make sure that all components have been rinsed and dried before proceeding with reassembly.

WARNING ⚠

ACIDS OR OTHER SOLVENTS MAY DAMAGE PLASTIC AND RUBBER PARTS. BEFORE CLEANING THE PLASTIC PARTS BE SURE TO REMOVE ANY SEALS OR OTHER MATERIALS SUBJECT TO DETERIORATION.

INSPECTION

Certain key components of the first stage should be regularly replaced at each scheduled overhaul. In addition, considering their low cost, it is recommended to replace all the O-Rings.
The components that it is recommended to replace are the following:

Snap ring	(2)	1	cod. 46185015	
Sintered filter	(22)	1	cod. 46185014	
O-Ring	(6)	1	cod. 46110101	cod. Viton 46110401
O-Ring	(74)	1	cod. 46110107	cod. Viton 46110403
LP O-Ring	(19)	4	cod. 46110106	cod. Viton 46110402
HP O-Ring	(52)	1	cod. 46110108	cod. Viton 46110404
Rotation stop coupling and swivel coupling O-Ring	(83)	3	cod. 46110225	cod. Viton 46110420
Locking pin O-Ring	(72)	2	cod. 46110205	cod. Viton 46110411
Locking pin O-Ring	(171)	1	cod. 46110110	
DIN connector coupling O-Ring	(50)	1	cod. 46110203	cod. Viton 46110409
DIN fitting O-Ring	(23)	2	cod. 46110117	cod. Viton 46110406

If these components are not replaced, they should at least be inspected with a jeweler's magnifying glass for the following defects.

DO NOT USE PARTS WITH THE FOLLOWING DEFECTS:

Snap rings (2) Check for distortion, cracking or damaged edges. It is recommended to replace these components at each overhaul

Sintered filter (22) Check for the presence of sedimentation or rust: rust deposits may indicate corrosion of the air tanks. Inspect for any cracks

1st Stage poppet (9) Check for cuts, burrs or abrasion of the rubber and separation of the rubber from the poppet body. Make sure that the hole through the poppet stem is not obstructed by foreign bodies

HP chamber (4) Inspect the interior for any foreign matter or particles

Backup ring (5) Make sure that it is correctly positioned inside the HP chamber, and inspect its surface for deformations or foreign particles

O-Rings Check for cuts, deformation or foreign particles. The presence of any of these defects may result in leakage

1st Stage Diaphragm (14) Check for splitting, cuts, tears or major surface deformations

1st Stage Body (1) Check for chips and/or scratches on the diaphragm sealing surfaces, the port plug seats and the poppet seat housing

Poppet seat (75) Check for chipping, scratches and/or foreign particles on the sealing surface and in the O-Ring seat

WARNING ⚠

FOR THOROUGH CLEANING OF THE FIRST STAGE POPPET SEAT IT IS POSSIBLE TO USE A SLIGHTLY ABRASIVE ERASER.

O-Ring seats Inspect all metal surfaces in contact with the O-Rings or other seals, and check for scratches, chipping, deteriorated plating or foreign particles

Springs Check for any split, deformed or broken coils

Threaded components Check that all threads are clean and undamaged

REASSEMBLY

Before reassembling, lightly lubricate all the O-Rings with silicone grease (type General Electric Versalube G 322 or equivalent). Lubrication reduces the likelihood of damage during reassembly.

WARNING ⚠

IF THE FIRST STAGE IS USED FOR DIVING WITH OXYGEN-RICH MIXTURES, IT MUST BE PERFECTLY CLEANED AND FREE OF ANY RESIDUAL SILICONE OR OTHER IMPURITIES. VITON O-RINGS MUST BE LUBRICATED WITH SPECIAL OXYGEN-COMPATIBLE GREASE. DO NOT USE SILICONE GREASE!

1. Screw the disassembly tool (B-5) into a low pressure port (3/8").
2. Reassemble the O-Ring(74) on the poppet seat (75).
3. Correctly position the poppet seat on the special tool (B-21).
4. Exerting a slight pressure, push the poppet seat into position in the first stage body. (Fig. 7).

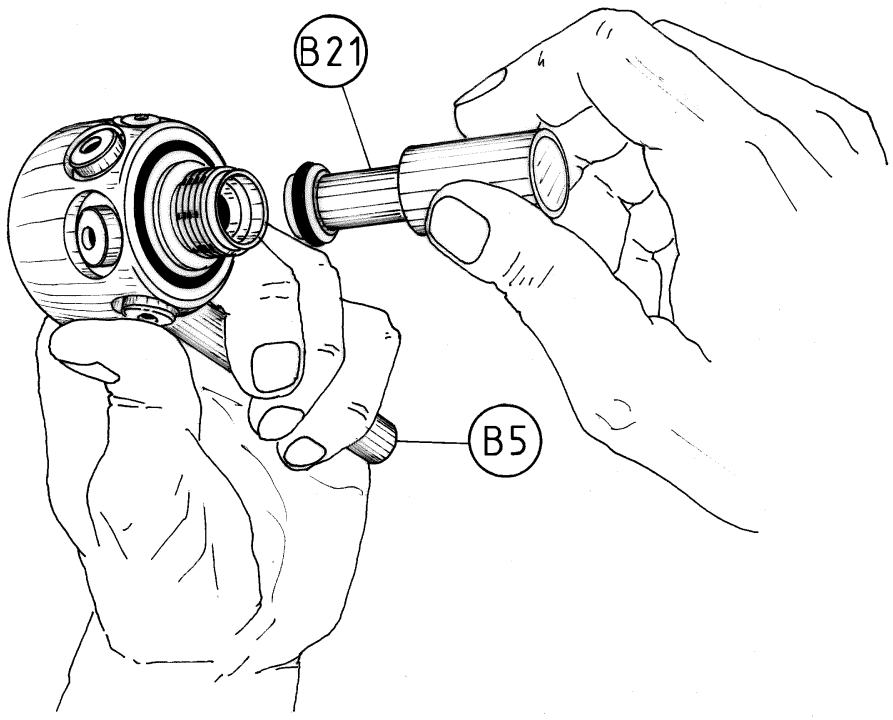


FIG. 7

5. Correctly position the first stage poppet (9) on the poppet seat.
6. Place the spring (8) on top of the poppet.
7. Fit the backup ring (5) (if it was disassembled) and the O-Ring(6) in the HP chamber (4).
8. Position the HP chamber assembly (4-5-6) on top of the spring.
9. Position the sintered filter (22) on the Hp chamber.
10. Using a pair of snap ring pliers (B-14), tighten the snap ring (2) and position it above the filter; use a finger to simultaneously press on the snap ring and filter to perfectly position the snap ring inside the groove of the first stage body.

NOTE

ROTATE THE SNAP RING TO CHECK ITS CORRECT POSITIONING

11. Position the O-Ring(153) in its seat in the 1st Stage body.
12. Position the yoke (3) with the knob (25) on the 1st Stage body (1).
13. Using the special tool (B-1) lock down the yoke retainer nut (7).

IMPORTANT ⚠

TO PREVENT THE YOKE RETAINER NUT FROM ACCIDENTALLY WORKING LOOSE DURING USE, APPLY A FEW DROPS OF THREAD COMPOUND (TYPE LOCTITE 242 E) ON THE THREAD ITSELF.

DIN VERSION

REASSEMBLY:

(instead of steps 11 and 12)

D. Position the O-Ring(23) in the seat on the DIN connector body (48).
E. Screw the DIN connector body (48) onto the first stage body, locking down fully with the tool (B-16).
F. Correctly position the threaded locking ring (49) on the first stage.
G. Fit the O-Rings (23) and (50) on the DIN connector coupling (51).
H. Using the 6-mm hex wrench (B-8) lock down the DIN connector coupling onto the first stage body.

WARNING ⚠

TO PREVENT THE DIN CONNECTOR BODY (48) AND THE DIN CONNECTOR COUPLING (48) FROM ACCIDENTALLY WORKING LOOSE, APPLY ONE OR TWO DROPS OF THREAD COMPOUND (TYPE LOCTITE 242 E) ON THE BASE OF THEIR THREADS. DO NOT APPLY THE THREAD COMPOUND (LOCTITE 242 E) ON THE O-RINGS.

14. Insert the poppet pin (12) in the center hole of the first stage body.
15. Place the poppet button (13) on the pin.

NOTE

PRESS THE POPPET BUTTON A FEW TIMES TO CHECK ITS MOVEMENT AND THE CORRECT POSITIONING OF THE POPPET ON THE FIRST STAGE

16. Install the first stage diaphragm (14), positioning it correctly in its seat.
17. Position the spring base plate (15) on the diaphragm.
18. Lightly lubricate the sealing edge of the retaining nut (17) and screw it into the first stage body, locking it down fully with the wrench (B-2).

NOTE

IF A TORQUE WRENCH IS USED, USE A TORQUE SETTING OF APPROXIMATELY 3 - 3.5 kg/m (APPROX. 30 - 35 N/m).

19. After having lightly lubricated the ends of the spring (16), center it on the base plate.
20. Using the 10-mm hex wrench (B-13), lock down the adjusting nut (18) through 2-3 turns into the retaining nut.
21. Fit the protection cap (110).
22. Unscrew the disassembly tool (B-5).
23. Fit O-Ring (83) on the rotation stop coupling (170), O-Rings (83) on the swivel coupling (168), and O-Ring (171) and O-Rings (72) on the locking pin (169).
24. Position the rotation stop coupling (170) on the first stage body.
25. Position the swivel coupling (168) on the rotation stop coupling (170).
26. Insert the locking pin (169) in the swivel coupling (168) and lock it down fully against the body using a 6-mm hex wrench.
27. Place the respective O-Rings (52) and (19) on the high (53) and low (20) pressure port plugs.
28. Screw the high and low pressure port plugs (53) and (20) into the ports on the first stage body.
29. Using the 14-mm open end wrench (B-18) screw the hose into the swivel coupling (168).

ADJUSTING THE INTERMEDIATE PRESSURE

To obtain a correct adjustment of the intermediate pressure:
A. The system used must have both a high and low pressure air supply.
B. It is necessary to have a pressure gauge for checking the intermediate pressure (the pressure gauge should have a full scale value MAX 30 - 40 BAR).

TABLE OF FIRST STAGE INTERMEDIATE PRESSURES		
MODEL	***PRESSURE P.S.I.***	***PRESSURE BAR***
D 20	142 - 152	9.8 - 10.2

(Tab. A)

TABLE OF FIRST STAGE INTERMEDIATE PRESSURE WITH A.E.R. KIT		
MODEL	***PRESSURE P.S.I.***	***PRESSURE BAR***
D 20	130 - 136	9.0 - 9.4

(Tab. B)

PROCEDURE FOR ADJUSTING THE INTERMEDIATE PRESSURE

1. Screw the intermediate pressure measuring gauge (cod. 46106252) into one of the 3/8" low pressure ports, using the special tool (B-18).

WARNING ⚠

DO NOT SUBMERGE THE INTERMEDIATE PRESSURE MEASURING GAUGE.

2. Using the wrench (B-18), apply the hose with the partially assembled second stage to the port D.F.C. (swivel).
3. Mount the regulator group on a tank.
4. Holding down the second stage demand lever, slowly open the tank valve and, almost simultaneously, release the demand lever.
5. Read the value of the first stage adjustment on the pressure gauge, and proceed as follows (Fig. 6):
   a) If the first stage adjustment is higher than the required value (see table), use the wrench (B-13) to slowly back off the adjusting nut (18) until the specified value is obtained.

NOTE

WHENEVER THE INTERMEDIATE PRESSURE IS REDUCED, IT IS NECESSARY TO VENT THE EXCESS AIR IN ORDER TO OBTAIN A CORRECT READOUT OF THE NEW VALUE.

   b) If the first stage adjustment is lower than the required value (see table), slowly lock down the adjusting nut until the specified value is obtained.
6. Operate the second stage demand lever a few times, and check that the first stage adjustment remains constant.
7. After completing the second stage adjustments, remove the pressure gauge and screw on the corresponding port plug.

A.E.R.
COLD WATER DIVING KIT FOR DACOR DIAPHRAGM REGULATORS
ALL ENVIRONMENT REGULATOR (A.E.R.)

WARNING ⚠

THE INSTALLATION OF THE A.E.R. KIT MUST BE CARRIED OUT AT AN AUTHORIZED DACOR SERVICE CENTER BY A TECHNICIAN TRAINED IN THE SERVICING OF REGULATORS, IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED HERE. DACOR RECOMMENDS PERFORMING A COMPLETE OVERHAUL OF THE REGULATOR BEFORE INSTALLING THE A.E.R. KIT.

COLD WATER DIVING

According to the CEN EN 250: 2000 standard, water is considered to be cold at a temperature below 10°C.

WARNING ⚠

ATTEMPTING TO DIVE IN COLD WATER CONDITIONS (10°C OR BELOW) WITHOUT ADEQUATE TRAINING MAY RESULT IN SERIOUS INJURY. BEFORE DIVING IN COLD WATER, IT IS ADVISABLE TO TAKE A SPECIAL TRAINING COURSE UNDER THE SUPERVISION OF A CERTIFIED DIVING INSTRUCTOR.

When diving in cold water conditions, parts of the regulator may be subject to "icing" phenomena. The factors affecting the likelihood of ice forming inside and on the regulator are: the external ambient temperature, the water temperature, the temperature of the air in the tanks (and hence the exposure time of the tanks to the cold before the dive). whether the dive is in fresh or seawater, the moisture content of the air in the tanks, the quantity of air delivered by the regulator during the dive and the breathing frequency.

WARNING ⚠

BECAUSE NO REGULATOR CAN BE COMPLETELY GUARANTEED AGAINST FREEZING OF THE SECOND STAGE UNDER ALL THE AFORESAID CONDITIONS, EVEN DACOR REGULATORS FITTED WITH THE AER KIT MAY BE SUBJECT TO "ICING" PHENOMENA WHICH CAN INTERFERER WITH THEIR CORRECT OPERATION. THIS MAY RESULT IN SERIOUS INJURY. THEREFORE, TO MINIMIZE THE POTENTIAL HAZARDS, IT IS ESSENTIAL TO BE ADEQUATELY TRAINED IN THE PREVENTION AND HANDLING OF THE PROBLEMS WHICH MAY ARISE FROM A REGULATOR SUBJECT TO "ICING" PHENOMENA.

In particular, for cold water conditions observe the following precautions:

1. Take a course to learn cold water diving techniques.
2. Refill the air tanks only at filling stations equipped with an efficient filtering and moisture removal system.
3. When preparing for a cold water dive, keep the tanks and regulator in a place that is sheltered from the cold until just before starting the dive.
4. Open the tank control valve for one or two seconds to make sure there are no water droplets or small ice crystals. Also check the inlet opening of the regulator.
5. In the event of repetitive dives, take particular care to ensure that the regulator is perfectly dry before starting the second dive.
6. Avoid breathing from the regulator outside the water.
7. As much as possible, try to prevent water from entering inside the second stage during the dive.
8. Never operate the purge button when not underwater.
9. Use the purge button as little as possible. In any case, never hold it down for more than 2 or 3 seconds consecutively; pressing it for longer may cause the formation of ice.
10. Try to breathe normally, to minimize the cooling effect produced by the higher air velocity during overbreathing.

INSTRUCTION FOR INSTALLING THE A.E.R. KIT

To facilitate the disassembly operations, the technician is advised to disassemble the hoses connected to the First Stage ports and replace them with the corresponding port plugs.

1. Screw the first stage disassembly tool (B-5) into a low pressure port (3/8").
2. After removing the protection cap (110), use the hex wrench (B-13) to unscrew the adjusting nut (18) and pull out the spring (16).
3. Unscrew the retaining nut (17) using wrench (B-2) and remove the spring base plate (15).

WARNING ⚠

DACOR RECOMMENDS CLEANING THE DISASSEMBLED COMPONENTS TO REMOVE ANY TRACES OF RUST OR FOREIGN PARTICLES, FOLLOWING THE INSTRUCTIONS PROVIDED IN THE SERVICE MANUALS.

4. Position the spring base plate (15) on the diaphragm (14).
5. Lightly lubricate the sealing rim of the A.E.R. body (57) and screw it onto the first stage body, locking it down firmly with the wrench (B-16).

NOTE

IF A TORQUE WRENCH IS USED, USE A TORQUE SETTING OF APPROXIMATELY 3 - 3.5 kg/m (APPROX. 30 - 35 N/m).

6. After having lightly lubricated the ends of the spring (16), center it on the base plate (15).
7. Using the hex wrench (B-13), lock down the A.E.R. adjusting nut (18) through 2-3 turns into the A.E.R. body. (57).

NOTE

DO NOT OVERTIGHTEN THE ADJUSTING NUT; THIS INCREASES THE INTERMEDIATE PRESSURE AND INTERFERES WITH THE SUBSEQUENT ADJUSTMENTS.

8. Unscrew the disassembly tool (B-5).
9. Screw the intermediate pressure measuring gauge (cod. 106252) into one of the 3/8" low pressure ports, using the special wrench (B-18).
10. Using the wrench (B-18), screw the hose with the second stage into the swivel coupling (168).
11. Remove the cover (39) from the second stage case (follow the instructions provided in the manual for the regulator model in question).
12. Mount the regulator group on the control valve (of a tank or Test Bench).
13. Holding down the second stage demand lever, slowly open the tank valve and, almost simultaneously, release the demand lever.
14. Read the first stage adjustment on the pressure gauge, and proceed as follows:
    a. If the adjustment is higher than the required value (see table in the "First Stage Adjustments" manual), slightly back off the adjusting nut (16) using wrench (B-13) until the specified adjustment is obtained.

NOTE

WHENEVER THE INTERMEDIATE PRESSURE IS REDUCED, IT IS NECESSARY TO VENT THE EXCESS AIR IN ORDER TO OBTAIN A CORRECT READING OF THE NEW VALUE.

    b. If the adjustment is lower than the required value (see table in the "First Stage Adjustments" manual), slowly lock down the adjusting nut, until the specified adjustment is obtained.
15. Operate the second stage demand lever a few times, and check that the first stage adjustment remains constant
16. After having completed the second stage adjustments, (follow the instructions provided in the manual of the regulator in question), remove the pressure gauge and the second stage, replacing them with port plugs.
17. Remove the first stage from the control valve.
18. Close the first stage air inlet with the dust cap (24).
19. Slightly tilt the first stage (5° - 10°).
20. Slowly fill the A.E.R. body (57) up to about 3 mm from the upper edge, using the silicone oil provided in the kit.

21. Hold the first stage vertically and turn it 2/3 times to eliminate any bubbles trapped in the threads or in the coils of the spring.
22. Fit the A.E.R. diaphragm (58) inside the A.E.R. body. (57) orienting it correctly (with the edge facing upward) on the seat of the A.E.R. body (See Fig. 8).

NOTE

WHEN THE DIAPHRAGM IS CORRECTLY FITTED IN THE A.E.R. BODY, IT SHOULD BE COMPLETELY IMMERSED THE SILICONE OIL.

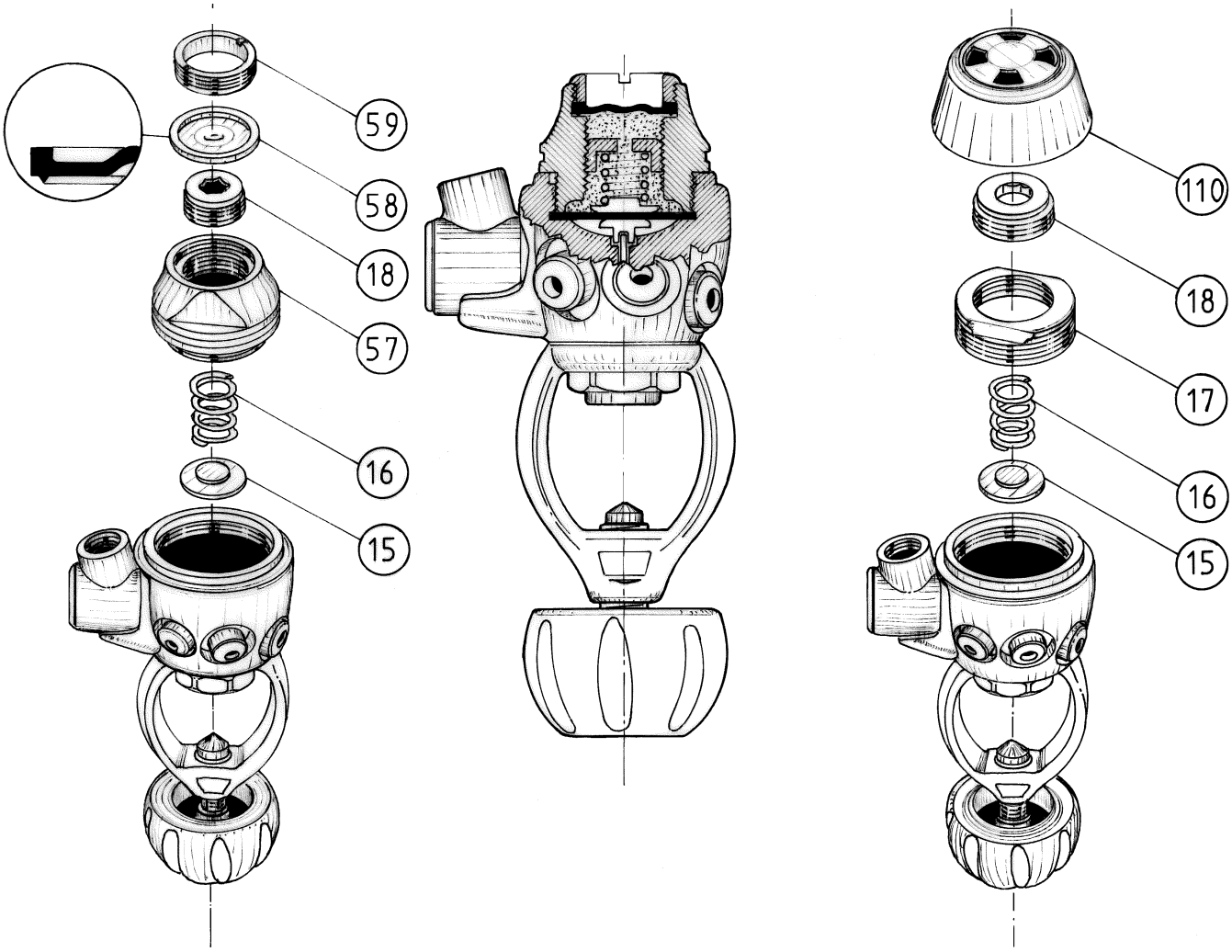


FIG. 8

23. Press the center of the diaphragm (58) slightly to expel any air bubbles.

WARNING ⚠

DO NOT USE SHARP OBJECTS TO PRESS ON THE DIAPHRAGM.
TO CHECK THAT THE DIAPHRAGM DOES NOT ADHERE BY SUCTION TO THE SIDES OF THE A.E.R. KIT BODY, SLIGHTLY LIFT THE EDGE OF THE A.E.R. DIAPHRAGM, TAKING CARE NOT TO ALLOW ANY AIR TO ENTER.

24. Correctly lock down the ring (59) against the body, using the special wrench provided in the kit.
25. Empty the excess oil.

26. Rinse the first stage in fresh water.

WARNING ⚠

DO NOT DIRECT STRONG JETS OF WATER (FOR EXAMPLE FROM A HOSE) ONTO THE A.E.R. DIAPHRAGM.

27. Using the wrench (B-18), screw the hose with the second stage into the swivel coupling (168).
28. Screw the intermediate pressure measuring gauge (cod. 106252) into one of the 3/8" low pressure ports, using the special tool (B-18).
29. Mount the regulator group on the control valve (of a tank or test bench).
30. Check that the previously adjusted intermediate pressure has not changed.

WARNING ⚠

A VARIATION OF 0.1 - 0.2 BAR IN THE INTERMEDIATE PRESSURE IS ACCEPTABLE.
IF THE VARIATION IS GREATER, IT IS NECESSARY TO REPEAT THE A.E.R. KIT INSTALLATION PROCEDURE.
TO OBTAIN A CORRECT READING OF THE INTERMEDIATE PRESSURE, DO NOT PRESS ON THE A.E.R. DIAPHRAGM.

31. Disassemble the group from the tank, replacing the LP pressure gauge (106252) and any port plugs with the corresponding hoses removed previously.

D 20 FIRST STAGE TROUBLESHOOTING

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 1 - AIR LEAKAGE FROM THE FIRST STAGE DIAPHRAGM RETAINING NUT	**D 20**	1) Retaining nut loose	1) Lock down the nut
		2) First stage diaphragm damaged	1) Replace the diaphragm
		3) First stage diaphragm seating surface damaged	1) Replace the first stage body
- 2 - AIR LEAKAGE FROM THE PLUG, FROM THE SWIVEL COUPLING OR FROM THE HOSE OF THE FIRST STAGE	**D 20**	1) O-Ring dirty or damaged	1) Clean the seat and replace the O-Ring
		2) Plug, swivel locking pin and/or hose loose	1) Tighten
- 3 - AIR LEAKAGE BETWEEN THE FIRST STAGE BODY AND THE INT OR DIN CONNECTOR	**D 20**	1) O-Ring seal dirty or damaged	1) Clean the seat and replace the O-Ring
		2) INT yoke fitting or DIN connector body loose	2) Tighten
- 4 - AIR LEAKAGE BETWEEN THE FIRST STAGE AND THE TANK VALVE	**D 20**	1) O-Ring seal of tank valve dirty or damaged	1) Clean the seat of the tank valve and replace the O-Ring
		2) O-Ring sealing surface on the first stage damaged	1) Replace the yoke retainer nut (INT version)
			1) Replace the connector body (DIN version)
- 5 - AIR LEAKAGE FROM THE HP CHAMBER PLUG	**D 20**	1) O-Ring defective	1) Replace
- 6 - OIL LEAKAGE FROM THE DIAPHRAGM (A.E.R. VERSION)	**D 20**	1) A.E.R. diaphragm damaged	1) Replace the A.E.R. diaphragm
		2) A.E.R. diaphragm locking ring loose	1) Lock down correctly

D 20 FIRST STAGE TROUBLESHOOTING

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
-7- AIR LEAKAGE FROM 2ND STAGE CHARACTERIZED BY AN INCREASE IN THE INTERMEDIATE PRESSURE	**D 20**	1) Intermediate pressure too high	1) Adjust the intermediate pressure
		2) First Stage poppet damaged	1) Replace
		3) Defective poppet seat	1) Clean or replace the seat
			2) Replace the O-Ring
		4) Defective HP chamber	1) Replace the O-Ring
			2) Replace the backup ring
			3) Clean or replace the HP seat

Drawing No. E 22	**FURY SECOND STAGE**	Drawing updated on: 15/02/2001

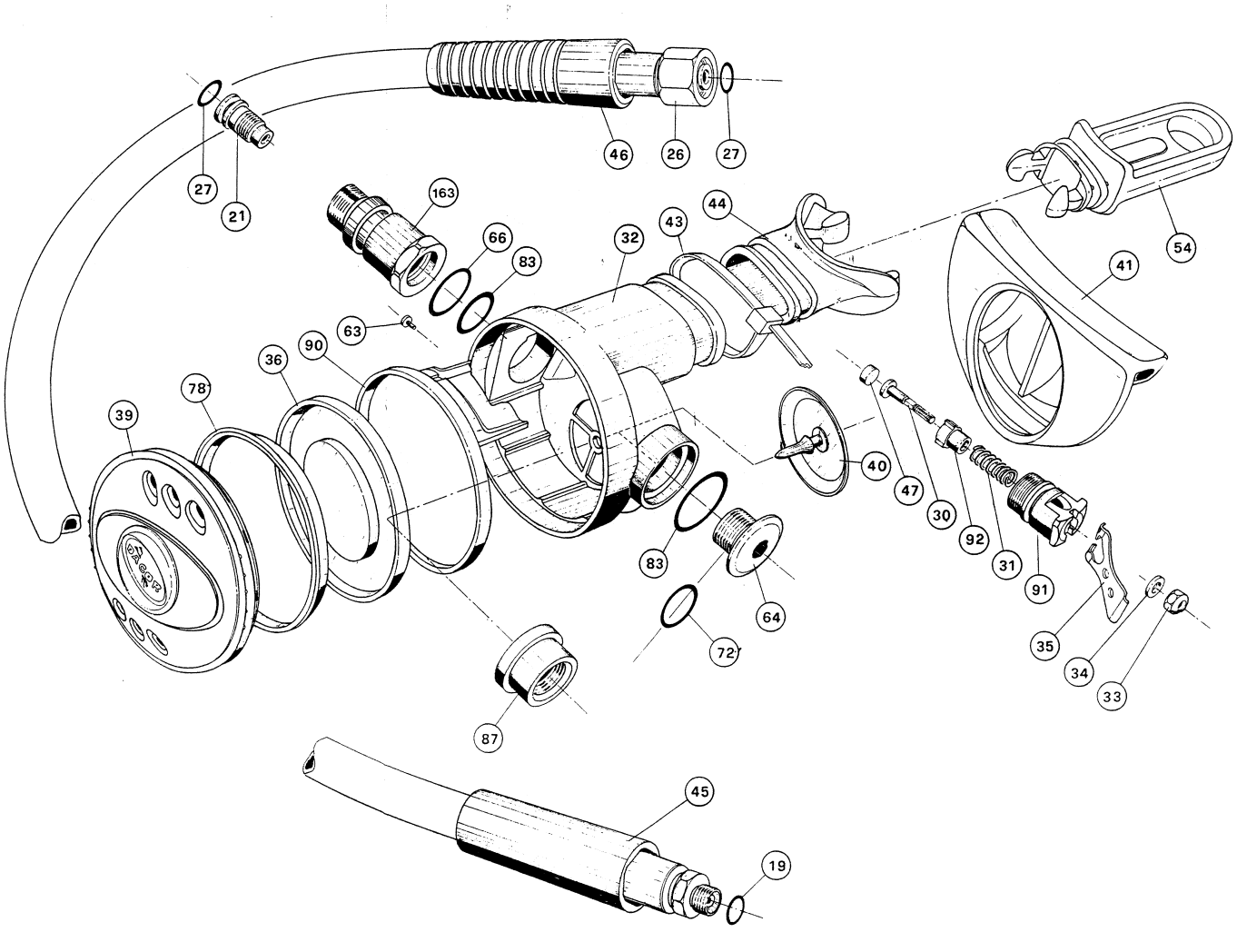


Table No. 107	**FURY SECOND STAGE**	Drawing reference No.: E 22 Table updated on: 30/10/2001

Ref.No.	Code	Description
19	46110106	OR 106
19	46110402	OR 106 Viton
21	46186023	2nd Stage poppet seat
26	46187062	Fury hi flow hose
26	46187070	Fury yellow hi flow hose
27	46110205	OR 2025
27	46110411	OR 2025 Viton
30	46184219	2nd stage poppet stem
31	46185057	2nd Stage poppet spring
32	46187059	1st stage case Fury
33	46185051	Fix.nut Lever
34	46185049	2nd stage washer
35	46185104	Demand lever CWD
36	46184225	Modular diaphragm
40	46184006	2nd stage exhaust valve
41	46186266	98 2nd stage exhaust tee
43	47157984	Black 200 x 4.8 strap
44	46185086	Black mouthpiece (GS)
45	46187061	Fury 2nd stage hose protector
46	46187014	Dacor 1st stage hose protector
47	46184062	Poppet seat
54	46186090	Octopus mouthpiece cap
63	46200095	Nickel-plated lock pin

Ref.No.	Code	Description
64	46186267	Adjuster port plug
66	46110220	OR 2062
66	46110417	OR 2062 Viton
72	46110215	OR 2043
72	46110415	OR 2043 Viton
78	46184224	Diaphragm retainer ring
83	46110225	OR 2068
83	46110420	OR 2068 Viton
87	46184233	Adjuster access connector
90	46184222	Spacer ring
91	46184218	Lever port connector
92	46184220	2nd stage poppet body
163	46200006	Case assembly connector
		ASSEMBLIES
G	436950	Fury 2nd stage assembly
39	46187257	Fury assembly cover
39	46187259	Fury yellow assembly cover
* * *	46187229	Fury 2nd stage service kit
		(19-27-29-33-40-43-47-66-72-83)
* * *	46200139	Nitrox 2nd stage service kit
		(19-27-29-33-40-43-47-66-72-83)

Drawing No. E 23	**FURY ADJ SECOND STAGE**	Drawing updated on: 15/02/2001

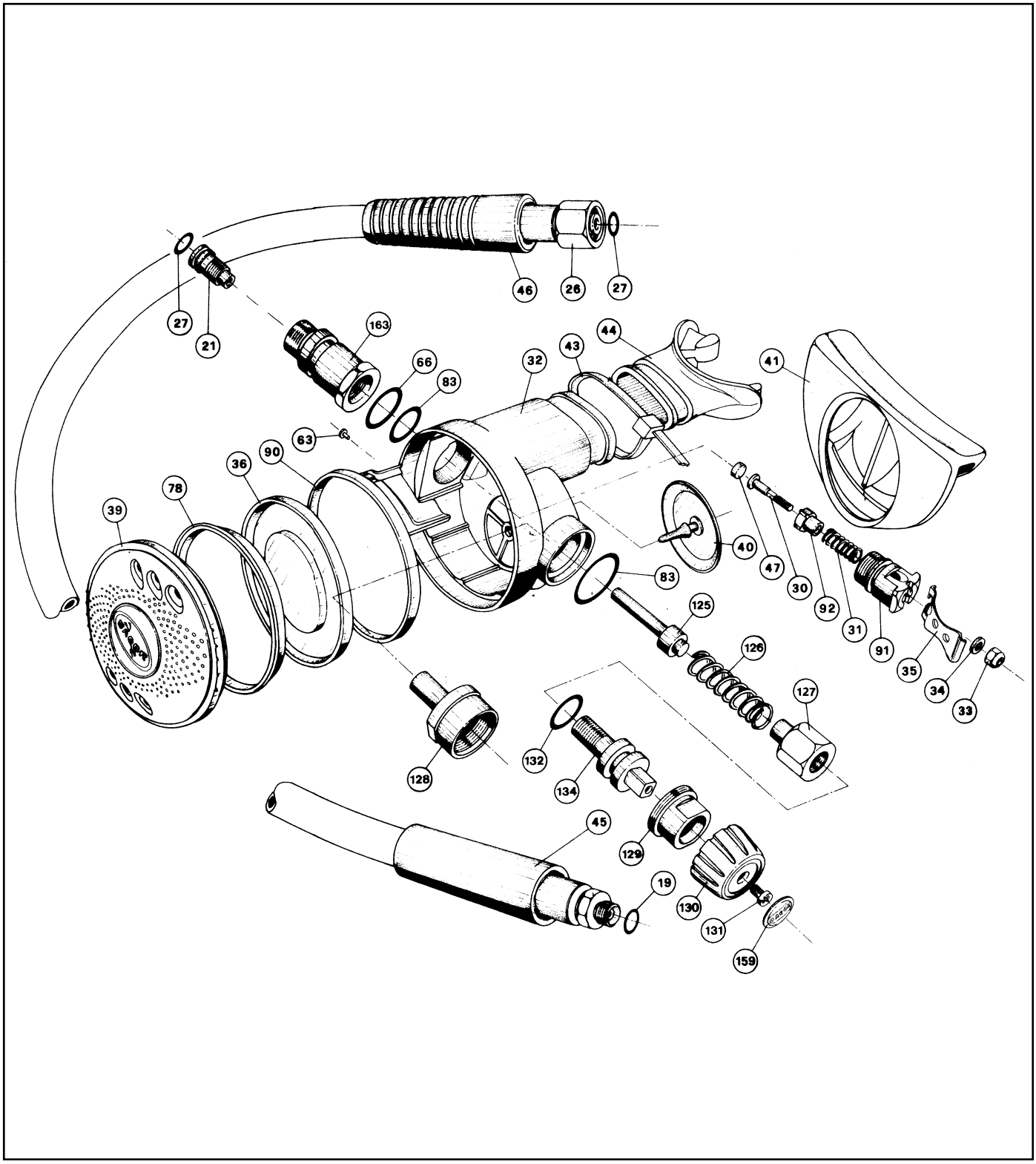


Table No. 108	**FURY ADJ SECOND STAGE**	Drawing reference No.: E 23 Table updated on: 30/10/2001

Ref.No.	Code	Description
19	46110106	OR 106
21	46186023	2nd Stage seat
26	46187069	Fury ADJ super flow hose
27	46110205	OR 2025
30	46184219	2nd stage poppet stem.
31	46185057	Spring
32	46187066	1st stage case Fury ADJ
33	46185051	Demand lever nut
34	46185049	2nd stage washer
35	46185104	Demand lever CWD
36	46184225	Modular diaphragm
40	46184006	2nd Stage exhaust valve
41	46186266	98 2nd stage exhaust tee
43	47157984	Black 200 x 4.8 strap
44	46185086	Black mouthpiece (GS)
45	46187061	Fury 2nd stage hose protector
46	46187014	Dacor 1st stage hose protector
47	46184062	Poppet seat
63	46200095	Nickel-plated lock pin
66	46110220	OR 2062
78	46184224	Diaphragm retainer ring
83	46110225	OR 2068

Ref.No.	Code	Description
90	46184222	Spacer ring
91	46184218	Lever port connector
92	46184220	2nd stage poppet body
125	46184685	Adjustment tree
126	43163325	Spring - power adjustment Sten
127	46184686	Adjust bushing
128	46184684	Adjuster body
129	46184688	Adjuster port plug
130	46187067	Adjuster knob
131	46184696	Screws m 3x8 UNI 7689
132	46110215	OR 2043
134	46184687	Adjuster pin
159	46187055	Drop sticker
163	46200006	Case assembly connector
		ASSEMBLIES
B	436951	Fury ADJ 2nd stage assembly
39	46187258	Fury ADJ assembly cover
* * *	46187228	Fury ADJ 2nd stage service kit
		(19-27-29-33-40-43-47-66-83-132)

DACOR REPAIR MANUAL
VOLUME THREE

SECTION 2

SECOND STAGE REGULATOR

VIPER
SECOND STAGES

Drawing No. E 25	**VIPER TEC SECOND STAGE**	Drawing updated on: 24/05/2001

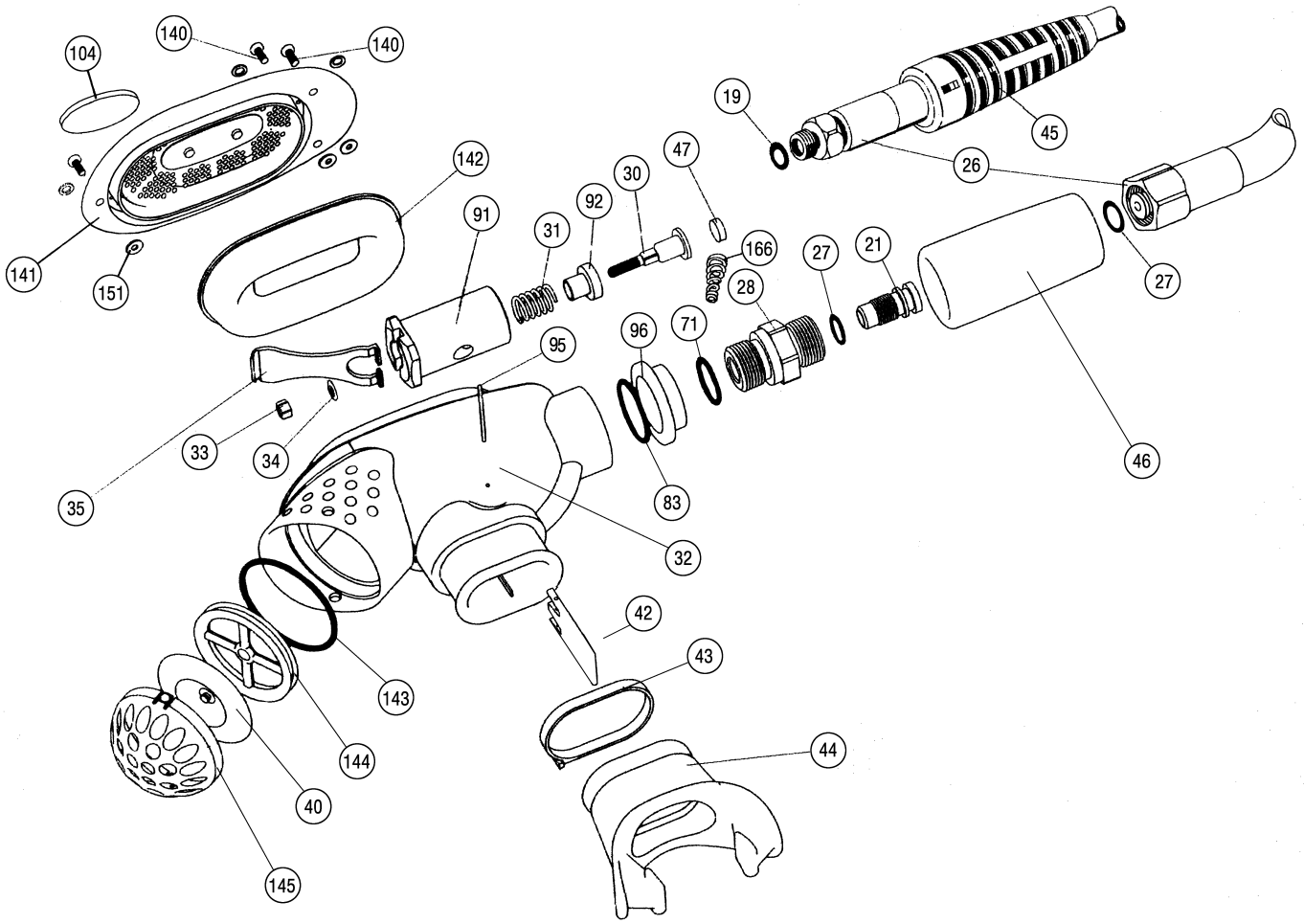


Table No. 110	**VIPER TEC SECOND STAGE**	Drawing reference No.: E 25 Table updated on: 30/10/2001

Ref.No.	Code	Description
19	46110106	OR 106
19	46110402	OR 106 Viton
21	46186023	2nd stage poppet seat
26	46187037	3/8 UNF Super Flow hose
27	46110205	OR 2025
27	46110411	OR 2025 Viton
28	46184282	Case assembly connector
30	46184219	2nd stage poppet stem.
31	46185059	Poppet spring
32	C	Viper Tec Nitrox case
32	C	Viper Tec case
33	46185051	Demand lever nut
34	46185049	Lever washer
35	46187027	Teflon-coated demand lever
40	46200236	Exhaust valve
42	C	Mobile deflector
43	47157984	Black 200 x 4.8 strap
44	46185086	Mouthpiece
45	46187036	2nd stage hose protector
46	46187014	Dacor 1st stage hose protector
47	46184062	Poppet seat
71	46110211	OR 2050
71	46110413	OR 2050 Viton
83	46110225	OR 2068
83	46110420	OR 2068 Viton
91	46187033	Lever port connector
92	46184221	2nd stage poppet body

Ref.No.	Code	Description
95	C	Viper Tec mobile deflector pin
96	46187054	Green by pass retainer ring
96	46187035	Gray by pass retainer ring
104	46187031	Viper Tec 25 mm oval sticker
140	46187004	M 2x5 DIN 7985-A4 cover screws
141	46187029	Two-material Viper Tec cover
142	46187009	Viper oval diaphragm
143	46110175	OR 2125
143	46110430	OR 2125 Viton
144	46187025	Viper exhaust valve port
145	46187023	Gray exhaust grid
151	46187008	1.8 x 5 x 0.5 washer
152	46187005	UNI 6592 D 4.5 flat washer
166	46200179	Conic spiral
		ASSEMBLIES
B	<46187237>	Viper Tec 2nd stage assembly
C	<46200150>	VIPER TEC P.F. 2nd stage case
		(32-42-95)
C	<46200149>	VIPER TEC NX P.F. 2nd stage case
		(32-42-95)
***	46187222	Serv.kit. Viper Tec / Viper 2nd stage
		(19-27-33-40-43-47-71-83-143)
***	46187223	Serv.kit. Viper Tec Nx/ Viper Nx 2nd stage
		(19-27-33-40-43-47-71-83-143)

Drawing No. E 24	**VIPER SECOND STAGE**	Drawing updated on: 24/05/2001

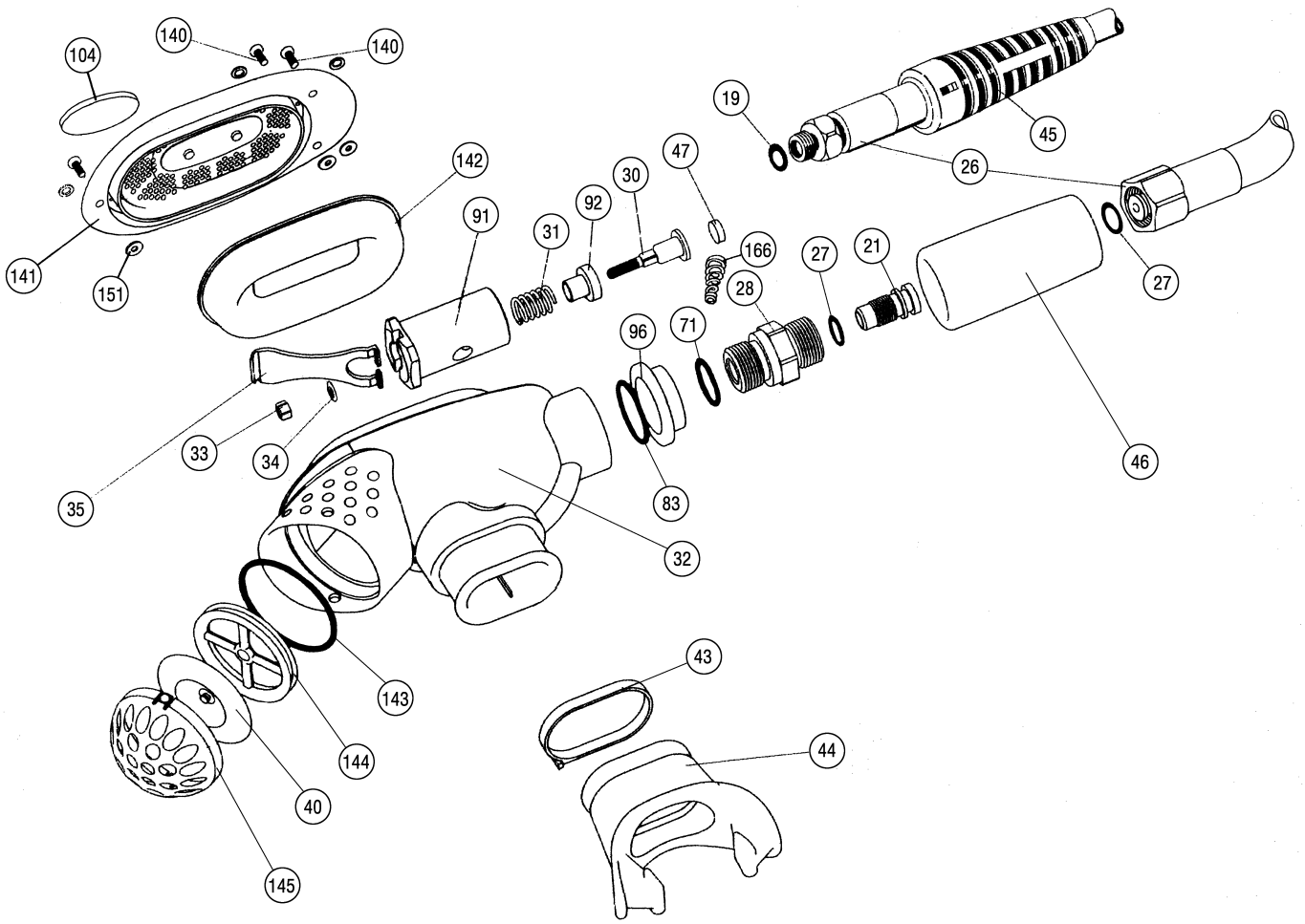


Table No. 109	**VIPER SECOND STAGE**	Drawing reference No.: E 24 Table updated on: 30/10/2001

Ref.No.	Code	Description
19	46110106	OR 106
19	46110402	OR 106 Viton
21	46186023	2nd stage poppet seat
26	46187043	Dacor black Hi-Flow hose
26	46187044	Yellow octopus hi/flow hose
27	46110205	OR 2025
27	46110411	OR 2025 Viton
28	46184282	Case assembly connector
30	46184219	2nd stage poppet stem.
31	46185059	Poppet spring
32	46187020	Viper case
32	46187019	Viper octopus case
32	46187051	Nitrox Viper case
32	46187050	Viper Nitrox octopus case
33	46185051	Demand lever nut
34	46185049	Lever washer
35	46187027	Teflon-coated demand lever
40	46200236	Exhaust valve
43	47157984	Black 200 x 4.8 strap
44	46185086	Mouthpiece
45	46187036	2nd stage hose protector
46	46187014	Dacor 1st stage hose protector
47	46184062	Poppet seat
71	46110211	OR 2050
71	46110413	OR 2050 Viton
83	46110225	OR 2068
83	46110420	OR 2068 Viton

Ref.No.	Code	Description
91	46187033	Lever port connector
92	46184221	2nd stage poppet body
96	46187054	Green by pass retainer ring
96	46184280	Black by pass retainer ring
96	46187038	Yellow by pass retainer ring
104	46187032	Viper Tec 17.5 mm oval sticker
140	46187004	M 2x5 DIN 7985-A4 cover screws
141	46187028	Yellow Viper cover
141	46187030	Black Viper cover
142	46187009	Viper oval diaphragm
143	46110175	OR 2125
143	46110430	OR 2125 Viton
144	46187025	Viper exhaust valve port
145	46187022	Black exhaust grid
145	46187024	Yellow exhaust grid
151	46187008	1.8 x 5 x 0.5 washer
152	46187005	UNI 6592 D 4.5 flat washer
166	46200179	Conic spiral
		ASSEMBLIES
B	46187238	Viper 2nd stage assembly
***	46187222	Serv.kit. Viper Tec / Viper 2nd stage
		(19-27-33-40-43-47-71-83-143)
***	46187223	Serv.kit. Viper Tec Nx / Viper Nx 2nd stage
		(19-27-33-40-43-47-71-83-143)

Drawing No. E 24	**VIPER AMERICA SECOND STAGE**	Drawing updated on: 13/11/2001

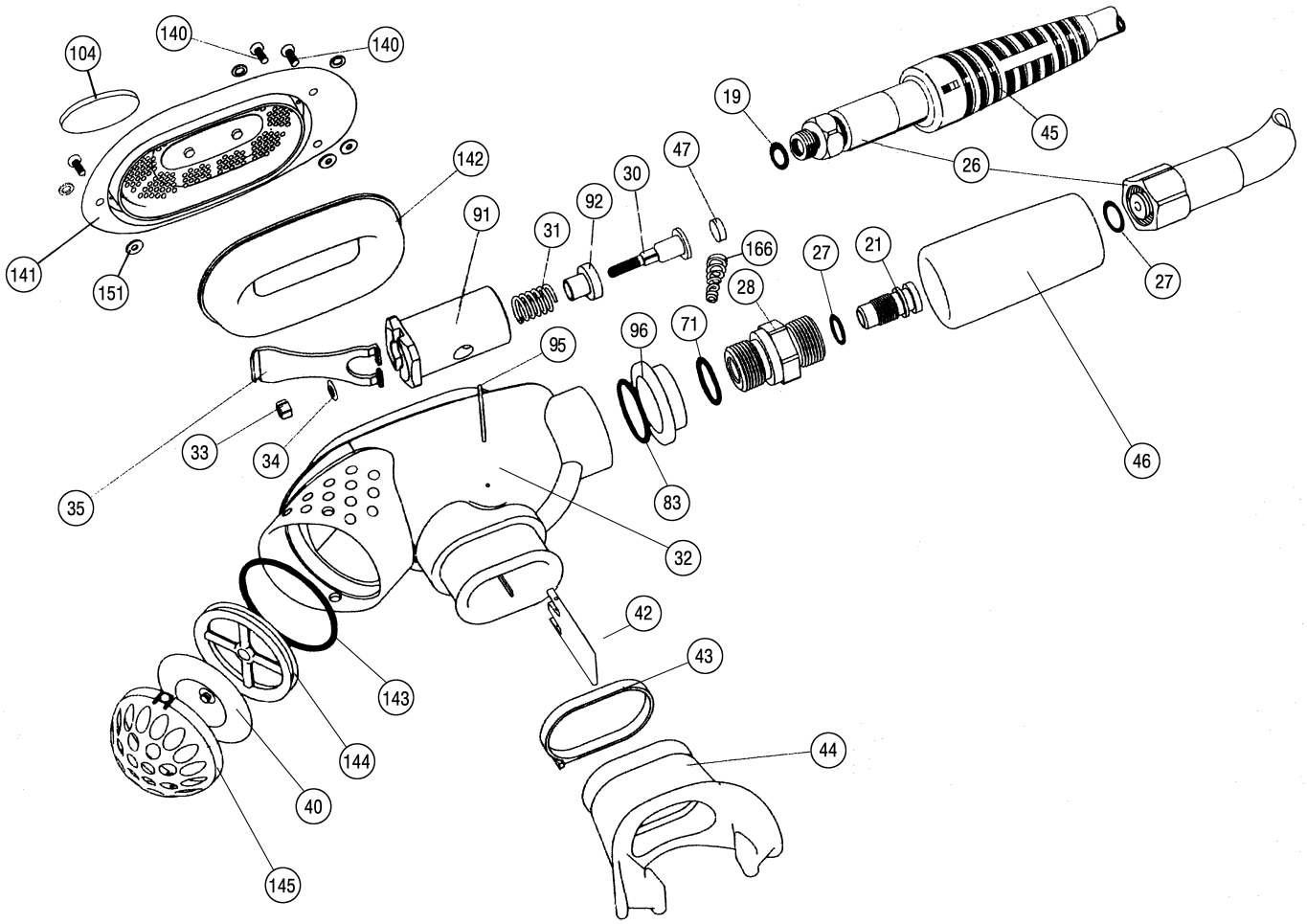


Table No. 111	**VIPER AMERICA SECOND STAGE**	Drawing reference No.: E 26 Table updated on: 02/05/2002

Ref.No.	Code	Description
19	46110106	OR 106
19	46110402	OR 106 Viton
21	46186023	2nd stage poppet seat
26	46187037	3/8 UNF Super Flow hose
27	46110205	OR 2025
27	46110411	OR 2025 Viton
28	46184282	Case assembly connector
30	46184219	2nd stage poppet stem
31	46185059	Poppet spring
32	C	Viper America case
33	46185051	Demand lever nut
34	46185049	Lever washer
35	46187027	Teflon-coated demand lever
40	46200236	Exhaust valve
42	C	Mobile deflector
43	47157984	Black 200 x 4.8 strap
44	46187017	Mouthpiece
45	46187036	2nd stage hose protector
46	46187014	Dacor 1st stage hose protector
47	46184062	Poppet seat
71	46110211	OR 2050
71	46110413	OR 2050 Viton
83	46110225	OR 2068
83	46110420	OR 2068 Viton
91	46187033	Lever port connector
92	46184221	2nd stage poppet body

Ref.No.	Code	Description
95	C	Viper Tec mobile deflector pin
96	46200217	Green by pass retainer ring
104	46187031	Viper Tec 25 mm oval sticker
140	46187004	M 2x5 DIN 7985-A4 cover screws
141	46200281	Two-material Viper America cover
142	46187009	Viper oval diaphragm
143	46110175	OR 2125
143	46110430	OR 2125 Viton
144	46187025	Viper exhaust valve port
145	46187023	Gray exhaust grid
151	46187008	1.8 x 5 x 0.5 washer
152	46187005	UNI 6592 D 4.5 flat washer
166	46200179	Conic spiral
		ASSEMBLIES
B	46187237	Viper America 2nd stage assembly
C	46200150	Viper America P.F. 2nd stage box
		(32-42-95)
C	46200149	Viper America NX P.F. 2nd stage box
		(32-42-95)
***	46187222	Viper regulator 2nd stage service kit
		(19-27-33-40-43-47-71-83-143)
***	46187223	Viper NX regulator 2nd stage service kit
		(19-27-33-40-43-47-71-83-143)

Drawing No. E 21	**VIPER METAL - VIPER GOLD SECOND STAGE**	Drawing updated on: 28/12/2000

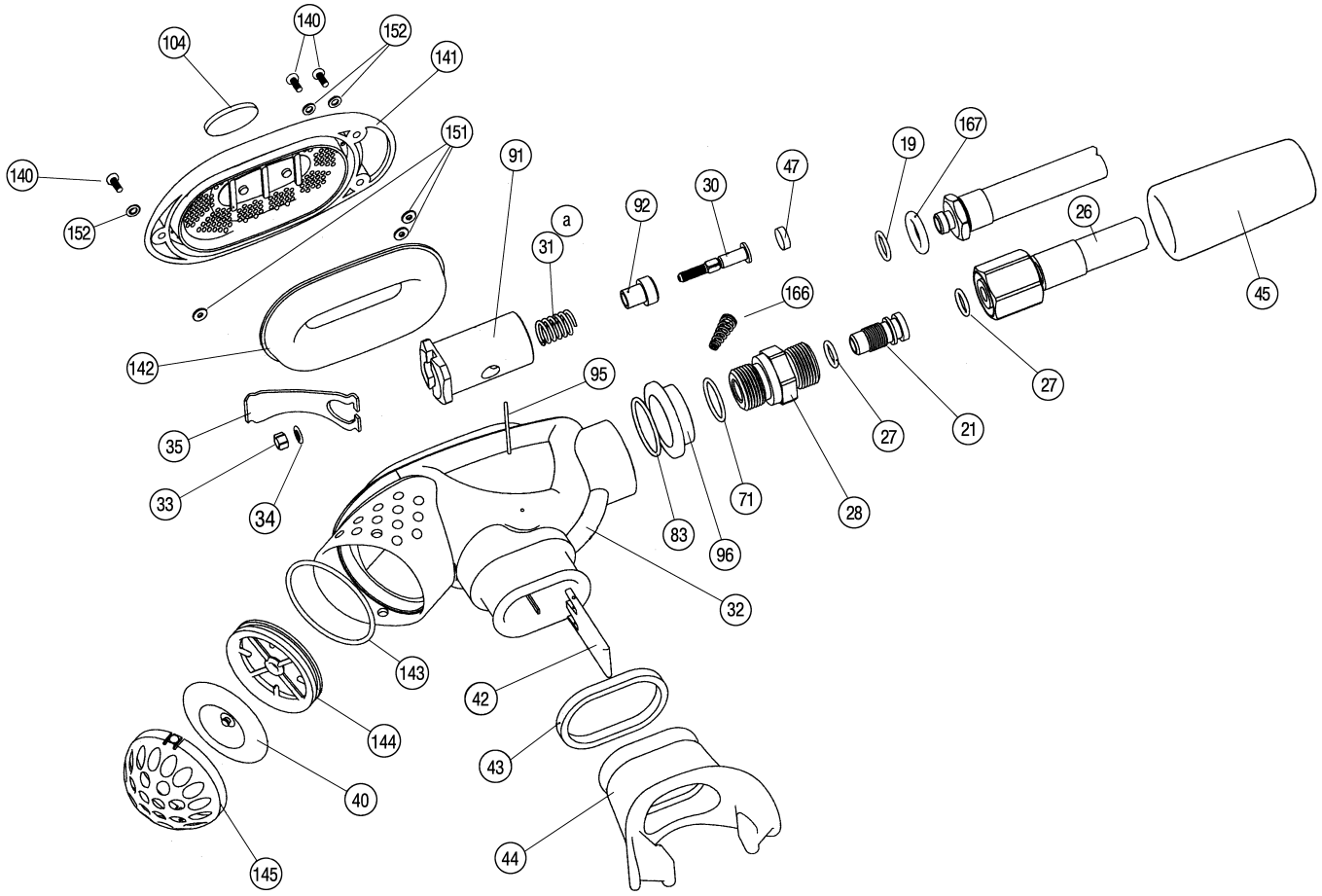


Table No. 105	**VIPER METAL SECOND STAGE**	Drawing reference No.: E 21 Table updated on: 30/10/2001

Ref.No.	Code	Description
19	46110106	OR 106
19	46110402	OR 106 Viton
21	46186023	2nd stage poppet seat
26	46200255	Viper Metal Super Flow hose
27	46110205	OR 2025
27	46110411	OR 2025 Viton
28	46184282	Case assembly connector
30	46184219	2nd stage poppet stem
31	46185059	Poppet spring
32	C	Viper Metal case
33	46185051	Demand lever nut
34	46185049	Lever washer
35	46187027	Teflon-coated demand lever
40	46200236	Exhaust valve
42	C	Mobile deflector
43	47157984	Black 200 x 4.8 strap
44	47187017	Mouthpiece
45	46187036	2nd stage hose protector
47	46184062	Poppet seat
71	46110211	OR 2050
71	46110413	OR 2050 Viton
83	46110225	OR 2068
83	46110420	OR 2068 Viton
91	46187033	Lever port connector

Ref.No.	Code	Description
92	46184221	2nd stage poppet body
95	C	Viper Tec mobile deflector pin
96	46200217	By pass retainer ring
104	46187031	Viper Tec 25 mm oval sticker
140	46187004	M 2x5 DIN 7985-A4 cover screws
141	46200181	Two-material Viper Tec cover
142	46187009	Viper oval diaphragm
143	46110175	OR 2125
143	46110430	OR 2125 Viton
144	46187025	Viper exhaust valve port
145	46187022	Black exhaust grid
151	46187008	1.8 x 5 x 0.5 washer
152	46187005	UNI 6592 D 4.5 flat washer
166	46200179	Conic spiral
167	46200218	OR 3043
		ASSEMBLIES
		Viper Metal 2nd stage assembly
B	46200291	VIPER METAL P.F. 2nd stage case
C	46200288	(32-42-95)
		Viper Metal 2nd Stage service kit
***	46187222	(19-27-33-40-43-47-71-83-143)

Drawing No. E 21	**VIPER METAL - VIPER GOLD SECOND STAGE**	Drawing continued from previous table

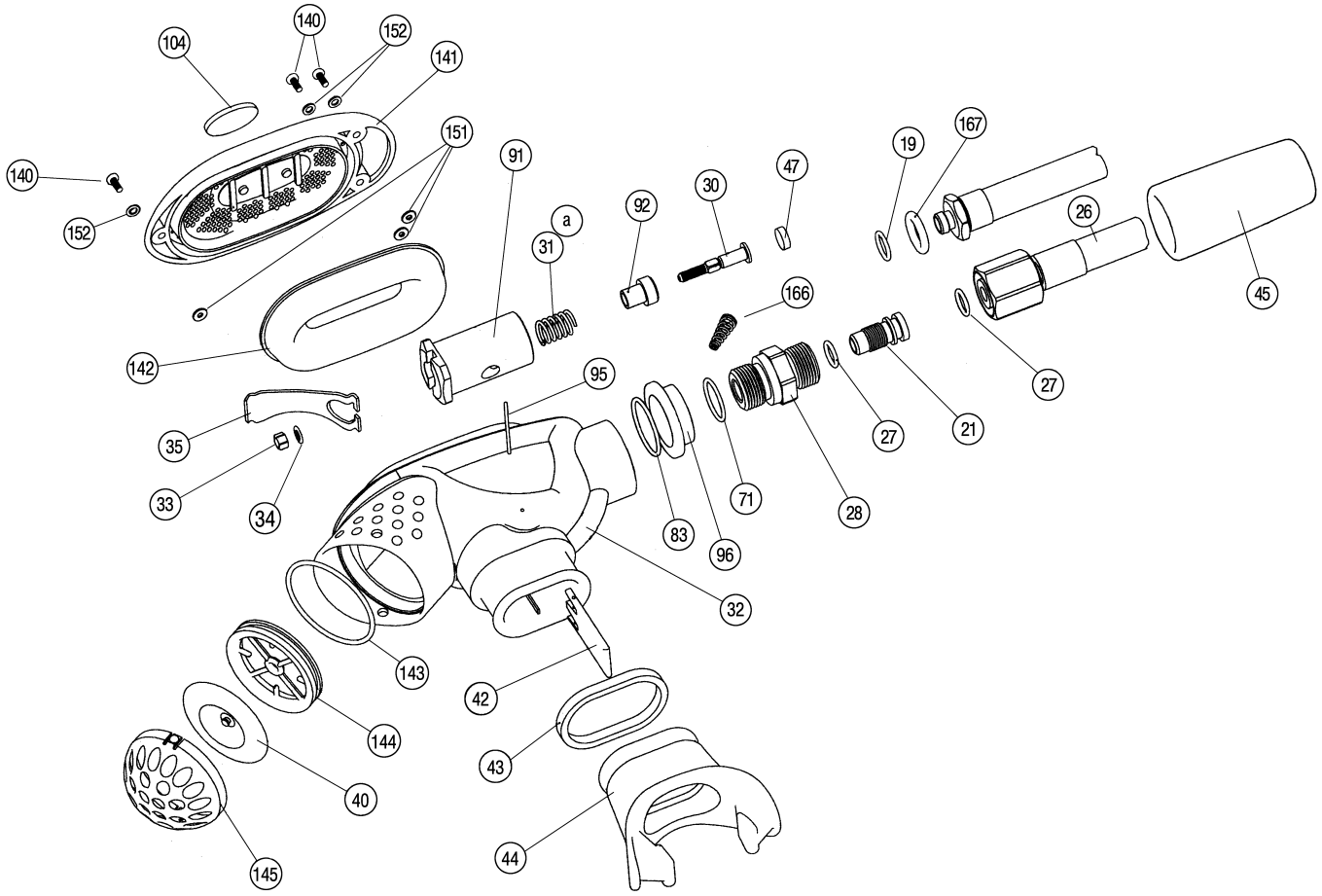


Table No. 106	**VIPER GOLD SECOND STAGE**	Drawing reference No.: E 21 Table updated on: 30/10/2001

Ref.No.	Code	Description
19	46110106	OR 106
19	46110402	OR 106 Viton
21	46186023	2nd stage poppet seat
26	46200255	Viper Metal Super Flow hose
27	46110205	OR 2025
27	46110411	OR 2025 Viton
28	46184282	Case assembly connector
30	46184219	2nd stage poppet stem
31	46185059	Poppet spring
32	C	Viper Gold case
33	46185051	Demand lever nut
34	46185049	Lever washer
35	46187027	Teflon-coated demand lever
40	46200236	Exhaust valve
42	C	Mobile deflector
43	47157984	Black 200 x 4.8 strap
44	47187017	Mouthpiece
45	46187036	2nd stage hose protector
47	46184062	Poppet seat
71	46110211	OR 2050
71	46110413	OR 2050 Viton
83	46110225	OR 2068
83	46110420	OR 2068 Viton
91	46187033	Lever port connector

Ref.No.	Code	Description
92	46184221	2nd stage poppet body
95	C	Viper Tec mobile deflector pin
96	46200225	By pass retainer ring
104	46187031	Viper Tec 25 mm oval sticker
140	46187004	M 2x5 DIN 7985-A4 cover screws
141	46200181	Two-material Viper Tec cover
142	46187009	Viper oval diaphragm
143	46110175	OR 2125
143	46110430	OR 2125 Viton
144	46187025	Viper exhaust valve port
145	46187022	Gray exhaust grid
151	46187008	1.8 x 5 x 0.5 washer
152	46187005	UNI 6592 D 4.5 flat washer
166	46200179	Conic spiral
167	46200218	OR 3043
		ASSEMBLIES
B	46200290	Viper Gold 2nd stage assembly
C	46200289	VIPER GOLD P.F. 2nd stage case
		(32-42-95)
***	46187222	Viper Gold 2nd Stage service kit
		(19-27-33-40-43-47-71-83-143)

VIPER 2nd STAGES TROUBLESHOOTING

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 1 - CONTINUOUS OR INTERMITTENT AIR LEAKS FROM THE SECOND STAGE	**VIPER TEC VIPER AMERICA VIPER METAL VIPER GOLD VIPER**	1) Second stage poppet seat dirty or damaged	1) Clean, invert or replace
		2) Sealing surface of seat connector dirty or damaged	1) Clean or replace
		3) Intermediate pressure too high	1) Adjust the intermediate pressure
		4) Demand lever set too high	1) Adjust correctly
		5) Poppet spring incorrectly positioned or damaged	1) Position correctly or replace
		6) Adjustable seat O-ring in connector dirty or damaged	1) Clean or replace
		7) Adjustable connector seat too low	1) Adjust correctly
- 2 - CRACKING PRESSURE TOO HIGH	**VIPER TEC VIPER AMERICA VIPER METAL VIPER GOLD VIPER**	1) Demand lever set too low	1) Adjust correctly
		2) Intermediate pressure too low	1) Adjust correctly
		3) Hole for 2nd stage poppet in the 2nd stage case obstructed	1) Clean carefully
		4) Tank control valve not fully opened	1) Open the tank valve completely
		5) Second stage spring deformed and/or damaged	1) Replace
		6) First stage filter clogged	1) Overhaul first stage and replace the filter
		7) Poppet spring loading too high	1) Adjust correctly and if necessary replace the spring
	VIPER TEC VIPER AMERICA VIPER METAL VIPER GOLD	8) Pivoting flow vane dirty and/or damaged	1) Clean and/or replace the damaged components

VIPER 2nd STAGES TROUBLESHOOTING

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 3 - CRACKING PRESSURE TOO LOW	VIPER TEC VIPER AMERICA VIPER METAL VIPER GOLD VIPER	1) Intermediate pressure too high	1) Adjust correctly
		2) Second stage spring deformed and/or damaged	1) Replace
		3) Poppet spring loading too low	1) Adjust correctly and if necessary replace the spring
- 4 - AIR LEAK BETWEEN SWIVEL HOSE COUPLING AND SECOND STAGE CONNECTOR	VIPER TEC VIPER AMERICA VIPER METAL VIPER GOLD VIPER	1) Swivel hose coupling O-Ring defective	1) Replace the O-Ring
		2) Sealing surface of hose connector O-Ring dirty or damaged	1) Clean or replace the hose connector
- 5 - TRACES OF WATER INSIDE THE SECOND STAGE	VIPER TEC VIPER AMERICA VIPER METAL VIPER GOLD VIPER	1) Exhaust valve dirty, incorrectly positioned or damaged	1) Clean, position correctly or replace
		2) Exhaust valve support dirty or damaged	1) Clean or replace the exhaust valve support
		3) Exhaust valve support O-Ring dirty or damaged	1) Clean or replace
		4) Diaphragm dirty, incorrectly positioned or damaged	1) Clean, position correctly or replace
		5) Mouthpiece loose or damaged	1) Replace the clamp and tighten or replace the mouthpiece
		6) Seat connector O-Ring defective	1) Replace
		7) Cover incorrectly clamped	1) Lock down the screws
		8) Sealing surface of second stage case with diaphragm dirty or damaged	1) Clean or replace
- 6 - VIBRATIONS DURING THE INHALATION PHASE	VIPER TEC VIPER AMERICA VIPER METAL VIPER GOLD VIPER	1) Poppet spring incorrectly positioned or damaged	1) Position correctly or replace
		2) Diaphragm incorrectly positioned	1) Position correctly
		3) Demand lever incorrectly adjusted	1) Adjust correctly

DACOR REPAIR MANUAL
VOLUME THREE

SECTION 2

SECOND STAGE REGULATORS

CLASSIC
SECOND STAGE

Drawing No. E 20	**CLASSIC SECOND STAGE**	Drawing updated on: 03/04/2000

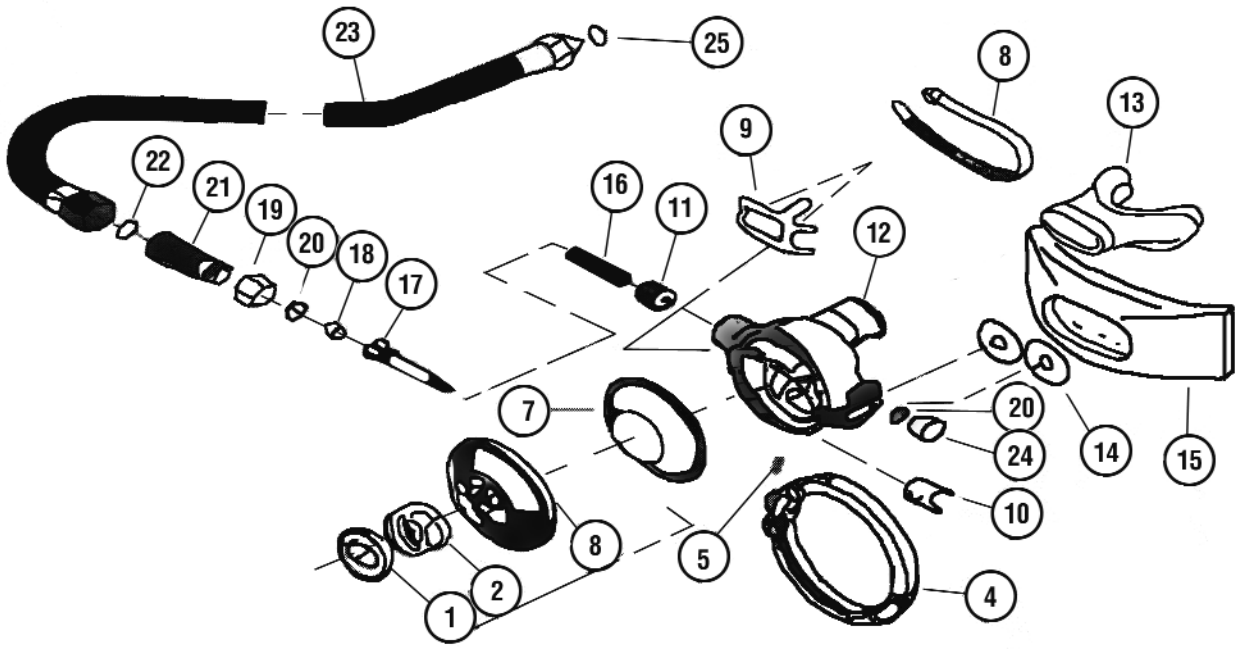


Table No. 104	**CLASSIC SECOND STAGE**	Drawing reference No.: E 20 Table updated on: 03/04/2000

Ref.No.	Code	Description
1	46200054	P.F. purge button
2	46187503	Push-button spring
4	46187585	Dacor chrome-plated band
5	46187603	Band screws
6	46200055	Classic cover
7	46187505	Diaphragm assembly
8	47157984	Mouthpiece clamp
9	46187512	Demand lever
10	46187525	Venturi flow adjustment ring
11	46187515	Adjustment screws
12	46187587	XLE 2nd stage case
13	46200094	Black neutral mouthpiece
14	46187642	Exhaust valve
15	46200093	XLE exhaust tee
16	46187562	2nd stage poppet spring

Ref.No.	Code	Description
17	46187514	Telfon-coated 2nd stage poppet
18	46187507	2nd stage poppet seat
19	46187511	Seat adjustment locking nut
20	46110324	O-Ring NBR 90
21	46200057	Chrome-plated seat connector
22	46110205	O-Ring 2025
23	46187037	Dacor 5.5 hose
24	46185204	3/8" Port plug
25	46187572	O-Ring 2043
***	46200074	Cover suction pump
		ASSEMBLIES
B	46200129	Classic 2nd stage assembly
***	46187687	Classic 2nd Stage service kit

CLASSIC SECOND STAGE

DISASSEMBLY

1. Unscrew the hose (23) from the 1st Stage using the wrench (B-18)
2. Unscrew the hose (23) from the 2nd stage using an 18-mm wrench (B-32) and a 17-mm wrench (B-17).
3. Remove the O-Ring (22) from the swivel coupling of the hose (23).
4. Remove the exhaust tee (15).
5. Remove the clamp (8) from the mouthpiece using a cutting nippers or a similar tool.

NOTE

ONLY REMOVE THE CLAMP FROM THE MOUTHPIECE IF A REPLACEMENT PART IS AVAILABLE.

6. Remove the mouthpiece (13).
7. Using a flat-blade screwdriver (type USAG 326 - 0.8 x 4) completely back off the screw (5) and remove the ring clamp (4).

WARNING ⚠

DO NOT WIDEN THE METAL RING CLAMP BY MORE THAN 2.5 CM.

8. Remove the 2ND stage cover assembly (6) and the diaphragm (7).

NOTE

THE COMPLETE COVER ASSEMBLY (PURGE BUTTON, SPRING, COVER) ONLY NEEDS TO BE REMOVED IF THE COVER IS VERY DIRTY OR CRUSTED, OR IF THE BUTTON TENDS TO STICK WHEN IT IS PRESSED.

9. Back off the retaining nut (19) using the 18-mm wrench (B-32).
10. Using the hex wrench (B 33) unscrew the seat connector (21) and remove the O-Ring (20).

WARNING ⚠

BE CAREFUL NOT TO DAMAGE THE SEAT CONNECTOR WHILE REMOVING THE O-RING.

11. Back off the retaining nut (19) from the seat connector (21).
12. Insert the multi-purpose tool (B-34) into the 2nd stage case and press on the poppet seat holder. (Fig. 1)

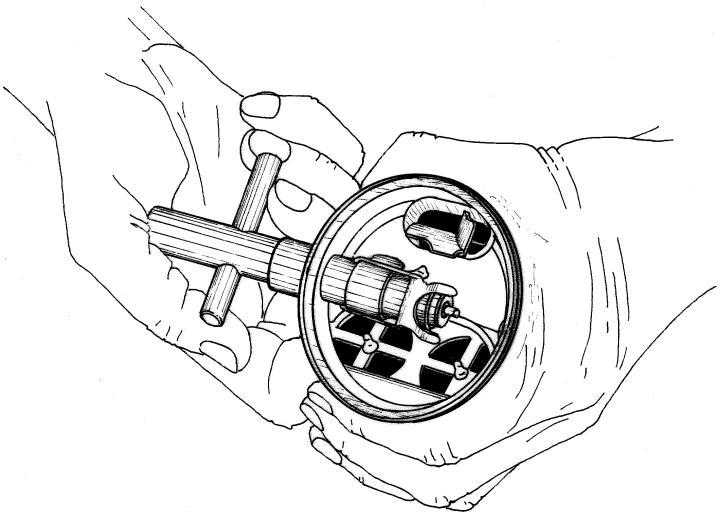


FIG. 1

13. Remove the lever (9) that has thus been loosened, releasing one side at a time from the support chamber.
14. Keeping the multi-purpose tool inside the 2nd Stage case (see Fig. 1), remove the adjusting screw (11), rotating the poppet seat holder in a clockwise direction until the adjusting screw (11), the poppet seat holder (17) and its spring (16) are released from the outer end of the poppet seat support chamber.
15. Remove the poppet seat (18) from the poppet seat holder (17).
16. Remove the Venturi flow control ring (10), sliding it outward from the end of the seat connector support housing. (Fig. 2)

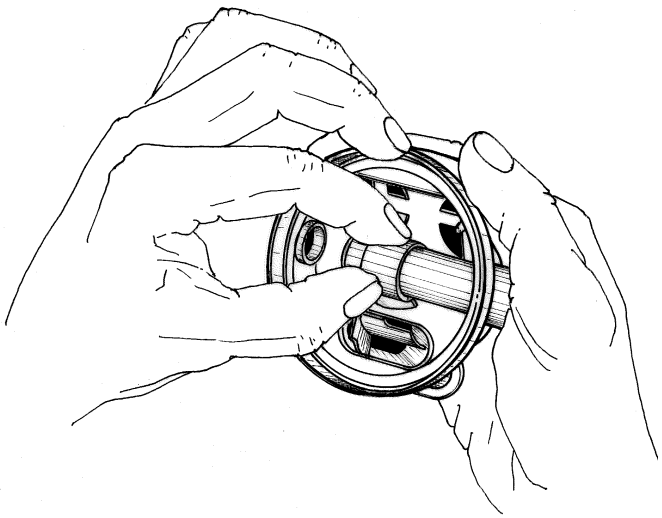


FIG. 2

17. Using a 4-mm hex wrench, remove the 3/8" plug (24) and its O-Ring (20), to access the hole in the second stage case.
18. At this point, disassemble the exhaust valves (14).

NOTE

ONLY REMOVE THE EXHAUST VALVE IF A REPLACEMENT PART IS AVAILABLE

CLEANING

WARNING ⚠

WHEN WORKING WITH ANY KIND OF ACID, WEAR ADEQUATE PROTECTIVE GEAR FOR EYES AND SKIN.

For routine cleaning of reusable rubber components, wash all parts in a mixture of hot water and mild detergent. Make sure all the components have been thoroughly rinsed in fresh water before reassembling them. Chrome plated brass and stainless steel parts can be cleaned with an ultrasonic cleaner in fresh water, or in a mild acid solution (for example white vinegar, diluted as necessary).

WARNING ⚠

ACIDS OR OTHER SOLVENTS MAY DAMAGE PLASTIC AND RUBBER PARTS. BEFORE CLEANING METAL COMPONENTS, MAKE SURE THAT ALL SEALS AND OTHER PARTS SUBJECT TO DETERIORATION HAVE BEEN REMOVED.

INSPECTION

Certain key components of the second stage should be routinely replaced at each scheduled overhaul. In addition, considering their relatively low cost, it is recommended to replace all the O-Rings each time.

Quantity	Ref. N.	Description	Code
1	25	O-Ring 2043	Cod. 46187572
2	20	O-Ring NBR 90	Cod. 46110324
1	22	O-Ring 2025	Cod. 46110205
1	18	2nd stage poppet seat	Cod. 46187507
2	14	Exhaust valves	Cod. 46187642
1	8	Mouthpiece clamp	Cod. 47157984

If these components are not replaced, they should at least be inspected with a jeweler's magnifying glass for the following defects.

DO NOT USE PARTS WITH THE FOLLOWING DEFECTS:

2nd stage case	(12)	Inspect the sealing surfaces for scratches or cracks
Seat connector	(21)	Check that the sealing surface and the O-Ring seat are intact
Diaphragm	(7)	Check for tears or pinholes around the metal disk, deformation of the outer rim or signs of separation of the diaphragm from the metal disk
O-Ring	(20-22)	Check for cuts, burrs or foreign particles. The presence of any of these defects may result in leaks
2nd stage poppet seat	(18)	Check for cuts, burrs or abrasion of the rubber
Poppet seat holder	(17)	Check for cracks, cuts or deformation
Adjusting screw	(11)	Check that the sealing surface is intact
Mouthpiece	(13)	Inspect for cuts, tears or signs of wear
Exhaust tee	(15)	Check that it is intact
Hose	(23)	Inspect for splits, blistering or any other signs of damage
Spring	(16)	Check for any split or broken coils

REASSEMBLY

Before reassembling, lightly lubricate all the O-Rings with silicone grease (type General Electric Versalube G-322 or equivalent). Lubrication reduces the likelihood of damage during reassembly.

1. Install two new exhaust valves (14), carefully pulling the silicone stem through the center holes of the second stage case.

WARNING ⚠

DO NOT PULL TOO HARD ON SILICONE STEM AS THIS MAY DAMAGE THE EXHAUST VALVE.

2. Insert the 2nd stage poppet seat (18) in the 2nd stage poppet seat holder.
3. Fit the O-Ring (20) in the seat of the seat connector (21).
4. Lock down the retaining nut (19) on the seat connector.

WARNING ⚠

DURING THE OPERATION DESCRIBED IN STEP 4 TAKE CARE NOT TO DAMAGE THE AREA OF THE CONE.

NOTE

THE UNTHREADED PART OF THE NUT MUST BE TURNED TOWARD THE LARGER SIDE OF THE SEAT CONNECTOR (FIG. 3).

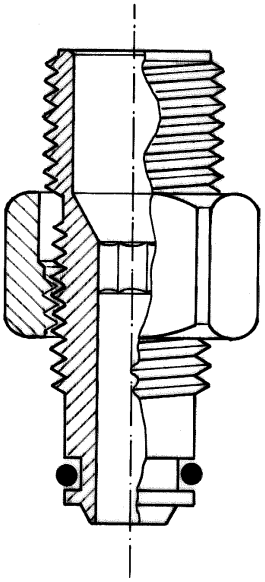


Fig. 3

5. Position the spring (16) on the poppet seat holder (17).
6. Position the adjusting screw (11) on the square end of the 2nd Stage poppet seat holder and insert the entire group inside the 2nd Stage case. (Fig. 4)

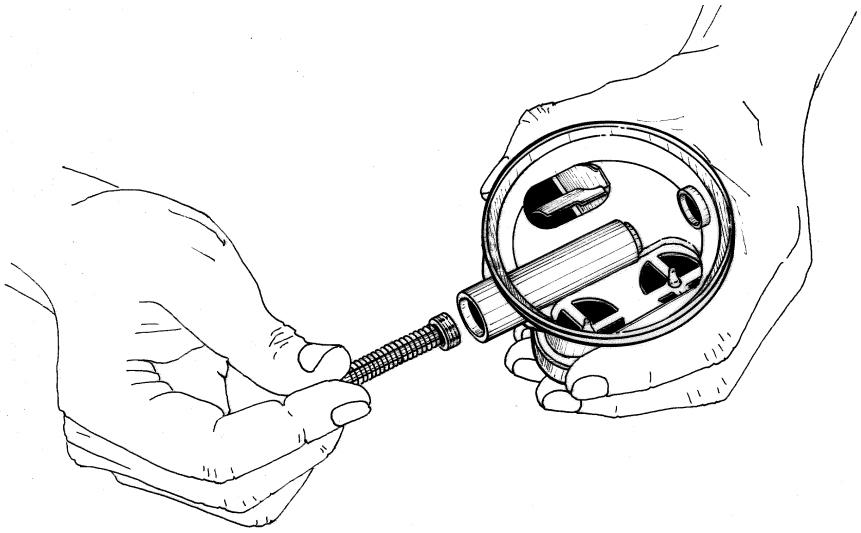


FIG. 4

7. Using the multi-purpose tool (B-34), turn the group in a clockwise direction until it is fully locked down. Do not force it beyond this point.

WARNING ⚠
DO NOT OVER-TIGHTEN THE SCREW.

IMPORTANT ⚠
TO MAKE A PRELIMINARY ADJUSTMENT, ROTATE THE GROUP IN AN ANTICLOCKWISE DIRECTION THROUGH 3-1/2 TURNS.

8. Keep the multi-purpose tool inserted in the 2nd Stage case as shown in (Fig. 1) and press on the poppet seat holder (17) so that about 3/8" of the stem protrudes from the adjusting screw (11).
9. Insert the ends of the demand lever (9) one at a time in the square holes on the sides of the 2nd stage poppet seat holder and release the multipurpose tool (B-34). (Fig. 5)

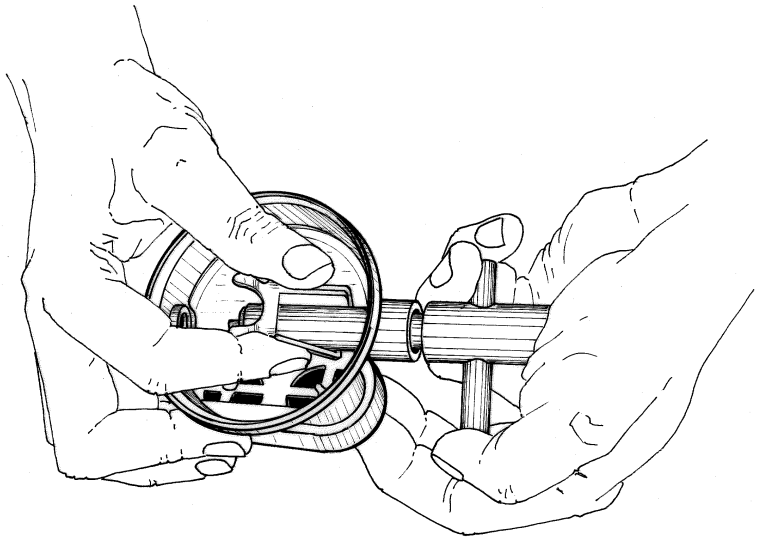


FIG.5

10. Install the Venturi flow control ring (10) on the support housing, bringing it into contact with the demand lever (9).

NOTE

THE 2 ENDS OF THE RING (10) MUST BE TURNED TOWARD INSIDE OF THE 2ND STAGE CASE (12).

NOTE

CHECK THAT THE LEVER IS ABLE TO MOVE FREELY, BY OPERATING IT A FEW TIMES.

11. Using the hex wrench (B-33) install the seat connector (21), turning it in a clockwise direction until the lever (9) is level with the bottom edge of the 2nd stage case (12).
12. Lock down the nut (19) fully up against the exhaust tee of the 2nd Stage case (12).
13. Position the diaphragm (7).
14. Position the cover assembly (6).
15. Install the clamp (4) and tighten it with the screw (5), using a flat-blade screwdriver (type USAG 326- 0.8 X 4).
16. Assemble the exhaust tee (15) on the support flange on the second stage case.

WARNING ⚠

MAKE SURE THAT THE EDGE OF THE EXHAUST TEE IS CORRECTLY INSERTED IN THE FLANGE. LIGHT LUBRICATION WITH LIQUID SOAP OR DETERGENT FACILITATES INSTALLATION. DO NOT USE SILICONE LUBRICANTS, AS THEY MAY DAMAGE CERTAIN COMPONENTS (DIAPHRAGMS) AND CAUSE THE EXHAUST TEE TO COME OUT OF ITS SEAT DURING USE.

17. Assemble the mouthpiece (44), securing it with a new mouthpiece clamp (43).
18. Insert the O-Ring (22) in the swivel coupling of the hose (23).
19. Using an 18-mm wrench (B-32) and a 17-mm wrench (B-17), screw the hose (23) onto the 2nd Stage assembly.

PROCEDURE FOR ADJUSTING THE DEMAND LEVER

To obtain a correct adjustment of the regulator:

A. The repair shop should be equipped with a high and low pressure compressed air supply.
B. It is necessary to have a pressure gauge for checking the intermediate pressure (the pressure gauge should have a full scale value MAX 30 - 40 BAR, for greater accuracy of adjustment).
1. Screw the intermediate pressure gauge into one of the 3/8" low pressure ports on the first stage, using the wrench (B-17).
2. Assemble the hose with the partially finished 2nd stage on the port marked D.F.C., tightening it with the wrench (B-18).
3. Mount the regulator group on the control valve (of a tank or Test Bench).
4. While pressing the purge button, slowly open the tank valve and, almost simultaneously, release the demand lever.
5. Read the pressure gauge to check whether the 1st stage pressure is correct.

WARNING ⚠

THE FIRST STAGE INTERMEDIATE PRESSURE MUST BE MEASURED WHEN THERE IS NO AIR COMING OUT OF THE 2ND STAGE. FOR ANY NECESSARY ADJUSTMENTS OF THE 1ST STAGE, REFER TO THE SEPARATE MANUAL.

6. Unscrew the swivel hose coupling and the retaining nut (19) through approximately one turn.
7. Hold the hose (23), the swivel coupling and the retaining nut (19) in place with one hand, and the 2nd stage with the other. (Fig. 6)

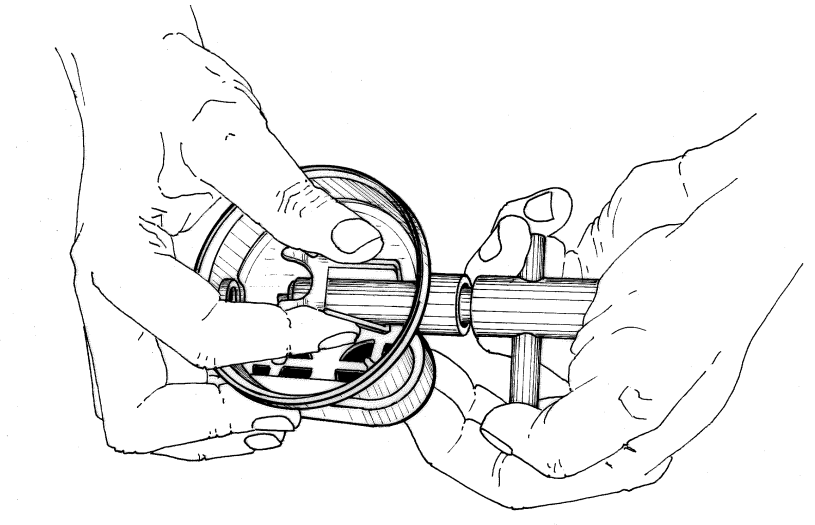


FIG. 6

8. Rotate the 2nd stage in an counter clockwise direction until there is plentiful free-flow.
9. Rotate the 2nd stage in a clockwise direction until the free-flow stops.
10. Check the travel of the purge button.

WARNING ⚠

ROTATE THE 2ND STAGE IN A CLOCKWISE DIRECTION UNTIL THE PURGE BUTTON HAS APPROXIMATELY 1MM OF IDLE TRAVEL BEFORE AIR DELIVERY BEGINS.

11. Back off the retaining nut (19) using the wrench (B-32).
12. Lock down the swivel coupling using the wrench (B-18).
13. Check the travel of the purge button again.
14. Then try breathing through the newly adjusted 2nd Stage. The air should come out gently and smoothly, without free-flow In addition, there should be plenty of air flow when the purge button is pressed.

WARNING ⚠

IF THE RESULT OBTAINED IS NOT AS DESCRIBED IN STEP 14, REPEAT THE ADJUSTMENT PROCEDURE.

FINAL CHECKS AND ADJUSTMENTS

Perform the checks described below to ensure that the regulator is working perfectly.

VALUES OF "CRACKING" PRESSURE		
MODEL	***INCHES OF H_2O***	***CM OF H_2O***
CLASSIC 2ND STAGE	1 - 1.5	2.5 - 3.5

Tab. A

1. Mount the regulator group on the control valve (of a tank or Test Bench).
2. Using the laboratory Test Bench or the portable Test Bench, after adjusting the 1st Stage, breathe in through the mouthpiece and read out the "cracking" pressure value (value required to trigger air delivery) on the U-gauge, at the instant when the gauge detects a drop in the intermediate pressure.

WARNING ⚠

WHEN PERFORMING THIS CHECK ALWAYS MAKE SURE THAT THE ADJUSTMENT ACCESS HOLE IN THE 2ND STAGE CASE (17) IS CLOSED WITH ITS PLUG (24) AND O-RING (20).

WARNING ⚠

IN THE ABSENCE OF A TEST BENCH IT IS POSSIBLE TO RUN AN APPROXIMATE CHECK OF THE CRACKING PRESSURE USING A BASIN OF WATER AND CARRYING OUT THE PROCEDURE BELOW:

A. SLOWLY SUBMERGE THE 2ND STAGE IN THE WATER WITH THE MOUTHPIECE FACING UP, AND WITHOUT ALLOWING WATER TO GO INSIDE.
B. WHEN THE WATER LEVEL, MEASURED FROM THE POINT INDICATED IN THE DIAGRAM (FIG. 7) FALLS BETWEEN THE CRACKING VALUES INDICATED IN THE TABLE, THE AIR SHOULD START TO FLOW. (SEE TAB. A)

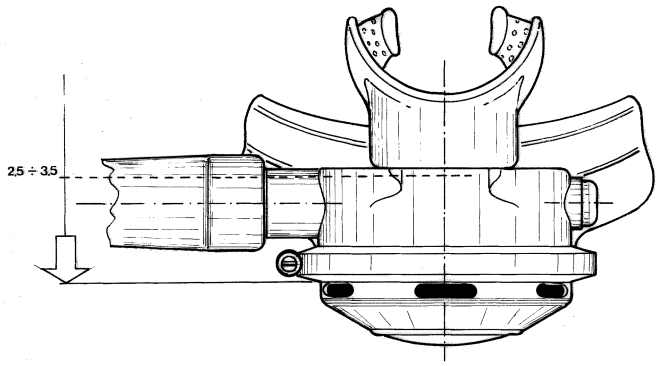


FIG. 7

2ND STAGE MODEL	POINT WHERE AIR DELIVERY STARTS
CLASSIC	POINT INDICATED IN THE FIGURE (Fig. 7)

3. If the value of the Cracking Pressure is less than that shown in table A it is necessary to increase the loading of the spring as follows:
   a) Insert a flat-blade screwdriver through the access hole and into the groove on the 2nd stage poppet seat holder.
   b) Rotate the 2nd Stage poppet seat holder in a clockwise direction to increase the loading of the spring and hence the breathing effort.
4. If the value of the Cracking Pressure is greater than that shown in table A it is necessary to reduce the loading of the spring as follows:
   c) Insert a flat-blade screwdriver through the access hole and into the groove on the 2nd stage poppet seat holder.
   d) Rotate the 2nd Stage poppet seat holder in an counter clockwise direction to reduce the loading of the spring and hence the breathing effort.
5. Submerge the 2nd stage in water with the mouthpiece facing up, allowing water to enter the exhaust tee and keeping it in this position for about 30 seconds.
6. Remove the 2nd stage from the water, then turn the mouthpiece downward.
7. Check for any traces of water inside the second stage.

WARNING ⚠

IF MORE THAN A FEW DROPS OF WATER COME OUT OF THE SECOND STAGE, CHECK THE SEALING SURFACES OF THE MOUTHPIECE CLAMP, THE EXHAUST VALVE AND THE RIM OF THE DIAPHRAGM.

8. Press the purge button a few times and check that it operates smoothly, and does not jam.
9. Completely submerge the 2nd stage in water (allowing water to enter the mouthpiece) and check for any air leaks.

CLASSIC SECOND STAGE TROUBLESHOOTING

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 1 - CONTINUOUS OR INTERMITTENT AIR LEAKS FROM THE SECOND STAGE	**CLASSIC**	1) 2nd stage poppet seat dirty or damaged	1) Clean, invert or replace
		2) Sealing surface of seat connector dirty or damaged	1) Clean or replace
		3) Intermediate pressure too high	1) Adjust the intermediate pressure
		4) Demand lever set too high	1) Adjust correctly
		5) Second stage spring incorrectly positioned or damaged	1) Position correctly or replace
		6) Adjustable seat O-Ring dirty or damaged	1) Clean or replace
		7) Adjustable seat too low	1) Adjust correctly
- 2 - CRACKING PRESSURE TOO HIGH	**CLASSIC**	1) Demand lever set too low	1) Adjust correctly
		2) Intermediate pressure too low	1) Adjust correctly
		3) Hole for 2nd stage poppet in the 2nd stage case obstructed	1) Clean carefully
		4) Tank control valve not fully opened	1) Fully open the tank valve
		5) 2nd stage spring deformed and/or damaged	1) Replace
		6) 1st stage filter obstructed	1) Overhaul the 1st stage and replace the filter
		7) Poppet spring loading too high	1) Adjust correctly and if necessary replace the spring
- 3 - CRACKING PRESSURE TOO LOW	**CLASSIC**	1) Intermediate pressure too high	1) Adjust correctly
		2) 2nd stage spring deformed and/or damaged	1) Replace
		3) Spring loading too low	1) Adjust correctly and if necessary replace the spring

CLASSIC SECOND STAGE TROUBLESHOOTING

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 4 - AIR LEAK BETWEEN SWIVEL HOSE COUPLING AND SECOND STAGE CONNECTOR	**CLASSIC**	1) Swivel hose coupling O-Ring defective	1) Replace the O-Ring
		2) Sealing surface of hose connector O-Ring dirty or damaged	1) Clean or replace the hose connector
- 5 - TRACES OF WATER INSIDE THE SECOND STAGE	**CLASSIC**	1) Exhaust valves dirty, incorrectly positioned or damaged	1) Clean, position correctly or replace
		2) Exhaust valve seats dirty, or damaged	1) Clean or replace the 2nd stage case
		3) Diaphragm dirty, incorrectly positioned or damaged	1) Clean, position correctly or replace
		4) Mouthpiece loose or damaged	1) Tighten with a new clamp or replace the mouthpiece
		5) Cover ring clamp loose or damaged	1) Tighten or replace
		6) Sealing surfaces and O-Rings dirty or defective	1) Inspect and clean all the sealing surfaces, replacing the O-Rings
- 6 - COVER PURGE BUTTON JAMMED	**CLASSIC**	1) Purge button seat dirty	1) Clean
		2) Defective spring	1) Replace the spring
- 7 - VIBRATIONS DURING THE INHALATION PHASE	**CLASSIC**	1) Diaphragm incorrectly positioned	1) Position correctly
		2) Demand lever incorrectly adjusted	1) Adjust correctly
		3) Poppet spring incorrectly positioned or damaged	1) Position correctly or replace

DACOR REPAIR MANUAL
VOLUME THREE

SECTION 2

SECOND STAGE REGULATOR

CLASSIC PRO
SECOND STAGE

Drawing No. E 27	**CLASSIC PRO SECOND STAGE**	Drawing updated on: 03/04/2002

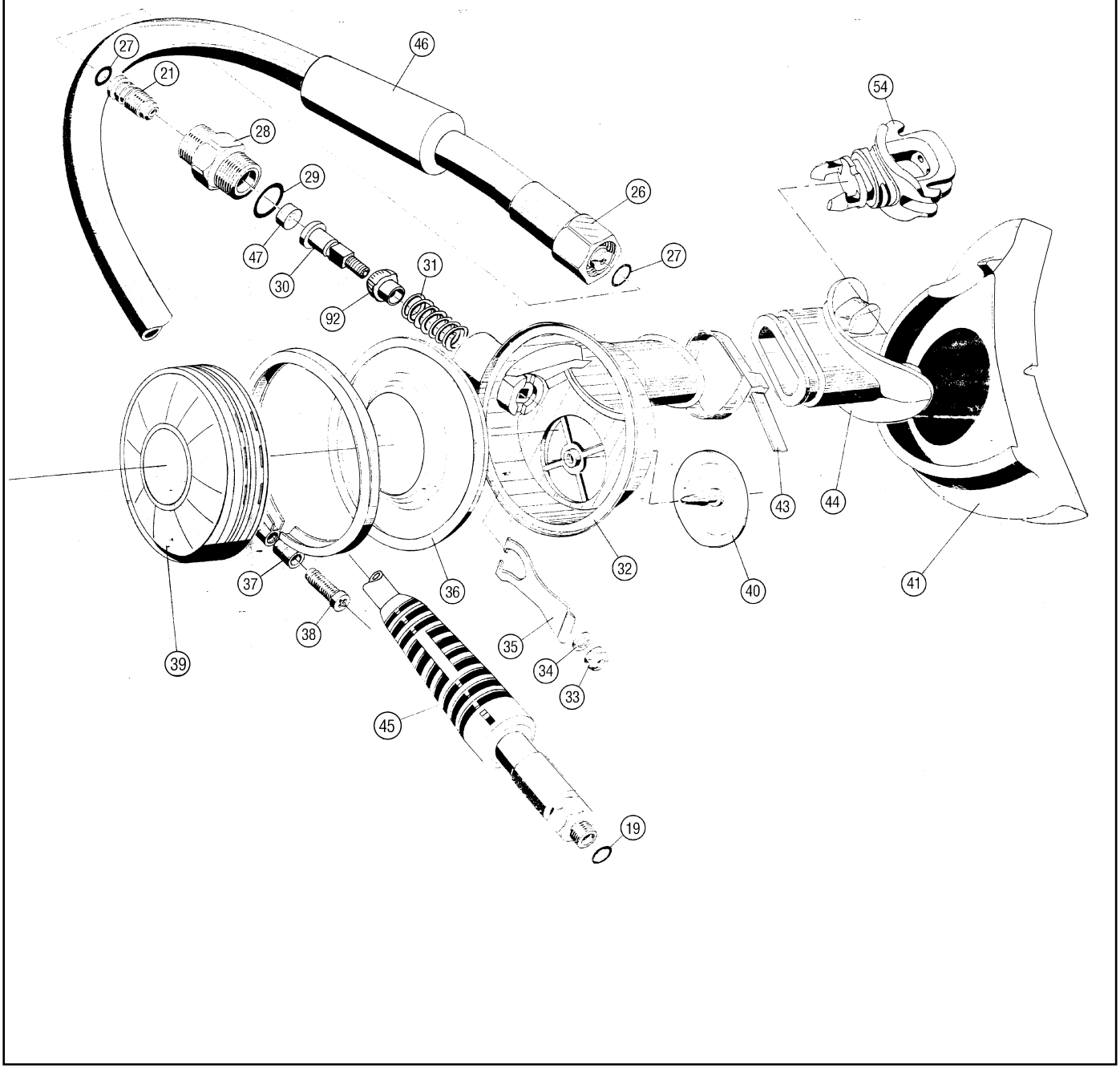


Table No. 112	**CLASSIC PRO SECOND STAGE**	Drawing reference No.: E 27 Table updated on: 09/05/2002

Ref.No.	Code	Description
19	46110106	OR 106
21	46200204	Push-button spring
26	46187037	Black thermorubber hose
26	46200255	1/2 Super Flow hose
27	46110205	OR 2025
28	46184282	Case assembly connector
29	46110211	OR 2050
30	46184219	Valve stem
31	46185057	Poppet spring
32	46200345	Case
33	46185051	Demand lever nut
34	46185049	Lever washer
35	46187027	Demand lever
36	46186029	Diaphragm
37	46185073	Ring clamp
38	46185075	Band screws

Ref.No.	Code	Description
39	46200424	Classic Pro assembly cover
40	46184006	Exhaust valve
41	46200093	Exhaust tee
43	47157984	Mouthpiece clamp
44	46187017	Mouthpiece
45	46187036	2nd stage hose protector
45	46200384	Yellow 2nd stage hose protector
46	46187014	1st stage hose protector
47	46184062	Poppet seat
92	46184220	Valve body
		ASSEMBLIES
B	46200423	Classic Pro 2nd stage assembly
***	46200427	Classic Pro 2nd Stage service kit

CLASSIC PRO

DISASSEMBLY

1. Using cutting nippers (or pliers), cut the mouthpiece clamp (43) and remove the mouthpiece (44).
2. Remove the exhaust tee (41) from the second stage case.
3. Shift the hose protector (46) and using two wrenches (B-17) unscrew the hose (26) from the second stage.
4. Remove the O-Ring (27) from the hose (26).
5. Unscrew the connector (28) from the second stage using the wrench (B-17).
6. Remove the O-Ring (29) and, using the hex wrench (B-4) unscrew the seat connector (21) with the O-Ring (27) from the case assembly connector (28).
7. Back off the screw (38) of the ring clamp (37).
8. Open the ring clamp (37) and pull it out of the second stage case (32).
9. Remove the cover (39) and the diaphragm (36).

NOTE

DISASSEMBLING THE COMPLETE COVER ASSEMBLY (PURGE BUTTON, SPRING, COVER) IS NECESSARY ONLY IF THE COVER IS VERY DIRTY OR ENCRUSTED, OR IF THE BUTTON DOES NOT RETURN TO ITS INITIAL POSITION WHEN PRESSED.

10. Using the special tool (B-12), back off the adjusting nut (33) from the poppet stem (30), removing the demand lever (35), the washer (34) and the spring (31).

WARNING ⚠

TO PREVENT THE SECOND STAGE POPPET AND SPRING FROM BEING EJECTED, COVER THE OPENING OF THE CASE ASSEMBLY CONNECTOR WITH A FINGER.

11. Remove the poppet (30) and the spring (31) from the second stage.
12. Remove the rubber poppet seat (47) from poppet body (30).
13. Remove the exhaust valve (40).

CLEANING

WARNING ⚠

WHEN WORKING WITH ANY KIND OF ACID, WEAR ADEQUATE PROTECTIVE GEAR FOR EYES AND SKIN.

For routine cleaning of reusable rubber components, wash all parts in a mixture of hot water and mild detergent. Make sure all the components have been thoroughly rinsed in fresh water before reassembling them. Chrome plated brass and stainless steel parts can be cleaned with an ultrasonic cleaner in fresh water, or in a mild acid solution (for example white vinegar, diluted as necessary).

WARNING ⚠

ACIDS OR OTHER SOLVENTS MAY DAMAGE PLASTIC AND RUBBER PARTS. BEFORE CLEANING METAL COMPONENTS, MAKE SURE THAT ALL SEALS AND OTHER PARTS SUBJECT TO DETERIORATION HAVE BEEN REMOVED.

INSPECTION

Certain key components of the second stage should be regularly replaced at each scheduled overhaul. In addition, considering their relatively low cost, it is recommended to replace all the O-Rings.

Quantity	Ref No.	Description	Code
2	(27)	O-Ring 2025	Cod. 46110205 cod. Viton 46110411
1	(29)	O-Ring 2050	Cod. 46110211 cod. Viton 46110413
1	(47)	2nd stage poppet seat	Cod. 46184062
1	(33)	Demand lever adjusting nut	Cod. 46185051
1	(40)	Exhaust valve	Cod. 46184006
1	(43)	Mouthpiece clamp	Cod. 47157984

If these components are not replaced, they should at least be inspected with a jeweler's magnifying glass for the following defects.

DO NOT USE PARTS WITH THE FOLLOWING DEFECTS:

2nd stage case	(32)	Inspect the sealing surfaces for scratches or cracks. Check that the exhaust valve seat is perfectly clean and intact. Check that the by-pass is not deformed
Seat connector	(21)	Check that the sealing surface and the O-Ring seat are intact
Case assembly connector	(28)	Check that the sealing surface and the O-Ring seat are intact
Diaphragm	(36)	Check for tears or pinholes around the metal disk, deformation of the outer rim or signs of separation of the diaphragm from the metal disk
O-Ring	(27-29)	Check for cuts, burrs or foreign particles The presence of any of these defects may result in leakage
2nd stage poppet seat	(47)	Check for cuts, burrs or abrasion of the rubber
Demand lever adjusting nut	(33)	Verify its self-locking capacity and inspect for rust. It is recommended to replace it at each scheduled overhaul
Mouthpiece	(44)	Inspect for cuts, tears or signs of wear
Exhaust tee	(41)	Check that it is intact
Hose	(26)	Inspect for splits, blistering or any other signs of damage
Mouthpiece clamp	(37)	Check for breakage or distortion
Spring	(31)	Check for any split or broken coils

REASSEMBLY

Before reassembling, lightly lubricate all the O-Rings with silicone grease (type General Electric Versalube G-322 or equivalent). Lubrication reduces the likelihood of damage during reassembly.

WARNING ⚠

IF THE SECOND STAGE IS USED FOR DIVING WITH OXYGEN-RICH MIXTURES, IT MUST BE PERFECTLY CLEANED AND FREE OF ANY RESIDUAL SILICONE OR OTHER IMPURITIES. VITON O-RINGS MUST BE LUBRICATED WITH SPECIAL OXYGEN-COMPATIBLE GREASE. DO NOT USE SILICONE GREASE.

1. Install a new exhaust valve (40), carefully pulling its silicone stem through the center hole of the second stage exhaust valve support.

WARNING ⚠

DO NOT PULL TOO HARD ON THE STEM TO AVOID DAMAGING THE EXHAUST VALVE.

2. Using cutting nippers, cut the silicone stem by about 7 mm.
3. Reassemble the poppet seat (47) on the poppet body (30).
4. Place the complete 2nd stage poppet assembly and its spring (31) on the special tool (B-6).
5. Exerting a slight pressure, correctly insert the 2nd stage poppet assembly and its spring into the inlet fitting of the 2nd stage case. (Fig. 1)

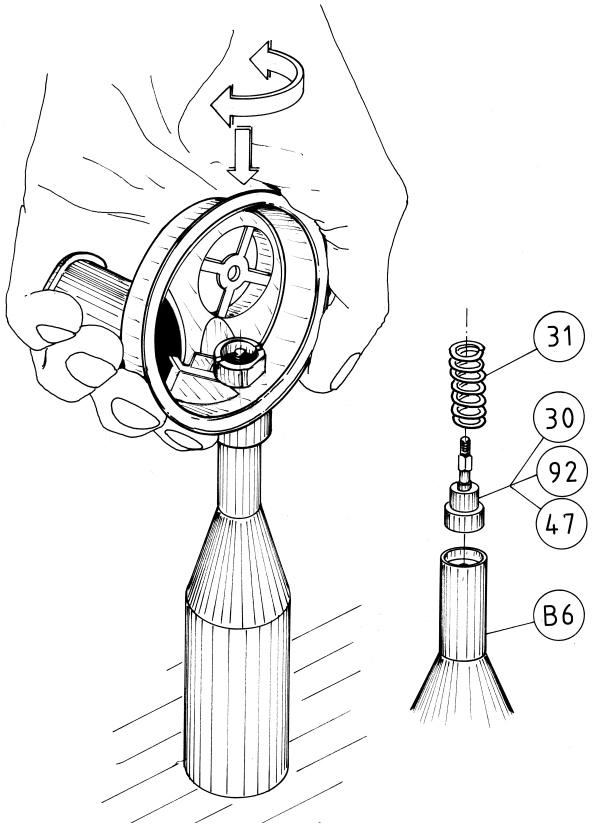


FIG. 1

IMPORTANT ⚠

ROTATE THE SECOND STAGE CASE SLIGHTLY TO THE RIGHT AND LEFT TO OBTAIN CORRECT POSITIONING OF THE 2ND STAGE POPPET STEM.

6. Correctly position the demand lever in the groove of the second stage case (32), fit the washer (34) on the poppet stem and lock down the adjusting nut (33) by a few turns, using the special wrench (B-12 or B-20). (Fig. 2)

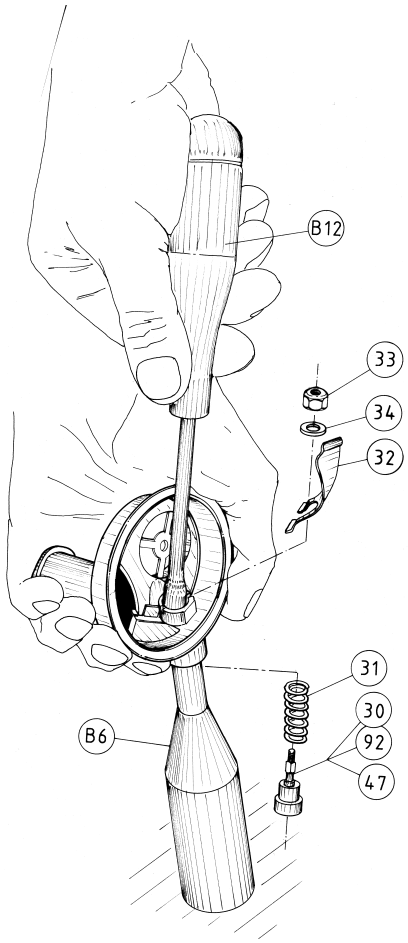


FIG. 2

WARNING ⚠

DO NOT OVER-TIGHTEN THE ADJUSTING NUT. IF THE ADJUSTING NUT IS TOO TIGHT IT MAY CAUSE FREE FLOWING OF THE SECOND STAGE, INTERFERING WITH THE ADJUSTMENT OF THE INTERMEDIATE PRESSURE.

NOTE

CHECK THAT THE LEVER IS ABLE TO MOVE FREELY, BY OPERATING IT A FEW TIMES.

7. Fit the O-Ring (27) in its seat in the case assembly connector (28).
8. Insert and lock down the seat connector (21) onto the case assembly connector (28) using the 5-mm hex wrench (B-4), so that it projects by about 3 mm.

WARNING ⚠

THE POPPET SEAT SHOULD NOT PROTRUDE MORE THAN 3.8 MM FROM THE CASE ASSEMBLY CONNECTOR.

9. Position the O-Ring (29) in the seat on the case assembly connector (28).
10. Using a 17 mm open end wrench (B-17), fully lock down the case assembly connector on the 2nd stage case.

NOTE

IF A TORQUE WRENCH IS USED, SET A MAXIMUM TORQUE OF 8 - 8.5 N/m.

11. Fit the O-Ring (27) in the seat on the swivel connector of the hose (26).
12. Screw the hose (26) onto the case assembly connector (28) with the help of two 17-mm open end wrenches (B-17).

ADJUSTMENTS AND FINAL ASSEMBLY

To obtain a correct adjustment of the regulator:

A. The repair shop should be equipped with a high and low pressure compressed air supply.
B. It is necessary to have a pressure gauge for checking the intermediate pressure (the pressure gauge should have a full scale value MAX 30 - 40 BAR, for greater accuracy of adjustment).

1. Screw the intermediate pressure measuring gauge into one of the 3/8" low pressure ports on the first stage, using the special wrench (B-18).
2. Using the wrench B-18, assemble the hose with the partially finished 2nd stage on the port marked D.F.C.
3. Mount the regulator group on the control valve (of a tank or Test Bench).
4. Depress the second stage demand lever, slowly open the tank valve and, almost simultaneously, release the demand lever.
5. Read the pressure gauge to check whether the 1st stage pressure adjustment is correct.

WARNING ⚠

THE FIRST STAGE INTERMEDIATE PRESSURE MUST BE MEASURED WHEN THERE IS NO AIR COMING OUT OF THE 2ND STAGE FOR ADJUSTMENT OF THE FIRST STAGE, REFER TO THE SEPARATE MANUAL.

6. Rest the ends of the gauge on the edge of the 2nd stage case. (Fig. 3)

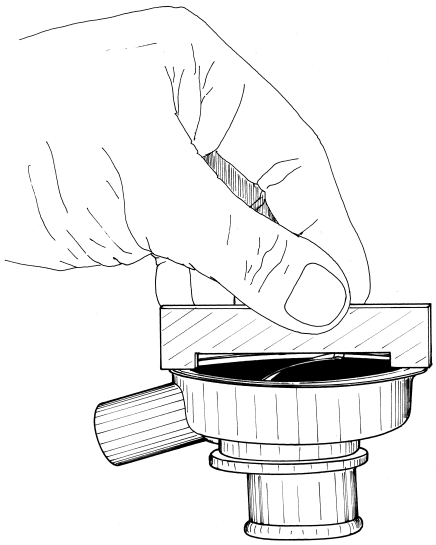


FIG. 3

7. Using the special tool (B-12 or B-20) lock down or back off the adjusting nut (33) to adjust the demand lever (35).

WARNING ⚠

THE DEMAND LEVER IS CORRECTLY ADJUSTED WHEN IT JUST TOUCHES THE GAUGE BUT THERE IS NO AIR COMING OUT.

8. Depress and trigger the demand lever a few times.
9. Correctly fit the diaphragm (36) with the metal disk in contact with the demand lever.
10. Fit the cover (39) on the diaphragm, orienting it the right way round.
11. Fit the ring clamp (37) so that the eye-holes are on top of the second stage fitting.
12. Lock down the clamp screw (38).
13. Assemble the exhaust tee (41) on the support flange on the second stage.

WARNING ⚠

MAKE SURE THAT THE EDGE OF THE EXHAUST TEE IS CORRECTLY FITTED ON THE FLANGE. LIGHT LUBRICATION WITH LIQUID SOAP OR DETERGENT FACILITATES INSTALLATION. DO NOT USE SILICONE LUBRICANTS, AS THEY MAY DAMAGE CERTAIN COMPONENTS (DIAPHRAGMS) AND CAUSE THE EXHAUST TEE TO COME OUT OF ITS SEAT DURING USE.

14. Carefully assemble the mouthpiece (44), securing it with a new mouthpiece clamp (43).

FINAL CHECKS AND ADJUSTMENTS

The checks described below are designed to verify the perfect operation of the regulator.

VALUES OF "CRACKING" PRESSURE FOR SECOND STAGES		
MODEL	**INCHES OF H_2O**	**CM OF H_2O**
PRIMARY 2ND STAGE	1 - 1.5	2.5 - 3.8

Tab. A

1. Mount the regulator group on the control valve (of a tank or Test Bench).
2. Using the laboratory Test Bench or the portable Test Bench, after adjusting the 1st Stage, breathe in through the mouthpiece and read out the "cracking" pressure value (value required to trigger air delivery) on the U-gauge, at the instant when the gauge detects a drop in the intermediate pressure.

WARNING ⚠

IN THE ABSENCE OF A TEST BENCH IT IS POSSIBLE TO RUN AN APPROXIMATE CHECK OF THE CRACKING PRESSURE USING A BASIN OF WATER AND CARRYING OUT THE PROCEDURE BELOW:

A. Slowly submerge the 2nd stage in the water with the mouthpiece facing up, and without allowing water to go inside.
B. When the water level, measured from the point indicated in the diagram (Fig. 4) falls between the cracking values indicated in the table, the air should start to flow. (see tab. **A**)

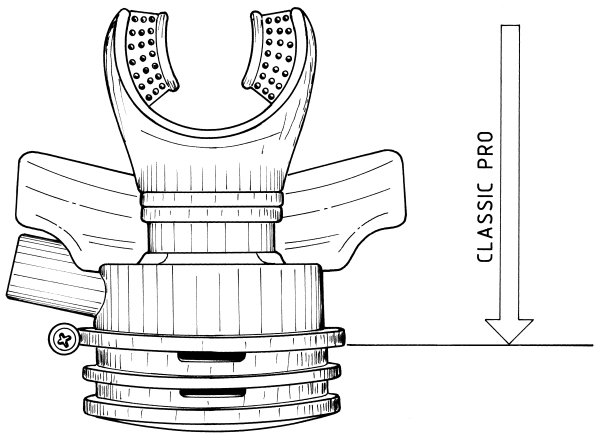


Fig. 4

2ND STAGE MODEL	CRACKING POINT
CLASSIC PRO	POINT INDICATED IN THE FIGURE (Fig. 4)

3. If the Cracking Pressure Value does not fall between the values specified in the table, proceed as follows:
   a. If the cracking pressure is greater, it is necessary to reduce the load on the spring.
   b. If the cracking pressure is lower, it is necessary to increase the load on the spring.

WARNING ⚠

WHENEVER THE LOADING OF THE SPRING IS CHANGED (INCREASED OR REDUCED) IT IS NECESSARY TO ADJUST THE DEMAND LEVER AS INSTRUCTED IN THE MANUAL.

4. Submerge the 2nd stage in water with the mouthpiece facing up, allowing water to enter the exhaust tee and keeping it in this position for about 30 seconds.
5. Remove the 2nd stage from the water, then turn the mouthpiece downward.
6. Check for any traces of water inside the second stage.

WARNING ⚠

IF MORE THAN A FEW DROPS OF WATER COME OUT OF THE SECOND STAGE, CHECK THE SEALS ON THE MOUTHPIECE CLAMP, THE EXHAUST VALVE AND THE RIM OF THE DIAPHRAGM.

7. Press the purge button a few times and check that it operates smoothly, and does not jam.
8. Completely submerge the 2nd stage in water (allowing water to enter the mouthpiece) and check for any air leaks.

CLASSIC PRO 2ND STAGE TROUBLESHOOTING

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 1 - CONTINUOUS OR INTERMITTENT AIR LEAKS FROM THE SECOND STAGE	**CLASSIC PRO**	1) 2nd stage poppet pad dirty or damaged	1) Clean, invert or replace
		2) Sealing surface of seat connector dirty or damaged	1) Clean or replace
		3) Intermediate pressure too high	1) Adjust the intermediate pressure
		4) Demand lever set too high	1) Adjust correctly
		5) Second stage spring incorrectly positioned or damaged	1) Position correctly or replace
		6) Adjustable O-Ring seat in connector dirty or damaged	1) Clean or replace
		7) Adjustable connector seat too low	1) Adjust correctly
- 2 - CRACKING PRESSURE TOO HIGH	**CLASSIC PRO**	1) Demand lever set too low	1) Adjust correctly
		2) Intermediate pressure too low	1) Adjust correctly
		3) Hole for 2nd stage poppet in the 2nd stage case obstructed	1) Clean carefully
		4) Tank control valve not fully opened	1) Open the tank valve completely
		5) 2nd stage spring deformed and/or damaged	1) Replace
		6) 1st stage filter obstructed	1) Overhaul 1st stage and replace the filter
		7) Poppet spring loading too high	1) Adjust correctly and if necessary replace the spring
- 3 - CRACKING PRESSURE TOO LOW	**CLASSIC PRO**	1) Intermediate pressure too high	1) Adjust correctly
		2) 2nd stage spring deformed and/or damaged	1) Replace
		3) Poppet spring loading too low	1) Adjust correctly and if necessary replace the spring

CLASSIC PRO 2ND STAGE TROUBLESHOOTING

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 4 - AIR LEAK BETWEEN THE SWIVEL HOSE COUPLING AND THE 2ND STAGE CONNECTOR	**CLASSIC PRO**	1) Swivel hose coupling O-Ring defective	1) Replace the O-Ring
		2) Sealing surface of hose connector O-Ring dirty or damaged	1) Clean or replace the hose connector
- 5 - TRACES OF WATER INSIDE THE 2ND STAGE	**CLASSIC PRO**	1) Exhaust valve dirty, incorrectly positioned or damaged	1) Clean, position correctly or replace
		2) Exhaust valve support dirty or damaged	1) Clean or replace the 2nd stage case
		3) Diaphragm dirty, incorrectly positioned or damaged	1) Clean, position correctly or replace
		4) Mouthpiece loose or damaged	1) Tighten with a new clamp or replace the mouthpiece
		5) Seat connector O-Ring defective	1) Replace
		6) Cover clamp loose or damaged	1) Tighten or replace
- 6 - COVER PURGE BUTTON JAMMED	**CLASSIC PRO**	1) Purge button seat dirty	1) Clean
		2) Defective spring	1) Replace the spring
- 7 - VIBRATIONS DURING THE INHALATION PHASE	**CLASSIC PRO**	1) Diaphragm incorrectly positioned	1) Position correctly
		2) Demand lever incorrectly adjusted	1) Adjust correctly
		3) Poppet spring incorrectly positioned or damaged	1) Position correctly or replace

DACOR REPAIR MANUAL
VOLUME THREE

SECTION 2

SECOND STAGE REGULATORS

EAGLE DPD -
EAGLE -
OCTOPUS EAGLE
SECOND STAGE

Drawing No. E 29	**EAGLE DIVE/PRE-DIVE SECOND STAGE**	Drawing updated on: 21/03/2002

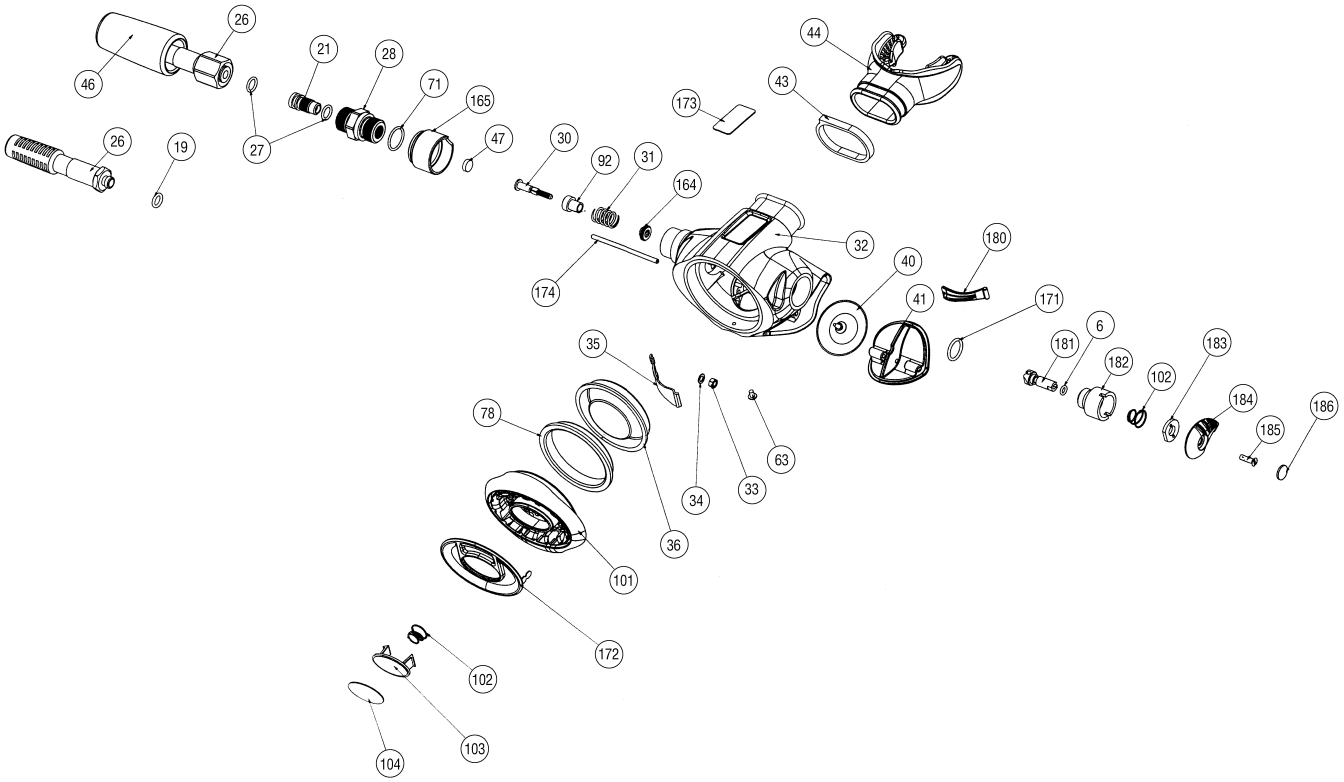


Table No. 114	**EAGLE DIVE/PRE-DIVE SECOND STAGE**	Drawing reference No.: E 29 Table updated on: 09/05/2002

Ref.No.	Code	Description
6	46110101	OR 2012
6	46110401	OR 2012 Viton
19	46110106	OR 106
19	46110402	OR 106 Viton
21	46200204	2nd stage poppet seat
26	46187037	3/8 neutral Super Flow hose
27	46110205	OR 2025
27	46110411	OR 2025 Viton
28	46184282	Case assembly connector
30	46184219	2nd stage poppet stem
31	46185059	Poppet spring
32	46200404	Eagle case
33	46185051	Demand lever nut
34	46185049	Lever washer
35	46187027	Teflon-coated demand lever
36	46200311	D. 52 2nd stage diaphragm
40	46184006	Exhaust valve
41	46200402	Proton inspection plug
43	47157984	Black 200 x 4.8 strap
44	46187017	Mouthpiece
46	46187036	2nd stage hose protector
47	46184062	Poppet seat
63	46184289	Cover lock pin
71	46110211	OR 2050
71	46110413	OR 2050 Viton
78	46200321	Diaphragm retainer ring
92	46184221	2nd stage poppet body
101	+++	Dacor oval cover

Ref.No.	Code	Description
102	47159175	Spring
103	46200387	Push-button
104	46200282	Button label
164	- - -	Non-rotation washer
165	46200422	Eagle connector bushing
171	46110110	OR 2037
171	46200298	OR 2037 Viton
172	+++	Eagle cover lamina
173	46200399	Case sticker
174	46200361	Exhaust plug fixing pin
180	46200388	Dive/Pre Dive Lever
181	46200391	Dive/Pre Dive lever support
182	46200386	Dive/Pre Dive Body
183	46200390	Dive/Pre Dive block
184	46200389	Dive/Pre Dive knob
185	46200395	Screws M 2 x 10 UNI 7688 A4
186	46200201	Dive/Pre Dive knob sticker
		ASSEMBLIES
B	46200430	Eagle DPD 2nd stage assembly
+ + +	46200428	Eagle DPD assembly cover
		(101 - 102 - 103 - 104 - 172)
***	46200425	Serv.kit. Eagle/Eagle DPD 2nd stage
		(6-19-27-33-40-43-47-71-171)
***	46200426	Serv.kit. Eagle/Eagle DPD NX 2nd stage
		(6-19-27-33-40-43-47-71-171)

Drawing No. E 28	**EAGLE - EAGLE OCTOPUS SECOND STAGE**	Drawing updated on: 21/03/2002

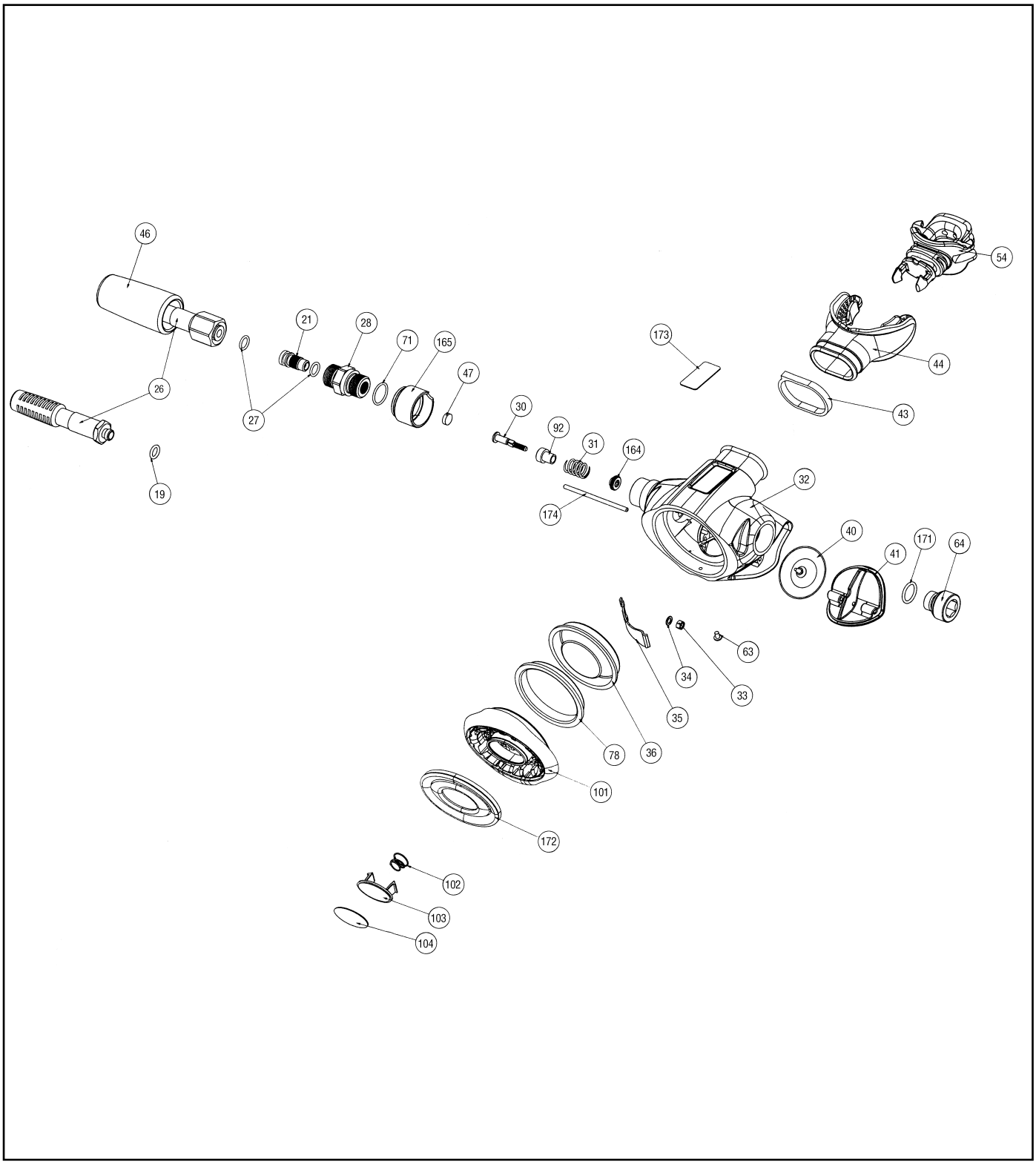


Table No. 113	**EAGLE - EAGLE OCTOPUS SECOND STAGE**	Drawing reference No.: E 28 Table updated on: 09/05/2002

Ref.No.	Code	Description
19	46110106	OR 106
19	46110402	OR 106 Viton
21	46200204	2nd stage poppet seat
26	46187045	3/8 Hi Flow hose
26	46187044	Yellow 3/8 Hi Flow hose
27	46110205	OR 2025
27	46110411	OR 2025 Viton
28	46184282	Case assembly connector
30	46184219	2nd stage poppet stem
31	46185059	Poppet spring
32	46200403	Eagle case
33	46185051	Demand lever nut
34	46185049	Lever washer
35	46187027	Teflon-coated demand lever
36	46200311	D. 52 2nd stage diaphragm
40	46184006	Exhaust valve
41	46200402	Proton inspection plug
43	47157984	Black 200 x 4.8 strap
44	46187017	Mouthpiece
46	46187036	2nd stage hose protector
47	46184062	Poppet seat
54	46185083	Octopus mouthpiece cap
63	46184289	Cover lock pin
64	46200393	Adjuster access plug
71	46110211	OR 2050
71	46110413	OR 2050 Viton
78	46200321	Diaphragm retainer ring

Ref.No.	Code	Description
92	46184221	2nd stage poppet body
101	+++	Dacor oval cover
102	47159175	Spring
103	46200387	Push-button
104	46187031	Button label
164		Non-rotation washer
165	46200422	Eagle connector bushing
171	46110110	OR 2037
171	46200298	OR 2037 Viton
172	+++	Eagle cover front
172	+++	Eagle octopus cover front
173	46200399	Case sticker
173	46200400	Octopus case sticker
174	46200361	Exhaust plug fixing pin
		ASSEMBLIES
B	46200431	Eagle 2nd stage assembly
+ + +	46200429	Eagle assembly cover
		(101 - 102 - 103 - 104 - 172)
+ + +	46200432	Eagle octopus assembly cover
		(101 - 102 - 103 - 104 - 172)
***	46200425	Serv.kit. Eagle/Eagle DPD 2nd stage
		(6-19-27-33-40-43-47-71-171)
***	46200426	Serv.kit. Eagle/Eagle DPD NX 2nd stage
		(6-19-27-33-40-43-47-71-171)

EAGLE DPD SECOND STAGE
EAGLE SECOND STAGE
EAGLE OCTOPUS SECOND STAGE

DISASSEMBLY

1. Unscrew the hose (26) from the first stage using the 14-mm open end wrench (B-18) or the 17-mm open end wrench (B-17).
2. Remove the mouthpiece clamp (43) from the mouthpiece (44).

NOTE

ONLY REMOVE THE CLAMP FROM THE MOUTHPIECE IF A REPLACEMENT PART IS AVAILABLE.

3. Remove the mouthpiece (44).
4. Remove the fixing pin (174) from the cap (41) of the exhaust tee. (Fig. 1)

NOTE

FOR THE OPERATION DESCRIBED IN STEP 4, IT IS RECOMMENDED TO USE A METAL PRICKER HAVING A MAX DIAMETER OF 2mm (Fig. 1).

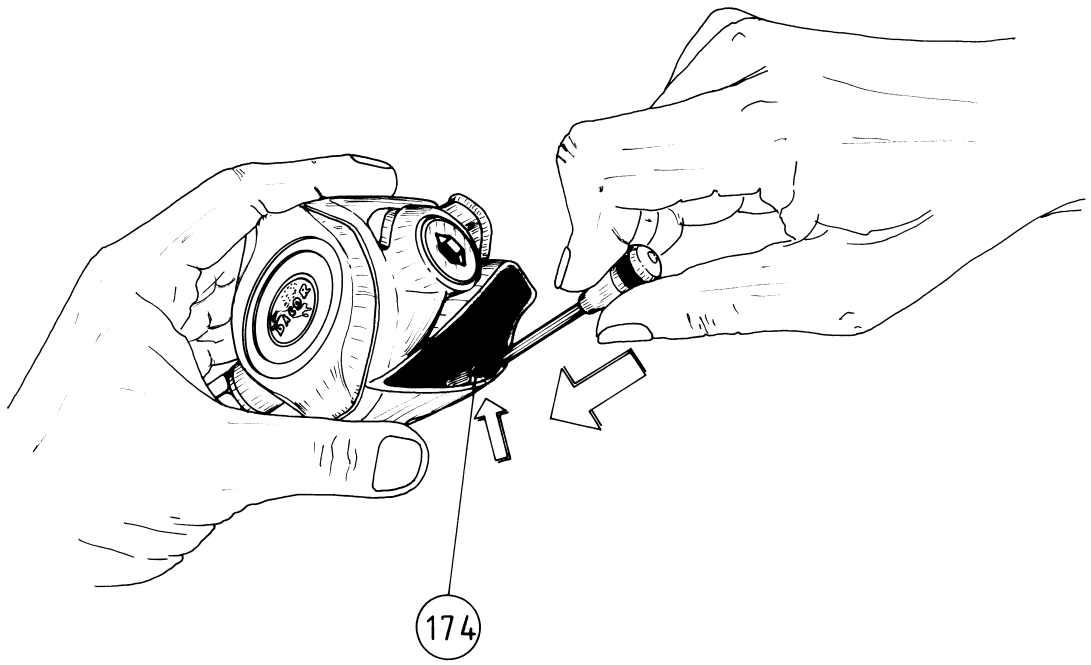


FIG. 1

5. Remove the inspection cap (41).
6. Shift the hose protector (46) along the hose (26).
7. Using the two 17-mm open end wrenches (B-17) unscrew the hose (26) from the case assembly connector (28).
8. Remove the O-Ring (27) and the O-Ring (19) from the hose (26).
9. Unscrew the case assembly connector (28) using a 17-mm open end wrench (B-17).
10. Remove the O-Ring (71) from the case assembly connector (28).
11. Unscrew the seat connector (21) from the case assembly connector (28) using a 5-mm hex wrench (B-4).
12. Remove the O-Ring (27) from the seat connector (21).

WARNING ⚠

REMOVE THE CASE ASSEMBLY BUSHING (165) ONLY IF NECESSARY, AND IF SO USING PLASTIC TOOLS.

13. Remove the safety clip (63).
14. Unscrew the cover assembly.

WARNING ⚠

DISASSEMBLE THE COVER ONLY IF NECESSARY.

15. Remove the diaphragm retaining ring (78) and the diaphragm (36) from the 2nd stage case (32).

DPD VERSIONS

a) Remove the sticker (186) from the Dive/Pre Dive knob (184).
b) Using a Phillips screwdriver (type USAG 327) back off the screw (185) and remove the DPD knob (184), the DPD clamp (183) and the spring (102) (Fig. 10).
c) Remove the lever support (181) and the DPD lever (180) from the DPD body (Fig. 9).
d) Remove the O-Ring (6) from the DPD lever support (181) (Fig. 9).
e) Using the special wrench (B-37), unscrew the DPD body (182) (Fig. 10).
f) Remove the O-Ring (171) from the DPD body (182).

WARNING ⚠

REMOVE THE DPD LEVER (180) FROM THE DPD LEVER SUPPORT (181) ONLY IF NECESSARY.

STANDARD VERSIONS

16. Unscrew the case plug (64) using a 10-mm hex wrench (B-13).
17. Remove the O-Ring (171) from the case plug (64).

ALL VERSIONS

18. Position the 2nd stage case (32) on the special tool (B-6) (Fig. 2).
19. Exerting a slight pressure, back off the demand lever adjusting nut (33) using the special tool (B-12), and working through the hole in the 2nd stage case (Fig. 2).

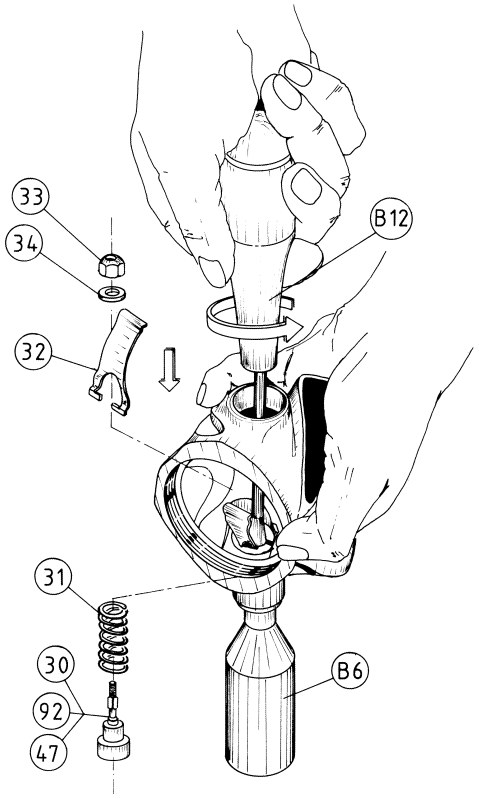


FIG. 2

20. Remove the demand lever adjusting nut (33), the washer (34), the 2nd stage poppet assembly and the spring (31) from the 2nd stage case (32) (Fig. 2).

WARNING ⚠

DON NOT UNDER ANY CIRCUMSTANCES REMOVE THE ROTATION STOP WASHER (164) FROM THE SECOND STAGE CASE (32).

21. Remove the poppet seat (47) from the poppet seat holder (92).
22. Remove the poppet seat holder (92) from the 2nd stage poppet stem (30).
23. Remove the exhaust valve (40).

CLEANING

WARNING ⚠

WHEN WORKING WITH ANY KIND OF ACID, WEAR ADEQUATE PROTECTIVE GEAR FOR EYES AND SKIN.

For routine cleaning of reusable rubber components, wash all parts in a mixture of hot water and mild detergent. Make sure all the components have been thoroughly rinsed in fresh water before reassembling them. Chrome plated brass and stainless steel parts can be cleaned with an ultrasonic cleaner in fresh water, or in a mild acid solution (for example white vinegar, diluted as necessary).

WARNING ⚠

ACIDS OR OTHER SOLVENTS MAY DAMAGE PLASTIC AND RUBBER PARTS. BEFORE CLEANING METAL COMPONENTS, MAKE SURE THAT ALL SEALS AND OTHER PARTS SUBJECT TO DETERIORATION HAVE BEEN REMOVED.

INSPECTION

Certain key components of the second stage should be routinely replaced at each scheduled overhaul. In addition, considering their relatively low cost, it is recommended to replace all the O-Rings.

Qty.	Ref. N.	Description	Code	Viton O-Ring Code
1	(6)	O-Ring 2012	46110101	46110401
2	(27)	O-Ring 2025	46110205	46110411
2	(19-71)	O-Ring 2050	46110211	46110413
1	(19)	O-Ring 106	46110106	46110402
1	(171)	O-Ring 2037	46110110	46200298
1	(47)	2nd stage poppet seat	46184062	- - -
1	(33)	Demand lever adjusting nut	46185051	- - -
1	(40)	Exhaust valve	46184006	- - -
1	(186)	DPD knob sticker	46200201	- - -
1	(43)	Mouthpiece clamp	47157984	- - -

If these components are not replaced, they should at least be inspected with a jeweler's magnifying glass for the following defects.

DO NOT USE PARTS WITH THE FOLLOWING DEFECTS:

2nd stage case (32) Inspect the sealing surfaces for scratches or cracks
Seat connector (21) Check that the sealing surface and the O-Ring seat are intact
Diaphragm (36) Check for tears or pinholes around the metal disk, deformation of the outer rim or signs of separation of the diaphragm from the metal disk
O-Rings (6-19-27-71-171) Check for cuts, burrs or foreign particles. The presence of any of these defects may result in leaks
2nd stage poppet seat (47) Check for cuts, burrs or abrasion of the rubber
Poppet seat holder (92) Check for cracks, cuts or deformations
Demand lever adjusting nut (33) Verify its self-locking capacity and inspect for rust. It is recommended to replace it at each scheduled overhaul and/or whenever it is disassembled.
Mouthpiece (44) Inspect for cuts, tears or signs of wear
Exhaust tee cap (41) Check that it is intact
Hose (26) Inspect for splits, blistering or any other signs of damage
Spring (31) Check for any split, broken or misshapen coils

REASSEMBLY

Before reassembling, lightly lubricate all the O-Rings with silicone grease (type General Electric Versalube G-322 or equivalent). Lubrication reduces the likelihood of damage during reassembly.

WARNING ⚠

IF THE SECOND STAGE IS USED FOR DIVING WITH OXYGEN-RICH MIXTURES, IT MUST BE PERFECTLY CLEANED AND FREE OF OIL/SILICONE GREASE RESIDUES OR OTHER IMPURITIES. VITON O-RINGS MUST BE LUBRICATED WITH SPECIAL OXYGEN-COMPATIBLE GREASE.
DO NOT USE SILICONE GREASE !!!

1. Install a new exhaust valve (40), carefully pulling its silicone stem through the center hole of the second stage exhaust valve support.

WARNING ⚠

DO NOT PULL TOO HARD ON SILICONE STEM TO AVOID DAMAGING THE EXHAUST VALVE.

2. Using cutting nippers, cut the silicone stem by about 7 mm.
3. Reassemble the poppet seat holder (92) on the 2nd stage poppet stem (30).
4. Reassemble the poppet seat (47) in the poppet seat holder (92).

WARNING ⚠

ASSEMBLE THE BUSHING (165) IF IT WAS PREVIOUSLY DISASSEMBLED.

WARNING ⚠

ON EAGLE SECOND STAGES IT IS POSSIBLE TO ASSEMBLE THE DEMAND LEVER IN TWO DIFFERENT WAYS. THE TWO DIFFERENT ASSEMBLY PROCEDURES ARE DESCRIBED BELOW.

ASSEMBLING THE DEMAND LEVER

METHOD "A"

A.1 Place the 2nd stage poppet assembly (30-47-92) together with its spring (31) on the special tool (B-6).

A.2 Insert the 2nd stage case (32) on the poppet assembly with spring and exert a slight pressure so that the poppet protrudes from the 2nd stage case. (Fig. 3)

WARNING ⚠

PRESS AND ROTATE THE 2ND STAGE CASE (32) SLIGHTLY TO THE RIGHT AND LEFT TO OBTAIN CORRECT POSITIONING OF THE 2ND STAGE POPPET STEM.

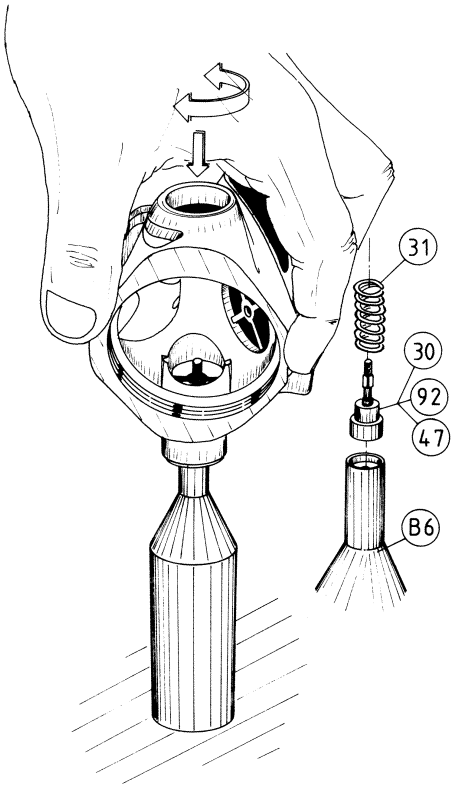


FIG. 3

A.3 Fit the washer (34) on the poppet stem which protrudes inside the 2nd stage case and lock down the adjusting nut (33) through a few turns, using the special wrench (B-20) (Fig. 4).

WARNING ⚠

IF THERE ARE DIFFICULTIES INSERTING AND/OR POSITIONING THE SPECIAL WRENCH (B-20) ON THE POPPET STEM DURING THE OPERATION DESCRIBED IN STEP -A.3- IT IS RECOMMENDED TO REDUCE THE PRESSURE EXERTED ON THE 2ND STAGE CASE SLIGHTLY UNTIL INSERTION AND/OR CORRECT ALIGNMENT IS ACHIEVED.

WARNING ⚠

TO FACILITATE THE OPERATION DESCRIBED IN STEP -A.3-, AFTER LOCKING DOWN THE NUT THROUGH A FEW TURNS WITH SPECIAL WRENCH (B-20) IT IS RECOMMENDED TO FINISH LOCKING IT DOWN USING SPECIAL WRENCH (B-12).

WARNING ⚠

TO FACILITATE THE SUBSEQUENT ASSEMBLY OPERATIONS, DURING STEP -A.3- IT IS ADVISABLE TO PERFORM ONLY AN APPROXIMATE (NOT FINAL) ADJUSTMENT OF NUT (33). THE RECOMMENDED APPROXIMATE ADJUSTMENT IS ACHIEVED WHEN THE POPPET STEM PROTRUDES FROM THE ADJUSTING NUT BY ABOUT 1 mm.

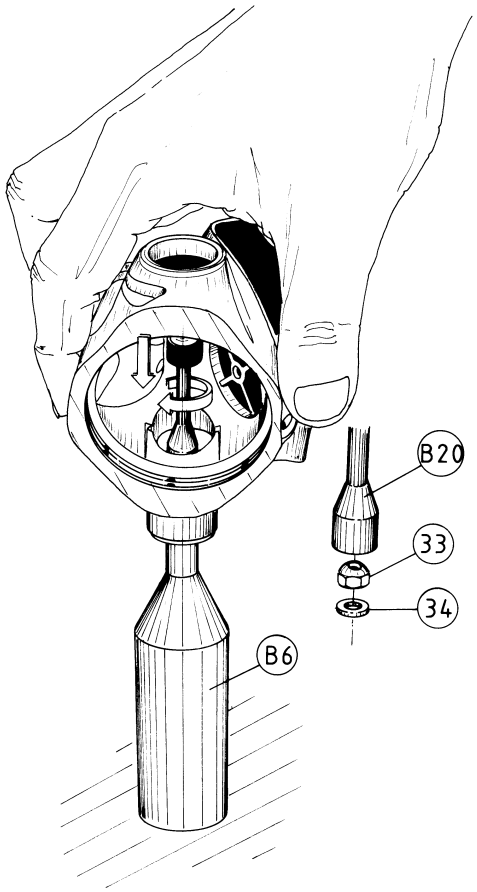


FIG. 4

A.4 Keeping the special tool (B-6) positioned inside the case assembly connector of the 2nd stage (32), insert the demand lever (35) between the washer (34) and the seat in the 2nd stage case, proceeding as shown in (Fig. 5).

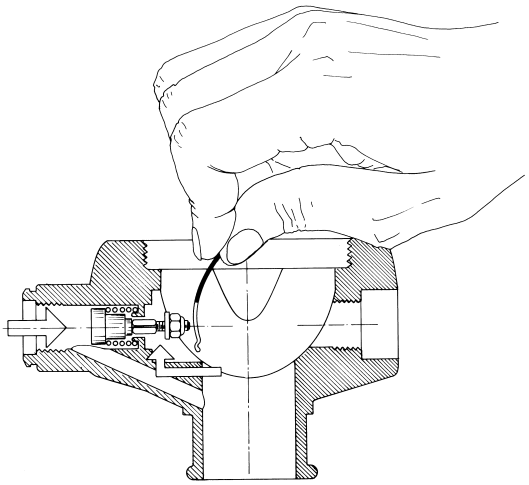


FIG. 5 A

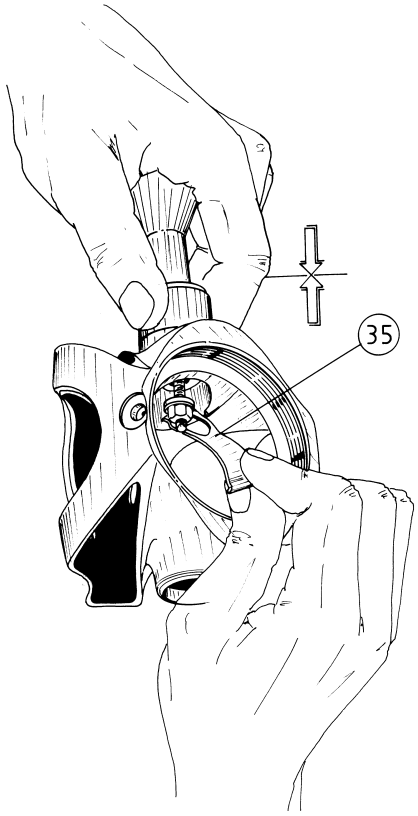


FIG. 5 B

WARNING ⚠

USING THE SPECIAL TOOL (B-6) AND THE SPECIAL WRENCH (B-12), IT IS RECOMMENDED TO CONTINUE LOCKING DOWN THE NUT (33) TO ACHIEVE AN APPROXIMATE (NOT FINAL) ADJUSTMENT IN WHICH THE VALVE STEM (30) PROTRUDES BY ABOUT 3 mm.

WARNING ⚠

TO CHECK THAT THE 2ND STAGE POPPET IS POSITIONED CORRECTLY, PUSH THE DEMAND LEVER A FEW TIMES, MAKING SURE IT IS ABLE TO MOVE FREELY.

METHOD "B"

WARNING ⚠

IF THE CONNECTOR BUSHING (165) COMES OUT DURING THE PROCEDURE DESCRIBED IN STEP B. 3, REASSEMBLE IT FOLLOWING THE INSTRUCTIONS GIVEN FOR METHOD "A".

B.1 Position the spring (31) in the 2nd stage case assembly connector (Fig. 6).
B.2 Insert the 2nd stage poppet assembly (30-47-92) in the previously inserted spring (31) (Fig. 6).

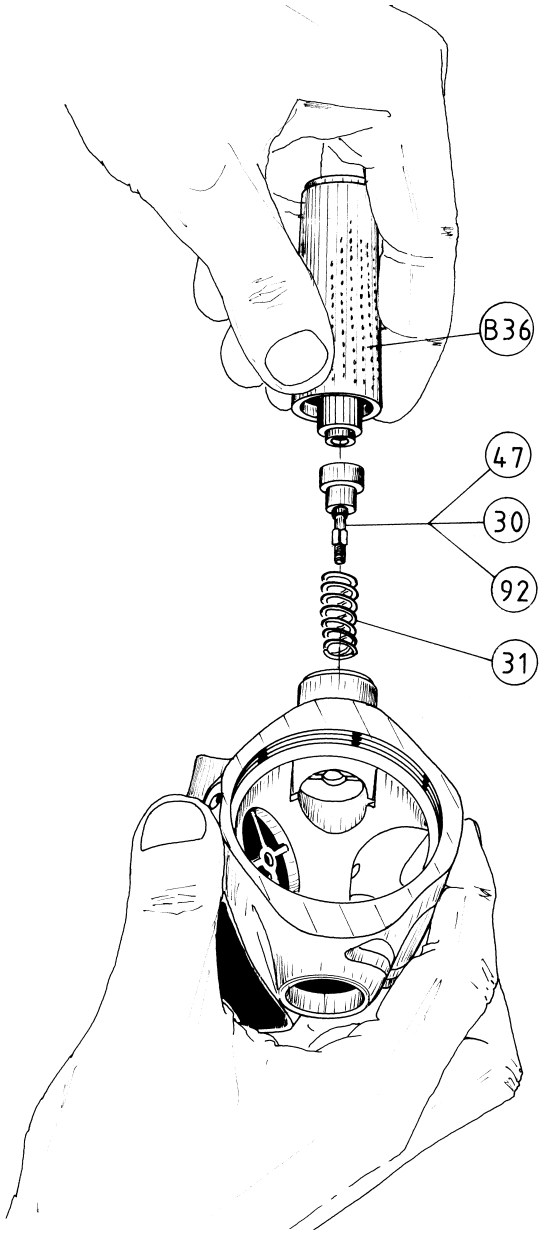


FIG. 6

B.3 Insert the special tool (B-36) (Cod. 46200383) into the 2nd stage case assembly connector until it engages the bushing (165) (Fig. 7).

WARNING ⚠

PRESS AND ROTATE THE SPECIAL TOOL (B-36) SLIGHTLY TO THE RIGHT AND LEFT TO OBTAIN CORRECT POSITIONING OF THE 2ND STAGE POPPET STEM.

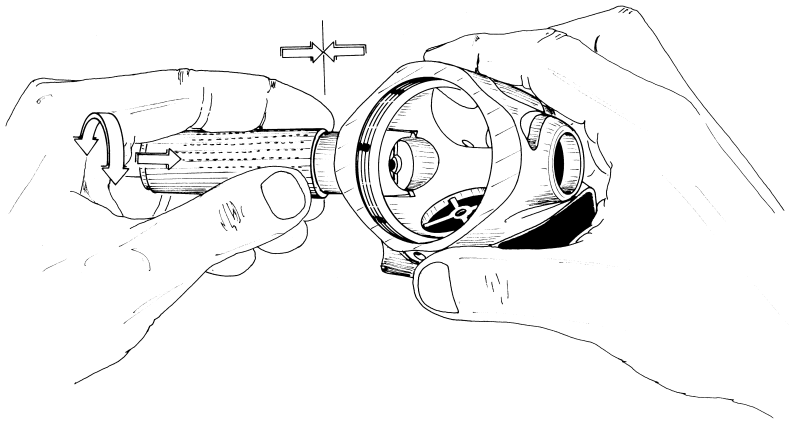


FIG. 7

B.4 Fit the washer (34) on the poppet stem (30).
B.5 Using the special wrench (B-12) lock down the adjusting nut (33) on the poppet stem (30).

WARNING ⚠

TO FACILITATE THE SUBSEQUENT ASSEMBLY OPERATIONS, DURING STEP -B.5- IT IS ADVISABLE TO PERFORM ONLY AN APPROXIMATE (NOT FINAL) ADJUSTMENT OF NUT (33). THE RECOMMENDED APPROXIMATE ADJUSTMENT IS ACHIEVED WHEN THE POPPET STEM PROTRUDES FROM THE ADJUSTING NUT BY ABOUT 1 mm.

B.6 Insert the demand lever (35) between the washer (34) and the seat in the 2nd stage case, proceeding as shown in (Fig. 5).

WARNING ⚠

USING THE SPECIAL WRENCH (B-12) IT IS RECOMMENDED TO FINISH LOCKING DOWN NUT (33) TO ACHIEVE AN APPROXIMATE (NOT FINAL) ADJUSTMENT IN WHICH THE VALVE STEM (30) PROTRUDES BY ABOUT 3 mm.

B.7 After having positioned the demand lever (35), remove the special tool (B-36) from the connector bushing (165).

WARNING ⚠

TO CHECK THAT THE 2ND STAGE POPPET IS POSITIONED CORRECTLY, PUSH THE DEMAND LEVER A FEW TIMES, MAKING SURE IT IS ABLE TO MOVE FREELY.

FINAL ASSEMBLY

5. Fit the O-Ring (27) in its seat in the case assembly connector (21).
6. Insert and lock down seat connector (21) into the case assembly connector (28) using the 5-mm hex wrench (B-4), so that it protrudes from the connector by about 2 mm.

WARNING ⚠

HTM SPORT TAKING THE UTMOST CARE DURING THE REASSEMBLY OPERATIONS DESCRIBED IN STEP "6" TO AVOID DAMAGING THE THREADS OF THE POPPET SEAT.

WARNING ⚠

THE POPPET SEAT SHOULD NOT PROTRUDE BY MORE THAN 3.8 MM FROM THE CASE ASSEMBLY CONNECTOR.

7. Fit O-Ring (71) in the seat of the case assembly connector (28).
8. Using a 17-mm open end wrench (B-17), lock down the case assembly connector into the 2nd stage case (32).

NOTE

IF A TORQUE WRENCH IS USED, SELECT A TORQUE SETTING OF APPROXIMATELY 8 - 8.5 N/m

WARNING ⚠

IF THE DEMAND LEVER MOVES DOWN CONSIDERABLY DURING THE PROCEDURE DESCRIBED IN STEP -8-, TO PREVENT IT FROM COMING OUT DURING THE SUBSEQUENT ASSEMBLY OPERATIONS, LOCK DOWN THE ADJUSTING NUT THROUGH A FEW TURNS USING THE SPECIAL WRENCH (B-12) AND WORKING THROUGH THE HOLE IN THE SECOND STAGE CASE.

9. Fit the O-Ring (27) in the seat on the swivel connector of the hose (26).
10. Screw the hose (26) into the case assembly connector (28) with the help of two 17-mm open end wrenches (B-17).

FINAL ADJUSTMENTS

To obtain a correct adjustment of the regulator:

A. The repair shop should be equipped with a high and low pressure compressed air supply.
B. It is necessary to have a pressure gauge for checking the intermediate pressure (the pressure gauge should have a full scale value MAX 30 - 40 BAR, for greater accuracy of adjustment).

1. Screw the intermediate pressure measuring gauge into one of the 3/8" low pressure ports on the first stage, using the wrench (B-18).
2. Assemble the hose with the partially finished 2nd stage on the port marked D.F.C., locking it down with the 14-mm wrench (B-18) or the 17-mm wrench (B-17).
3. Mount the regulator group on the control valve (of a tank or Test Bench).
4. Depress the second stage demand lever, slowly open the tank valve and, almost simultaneously, release the demand lever.
5. Read the pressure gauge to check whether the 1st stage pressure adjustment is correct.

WARNING ⚠

THE FIRST STAGE INTERMEDIATE PRESSURE MUST BE MEASURED WHEN THERE IS NO AIR COMING OUT OF THE 2ND STAGE. FOR ANY NECESSARY ADJUSTMENTS OF THE 1ST STAGE, REFER TO THE SEPARATE MANUAL.

6. Fit the 2nd stage diaphragm (36) in the 2nd stage case (32).
7. Insert the diaphragm retaining ring (78).
8. Screw on the cover.

IMPORTANT ⚠

CONTINUE LOCKING DOWN THE COVER UNTIL THE TWO SEATS (ON THE CASE AND COVER) WHICH ACCOMMODATE THE SAFETY CLIP ARE ALIGNED.
TO FACILITATE THIS OPERATION, USE THE SHAPED EDGE OF THE COVER AS A REFERENCE.

9. Insert the safety clip (63).
10. Working through the hole in the second stage case, use the wrench (B-12) to lock down or back off nut (33) in order to adjust the demand lever (35).

WARNING ⚠

THE DEMAND LEVER (35) IS CORRECTLY ADJUSTED WHEN AIR DELIVERY IS TRIGGERED ABOUT 1MM FROM THE START OF THE PURGE BUTTON'S TRAVEL, AND WHEN, ON SHAKING THE SECOND STAGE UP AND DOWN, THE "TAPPING" SOUND OF THE DEMAND LEVER TOUCHING THE METAL DISK OF THE DIAPHRAGM CAN BE HEARD.

11. Press the purge button a few times.

PDP VERSION ONLY

a) Pull out the safety clip (63).
b) Back off the cover and remove the diaphragm retaining ring (78) and the diaphragm (36).
c) Position the O-Ring (171) in its seat in the DPD body (182).
d) Using the special wrench (B 37), lock down the DPD body on the 2nd Stage case (32).

WARNING ⚠

THE DPD BODY (182) MUST BE FULLY LOCKED DOWN, MAKING SURE THAT ITS GROOVE IS PERFECTLY ALIGNED WITH THE REFERENCE ON THE SECOND STAGE CASE (32) AS ILLUSTRATED IN FIG. 8.

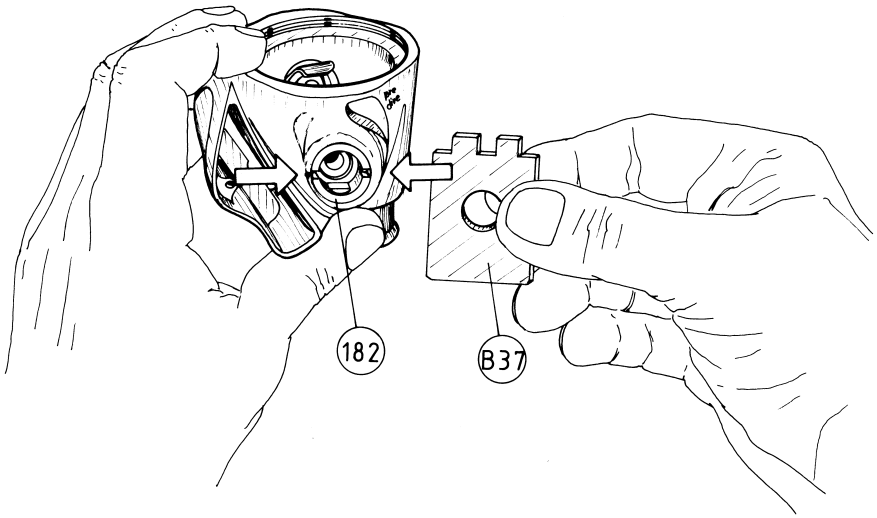


FIG. 8

NOTE

ASSEMBLE THE DPD LEVER ON THE DPD LEVER SUPPORT IF IT WAS PREVIOUSLY DISASSEMBLED.

e) Position the O-Ring (6) in the seat in the DPD lever support (181) (Fig. 9).
f) Insert the DPD lever support (181) complete with lever (180) inside the DPD body (182). (Fig. 9).

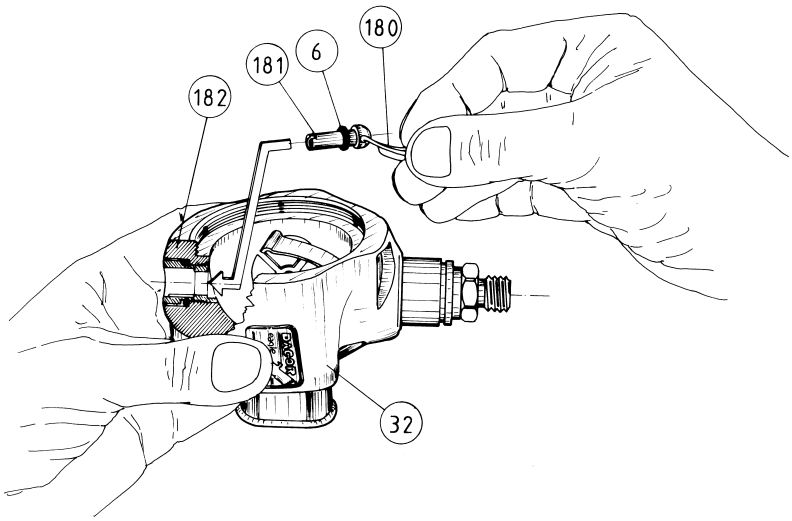


FIG. 9 A

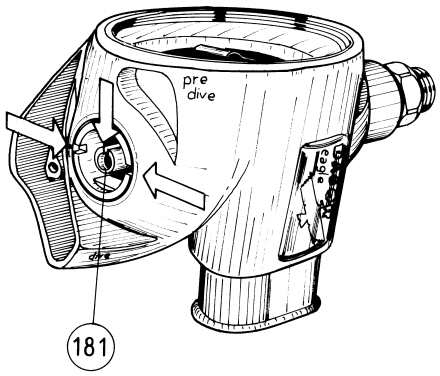


FIG. 9 B

WARNING ⚠

AFTER COMPLETING THE OPERATION DESCRIBED IN STEP "F", MAKE SURE THAT:
1. THE DPD LEVER (180) IS POSITIONED WITH THE CONCAVE PART FACING UPWARD
2. THE GROOVE ON THE DPD LEVER SUPPORT (181) IS FACING UPWARD (FIG. 9 B).

g) Correctly insert the concave spring (102) inside the DPD body (182).

WARNING ⚠

THE TAPERED SPRING IS CORRECTLY POSITIONED BY INSERTING IT INTO THE DPD BODY WITH THE SMALLER DIAMETER END FACING DOWNWARD.

h) Correctly fit the DPD clamp (182) on the spring (102) (Fig. 10).
i) Correctly insert the DPD knob (184) on the DPD body (182) (Fig. 10).

WARNING ⚠

DURING THE OPERATIONS DESCRIBED IN STEPS "G-H-I-J" HTM SPORT RECOMMENDS HOLDING THE DPD LEVER (180) AND ITS SUPPORT (181) IN PLACE INSIDE THE DPD BODY, IF NECESSARY USING ONE FINGER.

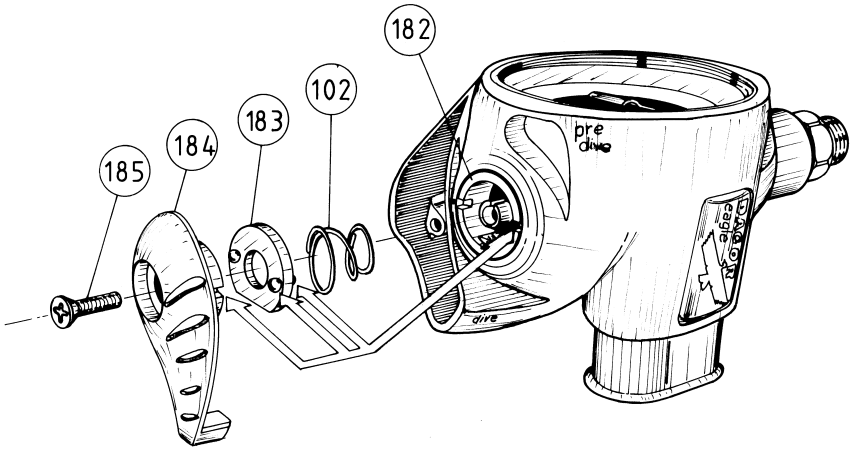


FIG. 10

j) Lock down the screw (185) on the DPD knob (184) using a Phillips screwdriver (type USAG 327).

WARNING ⚠

AFTER COMPLETING THE OPERATION DESCRIBED IN STEP "J" MAKE SURE THAT:
1. IN THE PRE-DIVE POSITION, THE DPD LEVER PREVENTS THE DEMAND LEVER (32) FROM MOVING.
2. IN THE DIVE POSITION THE DEMAND LEVER (32) IS ABLE TO MOVE FREELY.

k) Apply the knob sticker (186) on the DPD knob (184).
l) Fit the 2nd stage diaphragm (36) in the 2nd stage case (32).
m) Insert the diaphragm retaining ring (78).
n) Screw on the cover.

WARNING ⚠

CONTINUE LOCKING DOWN THE COVER UNTIL THE TWO SEATS (ON THE CASE AND COVER) WHICH ACCOMMODATE THE SAFETY CLIP ARE ALIGNED.
TO FACILITATE THIS OPERATION, USE THE SHAPED EDGE OF THE COVER AS A REFERENCE.

o) Insert the safety clip (63).

STANDARD VERSIONS

12. Reassemble the O-Ring (72) on the case plug (64).
13. Using the hex wrench (B-8), screw the case plug (64) into the threaded bushing

WARNING ⚠

IF A TORQUE WRENCH IS USED, SELECT A TORQUE SETTING OF APPROXIMATELY 90 N/cm.

ALL VERSIONS

14. Position the hose protector (46).
15. Disassemble the control valve group.
16. Disassemble the intermediate pressure measuring gauge and screw in the port plug with its O-Ring seal.
17. Assemble the mouthpiece (44), securing it with a new mouthpiece clamp (43).
18. Fit the exhaust tee cap (41) and secure it with the fixing pin (174).

FINAL CHECKS AND ADJUSTMENTS

The checks described below are designed to verify the perfect operation of the regulator

VALUES OF "CRACKING" PRESSURE FOR SECOND STAGES		
MODEL	**INCHES OF H_2O**	**cm OF H_2O**
PRIMARY 2ND STAGE	1 - 1.5	2.5 - 3.5
OCTOPUS 2ND STAGE	1.2 - 1.6	3.0 - 4

Tab. A

1. Mount the regulator group on the control valve (of a tank or Test Bench).
2. Using the laboratory Test Bench or the portable Test Bench, after adjusting the 1st Stage, breathe in through the mouthpiece and read out the "cracking" pressure value (value required to trigger air delivery) on the U-gauge, at the instant when the gauge detects a drop in the intermediate pressure.

WARNING ⚠

IN THE ABSENCE OF A TEST BENCH IT IS POSSIBLE TO RUN AN APPROXIMATE CHECK OF THE CRACKING PRESSURE USING A BASIN OF WATER AND CARRYING OUT THE PROCEDURE BELOW:

a. Remove the clamp (43) and the mouthpiece (44) from the second stage.
b. Slowly submerge the 2nd stage in the water with the mouthpiece facing up, and without allowing water to go inside.
c. When the water level, measured from the point shown in the diagram (Fig. 11) falls between the cracking values indicated in the table, the air should start to flow.

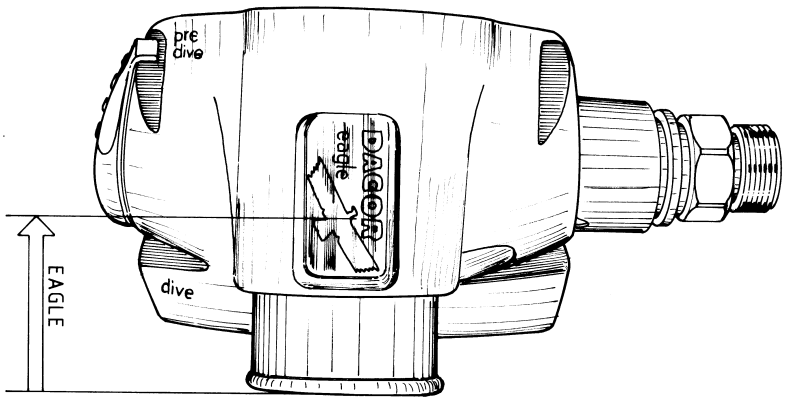


FIG. 11

3. If the Cracking Pressure Value does not fall between the values specified in the table, proceed as follows:
   a. If the cracking pressure is greater, it is necessary to reduce the load on the spring.
      - On second stages equipped with a case assembly connector (28) with adjustable seat connector (21), it is necessary to reduce the amount by which it protrudes using the hex wrench (B-4)
   b. If the cracking pressure is lower, it is necessary to increase the loading on the spring.
      - On second stages equipped with a case assembly connector (28) with adjustable seat connector (21), it is necessary to increase the amount by which it protrudes (MAX 3 mm) using the hex wrench (B-4).

WARNING ⚠

WHENEVER THE LOADING OF THE SPRING IS CHANGED IT IS NECESSARY TO ADJUST THE DEMAND LEVER AS INSTRUCTED IN THE MANUAL.

4. Submerge the 2nd stage in water with the mouthpiece facing up, allowing water to enter the exhaust tee and keeping it in this position for about 30 seconds.
5. Remove the 2nd stage from the water, then turn the mouthpiece downward.
6. Check for any traces of water inside the second stage.

WARNING ⚠

IF MORE THAN A FEW DROPS OF WATER COME OUT OF THE SECOND STAGE, CHECK THE SEALS ON THE MOUTHPIECE CLAMP, THE EXHAUST VALVE AND THE RIM OF THE DIAPHRAGM.

7. Press the purge button a few times and check that it operates smoothly, and does not jam.
8. Completely submerge the 2nd stage in water (allowing water to enter the mouthpiece) and check for any air leaks.

TROUBLESHOOTING EAGLE/EAGLE DPD 2ND STAGES

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 1 - CONTINUOUS OR INTERMITTENT AIR LEAKS FROM THE SECOND STAGE	**EAGLE EAGLE DPD**	1) 2nd stage poppet seat dirty or damaged	1) Clean, invert or replace
		2) Sealing surface of seat connector dirty or damaged	1) Clean or replace
		3) Intermediate pressure too high	1) Adjust the intermediate pressure
		4) Demand lever set too high	1) Adjust correctly
		5) Second stage spring incorrectly positioned or damaged	1) Position correctly or replace
		6) Adjustable seat O-ring in connector dirty or damaged	1) Clean or replace
		7) Adjustable connector seat too low	1) Adjust correctly
- 2 - CRACKING PRESSUR TOO HIGH	**EAGLE EAGLE DPD**	1) Demand lever set too low	1) Adjust correctly
		2) Intermediate pressure too low	1) Adjust correctly
		3) Hole for 2nd stage poppet in the 2nd stage case obstructed	1) Clean carefully
		4) Tank control valve not fully opened	1) Open the tank valve completely
		5) 2nd stage spring deformed and/or damaged	1) Replace
		6) 1st stage filter obstructed	1) Overhaul 1st stage and replace the filter
		7) Poppet spring loading too high	1) Adjust correctly and if necessary replace the spring
		8) DPD lever in Pre Dive position	1) Set the DPD lever to the Dive position
- 3 - CRACKING PRESSURE TOO LOW	**EAGLE EAGLE DPD**	1) Intermediate pressure too high	1) Adjust correctly
		2) 2nd stage spring deformed and/or damaged	1) Replace
		3) Poppet spring loading too low	1) Adjust correctly and if necessary replace the spring

TROUBLESHOOTING EAGLE/EAGLE DPD 2ND STAGES

PROBLEM	MODEL	PROBABLE CAUSE	SOLUTION
- 4 - AIR LEAK BETWEEN SWIVEL HOSE COUPLING AND SECOND STAGE CONNECTOR	**EAGLE EAGLE DPD**	1) Swivel hose coupling O-ring defective	1) Replace the O-Ring
		2) Sealing surface of hose connector O-Ring dirty or damaged	1) Clean or replace the hose connector
- 5 - TRACES OF WATER INSIDE THE SECOND STAGE	**EAGLE EAGLE DPD**	1) Exhaust valve dirty, incorrectly positioned or damaged	1) Clean, position correctly or replace
		2) Exhaust valve support dirty or damaged	1) Clean or replace the 2nd stage case
		3) Diaphragm dirty, incorrectly positioned or damaged	1) Clean, position correctly or replace
		4) Seat connector O-ring defective	1) Replace
		5) Spacer ring incorrectly positioned or damaged	1) Correctly position or replace the spacer ring
		6) Spacer ring incorrectly positioned or damaged	1) Correctly position or replace the spacer ring
		7) Cover incorrectly clamped	1) Correctly lock down the cover and secure the pin
		8) Sealing surfaces and O-Rings of the plug, between the threaded connector and the 2nd stage case and between the case assembly connector and the 2nd stage case	1) Inspect and clean all the sealing surfaces, replacing the O-Rings and defective components
- 6 - PURGE BUTTON ON COVER JAMMED	**EAGLE EAGLE DPD**	1) Purge button seat dirty	1) Clean
		2) Defective spring	1) Replace the spring
- 7 - VIBRATIONS DURING THE INHALATION PHASE	**EAGLE EAGLE DPD**	1) Diaphragm incorrectly positioned	1) Position correctly
		2) Demand lever incorrectly adjusted	1) Adjust correctly
		3) Poppet spring incorrectly positioned or damaged	1) Position correctly or replace

Table No. 203	**PULSE INFLATOR HOSE**	Drawing reference No.: J 4 Table updated on: 30/10/2001

Ref.No.	Code	Description
2	47159020	Two-tone whistle
9	46110106	OR 106
13	47159659	LP male quick coupling
22	47159146	LP filter
27	47159712	Quick coupling dust cap
45	47159681	International LP hose assembly
46	47158590	Body
47	E	Hook bushing
48	46185011	Spring
49	47159701	Deflation OR bushing
50	46110241	OR 2-109
55	46110210	OR 2056
56	47158584	P/V 2993 poppet
59	45179863	Strap for corrugated D. 23
62	47159711	Hose retainer
116	47158593	Ring nut
117	47158594	Button cover
118	47158591	Inflate/deflate button

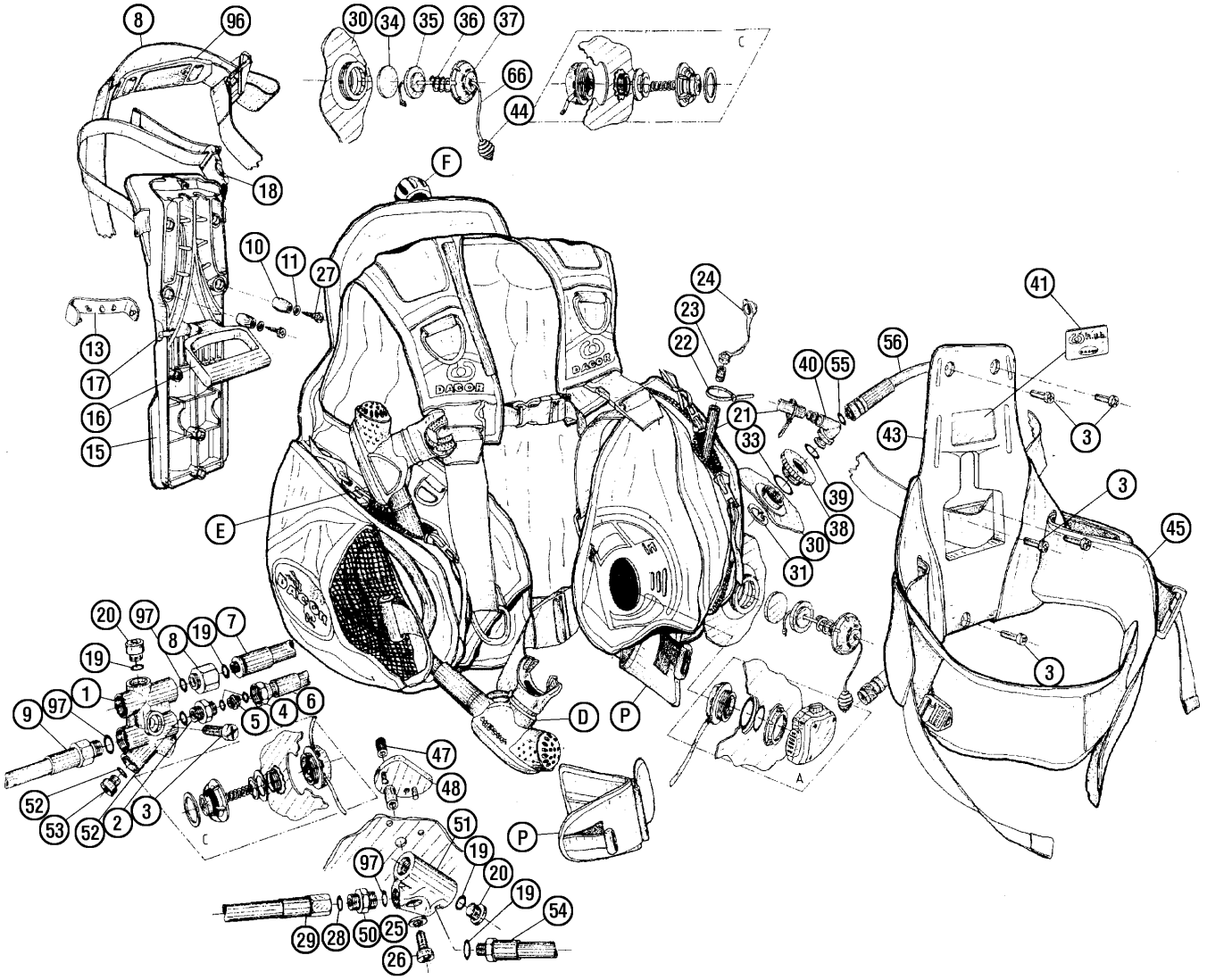
Ref.No.	Code	Description
119	47158592	Stem
122	E	OR 4075
123	E	Diaphragm port
124	E	Diaphragm
125	E	Cap
126	47158587	Sticker
127	46185013	Spring
128	46110247	O-Ring 3043
		ASSEMBLIES
===	47200003	Pulse Inflator unit w/o hose
^^^	47200013	Pulse Inflator unit corrugated hose LNG
^^^	47200004	Pulse Inflator unit corrugated hose CRT
E	47158901	R.E. Valve + 17" D hose
		(E-47-60-66-120-121-122-123-124-125)
E	47158902	R.E. Valve 15" D hose
		(E-47-60-66-120-121-122-123-124-125)

Table No. 204	**DACOR H.U.B.**	Drawing reference No.: J 76 Table updated on: 30/10/2001

Ref.No.	Code	Description
1	47158706	7 way distributor
2	47158724	Connector 7/16" UNF
3	45111016	Screw M 5 x 20
4	46110242	O-Ring 2-003
5	44172073	Swivel assembly
6	47158736	H.P. hose 55 cm
7	47158735	L.P. hose 3/8" - BC quick coupling 50 cm
7	47158734	L.P. hose 3/8" - BC quick coupling 45 cm
8	47158726	Connector 1/2 UNF 3/8"
9	47158729	L.P. Hose 1/2" - 1/2" (swivel)
10	46200007	Roller
11	45111017	Washer D. 4.3 UNI-6593 DIN-126
13	46200015	Grip plate
15	46200009	Tank pad
16	46200008	Handle
17	47158715	Rod d. 5 x 80 mm
18	47200203	Tank positioning band
19	46110106	O-Ring 106
20	46185204	Plug 3/8" UNF
21	x x x	Tube
22	45179863	Tube clamp
23	x x x	Halkey Roberts 730 ROA valve
24	46200017	Halkey 736 ACU4 valve cover
25	45111018	Washer D. 5.3 UNI 6592 DIN 125/A
26	45111015	Screw M 4 x 14 TCC
27	45111003	Screw 2.9 x 9.5 UNI 695471
28	46110205	O-Ring 2025
29	47158731	L.P. Hose 1/2" - 9/16" L-XL (50 cm)
29	47158730	L.P. Hose 1/2" - 9/16" S-M (43 cm)
30	47200025	Dacor H.U.B. buoyancy bag (Size S - XL)
31	47158708	Snap ring diam. 18
33	47110271	O-Ring 3100
34	47159125	Over-expansion relief valve seal
35	47159054	Spring base disk

Ref.No.	Code	Description
36	46159150	Quick air dump valve
37	47159056	Overpressure cap
38	x x x	Flange for swivel elbow fitting
39	46110210	O-Ring 2056
40	x x x	Swivel elbow fitting
41	47158744	Sticker
43	46200024	Backpack
44	47159136	Black knob
45	47200229	Tank retaining band (size S - XL)
47	47158713	Tapex Connector 073M4
48	46200000	Support for distributor
49	47158579	50 M Dacor buckle
49	47158563	Adj. Buckle 50 F
50	47158723	Connector 1/2" UNF 9/16"
51	47158705	4 way distributor
52	46110108	O-Ring 108
53	46185205	Plug 7/16" UNF
54	47158732	L.P. hose 3/8" - 9/16" (70 cm soft)
66	43169822	Cord
96	47159311	Tank protector
97	46110215	O-Ring 2043
		ASSEMBLIES
B	47159295	Belt assembly MB fixed backpack
***	46200147	Dacor H.U.B. interior distributor/hose Service Kit
		(4-19-28-52-97-OR 114-OR 2031)
x x x	47200376	H.U.B. Oral Inflator assembly
		(21 - 22 - 23 - 31 - 33 - 38 - 39 - 40)
D	----	H.U.B. pneumatic inflator (tab. no. 213 drg. J 77)
E	----	VIPER Octopus (table 102 drg. E 18)
F	----	H.U.B. 1st Stage (table n.18 drg.) E 9)
G	----	VIPER TEC 2nd Stage (table 103 drg. E 19)
H	----	Pneumatic exhaust valve (tab. no. 206 drg. J78)

Drawing No. J 79	**EVOLUTION H.U.B.**	Drawing updated on: 05/04/2002



DACOR	INTEGRATED SYSTEM H.U.B.		PAGE	REPAIR PROCEDURE
	H.U.B.	06/02	1-1.2	

Table No. 214	**EVOLUTION H.U.B.**	Drawing reference No.: J 79 Table updated on: 09/05/2002

Ref.No.	Code	Description
1	47158706	7 way distributor
2	47158724	Connector 7/16" UNF
3	45111016	Screw M 5 x 20
4	46110242	O-Ring 2-003
5	44172073	Swivel assembly
6	47158736	H.P. hose 55 cm
7	47158735	L.P. hose 3/8" - BC quick coupling 50 cm
7	47158734	L.P. hose 3/8" - BC quick coupling 45 cm
8	47158726	Connector 1/2 UNF 3/8"
9	47158729	L.P. Hose 1/2" - 1/2" (swivel)
10	46200007	Roller
11	45111017	Washer D. 4.3 UNI-6593 DIN-126
13	46200015	Grip plate
15	46200009	Tank pad
16	46200008	Handle
17	47158715	Rod d. 5 x 80 mm
19	46110106	O-Ring 106
20	46185204	Plug 3/8" UNF
21	x x x	Tube
22	45179863	Tube clamp
23	x x x	Halkey Roberts 730 ROA valve
24	46200017	Halkey 736 ACU4 valve cover
25	45111018	Washer D. 5.3 UNI 6592 DIN 125/A
26	45111015	Screw M 4 x 14 TCC
27	45111003	Screw 2.9 x 9.5 UNI 695471
28	46110205	O-Ring 2025
29	47158731	L.P. Hose 1/2" - 9/16" L-XL (50 cm)
29	47158730	L.P. Hose 1/2" - 9/16" S-M (43 cm)
30	47200292	Evolution H.U.B. buoyancy bag (Size S - XL)
31	47158708	Snap ring diam. 18
33	47110271	O-Ring 3100
34	47159125	Over-expansion relief valve seal
35	47159054	Spring base disk

Ref.No.	Code	Description
36	46159150	Quick air dump valve
37	47159056	Overpressure cap
38	x x x	Flange for swivel elbow fitting
39	46110210	O-Ring 2056
40	x x x	Swivel elbow fitting
41	47200095	Sticker
43	46200024	Backpack
44	47159136	Black knob
45	47200269	H.U.B. retaining band (size S - XL)
47	47158713	Tapex Connector 073M4
48	46200000	Support for distributor
50	47158723	Connector 1/2" UNF 9/16"
51	47158705	4 way distributor
52	46110108	O-Ring 108
53	46185205	Plug 7/16" UNF
54	47158732	L.P. hose 3/8" - 9/16" (70 cm soft)
56	47159681	Neutral LP hose assembly
66	43169822	Cord
96	47159311	Tank protector
97	46110215	O-Ring 2043
		ASSEMBLIES
B	47159295	Belt assembly MB fixed backpack
***	46200147	Dacor H.U.B. interior distributor/hose Service Kit
		(4-19-28-52-97-OR 114-OR 2031)
x x x	47200376	H.U.B. Oral Inflator assembly
		(21 - 22 - 23 - 31 - 33 - 38 - 39 - 40)
D	----	H.U.B. pneumatic inflator (tab. no. 213 drg. J 77)
E	----	VIPER Octopus (table 102 drg. E 18)
F	----	H.U.B. 1st Stage (table n.18 drg.) E 9)
G	----	VIPER METAL 2nd Stage (table 105 drg. E 21)
H	----	Pneumatic exhaust valve (tab. no. 206 drg. J78)

Drawing No. J 78	**PNEUMATIC EXHAUST VALVE H.U.B.**	Drawing continued from previous table

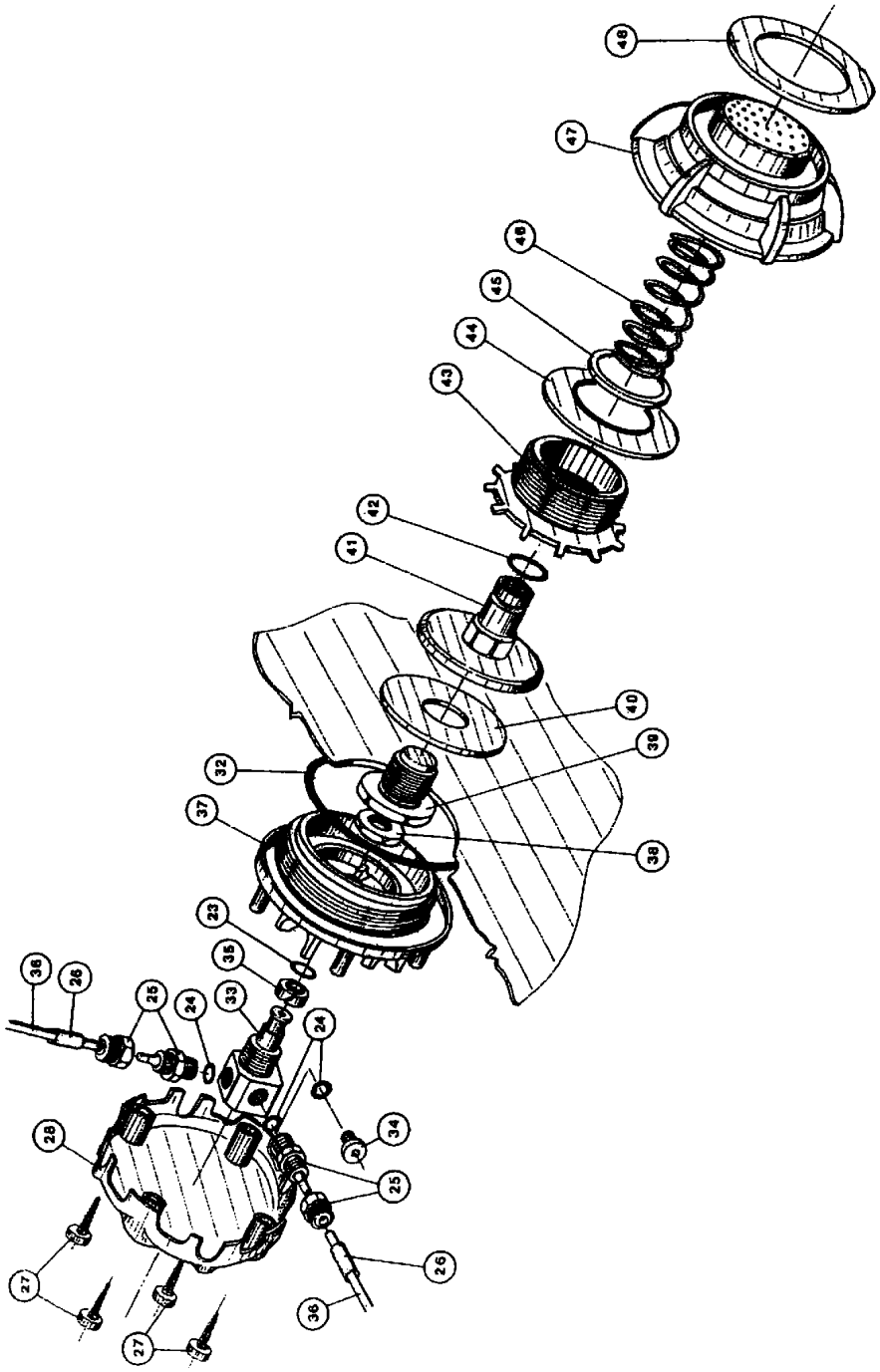


Table No. 206	**PNEUMATIC EXHAUST VALVE H.U.B.**	Drawing reference No.: J 78 Table updated on: 30/10/2001

Ref.No.	Code	Description
23	46110102	O-Ring 2015
24	47110272	O-Ring 3 x 1
25	= = =	Air connector
27	45111003	Screws 2.9 x 9.5
28	46200025	Protection cap
32	46110265	O-Ring 3231
33	47158721	2 way valve shaft
34	47158720	Plug for valve
35	47158716	Dash backup ring
37	46200012	Pneumatic valve flange
38	47158725	Valve shaft nut
39	46200010	Sealing disk nut
40	47158727	Sealing disk
41	46200011	Sealing disk support
42	46110110	O-Ring 2037
43	46200026	Diaphragm nut
44	47158728	Diaphragm

Ref.No.	Code	Description
45	47158737	Friction washer
46	47158701	Pneumatic valve spring
47	46200023	Valve ring
48	47158703	Sticker
		ASSEMBLIES
H	46200128	H.U.B. exhaust valve assembly
		(23-27-28-33-35-37-39-40-41-
		44-45-46-47-48)
xxx	46200126	H.U.B. long LP hose assembly
		(24-25-26-36)
xxx	46200125	H.U.B. short LP hose assembly
		(24-25-26-36)
***	46200144	Serv.kit. Dacor H.U.B. pneumatic valves
		(23-24-32-33 tab.204 -35-39 tab.204 -42)

Table No. 213	**PNEUMATIC INFLATOR ASSEMBLY A.T. DACOR**	Drawing reference No.: J 77 Table updated on: 30/10/2001

Ref.No.	Code	Description
1	46200013	Inflator body
2	47158717	Spring for pistons
3	46110213	O-Ring 2007
4	47158740	Deflation button bushing
5	46110211	O-Ring 2050
6	47158745	Deflation piston seat
7	46110101	O-Ring 2012
8	47158742	Deflation piston
9	46200018	Deflation button
10	46200019	Inflation button
11	46200022	Inflator ring
12	46200020	Lower covering
13	46200021	Upper covering
14	45111004	Screws 2.9 x 19
15	46185075	Screws M 3 x 16
16	47159146	Filter
17	46110106	O-Ring 106
18	47158718	Male quick coupling
19	47158741	Inflation piston
20	47158746	Inflation piston seat
21	47110270	O-Ring 3156
22	41138960	Inflator flange connector

Ref.No.	Code	Description
23	46110102	O-Ring 2015
24	47110272	O-Ring 3 x 1
25	= = =	Air connector
27	45111003	Screws 2.9 x 9.5
28	46200025	Protection cap
29	47158722	Valve shaft
30	46200014	Inflator flange
31	47158707	Radial snap ring diam. 6
32	46110265	O-Ring 3231
		ASSEMBLIES
D	47200285	Pneumatic inflator assembly H.U.B.
+++	46200141	Internal mechanism assembly Pneumatic inflator
		(1-2-3-4-5-6-7-8-15-16-17-18-19-20)
xxx	46200126	H.U.B. long LP hose assembly
		(24-25-26-36)
xxx	46200125	H.U.B. short LP hose assembly
		(24-25-26-36)
***	46200146	Serv. kit. Dacor H.U.B. pneumatic inflator
		(3-5-7-17-21-23-24-32)