

R1 - R2 FIRST STAGE

mares[®]

**R1 - R2
FIRST STAGE**

▶ **DISASSEMBLY:**

1. Remove all hoses from the first stage
2. Insert the disassembling tool for the first stage (B5) into a LP port.
3. With a pin wrench, unscrew cover (85), remove spring (8) and spring washers (82), if present.

NOTE Up to two spring washers may be found.

4. Remove the complete piston (84-88-86-50) from the cover (Fig.1).
5. Remove O-rings (86) and (50) from piston.
6. Remove the piston seat (86) with tool (B22) (Fig. 2).
7. Remove yoke retaining nut (7) with wrench (B-1) then remove yoke (3) with knob (25) (Fig. 3).

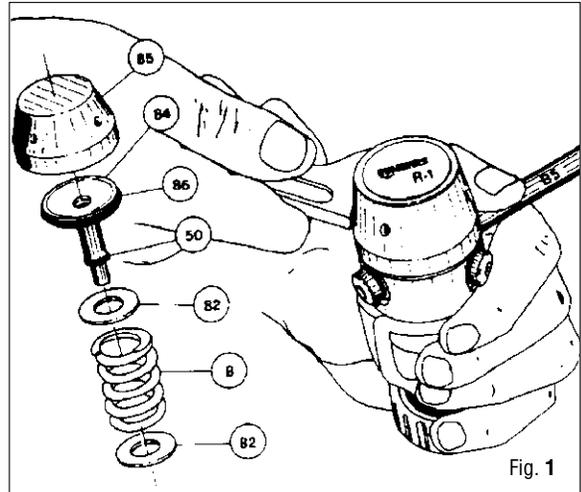


Fig. 1

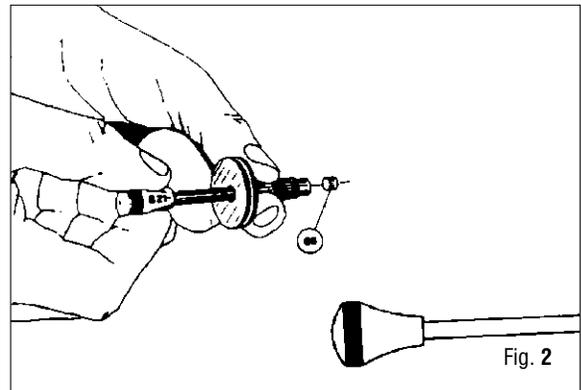


Fig. 2

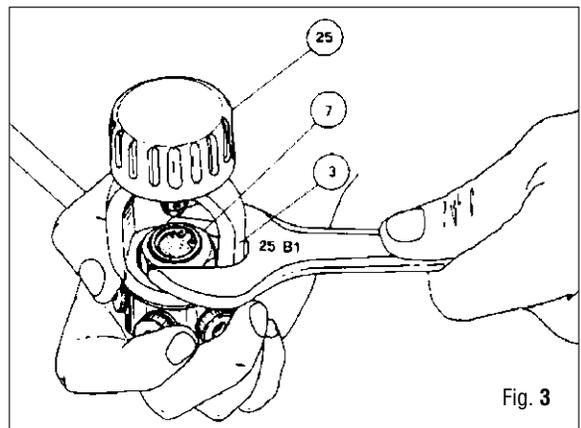


Fig. 3

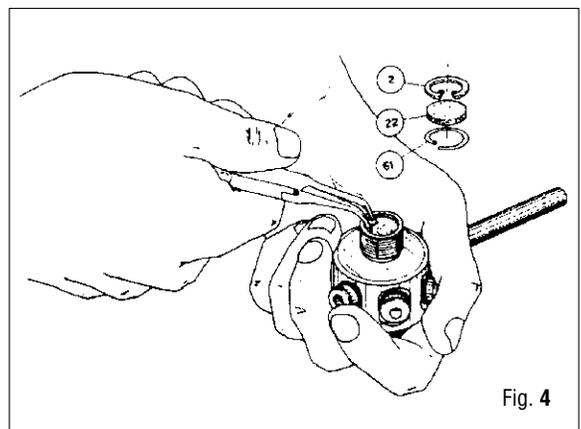


Fig. 4

DIN version

▶ **DISASSEMBLY:**

(instead of step 6)

- A. Using a 6 mm wrench (B-8), unscrew the DIN coupling attachment (51) and extract the O-rings (23) and (50).
 - B. Extract the ring nut (49).
 - C. Unscrew the DIN union attachment and remove O-ring (23).
8. Remove disassembly tool (BS) from LP port.
 9. Remove filter retaining ring (2) with snap ring pliers (Fig.4)
 10. Lift out sintered filter (22) and filter spring (61).
 11. Remove low (20) and high pressure (53) port plugs. Remove O-rings (19) and (52).



▶ **CLEANING**

Cleaning requires all reusable rubber and plastic parts to be carefully cleaned by scrubbing with a soft brush in a mild detergent and water solution. Do not use solvents or acids on rubber or plastic parts. Metal parts should be cleaned in an ultrasonic cleaner with fresh water or a mild acid solution. (White vinegar diluted with warm water is recommended). Before reassembly make sure all parts have been carefully rinsed and dried.

WARNING !

THE FIRST STAGE PISTON SEAT AND SINTERED FILTER MAY BE DAMAGED BY ACID OR ULTRASONIC CLEANING. DO NOT SOAK FIRST STAGE POPPET AND SINTERED FILTER IN ACID OR AN ULTRASONIC CLEANER. THIS MAY LEAD TO REGULATOR FAILURE RESULTING IN SERIOUS INJURY OR DEATH.

**WARNING !**

PROTECT EYES AND SKIN ADEQUATELY WHEN WORKING WITH ANY KIND OF ACID. BEFORE CLEANING METAL PARTS, MAKE SURE THAT ALL RUBBER AND PLASTIC PARTS HAVE BEEN REMOVED. ACIDS OR OTHER SOLVENTS MAY DAMAGE RUBBER AND PLASTIC PARTS.

▶ INSPECTION

The following first stage components should be replaced during routine service.

Description	Part Number
Retaining ring	185015
Filter	185014
Piston seat	186223
O-ring piston (stem)	110203
O-ring piston (head)	110224
O-ring LP ports	110106
O-ring HP ports	110108
O-ring DIN coupling attachment (DIN version)	110203
O-ring DIN coupling (DIN version)	110117

If the following parts are not replaced, they should be inspected with a jewelers loop for the defects listed below. Replace any part with these flaws.

Piston:	Inspect for any signs of corrosion or wear. Make sure the hole through the piston stem is open and not clogged with foreign matter.
Piston seat.	Inspect for any deformation or trapped foreign matter. If a new piston seat is not available, the piston housing can be reversed if the surface is not damaged or previously used.
Cover:	Inspect the surface in contact with the piston O-ring for chipping, scratches, or deteriorated plating.
Filter:	Inspect for sedimentation and rust. Rust deposits may indicate a deteriorated diving cylinder.
Retaining ring:	Inspect for any distortion, cracks or damaged edges.



The filter retaining ring should be replaced every time it is removed from the first stage.

Springs:	Inspect for cracking or broken coils.
Spring washers:	Inspect for distortion, brittleness and cracking.
O-rings:	Inspect for cuts, tears, flat spots or contamination. The presence of any of these defects may cause leakage.
O-ring seats:	Inspect all surfaces in contact with O-rings and other seals for chipping, scratches, deteriorated plating or contamination.
First stage body:	Inspect the tapered surface of the housing for any chipping and/or deep scratches. If the housing is damaged replace the first stage body.



A slightly abrasive rubber (such as a clean pencil eraser) may be used to clean the housing.

▶ REASSEMBLY

Before reassembly, slightly lubricate all O-rings with silicone grease (General Electric, Versalube G-322 or equivalent). Lubricating the O-rings before reassembly will minimize the risk of damage during reassembly.



WARNING !

IF THE FIRST STAGE IS USED FOR **ENRICHED AIR DIVING**, IT MUST BE PERFECTLY CLEANED AND FREE FROM RESIDUAL SILICONE OR FROM ANY FOREIGN MATTER. VITON O-RINGS CAN BE LUBRICATED WITH SPECIFIC OXYGEN COMPATIBLE GREASE. **DO NOT USE SILICONE GREASE.**

1. Place the filter spring (61) and sintered filter (22) into first stage body (Fig. 4).
2. Compress the retaining ring (2) with snap ring pliers and position the ring over the sintered filter. Compress the sintered filter until the retaining ring fits into the groove in the first stage body.



When the filter retaining ring is properly positioned in the groove of the first stage body it can be rotated freely using the snap ring pliers.

3. Insert tool (BS) in a LP port of the first stage body.
4. Place yoke (3) with knob (25) on first stage body
5. Install yoke retaining nut (7) and tighten into place with wrench (B1) (Fig. 3).



To prevent the yoke retainer nut from becoming loose, place two drops of thread compound (Loctite 242 E) in the bottom of the threads of the first stage body. Don't stick the thread compound (Loctite 242 E) onto the O-rings !

DIN version**▶ REASSEMBLY:**

(replacing stage 4 and 5)

- D. Place o-ring (23) into the housing of DIN union attachment (48).
- E. Screw the DIN union attachment (48) onto the first stage body, tightening as far as possible with the spanner.
- F. Place the ring nut (49) onto the first stage correctly.
- G. Connect up the o-rings (23) and (50) to the DIN coupling attachment.
- H. Using the 6 mm. wrench, (B-8) tighten the DIN coupling attachment in the body of the first stage.

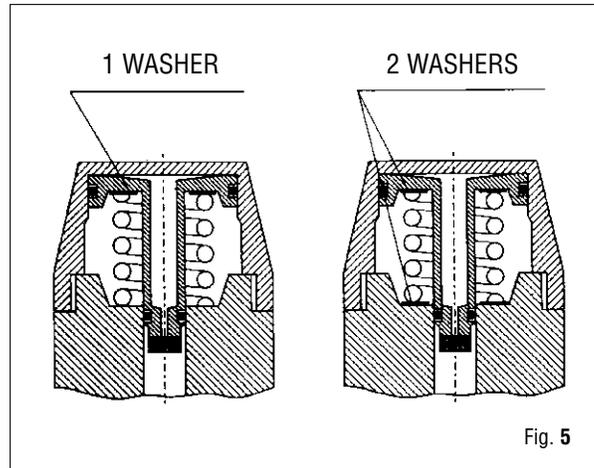


Fig. 5

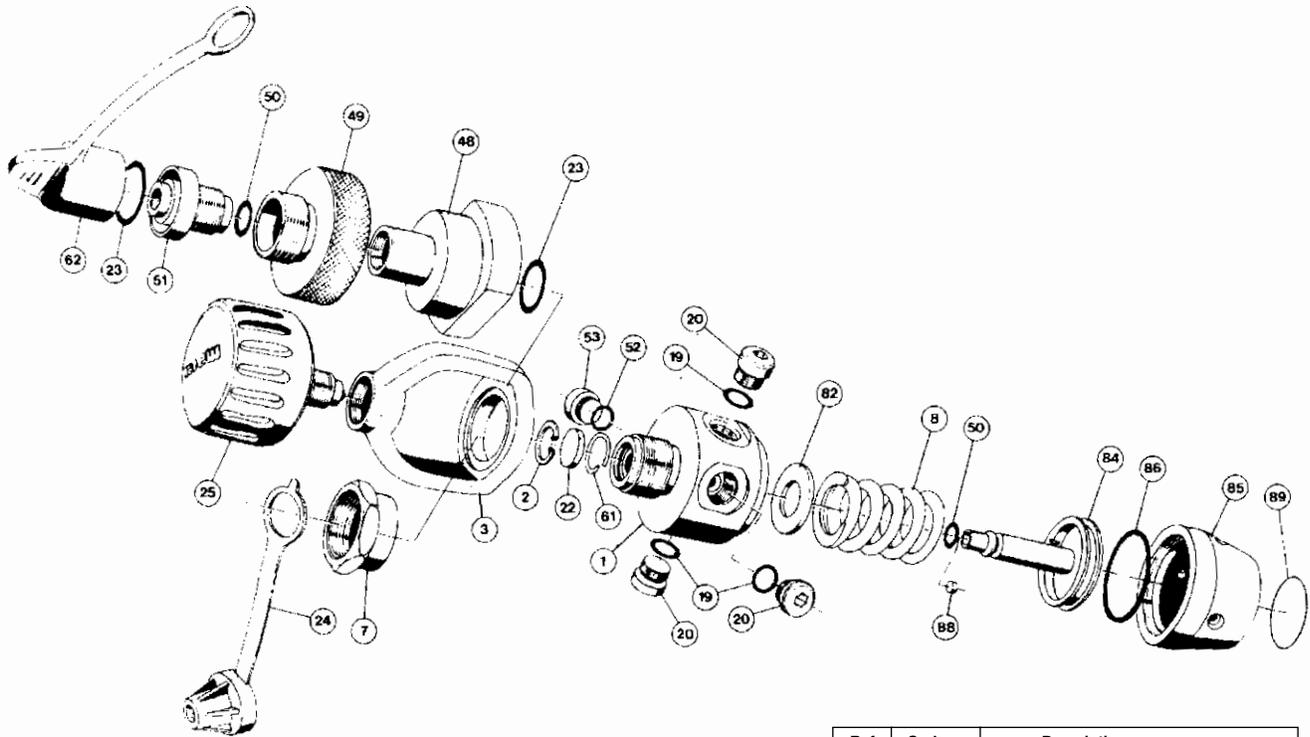
**WARNING !**

TO PREVENT THE DIN UNION ATTACHMENT (48) AND THE DIN COUPLING ATTACHMENT (51) BECOMING ACCIDENTALLY LOOSE, POUR ONE OR TWO DROPS OF THREAD COMPOUND (LOCTITE 242 E TYPE) ONTO THE THREADING.
DO NOT POUR THREAD COMPOUND ONTO THE O-RINGS !

6. Insert the piston seat (88) into the piston (84).
7. Place O-rings (50) and (86) onto piston
8. Place the complete piston (84-88-86-50) into the cover (85) (Fig. 1).
9. Spring washers:
 - a. If one washer is present place it against the piston.
 - b. If two washers are present place one against the piston and place the second washer into the first stage body (Fig. 5).
10. Slightly lubricate the base of the spring (8) then place it into the first stage body.
11. Thread cover (85) onto first stage body and tighten into place with a pin wrench.
12. Remove tool (B5).
13. Install O-rings (19) and (52) onto hoses or port plugs (20) and (53). Thread hoses and port plugs into appropriate ports and tighten.

FIRST STAGE, R2 DFC
FIRST STAGE, R2 DFC NITROX

Table 7
Updated to 01-04-98



Ref.	Code	Description
1	186230	Body
2	185015	Retaining ring
3	185208	Yoke
7	185212	Retaining nut, yoke
8	186220	Spring, piston
19	110106	O-Ring 106
19	110402	O-Ring 106 Viton 610-9754
20	185204	Plug 3/8 UNF
22	185014	Sintered filter
23	110117	O-Ring 115
23	110406	O-Ring 115 Viton 614-9754
24	185009	Dust cap 0,90
25	184076	Knob assembi
48	183008	DIN connector body , 200 BAR
49	183006	DIN connector wheel, 200 BAR
50	110203	O-Ring 2018
50	110409	O-Ring 2018 Viton 008-9754
51	179261	DIN connector, 200 BAR
52	110108	O-Ring 108
52	110404	O-Ring 108 Viton 611-9754
53	185205	Plug HP 7/16 UNF
61	185013	Spring, filter
62	183013	Cap, DIN connector
82	186221	Washer
84	186228	Piston
85	186225	Cover
86	110224	O-Ring 2100
86	110419	O-Ring 2100 Viton 022-9754
88	186223	Plastic seat, piston
89	184354	Label
107	184313	Knob assembly label
107	184366	Nitrox knob assembly label
ASSEMBLIES		
A	185975	First stage e assy. - complete
A	185976	First stage e assy. - R1 J - complete
A	185978	First stage e assy. - R1 DIN - complete
A	185966	First stage e assy. - R2, Nitrox - complete
A	185970	First stage e assy. - R2, Nitrox J.- complete
F	183020	DIN connector assy. 200 BAR (23-48-49-50-51-62)
F	183015	DIN connector assy. 300 BAR (23-48-49-50-51-62)
F	183042	DIN connector assy. 200 BAR Nitrox (23-48-49-50-51-62)
F	183041	DIN connector assy. 300 BAR Nitrox (23-48-49-50-51-62)
***	185323	INT/DIN maintenance Kit (2-19-22-23-50-52-86-88)
***	186155	INT/DIN Nitrox maintenance Kit (2-19-22-23-50-52-86-88)