Sea Hornet

REGULATOR

WORKSHOP PROCEDURE MANUAL

This manual is intended as a guide to aid the qualified technician to service and maintain Sea Hornet regulators.
IT IS NOT INTENDED AS AN INSTRUCTION MANUAL.
This manual should only be used by persons fully trained and qualified in the overhaul and servicing of underwater breathing equipment.

T.D. Preece & Co. Pty. Ltd.
Australia

THEORY OF OPERATION.

The Sea Hornet Challenge regulator reduces scuba cylinder high pressure air to ambient pressure in two seperate stages connected by an intermediate pressure hose.

The first stage utilizes a flow through balanced piston design to regulate cylinder pressure to an intermediate pressure of 996 kPa (145 psi).

The second stage utilizes a downstream demand valve, diaphragm activated to reduce intermediate pressure to ambient.

ROUTINE CLEANING AFTER USE.

- **IMPORTANT**

The following procedure is recommended after all dives in Salt, Chlorinated or Polluted water.

1. Ensure the dust cap is dry before placing it into position after diving.

2. Ensure the dust cap is in position before commencing the washing procedure.

3. DO NOT depress or 'lockdown' the purge button during the cleaning procedure.

4. After each dive totally immerse your regulator in fresh water for a short soaking period. This will allow any built up salt deposits to soften.

5. Wash under running water (preferably warm water) allowing the water to flush through the ambient sensing holes in the first stage. Next wash the second stage directing running water into the mouth piece as well as washing externally. Remember, DO NOT depress the purge button.

6. Lightly shake the second stage to remove any excess water from inside the mouthpiece.

Carrying out the above procedure will ensure peak performance between service periods.

Tooling Requirements

Special tools, jigs or fixtures are not required to perform standard maintenance procedures on the Command Air regulator.

Qty	Description
1	11/16'' — 5/8'' open end spanner
1	19/32'' — 11/16'' open end spanner
1	$_4$ 1 Phillips tip screw driver
1	1/4'' standard screw driver
1	Needle nosed pliers with plastic coated handles
1	O ring pick
1	Sharpened pencil with eraser

1st STAGE DESCRIPTION

SEA HORNET produce two models of first stage.

The **CHALLENGE** model which features a swivel on the low pressure end with 4 x low pressure ports and 2 x high pressure ports.

The **EXPLORER** model which is identical except for the low pressure end cap which does not swivel and has 6 x low pressure ports.

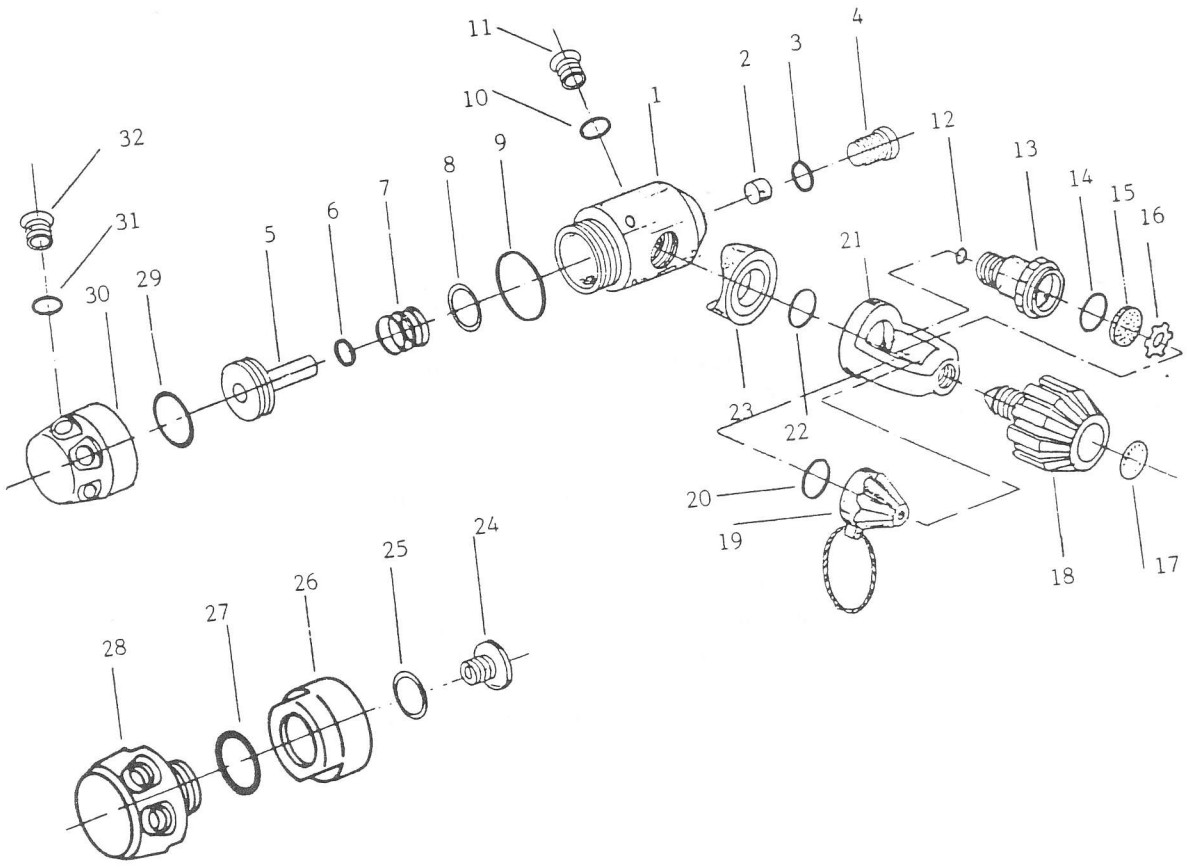
The 1st stage is a Balanced Flow Through Piston design with a Polyethylene high pressure seat using Neoprene o-rings throughout.

The components are manufactured from the following materials:
Naval Bronze, Brass and Stainless Steel.

The intermediate pressure (line pressure) is adjusted using stainless steel shims.

The filter assembly is sintered bronze filtering down to 40 microns.

1st Stage
Sea Hornet Regulator
Spare Parts List



1	First Stage Body	3300017	12	O-Ring	330025	23	Chrome Socket	330026
2	H.P. Seat	3300157	13	Yoke Inlet Nut	330007	24	Swivel Nut	330005
3	O-Ring	330026	14	O-Ring	330024	25	Thrust Washer	330013
4	H.P. Seat Plug	3300067	15	Filter	3300161	26	Cap	330002
5	S.S. Large Piston	330003L	16	Retaining Clip	330017	27	O-Ring	330021
6	O-Ring	330023	17	Sticker	3300095	28	Swivelling Head	330004
7	1st Stage Spring	330014	18	Yoke Knob	330009	29	O-Ring	330019
8	S.S. Shims	330012	19	Dust Cap	330028	30	L.P. Head	330000
9	O-Ring	330021	20	O-Ring	330029	31	O-Ring	330020
10	O-Ring	330024	21	Yoke	330008	32	L.P. Plug	330010
11	H.P. Plug	330010	22	O-Ring	330027			

1st STAGE SETTINGS

Intermediate Pressure 145 psi +/- 5psi
Tested static with 3000 psi. supply pressure

Pressure is Adjusted using Shims
Pressure Increase approx. 5 psi per Shim
Maximum number of Shims to be used = 3

PARTS TO BE REPLACED ANNUALLY

High Press. Seat	Item 2.	P/No. 3300157
Piston Shaft O-ring	Item 6.	P/No. 330023
Piston Head O-ring	Item 29.	P/No. 330019
Filter	Item 12.	P/No. 3300161

CAREFUL INSPECTION OF THE FOLLOWING PARTS
IS REQUIRED BEFORE REFITTING.

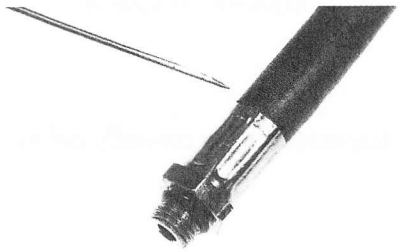
HP Seat O-ring	Item 3.	P/No. 330024
Body O-ring	Item 9.	P/No. 330021
Yoke Inlet O-ring	Item 12.	P/No. 330025
Swivel Head O-ring	Item 27.	P/No. 330022

Remaining Parts to be Visually Inspected Before Refitting.

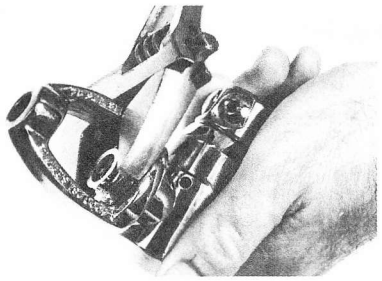
- **IMPORTANT**

All O-rings and Threads to be Lubricated with Silicone Grease.

1st STAGE DISASSEMBLY



Remove LP hose from 1st stage and inspect both ends for damage, particularly near the swage fittings.

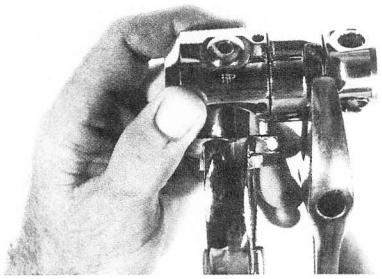


STEP 1

Use a 12" adjustable spanner to remove yoke inlet nut (13) from the body. Separate the yoke knob (18) and inspect the threads.

STEP 2

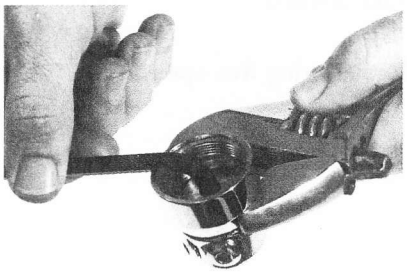
Remove and discard the filter. (15)



STEP 3

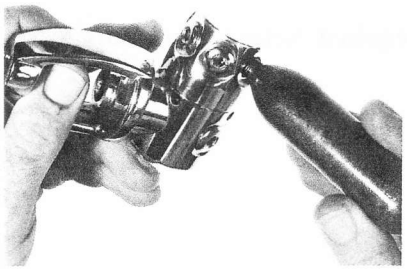
CHALLENGE MODEL:

Align the flats on the cap (26) and swivel head (28) use a 12" adjustable spanner to remove the cap from the body. (1)



STEP 4

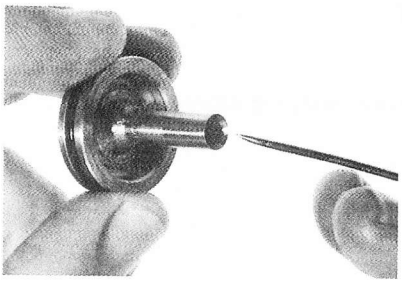
Using a 1/4" allen key remove the swivel nut (24)



STEP 5

EXPLORER MODEL:

Remove LP plugs, a used C02 cartridge can be used to unscrew the LP head. (30)

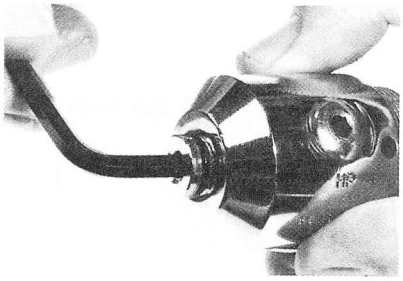


STEP 6

Remove the piston (5) using a gentle rocking motion. Remove the piston o-ring (29) and discard.

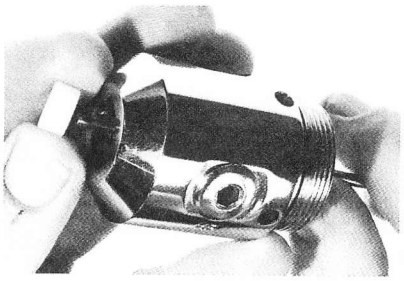
- **IMPORTANT**

Take care not to damage the piston knife edge. Inspect this area carefully before installation.



STEP 7

Using a 3/16" allen key remove the HP seat plug. (4)



STEP 8

Use a suitable dowel to push out the HP seat. Discard seat.

STEP 9

Remove piston shaft o-ring (6) from the body and discard.

- **IMPORTANT**

Take care not to score the o-ring groove in the body during this operation.

STEP 10

Clean and inspect all parts. Replace parts as required. Refer to Appendix A for parts requiring mandatory replacement.

1st STAGE ASSEMBLY PROCEDURES

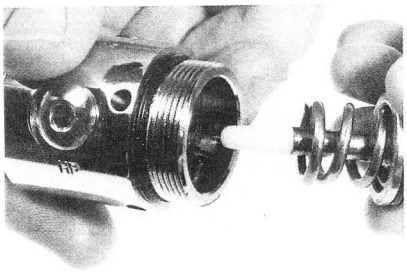
• **IMPORTANT**
All threads and o-rings should be liberally coated with silicone grease prior to reassembly.

STEP 1

CHALLENGE MODEL:
Reassemble swivel head (28) to cap (26) install thrust washer (25) then swivel nut (24) tighten firmly using a 1/4" allen key.

STEP 2

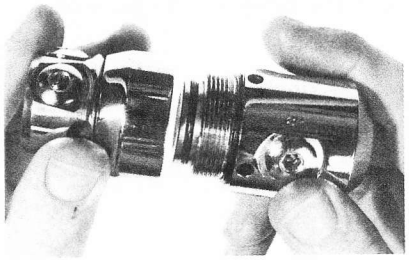
Install piston shaft o-ring (6) into the body.



STEP 3

Fit a new oring (29) to the piston head. Lubricate the ends of the 1st stage spring (7) and place in position on the piston (5).Ensure that the spring has clearance (fits freely) and is located in the piston head recess. Install the piston through the body.

• **IMPORTANT**
When reinstalling the piston (5) use a piston guide to prevent the piston orifice cutting the piston shaft o-ring. (6)

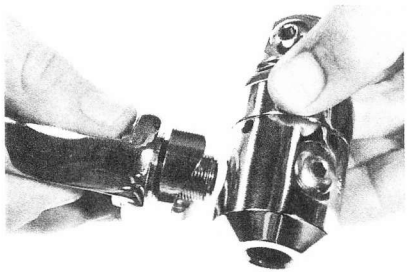


STEP 4

Install swivel LP cap assembly (26), CHALLENGE model, or the non-swivel cap (30), EXPLORER model. Tighten firmly.

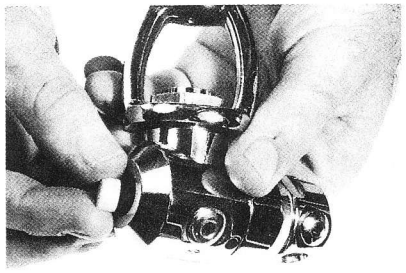
STEP 5

Fit a new filter to the yoke inlet nut. (13)



STEP 6

Preassemble the yoke items - 13,12,21,22 and 23.
Install this assembly, using a 12" adjustable spanner. Tighten firmly.

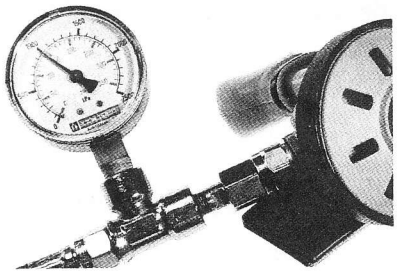


STEP 7

Fit a new HP seat (2). Refit HP seat plug (4). Tighten using a 3/16" allen key.

- **IMPORTANT**

This plug (4) should only be tightened lightly. More than hand tight will result in either distortion of the seat or the seat locking into the body.



STEP 8

After installing hoses or plugs the 1st stage can now be tested.
An inline pressure gauge should be used to test the outlet pressure from the 1st stage.
Intermediate pressure (line pressure) should be in the range of 145 psi + or - 5 psi.

Shims (8) are used to regulate this pressure, each shim increases pressure approximately 5 psi.
Maximum number of shims allowed is 3. If more than 3 shims are required, the 1st stage spring (7) is to be changed.