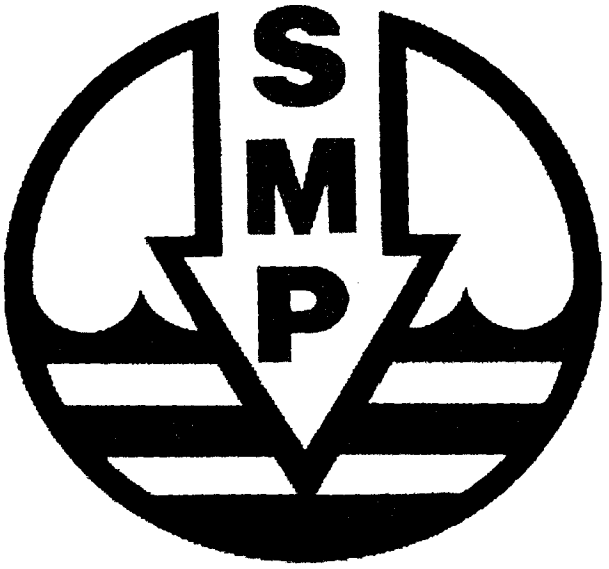


HYPERBARIC FIRE EXTINGUISHER MANUAL

SMP Hyperbaric Fire Extinguishers are simple, easily handled, and have been designed to be fitted in hyperbaric diving and medical therapy chambers.

They are available in two sizes to facilitate easy mounting and be appropriate in the different compartment sizes found in such hyperbaric systems. The 3 Litre SMP extinguisher will probably be found in air dive chambers, entry and transfer compartments and the 7 Litre will suit main living chambers and large treatment chambers.
They are foam stored pressure type charged up to 133 Bar, with a suitable chamber gas – usually helium. This gas provides the over-pressure required to force the water AFFF mixture through the outlet nozzle.

The SMP units mainly comprise of one robust aluminium cylinder containing the foam mixture and pressurized gas. This is in contrast to the old fashioned and cumbersome two cylinder extinguishers in use in the past.

The control valve/handle is similar to standard industrial units and exhibits immediate action and control enabling the operator to switch the unit off and on immediately – no delays in charging the 'foaming' cylinder' as in the old fashioned models (up to eight seconds was quite common).

The valve may be closed again for intermittent use.

For operation the safety pin is removed and when the valve handle is squeezed the valve seal moves, thus allowing the AFFF non-toxic foam/water mixture to be forced up the syphon tube and through the outlet nozzle. The nozzle is venture assisted which increases both foam texture and effectiveness.

All parts used in the SMP extinguishers are made from non-ferrous material and the aluminum cylinder will withstand the abuse given to equipment stored within hyperbaric confines without denting or pitting that normally requires the water-cylinder replacement. The red cylinder coating is a highly durable gloss epoxy resin.

A contents gauge indicates if the extinguisher is fully charged or has been partially used. SMP is easy to maintain and re-charge on site by trained personnel. *A comprehensive maintenance manual and training course is available by request.*

SMP is for multi-risk applications (fabrics, materials, and liquid fires.)

SMP Model	**7 Litre**	**3 Litre**
Height	600mm	450 mm
Diameter	150mm	120 mm
Weight Charged	12kg	7kg
Cylinder Volume	7 Litres	3 Litres
Foam Discharge	50 Litres	22 Litres
Discharge Time	50 secs	22 secs
Discharge Distance	6 m	6 m
Effective Discharge	99%	99%
Cylinder Test Pressure	200 bar	200 bar
Cylinder Working Pressure	133 bar	133 bar
Temperature Rating	-15 to +55 degrees C	-15 to +55 degrees C
Chamber Volume Rated	14 m CU	6 m CU

SMP Hyperbaric Fire Extinguisher
Re-filling instructions
Table of volumes and contents

The below table shows the proportion of water and foam concentrates in (litres) that are added to the cylinder prior the charging with helium.

VOLUME CYLINDER	3.0	7.0
GAS VOL: (25%)	0.75	1.875
WATER: (88% OF COMBINED LIQUID	1.98	4.95
FOAM: (12 OF COMBINED LIQUID)	0.27	0.675
COMBINED LIQUID: (75%)	2.25	5.700

Filling and Charging Instructions

1. Ensure the extinguisher is completely empty by squeezing the upper and lower handles together. Place safety pin in to handles to hold open.
2. Check the volume of the cylinder and refer to the above chart for water and foam concentrate levels.
3. Remove the venturi nozzle by unscrewing anti-clockwise.
4. Gripping the cylinder, unscrew the main valve by levering on the handle in an anti-clockwise rotation (if this proves to be difficult, turn the eye-bolt 90 degrees to the vertical, and use an adjustable spanner for extra leverage).
5. Completely remove the main valve.
6. Wash out the cylinder with fresh water. Ensure that it is completely empty.

WARNING: POWDER COATING OF ALUMINIUM CYLINDERS

Under no circumstances is the fire extinguisher cylinder to be epoxy powder coated or given any other coating which involves heat curing. Heat will compromise the temper of the aluminium alloy and could result in catastrophic failure of the cylinder

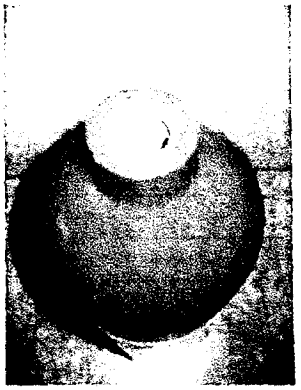
7. Carry out visual inspection of the cylinder, checking that there is no corrosion or damage, particularly around the thread and 'O' ring groove area.
8. Using a funnel and measuring beaker, pour in the correct amount of water as shown in the above table.
9. Add the correct amount of AFFF synthetic foam, as shown in the above table.
10. Check the collar 'O' Ring for good condition, and lightly grease with MS4.
11. Ensure that the correct length dip tube is fitted to the valve (this is almost the same length as the cylinder).
12. Replace the valve and screw in hand tightly.
13. Screw a quarter inch BSP charging fitting in to the outlet fitting and connect the charging hose.
14. Pressurize with a suitable gas to 133 Bar. It may be necessary to wait for the cylinder to cool, and then re-charge.
15. Remove the safety pin from the charging position and replace in the safety position and thread a frangible wire and seal through the safety pin hole.
16. Vent the pressure line and remove charging fitting.
17. Replace the venture nozzle in to the outlet fitting.
18. Shake the cylinder for a few seconds to ensure of a good mixture.
19. Store the extinguisher in a vertical position using the bracket provided.

1. Ensure extinguisher is empty, place safety pin in valve 'open' position, remove nozzle by turning anti-clockwise.

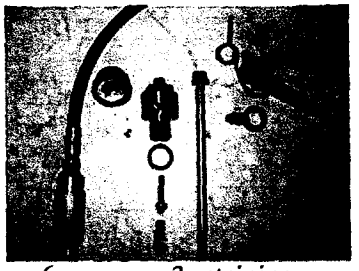
2. grip the cylinder and remove the complete valve by turning it anti-clockwise. Do NOT force the handle.

3. if valve is tight turn eyebolt 90 degrees and use as a lever with wrench. Use cylinder vice if necessary.

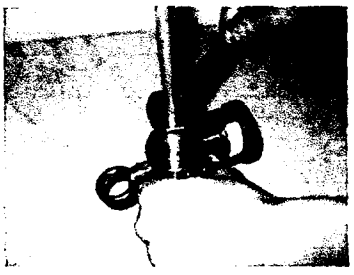
4. remove valve completely. Carry out scheduled maintenance as required on service label. Inspect hose for wear or damage.



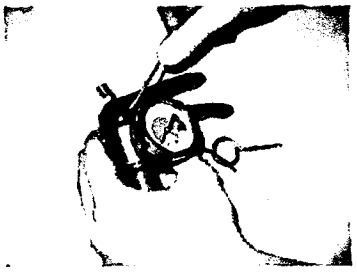
5. visually inspect cylinder internal, external, thread and 'O' Ring groove at neck. Ensure no damage or corrosion is evident.



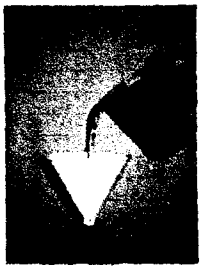
6. unscrew 3 retaining screws until handle is loose, remove from valve body by pulling vertically. Leave hose, gauge, eyebolt and dip tube in place.



7. using a 12mm socket, remove valve insert, stem, piston, 'O' Rings and spring. Remove burnt disc plug with 12mm spanner.



8. disassemble components (except hose and dip tube) as shown. Inspect for wear or damage. Replace as required clean, lubricate and reassemble in reverse order. Ensure valve piston seal is facing upwards.



9. to refill the extinguisher, using a funnel and measuring jug, pour in the correct amount of water.

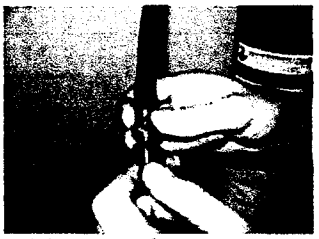
SMP 3.0 – 2ltr
SMP 7.5 – 5 ltr

10. measure and pour in the correct amount of foam:-
SMP 3.0 – 0.3 ltr
SMP 7.5 - 0.7 ltr

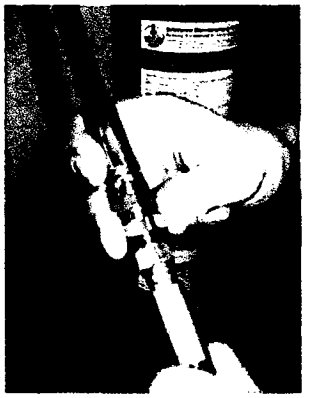
11. ensure that the correct full cylinder length dip tube is in place and replace valve into cylinder.

12. check that the 'O' Ring is in good condition and greased with a suitable lubricant.

13. screw the complete valve assembly back into the cylinder. Turn the extinguisher upside down a few times to ensure a good mixture.



14. screw the quarter inch BSP charging fitting into the end of the outlet hose.



15. connect a suitable charging whip to the charging fitting.

16. remove safety pin from 'open' position, place to valve 'closed' position and charge to 133 Bar.

17. place frangible wire into safety pin and seal with crimp. Mark up service label with service date and signature.

18. renew the instruction label if required, replace nozzle, and reseal the eyebolt with Locktight. (If necessary and tighten as required using eyebolt and socket.)