Chapter 10

CHARGING HEAD FOR 34 GRAMME CO_2 CYLINDERS

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LIST OF ILLUSTRATIONS

Introduction

1. The charging head (*Stores Ref.* 6D/1638) is used for filling 34 gramme cylinders fitted on Mk. 2, 3 and 4 life jackets from a bulk supply cylinder (fig. 1). It may also be used to fill the 86 gramme cylinder used on parachutist life jackets. The following spare parts are required when cylinders are to be filled.

Nomenclature	*Stores Ref.*
34 Gramme CO_2 cylinder (empty) complete with:—	6D/1623E
Cylinder cap	6D/1668
Sealing washer	6D/1669
Cylinder cap locking screw	6D/1670
Sealing disc	6D/1671
Fibre grips	6D/1639
Glass test tube	6D/1640

Note . . .

Cylinders are provisioned empty but complete with cylinder cap, washers, etc. Full cylinders are allocated the Stores Ref. 6D/1623F *for identification purposes only.*

Description

2. Details of the 34 gramme cylinder are shown in fig. 2 and 3. A metal cap in which are fitted a sealing disc and a sealing washer is screwed on to the neck of the cylinder and locked by a locking screw. To charge a cylinder the locking screw is loosened sufficiently to permit the cap to be unscrewed two turns so that the filling holes are lifted above the sealing face on the neck of the cylinder. (The sealing disc and washer move with the cap.) When the cylinder has been charged the cap is tightened, returning the filling holes to a position below the sealing face.

Charging head

3. The charging head is a rig in which the cylinder is mounted while it is being charged. It is illustrated in fig. 4 and 5. The entry of the CO_2 from the bulk supply cylinder is controlled by a semi-rotary cock mounted at the back of the charging head. The gas enters the inlet, passes along the passage into which the relief valve opens, round the annular passage on the filling spindle and through an aperture on the wall of the spindle into the chamber in which the cylinder head is fitted.

4. The relief valve consists of a spring loaded ball device which is normally held on its seat by the pressure of the gas but may be opened manually by a pivoted lever.

The relief valve exhausts gas from the charging head after the charged cylinder has been sealed.

5. After the cylinder is charged the cap is held in position while it is being adjusted, by a hexagonal key fitted to the front of the charging head.

6. The charging head may be held in a vice by its base or drilled and bolted to a bench.

Charging a cylinder

Note . . .

All cylinders are issued empty. They are proof tested before leaving the manufacturers premises and are still fitted with the sealing disc and washer used in the test. Before initial charging at a Unit the disc and washer must be discarded and new ones fitted. On subsequent chargings only discs showing no signs of bulging must be used.

7. (1) When a cylinder has to be charged, loosen the locking screw, but do not completely remove it, and take off the cap. Push out the sealing disc and washer.

(2) Examine the filling holes and ensure that they are free from obstructions.

(3) Insert a new disc and washer, checking that the disc is not bulged and the washer is on the gas side of the disc. Ensure that only one disc is fitted. The discs are very thin (0·007 in.) and two or more are easily picked up together.

(4) Screw the cap with the new disc and washer hand-tight on the cylinder.

(5) Fit the cylinder into the charging head and tighten the clamp.

(6) Turn the filling spindle two turns counter-clockwise to raise the filling holes in the cap above the sealing face.

(7) Turn on the CO_2, fill the cylinder, depress the relief valve and exhaust the cylinder thus causing the cylinder to freeze.

(8) Turn on the CO_2 again and charge the cylinder.

(9) Tighten the cap on the cylinder by turning the filling spindle two turns clockwise to its original position.

(10) Turn off the CO_2 supply and exhaust the charging head by depressing the relief valve.

(11) Release the clamp and remove the cylinder.

(12) To ensure that the cylinder is correctly charged it should be weighed and should exceed its empty weight by 34 grm. $\pm$ $\frac{1}{2}$ grm. If the charge is found to exceed 44 grm, the cylinder must be exhausted, the seal and washer discarded, new ones fitted and the cylinder re-charged. If the charge is found to exceed 34 gr. $\pm$ $\frac{1}{2}$ gr. but not exceed 44 gr. the charge should be reduced to 34 gr. $\pm$ $\frac{1}{2}$ gr.

(13) To reduce the charge, hold the cylinder with a fibre grip and momentarily loosen the cap by turning the key on the front of the head.

(14) If the cylinder is found to be under charged it should be re-mounted in the charging head, emptied by depressing the relief valve and re-charged.

Note . . .

Cylinders become extremely cold during discharging of the contents and should not be touched with the bare hands.

8. When sealing a cylinder the sealing cap should be tightened with a torque spanner (*Stores Ref.* 6D/1908) ensuring that a torque of 50 lb./in. is not exceeded. The final operation is to tighten the locking screw.

Testing a charged cylinder

9. The charged cylinder should be completely immersed, cap upwards, in a tank of clean water. The threads of the cap should be lightly brushed with a fine brush to remove any air bubbles. A glass test tube (*fig.* 6) completely filled with water should then be placed over the neck of the cylinder.

10. The cylinder should remain in the tank for at least 24 hrs. Any leakage of CO_2 will be evident from the presence of bubbles in the test tube. No leakage is permissible and if present indicates the need for a new seal and re-charging of the cylinder.

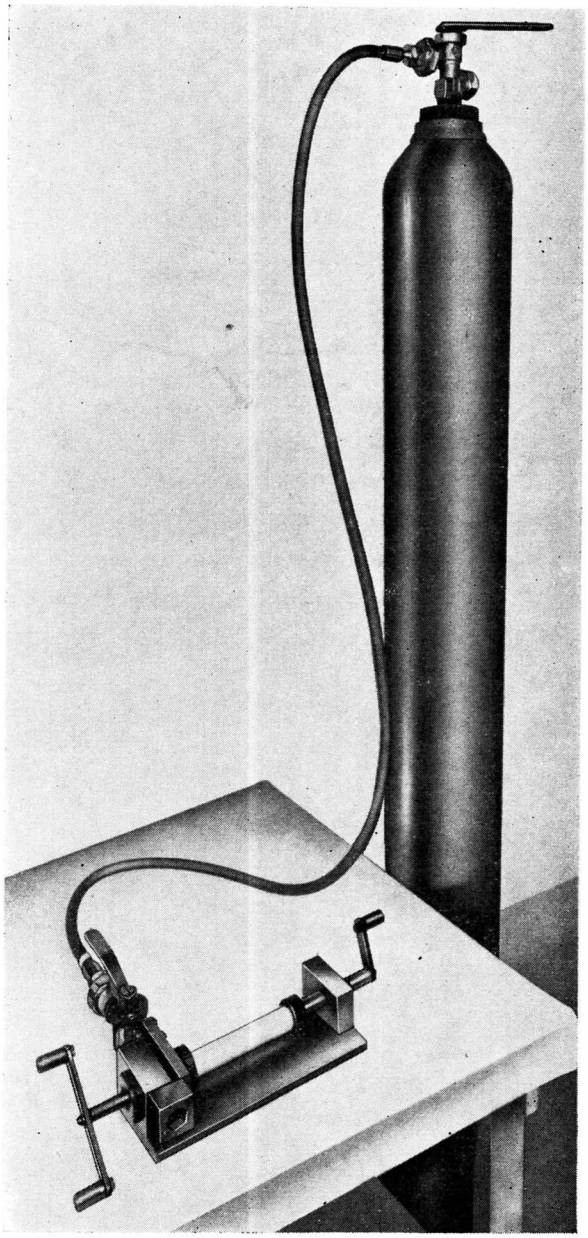

Fig. 1. Charging head and supply cylinder

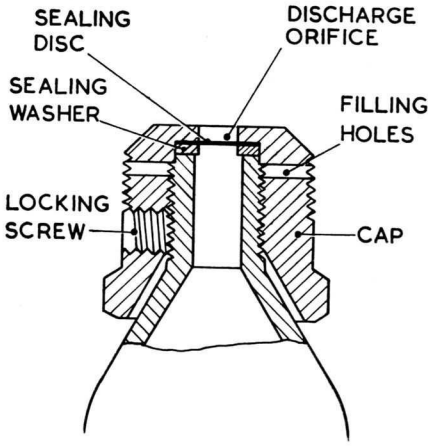

Fig. 2. Cylinder head

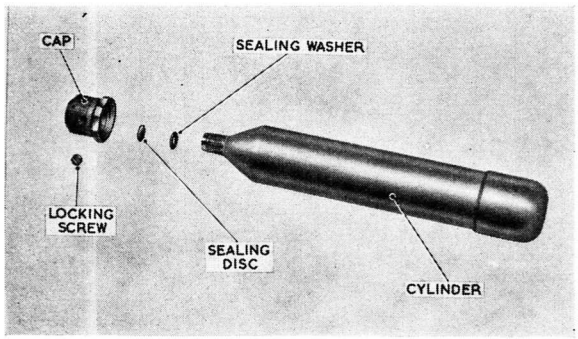

Fig. 3. Cylinder assembly

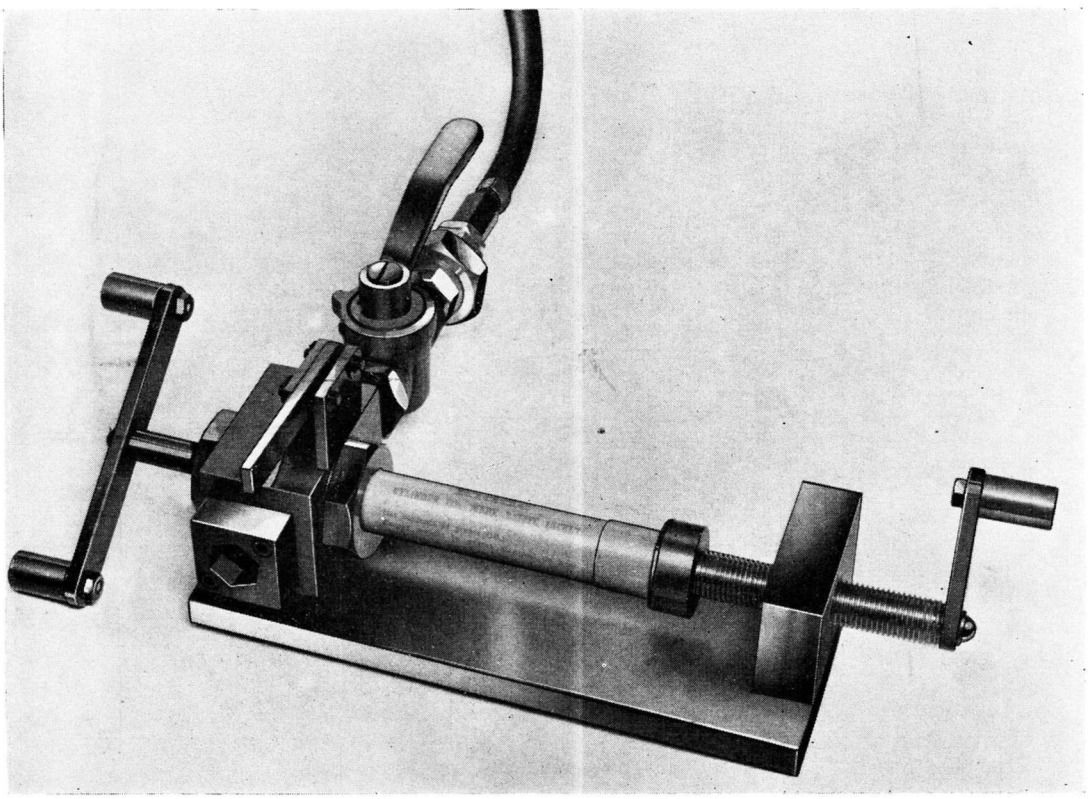

Fig. 4. Charging head with cylinder fitted

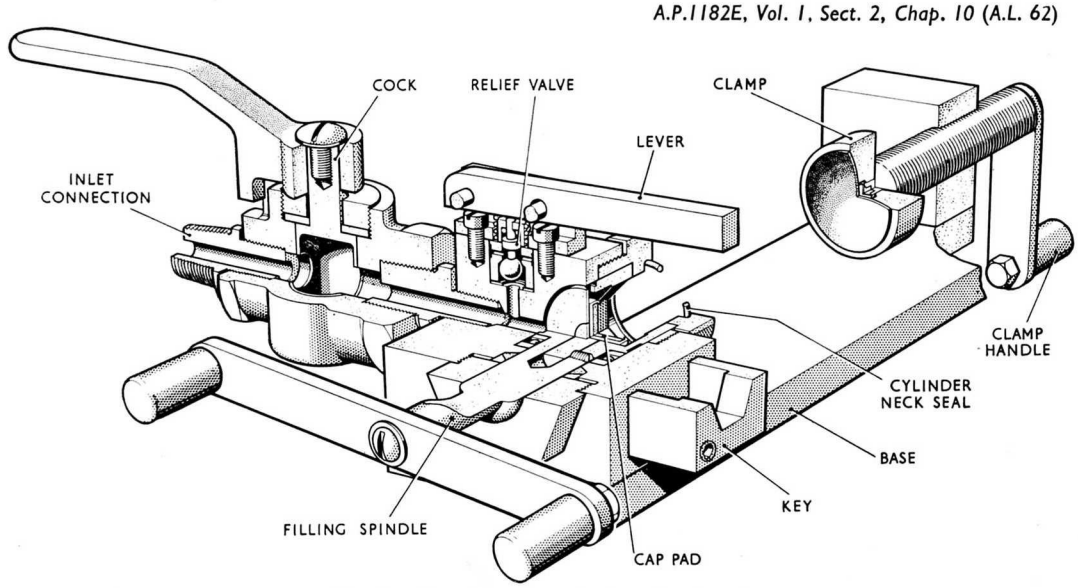

Fig. 5. Construction of charging head

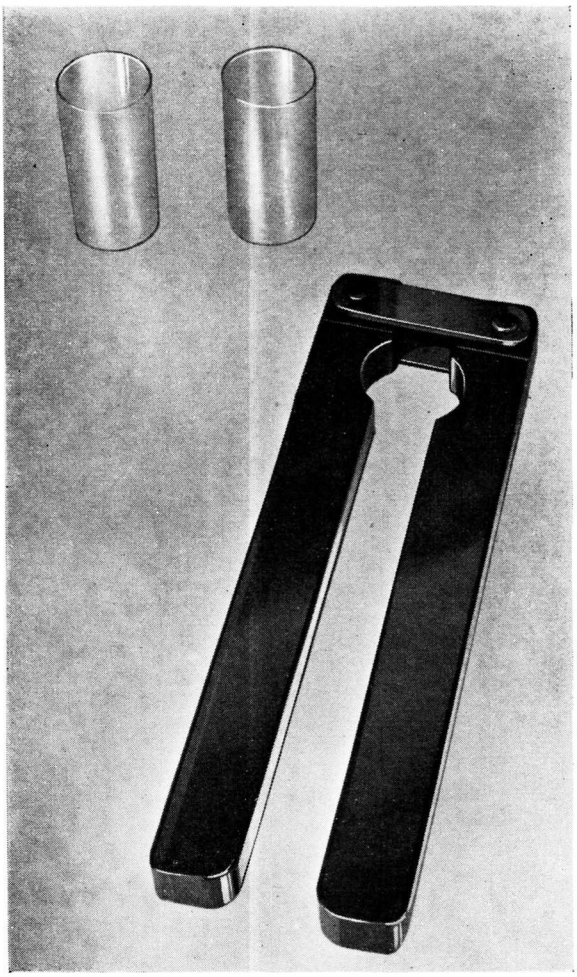

Fig. 6. Fibre grips and test tubes

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