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Breathing machine

Description



The apparatus comprises essentially 3 main parts:

- A pneumatic cylinder and a slave cylinder for CO2 dead space testing;
- A geared electric motor and mechanical drive mechanism;
- Control gear for the motor and solenoid operated valves.

By making the appropriate adjustments to the motor controller and the mechanical drive mechanism respectively, the pneumatic cylinder is capable of providing any one of five pre-set swept volumes of 1.0, 1.5, 1.75, 2.0 and 2.5 litres at variable rates up to 40 strokes per minute.

The slave cylinder provides a swept volume equivalent to 5% of that of the main cylinder.

In order to provide positive airflow control, solenoid-operated valves are provided. The solenoids are controlled by photoelectric switches.

The main lung valves should be connected in line with 25mm bore PVC tubing (6mm OD pushfit tubing for the CO_2 circuit). The exact connection arrangement of the tubing and the valves, with respect to a dummy headform which carries the facemask under test, will depend upon the standard being employed.

Available versions

The breathing machine comes in 4 variants:

- Single ended main lung with CO_2 slave cylinder (suitable for most work) – comes with 2 main lung valves and 3 CO_2 valves;
- Double ended main lung with single ended CO_2 slave cylinder – comes with 4 main lung valves and 3 CO_2 valves;
- Single ended main lung without CO_2 slave cylinder (suitable for breathing resistance measurements) – Comes with 2 main lung valves;
- Double ended main lung only (suitable for breathing resistance measurements or performing simulated wearing) – comes with 4 main lung valves.

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Breathing machine (continued)

Services required

Bench mounted
110/230 volts AC, 50/60Hz, mains electricity
Tubing for connecting the lung (25mm ID) and cylinders (6mm OD)

Approximate size & weight

130 x 75 x 70cm, 130kg

Relevant standards

ANSI 110-2009, AS/NZS 1716:2012, BS 4667-2:1974, BS 4667-3:1974, BS 8468-2:2006, DIN 58647-7:1997, EN 136:1998, EN 137:2006, EN 138:1994, EN 140:1998, EN 142:2002, EN 145:1997, EN 149:2001+A1:2009, EN 269:1994, EN 402:2003, EN 403:2004, EN 404:2005, EN 405:2001, EN 1061:1996*, EN 1146:2005, EN 1827:1999, EN 12941:1998, EN 12942:1998, EN 13274-3:2001*, EN 13274-6:2001, EN 13274-8:2002, EN 13794:2002*, EN 14143:2003, EN 14593-1:2005, EN 14593-2:2005, EN 14594:2018, ISO 23269-1:2008, ISO 23269-2:2011

*The 2.33 litre stroke specified by these standards is currently not available.

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