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IS 12717 (1989): Functional requirements of fire fighting equipment - High capacity portable pumpset (1100-1600 l/min) [CED 22: Fire Fighting]
Indian Standard

FIRE FIGHTING EQUIPMENT — HIGH CAPACITY PORTABLE PUMP SET (1100-1600 l/min) — FUNCTIONAL REQUIREMENTS

UDC 641.846.3

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 1989

Price Group 2
FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 20 June 1989, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

Portable pump set is one of the essential equipments for fire fighting. In view of its lighter weight and portability, it can be carried almost anywhere. It is specially used in small factories, railways, dockyards/areas where there are narrow lanes, rural areas and towns where water is scarce.

Based on the indigenous development so far, an Indian Standard covering the capacity up to 275 l/min was formulated (see IS 942:1982 'Functional requirements for 275 l/min portable pump set for fire fighting (second revision)'). However, this capacity was not found sufficient for fighting big fires and based on knowhow available in other countries, it has been possible to develop higher capacity of portable pump sets which are covered in this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.
Indian Standard

FIRE FIGHTING EQUIPMENT — HIGH CAPACITY PORTABLE PUMP SET
(1100-1600 l/min) — FUNCTIONAL REQUIREMENTS

1 SCOPE

1.1 This standard lays down requirements for materials, design and construction, workmanship and finish of high capacity portable pump set (between 1100 to 1600 l/min) for fire fighting purposes.

2 REFERENCES

2.1 The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 GENERAL REQUIREMENTS

3.1 The unit shall consist of a pump, an internal combustion engine mounted on a tubular steel cradle.

4 MATERIALS

4.1 Pump Casing, Delivery Outlets and Impeller
Aluminium alloy Grade 4600, 4450, 4223 or 4923 of IS 617:1975 or leaded tin bronze Grade II of IS 318:1962 or of stainless steel Grade 04 Cr Ni 10 of IS 6603:1972.

4.2 Pump Shaft, Delivery Valve, Spindle and Wear Rings, Stainless steel Grade VII Cr 13 Ni 9 of IS 6603:1972.

4.3 Fuel Tank, mild steel sheet conforming to IS 513:1986.

4.4 Tubular Frame, mild steel tubes conforming to IS 3601:1984.

4.5 Exhaust Gas Ejector Primer
4.5.1 Valve Body, same as in 4.1 in respect to aluminium alloy and leaded tin bronze.

4.5.2 Priming Lever, same as in 4.1 in respect to aluminium alloy.

4.5.3 Priming Pipe, brass conforming to IS 407:1981.

4.5.4 Ejector Nozzle, same as in 4.2 in respect of stainless steel.

5 DESIGN AND CONSTRUCTION

5.1 Engine
The engine shall have not less than 3 cylinders and shall conform to IS 10004:1981 and shall have sufficient power to give the required output. The engine shall be electric start with 12 V battery of 92 A capacity and be provided with a well designed hand starting back up device, preferably of the recoil rope type. The engine shall be fitted with generator/alternator for charging 12 volt battery.

5.2 The engine shall be water cooled. Indirect cooling system, if provided, shall be of the closed circuit type filled with adequate capacity heat exchanger to prevent overheating and to maintain engine temperature in range recommended for the engine. The heat exchanger shall incorporate copper coils and shall be provided with a drain plug to ensure drainage of cooling water.

5.3 The engine fuel tank shall have the capacity to allow running of pump for minimum one hour continuously at the rated output. It shall be provided with an opening of size 35 mm in diameter (minimum) located at a suitable position for easy refilling and checking the contents.

5.4 The engine exhaust shall be so arranged as to discharge on the opposite side of pump suction/operating side.

5.5 Pump
5.5.1 The pump shall be single stage centrifugal type directly mounted to the engine and driven preferably through a flexible coupling. The pump shall be designed to have easy access to the impeller with the outer face carrying suction/delivery, priming device, etc. The shaft shall be supported on antifriction bearing external to the casing. Pump shall be fitted with a self adjusting mechanical seal which consists of a carbon ring running on stainless steel face. A drain plug shall be provided at the bottom of the pump casing/volute. The pump suction shall have round threads (see IS 902:1974). The delivery shall be fitted with two numbers of instantaneous couplings (see IS 902:1974) with screwdown valves. The pump suction and delivery outlets shall be provided with blank caps.

5.5.2 The impeller shall be dynamically balanced and the pump shall be hydraulically tested to a pressure of 16.5 kgf/cm² for a period of 2 minutes.

5.5.3 The pump shall be tested for its performance duties with only internal and suction strainer fitted at suction lift of 3 m.
7.2 Equipment

The following equipment shall be provided along with the pump unit:

a) 100 mm suction hose in 4'- or 2'- length with 100 mm suction house couplings (see IS 902:1974) - 2 Nos/4 Nos;

b) Suction wrenches for 100 mm suction hose couplings (see IS 4643:1968) - 2 Nos.:

c) Suction strainer for 100 mm suction hose (see IS 907:1985);

d) Basket strainer suitable for 100 mm suction hose;

e) Adapter of size 65 mm (male) instantaneous coupling x 100 mm female suitable for RT (right hand threads); and

f) Tool kit comprising all essential tools required for normal maintenance.

8 MARKING

8.1 Each pump unit shall be clearly and permanently marked with the following information:

a) Manufacturer's name and trade name,

b) The output capacity of pump in l/min,

c) Weight of the pump set,

d) Year of manufacture,

e) Serial nos. and type of engine and pump,

f) Short instructions for operation of the pump set.
ANNEX A
(Clause 2.1)

LIST OF REFERRED INDIAN STANDARDS

<table>
<thead>
<tr>
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<tr>
<td>IS 407 : 1981</td>
<td>Specification for brass tubes for general purposes (third revision)</td>
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<td>Specification for suction strainers, cylindrical type for fire fighting purposes (second revision)</td>
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<td>IS 617 : 1975</td>
<td>Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes (second revision)</td>
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<td>Specification for suction wrenches for fire brigade use (first revision)</td>
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<td>IS 10004 : 1981</td>
<td>Performance requirements for spark ignition engines for automotive purposes</td>
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