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IS 947 (1985): Functional Requirements for Towing Tender for Trailer Fire Pump for Fire Brigade Use [CED 22: Fire Fighting]



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2007

Indian Standard

FUNCTIONAL REQUIREMENTS FOR
TOWING TENDER FOR TRAILER FIRE PUMP
FOR FIRE BRIGADE USE

(*First Revision*)

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

Indian Standard

FUNCTIONAL REQUIREMENTS FOR TOWING TENDER FOR TRAILER FIRE PUMP FOR FIRE BRIGADE USE

(*First Revision*)

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AMENDMENT NO. 1 APRIL 2005
TO
IS 947 : 1985 FUNCTIONAL REQUIREMENTS FOR
TOWING TENDER FOR TRAILER FIRE PUMP FOR
FIRE BRIGADE USE

(First Revision)

(*Page 12, Appendix A, Sl No. 41*) — Substitute the following for the existing:

‘Fire extinguisher, CO₂ type with squeeze grip, 4.5 kg (*see* IS 2878 : 2004⁷)’.

⁷Specification for fire extinguisher, carbon dioxide type (portable and trolley mounted) (*third revision*).

(*Page 12, Appendix A, Sl No. 43*) — Substitute the following for the existing:

‘Fire extinguisher, clean agent (*see* IS 15493 : 2004¹²)’.

¹²Gaseous fire extinguishing systems — General requirements.

Indian Standard
**FUNCTIONAL REQUIREMENTS FOR
TOWING TENDER FOR TRAILER FIRE PUMP
FOR FIRE BRIGADE USE**
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 August 1985, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 A number of Indian Standards on trailer pumps have been formulated and in order to supplement the requirements in respect of the pumping capacity and other necessary fire fighting equipments, towing tenders are attached with the large trailer pumps specially in rural areas and industrial complexes. This standard has, therefore, been formulated to give functional requirements relating to such towing tenders. This standard was first published in the year 1960. This revision has been prepared so as to base the appliance according to the available chassis and also up-to-date various requirements besides keeping them in line with similar Indian Standards. While revising this standard the title has been revised as in present form, it will not be possible to cover this in ISI Certification. The technical committee is, however, developing a suitable durability test which may ensure a reasonable life of this appliance. After this test is developed the same will be incorporated in this standard and standard will be made certifiable.

0.3 A list of accessories and equipment which do not form part of this appliance and most of which are normally required to assist in operation of the appliance is given in Appendix A for information and guidance. The appliance shall also conform to statutory rules, in regard to height clearance framed by transport authority.

0.4 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, shall be rounded off in accordance

with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard lays down the requirements regarding material; design and construction; workmanship; and finish; accessories and equipment for towing tender for large trailer pumps for fire brigade use.

2. GENERAL REQUIREMENTS

2.1 The appliance shall incorporate, a crew compartment for six persons including the driver, towing hitch and arrangements for stowage of equipment/accessories (*see* Appendix A).

2.2 The towing tender shall be fabricated in a manner so as to conform to the following characteristics:

- a) Engine out put not less than 65 kW;
- b) Pay load: Not exceeding 5 000 kg;
- c) Maximum cruising speed on level road, fully laden coupled with trailer — 64 km/h;
- d) Acceleration from a standing start through the gears, fully laden 64 km/h in 55 seconds;
- e) The appliance coupled with trailer shall be capable of being started from rest on a gradient of 1 in 4;
- f) When travelling at 48 km/h on a level dry surface the foot break shall be capable of stopping the vehicle within a distance of 15 m from the point at which the brake is applied. The hand brake shall be capable of holding the fully laden appliance coupled with trailer on a dry surface gradient of 1 in 4 when in neutral gear; and
- g) The appliance shall have the following overall dimensions:
 - i) Wheel base Not more than 3 600 mm
 - ii) Turning circle Not more than 16 m
 - iii) Road clearance Not less than 230 mm
 - iv) Overall width Not more than 2.50 m
 - v) Overall height Not more than 3.35 m from ground level

* Rules for rounding off numerical values (*revised*).

2.3 The appliance covered by this standard shall carry a 7.5 m extension ladder (*see* Appendix A) on ladder gallows and shall tow a trailer pump.

2.4 Provision shall be made, to carry, one portable pump (*see* IS : 942-1982*).

2.5 The unit shall be designed to be as compact as possible compatible with ease of accessibility to all service parts.

3. MATERIAL, SELECTION AND TREATMENT

3.1 The choice of materials to be used for the construction of the appliance shall be made with a view to combine lightness with strength and durability.

3.2 Timber shall not be used in body construction.

3.3 The appliance is intended for use in tropical conditions with constant high humidity and heat. This shall be given full consideration while selecting the materials and, for this reason, use of rubber or other similar materials shall be avoided.

3.4 Lubricating nipples shall be provided wherever necessary.

4. DESIGN AND CONSTRUCTION

4.1 Engine

4.1.1 The engine shall be oil-fuel type (compression-ignition) and capable of developing the minimum power required to drive the fully laden appliance coupled with trailer fire pump large with equipment (*see* IS : 944-1979†) at normal speed without any preliminary running period.

4.1.2 The operating temperature of the engine cooling water shall preferably be thermostatically controlled.

4.1.3 The oil in the oil sump shall be prevented from over-heating.

4.1.4 Suitable gauge for cooling water and glow lamp for lubricating system shall be provided in the driver's cab. This shall be marked with operating temperature.

*Functional requirements for 275-l/min portable pump set for fire fighting (*second revision*).

†Functional requirement of 1800-l/min trailer pump for fire brigade use (*second revision*).

4.1.5 External filter shall be provided for the lubricating system and a tubular dip-stick to gauge the level of oil in the oil sump shall be provided.

4.2 Electrical System

4.2.1 A trickle type battery charger shall be provided for recharging the battery in situ. A red pilot lamp, indicating when the batteries are being charged from an external supply shall be provided.

4.2.2 All important electrical circuits shall have separate fuses suitably indicated and shall be grouped into a common fuse box located in an accessible position in driver's cab and fitted with means for carrying spare fuses. The wiring shall be single pole and shall not be exposed to the atmosphere. Conduits shall be used wherever necessary.

4.3 Body Work and Stowage

4.3.1 Enclosed accommodation for six persons shall be provided in the driver cab-cum-crew compartment including the driver and the incharge of the crew. Two doors on each side shall be provided on the driver cab-cum-crew compartment. The doors shall be hinged opening outwards and shall be hung forward and shall have catch locks and flush type handles.

4.3.2 The cab and lockers should be of metal construction with sufficient rigidity and reinforcement and shall be kept as light as possible. Pressed sections of sufficient strength shall be used for the super-structure.

4.3.3 Lockers shall be provided for secure stowage of all equipment given in Appendix A. The height of the lockers from the bottom to the top of the opening shall be not less than 600 mm and the depth not less than 600 mm.

4.3.4 All lockers shall be provided with internal automatic lighting arrangement with the master switch in the cab. The doors of the side lockers shall not be hinged at the bottom.

4.3.5 Hose tunnels shall be provided to carry for 2.5 m lengths of suction hoses in convenient location. The tunnels should be sloped in such a way so that these allow the water or contents left in the hose after use to drain out.

4.3.6 A suitable compartment opening in the rear and fitted with hinged door opening outwards shall be provided for portable pump.

4.3.7 Provision for wireless equipment to suit requirements if required shall be made; the control panel of the wireless equipment shall be located in the driving compartment.

4.3.8 Spring loaded towing hitch made of *mild steel* shall be provided at the rear of the chassis fitted on a sub-frame securely fixed on main chassis frame.

4.3.9 The construction of the roof shall be such that it will support a weight of one man.

4.3.10 Grab-rails and non-slip steps shall be provided wherever required to assist the crew to mount and dismount and to give access to the roof of the appliance.

4.3.11 Ladder gallows shall be provided to carry a 7.5 m extension ladder. The design shall be such that the ladder can be released without difficulty from a reasonably accessible position and shall embody rollers to permit easy withdrawal by one man. Means shall be provided from locking the ladder when stowed.

4.3.12 Provision shall be made at the roof of the appliance for fixing a stand for portable search/floor light having 30 m coil to carry.

4.3.13 A specially fitted recessed tray container for the normal kit of tools carried on the appliance shall be provided.

4.4 Stability — The stability of the appliance shall be such that, when under fully equipped and loaded conditions (but excluding crew), if the surface on which the appliance stands is tilted to either side, the point at which over-turning occurs is not passed at an angle of 30 degrees from the horizontal.

5. WORKMANSHIP AND FINISH OF APPLIANCE

5.1 All parts of the appliance shall be of good workmanship and shall have streamlined finish.

5.2 The appliance shall be painted in fire red colour conforming to Shade No. 536 of IS : 5-1978*. The paint shall conform to IS : 2932-1974†.

*Colours for ready mixed paints and enamels (*third revision*).

†Specification for enamel, synthetic, exterior (a) under-coating, (b) finishing (*first revision*).

6. INSTRUCTION BOOK, ACCESSORIES AND EQUIPMENT

6.1 Instruction Book — Instruction book(s) for the guidance of the user(s) including both operating and normal maintenance procedure shall be provided. The book(s) shall include an itemised and illustrated spare parts list giving reference numbers of all the wearing parts.

6.2 Accessories

6.2.1 The following accessories shall be provided in addition to those normally fitted on modern commercial vehicles:

- a) *Fire bell* — A 250 mm diameter fire bell shall be mounted externally and shall be capable of being operated from within the driving compartment. The bell shall be of the hand operated type.
- b) *Head lamps* — Two.
- c) *Fog lamps* — Two.
- d) *Reversing light* — Suitably situated to assist reversing.
- e) *Amber blinker lights* — Situated on the head of the driving compartment.
- f) *Trafficators* — Illuminated with indicating lights on instrument panel or in any other prominent position in driving compartment.
- g) *Wind screen wipers*
- h) *Tools* — All tools required for normal routine maintenance of the appliance which are not included in the kit for the chasis.
- j) *Siren* — Battery operated.
- k) *Search light* — Adjustable to give flood or beam light, mounted in a convenient position but capable of being readily disconnected and mounted on a tripod away from the appliance, complete with tripod and with not less than 30 m of TRS cable on a reel mounted on the appliance.
- m) *Spot light* — Adjustable, mounted in a convenient position on the near side of the driving compartment.
- n) *Inspection lamp* — Protected type on wander lead with plug. A socket shall be provided in the control panel in the driver's cab for plugging in the lamps.

- p) *Tail lamps* — Two of combined stop and tail.
- r) *Wind screen washer* — Fitted in a suitable location with controls in driving compartment.
- s) *Case instrument panel and locker light*.
- t) *Public address system (if required)*.

7. MARKING

7.1 Each appliance shall be clearly and permanently marked with the following information:

- a) Manufacturer's name or trade-mark, if any; and
- b) Year of manufacture.

APPENDIX A

(*Clauses 0.3, 2.1, 2.3 and 4.3.3*)

SCHEDULE OF EQUIPMENT TO BE SUPPLIED WITH THE APPLIANCE

<i>Sl No.</i>	<i>Items</i>	<i>Quantity</i>
1.	Extension ladder — 7.5 m (<i>see</i> IS : 930-1977 ¹ or IS : 4571-1977 ²)	1
2.	Suction hose complete with coupling — 2.5 m long (<i>see</i> IS : 2410-1963 ³ and IS : 902-1974 ⁴)	4 length
3.	Delivery hose, 63 mm, in 30 m lengths (<i>see</i> Type II of IS : 636-1979 ⁵) complete with instantaneous couplings (<i>see</i> IS : 903-1984 ⁶)	12 length

¹Specification for wooden extension ladder for fire brigade use (*first revision*).

²Specification for aluminium extension ladder for fire brigade use (*first revision*).

³Specification for suction hose of rubber for fire services.

⁴Specification for suction hose couplings for fire fighting purposes (*second revision*).

⁵Specification for fire fighting hose (rubber lined, or rubberized fabric lined, woven-jacketed) (*second revision*).

⁶Specification for fire hose delivery couplings, branch pipe, nozzles and nozzle spanner (*third revision*).

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<i>Sl No.</i>	<i>Items</i>	<i>Quantity</i>
4.	Suction stainer for item — 2 (<i>see</i> IS : 907-1984 ¹)	1
5.	Basket stainer for item — 2 (<i>see</i> IS : 3582-1984 ²)	1
6.	Dividing breaching (<i>see</i> IS : 5131-1986 ³)	2
7.	Collecting breaching (<i>see</i> IS : 905-1980 ⁴)	2
8.	Suction wrenches (<i>see</i> IS : 4643-1984 ⁵)	1 pair
9.	Long line, 50 mm circumference, 30 m long (<i>see</i> IS : 1084-1983 ⁶)	2 lengths
10.	Short line, 50 mm circumference, 15 m long (<i>see</i> IS : 1084-1983 ⁶)	2 lengths
11.	Hose bangages [<i>see</i> IS : 5612 (Part 1)-1977 ⁷]	12
12.	Hose clamps [<i>see</i> IS : 5612 (Part 2)-1977 ⁸]	6
13.	Hydrant valve key and bar (<i>see</i> IS : 910-1980 ⁹)	1 set
14.	Fog nozzle (<i>see</i> IS : 952-1986 ¹⁰)	1
15.	Hand controlled branch for 63 mm size hose coupling	1
16.	Branch pipe, universal (<i>see</i> IS : 2871-1983 ¹¹)	1
17.	Branch with revolving head (<i>see</i> IS : 906-1972 ¹²)	1

¹Specification for suction strainers, cylindrical and shoe types, for fire fighting purposes (*second revision*).

²Specification for basket strainers for fire fighting purposes (cylindrical type) (*first revision*).

³Specification for dividing breeching with control, for fire brigade use (*first revision*).

⁴Specification for delivery breechings, dividing and collecting, instantaneous pattern, for fire fighting purposes (*second revision*).

⁵Specification for suction wrenches for fire brigade use (*first revision*).

⁶Specification for manila ropes (*third revision*).

⁷Specification for hose-clamps and hose-bandages for fire brigade use: Part 1 Hose-clamps (*first revision*).

⁸Specification for hose-clamps and hose-bandages for fire brigade use: Part 2 Hose-bandages (*first revision*).

⁹Specification for combined key for hydrant, hydrant cover and lower valve (*second revision*).

¹⁰Specification for fog nozzle for fire brigade use (*first revision*).

¹¹Specification for branch pipe, universal, for fire fighting purposes (*first revision*).

¹²Specification for branch with revolving head for fire fighting purposes (*second revision*).

<i>Sl No.</i>	<i>Items</i>	<i>Quantity</i>
18.	Branch pipe (<i>see</i> IS : 903-1984 ¹)	4
19.	Nozzle of sizes 12 mm, 16 mm, 20 mm and 32 mm (two each) (<i>see</i> IS : 903-1984 ¹)	10
20.	a) Adaptor for 100 mm suction female screw coupling and 63 mm male instantaneous	2
	b) Adaptor double male instantaneous pattern 63 mm	2
	c) Adaptor double male instantaneous pattern 63 mm	2
21.	Nozzle spanner (<i>see</i> IS : 903-1984 ¹)	2
22.	Portable electric box lamp with rechargeable accumulator	2
23.	Hand lamp (torch — 4 cells)	2
24.	Flame-proof lamp (usable in the presence of inflammable gases or vapours)	2
25.	Self contained breathing apparatus (compressed air type) complete with spare cylinder and tool kit [<i>See</i> IS : 10245 (Part 2)-1982 ²]	1 set
26.	First aid box for 10 persons	1
27.	Rubber gloves (in case) (<i>see</i> IS : 4770-1968 ³)	1 pair
28.	Asbestos gauntlet (in case)	1 pair
29.	Axe large (<i>see</i> IS : 703-1966 ⁴)	1
30.	Spade (<i>see</i> IS : 2238-1979 ⁵)	1
31.	Pick axe (<i>see</i> IS : 273-1973 ⁶)	1
32.	Crow bar (<i>see</i> IS : 704-1968 ⁷)	1

¹Specification for fire hose delivery couplings, branch pipe, nozzles and nozzle spanner (*third revision*).

²Specification for breathing apparatus: Part 2 Open-circuit breathing apparatus.

³Specification for rubber gloves for electrical purposes.

⁴Specification for axes (*revised*).

⁵Specification for spades and seprangs (*first revision*).

⁶Specification for picks and beaters (*second revision*).

⁷Specification for crow-bars and claw-bars (*first revision*).

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<i>Sl No.</i>	<i>Items</i>	<i>Quantity</i>
33.	Sledge hammer, 6.5 kg (<i>see</i> IS : 841-1968 ¹)	1
34.	Carpenter's saw, 60 cm (<i>see</i> IS : 5098-1969 ²)	1
35.	Hydraulic jack — 7.5 tonne	1
36.	Fire hook (<i>see</i> IS : 927-1981 ³)	1
37.	Tool kit	1
38.	Foam making branches (<i>see</i> IS : 2097-1983 ⁴)	1 each
39.	Fire extinguisher, water type 9 litres (<i>see</i> IS : 940-1976 ⁵)	1
40.	Fire extinguisher, foam type 9 litres (<i>see</i> IS : 933-1976 ⁶)	1
41.	Fire extinguisher, CO ₂ type 5 kg (<i>see</i> IS : 2878-1976 ⁷)	2
42.	Fire extinguisher, dry chemical powder type 10 kg (<i>see</i> IS : 2171-1985 ⁸)	2
43.	Fire extinguisher, BCF type 2 kg (<i>see</i> IS : 11108-1984 ⁹)	2
44.	Shears (bolt copper)	1
45.	Stretcher (<i>see</i> IS : 4037-1967 ¹⁰)	1
46.	Foam compound [<i>see</i> IS : 4989 (Part 1)-1985 ¹¹)	80 litres

¹Specification for hand hammers (*first revision*).

²Specification for cross-cut and rip saws.

³Specification for fire hooks (*second revision*).

⁴Specification for foam-making branch pipe (*first revision*).

⁵Specification for portable fire extinguisher, water type (gas pressure) (*second revision*).

⁶Specification for portable fire extinguisher, foam type (*second revision*).

⁷Specification for portable fire extinguishers, carbon-dioxide type (*first revision*).

⁸Specification for portable fire extinguishers, dry power type (*third revision*).

⁹Specification for portable fire extinguisher Halon 1211 type.

¹⁰Specification for stretchers and stretcher carriers.

¹¹Specification for foam compound for producing mechanical foam for fire fighting:
Part 1 Protein foam (*second revision*).

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