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Indian Standard

REQUIREMENTS FOR POWER DRIVEN RODDING MACHINE FOR SEWERS

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REQUIREMENTS FOR POWER DRIVEN RODDING MACHINE FOR SEWERS

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Indian Standard

REQUIREMENTS FOR POWER DRIVEN RODDING MACHINE FOR SEWERS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 28 September 1984, after the draft finalized by the Public Health Engineering Equipment Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Keeping the sewers clean is an important obligation of the civic authorities. If this is not done or improperly done, there will be unsightly overflows of sewage through manholes, which are not only aesthetically most repulsive, but also a source of danger to the health of community.

0.3 One of the ways of loosening the debris and removing blockage in the sewers is through the use of power driven rodding machines. These machines are particularly useful for sewers up to 400 mm dia which are liable to get choked with fibrous material or solid refuse.

0.4 The object of this standard is to give the purchaser an idea as to what he should look for when buying a power rodding machine.

0.5 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard covers the requirements of power driven rodding machine used for removing blockages in the sewers.

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

2. CONSTRUCTION

2.1 The machine shall be provided with the components given in **2.1.1** to **2.1.3** and shall be capable of operation between manholes located at a maximum distance of 100 m. A typical sketch of power driven rodding machine is shown in Fig. 1.

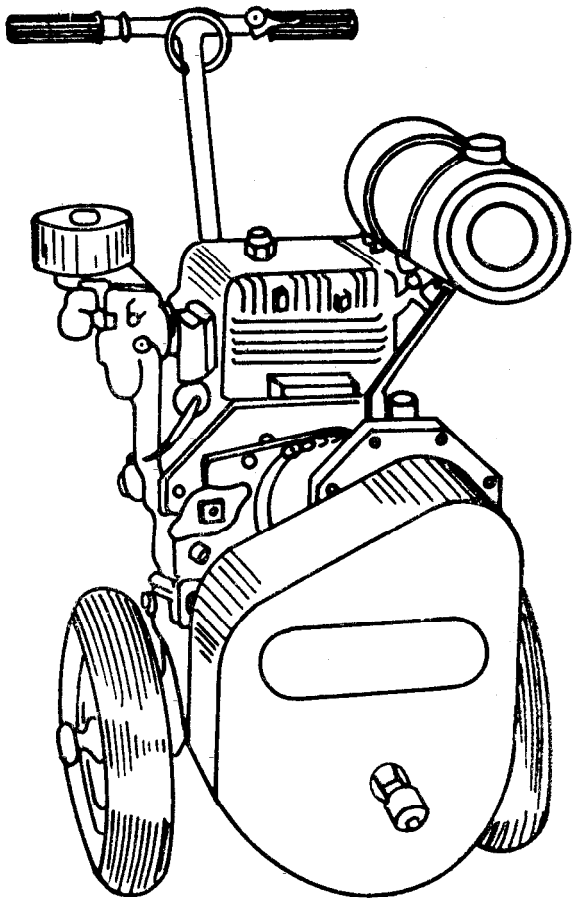


FIG. 1 TYPICAL SKETCH OF POWER DRIVEN RODDING MACHINE FOR SEWER CLEANING

2.1.1 *Prime Mover* — The prime mover shall be either a petrol or diesel engine with a gear arrangement to permit change in speed (*see* IS : 10003-1981* and IS : 10004-1981†). The maximum speed at the power take-off end should be around 120 rev/min. A slip ring belt clutch or any other clutch arrangement shall be provided for ease of operation and prevent any damage to the machine or the accessories through overload. The engine should be capable of developing at least 2·25 kW at the maximum speed, and should be aircooled type to facilitate handling. A canvas cover, an engine tool kit and spare parts for 3 years operation shall be provided.

On the output shaft of the machine a chuck, preferably a pin chuck, shall be fitted to permit quick coupling and uncoupling of the rods. The engine shall be provided with the following gadgets:

a) Automatic rewind starter or manual cranking;

b) Throttle control lever (to be fitted on the handle bar of the trolley); and

c) Clutch lever (to be fitted on or near the handle bar for easy control).

2.1.2 *Chassis* — It may be fabricated from M.S. sections or from M.S. tubes. The chassis shall be fitted with two wheels, preferably solid rubber cushion tyred, and shall have a rear skid support or a third wheel. The handle bar of the trolley thus formed shall incorporate twist grip type clutch and throttle control. The machine shall be well balanced and stable while in operation.

2.1.3 *Rods and Couplings* — The rods shall be made to the following specifications:

a) Each rod should be 1·0 m in length.

b) Each rod should be provided with one male and one female screwed sleeve. The ends of the rod shall be bent through 90° to ensure good anchorage after engaging in the female coupling, with a view to permit the rods to be rotated in either direction without fear of disconnection.

c) The rods should be 7 mm or more in diameter and shall be made of alloy steel of suitable composition so as to enable them to

*Performance requirements for compression ignition (diesel) engines for automotive purposes.

†Performance requirements for spark ignition engines for automotive purposes.

withstand a torque of 26 kg-m and to retain their elasticity even when bent through a 90° angle.

d) The rods should be corrosion resistant.

2.1.3.1 One of the typical sketch of rods and coupling is shown in Fig. 2.

3. ACCESSORIES

3.1 The purchaser shall specify the list of various accessories and tools required to be supplied with the machine (*see* Appendix A).

3.2 Each machine shall be provided with a lubrication diagram clearly identifying the points requiring lubrication and the type of lubricants to be used. The frequency of lubrication shall also be indicated.

4. DIMENSIONS

4.1 To overall dimensions of the machines shall be such that they do not cause undue obstructions to traffic and movement on road while in operation.

5. FINISH

5.1 Painting and Finishing — All machines shall be suitably cleaned of rust and scale or grease before finishing and painting. The machine shall be treated with one coat of primer paint followed by two coats of finished paint.

5.2 The shades of finished paint may be according to manufacturer's standard, unless otherwise specified by the customer.

APPENDIX A

(*Clause* 3.1)

ACCESSORIES FOR TYPICAL POWER DRIVEN RODDING MACHINE FOR SEWERS

A-1. ACCESSORIES

A-1.1 The following accessories are required for a typical set of power rodding machine for sewers (*see* Fig. 2):

a) Rod coupling spanner.

b) Bar turning handle to tighten the rods.

c) Hand ratchet.

d) Rod guide assembly to guide the rods in their travel from the manhole into the sewer.

e) Push and pull tool with pin to thrust the string of rods in and out of the manholes.

f) Finishing tool to rescue the string of rods which might have gone a drift in a sewer.

g) Rod reel and stand to keep the rods in assembled condition.

h) The following attachment tools conforming to 'Indian Standard Specification for attachment tools to be used in power rodding type sewer cleaning machine (*under preparation*)' (*see* Note) shall be supplied with each machine:

i) Standard corkscrew for boring through sand, silt, gravel and roots.

ii) Double corkscrew designed to pick up obstructions, such as fibrous roots, rags and cans.

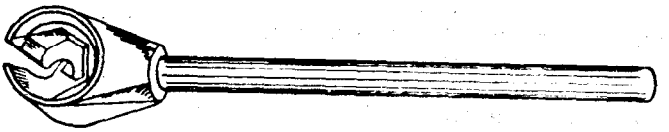
iii) Auger type rod cutter to clear not only sand and silt blockages but also to cut fibrous roots. It shall have cutting edge.

iv) Sand borer to permit to bore fast through sand and clear the blockages in the sewer.

v) Spearpoint borer with manganese-steel head to break up bottles knock holes through tin cans, break bricks, etc (size 50 mm).

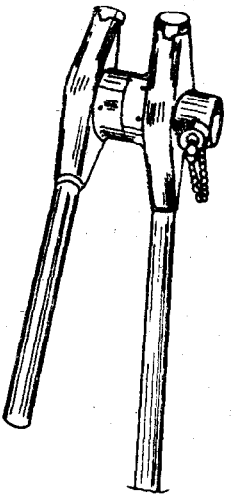
vi) Drill point borers with four radial cutting blades to drill through hard blockages (sizes 45 and 65 mm).

NOTE — Till such time the standard under preparation is published, the matter shall be as agreed to between the concerned parties.



ROD COUPLING SPANNER

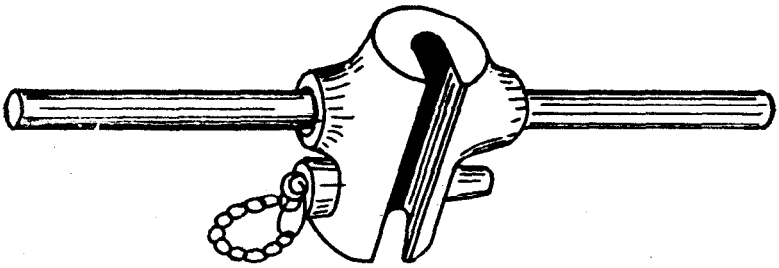
BAR TURNING HANDLE



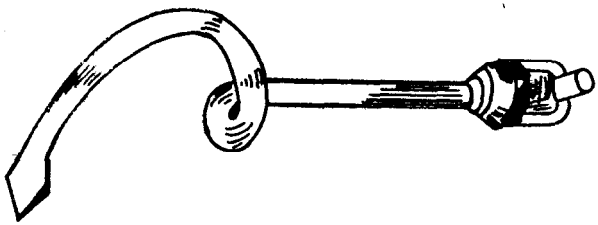
HAND RATCHET

ROD AND COUPLING

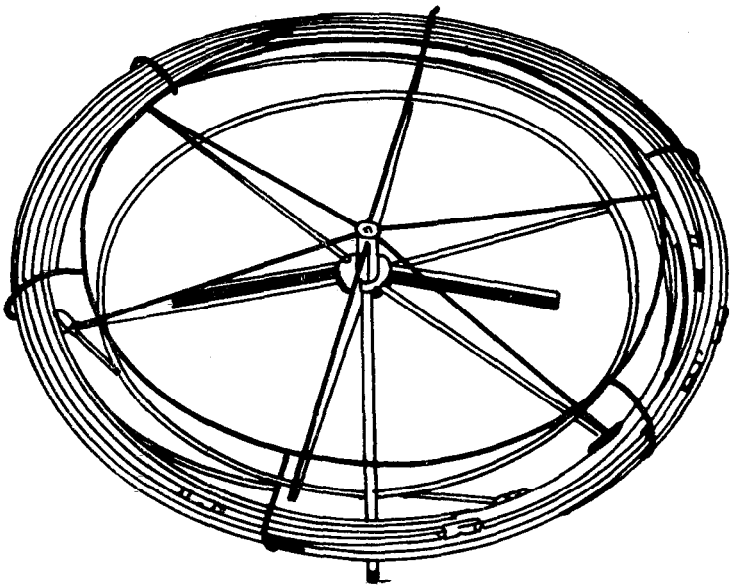
FIG. 2 TYPICAL SKETCH OF ACCESSORIES FOR RODDING MACHINE — *Contd*



PUSH AND PULL TOOL



FISHING TOOL



ROD REEL AND STAND

FIG. 2 TYPICAL SKETCH OF ACCESSORIES FOR RODDING MACHINE

(*Continued from page* 2)

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