

SPECIFICATION OF TRAILOR MOUNTED SEWER JETTING MACHINE **RAMJET® 1500 Lts.**

GENERAL :-

The trailer mounted Sewer Jetting Machine is designed to use high pressure water jets to remove obstruction, soluble grease, sand and other materials from R.C.C/S.W. pipes. The equipment is capable of use in all weather conditions.

OPERATING MECHANISM:-

The high velocity Sewer Jetting Machine is positioned directly above the manhole. The hose equipped with self-propelled nozzle is then inserted into the manhole. As the water at high pressure flows through the nozzle, forward jet of the nozzle breaks open the sewer blockage, the rear jet of the nozzle propels it and the sewer hose moves forward breaking silt formation. In matter of few minutes the nozzle reaches next manhole. The light material is flushed down the line and the remaining material is pushed backwards. The silt/mud collected at the manhole can be sucked by Suction Unit or manually lifted. The manhole is finally cleaned by hand gun arrangement.

The unit shall be such that 1 driver assisted by two helpers shall be adequate for all operation of the unit. The unit shall consist of :

- a) Trailer Chassis.
- b) Prime mover – Diesel engine
- c) Tank
- d) Jetting Pump.
- e) Hose Reel Drum
- f) Sewer Hose
- g) Hydraulic Plant.
- h) Piping
- i) Control Panel.
- j) Lateral cleaning system. (including handgun arrangement)
- k) Accessories.

a) TRAILOR CHASSIS :

The single axle trailer chassis shall be provided into which equipment shall be mounted. To ensure road stability the trailer shall have a wide wheelbase and low centre of gravity.

The chassis shall be fabricated by welding M.S. channels. The tow bar shall be provided to the trailer.

The trailer shall be provided with the internally expanding type hand operated brakes, the detachable wheels having semi elliptical springs, shock absorbers and taillights and reflectors.

All the weight of the unit shall be equally distributed on the chassis to ensure free movement.

b) PRIME MOVER :-

The Jetting pump shall be driven by minimum 60 hp, Electric Start, Water cooled diesel engine of Kirloskar or equivalent make. The engine shall be mounted on suitable vibration dampers.

c) TANK:-

The tank shall be square/cylindrical in shape and shall be fabricated from mild steel sheets as per IS:2062 and shall be electrically welded with suitable reinforcement.

The effective volume of the tank shall not be less than 1.5 cubic meters. Tank shall be fabricated out of mild steel sheets, which in no case shall be less than 3 mm (10 SWG) thick.

A drain valve for quick dumping at lowest point in sediment area will be provided at side of the tank. The inlet pipe to the Jetting Pump shall be provided with a strainer to filter water going into the pump.

The tank top shall be equipped with a manhole, self-venting, to allow entry into the tank. The manhole lid shall be gasketed. There shall be a tank filler cap with sieve, which shall be hinged for easy opening and closing without the use of tools.

A suitable full-length sight glass with the tank shall be provided to observe the water level in the tank.

The tank shall be provided with suitable anti-corrosive paint internally, which shall be suitable for normal sewage.

d) HIGH PRESSURE JETTING PUMP:-

The high pressure triplex jetting pump of imported make and shall be a fully variable unit with a heavy duty, positive displacement, reciprocating plunger and having a discharge capacity of 130 lpm, 138 bar pressure to perform the jetting function with a high degree of efficiency and reliability.

The pump shall be of Myers, USA make with proven performance.

The pump shall be suitably mounted & coupled with the engine on the trailer chassis.

The pump shall be equipped with pressure relief valve for protection and life extension of jetting pump.

d) HOSE REEL DRUM :-

The hose reel drum shall be of sturdy design and shall be design to take a minimum of 60 mts. of 19 mm internal diameter high pressure jetting hose.

The hose reel drum shall be driven through a hydraulic motor preferably of Eaton, USA make to effect the wind and unwind operations.

The hydraulic motor shall be designed for withdrawing the hose at its full length inside the sewer lines against the friction and jetting reaction forces. A manual cranking facility shall be provided.

The high pressure water supply to the jetting hose shall be given through a special rotary swivel arrangement provided at the hose reel drum end.

e) SEWER HOSE:-**DESIGN:-**

Subject hose shall be of 19 mm ID of 60 m length and designed in such a manner so as to facilitate replacement on a powered hose reel without interfering with the original manufacturer's intended minimum bend radius.

CONSTRUCTION:-

Subject hose shall be constructed to the following exact specifications. Exception to the following will render alternate hoses not acceptable. The hose shall be of Trelleborg Sweden / Piranha USA or reputed imported make.

INNER CORE :-

Inner core shall be constructed of a special water and grease resistant Styrene-Butadiene Rubber Polymers (SBR) / Polyolefin thermoplastic material.

REINFORCING MATERIAL:-

Special synthetic textile braided.

COVER:-

A smooth Styrene-Butadiene Rubber Polymers (SBR) / Natural Rubber. (NR) / Polyether-urathene of 1.3 – 1.4 mm thick cover shall be provided.

MINIMUM BEND RADIUS:-

110 - 150 mm approx.

STRENGTH OF HOSE:-**TENSILE STRENGTH:-**

Shall be around 30 KN – 45 KN.

FITTING PULL OFF:-

Permanently attached fitting shall be around 24 KN – 35 KN

PRESSURE RATINGS:-**BURST PRESSURE:-**

Shall be minimum of 7550 psi (520 bar)

WORKING PRESSURE:-

Shall be minimum of 3000 psi (200 bar).

DIMENSIONS:-

Outside diameter for hose shall be approximately :
30 mm for 19 mm inside dia.hose. or

WEIGHT OF HOSE:-

Weight of subject hose shall be approximately for 100 mtr. length.

41 kg - 62 kg for 19 mm dia. hose

TEMPERATURE LIMITS:-

-40° C to 50° C.

f) HYDRAULIC PLANT:-

A Hydraulic Pump shall be capable of developing a pressure of about 120 -150 bar approx. The entire hydraulic plant will consist of hydraulic motor, oil reservoir, pipeline with connected hoses, filter, control valve for operation of hydraulic function, etc. It shall be suitably laid along the entire length of the tank thereby avoiding additional space for the plant.

g) PIPING :-

All piping subjected to high pressure shall be fabricated from extra strong pipes and all fittings shall be forged steel. All pipings shall be laid out such that they can drain by gravity or through suitable plugged openings to drain water, when purged with air.

h) CONTROL PANEL:-

A control panel shall be provided and located conveniently i.e. at one side of hose reel. All gauges, switches, levers, etc. necessary for the operation of the unit shall be grouped in this control panel so that the operator can have complete control of the operation, from one location.

The following operation points shall be included in the control panel:

- (i) Jetting / Bypass valve lever.
- (ii) Acceleration lever.
- (iii) Pressure gauge.
- (iv) Control panel lamp.
- (v) Low level water indicator.
- (vi) Toggle switch for beacon.
- (vii) Toggle switch for control panel lamp.
- (viii) Toggle switch for low water level alarm.

j) ACCESSORIES:-

The following accessories shall be supplied alongwith each unit.

- i) Set of Nozzles.
 - a) 15° Bullet Nozzle (5 rear jet jets 1 forward)
 - b) 35° Tangential Nozzle (6 rear jets)
- ii) Al chequered plate lockable tool box – 1No.
- iii) Float switch with indicator and hooter for low water level – 1 No.
- iv) Mud guards – 2 Nos.
- v) Mud flaps – 4 Nos.

PAINTING:-

The entire unit shall be painted with two coats of superior quality anti-corrosive primer with two coats of approved quality paint. The bidder shall get the paints and shades approved from the Engineer.

TRAINING:-

The successful bidder shall arrange at his own cost to train client's operators for operating and maintaining the unit. The training period shall be 3 days.

TESTING AND INSPECTION:-

- (i) Tests on equipment at manufacturer's premises as required will be carried out in accordance with the manufacturer's standard. All inspection, examination and testing shall be carried out in presence of the Engineer's representative in accordance with the specification.
- (ii) If the Engineer's Representative witnesses a test he shall be given a copy of the test results and certificates, upon request.