



LOMBRICO

REMOTE OPERATED VEHICLE SYSTEM

EXCLUSIVELY FROM FS SOLUTIONS

SYSTEM COMPONENTS



HOSES

82 ft [25 m] hoses umbilical connection connecting the Lombrico tractors with the hydraulic manual manifold with quick connectors system⁽¹⁾

MANUAL CONTROL PANEL

The Lombrico control manifold allows the operator to control all functions of the ROV, including those of attachments and tools (when equipped), from one simple and safe location. The monitor for the optional camera system can be mounted on it to allow the operator to see all ROV operations as if they are at the end of the hose.



STANDARD MATERIALS

Screws	Aisi 304
Fittings	Aisi 316
Quick couplings	Galvanized
Steel structures	Aisi 304
Quick couplings on Lombrico S	Aisi 316

SYSTEM COMPONENTS

Stainless Steel is now standard for the entire structures, including fittings, couplings, and screws. Using stainless steel components increases the machines resistance to wear and chemical agents, extending their life and reducing maintenance operations.

OPTIONS



HOSE REEL

The hydraulic hose reel can be used to manage 164 feet (two lengths) of umbilical, with the ability to connect a further length in front of the reel. It is the efficient and practical way of handling/storing multiple lengths of umbilical, especially those used with water, camera or other attachments.

HYDRAULIC POWER PACK

Available with Diesel, Gasoline or Electric engine including 2 hydraulic hoses (23 ft [7 m each] connecting Power Pack to the manual control panel. The Lombrico can also be powered by a Vacuum Truck equipped with a hydraulic tool package.

Required hydraulic characteristics for Standard configuration:

S: 4 gpm @ 1900 psi [15 l/min @ 130 bar].

XXS: 2.5 gpm @ 1900 psi [10 l/min @ 130 bar].

Hydraulic source can be taken from the hydraulic system of the truck.



LOMBRICO ACCESSORIES



Auger ^(2,3)



Anti-spark auger ^(2,3)



Stainless steel auger ^(2,3)

AUGERS

Used to aid production / feed product to the vacuum hose. Can also help to break up compacted material (requires additional feed on umbilical and additional control on control station).

- Standard Auger
- Anti-spark Auger
- Stainless Steel Auger



Standard nose



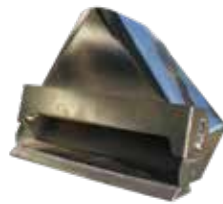
Flat nose



90° nose



Sludge suction nose



Gravel nose

BASIC SUCTION NOZZLES

Used for basic vacuuming tasks for wet or dry materials depending on angle and material consistency / depth / composition

- Standard Suction Nose
- Flat Suction Nose
- Gravel Nose
- 90 degree nose
- Sludge / wide mouth nose



Demolition wheel ^(2,3)



Dozer configuration



82 ft [25 m] retrieval stainless steel rope



CCTV System

MISCELLANEOUS

- Demolition wheel (requires additional feed on umbilical and additional control on control station)
- Dozer Blade
- Stainless Steel retrieval rope
- Umbilical extensions
- Hydraulic powered hose / umbilical reel
- CCTV camera systems

LOMBRICO ACCESSORIES



Rubber tracks with anti-spark teeth



Magnetic tracks



Extra counter-weights for Lombrico S and XXS



Sewer pipes configuration ⁽⁴⁾



Bora nose ⁽²⁾



Water blasting suction nose ^(2,3)



HP-LF / HF-LP water nozzle



Self-rotating nozzles cross

TRACK AND TRACK CONFIGURATION OPTIONS

- Rubber tracks with anti-spark teeth
- Magnetic tracks
- Track Pipe configurations (angle tracks to deal with pipe curvature)
- Additional Counter weights

WATER NOZZLES

Used in conjunction with a water source (not supplied) to aid production, clean vessels and pipes, break up material.

- Bora Nose (Water stream forwards / closing mouth)
- Water blasting suction nose (water stream side to side and up and down)
- HP-LF / LF-HP water nozzle (High Pressure Low Flow / Low Flow High Pressure)
- Self rotating three head water nozzle (spins to provide good agitation / break up of material)



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- (1) Possibility to use more than one umbilical connection for extending the length
(2) Modification of other components of the standard system are required
(3) Required hydraulic characteristics for Auger configuration: 6.5 gpm @ 2300 psi [25 l/min @ 160 bar]
(4) Adaptable to different pipe diameters

MINI ROV TRACTOR SYSTEM



LOMBRICO XXS



LOMBRICO S

The Lombrico ROV is a double tracked, remotely operated vehicle that gets the vacuum hose-end directly into dangerous and hazardous material and hard to reach places – keeping the operator out of harm's way.

It is powered hydraulically and able to operate up to 240 ft (73 m) from the attached vacuum truck making it an ideal accessory for confined spaces and no man entry zones in such environments as steel plants, refineries and mining operations. This innovative crawler can be used to vacuum settled material in sewage pipelines, manifolds and tunnels as small as 2.6 feet (80 cm) in diameter. The compact Lombrico is available in different sizes with a wide range of tooling. Standard configuration is for 6" (150 mm) vacuum hose but other sizes are available on request.

With many optional attachments, including camera systems, the Lombrico is capable of working in a multitude of materials and environments. Offered exclusively in the USA by FS Solutions with 12 convenient nationwide locations and from Joe Johnson Equipment with 8 Canadian locations.

- Accessing larger pipes and culverts
- Cleaning under live conveyors
 - Confined space cleaning
 - Dry and wet plant cleaning
- Hazardous fume applications
- High temperature applications
 - Mining operations
 - Tank cleaning

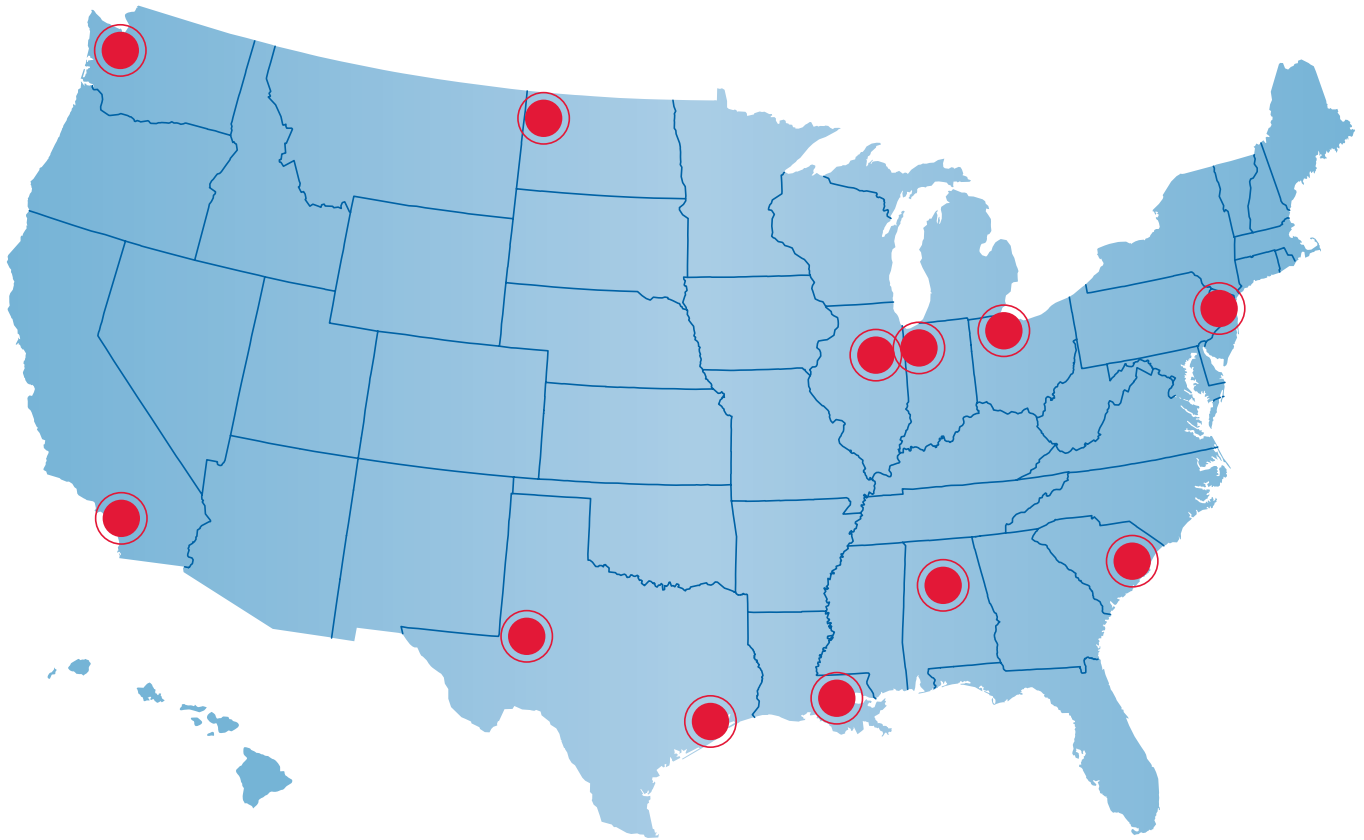
MACHINE WEIGHT AND DIMENSIONS

Size	XXS Model		S Model	
Weight	176 [lb]	80 [Kg]	595 [lb]	270 [Kg]
Height	13"	330 [mm]	19,3"	490 [mm]
Length	39"	980 [mm]	65"	1650 [mm]
Width	16"	400 [mm]	20"	500 [mm]
Standard suction hose	6"	150 [mm]	6"	150 [mm]
Manhole-Access	18"	450 [mm]	24"	600 [mm]



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