



**Mandals Tubeman L has been specifically designed for trenchless rehabilitation of industrial pressure pipelines transporting sewage, drain water, hydrocarbons, such as fuels, gasoline, natural gas, oil, and other non-aggressive liquids and gases. The liner is designed for low-pressure systems.**

With Mandals Tubeman L we offer a more sustainable solution for the rehabilitation of old pipelines with minimal disruption to traffic, pedestrians, and the environment in general, with an improved CO2 footprint and HSE performance. The hose liner is flexible in terms of the diameter variation of the original pipe, effortlessly passing bends even at long section lengths. Tubeman L is similar to the higher pressure Tubeman M.

### Installation

Mandals supplies the liner leak-proof tested, and tape wrapped in a "U"-shape. Prior to installation a regular cleaning procedure is required of the host pipe and condition controlled by CCTV inspection.

The liner is pulled through the host pipe by using a winch and can be installed in pipes having bends up to 45° (R/D ≥ 5)<sup>1</sup>. No steaming is needed to cure the liner, only a small amount of pressure is required to break the tape. Thereafter the liner is re-coupled and connected again to the existing infrastructure and the system is ready to be put back into operation.

### Features

- Resistant to a wide range of chemicals (mud, biogas, brines)
- Resistant to aliphatic and saturated hydrocarbons
- Excellent hydrolysis and fungus resistance.
- Outstanding wear and tear properties.
- Service Lifetime will depend on several important factors such as proper and correct installation, condition of the existing pipe, type of medium pumped through the liner, temperature, etc.

### Construction

- Mandals Tubeman L is a semi-structural, stand-alone liner which will absorb all internal pressure while in operation.
- The "extrusion through the weave" production technology gives excellent bonding between thermoplastic polyether-based polyurethane cover and lining as well as firmly encapsulating the circular woven polyester reinforcement.
- The liner complies with ISO11296-1:2018 and ISO11299-1:2018 Lining with inserted hoses

### Properties

- Color options: Black (standard).
- Lengths up to 600m (≤6") and 400m (>6").
- Max. recommended operational temperature is +30°C (86°F), but the actual fluid transferred will determine whether that temperature is appropriate. For higher temperature requirements, special polymer grades can be considered.

### Tubeman L

Article Number	-	TML020	TML025	TML 065	TML080	TML100	TML125	TML150	TML200	TML250	TML300	TML350
Nominal Pipe size DN	mm Inch	20 3/4	25 1	65 2 1/2	80 3	100 4	125 5	150 6	200 8	250 10	300 12	350 14
Inner Diameter <sup>4</sup>	mm Inch	15 0.59	19.8 0.80	51 2	65 2.5	75 3	102 4	113 4.5	154 6.1	193 7.6	227 8.9	274 10.8
Wall Thickness	mm Inch	1.2 0.05	1.2 0.05	2.8 0.11	3.0 0.12	3.3 0.13	3.4 0.13	3.6 0.14	4.0 0.16	4.2 0.17	4.5 0.18	4.6 0.18
Nominal Weight (hose only)	kg/m lbs/ft	0.07 0.05	0.09 0.06	0.52 0.33	0.7 0.41	0.85 0.57	1.28 0.85	1.54 1.03	2.45 1.63	3.14 2.09	3.85 2.59	4.80 3.22
Burst Pressure (BP)	bar psi	45 650	45 650	55 800	55 800	45 650	45 650	45 650	45 650	44 630	35 490	30 435
Maximum Working Pressure Water <sup>5</sup>	bar psi	18 260	18 260	22 320	22 320	18 260	18 260	18 260	18 260	17 245	14 200	12 175
Maximum Working Pressure Oil & gas <sup>5</sup>	bar psi	11 162	11 162	13.5 200	13.5 200	11 162	11 162	11 162	11 162	11 162	8.7 122	7.5 108
Actual Total Tensile Strength	x1000 kg x1000 lbs	0.5 1.2	0.7 1.6	2.9 6.4	3.9 8.6	5.4 11.9	7.3 16.1	10.3 22.9	20.7 45.9	25.9 57.5	29.9 66.4	35.5 78.8
Length Extension at WP	%	-0.5	-0.5	<1	<1.5		<2		<-1		<1.5	<2
Outer Diameter at 10% of BP	mm Inch	19.8 0.78	24.5 0.96	59 (±1.4) 2.32	72 (±1.4) 2.83	85 (±1.5) 3.35	111 (±1.5) 4.37		178 (-1 +3) 7.0	214 (-1 +5) 8.4	258 (-2 +6) 10.2	299 (-2 +6) 12
Outer Diameter at max WP <sup>5</sup>				63 (±1.4) 2.5	77 (±1.4) 3.0	89 (±1.5) 3.5	118 (±1.5) 4.65		195 (-1 +3) 7.68	238 (-1 +5) 9.37	282 (-2 +6) 11.1	330 (-2 +6) 13
Water Quality	pH	4 - 9 (Below 30 °C / 86 °F) 5 - 9 (Above 30 °C / 86 °F)										

**Note:** <sup>1</sup>Will depend on Operating Pressure and the R/D ratio. A higher R/D and/or Operating Pressure can allow a higher bend angle. <sup>2</sup>Tolerance range based on ISO1307 Type C. <sup>3</sup>Values are for hose only; allowed working pressure can not exceed coupling pressure rating. For questions about chemical resistance please check mandals.com/support.