



## Remotely Operated Vehicle

*A unique and purpose built vehicle to lay and bury interconnection array cables as part of MPI Offshore's single source solution for off-shore wind turbine installation.*

The Remotely Operated Vehicle LBT1 (ROV) is a powerful, rough terrain tracklayer capable of operating in up to 50 metres of water. It can be launched from the Resolution, lay and bury the cables simultaneously with other construction operations.

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*The ROV can carry up to 1,000 metres (3,330 feet) of 110/120 mm diameter cable on a subsea reel that is hydraulically driven, enabling it to payout and pick up while on the sea bed. This eliminates the need for cable catenary control from the installation vessel during lay and burial operations.*

Its combination of chain cutter and jetting tool either work together or separately, depending on the conditions, to lay and bury cable at one pass, with a typical speed of 200m/hr (650ft/hr) even on firm seabeds. Despite weighing almost 60 tonnes (132,000 lbs) when fully-laden with cable, its wide tracks also support and propel it on the weakest soils.

The ROV is purpose built for short inter turbine cable runs. It can reverse within a few metres of the start j-tube to commence the cable burial. At the second end, the cable is laid off appropriate to the j-tube design.

The ROV can be operated from vessels other than the Resolution and is available for hire as a stand-alone vehicle. It provides, in particular, the optimum solution for the rapid laying of short lengths of cable in applications involving tight turns that a plough could not achieve.

## General Information

<b>Maximum Operating Depth</b>	50m
<b>Vehicle Length</b> (less jet tool)	7.5m
<b>Vehicle Maximum Length</b> (3.0m jet tool fitted)	11.5m
<b>Vehicle Width</b>	7.5m
<b>Vehicle Height</b> (to docking point)	7.75m
<b>Weight in Air</b> (without reel fitted)	35Te
<b>Weight in Air</b> (with reel & 20Te cable)	60Te
<b>Track Type</b>	Plastic track plates on a single steel chain
<b>Ground Pressure</b>	25-30kPa
<b>Speed Range</b> (no burial)	0-2,000m/hr
<b>Speed Range</b> (trenching)	50-1,000m/hr
<b>Vehicle Power</b>	900kW Total - 1 x 300kW-4 pole underwater electro-hydraulic unit - 2 x 300kW-4 pole underwater direct electric drive water pumps
<b>Tractive Effort</b>	20Te under good seabed conditions
<b>Structure</b>	Monocoque chassis constructed from high strength steel
<b>Electronics Pod</b>	One atmosphere steel pressure vessel 50.0m depth

## Jet Tool Burial Specification

<b>Configuration</b>	Twin-legged device straddling the cable
<b>Power</b>	2 x 300kW, 3.3kV, 60Hz. Submersible water-filled motors
<b>Pumps</b>	2 x Pleuger KN357 pumps
<b>Soil Strength (maximum)</b>	100kPa shear strength
<b>Trench Depth Options</b>	1.6m and 3.0m
<b>Cable Path Width</b>	150mm
<b>Cable Bend Radius</b>	1.6m during lay operations

## Chain Cutter Specification

<b>Configuration</b>	Chain type mechanical cutter, mounted under the centre of the vehicle
<b>Power</b>	150kW
<b>Soil Strength</b>	Up to 400kPa shear strength. Some higher strength soils are cuttable
<b>Trench Depth</b>	1.6m
<b>Cutting Picks</b>	Rock picks, 25mm dia tungsten carbide point attack tools for hard, abrasive ground
<b>Hydraulic Supply</b>	From vehicle hydraulic system
<b>Control Functions</b>	Tool depth and cutter speed

## Vehicle Cable Reel Specification

<b>Structure</b>	High strength steel
<b>Core Diameter</b>	3.2m
<b>Width</b>	1.7m
<b>Cable Capacity</b>	1,000m (@ cable dia 110mm to 120mm)
<b>Weight</b>	Empty – 4,000kg. Loaded – 25,000kg
<b>Reel Drive</b>	Hydraulic, from the vehicle hydraulic system

## Surveillance Specification

<b>Cameras</b>	A total of 5 cameras, combining colour and mono output
<b>Sonar</b>	Kongsberg MS1000 front and rear mounted
<b>Cable Tracking</b>	Interface to TSS cable tracking equipment
<b>GPS Position</b>	CSI wireless DGPS Max; Frequency – 1.575GHz; Horizontal accuracy - < 1.2m