

EQUIPMENT / CABLE HANDLING / TRAVERSING SPOOLERS

CABLE HANDLING

TRAVERSING SPOOLERS

Deck-mounted traversing spooler systems for underdeck carousels — rack-and-pinion traverse, integrated guide chute, smooth-finish rollers for both HV submarine cables and offshore umbilicals, multi-directional VFD drive synchronised with the carousel PLC.

5 M

MBR

7.5 MT

LINE TENSION

5,700 MM

SPOOLER STROKE

VFD

PLC-INTEGRATED

ABOUT DIMENSION

Dimension Consultants Pte Ltd was incorporated in 2012 and has been growing steadily ever since. Our offshore engineering team has successfully delivered cable lay, transpooling and subsea installation packages for clients across the renewable, oil & gas and telecom sectors. The Dimension Traversing Spooler is engineered to handle the most demanding subsea products — from heavy HV submarine cable to slender offshore umbilicals — with one carefully-machined platform.

OVERVIEW

PRODUCT DESCRIPTION

The Dimension Traversing Spooler is a deck-mounted product feed system designed for top-loading underdeck cable carousels. Each spooler comprises a deck-bolted foundation, a rack-and-pinion traverse carriage and a product guide chute fitted with **integrated low-friction rollers**. The system is electrically driven through a VFD-controlled gearmotor, with the spooler PLC slaved to the carousel control loop — traverse position, carousel rotation and product feed remain synchronised in real time, eliminating operator hand-off.

The chute is **machined and polished to a smooth surface finish** suitable for both heavy submarine cable and offshore umbilicals. The reversible drive supports **multi-directional operation** across pay-on, pay-off and re-spool campaigns. In an emergency stop, the chute geometry absorbs slack, protecting the product and preserving the lay pattern.

HIGHLIGHTS

KEY FEATURE HIGHLIGHTS

INTEGRATED ROLLERS

Product guide chute fitted with low-friction LUC rollers — distributes contact load across the bend, eliminating point pressure and protecting the cable jacket through the full traverse stroke.

SMOOTH SURFACE FINISH

Machined-and-polished chute and roller liners — engineered for both high-voltage subsea cable and offshore umbilicals, including those with sensitive polymer outer sheaths.

MULTI-DIRECTIONAL OPERATION

Reversible rack-and-pinion traverse with VFD-controlled gearmotor — bidirectional spooling for pay-on, pay-off and re-spool campaigns; carousel rotation can run in either direction.

FEATURES

- ✓ Rack-and-pinion traverse carriage over the carousel hatch — 5,700 mm spooler stroke
- ✓ Integrated guide chute with low-friction LUC rollers — distributes contact load across the cable bend
- ✓ Machined-and-polished chute surface — smooth finish protects cable jackets and umbilical sheaths
- ✓ Reversible VFD electric drive — multi-directional operation (pay-on / pay-off / re-spool)
- ✓ Spooler PLC integrated with carousel PLC — synchronous traverse and rotation
- ✓ Slack absorption envelope built into chute geometry — safe emergency stop
- ✓ Rails bolted to deck — modular foundation, demountable carriage for class survey
- ✓ Local diagnostic interface plus remote operation from cable-lay control room
- ✓ Coatings: foundation RAL 6005 Moss Green; carriage RAL 5017 Blue / RAL 3020 Red

SUITABLE PRODUCTS

- **HV / EHV submarine power cable (HVAC, HVDC)**
 - Cable diameters and stiffness across the typical lay-vessel envelope
- **Offshore umbilicals**
 - Steel-tube and thermoplastic-hose constructions; control, hydraulic, electrical and hybrid umbilicals
 - Smooth-bore polymer outer sheaths protected by polished chute and rollers
- **Flexible pipeline and small-bore flexibles**
- **Telecom backbone and repeatered cable**

SECTORS

- Offshore Renewable Energy — inter-array and export cable lay
- Offshore Oil & Gas — umbilical, flexible-pipe and IRM operations
- Telecom — submarine backbone cable and repeater installation
- Shoreside transpooling and FAT operations

FEATURED BUILD

Two (2) traversing spooler systems, one per underdeck carousel — design, supply, FAT and integration with the carousel PLC. Refer to **Annexure-E (E-001 through E-043)** for full technical details and compliance matrix.

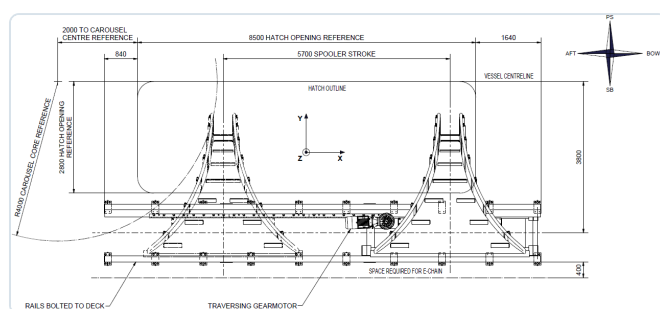
SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Headline parameters for the Dimension Traversing Spooler. Refer to Annexure-E (E-001 through E-043) for the full technical details and compliance matrix.

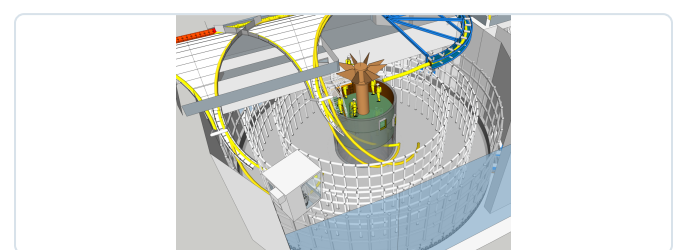
PARAMETER	SPECIFICATION
MBR / Line Tension	5 m / 7.5 MT
Traverse Mechanism	Rack & pinion over hatch opening
Spooler Stroke	5,700 mm
Hatch Opening Reference	8,500 mm × 2,800 mm
Carousel Core Reference	R 4,000 mm
Distance to Carousel Centre	2,000 mm (from spooler centreline)
Guide Chute	Integrated rollers (LUC) on machined-and-polished chute
Surface Finish	Smooth — suitable for cables and offshore umbilicals
Drive System	Electric via VFD — integrated with carousel PLC
Drive Direction	Reversible / multi-directional (pay-on, pay-off, re-spool)
Traversing Gearmotor	Pinion-driven, deck-mounted, with E-chain energy management
Foundation	Rails bolted to deck — modular, demountable carriage
Slack Absorption	Chute geometry absorbs slack on emergency stop
User Interface	Local diagnostic + remote operation from cable-lay control room
Finish — Foundation	RAL 6005 Moss Green
Finish — Carriage	RAL 5017 Blue / RAL 3020 Red
Quantity (typical)	2 × spooler systems (one per carousel)
Reference	Annexure-E, E-001 through E-043

GENERAL ARRANGEMENT

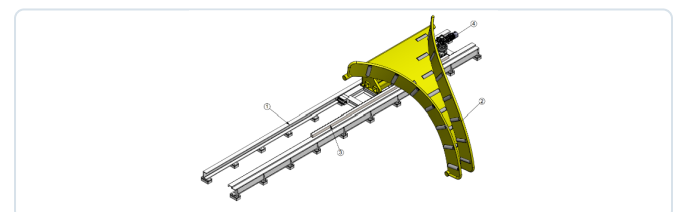


Spooler General Arrangement — hatch, stroke, rails, gearmotor and E-chain envelope

DESIGN VIEWS



3D render — inside underdeck carousel basket



CAD isometric — rails, carriage, chute, gearmotor, drive

CONTROL & OPERATION

- ✓ VFD electric drive — torque and speed continuously controlled across the traverse stroke
- ✓ Spooler PLC slaved to carousel PLC — traverse position commanded from carousel rotation
- ✓ HMI on the local panel for diagnostic, fault-finding and standalone test operation
- ✓ Remote console in the cable-lay control room — single-operator workflow with carousel and tensioner
- ✓ Reversible mode — multi-directional operation supports pay-on, pay-off and re-spool campaigns
- ✓ Trend logging — traverse position, motor current and PLC interlock status
- ✓ Hard-wired emergency stop — chute slack envelope catches the product before line tension is lost

BENEFITS

- ✓ Single platform handles cables and umbilicals — no separate spooling rig required
- ✓ Multi-directional drive shortens campaign turnaround between transpooling and lay operations
- ✓ PLC integration removes operator hand-off — reduces lay-pattern risk and crew workload
- ✓ Modular deck-bolted foundation — fast yard installation and demountability for class survey
- ✓ Engineered, fabricated and FAT-tested in Singapore by the team that supports operations offshore

DELIVERY METHODOLOGY

01

LAYOUT PLANNING

Spooler footprint, traverse stroke and chute envelope set against vessel hatch and basket geometry.

02

INTEGRATED ANALYSIS

Cable-path verification across chute, traverse and carousel; MBR, tension and slack envelope confirmed.

03

PLC INTEGRATION

Spooler VFD drive and traverse position synchronised with carousel rotation through the shared PLC.

04

EQUIPMENT FAT

Traverse function, chute alignment, emergency-stop slack absorption tested at the factory.

05

CAROUSEL INTEGRATION

Spooler installed over hatch, foundation rails bolted to deck, integrated FAT with carousel.

06

CLASS APPROVALS

Foundation and structural approval; integrated cable-handling certification with the carousel.

ENGINEERING ENQUIRIES

ENGINEER IT. BUILD IT. OPERATE IT.

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