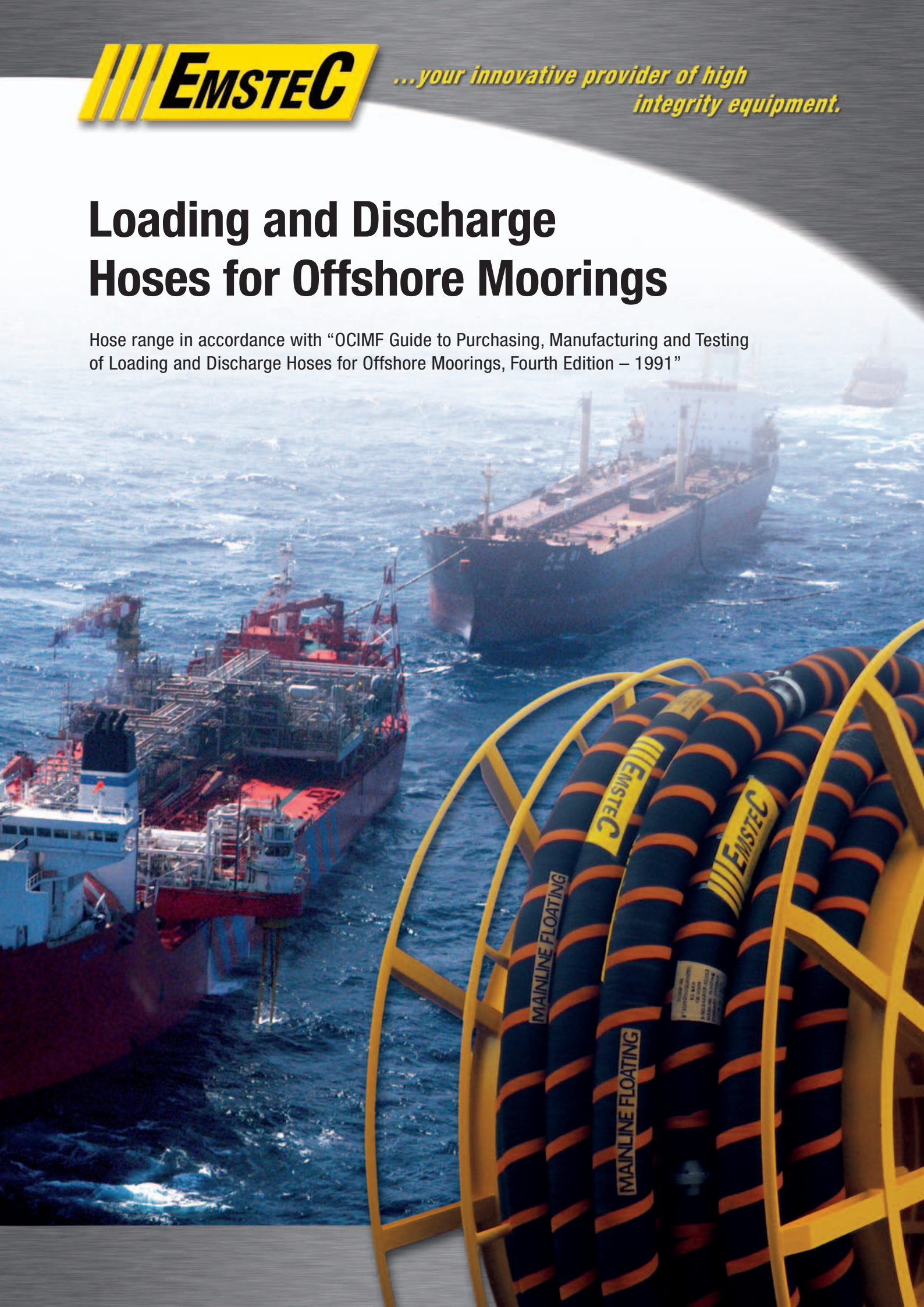
EMSTEC

...your innovative provider of high integrity equipment.

Loading and Discharge Hoses for Offshore Moorings

Hose range in accordance with “OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991”



OVERVIEW

Loading & Discharge Hoses for Offshore Moorings

EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world, which fully comply with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991"**. The *EMSTEC* Loading & Discharge hoses are available with rated working pressures of 15 BAR, 19 BAR and 21 BAR or higher for special applications or specific client requirements. Two distinctive designs within the *EMSTEC* hose range are available:

- *EMSTEC* **Single Carcass Hoses (21 Series)** Floating, Submarine & Catenary Hoses
- *EMSTEC* **Double Carcass Hoses (22 Series)** Floating, Submarine & Canenary Hoses

The *EMSTEC* **Single Carcass** hose construction consists of three main elements; i) smooth bore elastomeric lining resistant to a variety of hydrocarbons, ii) a standard elastomer reinforced carcass with multi-layers of high tensile textile cords and embedded steel wire helix. iii) a fibre reinforced smooth elastomer cover, resistant to ageing, abrasion, weathering, sunlight, tearing oil and seawater penetration.

In addition to the standard hose carcass (commonly termed 'primary' carcass), *EMSTEC* **Double Carcass** hose incorporate an additional second carcass designed to contain any product escaping from the standard carcass as a result of a slow leak or sudden failure. An effective, robust and reliable, integrated leak detection and indication system is provided.

The *EMSTEC* **Single Carcass** and **Double Carcass** hose range includes hose construction for **Floating**, **Submarine** and **Catenary applications**, utilized in offloading installations worldwide EPS, MBM, SBM, CALM, SALM and Tandem Offloading.

- *EMSTEC* Single Carcass / Double Carcass Floating Hoses (utilized in high integrity surface installations such as EPS, SBM, CALM, SALM offloading in addition to FPSO, FSO Tandem offloading configurations).
- *EMSTEC* Single Carcass / Double Carcass Submarine Hoses (utilized in high integrity sub-sea installations such as MBM, SBM, CALM, SALM configurations (i.e. Steep 'S', Lazy 'S', Chinese Lantern).
- *EMSTEC* Single Carcass / Double Carcass Catenary Hoses (utilized in high integrity offloading installations subject to high tensile loads such as FPSO, FSO tandem offloading to DP Shuttle Tankers (i.e. BLS, Reel, Chute, Cantilever hang-off arrangements).

The *EMSTEC* **Single Carcass** and **Double Carcass** hose range is complemented by a comprehensive range of Ancillary Equipment, recommended within "OCIMF SPM Hose Ancillary Equipment Guide" publication.

For additional information on specific hose types and applications, please refer to *EMSTEC* hose data sheets.

EMSTEC hoses fully comply with the requirements of the "OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991".

EMSTEC hoses are designed and manufactured under a quality system in accordance with ISO 9001, and in compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

Prototype Hose manufacture and testing witnessed and verified by Bureau Veritas (Certifying Authority) and GDC International (Industry Consultants).

EMSTEC GmbH & Co. KG
Sniers Achterhoff 11 · 21224 Rosengarten
Tel. +49 (0)40 79 68 63 45 · Fax +49 (0)40 79 68 67 02
e-mail: info@emstec.net · web: www.emstec.net

PRODUCT RANGE

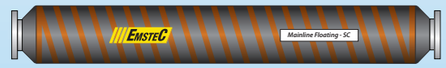
Loading & Discharge Hoses for Offshore Moorings

EMSTEC provide a range of high quality, high performance elastomer reinforced, smooth bore, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* hoses fully comply with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991".**

EMSTEC hose range includes **Single Carcass** and **Double Carcass** hoses construction for **Submarine, Catenary and Floating** applications, utilized in high integrity offloading installations worldwide.

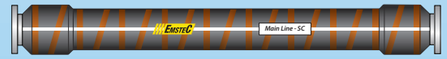
All *EMSTEC* hoses are designed and manufactured under a quality system in accordance with ISO 9001, and compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

21100 - Single Carcass Floating Hose

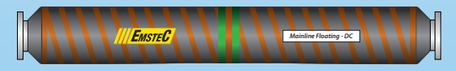


21200/21300 - Single Carcass Submarine Hose

21400 - Single Carcass Catenary Hose



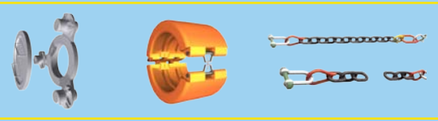
22100 - Double Carcass Floating Hose



22200/22300 - Double Carcass Submarine Hose

22400 - Double Carcass Catenary Hose

28500 - Ancillary Equipment



28600/28700 - Tranport, Handling and Test Equipment

For additional information on specific hose types and applications, please refer to *EMSTEC* hose data sheets.

Single Carcass Floating Hose

'21' SERIES

EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* **Single Carcass Floating** hoses are utilized in high integrity surface installations such as EPS, SBM, CALM, SALM offloading in addition to FPSO, FSO Tandem offloading configurations.

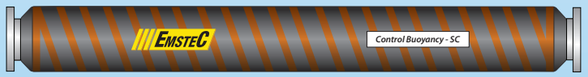
The *EMSTEC* hose fully complies with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991".**

All hoses are designed and manufactured under a quality system in accordance with ISO 9001, and compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

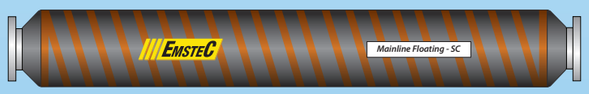
For performance characteristics and specification, please refer to EMSTEC data sheet 'Single Carcass Hose Specification'.

21110 FSC - End Reinforced Half Floating (ie. First off Buoy)

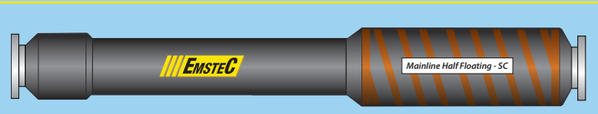
21120 FSC - Controlled Buoyancy



21130 FSC - Main Line Floating

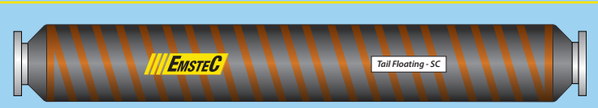


21140 FSC - Main Line Half Floating



21150 FSC - Reducing Floating

21160 FSC - Tail Floating



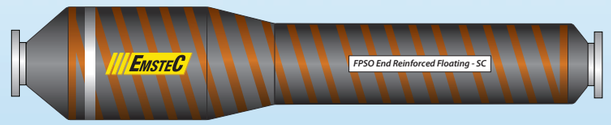
EMSTEC GmbH & Co. KG
Sniers Achterhoff 11 · 21224 Rosengarten
Tel. +49 (0)40 79 68 63 45 · Fax +49 (0)40 79 68 67 02
e-mail: info@emstec.net · web: www.emstec.net

Single Carcass Floating Hose (continuation)

'21' SERIES

21170 FSC - Tanker Rail Floating

21180 FSC - FPSO - End Reinforced High Buoyancy Floating (ie. First off FPSO to support ERC) *



21190 FSC – ST End Reinforced High Buoyancy Floating (ie. Shuttle Tanker connection to support HEV) *

* NOTE

The *EMSTEC* **Single Carcass Floating** hoses designed for **special end connection applications** are utilized in high integrity surface installations such as FPSO, FSO Tandem offloading configurations offshore Brazil.

The special hoses are installed at the ends of the floating hose string, connected to the FPSO/FSO hang-off Emergency Release Coupling (ERC) and the Shuttle Tanker bow loading system Hose End Valve (HEV).

The additional buoyancy within the special FPSO end hose will support the ERC on the surface of the sea, if released in an emergency. The Shuttle Tanker end hose will support the HEV on the surface of the sea, during hose transfer and / or emergency release.

For performance characteristics and specification, please refer to EMSTEC data sheet 'Single Carcass Hose Specification'.

Single Carcass Submarine Hose

'21' SERIES

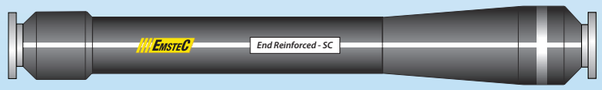
EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* **Single Carcass Submarine** hoses are utilized in high integrity sub-sea installations such as MBM, CALM, SALM configurations (i.e. Steep 'S', Lazy 'S', Chinese Lantern).

The *EMSTEC* hose fully complies with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991".**

All hoses are designed and manufactured under a quality system in accordance with ISO 9001, and compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

For performance characteristics and specification, please refer to EMSTEC data sheet 'Single Carcass Hose Specification'.

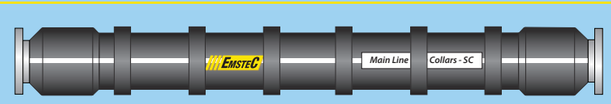
21210 SSC - End Reinforced without float collars (i.e. under Buoy)



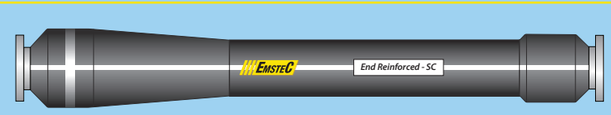
21310 SSCF – End Reinforced with float collars (i.e. under Buoy) *

21220 SSC - Main Line without float collars

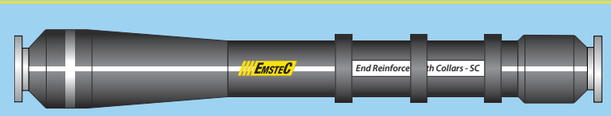
21320 SSCF - Main Line with float collars



21230 SSC - End Reinforced without float collars (i.e. off PLEM)



21330 SSCF – End Reinforced with float collars (i.e. off PLEM) *



**Note: Number and distribution of float collars can be adjusted to suit client specific requirements.*

EMSTEC GmbH & Co. KG
Sniers Achterhoff 11 · 21224 Rosengarten
Tel. +49 (0)40 79 68 63 45 · Fax +49 (0)40 79 68 67 02
e-mail: info@emstec.net · web: www.emstec.net

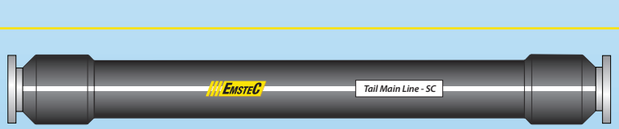
Single Carcass Submarine Hose (continuation)

'21' SERIES

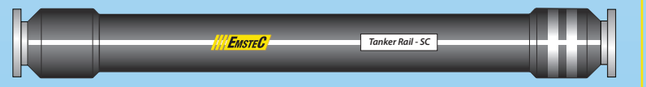
21240 SSC - Both Ends Reinforced without float collars

21250 SSC - Reducing Hose without float collars

21260 SSC - Tail Hose without float collars



21270 SSC - Tanker Rail



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Single Carcass Catenary Hose

'21' SERIES

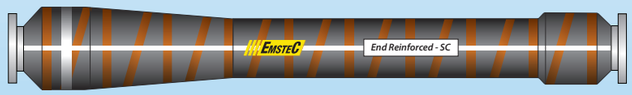
EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* **Single Carcass Catenary** hoses are utilized in high integrity floating offloading installations such as FPSO, FSO tandem offloading to DP Shuttle Tankers (i.e. Reel, Chute, Cantilever hang-off arrangements).

The *EMSTEC* hose fully complies with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991"**.

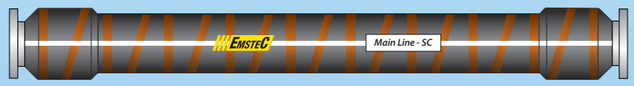
All hoses are designed and manufactured under a quality system in accordance with ISO 9001, and compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

For performance characteristics and specification, please refer to EMSTEC data sheet 'Single Carcass Hose Specification'.

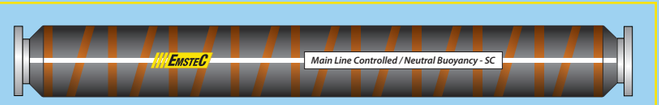
21410 SCSC - End Reinforced (i.e. FPSO)



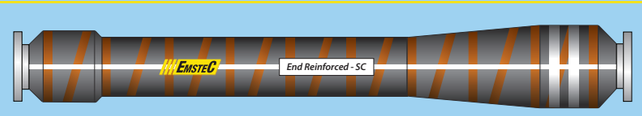
21420 SCSC - Main Line



21430 SCSC - Main Line – Controlled / Neutral Buoyancy (for special applications)



21440 SCSC - End Reinforced (i.e. Shuttle Tanker)



EMSTEC GmbH & Co. KG
Sniers Achterhoff 11 · 21224 Rosengarten
Tel. +49 (0)40 79 68 63 45 · Fax +49 (0)40 79 68 67 02
e-mail: info@emstec.net · web: www.emstec.net

Single Carcass Hose Specification

'21' SERIES

EMSTEC Single Carcass Submarine, Floating & Catenary hoses fully comply with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991"**.

PERFORMANCE CHARACTERISTICS & CONSTRUCTION

Nominal Bore (mm):	*150 (6"), 200 (8"), 250 (10"), 300 (12"), 400 (16"), 500 (20"), 600 (24")*
Standard Length:	*9.1M (30'), 10.7M (35') & 12.2M (40') (non-standard less than 12.2M also available)*
Hose Construction:	Liner Tube – *NBR based Rubber, resistant to hydrocarbons with aromatic content up to 60%.* Main Carcass – *Elastomer reinforced with multi-layers of high tensile textile cords and embedded steel wire helix.* Floatation Material (Floating Hoses only) – *Closed Cell Foam* Outer Cover – *Fibre reinforced smooth elastomer cover, resistant to ageing, abrasion, weathering, sunlight, tearing and oil and seawater penetration.* *(Polyurethane coating available on request).*
Flanges:	*ANSI B16.5 Class 150 or 300 Flat Face (FF), Hot Dip Galvanised in accordance with BS729 Part 1. (Raised Face (RF) flange face available on request).*
Pressure Rating:	*15 BAR, 19 BAR, 21 BAR (higher pressure ratings on request)*
Minimum Burst Pressure:	*75 BAR, 95 BAR, 105 BAR*
Flow Velocity:	*Maximum of 21m/s*
Fluid Product:	*Crude Oil and Liquid Petroleum Products (other than liquefied petroleum gases and liquefied natural gases).*
Temperature Range:	*Fluid Temperature from -20°C to 82°C.* *Ambient Temperature from -29°C to 52°C.*
Minimum Bend Radius:	Submarine Hose - *4 x hose Nominal Bore Diameter.* Floating Hose – *6 x hose Nominal Bore Diameter*
Electrical Continuity:	Electrically Continuous or Discontinuous as required.

For information regarding hose types and applications, please refer to relevant EMSTEC hose data sheets.

DESIGN APPROVAL & QUALITY ASSURANCE

All of the hoses are designed and manufactured under a quality system in accordance with ISO 9001, and is in compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

Prototype Hose manufacture and testing witnessed and verified by Bureau Veritas (Certifying Authority) and GDC International (Industry Consultant).

ISO 9001 Design

ISO 9001 Manufacture

Prototype Approval (BV)

Prototype Approval (GDC)

Double Carcass Floating Hose

'22' SERIES

EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* **Double Carcass Floating** hoses are utilized in high integrity surface installations such as EPS, SBM, CALM, SALM offloading in addition to FPSO, FSO Tandem offloading configurations.

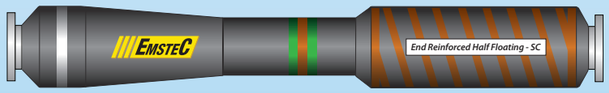
In addition to the standard hose carcass (commonly termed 'primary' carcass), *EMSTEC* **Double Carcass Floating** hoses incorporate an additional second carcass designed to contain any product escaping from the standard carcass as a result of a slow leak or sudden failure. An effective, robust and reliable leak detection and indication system is provided.

EMSTEC Double Carcass Submarine hoses fully comply with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991".**

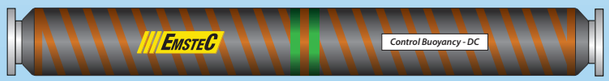
All hoses are designed and manufactured under a quality system in accordance with ISO 9001, and is in compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

For performance characteristics and specification, please refer to EMSTEC data sheet 'Double Carcass Hose Specification'.

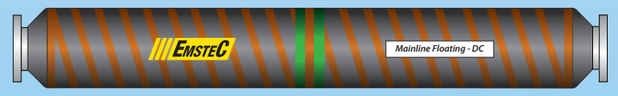
22110 FDC - End Reinforced Half Floating (ie. First off Buoy)



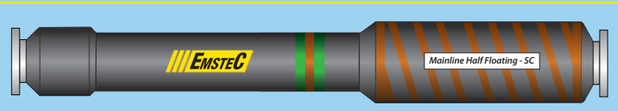
22120 FDC - Controlled Buoyancy



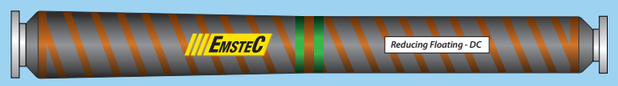
22130 FDC - Main Line Floating



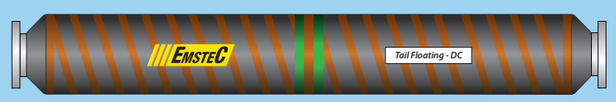
22140 FDC - Main Line Half Floating



22150 FDC - Reducing Floating



22160 FDC - Tail Floating



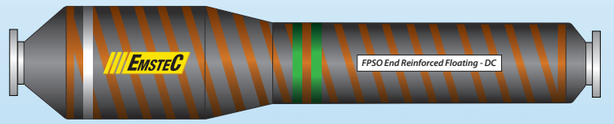
EMSTEC GmbH & Co. KG
Sniers Achterhoff 11 · 21224 Rosengarten
Tel. +49 (0)40 79 68 63 45 · Fax +49 (0)40 79 68 67 02
e-mail: info@emstec.net · web: www.emstec.net

Double Carcass Floating Hose (continuation)

'22' SERIES

22170 FDC - Tanker Rail Floating

22180 FDC - FPSO - End Reinforced High Buoyancy Floating (ie. First off FPSO to support ERC) *



22190 FDC – ST End Reinforced High Buoyancy Floating (ie. Shuttle Tanker connection to support HEV) *

* NOTE:

The *EMSTEC* **Doublee Carcass Floating** hoses designed for **special end connection applications** are utilized in high integrity surface installations such as FPSO, FSO Tandem offloading configurations offshore Brazil.

The special hoses are installed at the ends of the floating hose string, connected to the FPSO/FSO hang-off Emergency Release Coupling (ERC) and the Shuttle Tanker bow loading system Hose End Valve (HEV).

The additional buoyancy within the special FPSO end hose will support the ERC on the surface of the sea, if released in an emergency. The Shuttle Tanker end hose will support the HEV on the surface of the sea, during hose transfer and / or emergency release

For performance characteristics and specification, please refer to EMSTEC data sheet 'Double Carcass Hose Specification'.

Double Carcass Submarine Hose

'22' SERIES

EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* **Double Carcass Submarine** hoses are utilized in high integrity sub-sea installations such as MBM, CALM, SALM configurations (i.e. Steep 'S', Lazy 'S', Chinese Lantern).

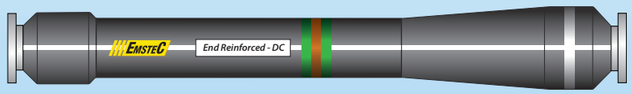
In addition to standard hose carcass (commonly termed 'primary' carcass), *EMSTEC* **Double Carcass Submarine** hoses incorporate an additional second carcass designed to contain any product escape from the standard carcass as a result of a slow leak or sudden failure. Effective, robust and reliable leak detection and indication system is provided.

The *EMSTEC* Double Carcass Submarine hoses fully comply with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991".**

All hoses are designed and manufactured under a quality system in accordance with ISO 9001, and is in compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

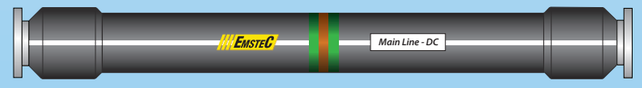
For performance characteristics and specification, please refer to EMSTEC data sheet 'Double Carcass Hose Specification'.

22210 SDC - End Reinforced without float collars (i.e. under Buoy)

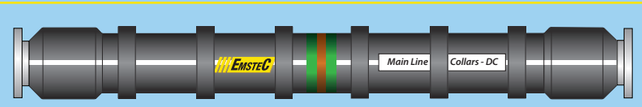


22310 SDCF - End Reinforced with float collars (i.e. under Buoy) *

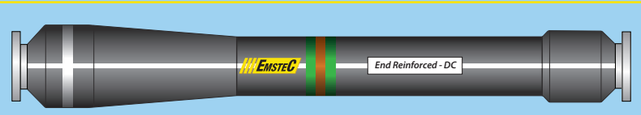
22220 SDC - Main Line without float collars



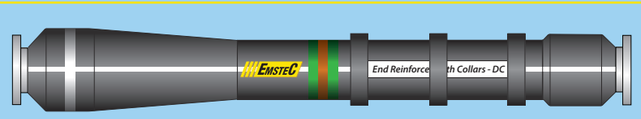
22320 SDCF - Main Line with float collars



22230 SDC - End Reinforced without float collars (i.e. off PLEM)



22330 SDCF - End Reinforced with float collars (i.e. off PLEM) *



**Note: Number and distribution of float collars can be adjusted to suit client specific requirements.*

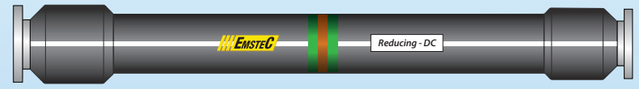
EMSTEC GmbH & Co. KG
Sniers Achterhoff 11 · 21224 Rosengarten
Tel. +49 (0)40 79 68 63 45 · Fax +49 (0)40 79 68 67 02
e-mail: info@emstec.net · web: www.emstec.net

Double Carcass Submarine Hose (continuation)

'22' SERIES

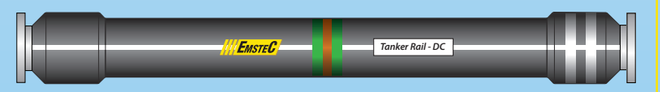
22240 DSC - Both Ends Reinforced without float collars

22250 DSC - Reducing Hose without float collars



22260 DSC - Tail Hose without float collars

22270 DSC - Tanker Rail



Double Carcass Catenary Hose

'22' SERIES

EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* **Double Carcass Catenary** hoses are utilized in high integrity floating offloading installations such as FPSO, FSO tandem offloading to DP Shuttle Tankers (i.e. Reel, Chute, Cantilever hang-off arrangements).

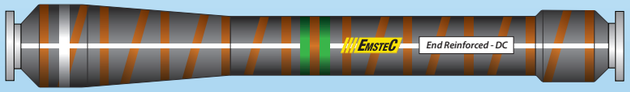
In addition to the standard hose carcass (commonly termed 'primary' carcass), *EMSTEC* **Double Carcass Catenary** hoses incorporate an additional second carcass designed to contain any product escaping from the standard carcass as a result of a slow leak or sudden failure. Effective, robust and reliable leak detection and indication system is provided.

The *EMSTEC* Double Carcass Catenary hoses fully comply with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991".**

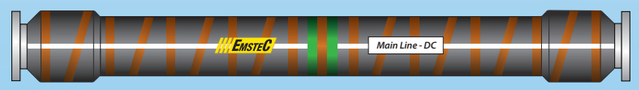
All hoses are designed and manufactured under a quality system in accordance with ISO 9001, and is in compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

For performance characteristics and specification, please refer to EMSTEC data sheet 'Double Carcass Hose Specification'.

22410 SCDC - End Reinforced (i.e. FPSO)

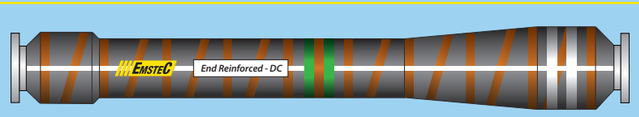


22420 SCDC - Main Line



22430 SCDC - Main Line – Controlled / Neutral Buoyancy (for special applications)

22440 SCDC - End Reinforced (i.e. Shuttle Tanker)



EMSTEC GmbH & Co. KG
Sniers Achterhoff 11 · 21224 Rosengarten
Tel. +49 (0)40 79 68 63 45 · Fax +49 (0)40 79 68 67 02
e-mail: info@emstec.net · web: www.emstec.net

Double Carcass Hose Specification

'22' SERIES

EMSTEC Double Carcass Submarine, Floating & Catenary hoses fully comply with the requirements of the **"OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991"**.

PERFORMANCE CHARACTERISTICS & CONSTRUCTION

Nominal Bore (mm):	*150 (6"), 200 (8"), 250 (10"), 300 (12"), 400 (16"), 500 (20"), 600 (24")*
Standard Length:	*9.1M (30'), 10.7M (35') & 12.2M (40') (non-standard less than 12.2M also available)*
Hose Construction:	Liner Tube – *NBR based Rubber, resistant to hydrocarbons with aromatic content up to 60%* Primary Carcass – *Elastomer reinforced with multi-layers of high tensile textile cords and embedded steel wire helix.* Secondary Carcass – *Elastomer reinforced with multi-layers of high tensile textile cords* Floatation Material (Floating Hoses only) – *Closed cell foam* Outer Cover – *Fibre reinforced smooth elastomer cover, resistant to ageing, abrasion, weathering, sunlight, tearing and oil and seawater penetration.* *(Polyurethane coating available on request).*
Flanges:	*ANSI B16.5 Class 150 or 300 Flat Face (FF), Hot Dip Galvanised in accordance with BS729 Part 1. (Raised Face (RF) flange face available on request).*
Pressure Rating:	*Primary Carcass - 15 BAR, 19 BAR, 21 BAR (higher pressure ratings on request)* *Secondary Carcass - 15 BAR, 19 BAR, 21 BAR.*
Minimum Burst Pressure:	Primary Carcass - *75 BAR, 95 BAR, 105 BAR* Secondary Carcass - *30 BAR, 38 BAR, 42 BAR*
Flow Velocity:	*Maximum of 21m/s*
Fluid Product:	*Crude Oil and Liquid Petroleum Products (other than liquefied petroleum gases and liquefied natural gases).*
Temperature Range:	*Fluid Temperature from -20°C to 82°C.* *Ambient Temperature from -29°C to 52°C.*
Minimum Bend Radius:	Submarine Hoses - *4 x hose Nominal Bore Diameter.* Floating Hose – *6 x hose Nominal Bore Diameter.*
Electrical Continuity:	Electrically Continuous or Discontinuous as required.
Leak Detection:	*Pressure compensated leak detection system for Floating, Submarine & Catenary applications.*

For information regarding hose types and applications, please refer to relevant EMSTEC hose data sheets.

DESIGN APPROVAL & QUALITY ASSURANCE

All of the hoses are designed and manufactured under a quality system in accordance with ISO 9001, and is in compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required). Prototype Hose manufacture and testing witnessed and verified by Bureau Veritas (Certifying Authority) and GDC International (Industry Consultant).

ISO 9001
Design

ISO 9001
Manufacture

Prototype Approval
(BV)

Prototype Approval
(GDC)

Ancillary Equipment

ANCILLARIES

EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* **Single Carcass** and **Double Carcass** hose range is complemented by a range of Ancillary Equipment in addition to equipment to aid Transportation, Handling and Testing.

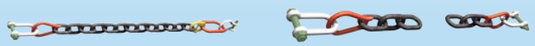
For performance characteristics and specification, please refer to EMSTEC equipment data sheets.

28510 - Flange Jointing

28511 - Studs and Nuts
28512 - Gaskets
28513 - Anodes
28514 -Flange Insulation Kits

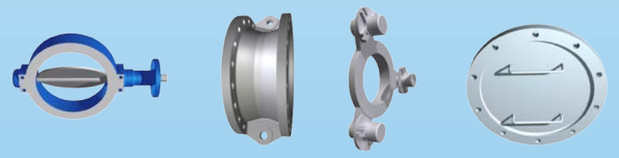
28520 - Chain Assemblies

28521 - Pick-up Chain
28522 - Snubbing Chain



28530 - Hose End Fittings

28531 - Butterfly Valve
28532 - Lifting Spool Piece
28533 - Camlock Coupling
28534 - Lightweight Blind Flange



28540 - Buoyancy Equipment

28541 - Pick-up Buoy
28542 - Floating Concentric Reducer
28543 - Floating 'Y' Piece
28544 - Hose Floats

28550 - Hose Marker Lights

28551 - Winker Light

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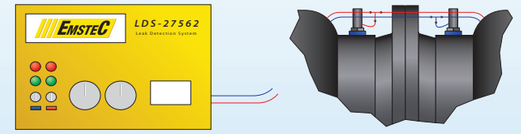
Ancillary Equipment (continuation)

ANCILLARIES

28560 - Continuous Leak Detection System

28561 - Single Line Leak Detection
28562 - Closed Circuit Leak Detection
28563 - Visual Indicator



28570 - Special Hose Connector / Couplings

28571 - Hose End Valve (i.e. Hose connection to BLS)
28572 - Emergency Release Coupling (ERC)
28573 - Marine Breakaway Coupling (MBC)

Transport, Handling and Test Equipment

ANCILLARIES

EMSTEC provide a range of high quality, high performance, oil suction and discharge hoses, extensively used at offshore moorings throughout the world. The *EMSTEC* **Single Carcass** and **Double Carcass** hose range is complemented by a range of Ancillary Equipment in addition to equipment to aid Transportation, Handling and Testing.

For performance characteristics and specification, please refer to EMSTEC equipment data sheets.

28600 - Hose Transport and Handling Equipment

28610 Lifting Beam

28620 Hose Transport / Storage Pallet

28700 - Hose Test Equipment

28710 Test Unit – Pressure Pump

28720 Test Unit – Vacuum Pump

28730 Test Unit – Pressure & Vacuum Pump

28740 Test Unit – Filling, Pressure and Vacuum Pumps

Notes

EMSTEC GmbH & Co. KG
Sniers Achterhoff 11 · 21224 Rosengarten
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EMSTEC

EMSTEC Loading & Discharge hoses fully comply with the requirements of the “OCIMF Guide to Purchasing, Manufacturing and Testing of Loading and Discharge Hoses for Offshore Moorings, Fourth Edition – 1991”.

Designed and manufactured under quality system in accordance with ISO 9001, and in compliance with Pressure Equipment Directive (PED) 97/23/EC module H (hoses carry CE marking as required).

Prototype Hose manufacture and testing witnessed and verified by Bureau Veritas (Certifying Authority) and GDC International Ltd. (Industry Consultant).

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