

MARINE APPLICATIONS

Equipment & Refuelling Solutions



ELAFLEX
Group

ELAFLEX GROUP – MARITIME EXCELLENCE BASED ON DECADES OF EXPERIENCE

Regardless of the roles gaseous and liquid fuels play in the global effort to decarbonise shipping, they must be transported safely and reliably to the point of use. The operating conditions of the international maritime industry impose demanding bunkering, transfer and refuelling systems that meet the highest standards and are approved by manufacturers, operators and suppliers across all types of ships, vessels and boats.

For decades, the ELAFLEX Group has been a trusted, fully certified supplier of refuelling and bunkering systems to the maritime industry. With origins dating back to 1923 in the Port of Hamburg, we combine decades of experience with proven engineering expertise. Discover the specialist capabilities that make the ELAFLEX Group a trusted partner for maritime fuel transfer solutions.



MARINE BUNKERING, CARGO AND CHEMICAL TRANSFER

Since the 1950s, ELAFLEX has been a leading supplier of marine hoses and accessories. Today, the ELAFLEX Group's portfolio includes bunkering hoses, with and without helix reinforcement, cargo hoses with helix reinforcement for petroleum-based products, cargo hoses for chemicals and other media, and composite hoses for a wide range of fluids and solvents.

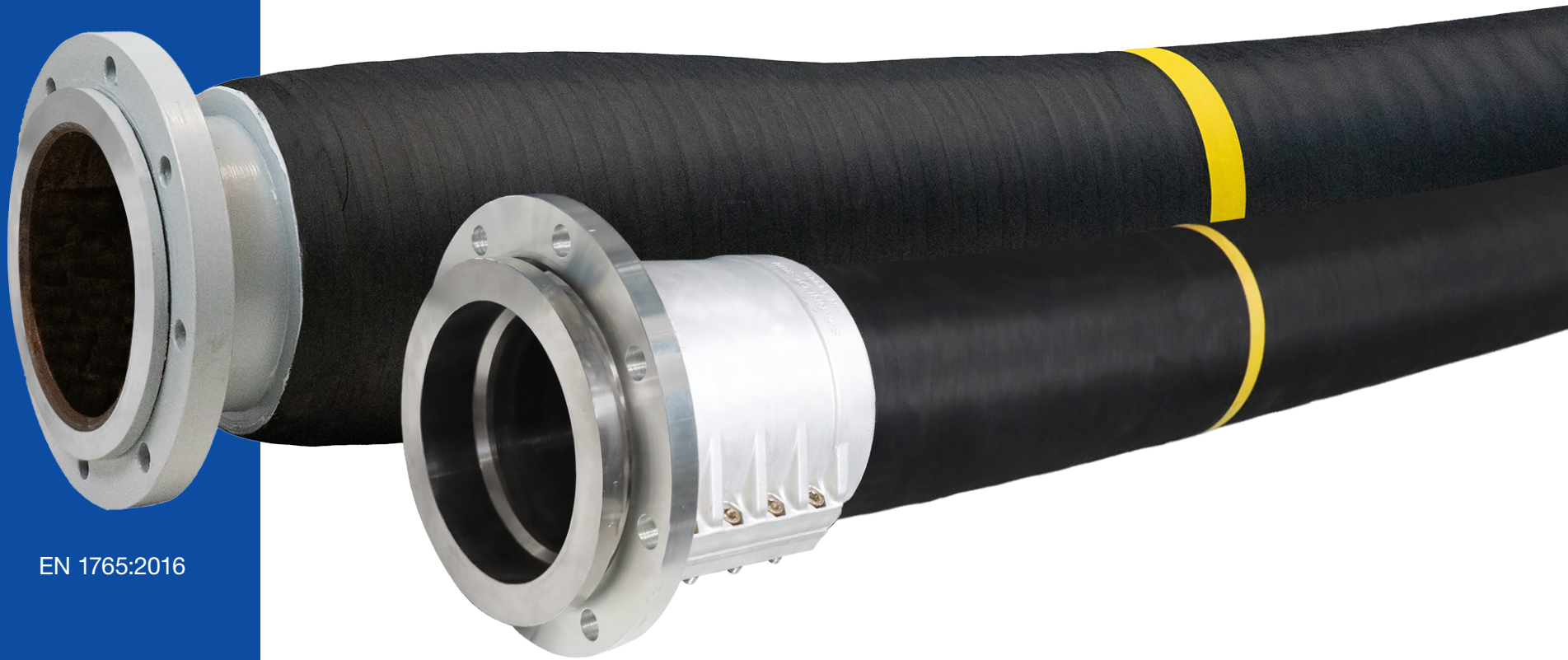
Our long-lasting products comply with international standards, including the latest edition of EN 1765. They are supplied pressure-tested, certified and with short lead times. Available in sizes from DN 13 (1/2") up to DN 250. Sizes up to DN 200 (8") are available ex stock with 15 bar pressure rating and with electrical continuity types 'M' (el. bonded), Ω (el. dissipative) or discontinuous.

EN 1765 permits the use of reusable safety clamps to EN 14420, which has become one of the most practical assembly methods. They fit onto ELAFLEX EN 1765 hoses perfectly, and can be reassembled on-site, significantly reducing downtime and lowering maintenance costs for operators. Alternative assembly methods, including built-in hose nipples (vulcanised), crimped or swaged ferrules, are also available.

We also supply composite hose assemblies manufactured to EN 13765 for cargo applications in sizes up to DN 250. Type FHD rubber hose assemblies are available in sizes from DN 63 to DN 150, including spliced versions.

 **Hose Assembly Configurator:**
hoseconfigurator.elaflex.de

Marine Hoses



EN 1765:2016

FHD

Catalogue page 129



Collapsible high pressure hose for marine bunkering.

Meets German military standard VG 95 955 and EN 1765, type L.

Type 'FHD' with low tensile textile braids with two crossed tinned copper strands. Without helix. Marking: 2 yellow bands every 4 metres, longitudinal yellow stripe and vulcanised embossed stamps.

Available sizes: DN 63 (2 1/2") to DN 250 (10")

STW

Catalogue page 129



Marine suction and discharge hose for tanker vessels.

Meets German military standard VG 95 955 and EN 1765, type S.

Type 'STW' with textile braids (STW 200 cord layers) and galvanised steel helix. Marking: yellow band every 2,5 metres and vulcanised continuous embossing.

Available sizes: DN 50 (2") to DN 200 (8")

SBS & SBL

Catalogue page 131



Marine Cargo Hoses for bulk loading and unloading of bunkering ships and tankers, for petroleum based products up to 50% aromatic content.

Meet EN 1765, type S and L.

Both types with multiple low tensile textile cord layers. Standard type 'SBL' without and 'SBS' with galvanised steel helix. Marking: yellow bands and vulcanised embossed stamps.

Available sizes: SBL: DN 100 (4") to DN 250 (10"), SBS: DN 150 (6") to DN 300 (12")

BITUMEN HOSE

ELAFLEX_Information_3.23E



Rubber bitumen hose for marine and dockside application with built-in nipples to EN 13482, Type SB/A.

Type 2 (15 bar) bitumen hoses are used for ship loading and unloading operations up to +175 °C.

Available sizes: DN 100 (4") and DN 200 (8")

TW

Catalogue page 107



Suction-/discharge hard wall hose with galvanised Steel helix. Best solution for riser systems and also for depot applications.

Type 'TW-E' for high suction and lowest bending radius. Not approved for in-to-plane and hydrant intake fuelling. Marking: 1 yellow band every 4 m and continuous embossing.

Available sizes: DN 25 (1") to DN 100 (4")

LPG

Catalogue page 115



Liquefied Petroleum Gas hose to EN 1762. For propane, butane and their mixtures to EN 589. Due to the very low permeability of the lining the hose is also suitable for natural gas (H₂-content max. 5%).

Burst pressure >100 bar. Temperature range -40°C up to +70°C (Special type LPG-LT does not crack down to -50°C). Approved by DVGW, approval No. DG-4621 AU 0049.

Available sizes: DN 10 (3/8") to DN 200 (8")

AMMONIA BUNKERING, CRYOGENIC CO₂ AND CARGO APPLICATIONS

Ships typically transport cryogenic ammonia at -33 °C, stored in insulated tanks at near-ambient pressure. Members of the ELAFLEX Group offer a range of speciality products for handling of liquefied ammonia.

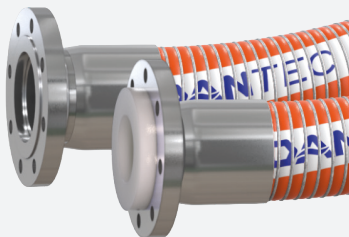
Dantec Danchem PA SS Cryogenic Ammonia hoses are multi-layer thermoplastic composite hoses designed for ammonia bunkering and cargo transfer. Available in sizes up to DN 250 (10") with internal and external helix construction. They provide a versatile solution for ship-to-ship, ship-to-shore and high-volume terminal operations, while also being suitable for other applications. Manufactured in accordance with EN 13766:2018 for suction and pressure service. Nominal sizes from DN 25 (1") to DN 250 (10"), with a working pressure of PN 25 bar and a burst pressure > 125 bar. Supplied assembled and pressure-tested with a range of flange or threaded end fittings to suit customer requirements.

Dantec liquefied CO₂ (LCO₂) composite hoses Type Danchem PA SS Cryogenic CO₂ are multi-layer thermoplastic hoses with internal and external helix. They provide a versatile solution for ship-to-ship, ship-to-shore, truck-to-ship and terminal operations, in accordance with EN 13766:2018 for suction and delivery service. Available in sizes from DN 25 (1") to DN 250 (10"), they have a working pressure of PN 25 bar, and a burst pressure > 125 bar, with a temperature range of -104 °C to -80 °C. Hose assemblies are supplied assembled, pressure-tested and fitted with flanged or threaded end fittings to meet customer requirements.

 **Hose Assembly Configurator:**
configurator.dantec.com

FLUOROPOLYMER

Composite hoses, catalogue pages 181–184

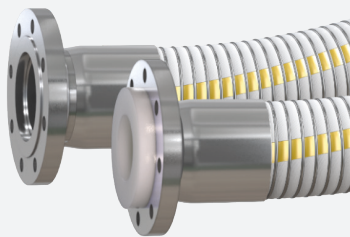


'Dantec Danflon GG, SG, SS' composite hoses for aggressive chemicals and acids. Lined as standard with ETFE (Ethylene tetra fluoro ethylene), a high-tech fluoro-polymer, very similar to PTFE in its broad-spectrum chemical resistance but with the added advantage of high mechanical strength and low permeability. Temperature range: -30 °C to +100 °C.

Available sizes: standard duty: DN 25 (1") to DN 100 (4"), heavy duty: DN 100 (4") to DN 250 (10").

CRYOGENIC

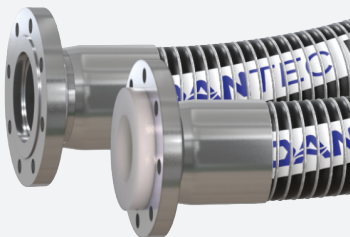
Composite hoses, catalogue pages 181–184



'Dantec Danchem PA' LPG/ammonia hoses for liquified low temperature gas, manufactured from multiple layers of polymers, with a stainless steel 316 inner and outer helix. The heavy duty versions are used for ship to shore transfer, ship to ship and applications requiring low temperature flexibility, strength, safety and reliability. Manufactured in accordance with EN 13766:2018 for suction and pressure service. Temperature range: -30 °C to +100 °C. Available sizes: standard duty: DN 25 (1") to DN 100 (4"), heavy duty: DN 100 (4") to DN 250 (10").

PETROLEUM AND OIL

Composite hoses, catalogue pages 181–184



'Dantec Danoil 7 & 9' composite tough high strength composite hoses for the transfer of heavier hydrocarbons (Danoil 7) and biofuel, aromatics and solvents (Danoil 9), both suitable for pressures up to 14 bar. Heavy duty version for ship to shore and marine applications.

Available sizes: standard duty: DN 25 (1") to DN 100 (4"), heavy duty: DN 100 (4") to DN 250 (10").

Composite Hoses



RELIABLE HOSE ASSEMBLY METHODS FOR MARITIME CONDITIONS

The proven ELAFLEX Spannloc safety clamp system offers numerous advantages, particularly for maritime applications. They enable straightforward maintenance almost anywhere (ELAFLEX provides assembly training) and complies with EN 1765. The system is highly reliable and allows short lead times through local assembly. As no crimping machine is required, fitting is both faster and more cost-effective. The re-usable, re-attachable clamps are available in sizes up to DN 200 (8") in both aluminium and stainless steel. Flanges and fittings comply with EN 14420, self-locking bolts and nuts are supplied in stainless steel as standard. Aluminium Spannloc safety clamps are widely used in marine applications because of their excellent corrosion resistance in saltwater environments. Stainless steel versions are also available where maximum corrosion resistance is required.

Fittings and Couplings



SPANNLOC SAFETY CLAMPS

Catalogue page 297 a-d



'Spannloc SC' bolted safety clamps to EN 14420-3 and VG 85328 of hot stamped aluminium or stainless steel, bolts and nuts of steel Zn/Cr or stainless steel.

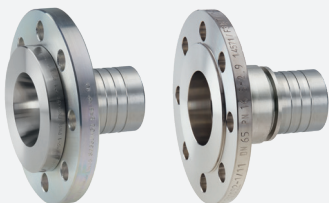
Advantages:

- Self-assembly and repair in the field
- Reusable
- Adjustable
- No special tools needed for assembling
- Compliant with standards, from our own production

Available sizes: DN 13 (1/2") to DN 200 (8") in aluminium, DN 13 (1/2") to DN 150 (6") in stainless steel

FLANGED HOSE COUPLINGS

Catalogue pages 271-285



Flanged hose couplings EN 14420-4 with SPANNFIX / SPANNLOC / Ferrules

Swivelling (SF) or fixed (FF) hose flanges to DIN / ASA, usually made of stainless steel or aluminium (if in contact with aviation fuel). Standards: hose tails EN 14420-4 flanges to EN 1092-1 and ASA (ANSI B 16.5).

Available sizes: DN 13 (1/2") to DN 200 (8")

SPLIT CLAMPS

Catalogue page 260



Hose coupling system for marine delivery hoses. Hose tails with male / female connection of stainless steel or aluminium, used with reusable Spannloc clamps of stainless steel or aluminium. Clamping screw of stainless steel. Meets military standard VG 95 970-3 and MIL-C-24356A.

Available sizes: DN 63 (2,1/2") to DN 150 (6")

SAFE AND ERGONOMIC HANDLING OF GASES AND FLUIDS

For decades, the ELAFLEX Group has continuously enhanced the efficiency and safety of couplings for marine bunkering and cargo applications. The ELAFLEX Group's expertise in the development and manufacture of dry disconnect couplings worldwide has helped reduce risks to both people and the environment while significantly improving loading and unloading efficiency.

With more than one million couplings supplied over the past 25 years, MannTek, a member of the ELAFLEX Group, has set new standards for dry disconnect couplings (DDCs). The original Design 1.0 is recognised worldwide for its outstanding performance and reliability. The new Design 2.0 is a carefully evolved development, based on extensive field studies and user testing. It delivers increased flow capacity while reducing the coupling force required in handling significantly.

DRY DISCONNECT COUPLINGS

Catalogue page 345-346



MannTek Design 2.0 DDC couplings with standardised interface to STANAG 3756 are used for spill free handling and transfer of liquids, gases and bulk powder. Applicable for maritime loading/unloading and transfer.

Available with BSP- and NPT-threads in sizes DN 25 (1") to DN 200 (8"). Other threads are available on request (S60X6, etc.), as well as flanges (EN ISO 1092-1 Typ 11 B1).

DRY GAS COUPLINGS

Catalogue page 349 a-b



MannTek Design 2.0 DGC couplings for liquefied petroleum gas. Self-locking coupling for the loading and unloading of LPG (propane, butane and their mixtures). Working pressure 25 bar. Temperature range -40° C up to +80° C. Certificates to European Pressure Equipment Directive PED, ATEX EX II 2G, ADR, RID, IMDG and TDT. Couplings correspond to EN 13760 (DN 25).

Available sizes: DN 25 (1") to DN 200 (8")

DRY CRYOGENIC COUPLINGS

ELAFLEX Brochure Marine Liquid & Gas Handling Equipment



MannTek Design DCC couplings are suitable for the loading and unloading of cryogenic liquefied gases, such as LNG, nitrogen, argon, ethylene, down to -196° C. A quick and safe connection of hoses and loading arms under pressure and with minimized product loss. During the cool down phase, no retightening of the connection is necessary as practiced with flanged or threaded connections. Dry Cryogenic Couplings according to ISO 21593 and ISO TS 18683.

Available sizes: DN 25 (1") to DN 200 (8")

Dry Disconnect Couplings



SAFE, RELIABLE AND ERGONOMIC LNG SOLUTIONS

Liquefied Natural Gas (LNG) is a key fuel in the global transition towards a more sustainable energy future. It offers lower carbon emissions, reduced particulate emissions and lower nitrogen oxide (NOx) emissions than conventional fuels. Its compact, transportable form makes LNG an ideal solution for applications ranging from heavy transport to industrial use.

MannTek is a recognised pioneer in the development and implementation of the ISO 21593 and ISO/TS 18683 standards, the leading international standards for LNG couplings. The Powered Emergency Release Coupling (PERC) system provides the highest level of safety under demanding operating conditions through three independent release mechanisms.

Nitrogen has a lower boiling point – which means no additional heating or circulation system is required when using LNG. As the PERC system uses nitrogen rather than hydraulics, no additional heating or circulation system is required during LNG bunkering, eliminating the risk of hydraulic oil leaks. The system continuously monitors pressure up to the point of activation.

The MannTek LNG transfer system, including the PERC, offers dual functionality: it is actively triggered by an ESD2 signal and passively activated in the event of a blackout. The hose assembly provides operational flexibility and controlled movement required following an ESD2 event. Together, these features help reduce both capital expenditure (CapEx) and operating expenditure (OpEx).



LNG Transfer Systems

PERC CONTROL UNIT

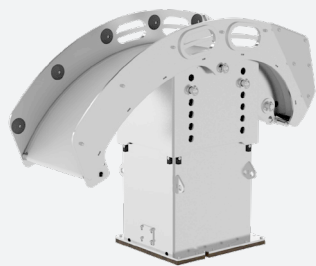
ELAFLEX Brochure Marine Liquid & Gas Handling Equipment



The **MannTek PERC (Powered Emergency Release Coupling)** offers highest safety level via three ways of release: By ESD-signal, by manual override, independent of electrical signal and by reverting from nitrogen activated to passive breaking pin. Breaking pins are designed to be the weakest point of hose or manifold. The control unit is the release and monitoring system for the MannTek PERC coupling, including the complete control, monitoring and release system. It also features a pilot pressure regulator to constantly monitor the system and keep it free from moisture and ice.

HOSE SADDLE

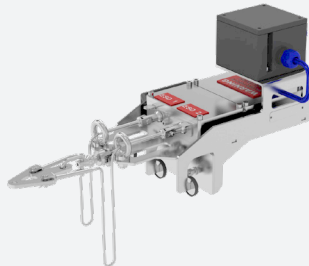
ELAFLEX Brochure Marine Liquid & Gas Handling Equipment



A single or double hose saddle can be used to support the hose in position on both vessels and maintain the correct bend radius. The contact surface is coated with polyurethane for non-conductivity and minimal wear resistance. Height of the hose saddle is adjustable; it is also available with integrated fall arrest and water ballast tank.

VESSEL SEPARATION DEVICE

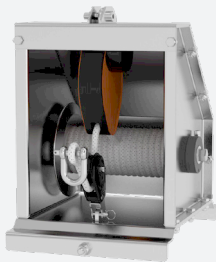
ELAFLEX Brochure Marine Liquid & Gas Handling Equipment



The MannTek VSD works with three activation cables of different lengths: The first wire (shortest) initiates an audible and/or visual alarm to warn of vessel movement. At a specific distance, the second wire (middle length) initiates the ESD 1 signal, shutting pumps and closing ESD valves. At another specific distance, the third wire (longest) sends the ESD 2 signal into the HPN2 PERC release unit, via the ESD system, activating the PERC.

FALL ARREST

ELAFLEX Brochure Marine Liquid & Gas Handling Equipment



This friction device will maintain a constant rate of descent of the hose following activation of the PERC following an ESD2. Once it has reached its full extent, the rope will 'breakaway' from the friction device.

LNG BUNKERING AND TRANSFER

A growing number of LNG-fuelled ships, LNG carriers and passenger ferries operate around the world. Across the ELAFLEX Group, experts with decades of experience and extensive technical expertise work together to support the entire LNG supply chain. MannTek dry disconnect couplings (DDCs) have successfully completed all tests required by ISO 21593, the international standard specifying the technical requirements for LNG couplings. As a result, MannTek dry cryogenic couplings (DCCs) provide safe, reliable performance under demanding operating conditions. They are easy to handle, save time during operation and are fully compatible with other manufacturers' couplings that comply with ISO 21593. Dantec is a global leader in composite hose technology, with more than 40 years of manufacturing expertise and a strong reputation for innovation and quality. Dantec composite hoses, equipped with MannTek dry cryogenic couplings and breakaway couplings, provide a safe and reliable solution for LNG transfer.

 **DCC Configurator:**
manntekconfigurator.elaflex.de



DRY CRYOGENIC COUPLINGS

ELAFLEX Brochure Marine Liquid & Gas Handling Equipment



MannTek Design 2.0 DCC couplings are suitable for the loading and unloading of cryogenic liquefied gases, such as LNG, nitrogen, oxygen, argon, ethylene, down to -196° C. A quick and safe connection of hoses and loading arms under pressure and with minimized product loss. During the cool down phase, no retightening of the connection is necessary as practiced with flanged or threaded connections. Dry Cryogenic Couplings according to ISO 21593 and ISO TS 18683.

Available sizes: DN 25 (1") to DN 200 (8")

CRYOGENIC BREAKAWAY COUPLINGS

ELAFLEX Brochure Marine Liquid & Gas Handling Equipment

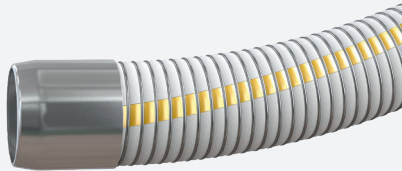


MannTek CBC Cryogenic Breakaway Couplings are used to avoid spillage and damage associated with drift and/or pull away incidents when loading and unloading. The couplings are designed to be the weakest link of the hose line or loading arm. The cryogenic breakaway couplings are suitable for cryogenic liquefied gases, such as LNG, nitrogen, argon, ethylene, down to -196 °C.

Available sizes: DN 25 (1") to DN 300 (12") for breaking pin, DN50 (2") to DN 200 (8") for cable release

DANCRYO LNG COMPOSITE HOSE

Catalogue page 181



The Dantec Dancryo LNG composite hose is manufactured from multiple thermoplastic layers and used for loading/unloading, shore-based transfer of cryogenic gases like LNG (Liquified Natural Gas) and other applications. The hose meets EN 13766 as Type 2 Class A (onshore use) and B (offshore use). The hose construction offers maximum safety, high reliability and durability. Suitable for handling in Ex-Zones.

Available sizes: DN 25 (1") to DN 250 (10")

HANDLING GASEOUS AND LIQUID HYDROGEN

To harness the benefits of liquid hydrogen (LH₂) – including its high energy density, environmental advantages and zero CO₂ emissions at the point of use – it must be handled safely and efficiently. This requires the highest standards of materials, manufacturing and insulation to ensure effective insulation and leak-tight performance.

To meet these challenges, the ELAFLEX Group has developed a range of safe and durable products specifically designed to meet the unique requirements of liquid hydrogen, including its extremely low boiling point of -253 °C and low ignition energy.

The same fundamental principles used for refuelling hydrogen-powered land vehicles also apply to the bunkering of ships. An additional integrated breakaway coupling has been incorporated into the system to address the specific requirements of ship-to-ship transfer, significantly enhancing the safety of the overall bunkering process.



BUNKERING COUPLING (HOSE UNIT)

ELAFLEX Brochure Liquid Hydrogen Refuelling

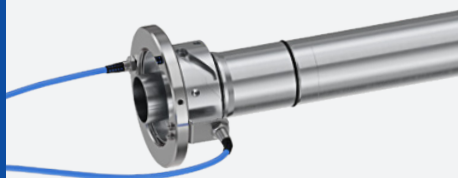


'H-LH2' hose unit coupling for the refuelling of ships with liquid hydrogen (LH₂) or subcooled liquid hydrogen (sLH₂). Available as male or female version depending on application and installation angle of the matching tank unit. Design temperature: -253 °C to +50 °C, design pressure: PN 25, flow coefficient: Kv / Cv 25.6 / 31 (DN 32), Kv / Cv 50 / 58 (DN 50).

Available sizes: DN 32 (1,1/4") and DN 50 (2"), other sizes on request

TANK UNIT RECEPTACLE

ELAFLEX Brochure Liquid Hydrogen Refuelling

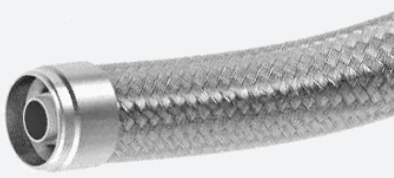


'T-LH2' tank unit receptacle for the installation at ships for the use with liquid hydrogen (LH₂) or subcooled liquid hydrogen (sLH₂). Two welding connections for the installation at double wall tanks, for high vacuum insulation. Available as male or female version depending on application and installation angle. Design temperature: -253 °C to +50 °C, design pressure: PN 25, flow coefficient: Kv/Cv 25.6/31 (DN 32), Kv/Cv 50/58 (DN 50). Class approvals available.

Available sizes: DN 32 (1,1/4") and DN 50 (2"), other sizes on request

DOUBLE WALLED HOSE

ELAFLEX Brochure Liquid Hydrogen Refuelling



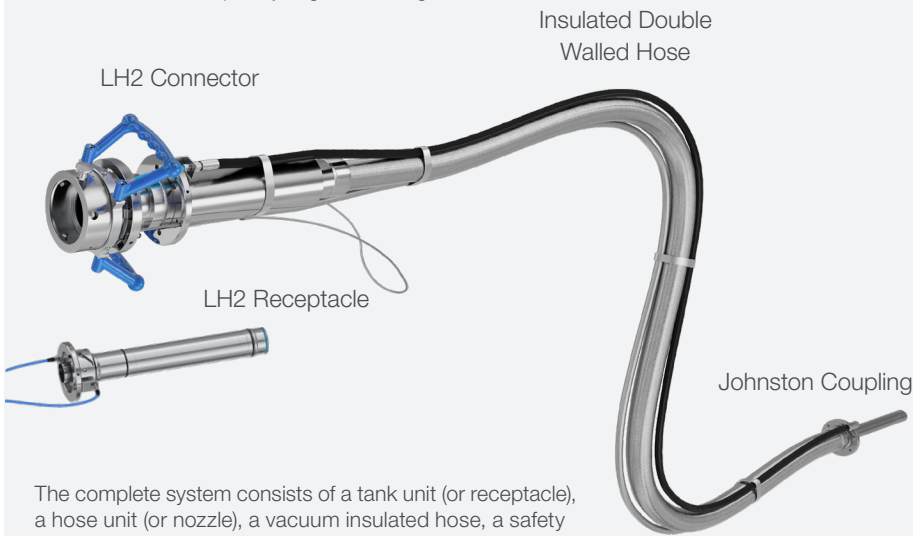
The 'LH2/sLH2' transfer system is completed by a double walled hose assembly with a connection to the dispensing unit, fully vacuum insulated. Size: DN 32/65 and DN 50/75. Temperature range: - 253 °C to + 50 °C.

Available sizes: DN 32 / 65 (1,1/4"/2,1/2") and DN 50/75 (2"/3"), other sizes on request

Hydrogen Solutions

COMPLETE SYSTEM

ELAFLEX Brochure Liquid Hydrogen Refuelling



The complete system consists of a tank unit (or receptacle), a hose unit (or nozzle), a vacuum insulated hose, a safety breakaway coupling (optional) and a bayonet style coupling (Johnston coupling) to connect the complete hose line to an existing pump or refuelling equipment. All components are vacuum insulated to minimise heat intake. An optional heated parking adapter for the nozzle or hose unit is available to avoid condensed water and ice on the coupling surface, which could impair the functionality of the seals during the next LH₂ transfer.

PARKING ADAPTER

ELAFLEX Brochure Liquid Hydrogen Refuelling



Heated Parking Adapter (shown version is meant for truck refuelling)

The parking adapter avoids icing up of the coupling by heating and blowing away humidity.

REFUELLING AT MARINAS

ELAFLEX has been at the forefront of self-service refuelling for decades, making fuel dispensing simpler, safer and more convenient for customers. In the early 1960s, ELAFLEX introduced the innovative ZVA automatic shut-off fuel dispenser nozzle, making it possible to 'dispense to the penny'. With the introduction of the Slimline design in the early 1970s, the nozzle was ergonomically shaped to fit comfortably in the user's hand.

Since the early 1990s, ELAFLEX has provided vapour recovery (VR) equipment to help reduce emissions at the fuel dispenser. Today, the ZVA Slimline 2 sets the benchmark for fuel and AdBlue® nozzles across Europe and beyond. The ZVA offers outstanding simplicity, safety and durability, supported by a low total cost of ownership, rapid availability from stock, and ease of repair and maintenance.

The comprehensive ZVA nozzle product range is complemented by high-quality fuel dispenser hoses and self-closing safety break couplings.

ZVA SLIMLINE 2 GR

Catalogue page 513



Automatic nozzle 'ZVA Slimline 2 GR' for active vapour recovery. Suitable for all standard gasoline fuels (also with ethanol content), up to 45 l/min. Design 'GRV' with integrated vapor valve 'On/Off', Design 'GRVP' with vapour proportional valve. Working pressure 0,5 to 3,5 bar.

ZVA SLIMLINE 2

Catalogue page 517



Automatic nozzle 'ZVA Slimline 2' ID 19 mm (3/4"), equipped either with a diesel spout OD 25 mm or a non-vapour recovery gasoline spout type 'R' OD 21 mm. For gasoline and diesel type fuels also with bio content. Max. flow rate 80 l/min (with diesel spout). Working pressure 0,5 to 3,5 bar.

ZVA 25

Catalogue page 525



Automatic nozzle 'ZVA 25' for flow rate up to 140 l/min, DN 25. Suitable for gasoline, diesel and fuel oil, also with bio content. Working pressure 0,5 to 3,5 bar. Special variant for 5 bar available.

ZVA 32

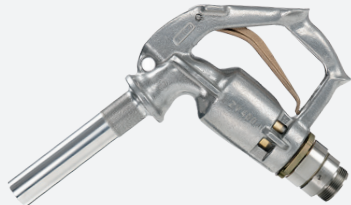
Catalogue page 529



Automatic nozzle 'ZVA 32' for flow rate up to 200 l/min, DN 32. Suitable for diesel, light fuel oil and petroleum. Working pressure 1,5 to 6 bar.

ZV 400

Catalogue page 543



High performance dispensing nozzles DN 32 to DN 50 (1 1/4" to 2") for flowrate up to 700 l/min. Suitable for diesel, gasoil and petroleum.

Working pressure 10 bar.

SLIMLINE HOSES

Catalogue page 111

Quality dispenser 'Slimline hoses' DN 16 to DN 25 in various colors for gasoline, diesel fuels and biodiesel or ethanol content. Cold flexible down to -30 °C (LT-type down to -40 °C). Assembly with ferrule type couplings.



HOSE REELS

ELAFLEX Brochure Hose Reels



ELAFLEX 'Hose Reels' (incl. vapor recovery variants) are produced to the highest quality standards and naturally comply with European health, safety and environmental standards. They are equipped with various return mechanisms – manual, return spring, electric, hydraulic, pneumatic.

Gasoline & Diesel



Nozzle Configurator:
nozzleconfigurator.elaflex.de

Hose Assembly Configurator:
hoseconfigurator.elaflex.de



REFUELLING FOR HELIDECK OPERATIONS

The safe and efficient operation of helicopter platforms (helidecks) on offshore installations, commercial, private and government vessels, and other maritime facilities in demanding environments is governed by stringent safety regulations. In many cases, these legal requirements combine regulations covering offshore production, aviation operations and maritime transport.

Refuelling equipment approved for use on helidecks must therefore be safe, reliable and fully certified. ELAFLEX refuelling systems and products draw on decades of expertise across these sectors and have helped establish widely recognised industry standards.

ZVF 50

Catalogue pages 541 a-d; Information 5.13 E



Advanced HiFlo aviation nozzle for overwing and helicopter refuelling, free of non-ferrous metals. Ergonomically designed with excellent features:

- Low weight & light lever action incl. Lever Assist®
- Flow rate up to 400 l/min. and sensitive flow control, minimised pressure shock
- Integrated bumpers with clear colour coding to avoid misfuelling: black = JET / red = AVGAS / green = UL
- Improved spout change system with threaded (SIC) or timesaving Push-Twist-Lock (PTL) connection
- Integrated easy rotating swivel
- Optional integrated Sight Glass

HD-C

Catalogue page 107



Standard type for into-plane (reel and deck hose) and hydrant intake fuelling.

ZVA 32 AF

Catalogue page 529



HiFlo automatic nozzle DN 32 (1¼"), free of non-ferrous metals, flow rate up to 200l/min. Working pressure 1,5 to 6 bar.

For AVGAS and JET A-1 as well as diesel, light fuel oil, and petroleum.

ZVA 25 AF

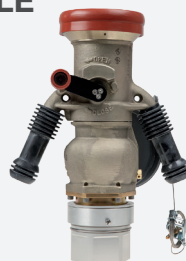
Catalogue page 525



HiFlo automatic nozzle DN 25 (1"), free of non-ferrous metals, flow rate up to 140l/min. Working pressure 0,5 - 3,5 bar. Special type up to 5 bar.

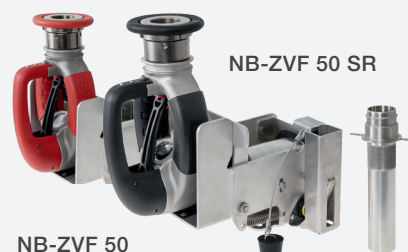
For AVGAS and JET A-1, gasoline, diesel, fuel oil and petroleum.

EATON'S CARTER® AIRCRAFT REFUELLING NOZZLE



Eaton's Carter® product line of ground fuelling equipment includes several underwing refuelling nozzle models, suitable for helideck operations. They are equipped with self-adjusting pressure loaded nose seals and connect to 3-lug international standard aircraft adapter. Available with 2-, 2½-, 3-inch NPT and BSPP threaded quick disconnect (QD) inlets.

NOZZLE BOOT 'NB-ZVF 50'



NB-ZVF 50

For easy installation of ZVF 50 nozzles on board of refuelers and dispensers. Available with different types of sensors for interlock systems. With or without spout retainer for quick spout change.

BONDING REEL

ELAFLEX Information 7.21E



'Bonding Reel with Spring Rewind Mechanism'. Frame available in polyester powder coated steel, UV resistant or stainless steel and any colour. High visibility grounding cable, up to 30 m, DN 6 and different types of clamps.

HOSE REELS

ELAFLEX Information 7.21E



Custom-made ELAFLEX hose reels are designed for the safe storage of aircraft refuelling hoses of any length, in sizes ranging from DN 13 (1/2") to DN 200 (8"), for operating pressures of 1 to 350 bar. The reel designs are available in 'long and low' versions for optimal use of horizontal space, and 'tall and narrow' versions for more compact vertical installations.

Helicopter Deck

COILED, CLEAN & TIDY – EVEN UNDER HARSH CONDITIONS

At ELAFLEX, we believe in taking a system-wide approach rather than individual components. As part of this philosophy, the ELAFLEX Group offers custom-designed hose reels for a wide range of applications worldwide. Supplied as a complete package with hose assemblies up to DN 200 (8"), they can be fitted with MannTek Dry Disconnect Couplings (DDCs), ZVA HiFlo nozzles or almost any other required configuration. A choice of rewind mechanisms is available, including manual, spring-return, electric, (including ATEX versions), hydraulic and pneumatic systems. ELAFLEX hose reels are manufactured to the highest quality standards and comply with all relevant European health, safety and environmental requirements. Materials are selected to suit the intended application, with polyester powder-coated steel or stainless steel available for demanding operating conditions, including use in harsh marine environments such as ports and terminals. A wide choice of colours is also available.

MANUAL REWIND

ELAFLEX Information 7.21E



'Hose Reel with Handle'. Also available with chain transmission for lower gear ratios.

SPRING REWIND

ELAFLEX Information 7.21E



'Hose Reel with Automatic Spring-loaded Rewind System'. Suitable for retraction of hoses up to 25 m in DN 50.

ELECTRIC REWIND

ELAFLEX Information 7.21E



'Hose Reel with Electric Motor'. Electric motors available: AC = 230/400 V DC = 12 V/24 V. Optionally with ATEX certified motors.

HYDRAULIC REWIND

ELAFLEX Information 7.21E



'Hose Reel with Hydraulic Motor'. The motor is always provided with levers to operate.

PNEUMATIC REWIND

ELAFLEX Information 7.21E



'Hose Reel with Pneumatic Motor'. Optionally available with 'ON/OFF' kit to operate the hose reel.

Hose Reels



ERV FOR FLEXIBLE CONNECTIONS

Rubber expansion joints (compensators) are used as flexible connectors in pipework systems, engines and bunkering vessels. ELAFLEX ERV expansion joints are single-sphere moulded rubber bellows with swivelling metal flanges. They are distinguished by a wide range of axial, lateral and angular movement, while maintaining low reaction forces and low inherent resistance. ERV expansion joints absorb stresses caused by temperature changes (thermal expansion), compensate for structural settlement and reduce vibration. They also minimise structure-borne noise within pipework and attenuate low-frequency noise generated by flowing media. A range of ERV types is available, including EPDM, NBR, Hypalon and Neoprene. Flanges can be supplied with protective coatings or painted to suit specific requirements. ELAFLEX expansion joints are type-approved by several leading Notified Bodies, including DNV, Lloyd's Register, ABS and others. Standard ERV units are available from stock, while custom-made solutions can be supplied to meet specific application requirements.

ERV Configurator:
ervconfigurator.elaflex.de



ERV-G

Catalogue page 423



Yellow band expansion joint 'ERV-G' for petroleum-based products with aromatic content up to 50 %, fuels (ethanol content up to 85 %), aviation fuels, town gas and natural gas except liquefied petroleum gas.

Temperature range (depending on medium) -20 °C to +90 °C, temporarily up to +100 °C. Electrically dissipative.

Available sizes: DN 25 (1") to DN 1000 (40")

ERV-GS

Catalogue page 427



Yellow steel expansion joint 'ERV-GS' for petroleum-based products, DIN EN fuels up to 50 % aromatic content, cooling water with oily anticorrosion additives, lubrication and hydraulic oil, seawater.

Temperature range (depending on medium) -20 °C to +90 °C. Fire resistant to ISO 15540 up to 30 min. at +800 °C. Electrically dissipative.

Available sizes: DN 25 (1") to DN 1000 (40")

ERV-CR

Catalogue page 415



'ERV-CR' expansion joints for cold and warm water, swimming pool, water, sea water, waste water (weakly sour or alkaline) also oil containing, cooling water with protective oils against corrosion, lubricating oil, grease and air, compressed air. Temperature range (depending on medium) -25 °C up to +90 °C, temporarily up to +100 °C. Electrically non-conductive.

Available sizes: 16 bar: DN 25 (1") to DN 400 (16"), 10 bar: DN 450 (18") to DN 1000 (40")

ERV-R

Catalogue page 407



Red band expansion joint 'ERV-R' for water, drinking water, waste water, seawater, cooling water, chemical waste water (without oil), chemicals, acids and alkalis, salt solutions, alcohols. Temperature range (depending on medium) -40 °C to +100 °C, temporarily up to +120 °C. Electrically dissipative.

Available sizes: DN 25 (1") to DN 1000 (40")

ERV-TA

Catalogue page 467



'ERV-TA' with white PTFE lining (6 or 10 bar). Electrically isolating, therefore not suitable for flammable liquids in Ex-Zones. The PTFE lining Meets EN 10/2011, EC 1935/2004, EC 2023/2006, FDA 177.1550. Delivered only as complete factory mounted unit with flanges. Unmounted PTFE lining not available.

Available sizes: 6 bar in DN 25 to 300 (1" to 12"), 10 bar in DN 25 to 600 (1" to 24")

VARIOUS FLANGES

Catalogue page 461-464



For the choice of flanges, a great variety of combinations concerning connection dimensions, materials and coatings is available.

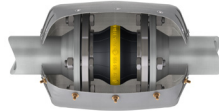
Flanges: ANSI B 16.5 150/300, EN 1092-1 BS 10 table D/E/F, VG 95 959, JIS 5K/10K/16K, SAE J518c, AS 2129, DIN 28460 'TW

Flange materials: Zinc plated steel, hot galvanised steel, stainless steel, bronze and aluminium.

FLAME PROTECTION

COVER - FSH

Catalogue page 471



Flame protection covers for rubber expansion joints, made of several fabric layers of glass fibre with a surface cover of silver coloured high temperature resistant silicone-aluminium glass (certified acc. MED A1/3.13). It reliably protects the expansion joint against radiation heat and direct flames up to 800° C for 30 min. (ISO 15540). Resistant against oil and chemical influences, ageing and weathering. Can be mounted subsequently and reopened.

Available sizes: DIN PN 10/16: DN 25 (1") to DN 300 (12"), VG 95959-1: DN 32 (1,1/4") to DN 250 (10")

Rubber Expansion Joints

RUBBER EXPANSION JOINTS AND SEALING SOLUTIONS CUSTOMISED FOR HIGHEST STANDARDS

The experts within the ELAFLEX Group are always available to support customers with bespoke solutions. This applies even to the most challenging applications, whether involving complex designs, demanding operating conditions or exceptional dimensions.

During the design and quotation phase, Finite Element Analysis (FEA) and 3D models are used to verify the functionality of the expansion joints and sealing solutions. These models can be directly integrated into customers' designs, allowing potential clashes with adjacent components to be identified at an early stage.

This capability is built on decades of experience and expertise, supported by modern manufacturing facilities, an integrated quality management system and comprehensive testing procedures. Together, these ensure the highest standards of product quality, as demonstrated by a range of internationally recognised certifications.

Every expansion joint and sealing solution undergoes extensive inspection and testing at each stage of the manufacturing process before leaving the factory.



RUBBER HOSES



Custom made rubber hoses for various applications, vehicles and engines.

AIR INTAKE PIPES



Straight or conical elastomer or multilayer expansion joint with self-sealing flange- sand single or multi-part backing flanges. Straight or conical fabric expansion joints (silicon free) with self-sealing flanges, single-part backing flange on both sides.

DECK SEALS



Ditec develops moulded rubber parts such as sleeves, membranes, bellows, profiles, hoses or deck seals together with you for your special application or manufacture them individually according to your technical and operational specifications.

Certificates

Approvals		ERV-GS	ERV-GS HNBR	ERV-G	ERV-R	ERV- CR	Other	
DNV (Det Norske Veritas)		✓	✓	✓	✓	✓	✓ all	
Lloyd's Register		✓	✓	✓	✓			
Bureau Veritas		✓	✓	✓	✓	✓		
RINA Services S.p.A.		✓	✓	✓	✓	✓	✓ (ERV-BR, -OR, -GR)	
American Bureau of Shipping		✓	✓	✓	✓			
Nippon Kaiji Kyokai		✓	✓	✓	✓			
China Classification Society		✓	✓	✓	✓	✓		
Korean Register		✓	✓	✓	✓			
Dienststelle Schiffssicherheit BG Verkehr*		✓  ✓ Marine Equipment Directive						
Technischer Überwachungs-Verein								
BAAINBW				✓	✓			
Water Regulations Advisory Scheme					✓		✓ (ERP)	

PDF of certificates can be downloaded under: elaflex.de/en/certificates/erv

*Certificate expires in a year, after which it will probably be replaced by DNV.

THE ELAFLEX GROUP

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