LIQUID HYDROGEN REFUELLING

Equipment and Solutions

ELAFLEX
Group

CONTENT

03 | Hydrogen
04 | Truck Refuelling
06 | Ship Bunkering
08 | Aviation Refuelling
11 | Complete System
12 | Contact

HYDROGEN

THE UPCOMING NEW ENERGY SOURCE.

To utilise its advantages – high energy density, environmental sustainability, no CO_2 emissions – the safe and eco-friendly handling of Liquid Hydrogen requires the **highest level of material and processing quality** in terms of insulation and pressure resistance. Accordingly, we have developed safe and durable products to reliably meet the special requirements of the medium (low boiling temperature of -253 °C, low ignition energy) through vacuum insulation, purge options and break-away couplings.

PRODUCT OVERVIEW

PNEUMATIC TRUCK REFUELLING NOZZLE

Connection double walled hose. Vacuum insulated.

Weld end (inner wall): 22 × 2 mm

Weld end (outer wall): 33.7 × 2 mm

Weight: approximately 12 kg

Operating pressure (pneu. system): 20 bar

Purge hose: 6 × 1 for Swagelok® connector

Proximity switch: Inductive NAMUR sensor (ATEX / IECEx)

Pneumatic hose: 6 × 1 quick connector

Order number: 'N-LH2-P'

Option

Anti-freezing equipment: Heated Parking Adapter

MANUAL TRUCK REFUELLING NOZZLE

Connection double walled hose. Vacuum insulation possible if welded to the coupling.

Weld end (inner wall): 22 × 2 mm

Weld end (outer wall): 35 × 2.5 mm

Weight: approximately 9.5 kg

Order number: 'N-LH2'

TRUCK RECEPTACLE

Connection double walled tank. Vacuum insulated.

Weld end (inner wall): 48.3 × 3 mm

Weld end (outer wall): 60.3 × 2 mm

Order number: 'R-LH2'

DOUBLE WALLED HOSE

Vacuum insulation possible if welded to the coupling.

Size: DN 15/20

Design temperature: -253 °C to +50 °C

Design pressure: PN 25

Order number: 'LH2-20-LXXm'

JOHNSTON COUPLING

Size: DN 15

Pressure rating: PN 25

Order number: 'JC-LH2-20-f/m-xx' (Various standard types available).

Male and female available (male usually welded to vacuum insulated hose).

Length of coupling differs between types.

DUST CAP TRUCK RECEPTACLE

Material: Aluminium

Order number: 'DC-LH2-20 (vapor)'

In case a vapor recovery line is needed (for example when refuelling LH2 instead of sLH2), the same equipment as for the Liquid Hydrogen can be used, because the returned gas phase is nearly as cold as the liquid phase. A special cap for the receptacle for the vapor line, marked with 'vapor', is available.

HEATED PARKING ADAPTER

Order number: 'HP-LH2-20'

When the nozzle is not in use, the interface should be heated in order to avoid condensation of air humidity on the surfaces, especially in so-called 'back to back' refuelling operations where many successive refuelling operations take place. This water might freeze again during the refuelling process and the ice crystals could damage the sealing. It could also happen that the nozzle is sticking to the receptacle due to the freezing water in the interspace between the nozzle and the receptacle. To keep a certain temperature above the condensation point of water on the nozzle when it is not in use, we can also supply a Heated Parking Adapter.

TRUCK REFUELLING

For refuelling trucks with Liquid Hydrogen (LH2) or subcooled Liquid Hydrogen (sLH2), ELAFLEX and MannTek have developed a nozzle and receptacle, based on the principles of a Dry Disconnect Coupling. The available system is completed by a hose assembly with a connection to the dispensing unit.

The system ensures an **easy and safe refuelling** operation **without any residual gas release volume of hydrogen.** The design of the nozzle and receptacle interface also offers a thermal insulation to minimise heat transfer into the refuelling system, keeping the outside warm to avoid surface condensation.

SPECIFICATIONS – MANUAL TRUCK REFUELLING NOZZLE AND RECEPTACLE

size: DN 15
design temperature: -253 °C to +50 °C
design pressure: PN 25
purge pressure: max. 0.8 bar above internal tank pressure
min. burst pressure: 100 bar
flow rate: 150 l/min
material: EN 10272 – 1.4404 (316L), EN 10216-5 – 1.4404 (316L), EN 10217-7 – 1.4404 (316L)
material seals: PEEK / PE / PTFE

PRODUCT OVERVIEW

BUNKERING COUPLING (HOSE UNIT)

Connection double walled hose.
Vacuum insulated.

Inner connection (process pipe):

Butt weld end (DN 32): 42.4 × 2 mm

Butt weld end (DN 50): 53 × 1.5 mm

Outer connection (vacuum hose/pipe):

Butt weld end (DN 32): 88.9 × 2.3 mm

Butt weld end (DN 50): 101.6 × 2 mm

Purge pipe: 10 × 2 for Swagelok® connector

Proximity switch: inductive
NAMUR sensor (ATEX/IECEx)
NJ1,5-8GM-N, (emergency release)
NJ4-12GK-SN, (purge/connected)

Locking device: disconnection pressure limited to 2.5 bar.

Order number: 'H-LH2-f/m'

Option

Integrated breakaway

Order number: 'SBC-LH2-50'

SHIP RECEPTACLE (TANK UNIT)

Connection double walled tank.
Vacuum insulation possible if welded to the coupling.

Inner connection (process pipe):

Butt weld end (DN 32): 42.4 × 2 mm

Butt weld end (DN 50): 53 × 1.5 mm

Outer connection (vacuum hose/pipe):

Butt weld end (DN 32): 88.9 × 2.3 mm

Butt weld end (DN 50): 101.6 × 2 mm

Order number: 'T-LH2-f/m'

DOUBLE WALLED HOSE

Vacuum insulation possible if welded to the coupling.

Size: DN 50/75

Design temperature:
-253 °C to +50 °C

Design pressure: PN 25

Order number: 'LH2-50-LXXm'

JOHNSTON COUPLING

Size: DN 50

Pressure rating: PN 25

Order number: 'JC-LH2-50-f/m-xx' (Various standard types available).

Male and female available (male usually welded to vacuum insulated hose).

Length of coupling differs between types.

SHIP BUNKERING

For the **bunkering of ships**, the same basic principles apply as to the refuelling of land vehicles. An additional integrated breakaway coupling takes into account the **specific requirements of the ship-to-ship transfer** and significantly increases the safety of the entire process.

SPECIFICATIONS – BUNKERING COUPLING AND RECEPTACLE

size: DN 32/DN 50
design temperature: -253 °C to +50 °C
design pressure: PN 25
purge pressure: max. 0.8 bar above internal tank pressure
min. burst pressure: 100 bar
flow rate: K_v/C_v 25.6/31 (DN 32), K_v/C_v 50/58 (DN 50)
material: EN 10272 – 1.4404+AT / EN 10216-5 – 1.4404+AT / EN 10217-7 – 1.4404+AT

PRODUCT OVERVIEW

AIRCRAFT REFUELLING NOZZLE

Connection double walled hose.
Vacuum insulated.

Weld end (inner wall): 22 × 2 mm

Weld end (outer wall): 35 × 2.5 mm

Weight: approximately 9.5 kg

Order number: 'N-LH2-P-GRC'

AIRCRAFT RECEPTACLE

Connection double walled tank.
Vacuum insulated.

Weld end (inner wall):
48.3 × 3 mm

Weld end (outer wall):
60.3 × 2 mm

Order number: 'R-LH2-ARC'

DOUBLE WALLED HOSE

Vacuum insulation possible if welded to the coupling.

Size: DN 15/20

Design temperature:
-253 °C to +50 °C

Design pressure: PN 25

Order number: 'LH2-40-LXXm'

JOHNSTON COUPLING

Size: DN 15

Pressure rating: PN 25

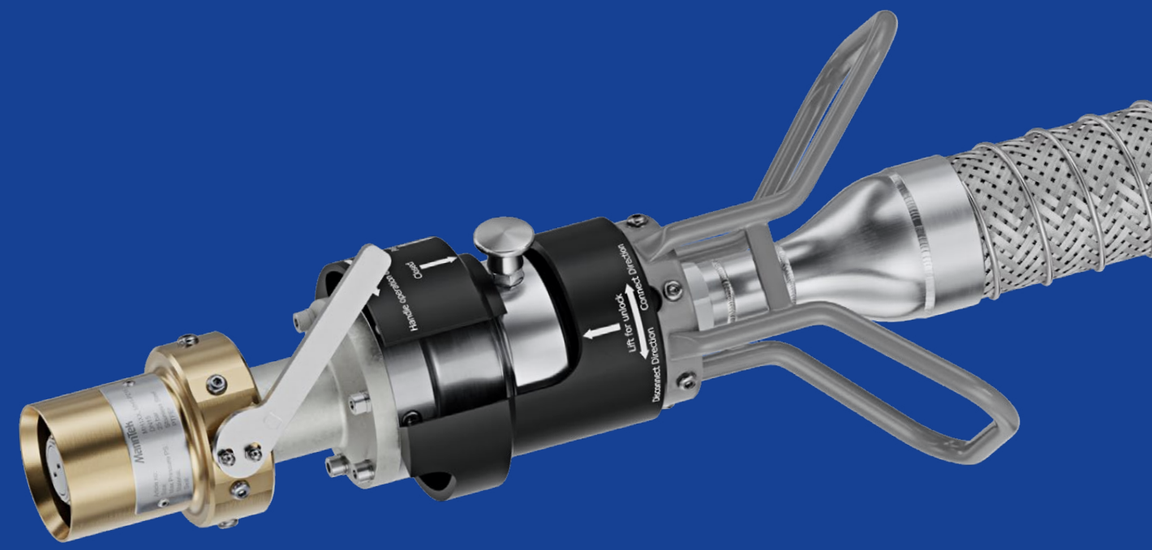
Order number: 'JC-LH2-40-f/m-xx'
(Various standard types available).

Male and female available (male usually welded to vacuum insulated hose).

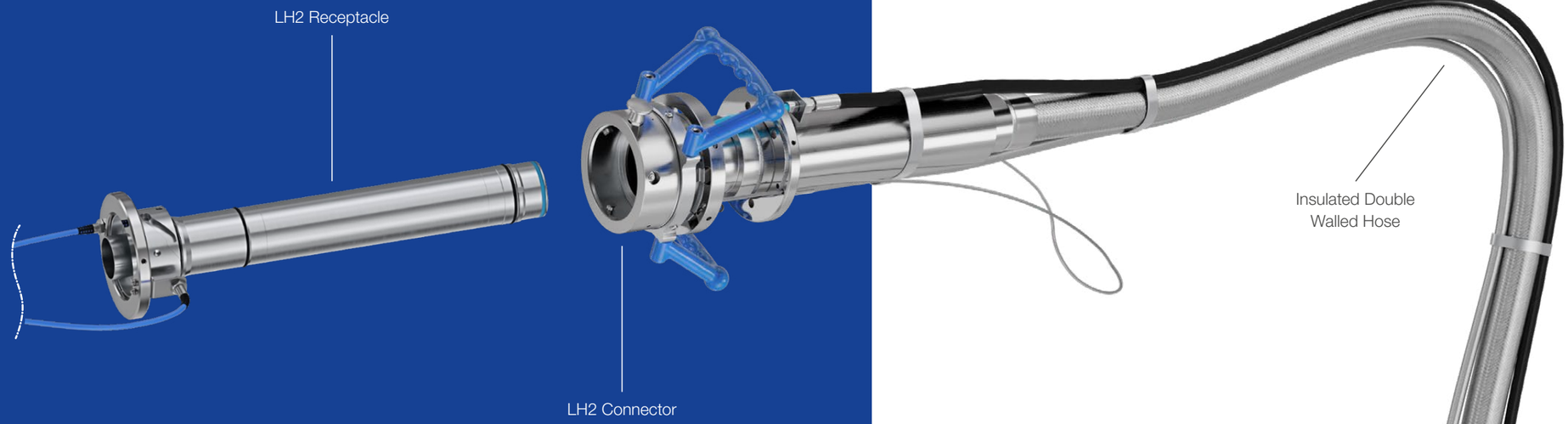
Length of coupling differs between types.

AVIATION REFUELLING

The aviation industry also offers considerable potential for **saving fossil fuels** such as kerosin using **Liquid Hydrogen.** Various sizes are possible here. A few test facilities are currently planned, but the existing truck refuelling systems are suitable here. However, for standardised operations in regular refuelling processes **the flow rate must be increased.** The expected necessary sizes will be up to 3".



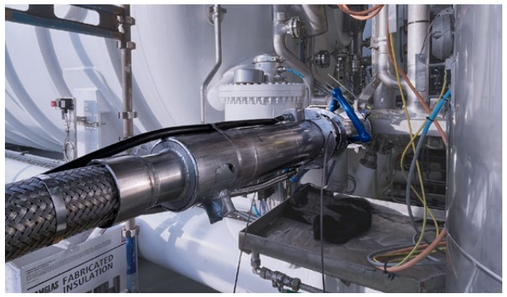
THE COMPLETE SYSTEM



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.

ELAFLEX and MannTek deliver **whole systems for any kind of hydrogen refuelling or transfer application.** We always see the whole refuelling or loading process from an operational point of view and offer suitable solutions, considering ergonomics, safety and environmental demands.

NORLEDs Liquid Hydrogen-Powered Ferry 'MF Hydra'



LH2 Bunkering of 'MF Hydra'

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

The complete system for LH2 ship bunkering is shown here. This is to be seen as an example for all other hydrogen refuelling systems.

THE ELAFLEX GROUP

Air Traffic Trade
Aljac
DANTEC
ditec
Oasis
ELAFLEX
MannTek
SGB
REIFLEXA

Contact data of our approximately
150 distribution partners worldwide:

elaflex.de/en/contact/distribution-partners

ELAFLEX WORLDWIDE

Air Traffic Trade AB
Sweden
Måttbandsvägen 12
18766 Täby
Tel. +46 8-768 39 90
info@airtt.se
airtt.se

Aljac GmbH
Germany
c/o ELAFLEX HIBY GmbH & Co. KG
Schnackenburgallee 121
22525 Hamburg
Tel. +49 40 6908 4116
info@aljac.de
aljac.de

Aljac Fuelling Components Ltd.
Great Britain
Unit 1a, Watchmore Point
Camberly, Surrey GU15 3AD
Tel. +44 1932 269869
sales@aljac.com
aljac.com

DANTEC LTD
Great Britain
Tarran Way,
Moreton, Wirral CH46 4TL
Tel. +44 151 678 2222
sales@dantec.com
dantec.com

ditec Gruppe
Germany
An der Staustufe 6
97318 Kitzingen
Tel. +49 9321 2307-0
info@ditec-adam.de
ditec-adam.de

ELAFLEX AB
Sweden
Måttbandsvägen 12
18766 Täby
Tel. +46 8 980 130
info@elaflex.se
elaflex.se

ELAFLEX HIBY
Asia-Pacific Pte. Ltd.
Singapore
Mr. Marvin Lambert
Office Singapore
Tel. +65 8486 4435
marvin.lambert@elaflex.com

ELAFLEX
BRAZIL Eireli
Brazil
Avenida Brigadeiro Luis Antonio,
Nº 300 8º andar sala 82
Bela vista, São Paulo-SP
Brazil - CEP 01318-903
Tel. +55 11 4153-2171
vendas.brasil@elaflex.com.ar
elaflex.com.ar

ELAFLEX FRANCE SARL
France
Aktipark
50 Rue des Chardonnerets,
Lot N° 3
93290 Tremblay en France
Tel. +33 1 41 84 06 22
info@elaflex.fr
elaflex.fr

ELAFLEX ITALIA SRL
Italy
Via Industriale 28
25086 Rezzato (BS)
Tel. +39 030 249 61 00
info@elaflex.it
elaflex.it

ELAFLEX
Latin America S.A.
Argentina
Av. Dardo Rocha 2524 Piso 1°
Martinez (1640)
Buenos Aires, Argentina
Tel. +54 11 4836-3510
ventas.latinamerica@elaflex.com.ar
elaflex.com.ar

ELAFLEX LTD
Great Britain
Riverside House
Plumpton Road
Hoddesdon, Herts EN11 0PA
Tel. +44 1992 45 29 50
sales@elaflex.co.uk
elaflex.co.uk

ELAFLEX NV
Belgium
Merksemsesteenweg 192
2100 Deurne (Antwerp)
Tel. +32 3 32 80 420
info@elaflex.be
elaflex.be

ELAFLEX PACIFIC PTY LTD
Australia
Unit 29/58 Box Road
Taren Point NSW 2229
Tel. +61 2 9525 0945
info@elaflex.com.au
elaflex.com.au

ELAFLEX
Representation Office
China
Mr. Jing Fan
Room 1120,
1101 South Pudong Road,
200120 Shanghai, P.R. China
Tel. +86 21 505 414 54
fan.jing@elaflex.net.cn
elaflex.com

ELAFLEX US Inc.
USA
11310 Slater Ave
Fountain Valley, CA 92708
Tel. +1 888 472 7444
info@elaflexus.com
elaflexus.com

ELAFLEX
Yakıt İletim Ürünleri
Ltd. Şti.
Turkey
42 Maslak Plaza
Ahi Evran Street No:6
34485 Maslak - Sarıyer
İstanbul, Turkey
Tel. +90 212 974 1020
batuhan.kiroglu@elaflex.com
elaflex.com.tr

Mann Teknik AB
Sweden
Strandvägen 16
54231 Mariestad
Tel. +46 501 39 32 00
sales@manntek.se
manntek.se

Mann Teknik China
China
Building C, No 505, 23rd Street,
Qian Tang District, Hangzhou
Tel. +86 571-87695112
info@manntek.cn
manntek.cn

MannTek Couplings
India Pvt. Ltd.
India
Office No. LF7A/7B
Lotus Aura, Sama -Savli Road,
Vadodara - 390008, Gujarat
Tel. +91 9558 825 855

Oasis Engineering
Limited
New Zealand
129 Birch Avenue
Tauranga, 3110
Tel. +64 7 928 3808
info@oasisngv.com
oasisngv.com

SGB GmbH
Germany
Hofstraße 10
57076 Siegen
Tel. +49 271 48964-0
sgb@sgb.de
sgb.de

ELAFLEX Group

ELAFLEX HIBY GmbH & Co. KG
Schnackenburgallee 121
22525 Hamburg | Germany
Tel. +49 40 540005-0
info@elaflex.de · elaflex.com

Copyright © ELAFLEX · 5.2026