

Transfer line	Coupling	Liquefier	Loading Bay	Loading Arm ▼
Automotive Industry		Marine Industry	Aerospace Industry	



A loading arm is required to refuel different kinds of applications, transferring liquid from one tank to another through a vacuum insulated pipe system. It is well known in the marine industry, the loading arm is placed onshore and follows the movement of a vessel. Apart from the marine industry, liquid hydrogen refuelling with a loading arm is required in the automotive and aerospace industry. For each application, the loading arm will slightly differ due to variable sizes and heights.

### Benefits

- Due to outstanding insulation properties, thermal heat losses are kept to a minimum
- Emergency breakaway coupling for maximum safety
- Entire stainless steel structure keeps the VIP fit for purpose during its entire economical lifetime
- Increasing safety standard due to double containment (on request)
- No ice and oxygen condensation

### Applications

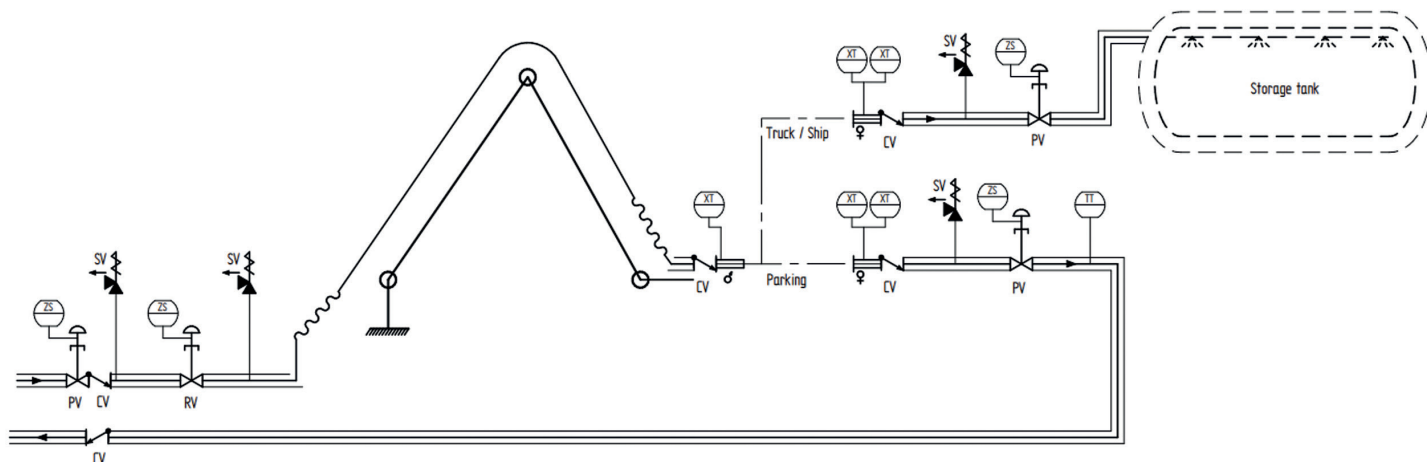
- Refuelling ships in the marine industry
- Refuelling aircraft in the aerospace industry
- Refuelling trucks in the automotive industry
- Transporting hydrogen from one tank to another

### Features

- All stainless steel
- High vacuum insulation
- Qualified welding to the highest standards (ISO 3834-2)
- Vacuum insulated flexible hose up to 2"
- Integrated contraction bellows
- Integrated swivel joints (vacuum insulated optional)
- Diameters up to 8"
- Pressure rates: up to PN25
- Suitable for dual use (LH<sub>2</sub> and LNG)
- Balanced steel structure for movement compensation



## Typical P&ID



## Interfaces

- Johnston coupling
- Welded couplings with vacuum
- Breakaway coupling (vacuum insulated)

## Materials

- Process Pipe:  
1.4401/1.4404~316/316L
- Vacuum jacket:  
1.4301/1.4306~304/304L
- Optional:  
1.4401/1.4404~316/316L
- Spacers:  
Epoxy-reinforced glass fibre
- Multi-Layer Insulation:  
Glass paper and aluminium foil

## Related documents

- Safety guidelines: D0061116
- Manual: On request

## Design specifications

- Design according to Demaco standard based on EN13480
- DNV approved for marine applications
- Other design codes on request
- Suitable for ambient temperatures -25 till +38 °C
- Cleanliness level:
  - Oil and grease-free
- Static vacuum with Multi-Layer Insulation
- Bellows: 1.000-10.000 cycles from +38 till -253 °C, calculated according to EN14917 or EJMA
- Standard testing for each individual loading arm:
  - Dimensional check
  - Pressure testing (if applicable or on request)
  - NDE by X-ray or PT (if applicable or on request)
  - Helium leak test ( $<1 \times 10^{-9}$  mbarL/sec)
  - Vacuum retention test after 24h at ambient temp (acceptance level  $<2 \times 10^{-4}$  mbar)
  - Functional test
  - Cold shock test with LN<sub>2</sub> (if applicable or on request)

## Documentation

- By default, a standard manufacturer data book record is part of each project and contains:
  - General drawing
  - Safety guidelines
  - User manuals
  - Declaration of conformity (if applicable)

Extended data books are available on request