



LNG Bunkering Manifolds

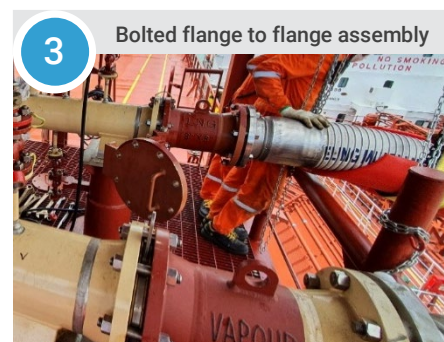
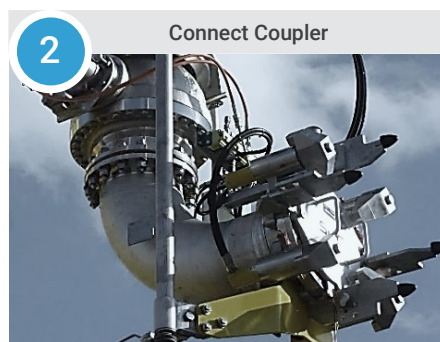
Background

The International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (here-in-after referred to as the Code) applies to ships using natural gas as ship's fuel, other than gas carriers subject to the IGC Code. Under the previous IGF Code Part A-1, paragraph 8.4.1, the connection of bunkering manifolds has been required to be of dry-disconnect type equipped with additional safety dry break-away coupling/self-sealing quick release. However, concerns have been raised about the lack of clarity in the previous paragraph 8.4.1 regarding the specific requirements or standards that should apply to the connection of bunkering manifolds.

To address the ambiguity, the IMO adopted amendments to paragraphs 8.4.1 to 8.4.3 of part A-1 of the IGF Code through resolution MSC.551(108) for entry into force from 1 January 2026. These amendments retroactively apply to all ships subject to the IGF Code, when bunkering LNG fuel on or after the implementation date.

Amendments to the IGF Code relating to LNG bunkering manifolds

According to paragraph 8.4.1 of the Code, the connection of the bunkering manifolds shall be arranged either through **dry-disconnect/connect couplings**^{1, 2} (paragraph 8.4.1.1), **manual or hydraulic connect couplers**³ (paragraph 8.4.1.2) or **bolted flange to flange assembly**³ (paragraph 8.4.1.3). Examples of typical bunkering manifold connections are illustrated below:



However, the risk of LNG or gas leakage during the disconnection process varies by the connection method used and is generally understood to increase in the order listed above. Consequently, paragraph 8.4.2 of the Code additionally requires that, **where manual/hydraulic connect-couplers or bolted flange-to-flange assemblies are utilized** for bunkering manifold connections, these arrangements shall be supplemented by **operating procedures** and subject to **special consideration through risk assessment**³ conducted at design stage to eliminate the risk of LNG or gas leakage. In this regard, ship's **fuel handling manual shall include documentation** that the bunkering arrangement risk assessment was conducted, and that special consideration was granted under this requirement.



On a separate note, during LNG bunkering, ships may encounter situations where bunkering system's operational envelope and/or parameters are exceeded beyond a predetermined point. In such cases, the bunkering manifold connections may require an immediate physical breakaway without damage to loading and unloading equipment. Accordingly, apart from the standard disconnection methods described above, Emergency Release Couplers (ERCs) have been utilized as break-away couplings. In this context, paragraph 8.4.3 of the Code now specifies that, effective from 1 January 2026, **unless installed on the bunkering supply side, an Emergency Release Coupler (ERC)/Emergency Release System (ERS)^{3, 4} shall be provided** to a receiving ship for a quick physical disconnection in an emergency. Based on ISO 20519:2021, ERC should be part of, and interlinked to, ERS.

Actions to be taken by stakeholders

There is a degree of ambiguity as to whether LNG-fueled ships are required to take specific compliance actions under the amendments, as the method of LNG bunkering, including manifold connections, is typically determined just before bunkering, based on the compatibility study between the bunkering facility and the receiving ship.

In light of the above, and for compliance with paragraphs 8.4.1 and 8.4.2 of the Code, **shipowners, operators, shipyards, and/or designers** are strongly encouraged to **ensure** that, for existing LNG-fueled ships or new constructions, a bunker arrangement risk assessment is carried out and operational procedures ensuring dry-disconnect methods are established, for incorporation into the ship's fuel handling manual, unless dry-disconnect/connect couplings, as required under paragraph 8.4.1.1 of the Code, are the sole method employed for bunkering operations. Where a bunker arrangement risk assessment is carried out and operational procedures are established, relevant documentation (e.g. fuel handling manual or separate documents) should be submitted to KR⁵ for reference. In this regard, any design modifications to the ship's bunkering transfer arrangements, if identified as necessary based on the risk assessment, shall be subject to KR's plan approval⁵ and subsequent survey.

For compliance with paragraphs 8.4.3 of the Code, **shipowners or operators** are invited to **ensure** that, unless the Emergency Release Couplers (ERC)/Emergency Release Systems (ERS) are fitted in their fleet's bunkering manifolds, bunker suppliers should be contacted beforehand to confirm that their bunkering facilities are equipped with ERC/ERS.

Attending KR surveyors are instructed to **confirm**, by the **first survey⁶** on or after **1 January 2026**, that, where applicable, the aforementioned actions have been taken aboard.

As the new requirements do not have a period of grace for their implementation, they need to be immediately met during the bunkering of LNG fuel from 1 January 2026. Should you have any questions, please contact P.I.C below.

Executive Vice President / Statutory Division Korean Register

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¹ Dry Disconnect/Connect Coupling: Mechanical device, consisting of a nozzle and a receptacle, which permits quick connection and disconnection of a hose bunkering system without employing bolts to minimize the leakage of LNG or gas to a negligible amount.

² ISO 21593:2019, Ships and marine technology - Technical requirements for dry-disconnect/connect couplings for bunkering liquefied natural gas

³ ISO 20519:2021 - Ships and Marine Technology - Specification for Bunkering of Liquefied Natural Gas Fuelled Vessels

⁴ ERS is consisted of an ERC including interlocked isolating valves to minimize loss of LNG or Gas when ERC is activated.

⁵ Please submit them to Environment and Piping Team (piping@krs.co.kr)

⁶ The expression "first survey" hereby means an initial SC survey for ships delivered on or after 1 January 2026, and the first periodical SC survey for ships delivered before the date.