

# Flange Connections for Gas Fuel Pipes

## Amended Guidance

Guidance for the Survey and Construction of Steel Ships Part GF

## Reasons for Amendment

Regulation 9.2.2 of the International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code) specifies that piping systems for transferring fuel to gas consumers are to be designed in a way that a failure of one barrier cannot lead to a leak from the piping system into the surrounding area. The regulation has already been incorporated into ClassNK's Part GF of the Rules for the Survey and Construction of Steel Ships.

To satisfy said requirements, piping systems are often designed so that a set of valves, sensors, filters, etc. (referred to as gas valve units) for controlling fuel supply are arranged in a single enclosure or in a dedicated compartment. Designs have also been accepted in which gas fuel lines, valves, etc. are connected by single common flanges (one set consists of two concentric O-rings forming a double-walled structure) without such enclosures. However, since some concerns were expressed regarding the safety of single common flanges and their compliance with Regulation 9.2.2, the IMO decided to examine their usage.

The IMO Sub-committee on Carriage of Cargoes and Containers (CCC) discussed the design and usage of single common flanges at its 8th session (CCC8) held in September 2022 and agreed on a unified interpretation (UI) of Regulation 9.2 that states single common flanges are not to be used because a single failure could compromise both the primary and secondary barriers of the flange. The CCC developed a draft MSC circular corresponding to this new interpretation and it was approved as an MSC circular at the 107th session of its Maritime Safety Committee (MSC107) in June 2023.

Accordingly, relevant requirements are amended based on the MSC circular.

## Outline of Amendment

The main details of the amendment are as follows:

- (1) Specifies that single common flanges are not to be used in piping systems for transferring fuel to gas consumers.
- (2) Specifies that single common flanges may be used at fuel connections to gas consumers.

“Guidance for the survey and construction of steel ships” has been partly amended as follows:

## **Part GF SHIPS USING LOW-FLASHPOINT FUELS**

### **GF9 FUEL SUPPLY TO CONSUMERS**

Section GF9.2 has been added as follows.

#### **GF9.2 Functional Requirements**

##### **GF9.2.2 Additional Requirements**

1 In applying 9.2.2-2, 9.6.1 and 7.3.6-3, Part GF of the Rules, two independent safety barriers are to be in place, while, as far as practicable, using a minimum of flange connections. There is to be no single common flange or other component where a single failure itself may overcome both primary and secondary barriers and may result in a gas leak into the surrounding area causing danger to the ship itself, any persons on board, or the environment.

2 Notwithstanding -1 above, a single common flange (with two sealing systems) may be accepted at fuel connections to gas consumers (including GCUs, boilers and components on the engine, such as gas regulating units).