

Regulations of 20 October 1983 No. 1580 on safety precautions for gasfired installations, etc. operating on propane or other liquefied hydrocarbon gases used on board vessels

Legal basis: Laid down by the Norwegian Maritime Authority on 20 October 1983 under the Act of 9 June 1903 No. 7 relating to public control of the seaworthiness of ships, etc. Legal basis amended to Act of 16 February 2007 No. 9 relating to ship safety and security (Ship Safety and Security Act) sections 2, 9, 11, 21, 28a and 43, cf. Formal Delegation of 16 February 2007 No. 171, Formal Delegation of 31 May 2007 No. 590 and Formal Delegation of 19 August 2013 No. 1002 and Act of 26 June 1998 No. 47 relating to recreational and small craft sections 23 and 25, cf. Formal Delegation of 27 November 1998 No. 1095, Formal Delegation of 1 December 1998 No. 4532 and Formal Delegation of 31 May 2007 No. 591.

Amendments: Amended by Regulations of 8 August 1986 No. 1631, 18 March 1987 No. 177, 15 September 1992 No. 697, 4 June 2002 No. 992, 29 June 2007 No. 1006 (i.a. legal basis), 19 August 2013 No. 1036, 20 December 2017 No. 2379.

Section 1

Scope of application

(1) These Regulations shall apply to Norwegian ships, with the specifications referred to in the second to fifth paragraphs.

(2) These Regulations shall apply to gasfired installations, etc. fitted or used on board vessels of 500 gross tonnage or below on or after the date of entry into force of these Regulations.

(3) The Regulations shall not apply to gasfired installations on board vessels which are produced in Norway and sold abroad.

(4) Gasfired installations, etc. which are installed or put into service prior to the entry into force of these Regulations shall satisfy the requirements of the previous Regulations or be modified to comply with the requirements of these Regulations.

(5) These Regulations shall not apply to liquefied hydrocarbon gases (including waste gas from the vessel's cargo) used in the machinery and boilers for the operation of the ship. Such use of liquefied hydrocarbon gases shall be approved in each individual case.

Amended by Regulation of 29 June 2007 No. 1006 (in force on 1 July 2007).

Section 2

Definitions

For the purpose of these Regulations, the following definitions shall apply:

- a) *“Responsible firm”*: Norwegian producers or Norwegian main agents holding type approvals for gasfired apparatus (i.e. main components of gasfired equipment) and having suitable workshop premises and installer(s) with qualifications as referred to in subparagraph j below. A responsible firm may appoint another installer (person or firm) to carry out installations. In such cases, the obligations imposed on the responsible firm by Section 3 third paragraph of these Regulations shall still prevail.
- b) *“Automatic change-over device”*: Arrangement which consists of two pressure regulators connected to the gas phase of two containers, and which automatically changes over from one container to the other.
- c) *“Vessel”*: Any vessel, including pleasure craft and barges of any size.
- d) *“Flame control”*: Safety device which automatically shuts off the gas supply to the main burner and the ignition burner if the flame should fail during operation.
- e) *“Gasfired installation”*: Gasfired apparatus with pipes, fittings and gas containers, etc. which is, completely or partly, permanently installed on board.
- f) *“Gasfired apparatus with open flame”*: Apparatus where the combustion air and the flue gases are drawn in and discharged in the same room.
- g) *“Gasfired apparatus”*: Cooker, heater, water heater, refrigerator, etc., with burners operating on liquefied hydrocarbon gases.
- h) *“Approved”*: A single piece of equipment approved by the Norwegian Maritime Authority.
- i) *“Certificate of installation”*: Document with form approved by the Norwegian Maritime Authority which documents that the gasfired installation is of an approved type, that it has been tested and inspected, and that the location, ventilation and thermal insulation are in accordance with the rules in force.
- j) *“Installer”*: Person or firm with adequate qualifications to perform piping and equipment installations in vessels and who has knowledge of regulations on the installation of gasfired apparatus complete with ventilation and thermal insulation, and who also is capable of carrying out testing and control of such installations.

- k) “*Vessels subject to control*”: Vessels which pursuant to the Ship Safety and Security Act with appurtenant regulations shall hold a Trading Certificate, a Passenger Certificate, or a Safety Equipment Certificate for Fishing Vessels.
 - l) “*Leakage indicator*”: Fixed manually operated indicator to control tightness (piping, hoses/tubes, valves, etc.) when the installation is out of service.
 - m) “*Closed system*”: System where the combustion air is led in from outside the vessel and the flue gases are conducted out of the vessel.
 - n) “*Manually operated change-over device*”: Arrangement with shut-off device connected to the gas phase of two containers, so arranged that one container at a time can be put into use without gas flowing from one container to the other.
 - o) “*Fail-safe leakage control system*”: Valve system which automatically shuts off the gas supply (e.g. emergency stop valve) in case of leakage in piping and hose system. (To the gas, which in a free condition is heavier than air, has been added a smelling substance so that a leakage is noticed more easily.)
 - p) “*Portable camping container*”: Portable camping container with cooking top not permanently installed on board. Cf. Section 13.
 - q) “*Type approved*”: Type approved by the Norwegian Maritime Authority.
- Amended by Regulation of 20 December 2017 No. 2379 (in force by 1 January 2018).

Section 3

Obligations imposed by these Regulations

(1) The company, employer, master and other persons working on board shall perform their duties in accordance with the Ship Safety and Security Act and the supplementary provisions laid down in these Regulations.

(2) Where a vessel is delivered from a Norwegian yard with a gasfired installation, the yard shall ensure that a valid certificate of installation is issued. If the vessel is imported from abroad in order to be resold, the importer shall ensure that a valid certificate of installation is issued. A dealer of vessels shall, if a gasfired installation is installed, see to it that a valid certificate of installation is issued.

(3) The responsible firm shall see to it that the installer is qualified as referred to in Section 2, subparagraph j. An installer of gasfired installations shall ensure that the installation is carried out and that the other conditions on which the issue of the certificate of installation is based are in compliance with the requirements of the Regulations.

(4) The Norwegian Maritime Authority may withdraw from an installer and responsible firm the right to carry out installations, etc. as referred to in these Regulations.

Amended by Regulations of 29 June 2007 No. 1006 (in force on 1 July 2007), 19 August 2013 No. 1036 (in force on 20 August 2013).

Section 4

Exemptions

The Norwegian Maritime Authority may, in individual cases and upon written application, grant exemption from the requirements of these Regulations. There must be special reasons that make the exemption necessary and it must be justifiable in terms of safety. Exemptions can only be granted where they do not contravene international agreements to which Norway has acceded.

Section 5

Approval, etc.

(1) Gas containers, gasfired apparatus, automatic change-over devices, pressure regulators, leakage indicators and fail-safe leakage control systems shall be type approved. Instructions for installation and use, etc. issued by the producer/main agent shall be approved. The instructions shall clearly state that these Regulations shall be provided or be enclosed if the equipment is to be used on board vessels. The instructions and regulations shall be enclosed when equipment is sold for use on board vessels and be kept on board. Directions for use for the gasfired installation shall be posted in the vicinity of the installation.

(2) Installation and testing of gasfired installations shall be carried out in accordance with these Regulations. A gasfired installation shall not be taken into use before it has been inspected and leakage tested and a certificate of installation has been issued, cf. section 12.

Section 6

Certificate of installation

(1) When installation, testing and inspection of a gasfired installation have been completed, a certificate of installation shall be issued on a form prescribed by the Norwegian Maritime Authority.

(2) The certificate of installation shall be issued by an installer, cf. section 2 subparagraph j) and shall in addition be signed and stamped by a representative of the responsible firm. It is the duty of whoever issues the certificate of installation to furnish correct information as to the installation being tested and inspected, the equipment being of an approved type and as to the location, ventilation and thermal insulation being in compliance with the Regulations.

(3) The certificate of installation shall be kept on board until a new certificate has been issued, cf. section 12. A copy of the certificate of installation shall be kept by the installer for the period the certificate is valid. For vessels subject to control, the company shall submit a copy of the certificate of installation to the station (local office) of the Norwegian Maritime Authority in the district where the vessel belongs.

(4) For vessels not subject to control under the Norwegian Maritime Authority's regulations and thus not subject to periodical surveys by the Norwegian Maritime Authority, a certificate of installation shall be issued when the installation, testing and inspection of the installation have been completed. It is the duty of the owner of the vessel to see to it that the gasfired installation is in a fully satisfactory condition with regard to safety and that a new certificate of installation is issued in the event of damage to or modifications of the installation.

(5) For a vessel which is not subject to control, a copy of the certificate of installation shall be kept by the installer until a new certificate is issued, or for 10 years.

Amended by Regulation of 29 June 2007 No. 1006 (in force on 1 July 2007).

Section 7

Location of gas containers, change-over device and pressure regulators

(1) For pleasure craft, the gas supplies kept on board shall be maximum 22 kg and for commercial vessels such as shrimp trawlers, the gas supplies kept on board shall be maximum 99 kg. To the consumer apparatus shall be connected maximum two containers which are connected to an automatic or manually operated change-over device. In order to prevent any leakages when removing one of the containers, a non-return valve shall be fitted between the containers and the connection to the change-over coupling, provided the change-over device has not been provided with such a valve.

(2) Gas containers shall be placed in a vertical position and securely fixed in a separate ventilated locker or box on the open deck. Any changeover device and pressure regulator shall be placed in the same locker or box. The containers shall not be placed in the vicinity of openings into the interior of the vessel, hatches or sources of ignition. The distance to such openings and sources of ignition shall be as great as possible and not less than 50 cm.

(3) Containers which are not placed as referred to in the second paragraph shall be placed in one of the following ways:

- a) Containers with change-over device and pressure regulator or container and pressure regulator may be placed lowered into a separate well in the deck.
- b) A well, separate locker or protective box may also be placed inboard in the open part of the vessel.

(4) Where the protective box is placed inboard it should preferably be constructed as part of the hull.

(5) A well flush with the deck, or a well, locker and protective box located in the open part of the vessel, shall be completely gas-tightly separated from the rest of the vessel. Closing and packing devices for covers and pipe penetrations shall be reliable gastight and weatherproof.

(6) From the bottom of wells, lockers or protective boxes shall be arranged draining pipes or hoses with a fall and with an interior width of at least 16 mm diameter which are carried to the outside of the vessel as close as possible to the water line, or another safe place on the outside of the vessel. Draining pipes shall be corrosion resistant.

(7) The pressure regulator shall have a nominal pressure of 30 millibars and it shall not be possible to adjust the pressure. Moreover, the regulator shall have a built-in safety valve to ensure that the pressure after the regulator does not exceed 150 millibars. A working pressure exceeding 30 millibars may be permitted for shrimp cookers, etc. placed on an open deck. The working pressure shall be stated in the approved instructions for installation and use.

Section 8

Leakage indicators, fail-safe leakage control system, hose connections and shut-off fittings

(1) Before branch pipes and as close as possible to gas containers, where it is easy to see on the main, there shall be a permanently fixed leakage indicator or fail-safe leakage control system.

(2) Connecting hoses shall be as short as possible and not more than 1.2 m.

(3) Gas containers shall be connected to the change-over device or pressure regulator with a copper pipe with an expansion joint or with a hose approved for 30 bars.

- a) Hoses shall be used as little as possible except with regard to the protective box referred to in Section 9, and otherwise be permitted only between the fixed piping and consumer apparatus with balance suspension or other arrangements necessitating movement of the connected apparatus. All hoses after the pressure regulator shall be approved for minimum 6 bars. The hoses shall be fixed to hose sockets with hose clamps of stainless steel (double sets of clamps where possible) or with shrink coupling. Hose sockets and hoses shall fit each

other. The hoses shall be gas resistant and be marked with gas type and maximum pressure, 3MPa (approx. 30 bars) and 0.6 MPa (approx. 6 bars) respectively.

- b) The main valve shall be placed so as to be easily accessible in the open part of the vessel and before the first branch pipe on the main. The main valve shall be clearly marked to show open/closed position and be marked "main valve" and that it shall be closed when the installation is not in use.

(4) In case of prolonged breaks in the use of the installation, both main valve and cylinder valves shall be closed. If it is difficult to place the main valve in an easily accessible place in the open part of the vessel, it may, in exceptional cases, be permitted to be placed just inside closed rooms such as galleys, pantries and cabins, provided these rooms contain no stoves, fireplaces or other sources of ignition which might ignite any leakage gas, and that the rooms comply with the requirements for ventilation in accordance with section 10 sixth paragraph.

(5) In branch pipes, a shut-off valve shall be installed so as to be easily accessible before each consumer apparatus or before the hose connection of the consumer apparatus. The shut-off valve with hose socket shall be fixed to the structure of the vessel. If the shut-off valve is not in the immediate vicinity of the consumer apparatus, the valve shall be marked to show to which apparatus it belongs.

Section 9

Installation of the pipe system

(1) The piping shall consist of seamless pipes of stainless steel or copper. The wall thickness shall be at least:

- a) 1.0 mm for steel pipes with an exterior diameter of up to 12 mm,
- b) 1.5 mm for steel pipes with an exterior diameter exceeding 12 mm,
- c) 0.8 mm for copper pipes with an exterior diameter of up to 10 mm, and
- d) 1.0 mm for copper pipes with an exterior diameter exceeding 10 mm.

(2) Joining of pipe joints may be made by welding, brazing or by using steel or metal couplings suitable for the purpose. Packing material shall be gas resistant, and of a type which is durable in use.

(3) Piping shall be so installed as to be able to withstand vibration and shall be satisfactorily protected against mechanical damage. They shall be protected against corrosion. Steel pipes shall be so fastened that the distance between the hose clamps is maximum 0.5 m and for copper pipes maximum 0.3 m. In places in the vessel which are exposed to movement, expansion joints shall be used. At clamps and where pipes penetrate the structure, the pipes shall be protected by some soft material.

(4) The pipes shall be accessible for inspection as far as practicable, and fittings shall be accessible for leakage control and subsequent inspections of the system.

(5) The consumer apparatus and protective box for gas containers shall be connected with the gas pipes in such a way that no tension occurs in pipes or connecting hoses. Cardan suspended or movable cooking apparatus shall be connected with the piping system by a hose of maximum 1.2 m in length.

(6) In order to avoid vibrations between the piping system and the protective box, a hose of not more than 50 cm in length between the box and the piping system may be permitted.

(7) The hoses shall be so placed as to be protected against heat (maximum 60°C) and mechanical stress. Hoses should not be carried through parts of the construction or furniture. If hoses nevertheless are led through parts of the construction or furniture, they shall be protected against mechanical wearing at the place of penetration, e.g. by means of a fixed plastic or rubber sleeve.

Section 10

Location and thermal insulation of gasfired apparatus

(1) Gasfired apparatus are not allowed in engine or boiler spaces. Nor shall pipes for gasfired apparatus be led through such rooms.

(2) Fixed gasfired apparatus shall be securely fixed to the floor, bulkhead or other firm base.

(3) Fixed gasfired apparatus shall be provided with a flame control. The time of closing for the flame control shall be maximum 60 seconds.

(4) On all sides of an open flame on cooking apparatus, etc., the following requirements shall be complied with:

- a) Cooking apparatus shall be placed in a tight locker or box which permits the safe placing of a cooking apparatus.
- b) Combustible materials, where such materials are permitted according to the figure below, shall not be exposed to surface temperatures of more than 80°. If this temperature is exceeded, the surface temperature shall be reduced to that which is permitted, either by increasing the distance to the naked flame and/or by means of screening with incombustible material which is thermally insulated from the combustible material behind.
- c) The bottom of the box/locker does not have to be of incombustible materials or be thermally insulated with such material.

(5) Heating apparatus with external surfaces having a temperature of more than 125°C shall be placed at a distance of at least 12 cm from combustible materials. The surfaces shall be protected so as to prevent pieces of clothing or other loose combustible material from getting into contact with the apparatus.

Section 11

Outlet of exhaust gases. Ventilation and thermal insulation

(1) Gasfired stoves, radiators, water heaters and refrigerators shall have a closed combustion system gas-tightly separated from the interior of the vessel.

- a) Fresh air pipes for combustion air and outlet pipes for exhaust gas shall be placed at a safe distance from filling connecting branches and gas openings for fuel. There shall be an ample and reliable supply of air to all gasfired apparatus.
- b) The air supply to burners for apparatus with a closed system shall be effected direct through pipes/canals from free air. The pipes/canals shall be dimensioned for the air required by the burners at maximum performance. The temperature of the combustion gas measured at the outlet shall not exceed 350°C and the outlet for combustion gas shall be freestanding so that surrounding combustible materials are not exposed to temperatures above 80°C. If the temperature of the outlet head is so high that it may cause a fire or damage by fire, this should be enclosed by a protective casing.
- c) Outlet pipes for combustion gases shall be placed at the greatest possible distance from ventilation openings, doors and hatches which may lead combustion gases into the ship. The sectional area of outlet pipes shall nowhere be less than the outlet opening of the apparatus. For gasfired heaters with hot air fans the temperature of the outlet air to accommodation shall not exceed 80°C.

(2) Outlet pipes for combustion gases and inlets for combustion air shall be kept open and shall not be provided with closing appliances (flaps, etc.).

- a) Outlet pipes for combustion gas shall consist of at least 3 mm thick steel plates (for corrosion resistant material, 1 mm). They shall be insulated and securely fixed. No such pipe shall be placed at a distance of less than 23 cm from a combustible material.
- b) Where carried through wooden decks or house tops or other combustible material, saucer formed rockwool sheets at least 7.5 cm thick shall be provided between the exhaust pipes and the woodwork.
- c) At such penetrations, exhaust pipes shall be at least 11 cm from the nearest woodwork or combustible material.

(3) The temperature of exterior heat-emitting surfaces shall not exceed 150°C excluding outlet pipes for combustion gas, and surrounding combustible furnishing shall always be arranged so that it is not exposed to temperatures exceeding 80°C. If the apparatus have a fresh air/outlet system arranged so that the combustion gas is isolated by means of an enclosing air supply duct so that the temperature towards surrounding materials cannot exceed 60°C, the requirements regarding distance and thermal insulation may be reduced below the requirements of the first and second paragraphs of this section. This will be considered in connection with the type approval of the apparatus.

(4) For cooking apparatus placed in a closed room there shall be openings to free air having a free area of at least 100 cm². These openings may be provided with means of closure in which case there shall be a notice in the vicinity of the cooking apparatus reading: "When using the cooking apparatus, adjustable air valves shall be kept open."

(5) Gas lamps are not permitted to be used.

(6) From the lowest possible points at or below decks where gas may collect due to leakage, intakes to a fan having a capacity of at least 2.5 m³/minute shall be arranged.

- a) Fans shall be approved for outlet of explosive gases, etc. by Det Norske Veritas or by one of the Nordic maritime authorities; due regard being paid to any restrictions stated in the certificate of approval.
- b) The fan motor shall be gas-tightly located outside the ventilation duct and preferably in free air. If it is placed in a cabin or another closed space, it shall be placed so high above the suction pipe inlet that it is located above the area which may be considered gas-hazardous.
- c) The fan shall be run for at least 5 minutes before an open flame or other source of ignition is used if the vessel has been out of use for some length of time.
- d) In case gas is observed, the leakage shall be repaired and all gas shall be ventilated before any sources of ignition are used.
- e) The requirements regarding fans shall not apply to covered vessels where the gasfired installation with attached piping system is placed in the accommodation above deck, in places where leakage gas cannot penetrate down under deck and where the natural ventilation is such as to prevent gas accumulation in the accommodation.

(7) Cooking apparatus shall not be used for heating of rooms.

Section 12

Testing, control and maintenance, etc. of gasfired installations, etc.

(1) Before a gasfired installation is put into service an installer shall carry out a tightness test and control in the following manner:

- a) After disconnecting the pressure regulator from the pipe system, pipes and hoses shall be tested for tightness with air or nitrogen with an overpressure of 150 mbar up to the regulating cocks or flame regulating valves of the apparatus. After the piping has been subjected to pressure for at least 5 minutes for temperature

equalizing, it shall be taken care that the pressure keeps constant for the next 5 minutes. If no pressure fall can be demonstrated the installation is considered to be tight.

- b) Any escapes shall be located by swabbing with soapwater or a special remedy for leakage location. Using an open flame or soap containing ammoniac is not permitted.
- c) Correct function of the burners, change-over device, pressure regulator, flame control, leakage indicator and fail-safe leakage control system shall be tested. (The latter two by simulated tests.)

(2) Gasfired installations shall be maintained in a proper condition with regard to safety at all times.

(3) Gasfired installations in vessels subject to obligatory control shall be tested and inspected by an installer at least once every fifth year in accordance with the guidelines of this section. Hoses and packings shall be inspected and renewed if necessary and then only by material intended for use with liquefied hydrocarbon gases. It is the duty of the installer to see to it that the installation complies with these Regulations. When the installation has been found to comply with the Regulations a new certificate of installation shall be issued.

(4) Major repairs and modifications of installations shall preferably be carried out by an installer. When the work has been completed, testing for tightness and control as referred to in this section shall be carried out by the installer. A new certificate of installation shall be issued when the installation has been found to comply with the Regulations. An installer may approve the mounting, repairs or alteration of an installation carried out by others whom he considers to be qualified. In such cases it is a condition that the installer inspects the installation afterwards in order to ensure that it complies with the requirements of the Regulations, and that he carries out a tightness and function control so that he by signing the certificate of installation assumes full responsibility for the installation.

(5) The provisions of this section shall also apply to gasfired installations mounted in accordance with previous regulations of 1 June 1964.

(6) To the extent deemed necessary, the Norwegian Maritime Authority or those so authorised may at any time carry out inspections to ensure that the requirements of these Regulations are complied with.

Section 13

Transportable camping containers with cooking tops

(1) Up to two transportable camping containers with fixed high pressure cooking tops without flame control may be allowed to be used in the open part of the vessel. Such containers shall not contain more than 2 kg of gas and are not allowed to be permanently installed on board, but they shall have satisfactory protection against rolling in use and during storage.

(2) After use, cooking tops shall be removed from the camping containers and a protection device shall be placed on the outlet opening, so that the gas cannot be turned on and so that the containers are made ready for storage and transport.

(3) Where camping containers are stored after use as referred to for gas containers in section 7, demounting of cooking tops with opening valves is not required.

Section 14

Entry into force

These Regulations enter into force on 1 December 1983.

As from the same date, Regulations of 1 June 1964 concerning safety precautions for gasfired installations operating on propane or other liquefied hydrocarbon gases used on board vessels, including pleasure craft and barges irrespective of size, are repealed.

Amended by Regulation of 29 June 2007 No. 1006 (in force on 1 July 2007, formerly section 15).