M3
cont'd

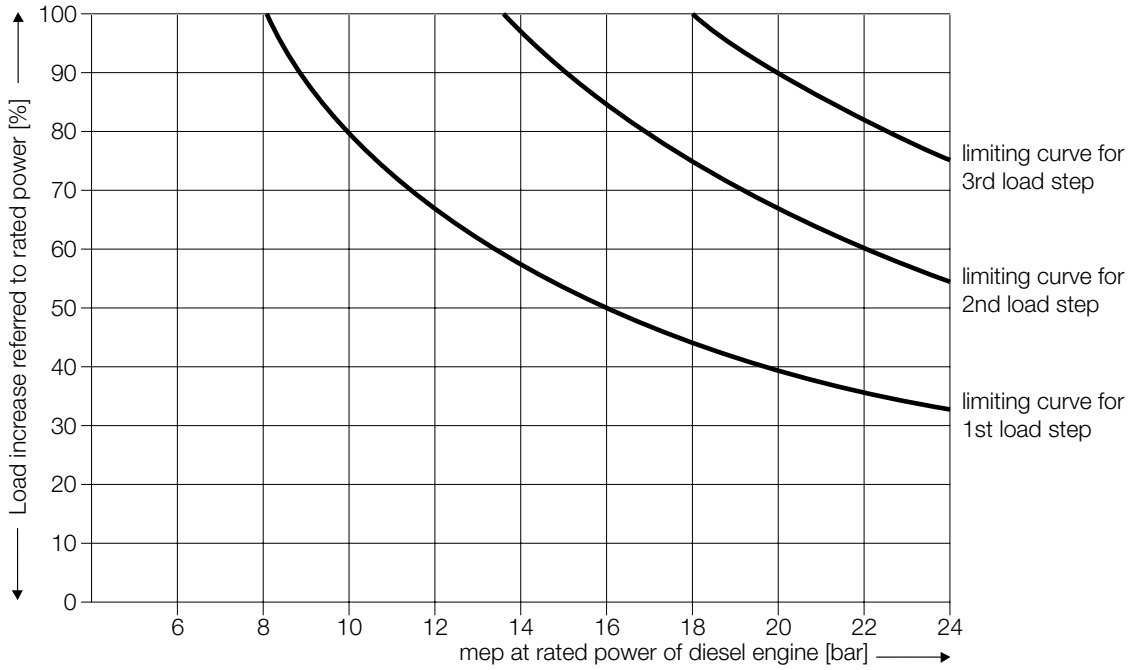

Fig. 1
Limiting curves for loading 4-stroke diesel engines step by step from no-load to rated power as function of the brake mean effective pressure

◄◄

M4 Deleted

Limits of flash point of oil fuel are covered by F35 as revised and should be referred to.

◄◄

M5 Mass production of internal combustion engines, procedure for inspection

M5
(1971)
(Rev.1
1987)

Deleted Feb 2015, replaced by UR Z26.

End of Document

M6 Test pressures for parts of internal combustion engines [1)]

(1972) (Rev.1 1985) (Rev.2 1994) (Rev.3 May 1998)

Deleted Feb 2015, replaced by UR M72.

End of Document

M7 (1972) (Rev. 1 1987) Re-categorized as "recommendation" No. 26

◄◄

M8 (1972) (Rev. 1 1989) Re-categorized as "recommendation" No. 27

◄◄

M9 (1972) (Rev. 1 1991) (Corr. 1997) (Rev.2 June 2000) (Rev.3 Jan 2005) (Corr.1 Nov 2005) Crankcase explosion relief valves for crankcases of internal combustion engines

M9.1 Internal combustion engines having a cylinder bore of 200 mm and above or a crankcase volume of 0.6 m^3 and above shall be provided with crankcase explosion relief valves in accordance with UR M9.2 to UR M9.13 as follows:

M9.1.1 Engines having a cylinder bore not exceeding 250 mm are to have at least one valve near each end, but, over eight crankthrows, an additional valve is to be fitted near the middle of the engine.

M9.1.2 Engines having a cylinder bore exceeding 250 mm but not exceeding 300 mm are to have at least one valve in way of each alternate crankthrow, with a minimum of two valves.

M9.1.3 Engines having a cylinder bore exceeding 300 mm are to have at least one valve in way of each main crankthrow.

M9.2 The free area of each relief valve is to be not less than 45 cm^2.

M9.3 The combined free area of the valves fitted on an engine must not be less than 115 cm^2 per cubic metre of the crankcase gross volume.

NOTE

1. The total volume of the stationary parts within the crankcase may be discounted in estimating the crankcase gross volume (rotating and reciprocating components are to be included in the gross volume).

2. Engines are to be fitted with components and arrangements complying with Revision 3 of this UR, except for M9.8, M9.9 and the second bullet point in M9.10, when:
1) an application for certification of an engine is dated on/after 1 January 2006; or
2) installed in new ships for which the date of contract for construction is on or after 1 January 2006.
The requirements of M9.8, M9.9 and the second bullet point in M9.10 apply, in both cases above, from 1 January 2007.

M7 (1972) (Rev. 1 1987) Re-categorized as "recommendation" No. 26

◄◄

M8 (1972) (Rev. 1 1989) Re-categorized as "recommendation" No. 27

◄◄

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M9.1.2 Engines having a cylinder bore exceeding 250 mm but not exceeding 300 mm are to have at least one valve in way of each alternate crankthrow, with a minimum of two valves.

M9.1.3 Engines having a cylinder bore exceeding 300 mm are to have at least one valve in way of each main crankthrow.

M9.2 The free area of each relief valve is to be not less than 45 cm^2.

M9.3 The combined free area of the valves fitted on an engine must not be less than 115 cm^2 per cubic metre of the crankcase gross volume.

NOTE

1. The total volume of the stationary parts within the crankcase may be discounted in estimating the crankcase gross volume (rotating and reciprocating components are to be included in the gross volume).

2. Engines are to be fitted with components and arrangements complying with Revision 3 of this UR, except for M9.8, M9.9 and the second bullet point in M9.10, when:
1) an application for certification of an engine is dated on/after 1 January 2006; or
2) installed in new ships for which the date of contract for construction is on or after 1 January 2006.
The requirements of M9.8, M9.9 and the second bullet point in M9.10 apply, in both cases above, from 1 January 2007.

M9 Crankcase explosion relief valves for crankcases of internal combustion engines

M9 (1972) (Rev.1 1991) (Corr. 1997) (Rev.2 June 2000) (Rev.3 Jan 2005) (Corr.1 Nov 2005) (Corr.2 Sept 2007)

M9.1 Internal combustion engines having a cylinder bore of 200 mm and above or a crankcase volume of 0.6 m^3 and above shall be provided with crankcase explosion relief valves in accordance with UR M9.2 to UR M9.13 as follows:

M9.1.1 Engines having a cylinder bore not exceeding 250 mm are to have at least one valve near each end, but, over eight crankthrows, an additional valve is to be fitted near the middle of the engine.

M9.1.2 Engines having a cylinder bore exceeding 250 mm but not exceeding 300 mm are to have at least one valve in way of each alternate crankthrow, with a minimum of two valves.

M9.1.3 Engines having a cylinder bore exceeding 300 mm are to have at least one valve in way of each main crankthrow.

M9.2 The free area of each relief valve is to be not less than 45 cm^2.

M9.3 The combined free area of the valves fitted on an engine must not be less than 115 cm^2 per cubic metre of the crankcase gross volume.

M9.4 Crankcase explosion relief valves are to be provided with lightweight spring-loaded valve discs or other quick-acting and self closing devices to relieve a crankcase of pressure in the event of an internal explosion and to prevent the inrush of air thereafter.

M9.5 The valve discs in crankcase explosion relief valves are to be made of ductile material capable of withstanding the shock of contact with stoppers at the full open position.

NOTE

1. The total volume of the stationary parts within the crankcase may be discounted in estimating the crankcase gross volume (rotating and reciprocating components are to be included in the gross volume).

2. Engines are to be fitted with components and arrangements complying with Revision 3 of this UR, except for M9.8, M9.9 and the second bullet point in M9.10, when:

   1) an application for certification of an engine is dated on/after 1 January 2006; or

   2) installed in new ships for which the date of contract for construction is on or after 1 January 2006.

   The requirements of M9.8, M9.9 and the second bullet point in M9.10 apply, in both cases above, from 1 January 2008.

3. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

M9
(cont)

M9.6 Crankcase explosion relief valves are to be designed and constructed to open quickly and be fully open at a pressure not greater than 0.02 N/mm^2 (0.2bar).

M9.7 Crankcase explosion relief valves are to be provided with a flame arrester that permits flow for crankcase pressure relief and prevents passage of flame following a crankcase explosion.

M9.8 Crankcase explosion relief valves are to type tested in a configuration that represents the installation arrangements that will used on an engine in accordance with UR M66.

M9.9 Where crankcase relief valves are provided with arrangements for shielding emissions from the valve following an explosion, the valve is to be type tested to demonstrate that the shielding does not adversely affect the operational effectiveness of the valve.

M9.10 Crankcase explosion relief valves are to be provided with a copy manufacturer's installation and maintenance manual that is pertinent to the size and type of valve being supplied for installation on a particular engine. The manual is to contain the following information:

- Description of valve with details of function and design limits.
- Copy of type test certification.
- Installation instructions.
- Maintenance in service instructions to include testing and renewal of any sealing arrangements.
- Actions required after a crankcase explosion.

M9.11 A copy of the installation and maintenance manual required by UR M9.10 is to be provided on board ship.

M9.12 Plans of showing details and arrangements of crankcase explosion relief valves are to be submitted for approval in accordance with UR M44.

M9.13 Valves are to be provided with suitable markings that include the following information:

- Name and address of manufacturer
- Designation and size
- Month/Year of manufacture
- Approved installation orientation

End of Document

M10 Protection of internal combustion engines against crankcase explosions

(1972) (Rev.1 1991) (Corr. 1997) (Rev.2 Jan 2005) (Corr.1 Nov 2005) (Corr.2 Oct 2007) (Rev.3 Sept 2008) (Rev.4 July 2013)

M10.1 Crankcase construction and crankcase doors are to be of sufficient strength to withstand anticipated crankcase pressures that may arise during a crankcase explosion taking into account the installation of explosion relief valves required by UR M9. Crankcase doors are to be fastened sufficiently securely for them not be readily displaced by a crankcase explosion.

M10.2 Additional relief valves are to be fitted on separate spaces of crankcase such as gear or chain cases for camshaft or similar drives, when the gross volume of such spaces exceeds 0.6 m^3.

M10.3 Scavenge spaces in open connection to the cylinders are to be fitted with explosion relief valves.

M10.4 Crankcase explosion relief valves are to comply with UR M9.

M10.5 Ventilation of crankcase, and any arrangement which could produce a flow of external air within the crankcase, is in principle not permitted except for dual fuel engines where crankcase ventilation is to be provided in accordance with UR M59.3.2.(1).

M10.5.1 Crankcase ventilation pipes, where provided, are to be as small as practicable to minimise the inrush of air after a crankcase explosion.

M10.5.2 If a forced extraction of the oil mist atmosphere from the crankcase is provided (for mist detection purposes for instance), the vacuum in the crankcase is not to exceed 2.5 x 10^{-4} N/mm^2 (2.5 m bar).

M10.5.3 To avoid interconnection between crankcases and the possible spread of fire following an explosion, crankcase ventilation pipes and oil drain pipes for each engine are to be independent of any other engine.

Note:

1. The requirements of M10 Rev. 3 are to be uniformly implemented by IACS Societies for engines:

   i) when an application for certification of an engine is dated on or after 1 January 2010; or

   ii) which are installed in new ships for which the date of contract for construction is on or after 1 January 2010.

2. The requirements of M10 Rev.4 are to be uniformly implemented by IACS Societies for engines:

   i) when an application for certification of an engine is dated on or after 1 January 2015; or

   ii) which are installed in new ships for which the date of contract for construction is on or after 1 January 2015.

3. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

M10
(cont)

M10.6 Lubricating oil drain pipes from the engine sump to the drain tank are to be submerged at their outlet ends.

M10.7 A warning notice is to be fitted either on the control stand or, preferably, on a crankcase door on each side of the engine. This warning notice is to specify that, whenever overheating is suspected within the crankcase, the crankcase doors or sight holes are not to be opened before a reasonable time, sufficient to permit adequate cooling after stopping the engine.

M10.8 Oil mist detection arrangements (or engine bearing temperature monitors or equivalent devices) are required:

- for alarm and slow down purposes for low-speed diesel engines of 2250 kW and above or having cylinders of more than 300 mm bore

- for alarm and automatic shutoff purposes for medium- and high-speed diesel engines of 2250 kW and above or having cylinders of more than 300 mm bore

Oil mist detection arrangements are to be of a type approved by classification societies and tested in accordance with UR M67 and comply with UR M10.9 to UR M10.20. Engine bearing temperature monitors or equivalent devices used as safety devices have to be of a type approved by classification societies for such purposes.

For the purpose of this UR, the following definitions apply:

Low-Speed Engines means diesel engines having a rated speed of less than 300 rpm.

Medium-Speed Engines means diesel engines having a rated speed of 300 rpm and above, but less than 1400 rpm.

High-Speed Engines means diesel engines having a rated speed of 1400 rpm and above.

Note: For equivalent devices for high-speed engines, refer to UI SC 133.

M10.9 The oil mist detection system and arrangements are to be installed in accordance with the engine designer's and oil mist manufacturer's instructions/recommendations. The following particulars are to be included in the instructions:

- Schematic layout of engine oil mist detection and alarm system showing location of engine crankcase sample points and piping or cable arrangements together with pipe dimensions to detector.

- Evidence of study to justify the selected location of sample points and sample extraction rate (if applicable) in consideration of the crankcase arrangements and geometry and the predicted crankcase atmosphere where oil mist can accumulate.

- The manufacturer's maintenance and test manual.

- Information relating to type or in-service testing of the engine with engine protection system test arrangements having approved types of oil mist detection equipment.

M10.10 A copy of the oil mist detection equipment maintenance and test manual required by UR M10.9 is to be provided on board ship.

M10
(cont)

M10.11 Oil mist detection and alarm information is to be capable of being read from a safe location away from the engine.

M10.12 Each engine is to be provided with its own independent oil mist detection arrangement and a dedicated alarm.

M10.13 Oil mist detection and alarm systems are to be capable of being tested on the test bed and board under engine at standstill and engine running at normal operating conditions in accordance with test procedures that are acceptable to the classification society.

M10.14 Alarms and shutdowns for the oil mist detection system are to be in accordance with UR M35 and UR M36 and the system arrangements are to comply with UR M29 and UR M30.

M10.15 The oil mist detection arrangements are to provide an alarm indication in the event of a foreseeable functional failure in the equipment and installation arrangements.

M10.16 The oil mist detection system is to provide an indication that any lenses fitted in the equipment and used in determination of the oil mist level have been partially obscured to a degree that will affect the reliability of the information and alarm indication.

M10.17 Where oil mist detection equipment includes the use of programmable electronic systems, the arrangements are to be in accordance with individual classification society requirements for such systems.

M10.18 Plans of showing details and arrangements of oil mist detection and alarm arrangements are to be submitted for approval in accordance with UR M44 under item 28.

M10.19 The equipment together with detectors is to be tested when installed on the test bed and on board ship to demonstrate that the detection and alarm system functionally operates. The testing arrangements are to be to the satisfaction of the classification society.

M10.20 Where sequential oil mist detection arrangements are provided the sampling frequency and time is to be as short as reasonably practicable.

M10.21 Where alternative methods are provided for the prevention of the build-up of oil mist that may lead to a potentially explosive condition within the crankcase details are to be submitted for consideration of individual classification societies. The following information is to be included in the details to be submitted for consideration:

- Engine particulars – type, power, speed, stroke, bore and crankcase volume.
- Details of arrangements prevent the build up of potentially explosive conditions within the crankcase, e.g., bearing temperature monitoring, oil splash temperature, crankcase pressure monitoring, recirculation arrangements.
- Evidence to demonstrate that the arrangements are effective in preventing the build up of potentially explosive conditions together with details of in-service experience.
- Operating instructions and the maintenance and test instructions.

M10.22 Where it is proposed to use the introduction of inert gas into the crankcase to minimise a potential crankcase explosion, details of the arrangements are to be submitted to the classification society for consideration.

End of Document

M11 Protective devices for starting air mains

(1972)

In order to protect starting air mains against explosion arising from improper functioning of starting valves, the following devices must be fitted:

(i) an isolation non-return valve or equivalent at the starting air supply connection to each engine

(ii) a bursting disc or flame arrester in way of the starting valve of each cylinder for direct reversing engines having a main starting manifold at the supply inlet to the starting air manifold for non-reversing engines.

Devices under (ii) above may be omitted for engines having a bore not exceeding 230 mm.

End of Document

M12 Fire extinguishing systems for scavenge manifolds

(1972)

For crosshead type engines, scavenge spaces in open connection to the cylinder must be connected to an approved fire extinguishing system, which is to be entirely separate from the fire extinguishing system of the engine room.

End of Document

M13 Re-categorised as “Recommendation” No.28

(1973)
(Rev.1
1989)

End of Document

M14 Mass production of internal combustion engines: definition of mass production

(1973)

Deleted Feb 2015, replaced by UR Z26.

End of Document

M15 (1974) (Rev. 1 1989) Re-categorized as "recommendation" No. 29

END

M16 (1974) (Rev.1 Jan 2005) Devices for emergency operation of propulsion steam turbines

In single screw ships fitted with cross compound steam turbines, the arrangements are to be such as to enable safe navigation when the steam supply to any one of the turbines is required to be isolated. For this emergency operation purpose the steam may be led directly to the L.P. turbine and either the H.P. or M.P. turbine can exhaust direct to the condenser. Adequate arrangements and controls are to be provided for these operating conditions so that the pressure and temperature of the steam will not exceed those which the turbines and condenser can safely withstand.

The necessary pipes and valves for these arrangements are to be readily available and properly marked. A fit up test of all combinations of pipes and valves is to be performed prior to the first sea trials.

The permissible power/speeds when operating without one of the turbines (all combinations) is to be specified and information provided on board.

The operation of the turbines under emergency conditions is to be assessed for the potential influence on shaft alignment and gear teeth loading conditions.

END

M17 Deleted 1 July 1998

END

M15 (1974) (Rev. 1 1989) Re-categorized as "recommendation" No. 29

END

M16 (1974) (Rev.1 Jan 2005) Devices for emergency operation of propulsion steam turbines

In single screw ships fitted with cross compound steam turbines, the arrangements are to be such as to enable safe navigation when the steam supply to any one of the turbines is required to be isolated. For this emergency operation purpose the steam may be led directly to the L.P. turbine and either the H.P. or M.P. turbine can exhaust direct to the condenser. Adequate arrangements and controls are to be provided for these operating conditions so that the pressure and temperature of the steam will not exceed those which the turbines and condenser can safely withstand.

The necessary pipes and valves for these arrangements are to be readily available and properly marked. A fit up test of all combinations of pipes and valves is to be performed prior to the first sea trials.

The permissible power/speeds when operating without one of the turbines (all combinations) is to be specified and information provided on board.

The operation of the turbines under emergency conditions is to be assessed for the potential influence on shaft alignment and gear teeth loading conditions.

END

M17 Deleted 1 July 1998

END

M15 (1974) (Rev. 1 1989) Re-categorized as "recommendation" No. 29

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The necessary pipes and valves for these arrangements are to be readily available and properly marked. A fit up test of all combinations of pipes and valves is to be performed prior to the first sea trials.

The permissible power/speeds when operating without one of the turbines (all combinations) is to be specified and information provided on board.

The operation of the turbines under emergency conditions is to be assessed for the potential influence on shaft alignment and gear teeth loading conditions.

END

M17 Deleted 1 July 1998

END

M18 Parts of internal combustion engines for which material tests are required

(1972) (Rev.1 1986) (Rev.2 1996) (Rev.3 May 1998) (Rev.4 June 2000)

Deleted Feb 2015, replaced by UR M72.

End of Document

M19 Parts of internal combustion engines for which nondestructive tests are required

(1974)

Deleted Feb 2015, replaced by UR M72.

End of Document

M20 Periodical Survey of Machinery

(1974)
(Rev. 1
1977)
(Rev. 2
1983)
(Rev. 3
1992)
(Rev. 4
1995)

Deleted in November 2001. Requirements relocated to URs Z18 and Z21.

M21 Mass production of internal combustion engines: type test conditions

(1974) (Corr. Feb 1999) (Corr. Sept 2003)

Deleted Feb 2015, replaced by UR M71.

End of Document

M23 Mass production of engines: mass produced exhaust driven turboblowers

(1975)
(Rev.2 1981)
(Rev.3 1991)

Deleted Feb 2015, replaced by UR M73.

End of Document

M24 Requirements concerning use of crude oil or slops as fuel for tanker boilers

M24 (1975) (Rev.1 1976)

M24.1 In tankers crude oil or slops may be used as fuel for main or auxiliary boilers according to the following requirements. For this purpose all arrangement drawings of a crude oil installation with pipeline layout and safety equipment are to be submitted for approval in each case.

M24.2 Crude oil or slops may be taken directly from cargo tanks or flow slop tanks or from other suitable tanks. These tanks are to be fitted in the cargo tank area and are to be separated from non-gas-dangerous areas by means of cofferdams with gas-tight bulkheads.

M24.3 The construction and workmanship of the boilers and burners are to be proved to be satisfactory in operation with crude oil.

The whole surface of the boilers shall be gas-tight separated from the engine room. The boilers themselves are to be tested for gas-tightness before being used. The whole system of pumps, strainers, separators and heaters, if any, shall be fitted in the cargo pump room or in another room, to be considered as dangerous, and separated from engine and boiler room by gas-tight bulkheads. When crude oil is heated by steam or hot water the outlet of the heating coils should be led to a separate observation tank installed together with above mentioned components. This closed tank is to be fitted with a venting pipe led to the atmosphere in a safe position according to the rules for tankers and with the outlet fitted with a suitable flame proof wire gauze of corrosion resistant material which is to be easily removable for cleaning.

M24.4 Electric, internal combustion and steam (when the steam temperature is higher than 220°C) prime movers of pumps, of separators (if any), etc., shall be fitted in the engine room or in another non-dangerous room.

Where drive shafts pass through pump room bulkhead or deck plating, gas-tight glands are to be fitted.

The glands are to be efficiently lubricated from outside the pump room.

M24.5 Pumps shall be fitted with a pressure relief bypass from delivery to suction side and it shall be possible to stop them by a remote control placed in a position near the boiler fronts or machinery control room and from outside the engine room.

M24.6 When it is necessary to preheat crude oil or slops, their temperature is to be automatically controlled and a high temperature alarm is to be fitted.

M24.7 The piping for crude oil or slops and the draining pipes for the tray defined in M24.9 are to have a thickness as follows:

M24
(cont)

External diameter of pipes, d_e				thickness, t
		$d_e \leq$	82, 5 mm	$t \geq$ 6,3 mm
88,9 mm	<	$d_e \leq$	108 mm	$t \geq$ 7,1 mm
114,3 mm	<	$d_e \leq$	139,7 mm	$t \geq$ 8 mm
152,4 mm	$\leq$	d_e		$t \geq$ 8,8 mm

Their connections (to be reduced to a minimum) are to be of the heavy flange type. Within the engine room and boiler room these pipes are to be fitted within a metal duct, which is to be gas-tight and tightly connected to the fore bulkhead separating the pump room and to the tray. This duct (and the enclosed piping) is to be fitted at a distance from the ship's side of at least 20% of the vessel's beam amidships and be at an inclination rising towards the boiler so that the oil naturally returns towards the pump room in the case of leakage or failure in delivery pressure. It is to be fitted with inspection openings with gas-tight doors in way of connections of pipes within it, with an automatic closing drain-trap placed on the pump room side, set in such a way as to discharge leakage of crude oil into the pump room.

In order to detect leakages, level position indicators with relevant alarms are to be fitted on the drainage tank defined in M24.9. Also a vent pipe is to be fitted at the highest part of the duct and is to be led to the open in a safe position. The outlet is to be fitted with a suitable flame proof wire gauze of corrosion-resistant material which is to be easily removable for cleaning.

The duct is to be permanently connected to an approved inert gas system or steam supply in order to make possible:

injection of inert gas or steam in the duct in case of fire or leakage
purging of the duct before carrying out work on the piping in case of leakage.

M24.8 In way of the bulkhead to which the duct defined in M24.7 is connected, delivery and return oil pipes are to be fitted on the pump room side, with shut-off valves remotely controlled from a position near the boiler fronts or from the machinery control room. The remote control valves should be interlocked with the hood exhaust fans (defined in M24.10) to ensure that whenever crude oil is circulating the fans are running.

M24.9 Boilers shall be fitted with a tray or gutterway of a height to the satisfaction of the Classification Society and be placed in such a way as to collect any possible oil leakage from burners, valves and connections.

Such a tray or gutterway shall be fitted with a suitable flame proof wire gauze, made of corrosion resistant material and easily dismountable for cleaning. Delivery and return oil pipes shall pass through the tray or gutterway by means of a tight penetration and shall then be connected to the oil supply manifolds.

A quick closing master valve is to be fitted on the oil supply to each boiler manifold.
The tray or gutterway shall be fitted with a draining pipe discharging into a collecting tank in pump room. This tank is to be fitted with a venting pipe led to the open in a safe position and with the outlet fitted with wire gauze made of corrosion resistant material and easily dismountable for cleaning.
The draining pipe is to be fitted with arrangements to prevent the return of gas to the boiler or engine room.

M24 (cont)

M24.10 Boilers shall be fitted with a suitable hood placed in such a way as to enclose as much as possible of the burners, valves and oil pipes, without preventing, on the other side, air inlet to burner register.

The hood, if necessary, is to be fitted with suitable doors placed in such a way as to enable inspection of and access to oil pipes and valves placed behind it. It is to be fitted with a duct leading to the open in a safe position, the outlet of which is to be fitted with a suitable flame wire gauze, easily dismountable for cleaning. At least two mechanically driven exhaust fans having spark proof impellers are to be fitted so that the pressure inside the hood is less than that in the boiler room. The exhaust fans are to be connected with automatic change over in case of stoppage or failure of the one in operation.

The exhaust fan prime movers shall be placed outside the duct and a gas-tight bulkhead penetration shall be arranged for the shaft.

Electrical equipment installed in gas dangerous areas or in areas which may become dangerous (i.e. in the hood or duct in which crude-oil piping is placed) is to be of certified safe type as required by Classification Societies.

M24.11 When using fuel oil for delivery to and return from boilers fuel oil burning units in accordance with Classification Societies' Rules shall be fitted in the boiler room. Fuel oil delivery to, and returns from, burners shall be effected by means of a suitable mechanical interlocking device so that running on fuel oil automatically excludes running on crude oil or vice versa.

M24.12 The boiler compartments are to be fitted with a mechanical ventilation plant and shall be designed in such a way as to avoid the formation of gas pockets.
Ventilation is to be particularly efficient in way of electrical plants and machinery and other plants which may generate sparks. These plants shall be separated from those for service of other compartments and shall be in accordance with Classification Societies' requirements.

M24.13 A gas detector plant shall be fitted with intakes in the duct defined in M24.7, in the hood duct (downstream of the exhaust fans in way of the boilers) and in all zones where ventilation may be reduced. An optical warning device is to be installed near the boiler fronts and in the machinery control room. An acoustical alarm, audible in the machinery space and control room, is to be provided.

M24.14 Means are to be provided for the boiler to be automatically purged before firing.

M24.15 Independent of the fire extinguishing plant as required by Classification Societies' Rules, an additional fire extinguishing plant is to be fitted in the engine and boiler rooms in such a way that it is possible for an approved fire extinguishing medium to be directed on to the boiler fronts and on to the tray defined in M24.9. The emission of extinguishing medium should automatically stop the exhaust fan of the boiler hood (see M24.8).

M24.16 A warning notice must be fitted in an easily visible position near the boiler front. This notice must specify that when an explosive mixture is signalled by the gas detector plant defined in M24.13 the watchkeepers are to immediately shut off the remote controlled valves on the crude oil delivery and return pipes in the pump room, stop the relative pumps, inject inert gas into the duct defined in M24.7 and turn the boilers to normal running on fuel oil.

M24.17 One pilot burner in addition to the normal burning control is required.

End of Document