

Action code: AT FIRST OPPORTUNITY

**Crankcase Relief Valve
Prevention and Damage Control**

SL09-512/CAA
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Concerns

Owners and operators of MAN B&W two-stroke diesel engines.
Type: All MAN Diesel two-stroke types

Short summary

Oil mist detectors gives a warning before a crankcase explosion occurs.
A new generation of crankcase explosion relief valves provides improved damage control in case of a crankcase explosion.



Crankcase explosion relief valves fitted on engine.

Dear Sirs

This service letter provides information on a new generation of type approved crankcase explosion relief valves.

The new generation of crankcase explosion relief valves has been approved to meet new IACS specifications. The new relief valve generation will improve protection of your engine and crew and prevent fire damage in case of a crankcase explosion. This new generation of crankcase explosion relief valves are to be fitted on all new engines where the contract for construction of the ship is on or after 1 July 2008.

Engines built after 1999 are in general fitted with crankcase explosion relief valves meeting the 1999 MAN Diesel Specification and are also acceptable for service.

IACS specifications and type test procedures are described in *IACS UR M66 Type Testing Procedure for Crankcase Explosion Relief Valves*. Type approved crankcase explosion relief valves have been available since January 2008.

Yours faithfully



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Crankcase explosion relief valves

Functionality of crankcase explosion relief valves:

1. Relieve the explosion pressure from the crankcase.
 - Valves open
2. Quenching the flame front with built-in flame arresters.
 - Efficient flame arresters prevent fire and subsequent fire damage outside the crankcase. Furthermore, they prevent ignition of the oil mist cloud having escaped the crankcase.
3. Close automatically after relieving the explosion pressure
 - Air and gas tight valve closure constrains the amount of oxygen entering the crankcase after an explosion. Subsequently, the low oxygen concentration in the crankcase suppresses the crankcase fire and reduces the risk of subsequent explosions.

Crankcase relief valve specifications

In the period 1999-2007, two crankcase explosion relief valve brands were approved to meet the 1999 MAN Diesel specifications and they are class approved (see Fig. 1):

- Hoerbiger Ventilwerke, type EVN
- Mt. Halla Control Valves, type HCSG

Provided they are installed correctly and well maintained, the two types may be used for continued service (see check list).

Crankcase explosion relief valves meeting the new specifications in IACS UR M66 Type Testing Procedure for Crankcase Explosion Relief Valves have been available for purchase since the beginning of 2008 (see Fig. 1a).

Oil mist detector

The OMD is an important tool for preventing crankcase explosions. We recommend connecting the OMD to the engine control system, so that the engine control system can issue a slowdown request in case of too high oil mist concentration in the crankcase.

Additionally, checking the oil mist detector and the oil mist alarm should be included in the regular maintenance routine.

Type approved crankcase explosion relief valves

As of July 2007, two types of crankcase explosion relief valves have been type approved to meet the specifications in IACS UR M66 Type Testing Procedure for Crankcase Explosion Relief Valves:

- Hoerbiger Ventilwerke, type EVS
- Mt. Halla Control Valves, type M20

In 2009, three new suppliers of crankcase explosion relief valves have been type approved:

- Kwang San, type KSRV
- Hyunwoo SMT, type HWG
- Unitech, Type ERV

New manufactures of the crankcase explosion relief valves are in the type approval process, please contact MAN Diesel for additional information.



Fig. 1: Example of crankcase explosion relief valves type approved in 1999.



Fig. 1a: New type of crankcase explosion relief valves with two flame arresters - type approved in 2007.

Non-approved crankcase explosion relief valves or valves not fulfilling the present standard

In case your investigation finds that your MAN Diesel engines are equipped with non-approved crankcase explosion relief valves or valves not fulfilling the present standard, please do not hesitate to contact MAN Diesel PrimeServ for advice on how to retrofit new type approved crankcase explosion relief valves and calculate the correct valve size. The opening free area of the crankcase explosion relief valves must not be less than $115 \text{ cm}^2/\text{m}^3$ of the crankcase gross volume.

Check list

A crankcase explosion relief valve is a safety device. Along with an effective oil mist detector, well-functioning crankcase explosion relief valves diminish the risk of critical human injury and severe material damage in the event of a crankcase explosion.

However, discussing crankcase explosions a few other issues need to be addressed, so we have created a list of precautions against crankcase explosions. We recommend using the list as a check list to learn how well protected your engines are against crankcase explosions and the consequential damage:

1. Crankcase explosion relief valves have been approved according to IACS UR M66 Type Testing Procedure for Crankcase Explosion Relief Valves or MAN Diesel 1999 specifications.
2. Oil mist detectors are well maintained and tested according to the manufacturer's maintenance and test manual.
3. Oil mist detectors are connected to the engine control system. The engine control system issues a slow-down request in case of too high oil mist concentration in the crankcase.
4. Crankcase pipe connections are made of steel or other explosion proof material.
No "garden hose type" solutions!
5. Venting pipes are made of steel and are at least 20 meters long.
6. Crankcase opening covers are gas proof and close tightly before the engine is started.
7. Crankcase explosion relief valves and flame arresters are undamaged and uncovered.
Never cover a flame arrester with plastic, paper or paint!
8. Spare parts are original MAN Diesel spare parts, and all maintenance is performed according to the enclosed instructions and/or MAN Diesel instruction manuals.

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Further information

Further information on crankcase explosion relief valves and crankcase explosions:

- Service letter SL99-373/ERO
- Service letter SL03-420/ERO

Our service letters are available online. Please register here to get online access to service letters:

www.mandiesel.com/sl-registration

By registering, you get online access to our service letters and you will be notified by email when new service letters are published.