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Technical Bulletin No. TB-070408E - PART II

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Subj.: VISATRON Oil Mist Detector Type VN 115/ 87, VN116/87, VN215/87
and VN115/93, VN116/93, VN215/93
Reasons for Oil Mist Detector's Delayed Reaction and False Alarms

Problem: Why do the oil mist detectors of some engines react late?
Answer: Suction pipes are clogged with oil.

A contributing factor towards some oil mist detectors not functioning effectively is the improper installation of the suction pipes and their engine wall connections. One of the most common deficiencies is lack of suction funnels in the oil mist suction point inside the engine crankcase. Most of the time the problem is discovered only after an expensive bearing or piston damage has occurred. Although it is an inexpensive item, the suction funnel is often left out during the engine assembly in the factory. Unfortunately there has been a lack of information for engine builders who do not realize the importance of the suction funnel.

After continuous testing, we have determined that when the funnel is not installed, the internal suction pipe is covered with excessive oil splashing from the crankshaft or coming down from the camshaft box. The end result is the suction point is clogged by an oil bubble and the oil mist detector cannot collect sufficient oil mist in the required time to react quickly and stop the engine.

Test Results:

1. When oil mist has been blown into the running engine with a special oil mist generator, reaction time was 30 to 50 seconds before the OMD reacted to stop the engine. Bearings or pistons in engines would become severely damaged within this period of time.
2. In the same engine, we installed the suction funnels and ran the tests again. This time the OMD was able to measure the oil mist correctly and reacted to stop the engine within 3 to 5 seconds. This represents genuine protection of the moving parts in the crankcase.

Suction funnels also limit the amount of oil from passing into the suction pipes and consequently into the detector. Excessive oil is also a reason for false alarms, especially when oil drops start falling through the measuring head across the infrared light beam. The OMD reacts to turbidity caused by oil drops.

Regarding the pipe system in general, a fundamental rule is to drain the fall-out oil from the oil mist back into the engine. This is also true for the oil exiting (draining) from the Venturi draft pump. The pipes should always be laid in a manner to ensure that:

1. Oil will not accumulate inside the piping
2. No obstructions exist in the suction side or in the exhaust.

In some cases, we have found out that the oil mist detector has triggered false alarms due to high humidity in the crankcase and condensed water in the OMD system suction pipes.
See special bulletin TB-070408E – PART I

We hope that these recommendations can be of assistance to our customers and ask that you contact us if you have additional questions regarding this subject.

Yours truly
SCHALLER AUTOMATION
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Pictures and comments follow in Page 2 & 3

Pictures & Comments

Fig. 1 & 2: Suction Elbow collects oil and clogs suction pipes. Consequences: Suction pipes and OMD become contaminated with oil, causing slow detector reaction and repeated false alarms.

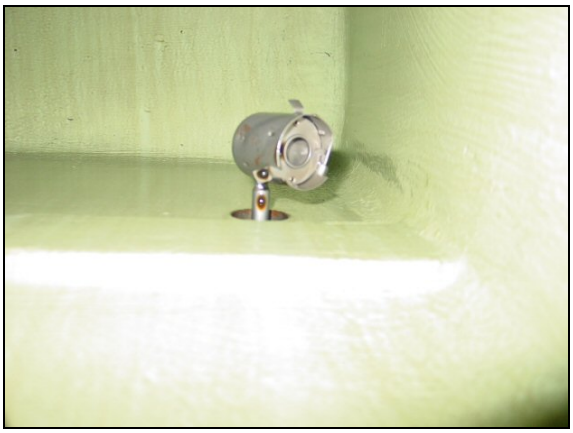

Fig. 3: A twisted suction funnel, as shown here, lets through excessive oil and can cause false alarms and clogging of OMD

Fig. 4: Many engines are found with this type of suction pipe, contaminating and clogging the OMD system with oil

Fig. 5: Solution, install suction funnels. These separate the oil effectively and oil mist will reach the OMD fast and unhindered

Fig. 6 & 7: The suction funnels in these crankcase compartments will ensure an effective oil separation and permit the unobstructed oil mist transfer to the suction pipes of the OMD system.
The suction funnel with the long cup design shown on the right (double labyrinth inside) has significantly improved the oil mist sampling and can be utilized in engines with CW or CCW crankshaft rotation.

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