TECHNICAL NOTE

NITROGEN-PAC™ M SERIES OIL-FILLED COMPRESSORS AND OIL "LEAKAGE"

This Technical Note clarifies what is normal and what may be abnormal when lubricating oil is observed on the outside of **NITROGEN-PAC™ M Series** Compressor / Tank Assemblies (CTAs).

UNITED Fire Systems uses oil-filled air compressor pumps for **NITROGEN-PAC™ M Series** systems since this type is efficient, reliable, and a good value. A number of inquiries have been received about oil "leaks" from these compressors. Actual oil leaks can be a problem – but not all visible oil comes from a leak.

NITROGEN-PAC™ systems are best characterized as light, intermittent duty. The pump undergoes fluctuations in operating temperature, and spends a substantial amount of time not operating. It is likely that oil will be observed outside the device under these circumstances.

1. **NORMAL OIL DISCHARGE** – It is normal and expected that a small amount of oil will travel past the piston rings of the piston-type air pumps used on **NITROGEN-PAC™** CTAs. This even happens in an automobile engine, where the oil is burned along with the gasoline.

   The pumps on CTAs do not, of course, burn the oil that travels past the rings. The oil discharges into the air storage tank, and collects with the water in the bottom of the tank. The oil and water are then discharged when the Auto-Drain on the bottom of the CTA tank operates. The manufacturer of our CTAs states that 5 parts per million of oil in the discharged water is normal, and will be visible (see **Figure 1**). If you see oil on the floor near the CTA, it is likely NOT a leak – it is simply the normal oil discharge. Simply wipe it up occasionally with a rag. If it is desired that no water or oil be present near the CTA, refer to manual P/N 30-NPMICM-000 and Technical Note UFS-16-02 for information about system drain connections.

   If the amount of discharged oil appears much greater than normal, or the oil sight glass indicates the oil level is low (see Figure 4), the pump may require maintenance. Otherwise, consider the small amount of oil on the floor as normal, and not a leak.

2. **NORMAL OIL SEEPAGE** – All oil-lubricated devices have a normal, natural amount of oil seepage. Your automobile engine is a good example. When your car is parked for a period of time, the engine will seep a small amount of oil, and an occasional drop of oil on your garage floor is usually no cause for alarm. On a CTA, oil may pass through the joints of the pump assembly, and may be noticed as a small amount of oil on the joints (see **Figure 2**) or on the compressor bracket (see **Figure 3**). Simply wipe off this oil as a part of normal maintenance.

   If the amount of visible oil appears much greater than normal, or the oil sight glass indicates the oil level is low, the pump may require maintenance. Otherwise, consider the small amount of oil on the compressor bracket as normal, and not a leak.

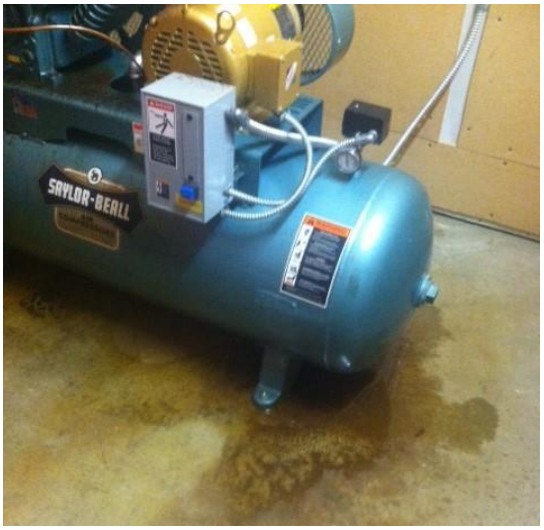

FIGURE 1 – NORMAL OIL DISCHARGE ON FLOOR

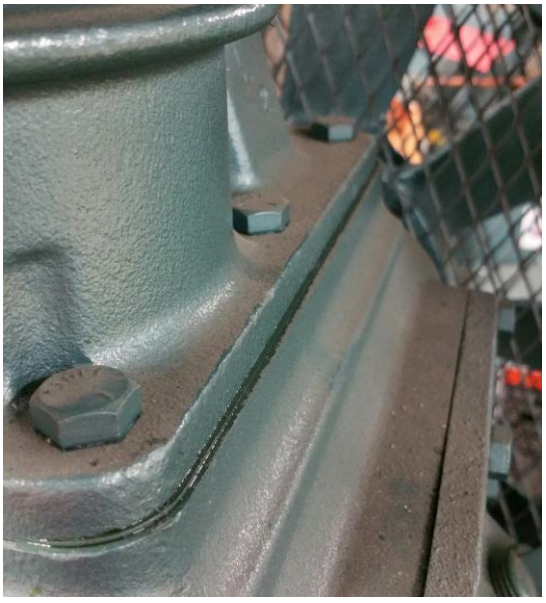

FIGURE 2 – NORMAL OIL SEEPAGE AT JOINT

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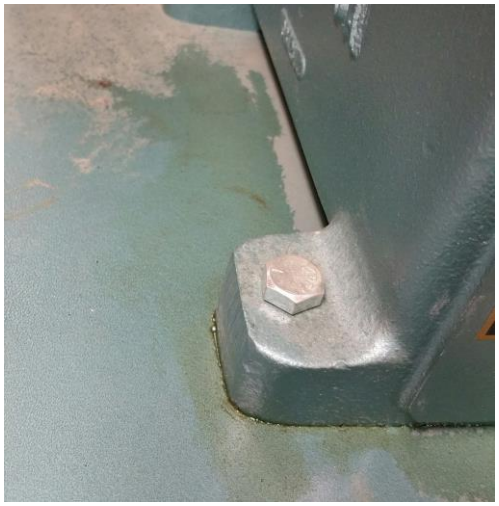

FIGURE 3 – NORMAL OIL ON BRACKET

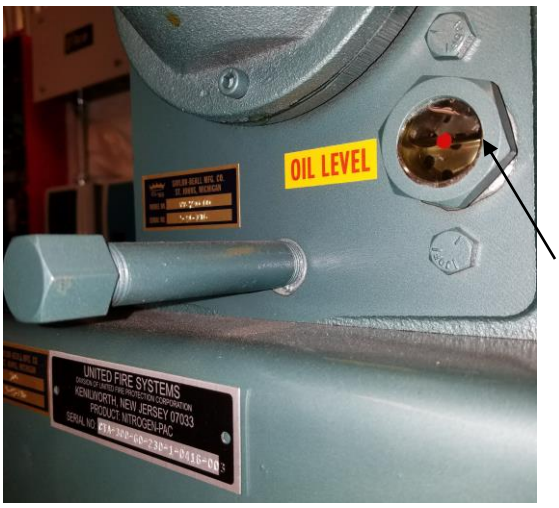

FIGURE 4 – OIL LEVEL SIGHT GLASS

3. **ABNORMAL OIL LEAKAGE** – Actual oil leakage is a serious matter, and requires repair. Oil leakage can be detected by:

A. Observing excessive amounts of oil on the floor from the Auto-Drain discharge. This may indicate worn piston rings or internal pump damage.

B. An abnormal amount of oil oozing from joints on the pump body, especially when the pump is running.

C. Excessive oil loss, indicated by the oil level being low on the sight glass.

WHAT YOU CAN DO - Perform periodic maintenance on the Compressor / Tank Assembly (CTA). See **Figure 5**.

MONTHLY MAINTENANCE

- Check filter regulator pressure gage to make sure the reading is in the range of 145 ± 5 PSIG (100 ± 5 PSIG for Model CTA-150).
- Check level of compressor pump oil at sight glass (see **Figure 4**). Add oil if necessary. NEVER over-fill.
- Check ball valve #1 for NORMAL operating position – valve should be OPEN.

ANNUAL MAINTENANCE

- Change compressor oil.
- Replace air inlet filter element.
- Replace filter / regulator filter element.

Detailed instructions for performing these procedures can be found in the **UNITED Fire Systems** M Series Installation, Commissioning, and Maintenance Manual P/N 30-NPMICM-000. The manual is available for download at no charge on our website:

NITROGEN-PAC™ M Series Manual P/N 30-NPMICM-000

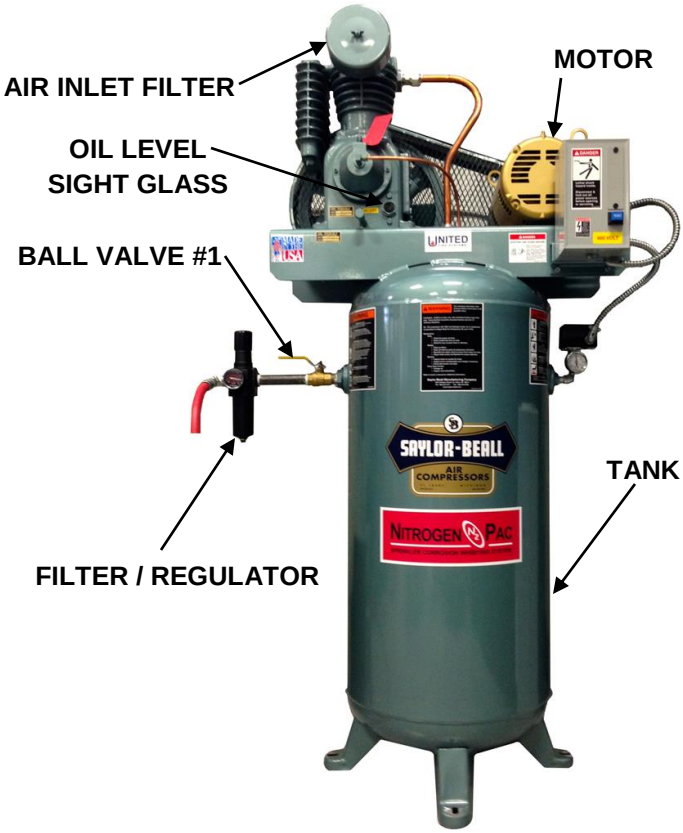

FIGURE 5 – COMPRESSOR / TANK ASSEMBLY (CTA)

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