

TECHNI-BRIEFS

PRODUCT APPLICATION: AUTO-PURGER AP SERIES

Suggested Maintenance for Hansen AUTO-PURGER Non-Condensable Gas Purger

The Mechanical Integrity section of PSM/RMP specifically addresses the need for written procedures to maintain the integrity of equipment. A well designed preventative maintenance program can not only help to meet this requirement of compliance, but can also minimize unscheduled down-time, make the maintained equipment last longer and keep the refrigeration system as safe as possible. To help assist in developing procedures to maintain the Hansen Auto-Purger AP series (AP08, AP16, AP24, APC, and AP01), the following guide is provided. This information should be used in conjunction with accepted and known safety practices and plant standard operation procedures (SOP). Please also refer to the current related Hansen product bulletins and Safety Precautions Sheet. Maintenance must only be performed by qualified technicians.

Daily

Keep a log of non-condensable gas activity. A counter inside the purger control cabinet records the number of times non-condensable gas releases to the bubbler (#5 purge gas solenoid is energized). By recording the number of releases in a log book, the typical operation of a purger at its installed location can be established. By monitoring this log, unusually high or low activity can be noted and reacted to. For example: if for a given purger, 10 releases per day is typical, but suddenly the log shows a day or several days of 50 or more releases, a careful inspection of the purger for proper operation may be necessary; see trouble-shooting section in current operator installation and instruction manual (Bulletin AP-003). However, this higher than normal count may also be indicating a change in the refrigeration system, such as: additional air in the system due to recent service work or perhaps a developing compressor seal or other leak. By monitoring non-

condensable gas activity, an operator can improve not only the operation of the purger, but the performance of the refrigeration system.

Inspect the purger for unusual noises (sounds), vibration, smells and sights. Pay particular attention to the water bubbler. When non-condensable gases are being released, it is not normal to note any strong ammonia smell. If there is, it can be an indication of several issues that are addressed in the trouble-shooting guide in the manual. When non-condensable gases are not being released, the water inside the bubbler should come to the top of the inside standpipe.

Routinely

The frequency of any one the following procedures will be determined by the experience at a given application. This may be monthly, quarterly or other.

Clean the water bubbler and remove any mineral deposits as necessary. Remove top cap of bubbler and add vinegar to water. Use the brush provided with purger to remove deposits from clear bubbler tube. Also, with purge gas gauge valve closed, inspect and clean metering orifice inside 1 psid check valve. (Figure 1) If cleaning is required often, consider using an alternate source of water (soft) or install Water Conditioning Housing and Cartridge; WCH & WCC.

Manually cycle through each connected (active) purge point to monitor for loss of pressure. This can be accomplished by rotating the switch located on the front panel of the control cabinet. Observe the pressure gauge (it must be in good working condition) on the purger for a minute or so while the switch is on each purge point. The gauge should normally be near head (condensing) pressure. If the pressure begins to drop on any given purge point, that solenoid may be stuck closed,



the electrical coil is burnt-out or the foul gas line is restricted in some way, such as a dirty (blocked) strainer at a purge point solenoid valve.

Test the 30 psid check valve. First close the purge gas valve to prevent any loss of refrigerant gas. Then close the foul gas line and observe the pressure gauge on the purger. The pressure should fall approximately 30 psig. If not, refer to manual. After satisfactory testing, reopen purge gas valve.

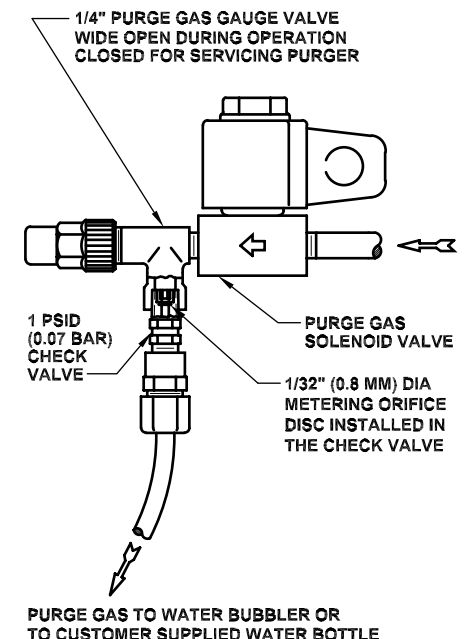
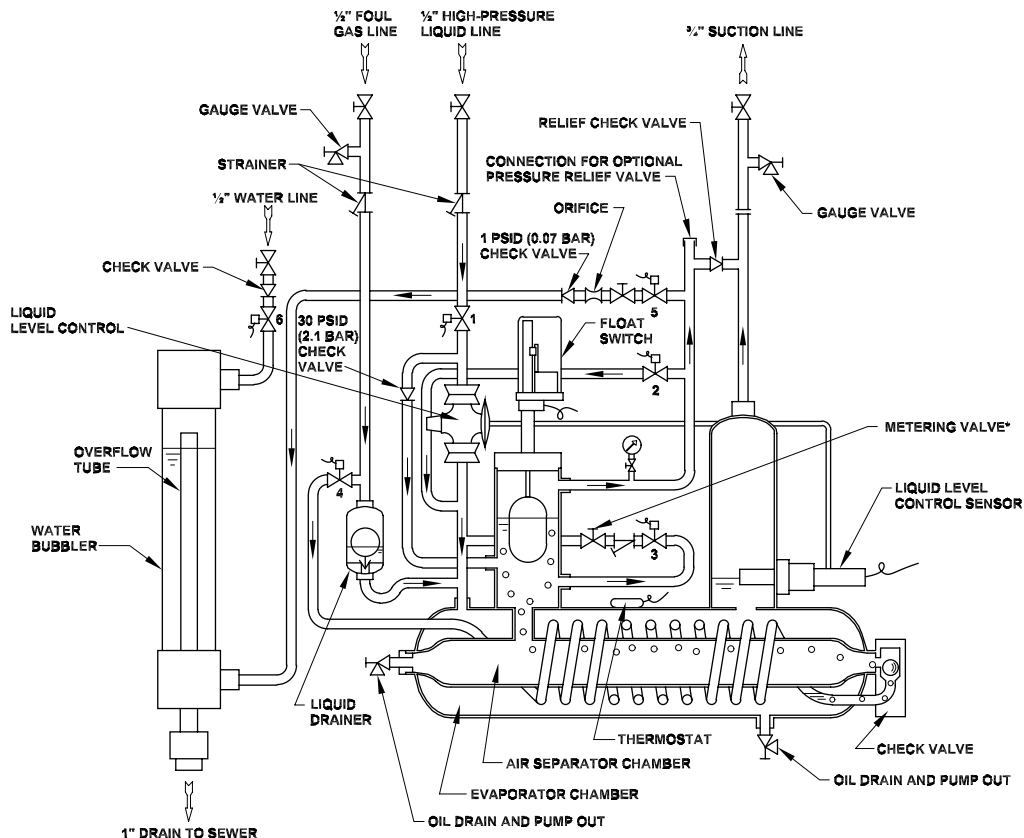


FIGURE 1

Continued on reverse

Suggested Maintenance for AUTO-PURGER ...cont'd



Check fuses. There are two fuses located inside the control cabinet. A 2 amp fuse protects the remote purge point solenoids. The 5 amp fuse is for the purger solenoid valves (#1-#6).

Pump out (down) purger and remove oil. Note the amount of oil removed in a maintenance log. This will be also helpful in detecting a change in the refrigeration system.

Check for proper operation of all lights on control cabinet. Watch the progression of lights from purger cooling down to automatic to releasing non-condensibles. Rotate purge point switch to illuminate each light. Replacement LED lights can be ordered from Hansen.

Annually

Pump out (down) purger to perform following maintenance. Clean the line strainers (foul gas, liquid and metering valve). Note the metering valve strainer assembly has a captured stainless steel material inside; do not attempt to remove this material. Clean and inspect each solenoid valve on purger. Consider replacing the solenoid tube/plunger kit on each solenoid valve. Inspect the external

condition of the purger and insulation. Remove any rust, repair or replace parts or pipes as necessary. Repaint any exposed bare metal. Check setting of metering valve. Replace the check valves (30#, 225#, 1#psid) as necessary.

Inspect, clean and test the operation of all remaining components, including level controls. Leak test purger. Place purger back into service and verify that it is operating properly.

Some suggested spares to always have on-hand include: solenoid coils, solenoid tube/plunger kit, 2 amp fuses, 5 amp fuses and strainer gaskets.

Although preventative maintenance of electronic/electrical components is not specifically addressed in this article, keep in mind that, as with all components, there is a limited life expectancy. An expected maximum life of seven to ten years is typical for electronic components. This life expectancy may vary based on quality of electrical supply, temperature, the presence of moisture, and other factors. Eventually, even with the above maintenance being performed, the purger should be replaced after 15 to

20 years of service. Remember, PM stands for Preventative Maintenance, not Post Mortem.

Summary

Daily:

- Record non-condensable gas activity (counter log)
- Inspect for unusual noise, vibration, sights, and smells

Routinely:

- Clean water bubbler and check valve orifice
- Monitor for loss of pressure
- Check fuses
- Test 30# check valve
- Pump out (down) and remove oil
- Check for proper operation of all lights

Annually:

- Service solenoid valves and strainers
- Replace check valves (30#, 225#, 1# psid) as necessary
- Completely inspect purger, repair or replace as necessary
- Clean and repaint exposed piping
- Leak test
- Verify proper operation

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