Western Municipal Water District
Standard Operating Procedures

SAWPA – Air-Vac Release Valves

APPROVED:

Operations Supervisor	Date
Wastewater Operations Manager	Date
Risk and Safety Manager	Date

Annual Reviewer				
Review Date	8/2009	8/2010	8/2011	8/2012

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Air and Vacuum Release Valves Purpose

Air and vacuum valves exhaust air from the line as the the system is filling and permit air to enter the line when a vacuum is drawn. This action of permitting air to enter and escape from the line can prevent system damage and loss of capacity.

Air and Vacuum Release Valves General Information

The SARI line uses several different manufactures of air and vacuum release Valves (Air-Vacs) throughout the system. The Air-Vacs throughout the system vary in size from 1”- 4”air-vacs. These air-vacs serve the same purpose throughout the system. The following Manufactures air vacs are known to be components of the SARI line system.

- CLA VAL
- CRISPIN
- VAL MATIC

Air-Vacs Operating Strategy

Air-vacs exhaust large volumes of air as the system is filling and permits air to enter the line when a vacuum is drawn. The Air-Vac permits the passage of a volume of air equal to the volume being moved through the line as the system is filling. As the water enters the valve body, the float begins to rise until the valve is seated at the orifice thus closing the valve. If a vacuum is drawn due to water level in the line dropping, or a break in the line the float drops away from the orifice and allows air to enter the line relieving vacuum.

Air-Vac Maintenance

- Inspect air-valve for leaks while the valve is in service.
- Insure air-vac is function properly.
- Back flush air-vac.
- If valve is leaking or malfunctioning, clean or replace seat as needed.

Air-Vac Buna-N-Seat Assembly

Seat Cleaning / Replacement

- Isolate or remove the air-vac from the system.
- Remove the air-vac top flange which secures the Buna-N-Seat assembly.
- Once the top flange is removed the Buna-n-Seat assembly can be removed.

- Clean or replace seat sealing surface as necessary.

Float Replacement

- Isolate or remove the air-vac from the system.
- Remove the bolts which secure the air-vac top flange.
- Lift the top flange and attached internal parts from the valve body.
- With float now exposed remove float from the float rod and replace with a new float.
- Reposition top flange on the valve body and replace the flange bolts.

Top Flange Seat and float assembly

Valve Body

Air-Vac flushing instructions

The air-vacs should be backflushed to remove solids from the valve body, to ensure smooth operation of the valves operating mechanism, and to prevent the build up of scum and debris on the valve seating surfaces.

To flush the air-vacs you should isolate the valve from the system. Attach a fresh water supply at 20-90 psi to the upper coupling on the valve body. Attach a hose to the lower ball valve and position the hose towards the vacuum tube from the Vactor truck. With the hoses attached to the couplings open both the lower and upper ball valve to blow off some of the solids which have accumulated in the valve body. At this point turn on the fresh water supply and the vacuum simultaneously. Flush out the valve body until it appears that the solids have been removed from the valve body.

Valve Body with Upper/Lower Ball Valves

Air-Vac Maintenance form

After all preventative maintenance has been done on the air-vac, the operator will fill out the air-vac maintenance form (appendix A) with the date the maintenance was performed, the location of the air-vac, the condition of the air-vac isolation valve (note if frozen or EXE. if the valve was exercised), the type of isolation valve, the condition of the air-vac (How dirty the air-vac was with a rating of 1-3. The dirtier the air-vac the higher the number.) Model or serial number of the air-vac, the time spent working on the air-vac which includes travel time and time to setup traffic control or perform confined space entries and the model or serial number of the air-vac.

The level of how dirty the air-vac was will determine the frequency of which the air-vac will be maintained in the future once historical records are developed. To aid staff in the numbering of the levels, refer to the bulleted items below.

- Level 1, air-vac working freely with no leakage.
- Level 2, air-vac working freely with no leakage but shows signs of a small amount of debris in body.
- Level 3, air-vac not functioning and or leaking. Shows signs of heavy deposits in valve body. Isolation valve may be frozen indicating debris present in line.

Air-Vac Maintenance schedule

Initial preventative maintenance will be done at a frequency of every 3-4 months until enough background data can be accumulated so that frequency can be altered. If an air-vac indicates a level 1 condition during consecutive maintenance activities, than this particular air-vac may only be required to be checked and cleaned once or twice a year. If an air-vac indicates a level of consecutive 3’s, than the cleaning frequency may need to be increased every 2-3 months.

APPENDIX A

AIR-VAC MAINTENANCE FORM

Date	***Station #***	***Location***	**Valve**	**Work Performed**	***Level***	***Model or Serial Number***