Nitrogen Introduction

The camera is back-filled with dry Nitrogen (N2) after air is evacuated to prevent condensation of water within the optics that could reduce visibility or damage the electronic and optical parts within the camera enclosure. N2 should be checked periodically (3 month intervals are recommended) and can be re-purged at the customer site by following these directions. The installed system permits remote monitoring of N2 levels. The N2 should be refilled once N2 counts drop to 25% above empty level.

WARNING
Improper pressure levels can or damaged parts of the camera system or refilling system have the potential to eject glass and other fragments from the system. The following procedure must be strictly adhered to order to prevent injury or death. Pressure level in the camera must not exceed 5.5psi.

Inspect the System

Disconnect camera power and remove the PTZ from its mount. Inspect the enclosure and glass window at the front of the camera enclosure. If the glass is intact, proceed to the next step.

CAUTION
Make certain that there are no cracks in the glass. If cracks are detected, do not proceed with the N^2 filling procedure. Store the system in a protected area and contact RVision for further assistance.

Use a Phillips screwdriver to remove the bleed screw on the camera enclosure. Inspect the O-ring of the seal screw for damage or debris, clean or replace seal-screw O-ring if required (Contact RVision for replacements). Apply a small amount of O-ring lube on seal and set aside in clean area. Also clean the bleed screw counter bore area.

Assemble N2 Filling Station

To properly fill N2 of the system, an appropriate filling station must be assembled. A filling station consists of the following items.

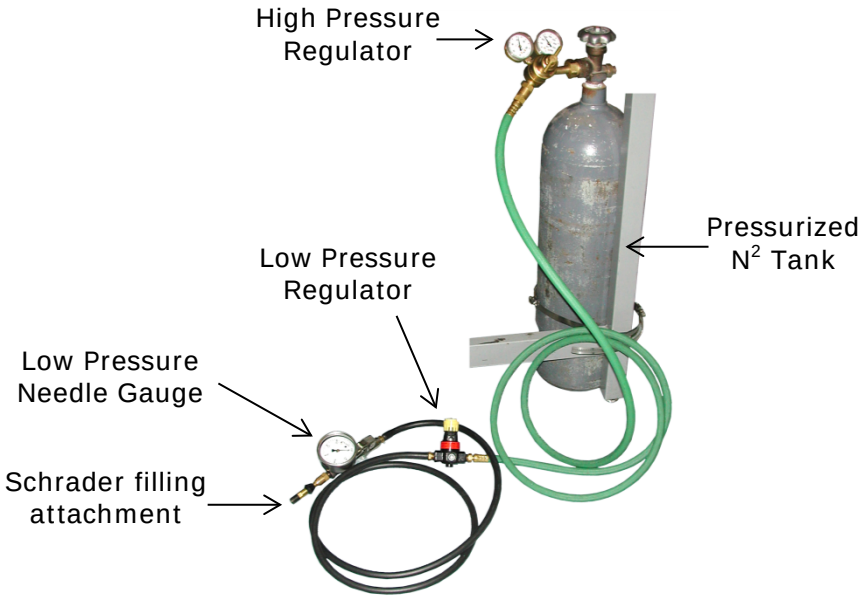

Figure 1: Example of an N2 Filling Station

1. Dry N2 pressurized tank- Available at many industrial supply stores. Strap to a fixed post.
2. High Pressure regulator- Gross pressure regulation, feed-in to low-pressure regulator
3. Low-Pressure regulator- Precision regulation to low levels (not to exceed 5.5PSI to the camera)
4. Low-Pressure needle gauge- Precise measurement of pressure output of N^2 low-pressure output
5. Schrader filling attachment- Filling hose and Schrader attachment to fill camera enclosure
6. Medium-size Phillips screwdriver: Used to remove purge screw on camera
7. Computer System- Windows 7 or later with PSEE and serial port
8. Camera Connection Cables and test stand w/power supply
9. TV Monitor

Purge the Camera enclosure with N2

Point the camera window away from yourself and make sure others stand clear while refilling the camera. Bleed screw should be removed before executing these steps.

1. If camera enclosure window is foggy, allow time for moisture to dissipate (with bleed screw removed) before proceeding.
2. Check N2 Pressure of filling station is set to 5psi.
   WARNING: Camera pressure levels must not exceed 5.5psi or injury may result. PSEE readings of N2 Pressure from the camera enclosure are in 'counts', not psi. Use the needle gauge to accomplish 5psi N2 filling of the camera housing.
3. Remove Schrader valve cap from camera housing.

4. Plug filling hose into camera Schrader valve and begin filling enclosure with bleed screw removed and purge for 30 seconds.
5. Cover bleed hole in enclosure with a finger, observe pressure in enclosure rises to 5psi.
6. Remove finger from bleed hole and repeat purge and release process about five times.
7. Tighten bleed screw while continuing to fill enclosure to 5psi.
8. Replace Schrader valve cap on camera housing.

Verify Proper N^2 Levels

1. Load camera into QuickConnect™ test stand and power-up camera.
2. After camera has finished self-calibration dance, open pSEE™ software.
3. Connect to camera and verify pan/tilt is functional and clear video is present.
4. Click on “Misc” tab.
5. Click “N2 Pressure” button.
6. N2 Pressure
7. N2 pressure “Now” reading should now be approximately equal to the “Full” pressure (set at the factory). The “Now” pressure should not exceed 180 counts.
8. Press pin lightly within Schrader valve to relieve any excess pressure and Click “N2 Pressure” button to re-check pressure.

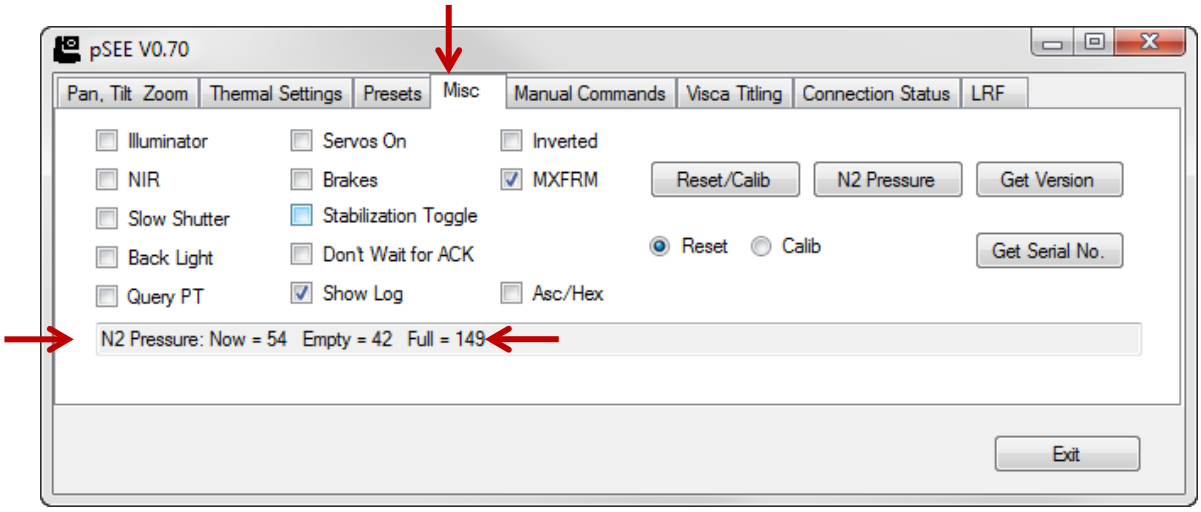

Figure 2: PSEE with MISC tab and N^2 Values.

Check for Leaks

The Camera may be checked for leaks by setting it aside for a period of several days and rechecking N2 levels. As gas pressure depends on temperature, ambient temperature should be similar when re-checking pressure levels. A reduction of 2 counts of N2 after this period is acceptable.

If it is desired to reinstall the camera immediately, inspection of the enclosure seals with a soap solution may be performed.

1. Mix a solution of 75% water / 25% dish soap.
2. Use a q-tip to apply solution to enclosure seals and around bleed screw and base of Schrader valve.
3. Apply solution to borders of camera window.
4. If bubbles appear and grow, there may be a leak. Set camera aside and retest with PSEE™ at a later date.
5. If no leaks are found, clean camera as outlined in manual and return the system into service

Periodic Maintenance

The camera requires the presence of dry N^2 to prevent ingress of contaminants into the camera enclosure and eliminate camera video problems due to condensation on the inside of the window.

1. The camera N2 levels should be checked every three months.
2. N2 should be refilled if levels ever drop within 25% of factory empty levels.
3. If the camera exhibits leaks that exhaust N2 levels quickly, contact RVision for support.