

## THE USE OF DIGITAL CAMERA TO ACQUIRE RADIOGRAPHIC IMAGES & TELEMEDICINE

The image quality of digital cameras has improved drastically over the past few years. 5.0 megapixel and higher cameras, when used properly, can outperform the images obtained on many of the laser scanners.

The current pricing of digital cameras allows for 5.0 models at under \$300.00. We recommend using these higher resolution cameras.

Use a stationary device to hold the camera: copy stand or tripod. The copy stand we recommend uses an adjustable arm for centering the image and a smooth turning crank column for focal distance changes.

High frequency illuminators using direct current (DC) offer better lighting than the standard view box that uses 60 Hz. The flicker lines seen with 60Hz are not produced with the high frequency illuminator. Remember to burn these illuminators in for 3 days prior to using for radiographic copying. The copy stand and the high frequency illuminator are available as a package through Veterinary X-Ray Supply, 800-289-9729 or [vetxraysupply.com](http://vetxraysupply.com).

Turn the overhead, wall or desk lights off in the room to avoid the typical glare or reflection off of the radiograph.

It has been stated that masking off the peripheral light around the radiograph improves the copied image. This is easily done with totally exposed and developed (black) x-ray film. Varying widths and lengths of this light blocking film can be cut to fit around the different size images.

Turn off the camera automatic flash.

Change the resolution to the highest setting, usually "fine".

Change the camera setting to grayscale for the exposure of radiographs. This is easy to change to color for other clinical uses, i.e. dental pre- and post-scaling, surgery, dermatology, etc.

**VERY IMPORTANT:** For images containing a large difference between the darkest and brightest portions of the radiographs, i.e. thorax (heart vs. lung), limbs (bone vs. soft tissue), at least two images should be made using the brightest density for one and the darkest density for the other to meter the image prior to the exposure.

Arrange the radiograph and camera to include a panoramic view of the whole region of study. If this is the thorax, include the first rib to the last rib. If the region is the abdomen, include the whole diaphragm to the pelvic inlet. Then make the necessary

close-up images of areas of question or interest. This is more easily accomplished with our digital camera copy system using the crank to raise and lower the camera. Do not use the optical zoom instead of lowering the camera to the radiograph. A typical scenario might be an exposure of the rear limb from the mid-femur to the tarsus with a close-up of the stifle and tarsus.

When making close-up images, it is most important to change the camera setting to “macro”. Each camera will have a different focal length and minimum distance to the image for their macro setting. Check the camera instruction manual for macro focal distance. Most cameras can be set on the Macro setting for all images of radiographs regardless of focal distance. Use the automatic focus (AF) and set the digital zoom between W (wide angle) and T (telephoto). The Marco icon on the monitor will change to a yellow color when the zoom is in optimal position for autofocus.

If an area of interest is on the very edge of the radiograph, masking the light around the edge of the radiograph is necessary for the proper automatic exposure. Otherwise the camera exposure meter will read the peripheral light from the illuminator and terminate the exposure before the area of interest is properly exposed.

Once the images are made, please review on your monitor. There should be no extraneous objects in the image around the edges of the illuminator: no view box switches, rims or peripheral light; no wall, no floor, no desk! The monitor on the camera will provide a screening of the images. It is easier to delete a poor quality image from the camera prior to downloading to your database.

Images can be uploaded to the Sugar Land Veterinary Specialists telemedicine server directly from the camera or memory card, but downloading to your computer for additional use and to view prior to uploading allows better inspection for detail. Repeat the image if necessary. Please call us at 281-491-7800 for details on system requirements and downloading a telemedicine program from the Internet in order to transmit images to our server for radiological consultation.

If your clinic data management system has the capability, download the images to the case file for future use. These images with the specialists’ reports are a great educational resource.