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Panorama Shift Adapter

Perspective control

The Zörk Panorama Shift Adapter on a 35mm SLR provides an ideal way to control perspective (such as converging vertical lines) by making use of lenses designed for medium format roll film cameras. Although "wide angle" focal lengths from medium format cameras are longer than those designed specifically for 35mm SLRs, (e.g., 50 vs. 35 or 40 vs. 28), the PSA provides a degree of shift adjustment that both compensates for the longer focal length of the medium format lens and surpasses the range of adjustment offered by dedicated perspective control lenses for the 35mm format (usually limited to a maximum of 10mm). The movements of the PSA coupled with the large image circle of medium format lenses provides a perspective control solution that approaches that of large format view cameras.

The PSA is particularly effective for architectural photography where the control of converging vertical lines is crucial. In this application the PSA yields results comparable with those from a view camera. The ability to shift and rotate the PSA (in effect combining vertical and horizontal shift adjustment), allows off center converging lines to be corrected as well.

Greater degree of perspective control over dedicated PC lenses

"Shift gain" refers to the effective shift or displacement of the subject relative to the film plane. The amount of shift gain is based on a given amount of shift divided by the focal length of the lens in use (both measures expressed in millimeters) multiplied by subject distance. For instance, a 40mm lens and 20mm of shift with a subject 100 meters away produces a shift gain of 50 meters (20 / 40 x 100). In the case of a conventional 28m PC lens, using 10mm of shift (typically the maximum shift for this type of lens) yields a shift gain of only 36 meters (10 / 28 x 100). With a 35mm PC lens, the shift gain would be as little as 29mm!

Recomposing without altering perspective

The PSA allows you to subtly recompose your photograph around obstacles in the scene without changing perspective. You have the option of moving either the camera or the lens to eliminate or reduce undesirable foreground details or reflections—without altering vertical or horizontal proportions, as would normally occur with a fixed position lens.

Panorama technique

Panoramas with the PSA involve taking two shots with the PSA shifted in opposite directions, corresponding to approximately half the length of the scene. The panorama capability can be used with any focal length lens mounted on the PSA, including telephoto lenses. The angle of coverage obtaining with the PSA can only be approached using short and super-wide angle lenses, which add undesirable perspective distortion. The PSA allows 3:1 aspect ratio panoramas (without vertical cropping) without the distortion associated with wide and super-wide angle lenses.

The two images align exactly because the camera remains stationary while the lens moves, so the film plane remains in the exact orientation for both the left and right images. The movement of the lens provides two distinct angles of view but with the same perspective correction, so that the panorama appears "natural" from left to right.

Mount the camera horizontally on a tripod (using a spirit level is advised). Expose the first shot, then rotate the PSA with the shifted lens through exactly 180 degrees to the opposite position. Advance the film and make the second exposure. With static subjects, the images will now join up precisely along one edge, with

the perspective perfectly matched from the foreground to the distant background. The actual displacement in each direction, obtained by superimposing the two matching markings on the adapter, is 16mm. Note: for panoramas do not de-center the lens by more than 18mm.

A slight overlap of the two frames is useful in allowing you to join two prints enlarged to the same degree using adhesive or tape along the back. The two images can also be joined end-to-end after trimming them with a ruler and sharp knife. Slight overlap of the two images is also useful when joining scanned negatives or slides in Photoshop or other image processing software.

Operation

The PSA is easy to use once you have acquainted yourself with its basic operation and functions. To begin, simply mount your medium format lens to the front mount of the PSA and then lock the lens securely in place.

Note: with Mamiya 645, and other PSA models with a bayonet mount lock switch, it is imperative to first push the switch—moving the lock claw away from the lens bayonet tabs—*before* mounting your medium format lens. The lock switch is a small metal lever located at about two o'clock on the outside of the bayonet mount. Releasing the lock switch prevents any possible damage to the locking claw and ensures a precise and tight lock of your lens into the PSA mount. Also note that with some early model Mamiya lenses the A/M switch may touch the tripod socket of the PSA. Newer model Mamiya lenses have a less obtrusive switch, and so switches on the older models may require some slight filing.

Basic operation involves using the threaded control rod for either gross or fine adjustments. We recommend using the gross adjuster (by tilting the T-handle and applying pressure to one side of the mounted lens) to establish initial degree of shift, then fine tuning using the knob at the end of the control rod.

If you have a PSA model with a lens mounted tripod socket you will need to purchase an L bracket. Zork has recently developed one for this purpose, and you can also source one through Really Right Stuff --their Multi-Camera L Plate (see www.reallyrightstuff.com/mcl/index.html) -- in order to take fullest advantage of using the PSA with this style socket for camera-only movements. The RRS bracket has been used successfully by a number of our customers, although a slight modification (filing to make it thinner) is required to gain full movement in the horizontal dimension on some current cameras with large battery compartment grips (e.g., EOS). With this method, it is possible to take multiple exposures and create a mosaic of images to be later stitched together, while maintaining the same nodal point / avoiding parallax. One of our users has posted a tutorial at www.stitchpix.com.

For PSA's without the lens mounted tripod socket, you can use another method, described here: www.outbackphoto.com/workflow/wf_58/essay.html. This method requires the purchase of a Really Right Stuff Focusing Rail: http://www.reallyrightstuff.com/specialty/index.html.

Angle of coverage and perspective

Using the PSA with a 40mm (for Hasselblad), 50mm (from the Pentacon Six, Kiev 66, or Exacta 66 line), or 45mm lens (for Mamiya or Pentax 645 and Pentax 67) will produce distortion-free panoramic images. Adjusting the offset to 18mm of shift on a 35mm SLR will provide an angle of view of 75-90 degrees across the 76mm diagonal of the 24x36mm frame. This equivalent angle of view would require a wide-angle lens of 28-32mm. However, these wide angle focal lengths would produce far greater perspective distortion (enlargement of foreground, diminishment of background) and would allow greater dominance of foreground and sky (with outdoor images) relative to the subject for a given camera-to-subject distance. Using these medium format lenses on the PSA allows much better isolation of the main subject with a resultant angle of view equivalent to standard 35mm wide angle lenses along with more natural perspective.

Excessive foreground can be reduced by shifting the lens beyond 16mm. Shifting the lens to 20mm and adding 30 degree of incline will reduce foreground while adding only minimally to the linear distortion.

In addition to horizontal panoramas in landscape orientation, the PSA can also rotate for vertical panoramas and upright compositions. With architectural photos a maximum of 18mm shift is possible to correct perspective, without incurring distortion to converging vertical lines.

A full 360 degree panorama is also possible, combining lens movement and camera rotation on a panorama tripod head. The camera is rotated only every third frame. The reduced frequency of angular displacement (compared with other methods) provides a more realistic and natural appearing 360 degree view or partially extended panorama sequence. We suggest looking for particularly "busy" or distracting looking sections in the scene and use these as the "join points," as these will more successfully hide joins. A friction type ballhead is recommended for this application.

Panorama slides may be projected using a pair of projectors or AV units. For this application, the pair of projectors must be accurately aligned and the two images mounted in the slide mounts using registration pins. Each slide must also have a clear film overlay with a gray wedge to reduce light at the join points (Zörk can provide suitable glass slide mounts, registration pins, an alignment grid, or gray wedges for this purpose). Both projectors must be precisely aligned on a common support and positioned at the precisely same distance from the screen. For the professional, a wide-screen projection of image pairs created using the PSA, eliminate angular displacement and greatly extend the scope and quality of images produced using the 35mm format.

Panoramic coverage of image pairs with Zörk PSA using medium format lenses on 24x36 film and digital cameras

Angle of view	Focal length of medium format lens for producing maximum 76mm diagonal with 18mm of shift	Corresponding equivalent focal length for 35 mm format
108º	35mm (Mamiya or Pentax 645)	17
90º	40 mm (Hasselblad)	22
81º	45 mm (Mamiya or Pentax 645, Pentax 67)	25
75º	50 mm (Hasselblad, Pentacon/Kiev/Exacta 66)	28
70º	55mm (Mamiya or Pentax 645, Pentax 67)	30
63º	60mm (Hasselblad)	35
52º	80mm (Hasselblad, Pentacon/Kiev/Exacta 66, Mamiya 645)	45
35º	120 Planar (Hasselblad)	70
30º	150 (Hasselblad, Mamiya or Pentax 645, Pentax 67)	80
14º	300mm (Hasselblad, Pentacon/Kiev/Exacta 66, Mamiya or Pentax 645)	180
9º	500mm (Hasselblad, Pentacon/Kiev/Exacta 66, Mamiya 645).	270

The PSA is part of a modular system

The PSA can be combined with the Zörk Mini Makro Mount (for macro range focusing) or the Multi Focus System, which adds tilt and swing (along with macro capability). This combination requires the use of a 105mm or longer enlarger lens, and opens up novel and creative approaches to macro-photography and other imaging challenges. For more information on this and other Zörk products, please see www.zoerk.com or contact us directly.