

PENTAX®

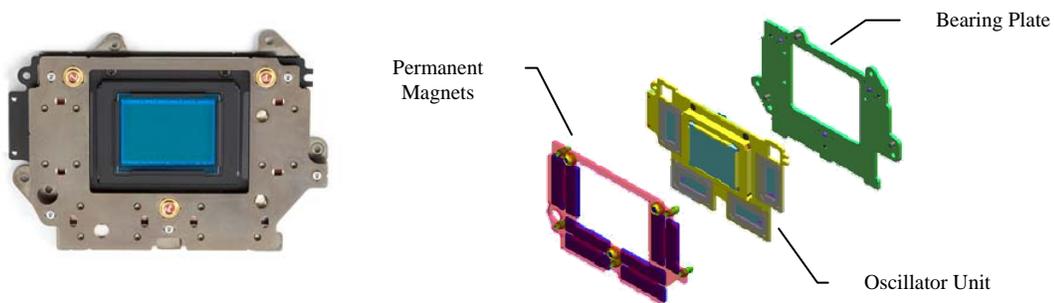
Shake Reduction Technology



All current PENTAX DSLR camera bodies incorporate a unique high-tech feature that helps deliver sharp, blur-free handheld shots with *any* Pentax lens. This is particularly helpful in situations where camera shake is an issue, such as with telephoto lenses, indoors without a flash, or other low light conditions at dawn, dusk or at night.

How PENTAX Shake Reduction Works

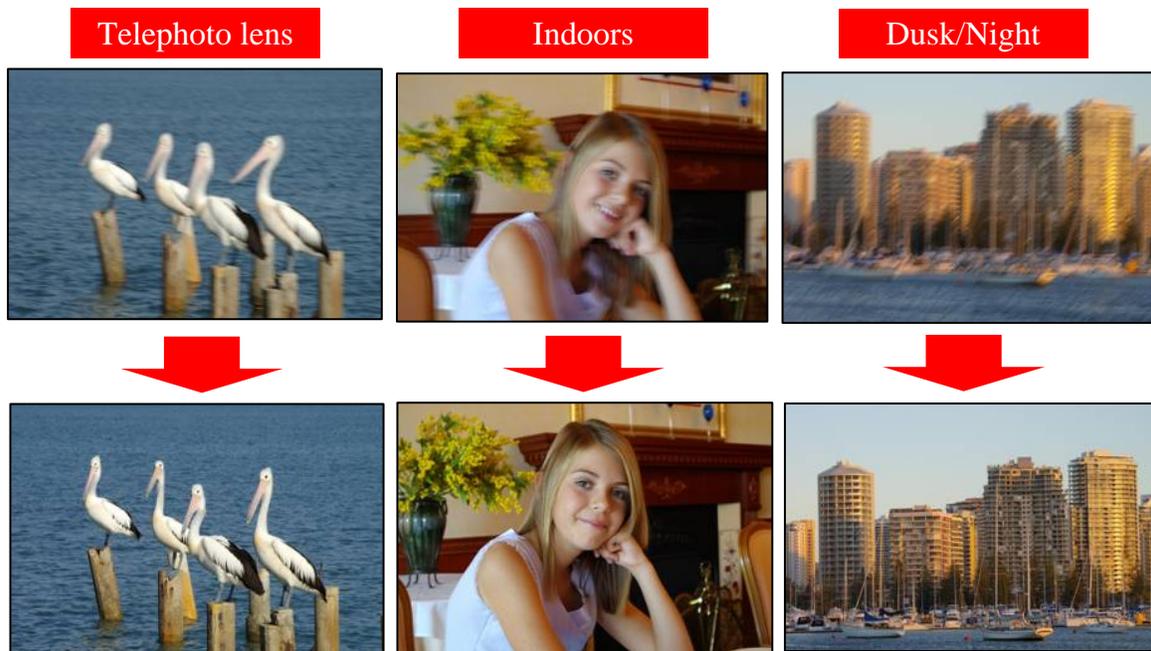
The PENTAX Shake Reduction (SR) feature is an electromagnetically controlled system built into the body to detect handheld camera shake and compensates by moving a free floating image sensor. Unlike other DSLR optical anti-shake systems, this SR system delivers shake reduction with *all* PENTAX lenses ever manufactured without requiring a special series of bulky, expensive optics.



Based on a free-floating sensor design, PENTAX SR is superior to other sensor-moving systems because it uses no guide rails, allowing the sensor to oscillate in three directions—horizontally, vertically, and rotationally.

Over 30 patents have been filed for this SR system, which uses a ball-bearing-mounted oscillator unit with four electromagnets that hold the free-floating image sensor. Angular velocity sensors detect camera movement and relay the amount of compensation necessary to the electromagnets that move the sensor to compensate for any shake.

As a result, photographers can capture sharp images at a shutter speed that is 2.5 – 4 stops slower (e.g. 1/15 sec instead of 1/60 sec with a standard lens) than would otherwise be possible. The SR system provides a crucial advantage when shooting handheld with telephoto or tele-zoom lenses, at macro distances, or any other situation that magnifies the effects of camera shake. The SR system also helps considerably when taking non-flash pictures indoors or at dusk or other low light situations without using a tripod.



Additional Advantages of the PENTAX SR System

- Since the SR system is activated only when you press the shutter release, any effect on battery consumption is negligible.
- PENTAX SR is optional. You can leave SR on permanently, turning it off only when using a tripod or panning (deliberately moving the camera in the direction of subject motion to blur the background).
- Performance capabilities such as auto-focus speed, shutter lag time and continuous shooting rate are unaffected by the SR system because its operation is instantaneous, occurring within the normal exposure interval.
- By building the shake-reduction system into the body, the Pentax SR system provides maximum flexibility and requires no compromises in optical quality.
- To provide optimal shake reduction, the camera must “know” the focal length of the lens in use. Pentax F, FA, D-FA, DA*, and DA series lenses automatically relay focal length information to the camera. With older lenses, the bodies allow users to manually input focal length information via the Shake Reduction menu which allows focal lengths all the way from 8mm to 800mm.

The SR system in all PENTAX DSLR camera bodies is an engineering achievement and an example of PENTAX’s commitment to our legacy of lenses.

PENTAX® Shake Reduction Technology

Shake Reduction (SR) Questions and Answers

What is the PENTAX-original Shake Reduction system?

It is an image-sensor-oscillation-type system installed in the camera body.

Is there any existing Pentax lens that is not compatible with the Shake Reduction system?

No, all lenses are compatible with this system as long as they can be mounted on PENTAX DSLR bodies. (Some lenses require the user to set the focal length.)

What is the effective compensation range (or, how many shutter-speed steps)?

The effective compensation range is equivalent to approximately 2.5 to 4 shutter-speed steps. The actual effect may vary depending on the photographic conditions, including the lens used. Some lenses may offer more than two stops of compensation.

What is the purpose of the Shake Reduction (SR) system's on/off switch?

To allow the user to select SR according to shooting conditions such as when the camera is fixed on a tripod, deliberate shooting for image blur, and conditions where camera shake other than by hand is expected.

Does battery life change while the SR system is engaged?

No, battery life remains the same whether the SR system is turned on or off.

Does the SR system's shifting of the image sensor beyond the lens image circle lower the performance of the lens?

No, shifting the sensor doesn't negatively affect the performance.

How does the SR system control hand shake?

By calculating a correction value from the amount of shake detected through the gyro sensor, the system shifts the image sensor at high speed, by magnetic force, to vertically or horizontally compensate for the shake.

Does the SR system work in slow sync mode, with strobe lights?

Yes, it does work in this shooting mode.

What are its advantages over other shake reduction systems developed by your competitors?

- 1. No special shake reduction lens is required. This means that all PENTAX lenses that can be mounted on PENTAX DSLR bodies will work with this system.;*
- 2. New lenses can be designed compact and lightweight, because the system makes no restrictions on lens design.*

How many existing PENTAX lenses are compatible with this SR system?

There are approximately 24 million compatible lenses, as of March 2006. This figure is a total of all lenses sold by PENTAX since the M42 screw-mount lenses.

Does the SR system work during pan shots of moving subjects?

Yes, it does work, but switching the SR function off is recommended. In shooting conditions where there may be camera shake more than by hand, the SR system may not appropriately compensate for the shaking.

Does the SR system effect the shutter lag time?

No, it does not.

Does the SR system work in bulb mode?

No, it does not. The SR system is shut off when bulb mode, remote control shutter release, self-timer, or wireless strobe is used.

How many patent applications have been filed with regard to this SR system?

Over 30 patent applications have been filed so far.