



Picture perfect scanning with Reli-a-Flex®

With the latest advances in digital optical scanning speed, professional flatbed scanner manufacturers are requiring more accuracy from their drive systems. A European company with leading edge technology in drum and flatbed scanners, image setting and integrated media processor products uses Reli-a-Flex® couplings in all their flatbed products. With XY technology, speeds of up to 50 scans per hour and resolutions of up to 5400 dpi, the accuracy and reliability of the Reli-a-Flex® coupling makes it the ideal choice.

Prior to the introduction of the Reli-a-Flex® coupling slight variations in the speed of the CCD element caused errors when trying to capture high resolution images. These errors manifest themselves as a colour registration defect, which resulted in an unacceptable banding effect across the image. Although these errors were small (typically 3.0 microns) they could easily be detected by the naked eye.

The cause of these errors was identified as the flatbed drive system. Introduction of a Reli-a-Flex® coupling manufactured from low inertia Grade 7075-T6 Aluminium was instrumental in bringing these registration defects under control. The unique slit pattern with radial rather than spiral slits gives the Reli-a-Flex® coupling high torsional stiffness and unsurpassed accuracy. However, with Reli-a-Flex® high torsional stiffness does not mean high bearing loads, the Reli-a-Flex® slit pattern has been carefully designed to give low bearing loads in conjunction with its high torsional stiffness.

Also, being tested to 50 million cycles at rated torque, the Reli-a-Flex® coupling is ideal for high duty cycle applications such as busy printing and typesetting applications. All in all the Reli-a-Flex® coupling has proved itself to be ideal for accurate positioning and responsive servo systems.





In the final analysis, Reli-a-Flex[®] shines through

During development of a new generation of micro plate analysis machines, engineers at a leading European scientific instrument supplier used the Reli-a-Flex[®] coupling as a critical part of the drive and positioning system.

In line with the industry trend to achieve more accurate, faster machines this particular machine has taken a leap ahead of the competition, being specially developed for life scientists working with very high throughput.

Accuracy and speed of operation of the transport mechanism are critical. Handling plate formats from 96 up to 1536 wells, and the capability to read 1536 wells in less than one minute meant that the correct selection of coupling was essential. Analytical techniques include fluorescence intensity, absorption fluorescence, polarised time delayed fluorescence, and glow luminescence.

The Reli-a-Flex[®] coupling was chosen as the link between the drive motor and the transport mechanism. High torsional stiffness, low inertia and accurate transmission of motion between the motor and the leadscrew drive were provided by a size 16 Reli-a-Flex[®] coupling.

The patented slit pattern of the Reli-a-Flex[®] coupling gives it very high torsional stiffness (comparable to bellows type couplings) whilst still providing very low bearing loads and extremely accurate transmission of motion. In applications requiring more stringent accuracy requirements the Reli-a-Flex[®] coupling helps the designer by introducing minimal errors of rotation. With a positional error budget of +/- 0.1mm the Reli-a-Flex[®] coupling was the only choice. Similar one piece spiral slitted couplings can introduce errors of up to +/-0.006mm, however with predicted Reli-a-Flex[®] errors of only +/-0.001, there was no comparison.

In fact, not only is the Reli-a-Flex[®] design the stiffest and most accurate one-piece flexible coupling available today, but the patented special slit pattern significantly reduces stress in the flexing elements as the coupling rotates. This ensures that the Reli-a-Flex[®] coupling is extremely reliable and exceeds the performance of other one-piece slitted couplings. Made from low inertia 7075-T6 Aluminium the Reli-a-Flex[®] coupling has been fully tested. Life expectancies of greater than 50 million cycles can be readily achieved, making it ideal for today's new generation of accurate, reliable and fast machines.

