

# APPLICATION BRIEF

## GENERAL INDUSTRY

## The Brad® Ultra-Lock™ Connection System Helps Reduce Ergonomic Stress

**Threadless M12-compatible quick-connect system helps reduce the risk of repetitive motion injuries for manufacturing and assembly workers, while providing a secure, operator-independent seal.**

**Business Challenge:** The High Cost of Repetitive Stress on the Industrial Workforce. Industry research shows that cumulative stress trauma resulting from long-term repetitive motion poses a major economic challenge to industrial companies. It is estimated that such injuries cost more than \$20 billion a year in worker's compensation. Consider these statistics from studies conducted over the past decade:

- The U.S. Department of Labor's 2004 Survey of Occupational Injuries and Illnesses, published in November 2005, cites warehousing, transportation and manufacturing firms as having the highest incidence rates for occupational injuries.
- The National Institute for Occupational Safety and Health (NIOSH) estimates that 20 million workers on assembly lines and in other jobs requiring repetitive, strain-producing motions are at an increased risk of developing stress trauma, such as carpal tunnel syndrome caused by working with the hands in a deviated position, and tendonitis from repeated muscle force required to perform certain tasks.
- The National Safety Council reports that repeated trauma disorders have the highest incidence rates of all occupational illnesses, with manufacturing workers constituting 72 percent of these disorders.

In automated manufacturing and assembly plants, workers are called upon to connect the multitude of sensors and control devices used in industrial machinery and material handling systems. One way companies can minimize the risk – and productivity impact – of worker fatigue and repetitive stress injuries is to select components with ergonomic features designed to reduce muscle tension and repetitive motion.



**Solution:** The Brad Ultra-Lock™ Connection System. To address this challenge, Molex introduced its Brad Ultra-Lock connection system, a breakthrough threadless design that combines innovative engineering and advanced ergonomics. The Ultra-Lock connection system is comprised of a series of integrated distribution boxes and cordsets built on a patented 'push-to-lock' technology that enables secure connections without turning the coupler, thus eliminating the repetitive hand/wrist rotation required to install traditional threaded M12 connectors. Assemblers simply push down to connect and pull up to disconnect, which helps reduce ergonomic strain, especially when connections must be made in tight or 'blind-mate' locations.

Additional advantages of Ultra-Lock connection system include:

- **Industrial-Strength Seal.** The radial O-ring compression seal is IP69K-rated and has shown to be effective in assisting to lock out moisture, dust, oil, solvents and other chemical contaminants that may be present in harsh industrial environments.
- **Secure Connectivity.** Ultra-Lock connectors are designed to stay securely mated even under the stresses of machine vibration, cable pulls and in-plant traffic of workers and mobile vehicles.
- **Operator Independent Seal Integrity.** Traditional threaded connectors are operator dependent; therefore the seal torque integrity is human dependent. The rugged Ultra-Lock connector seal is operator-independent, so it cannot be either too tight or too loose.
- **Ease of Installation.** The Ultra-Lock connection system's innovative push-to-lock technology results in faster, easier installation and higher worker productivity and morale.

**Benefits and ROI:** The Ultra-Lock connection system is engineered to help manufacturers and other industrial enterprises combat the high cost of worker's compensation, employee medical expenses and loss of productivity by significantly reducing the incidence rates of worker fatigue and repetitive stress injuries.

In addition, with pricing of the Ultra-Lock connection system competitive with other M12 connection systems, manufacturers and assemblers can realize a rapid return on investment due to higher worker productivity and increased production uptime, with less risk of intermittent or loose connections.



To learn more about Brad Automation products and solutions, call your Molex representative today at 1-800-225-7724 or visit [www.molex.com](http://www.molex.com) or [www.woodhead.com](http://www.woodhead.com)