

MAKING LONGWALL  
CONNECTIONS SIMPLER,  
FASTER, AND SAFER



**iLOK™ COUPLING**





**REDUCE THE TIME, COST, AND RISK OF  
MOVING LONGWALL MINING MACHINERY**



Conditions in a longwall mine play havoc with traditional staple-lock and super-staple-lock couplings. Operating pressures of 5,000 psi in the hydraulic hoses connecting the shields on your longwall miner put 60,000 ft-lbs of force against the fittings. That's a lot for a staple to withstand. Moreover, hoses and fittings are subjected to pressure spikes from pumping equipment, impulses from the self-advancing shields, corrosion created by coal dust and moisture, and highly emulsified hydraulic fluids.

After months in this environment, staples become corroded and deformed. They fuse to the grooves in the fitting. When it's time to move the equipment, workers often resort to dangerous practices to free the couplings. They use crowbars to pry the staples loose. They use hammers to beat on the coupling ferrule or the hose itself. The result is often a cracked ferrule or damaged hose, leading to a leak or catastrophic burst when lines are re-pressurized. And when accidents happen, MSHA scrutiny is quick to follow.

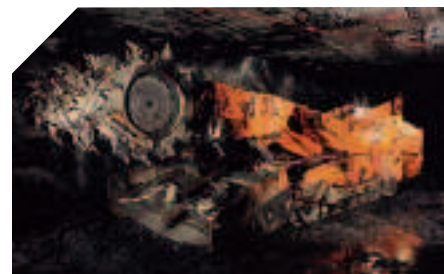
What if you could invent a new coupling without the disadvantages of the staple-lock fitting? This new coupling would have the following characteristics:

- › Simple to understand and use
- › Easy to connect and disconnect by hand
- › Withstand high impulse applications
- › Use a secure, visible locking system
- › Release residual pressure away from workers during disconnection
- › Compact, to fit in tight quarters
- › Smooth, to prevent abrasion against adjoining hoses

It's here. Gates introduces the iLok™ coupling, a patent-pending design that replaces the traditional staple-lock and super-staple-lock coupling.

#### **FASTER LONGWALL MOVES**

Moving a longwall miner from one coal seam to another chews up man-hours. On average, it takes 20 minutes to de-couple traditional staple-lock couplings. On a longwall miner with 500 connections, that means 10,000 minutes (nearly 7 days) just to disconnect the fittings. That's nearly 167 man-hours of labor. Gates iLok™ couplings can be safely disconnected in 2 minutes or less, for a total of 17 man-hours of labor, a decrease of 90 percent.



**Reduce man-hours by 90% or more on your next longwall move. Gates iLok™ coupling is also suited for high-pressure, high-impulse applications on continuous miners.**

# A COUPLING SO SIMPLE, IT'S REVOLUTIONARY

## WHAT MAKES THE GATES iLOK COUPLING UNIQUE?

Gates iLok coupling is designed to realize dramatic reductions in downtime when moving and re-assembling longwall mining equipment. Compared to a staple-lock coupling, it's simpler, safer, and faster.

### SPEEDY CONNECT AND DISCONNECT

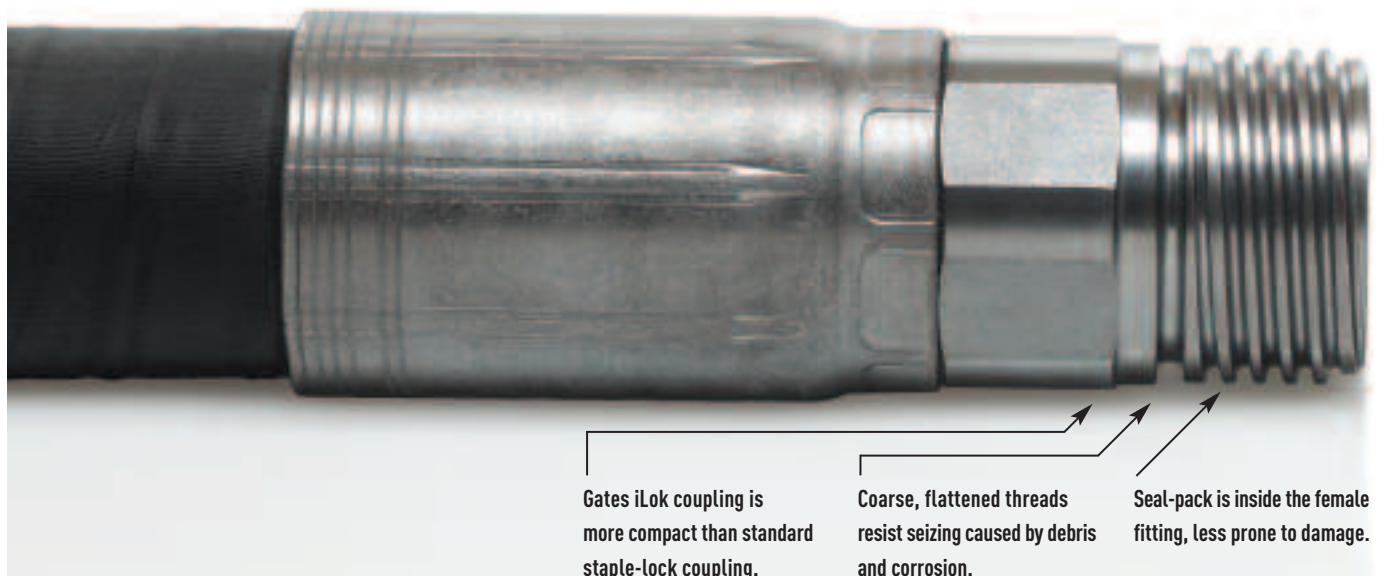
Gates iLok coupling is a threaded design with coarse, flattened threads to allow hand-tightening. It can be connected in seconds. Disengaging the connection is quick and easy too. Simply cut and remove the cable lock and turn the swivel nut counterclockwise 2-1/2 turns by hand. Slots on the swivel nut accommodate a spanner wrench in case extra force is needed to loosen the connection.

## POSITIVE, SECURE CONNECTION

When fully connected, openings in the iLok nut align with a groove in the female fitting to accommodate a cable lock. The cable won't pass through the grooves unless the nut is completely tightened, providing positive proof of a secure connection. The protruding cable lock "flags" workers that a connection has been made.

### SAFETY AND PERFORMANCE

A staple contacts only 1/4 to 1/3 of the mating groove, while the iLok coupling nut contacts the entire surface. This spreads the load evenly, preventing deformation of the fitting and providing greater resistance to de-coupling forces. Prior to full disconnection, residual pressure in the line is released from the sides of the coupling, away from workers' faces.





### DAMAGE RESISTANT

The iLok seal fits inside the female end, less subject to accidental damage. The sealing surface on the male end is protected within the swivel nut. The open thread design resists damage caused by debris and corrosion.

### COMPACT AND SMOOTH

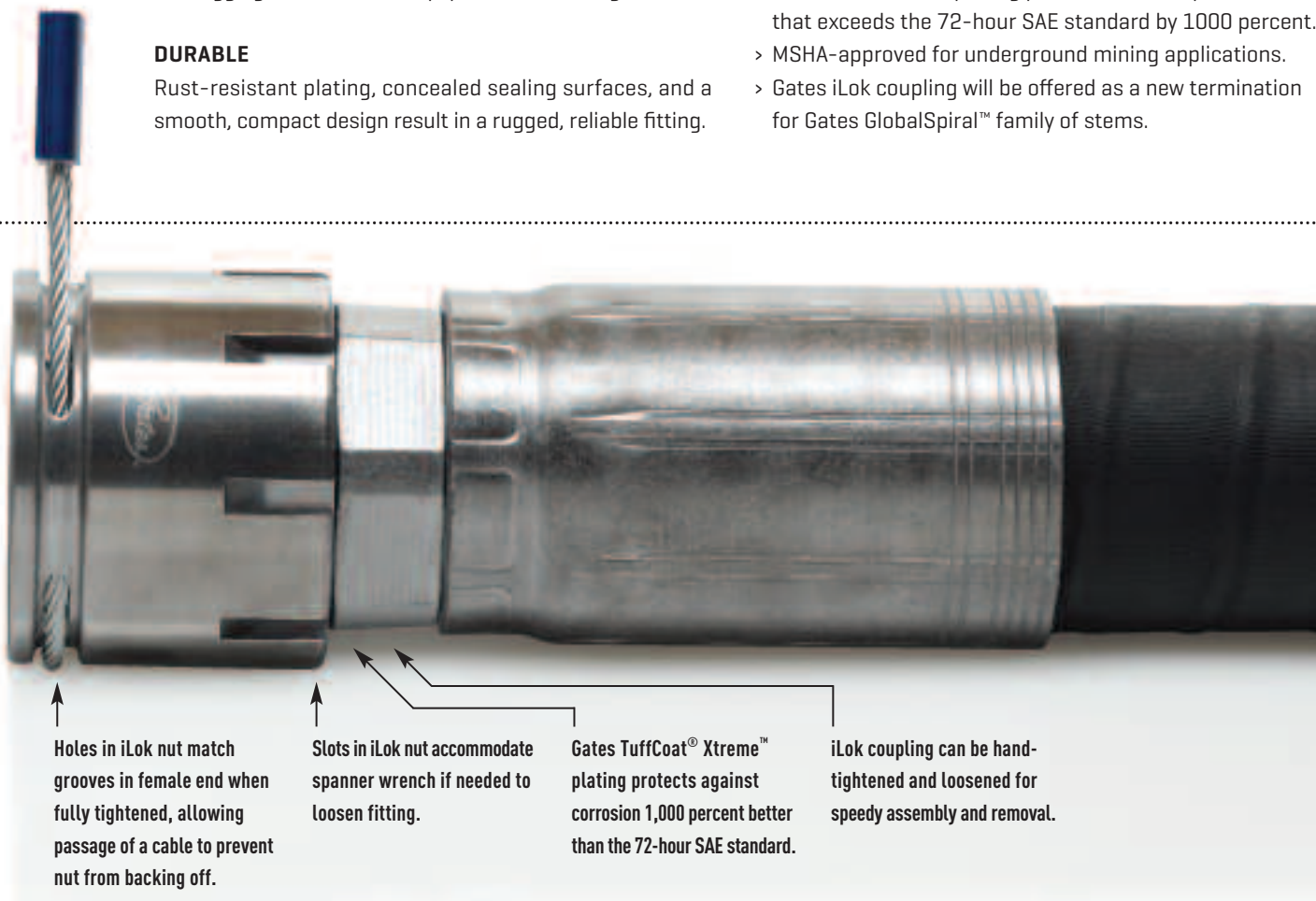
Compared to a standard staple-lock coupling, the iLok coupling takes up less space in the tight working quarters on longwall machines. Its smooth surface prevents abrading or snagging hoses or other equipment while being moved.

### DURABLE

Rust-resistant plating, concealed sealing surfaces, and a smooth, compact design result in a rugged, reliable fitting.

### SPECIFICATIONS

- > Impulse tested to 133% of operating pressure at 250°F [ $+121^{\circ}\text{C}$ ] for 1 million impulse cycles with no leaks or failures [SAE J343 impulse wave, 50 cycles/minute].
- > Exceeds Code 62 of SAE J518 flange specifications [CAT® flange] for 6,000 psi lines, easily withstanding the 5,000 psi working pressures needed for hydraulic lines on longwall equipment.
- > 4:1 design factor [burst pressure to working pressure ratio].
- > TuffCoat® Xtreme™ plating provides red rust protection that exceeds the 72-hour SAE standard by 1000 percent.
- > MSHA-approved for underground mining applications.
- > Gates iLok coupling will be offered as a new termination for Gates GlobalSpiral™ family of stems.



Holes in iLok nut match grooves in female end when fully tightened, allowing passage of a cable to prevent nut from backing off.

Slots in iLok nut accommodate spanner wrench if needed to loosen fitting.

Gates TuffCoat® Xtreme™ plating protects against corrosion 1,000 percent better than the 72-hour SAE standard.

iLok coupling can be hand-tightened and loosened for speedy assembly and removal.



**POWERING PROGRESS™**

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