

# Surface Connector Improvement



## Reduces connector rotational torque

BIW has implemented a new method for securing coupling rings to BIW Surface Connectors. It uses ball bearings to secure the coupling ring to the connector body.

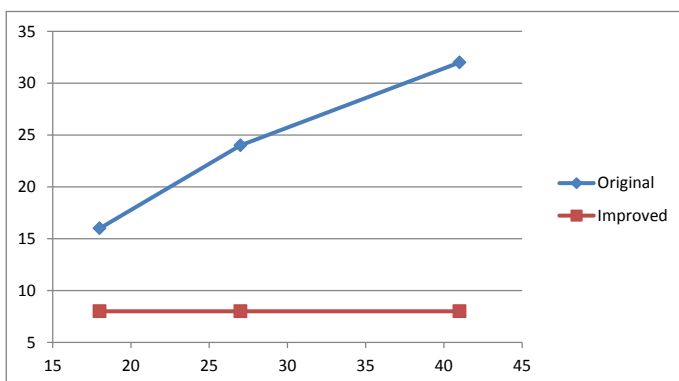
The new attachment method significantly reduces friction. It makes coupling easier on surface connectors where heavy cables contribute to side loads. The new method applies to most surface connector types.

The new retention method is extremely strong. The stainless steel bearings also resist corrosion, and they are less affected by debris than other methods of attachment.

The new coupling method has been subjected to extensive side-by-side testing with the conventional snap-ring attachment method. Testing was performed with connectors exposed to various environmental factors.

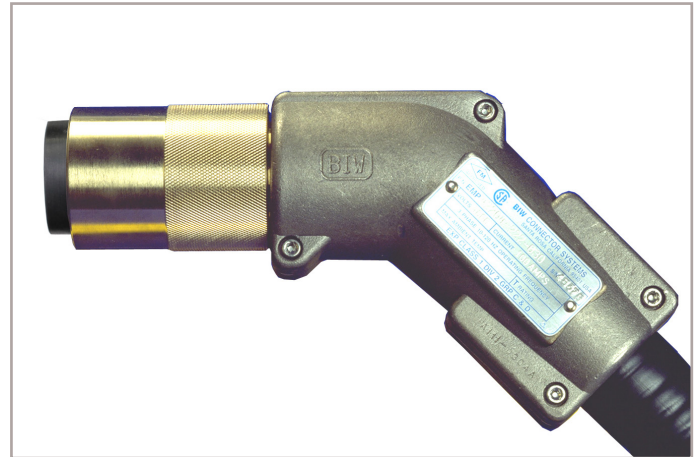
- High and low temperatures
- Dust and mud
- Salt spray
- 10 impacts from 3 feet drops

### Uncoupling Torque on Side-loaded Connectors

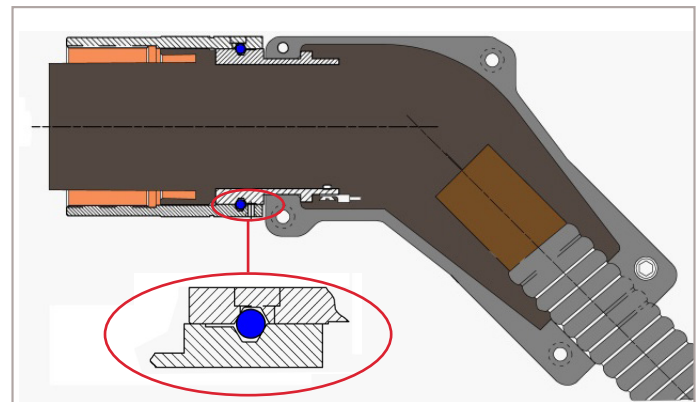


All loads are on foot-pounds

\*Torque wrench had a minimum readable increment of 8 lbs.



Exterior view of Surface Connector



Cut-away view of a Surface Connector. Stainless steel ball bearings (shown in blue) are placed into a raceway between the Coupling Ring and the Coupling Sleeve. When all ball bearings are in position, the Coupling Ring is permanently secured to the Coupling Sleeve.

Testing was performed with connectors that had been exposed to dust, salt, and mud. When 40-lb side loads were applied to the connectors, the ball bearing connectors required less than 8 pounds of rotational torque to uncouple compared with 32 pounds for conventional designs. In both cases, the threads on the mating feedthru had been lubricated.

Ball bearing Coupling Nuts have been implemented for the tabulated part numbers.

<b>BIW Part Number</b>
EM42201-XXX-XXX
EM42204-XXX-XXX
EM42203-XXX-XXX
M271105-129-XXX
EMP72001-099-XXX
EMP42215-XXX-XXX
EMP42260-XXX-XXX
EM42206-XXX-XXX
EM52011-XXX-XXX
EM42004-XXX-XXX
EM42218-XXX-XXX
HE301230-XXX
HBM5B7201-XXX-XXX
KLM5B7251-XXX-XXX
KLM5B7201-XXX-XXX
KLM5B7501-XXX-XXX
<b>Conversions in Progress</b>
EM52201-XXX-XXX
EMP42402-XXX-XXX
CM261101-XXX-XXX
HCM5B6201-XXX-XXX
M15XXX-XXX

