



**Product**

## Custom Backstop/Torque Limiter Clutches

**Application**

## Aircraft Engine Removal/Installation Trailer

**Highlights**

Two clutches combined into one compact custom-packaged unit:

**Formsprag Clutch**  
**Custom Engineered**  
**FL Form-Lock Backstop**

Bi-directional clutch

**Boston Gear**  
**Custom Modified**  
**HOR Overload Clutch**

Automatic reset, ball detent style overload release clutch

A leading aerospace ground support equipment manufacturer located in Australia required a custom set of clutches for an engine removal and installation (R&I) trailer used by F-35 strike fighter aircraft maintenance crews. The unique trailer/lift allows the heavy turbofan engines to be installed by just two mechanics in any location, including aircraft carrier hanger decks.

In order to position the engine precisely within the airframe during installation, a manually-operated, very fine adjustment resolution is required. A backstopping clutch is needed to prevent the telescoping trailer/lift from collapsing during engine handling when the input for the low speed, fine adjustment mechanism is un-manned. A torque limiting clutch is used to protect against potential damage caused by very high force levels that are generated by the high reduction ratio required for the fine adjustment. Without this overload release function, an operator could impose enough force to damage components if unintended impact between the engine and the airframe occurs.

To meet the dual-clutch, corrosion-resistant requirements, Formsprag Clutch engineers worked with Boston Gear, another Altra Industrial Motion brand, to design a single-piece, stainless steel packaged clutch solution. A modified Boston Gear HOR clutch was combined with a custom Formsprag Form-Lock bi-directional backstop. The unique configuration allowed both mated components to fit in the very tight space constraints.

The Formsprag Form-Lock (FL) is a mechanical clutch that can be driven in both directions while automatically providing a holding brake function when the driving torque is stopped. Built to withstand tough environments, Form-Lock clutches are available with torque ratings up to 4800 in.lb. (542 Nm). The Boston Gear HOR Series is an automatic reset, ball detent style overload release clutch. It has been designed to provide accurate and reliable torque disconnect protection for power transmission equipment.

**Contact**  
**Formsprag Clutch**

US (Application Assistance)  
**1-800-348-0881** Press #2  
formsprag.com

**Contact Boston Gear**

US (Application Assistance)  
**1-800-816-5608**  
bostongear.com

**Asia Pacific**

For a list of our AP sales offices:  
altramotion.com/contactus