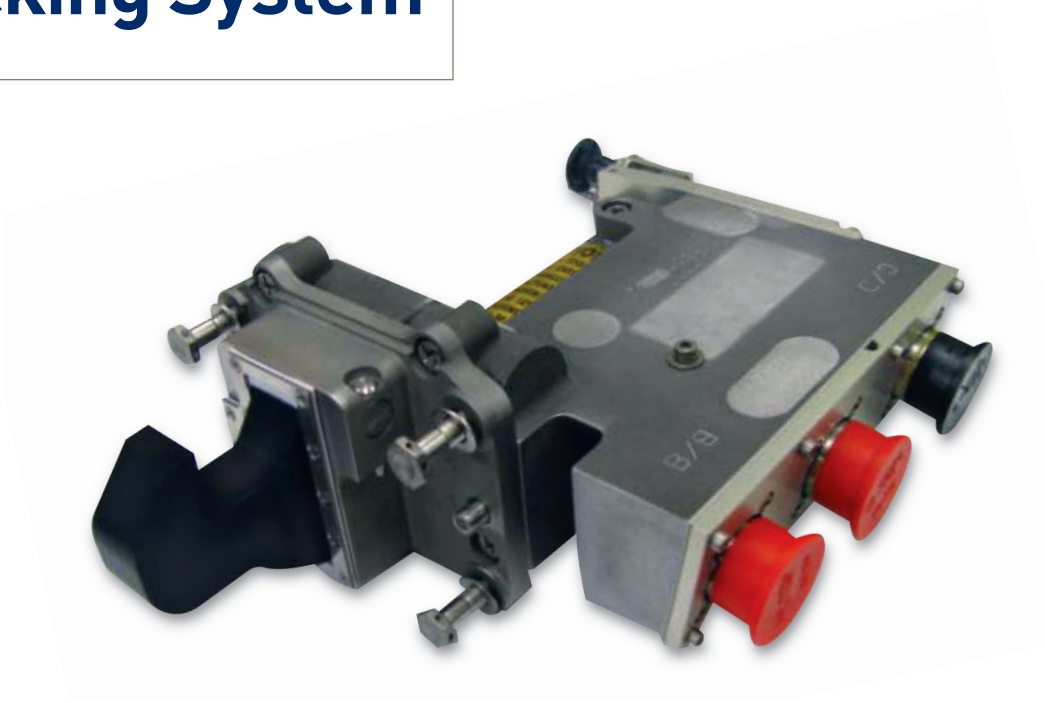
Transcowl Locking System

Customer value proposition

The Parker Aerospace electromechanical transcowl locking system (TLS) is designed to lock thrust reverser actuation systems out of operational mode during flight, totally independent of the hydraulic system.



Operation

When thrust reverser deployment is commanded, the transcowl locking system electromechanical actuator will be energized. This will unlock the TLS pawl from the transcowl structure load plate within 200 ms.

The redundant proximity switches in the TLS will send an unlock signal to the electronic engine control before the pawl moves through the position where it would be incapable of carrying load.

At the same time, a lever arm on the TLS pushes the visual indicator (installed on the fan cowl door) to an extended position, indicating that the TLS is unlocked.

Using the appropriate time delays, the electronic engine control signals the transcowl/thrust reverser system to deploy. The TLS electromechanical actuator will continue to be energized while deploy is commanded.

When stow is commanded, the TLS will be de-energized following a 15-second delay, causing the pawl to move to a locked position. The visual indicator will retract (indicating that it is locked) and the TLS proximity switches will indicate a TLS locked state at this time.

As the transcowl/thrust reverser system moves to the near-stowed position, the transcowl load plate pushes the pawl aside to allow complete stowage of the transcowl. When the load plate has cleared the TLS pawl, the pawl load spring returns the TLS to the locked position.

The transcowl locking system actuator is designed such that failure of the TLS will default the pawl to the locked position. Two TLS units are installed on each thrust reverser system, located near each of the two center thrust reverser actuators.

No special TLS associated rigging is required, and the unit may be manually pinned in the unlocked position for maintenance or manual operation of the thrust reverser system.

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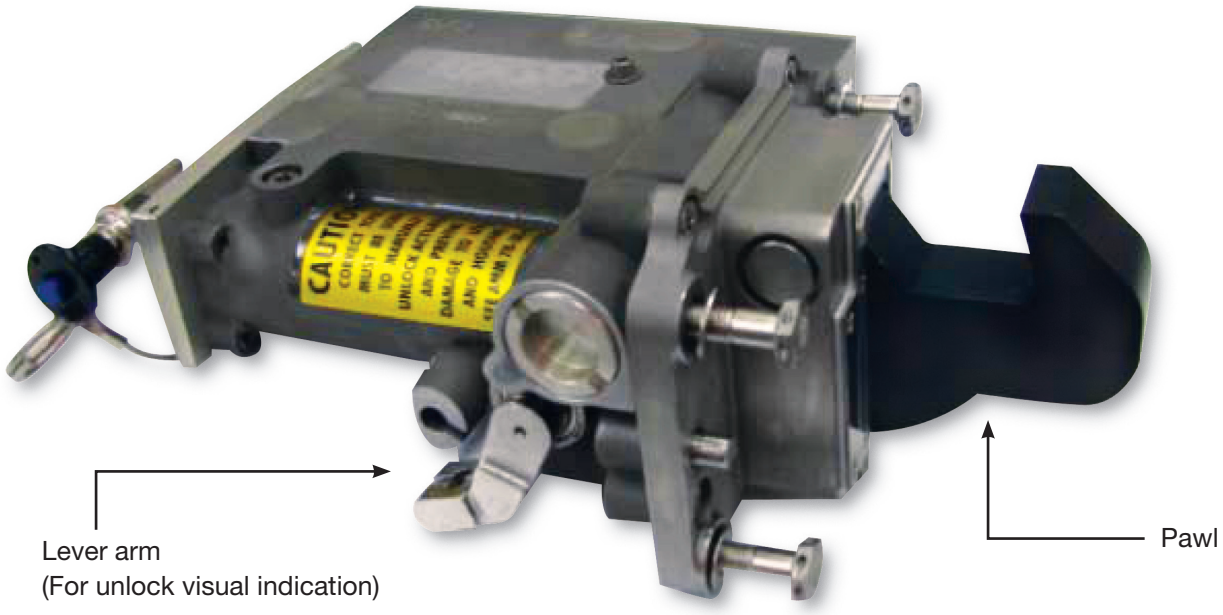

Specifications

- **Continuous current draw:**
  < 3 amps peak (0.75 amps RMS)
  continuous (35 seconds maximum)
- **Inrush current:**
  <15 amps peak (9 amps RMS)
  300 msec
- **Fail safe mode:**
  Spring loaded to re-lock. Simply remove power to cause re-lock. No redundancy.
- **Reliability:**
  59,600 hours MTBF
- **Operating voltage:**
  115 VAC @ 400 Hz
- **Temperature range:**
  -65° to +250° F
  (-53,9° to +121,1° C)
- **Lock pawl loads:**
  - Limit load:
    9,330 lbs (4150, 0 DaN)
  - Ultimate load:
    14,000 lbs (6227, 2 DaN)
  - Fatigue loads:
    40,000 cycles @ 4,300 lbs
    (1912, 6 DaN)
  - 5,000 cycles @ 7,200 lbs
    (3202, 6 DaN)
- **Weight:**
  6.0 lbs (2.7 kg) maximum

Contact information

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