

MODULAR CONTROL LOADING

Highest level of design flexibility with new compact actuators for Flight Training Devices



Moog introduces the new generation of Modular Control Loading units to support you with easy and fast development and deployment of your next Flight Training Devices.

These compact modules are developed for cost effective, and ready to use applications where installation volume constraints matter, the ideal solution for mobile trainers and quick dispatch FTDs.

Moog Modular Control Loading units come with:

- Common software base
- Common user interface
- Highest fidelity and performance available
- Proven reliability and support

The software environment allows for model plug-ins with the ability to easily customize the control loading software model.

ADVANTAGES

- Expect high reliability and matching fidelity with proven Moog Force Control Loop software and our critical components design and production legacy for full flight and FTD simulation applications
- Compact size will fit in low height frames allowing for easy access
- Compact design greatly simplifies your development and manufacturing
- Split architecture between actuators and servo drives/electronics, which makes it very easy to maintain and replace parts
- Actuators, servo drives, cables and force sensors are interchangeable between the modules which gives the benefit of only having one spare part for each needed



Center Stick Unit



Pedal Unit



Collective Unit

SPECIFICATIONS

Moog offers three compact modules that can be implemented in rotary wing and fixed wing applications with a cyclic or center stick, pedals and collective unit. Each Modular Control Loading unit can be delivered with generic controls (as shown in the pictures), or without controls so that custom controls can be mounted.

CENTER STICK UNIT

Installation Volume		
<i>Dimensions</i>		
Length (direction of flight)	404 mm (15.91 in)	
Width	385 mm (15.16 in)	
Depth below floor level	182 mm (7.17 in)	
Performance Data		
<i>Specifications</i>	<i>Pitch</i>	<i>Roll</i>
Torque (continuous)	102 Nm (905 in-lb)	69 Nm (611 in-lb)
Torque (max. peak)	204 Nm (1810 in-lb)	138 Nm (1222 in-lb)
Force (cont. at grip)	180 N (40 lb)	107 N (24 lb)
Force (peak at grip)	360 N (80 lb)	214 N (48 lb)
Travel	±22° (8.4 inch)	±22° (9.5 inch)
Velocity (max.)	210 deg/s	330 deg/s
Interface Diameter (inner diameter mounting socket)		
<i>Dimensions</i>		
Interface diameter	35 mm (1.38 in)*	

PEDAL UNIT

Installation Volume	
<i>Dimensions</i>	
Length (direction of flight)	447 mm (17.60 in)
Width	486 mm (19.13 in)
Depth below floor level	167 mm (6.57 in)
Performance Data	
<i>Specifications</i>	<i>Yaw</i>
Torque (continuous)	99 Nm (876 in-lb)
Torque (max. peak)	188 Nm (1752 in-lb)
Force (cont. at grip)	314 N (70 lb)
Force (peak at grip)	628 N (140 lb)
Travel	±22° (4.7 inch)
Velocity (max.)	220 deg/s
Interface Diameter (inner diameter mounting socket)	
<i>Dimensions</i>	
Interface diameter	30 mm (1.18 in)*

* Smaller diameter controls can be accommodated by adding a shim bus, or adding bushings for the pedals

The Cyclic and Collective units allow for a separate control neutral angle adjustment, independent of the motor position. The adjustment range is ±25°.

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COLLECTIVE UNIT

Installation Volume	
<i>Dimensions</i>	
Length (direction of flight)	195 mm (7.68 in)
Width	250 mm (9.84 in)
Depth below floor level	140 mm (5.51 in)
Performance Data	
<i>Specifications</i>	<i>Collective</i>
Torque (continuous)	95 Nm (844 in-lb)
Torque (max. peak)	190 Nm (1688 in-lb)
Force (cont. at grip)	164 N (37 lb)
Force (peak at grip)	328 N (74 lb)
Travel	±22° (8.6 inch)
Velocity (max.)	230 deg/s
Interface Diameter (inner diameter mounting socket)	
<i>Dimensions</i>	
Interface diameter	35 mm (1.38 in)*

TANDEM OPERATION

For a Pilot and Co-Pilot configuration, it's possible to couple the controls in two ways:

- Moog Force Control Loop allows very stiff virtual coupling by installing modules at both sides and couple the controls within the software models.
- Pedals and Cyclic modules are designed for mechanical interconnection by installing the modules on one side (for example Pilot) and connect to Co-Pilot side by mechanical push-pull rods. Due to its size, the Collective modules cannot be coupled mechanically and will therefore have the software coupling between pilot and co-pilot module. While offering a little less flexibility, it lowers acquisition cost.

SERVICE AND SUPPORT

Moog Global Support® is our promise to offer world-class Repair and Maintenance Services delivered expertly by our trained technicians. With the reliability only available from a leading manufacturer with facilities around the world, Moog offers you service and expertise you can count on to keep your equipment operating as it should.



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