

# MOOG HIGH TORQUE DIRECT DRIVE SERVOMOTORS

THE LARGEST CUSTOMIZED  
DIRECT DRIVE SERVOMOTORS  
AVAILABLE FOR PROCESSES  
REQUIRING HIGH PEAK OR  
RATED TORQUE

Moog High Torque Direct Drive Servomotors are a new line up of large, customized direct drive permanent magnet rotary servomotors for high torque applications. With peak torque up to 50,000 Nm and nominal power up to 510 kW, these motors are ideal for high-cycle applications requiring a low moment of inertia and high torque, such as injection molding machines, servo presses and punching machines.

## The challenges

Meeting customer requirements for cleaner, quieter and more energy-efficient machines for processes requiring high peak or rated torque

Lowering maintenance costs and increasing machine uptime

Providing greater freedom of machine design

## Our solution

These new servomotors provide all the benefits common to direct drive rotary motors such as improved accuracy and repeatability, zero compliance, higher efficiency, no maintenance, less downtime, quieter operation and reduced machine size. In addition, Moog's direct drive servomotors also provide the following:

## Higher torque

With peak torque up to 50,000 Nm and nominal power up to 510 kW, Moog's new direct drive rotary servomotors provide the highest torque and power available at present. Motor performance is enhanced via three cooling methods: water-cooled, fan-cooled and natural-cooled. Continuous torque ranges from 333 Nm to 17,000 Nm for the water-cooled type.

## Better dynamic performance

These servomotors have very short acceleration times due to a unique stator design which makes them very compact with a lower moment of inertia and produces the highest power density per unit volume currently available for large motors.

## Design flexibility

Moog customizes the characteristics and packaging of these motors to provide higher performance and machine design flexibility than previously possible. For instance, the stator design can be customized to maximize peak or rated torque depending on the intended application, the hollow shaft can be enlarged to pass cables through or house mechanical components and every kind of shaft and hollow shaft configuration can be accommodated, including flange, spline, key and thread. The standard feedback device provided with the motors is an absolute encoder, however, incremental encoder and resolver are also available.

Moog's ability to customize both the performance and packaging of these motors enables OEMs to develop higher performance machines with innovative designs in larger sizes where electro-magnetic servo technology is not yet commonly employed.

## Moog High Torque Direct Drive Servomotors in action

### Injection axis motor

This compact water-cooled motor (continuous torque: 1510 Nm, peak torque: 4770 Nm, rated speed: 620 rpm) was designed specifically for the injection axis on a 200-250 ton class injection unit. With a low moment of inertia and high torque, it has the high speed and high response essential for the molding of thin wall parts.

### Plasticizing axis motor

A pancake motor (continuous torque: 1100 Nm, rated speed: 320 rpm) designed specifically for the plasticizing axis of

a 200-250 ton class injection unit. This motor is only 23 cm wide, water-cooled, and has a large hollow shaft to house a load cell. This results in a very compact plasticizing unit, enabling machine size to be greatly reduced.

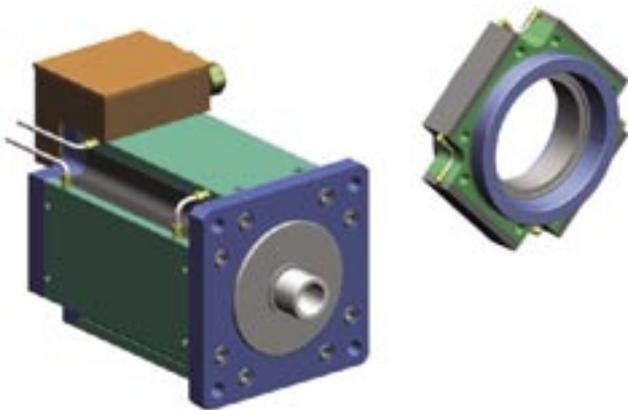
## Supported by Moog expertise

For over 20 years Moog has provided OEMs with high performance servomotors with the highest dynamics, power density and reliability as part of motion control solutions for applications with lower nominal power requirements. Moog's customers can now select from a much broader range of sizes, features and performance characteristics to realize the optimal motion control solution for their applications.

Our design engineers work collaboratively with customers, providing the guidance, support and expertise they need to overcome their toughest motion control challenges and move their ideas forward.

## Motor specification

Frame size	mm	290x290			375x375			450x450			550x550			825x825			
Motor length	mm	218	328	438	248	398	548	322	472	622	338	488	788	442	642	942	
Nominal power	Fan-cooled	kW	18.5	37	55	26	65	105	34	68	102	60	120	240	81	162	285
	Water-cooled	kW	33.3	66.6	99	47	118	189	61	123	185	108	216	432	146	292	510
Rated torque	Fan-cooled	Nm	185	370	550	350	875	1400	680	1370	2050	1500	3000	6000	2720	5440	9520
	Water-cooled	Nm	333	666	990	630	1575	2520	1220	2460	3700	2700	5400	10800	4890	9790	17000
Max. torque	Nm	800	1600	2400	1200	3000	4800	2850	5700	8500	5300	10500	21000	14000	28500	50000	
Rated speed	rpm	1000			750			500			400			300			
Max. speed	rpm	1500			1200			750			600			400			
Encoder		Absolute 17 bit / rev															
Ambient temperature	°C	-25 - 40°C															



For more information visit  
[www.moog.com/industrial](http://www.moog.com/industrial)