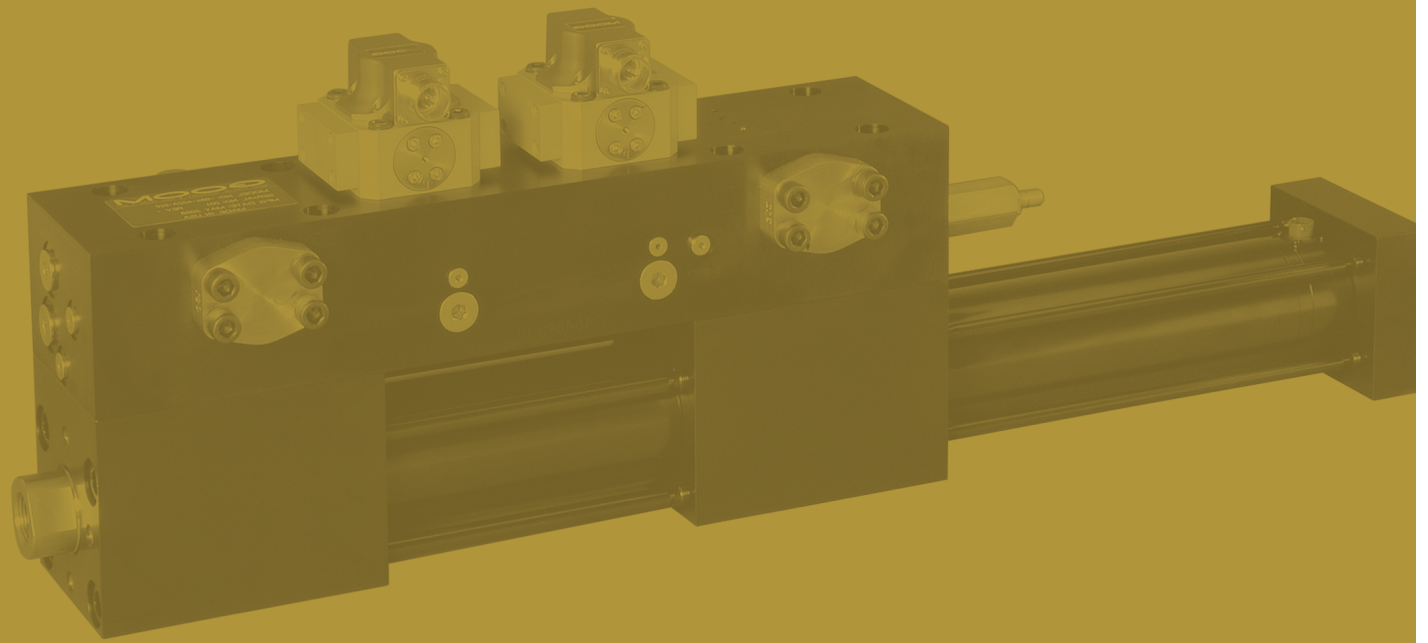


HYDRAULIC TEST ACTUATOR

POLYMER BEARING



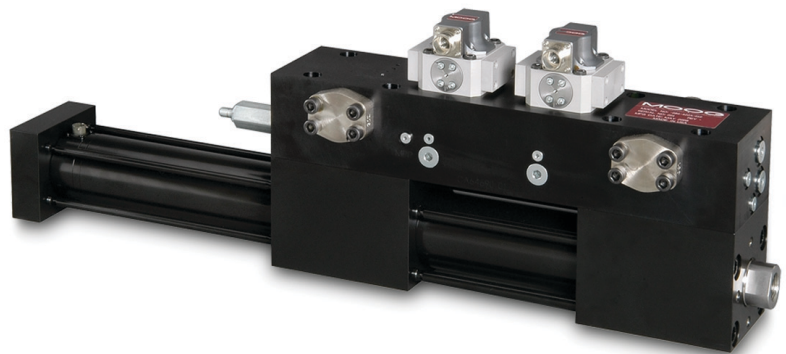
Rev. B 0609

HIGHER LEVEL OF DYNAMIC PERFORMANCE,
RELIABILITY AND LONGEVITY FOR STRUCTURAL
TEST APPLICATIONS

Whenever the highest levels of motion control performance and design flexibility are required, you'll find Moog expertise at work. Through collaboration, creativity and world-class technological solutions, we help you overcome your toughest engineering obstacles.

Enhance your products' performance, achieve greater efficiencies, and help take your thinking further than you ever thought possible.

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This catalog is for users with technical knowledge. To ensure that all necessary characteristics for function and safety of the system are given, the user has to check the suitability of the products described herein. The products described herein are subject to change without notice. In case of doubt, please contact Moog.

For the most current information, visit www.moog.com/industrial.

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A HIGHER LEVEL OF DYNAMIC PERFORMANCE, RELIABILITY AND LONGEVITY

Moog has vast experience developing actuators for some of the world's most demanding applications and building high performance motion control components is one of our strengths. Actuators are key to high performance test solutions and our customers have expressed a need for more reliable, high performance components than they can find in the marketplace. We have put some of our top engineers on a new product development project that combines test application knowledge with a long history of actuation experience. The result is the O86-4 series actuator that is the benchmark for strength and durability test applications.

Improving the performance of today's test systems, while meeting stricter environmental concerns requires a new kind of building block component. The Moog actuator for structural test applications represents a new breed of component design and robust performance. This new building block can be used in many applications including single and multiple actuator test systems.

Advanced cushion design for higher reliability and safety

We took a traditional design and made significant improvements developing a truly better cushioning system. The actuator incorporates this advanced design to ensure safety and prevent equipment damage. The O86-4 series actuator has a cushion at each end to ensure that the actuator will be decelerated before reaching end of stroke in both directions.

- Dampens force for test reliability
- Each cushion design is physically tested to ensure proper functioning
- Provides true active cushioning in a properly sealed system

Improved seal wear for longer life and less maintenance

The actuator's advanced coating used on the rod significantly improves seal wear for long life and less maintenance. A stainless steel rod utilizes proprietary seals and this unique rod coating to provide several performance advantages. This design also provides for a cleaner hydraulic operation creating a more environmentally friendly lab.

- Rod surface 80 HRC
- Extends the seal life
- Clean operation allows for less maintenance time and costs
- Proprietary surface finishing requirements to enhance seal life and minimize oil leakage
- Stainless steel rod to prevent corrosion

Better side load rating for more applications

We have equipped this actuator with a hybrid actuator bearing which significantly increases its side load rating. This allows you to take on additional applications that you may not normally attempt with a normal structural test actuator and could prevent you from having to use a more expensive hydrostatic bearing actuator.

- Double the typical side load rating for Structural Test actuators
- Avoid more costly alternatives with this increased side load capability
- Uses a high performance hybrid actuator bearing

Innovative design for less maintenance

Moog engineers designed the manifold to house all of the piping in the actuator, thereby removing the need for most of the exterior piping. The result is significantly less maintenance requirements and downtime.

- Minimal failure points due to less piping
- Few potential oil leaks over time because of self containment in manifold

Moog Servovalves - World leader in servo-control test systems

Moog Servovalves have a worldwide reputation for long-life, high performance and excellent aftermarket support. This advanced servo control provides precision movement in these test actuators.

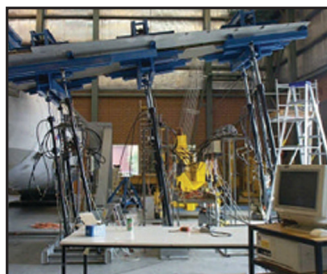
Custom servovalves can also be tailored to meet your unique requirements by developing special configurations that offer even more optimized performance. Benefits include:

- Improved step response
- Reduced hysteresis and increased small signal response with use of high response valves

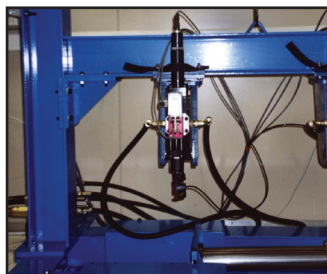
Solutions built around you

The Moog actuator for structural test applications delivers higher reliability, less maintenance and increased dynamic performance for test labs looking for the competitive edge. High-quality materials combined with superior engineering such as advanced cushion design and innovative manifold design make these actuators the right choice for a range of system challenges.

To ensure high performance from design to delivery, Moog engineers use the latest tools such as Matlab® and Simulink® system modeling. A rigorous physical testing program ensures that our customers receive components that they can rely on for a trouble-free test process. The combination of innovative design, world-class manufacturing and responsive worldwide customer support, make Moog components the ideal answer for test labs that offer more reliability and the highest performance.



Multi-Actuator Structural Test Systems

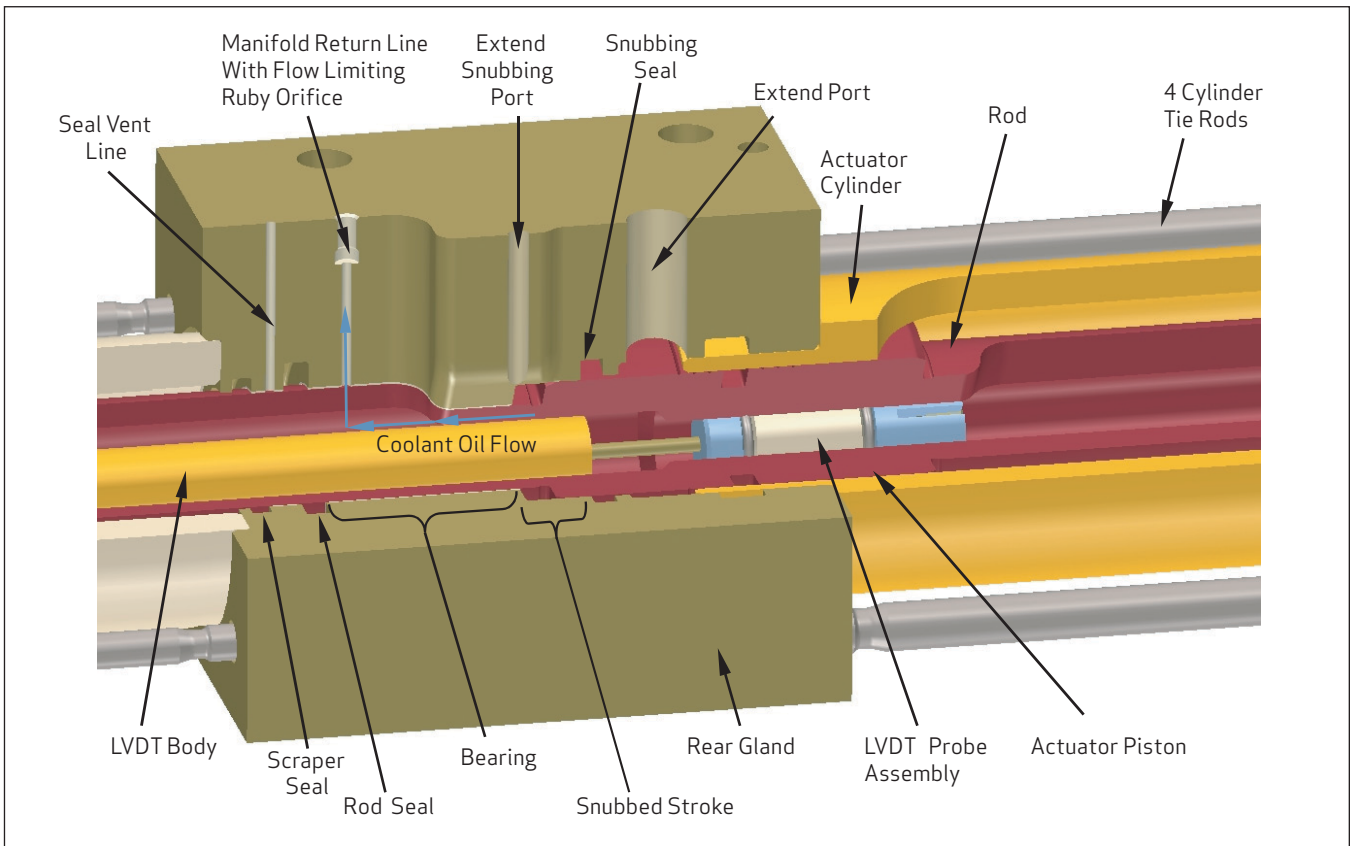


Single Actuator Structural Test Systems

STRUCTURAL ACTUATOR FORCE PRODUCT RANGE

Dynamic Force Rating	Stroke Length	Rod Diameter	Cylinder Bore Diameter	Piston Area	Cushion Stroke
kN (kip)	mm (in)	mm (in)	mm (in)	sq cm (sq in)	mm (in)
15 (3.3)	102, 152, 254 (4, 6, 10)	45 (1.75)	56 (2.21)	8.73 (1.35)	15 (0.6)
25 (5.5)	102, 152, 254 (4, 6, 10)	45 (1.75)	63 (2.48)	15.27 (2.37)	15 (0.6)
50 (11)	102, 152, 254 (4, 6, 10)	70 (2.75)	92 (3.62)	27.99 (4.34)	15 (0.6)
68 (15)	102, 152, 254 (4, 6, 10)	70 (2.75)	99 (3.90)	38.49 (5.97)	15 (0.6)
100 (22)	102, 152, 254 (4, 6, 10)	70 (2.75)	109 (4.29)	54.83 (8.50)	15 (0.6)
160 (35)	102, 152, 254 (4, 6, 10)	70 (2.75)	126 (4.96)	86.21 (13.36)	15 (0.6)

CRITICAL COMPONENTS



HYDRAULIC INTERFACES

Hydraulic Distribution System	
Oil Requirements System Fluid System Fluid	Mobil DTE-25, Shell Tellus 46, or equivalent Mobil DTE-24, Shell Tellus 32, or equivalent
Filtration Requirements	To prolong the operational life of active hydraulic components, the hydraulic fluid should be maintained at a cleanliness level of ISO 4406 (SAE J1165) 16/14/11.
Pressure Operating Pressure Maximum Return Pressure Maximum Drain Pressure	3000 psi (210 bar) 200 psi (14 bar) 50 psi (3.5 bar)
Operating Temperature	Hydraulic oil temperature should be maintained between 24°C (75°F) and 57°C (135°F)
Hydraulic Manifolds	
Manifold Ports	SAE four bolt metric flange connection per ISO 6162 TYPE 1 SAE Straight Thread O-ring port - ISO 11926-1
Hydraulic Fitting Requirements Standard Fittings Optional Fittings	SAE O-Ring Face Seal (ORFS) "Seal-Lok" ISO 8434-3 BSPP O-Ring 24° Cone Flareless "EO2" - ISO 8434-4
Servovalves* Standard Response High Response	G761, 72, 79-100 G761, D765, 79-100

*Moog Application Engineering can help you select the ideal size and type of servovalve to optimize performance.

ELECTRICAL INTERFACE

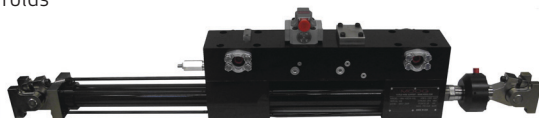
Transducer Specifications	
LVDT Transducer	LVDT excitation (5V peak to peak @ 3kHz)

MODULAR CONFIGURATIONS

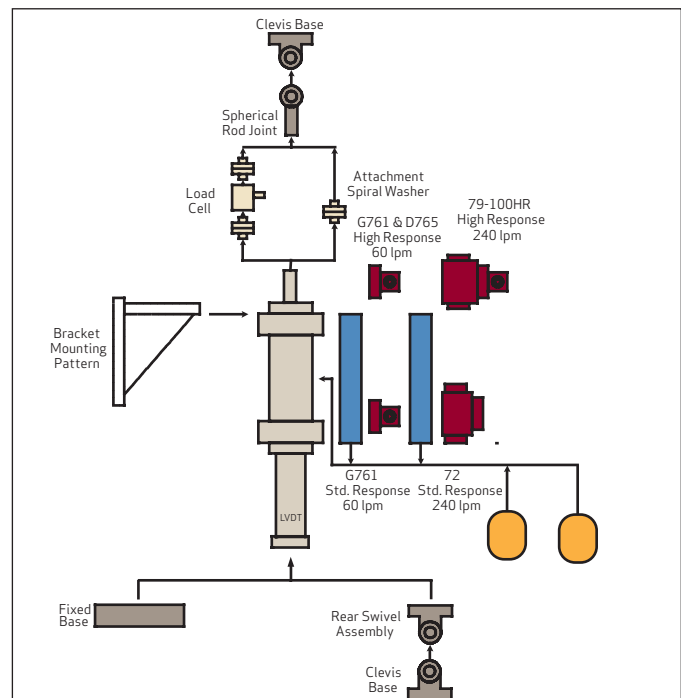
A variety of available configurations allows you to design the exact actuator that you need for your test system for increased modularity. Moog can provide a series of servovalves and accumulators to match your needs as well as offer a range of joints and bases for maximum efficiency.

Key for configurations:

- Joints and Bases
- Load Cells
- Servovalves
- Accumulators
- Manifolds



Example of test actuator configured with load cell and spherical joints



Solutions designed around you

Moog engineers are always ready to meet your unique application needs with complete turnkey systems that include servoactuators, servovalves, software and more. Our Test Controller, for example, is the only stand-alone unit on the market that can be extended up to four channels within the same housing.

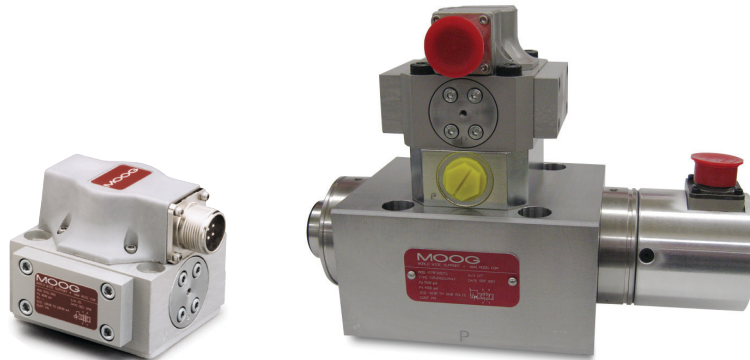
Test Controllers

This servocontroller product incorporates Moog' unique force loop technology to handle general purpose tests. With or without a PC, our Test Controllers are flexible with high-performance capabilities to handle complex testing formulas. This makes it an indispensable tool for testing labs. The units offers plug-and-play with industry standard connectors for cost effective and easy integration. The larger Test Controller is ideal for complex systems up to 32 servo channels.

Moog Servovalves

Because we designed our renowned Moog Servovalves — the world standard in performance and durability — you're assured of a system tailored to your exacting requirements.

Test Controllers



A HIGHER LEVEL OF SUPPORT

Moog engineering on call for you

Working with Moog means total access to a team of specialists who are committed to your needs long after your solution is delivered.

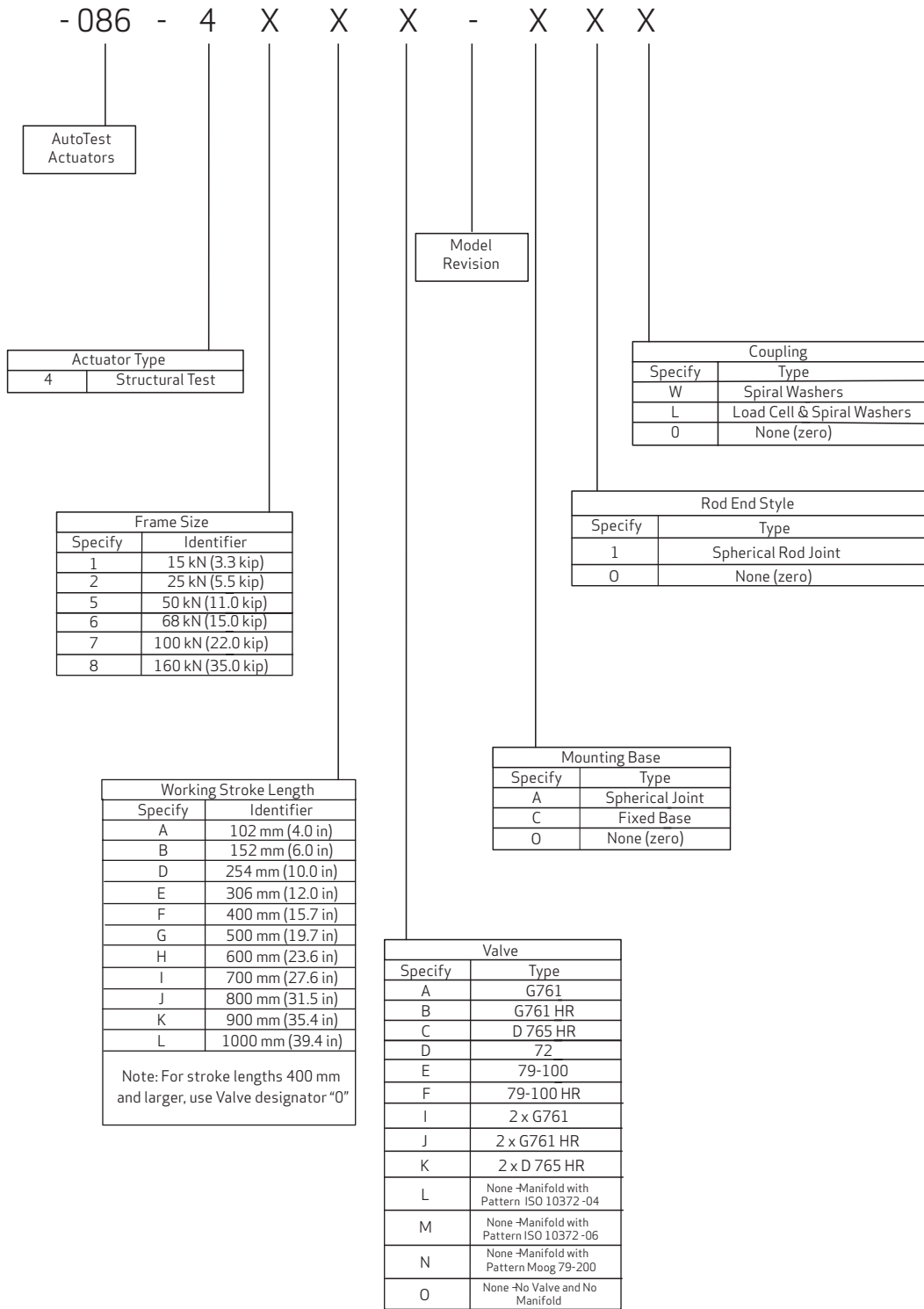
Our expert engineers are on call across the globe, ready to respond quickly and professionally to help you get the most from your investment. From helping you minimize downtime to keeping your systems working at peak effectiveness, Moog specialists understand the special demands of actuation for strength and durability testing. We're there when you need us.

Take the next step

Isn't it time you worked with a partner who understands what makes your actuation for structural testing applications more productive? Who can offer both the world-class products and collaborative expertise you need to reach the next level of performance? And who is committed to this industry for the long run?

Contact us today. And see for yourself the difference the right partner can make.

MODEL NUMBER DEFINITION FOR HYDRAULIC TEST ACTUATOR - POLYMER BEARING



TAKE A CLOSER LOOK

Structural Actuator test solutions from Moog are available around the world.
For more information, visit our Web site at www.moog.com or contact one of the locations below.

Argentina
+54 11 4326 5916
info.argentina@moog.com

Hong Kong
+852 2 635 3200
info.hongkong@moog.com

Singapore
+65 677 36238
info.singapore@moog.com

Australia
+61 3 9561 6044
info.australia@moog.com

India
+91 80 4057 6605
info.india@moog.com

South Africa
+27 12 653 6768
info.southafrica@moog.com

Austria
+43 664 144 65 80
info.austria@moog.com

Ireland
+353 21 451 9000
info.ireland@moog.com

Spain
+34 902 133 240
info.spain@moog.com

Brazil
+55 11 3572 0400
info.brazil@moog.com

Italy
+39 0332 421 111
info.italy@moog.com

Sweden
+46 31 680 060
info.sweden@moog.com

Canada
+1 716 652 2000
info.canada@moog.com

Japan
+81 46 355 3767
info.japan@moog.com

Switzerland
+41 71 394 5010
info.switzerland@moog.com

China
+86 21 2893 160
info.china@moog.com

Korea
+82 31 764 6711
info.korea@moog.com

The Netherlands
+31 252 462 000
test@moog.com

Finland
+358 9 2517 2730
info.finland@moog.com

Luxembourg
+352 40 46 401
info.luxembourg@moog.com

United Kingdom
+44 168 429 6600
info.uk@moog.com

France
+33 1 4560 7000
info.france@moog.com

Norway
+47 6494 1948
info.norway@moog.com

USA
+1 716 652 2000
info.usa@moog.com

Germany
+49 7031 622 0
info.germany@moog.com

Russia
+7 8 31 713 1811
info.russia@moog.com

www.moog.com/industrial

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