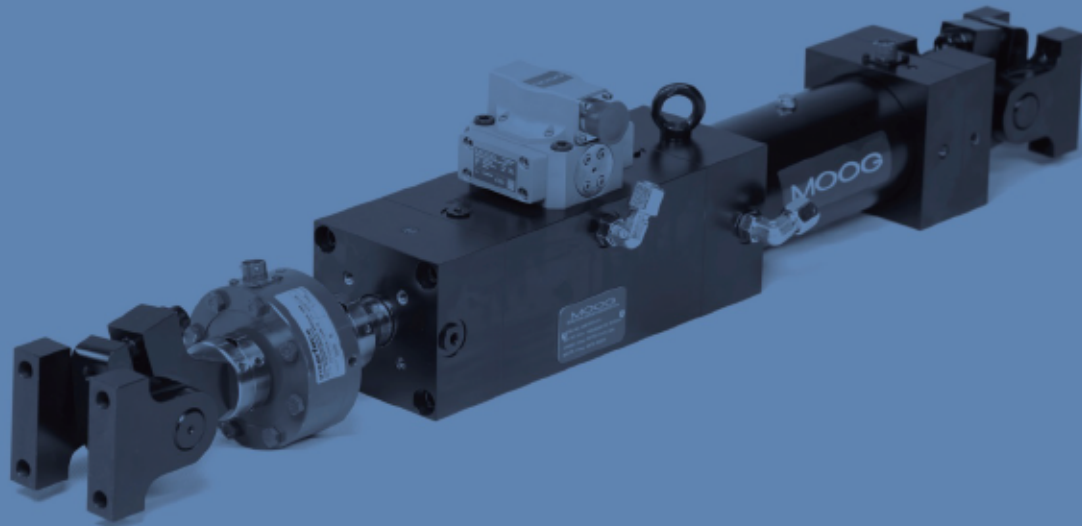


HYDRAULIC TEST ACTUATOR

5 to 10 kN, C086-9



Rev.-; July 2019

DELIVERING FLEXIBILITY AND RELIABILITY FOR
A RANGE OF SINGLE AND MULTI-AXIS TEST SYSTEMS

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

INTRODUCTION

Overview3

TECHNICAL DATA

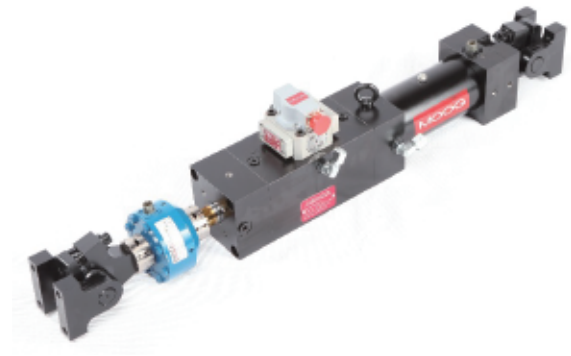
Specifications4
 Dimensions.....5
 Technical Features6

ORDERING CODE

Ordering Information7

BACKGROUND

Support8
 Test Products9



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.

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OVERVIEW

The C086-9 Test actuator is a low force, double-ended, fatigue-rated test component

- Mainly consists of a hydraulically powered piston rod that can extend or retract (double-acting)
- Can provide equal force in tension and compression (double-ended)
- Includes an LVDT which measures the displacement of the actuator
- Operates under precision servo valve control in a closed-loop servo hydraulic system
- Is linear and associated with axial control channels.

It is designed to accept a wide variety of options and accessories including

- force transducer
- fixed base
- rod end swivel
- base end swivel.

When equipped with appropriate options and accessories, the actuator can be configured for precision testing of materials, structures and components.

Actuator Series Code: C086-9

Features	Benefits
2 rated dynamic forces: 5 and 10 kN (1.1 and 2.2 kip) 2 standard working strokes: 100 and 150 mm (4 and 6 inch) Multiple combinations: Building-block design and other options to create different actuator configurations to suit your unique application needs	Varies standard offer for different application needs
High performance seal solution, long life bearings Robust and rigid servo valves, contact-less linear position sensors and fatigue-rated load cells	Long life and low friction
High side-load capacity bearing design	Higher side-load capacity and increased durability, longer service time for more demanding applications
Industrial leading Moog G761 series Servo Valves are installed to provide high dynamic, accurate and robust actuator control	High performance servo control

Typical Applications:

- Low force structural fatigue/durability tests
- High velocity, short stroke component tests
- Low friction, low signal distortion vibration testing
- Structural resonance searching and modal analysis
- For parts such as rubber parts, elastomer parts, suspension/damper parts

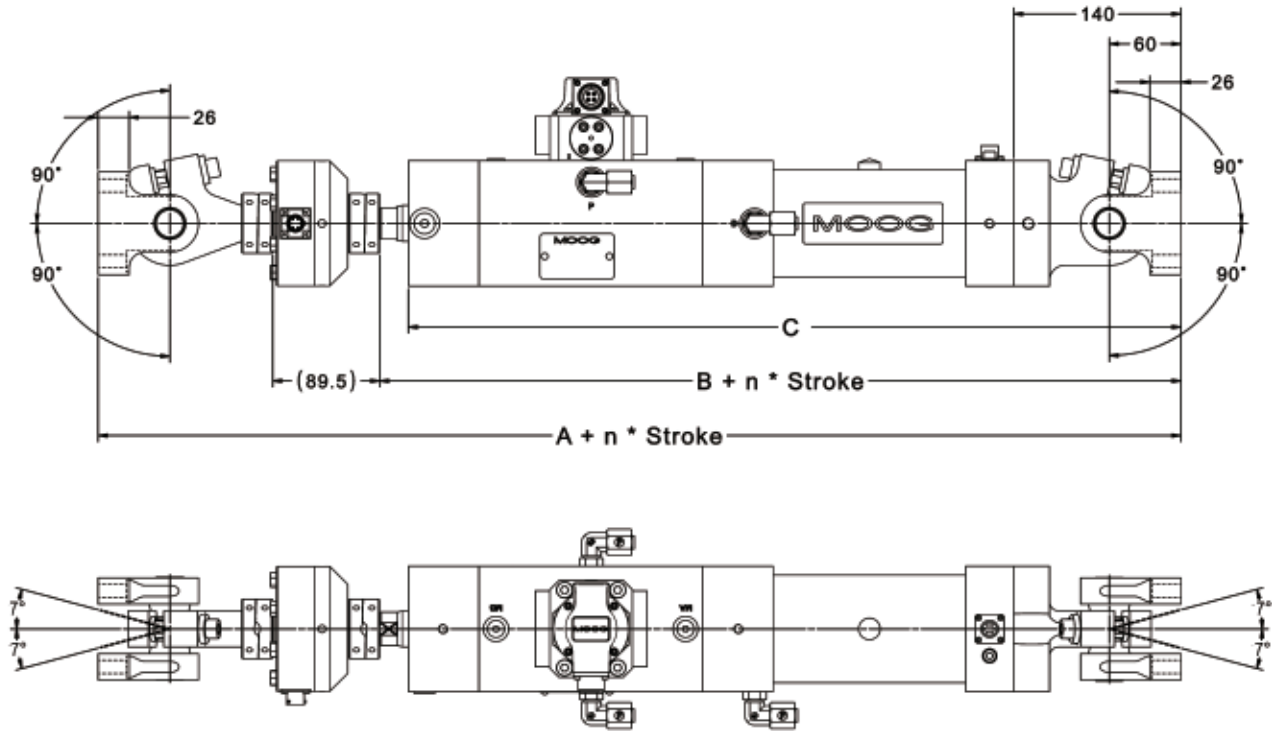
SPECIFICATIONS

Model Number	Nominal Force kN (kip)	Full Stroke mm(in)	Working Stroke mm (in)	Cushion Length/End mm (in)	Rod Dia. mm(in)	Bore Dia. mm (in)	Piston Area cm ² (in ²)
C086-91	5 (1.1)	130, 180 (5, 7)	100, 150 (4, 6)	15 (0.6)	30 (1.2)	35 (1.4)	2.5 (0.4)
C086-92	10 (2.2)	130, 180 (5, 7)	100, 150 (4, 6)	15 (0.6)	30 (1.2)	40 (1.6)	5.5 (0.9)

Technical Specifications

Pressure	
Maximum Operating Pressure	210 bar (3000 psi)
Maximum Return Pressure	14 bar (200 psi)
Maximum Drain Pressure	3.5 bar (50 psi)
Seal	
Material	NBR
Hydraulic Interface	
Pressure line	SAE 37° FLARE (ISO8434-2), -6
Return line	SAE 37° FLARE (ISO8434-2), -6
Drain line	SAE 37° FLARE (ISO8434-2), -6
Operation Temperature Range	
Hydraulic oil temperature	35 to 55°C (95 to 131°F)
Oil Requirements	
System fluid	Industrial hydraulic fluid per DIN 51524 parts 1 to 3 and ISO VG 32, 46, or equivalent
Cleanliness level	For Normal Life: ISO4406 < 16/14/11 (NAS5) For Extended Life: ISO4406 < 15/13/10 (NAS4)
Standard electrical connector mates with the following, or equivalent (waterproof, IP65)	
G761 Servo Valve Position Transducer and Load cell	MS3106F14S-2S PT06A-10-6S

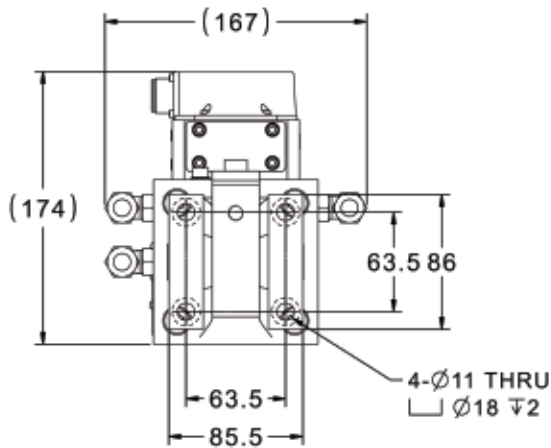
DIMENSIONS



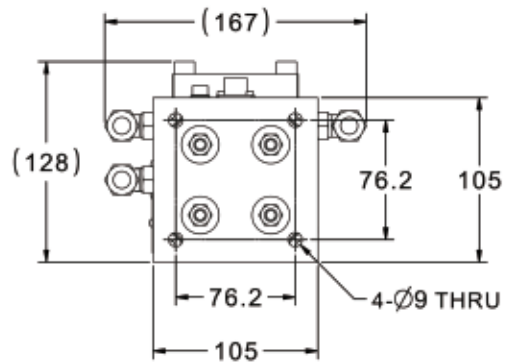
Model Number	Nominal Force kN	A		B		C	
		Fully retracted n=2 mm	Fully extended n=3 mm	Fully retracted n=2 mm	Fully extended n=3 mm	100 mm Stroke mm	150 mm Stroke mm
C086-91	5	705	736	570	601	646	746
C086-92	10	705	736	570	601	646	746

Note: Factor n = 2 (fully retracted); n = 3 (fully extended)
Stroke = 100 and 150 mm

BASE END MOUNTING INTERFACE

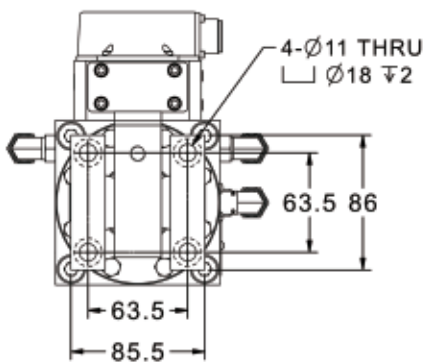


With swivel

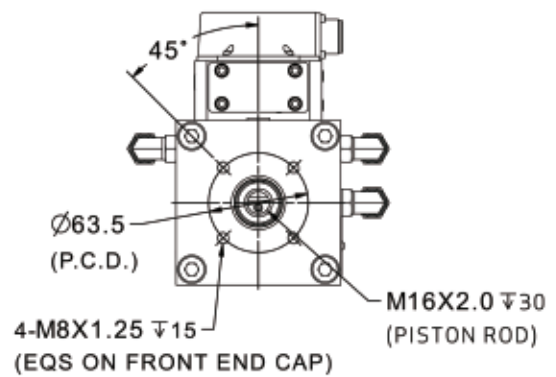


With fixed base

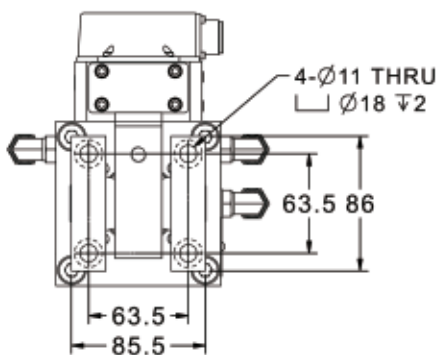
ROD END MOUNTING INTERFACE



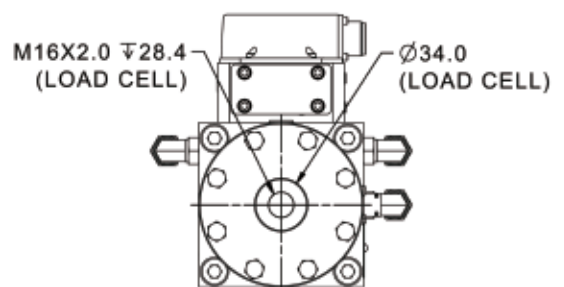
With swivel and load cell



Without swivel and load cell



With swivel but without load cell



Without swivel but with load cell

TECNICAL FEATURES

LVDT Position Sensor

- Built-in Co-axial LVDT integrated inside the piston rod

Servo Valve

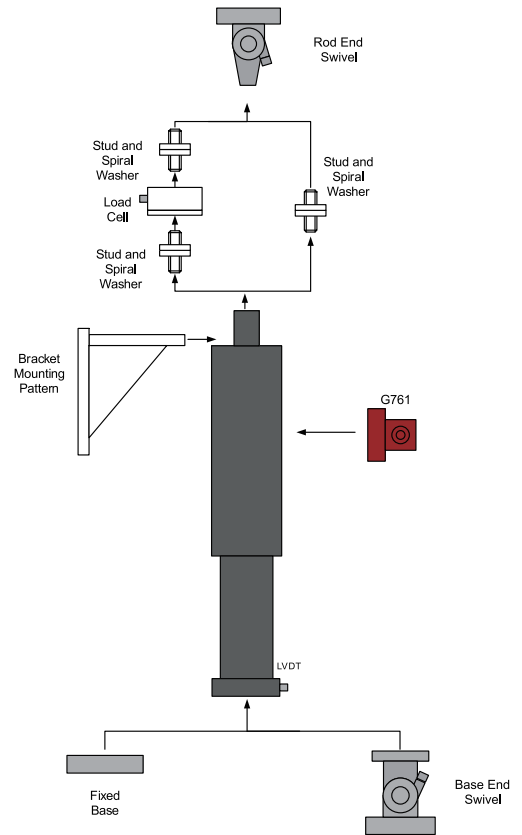
- G761 servo valve with size up to 19 l/min of rated flow

Mounting

- Bracket mounting bolt-circle is provided on the front end-bell
- Swivels can be selected on both ends
- A fixed mounting base is also an option

Load Cell

- Fatigue-rated load cells are properly sized to provide reliable force feedback. Studs and Spiral Washers are typically provided together with the load cell



ORDERING CODE

C086 - 9 X X X - X X X X X X X X

Test Actuators		Special		
Model Revision		SXXX	Special	
		Blank	Standard	
Actuator Type		Force Sensor Coupling		
9	Hydraulic Test Actuator	Specify	Type	
		N	None	
		W	Spiral Washers	
		L	Loadcell & Spiral Washers	
		S	Special	
Actuator Force Rating		Rod End Style		
Specify	Frame Size		Specify	Type
	kN	kip	0	None
1	5	1.1	1	Swivel
2	10	2.2	S	Special
Working Stroke Length		Mounting Style		
Specify	Identify		Specify	Type
C	100 mm	4 in	A	Swivel
D	150 mm	6 in	B	Fixed Base
			S	Special
Servo Valve				
Specify	Type	Rated Flow		
A	G761 (ISO 10372-04-04-0-92)	19 l/min (5 GPM)		
B	G761 (ISO 10372-04-04-0-92)	10 l/min (2.5GPM)		
C	G761 (ISO 10372-04-04-0-92)	4 l/min (1 GPM)		
D	None. SV pattern (ISO 10372-04-04-0-92)	Cover Plate		

Note: Other Servo Valve option please consult Moog.

A HIGHER LEVEL OF SUPPORT

The actuator was designed to provide long life, and inexpensive, fast and easy repair when it is finally necessary. Moog can provide the typical wear items such as a replaceable bearing and the seals for your own repair. Or you can have Moog repair the actuator to a like-new condition.

Five Point Inspection Process

Our number one goal is to eliminate downtime and make repairs that will deliver reliability and cost savings for years to come. When you send in your repair, it must work like new when you get it back. This is the Moog Global Support promise.

- Incoming inspection will provide the customer details on the performance of the actuator assembly such as leakage and response. The inspection will also provide details to our technicians in regards to critical performance specs that need to be addressed.
- Technicians will then review engineering notes for any design improvements that may have been initiated since inception.
- Actuator assembly will get completely disassembled to piece parts. Aqueous Ultrasonic cleaners are used to thoroughly clean each component before inspection and dimensional checks. Any components found too worn will be replaced with OEM parts. Critical components such as fitted rod and bearings will be dimensionally checked to ensure the component meets the print criteria. A complete seal kit replacement will be installed to ensure integrity of the structure.
- The servo valve will be removed and sent through the same rigorous evaluation, disassembly and test.
- Finally, the assembly will be tested to original specs to ensure the overhauled unit meets all design and performance criteria as if it were new.

Moog Engineering On Call For You

Delivering world-class motion control products and solutions means taking customer support far beyond the initial sale. It requires a dedicated approach to solving your problems, addressing your machine challenges and helping you achieve maximum productivity on a daily basis. In today's competitive manufacturing environment, machine performance plays a significant role in determining your bottom line. Moog Global Support is key to achieving cost-effective machine operation, day in and day out.

Actuator Repair Capabilities

Moog Global Support is designed to keep your critical machines up and running at peak performance with only 100% genuine Moog replacement parts. Only Moog replacement parts can deliver the reliability, versatility and long life that you would expect from a world leader in motion control solutions. Each Moog part delivers essential components with precise dimensions, close tolerances and specific materials specifications. Because we understand the key role our parts play in the overall operation of your machine, we carefully inspect and test each repair to identify only those components that need replacement.

Take The Next Step

Isn't it time you worked with a partner who can offer both the world-class products and collaborative expertise you need to reach the next level of performance? Contact us today and see for yourself the difference the right partner can make.



MOOG TEST PRODUCTS-FOR EVERY TESTING NEED

Moog engineers are always ready to meet your unique application needs with building blocks or complete turnkey systems that include hydraulic or electric test actuators, servo valves, hydraulic service manifolds, test controllers, software and more.

Test Controllers and Software

The Moog Test Controller is a real-time modular control system that can control or collect data from any hydraulic or electromechanical test system. The robust and compact modules have a wide range of transducer inputs and control outputs that can be easily configured for optimum use. The Moog Test Software allows the end user to control and record all of these signals in an easy to use format providing maximum value for many years of reliable usage.



The Moog Aerospace Test Software is the result of close and ongoing cooperation with leading aerospace OEMs and independent test laboratories, as well as research and development centers. This software remains the best-in-class option to successfully run both simple and complex solutions for aerospace static and dynamic tests.

Hydraulic Service Manifolds

The Moog Hydraulic Service Manifold (HSM) provides on/off hydraulic pressure with an adjustable transition from off to high pressure. Filters protect sensitive servo valves and accumulators provide instantaneous flow or pressure damping when needed. Several flow-rating sizes with 1 to 4 station options are available.



Moog Servo Valves

Because we design our renowned Moog Servo Valves - the world standard in performance and durability - you're assured of a system tailored to your exacting requirements.



TAKE A CLOSER LOOK.

Moog designs a range of products that complement the performance of those featured in this catalog. Visit our website for more information or contact the Moog facility nearest you.

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Moog 5 to 10 kN Actuator C086-9
MSH/PDF/Rev. -. May, 2019. Id. CDL59330 - en