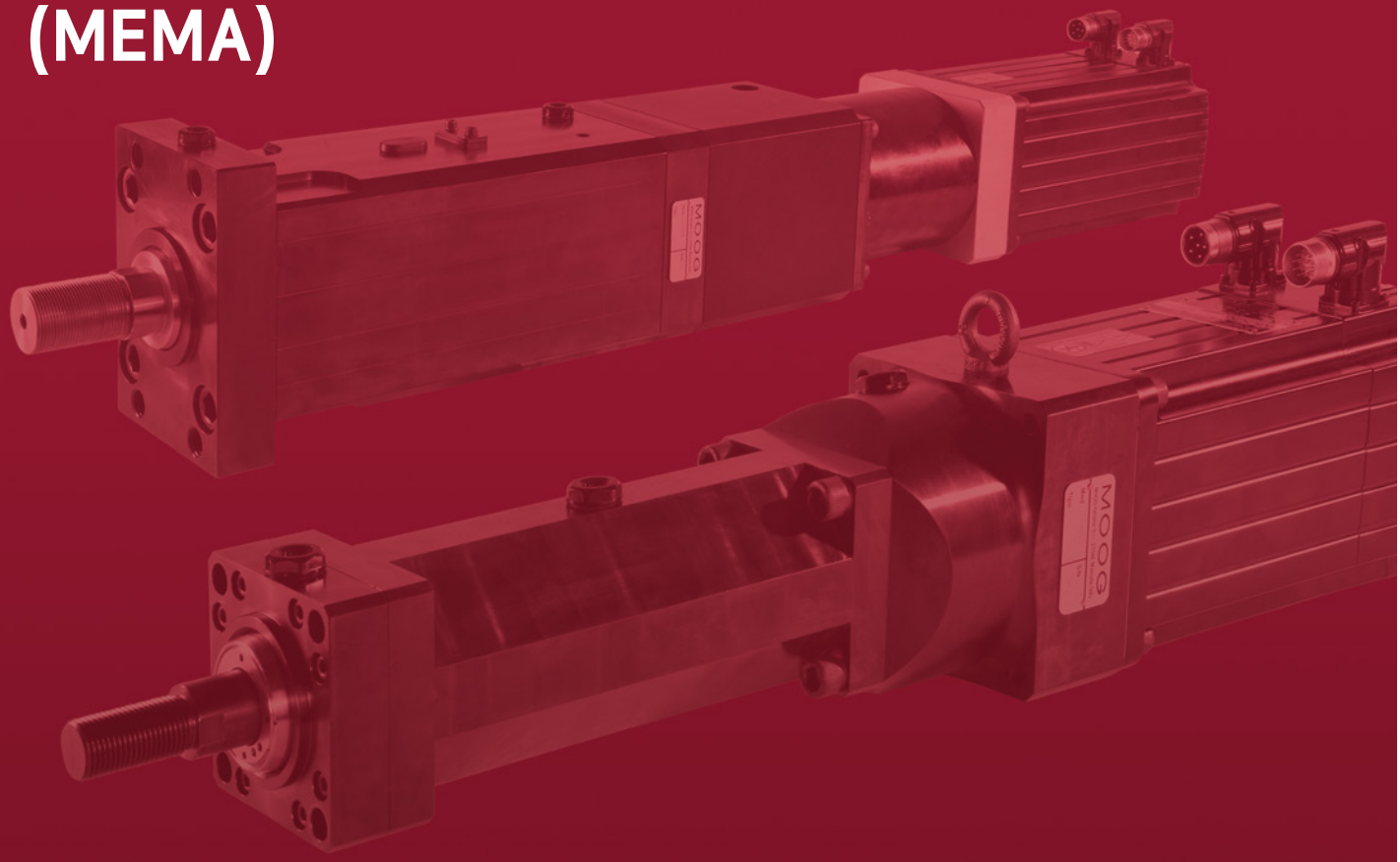
MULTI-PURPOSE ELECTRO-MECHANICAL LINEAR ACTUATOR (MEMA)



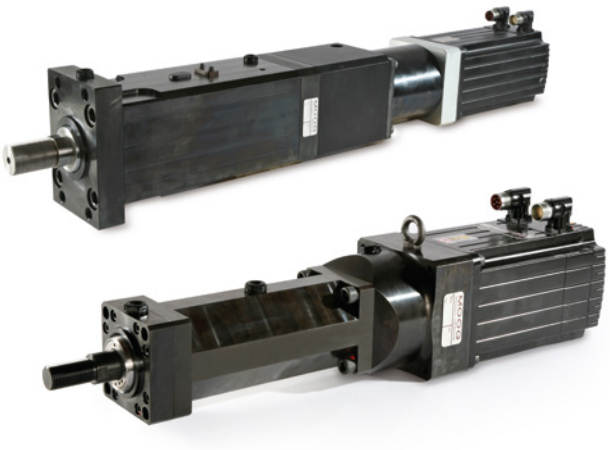
Rev. 0, September 2014

OFFERING TWO MAIN TYPES
OF ELECTRO-MECHANICAL ACTUATORS,
TO ACHIEVE HIGH STROKE SPEEDS
OR HIGH FORCE

WHAT MOVES YOUR WORLD

MOOG

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. And help take your thinking further than you ever thought possible.



PRODUCT OVERVIEW

Synergy of Moog products and technology

For over two decades, the name Moog has been associated with Brushless Servo Motors and drives offering the highest dynamics, power density and reliability. Moog also offers ball and roller screw in a wide range of application. The synergy of all of these components creates the new family of Multi-purpose Electromechanical Actuators to meet customer requirements, with a variety of configuration and customization available.

Multi-purpose Electromechanical Actuators

Multi-purpose Electromechanical Actuators address the evolving need for greater dynamics and higher performance in industrial applications. Designed and manufactured in accordance with strict CE standards are robust, configurable and adaptable in a wide range of application thanks to:

Precision

- Ensures more accurate precision motion control
- Low inertia servomotors for higher acceleration
- Lower audible noise compared to hydraulic installation

Efficiency

- Reduces maintenance and operating costs
- Match unique machine designs with a full range of options, sizes and configurations
- Reduces energy consumption
- Eliminates oil leaks

Multi-purpose Electromechanical Actuators Solution is an actuation package that employs Moog's innovative brushless servomotor and ball-screw/roller screw technology. All of the components are optimized to work together to provide the highest level of performance and accuracy.

Exceptional Overload Capacity

The motor electromagnetic design with exceptional overload capacity results in an increase in the effective force available to accelerate and decelerate the load, enabling higher dynamics and improved cycle times.

Modular Design

- The modular design of the Multi-purpose EMA facilitates a high degree of customization to meet diverse application requirements across several industry segments. The modular design is supported by a variety of options with Moog's application staff capable of supplying fully customized solutions tailored to meet exact customer specifications.
- All Moog EMA are manufactured using tight machining tolerances and undergo thorough production testing. The use of high reliability feedback devices and IP54 compliant construction combine to extend service life and offer years of reliable, low maintenance operation.
- The use in these EMA of the MD Series Servo Motors is the ideal choice for machine builders looking for 'best-in-class' servo motors with low inertia and high dynamics.
- Moog servo drives can further optimize machine performance and ensure smooth integration.

ServoDrives

ServoMotors

Screws

PRODUCT OVERVIEW

Overview of Multi-purpose EMA - High force

Type code	Continuos stall force [kN]	Peak stall force [kN]	Continuos force @ max. speed [kN]	Peak force @ max. speed [kN]	Maximum speed [mm/s]
L875-P1	10 ÷ 16,5	25	7,5 ÷ 9,8	25	60/50
L875-P2	29 ÷ 55	80	16,3 ÷ 30,5	80	60/40
L875-P3	91 ÷ 123	165	63,5 ÷ 78	165	50
L875-P4	166,5 ÷ 200	240	73,5 ÷ 97	240	35/30

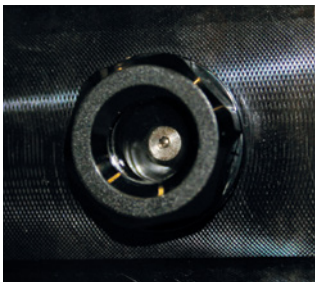
Data refers to an ambient temperature of 40°
Maximum speed reached with field weakening
With internal anti-rotation device

Overview of Multi-purpose EMA - High speed

Type code	Continuos stall force [kN]	Peak stall force [kN]	Continuos force @ max. speed [kN]	Peak force @ max. speed [kN]	Maximum speed [mm/s]
L875-B1	2,5 ÷ 5,8	7 ÷ 12	1,7 ÷ 2,2	6,3 ÷ 12	730/600
L875-B2	8,5 ÷ 18,4	22,5 ÷ 30	6,5 ÷ 7,5	22,4 ÷ 30	500
L875-B3	13 ÷ 25	42,5 ÷ 50	10 ÷ 18	42,5 ÷ 50	500

Data refers to an ambient temperature of 40°
Maximum speed reached with field weakening
No anti-rotation device

FEATURES AND BENEFITS

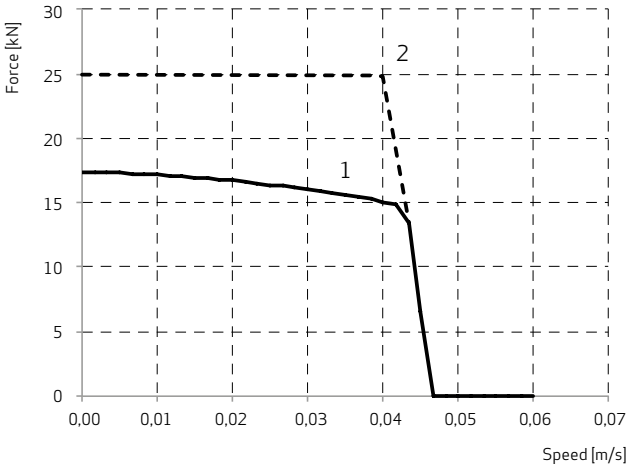


Features	Benefits
Protection class IP54	Energy Efficient
Built-in PTC thermal sensor to protect motor from overheating under excessive load	Improve machine cycle time
Greasing port for easy maintenace	Oil pressurized free
Flexible design option that can be tailored to exact specification	Lower maintenance time and set-up costs
Engineering support to optimize performance and value	Improved stiffness
Reliable, fully tested design	No leakage
Fully integrated system, all components are optimized to work together	

TECHNICAL FEATURES

Moog MEMA Performance Characteristics

Having collaborated with a several industrial machine designers, Moog engineers understand the critical role that application sizing process plays in overall machine design. The MEMA have been developed keeping this in consideration.
The typical force/speed characteristics of the MEMA are shown below:



1 Continuos force
2 Maximum force

These values are referred to the «thermal» behaviour of the actuator, this graph does not give any information on life of the components of the actuator.
For life estimation please refer to the following pages.

Maximum force Curve

This curve reflects the motor torque available with a 5 % duty cycle (1 out of 20 s). It is based on years of practical industry experience and is useful for typical servo applications.

Continuous force Curve

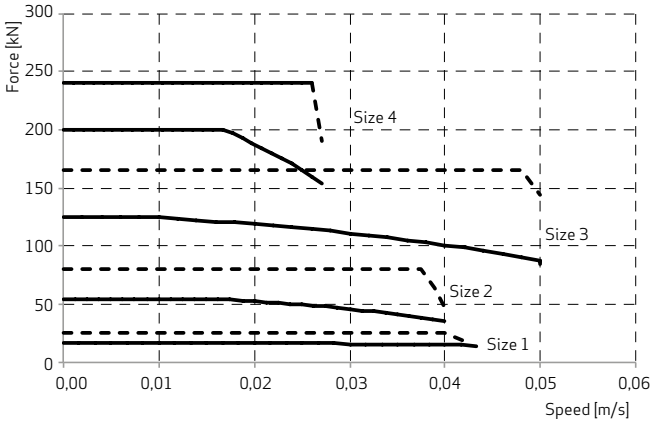
This curve illustrates the motor torque available at 100 % duty cycle under the following conditions:

- Operation in still air with ambient temperatures up to 40 °C
- Winding temperature measure up to 110 °C over ambient for resolver feedback motors
- Motor front flange attached to a steel mounting plate measuring minimum 300 x 300 x 25 mm

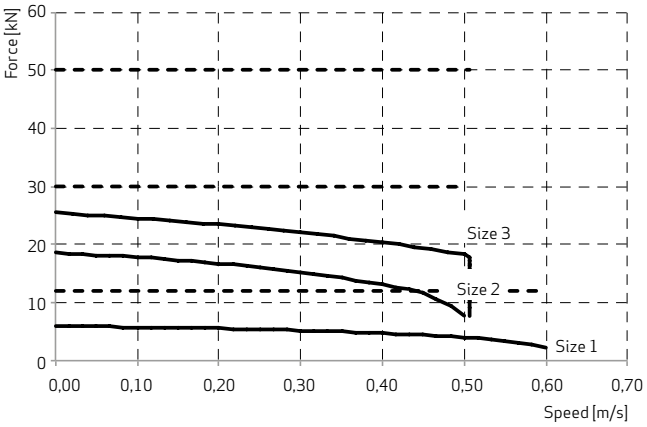
MEMA capabilities

The below illustration provides an overview of the MEMA capabilities.

Overview performances - L875P



Overview performances - L875B

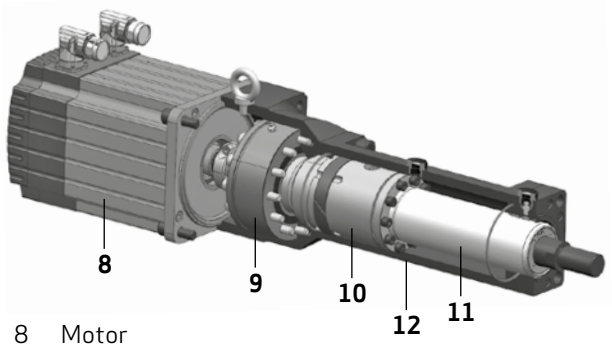


TECHNICAL FEATURES

MEMA High force – L875P – Drawings

1 Motor
2 Gearbox
3 Torque limiter
4 Bearing
5 Screw
6 Rod
7 Housing

MEMA High speed – L875B – Drawings



8 Motor
9 Bearing
10 Screw
11 Rod
12 Housing

Fully Customized Designs Support Unique Application Requirements

Moog can tailor actuators to the exact specifications or requirements of a machine including custom specifications for the following:

- Connector configuration (including pigtail)
- Feedback device
- Design for unique environments including high temperature, high shock levels, oil and water immersion
- Special painting
- Special mounting interface
- Special mounting rodend

DEFINITIONS

Continuous Stall Force:

Force produced by the servoactuator at the continuous servomotor torque and at zero speed. Continuous force declines as servomotor speed increases. Consult performance curves for force rating at higher speeds. Continuous servomotor torque is limited by temperature and thus, the continuous force will be reduced with ambient temperatures above 25°C.

Peak Stall Force:

Force produced by the servoactuator at the peak servomotor torque and at zero speed. Peak force declines as servomotor speed increases. Consult performance curves for force rating at higher speeds. Peak force can be held only for short durations (typically less than 1 minute) after which a cool down period at less than the continuous rating is required.

Brake Holding Force:

Maximum force that the optional brake will hold stationary. Brake should not be used to stop a moving servoactuator as damage to the brake will result.

Maximum Static Load:

Mechanical load limit of the servoactuator components. This is a limitation of the structural components of the servoactuator.

Dynamic Load Rating:

The load at which the estimated life of a ballscrew or bearing will be 1 million revolutions.

Maximum Speed:

The maximum linear speed for the servoactuator. The available force at maximum speed is significantly less than the Stall Forces. Consult the Performance curves for Force/Speed relationship.

Accuracy:

The ability of a positioning system to move exactly to a commanded position.

Repeatability:

The ability of a positioning system to return to the same point from the same direction with the same load.

Resolution:

The smallest positioning increment possible.

Anti-rotation device:

Device used to prevent the nut spin movement. An anti-rotation device is essential for the properly work of the actuator

Lead Accuracy:

The maximum deviation from nominal lead over specified interval.

High Force – Size 1

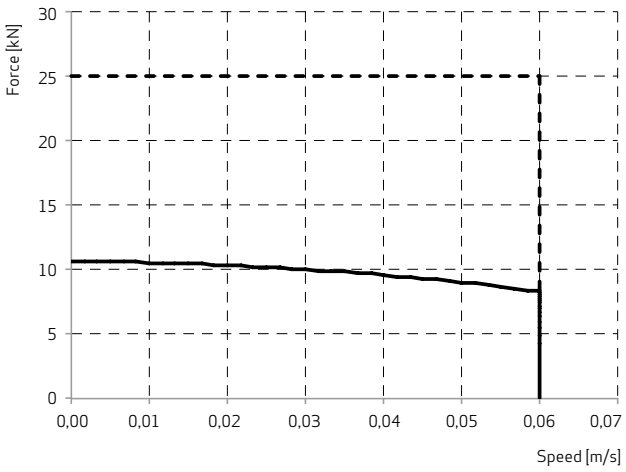
Type L875P-1

Characteristics and performance with Moog Drive

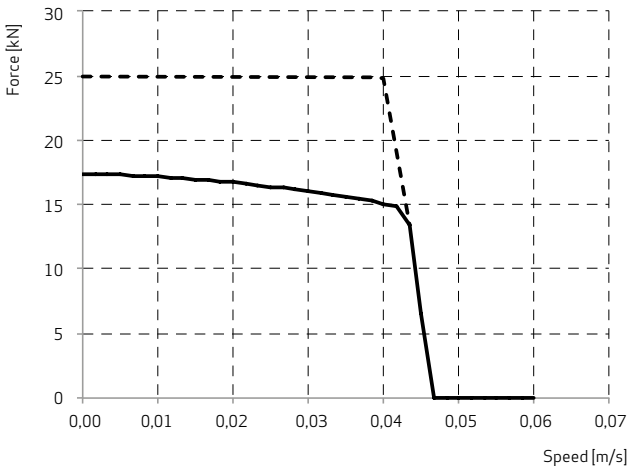
Characteristics		L875P-110	L875P-120
Continuous stall force	F_0	10,23 kN	16,70 kN
Continuous force @ max speed	F_n	7,68 kN	14.25 kN
Maximum stall force	F_{0m}	25,00 kN	25,00 kN
Maximum force @ max speed	F_{nm}	25,00 kN	24,75 kN
Maximum speed	S_{max}	60,00 mm/s	40,00 mm/s
Continuous stall current	I_0	2,12 A_{rms}	1,99 A_{rms}
Continuous current @ max speed	I_n	1,66 A_{rms}	1,72 A_{rms}
Maximum stall current	I_{om}	4,85 A_{rms}	2,90 A_{rms}
Maximum current @ max speed	I_{nm}	4,35 A_{rms}	2,90 A_{rms}
Force ratio	r_f	6,69 kN/Nm	7,02 kN/Nm
Speed ratio	r_s	8,33E-03 (mm/s)/rpm	8,33E-03 (mm/s)/rpm
Force costant	k_f	4,76 kN/A_{rms}	8,34 kN/A_{rms}
Inertia @ motor side*	J	0,79 kg/cm^2	1,02 kg/cm^2
Weight*	m	18,8 kg	19,4 kg

Data refers to an ambient temperature of 40°
Data consider field weakening
* Estimated referred to 12 mm stroke

L875P-110



L875P-120



High Force – Size 2

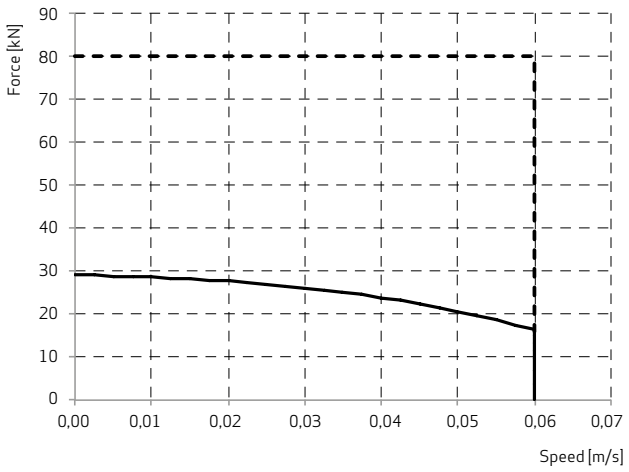
Type L875P-2

Characteristics and performance with Moog Drive

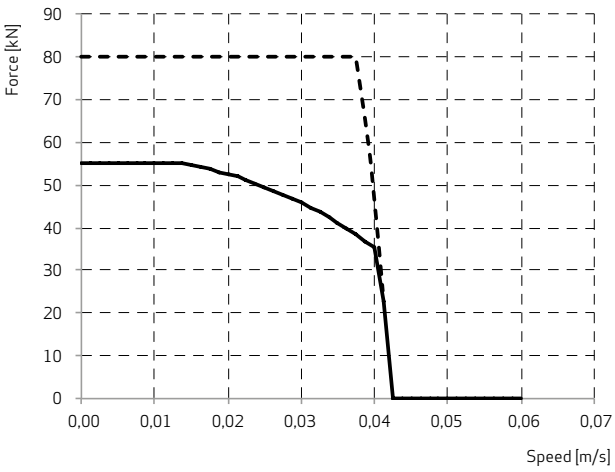
Characteristics		L875P-210	L875P-220
Continuous stall force	F_0	29,00 kN	55,00 kN
Continuous force @ max speed	F_n	16,31 kN	30,78 kN
Maximum stall force	F_{0m}	80,00 kN	80,00 kN
Maximum force @ max speed	F_{nm}	80,00 kN	47,71 kN
Maximum speed	S_{max}	60,00 mm/s	40,00 mm/s
Continuous stall current	I_0	5,27 A_{rms}	5,13 A_{rms}
Continuous current @ max speed	I_n	3,22 A_{rms}	2,99 A_{rms}
Maximum stall current	I_{om}	13,44 A_{rms}	7,24 A_{rms}
Maximum current @ max speed	I_{nm}	12,18 A_{rms}	4,45 A_{rms}
Force ratio	r_f	3,77 kN/Nm	5,36 kN/Nm
Speed ratio	r_s	1,67E-02 (mm/s)/rpm	1,25E-02 (mm/s)/rpm
Force costant	k_f	5,40 kN/A_{rms}	10,69 kN/A_{rms}
Inertia @ motor side*	J	9,32 kg/cm^2	9,64 kg/cm^2
Weight*	m	46,8 kg	48,6 kg

Data refers to an ambient temperature of 40°
Data consider field weakening
* Estimated referred to 12 mm stroke

L875P-210



L875P-220



High Force – Size 3

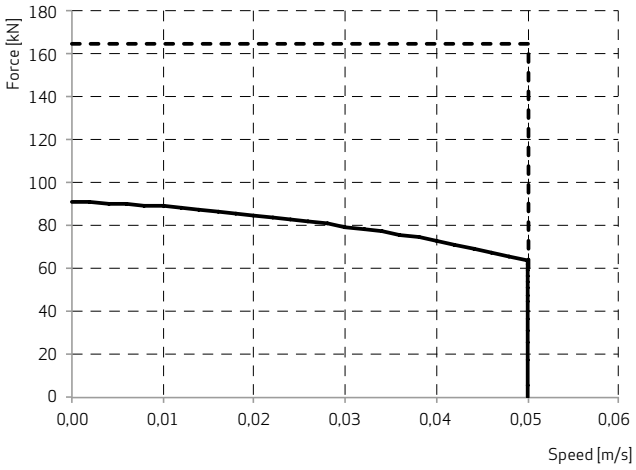
Type L875P-3

Characteristics and performance with Moog Drive

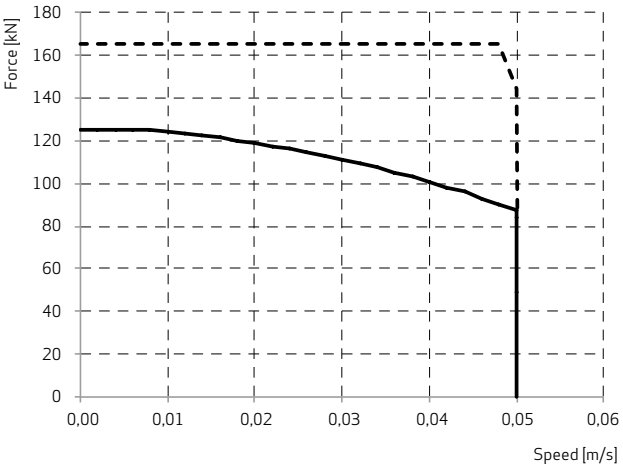
Characteristics		L875P-310	L875P-320
Continuous stall force	F_0	91,50 kN	123,76 kN
Continuous force @ max speed	F_n	63,86 kN	78,15 kN
Maximum stall force	F_{0m}	165,00 kN	165,00 kN
Maximum force @ max speed	F_{nm}	165,00 kN	144,31 kN
Maximum speed	S_{max}	50,00 mm/s	50,00 mm/s
Continuous stall current	I_0	13,65 A_{rms}	13,01 A_{rms}
Continuous current @ max speed	I_n	9,70 A_{rms}	8,36 A_{rms}
Maximum stall current	I_{om}	24,15 A_{rms}	17,21 A_{rms}
Maximum current @ max speed	I_{nm}	24,15 A_{rms}	15,10 A_{rms}
Force ratio	r_f	3,81 kN/Nm	3,85 kN/Nm
Speed ratio	r_s	2,00E-02 (mm/s)/rpm	2,00E-02 (mm/s)/rpm
Force costant	k_f	6,66 kN/A_{rms}	9,46 kN/A_{rms}
Inertia @ motor side*	J	32,61 kg/cm^2	40,1 kg/cm^2
Weight*	m	122,6 kg	127,6 kg

Data refers to an ambient temperature of 40°
Data consider field weakening
* Estimated referred to 12 mm stroke

L875P-310



L875P-320



High Force – Size 4

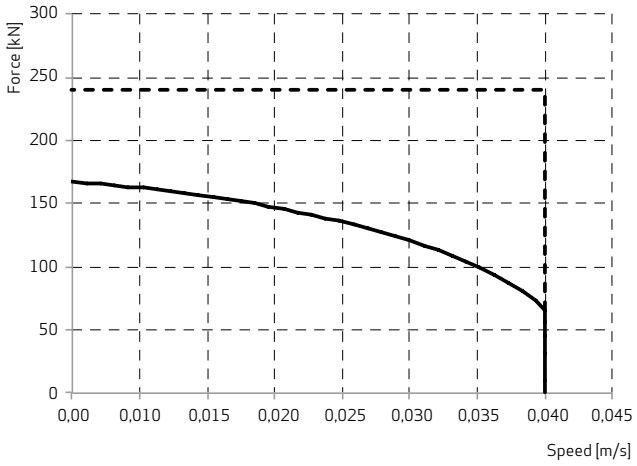
Type L875P-4

Characteristics and performance with Moog Drive

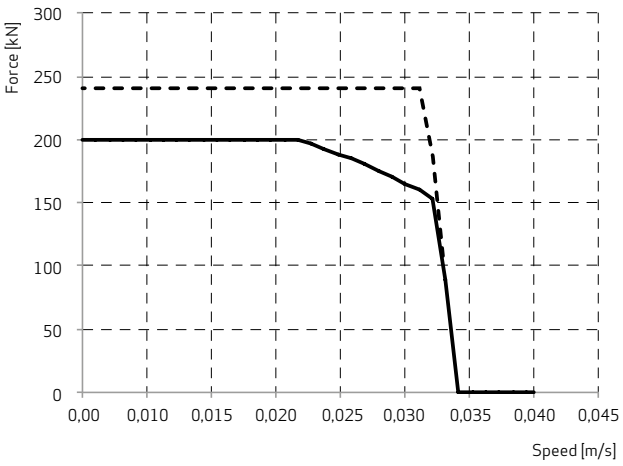
Characteristics		L875P-410	L875P-420
Continuous stall force	F_0	167,54 kN	200,00 kN
Continuous force @ max speed	F_n	65,96 kN	73,00 kN
Maximum stall force	F_{0m}	240,00 kN	240,00 kN
Maximum force @ max speed	F_{nm}	240,00 kN	240,00 kN
Maximum speed	S_{max}	35,00 mm/s	31,00 mm/s
Continuous stall current	I_0	13,65 A_{rms}	13,01 A_{rms}
Continuous current @ max speed	I_n	5,73 A_{rms}	7,96 A_{rms}
Maximum stall current	I_{om}	19,29 A_{rms}	13,75 A_{rms}
Maximum current @ max speed	I_{nm}	17,62 A_{rms}	11,01 A_{rms}
Force ratio	r_f	6,92 kN/Nm	6,80 kN/Nm
Speed ratio	r_s	1,04E-02 (mm/s)/rpm	1,04E-02 (mm/s)/rpm
Force costant	k_f	12,10 kN/A_{rms}	16,70 kN/A_{rms}
Inertia @ motor side*	J	34,72 kg/cm^2	42,21 kg/cm^2
Weight*	m	208,3 kg	213,3 kg

Data refers to an ambient temperature of 40°
Data consider field weakening
* Estimated referred to 12 mm stroke

L875P-410



L875P-420

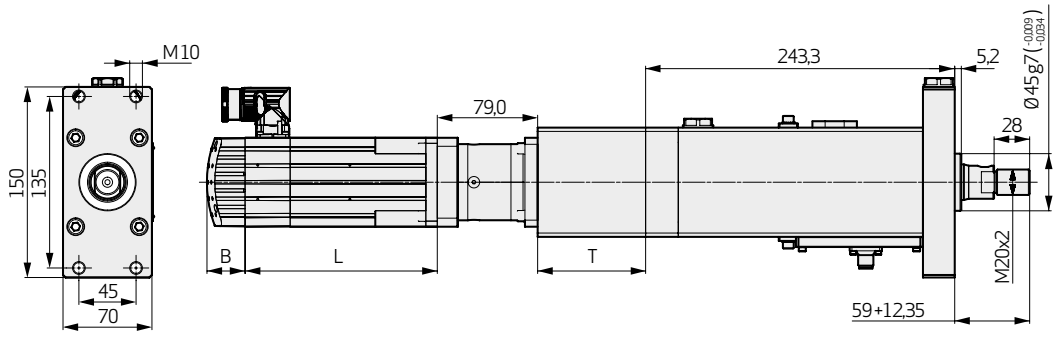


DIMENSIONAL DRAWINGS

High Force - Size 1

Type L875P-1

Installation drawings

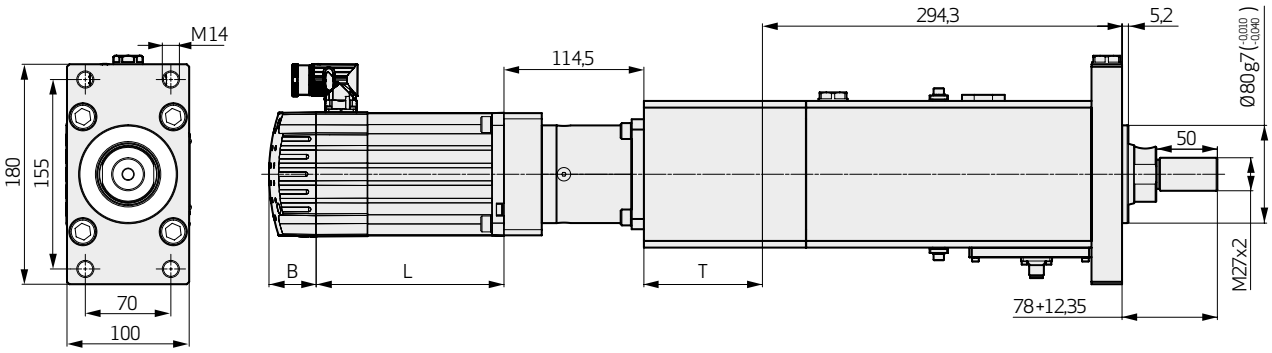


	Force level 1	Force level 2	No brake	Brake & resolver	Brake & encoder	Coupling	Torque limiter
L	140	165	-	-	-	-	-
B	-	-	0	22	41	-	-
T	-	-	-	-	-	69	85

High Force - Size 2

Type L875P-2

Installation drawings



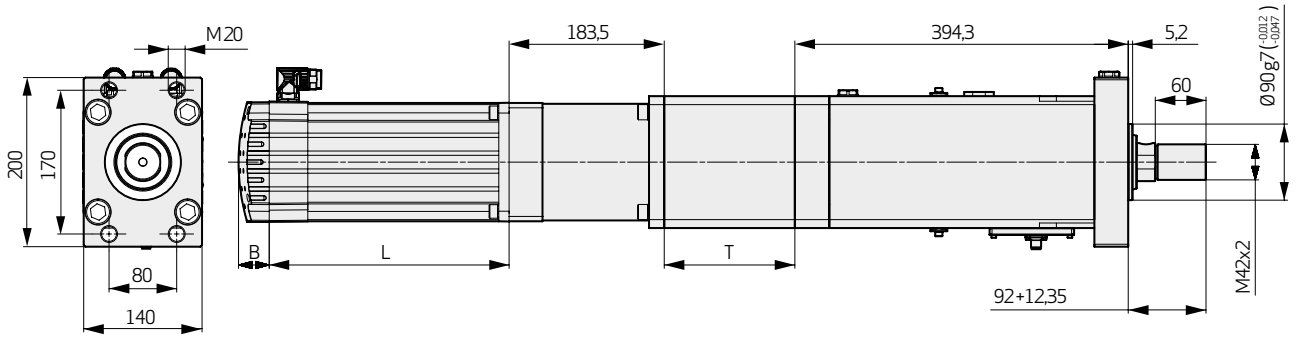
	Force level 1	Force level 2	No brake	Brake & resolver	Brake & encoder	Coupling	Torque limiter
L	222	273	-	-	-	-	-
B	-	-	0	21	42	-	-
T	-	-	-	-	-	97	116

DIMENSIONAL DRAWINGS

High Force - Size 3

Type L875P-3

Installation drawings

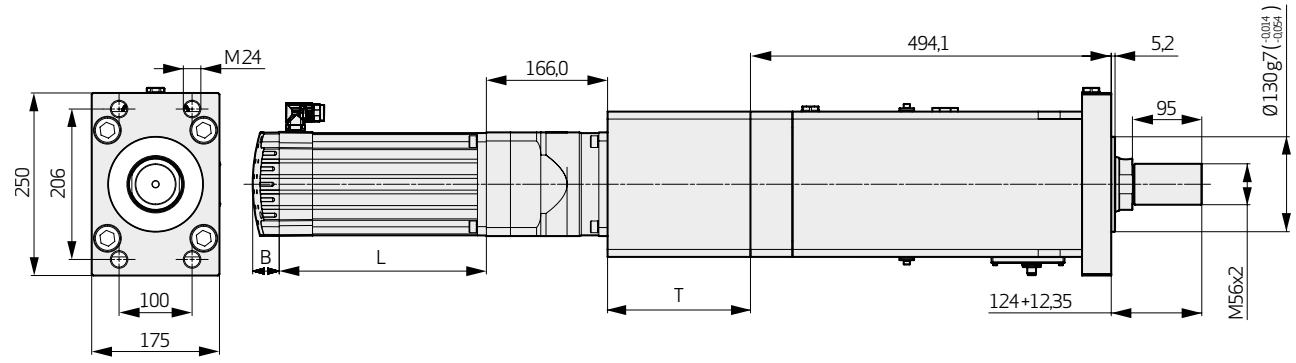


	Force level 1	Force level 2	No brake	Brake & resolver	Brake & encoder	Coupling	Torque limiter
L	271	322	-	-	-	-	-
B	-	-	0	14	42	-	-
T	-	-	-	-	-	126.5	154.5

High Force - Size 4

Type L875P-4

Installation drawings



	Force level 1	Force level 2	No brake	Brake & resolver	Brake & encoder	Coupling	Torque limiter
L	271	322	-	-	-	-	-
B	-	-	0	14	42	-	-
T	-	-	-	-	-	167.7	195.7

High Speed – Size 1

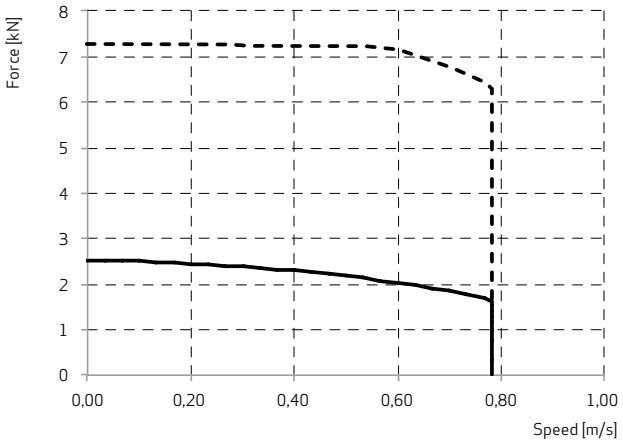
Type L875B-1

Characteristics and performance with Moog Drive

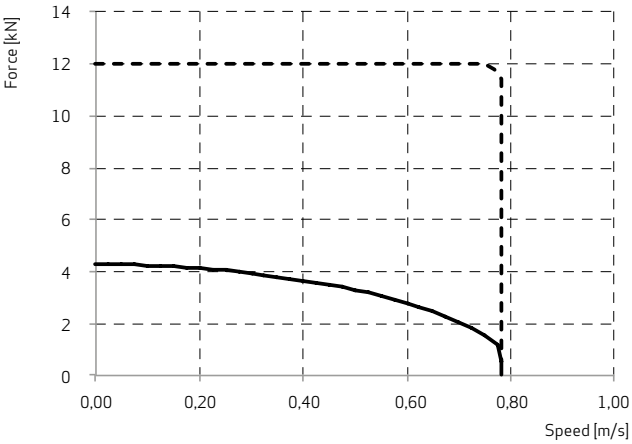
Characteristics		L875B-110	L875B-120	L875B-130
Continuous stall force	F_0	2,43 kN	4,14 kN	5,66 kN
Continuous force @ max speed	F_n	1,43 kN	1,62 kN	3,59 kN
Maximum stall force	F_{0m}	7,29 kN	12,00 kN	12,00 kN
Maximum force @ max speed	F_{nm}	6,31 kN	11,73 kN	12,00 kN
Maximum speed	S_{max}	783,00 mm/s	775,00 mm/s	617,00 mm/s
Continuous stall current	I_0	3,93 A_{rms}	5,27 A_{rms}	5,13 A_{rms}
Continuous current @ max speed	I_n	2,39 A_{rms}	2,15 A_{rms}	3,30 A_{rms}
Maximum stall current	I_{om}	11,45 A_{rms}	15,00 A_{rms}	10,77 A_{rms}
Maximum current @ max speed	I_{nm}	5,79 A_{rms}	6,88 A_{rms}	7,67 A_{rms}
Force ratio	r_f	0,53 kN/Nm	0,54 kN/Nm	0,55 kN/Nm
Speed ratio	r_s	1,67E-01(mm/s)/rpm	1,67E-01(mm/s)/rpm	1,67E-01(mm/s)/rpm
Force costant	k_f	0,61 kN/A_{rms}	0,78 kN/A_{rms}	1,10 kN/A_{rms}
Inertia @ motor side*	J	4,94 kg/cm^2	7,16 kg/cm^2	9,34 kg/cm^2
Weight*	m	16,7 kg	19,7 kg	21,5 kg

Data refers to an ambient temperature of 40°
Data consider field weakening
* Estimated referred to 120 mm stroke

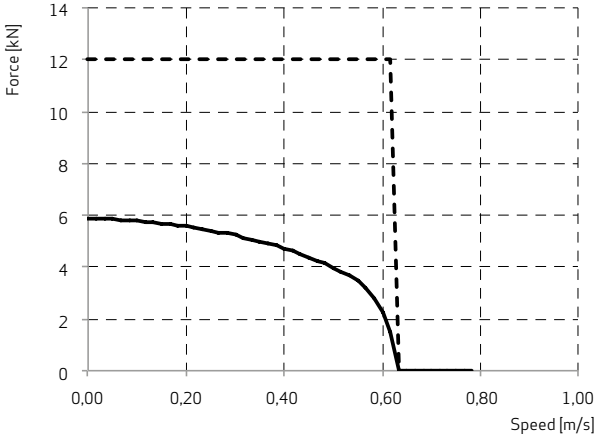
L875B-110



L875B-120



L875B-130



High Speed – Size 2

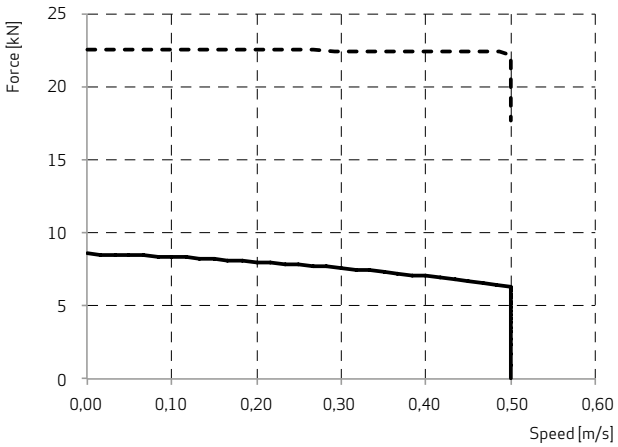
Type L875B-2

Characteristics and performance with Moog Drive

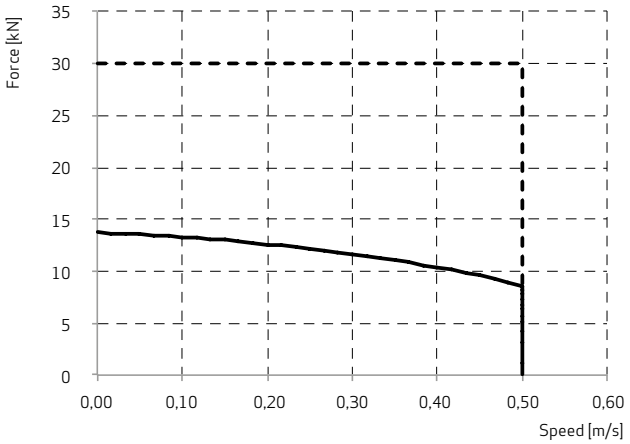
Characteristics		L875B-210	L875B-220	L875B-230
Continuous stall force	F_0	8,26 kN	13,23 kN	17,83 kN
Continuous force @ max speed	F_n	5,79 kN	7,48 kN	11,33 kN
Maximum stall force	F_{0m}	22,62 kN	30,00 kN	30,00 kN
Maximum force @ max speed	F_{nm}	21,24 kN	30,00 kN	30,00 kN
Maximum speed	S_{max}	500,00 mm/s	500,00 mm/s	500,00 mm/s
Continuous stall current	I_0	10,86 A_{rms}	13,65 A_{rms}	13,01 A_{rms}
Continuous current @ max speed	I_n	7,75 A_{rms}	7,87 A_{rms}	8,36 A_{rms}
Maximum stall current	I_{om}	28,90 A_{rms}	30,46 A_{rms}	21,71 A_{rms}
Maximum current @ max speed	I_{nm}	27,18 A_{rms}	26,99 A_{rms}	15,82 A_{rms}
Force ratio	r_f	0,54 kN/Nm	0,55 kN/Nm	0,56 kN/Nm
Speed ratio	r_s	1,67E-01(mm/s)/rpm	1,67E-01(mm/s)/rpm	1,67E-01(mm/s)/rpm
Force costant	k_f	0,76 kN/A_{rms}	0,96 kN/A_{rms}	1,37 kN/A_{rms}
Inertia @ motor side*	J	27,36 kg/cm^2	34,90 kg/cm^2	42,39 kg/cm^2
Weight*	m	37,1 kg	41 kg	46 kg

Data refers to an ambient temperature of 40°
Data consider field weakening
* Estimated referred to 120 mm stroke

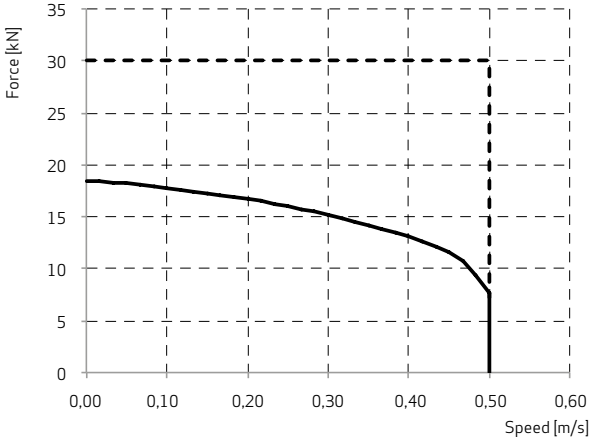
L875B-210



L875B-220



L875B-230



High Speed – Size 3

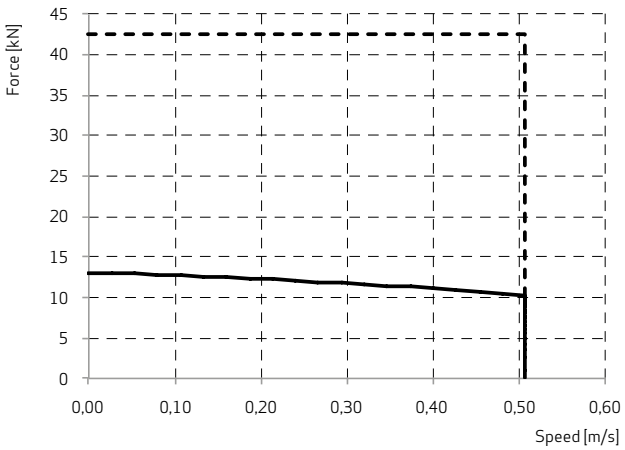
Type L875B-3

Characteristics and performance with Moog Drive

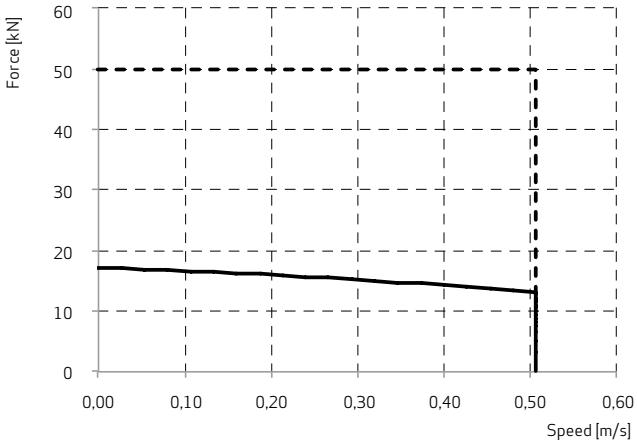
Characteristics		L875B-310	L875B-320	L875B-330
Continuous stall force	F_0	12,59 kN	16,58 kN	24,51 kN
Continuous force @ max speed	F_n	9,61 kN	12,02 kN	16,11 kN
Maximum stall force	F_{0m}	42,64 kN	50,00 kN	50,00 kN
Maximum force @ max speed	F_{nm}	42,56 kN	50,00 kN	50,00 kN
Maximum speed	S_{max}	507,00 mm/s	507,00 mm/s	507,00 mm/s
Continuous stall current	I_0	22,84 A_{rms}	22,34 A_{rms}	30,55 A_{rms}
Continuous current @ max speed	I_n	17,19 A_{rms}	15,86 A_{rms}	20,28 A_{rms}
Maximum stall current	I_{om}	75,39 A_{rms}	66,15 A_{rms}	61,71 A_{rms}
Maximum current @ max speed	I_{nm}	75,26 A_{rms}	59,90 A_{rms}	61,71 A_{rms}
Force ratio	r_f	0,35 kN/Nm	0,35 kN/Nm	0,35 kN/Nm
Speed ratio	r_s	2,67E-01(mm/s)/rpm	2,67E-01(mm/s)/rpm	2,67E-01(mm/s)/rpm
Force costant	k_f	0,55 kN/A_{rms}	0,74 kN/A_{rms}	0,80 kN/A_{rms}
Inertia @ motor side*	J	129,49 kg/cm^2	155,53 kg/cm^2	207,11 kg/cm^2
Weight*	m	89 kg	94,9 kg	106,6 kg

Data refers to an ambient temperature of 40°
Data consider field weakening
* Estimated referred to 120 mm stroke

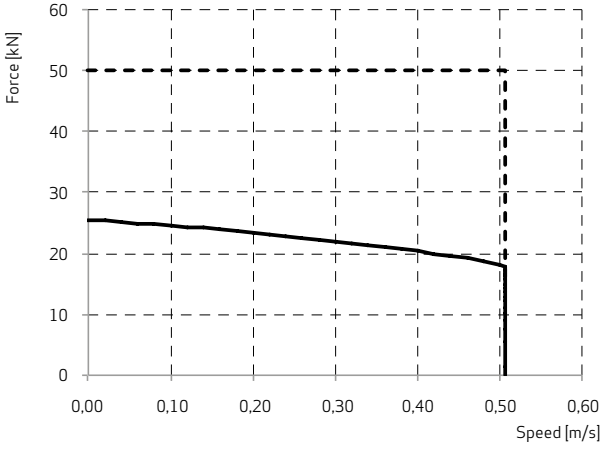
L875B-310



L875B-320



L875B-330

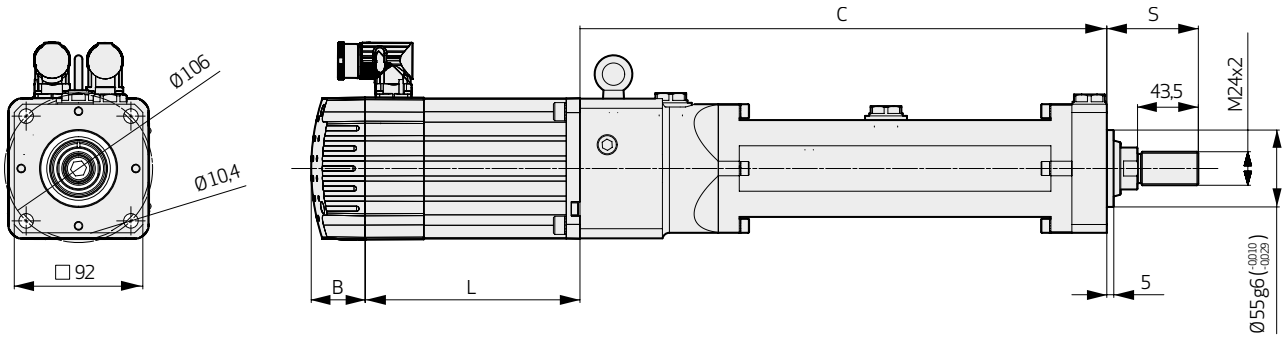


DIMENSIONAL DRAWINGS

High Speed - Size1

Type L875B-1

Installation drawings

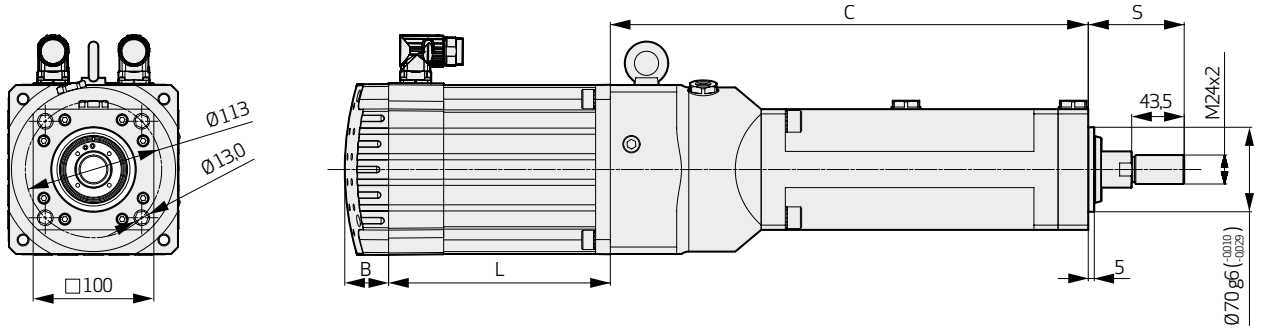


	Stroke 120	Stroke 200	Stroke 250	Force level 1	Force level 2	Force level 3	No brake	Brake & resolver	Brake & encoder
C	377	457	507	-	-	-	-	-	-
S retracted	65.5	65.5	65.5	-	-	-	-	-	-
S extracted	186.5	266.5	316.5	-	-	-	-	-	-
L	-	-	-	171	222	273	-	-	-
B	-	-	-	-	-	-	0	21	42

High Speed - Size2

Type L875B-2

Installation drawings



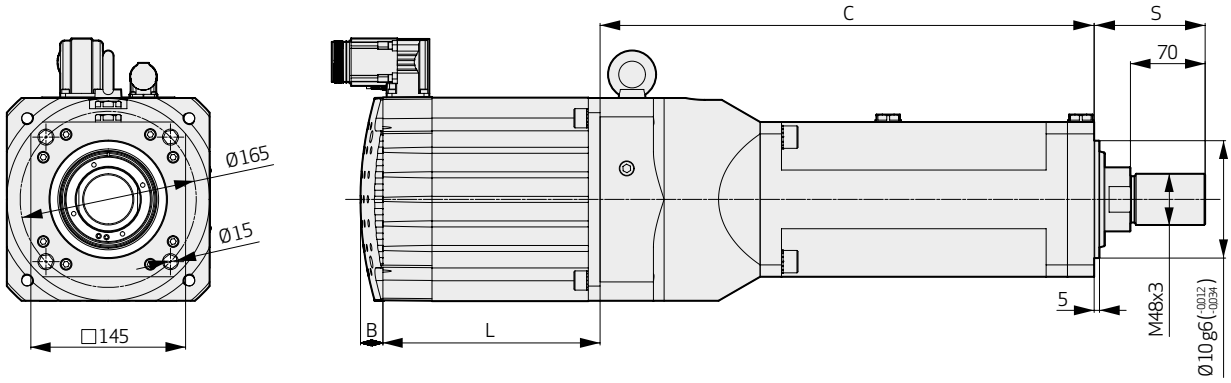
	Stroke 120	Stroke 200	Stroke 250	Force level 1	Force level 2	Force level 3	No brake	Brake & resolver	Brake & encoder
C	396	476	526	-	-	-	-	-	-
S retracted	79.5	79.5	79.5	-	-	-	-	-	-
S extracted	200	280	320	-	-	-	-	-	-
L	-	-	-	220	271	322	-	-	-
B	-	-	-	-	-	-	0	14	42

DIMENSIONAL DRAWINGS

High Speed – Size 3

Type L875B-3

Installation drawings

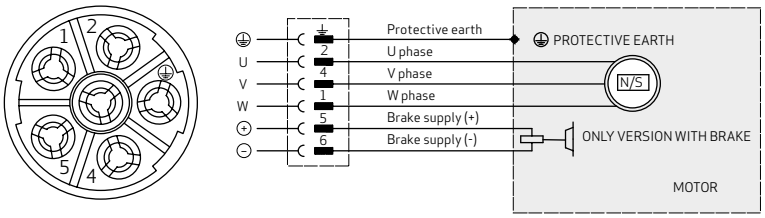


	Stroke 120	Stroke 200	Stroke 250	Force level 1	Force level 2	Force level 3	No brake	Brake & resolver	Brake & encoder
C	463	543	593	-	-	-	-	-	-
S retracted	104	104	104	-	-	-	-	-	-
S extracted	225.3	305.3	355.3	-	-	-	-	-	-
L	-	-	-	263	301	377	-	-	-
B	-	-	-	-	-	-	0	37	59

WIRING DIAGRAMS

Power Connector

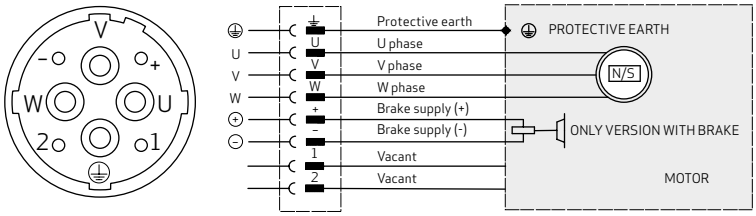
Power Connector Size 1



Applicable to:

L875P-1xx
L875P-2xx
L875P-310
L875P-410
L875B-1xx
L875B-210
L875B-220

Power Connector Size 1.5

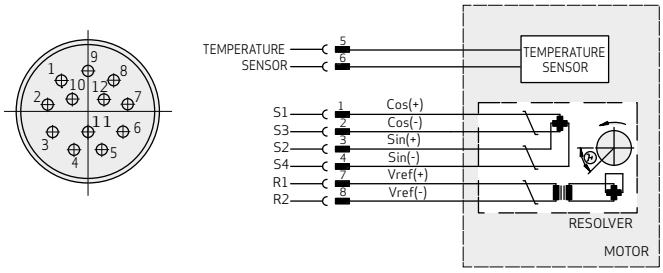


Applicable to:

L875P-320
L875P-420
L875B-230
L875B-3XX

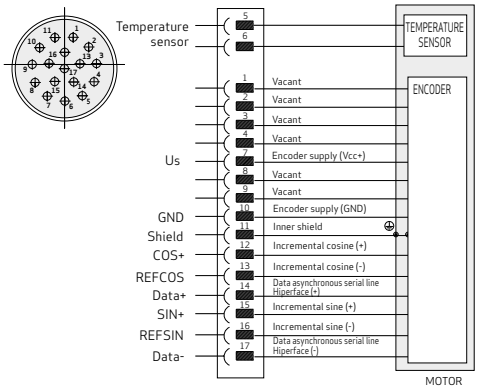
Signal Resolver Connector

Signal Resolver Connector

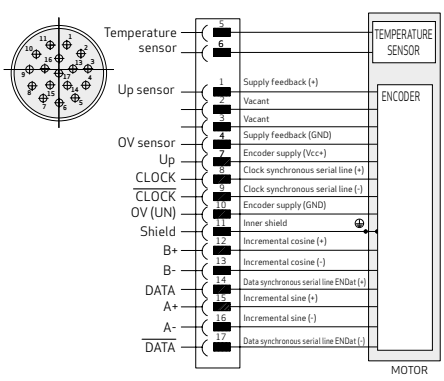


Signal Encoder Connector

Stegmann Absolute



Heidenhain Absolute



LIFE ESTIMATION DIAGRAMS

Lifetime estimation

The previous performance are just releated to thermal beahviour of the actuator, the estimated life of the system will depend on the duty cycle applied.
In the following graph it is shown the estimated life with at different values of equivalent force and medium speed.
On the side the formulas in order to estimate "equivalent force" and "medium speed".

$$F_{eq} = \sqrt{\frac{\sum_{i=1}^{n} v_i \cdot t_i \cdot (F_p)}{v_m \cdot \sum_{i=1}^{n} t_i}}$$

$$v_m = \frac{\sum_{i=1}^{n} v_i \cdot t_i}{\sum_{i=1}^{n} t_i}$$

Where the following terms are defined:

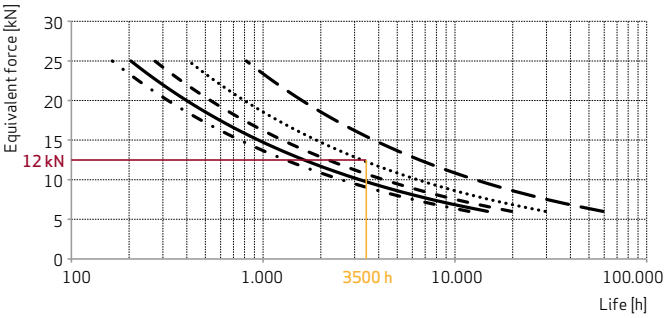
F_{eq}: mean load for screw estimation [kN]
C_i: force applied during phase i [kN]
v_i: speed applied during phase i [mm/s]
t_i: length of phase i [s]

Lifetime estimation example

After calculated the equivalente force and medium speed, these 2 value must be crossed on the graph, and on the horizontal axis the estimated life is shown:

F_{eq} = 12,5 [kN]
V_m = 24 [mm/s] → L = 3500 h

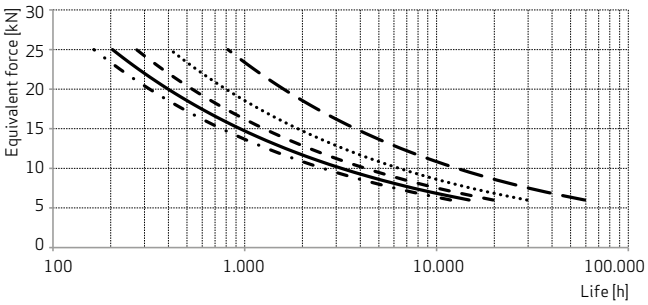
L875P Size 1 - Life estimation



Avarage speed [mm/s]:
12 24 36 48 60

High Force – Size 1

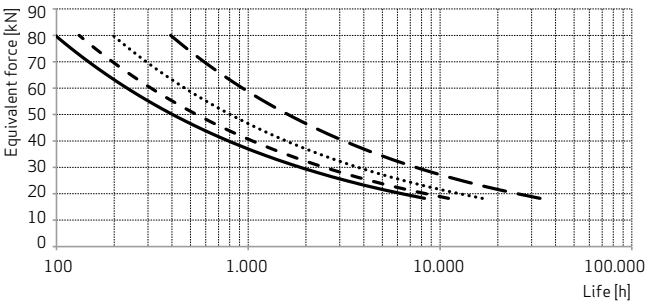
Type L875P-1 - Life estimation



Avarage speed [mm/s]:
12 24 36 48 60

High Force – Size 2

Type L875P-2 - Life estimation

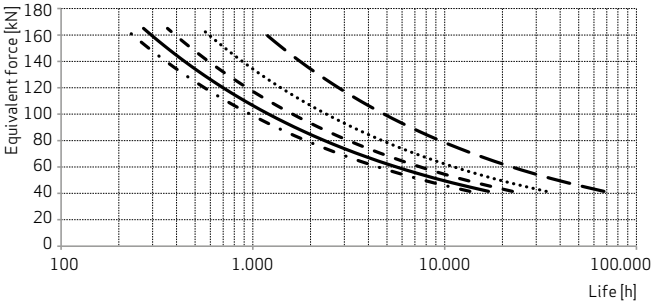


Avarage speed [mm/s]:
12 24 36 48 60

LIFE ESTIMATION DIAGRAMS

High Force – Size 3

Type L875P-3 - Life estimation

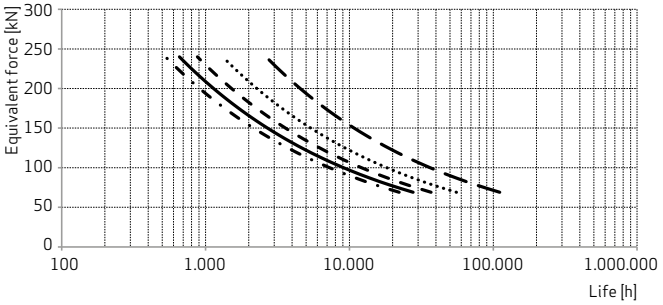


Avarage speed [mm/s]:

10 ..... 20 - - - - 30 ——— 40 _ . _ 50

High Force – Size 4

Type L875P-4 - Life estimation

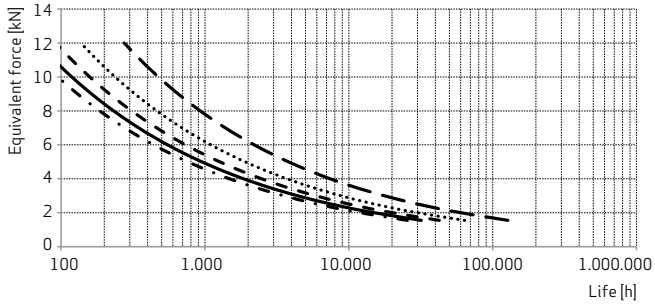


Avarage speed [mm/s]:

7 ..... 14 - - - - 21 ——— 28 _ . _ 35

High Speed – Size 1

Type L875B-1 - Life estimation

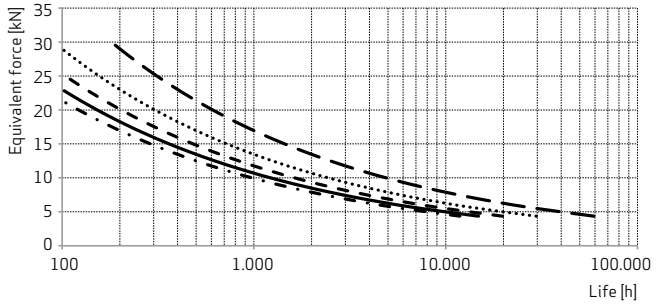


Avarage speed [mm/s]:

150 ..... 300 - - - - 450 ——— 600 _ . _ 750

High Speed – Size 2

Type L875B-2 - Life estimation

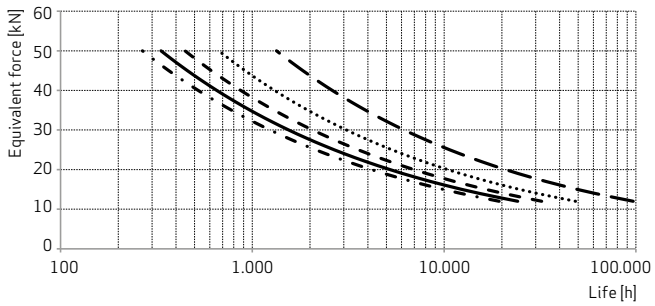


Avarage speed [mm/s]:

100 ..... 200 - - - - 300 ——— 400 _ . _ 500

High Speed – Size 3

Type L875B-3 - Life estimation



Avarage speed [mm/s]:

100 ..... 200 - - - - 300 ——— 400 _ . _ 500

MULTI-PURPOSE ELECTROMECHANICAL ACTUATORS

General information

1. Motors designed to EN 60034 (VDE 0530)
2. Rotors balanced to Class G 6.3 per ISO 1940
3. Sealing to IP54 with Moog specified mating connectors
4. Operating ambient temperature
   -25 to +80 °C (-13 to+104 °F) (up to 40 °C (266 °F) with derated output)
5. Class F winding insulation
6. Feedback Sensors: Resolver, Encoder (Incremental, Absolute Single-turn, Absolute Multi-turn)
7. Winding temperature sensors (standard version):
   PTC with threshold at 155 °C (311 °F)

Notes:

1. Continuous ratings based upon:

   a. Operation in still air with ambient temperatures at 25 °C (77 °F)

   b. Winding temperature at 110 °C (230 °F) over ambient

   c. Actuator attached to a steel mounting plate measuring 300 x 300 x 25 mm (11.81 x 11.81 x 1.00 in)

2. Peak ratings based on:

   a. Duty cycle: Please contact Moog application engineering

   b. Iron saturation of 15 % or less

3. Nominal speed and power values at maximum continuous output power with conditions per note 1
4. Performance as measured with Moog Servo
5. Specification tolerances are ±10 %
6. For motors with Encoder feedback, please use a lower Nominal Torque, Continuous Duty, Nominal Speed rating [80 °C (176 °F) temperature rise above Ambient of 40 °C (104 °F)], due to operating temperature limitations [120 °C (248 °F)] of encoder devices
7. Although very low maintenance, we advise you talk to your local Moog customer service team to determine an appropriate maintenance schedule for these MEMA based on loading and usage

ABOUT MOOG

Moog Inc. is a worldwide designer, manufacturer and integrator of precision control components and systems. Moog's Industrial Group designs and manufactures high performance motion control solutions combining electric, hydraulic, and hybrid technologies with expert consultative support in a range of applications including energy production and generation machinery, industrial production machinery and simulation and test equipment. We help performance-driven companies design and develop their next-generation machines.

Moog maintains facilities in 26 countries around the globe. This vast scope ensures that our engineers remain close to the needs of machine builders and provide flexible design solutions and technical expertise tailored to our customers' toughest challenges.

Moog experts work in close collaboration with machine builders and application engineers to design motion control systems for greater productivity, higher reliability, superior connectivity, less costly maintenance and more effective operations. Our regional presence, industry knowledge and design flexibility ensures Moog motion control solutions are tailored to their environment—from meeting operating regulations and performance standards, to taking machine performance to a higher level.

Products

At the heart of every Moog solution is an array of products engineered for precision, high performance and reliability. For more than six decades, Moog products have been specified for critical machine applications.

Some are developed specifically for unique operating environments. Others are standard equipment on machines across many industries. All are continuously improved to take advantage of the latest technology breakthroughs and advancements.

Moog products include:

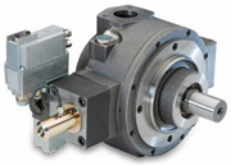
- Servo Valves and Proportional Valves
- Servo Motors and Servo Drives
- Servo Controllers and Software
- Radial Piston Pumps
- Actuators
- Integrated Hydraulic Manifold Systems and Cartridge Valves
- Slip Rings
- Motion Bases
- Ball screw
- Roller screw

Servo Drives

Servo Motors

Servo Valves

Screws



Radial Piston Pump

ABOUT MOOG

Solutions

Hydraulic solutions

Since Bill Moog invented the first commercially viable servo valve in 1951, Moog has set the standard for worldclass hydraulic technology. Today, Moog products are used in a variety of applications - providing high power, enhanced productivity and ever better performance for some of the worlds most demanding applications.

Electric solutions

Clean operation, low noise generation, less maintenance and reduced power consumption make Moog electric solutions ideal for applications worldwide. Moog is the ideal partner for applications where transitioning technologies requires special expertise.

Hybrid solutions

By incorporating the advantages of existing hydraulic and electric technologies - including modular flexibility, increased efficiency and cleanliness - into innovative hybrid solutions, Moog offers new performance potential in specialized applications.

Flight simulation

Formula 1 Simulation Table

Moog global 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.

This promise offers many benefits to our customers including:

- Reduce your downtime by keeping critical machines running in peak performance
- Protect your investment by ensuring reliability, versatility and long-life of products
- Better plan your maintenance activities and make systematic upgrades
- Leverage our flexible programs to meet the unique service requirements of your facility

Look to Moog for global support including:

- Repair services using OEM parts are performed by trained technicians to the latest specifications
- Stock management of spare parts and products to prevent unplanned downtime
- Flexible programs, tailored to your needs such as upgrades, preventative maintenance and annual/ multiyear contracts
- On-site services bring the expertise to you, providing quicker commissioning, set-up and diagnostics
- Access to reliable services that are guaranteed to offer consistent quality anywhere in the world

For more information on Moog Global Support™, visit www.moog.com/industrial/service.

ORDERING CODE

To order an actuator, choose the various Type options by filling in the box car on the inside back page of the catalog.

Moog sales department will provide the corresponding Model number suitable for the order.

L875P - □□□ - □□□□ - □□ - □□□

Mechenical converter size	
1	Size 1 (18 kN / 25 kN)
2	Size 2 (55 kN / 80 kN)
3	Size 3 (125 kN / 165 kN)
4	Size 2 (200 kN / 240 kN)

Actuator stroke	
12	12 mm
25	25 mm
X	Special

Motor cooling	
N	Natural convection

Actuator class force	
10	Low force
20	High force

Body mounting	
A	Threaded holes
B	Through holes
X	Special

Motor voltage	
H	High 565V (PTC)
L	Low 525V (PTC)

Rod mounting fixture	
A	Metric thread male
B	Metric thread female
X	Special

Torque limiter	
0	YES
N	NO

Motor with brake	
0	YES
N	NO

Motor sensor	
R	Resolver 2 poles
S	Stegmann abs. Multiturn
H	Heidenhain abs. Multiturn

L875B - □□□ - □□□□ - □N - □□□

Mechenical converter size	
1	Size 1 (7 kN / 12 kN)
2	Size 2 (20 kN / 30 kN)
3	Size 3 (30 kN / 50 kN)

Actuator stroke	
12	120 mm
20	200 mm
25	250 mm
XX	Special

Motor cooling	
N	Natural convection

Actuator class force	
10	Low force
20	Medium force
30	High force

Body mounting	
B	Through holes
X	Special

Motor voltage	
H	High 565V (PTC)
L	Low 525V (PTC)

Rod mounting fixture	
A	Metric thread male
B	Metric thread female
X	Special

Motor with brake	
0	YES
N	NO

Motor sensor	
R	Resolver 2 poles
S	Stegmann abs. Multiturn
H	Heidenhain abs. Multiturn

NOTES

TAKE A CLOSER LOOK.

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

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Moog Multi-Purpose Electro-Mechanical Linear Actuator (Mema)
Rev. 0, September 2014

WHAT MOVES YOUR WORLD

MOOG