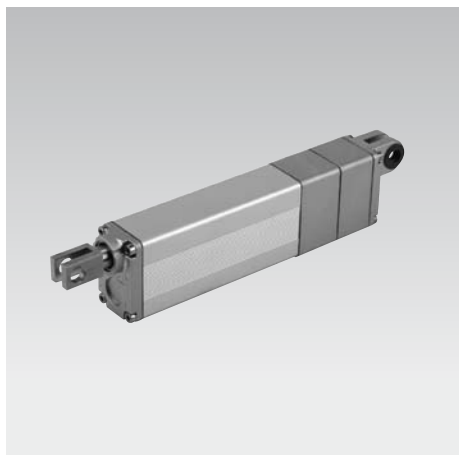




Linear Actuators RA 60

Max. lifting force 300 to 600 N, stroke from 100 to 200 mm
 Version with limit switches or stroke measuring system



Advantages

- Compact design without interfering edges
- Outstanding durability
- Mounting position: variable
- Maintenance free
- Code class IP69K – Cleaning with high-pressure cleaner
- Precise pushing rod guide

Application

Linear actuators RA 60 are used for electrically-operated proportioning tasks or as actuating element in applications with control-oriented demands in short-time service. The range of application is versatile.

The version for mobile applications was developed especially for the rough outdoor use and under corrosive environment influences.

Principal use

- Mobile automotive engineering
- Conveyor and dosing technology
- Communal technology
- Agricultural and forest technology

Fixing and installation

The linear actuators RA 60 have two fork eyes with \varnothing 10 mm for the connection of user's constructions.

It has to be considered that the linear actuator has to be mounted protected against torsion. The pushing rod must be installed without any side loads. The connecting construction has to be designed so that no forced conditions act on the pushing rod.

The electric connection is made alternatively by the plug-type connector available as accessory or directly to a terminal strip in the control box by means of the cable wires.

Description

Linear actuators RA 60 consist of a 12 V DC direct current drive, whose drive energy is transferred over a planetary gear and a spindle lifting gear to the pushing rod.

The generated lifting force is available as push and pull force. The sturdy design with code class IP69k guarantees a trouble-free function also in rough operating conditions.

Linear actuators RA 60 are maintenance free and can be operated with a duty cycle of up to 15%.

The version with limit switches is equipped with 2 sensors, that prevent an unintentional movement to the mechanical stroke ends and thus the overload of the mechanics.

The end positions of RA 60 with stroke measuring system are definable by the signal of the stroke measuring system.

Operation

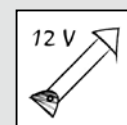
Linear actuators RA 60 are supplied and operated with 12 V board supply of the vehicle electronics.

The version with stroke measuring system provides the absolute position values of the actuator to the control. Referencing is not required.

RA 60 mobile can be integrated on request into existing BUS systems and controlled by LIN or CAN bus.

Please contact us.

Linear actuators RA 60 – 12 V DC



Part-no.: **F1-XX-XX-1-C-XS3A**

Technical characteristics

Max. push force:	300 – 600 N
Max. pull force:	100 % of the push force
Stroke:	100 – 200 mm
Max. duty cycle:	15%
Code class:	IP69K

Operational modes

- Control by external
12 V DC control
- Optional control by BUS interface

Electrical interface

Cable wires 0.34 mm² 12 V DC

Mechanical interface

2 fork eyes \varnothing 10 mm

Accessories

- Kit of plug-type connector
- BUS control

Material

Cylinder body:	zinc die casting, mat chromium plated
Guiding tube:	aluminium, naturally anodised
Pushing rod:	stainless steel

Important notes!

The linear actuators RA 60 are resistant against corrosion, diesel, oil, detergents and sulphates. The admissible environmental temperature is -20° up to $+70^{\circ}$ C.

Cleaning with high-pressure cleaner is admissible.

We recommend to install the cable ends and/or plug-type connectors protected against environment conditions to avoid the penetration of humidity and premature corrosion.

Version with limit switches

Description

The version with limit switches has 2 integrated sensors, which automatically switch off the motor as soon as the upper or lower stroke end position is obtained.

This guarantees that the linear actuator does not mechanically push against the stop.

The strands brown and white of this version are to be connected to 12 V DC. By changing the polarity, switching over from retracting to extending is effected.

Current consumption

As a function of the load the current consumption amounts linearly up to 4.5 A at nominal load. For a safe power supply, a supply current of at least 6 A is required.

Technical characteristics

Force	Velocity		Current-consumption	Duty cycle
	Idle running	loaded		
[N]	[mm/s]	[mm/s]	[A]	[max. 1.5 min]
300	28	18	3.5	max. 15 %
600	16	7	4	max. 15 %

Stroke	L	L + Stroke	Weight
[mm]	[mm]	[mm]	[kg]
100	270	370	0.9
150	320	470	1.4
200	370	570	1.8

Code class

IP69K (exception cable ends)

Static retention force

200 N at lifting force 300 N

600 N at lifting force 600 N

Since the actuators are designed without holding brake, the piston rod can be displaced in case of higher loads or vibrations and the actuator has to be readjusted, if necessary.

Code for part numbers

Part-no. **F1-XX-XX-1-C-ES3A**

Maximum lifting force

(optionally)

03 = 300 N

06 = 600 N

Stroke

(optionally)

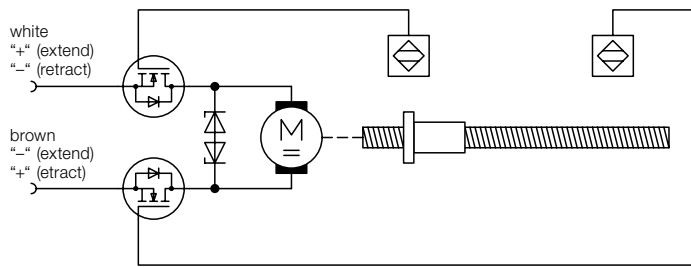
10 = 100 mm

15 = 150 mm

20 = 200 mm

Variant 24 V available on request.

Circuit diagram and configuration of cables for RA 60 with stroke end disconnection



Important notes!

Only RA 60 with stroke measuring system can be operated synchronously!

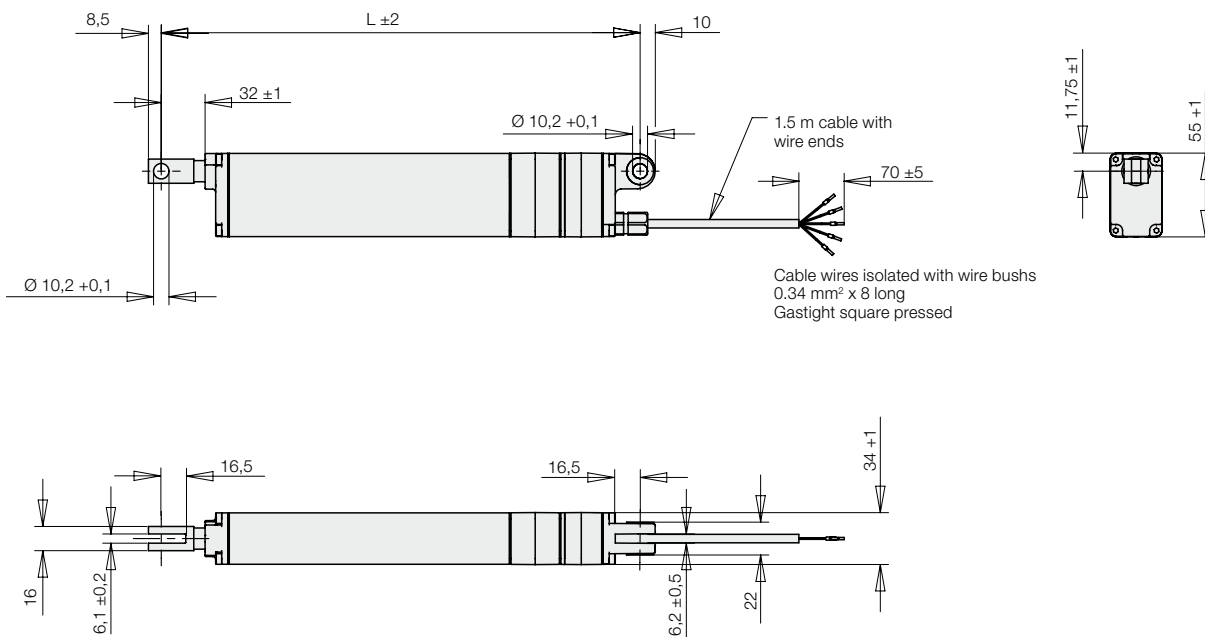
The user has to provide a current limitation of 5.5 A.

In the case of a blockade, the control has to provide for a switching off of the power supply at the latest after 10 second to prevent an overload of the actuator.

Accessories

See page 3.

Dimensions



Description

The version with absolute stroke measuring system is equipped with a linear potentiometer. A slider at the pushing rod produces a signal at the potentiometer, that is proportional to the position of the pushing rod. This signal can easily be evaluated by a priority control and is permanently available. Referencing is not required. Due to the direct connection of the absolute stroke measuring system to the pushing rod, one gets a precise stroke information with slight backlash. With the stroke measuring system control-oriented applications and the compound of several linear actuators in synchronism can be realised.

Technical characteristics

See page 2.

Data stroke measuring system

Connecting resistance 5 k Ω
Linearity ±1 %

Connection according to the principle of a voltage divider to a stable reference supply point with max. 12 V.

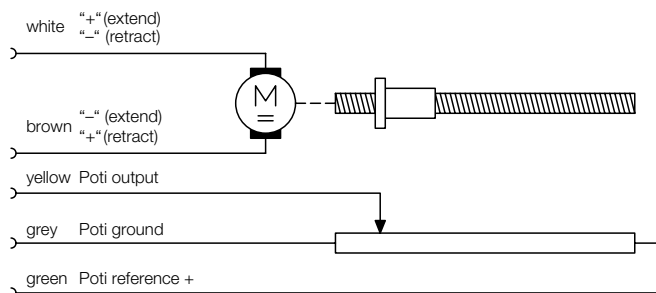
Code for part numbers

Part-no. F1-XX-XX-1-C-AS3A

Maximum lifting force
(optionally)
03 = 300 N
06 = 600 N

Stroke
(optionally)
10 = 100 mm
15 = 150 mm
20 = 200 mm

Circuit diagram and configuration of cables for RA 60 with stroke measuring system



Dimensions

See page 2.

Important notes!

The stroke end positions must not be loaded mechanically. An approach in creep speed or switching off 2 mm before reaching the end positions is required.

Accessories

• Kit of plug-type connector Superseal 5 Pol

Complete kit of plug-type connector and bushing with sealings. For crimping of the plug contacts the user has to remove the wire bushes of the cable. The bushing is suited for wire diameters of 0.75 mm² to 1.5 mm²

Part-no. 3823-088



• BUS control

The optionally available BUS board especially adapted to the customer's requirements offer beside the BUS control further advantages such as

- Motor brake function
- Soft start
- Current limitation
- Overcurrent cut-off
- Limitation of duty cycle
- Function release blockade
- Error message