Linear Actuators RA 60 K

Max. lifting force 300 to 600 N, stroke from 100 to 150 mm version with limit switches or stroke measuring system

Advantages
- Compact design
- Outstanding durability
- Variable mounting position
- Maintenance free
- Code class IP69K (Cleaning with high-pressure cleaner possible)
- Solid pushing rod guide
- High positioning accuracy by directly coupled stroke measuring system

Linear actuators RA 60 K – 12 V DC

Part no.: F2-XX-XX-1-C-XS3A

Technical data

Max. push force:	300 to 600 N
Max. pull force:	100% of the push force
Stroke:	100 to 150 mm
Max. duty cycle:	15 %
Code class:	IP69K

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

Electrical interface
Cable wires 0.34 mm² 12 VDC

Mechanical interface
2 fork eyes Ø 10 mm

Accessories
- Kit of plug-type connector
- Bus control

Application
Linear actuators RA 60 K 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
- Agricultural and forest technology
- Mobile automotive engineering
- Conveyor and dosing technology
- Municipal technology

Fixing and installation
The linear actuators RA 60 K have two fork eyes with Ø 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 K consist of a 12 VDC direct current drive, whose drive energy is transferred over a planetary gear and a spindle stroke actuator to the pushing rod.
The generated lifting force is available as push and pull force. The sturdy design with code class IP 69 k guarantees a trouble-free function also in rough operating conditions.
Linear actuators RA 60 K 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 the RA 60 K with stroke measuring system are definable by the signal of the stroke measuring system.

Operation
Linear actuators RA 60 K 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 K can be integrated on request into existing bus systems and controlled by LIN or CAN bus.
Please contact us.

Materials

Body:	polyamide, black, glass fibre reinforced
Guiding tube:	aluminium, anodized and powder coated
Pushing rod:	stainless steel

Important notes!
The linear actuators RA 60 K are resistant against corrosion, diesel, oil, detergents, fertilizers and salts.
The admissible environmental temperature is –20° up to +70 °C.
Cleaning with high-pressure cleaner is admissible.
We recommend to install the cable ends or plug-type connectors protected against the environmental conditions to avoid penetration of humidity and premature corrosion.

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 wires 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.

Technical data

Force	Speed		Current consumption	Duty cycle
	Idle running	loaded		
[N]	[mm/s]	[mm/s]	[A]	[max. 1.5 min.]
300	30	20	3.0	max. 15%
600	16	9	3.5	max. 15%

Stroke	L	L + stroke	Weight
[mm]	[mm]	[mm]	[kg]
100	267	367	1.0
150	317	467	1.1

Code for part numbers

Part no. **F2-XX-XX-1-C-ES3A**

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

Stroke
10 = 100 mm
15 = 150 mm

Variant 24 V available on request.

Current consumption

Depending on the load, the current consumption is linear up to the current value at nominal load specified in the technical data.
For a safe power supply, a supply current of at least 6 A is required.

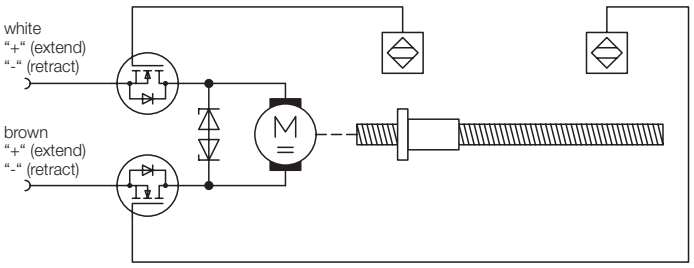
Code class

IP69K (exception: cable end)

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.

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



Important notes!

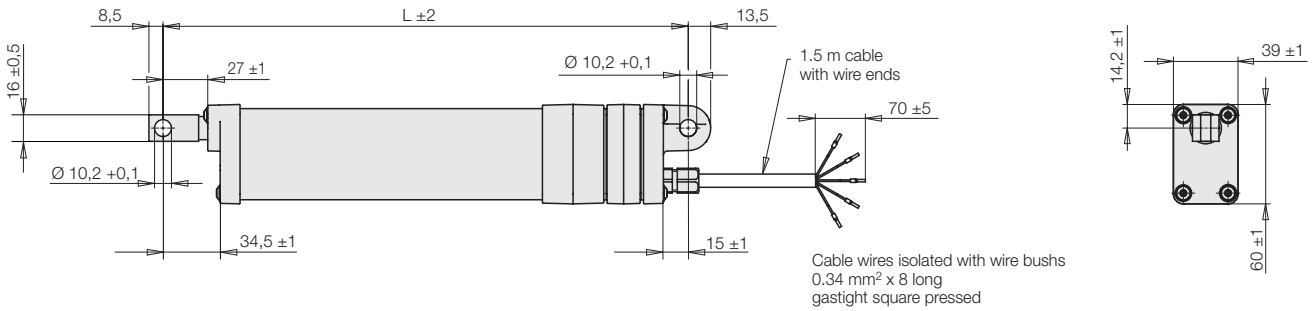
The user has to provide a current limitation of 4.5 A.
In the case of a blockade, the control has to provide for a switching off of the power supply at the latest after 10 seconds to prevent an overload of the actuator.

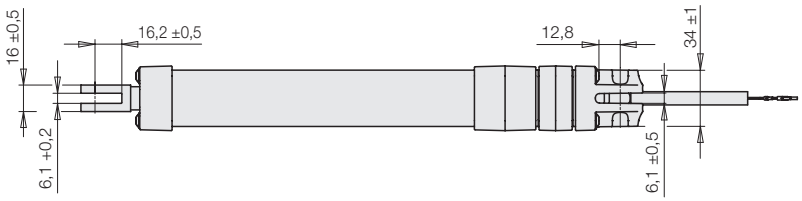
For more information on technical data and tolerances, see operating manual or installation drawing.

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 data
See page 2.

Data stroke measuring system

Connecting resistance	5 k Ω
Linearity	± 1 %

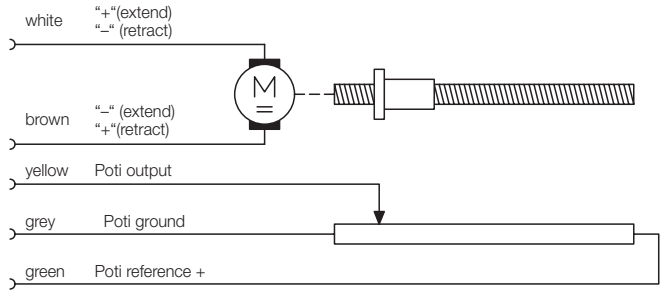
Connection according to the principle of a voltage divider to a stable reference supply point with max. 50 V.

Code for part numbers
Part no. F2-XX-XX-1-C-AS3A

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

Stroke
10 = 100 mm
15 = 150 mm

Circuit diagram and configuration of cables for RA 60 K 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 consisting of plugs and bushing with seals.
For crimping of the plug contacts, the user has to remove the wire bushs of the cable.
The bushing is suited for wire diameters of 0.75 mm^2 to 1.5 mm^2.

Part no. 3823088

• 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
– Excess-current release
– Limitation of duty cycle
– Function release blockade
– Error message