

# BRIEF INFORMATION

## Linear actuators

- Electrical locking /unlocking and closing
- High actuating force
- Dustproof or waterproof
- With or without manual adjustment
- Thermal overload protection through PTC (PolySwitch)
- Various connecting elements available

## PRODUCT FEATURES

### Application

The linear actuator is used for the electrical locking, unlocking or shutting function of the closing and flap systems in automotive and industrial applications.

Examples of applications in mechanisms include:

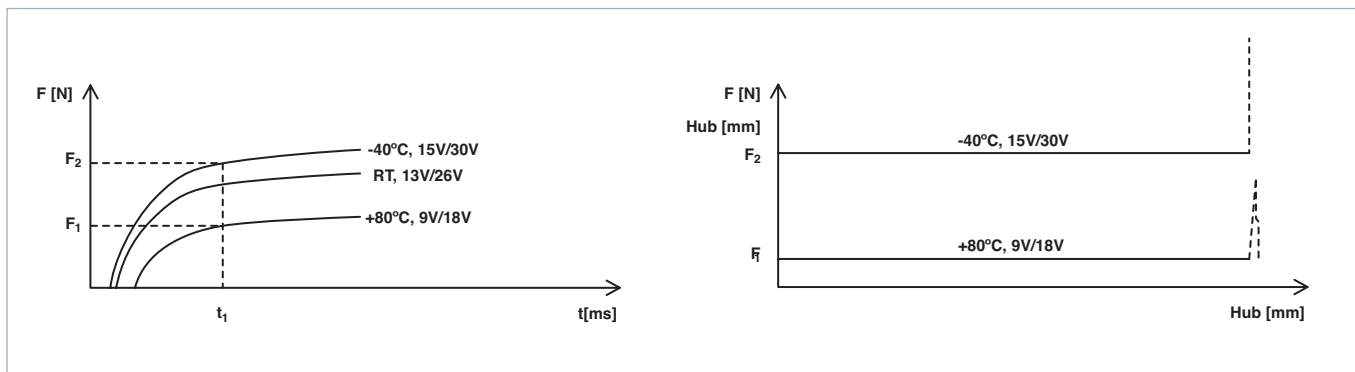
- Electrical locking/unlocking
- Electrical closing
- Electrical opening and closing of all doors (locking systems), flaps, sunroofs, seats, covers, bonnets, glove compartments, etc.

### Design and function

There is an electric motor installed in the two laser-welded polyamide housing halves. As a result of the electric motor being supplied with current via pin 1 and pin 2, it moves a spindle gear, which causes the tappet to retract or extend depending on the direction of rotation. The current supply with plus at pin 1 and minus at pin 2 causes the tappet to extend.







The current supply with minus at pin 1 and plus at pin 2, causes the plunger to retract. The stability of the retracted/extended locking positions is achieved by the short-circuited motor following successful actuation. A PolySwitch (PTC) integrated in the motor provides thermal overload protection. In addition, it is possible to equip the actuators with an automatic return function (retracting or extending) by way of a mainspring.

# DEPENDENCIES OF ACTUATING FORCE CHARACTERISTIC CURVES



With a controller time of  $t_1$ , the actuator has an actuating force of  $F_1 < F < F_2$ . The constant actuating force on the tappet over the rated stroke depends on the operating voltage and ambient temperature. If the actuator has no load to move over the stroke, the actuator power is converted into a higher actuator speed, resulting in the dynamic impact pulse becoming a multiple of the constant actuating force.

## ACCESSORIES: CONNECTING ELEMENTS

Product picture	For actuator function	Storage temperature	Material	Article number
	Retraction and extension	-40 °C to +90 °C	POM white	9XD 860 912-001
				9XD 862 354-001
	Extension	-40 °C to +90 °C	POM black	9XD 861 450-001
	Retraction and extension with rod	-40 °C to +90 °C	POM white	9XD 861 771-001
				9XD 862 516-001
				9XD 860 913-001

# TECHNICAL DETAILS

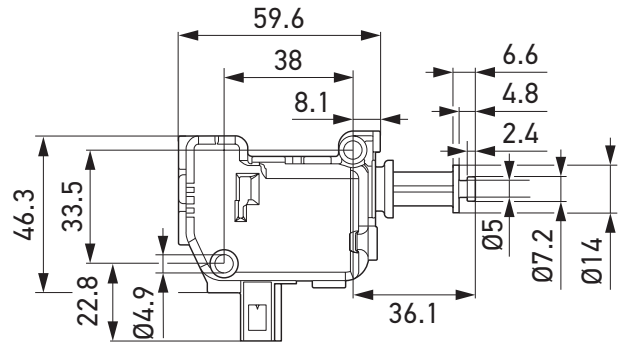
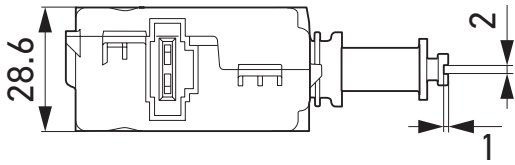
Technical data				
Article number	6NW 009 203-607	6NW 009 203-411/-417	6NW 009 203-627	6NW 009 203-637
Function	Electrical retraction and extension			
Position when delivered	Retracted		Extended	
Mainspring reset	None			
Weight	90 g			
Rated voltage	12 V			
Voltage range	9–15 V	9–15,5 V	9–15,5 V	9–15,5 V
Maximum current consumption (stall current)	6.7 A			
No-load/idling current	350 ± 200 mA	350 mA	350 mA	350 mA
Actuating force for tappet stroke via operating voltage range and operating temperature range	25–130 N	30–140 N	20–130 N	30–160 N
Manual adjustment	≤ 15 N	None	≤ 15 N	None
Actuating time for 18 mm stroke <sup>1)</sup>	max. 400 ms			
Thermal overload protection	Via PTC (PolySwitch)			
Operating temperature	-40 °C to +80 °C			
Storage temperature	-40 °C to +90 °C			
Lifetime	100,000 switching cycles			
Conducted electromagnetic interference	< 75 V			
Interference suppression (in all ranges)	Intensity level 1 + 10 dB µV			
Functional stroke	≤ 18 mm			
Protection class	IP 5K0		IP 5K4	
Vibration resistance	2.7 g <sub>eff.</sub>			
Housing material (top side)	Polyamide 6 GF15			
Housing material (bottom side)	Polyamide 6 M25 GF15			
Pin coating	Tin			
Mating connector <sup>2)</sup>	1355390-1		282080-1	

<sup>1)</sup> At the tappet over operating voltage range and operating temperature range.

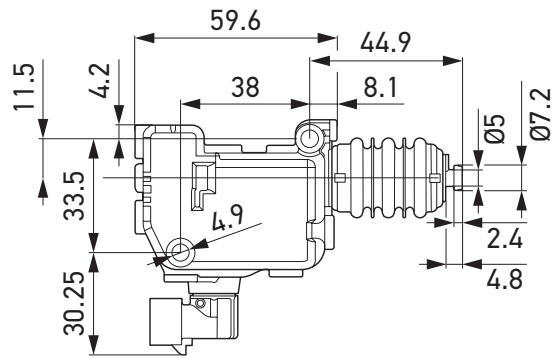
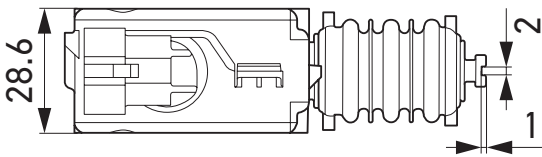
<sup>2)</sup> These accessories are not included in the scope of delivery. Available from TE Connectivity.

Technical drawing

6NW 009 203-607, 6NW 009 203-411 / -417

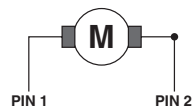
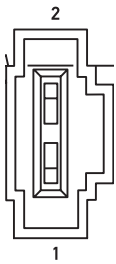


6NW 009 203-627, 6NW 009 203-637



Pin assignment / electrical connection

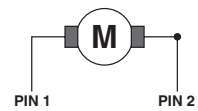
6NW 009 203-607, 6NW 009 203-411 / -417



Electrical extension  
Electrical retraction

+	-
-	+

6NW 009 203-627, 6NW 009 203-637



Electrical extension  
Electrical retraction

+	-
-	+

# TECHNICAL DETAILS

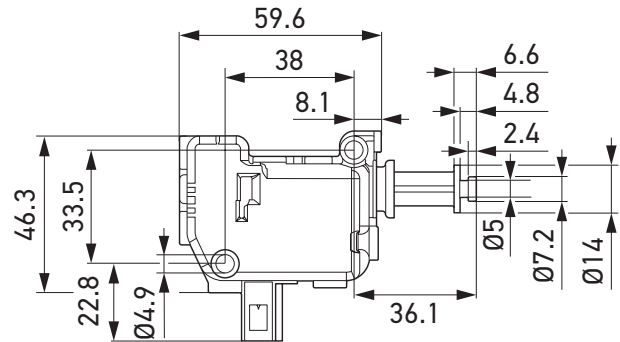
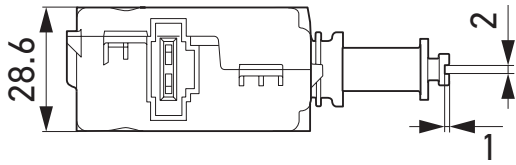
Technical data				
Article number	6NW 009 203-461/ -467	6NW 009 203-471/ -477	6NW 009 203-491/ -497	6NW 009 203-501
Function	Electrical retraction and extension with mainspring		Electrical extension and retraction with mainspring	
Position when delivered	Extended		Retracted	
Mainspring reset	Extend		Retract	
Weight	90 g			
Rated voltage	12 V			
Voltage range	9 – 15 V			
Maximum current consumption (stall current)	10.5 A			
No-load/idling current	545 mA		577 mA	
Actuating force for tappet stroke via operating voltage range and operating temperature range	30 – 170 N			
Manual adjustment	None			
Actuating time for 18 mm stroke <sup>1)</sup>	max. 400 ms			
Thermal overload protection	Via PTC (PolySwitch)			
Operating temperature	- 40 °C to +80 °C			
Storage temperature	- 40 °C to +90 °C			
Lifetime	50,000 switching cycles			
Conducted electromagnetic interference	< 75 V			
Interference suppression (in all ranges)	Intensity level 1 + 10 dB µV			
Functional stroke	≤ 18 mm			
Protection class	IP 5K0	IP 5K4	IP 5K0	IP 5K4
Vibration resistance	2.7 g <sub>eff.</sub>			
Housing material (top side)	Polyamide 6 GF15			
Housing material (bottom side)	Polyamide 6 M25 GF15			
Pin coating	Tin			
Mating connector <sup>2)</sup>	1355390-1	282080-1	1355390-1	282080-1

<sup>1)</sup> At the tappet over operating voltage range and operating temperature range.

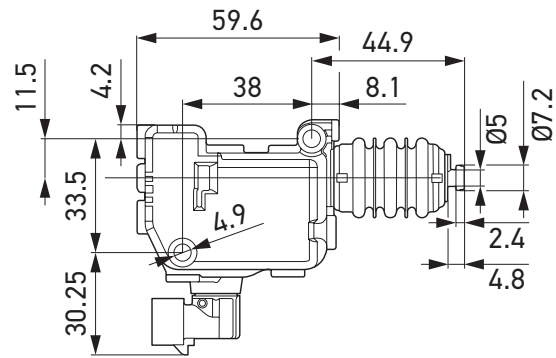
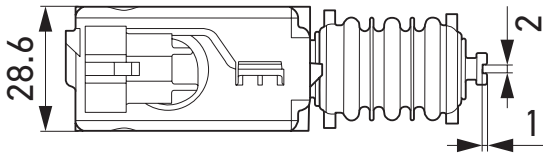
<sup>2)</sup> These accessories are not included in the scope of delivery. Available from TE Connectivity.

## Technical drawing

6NW 009 203-461 / -467, 6NW 009 203-491 / -497

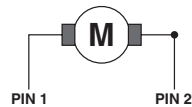
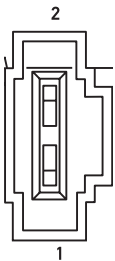


6NW 009 203-471 / -477, 6NW 009 203-501



## Pin assignment / electrical connection

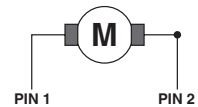
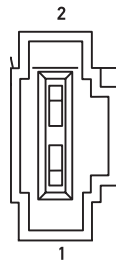
6NW 009 203-461 / -467



Electrical extension with mainspring  
Electrical retraction

	0	0
	-	+

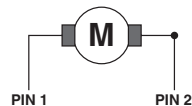
6NW 009 203-491 / -497



Electrical extension  
Electrical retraction with mainspring

	+	-
	0	0

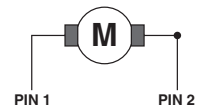
6NW 009 203-471 / -477



Electrical extension with mainspring  
Electrical retraction

	0	0
	-	+









6NW 009 203-501



Electrical extension  
Electrical retraction with mainspring

	0	0
	-	+

# PROGRAM OVERVIEW

Product picture	Function	Actuating force*	Manual adjustment	Protection class	Article number	Packaging unit
	Electrical retraction and extension	25 – 130 N	Yes	IP 5K0	<b>6NW 009 203-607</b>	128
		30 – 140 N	No	IP 5K0	<b>6NW 009 203-411</b> <b>6NW 009 203-417</b>	1 128
		20 – 130 N	Yes	IP 5K4	<b>6NW 009 203-627</b>	100
		30 – 160 N	No	IP 5K4	<b>6NW 009 203-637</b>	100
	Electrical retraction, extension by mainspring	30 – 170 N	No	IP 5K0	<b>6NW 009 203-461</b> <b>6NW 009 203-467</b>	1 110
				IP 5K4	<b>6NW 009 203-471</b> <b>6NW 009 203-477</b>	1 100
	Electrical extension, retraction by mainspring	30 – 170 N	No	IP 5K0	<b>6NW 009 203-491</b> <b>6NW 009 203-497</b>	1 128
				IP 5K4	<b>6NW 009 203-501</b>	1

\* Depending on the operating voltage and ambient temperature.