CAHB-21E

Linear actuator

Benefits

- High productivity
- Reliability and safety
- Save development time
- Cost effectiveness

Features:

- High holding force
- High speed
- Mechanical overload protection
- Enhanced ingress protection
- Corrosion protection and stainless steel tube
- Manual override option
- Virtuality maintenance free

Technical data

Designation	Unit	CAHB-21E / 12 V			CAHB-21E / 24 V		
Performance data							
Rated Push Force	N	1 500	2 500	4 500	1 500	2 500	4 500
Rated Pull Force	N	1 500	2 500	4 500	1 500	2 500	4 500
Max pull / push Force [1]	N	2 500	3 600	6 300	2 500	3 600	6 300
Holding force [2]	N						
Speed without load [3]	mm/s	49,5	37	24,0	52,5	38	22,5
Speed with the rated force [3]	mm/s	43	31,5	19,0	50	31,5	21,0
Electric data							
Nominal voltage	V DC	12	12	12	24	24	24
Nominal current @ rated load [3]	A	14,5	16	19	7	7,5	10,5
Rated current (clutch activation)	A	19,2	20,2	24,8	9,1	9,3	13,7
Duty cycle	%	10 (85/765 s)	10 (85/765 s)	10 (85/765 s)	20 (85/340 s)	20 (85/340 s)	20 (85/340 s)
Mechanical data							
Stroke	mm	50 … 700	50 … 700	50 … 700	50 … 700	50 … 700	50 … 700
Backlash	mm	0,6	0,6	0,6	0,6	0,6	0,6
Weight for 200 mm stroke	kg	4,8	4,8	4,8	4,8	4,8	4,8
Colour	–	Black	Black	Black	Black	Black	Black
Environment and standards							
Ambient temperature [4]	°C	–40 … 85	–40 … 85	–40 … 85	–40 … 85	–40 … 85	–40 … 85
Degree of protection	–	IP 69K/66M					
Standards / EMC	–	EN61000-6-2:2005, EN61000-6-4:2007/A1:2011					
Salt spray test	–	ISO 9227:2012, 250 hours					

[1] Upper limit of the pull/push force limited by the clutch. The lower limit is just above the rated force. The limitation of the force will happen between these 2 limits
[2] Ultimate Static Load, refer to the “Static load” diagrams
[3] The data of speed and current on this list is defined at +20 °C
[4] Full performance from 0 °C to +40 °C

Technical data

Designation	Unit	CAHB-21E / 48 V		
Performance data				
Rated Push Force	N	1 500	2 500	4 500
Rated Pull Force	N	1 500	2 500	4 500
Max pull / push Force [1]	N	2 500	3 600	6 300
Holding force [2]	N			
Speed without load [3]	mm/s	51,5	41,0	23,5
Speed with the rated force [3]	mm/s	46,0	33,5	19,0
Electric data				
Nominal voltage	V DC	48	48	48
Nominal current @ rated load [3]	A	4,0	4,5	5,0
Rated current (clutch activation)	A	5,6	6,1	6,4
Duty cycle	%	20 (85/340 s)	20 (85/340 s)	20 (85/340 s)
Mechanical data				
Stroke	mm	50 ... 700	50 ... 700	50 ... 700
Backlash	mm	0,6	0,6	0,6
Weight for 200 mm stroke	kg	4,8	4,8	4,8
Colour	–	Black	Black	Black
Environment and standards				
Ambient temperature [4]	°C	–40 … 85	–40 … 85	–40 … 85
Degree of protection	–	IP 69K/66M		
Standards / EMC	–	EN61000-6-2:2005, EN61000-6-4:2007/A1:2011		
Salt spray test	–	ISO 9227:2012, 250 hours		

[1] Upper limit of the pull/push force limited by the clutch. The lower limit is just above the rated force. The limitation of the force will happen between these 2 limits
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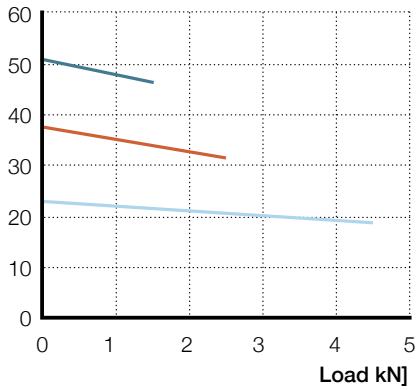
[3] The data of speed and current on this list is defined at +20 °C
[4] Full performance from 0 °C to +40 °C

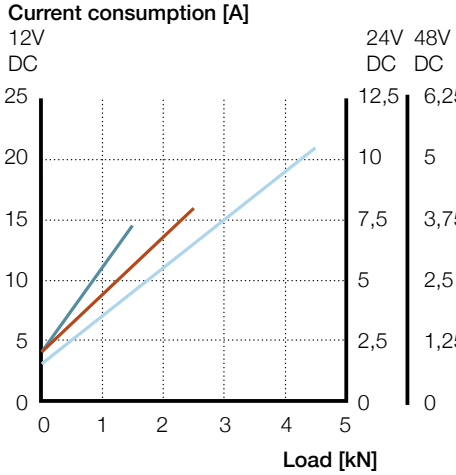
Performance diagrams

Speed-load diagram

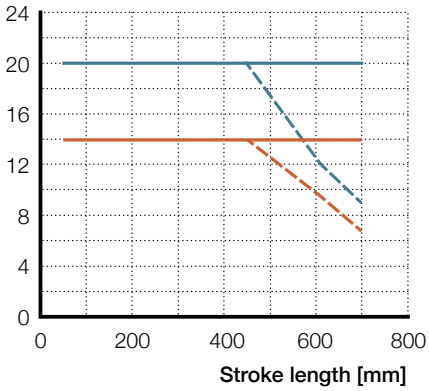


Rated push force 1 500
Rated push force 2 500
Rated push force 4 500

Current load diagram

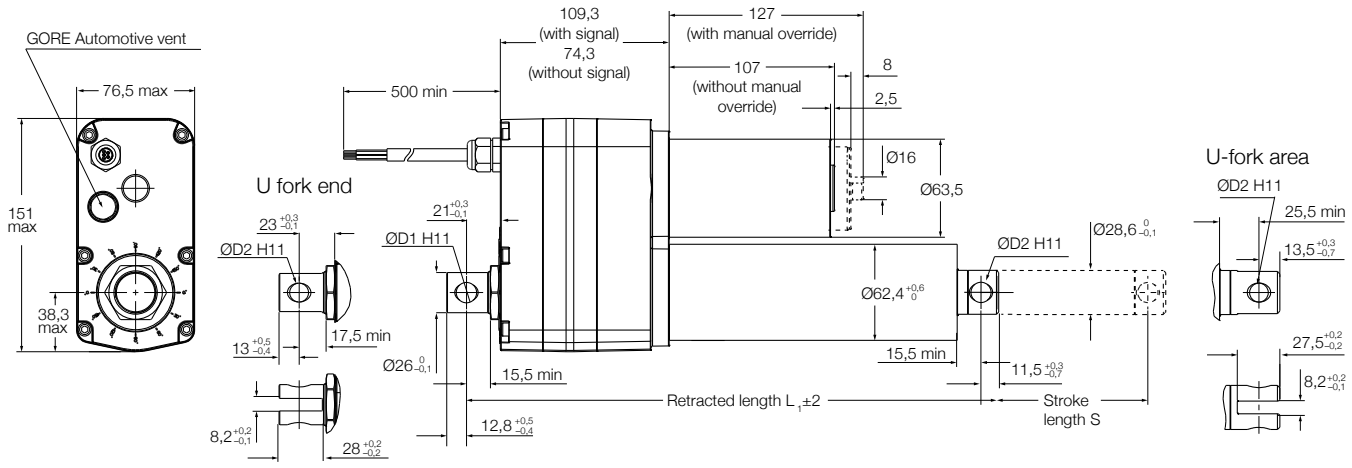


Static load diagram



Ultimate CAHB-21-xxE (pull)
Ultimate CAHB-21-xxE (push)
Recommended CAHB 21-xxE (pull)
Recommended CAHB 21-xxE (push)

Dimensional drawing



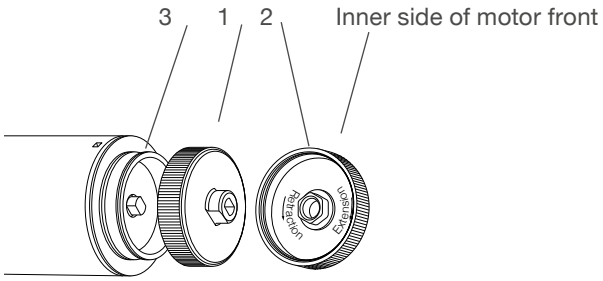
	Rod end attachment (D1)					U fork attachment (D2)	
Holes symbol	A	B	C	D	E	F	G
Hole dimension	13,1	12,8	12,5	14	12,2	12,2	12,8

	Rod end attachment		U fork attachment	
S Stroke [mm]	50-305	306-700	50-305	306-700
L_1 retracted length no option	182 + stroke	217 + stroke	194 + stroke	229 + stroke
L_1 retracted length with LS	191 + stroke	226 + stroke	203 + stroke	238 + stroke
L_1 retracted length with signal	217 + stroke	252 + stroke	229 + stroke	264 + stroke
L_1 retracted length sith LS and signal	226 + stroke	261 + stroke	238 + stroke	273 + stroke

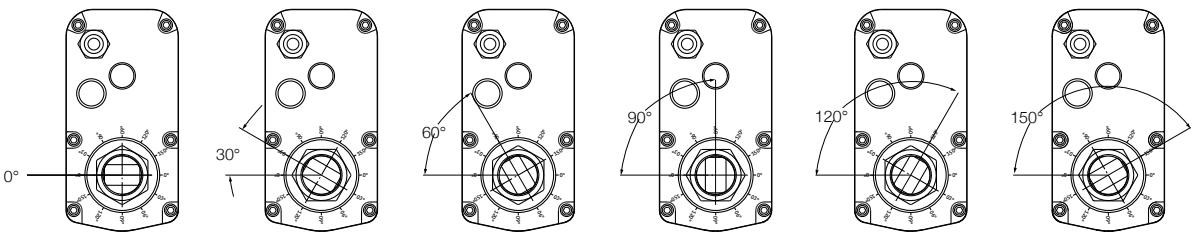
Tolerance of stroke "S"
Without LS: if S ≤ 305 (±2); if S > 305 (±3)
With LS: if S ≤ 3 05 (-2, -0,5); if S > 305 (-3, -1)

Manual override

Release the motor cover (**1**). Use the slot (**2**) to rotate the motor shaft (**3**) in the proper direction



Attachment



Electrical specifications

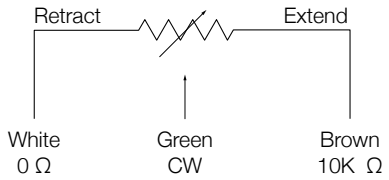
Wire connection with no signal

Wire no.	AWG	Colour	Application
1	14	Red	Motor power(+)=> Extension, (–)=> Retraction
2	14	Black	Motor power(–)=> Extension, (+)=> Retraction

Wire connection with potentiometer

Wire no.	AWG	Colour	Application
1	22	Green	See picture description
2	22	White	See picture description
3	22	Brown	See picture description
4	14	Red	Motor power(+)=> Extension, (–)=> Retraction
5	14	Black	Motor power(–)=> Extension, (+)=> Retraction

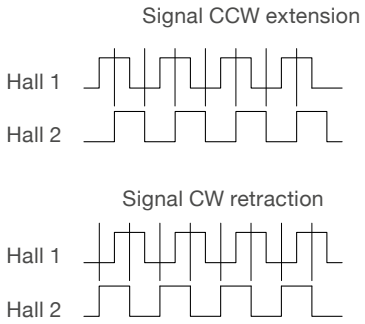
Potentiometer



Wire connection with encoder

Wire no.	AWG	Colour	Application	
1	26	Green	Sensor signal 1	Encoder
2	26	Yellow	Sensor signal 2	Encoder
3	26	Black	Sensor power GND	Encoder
4	26	Red	Sensor power 5 V	Encoder
5	14	Red	Motor power(+)=> Extension, (–)=> Retraction	
6	14	Black	Motor power(–)=> Extension, (+)=> Retraction	

Encoder

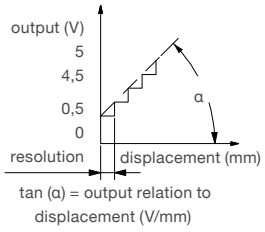


Wire connection with absolute analog output

Wire no.	AWG	Colour	Application
1	22	Green	Output signal
2	22	White	Sensor power GND
3	22	Brown	Sensor power +10~55 VDC
4	14	Red	Motor power(+)=> Extension, (–)=> Retraction
5	14	Black	Motor power(–)=> Extension, (+)=> Retraction

Absolut analog position output

Input voltage:	10~55 V DC
Current consumpion:	15 mA max.
Output analog signal (voltage):	0~5 V DC
Max current output:	5 mA
Absolute analog output set up:	
retraction 0,5±0,15 V	
extension 4,5 to the maximum	



Output relation to displacement and resolution

Actuator type	Hall sensor [pulses/mm]	Potentiometer [ohm/mm]	Absolute analogue position output [V/mm]	Resolution of the absolute analog position output [mm]
CAHB-21...E	1,56	33,33 if S=050-222	0,0167 if S=050-222	0,0732 if S=050-222
		16,67 if S=223-444	0,0083 if S=223-444	0,1465 if S=223-444
		5,56 if S=445-700	0,0028 if S=445-700	0,4395 if S=445-700

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Ordering key

C A H B – 2 1 – _ _ E – _ _ _ _ _ _ _ – B _ _ _ _ T – 0 0 0

Type

Voltage

A	12 V DC
B	24 V DC
D	48 V DC
E	12 V DC with manual override
F	24 V DC with manual override
H	48 V DC with manual override

Load

1	1 500 N
2	2 500 N
3	4 500 N

Design

E

Stroke

100	100 mm
150	150 mm
200	200 mm
250	250 mm
300	300 mm
350	350 mm
400	400 mm
450	450 mm
500	500 mm
600	600 mm
700	700 mm

Retracted length[1)]

Stroke	with limith switch	without position output	with position output
100 mm		291	326
150 mm		341	376
200 mm		391	426
250 mm		441	476
300 mm		491	526
350 mm		576	611
400 mm		626	661
450 mm		676	711
500 mm		726	761
600 mm		826	861
700 mm		926	961
	without limith switch		
100 mm		282	317
150 mm		332	367
200 mm		382	417
250 mm		432	467
300 mm		482	517
350 mm		567	602
400 mm		617	652
450 mm		667	702
500 mm		717	752
600 mm		817	852
700 mm		917	952

Ingress protection

B	Standard: IP69K/IP66M

Attachment diameter: (Front and rear)

A	Hole Ø13,1 H11 (+0, +0,11 mm)
B	Hole Ø12,8 H11 (0, +0,11 mm)
C	Hole Ø12,5 H11 (+0, +0,11mm)
D	Hole Ø14 H11(+0,+0,11mm)
E	Hole 12.2 H11(+0,+0,11mm)
F	U fork hole 12,2 H11
G	U fork hole 12,8 H11
X	Customized

Attachment orientation

A	Standard (0°)
B	30°
C	60°
D	90°
E	120°
F	150°
X	Customized

Option 1: Limit switch

0	None (mandatory for 1 500 N, 2 500 N version)
L	Limit switch (valid only for load version 4 500 N)

Option 2: Position output

0	None
A	Absolute analog output
P	Potentiometer
E	Encoder

Thermal protection

T	Standard: Built-in thermal switch

Customization

Stroke length, retracted length, cable, connector, front attachment, rear attachment, color, de-rated load

[1)] Retracted length +12mm when attachments U fork are used.

In standard, the actuators are IP69K / IP66M and equipped with GORE Automotive vent, built-in thermal protection, protection Clutch and EMC filter.