

Linear actuator CAHB series





CAHB series

Designed to operate in harsh environment with temperatures from -40 to 85 °C up to 25% duty cycle, Ewellix electromechanical actuator CAHB family features robust metal gears and corrosion-resistant housings.

Available in 7 series - CAHB-20A/20E/21E/22E for medium and heavy load applications with an over load protection by clutch, CAHB-10, a compact solution for low-load applications and CAHB-30A/31N for AC version- Ewellix electromechanical actuators, are virtually maintenance-free, self-locking up to 2 times the rated load and rated up to IP69K/66M. Additional design options are available like limit switches, positioning feedback and manual override.



Features

- Long stroke and high speed
- High holding force up to 20 000 N
- Absolute or incremental Position feedback and limit switches option
- Low backlash
- Manual override option
- Overload and thermal protection
- Ingress protection IP69K/66M with vent
- Stainless steel push tube and Corrosion protected metal parts
- Wide temperature range (-40 to 85 °C)
- Mechanical, electrical and climatic tests
- High efficiency
- Virtually maintenance-free

See [L](#) pages 38 and 39 for test results.

Benefits

- High productivity and usability of the adjustment
- Reliability and safety
- Save development time and shorten the time to market
- Cost effectiveness
- Durable

CAHB-10

Linear actuator

Benefits

- Compact design
- Designed for harsh environment
- Robust and reliable
- Integrated limit switches
- Quiet operation
- Thermal protection
- Optional potentiometer and 2-Hall encoder available
- Electromagnetic compatibility (EMC) compliant



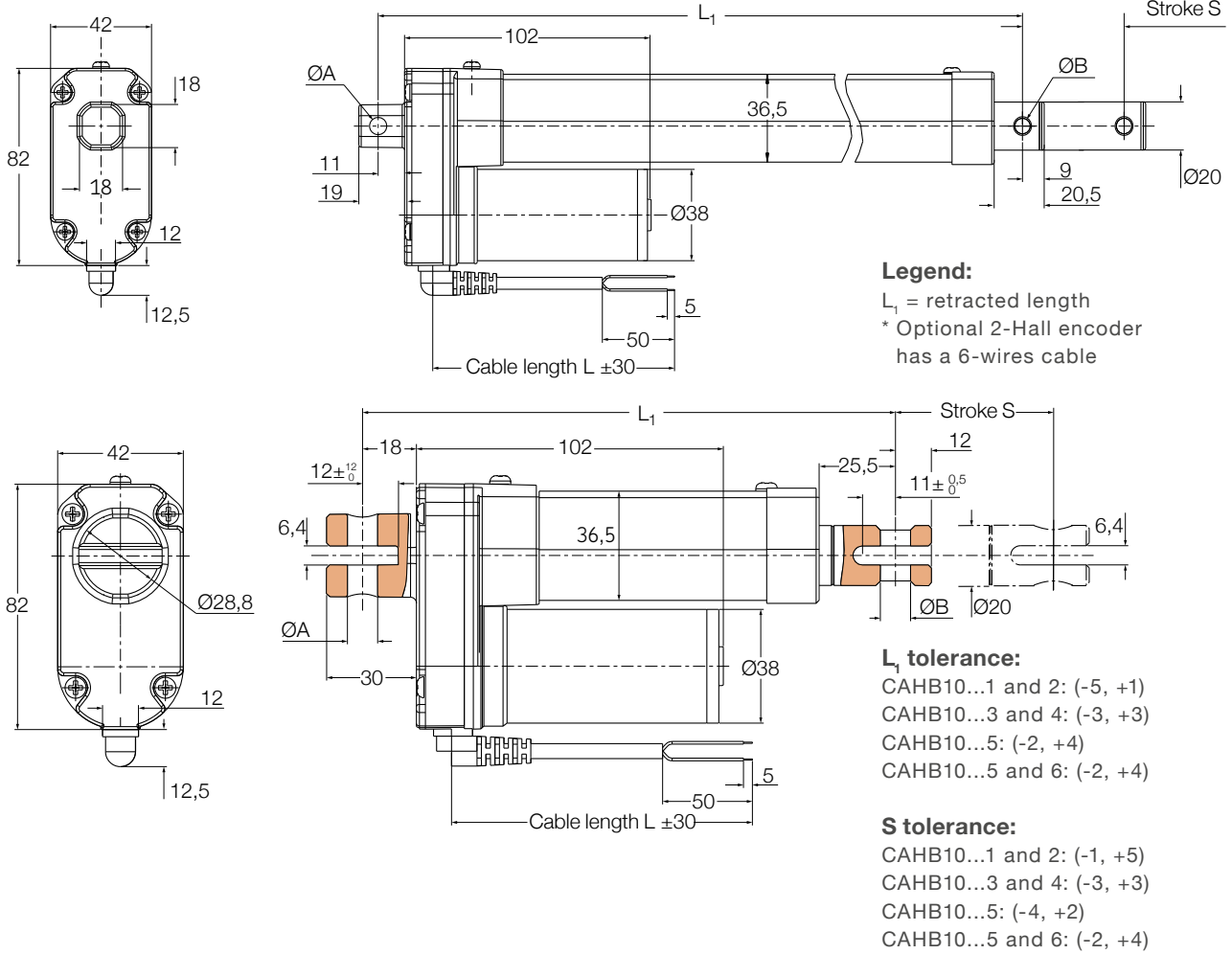
Technical data

Designation	Unit	CAHB-10... 1	CAHB-10... 2	CAHB-10... 3	CAHB-10... 4	CAHB-10... 5	CAHB-10... 6
Push load	N	120	240	500	750	1 000	1 500
Pull load	N	120	240	500	750	1 000	1 500
Speed (full load to no load)	mm/s	45 to 56	24 to 30	13 to 16	8 to 10	6 to 8	5 to 8
Stroke	mm	50 to 300	50 to 300	50 to 300	50 to 300	50 to 300	50 to 300
Retracted length	mm	– ¹⁾	– ¹⁾	– ¹⁾	– ¹⁾	– ¹⁾	– ¹⁾
Voltage	V DC	12 or 24	12 or 24	12 or 24	12 or 24	12 or 24	12 or 24
Power consumption	W	N/A	N/A	N/A	N/A	N/A	N/A
Current consumption 12 V DC	A	4	3,5	3,2	3	2,8	4,4
24V DC	A	2,2	2	1,8	1,8	1,6	2,8
Duty cycle	%	25	25	25	25	25	20
Ambient temperature	°C	–40 to +85	–40 to +85	–40 to +85	–40 to +85	–40 to +85	–40 to +85
Type of protection	IP	66s/69k	66s/69k	66s/69k	66s/69k	66s/69k	66s/69k
Weight (at 300 mm stroke)	kg	1,5	1,5	1,5	1,5	1,5	1,5
Color	–	Silver	Silver	Silver	Silver	Silver	Silver
Limit switches	–	Yes	Yes	Yes	Yes	Yes	Yes
Thermal protection	–	Yes	Yes	Yes	Yes	Yes	Yes

¹⁾ For basic configuration see dimensional drawing ↪ page 5
 For potentiometer configuration see dimensional drawing ↪ page 7

Dimensional drawing

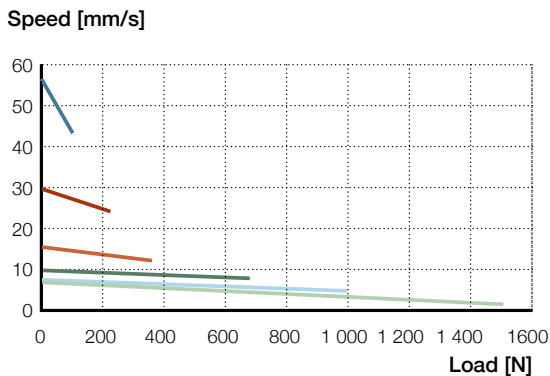
Basic configuration and optional 2-Hall encoder



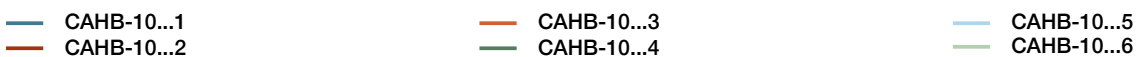
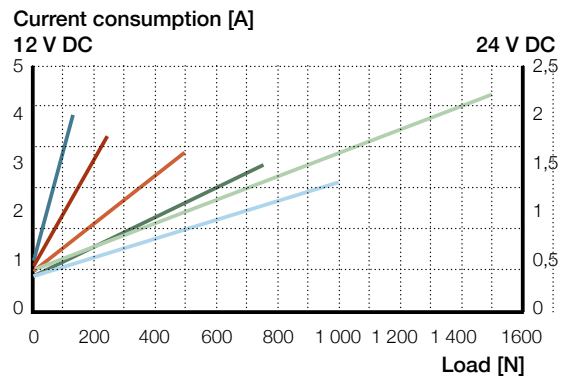
Stroke [mm]	50	100	150	200	250	300
Retracted length (L_1)	158	209	260	311	362	413
Retracted length with fork head	179	230	281	332	383	434

Performance diagrams

Speed-load diagram

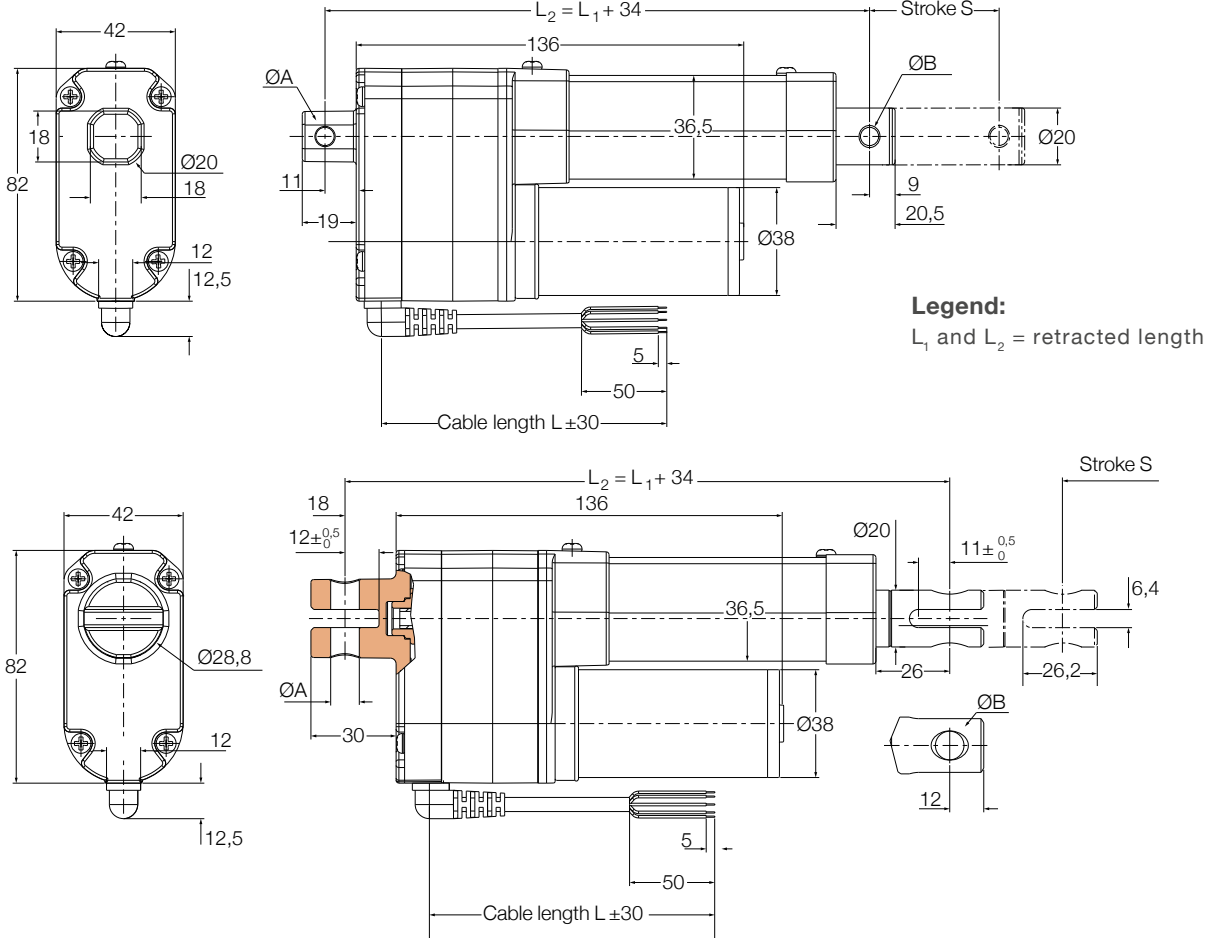


Current-load diagram



Dimensional drawing

Optional potentiometer

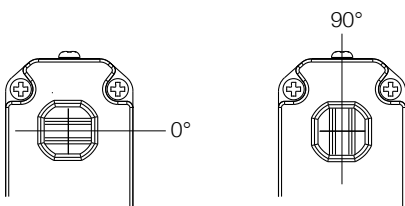


L₂ tolerance:
 CAHB10...1 and 2: (-5, +1)
 CAHB10...3 and 4: (-3, +3)
 CAHB10...5: (-2, +4)
 CAHB10...5 and 6: (-2, +4)

S tolerance:
 CAHB10...1 and 2: (-1, +5)
 CAHB10...3 and 4: (-3, +3)
 CAHB10...5: (-4, +2)
 CAHB10...5 and 6: (-2, +4)

Stroke (mm)	50	100	150	200	250	300
Retracted length (L ₂)	192	243	294	345	396	447
Retracted length with fork head	213	264	315	366	417	468

Attachment



Encoder resolution

Type	CAHB-10...1	CAHB-10...2	CAHB-10...3	v CAHB-10...4	CAHB-10...5/6
Mm/pulse	0,3	0,15	0,075	0,05	0,038

Potentiometer resolution

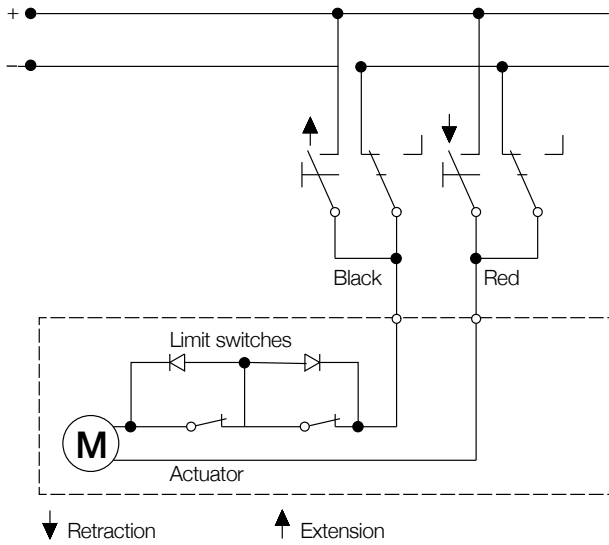
Stroke [mm]	50~80	80~160	160~300
Minimum resistance value of potentiometer	700~1 300 Ω	700~1 300 Ω	700~1 300 Ω
Potentiometer resolution	100 Ω/mm	50 Ω/mm	16,6 Ω/mm

Absolute analog output

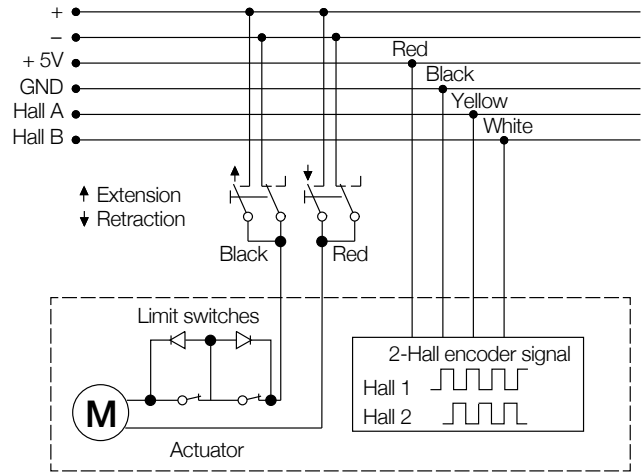
Stroke [mm]	50~80	80~160	160~300
Initial value VS RL position (V)	0,5	0,5	0,5
Resolution (mm)	0,024	0,049	0,0146
Position feedback change (V/mm)	0,05	0,025	0,0083

Connecting diagram

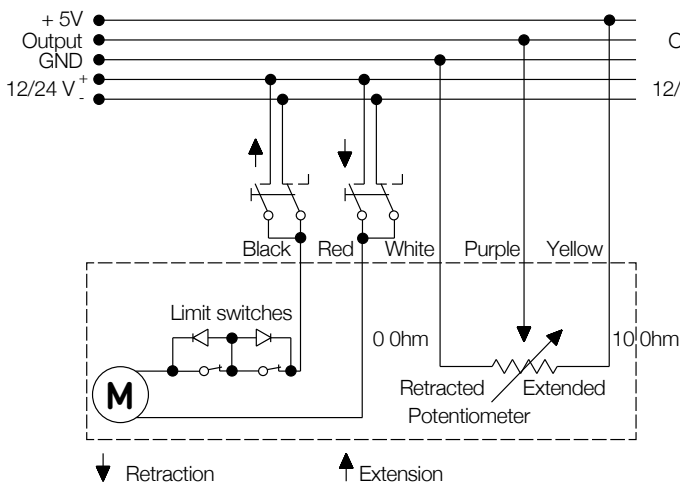
Basic configuration
12/24 V DC



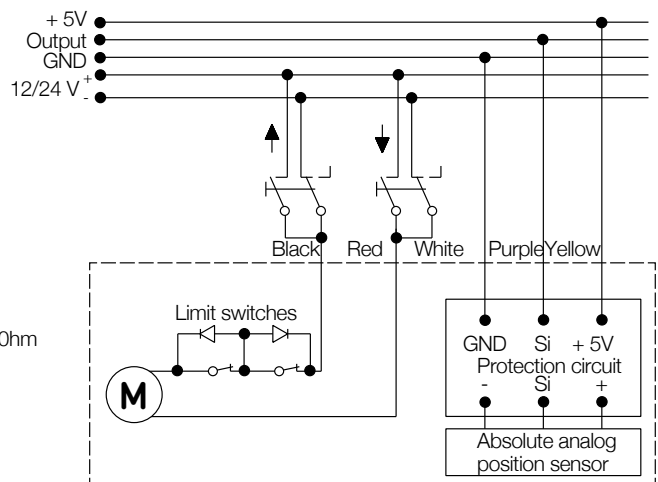
2-Hall encoder
12/24 V DC



Potentiometer



Absolute analog output



CAHB-20A

Linear actuator

Benefits

- ACME screw drive
- Extension tube (stainless steel)
- Protection tube (steel)
- Enhanced corrosion resistance
- Mechanical overload protection (clutch)
- Lubricated for service life
- Robust, designed for tough environment
- Self-locking
- Certified (CE: EN 55011)



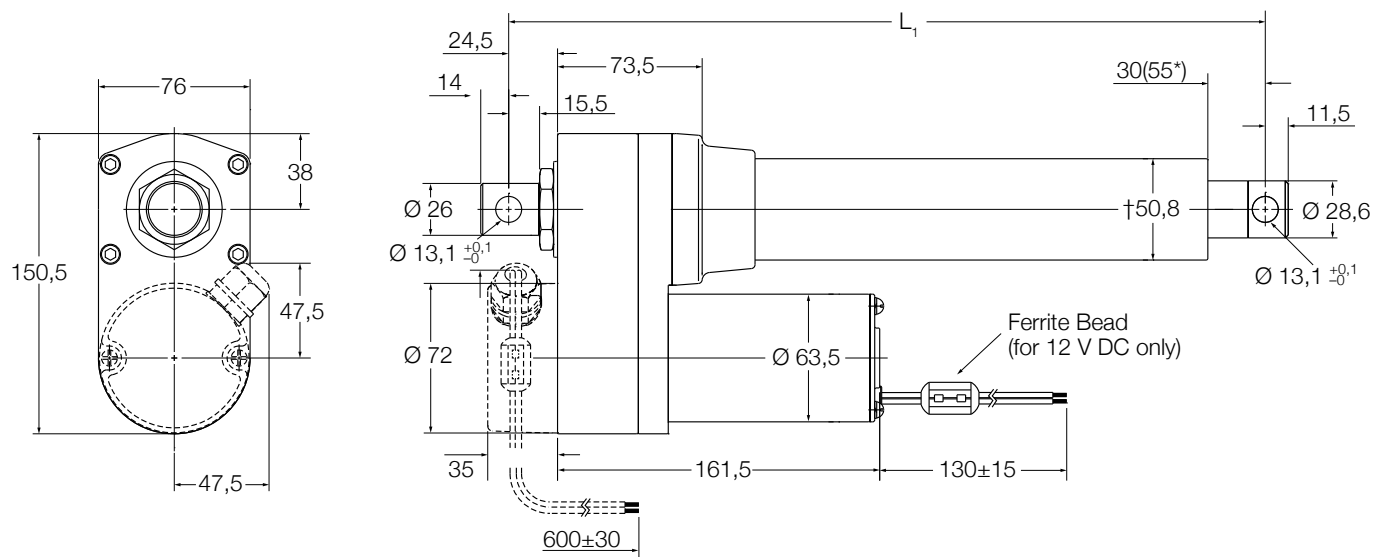
Technical data

Designation	Unit	CAHB-20... 1	CAHB-20... 2
Performance data			
Push load	N	1 500	2 500
Pull load	N	1 500	2 500
Speed (full load to no load)	mm/s	27 to 33	13 to 17
Stroke	mm	102 to 610	102 to 610
Retracted length mm –* –*	mm	–*	–*
Voltage	V DC	12 or 24	12 or 24
Power consumption	W	N/A	N/A
Current consumption 12 V DC	A	16	14
24 V DC	A	8	7
Duty cycle	%	25	25
Ambient temperature	°C	–40 to +85	–40 to +85
Type of protection	IP	66	66
Weight (at 305 mm stroke)	kg	5,5	5,5
Color	–	Black	Black

* see dimensional drawing → page 11 and 12

Dimensional drawing

Basic configuration (dashed line for optional limit switch)



Without limit switch:

RED (+) & BLACK (-) = retraction
 RED (-) & BLACK (+) = extension

With limit switch:

RED (+) & BLACK (-) = extension
 RED (-) & BLACK (+) = retraction

Legend:

L₁ = retracted length
 *55 = dimension with limit switch

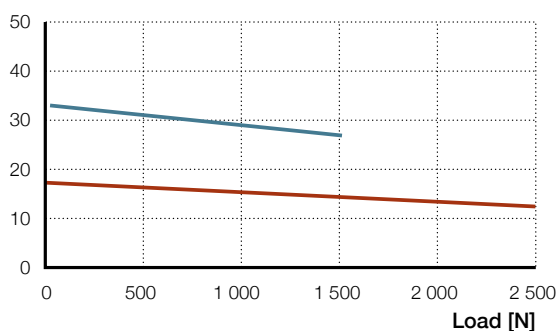
	With limit switch ¹⁾						Without limit switch ²⁾					
Stroke [mm]	102	153	204	305	457	610	102	153	204	305	457	610
L ₁ Retracted length	338	389	440	592	744	897	262	313	364	465	668	821

¹⁾ Tolerance: S and L₁ = ± 5,0 mm (if S ≥ 305 mm, S = ± 7,5 mm)
²⁾ Tolerance: S = ± 2,5 mm and L = ± 3,8 mm

Performance diagrams

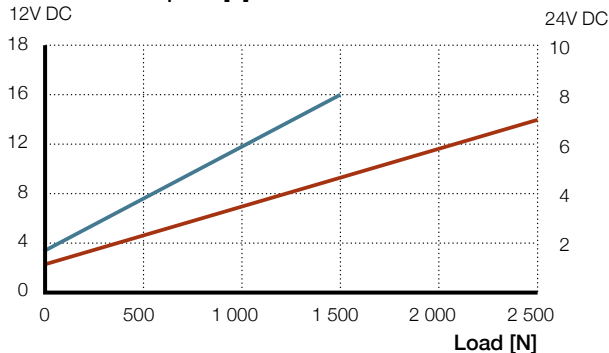
Speed-load diagram

Speed [mm/s]



Current-load diagram

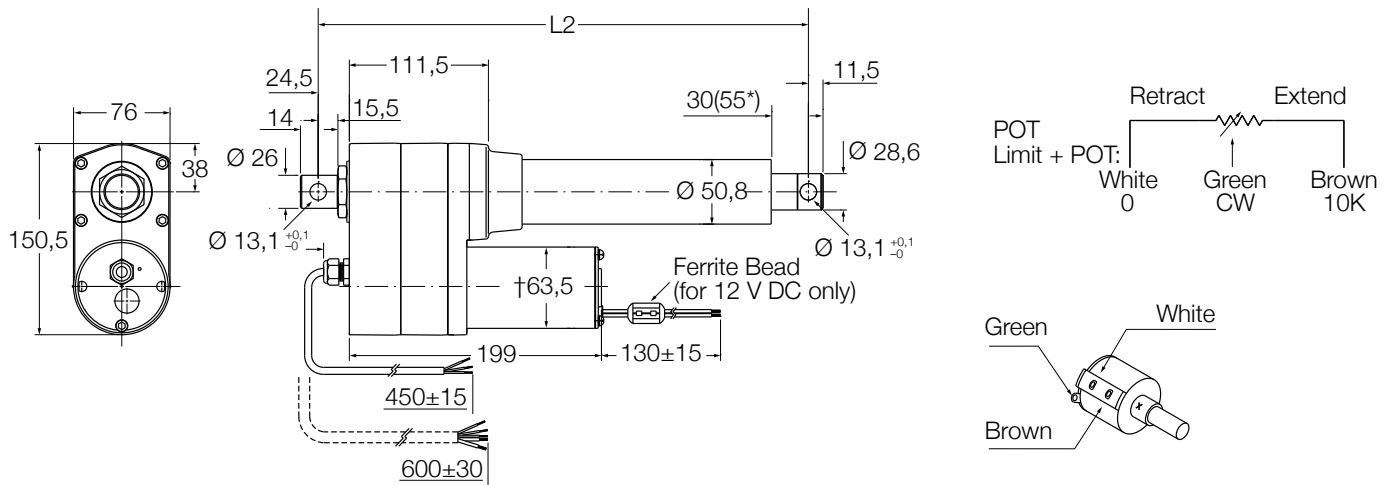
Current consumption [A]
 12V DC



— CAHB-20...1
 — CAHB-20...2

Dimensional drawing

Optional potentiometer (dashed line for optional limit switch)



Without limit switch:
 RED (+) & BLACK (-) = retraction
 RED (-) & BLACK (+) = extension

With limit switch:
 RED (+) & BLACK (-) = extension
 RED (-) & BLACK (+) = retraction

Legend:
 L2 = retracted length
 *55 = dimension with limit switch

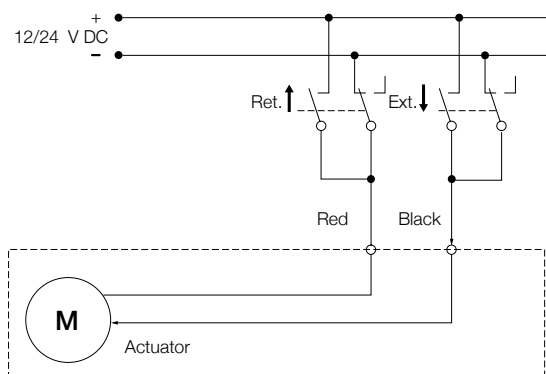
	With limit switch ¹⁾						Without limit switch ²⁾					
Stroke [mm]	102	153	204	305	457	610	102	153	204	305	457	610
L ₁ Retracted length	376	427	478	630	782	935	300	351	402	503	706	859

¹⁾ Tolerance: S and L1 = ± 5,0 mm (if S ≥ 305 mm, S = ± 7,5 mm)
²⁾ Tolerance: S = ± 2,5 mm and L2 = ± 3,8 mm

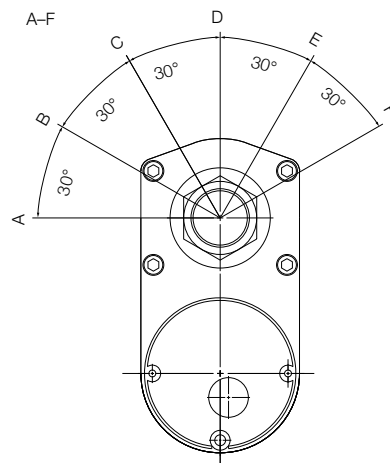
Potentiometer resolution

Stroke [mm]	102	153	204	305	457	610
Ohm/mm	59,0	59,0	29,5	29,5	9,84	9,84

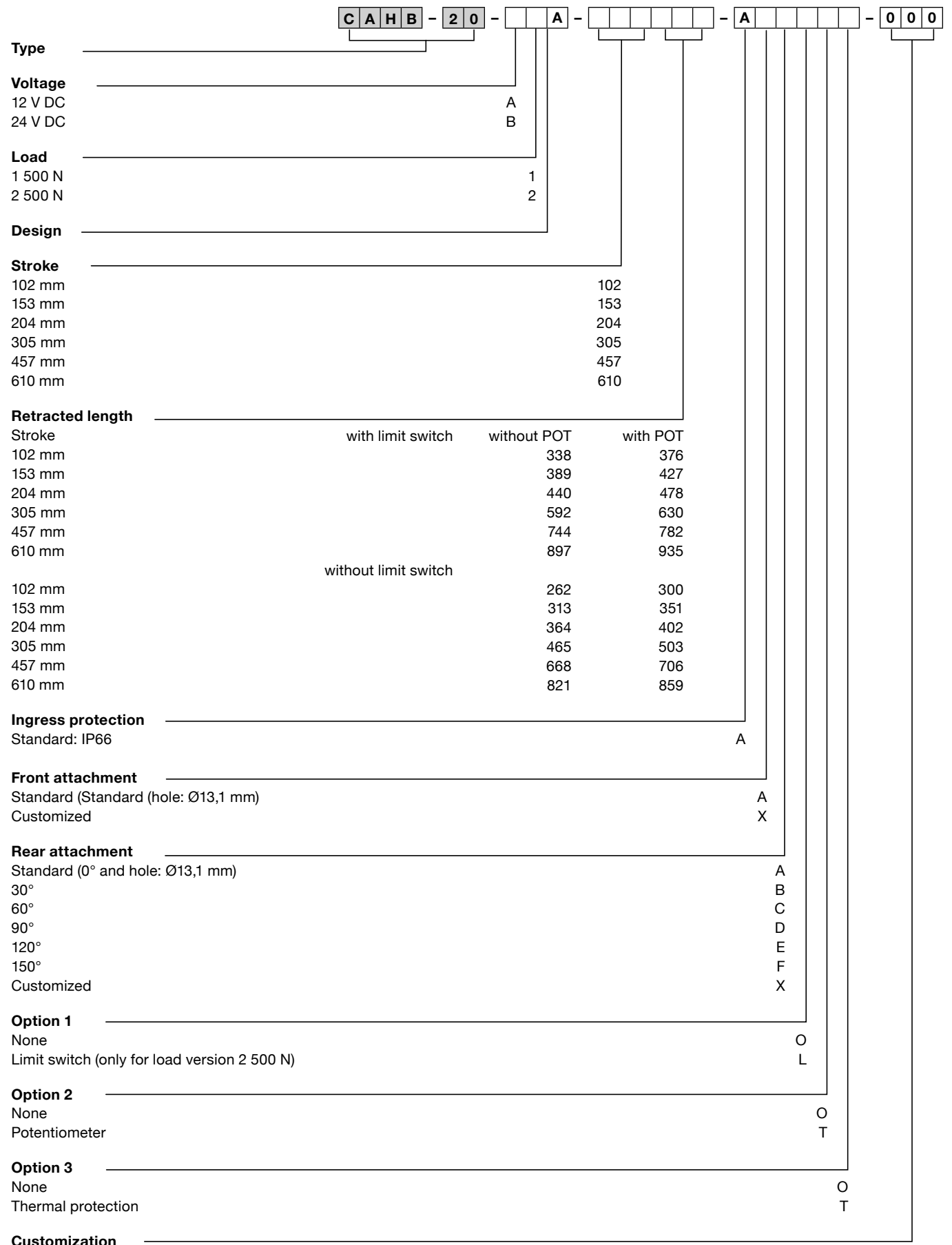
Connecting diagram



Different rear attachment



Ordering key



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

CAHB-20E

Linear actuator

Benefits

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

Features

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



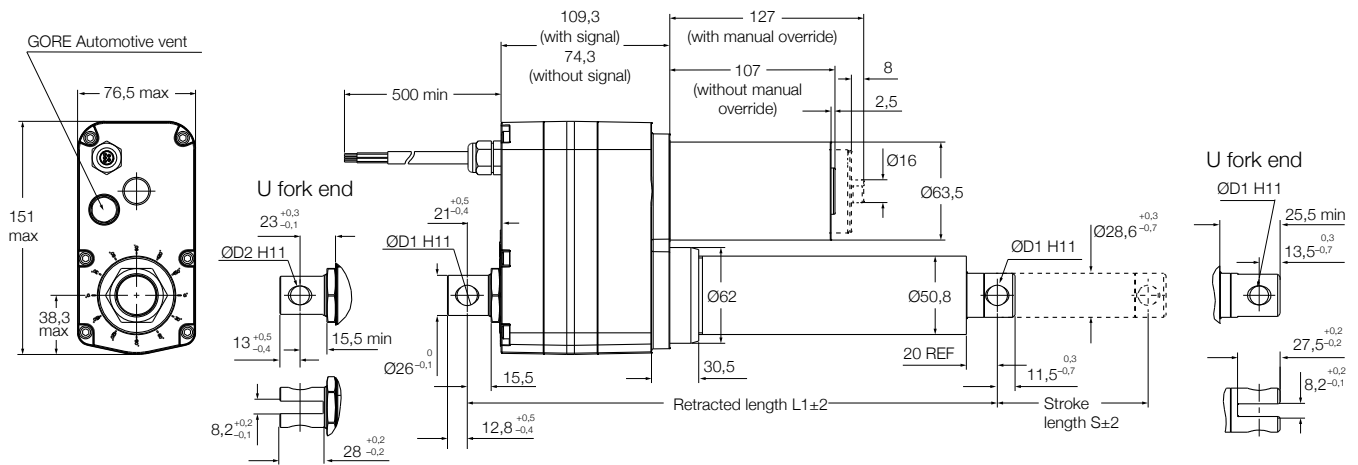
Technical data

Designation	Unit	CAHB-20E / 12 V			CAHB-20E / 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	2 600	3 800	6 300	2 600	3 800	6 300
Holding force ²⁾	N						
Speed without load	mm/s	27,0	23,5	13,5	29,0	22,0	13,0
Speed with the rated force	mm/s	24,5	17,5	10,5	25,5	19,0	11,0
Electric data							
Nominal voltage	V DC	12	12	12	24	24	24
Nominal current @ rated load	A	12,5	15	17	5	6,5	8
Rated current (clutch activation)	A	18,4	21	22,4	6,8	8,8	10,4
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	4,5	4,5	4,5	4,5	4,5	4,5
Colour	–	Black	Black	Black	Black	Black	Black
Environment and standards							
Ambient temperature	°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

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	160 + stroke	211 + stroke	172 + stroke	223 + stroke
L ₁ retracted length with signal	195 + stroke	246 + stroke	207 + stroke	258 + stroke

Technical data

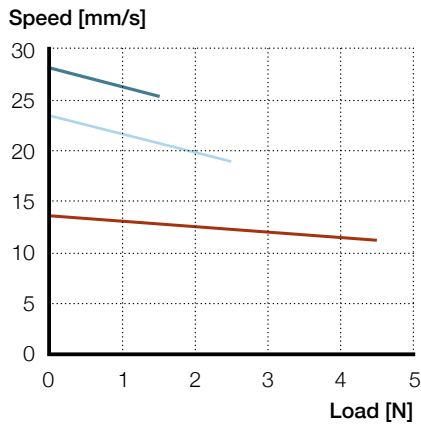
Designation	Unit	CAHB-20E / 48 V		
Performance data				
Rated Push Force	N	1 500	2 500	4 500
Rated Pull Force	N	1 500	2 500	4 500
Max pull / push Force ¹⁾	N	2 600	3 800	6 300
Holding force ²⁾	N			
Speed without load	mm/s	31,0	23,0	13,0
Speed with the rated force	mm/s	27,5	20,0	11,0
Electric data				
Nominal voltage	V DC	48	48	48
Nominal current @ rated load	A	2,6	3,8	4,2
Rated current (clutch activation)	A	4,3	5,6	5,8
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	4,5	4,5	4,5
Colour	-	Black	Black	Black
Environment and standards				
Ambient temperature	°C	-40 ... 85	-40 ... 85	-40 ... 85
Degree of protection	-	IP 69K/66M		
Standards / EMC	-	EN61000-6-2:2005, EN61000-6-4:2007/A1:2001		
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

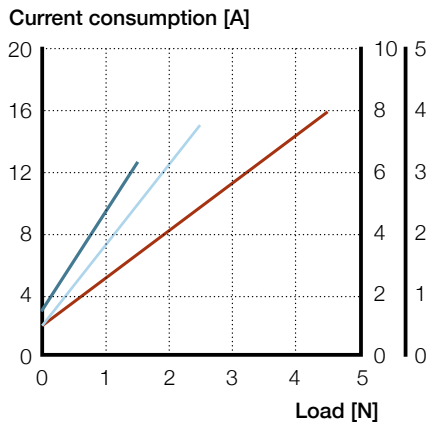
²⁾ Ultimate Static Load, refer to the "Static load" diagrams

Performance diagrams

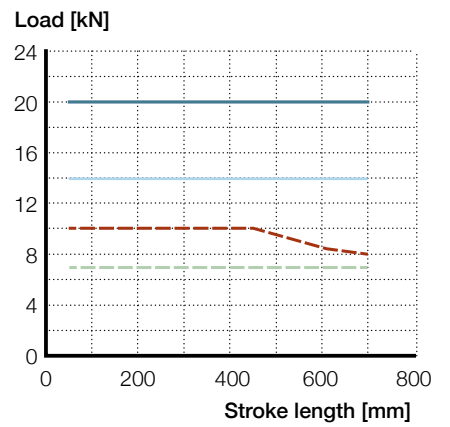
Speed-load diagram



Current load diagram



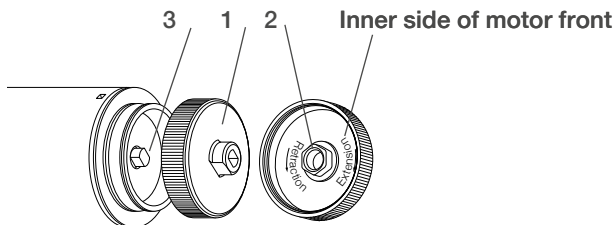
Static load diagram



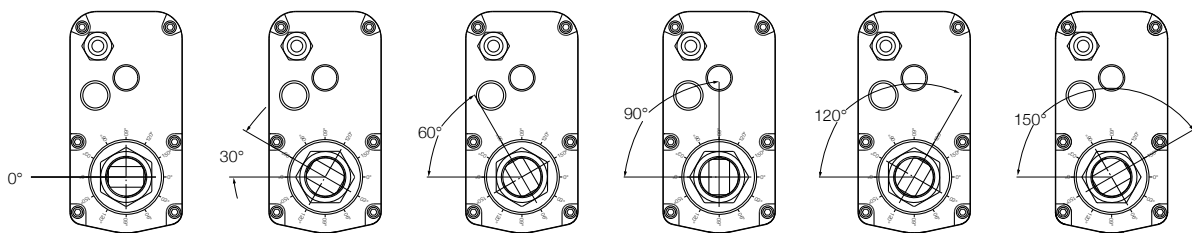
- Rated push force 1 500
- Rated push force 2 500
- Rated push force 4 500
- - - Ultimate CAHB-20-xxE (push)
- Ultimate CAHB-20-xxE (pull)
- - - Recommended CAHB 20-xxE (push)
- Recommended CAHB 20-xxE (pull)

Manual override

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



Attachment



Electrical specifications

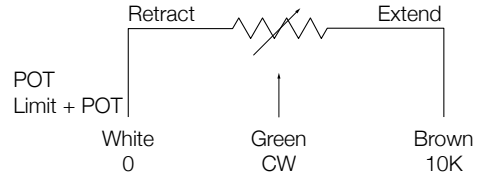
Wire connection with no signal

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

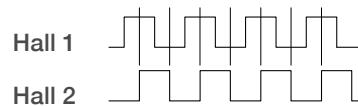


Wire connection with encoder

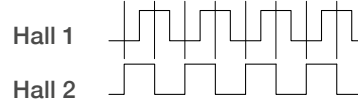
Wire no.	AWG	Colour	Application
1	26	Green	Sensor signal 1 Encoder
2	26	Yellow	Sensor signal 2 Encoder
3	26	Black	Sensor power GND Encoder
4	26	Red	Sensor power 5 V Encoder
5	14	Red	Motor power(+)=> Extension, (-)=> Retraction
6	14	Black	Motor power(-)=> Extension, (+)=> Retraction

Encoder

Signal CCW extension



Signal CW retraction

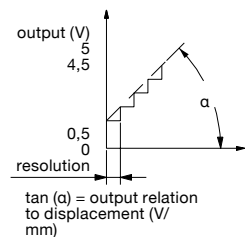


Wire connection with absolute analog output

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 consumption: 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-20...E	2,76	59,06 if S=050-125	0,0295 if S=050-125	0,0413 if S=050-125
		29,53 if S=126-250	0,0295 if S=126-250	0,0827 if S=126-250
		9,84 if S=251-700	0,0295 if S=251-700	0,2480 if S=251-700

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	mm/s	49,5	37	24,0	52,5	38	22,5
Speed with the rated force	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	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	°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

Technical data

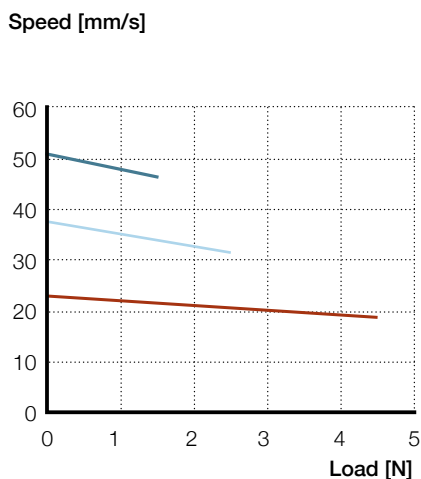
Designation	Unit	CAHB-21E / 48 V		
Performance data				
Rated Push Force	N	1 500	2 500	4 500
Rated Pull Force	N	1 500	2 500	4 500
Max pull / push Force ¹⁾	N	2 500	3 600	6 300
Holding force ²⁾	N			
Speed without load	mm/s	51,5	41,0	23,5
Speed with the rated force	mm/s	46,0	33,5	19,0
Electric data				
Nominal voltage	V DC	48	48	48
Nominal current @ rated load	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	°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

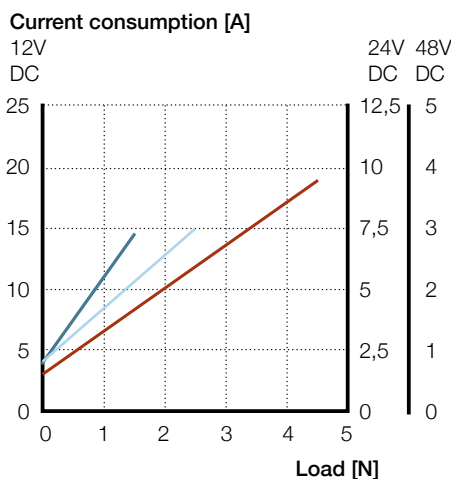
²⁾ Ultimate Static Load, refer to the "Static load" diagrams

Performance diagrams

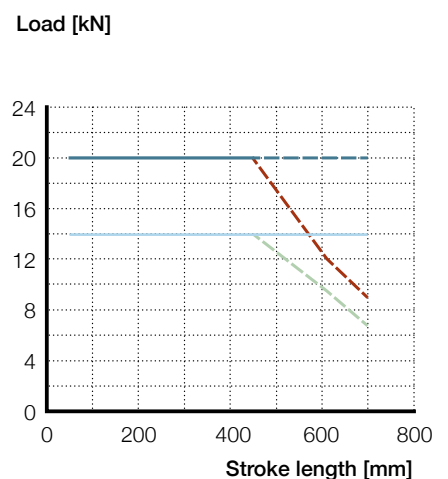
Speed-load diagram



Current load diagram

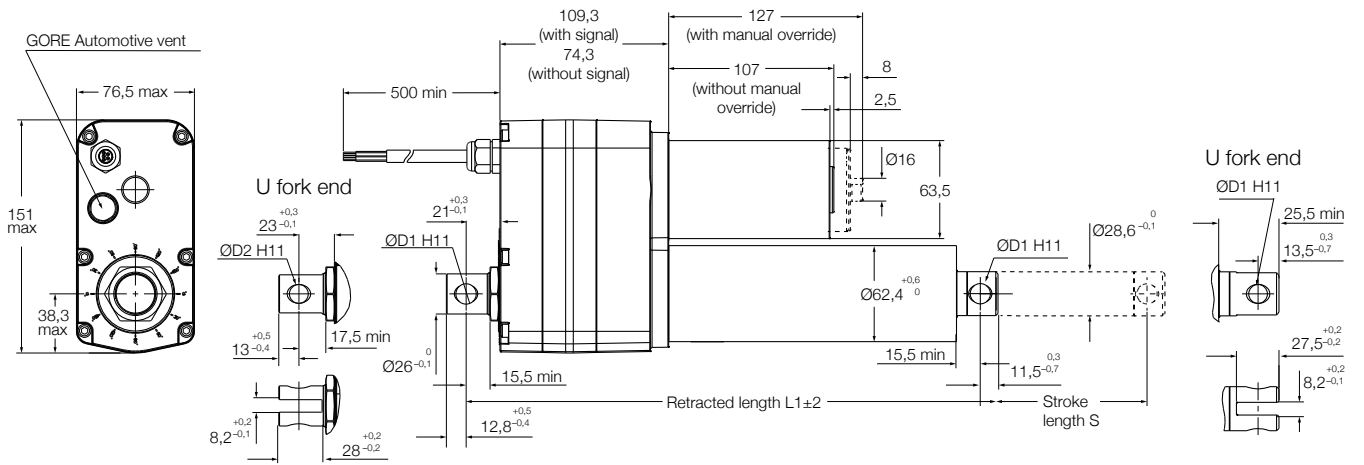


Static load diagram



- Rated push force 1 500
- Rated push force 2 500
- Rated push force 4 500
- - - Ultimate CAHB-21-xxE (push)
- - - Ultimate CAHB-21-xxE (pull)
- - - Recommended CAHB 21-xxE (push)
- - - Recommended CAHB 21-xxE (pull)

Dimensional drawing

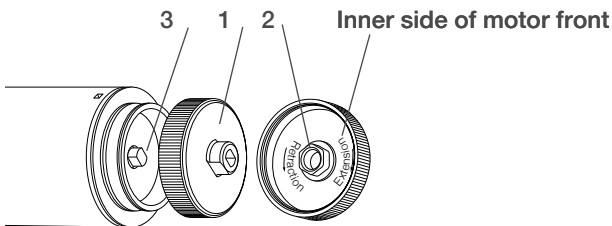


	Rod end attachment (D1)					U fork attachment (D2)	
Holes symbol	A	B	C	D	E	F	G
Hole dimension	13,1	12,8	12,5	14	12,2	12,2	12,8

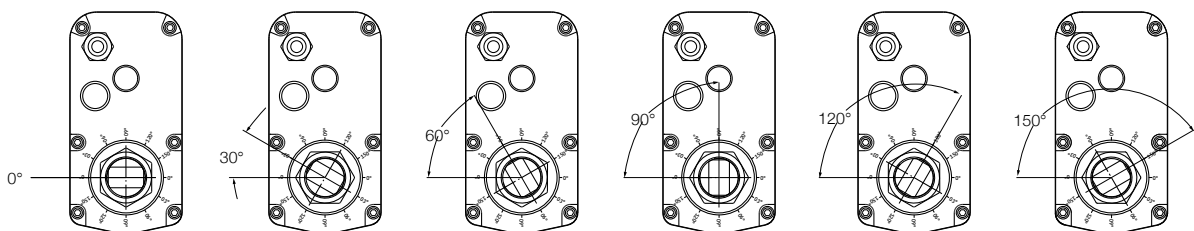
	Rod end attachment		U fork attachment	
S Stroke [mm]	50-305	306-700	50-305	306-700
L _r retracted length no option	182 + stroke	217 + stroke	194 + stroke	229 + stroke
L _r retracted length with LS	191 + stroke	226 + stroke	203 + stroke	238 + stroke
L _r retracted length with signal	217 + stroke	252 +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

Manual override

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



Attachment



Electrical specifications

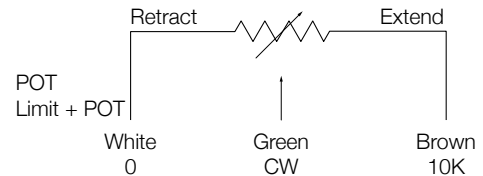
Wire connection with no signal

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

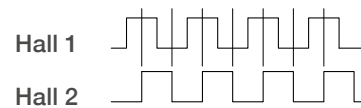


Wire connection with encoder

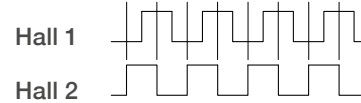
Wire no.	AWG	Colour	Application
1	26	Green	Sensor signal 1 Encoder
2	26	Yellow	Sensor signal 2 Encoder
3	26	Black	Sensor power GND Encoder
4	26	Red	Sensor power 5 V Encoder
5	14	Red	Motor power(+)=> Extension, (-)=> Retraction
6	14	Black	Motor power(-)=> Extension, (+)=> Retraction

Encoder

Signal CCW extension



Signal CW retraction

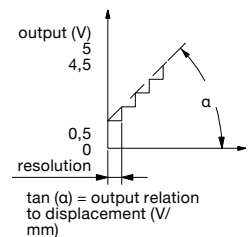


Wire connection with absolute analog output

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

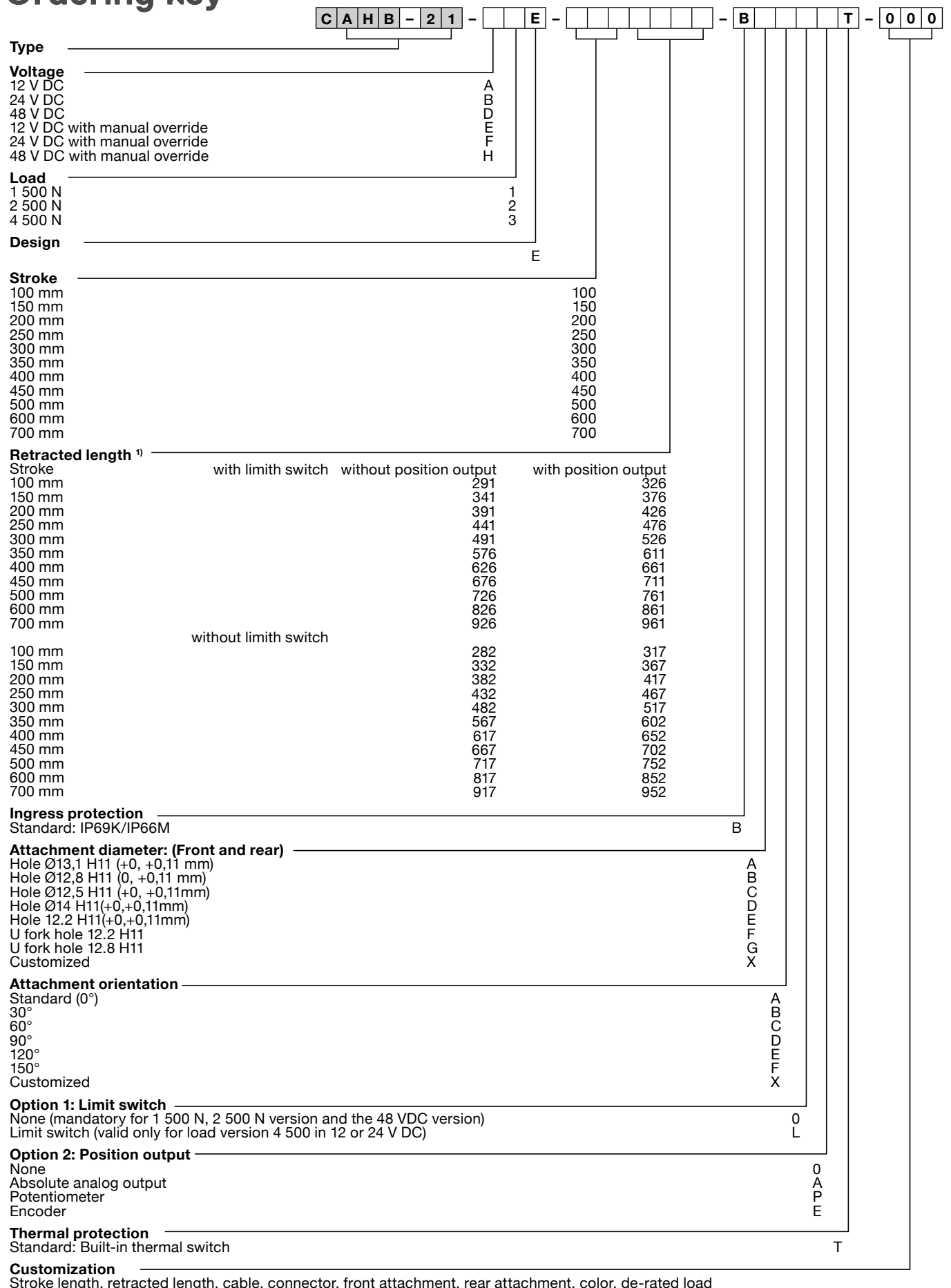
Input voltage: 10~55 V DC
 Current consumption: 15 mA max.
 Output analog signal (voltage): 0~5 V DC
 Max current output: 5 mA
 Absolute analog output set up:
 retraction 0,5±0,15 V
 extension 4,5 to the maximum



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

Ordering key



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.

CAHB-22E

Linear actuator

Benefits

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

Features

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



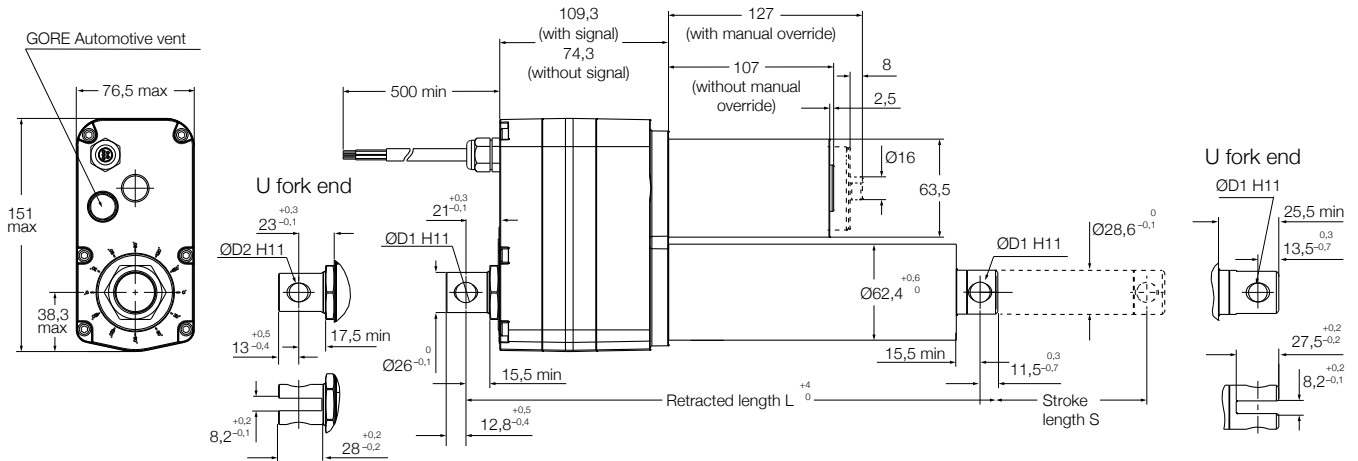
Technical data

Designation	Unit	CAHB-22E / 12 V				CAHB-22E / 24 V			
Performance data									
Rated Push Force	N	2 300	3 500	6 800	10 000	2 300	3 500	6 800	10 000
Rated Pull Force	N	2 300	3 500	6 800	10 000	2 300	3 500	6 800	10 000
Max pull / push Force ¹⁾	N	3 500	4 900	9 500	14 000	3 500	4 900	9 500	14 000
Holding force ²⁾	N								
Speed without load	mm/s	55,0	45,0	22,0	13,0	53,0	45,0	22,0	13,0
Speed with the rated force	mm/s	42,0	36,0	15,5	10,2	42,0	37,0	17,0	10,2
Electric data									
Nominal voltage	V DC	12	12	12	12	24	24	24	24
Nominal current @ rated load	A	18	19,5	19,5	19	8	9,5	9,5	8,5
Rated current (clutch activation)	A	24,3	25,5	25,5	25	10,6	12,3	12,3	10,9
Duty cycle	%	10%	10%	10%	10%	20%	20%	20%	20%
		(85/765 s)	(85/765 s)	(85/765 s)	(85/765 s)	(85/340 s)	(85/340 s)	(85/340 s)	(85/340 s)
Mechanical data									
Stroke	mm	50 ... 700	50 ... 700	50 ... 610	50 ... 450	50 ... 700	50 ... 700	50 ... 610	50 ... 450
Backlash	mm	1,0	1,0	0,6	0,6	1,0	1,0	0,6	0,6
Weight for 200 mm stroke	kg	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8
Colour	-	Black	Black	Black	Black	Black	Black	Black	Black
Environment and standards									
Ambient temperature	°C	-40 ... 85	-40 ... 85	-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

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	194 + stroke	229 + stroke	206 + stroke	241 + stroke
L ₁ retracted length with LS	200 + stroke	235 + stroke	212 + stroke	247 + stroke
L ₁ retracted length with signal	229 + stroke	264 + stroke	241 + stroke	276 + stroke
L ₁ retracted length with LS and signal	235 + stroke	270 + stroke	247 + stroke	282 + stroke

Tolerance L₁; Stroke S
¹⁾ Tolerance S, if S ≤ 300 (±2); if S > 300 (±3)
²⁾ Tolerance S, if S ≤ 300 (-2, -0,5); if S > 300 (-3, -1)

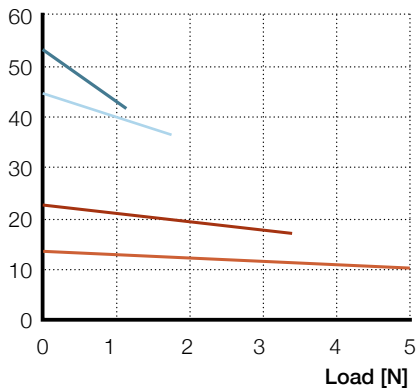
Technical data

Designation	Unit	CAHB-22E / 48 V			
Performance data					
Rated Push Force	N	2 300	3 500	6 800	10 000
Rated Pull Force	N	2 300	3 500	6 800	10 000
Max pull / push Force ¹⁾	N	3 500	4 900	9 500	14 000
Holding force ²⁾	N				
Speed without load	mm/s	57,0	45,0	22,0	13,0
Speed with the rated force	mm/s	50,0	37,0	18,5	10,2
Electric data					
Nominal voltage	V DC	48	48	48	48
Nominal current @ rated load	A	4,5	5	5	5
Rated current (clutch activation)	A	6,5	7	7	5,5
Duty cycle	%	20% (85/340 s)	20% (85/340 s)	20% (85/340 s)	20% (85/340 s)
Mechanical data					
Stroke	mm	50 ... 700	50 ... 700	50 ... 610	50 ... 450
Backlash	mm	1,0	1,0	0,6	0,6
Weight for 200 mm stroke	kg	4,8	4,8	4,8	4,8
Colour	-	Black	Black	Black	Black
Environment and standards					
Ambient temperature	°C	-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			

Performance diagrams

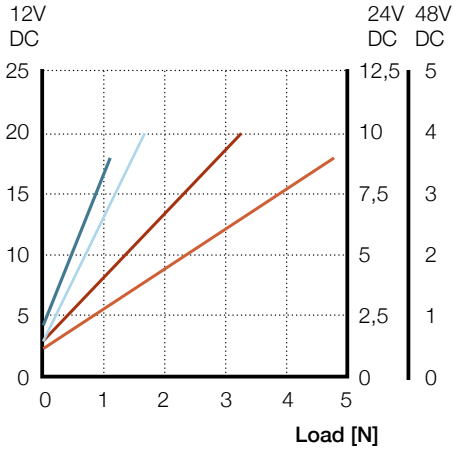
Speed-load diagram

Speed [mm/s]



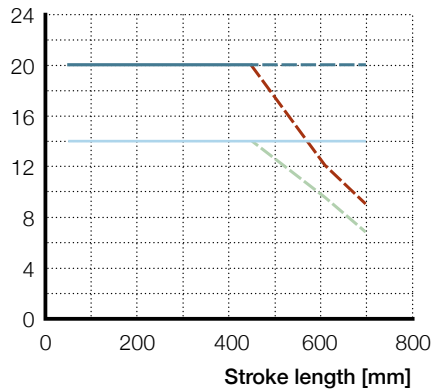
Current load diagram

Current consumption [A]



Static load diagram

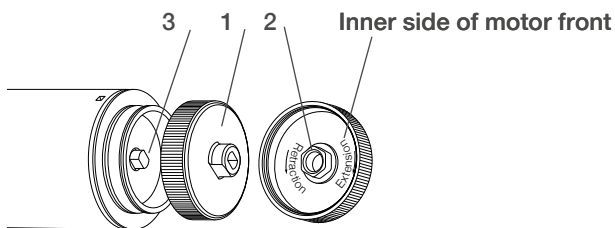
Load [kN]



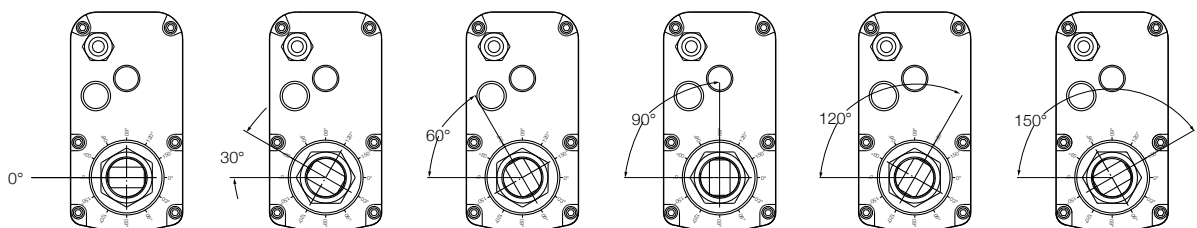
- Rated push force 2 300
- Rated push force 3 500
- Rated push force 6 800
- Rated push force 10 000
- Ultimate CAHB-22-xxE (push)
- Ultimate CAHB-22-xxE (pull)
- Recommended CAHB 22-xxE (push)
- Recommended CAHB 22-xxE (pull)

Manual override

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



Attachment



Electrical specifications

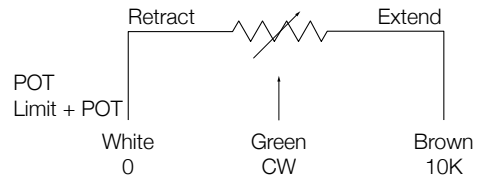
Wire connection with no signal

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

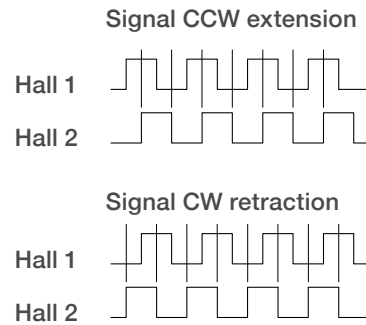
Potentiometer



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

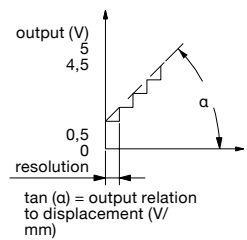


Wire connection with absolute analog output

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

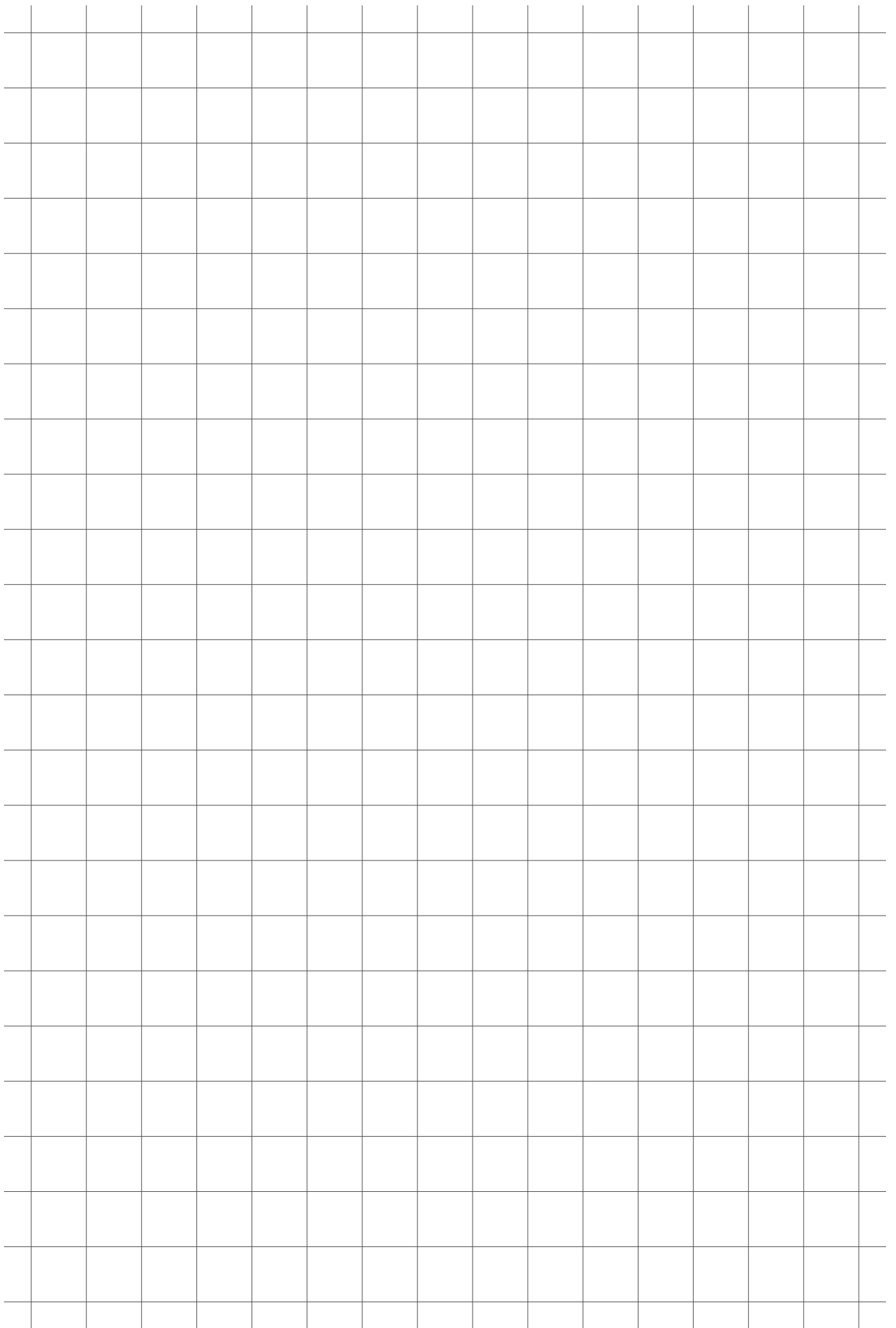
Absolut analog position output

Input voltage: 10~55 V DC
 Current consumption: 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-22...1E	1,4	30 if S=050-254	0,0150 if S=050-254	0,0814 if S=050-254
CAHB-22...2E	1,4	15 if S=255-508	0,0075 if S=255-508	0,1638 if S=255-508
		5 if S=509-700	0,0025 if S=509-700	0,4883 if S=509-700
CAHB-22...3E	2,8	60 if S=050-254	0,030 if S=050-254	0,0407 if S=050-254
CAHB-22...4E	2,8	30 if S=255-508	0,015 if S=255-508	0,0814 if S=255-508
		10 if S=509-700	0,005 if S=509-700	0,2441 if S=509-700



CAHB-30A

Linear actuator

Benefits

- ACME screw drive
- Extension tube (stainless steel)
- Protection tube (steel)
- Enhanced corrosion resistance
- Mechanical overload protection (clutch)
- Maintenance free
- Robust, designed for tough environment
- Self-locking
- Motor with thermal protection



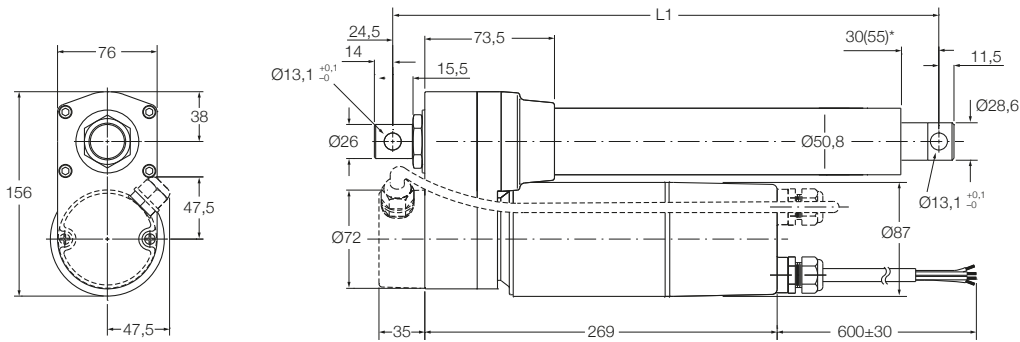
Technical data

		Unit	CAHB-30A... 1	CAHB-30A... 2
Rated push load		N	1 500	2 300
Rated pull load		N	1 500	2 300
Speed (full load to no load)	115 V AC/60 Hz	mm/s	25 to 26	12 to 13
	230 V AC/50 Hz	mm/s	21 to 22	11 to 12
Stroke		mm	102 to 610	102 to 610
Retracted length		mm	– ¹⁾	– ¹⁾
Voltage		V AC	115 or 230	115 or 230
Power consumption		W	N/A	N/A
Current consumption	115 V AC/60 Hz	A	2,3	1,8
	230 V AC/50 Hz	A	1,35	1,4
Duty cycle		%	25 (94/376 s)	25 (94/376 s)
Ambient temperature		°C	–26 to +65	–26 to +65
Type of protection		IP	65S	65S
Weight		kg	9	9
Color		–	Black	Black

¹⁾ See dimensional drawing → page 31
For outdoors application, please contact Ewellix.

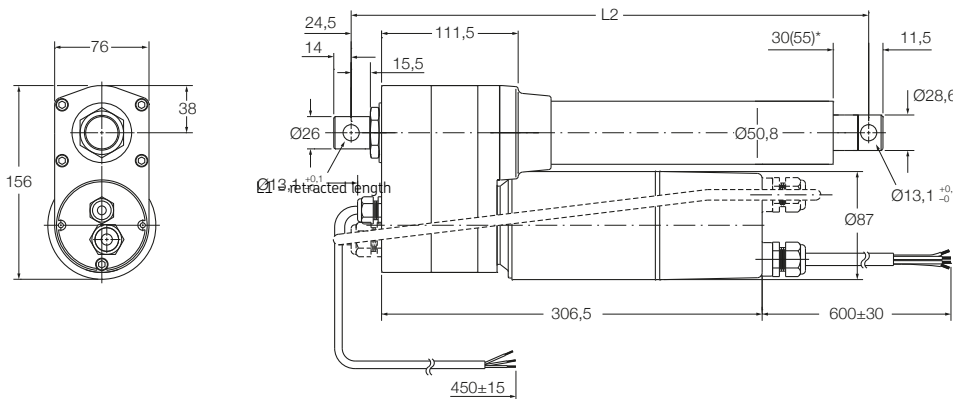
Dimensional drawing

Basic configuration (dashed line for optional limit switch)

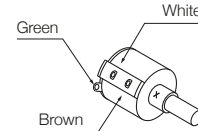
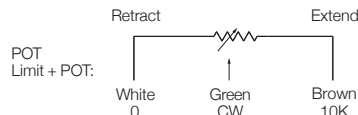
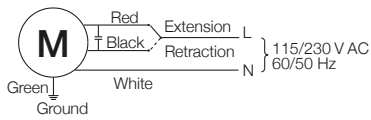


Legend
 L1 = retracted length
 * 55 = dimension with limit switch

Optional potentiometer (dashed line for optional limit switch)

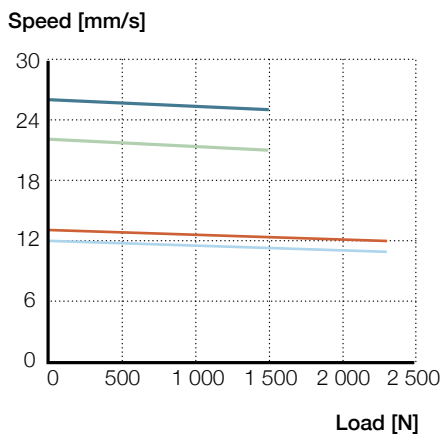


Legend
 L2 = retracted length
 * 55 = dimension with limit switch

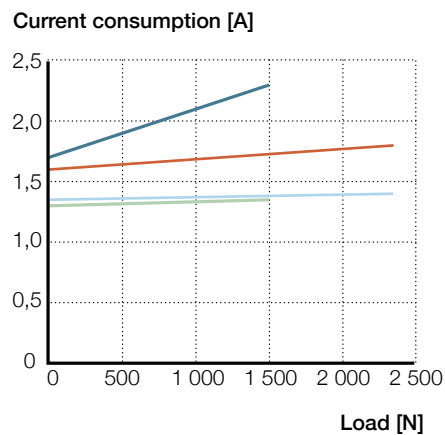


Performance diagrams

Speed-load diagram

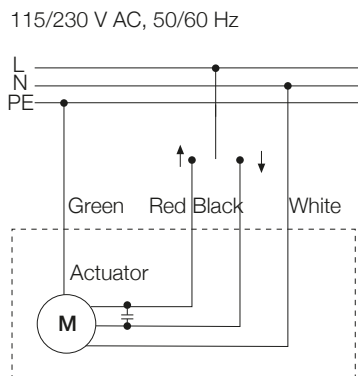


Current-load diagram

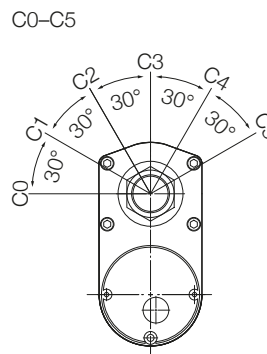


— 1 (115 VAC) — 1 (230 VAC) — 2 (115 VAC) — 2 (230 VAC)

Connecting diagram



Different rear attachment



Electrical specifications

Basic configuration	With limit switch ¹⁾						Without limit switch ²⁾					
	Stroke (mm)	102	153	204	305	457	610	102	153	204	305	457
L1 Retracted length	440	440	440	592	744	897	380	415	415	465	668	821

¹⁾ Tolerance: S and L1 = ± 5,0 mm (If S≥305 mm, S = ± 7,5 mm)

²⁾ Tolerance: S = ± 2,5 mm and L1 = ± 3,8 mm

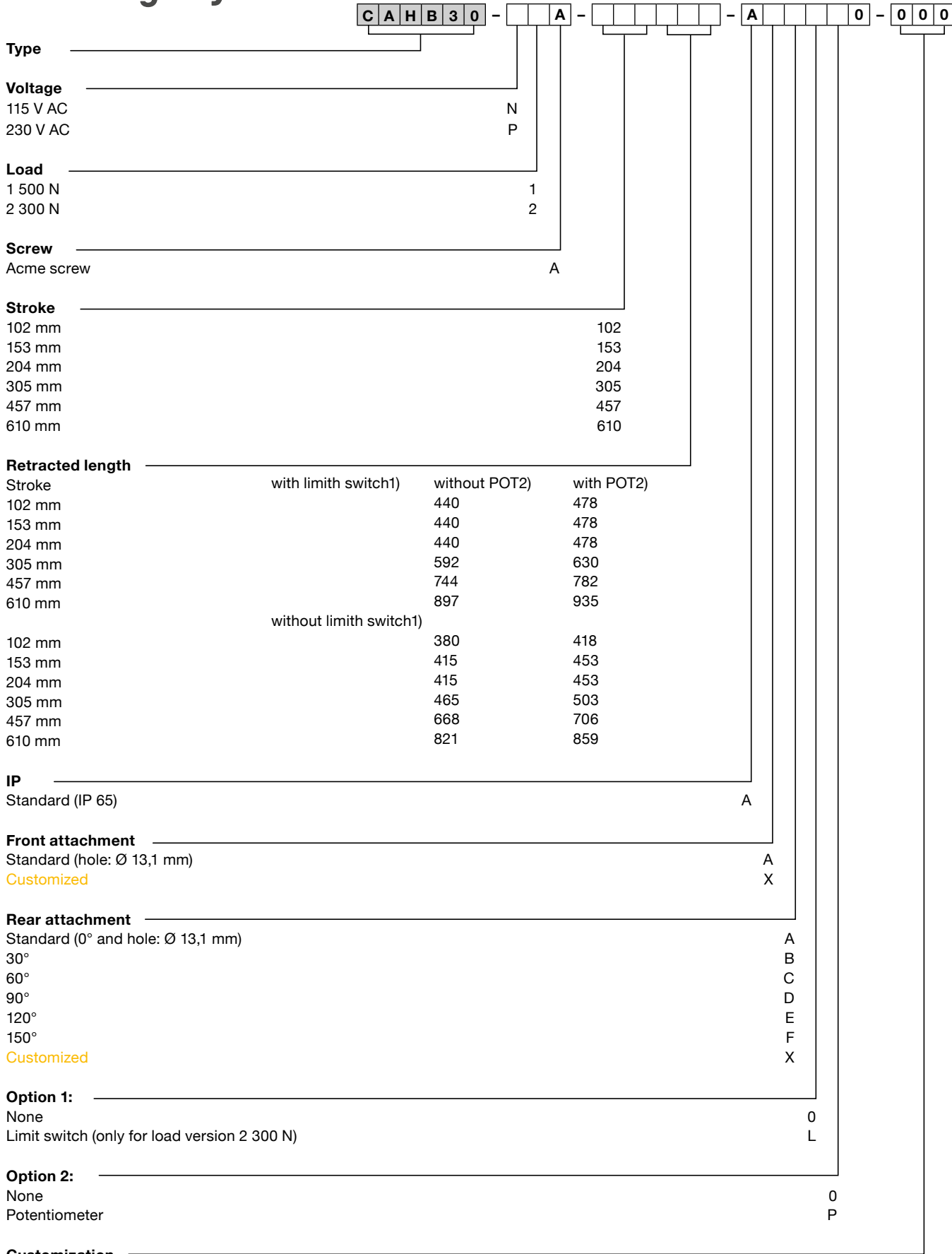
Optional potentiometer	With limit switch ¹⁾						Without limit switch ²⁾					
	Stroke (mm)	102	153	204	305	457	610	102	153	204	305	457
L2 Retracted length	478	478	478	630	782	935	418	453	453	503	706	859

¹⁾ Tolerance: S and L2 = ± 5,0 mm (If S≥305 mm, S = ± 7,5 mm)

²⁾ Tolerance: S = ± 2,5 mm and L2 = ± 3,8 mm

Potentiometer resolution	
Stroke (mm)	102 153 204 305 457 610
Ohm/mm	59,0 59,0 29,5 29,5 9,84 9,84

Ordering key



Options shown in yellow are only available on request. Contact Ewellix for more information on minimum quantities and additional costs.

CAHB-31N

Linear actuator

Benefits

- High efficiency ball screw
- Extension tube (stainless steel)
- Protection tube (steel)
- Enhanced corrosion resistance
- Mechanical overload protection (clutch)
- Lubricated for service life
- Robust, designed for tough environment
- No back driving
- Motor with thermal protection



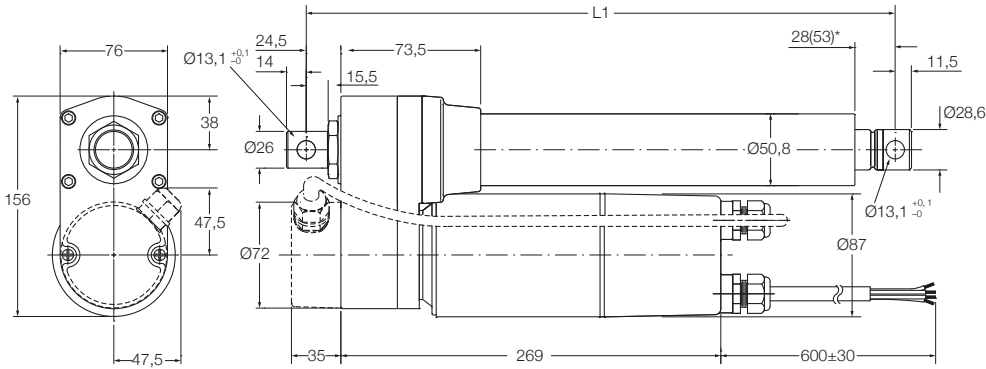
Technical data

		Unit	CAHB-31N... 1	CAHB-31N... 2	CAHB-31N... 3
Rated push load		N	2 300	4 500	6 000
Rated pull load		N	2 300	4 500	6 000
Speed (full load to no load)	115 V AC/60 Hz	mm/s	48 to 57	22 to 28	13 to 15
	230 V AC/50 Hz	mm/s	40 to 50	20 to 24	11 to 13
Stroke		mm	102 to 610	102 to 610	102 to 610
Retracted length		mm	– ¹⁾	– ¹⁾	– ¹⁾
Voltage		V AC	115 or 230	115 or 230	115 or 230
Power consumption		W	N/A	N/A	N/A
Current consumption	115 V AC/60 Hz	A	3	2,6	2,2
	230 V AC/50 Hz	A	1,5	1,4	1,4
Duty cycle		%	25 (94/376 s)	25 (94/376 s)	25 (94/376 s)
Ambient temperature		°C	–26 to +65	–26 to +65	–26 to +65
Type of protection		IP	65S	65S	65S
Weight		kg	9,5	9,5	9,5
Color		–	Black	Black	Black

¹⁾ See dimensional drawing [L → page 35](#)
 For outdoors application, please contact SKF Motion Technologies.

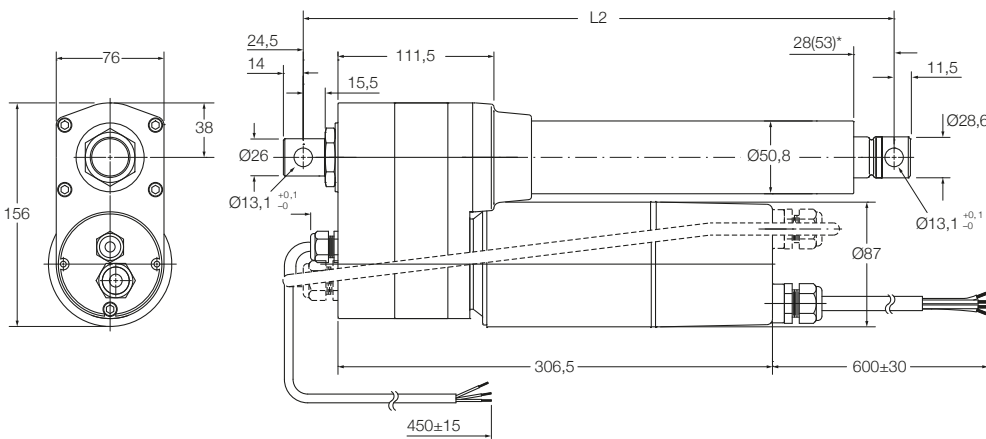
Dimensional drawing

Basic configuration (dashed line for optional limit switch)

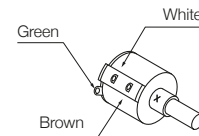
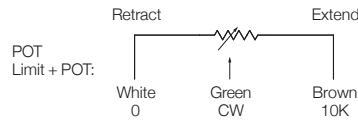
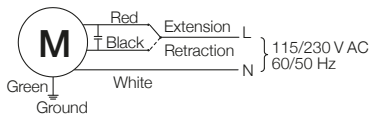


Legend
 L1 = retracted length
 * 53 = dimension with limit switch

Optional potentiometer (dashed line for optional limit switch)

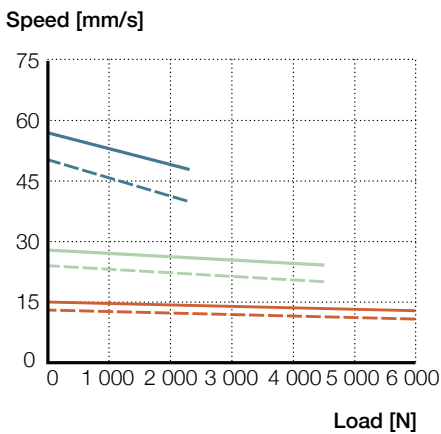


Legend
 L2 = retracted length
 * 53 = dimension with limit switch

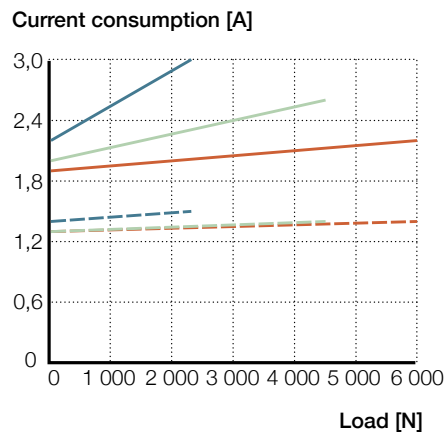


Performance diagrams

Speed-load diagram

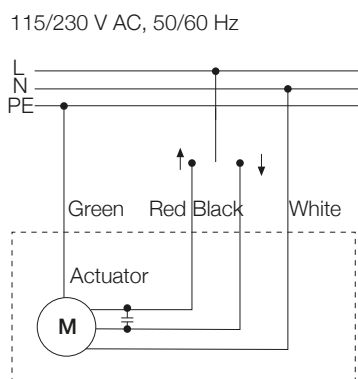


Current-load diagram

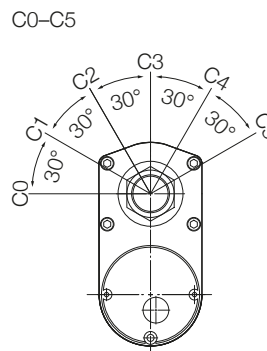


- 1 (115 VAC) — 2 (115 VAC) — 3 (115 VAC)
- - - 1 (230 VAC) - - - 2 (230 VAC) - - - 3 (230 VAC)

Connecting diagram



Different rear attachment



Electrical specifications

Stroke (mm)	With limit switch ¹⁾						Without limit switch ²⁾					
	102	153	204	305	457	610	102	153	204	305	457	610
L1 Retracted length	444	444	495	659	811	964	380	419	419	521	735	888

¹⁾ Tolerance: S and L1 = ± 5,0 mm (If S ≥ 305 mm, S = ± 7,5 mm)
²⁾ Tolerance: S = ± 2,5 mm and L1 = ± 3,8 mm

Stroke (mm)	With limit switch ¹⁾						Without limit switch ²⁾					
	102	153	204	305	457	610	102	153	204	305	457	610
L2 Retracted length	482	482	533	697	849	1002	418	457	457	559	773	926

¹⁾ Tolerance: S and L2 = ± 5,0 mm (If S ≥ 305 mm, S = ± 7,5 mm)
²⁾ Tolerance: S = ± 2,5 mm and L2 = ± 3,8 mm

Potentiometer resolution	
Stroke (mm)	102 153 204 305 457 610
Ohm/mm	59,0 59,0 29,5 29,5 9,84 9,84

CAHB series - Environmental tests

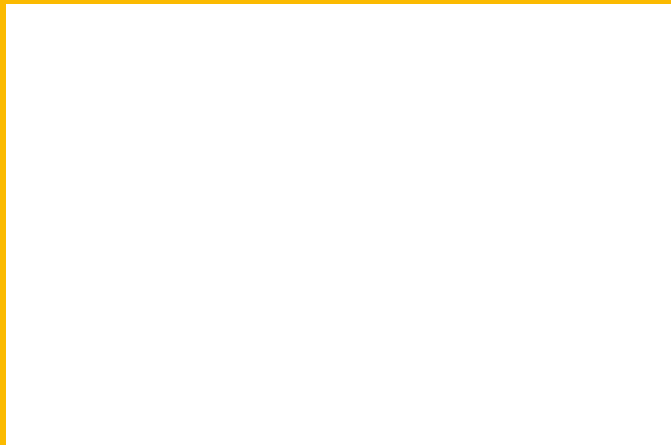
Climatic tests						
Test and Standard	CAHB-20xE, CAHB-21xE, CAHB-22xE		CAHB-10		CAHB-30, CAHB-31	
	Performance	Report No.	Performance	Report No.	Performance	Report No.
Cold test EN60068-2-1 (Ab)	Storage at low temperature Temperature: -40 °C Duration: 6 hours Not connected Tested at room temperature.	PH_TR0295	Storage at low temperature Temperature: -40 °C Duration: 96 hours Not connected Tested at room temperature.	"Low temperature for CAHB-10"	Storage at low temperature: Temperature: -40 °C Duration: 8 hours Not connected Tested at room temperature.	PH_TR0265
Cold test EN60068-2-1 (Ad)	Storage at low temperature Temperature: -30 °C Duration: 6 hours Actuator is not activated/ connected Tested at low temperature.	PH_TR0295	Storage at low temperature Temperature: -20 °C Duration: 96 hours Actuator is not activated/ connected Tested at low temperature.	"Low temperature for CAHB-10"	Storage at low temperature: Temperature: -26 °C Duration: 8 hours Not connected Tested at room temperature.	PH_TR0265
Dry Heat EN60068-2-2 (Bb)	Storage at high temperature Temperature: +90 °C Duration: 72 hours Actuator is not activated/ connected. Tested at room temperature	PH_TR0278	Storage at high temperature Temperature: +85 °C Duration: 96 hours Actuator is not activated/ connected. Tested at room temperature	"High temperature for CAHB-10"	-	-
Change of temperature EN60068-2-14 (Na)	Rapid change of temperature High temperature: +100 °C in 60 min. Low temperature: -30 in 60 min. Transition time: < 10 seconds Duration: 100 cycles Actuator is not activated/ connected. Tested at room temperature.	PH_TR0278	-	-	-	-
Salt mist EN60068-2-52 (Kb)	Salt spray test Salt solution: 5% sodium chloride (NaCl) 4 spraying periods, each of 2 hours. Humidity storage 7 days after each. Actuator not activated/ connected. Exposure time: 250 hours	PH_TR0268	Salt spray test Salt solution: 5% sodium chloride (NaCl) 4 spraying periods, each of 2 hours. Humidity storage 7 days after each. Actuator not activated/ connected. Exposure time: 96 hours	"Salt spray test for CAHB-10"	-	-
Degrees of protection IEC 60529	1. Test Item: IP6XM Test Condition: Movement Test Dust: Talcum powder Dust Concentration: 2 kg/m ³ chamber volume and be kept in suspension during the test Test Duration: 8 hours	SHIN1607036235PS	1. Test Item: IP6XS Test Condition: Static Type of dust: Talcum powder Test Duration: 8 hours	COM12-GPE080184AN, COM12-GPE080183AN	-	-
Degrees of protection IEC 60529	2. Test Item: IPX6M Test Condition: Movement Flux: 100 L/min Nozzle diameter: Ø 12,5 mm Distance: 2,5 ~ 3,0 m Test duration: 3 min	SHIN1607036235PS	2. Test Item: IPX6S Test Condition: Static Flux: 100 (1 ±5%) L/min Nozzle diameter: Ø 12,5 mm Distance: 2,5 ~ 3,0 m Test duration: 3 min	COM12-GPE080184AN, COM12-GPE080183AN	2. Test Item: IPX5S Test Condition: Static Flux: 12,5 L/min Nozzle diameter: Ø 6,3 mm Distance: 2,5 ~ 3,0 m Test duration: 3 min	SHIN1608042057MR
Degrees of protection ISO 20653:2013	3. Test Item: IPX9K Test Condition: Static Jet angle: 2507 Water flow: 14~16 L/min Water pressure: 8 000~10 000 kPa Water temperature: 80 to -5 °C Test angle: 0°, 30°, 60°, 90° Test distance from jet to sample: 100~150 mm Test duration: 30 s/position	SHIN1607036235PS	3. Test Item: IPX9K Test Condition: Static Jet angle: 2507 Water flow: 14~16 L/min Water pressure: 8 000~10 000 kPa Water temperature: 80 to -5 °C Test angle: 0°, 30°, 60°, 90° Test distance from jet to sample: 100~150 mm Test duration: 30 s/position	SHIN1510048959MR-01	-	-

Mechanical tests

Test and Standards	CAHB-20xE, CAHB-21xE, CAHB-22xE		CAHB-10		CAHB-30, CAHB-31	
	Performance	Report No.	Performance	Report No.	Performance	Report No.
Vibration EN60068-2-6 (Fdb) EN60068-w2-6(Fc)	Test Item: Random vibration Frequency (Hz) Power spectral density level 10 0,005 200 0,02 300 0,01 350 0,002 Test Direction: X/Y/Z axis Test Duration: 2 hours/axis, Total 6 hours Test Item: Sinusoidal vibration Test Condition: Frequency range: 5~25~200 Hz Amplitude: 3,3 mm (p-p) Acceleration: 4g Sweep Rate: 10 ct/min Test Direction: X/Y/Z axis Test Duration: 2 hours/axis, Total 6 hours	SHIN1607036235PS SHIN1702007025PS	-	-	-	-
Vibration Ewellix Specified Conditions	-	-	Test Item: Vibration Set Point (Grms)	Dwell Time(min)	SHIN1805034119SC SHIN1805032588SC	-
			5	10		
			10	10		
			15	10		
			20	10		
			20	20		
			20	30		
			Test Equipment Name			
			Halt Tester	Typhoon-2,5+		

Electrical tests

Test and Standards	CAHB-20xE, CAHB-21xE, CAHB-22xE		CAHB-10		CAHB-30, CAHB-31	
	Performance	Report No.	Performance	Report No.	Performance	Report No.
Power supply 12 VDC ASAE EP455 (1990)	Operating voltages: +10 V ~ +16 V Over voltage: +26 V / 5 min. Reverse polarity: -26 V / 5 min. Short circuit to ground: 16 V / 5 min. Short circuit to supply: 16 V	PH_TR0267 PH_TR0302	-	-	-	-
Power supply 24 VDC ASAE EP455 (1990)	Operating voltages: +21 V ~ +26 V Over voltage: +36 V / 5 min Reverse polarity: -36 V / 5 min Short circuit to ground: 32 V / 5 min Short circuit to supply: 32 V	PH_TR0267 PH_TR0302	-	-	-	-
Safety Low Voltage Directive EN 60335-1: 2012 + A11: 2014	-	-	-	-	Rated Voltage: 230 V AC Rated frequency: 50 Hz Rated Current: 1,5 A Degree of protection: IP65	UL 4787638796
EN 60335-2-97 : 2006 + A11: 2008 + A2:2010 + A12: 2015 EN 62233 : 2008	-	-	-	-	Rated Voltage: 230 V AC Rated frequency: 50 Hz Rated Current: 1,5 A Degree of protection: IP65	UL 4787638796
EMC, HF-immunity EN 61000-6-1	-	-	Pass the test for 12 V / 24 V Motor	70.888.12.1063.02	-	-
EN 61000-6-2	Pass the test for 12 V / 24 V Motor	708881688102-00				
EMC, Emission EN 61000-6-3	-	-	Inside limits for 12 V / 24 V motor	70.888.12.1063.02	-	-
EN 61000-6-4	Inside limits for 12 V / 24 V motor	708881688102-00	-	-	-	-
EN 50081-2 (1993) EN 55011 (1998)	-	-	-	-	Class B	EM99777 (IA4=CAHB-30 CAHB-31 series
EMC, Automotive transients ISO 7637-2	ISO 7637 Load dump test only accepted on motor power connection	708881688103-00	-	-	-	-



ewellix.com

© Ewellix

All contents of this publication are the property of Ewellix, and may not be reproduced or given to third parties (even extracts) without permission. Although great care has been taken in the production of this catalog, Ewellix does not take any responsibility for damage or other loss resulting from omissions or typographical errors. The photo may differ slightly in appearance from the actual product. Due to continuous improvements being made in our products, the product's appearance and specifications are subject to change without notice.

PUB IL-06006-EN-October 2019

Certain image(s) used under license from Shutterstock.com.
SKF and SKF logo are trademarks of the SKF Group