

EWELLIX

A Schaeffler Company

Linear actuator CAR, CAP & CAT series





CAR, CAP & CAT series

The CAR, CAP, CAT modular design concept makes it easy to interchange critical components such as motors, gears, screws, attachments, etc. Custom-built actuators are easily and cost efficiently built from standard parts. The CAT range flexibility makes it suitable for a high number of applications.



Features

- Compact
- Robust
- Modular
- Lubricated for service life
- High efficiency

Benefits

- Industrial reliable and robust actuator
- Wide range of components
- Right-hand and left-hand version
- Incremental or absolute position feedback option

CAR 22

Linear actuator

Benefits

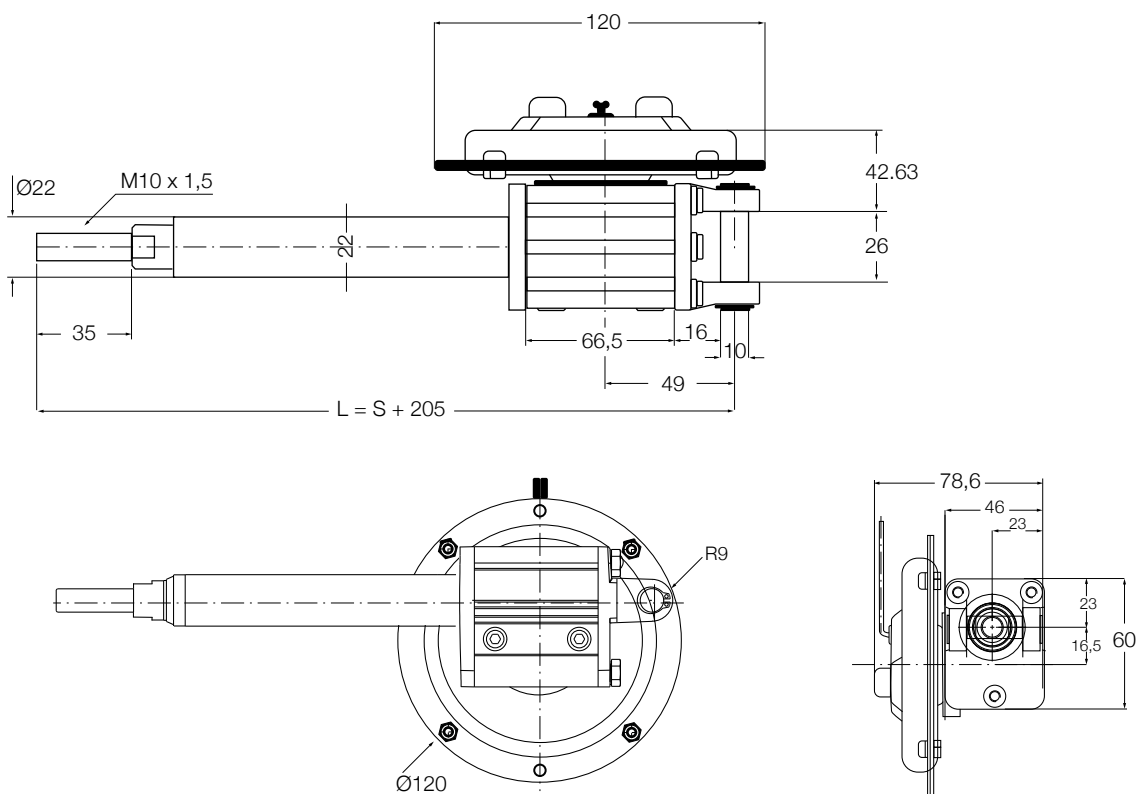
- Reliable and robust industrial actuator
- Right- and left-hand version
- Maintenance free



Technical data

	Unit	CAR 22
Rated push load	N	1 000 to 1 500
Rated pull load	N	1 000 to 1 500
Speed (full load to no load)	mm/s	13 to 35
Stroke	mm	50 to 300
Retracted length	mm	S+ 205
Voltage	V AC	12 or 24
Power consumption	W	120
Current consumption	12 V DC 24 V DC	A A
		9 4
Duty cycle	%	25
Ambient temperature	°C	-20 to +70
Degree of protection	IP	44
Weight	kg	1,2 to 1,6

Dimensional drawing

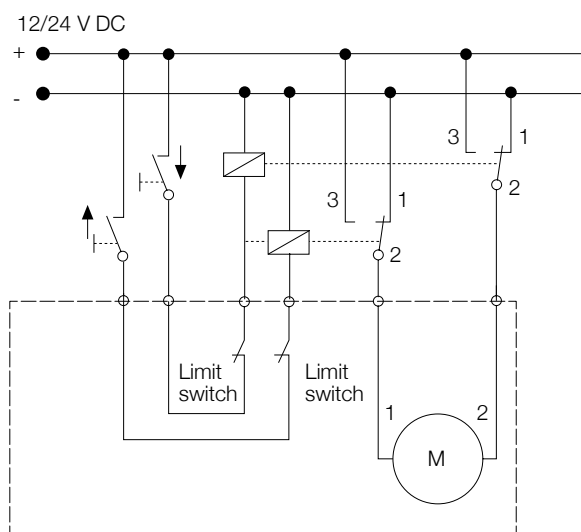


Legend:

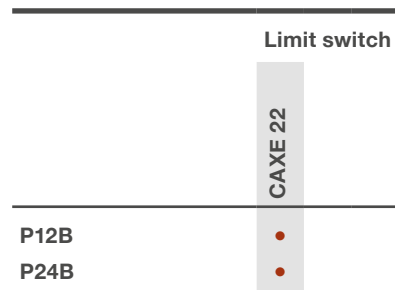
S = stroke

L = retracted length

Connecting diagrams

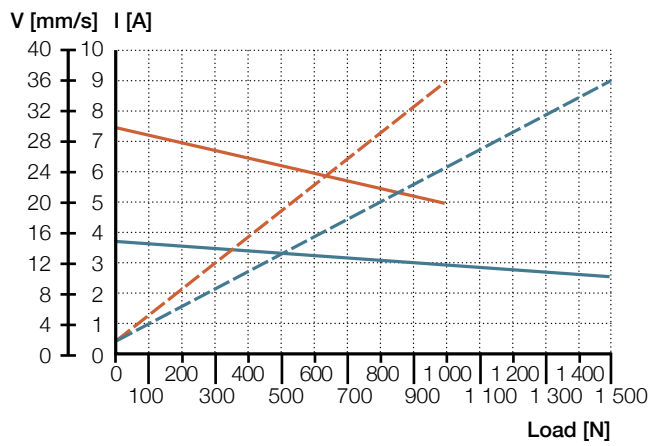


Suitable control units and accessories

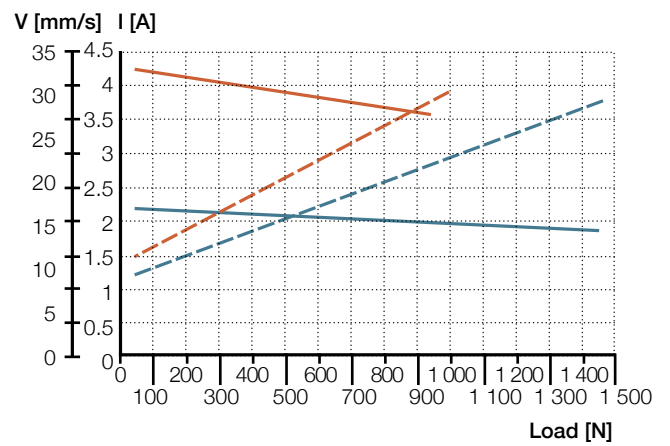


Performance diagrams

CAR 22.../P12B



CAR 22.../P24B



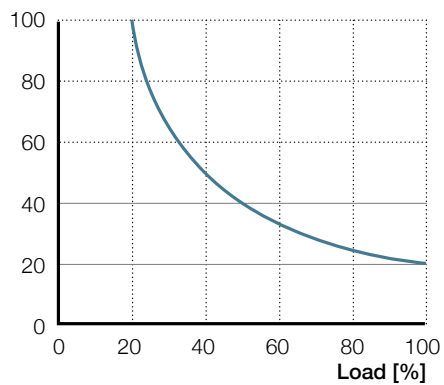
Gear 1 — V (mm/s) — I (A)

Gear 2 — V (mm/s) — I (A)

*There may be deviations of +/-10% from the values in the chart.

Duty cycle

Duty factor [%] at 20 °C



Ordering key

Load [N] / Full Load Speed [mm/s]		Motor options	
1 500/xx	1 000/xx	No motor	0000
1 500/15-10	1 000/30-20	12 V DC, flat motor, IP44	P12B
1 500/17-14.5	1 000/33-28	24 V DC, flat motor, IP44	P24B

1	2
Gear	

Type	C A R 2 2 X	X	/
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Motor assembly	R Right	L Left
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Stroke [S]	050 50 mm	100 100 mm	150 150 mm	200 200 mm	300 300 mm	--- Other stroke lengths
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Options shown in red are only available on request. Contact Ewellix for more information on minimum quantities and additional costs.

CAR 22 – Type codes for accessories and spare parts

Item code	Type code	Order N°
12 VDC motor (flat motor)	P12B	M/0405516-V01
24 VDC motor (flat motor)	P24B	M/0405517-V01
Limit switch for stroke = 50 mm	CAXE 22 × 50	M/0412019
Limit switch for stroke = 100 mm	CAXE 22 × 100	M/0412020
Limit switch for stroke = 150 mm	CAXE 22 × 150	M/0412021
Limit switch for stroke = 200 mm	CAXE 22 × 200	M/0412022
Limit switch for stroke = 300 mm	CAXE 22 × 300	M/0412023
Proximity switch for CAXE	CAXE Proximity switch	M/0432369
Front mounting attachments type Rod-end	575-22	M/0430575-22
Front mounting attachments type Clevis	576-22	M/0430576-22
Rear mounting attachments type Single ear bracket	580-22	M/0430580-22
Rear mounting attachments type Ball-joint bracket	581-22	M/0430581-22

CAP 32

Linear actuator



Benefits

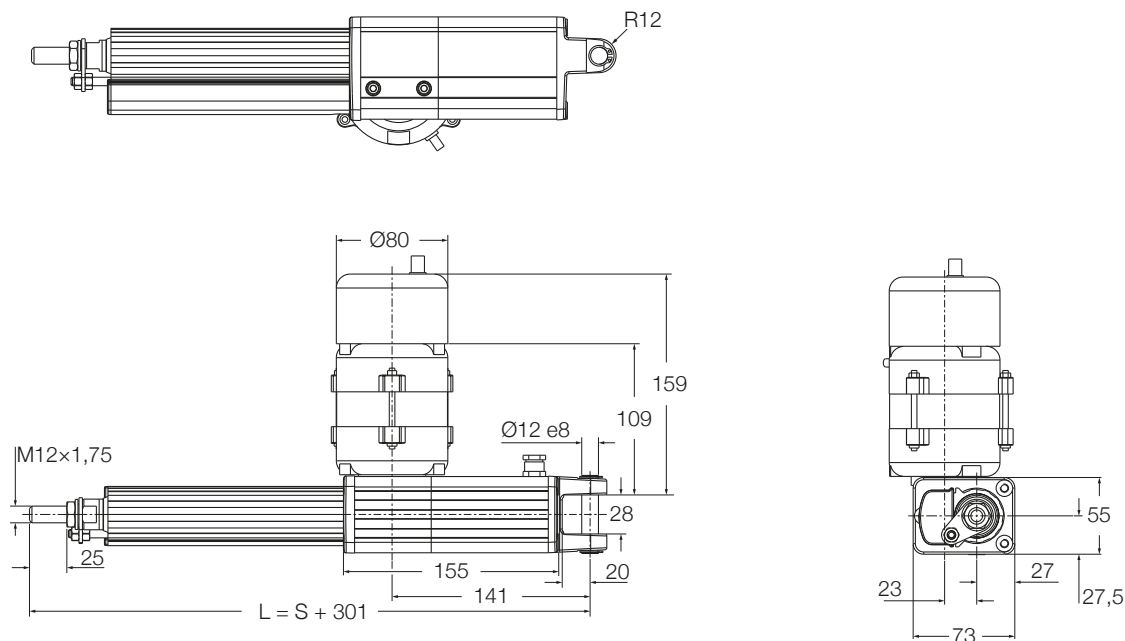
- High efficiency ball screw
- Extension tube (stainless steel)
- Protection tube (steel)
- Enhanced corrosion resistance
- Mechanical overload protection (clutch)
- Lubricated for service life
- Robust, designed for tough environment
- No back driving
- Motor with thermal protection

Technical data

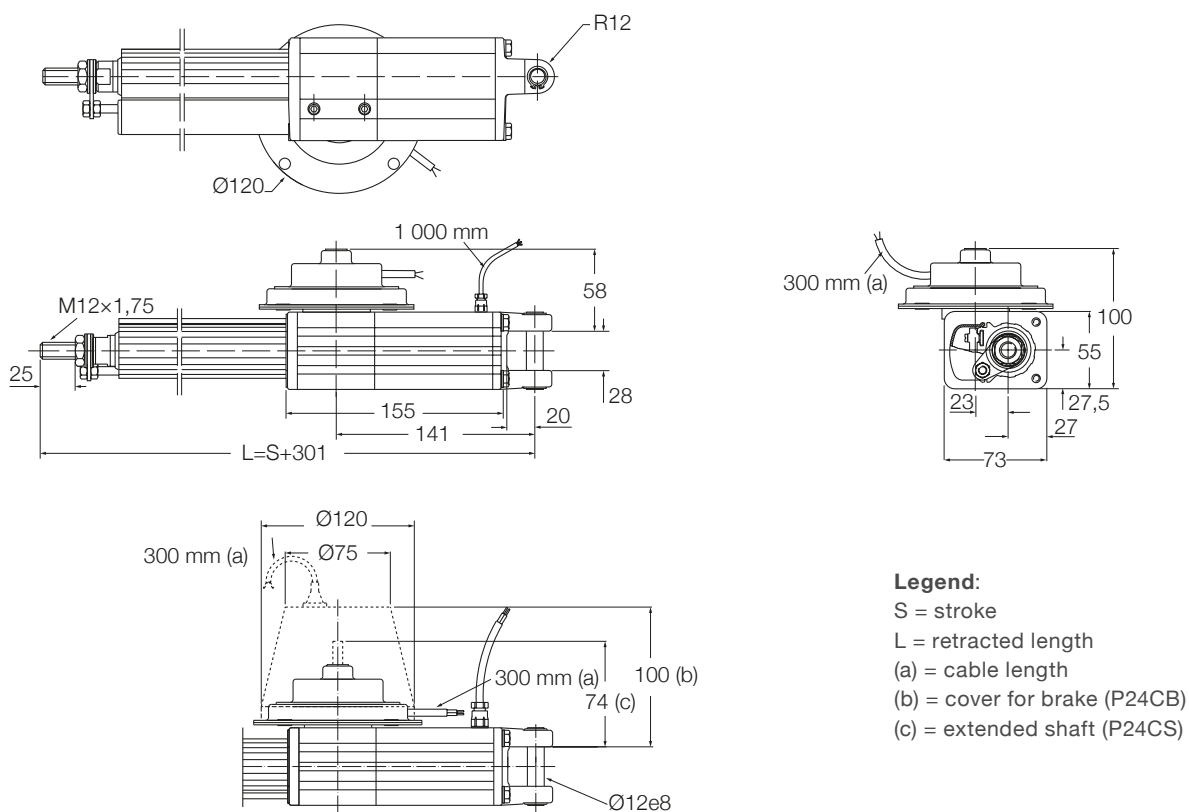
		Unit	CAP 32 – AC version	CAP 32 – DC version
Rated push load		N	1 500 to 3 500	1 000 to 3 500
Rated pull load		N	1 500 to 3 500	1 000 to 3 500
Speed (full load to no load)		mm/s	6 to 32 ¹⁾	6 to 66 ¹⁾
Stroke		mm	50 to 700	50 to 700
Retracted length		mm	S+301	S+301
Voltage		V AC	120 or 230	–
		V DC	–	12 or 24
Power consumption	120 V AC	W	98 (brake 133,2 W)	N/A
	230 V AC	W	92 (brake 117,3 W)	–
	12 or 24 V DC	W	–	N/A
Current consumption	120 V AC	A	0,82 (brake +0,29 A)	–
	230 V AC	A	0,4 (brake + 0,11 A)	–
	12 V DC	A	–	13
	24 V DC	A	–	9
	24 V DC	A	–	5 (for motor P24CW)
Duty cycle		%	30	25
Ambient temperature		°C	–20 to +50	–20 to +50
Degree of protection		IP	20/54	20/44
Weight		kg	2,9 to 5,0	2,9 to 5,0

¹⁾ Depending on selected motor

Dimensional drawing – AC version

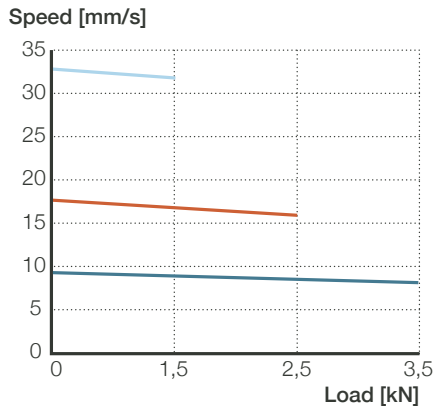


Dimensional drawing – DC version

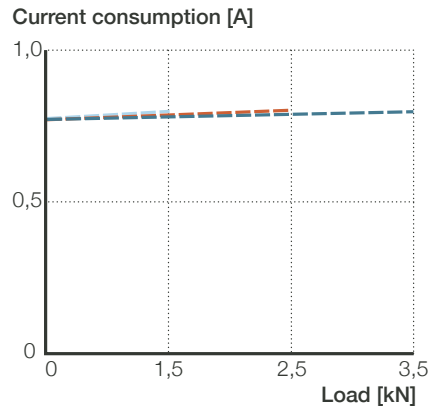


Performance diagrams – AC version

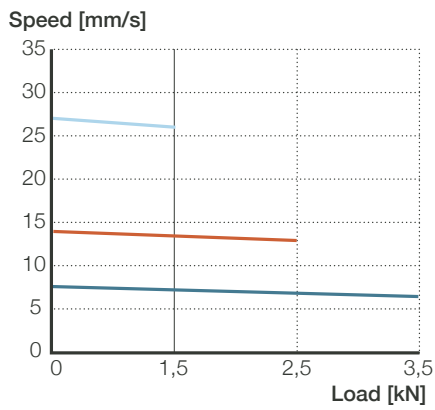
Speed-load diagram CAP 32 ... 120 V AC



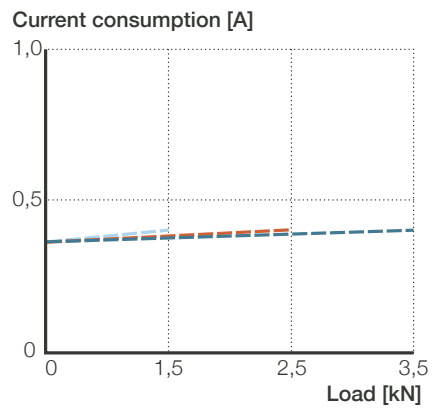
Current-load diagram CAP 32 ... 120 V AC



Speed-load diagram CAP 32 ... 230 V AC



Current-load diagram CAP 32 ... 230 V AC



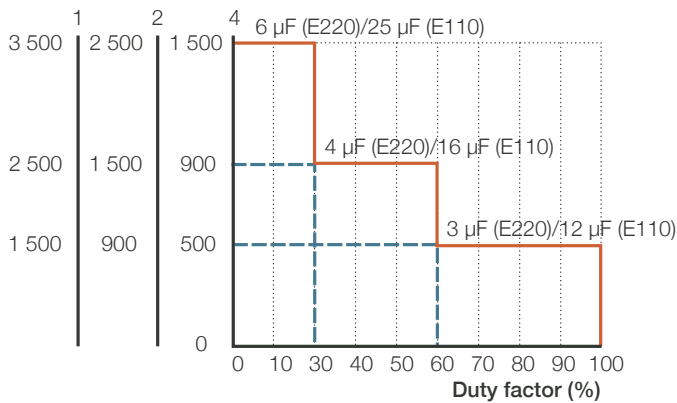
Gear 1 — V (mm/s) — I (A) Gear 2 — V (mm/s) — I (A) Gear 4 — V (mm/s) — I (A)

*There may be deviations of +/-10% from the values in the chart.

Duty cycle – AC version

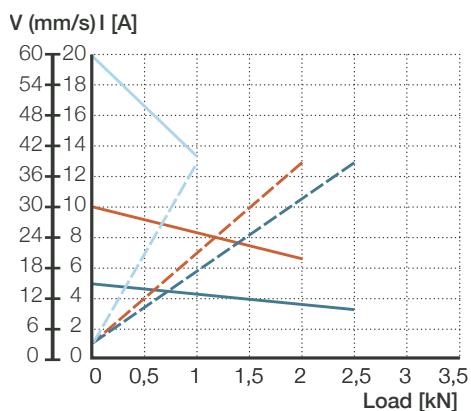
CAP 32 ... 230/120 V AC

F (N) Gear

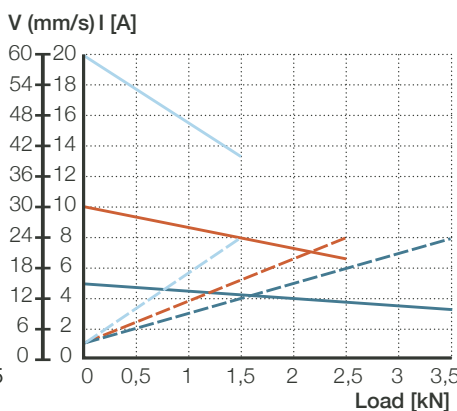


Performance diagrams – DC version

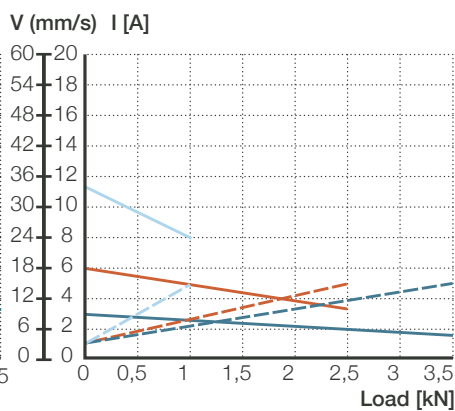
CAP 32.../P12C



CAP 32.../P24C/P24CS/P24CB



CAP 32.../P24CW



Gear 1 — V (mm/s) — I (A)

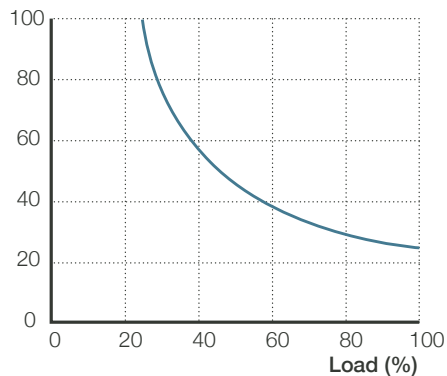
Gear 2 — V (mm/s) — I (A)

Gear 4 — V (mm/s) — I (A)

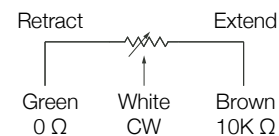
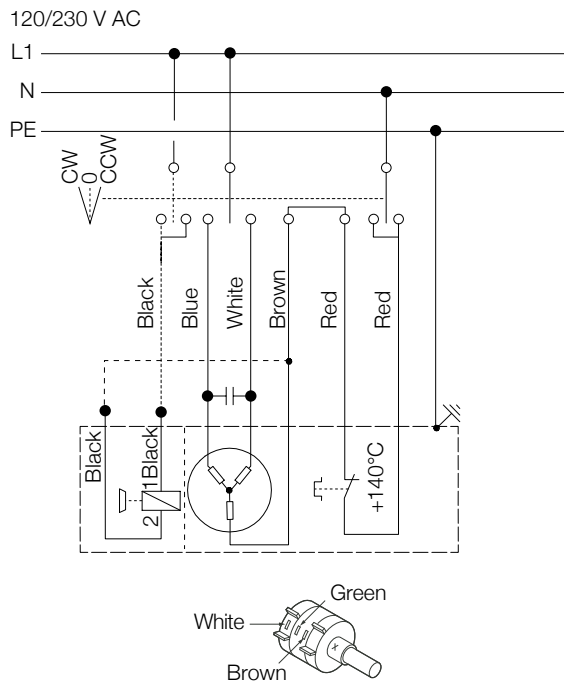
*There may be deviations of +/-10% from the values in the chart.

Duty cycle – DC version

Duty factor (%) at 20°C

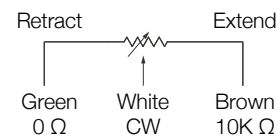
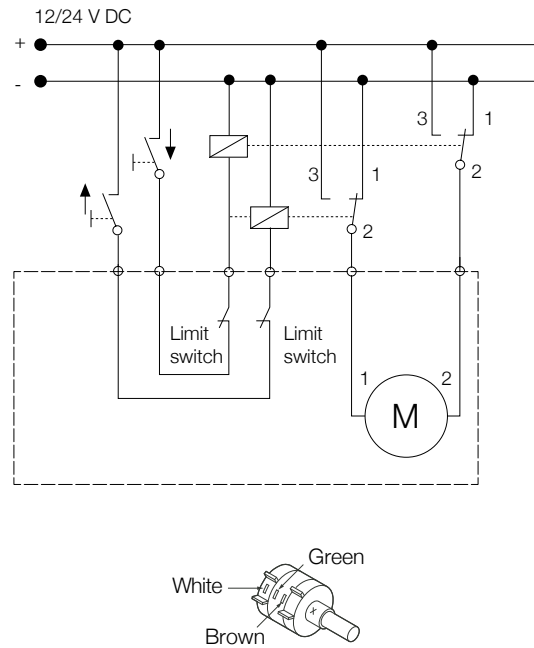


Connecting diagrams – AC version



Connection diagram for rotating potentiometer

Connecting diagrams – DC version



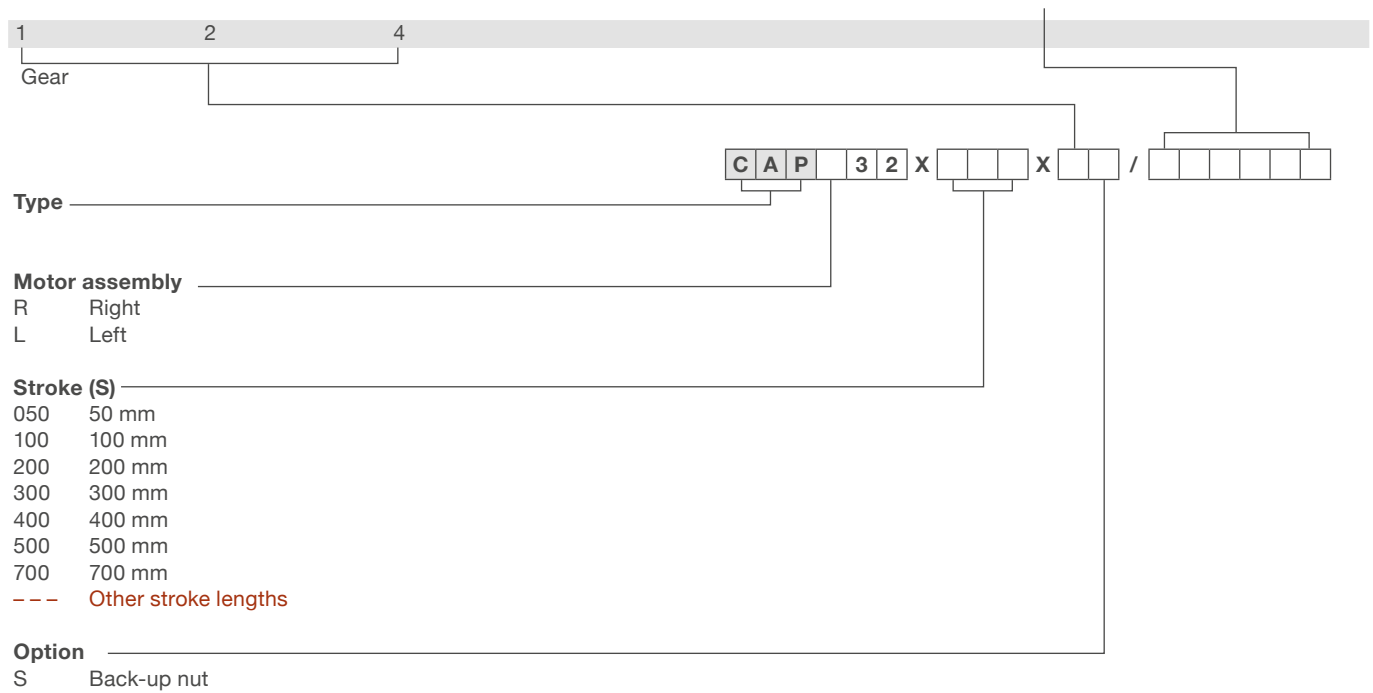
Connection diagram for rotating potentiometer

CAP 32 – Type codes for accessories and spare parts

Item code	Type code	Order N°
12 V DC motor (flat motor)	P12C	M/0405518-V01
24 V DC motor (flat motor)	P24C	M/0405519-V01
24 V DC motor (flat motor with brake)	P24CB	M/0405523-V01
24 V DC motor (flat motor with extended shaft)	P24CS	M/0405522-V01
24 V DC motor (flat motor with low speed)	P24CW	M/0405521-V01
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670-16
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670-03
Limit switch for stroke = 50 mm	CAXE 32 × 50	M/0412030
Limit switch for stroke = 100 mm	CAXE 32 × 100	M/0412031
Limit switch for stroke = 200 mm	CAXE 32 × 200	M/0412033
Limit switch for stroke = 300 mm	CAXE 32 × 300	M/0412034
Limit switch for stroke = 500 mm	CAXE 32 × 500	M/0412036
Limit switch for stroke = 700 mm	CAXE 32 × 700	M/0412037
Proximity switch for CAXE	CAXE Proximity switch	M/0432369
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32

Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
3 500xx	2 500/xx	1 500/xx	No motor	0000
3 500/8	2 500/16	1 500/32	120 V AC/60 Hz, 1-phase, IP54	E110C
3 500/8	2 500/16	1 500/32	120 V AC/60 Hz, 1-phase, brake, IP20	E110CB
3 500/6	2 500/13	1 500/26	230 V AC/50 Hz, 1-phase, IP54	E220C
3 500/6	2 500/13	1 500/26	230 V AC/50 Hz, 1-phase, brake, IP20	E220CB
3 500/xx	2 500/xx	1 500/xx	No motor	0000
2 500/15-10	2 000/30-20	1 000/60-40	12 V DC, flat motor, IP44	P12C
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, IP44	P24C
3 500/10-6	2 500/18-12	1 500/36-26	24 V DC, flat motor, low speed, IP44	P24CW
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, extended shaft, IP44	P24CS
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, brake, IP20	P24CB



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

CAT 32B and CAP 43B

Linear actuator

Benefits

- Compact
- Robust
- Modular
- Lubricated for service life
- High efficiency
- Digital encoder feedback



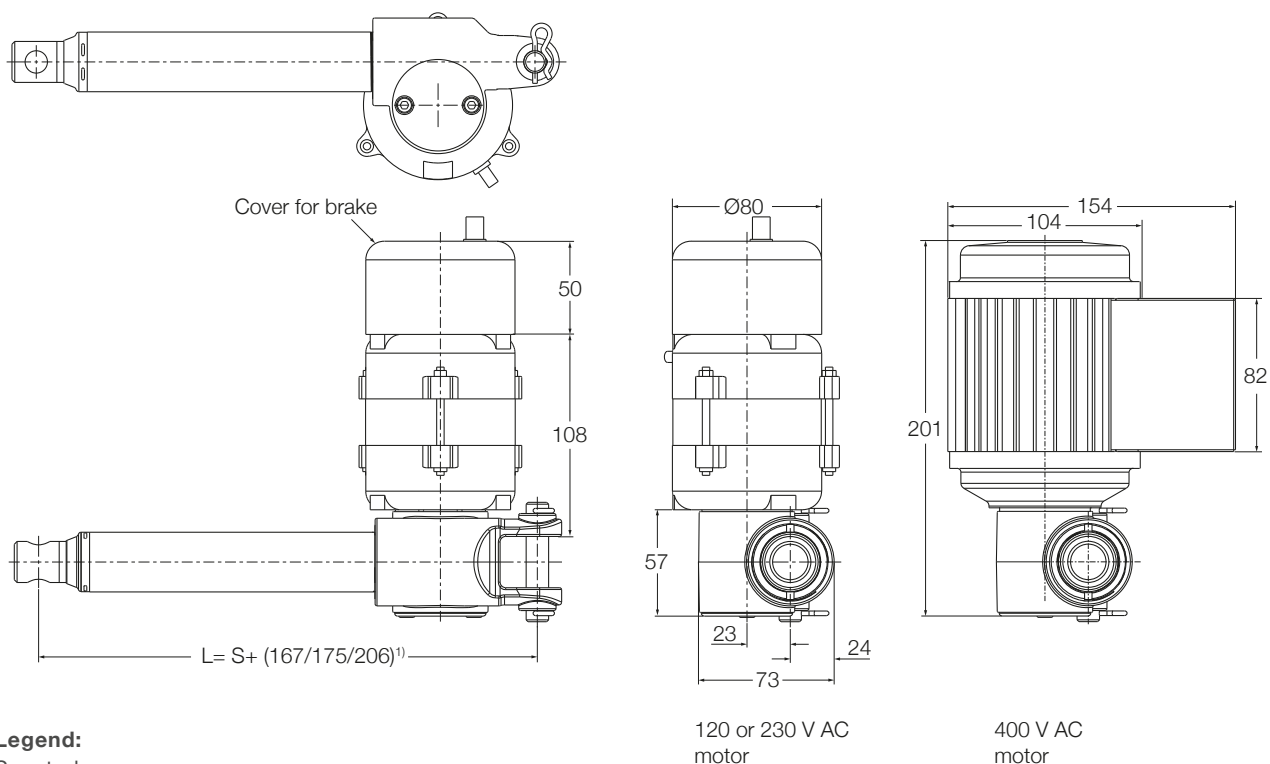
Technical data

	Unit	CAT 32B – AC version	CAT 32B – DC version	CAP 43B
Rated push load	N	1 500 to 3 500	1 000 to 4 000	1 500 to 4 000
Rated pull load	N	1 500 to 3 500	1 000 to 4 000	1 500 to 4 000
Speed (at full load)	mm/s	6,5 to 32 ¹⁾	6 to 66 ¹⁾	6 to 66 ¹⁾
Stroke	mm	50 to 700	50 to 700	50 to 700
Retracted length	mm	S+167/175/206 ²⁾	S+167/175/206 ²⁾	S+167/175/206 ²⁾
Voltage	V AC	120, 230 or 400	–	–
	V DC	–	12 or 24	24
Power consumption	120 V AC	W	98 (brake 133,2 W)	–
	230 V AC	W	92 (brake 117,3 W)	–
	400 V AC	W	80	–
	12 or 24 V DC	W	–	N/A
Current consumption	120 V AC	A	0,82 (brake +0,29 A)	–
	230 V AC	A	0,4 (brake +0,11 A)	–
	400 V AC	A	0,2	–
	12 V DC	A	–	18
	24 V DC	A	–	9
	24 V DC	A	–	5 (for motors C24CW and P24CW)
Duty cycle	%	30	20	20
Ambient temperature	°C	–20 to +50	–20 to +50	–20 to +50
Degree of protection	IP	20/54/55	20/44/66 ¹⁾	44
Weight	kg	2 to 3,5	2 to 3,5	2,0 to 2,7

¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

Dimensional drawing – CAT 32B AC version



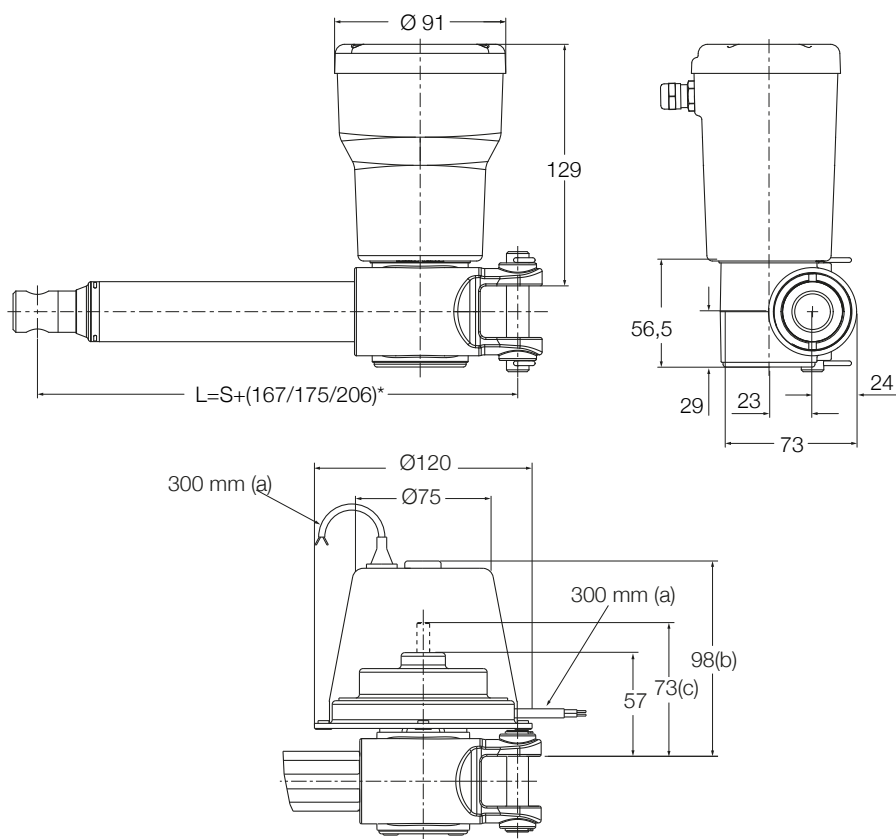
Legend:

S = stroke

L = retracted length

¹⁾ Dimension depends on selected front attachment

Dimensional drawing – CAT 32B DC version



Legend:

S = stroke

L = retracted length

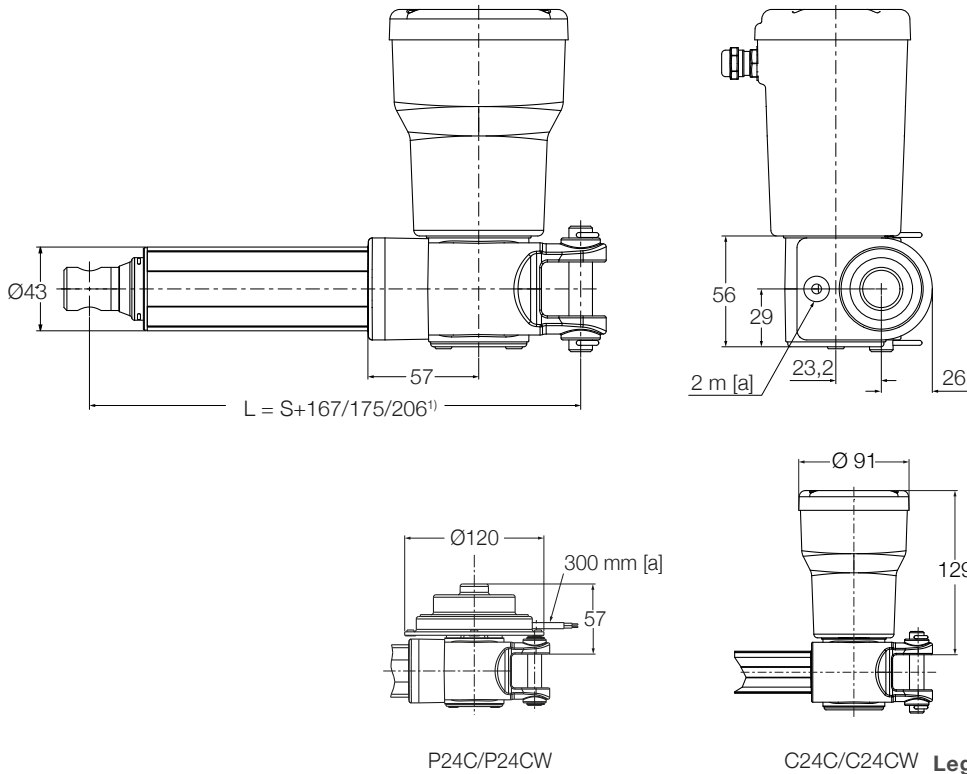
(a) = cable length

(b) = cover for brake (P24CB)

(c) = extended shaft (P24CS)

P12C, P24C, P24CB, P24CS, P24CW

Dimensional drawing – CAP 43B

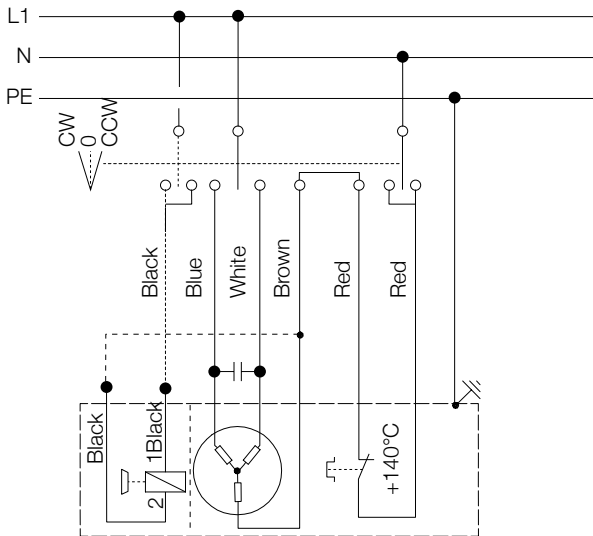


Legend:
 S = stroke
 L = retracted length
 [a] = cable length

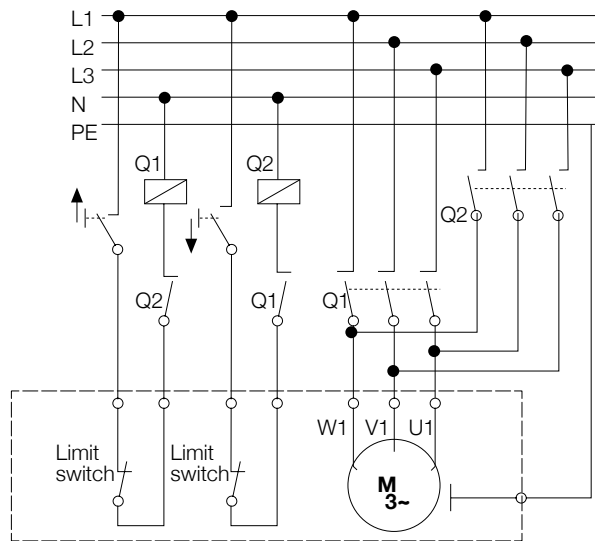
¹) Dimension depends on selected front attachment

Connecting diagrams – AC version

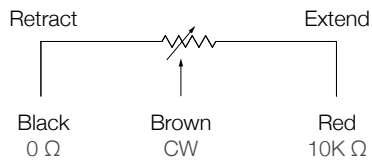
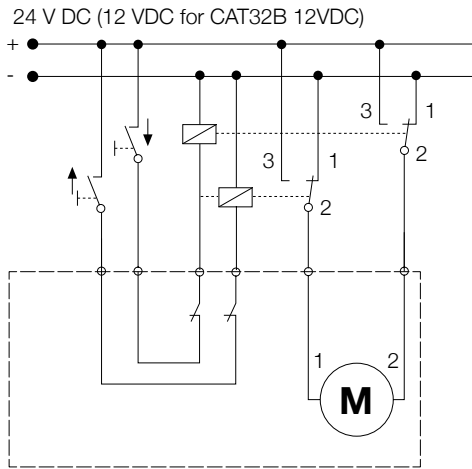
120/230 V AC



400 V AC



Connecting diagrams – DC version



Connection diagram for linear potentiometer only for CAP 43B.

Suitable control units and accessories AC version

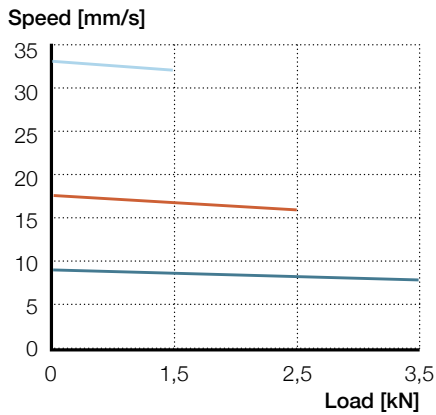
	Limit switch	Encoder
	CAXE32B	E2
E110C	•	•
E110CB	•	•
E220C	•	•
E220CB	•	•
E380C	•	•

Suitable control units and accessories DC version

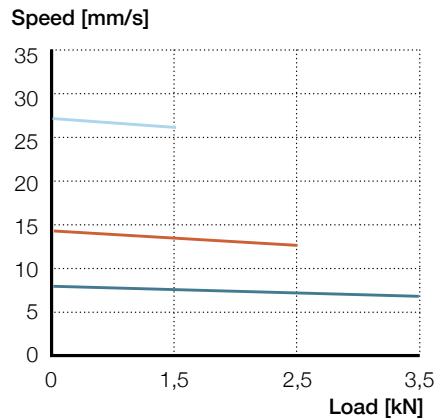
	Limit switch	Encoder
	CAXE32B	E2
C12C	•	•
P12C	•	•
C24C	•	•
C24CW	•	•
P24C	•	•
P24CB	•	•
P24CS	•	•
P24CW	•	•

Performance diagrams – AC version

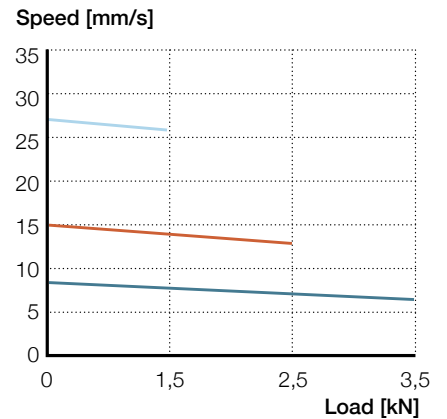
Speed-load diagram CAT 32B ... 120 V AC



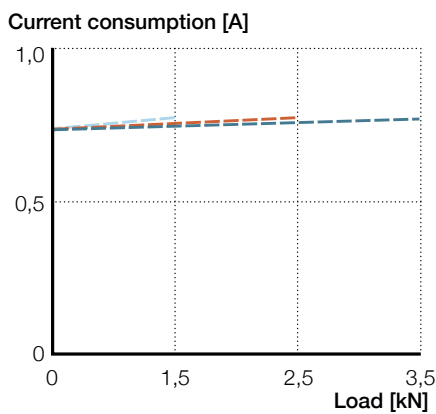
Speed-load diagram CAT 32B ... 230 V AC



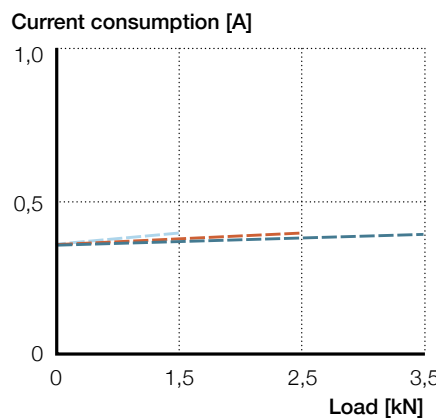
Speed-load diagram CAT 32B ... 400 V AC



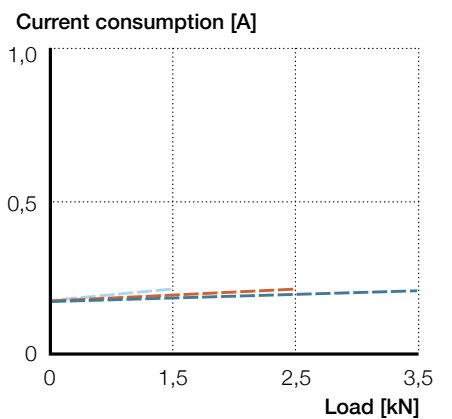
Current-load diagram CAT 32B ... 120 V AC



Current-load diagram CAT 32B ... 230 V AC



Current-load diagram CAT 32B ... 400 V AC



Gear 1 — V (mm/s) — I (A)

Gear 2 — V (mm/s) — I (A)

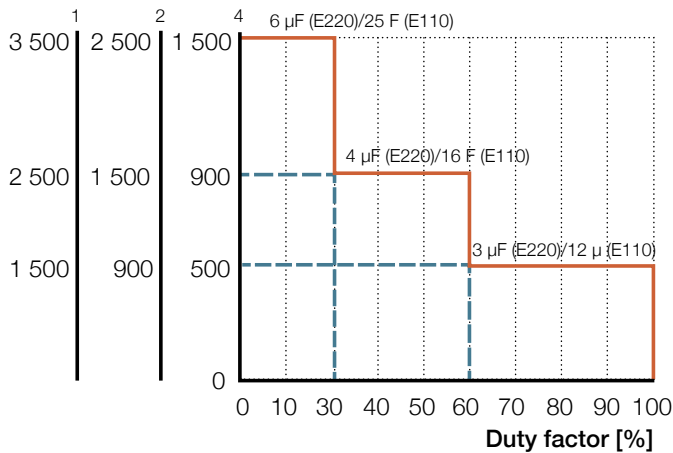
Gear 4 — V (mm/s) — I (A)

*There may be deviations of +/-10% from the values in the chart.

Duty cycle – AC version

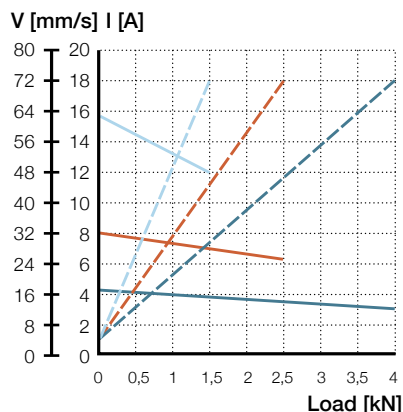
CAT 32B...230/120 V AC

F [N] Gear

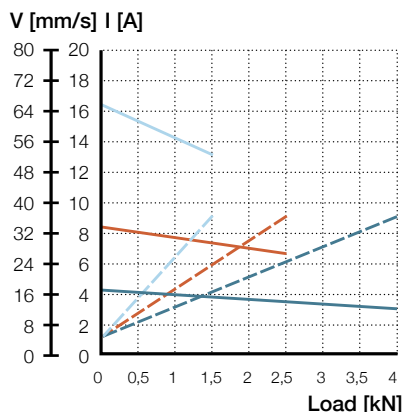


Performance diagrams – DC version

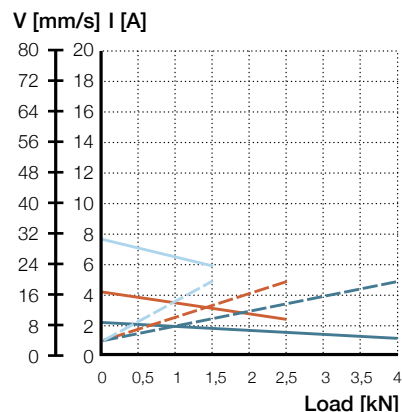
CAT 32B.../C12C



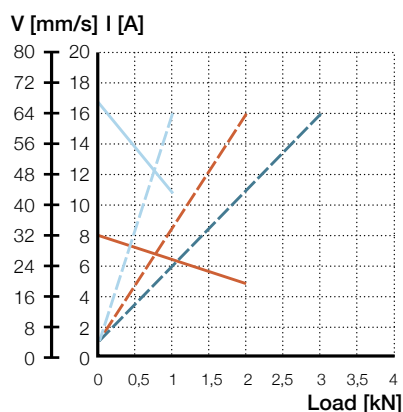
CAT 32B.../C24C
CAP 43B.../C24C



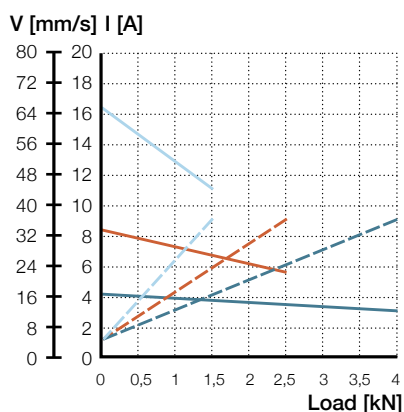
CAT 32B.../C24CW
CAP 43B.../C24CW



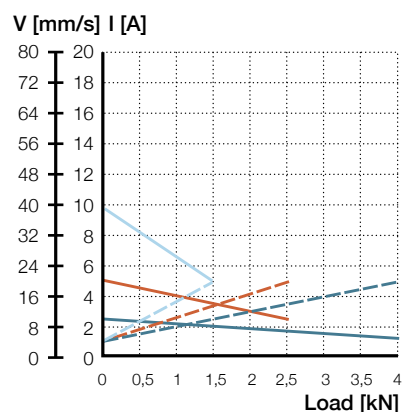
CAT 32B.../P12C



CAT 32B.../P24C/P24CB/P24CS
CAP 43B.../P24C



CAT 32B.../P24CW
CAP 43B.../P24CW



Gear 1 — V (mm/s) — I (A)

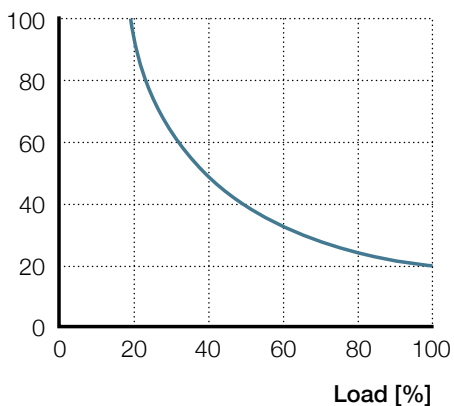
Gear 2 — V (mm/s) — I (A)

Gear 4 — V (mm/s) — I (A)

*There may be deviations of +/-10% from the values in the chart.

Duty cycle – DC version

Duty factor [%] at 20 °C



CAT 32B – Type codes for accessories and spare parts

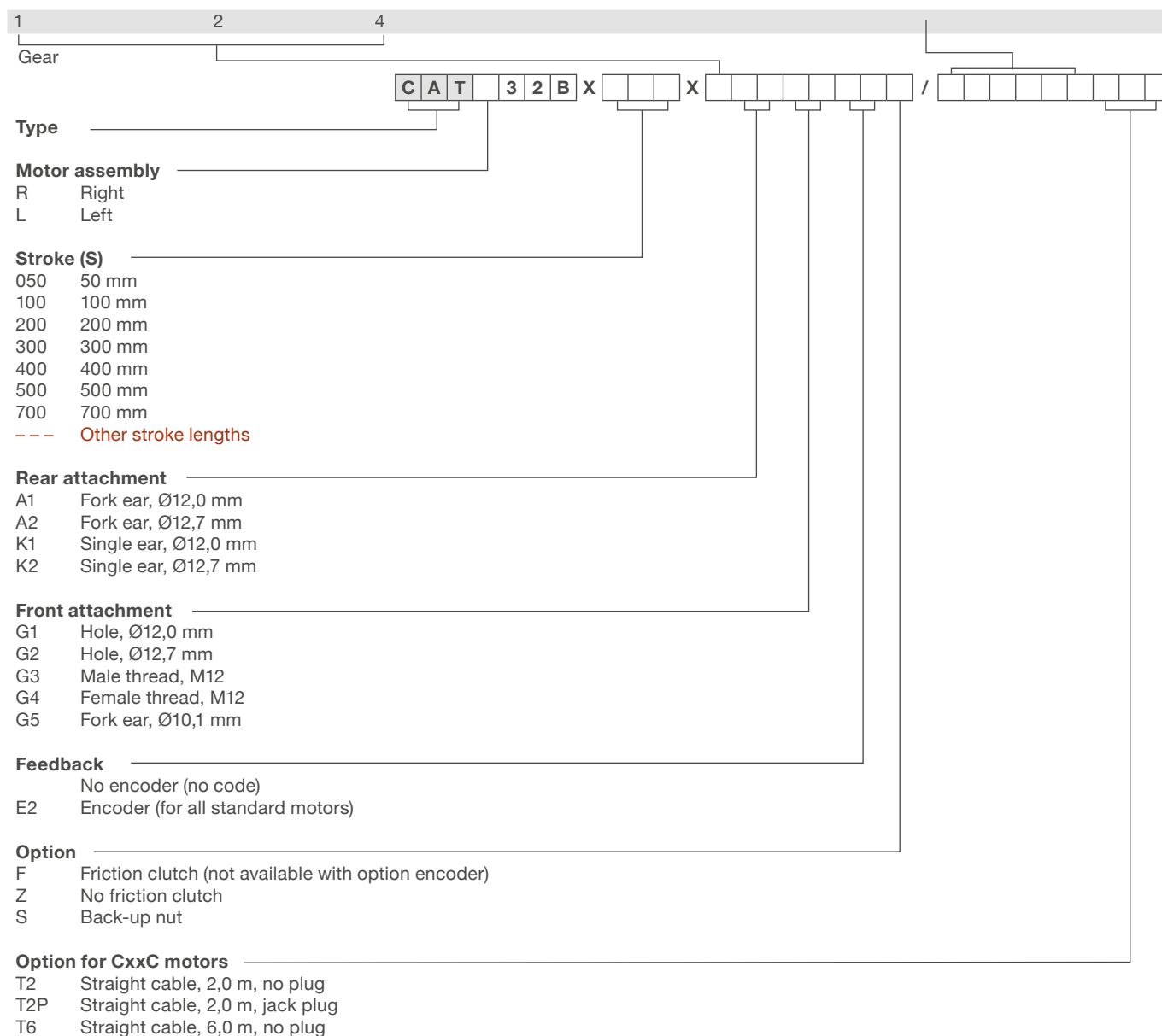
Item code	Type code	Order N°
12 V DC motor (cylindrical motor)	C12C	M/0405535
12 V DC motor (flat motor)	P12C	M/0405518-V01
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	P24C	M/0405519-V01
24 V DC motor (flat motor with brake)	P24CB	M/0405523-V01
24 V DC motor (flat motor with extended shaft)	P24CS	M/0405522-V01
24 V DC motor (flat motor with low speed)	P24CW	M/0405521-V01
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
400 V AC motor (cylindrical motor)	E380C	M/0411607
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670-16
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670-03
Limit switch for stroke = 50 mm	CAXE 32B × 50	M/0412070
Limit switch for stroke = 100 mm	CAXE 32B × 100	M/0412071
Limit switch for stroke = 200 mm	CAXE 32B × 200	M/0412073
Limit switch for stroke = 300 mm	CAXE 32B × 300	M/0412074
Limit switch for stroke = 400 mm	CAXE 32B × 400	M/0412075
Limit switch for stroke = 500 mm	CAXE 32B × 500	M/0412076
Limit switch for stroke = 700 mm	CAXE 32B × 700	M/0412077
Proximity switch for CAXE	CAXE Proximity switch	M/0432369
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32

CAP 43B – Type codes for accessories and spare parts

Item code	Type code	Order N°
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	P24C	M/0405519-V01
24 V DC motor (flat motor with low speed)	P24CW	M/0405521-V01
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32

Ordering key

Load [N] / Full Load Speed [mm/s]			Motor options	
4 000/xx	2 500/xx	1 500/xx	No motor	0000
3 000/17-11	2 000/34-19	1 000/67-43	12 V DC, flat motor, IP44	P12C
3 500/8	2 500/16	1 500/32	120 V AC/60 Hz, 1-phase, IP54	E110C
3 500/8	2 500/16	1 500/32	120 V AC/60 Hz, 1-phase, brake, IP20	E110CB
3 500/6,5	2 500/13	1 500/26	230 V AC/50 Hz, 1-phase, IP54	E220C
3 500/6,5	2 500/13	1 500/26	230 V AC/50 Hz, 1-phase, brake, IP20	E220CB
3 500/7	2 500/14	1 500/32	400 V AC/50 Hz, 3-phase, IP55	E380C
4 000/xx	2 500/xx	1 500/xx	No motor	0000
4 000/17-12	2 500/32-25	1 500/63-48	12 V DC, IP66	C12C
4 000/17-13	2 500/33-26	1 500/65-52	24 V DC, IP66	C24C
4 000/9-5	2 500/17-10	1 500/31-24	24 V DC, low speed motor, IP66	C24CW
4 000/16-12	2 500/33-22	1 500/65-44	24 V DC, flat motor, IP44	P24C
4 000/16-12	2 500/33-22	1 500/65-44	24 V DC, flat motor, brake, IP20	P24CB
4 000/16-12	2 500/33-22	1 500/65-44	24 V DC, flat motor, ext.shaft, IP44	P24CS
4 000/10-6	2 500/18-12	1 500/36-26	24 V DC, flat motor, low speed, IP44	P24CW



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

Ordering key

Load [N] / Full Load Speed [mm/s]			Motor options	
4 000/xx	2 500/xx	1 500/xx	No motor	0000
4 000/17-13	2 500/33-26	1 500/65-52	24 V DC, IP44	C24C
4 000/9-5	2 500/17-10	1 500/31-24	24 V DC, low speed, IP44	C24CW
4 000/17-11	2 500/34-19	1 500/66-38	24 V DC, flat motor, IP44	P24C
4 000/10-6	2 500/18-12	1 500/36-26	24 V DC, flat motor, low speed, IP44	P24CW

1	2	4
---	---	---

Gear

Type

Motor assembly

R Right
L Left

Stroke [S]

100 100 mm
200 200 mm
300 300 mm
400 400 mm
500 500 mm
700 700 mm

Rear attachment

A1 Fork ear, Ø12,0 mm
A2 Fork ear, Ø12,7 mm
K1 Single ear, Ø12,0 mm
K2 Single ear, Ø12,7 mm

Front attachment

G1 Hole, Ø12,0 mm
G2 Hole, Ø12,7 mm
G3 Male thread, M12
G4 Female thread, M12
G5 Fork ear, Ø10,1 mm

Option

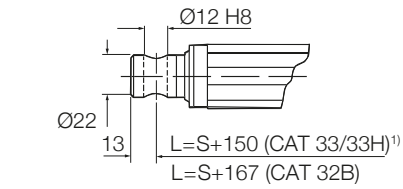
F Friction clutch
S Back-up nut

Cable option for C24C[W] motors

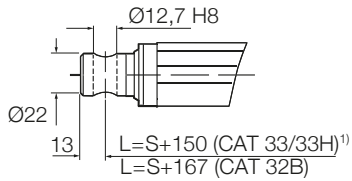
T2 Straight, 2,0 m
T6 Straight cable, 6,0 m, no plug

Detailed drawings of front and rear attachments for CAT and CAP 43 and motor options for CAT

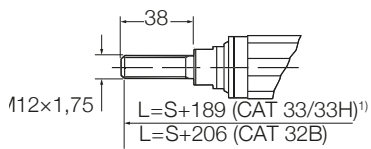
Front attachments and retracted length



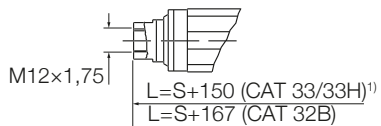
G1



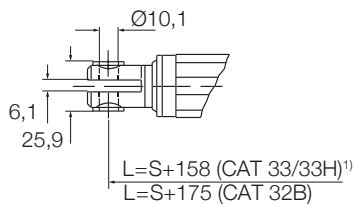
G2



G3

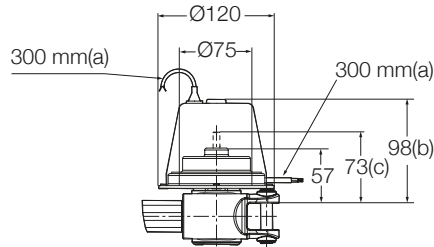


G4

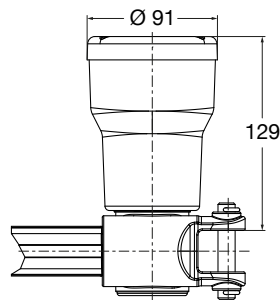


G5

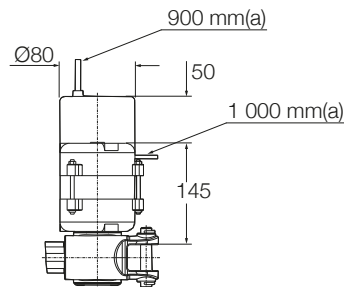
Motor options for CAT



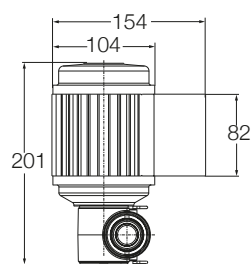
P12C, P24C, P24CB, P24CS, P24CW



C12XX/C24XX

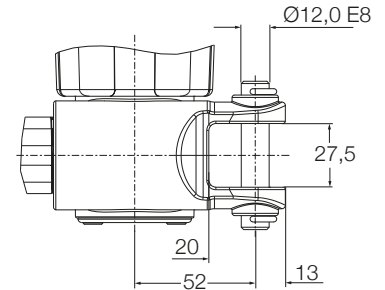


E110C, E110CB, E220C, E220CB

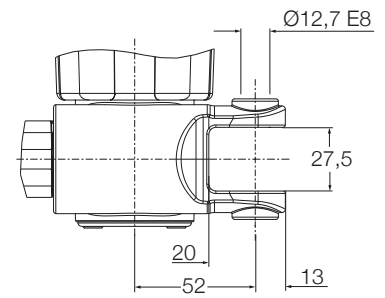


E380C

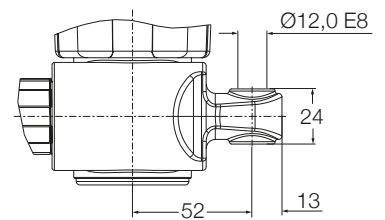
Rear attachments



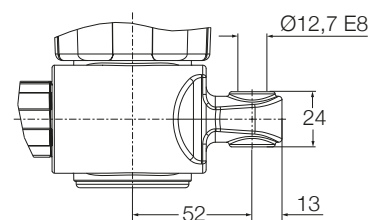
A1



A2



K1



K2

Legend:

S = stroke

L = retracted length

(a) = cable length

(b) = cover for brake

(c) = extended shaft

¹⁾ If S = 400, add 50 mm to retracted length.

CAT 33 and CAP 43A

Linear actuator

Benefits

- Small
- Robust
- Highly efficient
- Lubricated for service life
- Digital encoder feedback



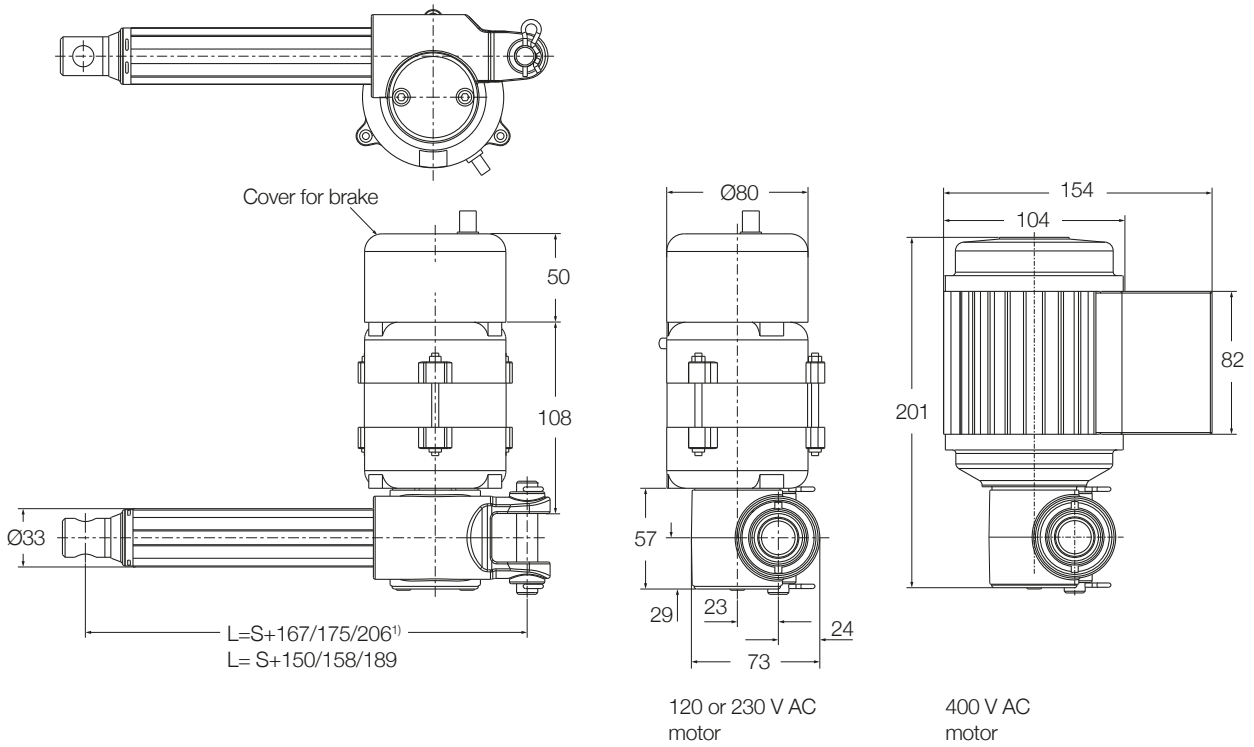
Technical data

	Unit	CAT 33 - AC version	CAT 33 - DC version	CAP 43A
Rated push load	N	800 to 3 000	800 to 3 000	1 000 to 3 000
Rated pull load	N	800 to 3 000	800 to 3 000	1 000 to 3 000
Speed (at full load)	mm/s	5 to 24 ¹⁾	6 to 66 ¹⁾	6 to 66 ¹⁾
Stroke	mm	100 to 400	100 to 400	100 to 400
Retracted length	mm	S+150/158/189 ²⁾	S+150/158/189 ²⁾	S+150/158/189 ²⁾
Voltage	V AC	120, 230 or 400	–	–
	V DC	–	12 or 24	24
Power consumption	120 V AC	W	98 (brake 133,2 W)	–
	230 V AC	W	92 (brake 117,3 W)	–
	400 V AC	W	80	–
	12 or 24 V DC	W	–	N/A
Current consumption	120 V AC	A	0,82 (brake +0,29 A)	–
	230 V AC	A	0,4 (brake + 0,11 A)	–
	400 V AC	A	0,2	–
	12 V DC	A	–	18
	24 V DC	A	–	9
	24 V DC	A	–	5 (for motors C24CW and P24CW)
Duty cycle	%	30	15	15
Ambient temperature	°C	–20 to +50	–20 to +50	–20 to +50
Degree of protection	IP	20/54/55	20/44/66 ¹⁾	44
Weight	kg	2 to 2,7	2 to 2,7	2,0 to 2,7

¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

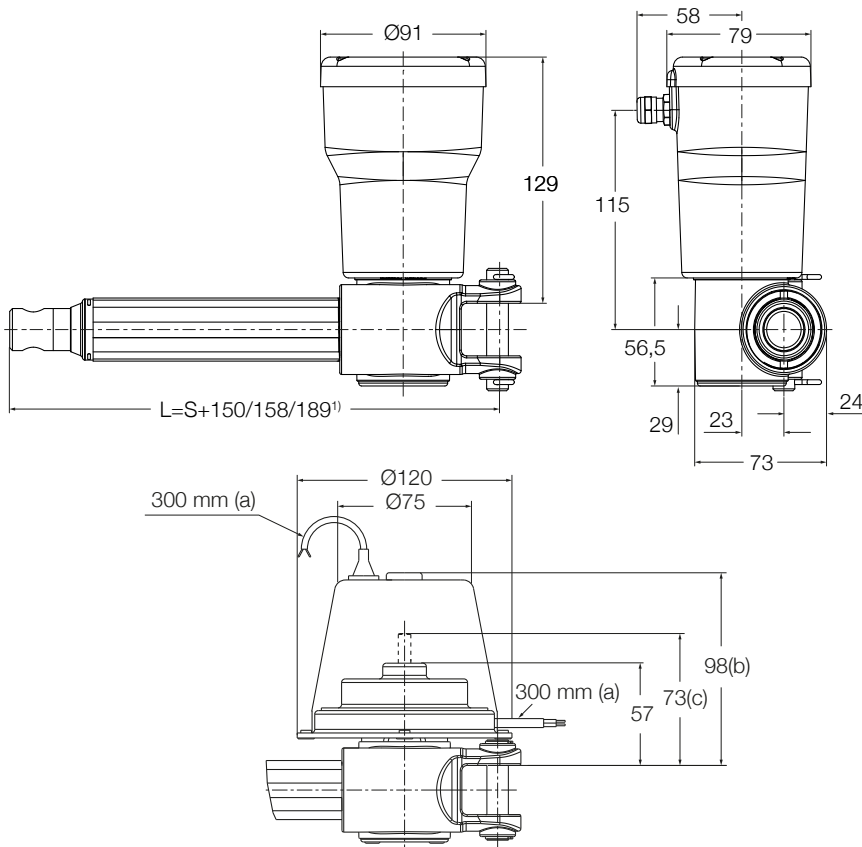
Dimensional drawing – CAT 33 AC version



Legend:
 S = stroke
 L = retracted length

¹⁾ Dimension depends on selected front attachment

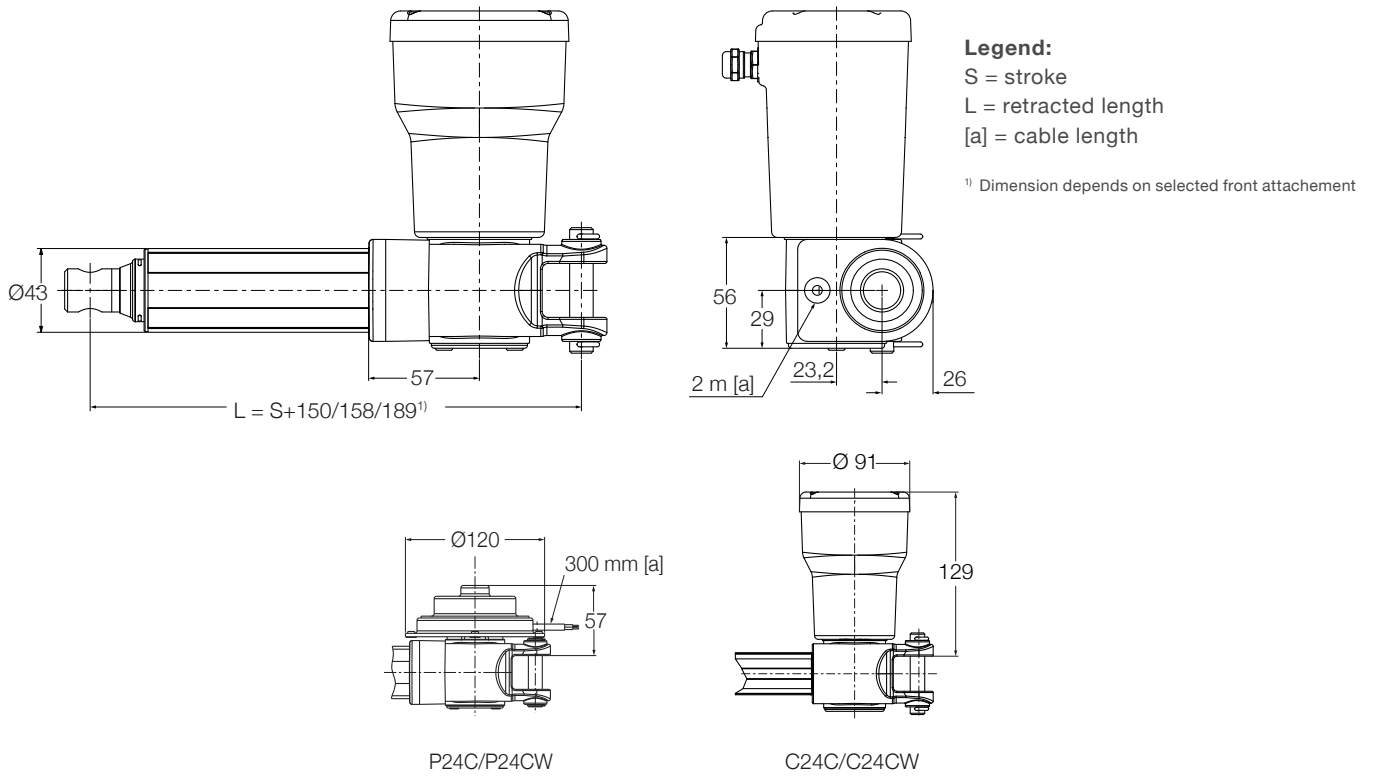
Dimensional drawing – CAT 33 DC version



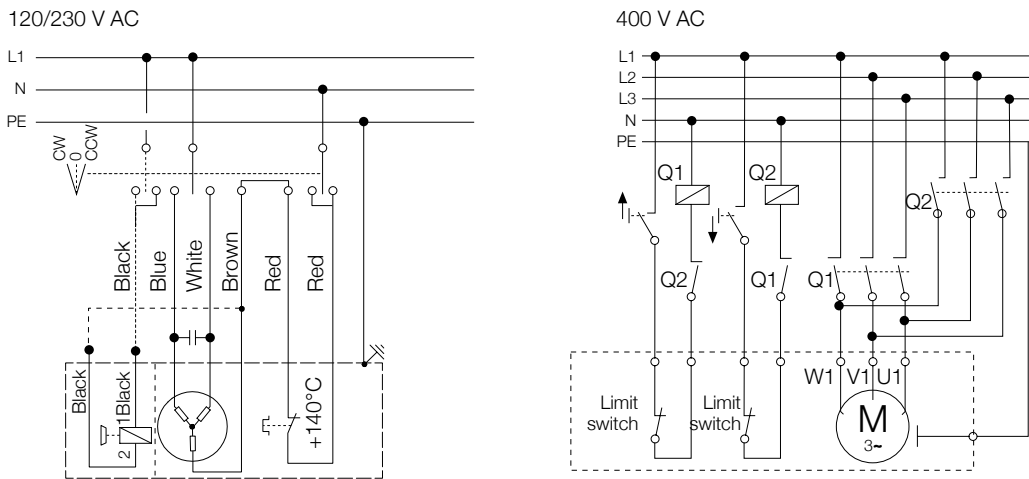
Legend:
 S = stroke
 L = retracted length
 (a) = cable length
 (b) = cover for brake (P24CB)
 (c) = extended shaft (P24CS)

¹⁾ Dimension depends on selected front attachment

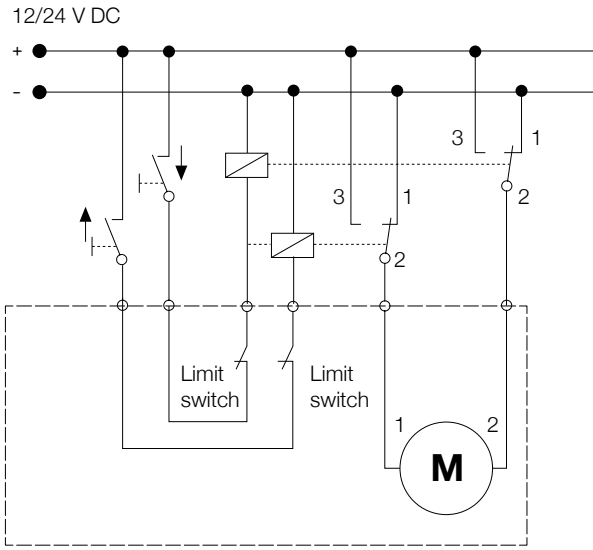
Dimensional drawing – CAP 43A



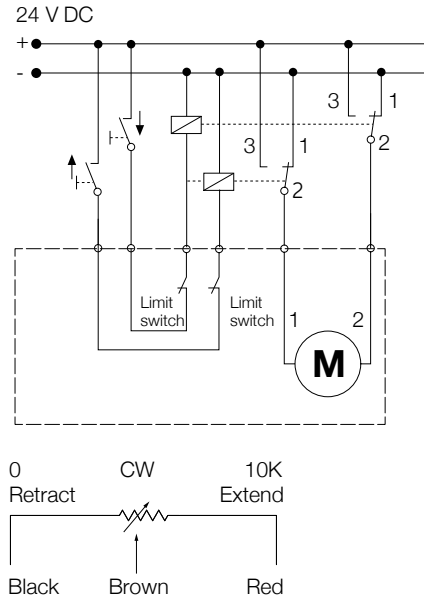
Connecting diagrams – CAT 33 AC version



Connecting diagrams – CAT 33 DC version



Connecting diagrams – CAP 43A



Connection diagram for linear potentiometer

Suitable control units and accessories AC version

	Limit switch	Encoder
	CAXD33	E2
E110C	•	•
E110CB	•	•
E220C	•	•
E220CB	•	•
E380C	•	•

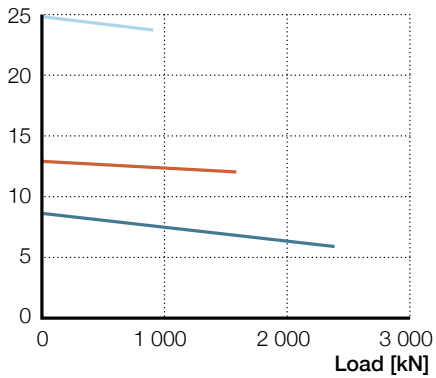
Suitable control units and accessories DC version

	Encoder
	E2
C12C	•
P12C	•
C24C	•
C24CW	•
P24C	•
P24CB	•
P24CS	•
P24CW	•

Performance diagrams – AC version

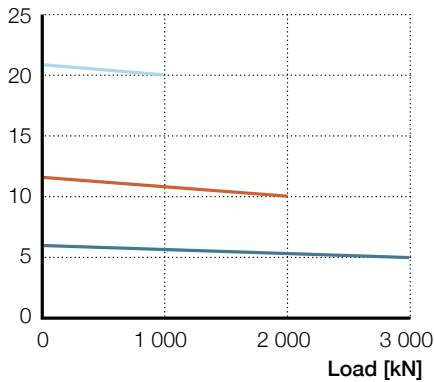
Speed-load diagram CAT 33 ... 120 V AC

Speed [mm/s]



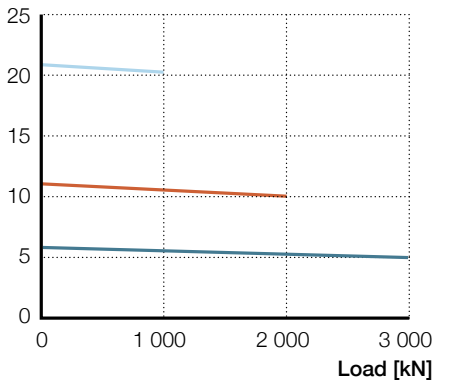
Speed-load diagram CAT 33 ... 230 V AC

Speed [mm/s]



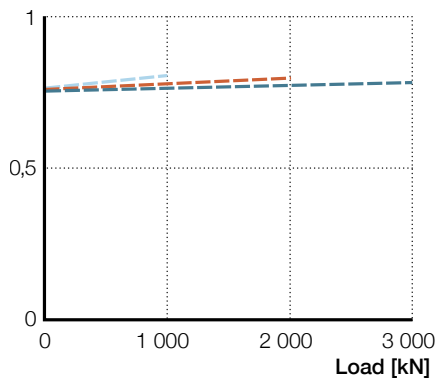
Speed-load diagram CAT 33 ... 400 V AC

Speed [mm/s]



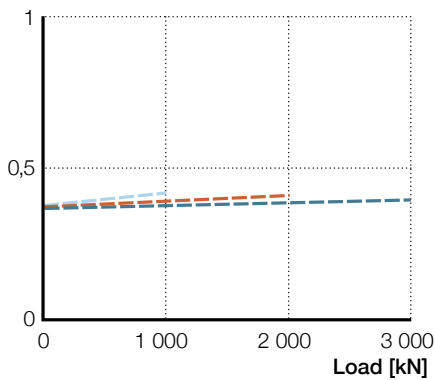
Current-load diagram CAT 33 ... 120 V AC

Current consumption [A]



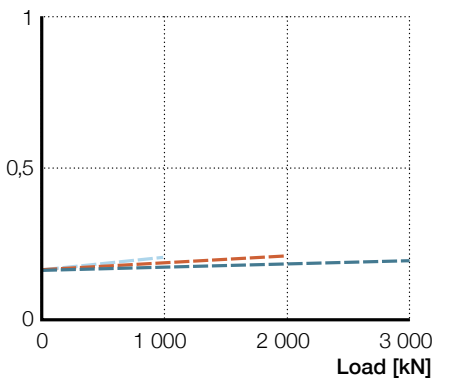
Current-load diagram CAT 33 ... 230 V AC

Current consumption [A]



Current-load diagram CAT 33 ... 400 V AC

Current consumption [A]



Gear 1 — V (mm/s) — I (A)

Gear 2 — V (mm/s) — I (A)

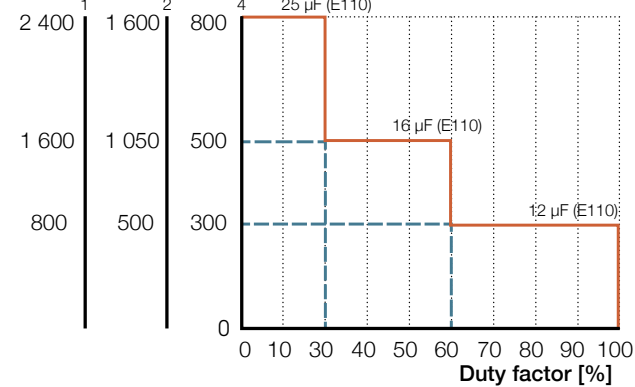
Gear 4 — V (mm/s) — I (A)

*There may be deviations of +/-10% from the values in the chart.

Duty cycle

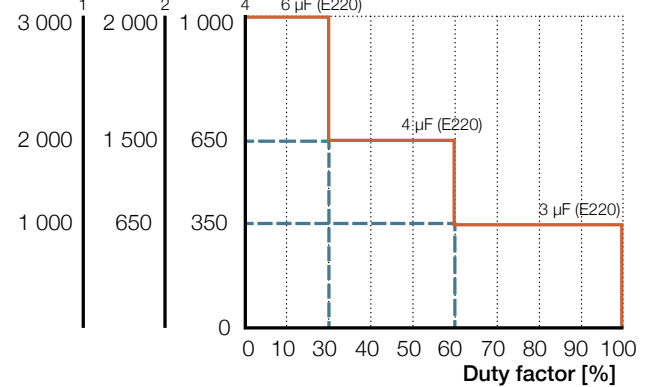
CAT 33 ... 120 V AC

F [N] Gear



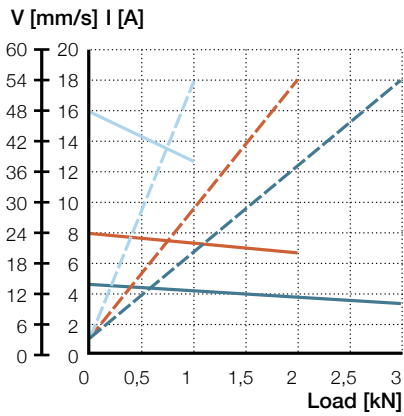
CAT 33 ... 230 V AC

F [N] Gear

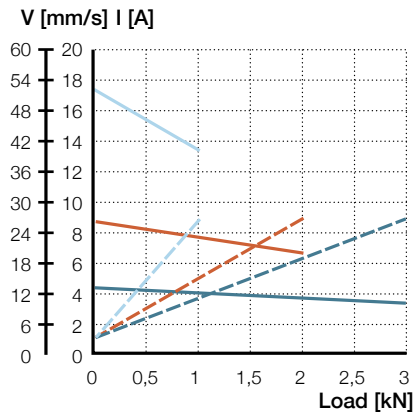


Performance diagrams – DC version

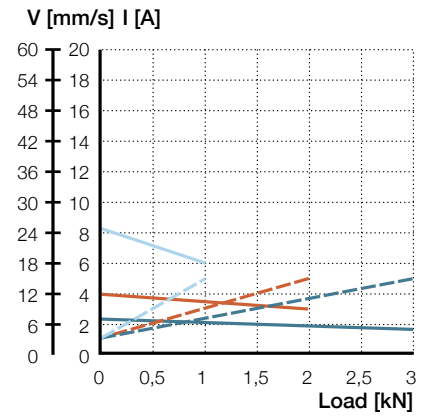
CAT 33.../C12C



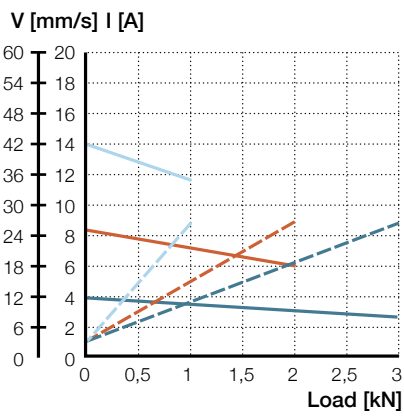
CAT 33.../C24C
CAP 43A.../C24C



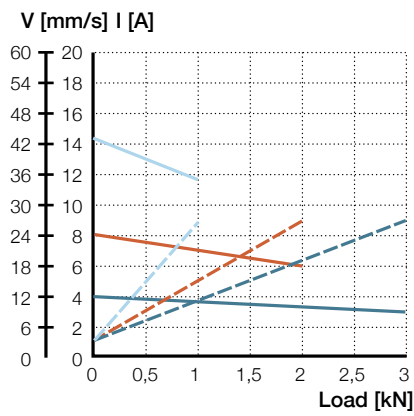
CAT 33.../C24CW
CAP 43A.../C24CW



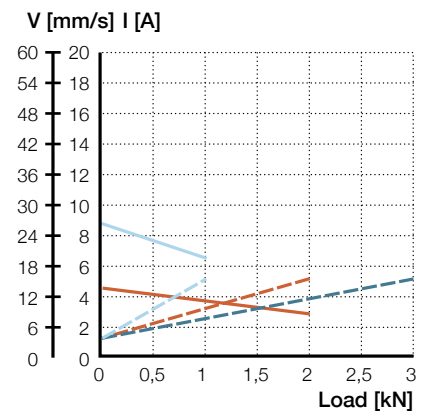
CAT 33.../P12C



CAT 33.../P24C/P24CB/P24CS
CAP 43A.../P24C



CAT 33.../P24CW
CAP 43A.../P24CW



Gear 1 — V (mm/s) — I (A)

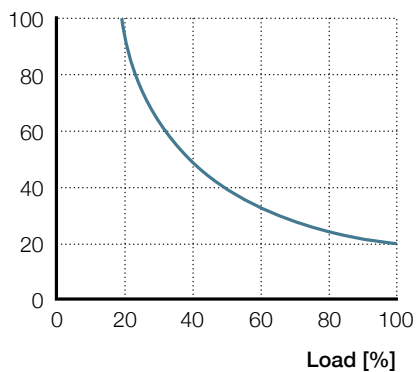
Gear 2 — V (mm/s) — I (A)

Gear 4 — V (mm/s) — I (A)

*There may be deviations of +/-10% from the values in the chart.

Duty cycle – DC version

Duty factor [%] at 20 °C



CAT 33 – Type codes for accessories and spare parts

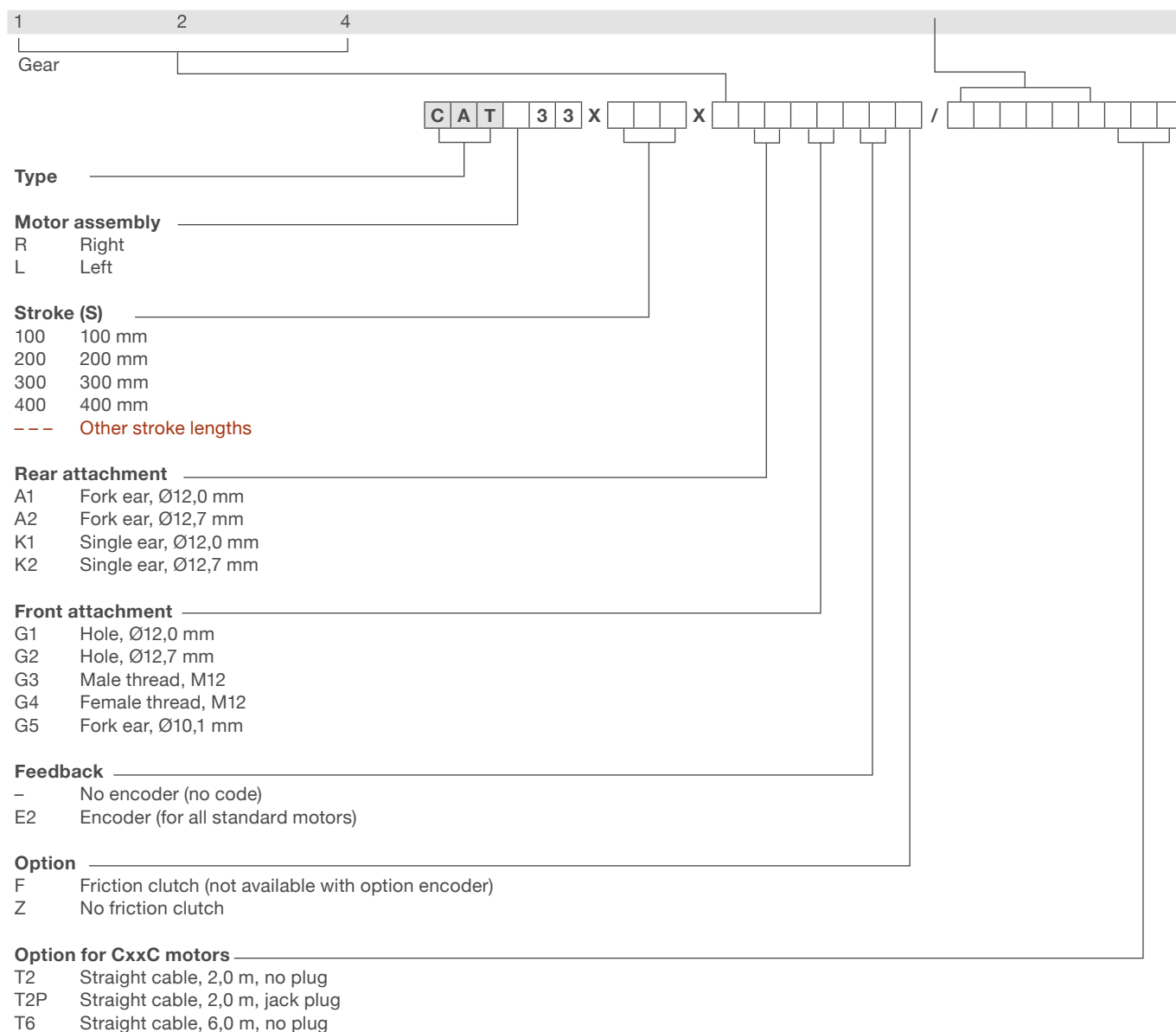
Item code	Type code	Order N°
12 V DC motor (cylindrical motor)	C12C	M/0405535
12 V DC motor (flat motor)	P12C	M/0405518-V01
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	P24C	M/0405519-V01
24 V DC motor (flat motor with brake)	P24CB	M/0405523-V01
24 V DC motor (flat motor with extended shaft)	P24CS	M/0405522-V01
24 V DC motor (flat motor with low speed)	P24CW	M/0405521-V01
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
400 V AC motor (cylindrical motor)	E380C	M/0411607
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670-16
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670-03
Limit switch for any stroke, normally closed	CAXD33, NC	M/0440054
Limit switch for any stroke, normally open	CAXD33, NO	M/0440053
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32

CAP 43A – Type codes for accessories and spare parts

Item code	Type code	Order N°
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	P24C	M/0405519-V01
24 V DC motor (flat motor with low speed)	P24CW	M/0405521-V01
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32

Ordering key

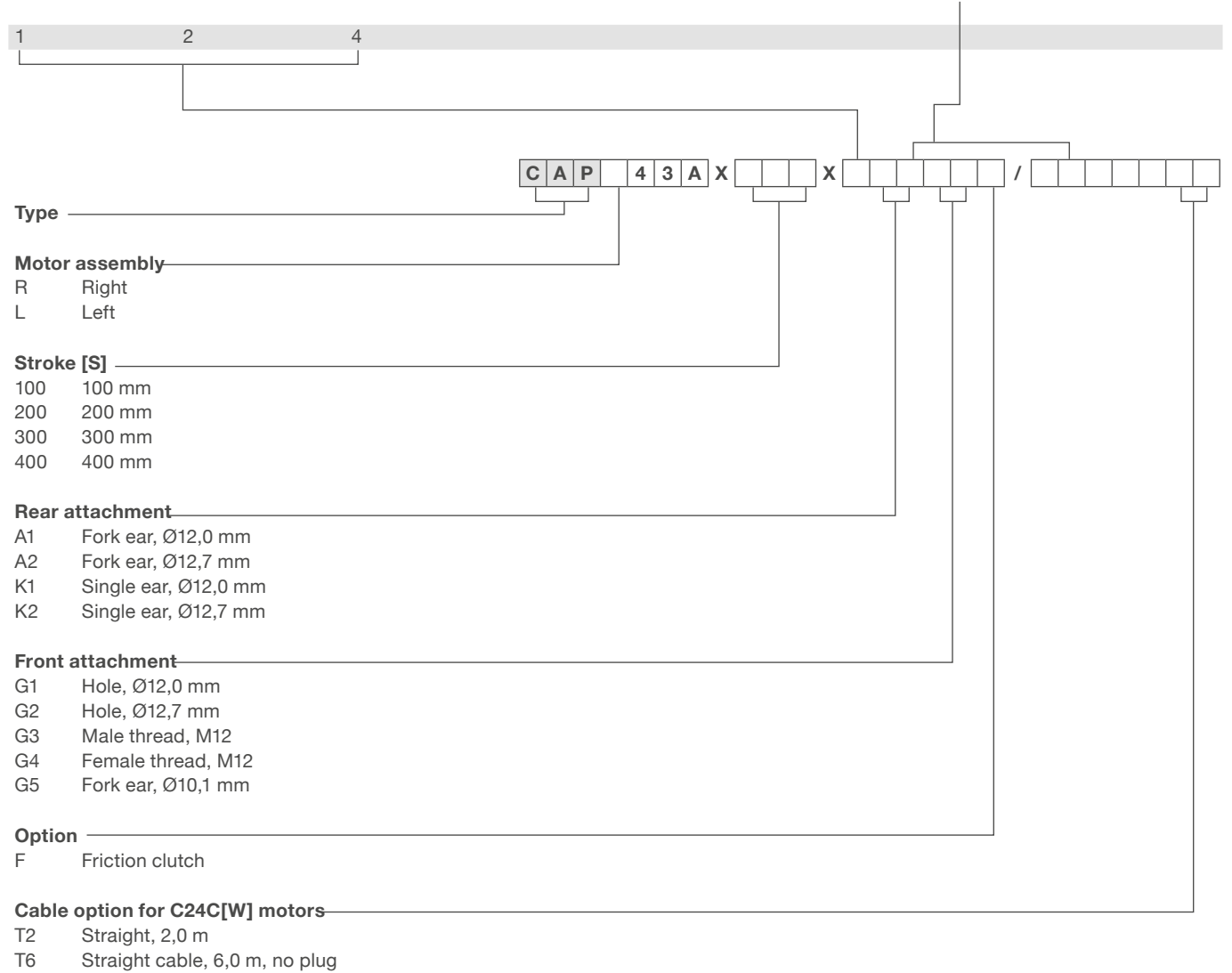
Load [N] / Full Load Speed [mm/s]			Motor options	
3 000/xx	2 000/xx	1 000/xx	No motor	0000
2 400/6	1 600/12	800/24	120 V AC/60 Hz, 1-phase, IP54	E110C
2 400/6	1 600/12	800/24	120 V AC/60 Hz, 1-phase, brake, IP20	E110CB
3 000/5	2 000/10	1 000/20	230 V AC/50 Hz, 1-phase, IP54	E220C
3 000/5	2 000/10	1 000/20	230 V AC/50 Hz, 1-phase, brake, IP20	E220CB
3 000/5	2 000/10	1 000/20	400 V AC/50 Hz, 3-phase, IP55	E380C
3 000/xx	2 000/xx	1 000/xx	No motor	0000
3 000/13-10	2 000/24-20	1 000/48-38	12 V DC, IP66	C12C
2 400/ 11-7	1 600/21-15	800/39-21	12 V DC, flat motor, IP44	P12C
3 000/13-10	2 000/26-20	1 000/52-40	24 V DC, IP66	C24C
3 000/7-5	2 000/13-9	1 000/25-18	24 V DC, low speed, IP66	C24CW
3 000/17-11	2 000/34-19	1 000/66-38	24 V DC, flat motor, IP44	P24C
3 000/12-9	2 000/25-18	1 000/43-35	24 V DC, flat motor, brake, IP20	P24CB
3 000/17-11	2 000/34-19	1 000/66-38	24 V DC, flat motor, IP44, ext. shaft	P24CS
3 000/10-16	2 000/18-12	1 000/36-26	24 V DC, flat motor, low speed, IP44	P24CW



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

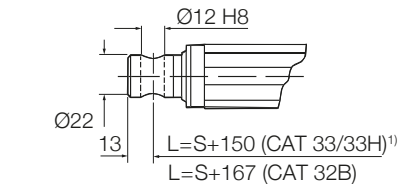
Ordering key

Load [N] / Full Load Speed [mm/s]			Motor options	
3 000/xx	2 000/xx	1 000/xx	No motor	0000
3 000/13-10	2 000/26-20	1 000/52-40	24 VDC, IP44	C24C
3 000/7-5	2 000/13-9	1 000/25-18	24 VDC, IP44	C24CW
3 000/17-11	2 000/34-19	1 000/66-38	24 VDC, flat motor, IP44	P24C
3 000/7-5	2 000/13-8	1 000/26-19	24 VDC, flat motor, low speed, IP44	C24CW

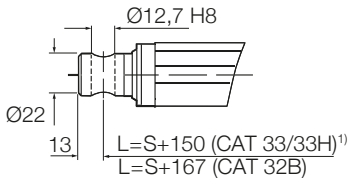


Detailed drawings of front and rear attachments for CAT and CAP 43 and motor options for CAT

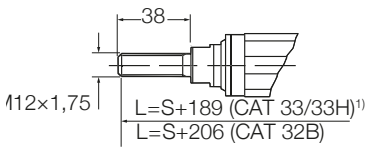
Front attachments and retracted length



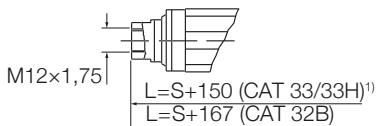
G1



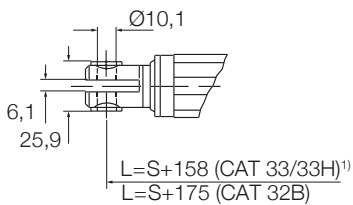
G2



G3



G4



G5

Legend:

S = stroke

L = retracted length

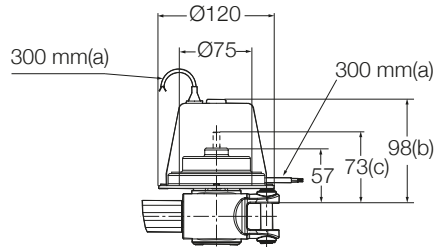
(a) = cable length

(b) = cover for brake

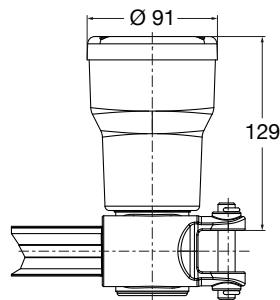
(c) = extended shaft

¹⁾ If S = 400, add 50 mm to retracted length.

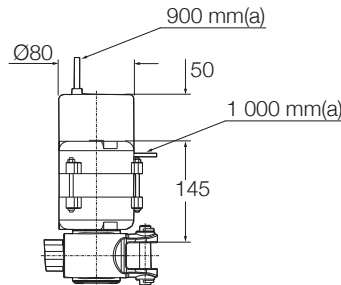
Motor options for CAT



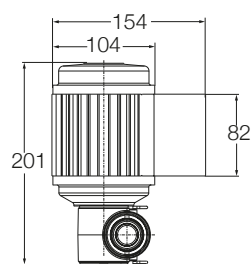
P12C, P24C, P24CB, P24CS, P24CW



C12XX/C24XX

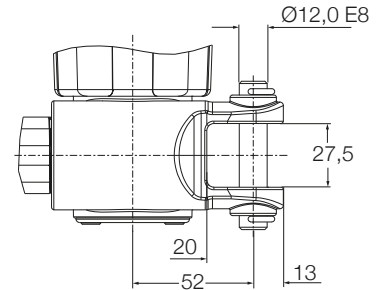


E110C, E110CB, E220C, E220CB

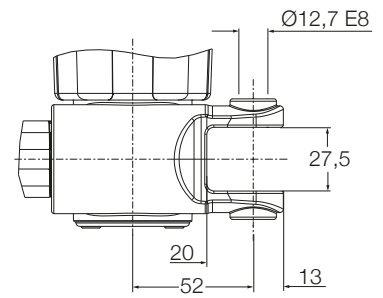


E380C

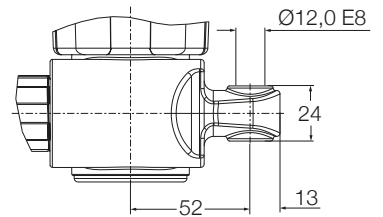
Rear attachments



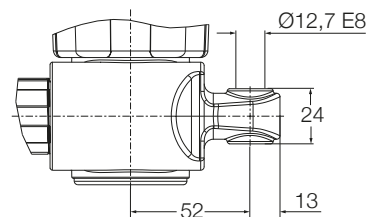
A1



A2



K1



K2

CAT 33H

Linear actuator

Benefits

- Compact
- Robust
- Modular
- Lubricated for service life
- High efficiency
- Digital encoder feedback



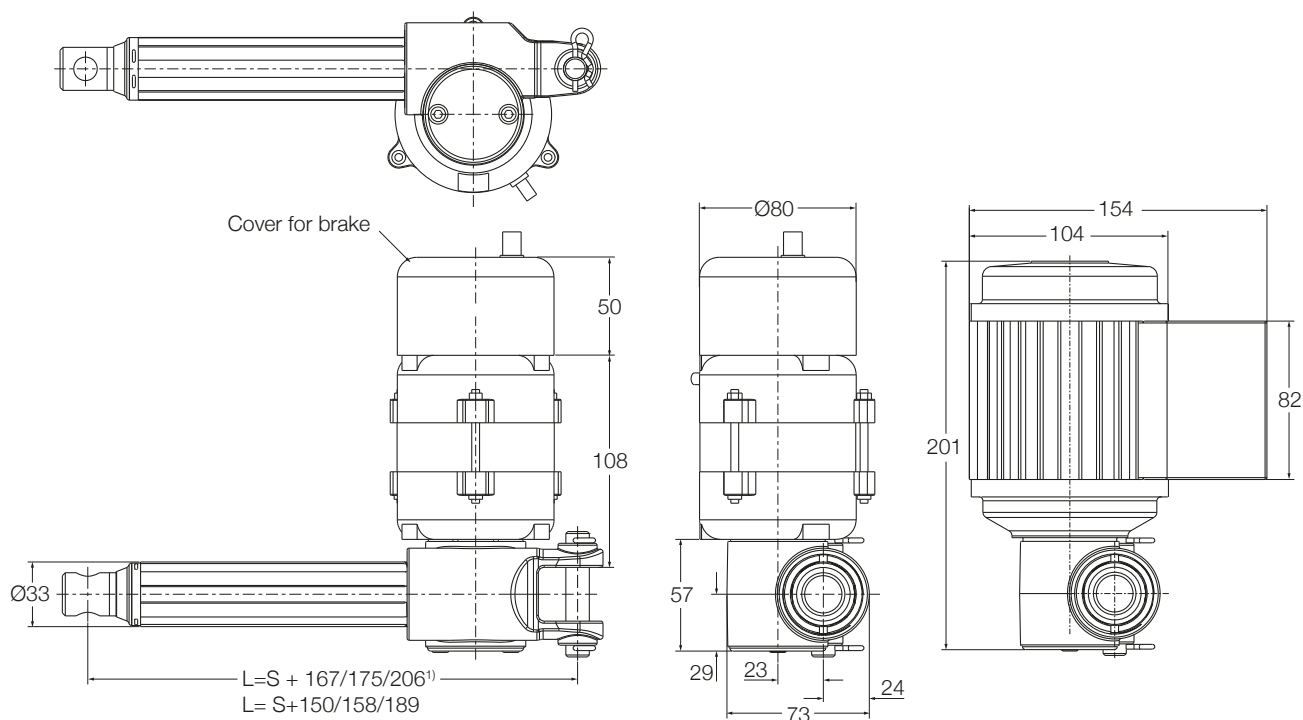
Technical data

	Unit	CAT 33H – AC version	CAT 33H – DC version
Rated push load	N	500 to 1 200	400 to 1 200
Rated pull load	N	500 to 1 200	400 to 1 200
Speed (at full load)	mm/s	20 to 90 ¹⁾	17 to 193 ¹⁾
Stroke	mm	100 to 400	100 to 400
Retracted length	mm	S+150/158/189 ²⁾	S+150/158/189 ²⁾
Voltage	V AC	120, 230 or 400	–
	V DC	–	12 or 24
Power consumption	120 V AC	W	98 (brake 133,2 W)
	230 V AC	W	92 (brake 117,3 W)
	400 V AC	W	80
	12 or 24 V DC	W	–
Current consumption	120 V AC	A	0,82 (brake +0,29 A)
	230 V AC	A	0,4 (brake +0,11 A)
	400 V AC	A	0,2
	12 V DC	A	–
	24 V DC	A	18
	24 V DC	A	9
			5 (for motors C24CW and P24CW)
Duty cycle	%	30	20
Ambient temperature	°C	–20 to +50	–20 to +50
Degree of protection	IP	20/54/55	20/44/66 ¹⁾
Weight	kg	2 to 2,7	2 to 2,7

¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

Dimensional drawing – AC version



120 or 230 V AC motor

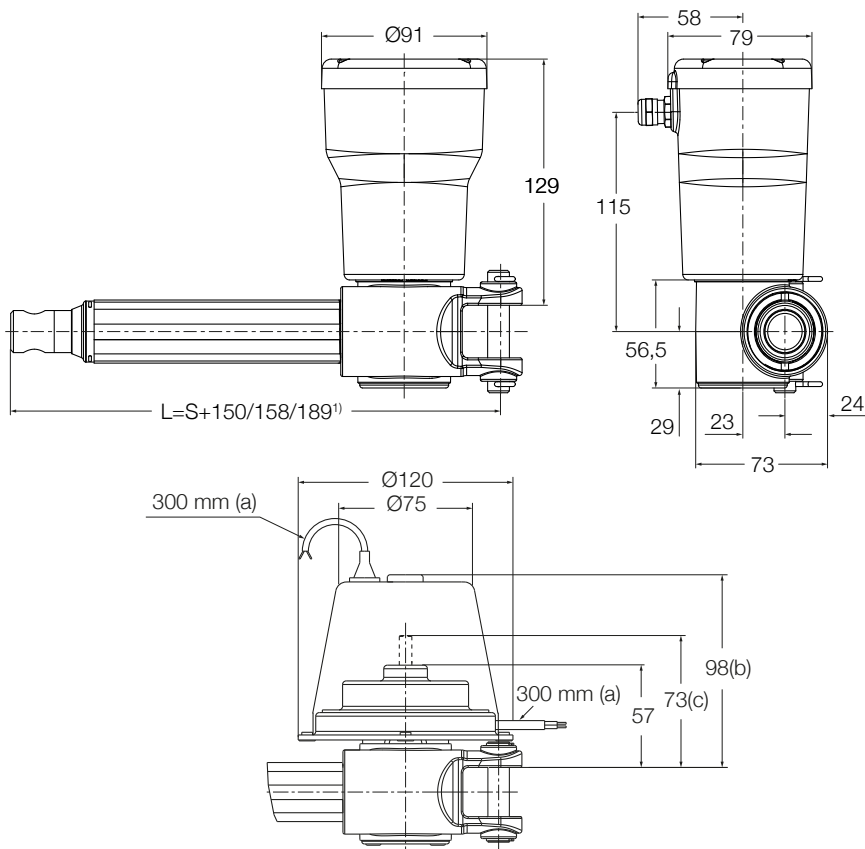
Legend:

S = stroke

L = retracted length

¹⁾ Dimension depends on selected front attachment

Dimensional drawing – DC version



Legend:

S = stroke

L = retracted length

(a) = cable length

(b) = cover for brake (P24CB)

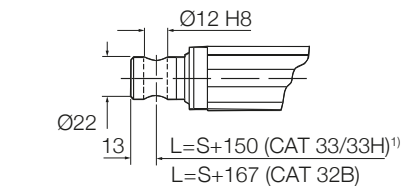
(c) = extended shaft (P24CS)

¹⁾ Dimension depends on selected front attachment

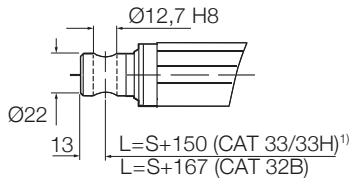
P12C, P24C, P24CB, P24CS, P24CW

Detailed drawings of front and rear attachments for CAT and CAP 43 and motor options for CAT

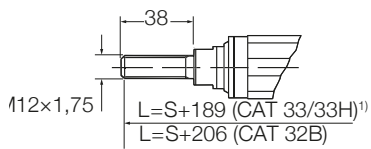
Front attachments and retracted length



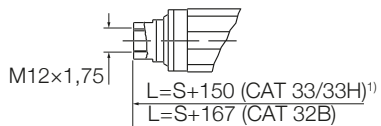
G1



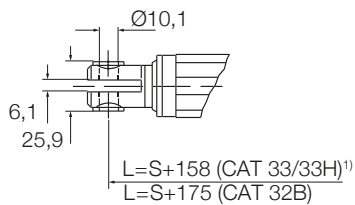
G2



G3

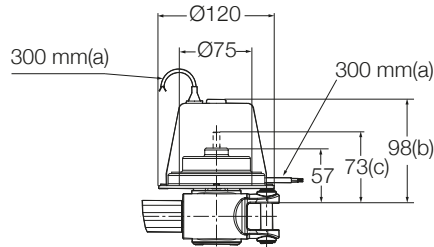


G4

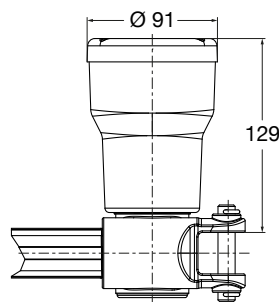


G5

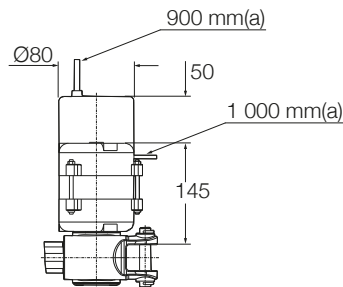
Motor options for CAT



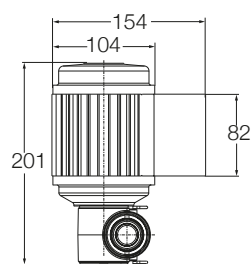
P12C, P24C, P24CB, P24CS, P24CW



C12XX/C24XX

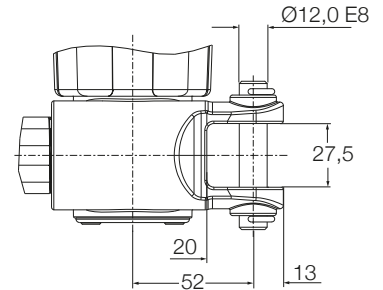


E110C, E110CB, E220C, E220CB

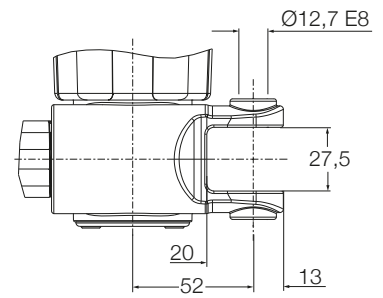


E380C

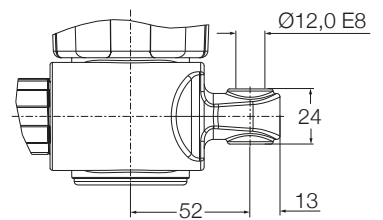
Rear attachments



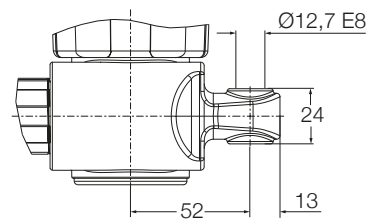
A1



A2



K1



K2

Legend:

S = stroke

L = retracted length

(a) = cable length

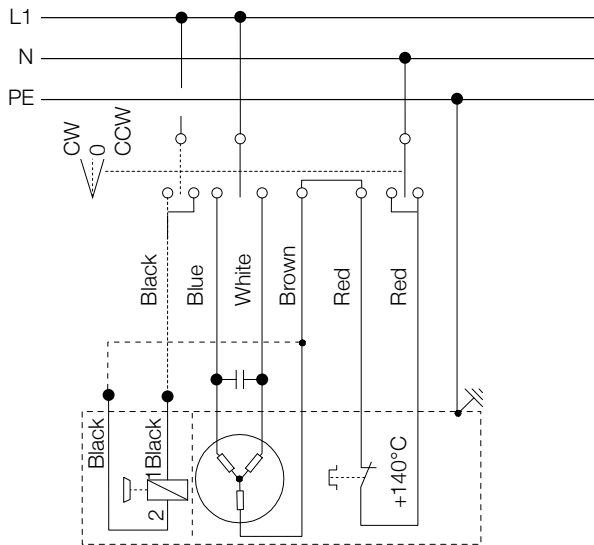
(b) = cover for brake

(c) = extended shaft

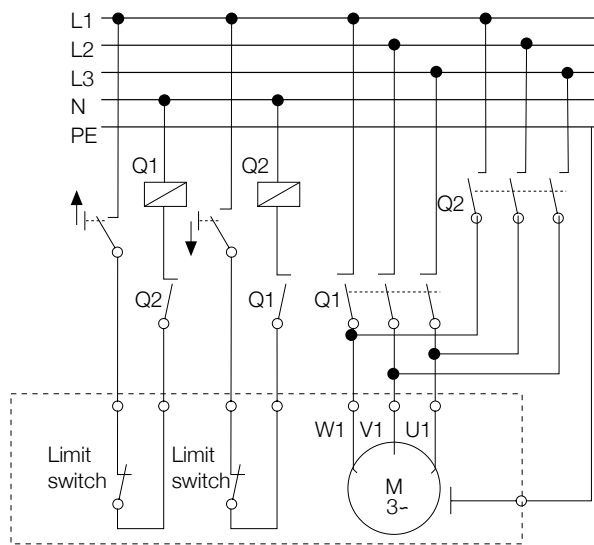
¹⁾ If S = 400, add 50 mm to retracted length.

Connecting diagrams – AC version

120/230 V AC

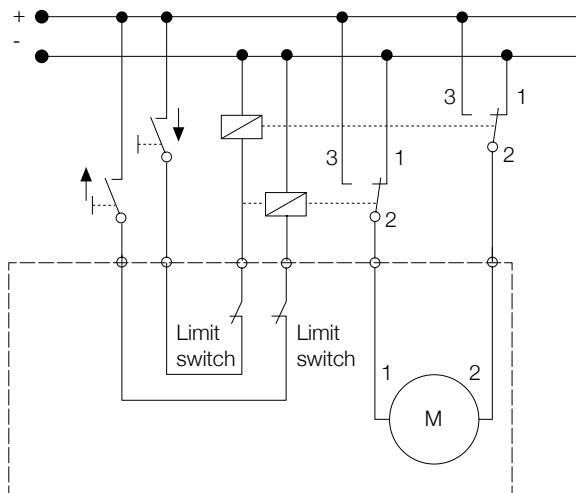


400 V AC



Connecting diagrams – DC version

12/24 V DC



**Suitable control units and accessories
AC version**

	Encoder
	E2
E110C	•
E110CB	•
E220C	•
E220CB	•
E380C	•

**Suitable control units and accessories
DC version**

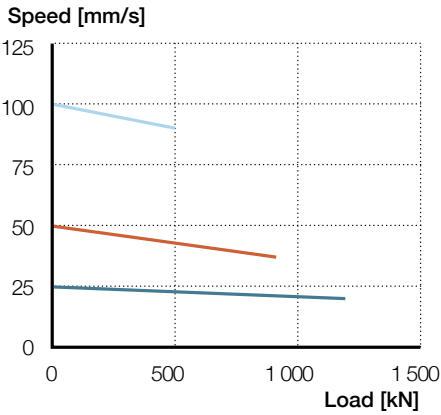
	Encoder
	E2
C12C	•
P12C	•
C24C	•
C24CW	•
P24C	•
P24CB	•
P24CS	•
P24CW	•

CAT 33H – Type codes for accessories and spare parts

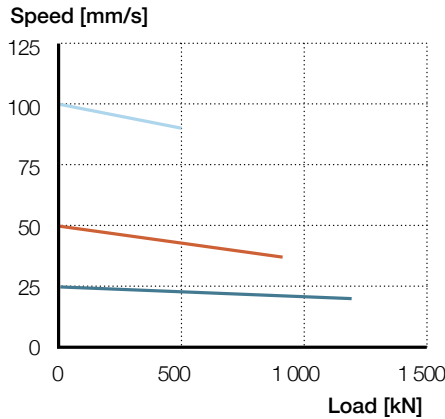
Item code	Type code	Order N°
12 V DC motor (cylindrical motor)	C12C	M/0405535
12 V DC motor (flat motor)	P24C	M/0405518-V01
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	P24C	M/0405519-V01
24 V DC motor (flat motor with brake)	P24CB	M/0405523-V01
24 V DC motor (flat motor with extended shaft)	P24CS	M/0405522-V01
24 V DC motor (flat motor with low speed)	P24CW	M/0405521-V01
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
400 V AC motor (cylindrical motor)	E380C	M/0411607
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670-16
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670-03
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32

Performance diagrams – AC version

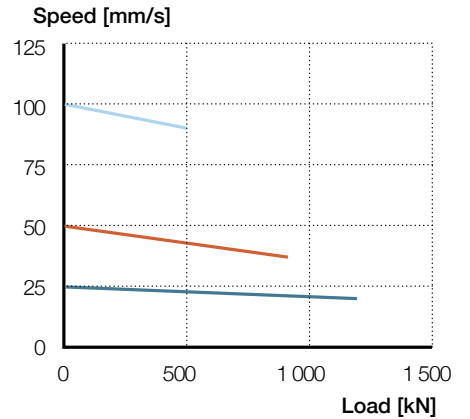
Speed-load diagram CAT 33H ... 120 V AC



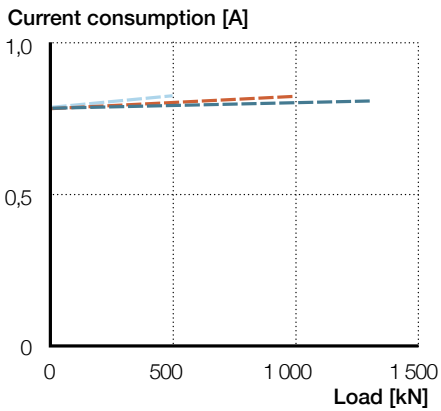
Speed-load diagram CAT 33H ... 230 V AC



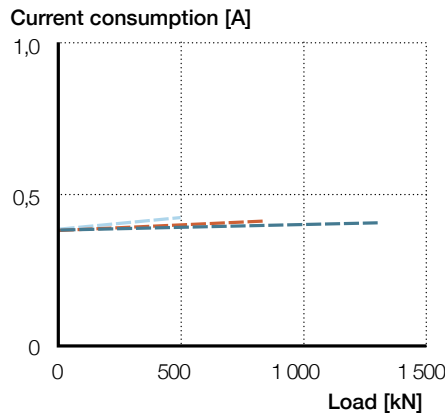
Speed-load diagram CAT 33H ... 400 V AC



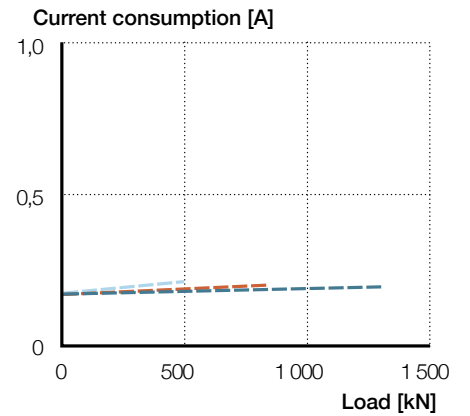
Current-load diagram CAT 33H ... 120 V AC



Current-load diagram CAT 33H ... 230 V AC



Current-load diagram CAT 33H ... 400 V AC



Gear 1 — V (mm/s) — I (A)

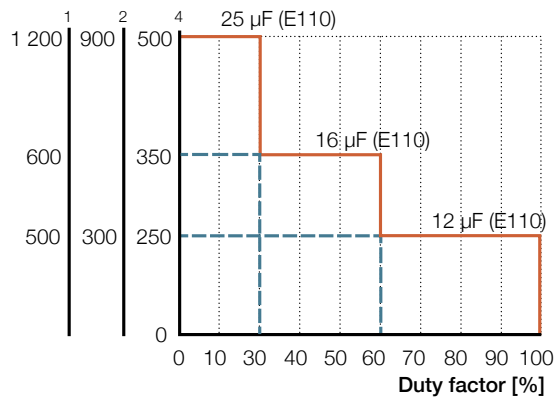
Gear 2 — V (mm/s) — I (A)

Gear 4 — V (mm/s) — I (A)

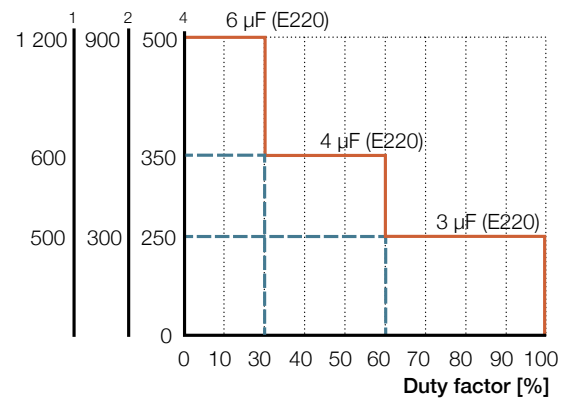
*There may be deviations of +/-10% from the values in the chart.

Duty cycle

F [N] Gear

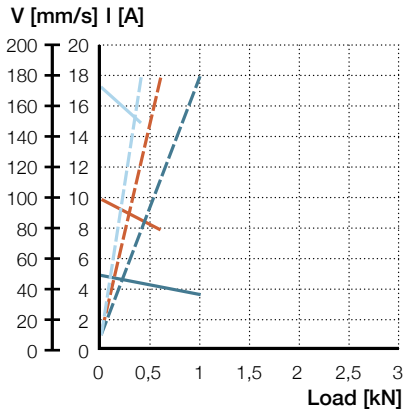


F [N] Gear

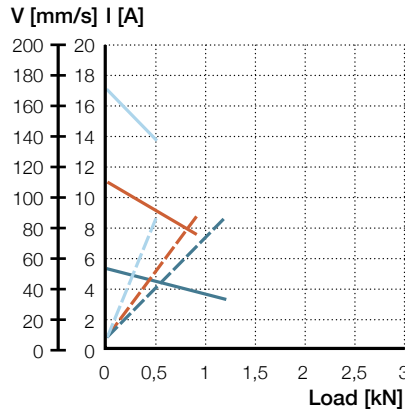


Performance diagrams – DC version

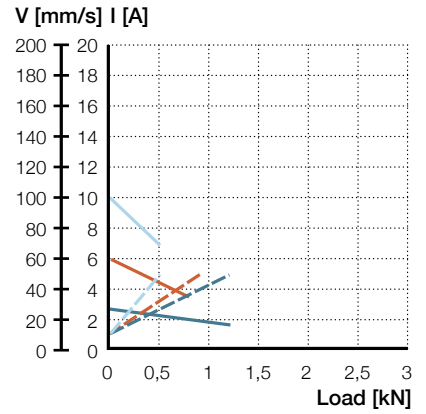
CAT 33H.../C12C



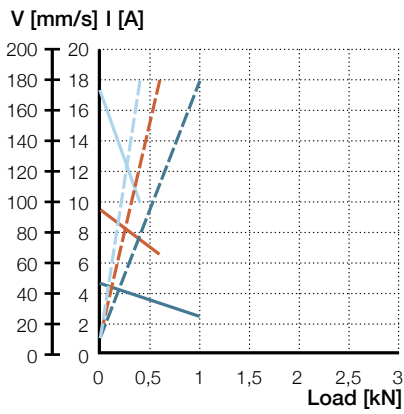
CAT 33H.../C24C



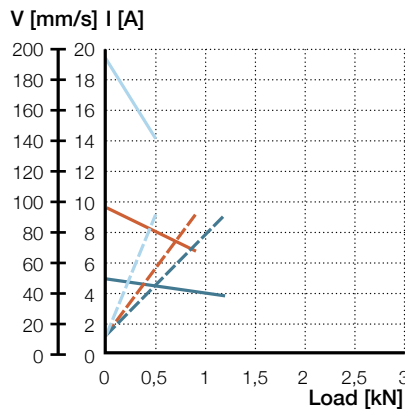
CAT 33H.../C24CW



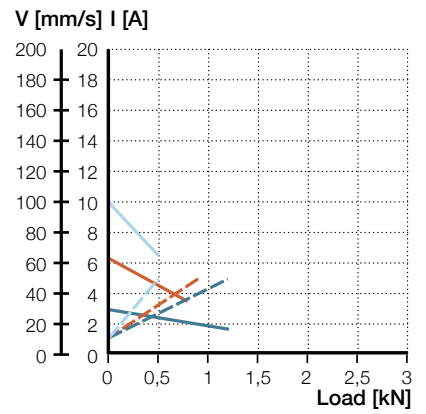
CAT 33H.../P12C



CAT 33H.../P24C/P24CB/P24CS



CAT 33H.../P24CW



Gear 1 — V (mm/s) - - I (A)

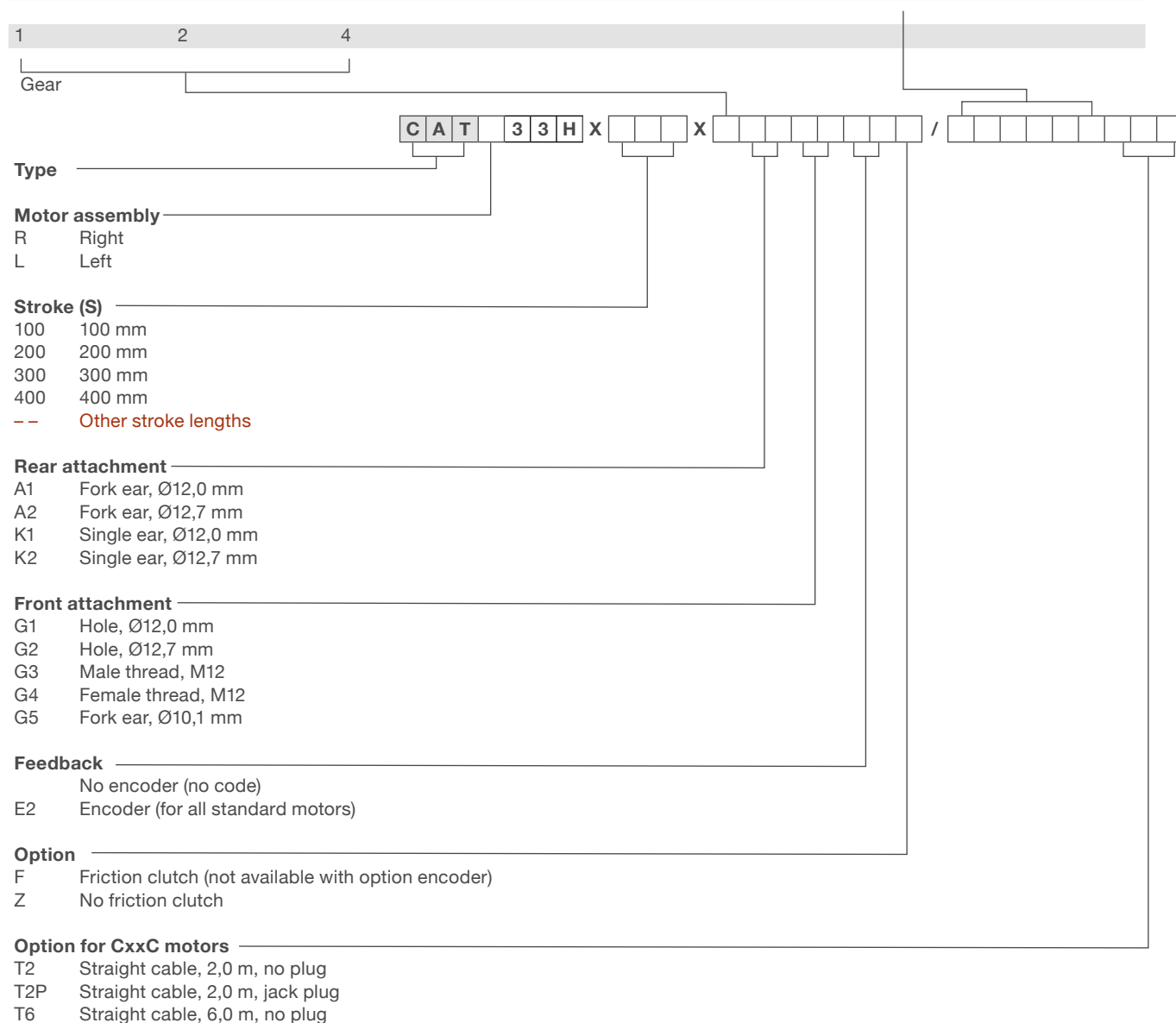
Gear 2 — V (mm/s) - - I (A)

Gear 4 — V (mm/s) - - I (A)

*There may be deviations of +/-10% from the values in the chart.

Ordering key

Load [N] / Full Load Speed [mm/s]			Motor options	
1 200/xx	900/xx	600/xx	No motor	0000
1 200/20	900/37	500/90	120 V AC/60 Hz, 1-phase, IP54	E110C
1 200/20	900/37	500/90	120 V AC/60 Hz, 1-phase, brake, IP20	E110CB
1 200/20	900/37	500/90	230 V AC/50 Hz, 1-phase, IP54	E220C
1 200/20	900/37	500/90	230 V AC/50 Hz, 1-phase, brake, IP20	E220CB
1 200/20	900/37	500/90	400 V AC/50 Hz, 3-phase, IP55	E380C
1 200/xx	900/xx	600/xx	No motor	0000
1 200/50-38	600/100-80	400/174-150	12 V DC, IP666	C12C
1 200/47-25	600/95-65	400/170-100	12 V DC, flat motor, IP44	P12C
1 200/56-36	900/113-79	500/174-140	24 V DC, IP66	C24C
1 200/27-17	900/60-35	500/100-69	24 V DC, low speed motor, IP66	C24CW
1 200/48-37	900/95-65	500/193-140	24 V DC, flat motor, IP44	P24C
1 200/48-37	900/95-65	500/193-140	24 V DC, flat motor, brake, IP20	P24CB
1 200/48-37	900/95-65	500/193-140	24 V DC, flat motor, ext.shaft, IP44	P24CS
1 200/30-17	900/63-35	500/100-65	24 V DC, flat motor, low speed, IP44	P24CW



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

CAR 40

Linear actuator



Benefits

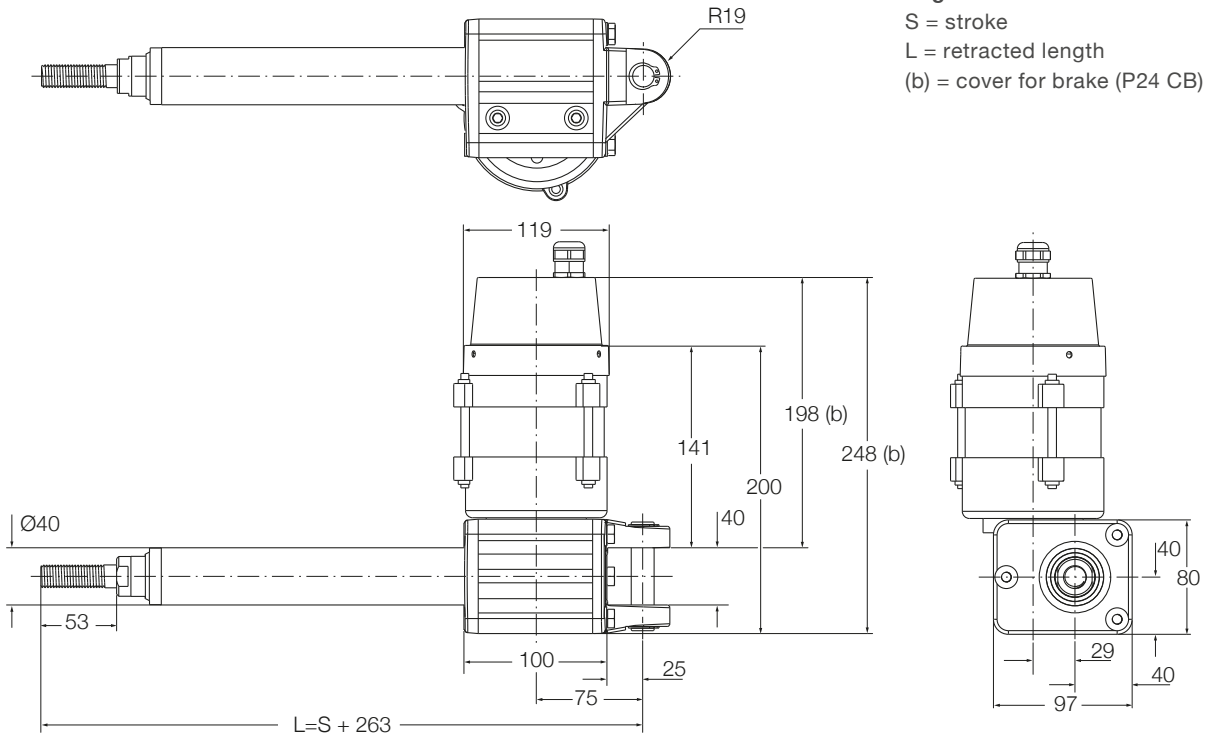
- Reliable and robust industrial actuator
- Wide range of components
- Right- and left-hand version

Technical data - AC version

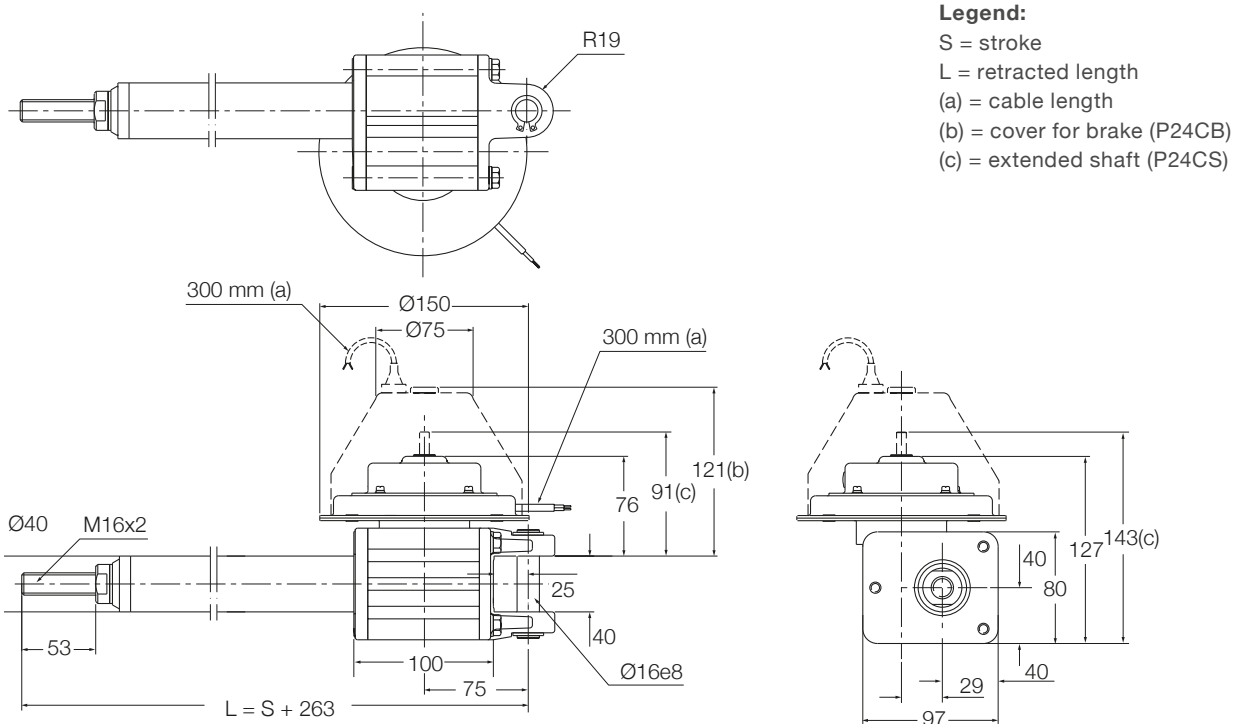
	Unit	CAR 40 - AC version	CAR 40 - DC version
Rated push load	N	2 000 to 6 000	2 000 to 6 000
Rated pull load	N	2 000 to 6 000	2 000 to 6 000
Speed (at full load)	mm/s	9 to 40 ¹⁾	8 to 50
Stroke	mm	100 to 700	100 to 700
Retracted length	mm	S+263	S+263
Voltage	V AC	120 or 230	–
	V DC	–	24
Power consumption	120 V AC W	360	–
	230 V AC W	299	–
	24 V DC W	–	N/A
Current consumption	120 V AC A	3 (brake +0,29 A)	–
	230 V AC A	1,3 (brake +0,11 A)	–
	24 V DC A	–	16
Duty cycle	%	40	25
Ambient temperature	°C	–20 to +70	–20 to +70
Degree of protection	IP	20/54	20/44
Weight	kg	5,8 to 8,4	5,8 to 8,4

¹⁾ Depending on selected motor

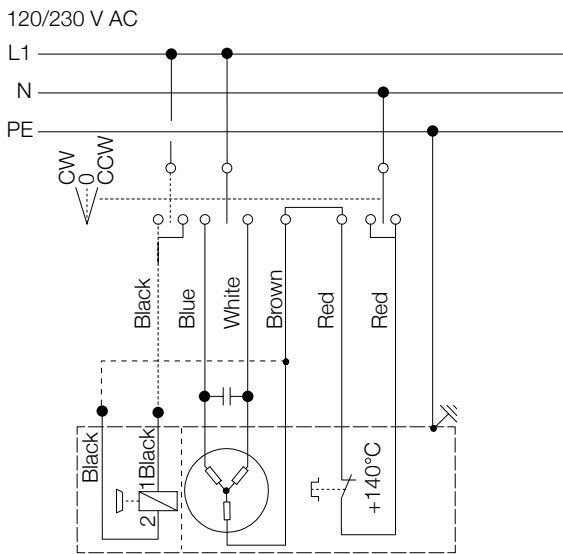
Dimensional drawing – AC version



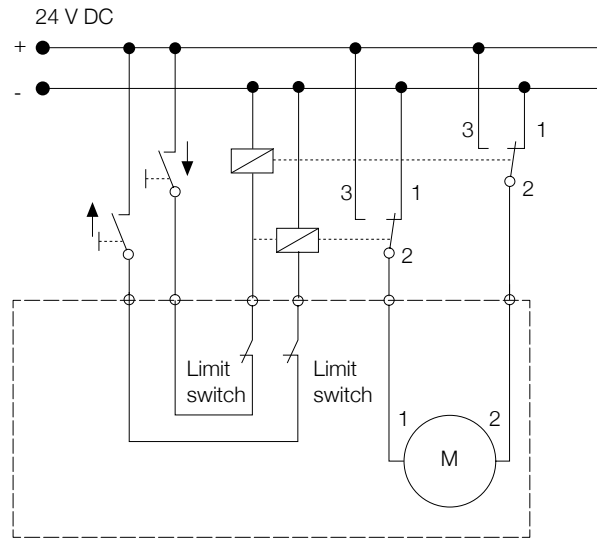
Dimensional drawing – DC version



Connecting diagrams – AC version



Connecting diagrams – DC version



Suitable control unit and accessories
AC version

	Limit switch
	CAXE40
E110D	•
E110DB	•
E220D	•
E220DB	•

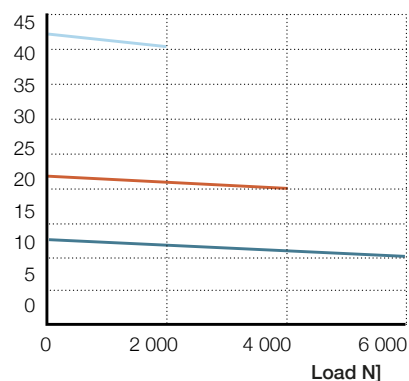
Suitable control unit and accessories
DC version

	Limit switch
	CAXE40
P24D	•
P24DS	•
P24DB	•

Performance diagrams – AC version

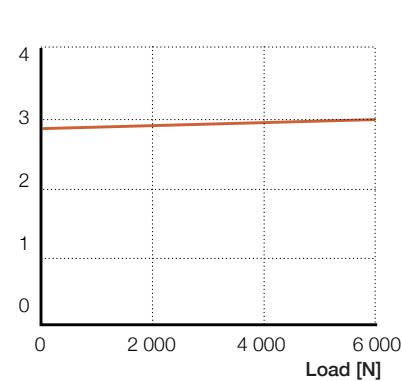
Speed-load diagram CAR 40 ... 120 V AC

Duty factor [%] at 20 °C



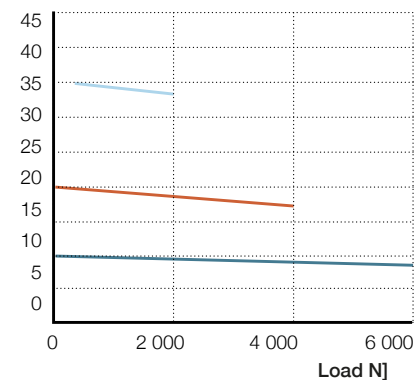
Speed-load diagram CAR 40 ... 230 V AC

Speed [mm/s]



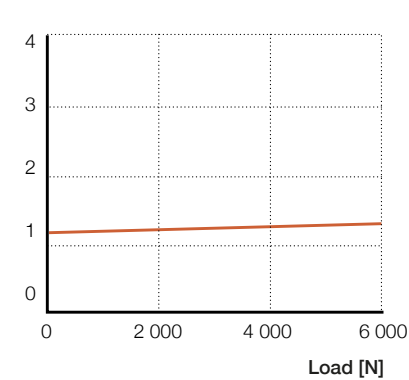
Current-load diagram CAR 40 ... 120 V AC

Current consumption [A]



Current-load diagram CAR 40 .. 230 V AC

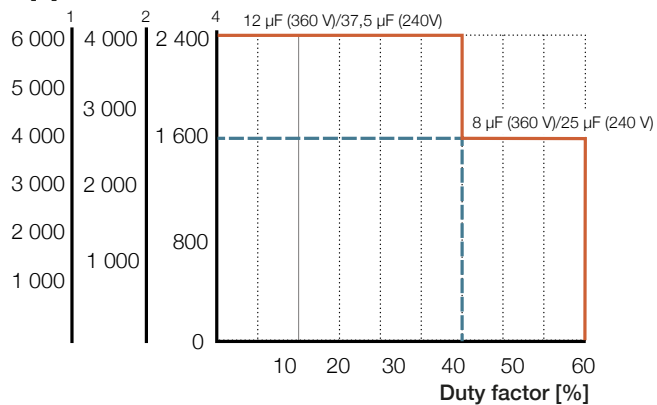
Current consumption [A]



*There may be deviations of +/-10% from the values in the chart.

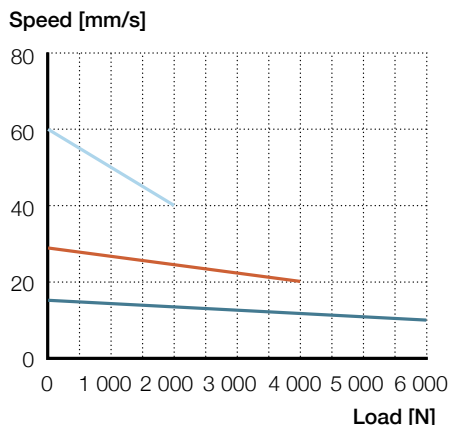
Duty cycle – AC version

F [N] Gear

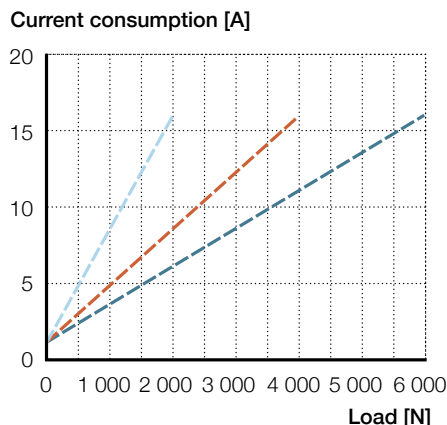


Performance diagrams – DC version

Speed-load diagram CAR 40 ... 24 V DC



Current-load diagram CAR 40 ... 24 V DC

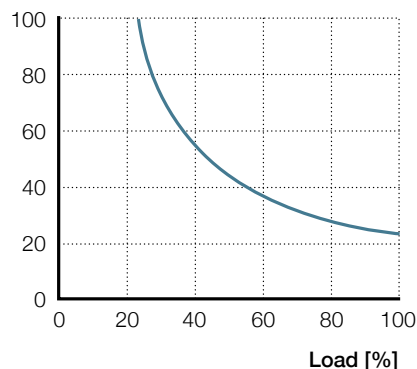


Gear 1 — V (mm/s) — I (A) Gear 2 — V (mm/s) — I (A) Gear 4 — V (mm/s) — I (A)

*There may be deviations of +/-10% from the values in the chart.

Duty cycle – DC version

Duty factor [%] at 20 °C

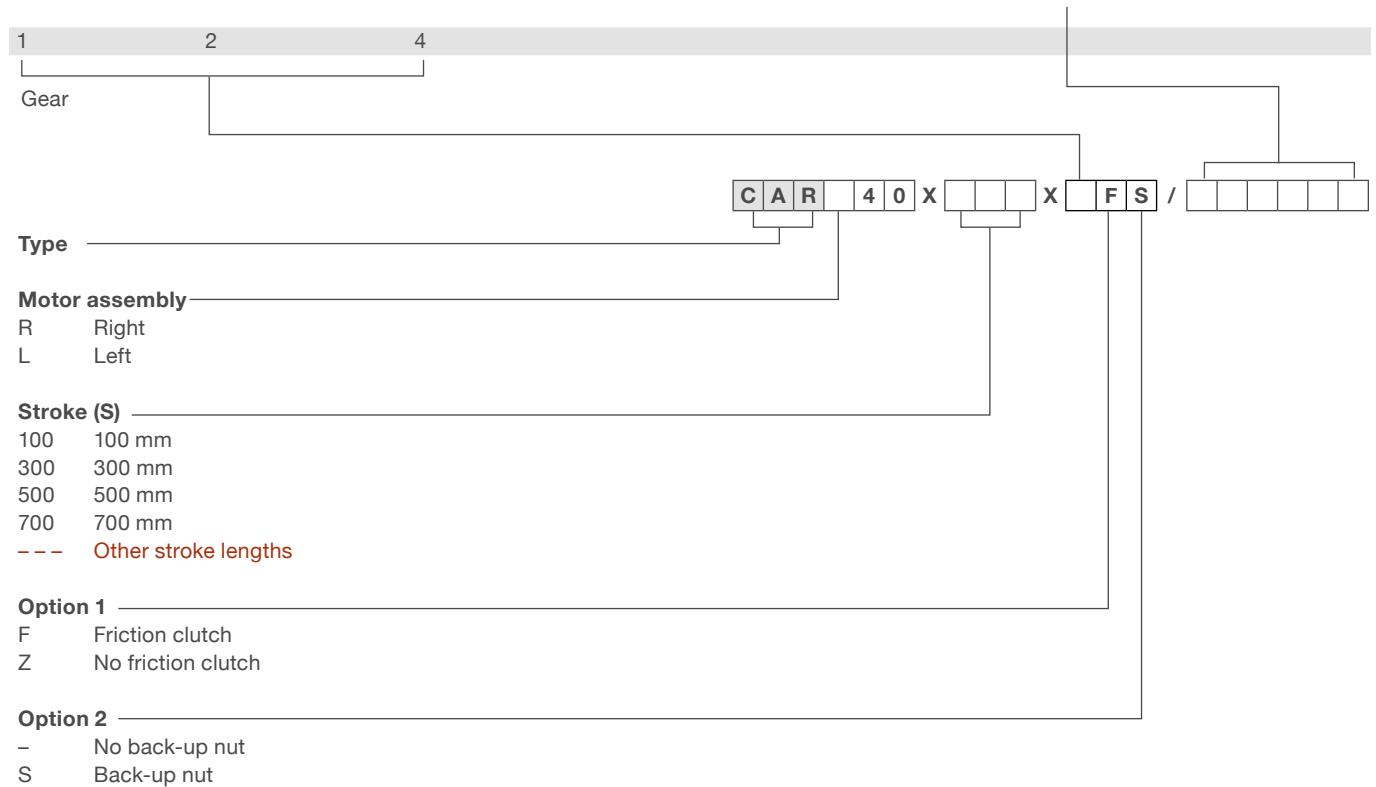


CAR 40 – Type codes for accessories and spare parts

Item code	Type code	Order N°
24 V DC motor (flat motor)	P24D	M/0405524-V01
24 V DC motor (flat motor with extended shaft)	P24DS	M/0405526-V01
24 V DC motor (flat motor with brake)	P24DB	M/0405525-V01
120 V AC motor (cylindrical motor)	E110D	M/0405529
120 V AC motor (cylindrical motor with brake)	E110DB	M/0405530
230 V AC motor (cylindrical motor)	E220D	M/0405527
230 V AC motor (cylindrical motor with brake)	E220DB	M/0405528
Capacitor value 12 µF (230 VAC-motor)	Capacitor 12 µF	M/0430670-04
Limit switch for stroke =100 mm	CAXE 40 × 100	M/0412051
Limit switch for stroke =300 mm	CAXE 40 × 300	M/0412054
Limit switch for stroke =500 mm	CAXE 40 × 500	M/0412056
Limit switch for stroke =700 mm	CAXE 40 × 700	M/0412057
Proximity switch for CAXE	CAXE Proximity switch	M/0432369
Front mounting attachments type Rod-end	575-40	M/0430575-40
Front mounting attachments type Clevis	576-40	M/0430576-40
Rear mounting attachments type Single ear bracket	590-40	M/0430590-40
Rear mounting attachments type Ball-joint bracket	581-40	M/0430581-40

Ordering key

Dynamic load [N] / Speed [mm/s]			Motor options	
6 000/xx	4 000/xx	2 000/xx	No motor	0000
6 000/10	4 000/20	2 000/40	120 V AC/60 Hz, 1-phase, IP54	E110D
6 000/10	4 000/20	2 000/40	120 V AC/60 Hz, 1-phase, brake, IP20	E110DB
6 000/9	4 000/17	2 000/34	230 V AC/50 Hz, 1-phase, IP54	E220D
6 000/9	4 000/17	2 000/34	230 V AC/50 Hz, 1-phase, brake, IP20	E220DB
6 000/xx	4 000/xx	2 000/xx	No motor	0000
6 000/13-8	4 000/25-18	2 000/50-38	24 V DC, flat motor, IP44	P24D
6 000/15-10	4 000/30-20	2 000/60-40	24 V DC, flat motor, extended shaft, IP44	P24DS
6 000/15-10	4 000/30-20	2 000/60-40	24 V DC, flat motor, brake, IP20	P24DB



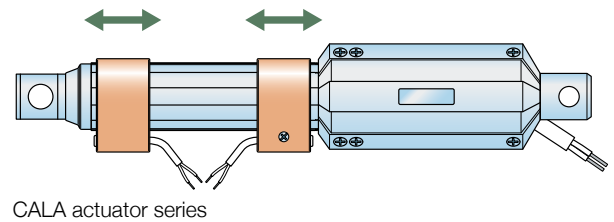
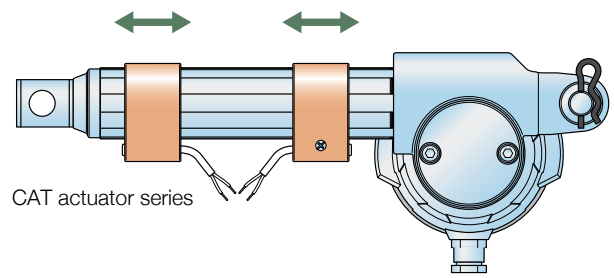
Options shown in red are only available on request. Contact Ewellix for more information on minimum quantities and additional costs.

Spare parts

CAXD 33 limit switch

Limit switches, combined with Ewellix control units, make it possible to set the stroke to any desired length.

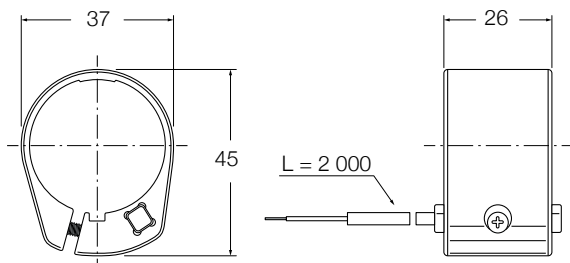
- CAXD 33 – designed for the following actuators:
 - CAT 33
 - CALA 36A
- One CAXD is needed for each limit position
- Use of limit switches reduce the effective stroke by 20 mm for CAT 33 and 25 mm for CALA 36A (retracted position is affected)



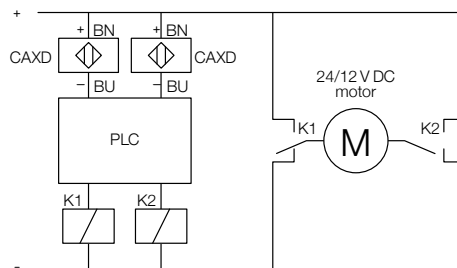
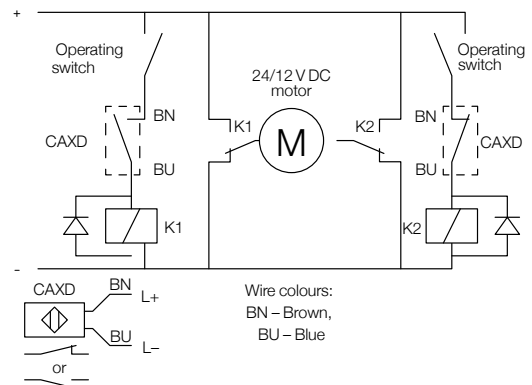
Technical data

CAXD 33	
Operating voltage	5 to 30 V DC
Max. current	100 mA DC
Voltage drop	< 5 V
Voltage drop	< 5 V
Electrical function	Normally closed or normally open
Make/fall time	0,3 ms / 0,6 ms
Operating temperature	-20 °C to +50 °C
Ingress protection	IP 67 (sensor element)
Vibration/shock	According to IEC 90947-5-2 (sensor element)
Cable dimensions (L x D)	2 m x 3 mm (PUR)
Cable area	2 x 0,14 mm ²
Housing colour	Black

Dimensional drawing



Connecting diagrams



Important! For DC-supply only

Ordering key

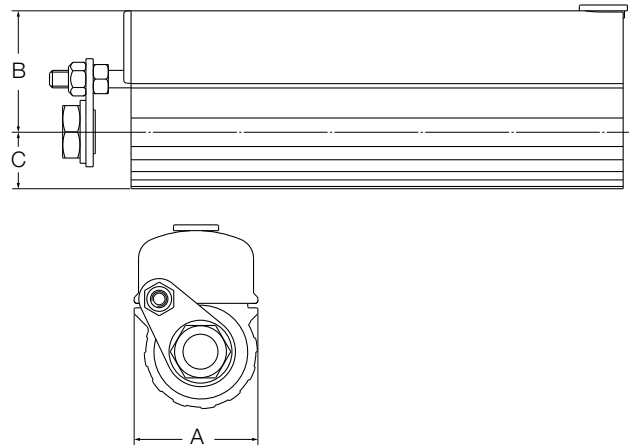
Code	Description
CAXD 33 LIMIT SWITCH, NC	Normally Closed
CAXD 33 LIMIT SWITCH, NO	Normally Open

CAXE limit switch

Limit switches, combined with Ewellix control units, make it possible to set the stroke to any desired length.

- CAXE - designed for the following actuators:
 - CAR 22
 - CAR 32
 - CAR 40
 - CAT 32B
 - CARN 32
- It is recommended to place the limit switch at least 10 mm from the end stop to avoid mechanical failure
- Front attachment G3 must be selected for this option

Dimensional drawing



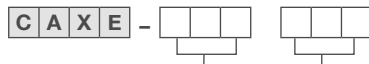
	A	B	C
CAXE 22	42,5	37	14
CAXE 32/32B	47,5	40	20
CAXE 40	46	46	23

Technical data

CAXE	
Operating voltage	5 to 30 V DC
Max. current	100 mA DC
Protection class	III
Voltage drop	< 5 V
Electrical function	Normally Closed (NC) and Normally Open (NO)
Make/break time	0,3 ms / 0,6 ms
Operating temperature	-20 to +70 °C
Degree of protection	IP 67 (sensor element)
Vibration/shock	According to IEC 60947-5-1 (sensor element)
Cable dimensions (L x D)	2 000 x 3 mm (PUR)
Cable area	3 x 0,14 mm ²

Important! The sensor has no overload protection and no reverse polarity protection.

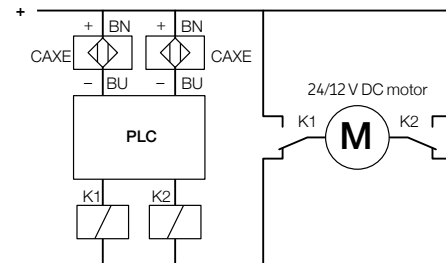
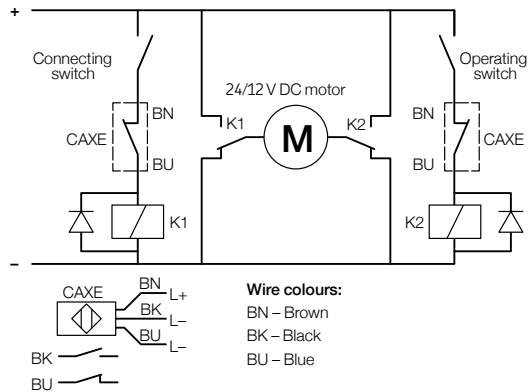
Ordering key



Type	Actuator	Stroke (mm)
022	CAXE32 CAR 22	
032	CAXE32 CAR 32, CARN 32	
32B	CAXE32B CAT 32B	
040	CAXE40 CAR 40	

Actuator stroke (mm)	Stroke (mm)	Actuator
050	050	CAR 22, 32 CARN 32 and CAT 32B
100	100	CAR 22, 32, 40, CARN 32 and CAT 32B
150	150	CAR 22
200	200	CAR 22, 32 CARN 32 and CAT 32B
300	300	CAR 22, 32, 40, CARN 32 and CAT 32B
400	400	CAT 32B
500	500	CAR 32, 40, CARN 32 and CAT 32B
700	700	CAR 32, 40, CARN 32 and CAT 32B

Connecting diagrams



Important! For DC-supply only

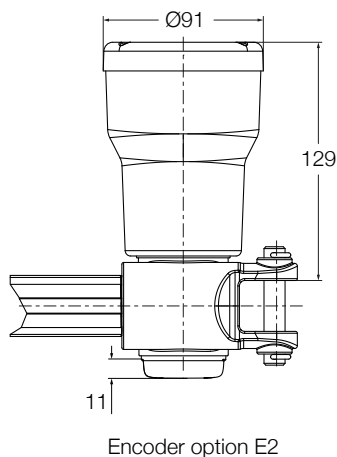
Feedback for CAT series – Encoder E2

- Can be fitted to all standard motors
- Hall effect, two channels with 90° displacement
- Located on gear housing, see drawing
- 2 pulses/channel and motor revolution
- Supply voltage: 5–24 V DC
- Final resolution according to gear ratio and actuator basic type (see table)

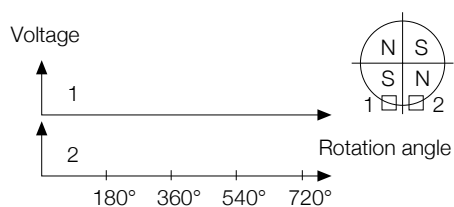
Feedback

	Gear	Pulses at 1mm stroke	Resolution (mm) per pulse
CAT 33	1	16,67	0,06
	2	8,33	0,12
	4	4,17	0,24
CAT 33H	1	4,00	0,25
	2	2,00	0,50
	4	1,00	1,00
CAT 32B	1	12,50	0,08
	2	6,25	0,16
	4	3,13	0,32

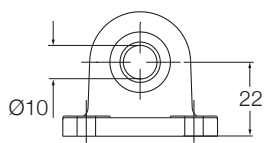
Dimensional drawing



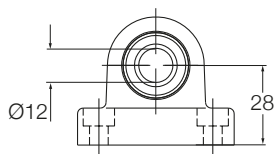
Connecting diagrams



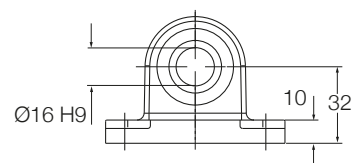
Attachments



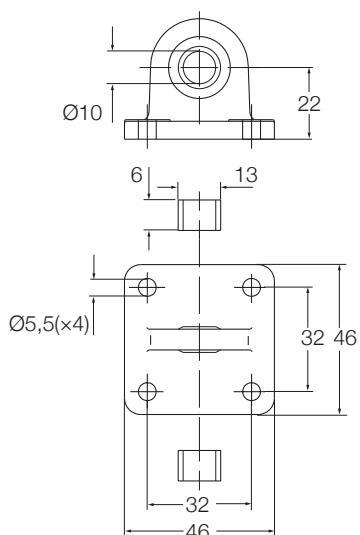
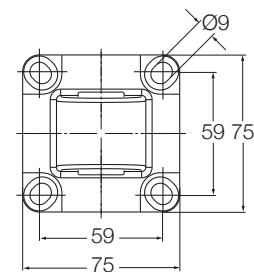
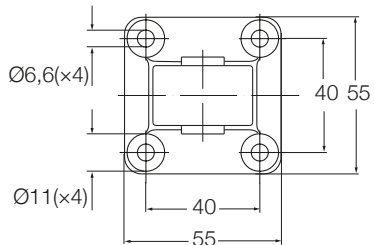
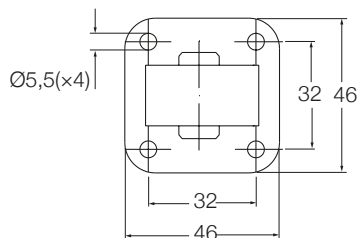
580-22



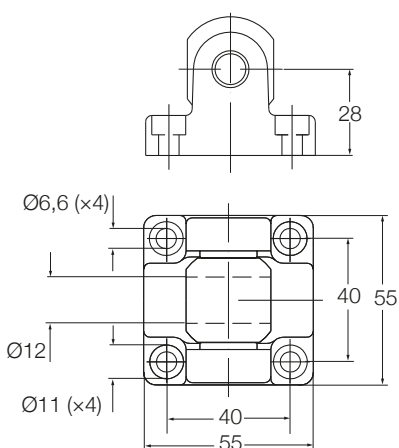
580-32



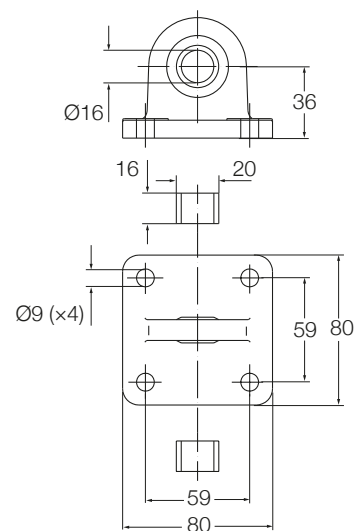
590-40



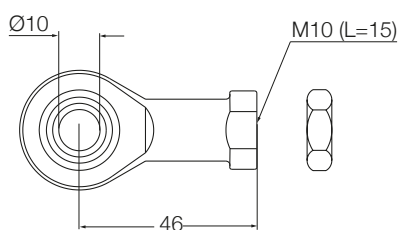
581-22



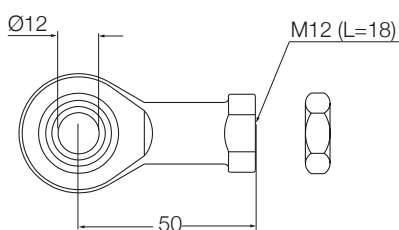
582-32



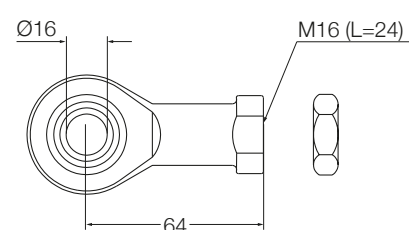
581-40



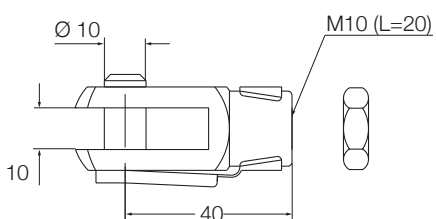
575-22



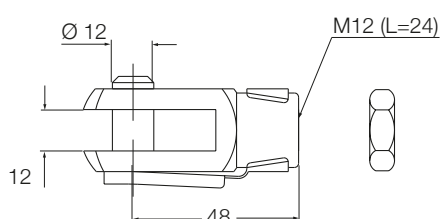
575-32



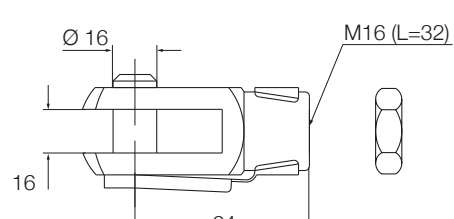
575-40



576-22



576-32



576-40



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