EWELLIX

# EWELLIX Linear Actuators

## CAR, CAP, CAT

Product Data Sheet

We pioneer motion

SCHAEFFLER

# Contents

1 CAR, CAP, CAT ..... 4
2 CAR22 ..... 5
3 CAP32 ..... 10
4 CAT32B, CAP43B ..... 20
5 CAT33, CAP43A ..... 36
6 CAT33H ..... 52
7 CAR40 ..... 65
8 Replacement parts ..... 74
8.1 EWELLIX limit switch CAXD ..... 74
8.2 EWELLIX limit switch CAXE ..... 77
8.3 Feedback for EWELLIX linear actuator CAT – EWELLIX encoder E2 ..... 80

# 1 CAR, CAP, CAT

The modular design of the CAR, CAP, and CAT series allows key components such as motors, gearboxes, screws, attachments, etc. to be easily replaced. Customized linear actuators can be easily and cost-effectively built from standard components. Thanks to its high flexibility, the CAT series is suitable for a wide range of applications.

## Benefits

- reliable and robust linear actuators for industrial applications
- wide range of components
- right-hand and left-hand versions
- option for feedback via incremental or absolute position

## Characteristics

- compact
- robust design
- modular
- with lifetime lubrication
- high efficiency

# 2 CAR22

1 CAR22

001CF05E



## Benefits

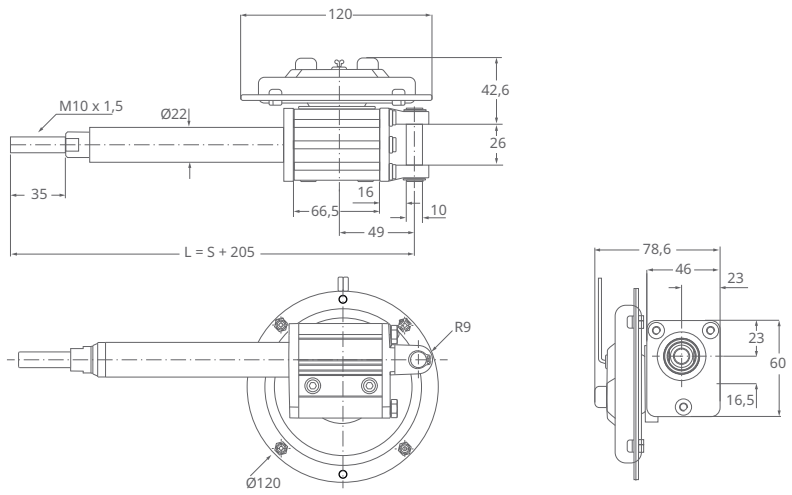
- reliable and robust linear actuators for industrial applications
- available in right-hand and left-hand versions
- maintenance-free

1 Technical data CAR22

| Feature | | | Unit | CAR22 |
|---|---|---|---|---|
| Rated push force | | | N | 1000 to 1500 |
| Rated pull force | | | N | 1000 to 1500 |
| Speed (full load ... no load) | | | mm/s | 11 to 34 |
| Stroke S | | | mm | 50 to 300 |
| Retracted length L | | | mm | S + 205 |
| Voltage | AC | | V | 12 / 24 |
| Power consumption | | | W | 120 |
| Current consumption | DC | 12 V | A | 10 |
| | DC | 24 V | A | 4 |
| Duty cycle | | | % | 25 |
| Ambient temperature | | | °C | –20 to +70 |
| Protection code (IP) | | | – | IP44 |
| Mass | | | kg | 1.2 to 1.6 |

## Dimensional drawings

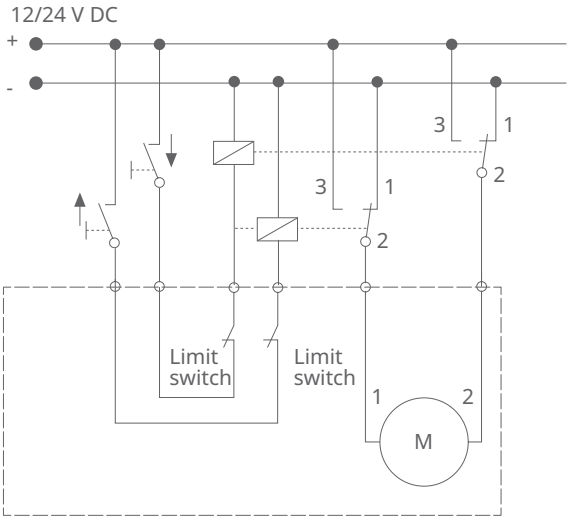
2 Dimensions CAR22




| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

## Wiring diagrams

3 Connecting diagram CAR22

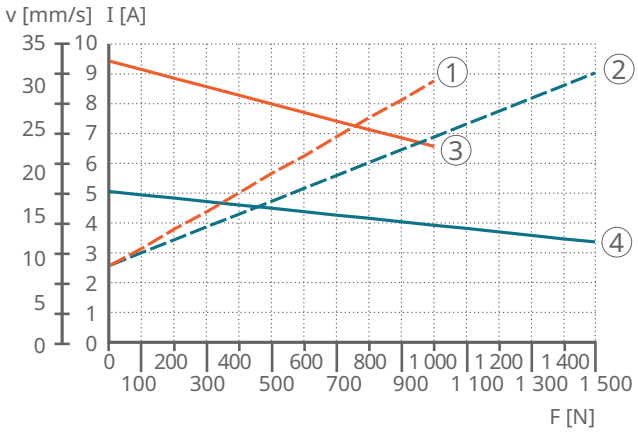



2 Suitable operating elements and controls CAR22

| Linear actuator | Limit switch |
|---|---|
| **CAR22** | **CAXE 22** |
| P12B | ✓ |
| P24B | ✓ |
| ✓ | suitable |

## Performance diagrams

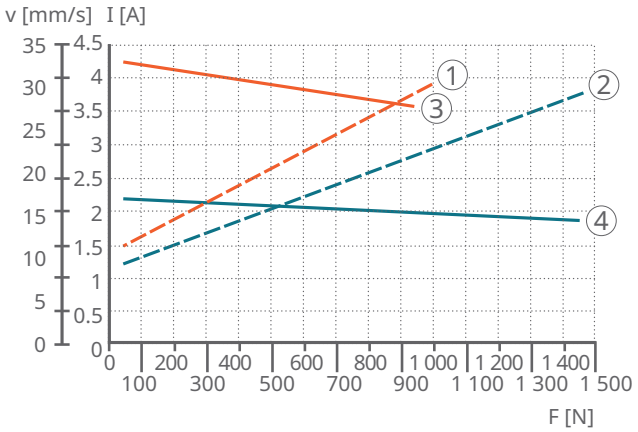
### 4 Performance diagram CAR22.../P12B




001D17A7

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | v (mm/s) gear 1 | 4 | v (mm/s) gear 2 |
| F | Load | v | Speed |

### 5 Performance diagram CAR22.../P24B



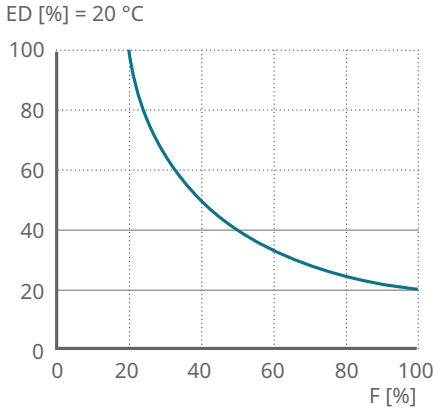

001D17AA

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | v (mm/s) gear 1 | 4 | v (mm/s) gear 2 |
| F | Load | v | Speed |

2

## Duty cycle

6 Duty cycleCAR22.../P12B




| | | | |
|---|---|---|---|
| F | Load | ED | Duty cycle |

## Ordering key

7 Ordering designation CAR22

| Load [N]/speed at full load [mm/s] | | Motor options | |
|---|---|---|---|
| 1500/xx | 1000/xx | No motor | 0000 |
| 1500/18–11 | 1000/34-21 | DC 12 V, flat motor, IP44 | P12B |
| 1500/17-14.5 | 1000/33-28 | DC 24 V, flat motor, IP44 | P24B |

1 2 — Gearbox

CAR R 22 x 050 x 1 / 0000

**Type**

**Motor installation**

| | |
|---|---|
| **R** | Right |
| **L** | Left |

**Stroke (S)**

| | |
|---|---|
| **050** | 50 mm |
| **100** | 100 mm |
| **150** | 150 mm |
| **200** | 200 mm |
| **300** | 300 mm |
| **-** | Other stroke lengths available on request |

001DF3FE

# CAR22 – Type codes for accessories and spare parts



## 3 Accessories and spare parts for CAR22

| Description | Ordering designation | Order number |
|---|---|---|
| Motor DC 12 V (flat motor) | P12B | M/0405516-V01 |
| Motor DC 24 V (flat motor) | P24B | M/0405517-V01 |
| Limit switch for stroke = 50 mm | CAXE22X50 | M/0412019 |
| Limit switch for stroke = 100 mm | CAXE22X100 | M/0412020 |
| Limit switch for stroke = 150 mm | CAXE22X150 | M/0412021 |
| Limit switch for stroke = 200 mm | CAXE22X200 | M/0412022 |
| Limit switch for stroke = 300 mm | CAXE22X300 | M/0412023 |
| Proximity switch for CAXE | CAXE | M/0432369 |
| Front attachments, rod end type | 575–22 | M/0430575–22 |
| Front attachments, rod clevis type | 576–22 | M/0430576–22 |
| Rear attachments, single bracket with ear type | 580–22 | M/0430580–22 |
| Rear attachments, bracket with ball joint type | 581–22 | M/0430581–22 |

# 3 CAP32

8 CAP32

001CF069

## Benefits

- high-efficiency ball screw
- extension tube (stainless steel)
- protection tube (steel)
- enhanced corrosion resistance
- mechanical overload protection (clutch)
- with lifetime lubrication
- robust, designed for harsh environments
- no back-driving
- motor with thermal protection

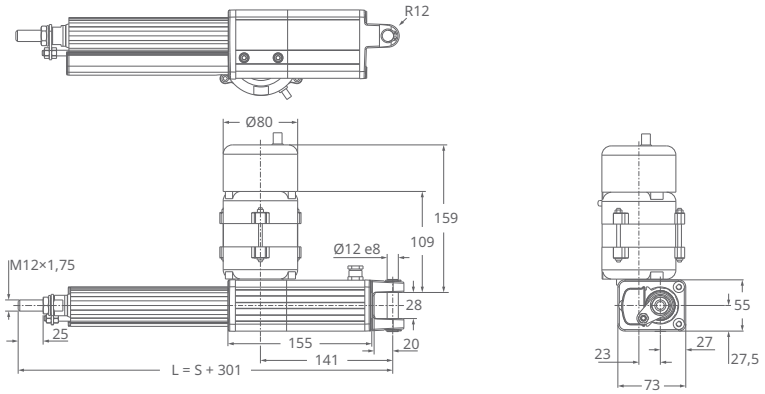
4 Technical data CAP32

| Feature | | | Unit | CAP32 | |
|---|---|---|---|---|---|
| | | | | AC | DC |
| Rated push force | | | N | 1500 ... 3500 | 1000 ... 3500 |
| Rated pull force | | | N | 1500 ... 3500 | 1000 ... 3500 |
| Speed (full load ... no load) | | | mm/s | 6 ... 32 [1)] | 6 ... 66 [1)] |
| Stroke S | | | mm | 50 ... 700 | 50 ... 700 |
| Retracted length L | | | mm | S + 301 | S + 301 |
| Voltage | AC | | V | 120 / 230 | – |
| | DC | | V | – | 12 / 24 |
| Power consumption | AC | 120 V | W | 98 (brake 133.2 W) | n/a |
| | AC | 230 V | W | 92 (brake 117.3 W) | – |
| | DC | 12 V / 24 V | W | – | n/a |
| Current consumption | AC | 120 V | A | 0.82 (brake +0.29 A) | – |
| | AC | 230 V | A | 0.4 (brake +0.11 A) | – |
| | DC | 12 V | A | – | 13 |
| | DC | 24 V | A | – | 9 |
| | DC | 24 V | A | – | 5 (for motor P24CW) |
| Duty cycle | | | % | 30 | 25 |
| Ambient temperature | | | °C | –20 ... +50 | –20 ... +50 |
| Protection code (IP) | | | – | IP20, IP54 | IP20, IP54 |
| Mass | | | kg | 2.9 ... 5.0 | 2.9 ... 5.0 |

1) depending on selected motor

## Dimensional drawings

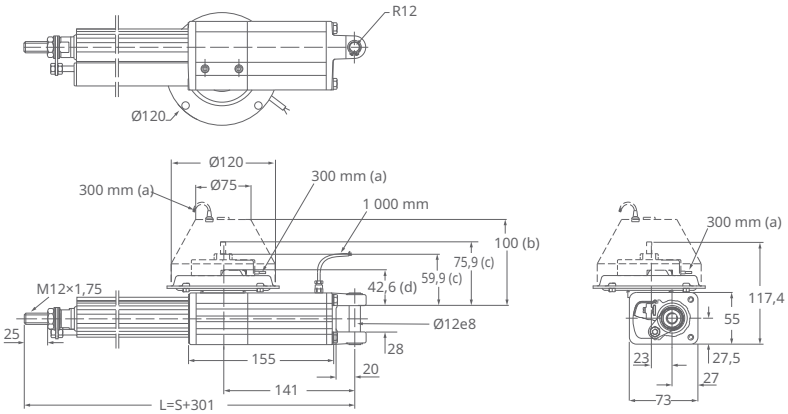
### 9 Dimensions CAP32, AC




E110C, E110CB, E220C, E220CB
120 or 230 V AC motor

001DC5B7

### 10 Dimensions CAP32, DC




D12C, P24C, P24CB, P24CS, P24CW

001DC5C7

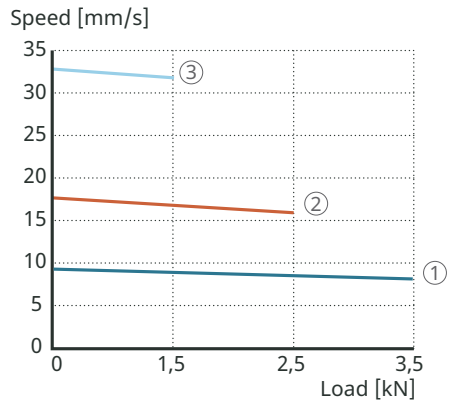
| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

3

## Performance diagrams

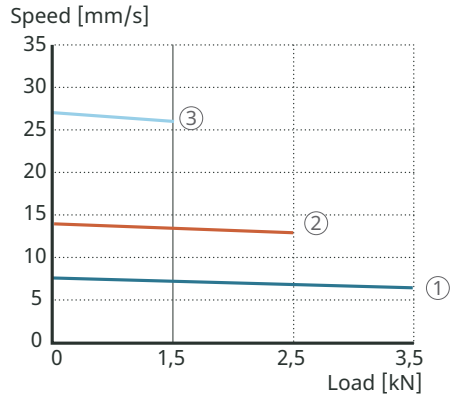
### AC version

11 Speed-load diagram CAP32, AC 120 V



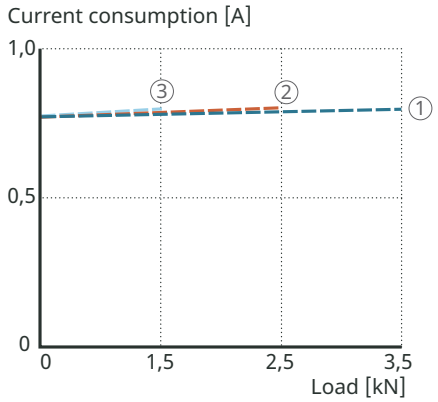

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

12 Speed-load diagram CAP32, AC 230 V



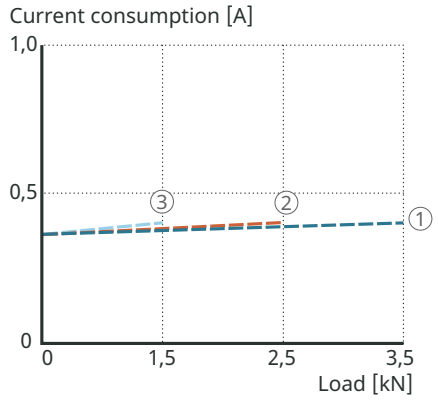

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

13 Current-load diagram CAP32, AC 120 V




| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

14 Current-load diagram CAP32, AC 230 V



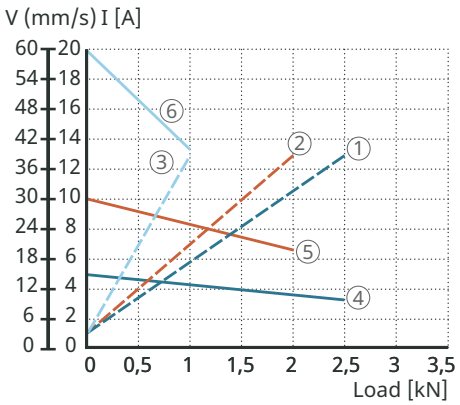

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

Deviations of ±10 % from the values in the diagram may occur.

3

## DC version

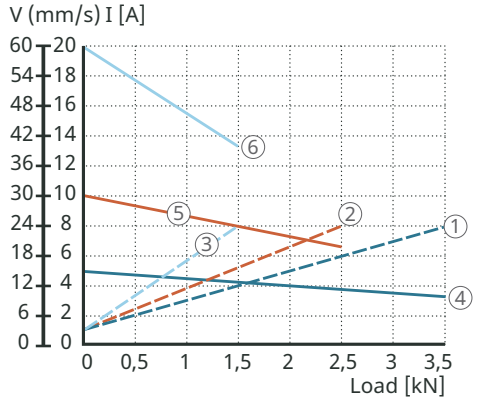
15 Performance diagram CAP32.../D12C




001DF42E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

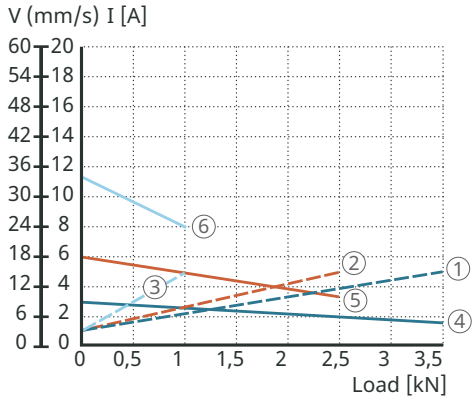
16 Performance diagram CAP32...//P24C/P24CS/P24CB




001DF43E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

17 Performance diagram CAP32.../P24CW




001DF44E

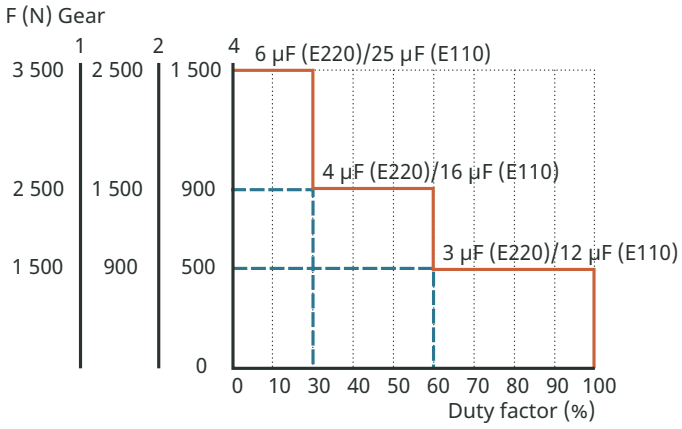
| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

Deviations of ±10 % from the values in the diagram may occur.

## Duty cycle

### AC version

18 Duty cycle CAP32, AC 230/120 V

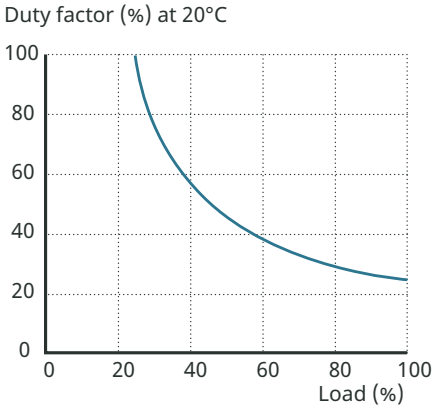



001D6637

| | |
|---|---|
| F | Load |

## DC version

19 Duty cycle CAP32, DC

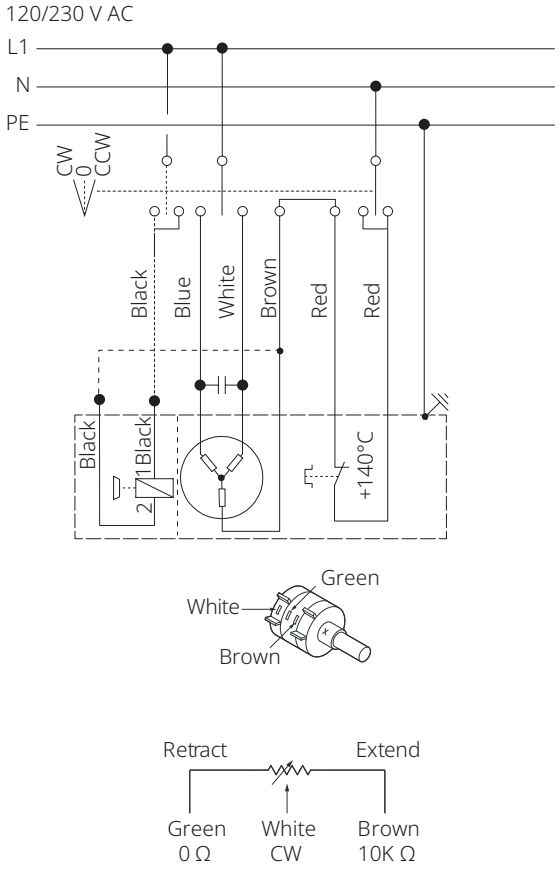



001D6677

## Wiring diagrams

## AC version

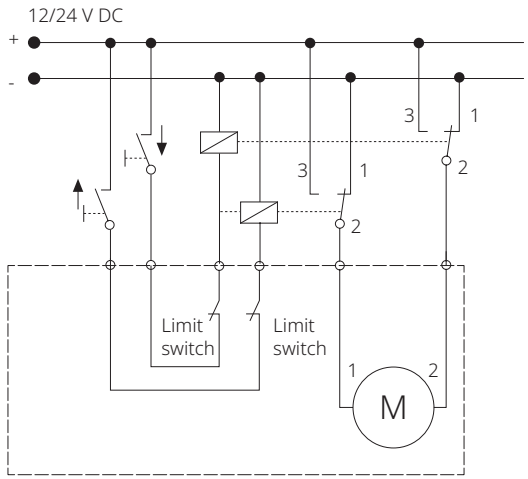
20 Connecting diagram CAP32 AC version

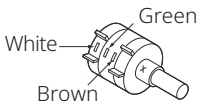


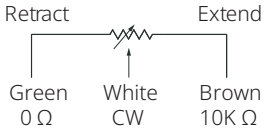

001D6686

## DC version

21 Wiring diagram CAP32 DC version




001D6697

# Ordering key

## 22 Ordering designation CAP32

| Dynamic load [N]/speed [mm/s] | | | Motor options | |
|---|---|---|---|---|
| 3500/xx | 2500/xx | 1500/xx | No motor | 0000 |
| 3500/B | 2500/16 | 1500/32 | AC 120 V/60 Hz, 1-phase, IP54 | E110C |
| 3500/B | 2500/16 | 1500/32 | AC 120 V/60 Hz, 1-phase, brake, IP20 | E110CB |
| 3500/6 | 2500/13 | 1500/26 | AC 230 V/50 Hz, 1-phase, IP54 | E220C |
| 3500/6 | 2500/13 | 1500/26 | AC 230 V/50 Hz, 1-phase, brake, IP20 | E220CB |
| 3500/xx | 2500/xx | 1500/xx | No motor | 0000 |
| 2500/15-10 | 2000/30-20 | 1000/60-40 | DC 12 V, flat motor, IP44 | D12C |
| 3500/15-10 | 2500/30-20 | 1500/60-40 | DC 24 V, flat motor, IP44 | P24C |
| 3500/10-6 | 2500/18-12 | 1500/36-26 | DC 24 V, flat motor, low speed, IP44 | P24CW |
| 3500/15-10 | 2500/30-20 | 1500/60-40 | DC 24 V, flat motor, extended shaft, IP44 | P24CS |
| 3500/15-10 | 2500/30-20 | 1500/60-40 | DC 24 V, flat motor, brake, IP20 | P24CB |

1 2 4
Gearbox

CAP R 32 x 050 x 1 S / E110CB

**Type**

**Motor installation**

| | |
|---|---|
| **R** | Right |
| **L** | Left |

**Stroke (S)**

| | |
|---|---|
| **050** | 50 mm |
| **100** | 100 mm |
| **200** | 200 mm |
| **300** | 300 mm |
| **400** | 400 mm |
| **500** | 500 mm |
| **700** | 700 mm |
| **– – –** | Other stroke lengths; 50 < S < 700 mm, available on request |

**Cable/connecting plug**

| | |
|---|---|
| **S** | Back-up nut |

001DF45E

# CAP32 – Type codes for accessories and spare parts



## 5 Accessories and spare parts for CAP32

| Description | Ordering designation | Order number |
|---|---|---|
| Motor DC 12 V (flat motor) | D12C | M/0405518 |
| Motor DC 24 V (flat motor) | P24C | M/0405519-V01 |
| Motor DC 24 V (flat motor with brake) | P24CB | M/0405523-V01 |
| Motor DC 24 V (flat motor with extended shaft) | P24CS | M/0405522-V01 |
| Motor DC 24 V (flat motor with low speed) | P24CW | M/0405521-V01 |
| Motor AC 120 V (cylindrical motor) | E110C | M/0405533 |
| Motor AC 120 V (cylindrical motor with brake) | E110CB | M/0405534 |
| Motor AC 230 V (cylindrical motor) | E220C | M/0405531 |
| Motor AC 230 V (cylindrical motor with brake) | E220CB | M/0405532 |
| Capacitor value 25 µF (AC 120 V) | Capacitor 25 µF | M/0430670-16 |
| Capacitor value 6 µF (AC 230 V) | Capacitor 6 µF | M/0430670-03 |
| Limit switch for stroke = 50 mm | CAXE32X50 | M/0412030 |
| Limit switch for stroke = 100 mm | CAXE32X100 | M/0412031 |
| Limit switch for stroke = 200 mm | CAXE32X200 | M/0412033 |
| Limit switch for stroke = 300 mm | CAXE32X300 | M/0412034 |
| Limit switch for stroke = 500 mm | CAXE32X500 | M/0412036 |
| Limit switch for stroke = 700 mm | CAXE32X700 | M/0412037 |
| Proximity switch for CAXE | CAXE | M/0432369 |
| Front attachments, rod end type | 575–32 | M/0430575–32 |
| Front attachments, rod clevis type | 576–32 | M/0430576–32 |
| Rear attachments, single bracket with ear type | 580–32 | M/0430580–32 |
| Rear attachments, universal joint type | 582–32 | M/0431780–32 |

# 4 CAT32B, CAP43B

23 CAT32B, CAP43B

## Benefits

- compact
- robust design
- modular
- with lifetime lubrication
- high efficiency
- digital encoder feedback

6 Technical data CAT32B and CAP43B

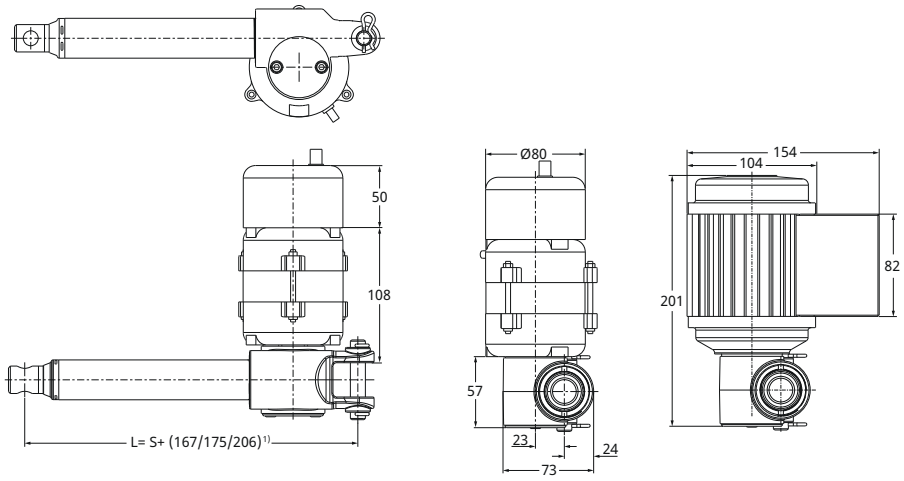
| Feature | | | Unit | CAT32B AC | CAT32B DC | CAP43B DC |
|---|---|---|---|---|---|---|
| Rated push force | | | N | 1500 ... 3500 | 1000 ... 4000 | 1500 ... 4000 |
| Rated pull force | | | N | 1500 ... 3500 | 1000 ... 4000 | 1500 ... 4000 |
| Speed (full load ... no load) | | | mm/s | 6.5 ... 32 [1] | 6 ... 66 [1] | 6 ... 66 [1] |
| Stroke S | | | mm | 50 ... 700 | 50 ... 700 | 50 ... 700 |
| Retracted length L | | | mm | S + 167/175/206 [2] | S + 167/175/206 [2] | S + 167/175/206 [2] |
| Voltage | AC | | V | 120, 230 / 400 | – | – |
| | DC | | V | – | 12 / 24 | 24 |
| Power consumption | AC | 120 V | W | 98 (brake 133.2 W) | – | – |
| | AC | 230 V | W | 92 (brake 117.3 W) | – | – |
| | AC | 400 V | W | 80 | – | – |
| | DC | 12 V / 24 V | W | – | n/a | n/a |
| Current consumption | AC | 120 V | A | 0.82 (brake 0.29 A) | – | – |
| | AC | 230 V | A | 0.4 (brake 0.11 A) | – | – |
| | AC | 400 V | A | 0.2 | – | – |
| | DC | 12 V | A | – | 18 | – |
| | DC | 24 V | A | – | 9 | 9 |
| | DC | 24 V | A | – | 5 (for motors C24CW and P24CW) | 5 (for motors C24CW and P24CW) |
| Duty cycle | | | % | 30 | 20 | 20 |
| Ambient temperature | | | °C | −20 ... +50 | −20 ... +50 | −20 ... +50 |
| Protection code (IP) | | | – | IP20, IP54 | IP20, /IP44, IP66 [1] | IP44 |
| Mass | | | kg | 2 ... 3.5 | 2 ... 3.5 | 2.0 ... 2.7 |

[1] depending on selected motor

[2] dimension depends on selected front attachment

## Dimensional drawings

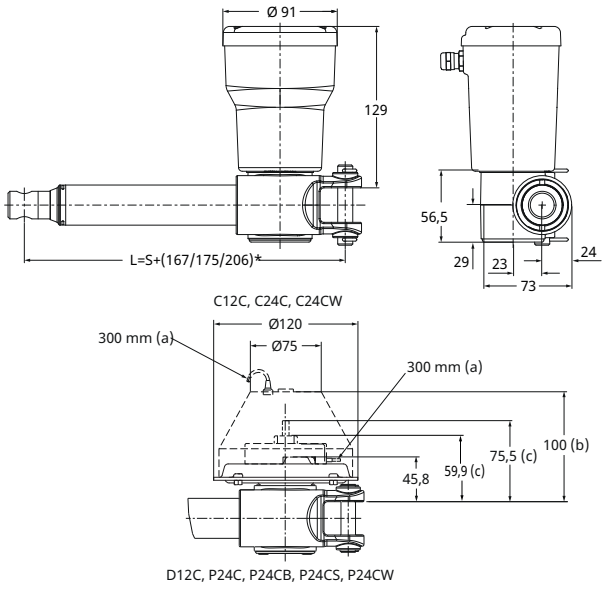
### 24 Dimensions CAT32B,AC version




1) dimension depends on selected front attachment

| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

### 25 Dimensions CAT32B,DC version

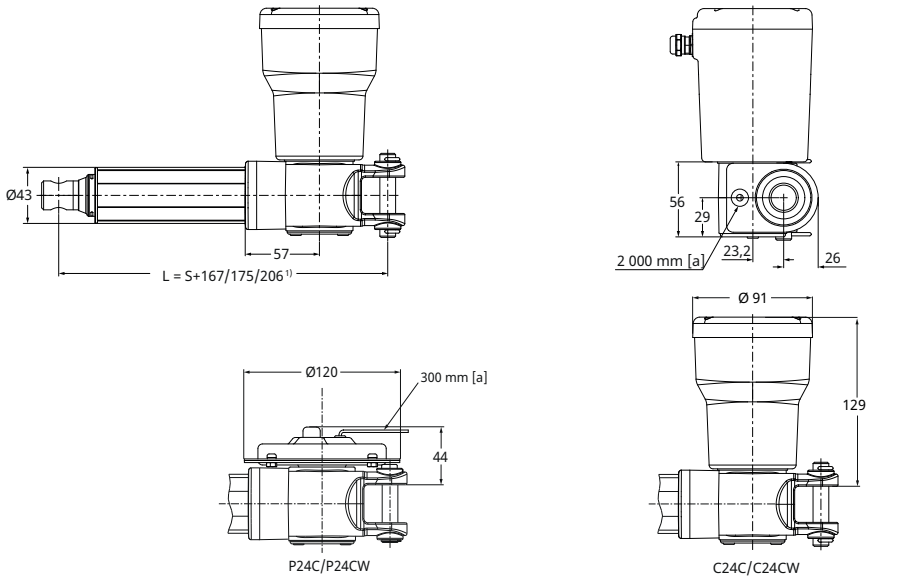



| | | | |
|---|---|---|---|
| a | Cable length | b | Cover for brake (P24CB) |
| c | Extended shaft (P24CS) | d | Motor (P24C) |

1) dimension depends on selected front attachment

| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

26 Dimensions CAP43B




| | |
|---|---|
| a | Cable length |

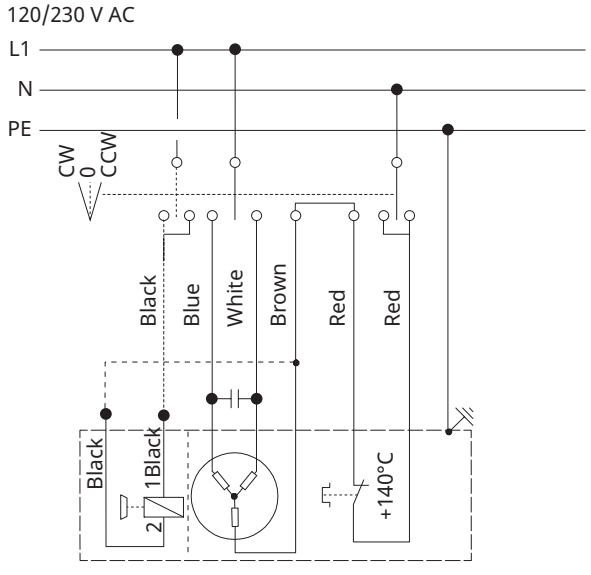
1) dimension depends on selected front attachment

| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

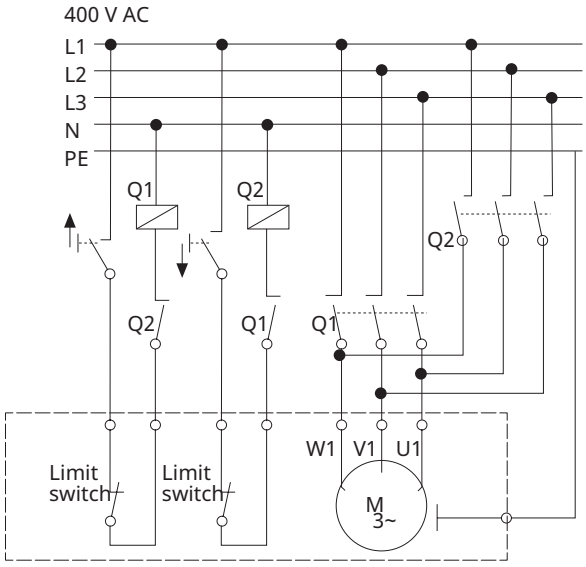
## Wiring diagrams

## AC version

27 Connecting diagram CAT32B and CAP43B, AC 120/230 V



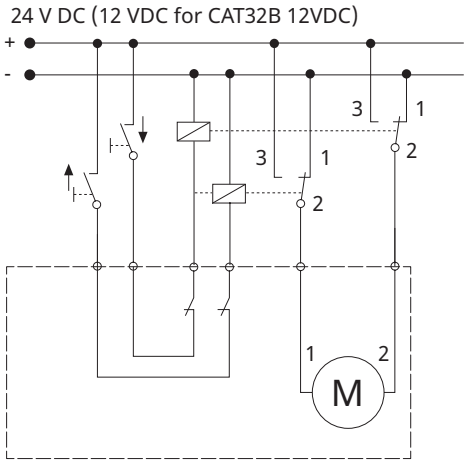
28 Connecting diagram CAT32B and CAP43B, AC 400 V




001D66B7

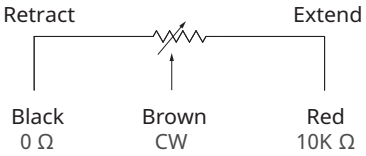
## DC version

29 Connecting diagramCAT32B and CAP43B, DC 24 V




001D5BB8

30 Wiring diagram for linear potentiometer CAP43B




Connection diagram for linear potentiometer only for CAP 43B.

001D66C7

## Suitable control units and accessories

### AC version

7 Suitable operating elements and controls CAT32B AC version

| Linear actuator | Limit switch | Encoder |
|---|---|---|
| **CAT32B AC** | **CAXE 32B** | **E2** |
| E110C | ✓ | ✓ |
| E110CB | ✓ | ✓ |
| E220C | ✓ | ✓ |
| E220CB | ✓ | ✓ |
| E380C | ✓ | ✓ |

✓ suitable

### DC version

8 Suitable operating elements and controls CAT32B DC version and CAP43B

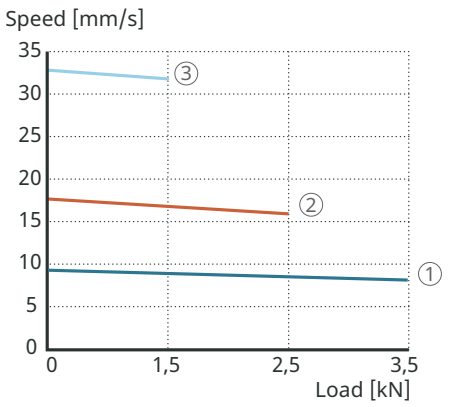
| Linear actuator | Limit switch | Encoder |
|---|---|---|
| **CAT32B DC, CAP43B** | **CAXE 32B** | **E2** |
| C12C | ✓ | ✓ |
| D12C | ✓ | ✓ |
| C24C | ✓ | ✓ |
| C24CW | ✓ | ✓ |
| P24C | ✓ | ✓ |
| P24CB | ✓ | ✓ |
| P24CS | ✓ | ✓ |
| P24CW | ✓ | ✓ |

✓ suitable

## Performance diagrams

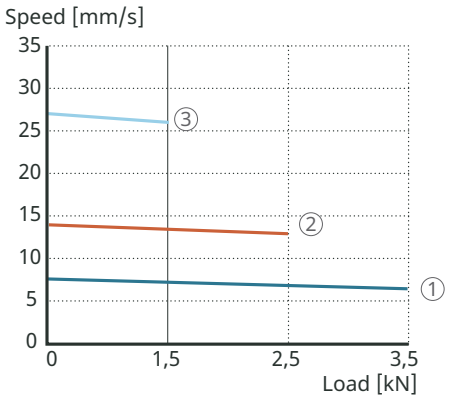
### AC version

31 Speed-load diagram CAT32B, AC 120 V




| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

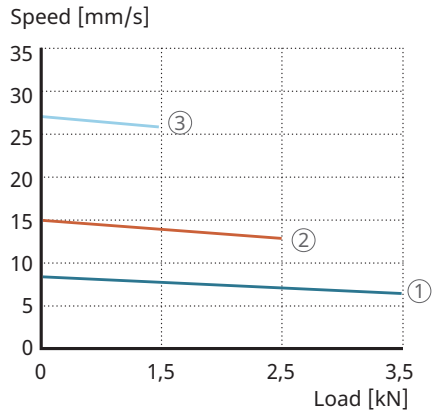
### 32 Speed-load diagram CAT32B, AC 230 V




001DCBD2

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

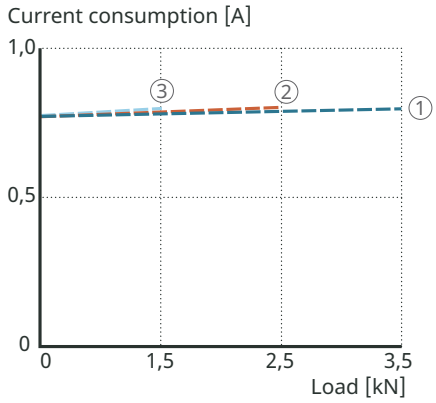
### 33 Speed-load diagram CAT32B, AC 400 V




001DCBDF

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

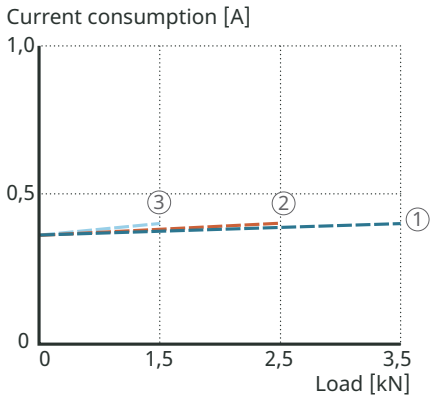
### 34 Current-load diagram CAT32B, AC 120 V




001DF40E

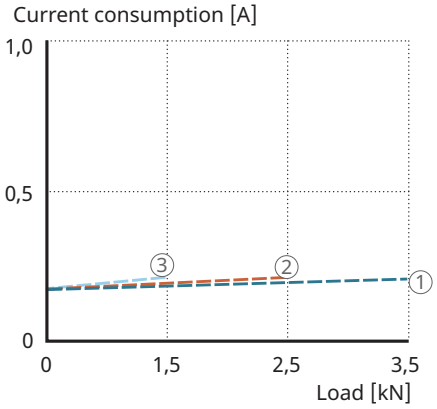
| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

35 Current-load diagram CAT32B, AC 230 V




| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

36 Current-load diagram CAT32B, AC 400 V

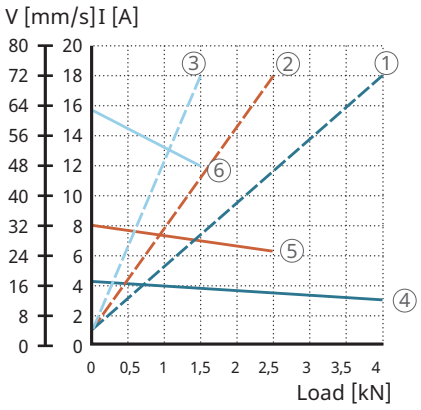



| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

Deviations of ±10 % from the values in the diagram may occur.

## DC version

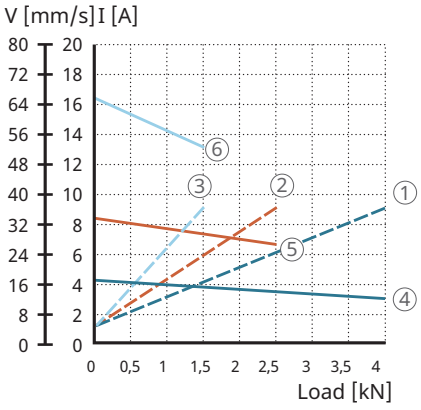
37 Performance diagram CAT32B.../C12C




001DF47E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

38 Performance diagram CAT32B.../C24C, CAP43B.../C24C

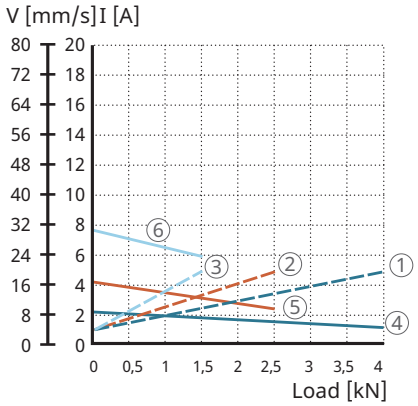



001DF48E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

4

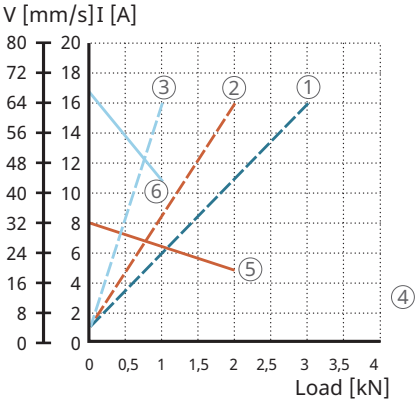
### 39 Performance diagram CAT32B.../C24CW, CAP43B.../C24CW




001DF49E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

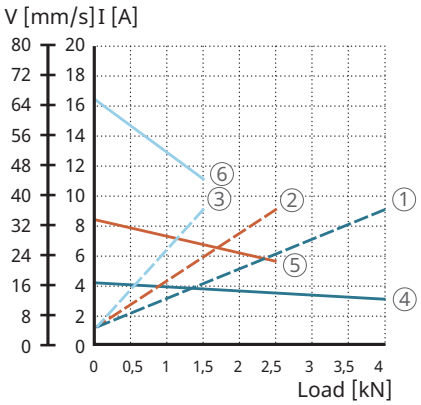
### 40 Performance diagram CAT32B.../D12C




001DF4AE

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

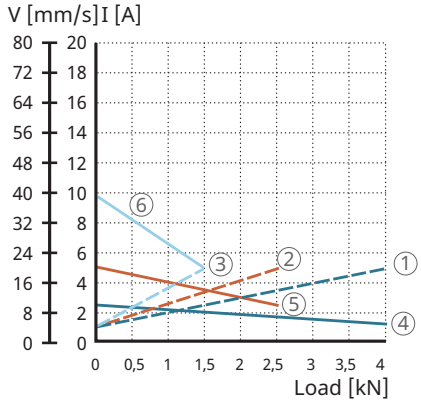
41 Performance diagram CAT32B.../P24C/P24CB/24CS, CAP43B.../P24C




001DF4BE

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

42 Performance diagram CAT32B.../P24CW, CAP43B.../P24CW




001DF4CE

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

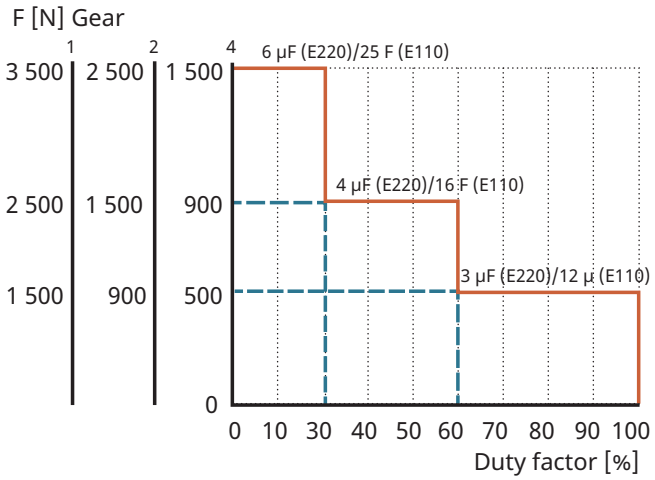
Deviations of ±10 % from the values in the diagram may occur.

4

## Duty cycle

### AC version

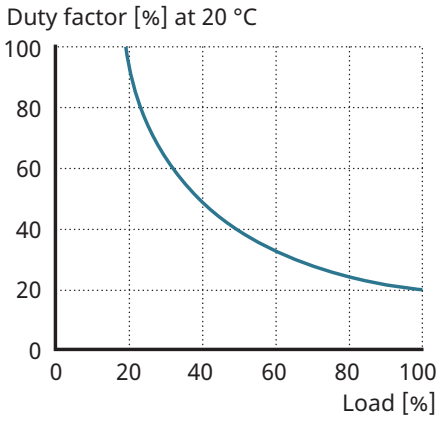
43 Duty cycle CAT32B, AC 230/120 V




F Load

### DC version

44 Duty cycle CAT32B and CAP43B



## CAT 32B – Type codes for accessories and spare parts

9 Accessories and spare parts for CAT32B

| Description | Ordering designation | Order number |
|---|---|---|
| Motor DC 12 V (flat motor) | D12C | M/0405518 |
| Motor DC 24 V (flat motor) | P24C | M/0405519-V01 |
| Motor DC 24 V (flat motor with brake) | P24CB | M/0405523-V01 |
| Motor DC 24 V (flat motor with extended shaft) | P24CS | M/0405522-V01 |
| Motor DC 24 V (flat motor with low speed) | P24CW | M/0405521-V01 |
| Motor AC 120 V (cylindrical motor) | E110C | M/0405533 |
| Motor AC 120 V (cylindrical motor with brake) | E110CB | M/0405534 |
| Motor AC 230 V (cylindrical motor) | E220C | M/0405531 |
| Motor AC 230 V (cylindrical motor with brake) | E220CB | M/0405532 |
| Capacitor value 25 µF (AC 120 V) | Capacitor 25 µF | M/0430670-16 |
| Capacitor value 6 µF (AC 230 V) | Capacitor 6 µF | M/0430670-03 |
| Limit switch for stroke = 50 mm | CAXE32X50 | M/0412030 |
| Limit switch for stroke = 100 mm | CAXE32X100 | M/0412031 |
| Limit switch for stroke = 200 mm | CAXE32X200 | M/0412033 |
| Limit switch for stroke = 300 mm | CAXE32X300 | M/0412034 |
| Limit switch for stroke = 500 mm | CAXE32X500 | M/0412036 |
| Limit switch for stroke = 700 mm | CAXE32X700 | M/0412037 |
| Proximity switch for CAXE | CAXE | M/0432369 |
| Front attachments, rod end type | 575–32 | M/0430575–32 |
| Front attachments, rod clevis type | 576–32 | M/0430576–32 |
| Rear attachments, single bracket with ear type | 580–32 | M/0430580–32 |
| Rear attachments, universal joint type | 582–32 | M/0431780–32 |

## CAP 43B – Type codes for accessories and spare parts

10 Accessories and spare parts for CAP43B

| Description | Ordering designation | Order number |
|---|---|---|
| Motor DC 24 V (cylindrical motor) | C24C | M/0405536 |
| Motor DC 24 V (cylindrical motor with low speed) | C24CW | M/0405537 |
| Motor DC 24 V (flat motor) | P24C | M/0405519-V01 |
| Motor DC 24 V (flat motor with low speed) | P24CW | M/0405521-V01 |
| Front attachments, rod end type | 575–32 | M/0430575–32 |
| Front attachments, rod clevis type | 576–32 | M/0430576–32 |
| Rear attachments, single bracket with ear type | 580–32 | M/0430580–32 |
| Rear attachments, universal joint type | 582–32 | M/0431780–32 |

4

# Ordering key

## 45 Ordering designation CAT32B

| Load [N]/speed at full load [mm/s] | | | Motor options | |
|---|---|---|---|---|
| 4000/xx | 2000/xx | 1500/xx | No motor | 0000 |
| 3000/17–11 | 2000/34-19 | 1000/67-43 | DC 12 V, flat motor, IP44 | D12C |
| 3500/8 | 2000/16 | 1500/32 | AC 120 V/60 Hz, 1-phase, IP54 | E110C |
| 3500/8 | 2000/16 | 1500/32 | AC 120 V/60 Hz, 1-phase, brake, IP20 | E110CB |
| 3500/6,5 | 2000/13 | 1500/26 | AC 230 V/50 Hz, 1-phase, IP54 | E220C |
| 3500/6,5 | 2000/13 | 1500/26 | AC 230 V/50 Hz, 1-phase, brake, IP20 | E220CB |
| 3500/7 | 2000/14 | 1500/32 | AC 400 V/50 Hz, 3-phase, IP55 | E380C |
| 4000/xx | 2000/xx | 1 500/xx | No motor | 0000 |
| 4000/17-12 | 2500/32-25 | 1500/63-48 | DC 12 V, IP66 | C12C |
| 4000/17-13 | 2500/33-26 | 1500/65-52 | DC 24 V, IP66 | C24C |
| 4000/9-5 | 2500/17-10 | 1500/31-24 | 24 V DC, motor with low speed, IP66 | C24CW |
| 4000/16-12 | 2500/33-22 | 1500/65-44 | DC 24 V, flat motor, IP44 | P24C |
| 4000/16-12 | 2500/33-22 | 1500/65-44 | DC 24 V, flat motor, brake, IP20 | P24CB |
| 4000/16-12 | 2500/33-22 | 1500/65-44 | DC 24 V, flat motor, extended shaft, IP44 | P24CS |
| 4000/16-6 | 2500/18-12 | 1500/36-26 | DC 24 V, flat motor, low speed, IP44 | P24CW |

1 2 4
Gearbox

CAT R 32B x 050 1 A1 G1 E2 F E110CB T2

**Type**

**Motor installation**
- **R** Right
- **L** Left

**Stroke (S)**
- **050** 50 mm
- **100** 100 mm
- **200** 200 mm
- **300** 300 mm
- **400** 400 mm
- **500** 500 mm
- **700** 700 mm
- – – – Other stroke lengths available on request

**Rear attachment**
- **A1** Rod clevis, Ø12,0 mm
- **A2** Rod clevis, Ø12,7 mm
- **K1** Single bracket with ear, Ø12,0 mm
- **K2** Single bracket with ear, Ø12,7 mm

**Cable/connecting plug**
- **G1** Hole, Ø12,0 mm
- **G2** Hole, Ø12,7 mm
- **G3** Male thread, M12
- **G4** Female thread, M12
- **G5** Rod clevis, Ø10,1 mm

**Feedback**
- No encoder (no code)
- **E2** Encoder (for all standard motors)

**Option**
- **F** Friction clutch (not available with optional encoder)
- **Z** No friction clutch
- **S** Back-up nut

**Option for CxxC motors**
- **T2** Straight cable, 2,0 m, no plug
- **T2P** Straight cable, 2,0 m, jack plug
- **T6** Straight cable, 6,0 m, no plug

001DF4DE

## 46 Ordering designation CAP43B

| Load [N]/speed at full load [mm/s] | | | Motor options | |
|---|---|---|---|---|
| 4000/xx | 2500/xx | 1500/xx | No motor | 0000 |
| 4000/17-13 | 2500/33-26 | 1500/65-52 | DC 24 V, IP44 | C24C |
| 4000/9-5 | 2500/17-10 | 1500/31-24 | DC 24 V, low speed, IP44 | C24CW |
| 4000/17–11 | 2500/34-19 | 1500/66-38 | DC 24 V, flat motor, IP44 | P24C |
| 4000/10-6 | 2500/18-12 | 1500/36-26 | DC 24 V, flat motor, low speed, IP44 | P24CW |

1 2 4
Gearbox

CAP R 43B x 100 x 1 A1 G1 F / C24CW T2

**Type**

**Motor installation**
**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** Rod clevis, Ø12,0 mm
**A2** Rod clevis, Ø12,7 mm
**K1** Single bracket with ear, Ø12,0 mm
**K2** Single bracket with 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** Rod clevis, 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

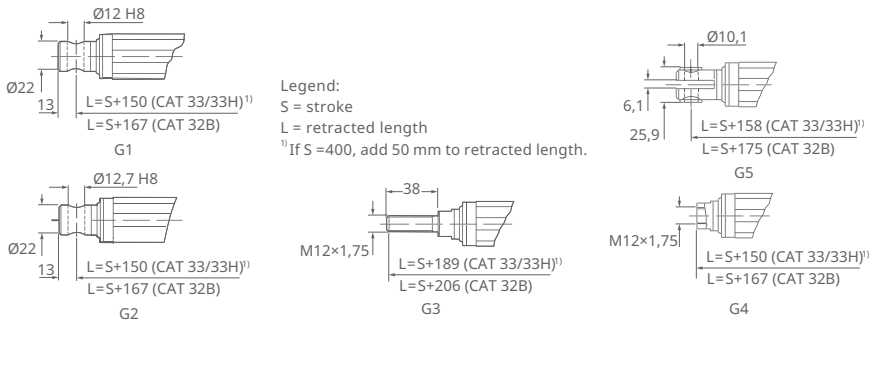
001DF4EE

4

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

## Front attachments and retracted length

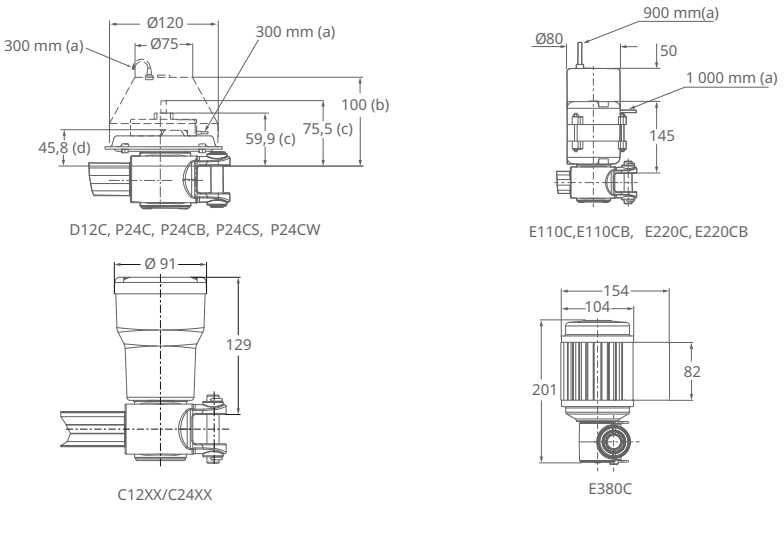
47 Front attachments and retracted length




| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

## Motor options for CAT

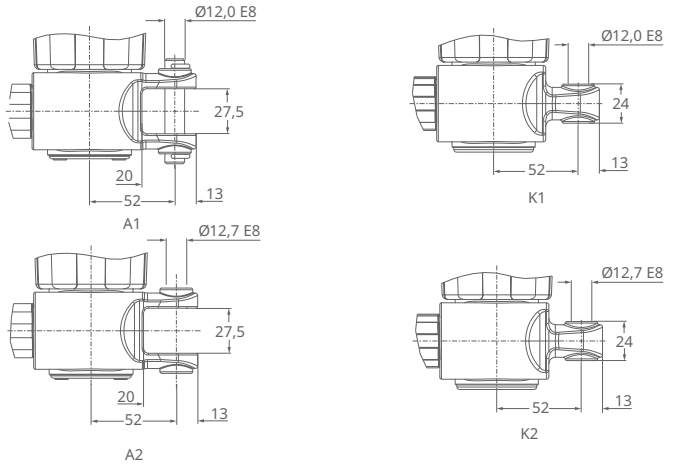
48 Motor options for CAT




| | | | |
|---|---|---|---|
| a | Cable length | b | Cover for brake |
| c | Extended shaft | d | Motor |

## Rear attachments

49 Rear attachments



# 5 CAT33, CAP43A

50 CAT33, CAP43A

## Benefits

- compact
- robust design
- highly efficient
- with lifetime lubrication
- digital encoder feedback

11 Technical data CAT33 and CAP43A

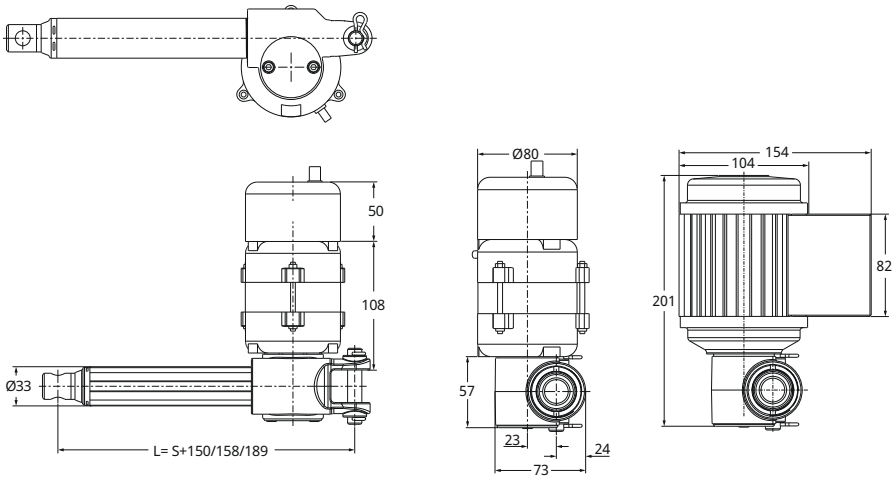
| Feature | | | Unit | CAT33 | | CAP43A |
|---|---|---|---|---|---|---|
| | | | | AC | DC | DC |
| Rated push force | | | N | 800 ... 3000 | 800 ... 3000 | 1000 ... 3000 |
| Rated pull force | | | N | 800 ... 3000 | 800 ... 3000 | 1000 ... 3000 |
| Speed (full load ... no load) | | | mm/s | 5 ... 24 [1] | 6 ... 66 [1] | 6 ... 66 [1] |
| Stroke S | | | mm | 100 ... 400 | 100 ... 400 | 100 ... 400 |
| Retracted length L | | | mm | S + 150/158/189 [2] | S + 150/158/189 [2] | S + 150/158/189 [2] |
| Voltage | AC | | V | 120, 230 / 400 | – | – |
| | DC | | V | – | 12 / 24 | 24 |
| Power consumption | AC | 120 V | W | 98 (brake 133.2 W) | – | – |
| | AC | 230 V | W | 92 (brake 117.3 W) | – | – |
| | AC | 400 V | W | 80 | – | – |
| | DC | 12 V / 24 V | W | – | n/a | n/a |
| Current consumption | AC | 120 V | A | 0.82 (brake +0.29 A) | – | – |
| | AC | 230 V | A | 0.4 (brake +0.11 A) | – | – |
| | AC | 400 V | A | 0.2 | – | – |
| | DC | 12 V | A | – | 18 | – |
| | DC | 24 V | A | – | 9 | 9 |
| | DC | 24 V | A | – | 5 (for motors C24CW and P24CW) | 5 (for motors C24CW and P24CW) |
| Duty cycle | | | % | 30 | 15 | 15 |
| Ambient temperature | | | °C | –20 ... +50 | –20 ... +50 | –20 ... +50 |
| Protection code (IP) | | | – | IP20, IP54, IP55 | IP20, /IP44, IP66 [1] | IP44 |
| Mass | | | kg | 2 ... 2.7 | 2 ... 2.7 | 2 ... 2.7 |

[1] depending on selected motor

[2] dimension depends on selected front attachment

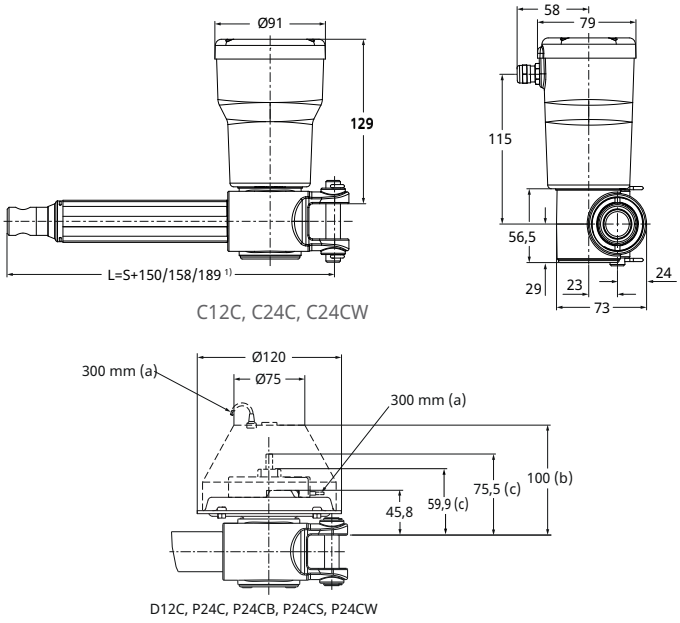
## Dimensional drawings

### 51 Dimensions CAT33,AC version




| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

### 52 Dimensions CAT33,DC version



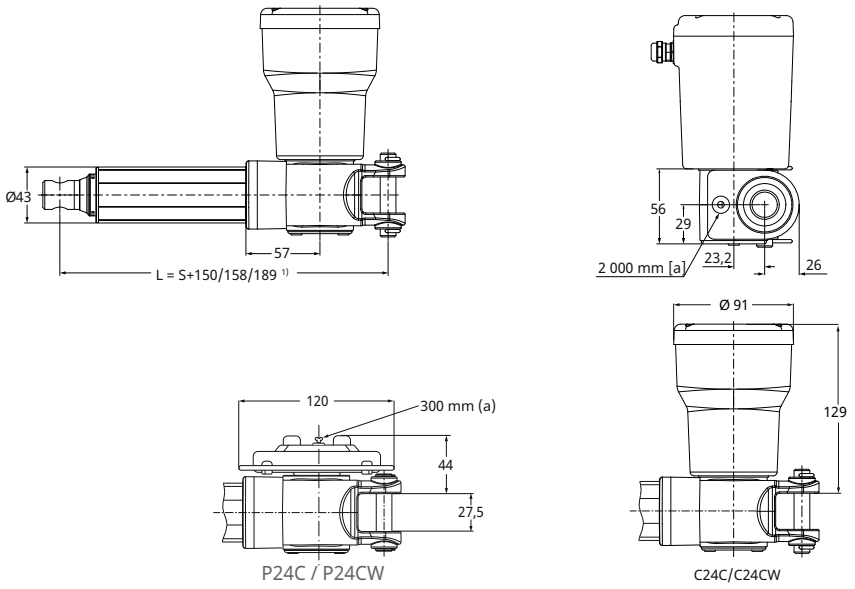

| | | | |
|---|---|---|---|
| a | Cable length | b | Cover for brake (P24CB) |
| c | Extended shaft (P24CS) | d | Motor (P24C) |

1) dimension depends on selected front attachment

| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

5

53 Dimensions CAP43A

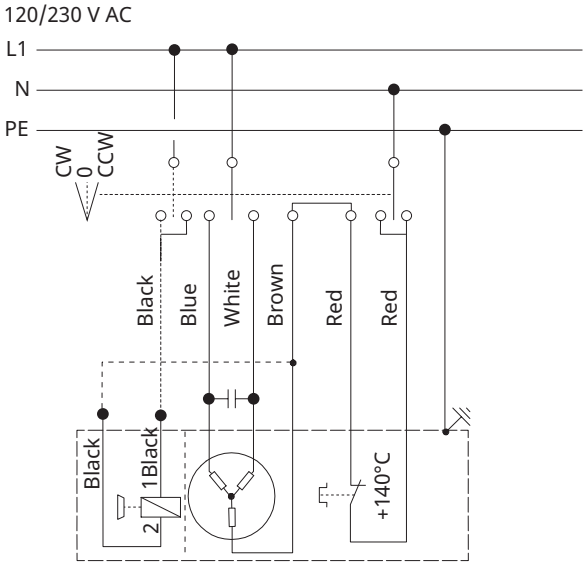



1) dimension depends on selected front attachment

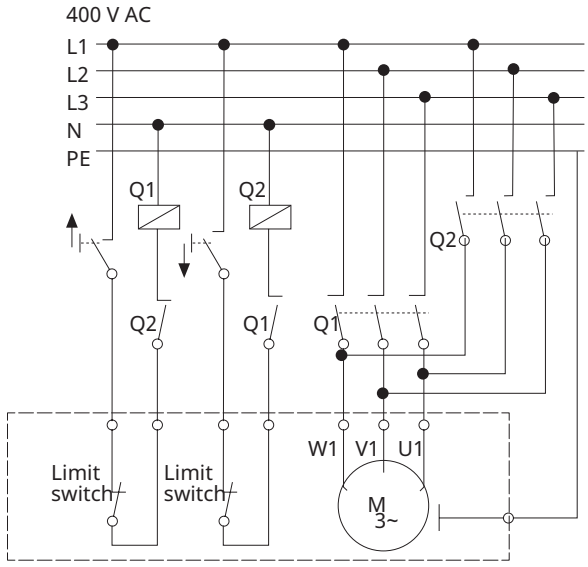
## Wiring diagrams

## AC version

54 Connecting diagram CAT33, AC 120/230 V

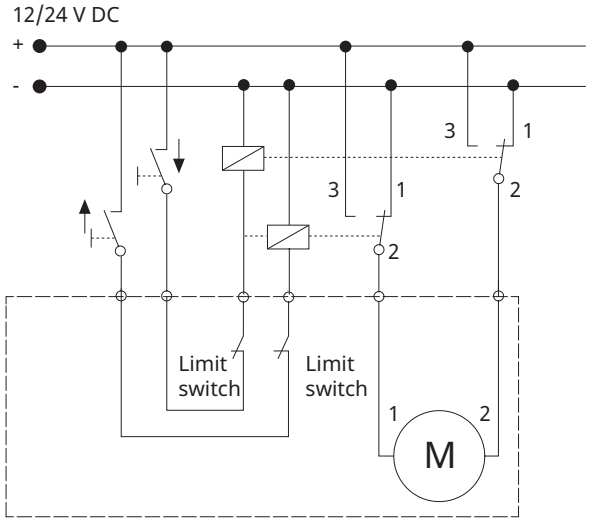


55 Connecting diagram CAT33, AC 400 V

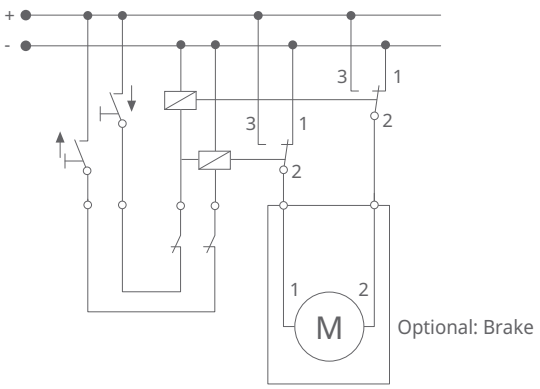



## DC version

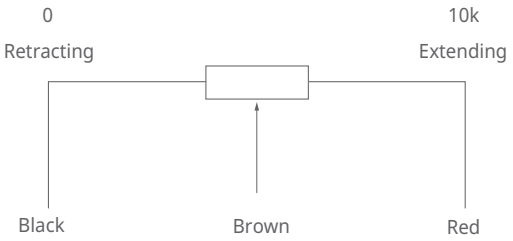
56 Connecting diagramCAT33, DC 12/24 V



57 Connecting diagram CAP43A




58 Wiring diagram for linear potentiometer




## Suitable control units and accessories

### AC version

12 Suitable operating elements and controls CAT33 AC version

| Linear actuators | Limit switch | Encoder |
|---|---|---|
| **CAT33 AC** | **CAXD33** | **E2** |
| E110C | ✓ | ✓ |
| E110CB | ✓ | ✓ |
| E220C | ✓ | ✓ |
| E220CB | ✓ | ✓ |
| E380C | ✓ | ✓ |

✓ suitable

### DC version

13 Suitable operating elements and controls CAT33 DC version and CAP43A

| Linear actuators | Encoder |
|---|---|
| **CAT33 DC, CAP43A** | **E2** |
| C12C | ✓ |
| D12C | ✓ |
| C24C | ✓ |
| C24CW | ✓ |
| P24C | ✓ |
| P24CB | ✓ |

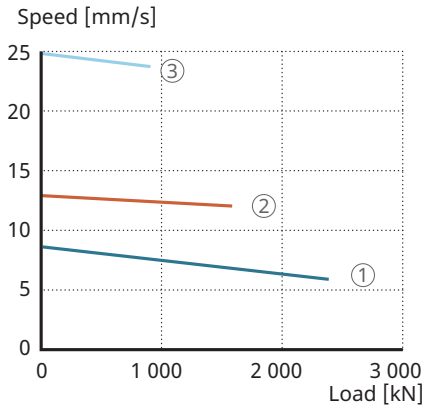
| Linear actuators | Encoder |
|---|---|
| **CAT33 DC, CAP43A** | **E2** |
| P24CS | ✓ |
| P24CW | ✓ |
| ✓ | suitable |

## Performance diagrams

## AC version

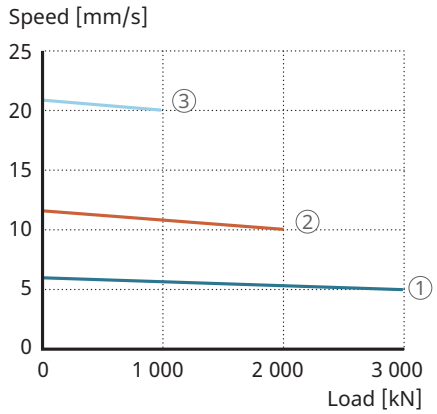


59 Speed-load diagram CAT33, AC 120 V



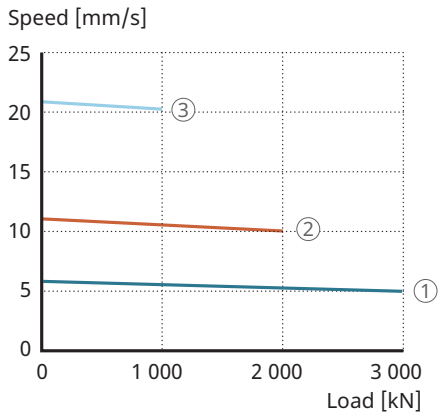

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

60 Speed-load diagram CAT33, AC 230 V



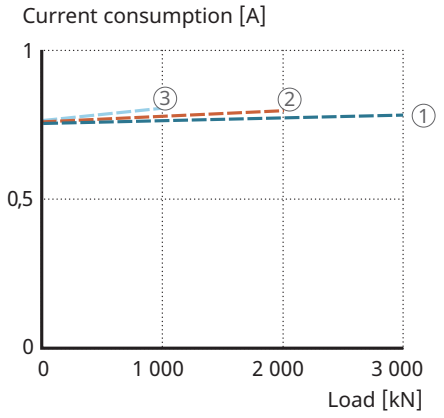

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

61 Speed-load diagram CAT33, AC 400 V



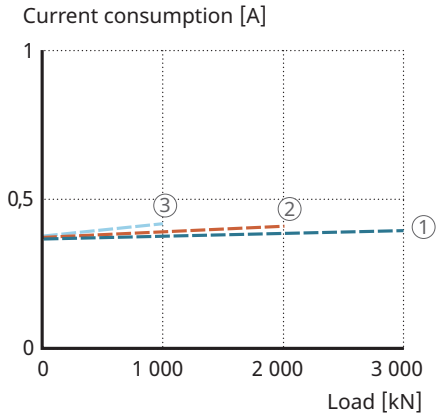

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

62 Current-load diagram CAT33, AC 120 V



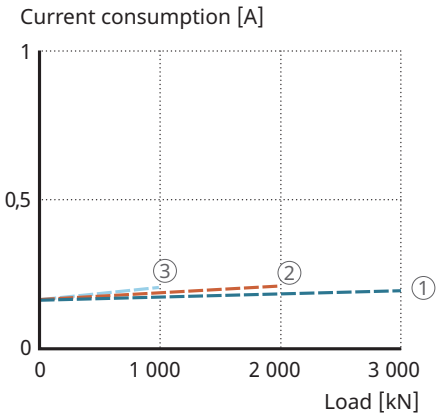

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

63 Current-load diagram CAT33, AC 230 V




| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

64 Current-load diagram CAT33, AC 400 V

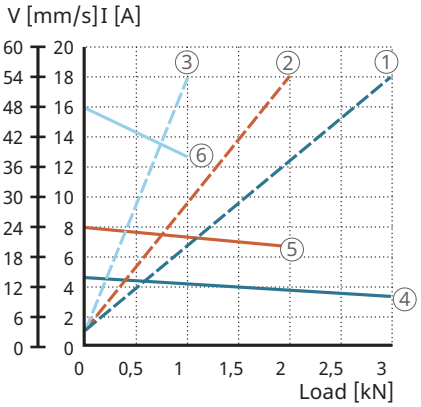



| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 2 |
| 3 | Gear 4 | | |

Deviations of ±10 % from the values in the diagram may occur.

## DC version

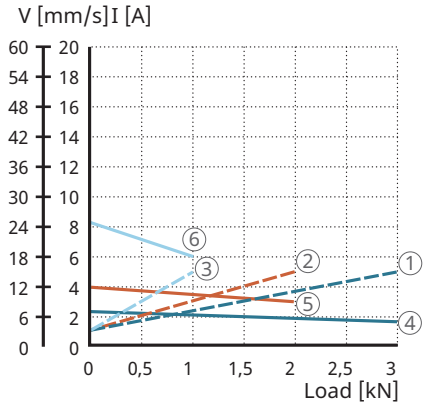
65 Performance diagram CAT33.../C12C




| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

5

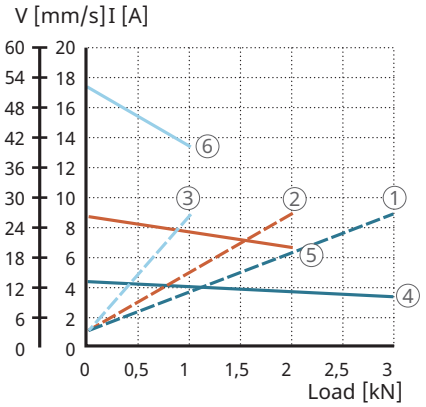
66 Performance diagram CAT33.../C24C, CAP43A.../C24C




001DF56E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

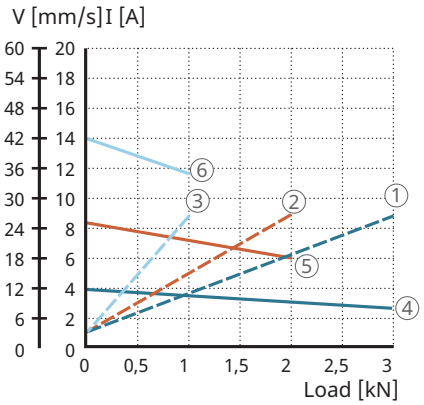
67 Performance diagram CAT33.../C24CW, CAP43A.../C24CW




001DF57E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

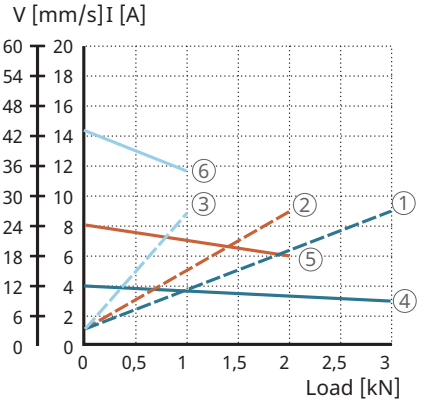
### 68 Performance diagram CAT33.../D12C




001DF58E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

### 69 Performance diagram CAT33.../P24C/P24CB/P24CS, CAP43A.../P24C

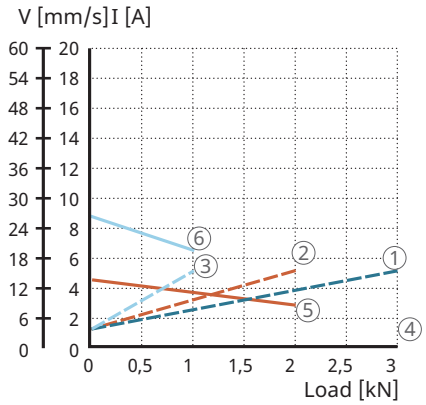



001DF59E

| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| 1 | I [A] gear 1 | 2 | I [A] gear 2 |
| 3 | I [A] gear 4 | 4 | v [mm/s] gear 1 |
| v | Speed | I | Current consumption |

5

70 Performance diagram CAT33.../P24CW, CAP43A.../P24CW




001DF5AE

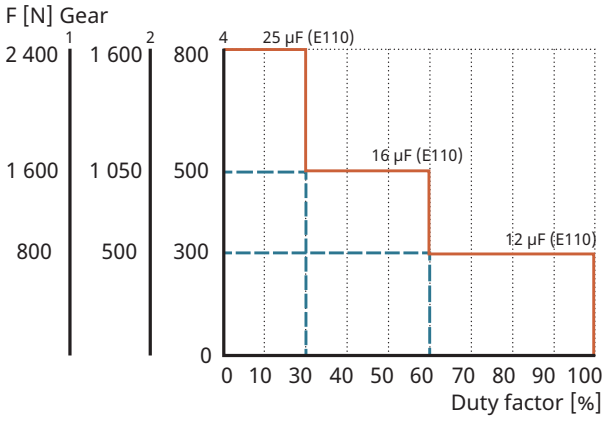
| | | | |
|---|---|---|---|
| 1 | I (A) gear 1 | 2 | I (A) gear 2 |
| 3 | I (A) gear 4 | 4 | v (mm/s) gear 1 |
| 5 | v (mm/s) gear 2 | 6 | v (mm/s) gear 4 |
| v | Speed | I | Current consumption |

Deviations of ±10 % from the values in the diagram may occur.

## Duty cycle

## AC version

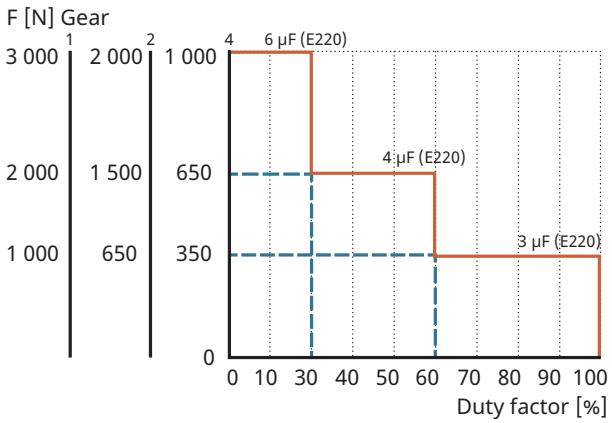
71 Duty cycle CAT33, AC 120 V




001D6806

| | | | |
|---|---|---|---|
| F | Load | | |

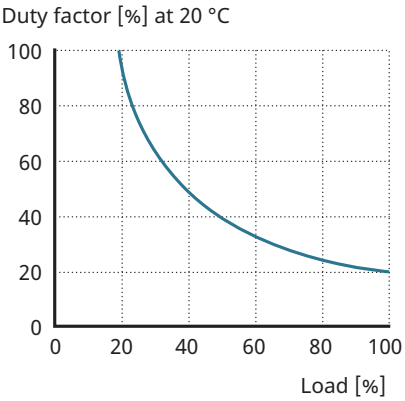
72 Duty cycle CAT33, AC 230 V




| | |
|---|---|
| F | Load |

## DC version

73 Duty cycle CAT33 and CAP43A, DC version



## CAT33 – Type codes for accessories and spare parts

14 Accessories and spare parts for CAT33

| Description | Ordering designation | Order number |
|---|---|---|
| Motor DC 12 V (cylindrical motor) | C12C | M/0405535 |
| Motor DC 12 V (flat motor) | D12C | M/0405518 |
| Motor DC 24 V (cylindrical motor) | C24C | M/0405536 |
| Motor DC 24 V (cylindrical motor with low speed) | C24CW | M/0405537 |
| Motor DC 24 V (flat motor) | P24C | M/0405519-V01 |
| Motor DC 24 V (flat motor with brake) | P24CB | M/0405523-V01 |
| Motor DC 24 V (flat motor with extended shaft) | P24CS | M/0405522-V01 |
| Motor DC 24 V (flat motor with low speed) | P24CW | M/0405521-V01 |
| Motor AC 120 V (cylindrical motor) | E110C | M/0405533 |
| Motor AC 120 V (cylindrical motor with brake) | E110CB | M/0405534 |
| Motor AC 230 V (cylindrical motor) | E220C | M/0405531 |
| Motor AC 230 V (cylindrical motor with brake) | E220CB | M/0405532 |
| Motor AC 400 V (cylindrical motor) | E380C | M/0411607 |
| Capacitor value 25 µF (AC 120 V) | Capacitor 25 µF | M/0430670-16 |
| Capacitor value 6 µF (AC 230 V) | 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 attachments, rod end type | 575–32 | M/0430575–32 |
| Front attachments, rod clevis type | 576–32 | M/0430576–32 |
| Rear attachments, single bracket with ear type | 580–32 | M/0430580–32 |
| Rear attachments, universal joint type | 582–32 | M/0431780–32 |

## CAP43A – Type codes for accessories and spare parts

15 Accessories and spare parts for CAP43A

| Description | Ordering designation | Order number |
|---|---|---|
| Motor DC 24 V (cylindrical motor) | C24C | M/0405536 |
| Motor DC 24 V (cylindrical motor with low speed) | C24CW | M/0405537 |
| Motor DC 24 V (flat motor) | P24C | M/0405519-V01 |
| Motor DC 24 V (flat motor with low speed) | P24CW | M/0405521-V01 |
| Front attachments, rod end type | 575–32 | M/0430575–32 |
| Front attachments, rod clevis type | 576–32 | M/0430576–32 |
| Rear attachments, single bracket with ear type | 580–32 | M/0430580–32 |
| Rear attachments, universal joint type | 582–32 | M/0431780–32 |

# Ordering key

## 74 Ordering designation CAT33

| Load [N]/speed at full load [mm/s] | | | Motor options | |
|---|---|---|---|---|
| 3000/xx | 2000/xx | 1000/xx | No motor | 0000 |
| 2400/6 | 1600/12 | 800/24 | AC 120 V/60 Hz, 1-phase, IP54 | E110C |
| 2400/6 | 1600/12 | 800/24 | AC 120 V/60 Hz, 1-phase, brake, IP20 | E110CB |
| 3000/5 | 2000/10 | 1000/20 | AC 230 V/50 Hz, 1-phase, IP54 | E220C |
| 3000/5 | 2000/10 | 1000/20 | AC 230 V/50 Hz, 1-phase, brake, IP20 | E220CB |
| 3000/5 | 2000/10 | 1000/20 | AC 400 V/50 Hz, 3-phase, IP55 | E380C |
| 3000/xx | 2000/xx | 1000/xx | No motor | 0000 |
| 3000/13-10 | 2000/24-20 | 1000/48-38 | DC 12 V, IP66 | C12C |
| 2400/ 11–7 | 1600/21-15 | 800/39-21 | DC 12 V, flat motor, IP44 | D12C |
| 3000/13-10 | 2000/26-20 | 1000/52-40 | DC 24 V, IP66 | C24C |
| 3000/7-5 | 2000/13-9 | 1000/25-18 | DC 24 V, low speed, IP66 | C24CW |
| 3000/17–11 | 2000/34-19 | 1000/66-38 | DC 24 V, flat motor, IP44 | P24C |
| 3000/12-9 | 2000/25-18 | 1000/43-35 | DC 24 V, flat motor, brake, IP20 | P24CB |
| 3000/17–11 | 2000/34-19 | 1000/66-38 | DC 24 V, flat motor, IP44, extended shaft | P24CS |
| 3000/10-16 | 2000/18-12 | 1000/36-26 | DC 24 V, flat motor, low speed, IP44 | P24CW |

1 2 4
Gearbox

CAT R 33 x 100 x 1 A1 G1 E2 F / E110CB T2

**Type**

**Motor installation**
**R** Right
**L** Left

**Stroke (S)**
**100** 100 mm
**200** 200 mm
**300** 300 mm
**400** 400 mm
**– – –** Other stroke lengths available on request

**Rear attachment**
**A1** Rod clevis, Ø12,0 mm
**A2** Rod clevis, Ø12,7 mm
**K1** Single bracket with ear, Ø12,0 mm
**K2** Single bracket with 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** Rod clevis, Ø10,1 mm

**Feedback**
**–** No encoder (no code)
**E2** Encoder (for all standard motors)

**Option**
**F** Friction clutch (not available with optional encoder)
**Z** No friction clutch

**Option for CxxC motors**
**T2** Straight cable, 2,0 m, no plug
**T2P** Straight cable, 2,0 m, jack plug
**T6** Straight cable, 6,0 m, no plug

001DF5BE

## 75 Ordering designation CAP43A

| Load [N]/speed at full load [mm/s] | | | Motor options | |
|---|---|---|---|---|
| 3000/xx | 2000/xx | 1000/xx | No motor | 0000 |
| 3000/13-10 | 2000/26-20 | 1000/52-40 | DC 24 V, IP44 | C24C |
| 3000/7-5 | 2000/13-9 | 1000/25-18 | DC 24 V, IP44 | C24CW |
| 3000/17–11 | 2000/34-19 | 1000/66-38 | DC 24 V, flat motor, IP44 | P24C |
| 3000/7-5 | 2000/13-8 | 1000/26-19 | DC 24 V, flat motor, low speed, IP44 | C24CW |

1 2 4
Gearbox

| CAP | R | 43A | x | 100 | x | 1 | A1 | G1 | F | / | C24CW | T2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Type**

**Motor installation**
**R** Right
**L** Left

**Stroke (S)**
**100** 100 mm
**200** 200 mm
**300** 300 mm
**400** 400 mm

**Rear attachment**
**A1** Rod clevis, Ø12,0 mm
**A2** Rod clevis, Ø12,7 mm
**K1** Single bracket with ear, Ø12,0 mm
**K2** Single bracket with 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** Rod clevis, Ø10,1 mm

**Option**
**F** Friction clutch

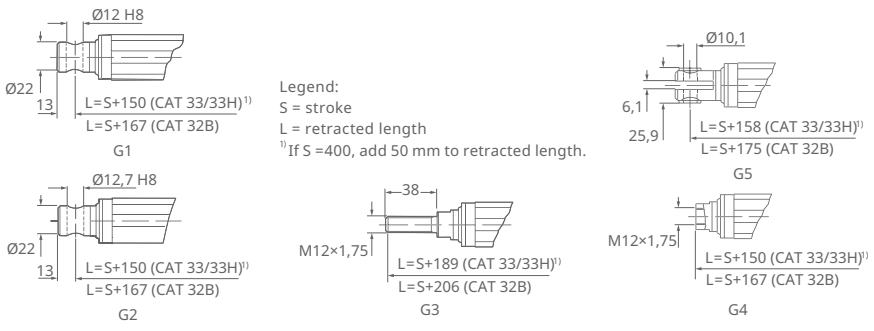
**Cable option for C24C[W] motors**
**T2** Straight, 2,0 m
**T6** Straight cable, 6,0 m, no plug

001DF5CE

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

## Front attachments and retracted length

### 76 Front attachments and retracted length



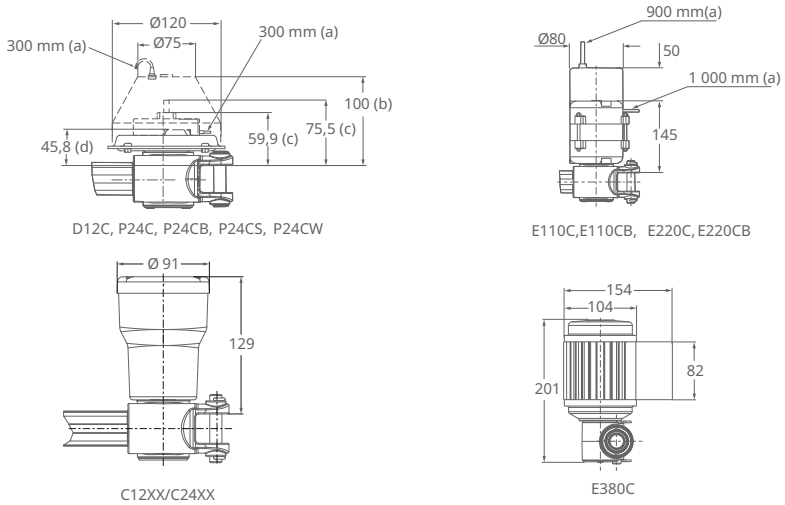

001DCAD5

S mm Stroke

| | | |
|---|---|---|
| L | mm | Retracted length |

## Motor options for CAT

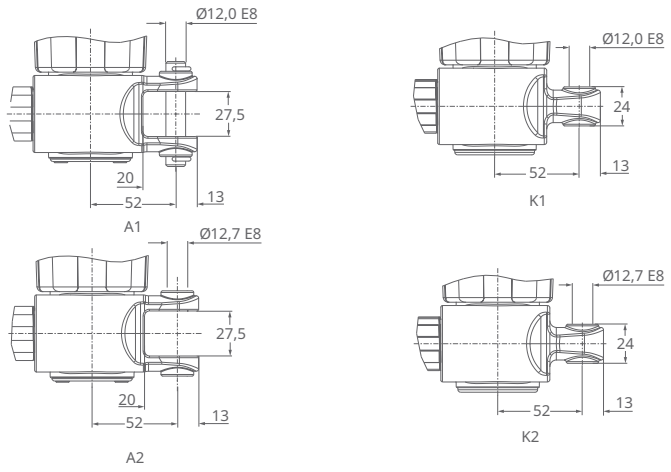
77 Motor options for CAT




| | | | |
|---|---|---|---|
| a | Cable length | b | Cover for brake |
| c | Extended shaft | d | Motor |

## Rear attachments

78 Rear attachments



# 6 CAT33H



79 CAT33H

001D5C19

## Benefits

- compact
- robust design
- modular
- with lifetime lubrication
- high efficiency
- digital encoder feedback

16 Technical data CAT33H

| Feature | | | Unit | CAT33H | |
|---|---|---|---|---|---|
| | | | | AC | DC |
| Rated push force | | | N | 500 ... 1200 | 400 ... 1200 |
| Rated pull force | | | N | 500 ... 1200 | 400 ... 1200 |
| Speed (full load ... no load) | | | mm/s | 20 ... 90 [1)] | 17 ... 93 [1)] |
| Stroke S | | | mm | 100 ... 400 | 100 ... 400 |
| Retracted length L | | | mm | S + 150/158/189 [2)] | S + 150/158/189 [2)] |
| Voltage | AC | | V | 120, 230 / 400 | – |
| | DC | | V | – | 12 / 24 |
| Power consumption | AC | 120 V | W | 98 (brake 133.2 W) | – |
| | AC | 230 V | W | 92 (brake 117.3 W) | – |
| | AC | 400 V | W | 80 | – |
| | DC | 12 V / 24 V | W | – | n/a |
| Current consumption | AC | 120 V | A | 0.82 (brake +0.29 A) | – |
| | AC | 230 V | A | 0.4 (brake +0.11 A) | – |
| | AC | 400 V | A | 0.2 | – |
| | DC | 12 V | A | – | 18 |
| | DC | 24 V | A | – | 9 |
| | DC | 24 V | A | – | 5 (for motors C24CW and P24CW) |
| Duty cycle | | | % | 30 | 20 |

| Feature | Unit | CAT33H | |
|---|---|---|---|
| | | AC | DC |
| Ambient temperature | °C | –20 ... +50 | –20 ... +50 |
| Protection code (IP) | – | IP20, IP54, IP55 | IP20, /IP44, IP66 [1] |
| Mass | kg | 2 ... 2.7 | 2 ... 2.7 |

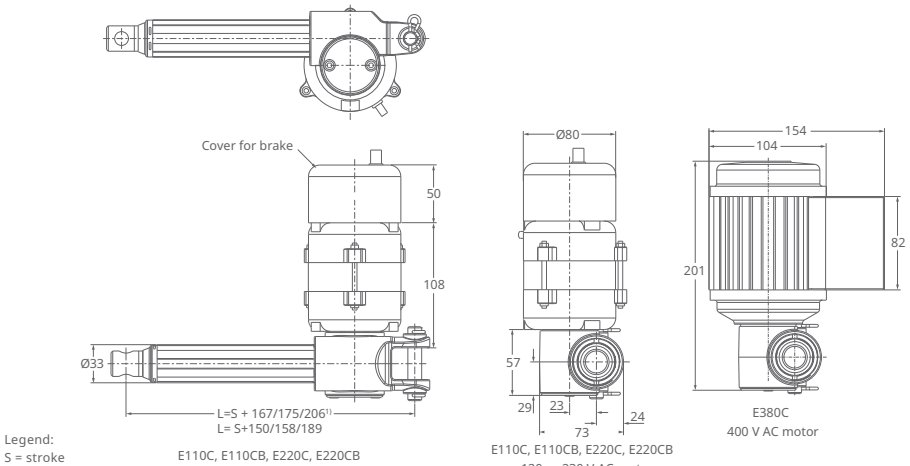
1) depending on selected motor

2) dimension depends on selected front attachment

## Dimensional drawings



### 80 Dimensions CAT33H – AC version




Legend:
S = stroke
L = retracted length

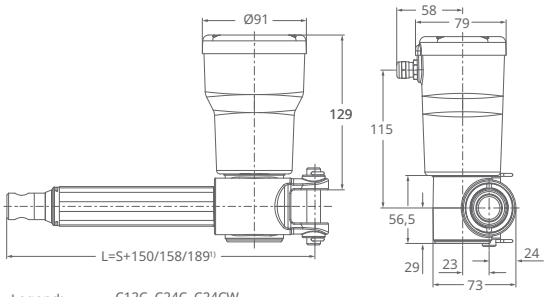
E110C, E110CB, E220C, E220CB
120 or 230 V AC motor

E110C, E110CB, E220C, E220CB
120 or 230 V AC motor

[1] Dimension depends on selected front attachement

001DCB16

### 81 Dimensions CAT33H – DC version

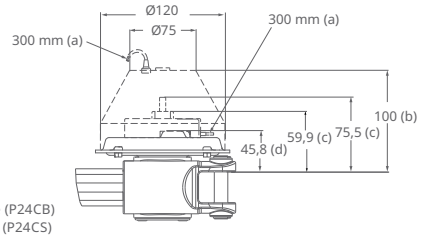



Legend:
S = stroke
L = retracted length

C12C, C24C, C24CW

C12C, C24C, C24CW

[1] Dimension depends on selected front attachement



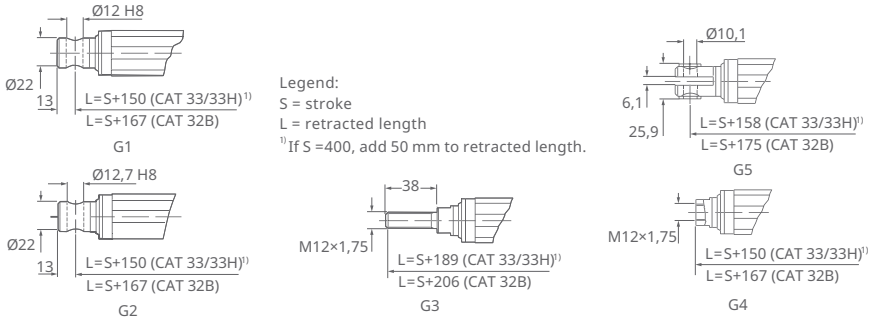

Legend:
(a) = cable length
(b) = cover for brake (P24CB)
(c) = extended shaft (P24CS)
(d) = motor (D12C, P24C, P24CW)

D12C, P24C, P24CB, P24CS, P24CW

001DCB23

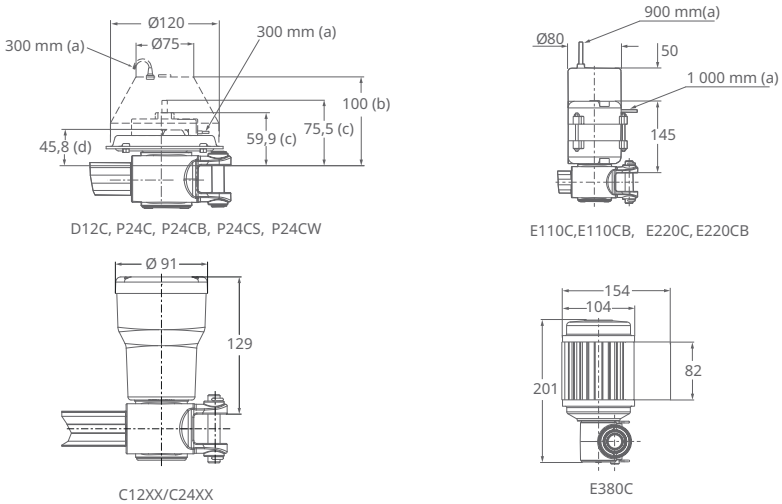
# Detailed drawings of front and rear attachments for CAT and CAP43 and motor options for CAT

## 82 Front attachments and retracted length




001DCAD5

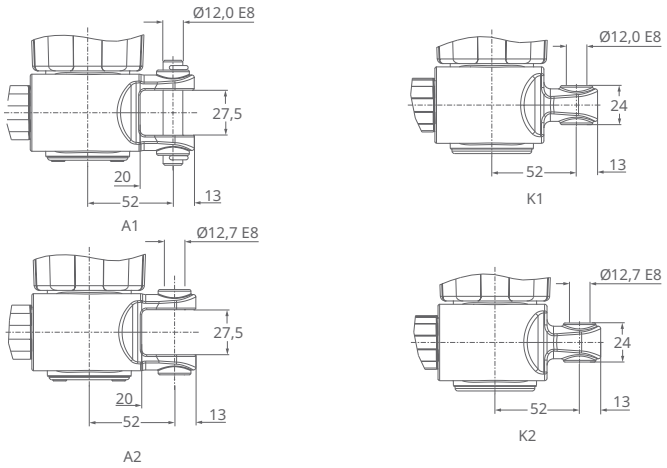
## 83 Motor options for CAT




001DCABA

| | | | |
|---|---|---|---|
| a | Cable length | b | Cover for brake |
| c | Extended shaft | d | Motor |

## 84 Rear attachments

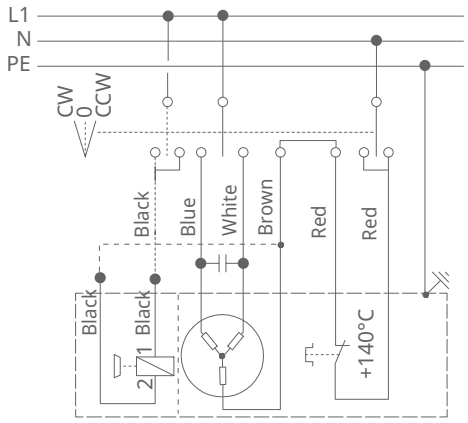



001DCAC7

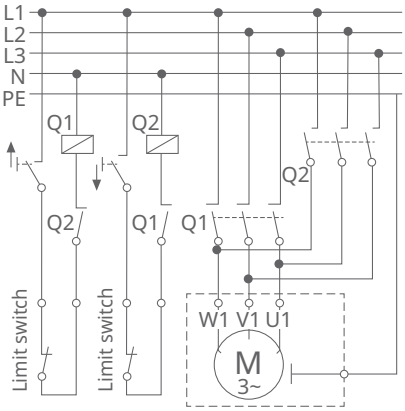
# Wiring diagrams

## AC version

85 AC single-phase alternating current: 120 V, 230 V

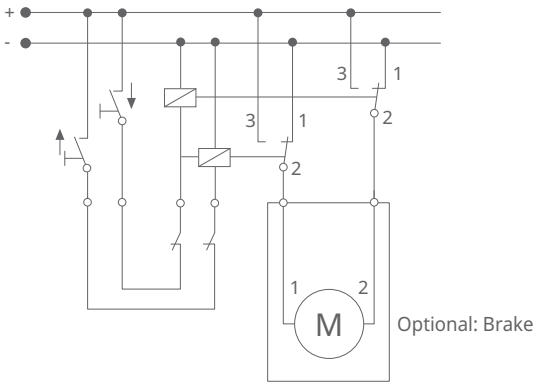



86 AC three-phase alternating current: 400 V




## DC version

87 DC: 12 V, 24 V



## Suitable control units and accessories

### AC version

17 Suitable operating elements and controls CAT33H AC version

| Linear actuator | Encoder |
|---|---|
| **CAT33H AC** | **E2** |
| E110C | ✓ |
| E110CB | ✓ |
| E220C | ✓ |
| E220CB | ✓ |
| E380C | ✓ |
| ✓ | suitable |



### DC version

18 Suitable operating elements and controls CAT33H DC version

| Linear actuator | Encoder |
|---|---|
| **CAT33H DC** | **E2** |
| C12C | ✓ |
| D12C | ✓ |
| C24C | ✓ |
| C24CW | ✓ |
| P24C | ✓ |
| P24CB | ✓ |
| P24CS | ✓ |
| P24CW | ✓ |
| ✓ | suitable |

## CAT 33H – Type codes for accessories and spare parts

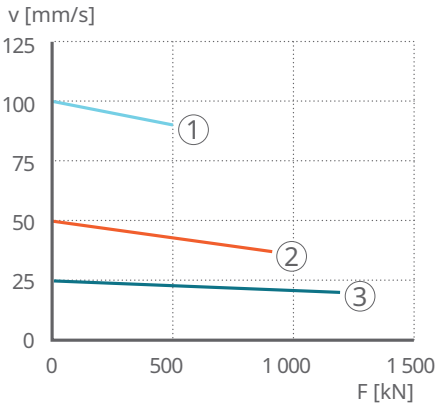
19 Accessories and spare parts for CAT33H

| Description | Ordering designation | Order number |
|---|---|---|
| Motor DC 12 V (cylindrical motor) | C12C | M/0405535 |
| Motor DC 12 V (flat motor) | P24C | M/0405518-V01 |
| Motor DC 24 V (cylindrical motor) | C24C | M/0405536 |
| Motor DC 24 V (cylindrical motor with low speed) | C24CW | M/0405537 |
| Motor DC 24 V (flat motor) | P24C | M/0405519-V01 |
| Motor DC 24 V (flat motor with brake) | P24CB | M/0405523-V01 |
| Motor DC 24 V (flat motor with extended shaft) | P24CS | M/0405522-V01 |
| Motor DC 24 V (flat motor with low speed) | P24CW | M/0405521-V01 |
| Motor AC 120 V (cylindrical motor) | E110C | M/0405533 |
| Motor AC 120 V (cylindrical motor with brake) | E110CB | M/0405534 |
| Motor AC 230 V (cylindrical motor) | E220C | M/0405531 |
| Motor AC 230 V (cylindrical motor with brake) | E220CB | M/0405532 |
| Motor AC 400 V (cylindrical motor) | E380C | M/0411607 |
| Capacitor value 25 µF (AC 120 V) | Capacitor 25 µF | M/0430670-16 |
| Capacitor value 6 µF (AC 230 V) | Capacitor 6 µF | M/0430670–03 |
| Front attachments, rod end type | 575–32 | M/0430575–32 |
| Front attachments, rod clevis type | 576–32 | M/0430576–32 |
| Rear attachments, single bracket with ear type | 580–32 | M/0430580–32 |
| Rear attachments, universal joint type | 582–32 | M/0431780–32 |

## Performance diagrams

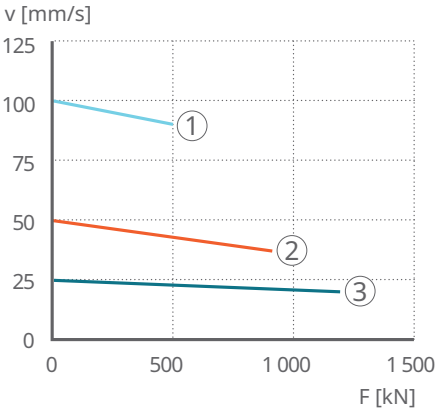
### AC version

88 Speed-load diagram CAT33H, AC 120 V



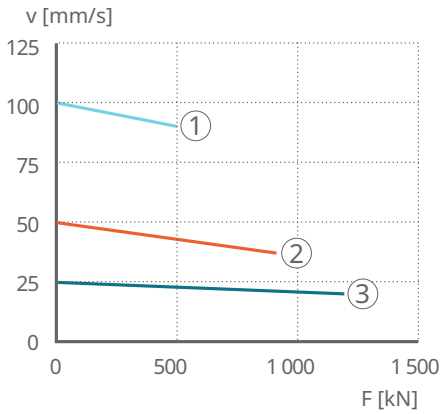

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| v | Speed | | |

89 Speed-load diagram CAT33H, AC 230 V




| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| v | Speed | | |

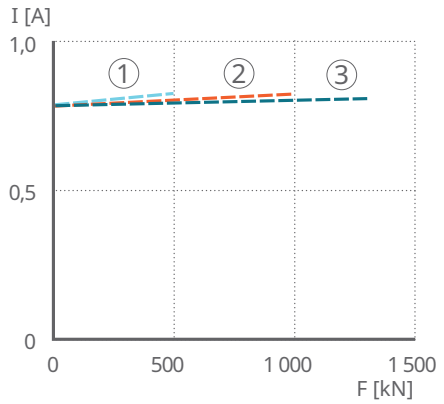
90 Speed-load diagram CAT33H, AC 400 V




001D17B0

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| v | Speed | | |

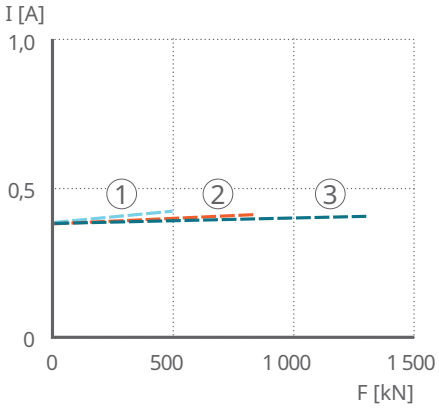
91 Current-load diagram CAT33H, AC 120 V




001D17B1

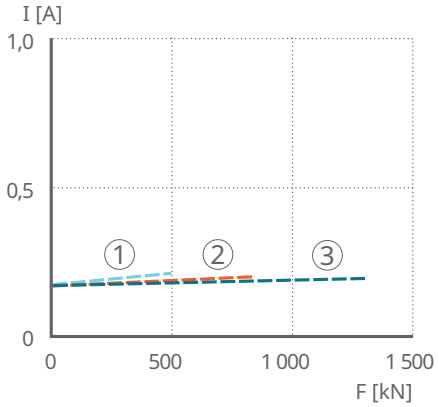
| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| I | Current consumption | | |

92 Current-load diagram CAT33H, AC 230 V




| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| I | Current consumption | | |

93 Current-load diagram CAT33H, AC 400 V

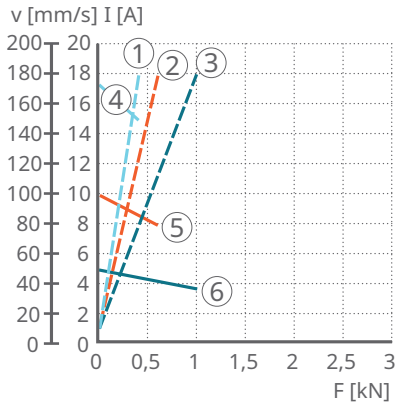



| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| I | Current consumption | | |

Deviations of ±10 % from the values in the diagram may occur.

## DC version

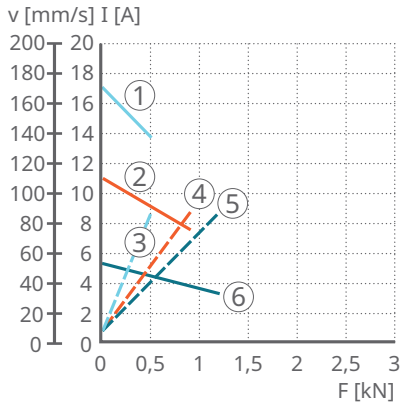
94 Performance diagram CAT33H.../C12C




001D17BC

| | | | |
|---|---|---|---|
| 1 | I [A] gear 1 | 2 | I [A] gear 2 |
| 3 | I [A] gear 4 | 4 | v [mm/s] gear 1 |
| 5 | v [mm/s] gear 2 | 6 | v [mm/s] gear 4 |
| v | Speed | I | Current consumption |
| F | Load | | |

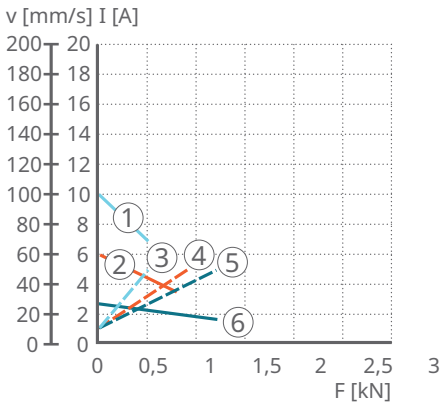
95 Performance diagram CAT33H.../C24C




001D17BE

| | | | |
|---|---|---|---|
| 1 | I [A] gear 1 | 2 | I [A] gear 2 |
| 3 | I [A] gear 4 | 4 | v [mm/s] gear 1 |
| 5 | v [mm/s] gear 2 | 6 | v [mm/s] gear 4 |
| v | Speed | I | Current consumption |
| F | Load | | |

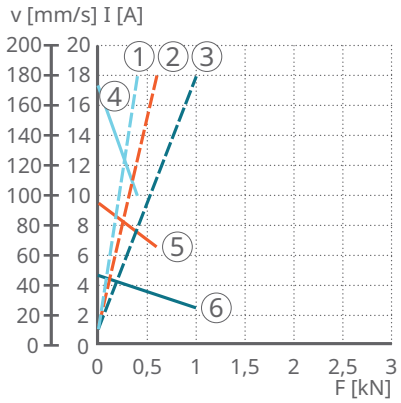
## 96 Performance diagram CAT33H.../C24CW




001D17C1

| | | | |
|---|---|---|---|
| 1 | I [A] gear 1 | 2 | I [A] gear 2 |
| 3 | I [A] gear 4 | 4 | v [mm/s] gear 1 |
| 5 | v [mm/s] gear 2 | 6 | v [mm/s] gear 4 |
| v | Speed | I | Current consumption |
| F | Load | | |

## 97 Performance diagram CAT33H.../D12C

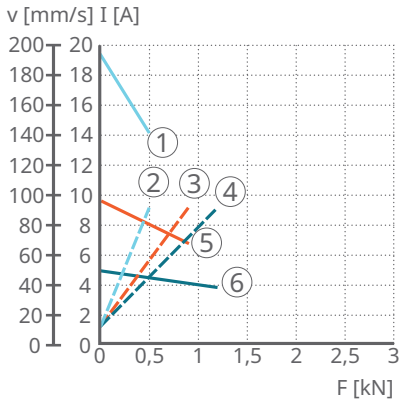



001D17C3

| | | | |
|---|---|---|---|
| 1 | I [A] gear 1 | 2 | I [A] gear 2 |
| 3 | I [A] gear 4 | 4 | v [mm/s] gear 1 |
| 5 | v [mm/s] gear 2 | 6 | v [mm/s] gear 4 |
| v | Speed | I | Current consumption |
| F | Load | | |

6

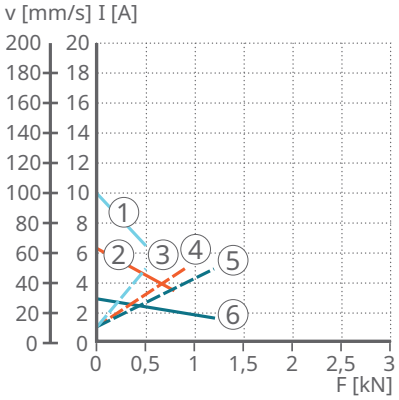
98 Performance diagram CAT33H.../P24...




001D17C4

| | | | |
|---|---|---|---|
| 1 | I [A] gear 1 | 2 | I [A] gear 2 |
| 3 | I [A] gear 4 | 4 | v [mm/s] gear 1 |
| 5 | v [mm/s] gear 2 | 6 | v [mm/s] gear 4 |
| v | Speed | I | Current consumption |
| F | Load | | |

99 Performance diagram CAT33H.../P24CW



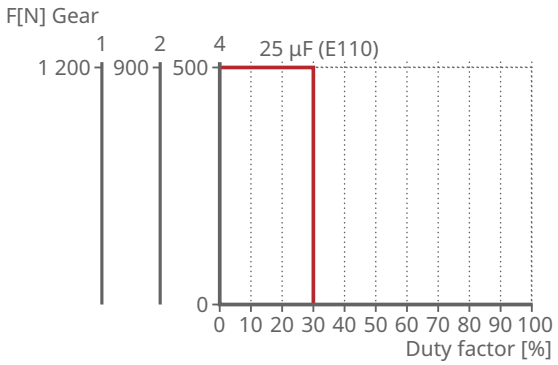

001D17C8

| | | | |
|---|---|---|---|
| 1 | I [A] gear 1 | 2 | I [A] gear 2 |
| 3 | I [A] gear 4 | 4 | v [mm/s] gear 1 |
| 5 | v [mm/s] gear 2 | 6 | v [mm/s] gear 4 |
| v | Speed | I | Current consumption |
| F | Load | | |

Deviations of ±10 % from the values in the diagram may occur.

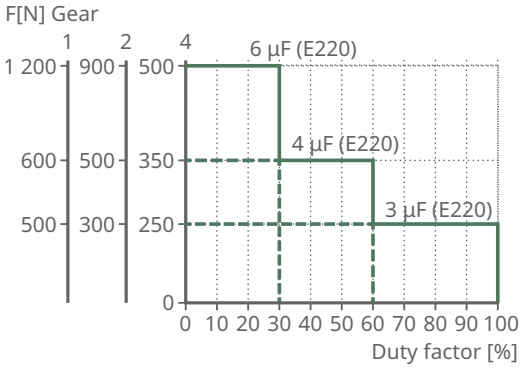
## Duty cycle

100 CAT33H AC: 120 V




001C36DC

101 CAT33H AC: 230 V




001C36DE

# Ordering key

## 102 Ordering designation CAT33H

| Load [N]/speed at full load [mm/s] | | | Motor options | |
|---|---|---|---|---|
| 1200/xx | 900/xx | 600/xx | No motor | 0000 |
| 1200/20 | 900/37 | 500/90 | AC 120 V/60 Hz, 1-phase, IP54 | E110C |
| 1200/20 | 900/37 | 500/90 | AC 120 V/60 Hz, 1-phase, brake, IP20 | E110CB |
| 1200/20 | 900/37 | 500/90 | AC 230 V/50 Hz, 1-phase, IP54 | E220C |
| 1200/20 | 900/37 | 500/90 | AC 230 V/50 Hz, 1-phase, brake, IP20 | E220CB |
| 1200/20 | 900/37 | 500/90 | AC 400 V/50 Hz, 3-phase, IP55 | E380C |
| 1200/xx | 900/xx | 600/xx | No motor | 0000 |
| 1200/50-38 | 600/100-80 | 400/174-150 | DC 12 V, IP66 | C12C |
| 1200/47-25 | 600/95-65 | 400/170-100 | DC 12 V, flat motor, IP44 | D12C |
| 1200/56-36 | 900/113-79 | 500/174-140 | DC 24 V, IP66 | C24C |
| 1200/27-17 | 900/60-35 | 500/100-69 | 24 V DC, motor with low speed, IP66 | C24CW |
| 1200/48-37 | 900/95-65 | 500/193-140 | DC 24 V, flat motor, IP44 | P24C |
| 1200/48-37 | 900/95-65 | 500/193-140 | DC 24 V, flat motor, brake, IP20 | P24CB |
| 1200/48-37 | 900/95-65 | 500/193-140 | DC 24 V, flat motor, extended shaft, IP44 | P24CS |
| 1200/30-17 | 900/63-35 | 500/100-65 | DC 24 V, flat motor, low speed, IP44 | P24CW |

1 2 4
Gearbox

CAT R 33 H x 100 x 1 A1 G1 E2 F / E110CB T2P

**Type**

**Motor installation**
**R** Right
**L** Left

**Stroke (S)**
**100** 100 mm
**200** 200 mm
**300** 300 mm
**400** 400 mm
**-** Other stroke lengths available on request

**Rear attachment**
**A1** Rod clevis, Ø12,0 mm
**A2** Rod clevis, Ø12,7 mm
**K1** Single bracket with ear, Ø12,0 mm
**K2** Single bracket with 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** Rod clevis, Ø10,1 mm

**Feedback**
**-** No encoder (no code)
**E2** Encoder (for all standard motors)

**Option**
**F** Friction clutch (not available with optional encoder)
**Z** No friction clutch

**Option for CxxC motors**
**T2** Straight cable, 2,0 m, no plug
**T2P** Straight cable, 2,0 m, jack plug
**T6** Straight cable, 6,0 m, no plug

001DF5DE

# 7 CAR40

103 CAR40

001CF094



## Benefits

- reliable and robust linear actuators for industrial applications
- wide range of components
- available in right-hand and left-hand versions

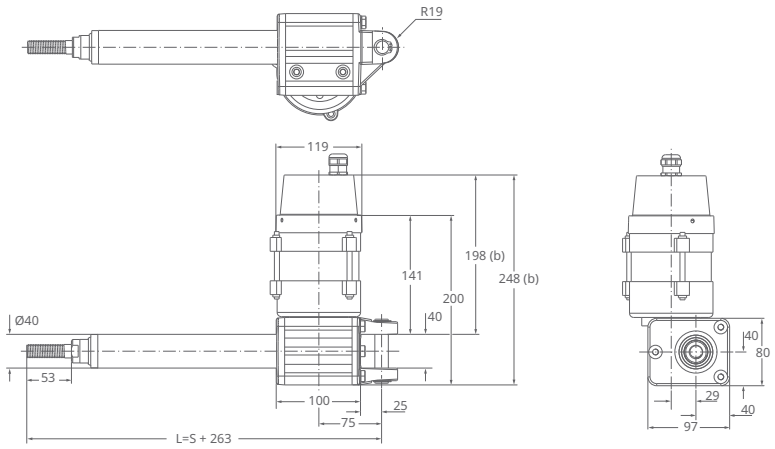
20 Technical data CAR40

| Feature | | | Unit | CAR40 | |
|---|---|---|---|---|---|
| | | | | AC | DC |
| Rated push force | | | N | 2000 to 6000 | 2000 to 6000 |
| Rated pull force | | | N | 2000 to 6000 | 2000 to 6000 |
| Speed (full load ... no load) | | | mm/s | 9 ... 40 [1] | 8 to 50 |
| Stroke S | | | mm | 100 to 700 | 100 to 700 |
| Retracted length L | | | mm | S + 263 | S + 263 |
| Voltage | AC | | V | 120 / 230 | – |
| | DC | | V | – | 24 |
| Power consumption | AC | 120 V | W | 360 | – |
| | AC | 230 V | W | 299 | – |
| | DC | 24 V | W | – | n/a |
| Current consumption | AC | 120 V | A | 3 (brake +0.29 A) | – |
| | AC | 230 V | A | 1.3 (brake +0.11 A) | – |
| | DC | 24 V | A | – | 16 |
| Duty cycle | | | % | 40 | 25 |
| Ambient temperature | | | °C | –20 to +70 | –20 to +70 |
| Protection code (IP) | | | – | IP20, IP54 | IP20, IP54 |
| Mass | | | kg | 5.8 to 8.4 | 5.8 to 8.4 |

[1] depending on selected motor

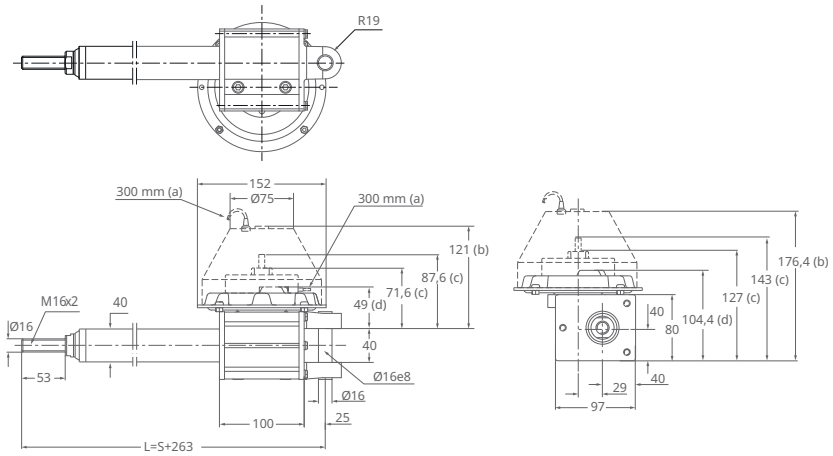
## Dimensional drawings

104 Dimensions CAR40 – AC version




| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

105 Dimensions CAR40 – DC version

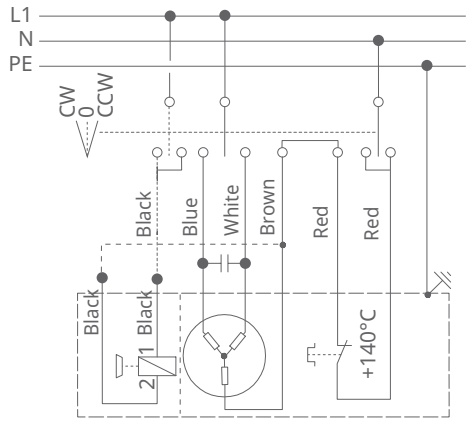



| | | |
|---|---|---|
| S | mm | Stroke |
| L | mm | Retracted length |

# Wiring diagrams

## AC version

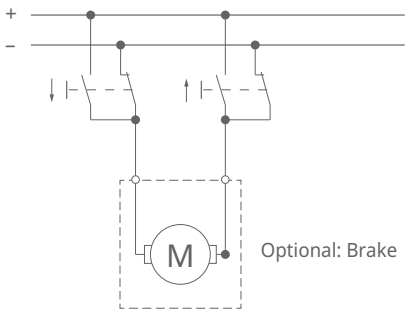
106 AC single-phase alternating current: 120 V, 230 V




001D2216

## DC version

107 DC: 12 V, 24 V




001D2226

# Suitable control units and accessories

## AC version

21 Suitable operating elements and controls CAR40 AC version

| Linear actuator | Limit switch |
|---|---|
| **CAR40 AC** | **CAXE40** |
| E110D | ✓ |
| E110DB | ✓ |
| E220D | ✓ |
| E220DB | ✓ |
| ✓ | suitable |

## DC version

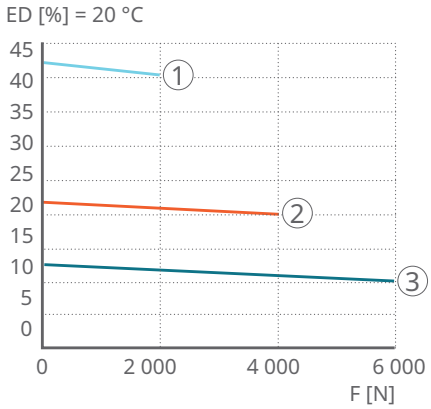
22 Suitable operating elements and controls CAR40 DC version

| Linear actuator | Limit switch |
|---|---|
| **CAR40 DC** | **CAXE40** |
| P24D | ✓ |
| P24DS | ✓ |
| P24DB | ✓ |
| ✓ | suitable |

# Performance diagrams

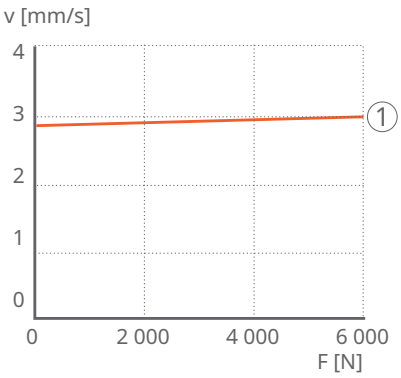
## AC version

108 Speed-load diagram CAR40, AC 120 V



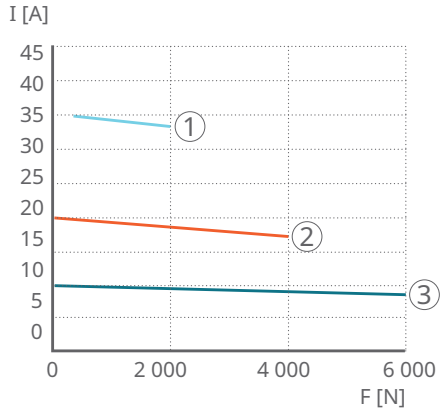

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| ED | Duty cycle | | |

109 Speed-load diagram CAR40, AC 230 V




| | | | |
|---|---|---|---|
| 1 | CAR40 | F | Load |
| v | Speed | | |

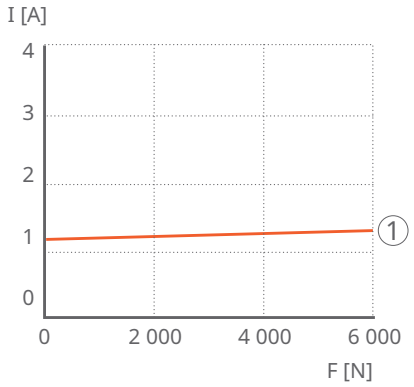
110 Current-load diagram CAR40, AC 120 V




001D17CF

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| I | Current consumption | | |

111 Current-load diagram CAR40, AC 230 V

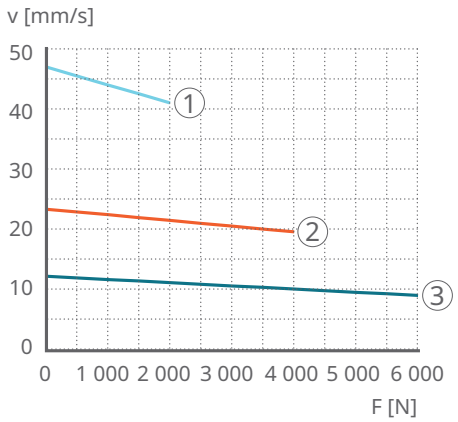



001D17D1

| | | | |
|---|---|---|---|
| 1 | CAR40 | F | Load |
| I | Current consumption | | |

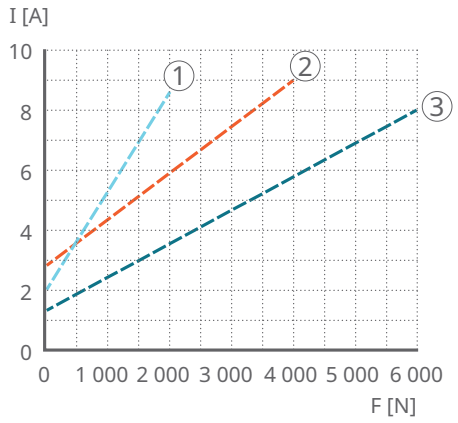
## DC version

112 Speed-load diagram CAR40, DC 24 V




| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| v | Speed | | |

113 Current-load diagram CAR40, DC 24 V



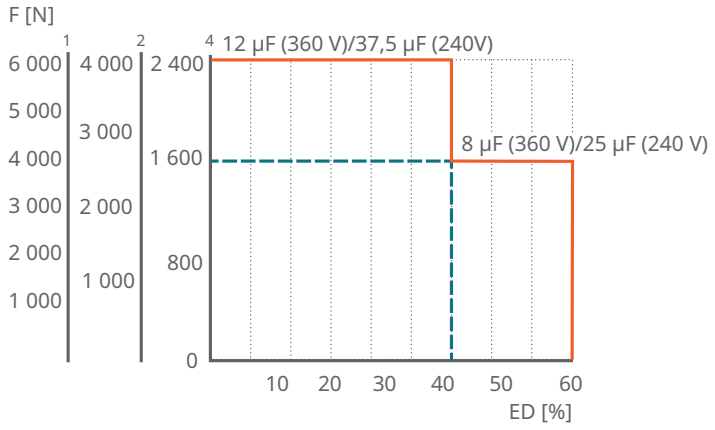

| | | | |
|---|---|---|---|
| 1 | Gear 1 | 2 | Gear 3 |
| 3 | Gear 2 | F | Load |
| I | Current consumption | | |

Deviations of ±10 % from the values in the diagram may occur.

## Duty cycle

### AC version

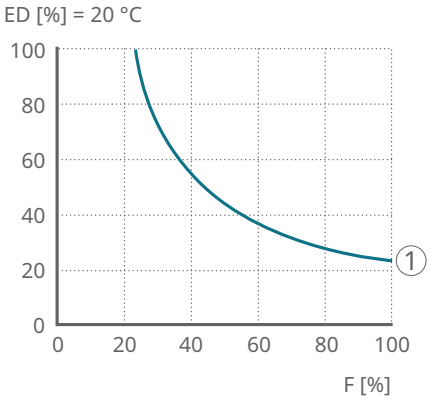
114 Duty cycle CAR40, AC




| | | | |
|---|---|---|---|
| ED | Duty cycle | F | Load |

### DC version

115 Duty cycle CAR40, DC




| | | | |
|---|---|---|---|
| 1 | CAR40 | ED | Duty cycle |
| F | Load | | |

# CAR 40 – Type codes for accessories and spare parts

23 Accessories and spare parts for CAR40

| Description | Ordering designation | Order number |
|---|---|---|
| Motor DC 24 V (flat motor) | P24D | M/0405524-V01 |
| Motor DC 24 V (flat motor with extended shaft) | P24DS | M/0405525-V01 |
| Motor DC 24 V (flat motor with brake) | P24DB | M/0405526-V01 |
| Motor AC 120 V (cylindrical motor) | E110D | M/0405529 |
| Motor AC 120 V (cylindrical motor with brake) | E110DB | M/0405530 |
| Motor AC 230 V (cylindrical motor) | E220D | M/0405527 |
| Motor AC 230 V (cylindrical motor with brake) | E220DB | M/0405528 |
| Capacitor value 12 µF (motor AC 230 V) | Capacitor 12 µF | M/0430670–04 |
| Limit switch for stroke = 100 mm | CAXE40X100 | M/0412051 |
| Limit switch for stroke = 300 mm | CAXE40X300 | M/0412054 |
| Limit switch for stroke = 500 mm | CAXE40X500 | M/0412056 |
| Limit switch for stroke = 700 mm | CAXE40X700 | M/0412057 |
| Proximity switch for CAXE | CAXE | M/0432369 |
| Front attachments, rod end type | 575–40 | M/0430575–40 |
| Front attachments, rod clevis type | 576–40 | M/0430576–40 |
| Rear attachments, single bracket with ear type | 590–40 | M/0430590–40 |
| Rear attachments, bracket with ball joint type | 581–40 | M/0430581–40 |



# Ordering key

116 Ordering designation CAR40

| Dynamic load [N]/speed [mm/s] | | | Motor options | |
|---|---|---|---|---|
| 6000/xx | 4000/xx | 2000/xx | No motor | 0000 |
| 6000/10 | 4000/20 | 2000/40 | AC 120 V/60 Hz, 1-phase, IP54 | E110D |
| 6000/10 | 4000/20 | 2000/40 | AC 120 V/60 Hz, 1-phase, brake, IP20 | E110DB |
| 6000/9 | 4000/17 | 2000/34 | AC 230 V/50 Hz, 1-phase, IP54 | E220D |
| 6000/9 | 4000/17 | 2000/34 | AC 230 V/50 Hz, 1-phase, brake, IP20 | E220DB |
| 6000/xx | 4000/xx | 2000/xx | No motor | 0000 |
| 6000/13-8 | 4000/25-18 | 2000/50-38 | DC 24 V, flat motor, IP44 | P24D |
| 6000/13-8 | 4000/25-18 | 2000/50-38 | DC 24 V, flat motor, extended shaft, IP44 | P24DS |
| 6000/13-8 | 4000/25-18 | 2000/50-38 | DC 24 V, flat motor, brake, IP20 | P24DB |

1 2 4
Gearbox

CAR R 40 x 100 x 1 F S / E110DB

**Type**

**Motor installation**
**R** Right
**L** Left

**Stroke (S)**
**100** 100 mm
**300** 300 mm
**500** 300 mm
**700** 500 mm
**-** Other stroke lengths available on request

**Option 1**
**F** Friction clutch
**Z** No friction clutch

**Option 2**
**-** No back-up nut
**S** Back-up nut

001DF5EE

# 8 Replacement parts

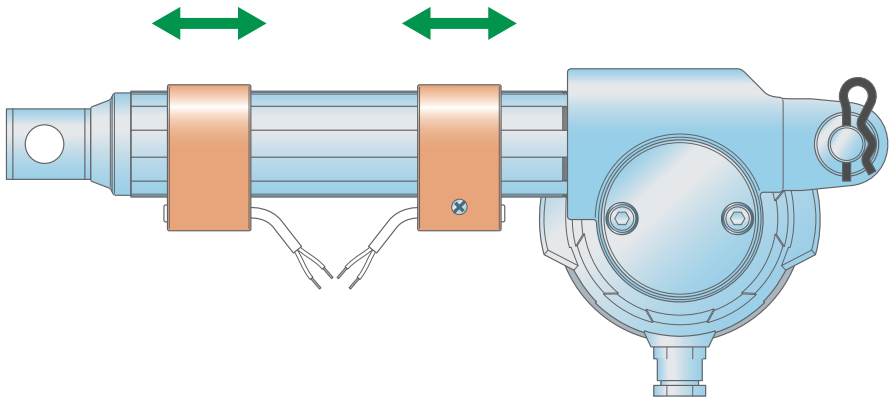
## 8.1 EWELLIX limit switch CAXD

EWELLIX limit switch CAXD is an electronically controlled limit switch based on reed technology. It is mounted on the protection tube to indicate the positions of the actuator. When combined with actuator control units, the limit switch enables the stroke to be set to any desired length.

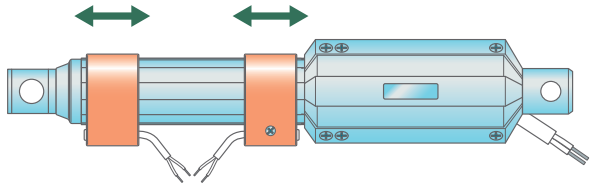
- CAXD designed for the following linear actuators
  - CAT33
  - CALA36A
- A CAXD is required for each end position
- The use of limit switches reduces the useful stroke of CAT33 by 20 mm and CALA36A by 25 mm (affects the retracted position)



117 EWELLIX linear actuator CAT




118 EWELLIX linear actuator CALA36A



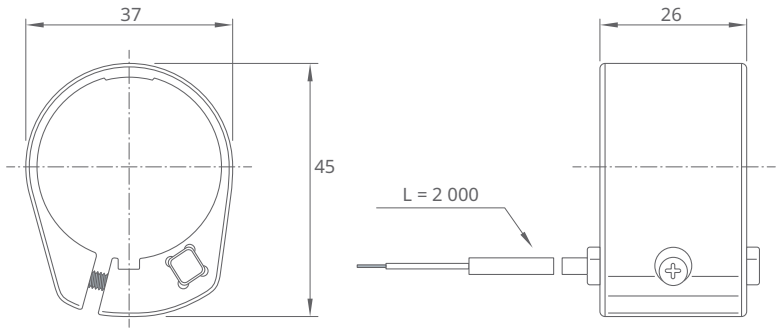

24 Technical data, CAXD

| Characteristic | Unit | CAXD |
|---|---|---|
| Power supply | – | DC |
| Operating voltage | V | 5 ... 30 |
| Current max. | mA | 100 |
| Voltage drop | V | < 5 |
| Electrical function | – | NC: normally closed<br>NO: normally open |
| Response time | ms | 0.3 |
| Release time | ms | 0.6 |
| Operating temperature | °C | –20 ... +50 |
| Sensor element protection type | – | IP67 |
| Vibration/shock, sensor element | – | According to IEC 90947-5-2 |

| Characteristic | Unit | CAXD |
|---|---|---|
| Cable length L | mm | 2000 |
| Cable diameter D | mm | 3 |
| Cable material | – | PUR |
| Cable cross-section | $mm^2$ | 2 × 0.14 |
| Housing color | – | Black |

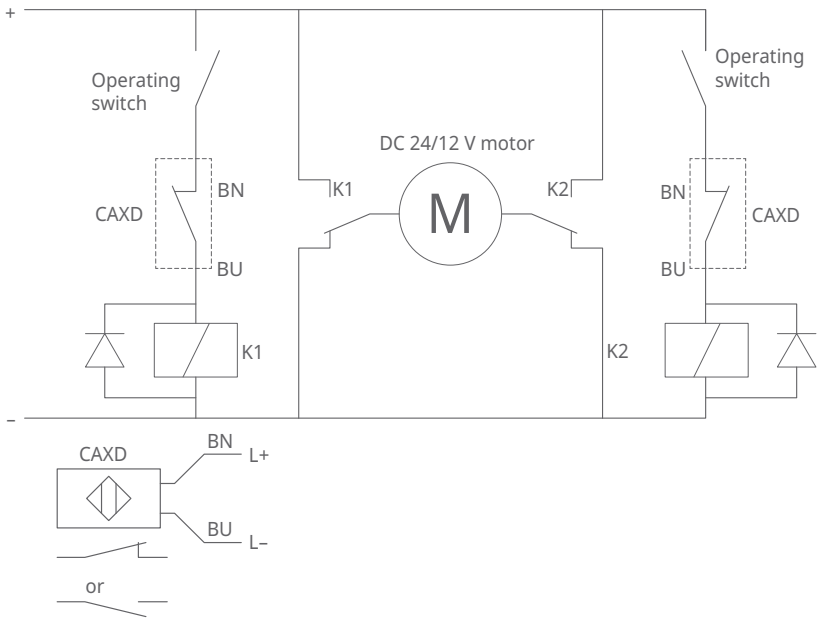
## Dimensional drawings

119 Dimensions



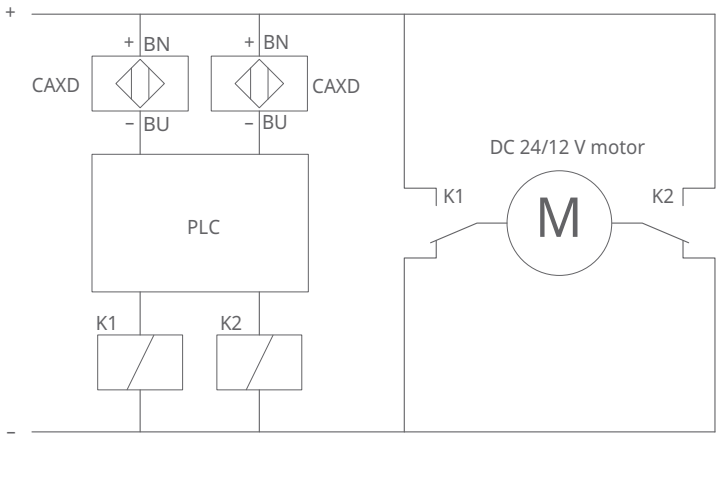

## Wiring diagrams

120 Connection diagram




| | | | |
|---|---|---|---|
| BN | Cable color Brown | BU | Cable color Blue |

121 Connection diagram for PLC use




| | | | |
|---|---|---|---|
| BN | Cable color Brown | BU | Cable color Blue |

Never connect the limit switches to an AC power supply.

## Ordering key

25 Order key limit switch CAXD

| Code | Description |
|---|---|
| CAXD 33 LIMIT SWITCH, NC | Opener (Normally Closed, NC) |
| CAXD 33 LIMIT SWITCH, NO | Closer (Normally Open, NO) |

## 8.2 EWELLIX limit switch CAXE

The EWELLIX limit switch CAXE is based on 2 complementary (NO/NC) proximity switches mounted on a special protection tube to indicate the end positions of the actuator. When combined with actuator controllers or other PLC controllers, the limit switch enables the stroke to be set to any desired length.

- CAXE developed for the following linear actuators
  - CAR22
  - CAR32
  - CAR40
  - CAT32B
  - CARN32
- It is recommended to place the limit switch at a distance of at least 10 mm from the end stop to avoid mechanical defects.
- For this option, the front attachment G3 must be selected.



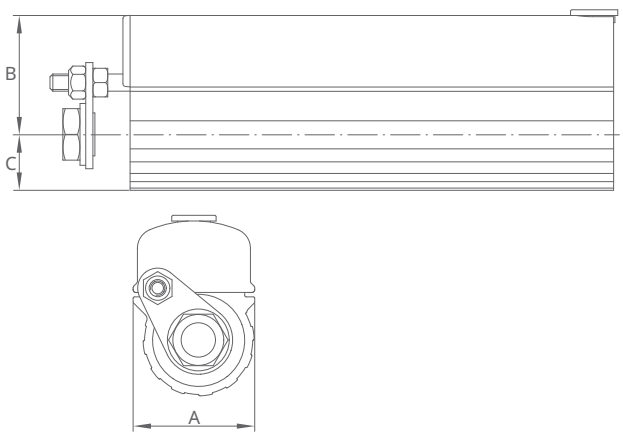
26 Technical data, CAXE

| Characteristic | Unit | CAXE |
|---|---|---|
| Power supply | – | DC |
| Operating voltage | V | 5 ... 30 |
| Current max. | mA | 100 |
| Protection class | - | III |
| Voltage drop | V | < 5 |
| Electrical function | – | NC: normally closed<br>NO: normally open |
| Response time | ms | 0.3 |
| Release time | ms | 0.6 |
| Operating temperature | °C | –20 ... +70 |
| Sensor element protection type | – | IP67 |
| Vibration/shock, sensor element | – | According to IEC 60947-5-1 |
| Cable length L | mm | 2000 |
| Cable diameter D | mm | 3 |
| Cable material | – | PUR |
| Cable cross-section | $mm^2$ | 3 × 0.14 |

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

### Dimensional drawings

122 Dimensions

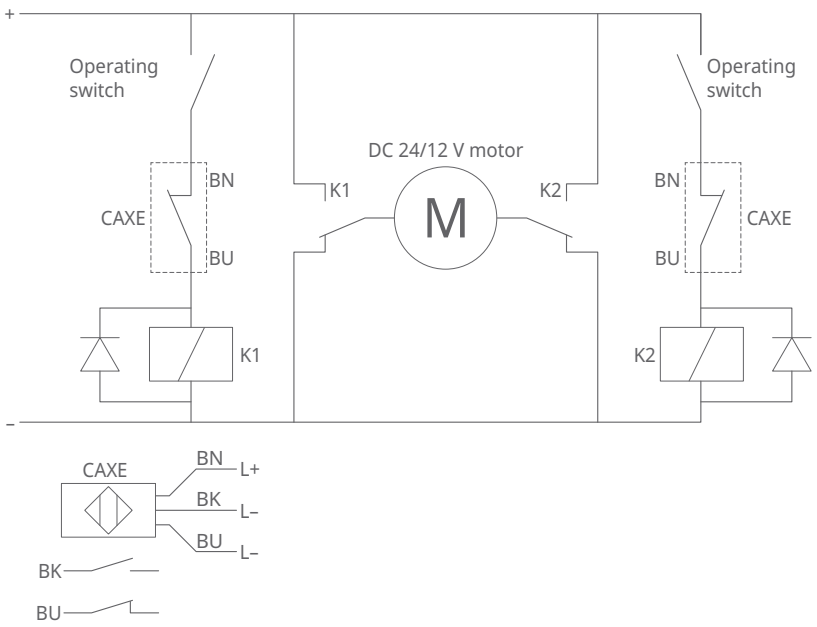


27 Dimensions

| Limit switch | A | B | C |
|---|---|---|---|
| CAXE 22 | 42.5 | 37 | 14 |
| CAXE 32 | 47.5 | 40 | 20 |
| CAXE 32B | 47.5 | 40 | 20 |
| CAXE 40 | 46 | 46 | 23 |

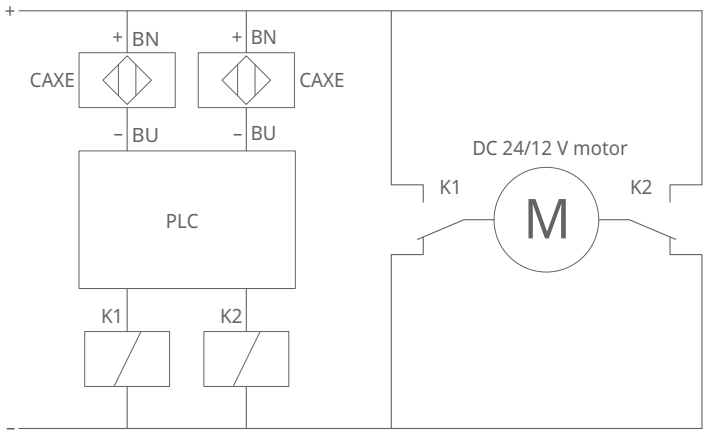
## Wiring diagrams

123 Connection diagram




| | | | |
|---|---|---|---|
| BK | Cable color Black | BN | Cable color Brown |
| BU | Cable color Blue | | |

124 Connection diagram for PLC use




| | | | |
|---|---|---|---|
| BN | Cable color Brown | BU | Cable color Blue |

Never connect the limit switches to an AC power supply.

## Ordering key

125 Order key CAXE

**Type**

| | | |
|---|---|---|
| **022** | CAXE32 | CAR 22 |
| **032** | CAXE32 | CAR 32, CARN 32 |
| **32B** | CAXE32B | CAT 32B |
| **040** | CAXE40 | CAR 40 |

**Actuator stroke (mm)**

| | | |
|---|---|---|
| **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 |

001DC082

## 8.3 Feedback for EWELLIX linear actuator CAT – EWELLIX encoder E2

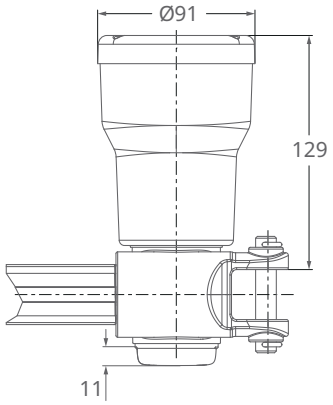
- can be fitted to all standard motors
- Hall effect, two channels, offset by 90°
- arranged on the gearbox housing
- 2 pulses/channel and motor revolution
- supply voltage: DC 5 V to DC 24 V
- final resolution according to gear ratio and base type of the linear actuator

28 Feedback EWELLIX encoder E2

| EWELLIX linear actuator | Gearbox | Pulses at 1 mm stroke | Resolution (mm) per pulse |
|---|---|---|---|
| CAT33 | 1 | 16.67 | 0.06 |
| | 2 | 8.33 | 0.12 |
| | 4 | 4.17 | 0.24 |
| CAT33H | 1 | 4.00 | 0.25 |
| | 2 | 2.00 | 0.50 |
| | 4 | 1.00 | 1.00 |
| CAT32B | 1 | 12.50 | 0.08 |
| | 2 | 6.25 | 0.16 |
| | 4 | 3.13 | 0.32 |

### Dimensional drawings

126 Dimensions EWELLIX encoder E2

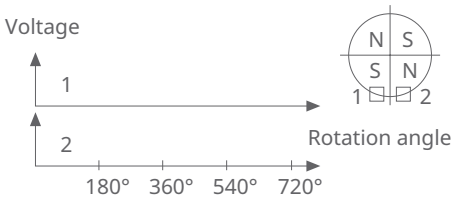



Encoder option E2

001D33F9

### Wiring diagrams

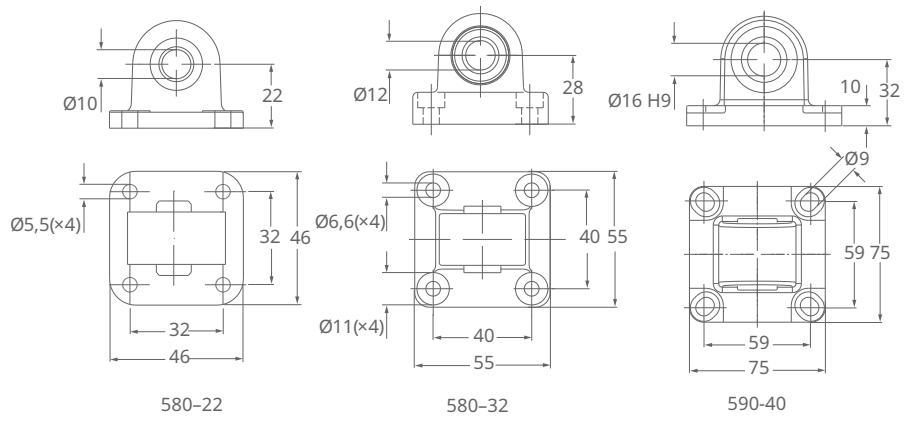
127 Connecting diagram




001D33EB

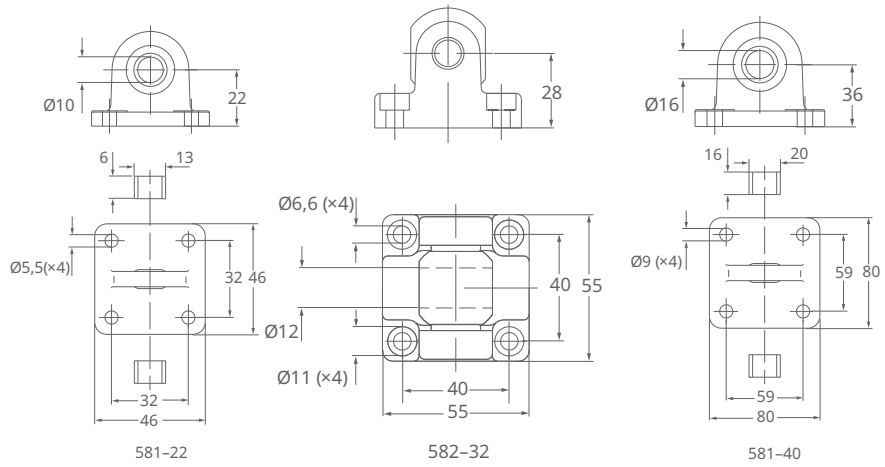
# Attachments

## 128 Attachments 580-22, 580-32, 590-40



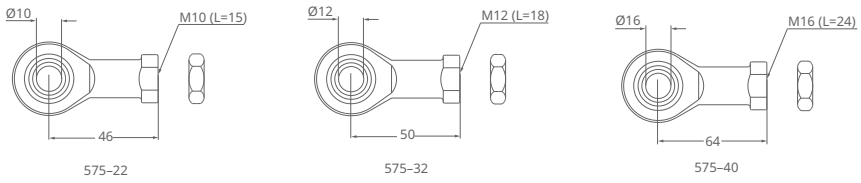

001DCB4A

## 129 Attachments 581-22, 582-32, 581-40



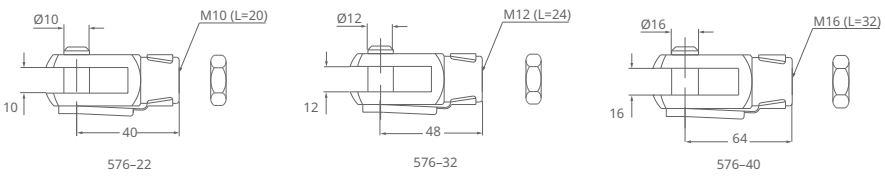

001DCB84

## 130 Attachments 575-22, 575-32, 575-40




001DCB91

## 131 Attachments 576-22, 576-32, 576-40




001DCB9E

**Schaeffler Technologies AG & Co. KG**
Georg-Schäfer-Straße 30
97421 Schweinfurt
Germany
www.schaeffler.de/en
info.de@schaeffler.com

In Germany:
Phone 0180 5003872
From other countries:
Phone +49 9721 91-0

All information has been carefully compiled and checked by us, but we cannot guarantee complete accuracy. We reserve the right to make corrections. Therefore, please always check whether more up-to-date or amended information is available. This publication supersedes all deviating information from older publications. Printing, including excerpts, is only permitted with our approval.
© Schaeffler Technologies AG & Co. KG
PDB 88 / 01 / en-US / 2026-08