SCHAEFFLER

Matrix series

Linear Actuators

Product Data Sheet

1 Introduction

The Matrix series has been developed for medical devices and includes powerful linear AC actuators and DC actuators with a direct current motor.

Matrix linear actuators operate very quietly, require minimal space, and can be installed at almost any angle in a vertical or horizontal position. The series is medically approved. The Matrix series can be supplied as a complete system including control units, operating devices, and accessories.

Features

- developed for medical devices
- medically approved
- complete system including control units, operating devices, and accessories
- back up nut included as standard
- safety factor of up to 4

Benefits

- synchronization possible
- silent operation with smooth running
- compact and aesthetically pleasing
- available as an option:
  - anti-pitching
  - incremental position feedback
  - emergency lowering

2 Matrix - MAX1

1 Linear drive MAX1

001C0FFD

2.1 Performance overview

2.1.1 Technical data

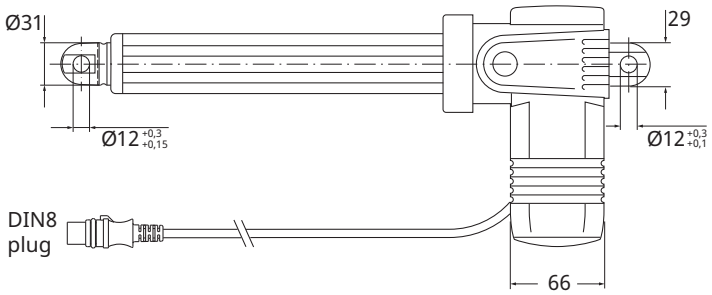
1 Technical data

Feature	Unit	MAX1..A..	MAX1..B..	MAX1..C..
Rated push load	N	4000	2000	1500
Rated pull load	N	4000	2000	1500
min. speed (full load)	mm/s	5	6	13
max. speed (no load)	mm/s	7	9	18
min. stroke	mm	50	50	50
max. stroke	mm	700	700	700
Retracted length	mm	Stroke + 195/260 [1)]	Stroke + 195/260 [1)]	Stroke + 195/260 [1)]
Voltage	VDC	24	24	24
Power consumption	W	120	120	120
Current consumption	A	5	5	5
Duty cycle	%	10 ($^1/_9$)	10 ($^1/_9$)	10 ($^1/_9$)
min. ambient temperature	°C	0	0	0
max. ambient temperature	°C	+40	+40	+40
Degree of protection	IP	66S	66S	66S
Weight (at 200 mm stroke)	kg	4	3.7	3.6
Color	–	Gray	Gray	Gray

1) For strokes ≤ 350 mm: L = 195 + stroke
For strokes > 350 mm: L = 260 + stroke

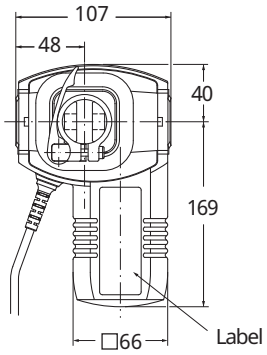
2.1.2 Geometric data

2 Side view



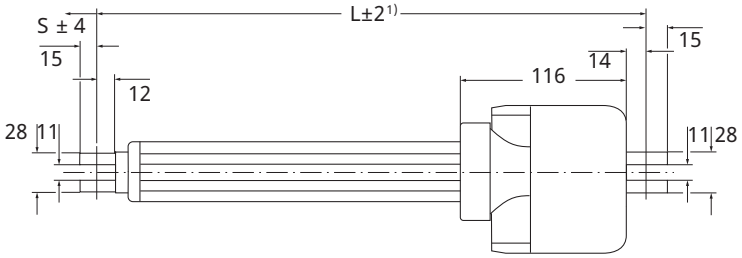
001C10BD

3 Front view



001C109D

4 Top view

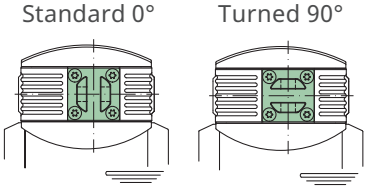


001C104B

1) For strokes ≤ 350 mm: L = 195 + stroke

For strokes > 350 mm: L = 260 + stroke

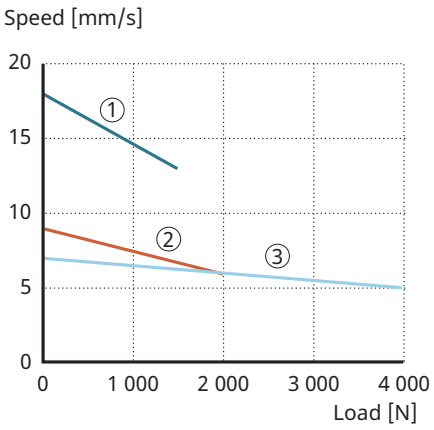
5 Rear mounting



001C106D

2.1.3 Speed and load

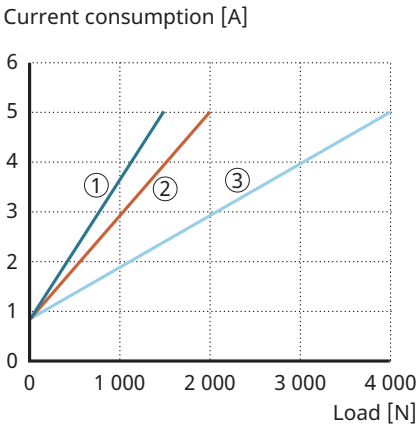
6 Speed-load diagram



1	Push load reduction static 1500 N	2	Push load reduction static 2000 N
3	Push load reduction static 4000 N		

2.1.4 Current and load

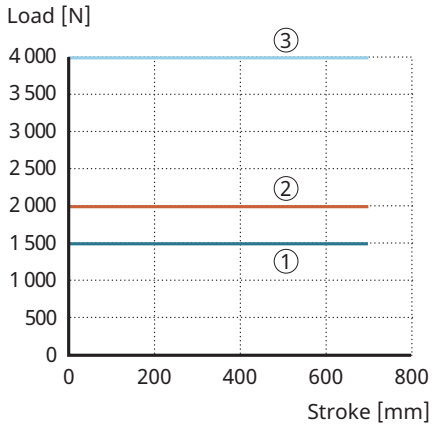
7 Current-load diagram



1	Push load reduction static 1500 N	2	Push load reduction static 2000 N
3	Push load reduction static 4000 N		

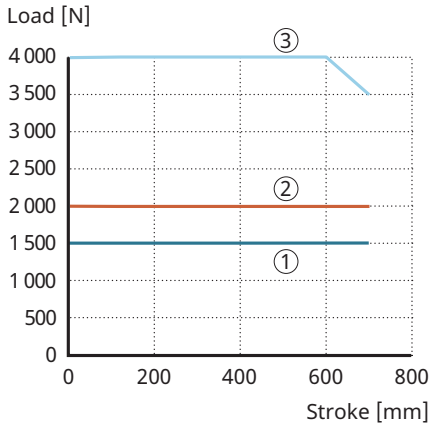
2.1.5 Safety factor load conditions

8 Push load reduction, static safety factor S = 1



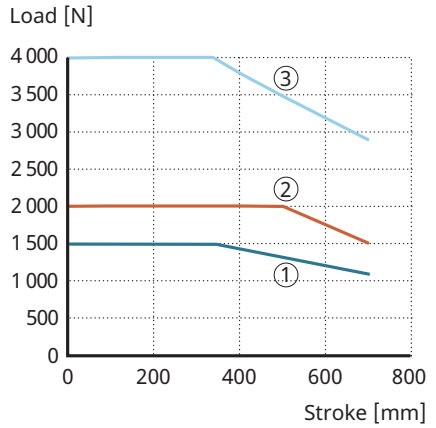
1	Rated compression force 1500 N	2	Rated compression force 2000 N
3	Rated compression force 4000 N		

9 Push load reduction, static safety factor S = 2



1	Rated compression force 1500 N	2	Rated compression force 2000 N
3	Rated compression force 4000 N		

10 Push load reduction, static safety factor S = 4 (EN 60601)



1	Rated compression force 1500 N	2	Rated compression force 2000 N
3	Rated compression force 4000 N		

2.2 Control unit

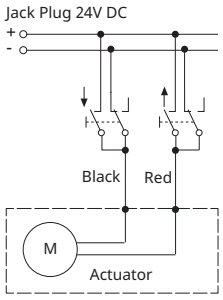
2.2.1 Control units and accessories

2 Operating elements and control units

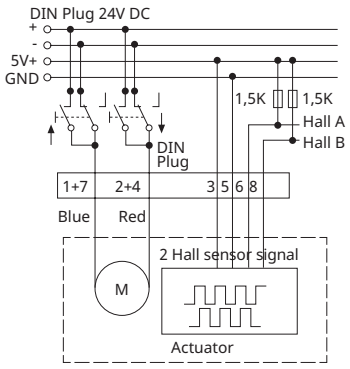
Operating elements	Control unit			
	SCU	VCU	BCU	MCU
EHA 1	–	–	–	Hand switch
EHA 3	Hand switch	Hand switch	Hand switch	–
STJ	Foot switch	Foot switch	Foot switch	–
STF	–	–	–	Foot switch
STE	Desk switch	Desk switch	Desk switch	–
STA	–	–	–	Desk switch

2.2.2 Connection

11 Connection diagram 1



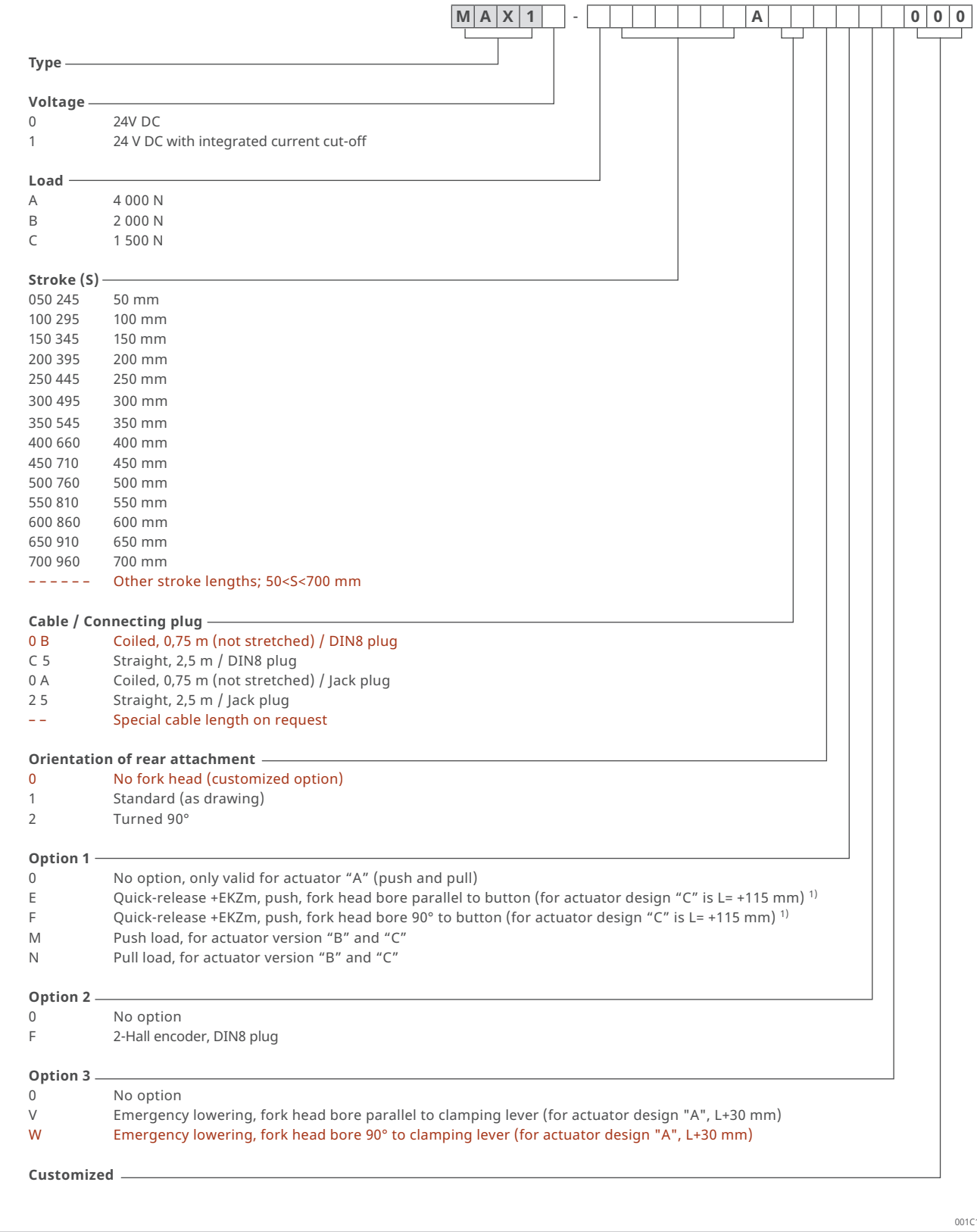
12 Connection diagram 2



Valid for MAX 11 only. MAX 10 must be operated using a BCU, VCU, SCU, or MCU control unit.

2.3 Ordering key

13 Ordering key



1) EKZm: mechanical anti-pinching device, min. stroke 150 mm to 300 mm

Options shown in red are available on request only.

3 Matrix - MAX3

14 Linear drive MAX3

001C118D

3.1 Performance overview

3.1.1 Technical data

3 Technical data

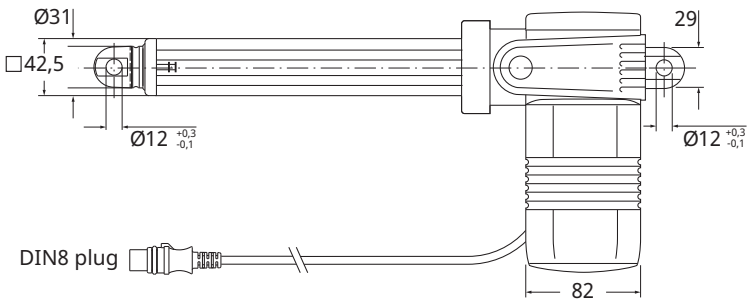
Feature	Unit	MAX3..A..	MAX3..B..	MAX3..C..
Rated push load	N	8000	4000	3000
Rated pull load	N	6000 [1)]	4000	3000
min. speed (full load)	mm/s	5	6	13
max. speed (no load)	mm/s	7	9	18
min. stroke	mm	50	50	50
max. stroke	mm	700	700	700
Retracted length	mm	Stroke + 215/280 [2)]	Stroke + 215/280 [2)]	Stroke + 215/280 [2)]
Voltage	VDC	12 oder 24	12 oder 24	12 oder 24
Power consumption	W	120	120	120
Current consumption	A	5	5.2	5.2
Duty cycle	%	10 ($^1/_9$)	10 ($^1/_9$)	10 ($^1/_9$)
min. ambient temperature	°C	0	0	0
max. ambient temperature	°C	+40	+40	+40
Degree of protection	IP	66S	66S	66S
Weight (at 200 mm stroke)	kg	4.5	4.2	4
Color	–	Gray	Gray	Gray

1) The max. load for medical applications is 5000 N.

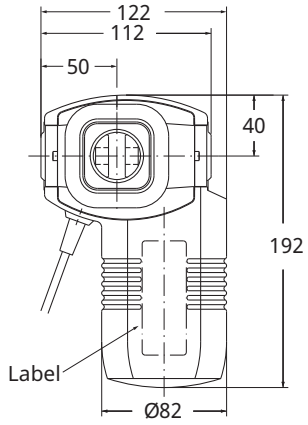
2) For strokes ≤ 350 mm: L = 215 + stroke
For strokes > 350 mm: L = 280 + stroke

3.1.2 Geometric data

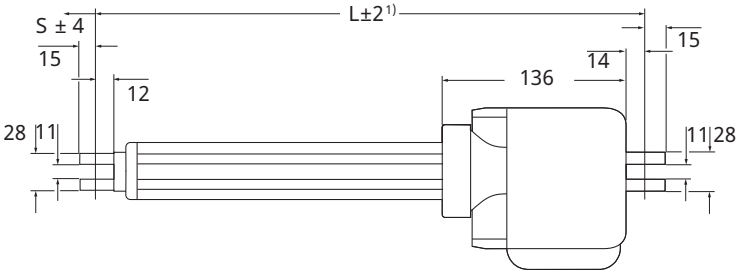
15 Side view



16 Front view



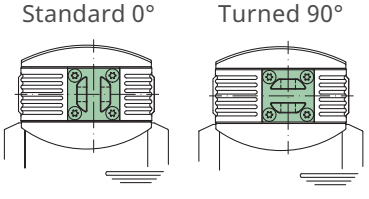
17 Top view



1) For strokes ≤ 350 mm: L = 215 + stroke

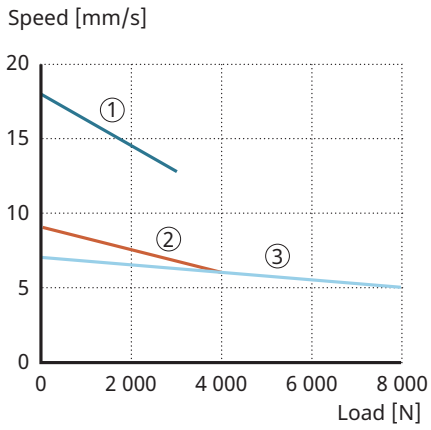
For strokes > 350 mm: L = 280 + stroke

18 Rear mounting



3.1.3 Speed and load

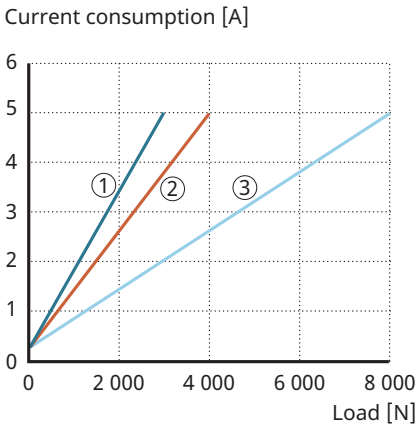
19 Speed-load diagram



1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

3.1.4 Current and load

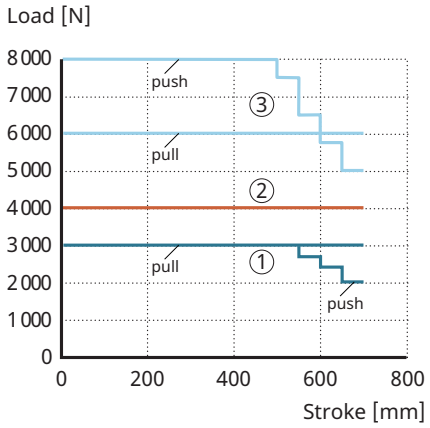
20 Current-load diagram



1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

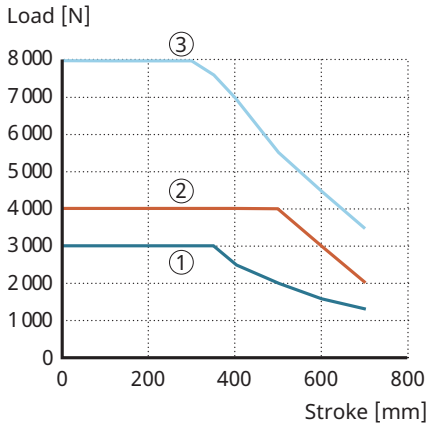
3.1.5 Safety factor load conditions

21 Push load reduction, static safety factor S = 1



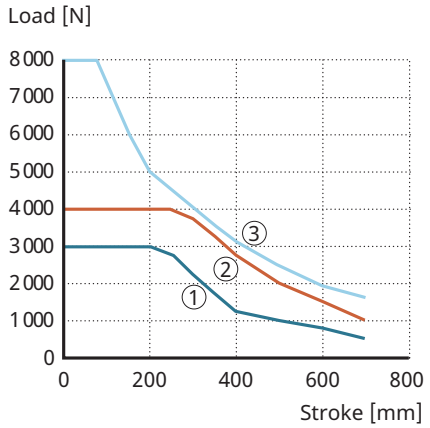
1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

22 Push load reduction, static safety factor S = 2



1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

23 Push load reduction, static safety factor S = 4 (EN 60601)



1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

3.2 Control unit

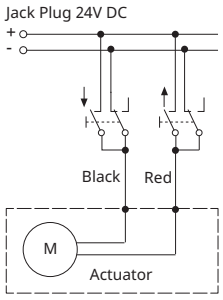
3.2.1 Control units and accessories

4 Operating elements and control units

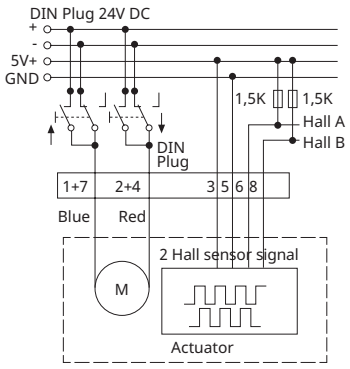
Operating elements	Control unit			
	SCU	VCU	BCU	MCU
EHA 1	–	–	–	Hand switch
EHA 3	Hand switch	Hand switch	Hand switch	–
STJ	Foot switch	Foot switch	Foot switch	–
STF	–	–	–	Foot switch
STE	Desk switch	Desk switch	Desk switch	–
STA	–	–	–	Desk switch

3.2.2 Connection

24 Connection diagram 1



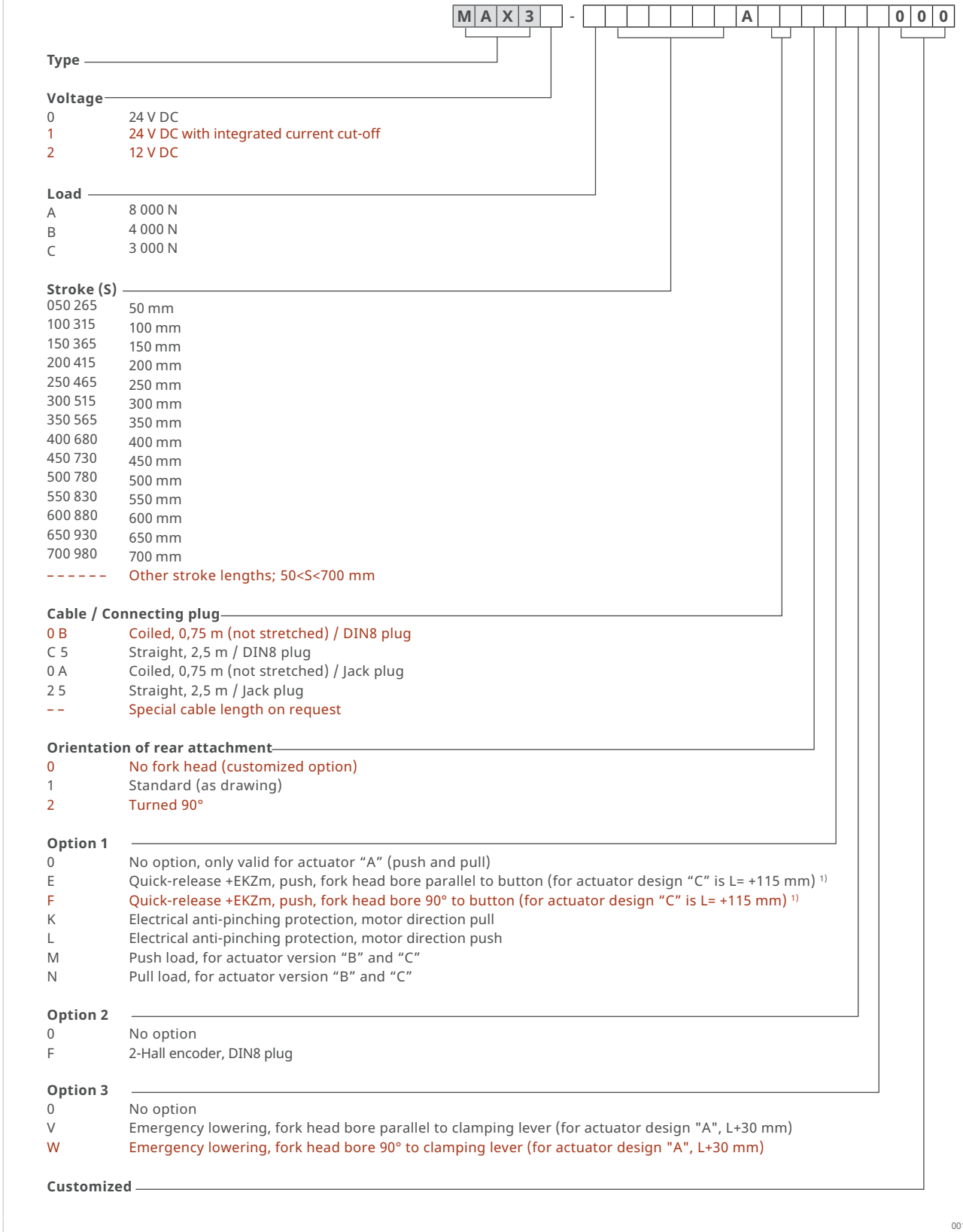
25 Connection diagram 2



Valid for MAX 31 only. MAX 30 must be operated using a BCU, VCU, SCU, or MCU control unit.

3.3 Ordering key

26 Ordering key



1) EKZm: mechanical anti-pinching device, min. stroke 150 mm to 300 mm

Options shown in red are available on request only.

4 Matrix - MAX7

27 Linear drive MAX7

001C129B

4.1 Performance overview

4.1.1 Technical data

5 Technical data

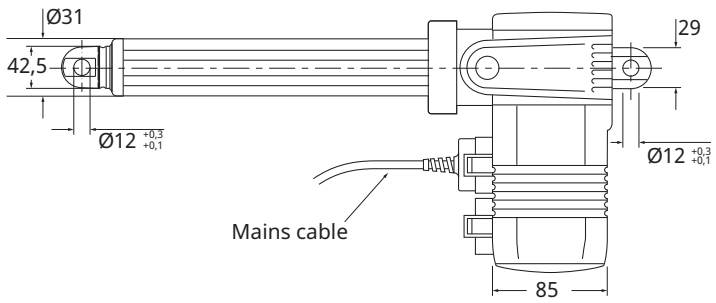
Feature	Unit	MAX7..A..	MAX7..B..	MAX7..C..
Rated push load	N	8000	4000	3000
Rated pull load	N	6000 [1]	4000	3000
min. speed (full load)	mm/s	6	8	13
max. speed (no load)	mm/s	7.5	10	18
min. stroke	mm	50	50	50
min./max. stroke	mm	700	700	700
Retracted length	mm	Stroke + 215/280 [2]	Stroke + 215/280 [2]	Stroke + 215/280 [2]
Voltage	VAC	100...240 at 50/60 Hz	100...240 at 50/60 Hz	100...240 at 50/60 Hz
Power consumption	W	180	180	180
Current consumption at AC 100 V	A	3.2	3.2	3.2
Current consumption at AC 240 V	A	1.6	1.6	1.6
Duty cycle	%	10 ($^1/_9$)	10 ($^1/_9$)	10 ($^1/_9$)
min. ambient temperature	°C	0	0	0
max. ambient temperature	°C	+40	+40	+40
Degree of protection	IP	66S	66S	66S
Weight (at 200 mm stroke)	kg	4.8	4.5	4.2
Color	–	Gray	Gray	Gray

[1] The max. load for medical applications is 5000 N.

[2] For strokes ≤ 350 mm: L = 215 + stroke
For strokes > 350 mm: L = 280 + stroke

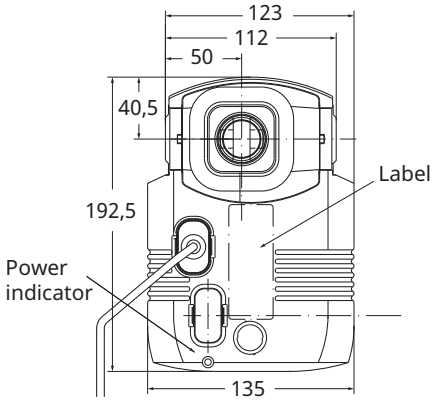
4.1.2 Geometric data

28 Side view



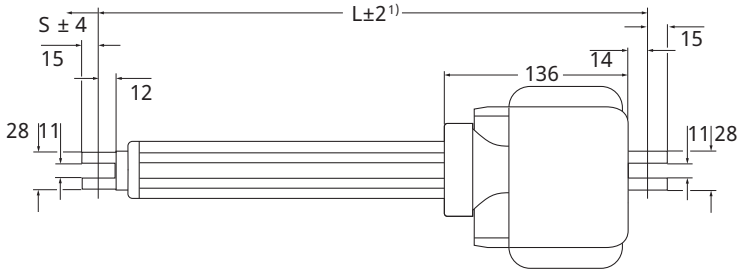
001C130E

29 Front view



001C12FE

30 Top view

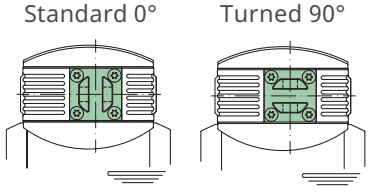


001C12CD

1) For strokes ≤ 350 mm: L = 215 + stroke

For strokes > 350 mm: L = 280 + stroke

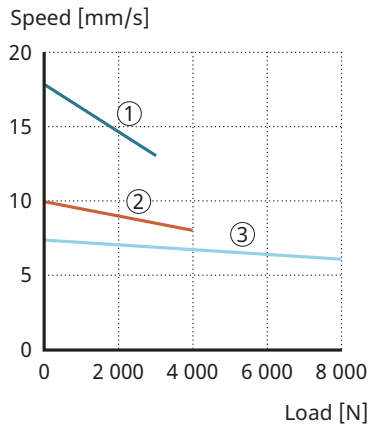
31 Rear mounting



001C106D

4.1.3 Speed and load

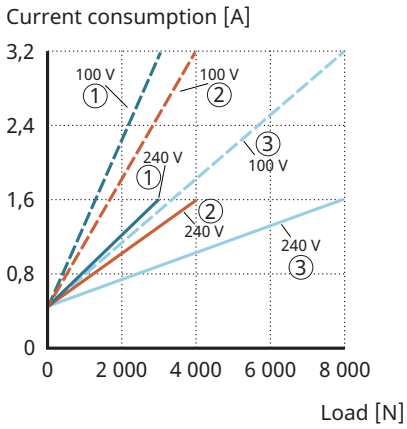
32 Speed-load diagram



1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

4.1.4 Current and load

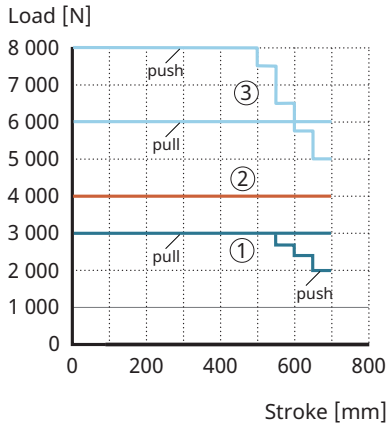
33 Current-load diagram



1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

4.1.5 Safety factor load conditions

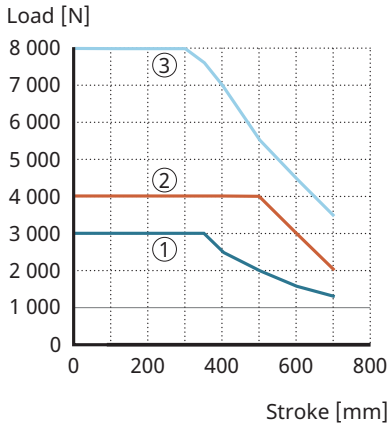
34 Push load reduction, static safety factor S = 1



001C139E

1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

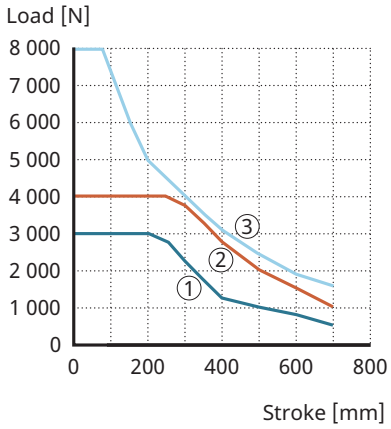
35 Push load reduction, static safety factor S = 2



001C13AE

1	Rated compression force 3000 N	2	Rated compression force 4000 N
3	Rated compression force 8000 N		

36 Push load reduction, static safety factor S = 4 (EN 60601)



001C13BE

1	Rated compression force 1500 N	2	Rated compression force 2000 N
3	Rated compression force 4000 N		

4.2 Control unit

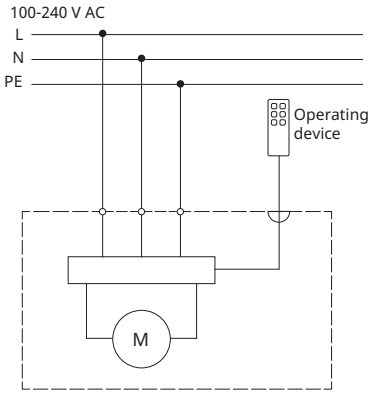
4.2.1 Control units and accessories

6 Operating elements and control units

Operating elements	MAX70	MAX72/74
EHA 1	–	Hand switch
PHC	Hand switch	–
STF	–	Foot switch
PFP	Foot switch	–
STA	–	Desk switch
PAM	Desk switch	–

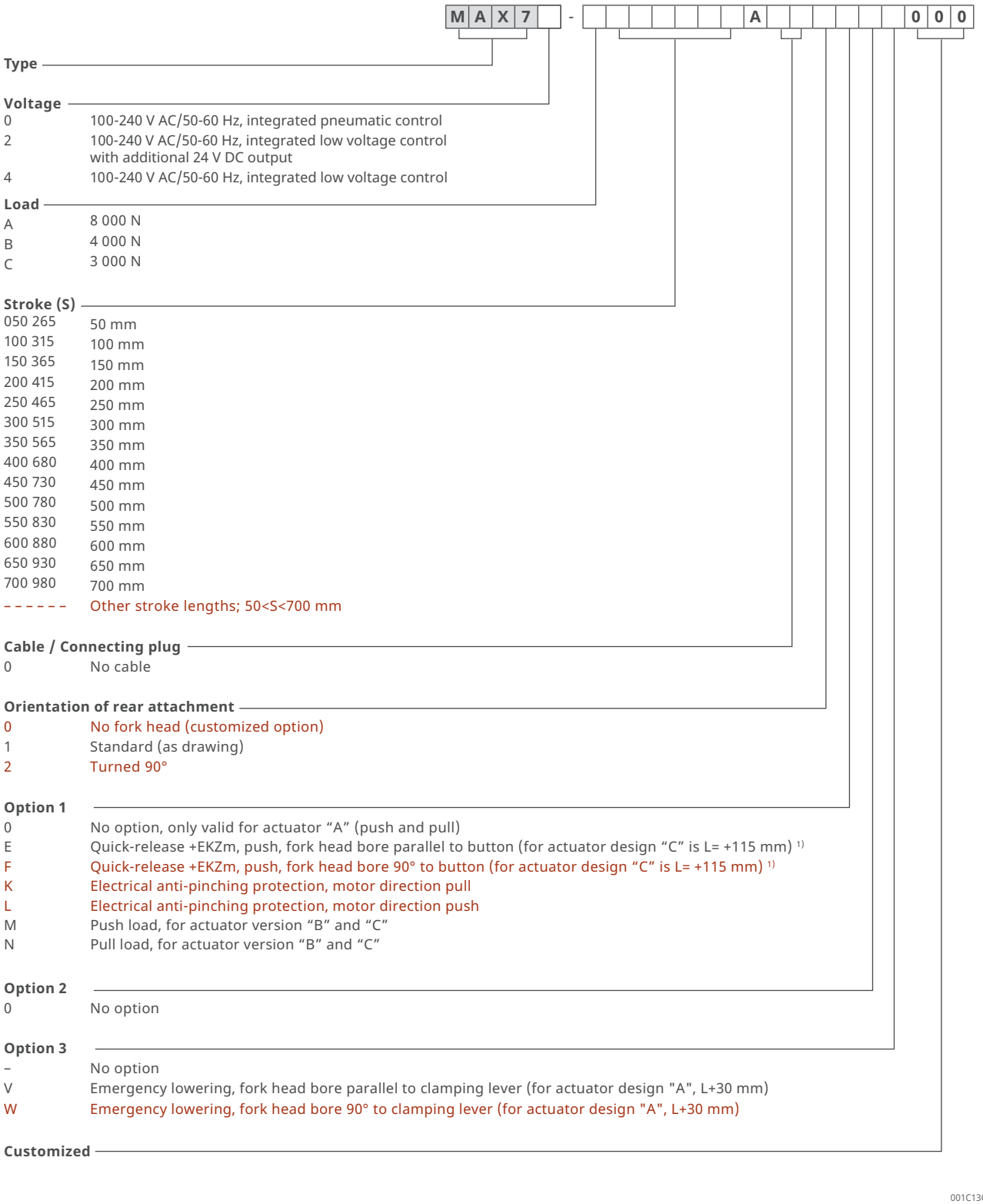
4.2.2 Connection

37 Connection diagram



4.3 Ordering key

38 Ordering key



1) EKZm: mechanical anti-pinching device, min. stroke 150 mm to 300 mm

Options shown in red are available on request only.

4.4 Accessories

7 Accessories

	Plug type	Country	Designation	Ordering number
Straight cable, 3.5 m long	Schuko	DE	ZKA-140306-3500	0121723
Straight cable, 3.5 m long	SEV	CH	ZKA-140316-3500	0121737
Straight cable, 3.5 m long	UL	USA	ZKA-140355-3500	0121724
Straight cable, 3.5 m long	Hospital grade	USA	ZKA-140360-3500	0121732
Straight cable, 3.5 m long	British Standard	UK	ZKA-140350-3500	0121743
Coiled cable, 1.2 m / 2.2 m / 2.2 m	Schuko	DE	ZKA-140342-1500	0121728
Strain relief for mains cable	-	-	ZUB-952253	0102848
Tool for plug (socket/D-sub/mains connection cable)	-	-	ZBG-140375	0125322

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

PDB 79 / 01 / en-US / DE / 2025-08