

#### Interface

-  CANopen
-  PROFIBUS
-  EtherCAT

#### Force

- Peak: 46 - 92 N
- Continuous: 6 - 19N

#### Maximum Velocity

- Up to 5.2 m/s

#### Feedback

- Built-in position sensor
- 12 micron repeatability

#### Range of motion

- 14~271 mm

#### Dimensions

- W x H: 28 x 131mm
- Rod diameter: 11mm

#### Applications

- Packaging
- Material Handling
- Automated Assembly
- Bio-medical

#### The OEM advantage

- Reduced cabling complexity
- Flexible position control
- Easy installation



The ServoTube Integrated Control range is an optimal solution for industrial position control. Combining the benefits of a linear motor with the advantages of integrated control, it is a cost-effective option for applications requiring greater flexibility and control contained in a compact package.

The ServoTube Integrated Control range is available as a standalone position controller or alternatively, with one of three industrial communication protocols, CANopen, PROFIBUS or EtherCAT.

The ServoTube Integrated Control range incorporates an IP67 rated forcer and a sealed stainless steel thrust rod enclosing rare-earth magnets. Four sizes deliver a continuous force range of 9~27 N (2~6 lb) with peak forces up to 92 N (21 lb). 11 stroke lengths are available from 14~271 mm.

The patented magnetic design of ServoTube generates 12 micron (0.47 mil) repeatability and 350 micron (14 mil) accuracy from a non-contact, integral position sensor. No external encoder is required.

An internal dry bearing provides clean, quiet, maintenance-free performance. Life expectancy far exceeds typical ballscrew solutions.

The ServoTube Integrated Control range is ideal for push/pull/lift material handling, packaging and automated assembly applications. ServoTube Integrated Control accepts a range of industry standard accessories for simple mechanical integration.

## ELECTRICAL SPECIFICATIONS

FORCER TYPE	1104	1108	1112	1116	units
Peak force @ 25°C ambient for 1 sec <sup>(1)</sup>	46.0	53.0	68.9	91.9	N
<b>With 25 x 25 x2.5cm heatsink plate</b>					
Continuous stall force @ 25°C ambient <sup>(2)</sup>	9.27	15.78	21.44	26.75	N
<b>Without heatsink plate</b>					
Continuous stall force @ 25°C ambient <sup>(2)</sup>	6.02	10.83	15.18	19.28	N
Peak acceleration <sup>(3)</sup>	407	359	378	422	m/s <sup>2</sup>
Maximum speed <sup>(4)</sup>	4.7	5.2	5.0	4.2	m/s
Power supply voltage (U <sub>E</sub> )	10-60				Vdc
Power supply current	5A continuous, 12A peak				Adc
Logic supply voltage (U <sub>L</sub> )	10-30				Vdc
Logic supply current (-CI, -PI, -MI options, all outputs off)	30				mAdc
Logic supply current (-EC option, all outputs off)	50				mAdc
Logic supply current (-PB option, all outputs off)	50				mAdc

### Notes: -

<sup>(1)</sup> U<sub>E</sub>=60Vdc

<sup>(2)</sup> U<sub>E</sub>=60Vdc, reduce continuous stall force to 89% at 40°C ambient

<sup>(3)</sup> U<sub>E</sub>=60Vdc, based on a moving thrust rod with 14mm stroke and no payload

<sup>(4)</sup> U<sub>E</sub>=60Vdc, based on a moving thrust rod with triangular move over maximum stroke and no payload

## MECHANICAL SPECIFICATIONS

FORCER TYPE	1104	1108	1112	1116	units
Maximum stroke	245	245	271	271	mm
Mass (-CI, -PI, -MI options, excluding thrust rod and cables)	415	565	695	825	gram
Mass (-EC option, excluding thrust rod and cables)	470	620	750	880	gram
Mass (-PB option, excluding thrust rod and cables)	470	620	750	880	gram
Thrust rod mass/metre	0.68	0.68	0.68	0.68	kg/m
Integrated bearing type	2 x plastic polymer, self-lubricating, self-aligning				-
Position resolution	3.125				micron
Position repeatability <sup>(1)</sup>	± 12				micron
Position absolute accuracy <sup>(2)</sup>	± 350				micron

### Notes: -

<sup>(1)</sup> Under constant operating conditions. Self-heating of the forcer will cause expansion in the thrust rod during the initial warm up period. In high duty applications (corresponding to an internal forcer temperature of 80°C) a 0.5 metre thrust rod will expand typically by 125 microns.

<sup>(2)</sup> Maximum error over 0.5 metre under constant operating conditions.

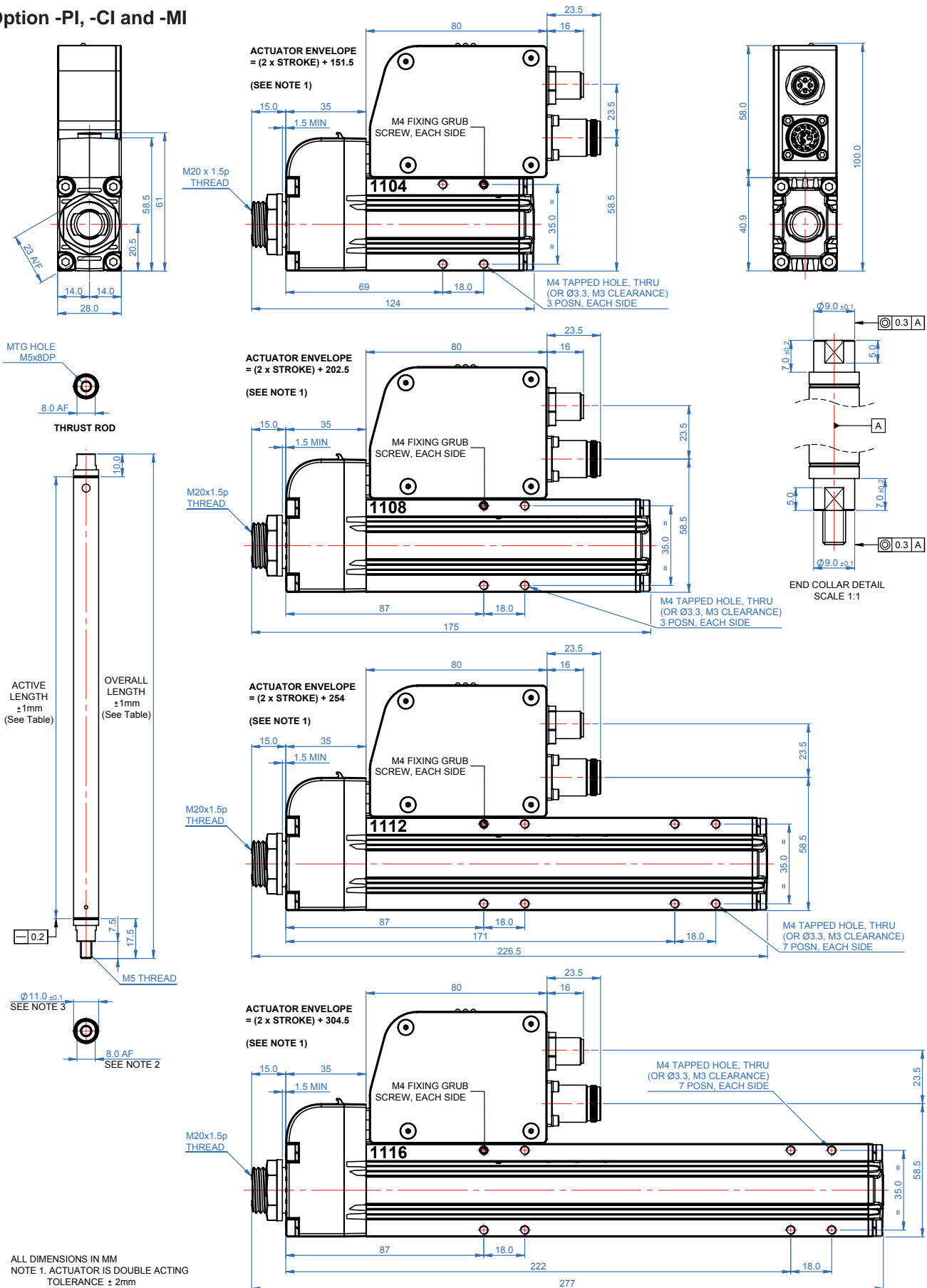
## STROKE TABLE

Stroke (mm)	1104	1108	1112	1116
14	166	217	268	319
39	191	242	293	344
65	217	268	319	370
91	243	294	345	396
116	268	319	370	421
142	294	345	396	447
168	320	371	422	473
194	346	397	448	499
219	371	422	473	524
245	397	448	499	550
271	-	-	525	576

Longer strokes are possible depending on the application

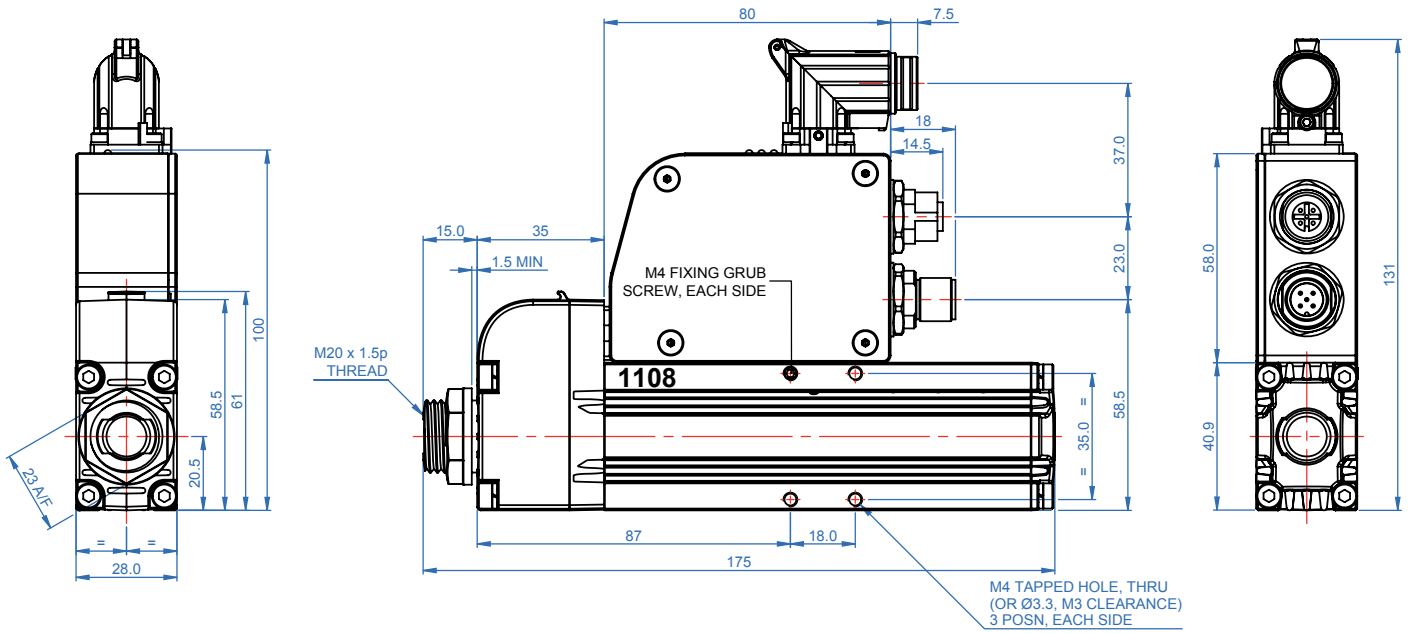
**OUTLINE DRAWINGS**

**Option -PI, -CI and -MI**

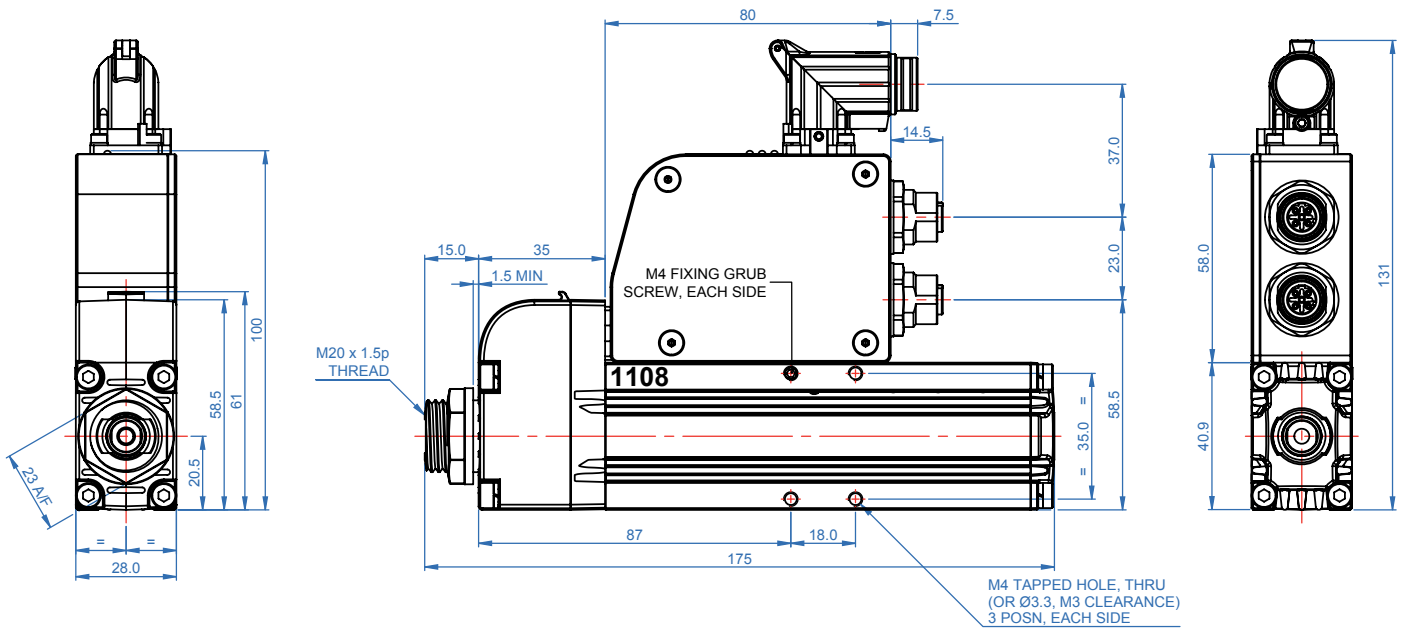


ALL DIMENSIONS IN MM  
NOTE 1. ACTUATOR IS DOUBLE ACTING  
TOLERANCE ± 2mm  
NOTE 2. FLATS AT EACH END ARE NOT  
RECOMMENDED FOR ALIGNMENT PURPOSES  
NOTE 3. TOLERANCE AROUND SWAGED AREA MAY VARY

Option -PB (only 1108 model shown for clarity)



Option -EC (only 1108 model shown for clarity)

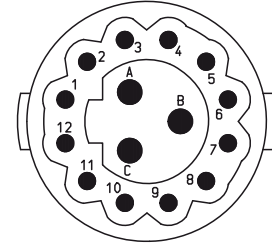


## ELECTRICAL CONNECTIONS

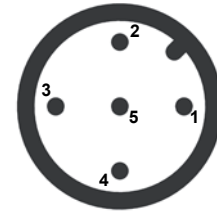
### Options -CI, -PI and -MI

Connections for power and I/O are available via an M16, 15-way male connector. Connections for CANopen are available via an M12, 5-pin, male A-coded connector.

PIN NUMBER	FUNCTION	COLOUR
A	$U_E$	Blue
B	No connection	Black
C	Power GND	Brown
1	IN0	Yellow
2	IN1	Blue
3	IN2	Brown
4	IN3	Green
5	IN4	Grey
6	Signal GND	Pink/grey
7	Ain0	Pink
8	Signal GND	Violet
9	$U_C$	Red
10	OUT1	Black
11	OUT2	Red/blue
12	OUT3	White
Connector body	SCREEN	-



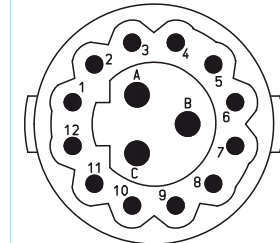
PIN NUMBER	FUNCTION
1	No connection
2	No connection
3	No connection
4	CAN Hi
5	CAN Lo
Connector body	SCREEN



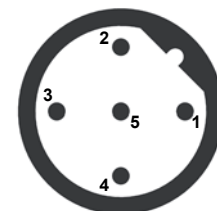
### Option -PB

Connections for power and I/O are available via an M16, 15-way male connector. Connections for PROFIBUS are available via two M12, 5-pin, B-coded connectors. Male is used for the INPUT and female for the OUTPUT.

PIN NUMBER	FUNCTION	COLOUR
A	$U_E$	Blue
B	No connection	Black
C	Power GND	Brown
1	IN0	Yellow
2	IN1	Blue
3	IN2	Brown
4	IN3	Green
5	Factory use only	Grey
6	Factory use only	Pink/grey
7	Ain0	Pink
8	Signal GND	Violet
9	$U_C$	Red
10	OUT1	Black
11	OUT2	Red/blue
12	OUT3	White
Connector body	SCREEN	-



PIN NUMBER	FUNCTION (INPUT)
1	No connection
2	A
3	No connection
4	B
5	No connection
Connector body	SCREEN



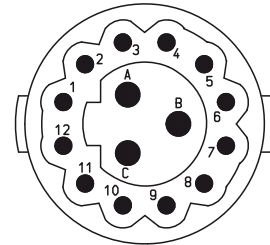
PIN NUMBER	FUNCTION (OUTPUT)
1	VP
2	A
3	GND
4	B
5	No connection
Connector body	SCREEN



**Option -EC**

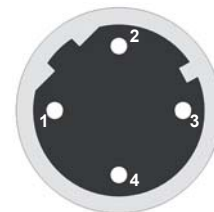
Connections for power and I/O are available via an M16, 15-way male connector. Connections for EtherCAT are available via two M12, 4-pin, female D-coded connectors.

PIN NUMBER	FUNCTION	COLOUR
A	U <sub>E</sub>	Blue
B	No connection	Black
C	Power GND	Brown
1	IN0	Yellow
2	IN1	Blue
3	IN2	Brown
4	IN3	Green
5	Factory use only	Grey
6	Factory use only	Pink/grey
7	Ain0	Pink
8	Signal GND	Violet
9	U <sub>C</sub>	Red
10	OUT1	Black
11	OUT2	Red/blue
12	OUT3	White
Connector body	SCREEN	- - - -



PIN NUMBER	FUNCTION (INPUT)
1	+TX
2	+RX
3	-TX
4	-RX
Connector body	SCREEN

PIN NUMBER	FUNCTION (OUTPUT)
1	+TX
2	+RX
3	-TX
4	-RX
Connector body	SCREEN



**ENVIRONMENT**

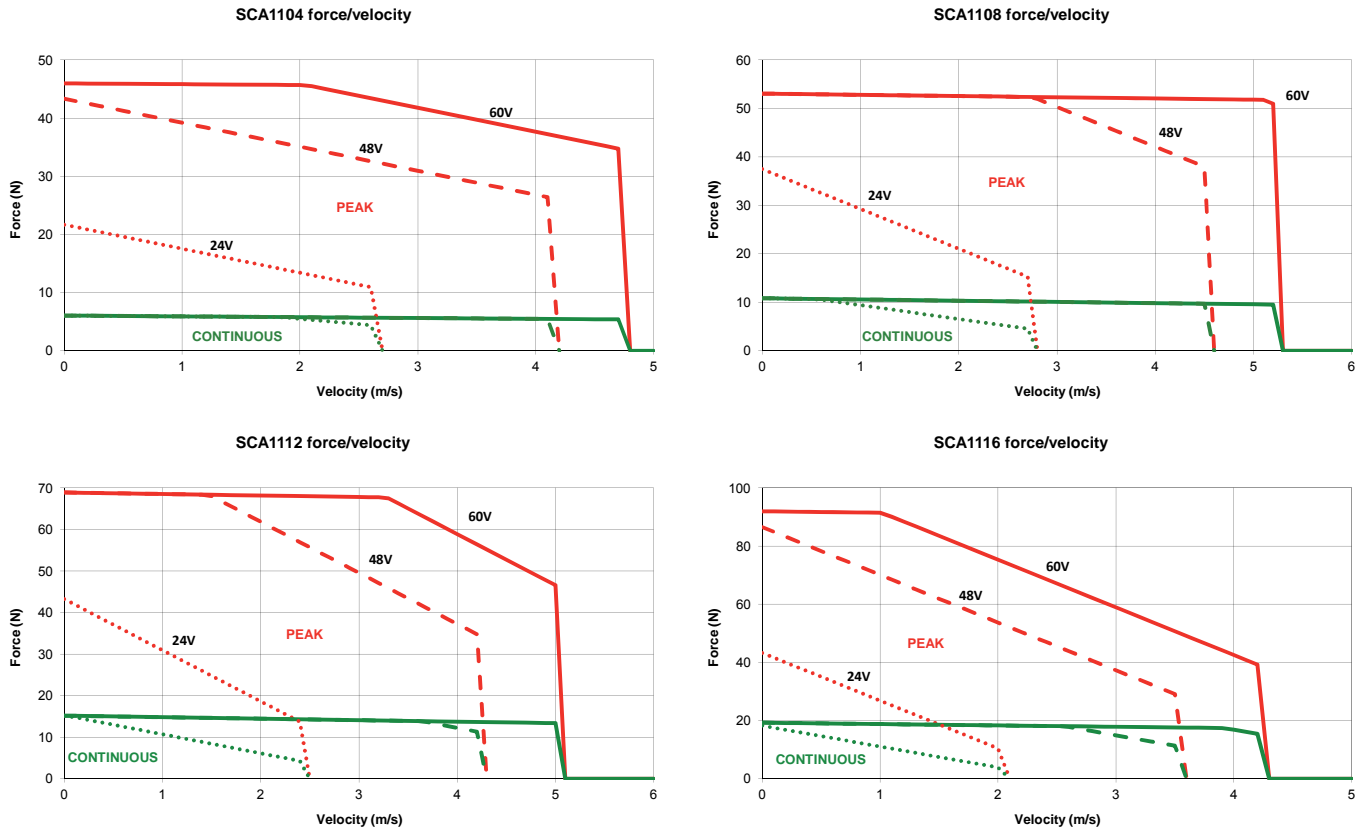
The SCA is intended for use in an environment within the following conditions: -

SPECIFICATION	VALUE
Operating temperature	0°C to +40°C
Storage temperature	-25°C to +70°C
Ingress protection	IP65
Altitude (above mean sea level)	1000m
Overvoltage category	II
Pollution degree	2

In addition, the SCA is available with two environmental coating options. **Option S** has the forcer body coated with a 25 micron layer of black anodise that is suitable for general use. **Option H** has the forcer body coated with a 90 micron layer of hard natural anodise that is suitable for harsher environments.

## CHARACTERISTICS

These profiles assume that there is no additional heatsink plate and that the ambient temperature is 25°C. Continuous ratings are based on a maximum phase temperature of 100°C.



## ORDER CODES

### Actuator

SCA11□□ - □□□ - □ - □□ - 60 - 15

**Forcer**  
04, 08, 12, 16

**Stroke**  
014, 039, 065, 091, 116,  
142, 168, 194, 219, 245, 271

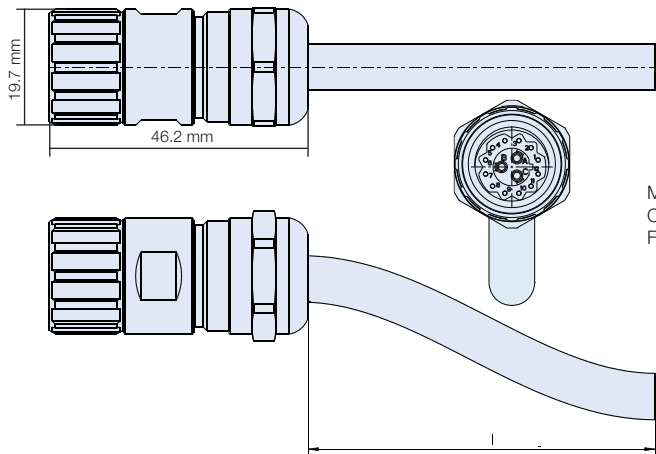
**Stroke in mm**  
Note: 271 not available on 04  
and 08 forcers

**Environment**  
S - Standard

**Controller Type**

- PI - Program Integrated
- CI - CANopen Integrated
- MI - Master functionality Integrated
- PB - PROFIBUS
- EC - EtherCAT

Connector with cable, 15-pin



Material:  
Construction:  
Feature:

PVC  
2x2x0,14mm<sup>2</sup>+8x0,14<sup>2</sup>+3x1,38mm<sup>2</sup>  
schleppketteneignen, UV-  
und ozonbeständig

Pin	Color
A	BU
B	BK
C	BN
1	YE
2	BU
3	BN
4	GN
5	GY
6	GY/ PK
7	PK
8	VT
9	RD
10	BK
11	RD-BU
12	WH

Length L (m)	SNR
3.0	27573 41020
6.0	27573 41021
10.0	27573 41024

Suitable versions available for SCA11.

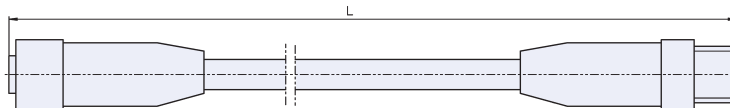
Drop cable for CAN interface, 5-pin



Further accessories CANopen	SNR
Y-Splitter M12	1659757012
T-Splitter M12	1659757025
Terminating resistor M12	1659757013
Starter-Kit	

Length L (m)	SNR
1	16597 57014
8	16597 57029

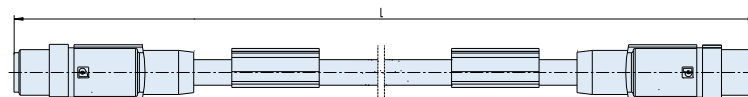
Drop cable for PROFIBUS, 5-pin



Further accessories Profibus	SNR
T-Splitter M12	1659757019
Terminating resistor M12	4119757210

Length L (m)	SNR
1	16597 57065
5	16597 57066
10	16597 57067

Drop cable for EtherCAT, 4-pin



Material: PUR  
Construction: 2x2x0,14mm<sup>2</sup>  
Feature: CAT5, CAT5e

Further accessories EtherCAT	SNR
Cable RJ45 to M12, 2m	2757341500

Length L (m)	SNR
1	27573 41505
5	27573 41506



### Motion Starter Kit for CI (CANopen)

In order to integrate a drive approx. external controller to a Slave in CANopen-network via a PC, the Motion Starter Kit is needed.

**The Motion Starter Kit contains:**

- » The software "Drive Assistant" and "mPLC"
- » CAN-USB adapter with connecting cable
- » T-connector 0906 UTP 101
- » Terminator (male) 0930 CTX 101

SNR: 27573 35615

**Add-on Kit:**

To create a network containing several motors, the CAN bus must be extended from one motor to the next. This is carried out using a T-connector. The motors are connected by a bus cable, and a termination resistor must be connected at the end of the bus.

**The add-on Kit contains:**

- » T-connector 0906 UTP 101
- » Drop cable 0935 253 103/1

SNR: 27573 35616

### Starter Kit for PI

- » To parameterise a PI motor with a PC, a PI Starter Kit is necessary. It is the interface between PC and the PI motor. It is connected via the USB adapter to a USB port. The Drive Assistant is a graphical user interface which simplifies commissioning and PI motor parameterisation.

**The Starter Kit contains:**

- » USB adaptor with connecting cable
- » Software "Drive Assistant"

P/N: 2757335617

