



Datasheet CTC-060



Control type	-DIO		-IOL		-MUL
Control / Parameterization Setting force & speed Control functions	Digital I/O <ul style="list-style-type: none">• Movements controlled by IO signal• Teach-in distances (teach run)• Teached-in distances can be called up• Speed adjustable for both directions via potentiometer• Maximum force adjustable via potentiometer		 IO-Link <ul style="list-style-type: none">• Singleturn-Encoder• Target position setting in real time• Adjustable speed, force and acceleration settings in real time• Real-time feedback of position, speed and force• Pre-programmable travel sets• Press-in mode• Extensive diagnostic options• Many more features		 IO-Link <ul style="list-style-type: none">• Multiturn-Encoder (keeps track of movements when powered off)• Higher positioning accuracy• Available from Q3/24
Stroke	[mm]	100, 150, 200, 250, 300, 400, 500, 600, 800			
Spindle pitch	[mm/rev]	5	10	20*	
Max. Feed force (peak)	[N]	800	400	200*	
Max. Feed force (continuous operation)	[N]	400	200	100*	
Max. Speed In 24V operation In 48V operation	[mm/s]	150 300	300 600	600* 1200*	
Max. Acceleration	[m/s²]	10	20	20*	
Positioning accuracy	[mm]	+/- 0.1	+/- 0.1	+/- 0.2	
Positioning precision (repeatability)	[mm]	+/- 0.02	+/- 0.02	+/- 0.04	
Spindle type		Ball screw			
Mounting position		any			
Piston rod thread		-A: M10 x 1.25 male / -F: M6 female / -V&-F: end plate			
Ambient temperature	[°C]	0...+40 (-20...+60 on request)			
Ambient temperature note		At ambient temperatures above 25° C a reduction in performance must be expected.			
Storage temperature	[°C]	-20...+60			
Protection class		IP65 according to EN 60529			
Relative humidity	[%]	0...90 (non-condensing)			
Motor type		Synchronous-Servomotor			
Rotor position encoder		Absolute, single turn, 12bit			
Anti-torsion mechanism of the push rod		Sliding guide (no external torque)			
CE mark (see Declaration of Conformity)		According to EU-RoHS-RL			
		According to EU-EMC-Directive			

*Spindle Pitch 20mm available on request. The stroke is reduced by 3mm compared to other versions.

Connectors, signals, control

Status display		3x LED
Rated voltage power circuit	[V DC]	24 - 48
Max. current consumption	[A]	3.5 (continuous load operation)
	[A]	5 (consumption peak load operation)
Operating range signal input	[V DC]	24
Permissible voltage variations	%	+/- 15
Max. current consumption logic	[mA]	50
Max. current digital signal outputs	[mA]	100 / output
Number of digital signal inputs	3	extend, retract, teach
Number of digital signal outputs	3	extended, retracted, ready
Features signal input		galvanically isolated from power circuit not galvanically isolated between signals
Max. cable length	[m]	20
Switching logic outputs		push-pull
Switching logic inputs		positive switching
Reference		External fixed stop (-DIO) External fixed stop / manually by IO-Link (-IOL) Optional: manually by IO-Link (-MUL)

Weight (+/- 10%)

For 100 mm stroke	[g]	1600
Per 10mm stroke additionally	[g]	45
moving mass / 10 mm stroke	[g]	5.85

Materials

Housing, cover	Aluminium colorless anodized
Thrust tube	Aluminium, hard anodized
Seals	NBR / PUR / EPDM
Thread attachment	Stainless steel
Screws	Steel Galvanized
Spindle	heat-treated steel
Spindle nut	Roller bearing steel
Covers knobs	Stainless steel
Grease nipple	Steel Galvanized
Connector fittings	Zinc nickel plated
RoHS Information	Conform according to declaration
REACH Information	All Variants: contains > 0,1% of 7439-92-1 Variant -MUL: contains % > 0,1% of: D4 556-67-2

Configuration key

CTC - [] - [] - [] - [] - [] - []

Control type

- DIO: via digital IO-signals
 - IOL: via IO-Link Interface*
 - MUL: IO-Link Interface + Multiturn Encoder*
- * Can also be operated via digital IO-Signals

Thread type thrust tube

- A: male thread
- I: female thread
- V: rod guided device (max. stroke 300mm)
- F: Guidance (max. stroke 500mm)
- B: holding brake Q3/24
- J: holding brake Q3/24
- W: holding brake Q3/24
- G: holding brake Q3/24

Stroke length [mm]

- 0100, 0150, 0200, 0250, 0300, 0400, 0500, 0600, 0800

Spindle pitch [mm]

- 5
- 10
- (20) on request

Spindel type

- K: ball screw

Size

- 060, ...

Type

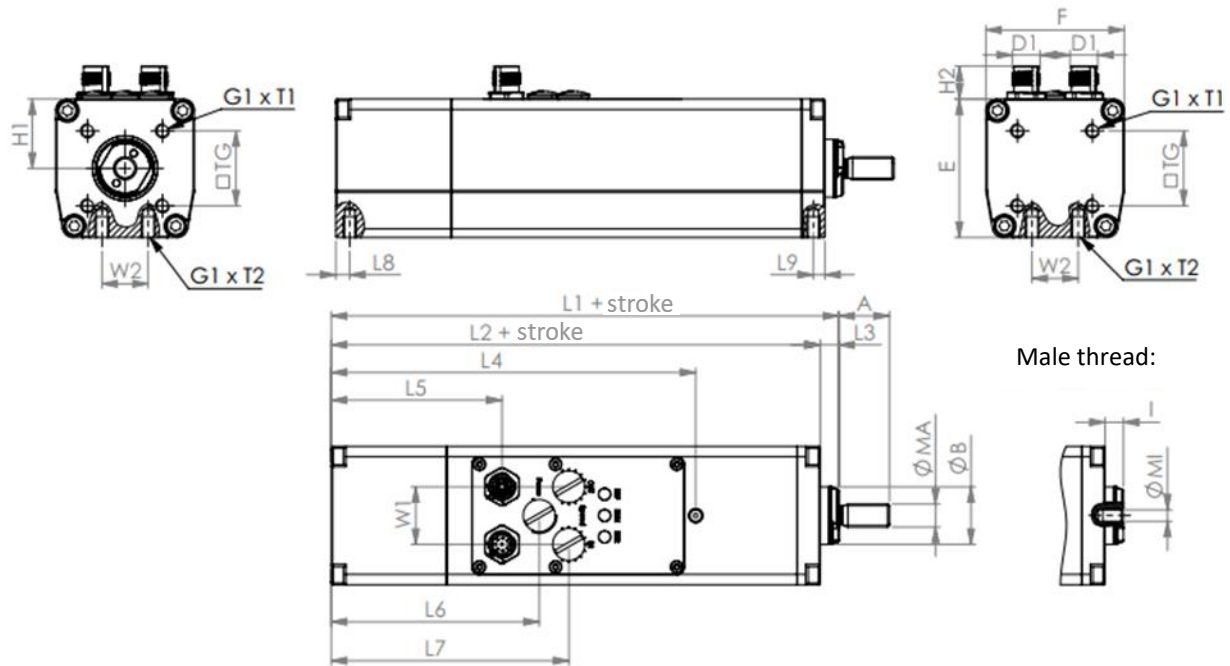
- CTC: Electric cylinder

Example: CTC-060-K10-0100-A-IOL

Dimensions

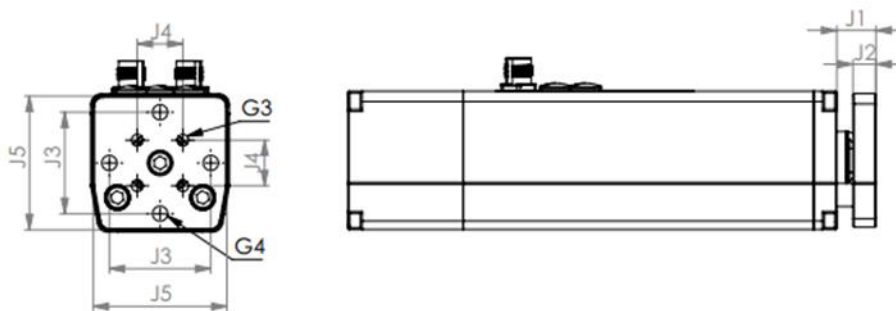
The basic dimensions are based on ISO 15552.

The connection and accessory dimensions fully comply with ISO 15552.



Male thread:

With anti-twist device:



	L1*	L2*	L3	L4	L5	L6	L7	L8	L9	H1	H2	D1
CTC-060	120	112	8	158	74	90	103	6	5	30	14.3	M12

	TG**	G1	T1	T2	A	B	E	F	I	MA	MI
CTC-060	32.5	M6	12	9	22	25	60	60	9	M10x1.25	M6

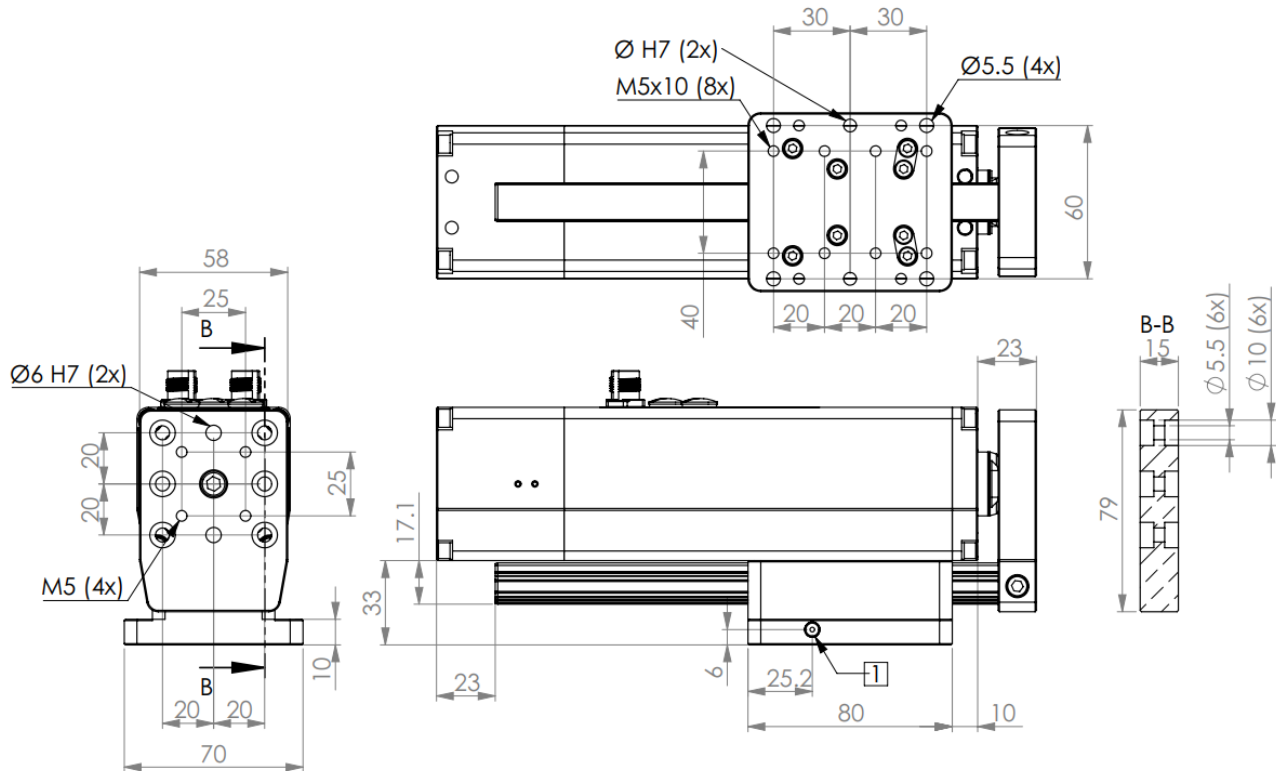
	W1	W2	J1	J2	J3	J4	J5	G3	G4			
CTC-060	25	20	17	10	44	19.8	58	M6	6.6			

All dimensions in mm.

* Stroke-dependent dimensions

** Thread for version with anti-rotation lock only on rear side of housing

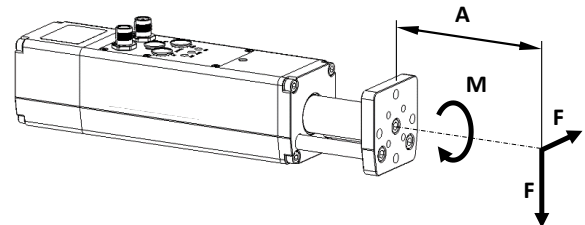
Supplementary dimensions for CTC-060-____-____-F



[1] Conical grease nipple for lubricating the guide (both sides)

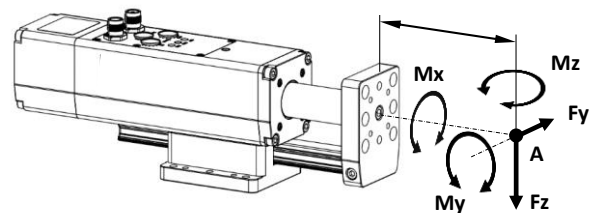
Permissible moment load M and transversal load F for CTC-060-___-___-V

Hub	F [N]	M [Nm]
100	29.96	1.26
150	12.45	0.75
200	6.31	0.54
250	3.63	0.45
300	2.28	0.40



Permissible moment load M and transversal load F for CTC-060-___-___-F

stroke	Fy [N]*	Fz [N]*	Mx [Nm]*	My [Nm]*	Mz [Nm]*
100	84.6	182.7	11.3	8.2	3.8
150	77.8	168.1	10.4	7.5	3.5
200	74.1	160.1	9.9	7.2	3.3
250	71.8	155.0	9.6	6.9	3.2
300	70.2	151.5	9.4	6.8	3.1

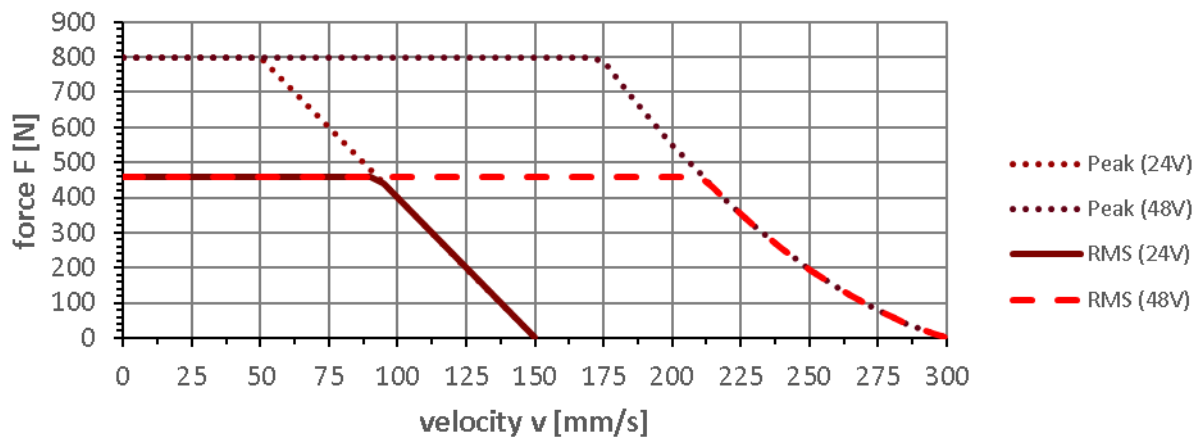


*The maximum permissible load applies in the retracted state and decreases with extended length.
Detailed design according to diagrams in the operating instructions.

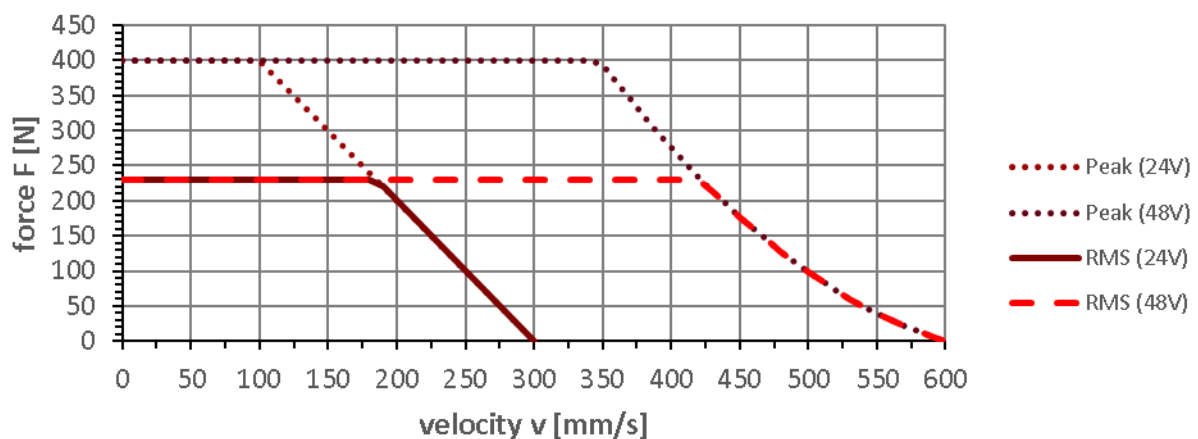
Characteristics

Force-velocity characteristic

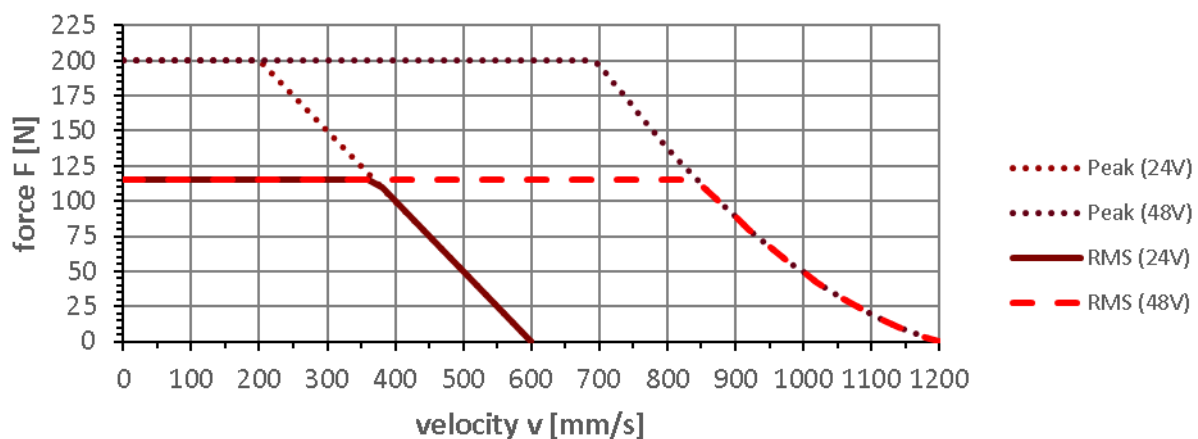
Force-velocity characteristic $F(v)$ at spindle pitch $P = 5 \text{ mm}$



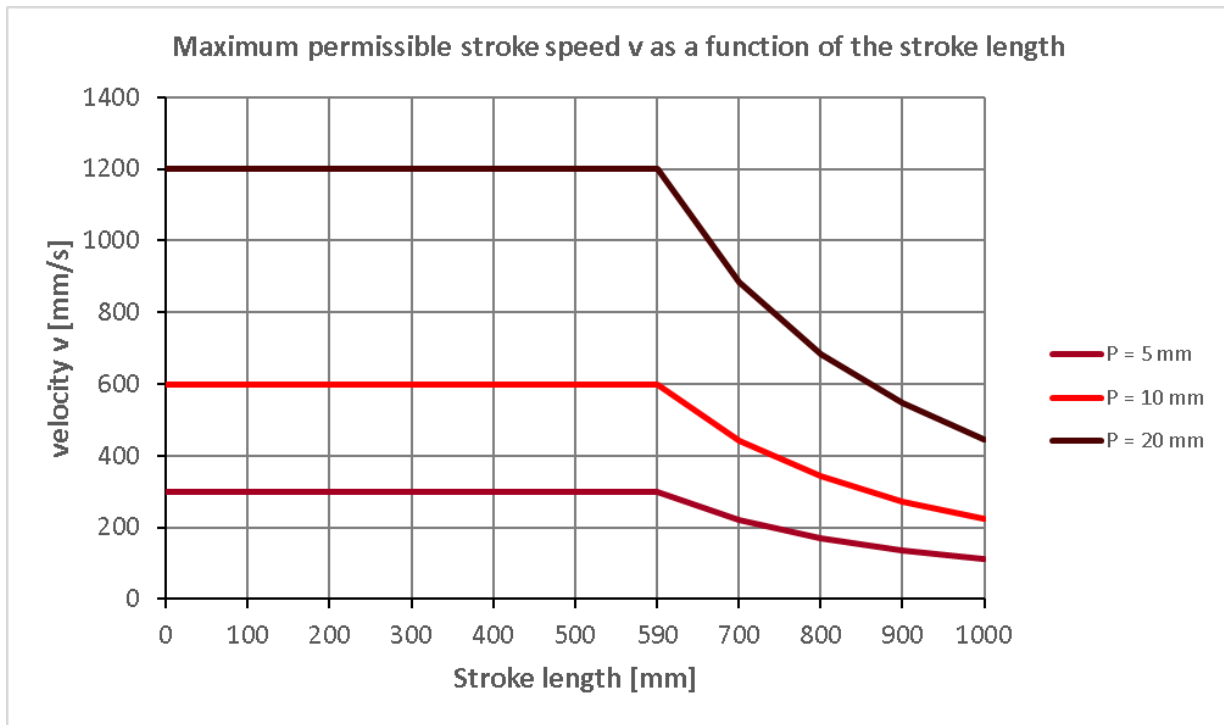
Force-velocity characteristic $F(v)$ at spindle pitch $P = 10 \text{ mm}$



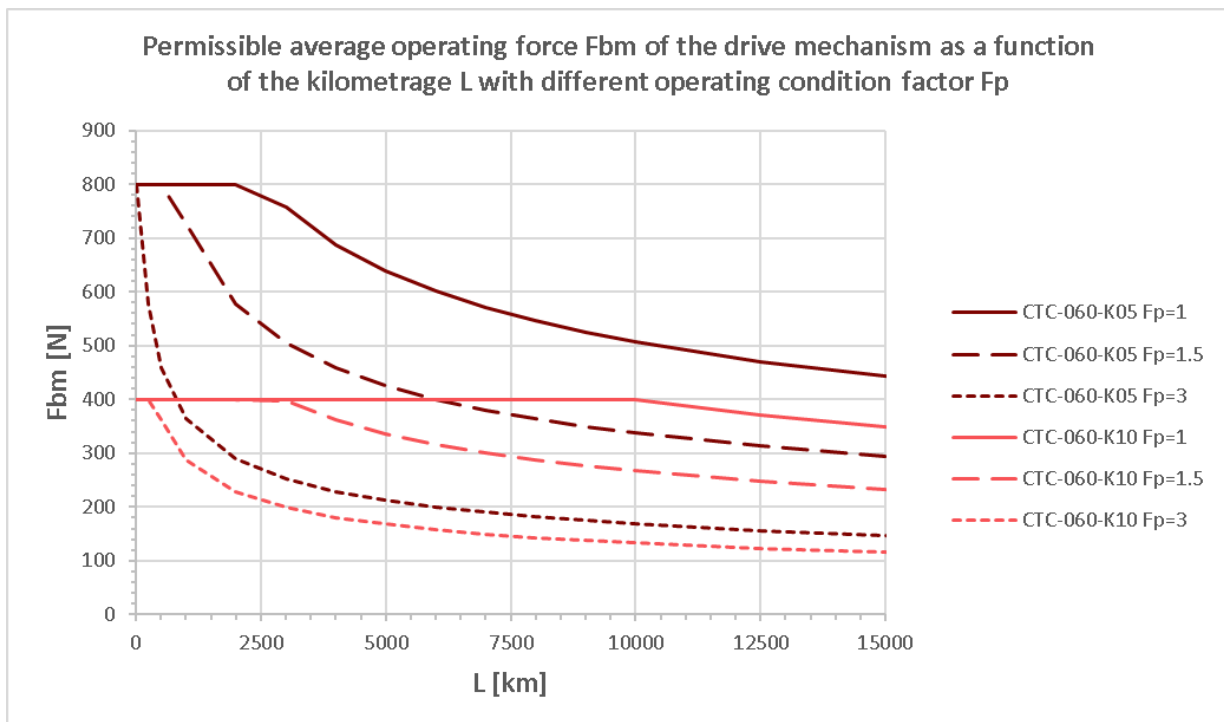
Force-velocity characteristic $F(v)$ at spindle pitch $P = 20 \text{ mm}$



Stroke speed



Lifetime characteristic * of the drive mechanism **



Operating condition factor F_p :

$F_p = 1$ Operation under ideal conditions

$F_p = 1.5$ Operation under normal conditions

$F_p = 3$ Operation with high impact and vibration or short stroke application (stroke < 100 mm)

* Failure probability 10%

** Ball screw and its bearing

Relubrication interval

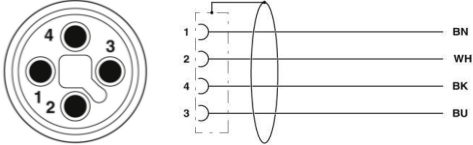

Cylinder type			Relubrication interval according to application				Lubricant quantity + number of passes		
	Nominal stroke [mm]	Spindle pitch	Continuous operation (> 3600 strokes / h)	Medium mileage (10 - 3600 strokes / h)	Low mileage (< 10 stroke / h)	short-stroke applications (< 20mm travel)	Lubricant-Quantity per pass [cm³]	Lubrication strokes after each pass	Number of passes
CTC-060	100 - 300	K05	250 Km	3 months	1 x / year	Lubrication run after1 million motion cycles (= 4 movements over entire nominal stroke range required)	0.6	6	2
		K10	500 Km						
	400 - 600	K05	250 Km	3 months	1 x / year		1.2	6	2
		K10	500 Km						
	600 - 800	K05	250 Km	3 months	1 x / year	Relubrication interval: 2 months	1.2	6	3
		K10	500 Km						

Tightening torques of screws

Thread	Tightening torque for mounting holes	Minimal screwing depth
M5	4.8 Nm (+/- 10%)	7.5 mm
M6	8.0 Nm (+/- 10%)	9.0 mm

Version	Tightening torque for Piston rod thread	Minimal screwing depth
-A	20.0 Nm (+/- 10%)	5.0 mm
-I	8.0 Nm (+/-10%)	6.0 mm

Electrical Connection of the Drive

Power			Signal		
Plug M12x1, 4-pole T-coded according to EN 61076-2-11			Plug M12x1, 8-pin A-coded according to EN 61076-2-101 (Shielded cables are recommended)		
					
Pin	Color	Function	Pin	Color	Function
1	BN	Power voltage 24V-48V ± 15% (max. 10A) At 48V the use of a brake chopper is recommended.	1	WH	DO Ready / IO-Link CQ
2	WH	Functional earth (FE)	2	BN	Logic voltage 24V ± 15% (max. 500mA)
3	BU	GND 0V	3	GN	DO is extended
4	BK	reserved, do not connect	4	YE	DO is retracted
			5	GY	DI Retract*
			6	PK	DI Extend*
			7	BU	GND 0V
			8	RD	DI Teach / Reset / Powerless

IO-Link interface

Parameter		
Transfer rate		COM3
Cycle time	ms	1.5
IO-Link specification		V1.1.3
Process data input (Slave->Master)		Status Actual Position (in mm) Actual Speed (in mm/s) Actual Force (in N)
Process data output (Master->Slave):		Motion Mode Target Position (in mm) Override 1-3 (in %)
Service data		Configuration, diagnosis, statistics, identification
IO-Link profile		Common Profile BLOB Transfer & Firmware Update