ROLLON®
BY TIMKEN

TH

Data sheet - rev. 1.0

ACTUATORS AND SYSTEMS

myRollon

myRollon is Rollon's **digital working platform** designed to simplify the selection and configuration of linear and rotary motion solutions. It enables users to identify the most suitable motion system based on their specific application requirements, enhancing design precision and efficiency.
By centralizing essential tools and resources in a unified environment, myRollon empowers users to access all necessary services and information — saving time and boosting productivity in search of high-performance motion solutions.

SCAN ME!

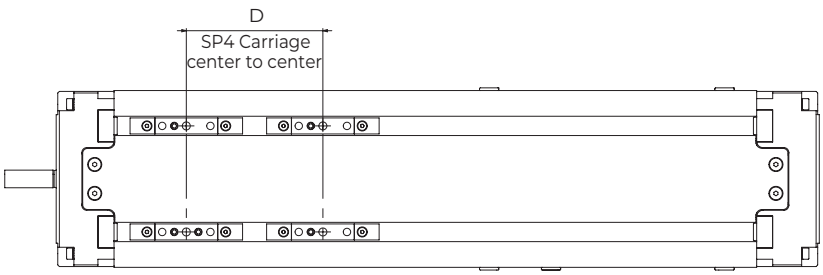
Index

ORDERING KEY

▪ **TH**

H	**09** 07 = 70 09 = 90 11 = 110 14 = 145 20 = 200	**1205** 08-2.5 12-05 12-10 16-05 16-10 16-16 20-05 20-20 25-10 25-25 32-05 32-10 32-20 32-32	**5P** 5P=ISO 5 7N=ISO 7	**0800**	**1A** 1A=SP2 set for motor bell kit 2A=SP4 set for motor bell kit 3A*=SP2 set for wrap around kit 4A*=SP4 set for wrap around kit	**D200**
						Carriage centre to centre distance - only for SP4 corfiguration
					Head configuration code	
				Total length of the unit [mm]		
			Ball screw precision class see from pg. PS-4 to pg. PS-11, tab. 5, 10, 15, 21, 27, 33			
		Ball screw diameter and lead - depending on the size				
	Size - see from pg. 6 to pg. 15					
Series						

Ordering example: **H0912057N07001A**
In order to create identification codes for Actuator Line, you can visit: http://configureactuator.rollon.com
* TH200 has the same arrangment for "motor bell kit" and "wrap around kit", so only 1A or 2A applies for both options



FEATURES AND ADVANTAGES

Fig.1

The TH ball screw-driven linear actuator is designed to deliver exceptional precision and repeatability in linear motion.

Rigid and compact, TH actuators ensure high positioning accuracy and repeatability throughout all process phases, with repeatability within 5 µm. Thrust force transmission is achieved through efficient ball screws, available in multiple precision classes and lead options.

Linear motion relies on two or four preloaded re-circulating ball bearing blocks with ball retainer technology mounted on two precisely aligned parallel rails. The TH series is available in both single and double carriage configurations to accommodate different load requirements.

For enhanced reliability, the TH linear units feature dedicated lubrication channels for both the rail and screw.

Designed for versatility, TH actuators are well-suited for a wide range of industries, particularly in industrial automation, packaging, and robotics. Their compact design makes them an ideal solution for applications with space constraints.

Performance characteristics

- Available sizes: 70, 90, 110, 145, 200
- Max. operating speed: see pg. 26*
- Repeatability: up to 5 µm
- Profile material: Aluminum
- Drive: ball screw ISO 7 (ISO 5 upon request)
- Guide: precision recirculating ball guides with preloaded and caged blocks

* Depends on the critical speed of the screw (based on its diameter and length) and on the max. permissible speed of the ball screw nut used.

Standard accessories

- Fixing bracket and t-nuts
- Proximity holder and sensor dog
- Motor bell kit
- External carriages
- Couplings
- X-Z and X-Y assembly kits
- Wrap around kit

MAIN ADVANTAGES

High positioning accuracy

Exceptional precision, with a repeatability up to ±0.005 mm.

Compact design

The space-saving structure makes it ideal for applications where maximizing space is crucial.

Precision and sfiffness

TH maintains precision and stiffness during operation, maximizing quality and efficiency of applications.

Protected

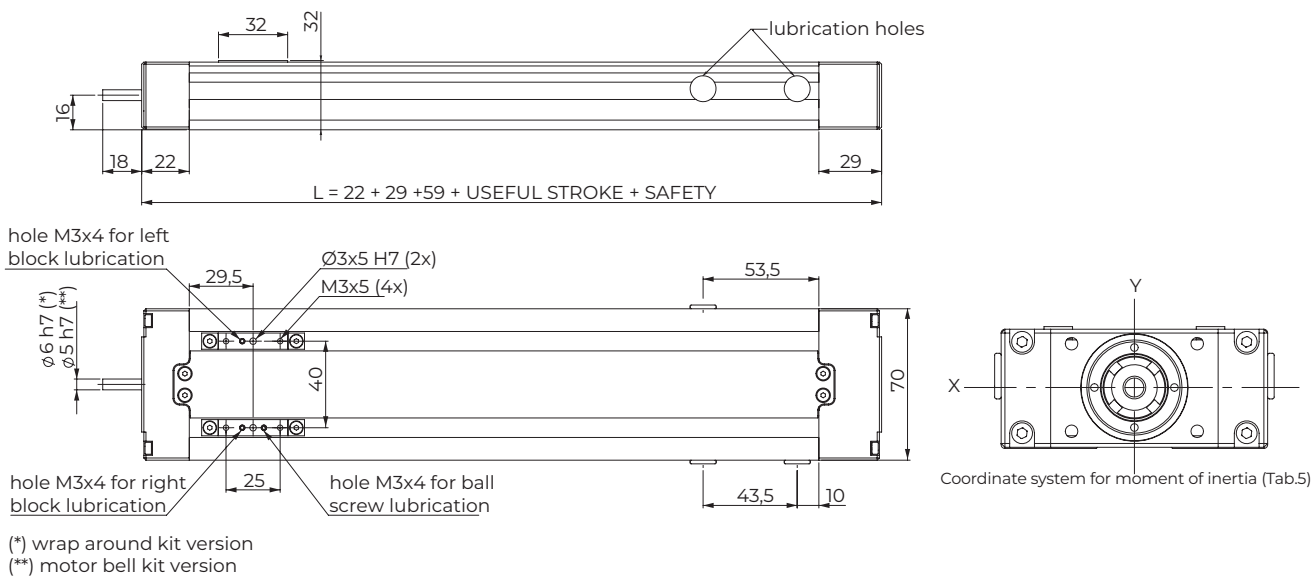
Equipped with strips that safeguard internal components, while scrapers and lip seals further enhance protection of the ball bearing guides.

Efficient lubrication

Dedicated lubrication channels for the ball screw and blocks help ensure easy maintenance and long-term reliability.

COMPONENTS AND DIMENSIONS

▪ TH70 SP2



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.2

Technical data	SP2
Max. useful stroke length [mm]* (ISO5)	290 (190)
Max. speed [m/s]	See page 26
Carriage weight [kg]	0.15
Zero travel weight [kg]	0.58
Weight for 100 mm useful stroke [kg]	0.26
Rail size [mm]	9 mini

* Maximum stroke until 591 mm (390 mm for ISO5) available on request. For more information please contact Rollon.

Tab.1

Load capacity F_x	
Ball screw	8-2.5
Fx static [N]	2220
Fx dynamic [N]	1470

Tab.4

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

Ball screw precision	
Max. positioning precision [mm/300mm] ISO 5	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05
Max. repeatability precision ISO 5 [mm]	0.01
Max. repeatability precision ISO 7 [mm]	0.02

Tab.2

Positioning precision refers to the degree of accuracy in reaching the target position in a single movement, while repeatability refers to the ability to reach the same position repeatedly in multiple operations.

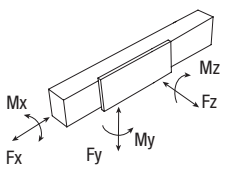
Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.0054
Iy [10^7 mm^4]	0.0367
Jt [10^7 mm^4]	0.0007

Tab.5

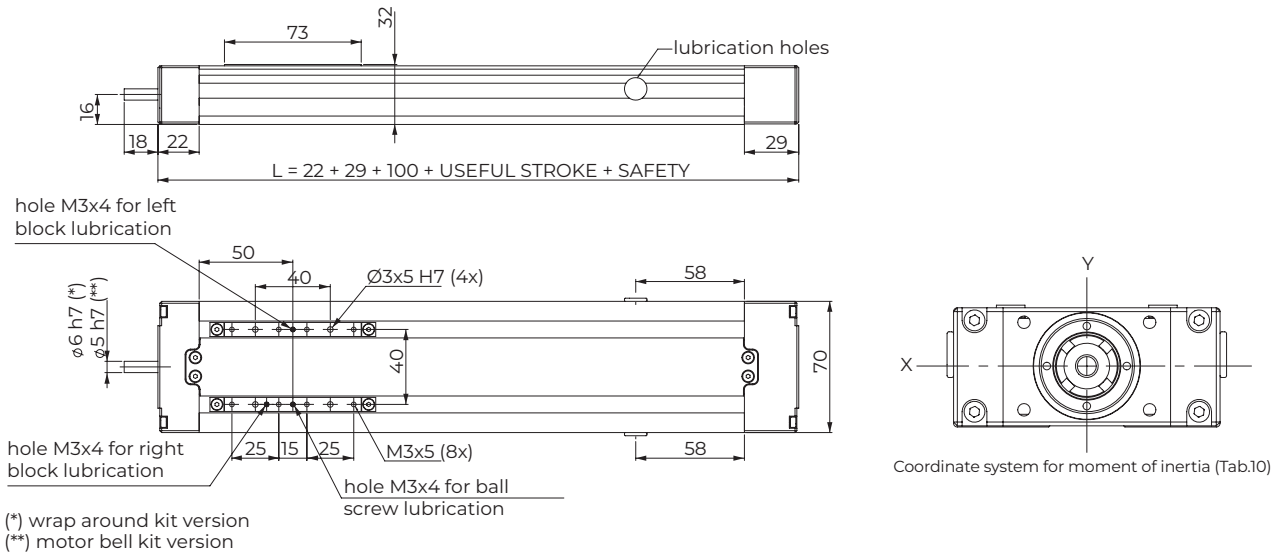
Load capacity	SP2
Fy static [N]	4990
Fy dynamic [N]	3140
Fz static [N]	4990
Mx static [Nm]	99.8
My static [Nm]	12.8
Mz static [Nm]	12.8

Tab.3

Loads



■ TH70 SP4



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.3

Technical data	SP4
Max. useful stroke length [mm]* (ISO5)	249 (149)
Max. speed [m/s]	See page 26
Carriage weight [kg]	0.27
Zero travel weight [kg]	0.80
Weight for 100 mm useful stroke [kg]	0.26
Rail size [mm]	9 mini

* Maximum stroke until 550 mm (349 mm for ISO5) available on request. For more information please contact Rollon.

Tab.6

Load capacity F_x	
Ball screw	8-2.5
Fx static [N]	2220
Fx dynamic [N]	1470

Tab.9

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

Ball screw precision	
Max. positioning precision [mm/300mm] ISO 5	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05
Max. repeatability precision ISO 5 [mm]	0.01
Max. repeatability precision ISO 7 [mm]	0.02

Tab.7

Positioning precision refers to the degree of accuracy in reaching the target position in a single movement, while repeatability refers to the ability to reach the same position repeatedly in multiple operations.

Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.0054
Iy [10^7 mm^4]	0.0367
Jt [10^7 mm^4]	0.0007

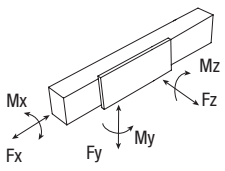
Tab.10

Load capacity	SP4
Fy static [N]	9980
Fy dynamic [N]	6280
Fz static [N]	9980
Mx static [Nm]	200
My static [Nm]	319
Mz static [Nm]	319

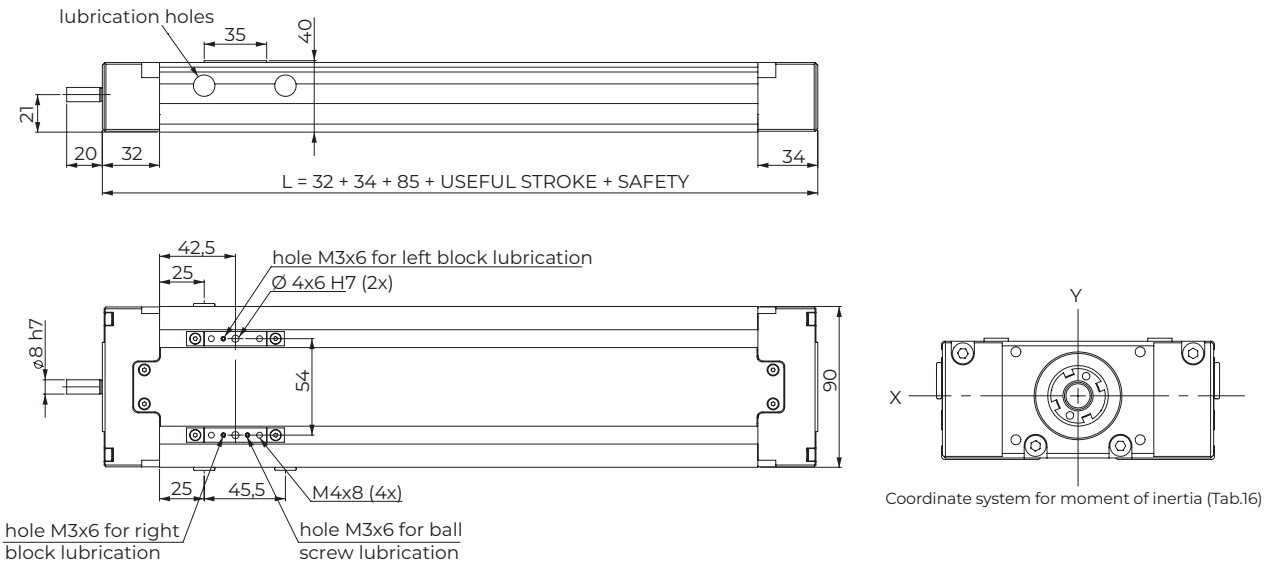
Note: For the SP4 model, the load capacities are valid only when the sliders are fixed together.

Tab.8

Loads



■ TH90 SP2



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.4

Technical data	SP2
Max. useful stroke length [mm]	665
Max. speed [m/s]	See page 26
Carriage weight [kg]	0.65
Zero travel weight [kg]	1.41
Weight for 100 mm useful stroke [kg]	0.60
Rail size [mm]	12 mini

Tab.11

Ball screw precision	12-05	12-10
Max. positioning precision [mm/300mm] ISO 5	0.023	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05	0.05
Max. repeatability precision ISO 5 [mm]	0.01	0.01
Max. repeatability precision ISO 7 [mm]	0.02	0.02

Tab.12

Load capacity	SP2
Fy static [N]	7060
Fy dynamic [N]	6350
Fz static [N]	7060
Mx static [Nm]	192
My static [Nm]	24
Mz static [Nm]	24

Tab.13

Starting torque		
Ball Screw (diameter-lead)	12-05	12-10
[Nm]	0.07	0.08

Tab.14

Load capacity F_x		
Ball screw	12-05	12-10
Fx static [N]	5690	5788
Fx dynamic [N]	3335	3335

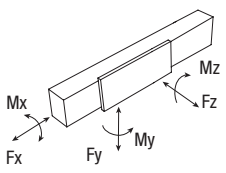
Tab.15

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

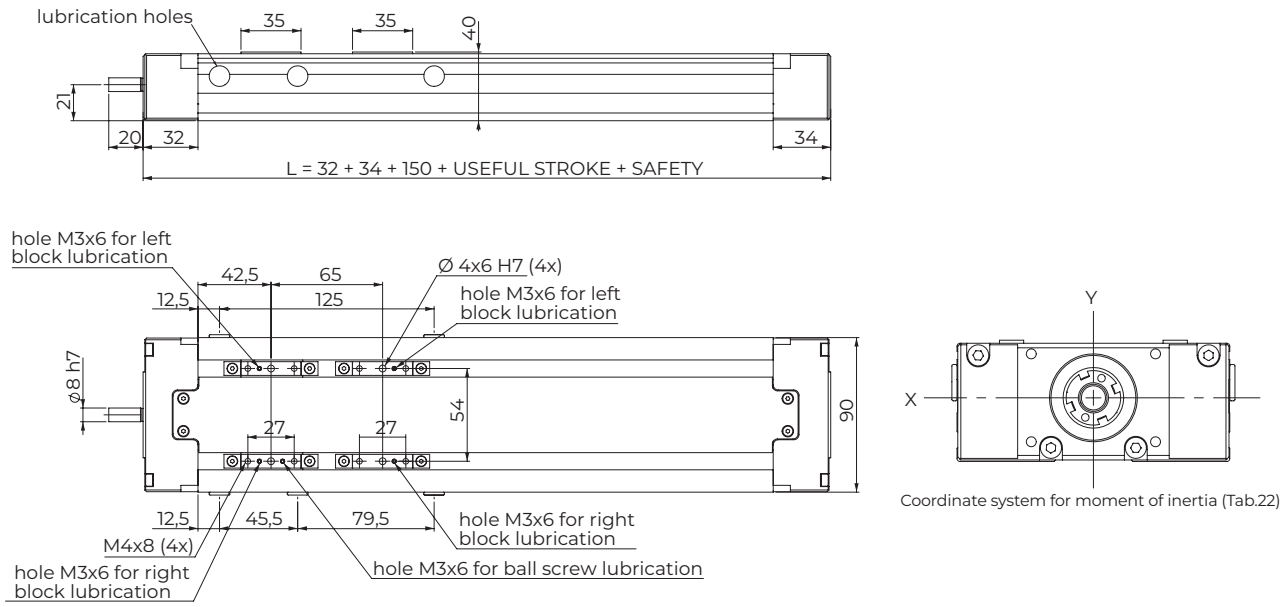
Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.0130
Iy [10^7 mm^4]	0.0968
Jt [10^7 mm^4]	0.0020

Tab.16

Loads



■ TH90 SP4



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.5

Technical data	SP4
Max. useful stroke length [mm]	600
Max. speed [m/s]	See page 26
Carriage weight [kg]	0.90
Zero travel weight [kg]	2.04
Weight for 100 mm useful stroke [kg]	0.60
Rail size [mm]	12 mini

Tab.17

Ball screw precision	12-05	12-10
Max. positioning precision [mm/300mm] ISO 5	0.023	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05	0.05
Max. repeatability precision ISO 5 [mm]	0.01	0.01
Max. repeatability precision ISO 7 [mm]	0.02	0.02

Tab.18

Load capacity	SP4
Fy static [N]	14120
Fy dynamic [N]	12699
Fz static [N]	14120
Mx static [Nm]	384
My static [Nm]	459
Mz static [Nm]	459

Note: For the SP4 model, the load capacities are valid only when the sliders are fixed together.

Tab.19

Starting torque		
Ball Screw (diameter-lead)	12-05	12-10
[Nm]	0.07	0.08

Tab.20

Load capacity F_x		
Ball screw	12-05	12-10
Fx static [N]	5690	5788
Fx dynamic [N]	3335	3335

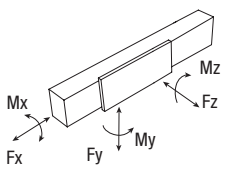
Tab.21

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

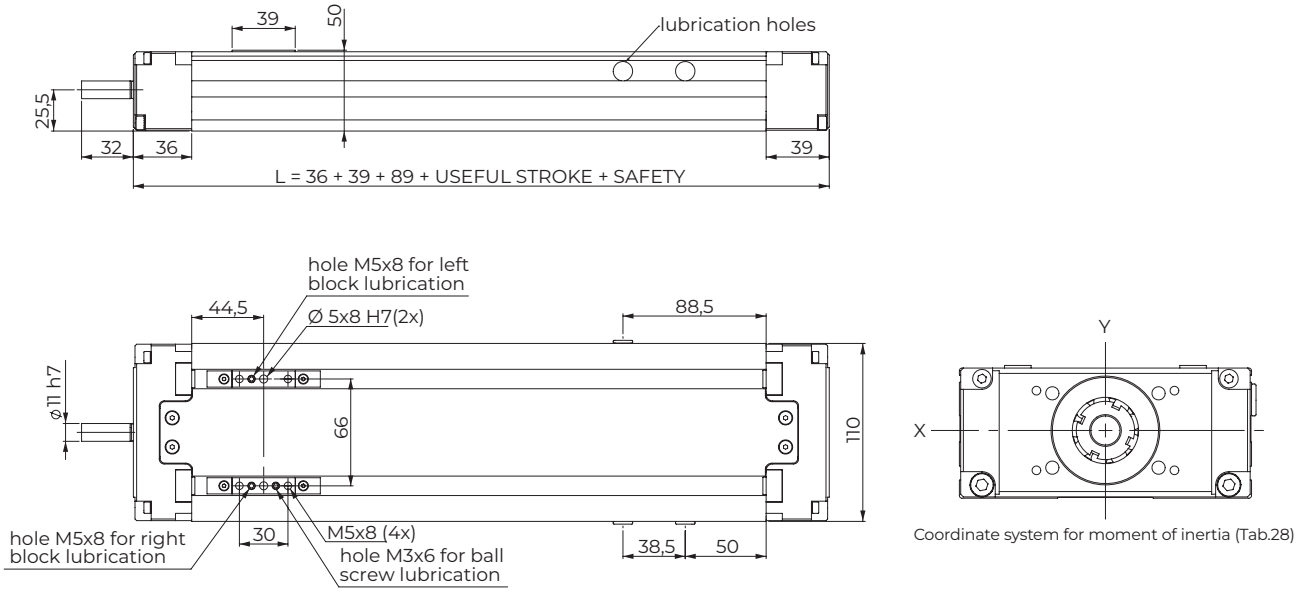
Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.0130
Iy [10^7 mm^4]	0.0968
Jt [10^7 mm^4]	0.0020

Tab.22

Loads



▪ TH110 SP2



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.6

Technical data	SP2
Max. useful stroke length [mm]	1411
Max. speed [m/s]	See page 26
Carriage weight [kg]	0.76
Zero travel weight [kg]	2.65
Weight for 100 mm useful stroke [kg]	0.83
Rail size [mm]	15

Tab.23

Ball screw precision	16-05	16-10	16-16
Max. positioning precision [mm/300mm] ISO 5	0.023	0.023	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05	0.05	0.05
Max. repeatability precision ISO 5 [mm]	0.005	0.005	0.005
Max. repeatability precision ISO 7 [mm]	0.045	0.045	0.045

Tab.24

Load capacity	SP2
Fy static [N]	48400
Fy dynamic [N]	22541
Fz static [N]	48400
Mx static [Nm]	1549
My static [Nm]	350
Mz static [Nm]	350

Tab.25

Starting torque			
Ball Screw (diameter-lead)	16-05	16-10	16-16
[Nm]	0.16	0.23	0.27

Tab.26

Load capacity F_x			
Ball screw	16-05	16-10	10-16
Fx static [N]	17400	18300	18800
Fx dynamic [N]	11800	10500	10300

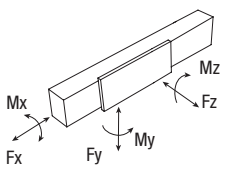
Tab.27

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

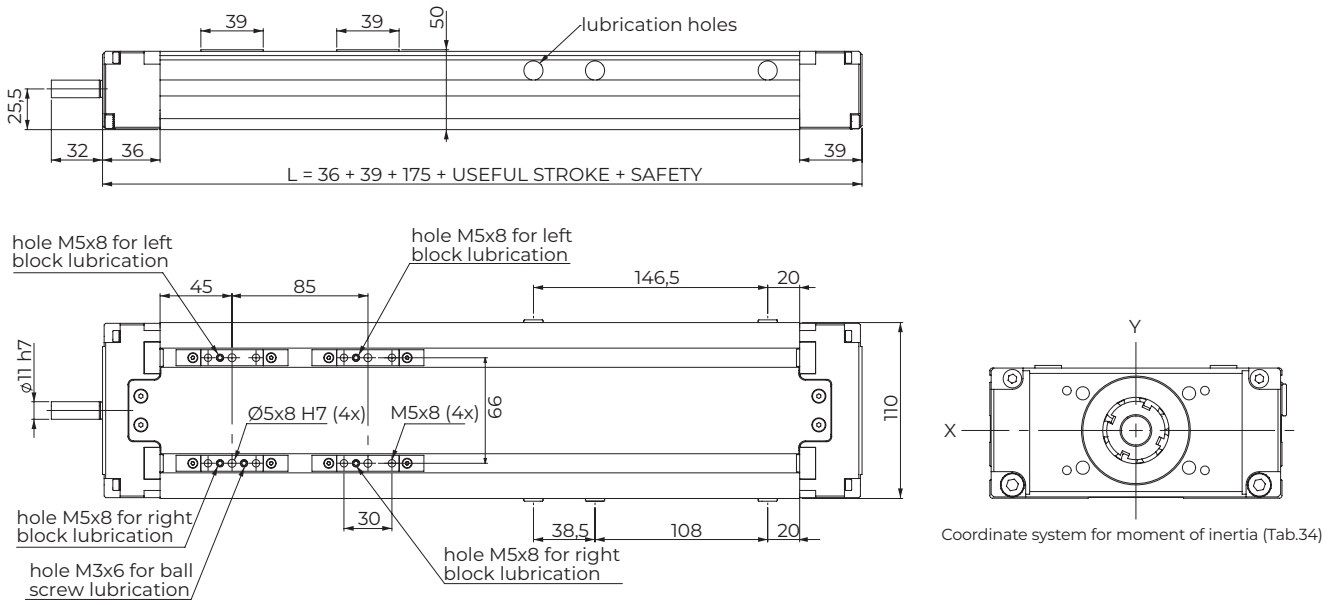
Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.0287
Iy [10^7 mm^4]	0.2040
Jt [10^7 mm^4]	0.0023

Tab.28

Loads



■ TH110 SP4



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.7

Technical data	SP4
Max. useful stroke length [mm]	1325
Max. speed [m/s]	See page 26
Carriage weight [kg]	1.26
Zero travel weight [kg]	4.00
Weight for 100 mm useful stroke [kg]	0.83
Rail size [mm]	15

Tab.29

Ball screw precision	16-05	16-10	16-16
Max. positioning precision [mm/300mm] ISO 5	0.023	0.023	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05	0.05	0.05
Max. repeatability precision ISO 5 [mm]	0.005	0.005	0.005
Max. repeatability precision ISO 7 [mm]	0.045	0.045	0.045

Tab.30

Load capacity	SP4
Fy static [N]	96800
Fy dynamic [N]	45082
Fz static [N]	96800
Mx static [Nm]	3098
My static [Nm]	2606
Mz static [Nm]	2606

Note: For the SP4 model, the load capacities are valid only when the sliders are fixed together.

Tab.31

Starting torque			
Ball Screw (diameter-lead)	16-05	16-10	16-16
[Nm]	0.16	0.23	0.27

Tab.32

Load capacity F_x			
Ball screw	16-05	16-10	10-16
Fx static [N]	17400	18300	18800
Fx dynamic [N]	11800	10500	10300

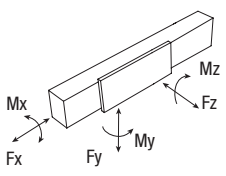
Tab.33

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

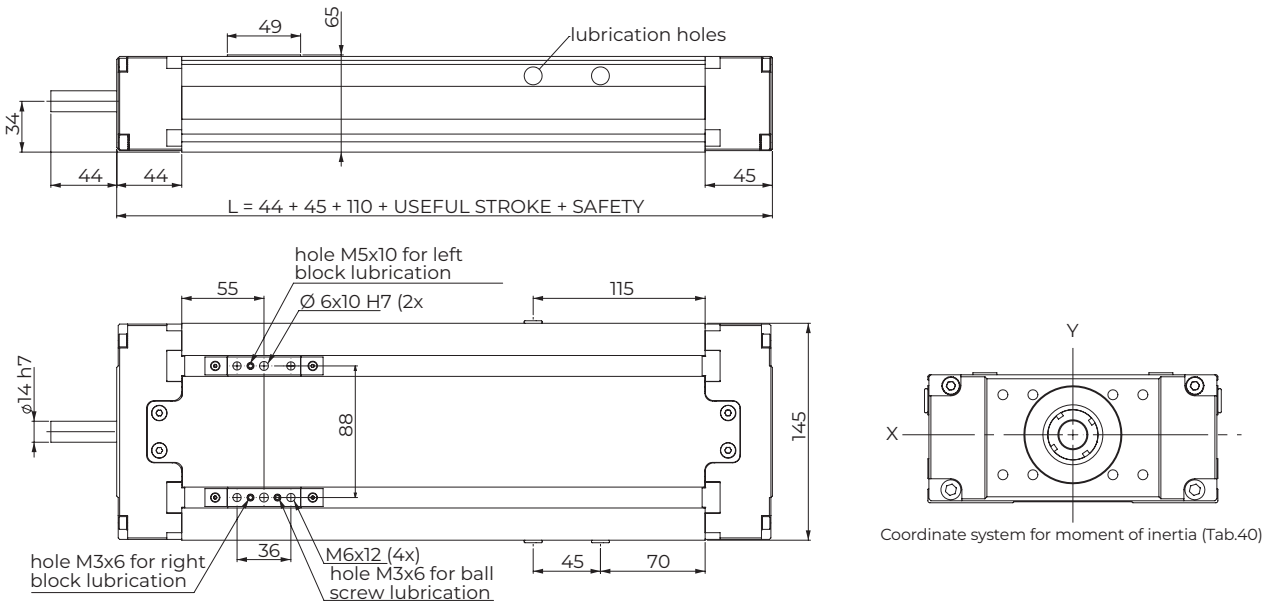
Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.0287
Iy [10^7 mm^4]	0.2040
Jt [10^7 mm^4]	0.0023

Tab.34

Loads



▪ TH145 SP2



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.8

Technical data	SP2
Max. useful stroke length [mm]	1690
Max. speed [m/s]	See page 27
Carriage weight [kg]	1.45
Zero travel weight [kg]	5.90
Weight for 100 mm useful stroke [kg]	1.60
Rail size [mm]	20

Tab.35

Ball screw precision	20-05	20-20	25-10	25-25
Max. positioning precision [mm/300mm] ISO 5	0.023	0.023	0.023	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05	0.05	0.05	0.05
Max. repeatability precision ISO 5 [mm]	0.005	0.005	0.005	0.005
Max. repeatability precision ISO 7 [mm]	0.045	0.045	0.045	0.045

Tab.36

Load capacity	SP2
Fy static [N]	76800
Fy dynamic [N]	35399
Fz static [N]	76800
Mx static [Nm]	3341
My static [Nm]	668
Mz static [Nm]	668

Tab.37

Starting torque				
Ball Screw (diameter-lead)	20-05	20-20	25-10	25-25
[Nm]	0.22	0.35	0.29	0.49

Tab.38

Load capacity F_x				
Ball screw	20-05	20-20	25-10	25-25
Fx static [N]	25900	23900	32600	30500
Fx dynamic [N]	14600	13400	16000	15100

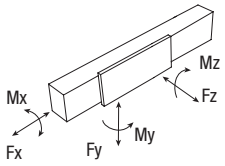
Tab.39

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

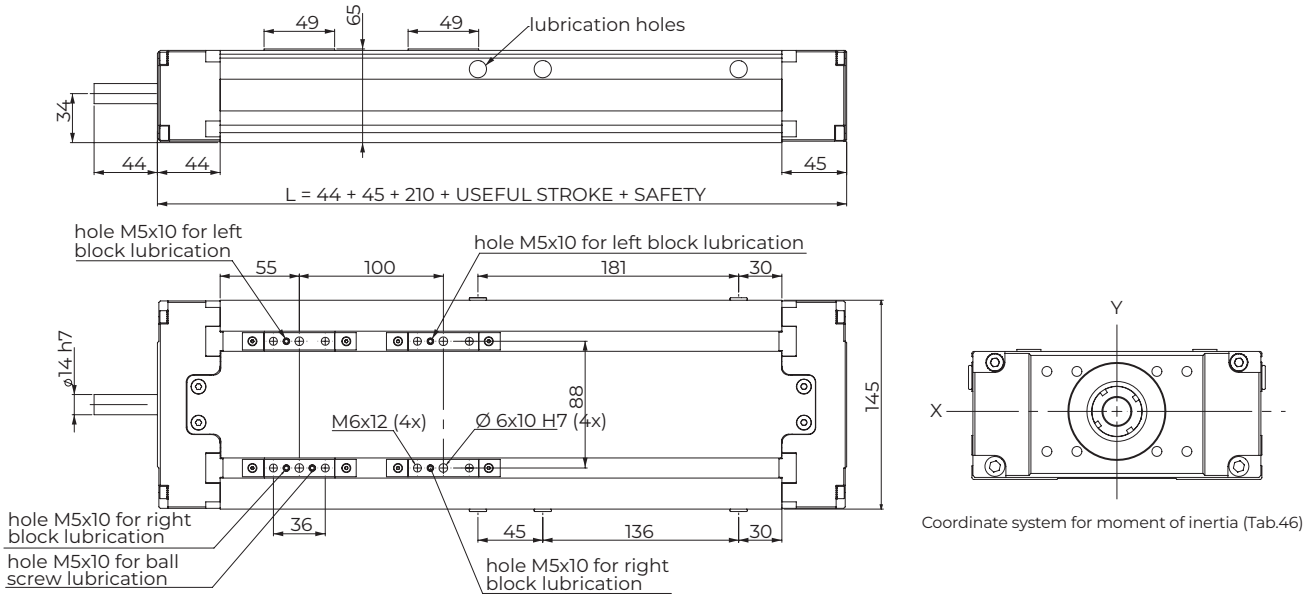
Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.090
Iy [10^7 mm^4]	0.659
Jt [10^7 mm^4]	0.012

Tab.40

Loads



■ TH145 SP4



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.9

Technical data	SP4
Max. useful stroke length [mm]	1590
Max. speed [m/s]	27
Carriage weight [kg]	2.42
Zero travel weight [kg]	8.30
Weight for 100 mm useful stroke [kg]	1.60
Rail size [mm]	20

Tab.41

Ball screw precision	20-05	20-20	25-10	25-25
Max. positioning precision [mm/300mm] ISO 5	0.023	0.023	0.023	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05	0.05	0.05	0.05
Max. repeatability precision ISO 5 [mm]	0.005	0.005	0.005	0.005
Max. repeatability precision ISO 7 [mm]	0.045	0.045	0.045	0.045

Tab.42

Load capacity	SP4
Fy static [N]	96800
Fy dynamic [N]	45082
Fz static [N]	96800
Mx static [Nm]	3098
My static [Nm]	2606
Mz static [Nm]	2606

Note: For the SP4 model, the load capacities are valid only when the sliders are fixed together.

Tab.43

Starting torque				
Ball Screw (diameter-lead)	20-05	20-20	25-10	25-25
[Nm]	0.22	0.35	0.29	0.49

Tab.44

Load capacity F_x				
Ball screw	20-05	20-20	25-10	25-25
Fx static [N]	25900	23900	32600	30500
Fx dynamic [N]	14600	13400	16000	15100

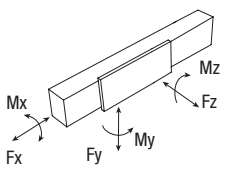
Tab.45

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

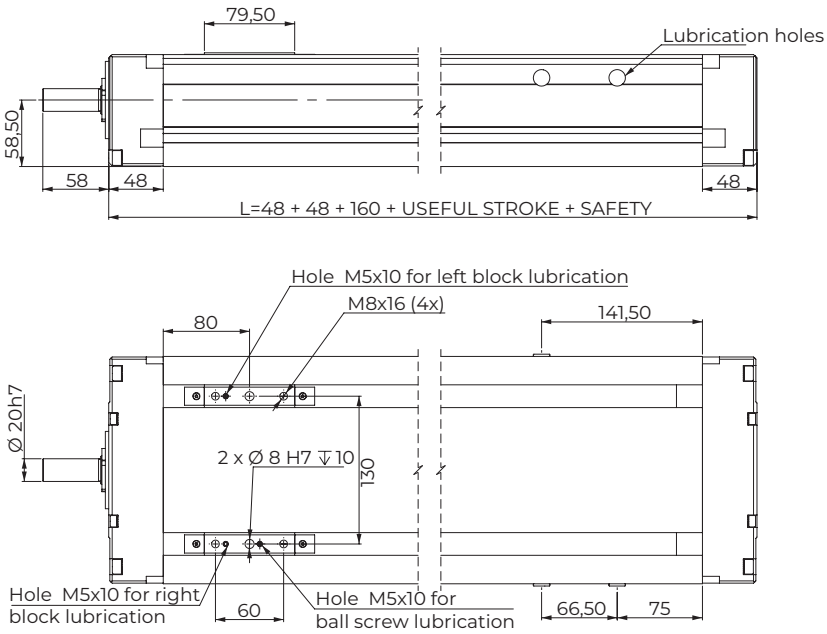
Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.090
Iy [10^7 mm^4]	0.659
Jt [10^7 mm^4]	0.012

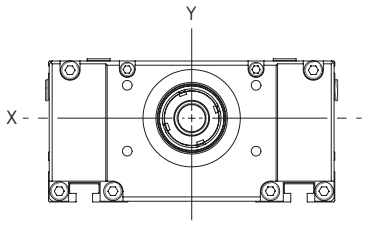
Tab.46

Loads



■ TH200 SP2





Coordinate system for moment of inertia (Tab.52)

The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.10

Technical data	SP2
Max. useful stroke length [mm]* (ISO5)	4175 -(2675)
Max. speed [m/s]	See page 27-28
Carriage weight [kg]	2.97
Zero travel weight [kg]	21.03
Weight for 100 mm useful stroke [kg]	2.77
Rail size [mm]	25

Tab.47

Ball screw precision	32-05	32-10	32-20	32-32
Max. positioning precision [mm/300mm] ISO 5	0.023	0.023	0.023	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05	0.05	0.05	0.05
Max. repeatability precision ISO 5 [mm]	0.005	0.005	0.005	0.005
Max. repeatability precision ISO 7 [mm]	0.045	0.045	0.045	0.045

Tab.48

Load capacity	SP2
Fy static [N]	104800
Fy dynamic [N]	50321
Fz static [N]	104800
Mx static [Nm]	6498
My static [Nm]	1132
Mz static [Nm]	1132

Tab.49

Starting torque				
Ball Screw (diameter-lead)	32-05	32-10	32-20	32-32
[Nm]	0.16	0.32	0.64	1.02

Tab.50

Load capacity F_x				
Ball screw	32-05	32-10	32-20	32-32
Fx static [N]	64200	66300	49700	48600
Fx dynamic [N]	25900	29800	24100	22700

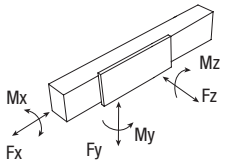
Tab.51

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

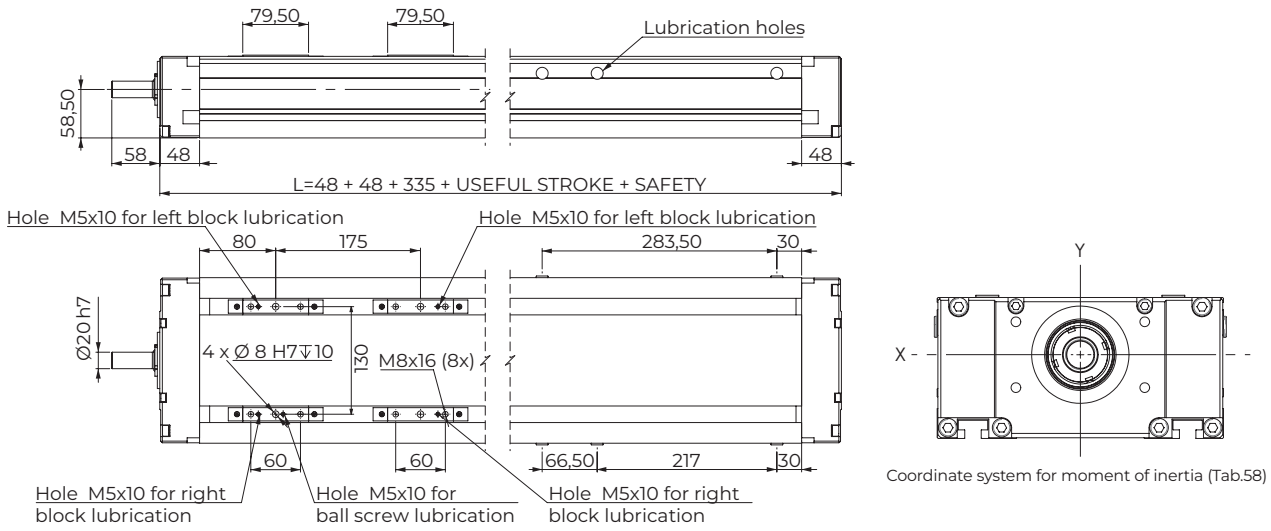
Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.381
Iy [10^7 mm^4]	2.476
Jt [10^7 mm^4]	0.051

Tab.52

Loads



■ TH200 SP4



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig.11

Technical data	SP4
Max. useful stroke length [mm]* (ISO5)	4000 - (2500)
Max. speed [m/s]	See page 27-28
Carriage weight [kg]	5.20
Zero travel weight [kg]	23.41
Weight for 100 mm useful stroke [kg]	2.77
Rail size [mm]	25

Tab.53

Ball screw precision	32-05	32-10	32-20	32-32
Max. positioning precision [mm/300mm] ISO 5	0.023	0.023	0.023	0.023
Max. positioning precision [mm/300mm] ISO 7	0.05	0.05	0.05	0.05
Max. repeatability precision ISO 5 [mm]	0.005	0.005	0.005	0.005
Max. repeatability precision ISO 7 [mm]	0.045	0.045	0.045	0.045

Tab.54

Load capacity	SP4
Fy static [N]	209600
Fy dynamic [N]	100641
Fz static [N]	209600
Mx static [Nm]	12995
My static [Nm]	16454
Mz static [Nm]	16454

Note: For the SP4 model, the load capacities are valid only when the sliders are fixed together.

Tab.55

Starting torque				
Ball Screw (diameter-lead)	32-05	32-10	32-20	32-32
[Nm]	0.16	0.32	0.64	1.02

Tab.56

Load capacity F_x				
Ball screw	32-05	32-10	32-20	32-32
Fx static [N]	64200	66300	49700	48600
Fx dynamic [N]	25900	29800	24100	22700

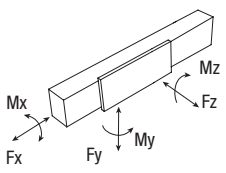
Tab.57

Fx in the table represents the maximum capacity of the Ball Screw. In the application the actual load that can be borne must consider factors such as buckling, the permissible compressive and tensile load and the expected lifetime. For more information please contact Rollon.

Moments of inertia of the aluminum body	
Ix [10^7 mm^4]	0.381
Iy [10^7 mm^4]	2.476
Jt [10^7 mm^4]	0.051

Tab.58

Loads



▪ Connection interfaces

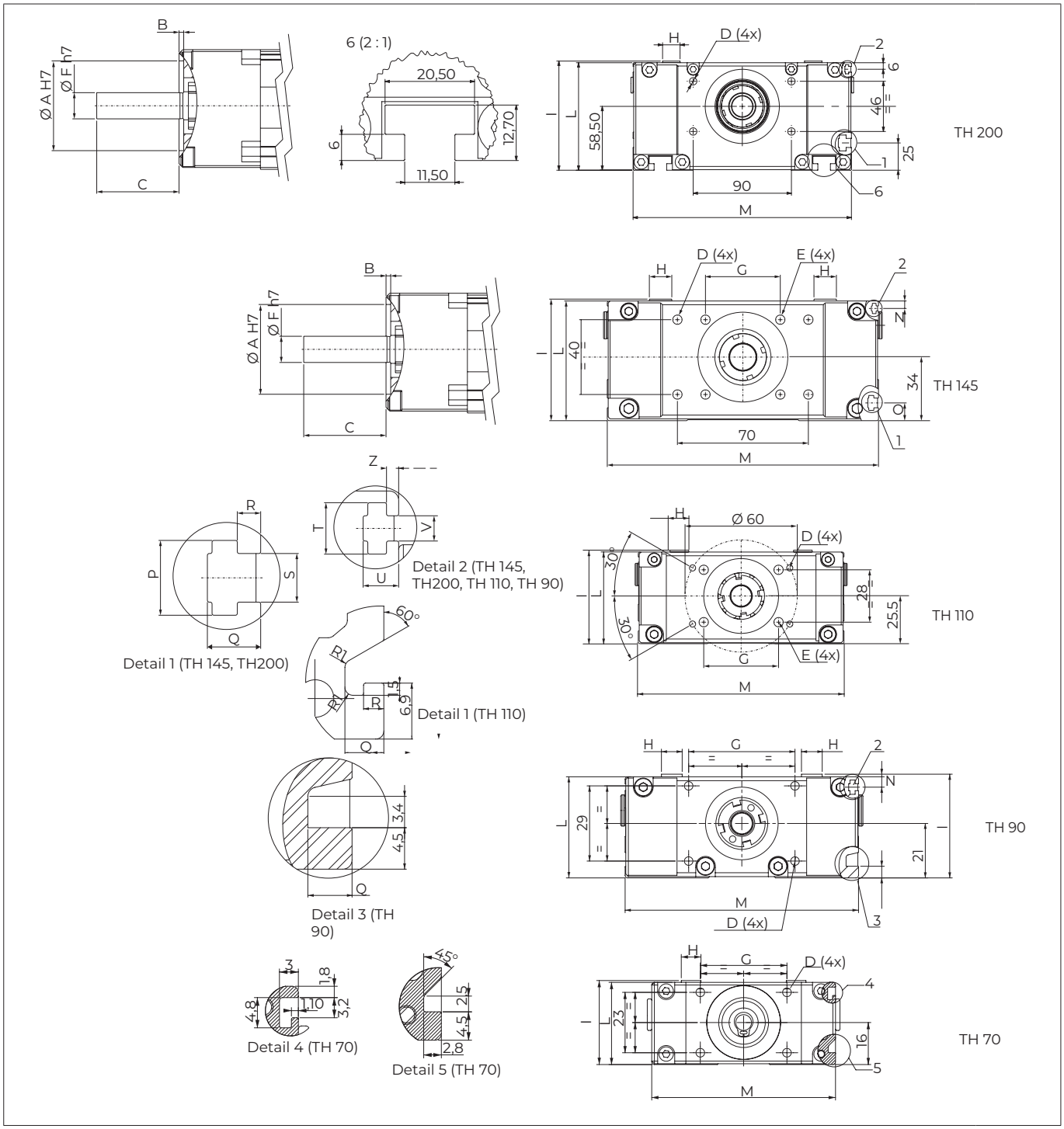


Fig.12

Type	A	B*	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	Z
TH70	28	2.5	18	M4x8	-	5 or 6	33	7.5	32	31.3	70	-	-	-	-	-	-	-	-	-	-
TH90	28	2.5	20	M4x8	-	8	41	8	40	39	90	4	4.5	-	4.8	-	-	5.5	3.8	2.7	1.3
TH110	40	2.5	32	M4x8	M6x10	11	40	10	50	49	110	4	-	-	4.8	2.5	-	5.5	3.8	2.7	1.3
TH145	48	2.5	44	M6x10	M6x12	14	40	12	65	64	145	4	9.5	8	5.7	2.5	5.2	5.5	3.8	2.7	1.3
TH200	68	3*	58	M8x16	-	20	-	16	100	98.5	200	-	-	14.5	12	4.9	8.3	8.3	6	5.2	2.5

* For the TH200, the dimension B for centering is a protrusion extending from the driving head, rather than a recess as in the other sections.

Tab.59

ACCESSORIES

▪ Fixing by brackets

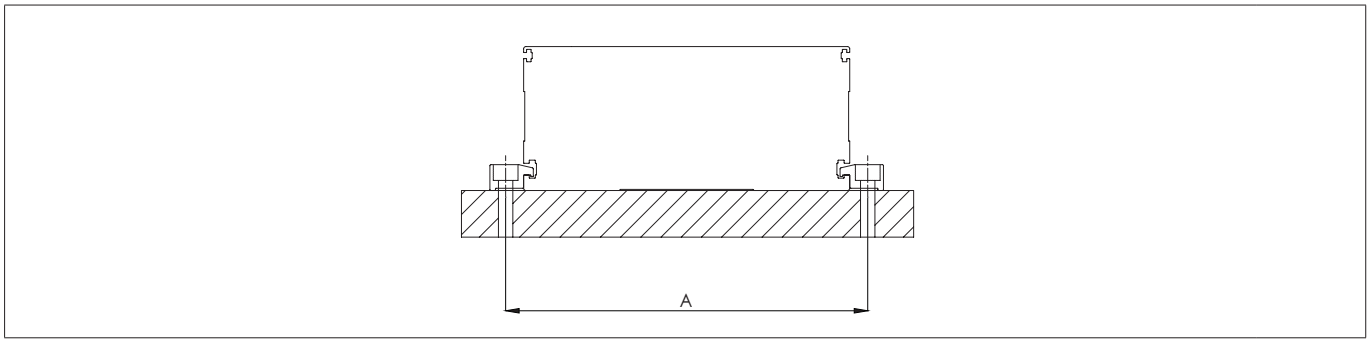


Fig.13

Type	A Unit [mm]
TH70	82
TH90	102
TH110	126
TH145	161
TH200	220

Tab.60

▪ Fixing brackets

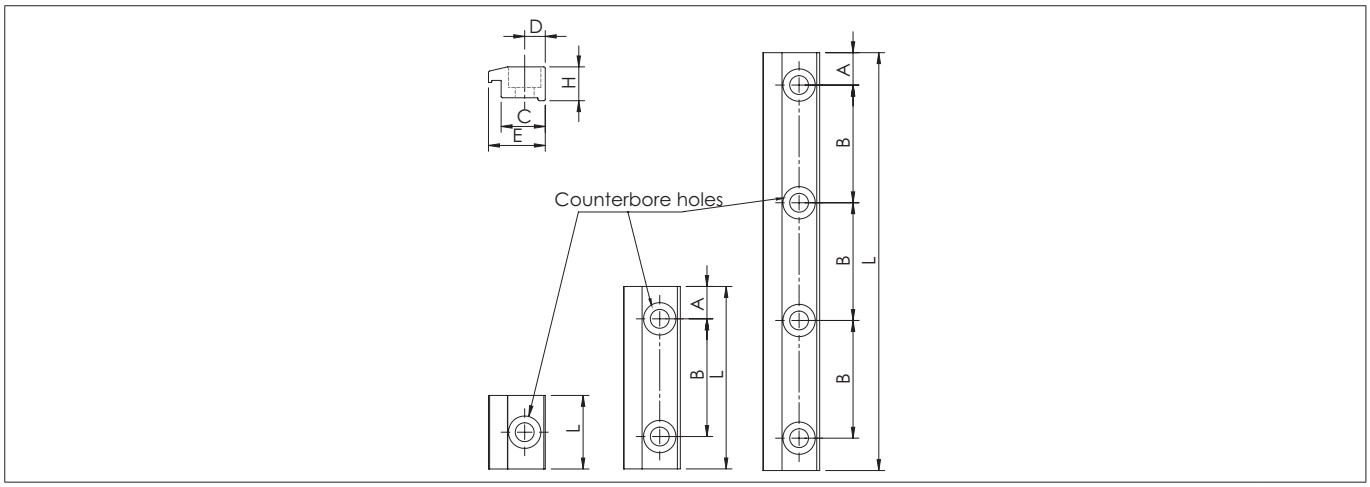


Fig.14

Type	N° holes	Counterbore for screw	A	B	C	D	E	H	L	Rollon code
TH70	1	M4	-	-	12.5	6.5	15	9	22	1005198
TH90	2	M4	11	40	10.5	4.5	14.5	9.1	62	1003385
	4	M4	8.5	30	10.5	4.5	14.5	9.1	107	1003509
	4	M4	8.5	20	10.5	4.5	14.5	9.1	77	1003510
	1	M4	-	-	10.5	4.5	14.5	9.1	25	1003612
TH110 TH145	4	M5	8.5	30	15	7	19.3	11.5	107	1002805
	4	M6	11	40	15	7	19.3	11.5	142	1002864
	1	M6	-	-	15	7	19	11.5	25	1002970
	2	M6	11	40	15	7	19	11.5	62	1002971
	4	M5	20	20	15	7	19	11.5	100	1003311
TH200	2	M8	17.5	45	31	21	36.5	27	80	1020742

Tab.61

▪ T-Nuts

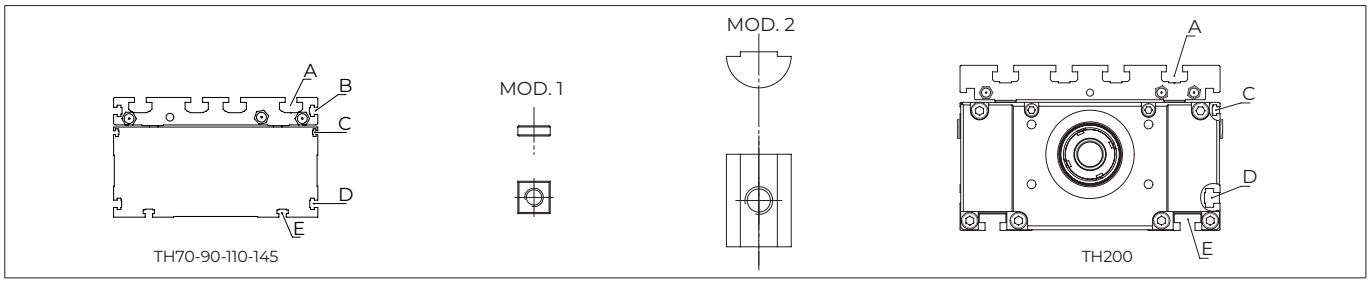


Fig.15

Type	A	B	C	D	E
TH70	Mod. 1 M4 - 963.0407.81	Mod. 1 M4 - 963.0407.81	-	-	-
TH90	Mod. 2 M5 - 6000436	-	Mod. 1 M2.5 - 6001361	-	-
TH110	Mod. 2 M5 - 6000436	Mod. 1 M4 - 963.0407.81	Mod. 1 M2.5 - 6001361	-	-
TH145	Mod. 2 M6 - 6000437	Mod. 1 M4 - 963.0407.81	Mod. 1 M2.5 - 6001361	Mod. 1 M4 - 963.0407.81	-
TH200	Mod. 2 M6 - 2151769	-	Mod. 1 M5 - 6009862	Mod. 2 M4 - 4111357	Mod. 2 M6 - 4112541
	Mod. 2 M8 - 2151770	-	-	Mod. 2 M5 - 4111358	Mod. 2 M8 - 4112542
	-	-	-	Mod. 2 M6 - 4111359	Mod. 2 M10 - 4112543

Tab.62

▪ Kit for sensors

The inductive proximity sensor holder is made of aluminum and features “T” nuts, used for fixing on the axis profile. The sensor dog is an iron plate mounted on the carriage and used for proximity operation. The inductive proximity sensor is not supplied by Rollon.

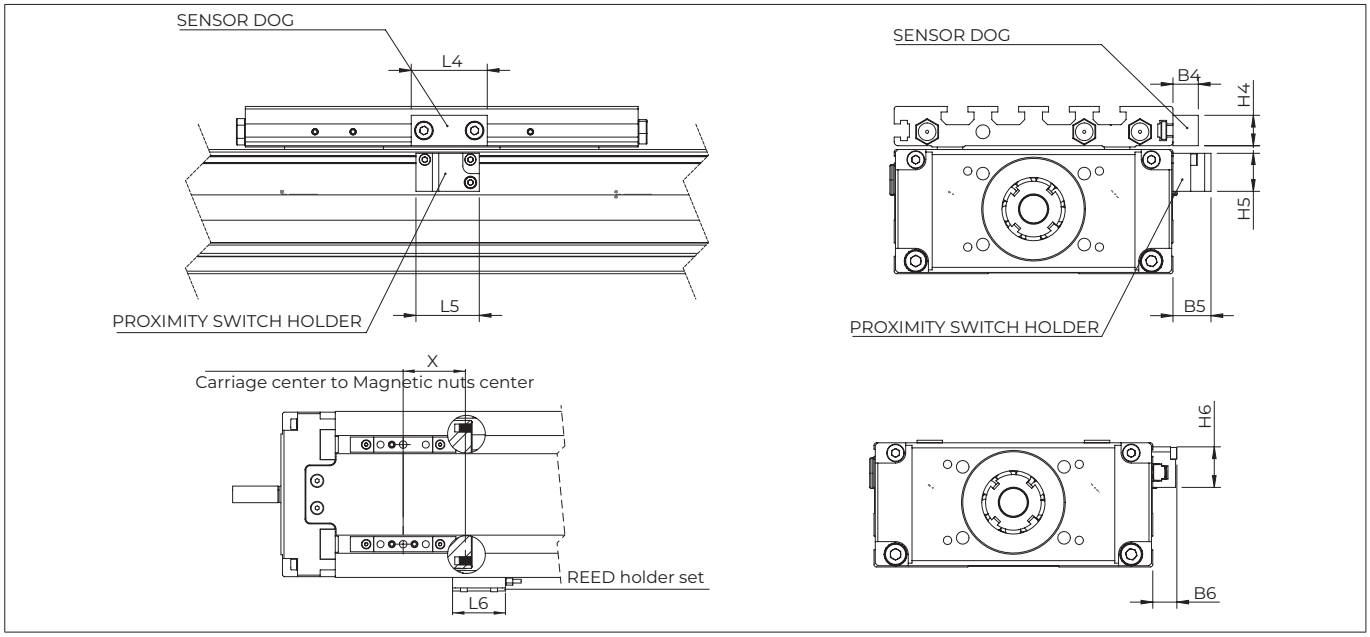


Fig.16

Type	B4	B5	B6	L4	L5	L6	H4	H5	H6	X	Sensor	Proximity holder set	Sensor dog	REED holder set
TH70 SP2	8	10	8	30	25	35	10	18	18	26.5	Ø 6.5	G001975	G001976	G001974
TH70 SP4	8	10	8	30	25	35	10	18	18	54.5	Ø 6.5	G001975	G001976	G001974
TH90	10	15	9.5	12	25	35	6	15	16	33.5	Ø 8	G001193	G001203	G001204
TH110	10	15	9.5	30	25	35	12	15	16	41	Ø 8	G001193	G001198	G001204
TH145	10	15	9.5	30	25	35	12	15	16	49.5	Ø 8	G001193	G001198	G001204
TH200	15	17	11.8	35	38	35	14	18	25	71.3	Ø 12	G004840	G004853	G004852

Tab.63

▪ External carriage

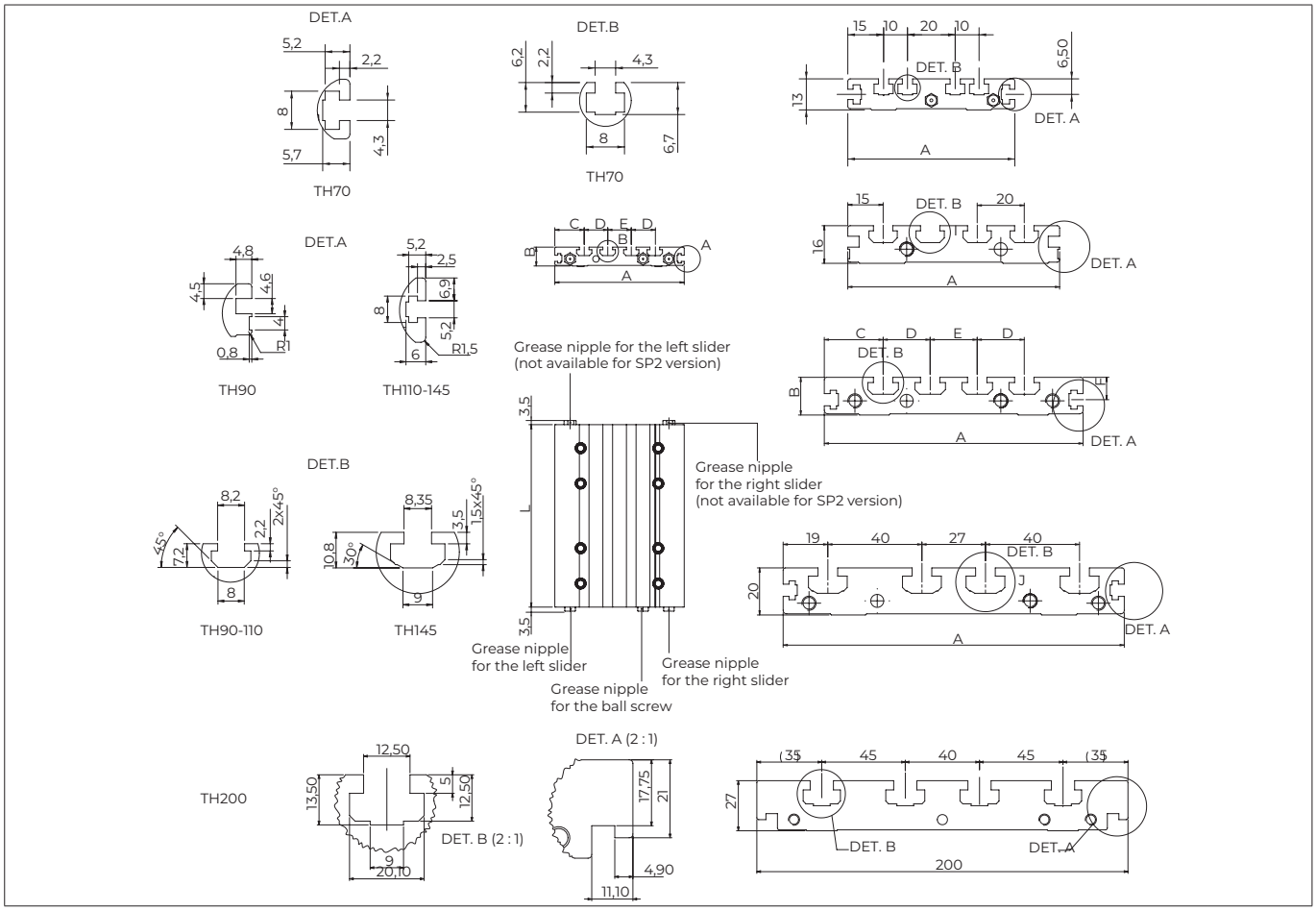
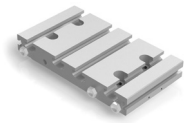


Fig.17

External carriage for SP2	Type	A	B	C	D	E	F	L	Code
	TH70	70	13	15	10	20	6,5	60	G001957
	TH90	90	16	15	20	20	6.8	60	G001195
	TH110	110	16	25	20	20	9.5	60	G001059
	TH145	145	20	19	40	27	9.5	80	G001062
	TH200	200	27	35	45	40	-	190	G005084

Tab.64

External carriage for SP4	Type	A	B	C	D	E	F	L	Code
	TH70	70	13	15	10	20	6,5	95	G001958
	TH90	90	16	15	20	20	6.8	125	G001194
	TH110	110	16	25	20	20	9.5	155	G001060
	TH145	145	20	19	40	27	9.5	190	G001061
	TH200	200	27	35	45	40	-	305	G004851

Tab.65

■ **External carriage with centering pins**

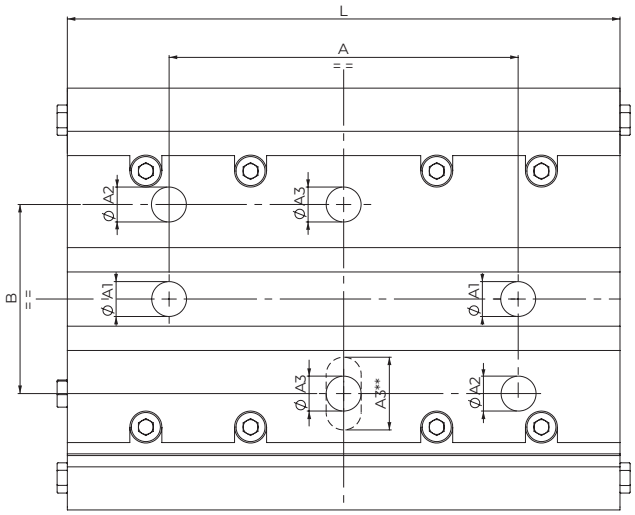
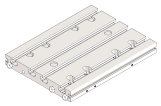


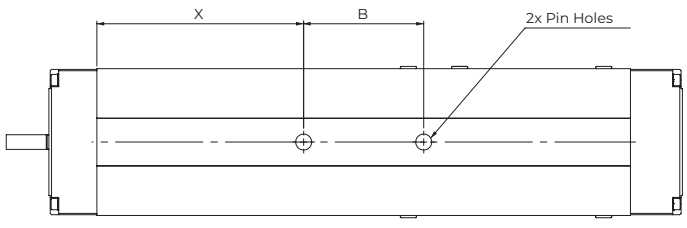
Fig.18

EXTERNAL CARRIAGE KIT SP4	UNIT	L	OPTION A1				OPTION A2				OPTION A3			
			A	Ø A1	Code	Mounting Configuration	AxB	Ø A2	Code	Mounting Configuration	B	Ø A3	Code	Mounting Configuration
	TH70	95	80	Ø 7	G001958	X-Y 4	-	-	-	-	40	Ø 7	G001958	X-Y 3
	TH90	125	80	Ø 9	G004270	X-Y 4	-	-	-	-	-	-	-	-
	TH90	125	90	Ø 5	G003514	X-Y 4	-	-	-	-	-	-	-	-
	TH110	155	-	-	-	-	85.5	Ø 12	G002740	X-Y 4	90	Ø 12	G001956	X-Y 3
	TH110	155	-	-	-	-	-	-	-	-	90	Ø 5	G003515	X-Y 3
	TH110	155	-	-	-	-	-	-	-	-	130	Ø 4	G004565	X-Y 3
	TH110	155	-	-	-	-	-	-	-	-	88	Ø 8 Ø8x14**	G003086	X-Y 3
	TH145	190	40	Ø 12	G001847	X-Y 4	58x58	Ø 12	G004298	X-Y 4	70	Ø 12	G001955	X-Y 3
	TH145	190	120	Ø 12	G001948	X-Y 4	-	-	-	-	70	Ø 12 Ø12x20**	G002734	X-Y 3
	TH200	305	120	Ø 16	G005187	X-Y 4	-	-	-	-	130	Ø 16	G005188	X-Y 3

Tab.66

Mounting Y axis with centering pins

Options A3 from the above table are designed for assembly configuration X-Y3 (see Pag. 22). In that case the back side of the Y axis aluminum profile must be drilled to accommodate the pins. The generic example below shows the position X of the first hole. The value is depending on the relative position of Y axis with reference to X carriage and it is designed on project basis. Please contact Rollon. The distance B corresponds to the spacing between the two pins as per the table above. For ordering please specify as description the dimension "X" and we will assign a drawing code S0x to manage the order.



For further information, please contact our technical department

Fig.19

As accessory we can provide two types of centering bushes that fit the holes on the profile.

Ø	Code
Ø8	1007291
Ø12	1006875

Tab.67

▪ Assembly kits

For the direct assembly of TH linear units in multi-axis systems, Rollon offers dedicated assembly kits. The table below shows the allowed combinations as well as the corresponding assembly kit codes.

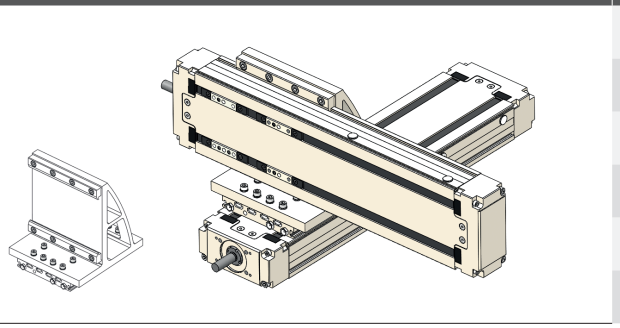
Type of mounting X-Y_1	Actuators	Kit Code
	TH90 - TH90	G001199 + G001194
	TH110 - TH90	G001199 + G001060
	TH110 - TH110	G001080 + G001060
	TH145 - TH110	G001079 + G001061
	TH145 - TH145	G001081 + G001061
	TH200 - TH145	G004855 + G004851

Fig.20

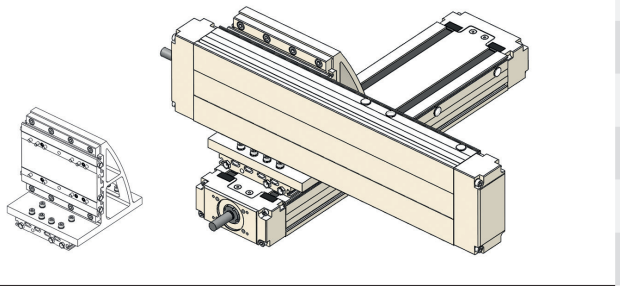
Type of mounting X-Y_2	Actuators	Kit Code
	TH90 - TH90	G001199 + 2x G001194
	TH110 - TH90	G001199 + G001060 + G001194
	TH110 - TH110	G001080 + 2x G001060
	TH145 - TH110	G001079 + G001061 + G001060
	TH145 - TH145	G001081 + 2x G001061
	TH200 - TH145	G004855 + G004851 + G001061

Fig.21

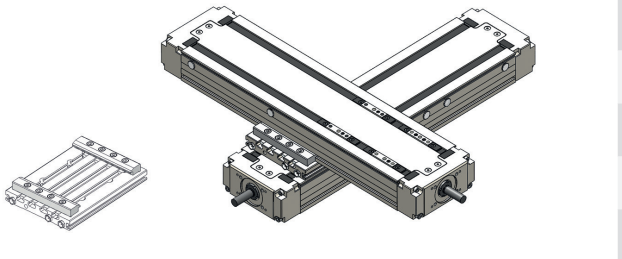
Type of mounting X-Y_3	Actuators	Kit Code
	TH90 - TH90	G001483
	TH110 - TH90	G005179
	TH110 - TH110	G001173
	TH145 - TH110	G002464
	TH145 - TH145	G001362
	TH200 - TH200	G004862

Fig.22

If external carriage with centering pins are requested please add the A3 to the above kit codes, example G001483A3

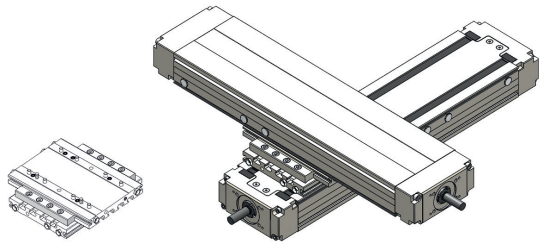
Type of mounting X-Y_4	Actuators	Kit Code
	TH90 - TH90	G001483 + G001194
	TH110 - TH90	G005179 + G001194
	TH110 - TH110	G001173 + G001060
	TH145 - TH110	G002464 + G001060
	TH145 - TH145	G001362 + G001061
	TH200 - TH200	G004862 + G004851

Fig.23

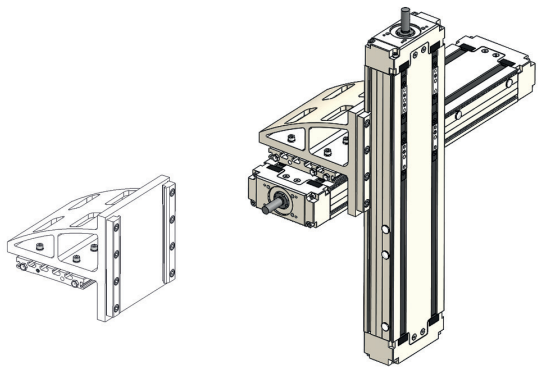
Type of mounting X-Z_1	Actuators	Kit Code
	TH110 - TH90	G001205 + G001060
	TH110 - TH110	G001083 + G001060
	TH145 - TH110	G001084 + G001061
	TH145 - TH145	G001085 + G001061
	TH200 - TH145	G004854 + G004851
	TH200 - TH200	G005105 + G004851

Fig.24

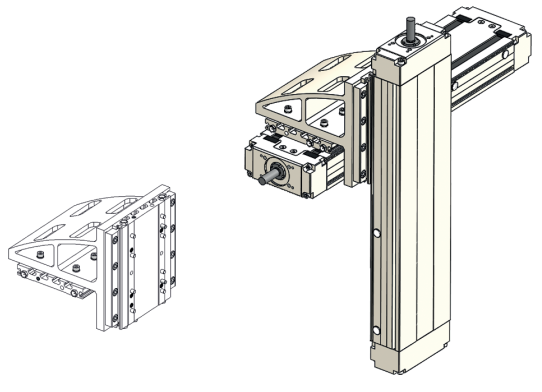
Type of mounting X-Z_2	Actuators	Kit Code
	TH110 - TH90	G001205 + G001060 + G001194
	TH110 - TH110	G001083 + 2x G001060
	TH145 - TH110	G001084 + G001061 + G001060
	TH145 - TH145	G001085 + 2x G001061
	TH200 - TH145	G004854 + G004851 + G001061
	TH200 - TH200	G005105 + 2x G004851

Fig.25

▪ Mounting of the motor

Rollon TH Series linear units can be supplied with different types of motor mounts, motor bell kits, and torsionally stiff couplings for ball screw and motor connections, enabling fast, hassle-free motor assembly. The types of bells and couplings available for the related units are shown in the table below:

▪ Couplings

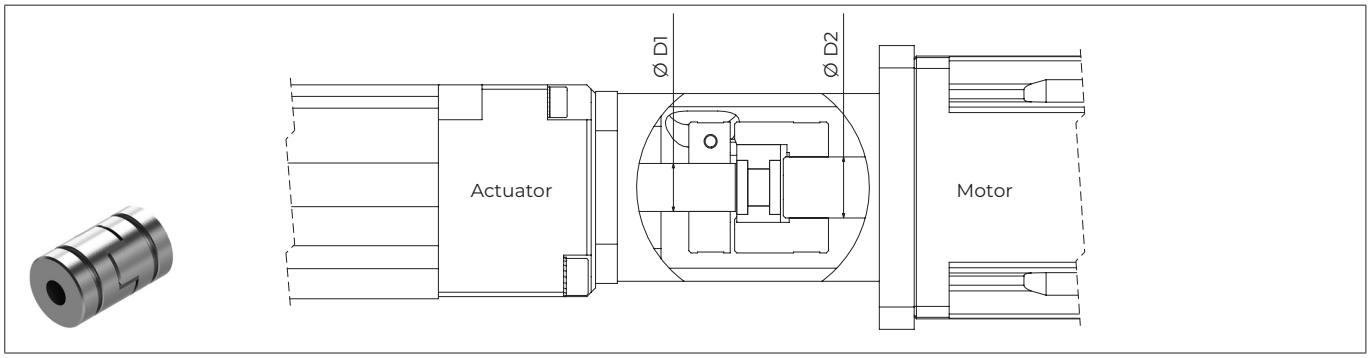


Fig.26

Actuator	ØAvailable coupling	
	ØD1	ØD2
TH70	5 - 6	4 - 8 - 9 - 11
TH90	8	5 - 8 - 9 - 11 - 12 - 14 - 15
TH110	11	5 - 6 - 8 - 9 - 10 - 11 - 12 - 14 - 15 - 16 - 20
TH145	14	8 - 10 - 11 - 12 - 14 - 15 - 16 - 18 - 19 - 20
TH200	20	11 - 14 - 16 - 18 - 19 - 20 - 22 - 24 - 25 - 30 - 32 - 35

Tab.68

▪ Motor bell kits

Unit	D1	D2	D3	D4	L	L3	Code
TH70	Ø 30	Ø 45	38	M3	52	4	G002000
TH70	Ø 40	Ø 63	54	M4	49	3.5	G002001
TH70	Ø 50	Ø 70	60	M4	59	4	G002002
TH90	Ø 30	Ø 45	55	M3	57	4	G004381
TH90	Ø 40	Ø 63	56	M5	50	3	G001192
TH90	Ø 50	Ø 70	65	M5	56	4	G002156
TH90	Ø 50	Ø 70	65	M5	63	4	G003714
TH110	Ø 60	Ø 75	65	M6	68	4	G001051
TH110	Ø 73,1	Ø 98,4	86	M5	76.7	2	G001074
TH110	Ø 60	Ø 75	65	M5	68	4	G001119
TH110	Ø 50	Ø 70	65	Ø 5.4	75	11	G001200
TH145	Ø 50	Ø 70	80x60	M4	92	21	G000979
TH145	Ø 70	Ø 85	80x85	M6	92	4	G001066
TH145	Ø 70	Ø 90	80x85	M5	92	5	G001067
TH145	Ø 80	Ø 100	90	M6	92	4	G001068
TH145	Ø 50	Ø 65	80x85	M5	92	21	G001069
TH145	Ø 60	Ø 75	80x85	M6	92	4	G001070
TH145	Ø 50	Ø 70	80x85	M5	92	21	G001071
TH145	Ø 73	Ø 98,4	85	M5	92	4	G001072
TH145	Ø 55	68X40	85x60	Ø6,4	82	11	G001073
TH200	130	165	140	M10	136	5	G004858
TH200	95	130	120	M8	126	5	G004859
TH200	95	115	110	M8	116	5	G004860
TH200	130	165	140	M10	128	5	G004994

Tab.69

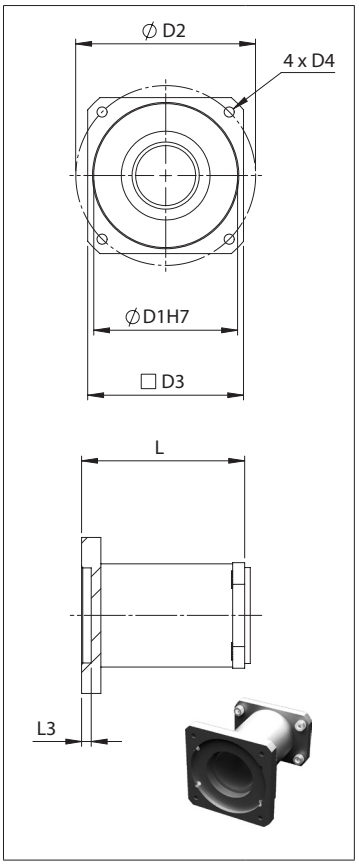


Fig.27

Wrap around kit

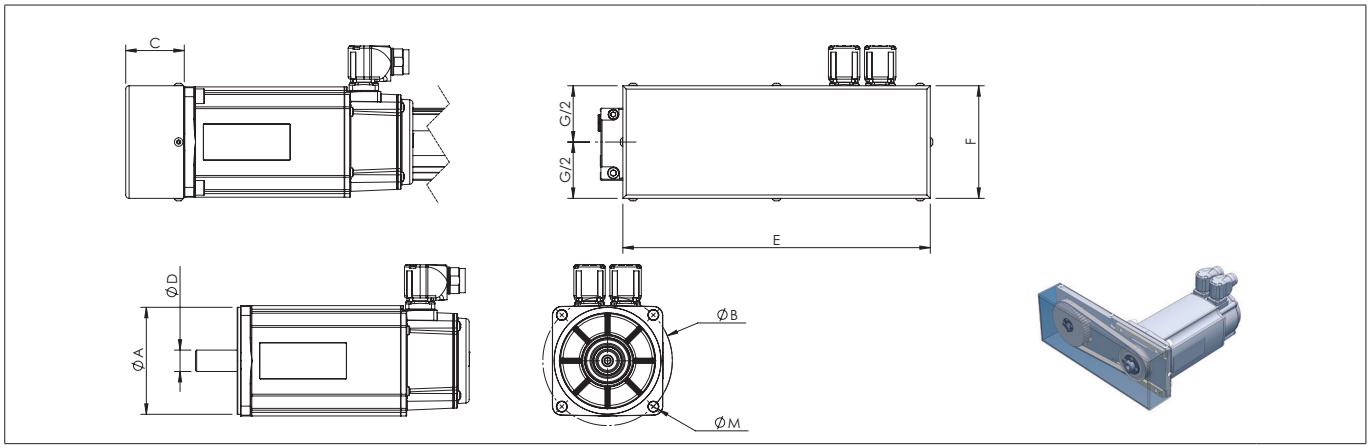


Fig.28

Unit	Ratio	A	B	C	D	E	F	M	Code
TH70	1 : 1	Ø 30	Ø 45	30	Ø 8	136	48	M3	G002003
TH70	1 : 1	Ø 40	Ø 63	30	Ø 9	136	48	M4	G002005
TH70	1 : 1	Ø 50	Ø 70	30	Ø 11	136	48	M4	G002007
TH90	1 : 1	Ø 30	Ø 46	30	Ø 8	168	63	M4	G002729
TH90	1 : 1	Ø 40	Ø 63	30	Ø 9	168	63	M4	G001592
TH90	1 : 1	Ø 40	Ø 63	30	Ø 9	168	63	M5	G004271
TH110	1 : 1	Ø 40	Ø 63	40.5	Ø 9	233	88	M4	G001011
TH110	1 : 1	Ø 50	Ø 70	40.5	Ø 14	233	88	M4	G001055
TH110	1 : 1	Ø 60	Ø 75	40.5	Ø 11	233	88	M5	G001465
TH110	1 : 1	Ø 60	Ø 75	40.5	Ø 14	233	88	M6	G001013
TH145	1 : 1	Ø 60	Ø 75	52	Ø 11	273	100	M5	G001290
TH145	1 : 1	Ø 80	Ø 100	52	Ø 14	273	100	M6	G000984
TH145	1 : 1	Ø 80	Ø 100	52	Ø 16	273	100	M6	G002449
TH145	1 : 1	Ø 95	Ø 115	52	Ø 19	273	100	M8	G000988
TH200	1 : 1	Ø 95	Ø 130	71.5	Ø 24	340	148	M8	G004869

When using a wrap around kit the precision and reapeatability is the one of the belt, +/- 0,05 mm.

Tab.70

USE AND MAINTENANCE

▪ Lubrication

Recirculation ball bearing guides
TH Linear units are equipped with self-lubricating linear ball guides. The ball bearing blocks are also fitted with a retention cage that eliminates "steel-to-steel" contact between adjacent revolving parts and prevents misalignment within the circuits. This system guarantees a long maintenance intervals: every 2000 Km or 1 year of use, whichever comes first. If a longer service life is required, or in the case of high-dynamic or heavily loaded applications, please contact our offices for further verification.

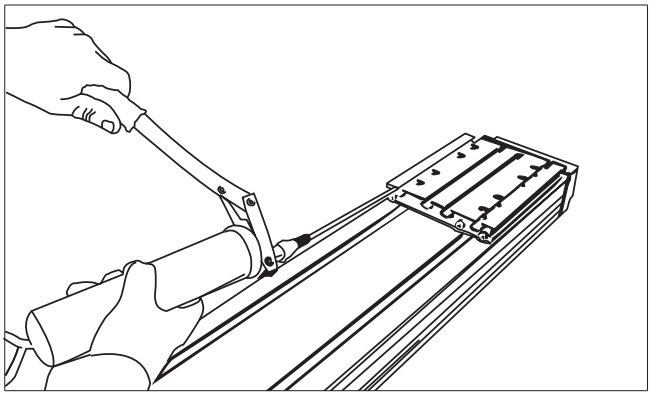


Fig.29

Ball screws
The ball screw nuts for the Rollon TH series linear units should be re-lubricated every 100 km.

Amount of lubricant needed to lubricate each block:

Type	Quantity [cm^3]
TH70	0.23
TH90	0.5
TH110	0.7
TH145	1.4
TH200	2

Tab.71

- Insert grease gun into the specific grease nipples.
- Type of lubricant: Lithium soap grease of class NLGI 2.
- For specially stressed applications or harsh environmental conditions, lubrication should be carried out more frequently.

Refer to Rollon for further advice.

Ballscrew type	Quantity [cm^3] for grease nipple
08-2.5	0.1
12-05	0.2
12-10	0.2
16-05	0.41
16-10	0.78
16-16	0.6
20-05	0.79
20-20	1.0
25-10	1.2
32-05	1.4
32-10	1.8
32-20	2.1
32-32	2.4

Tab.72

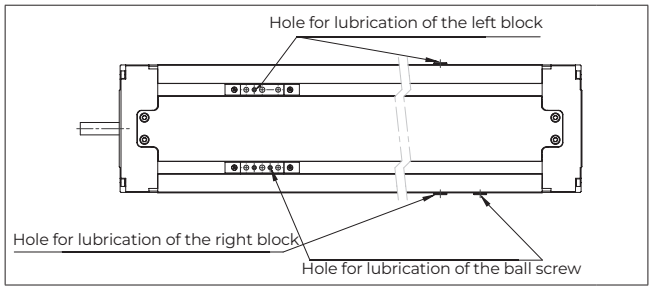
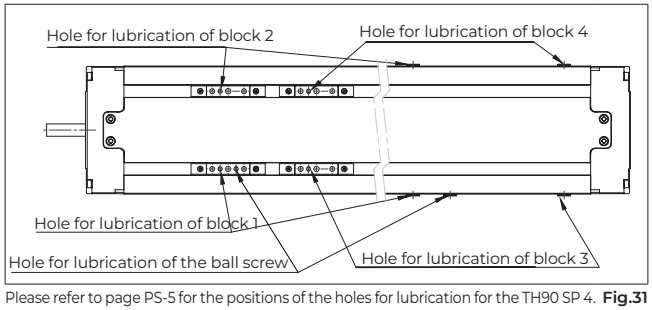


Fig.30



Please refer to page PS-5 for the positions of the holes for lubrication for the TH90 SP 4. **Fig.31**

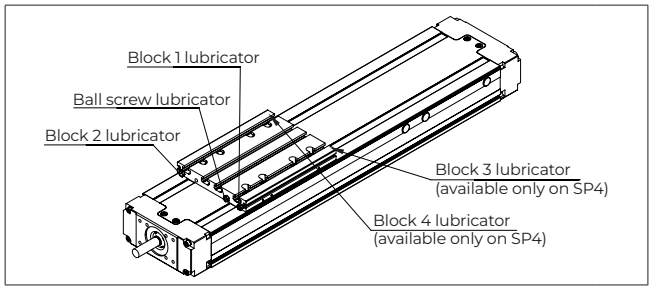


Fig.32

Critical speed
The maximum linear speed of Rollon TH Series linear units depends on the critical speed of the screw (based on its diameter and length) and on the max. permissible speed of the ball screw nut used. On the below graphs, you can find the critical speed (in m/s) in function of the ball screw size and length of the unit (L).

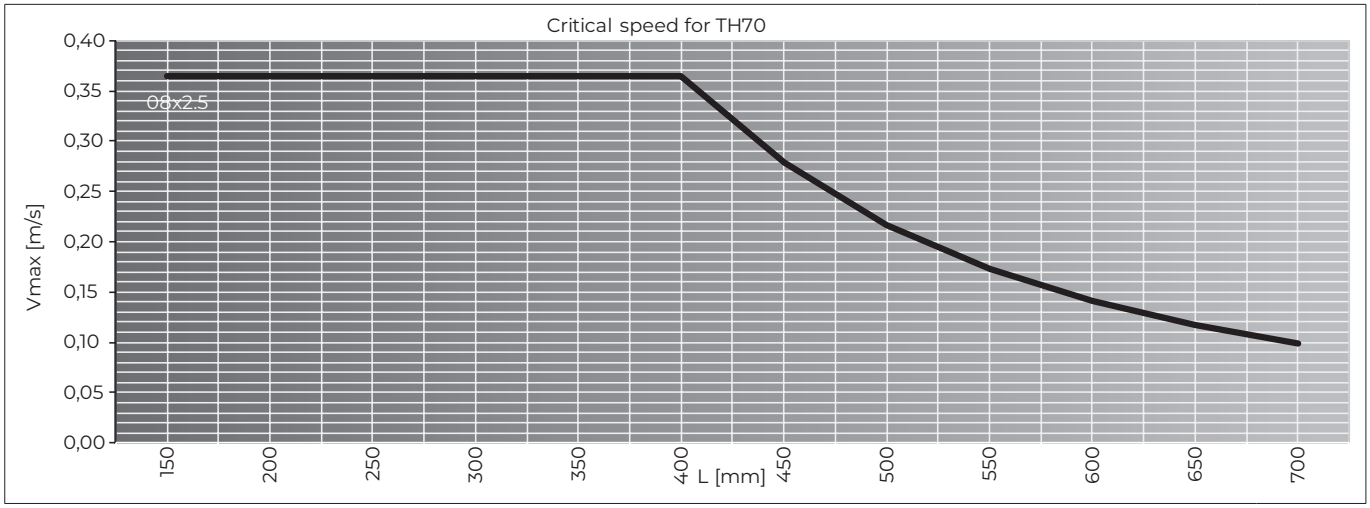


Fig.33

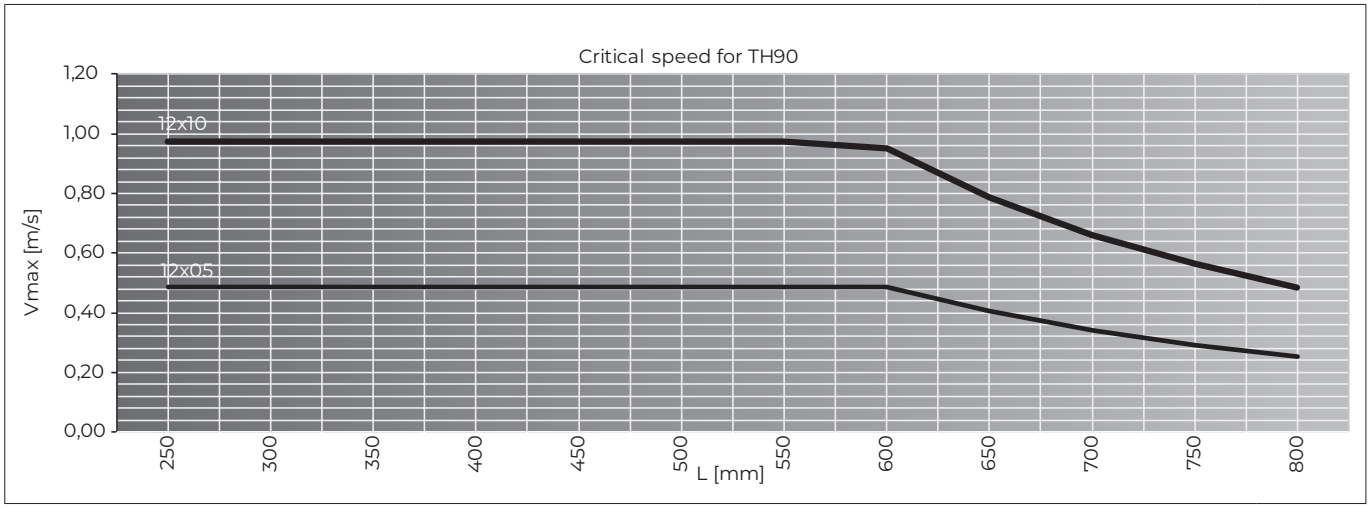


Fig.34

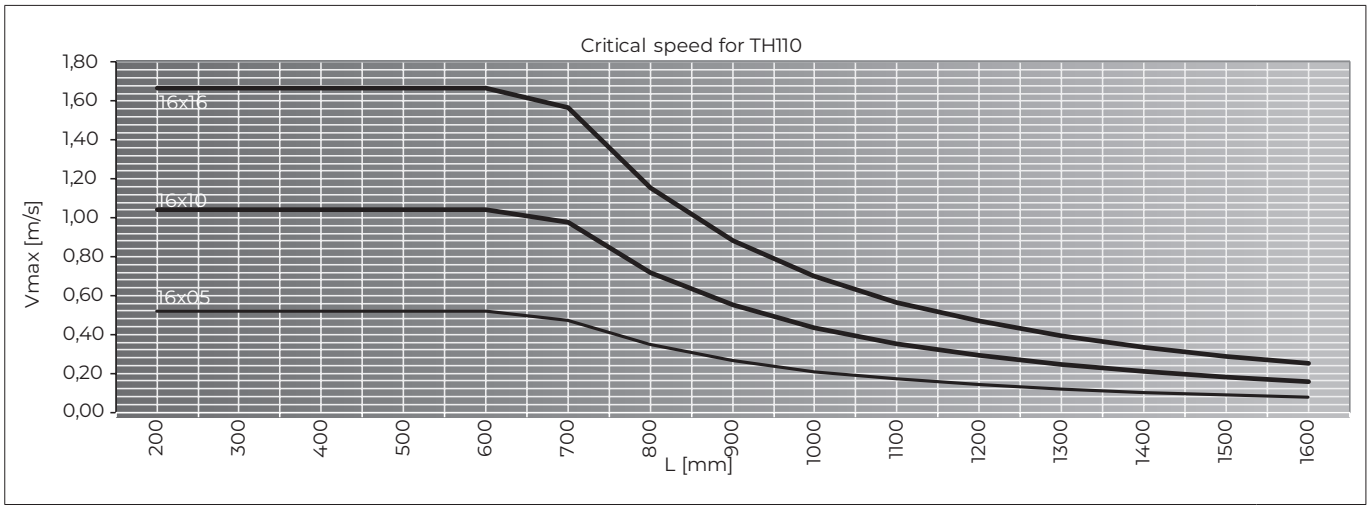


Fig.35

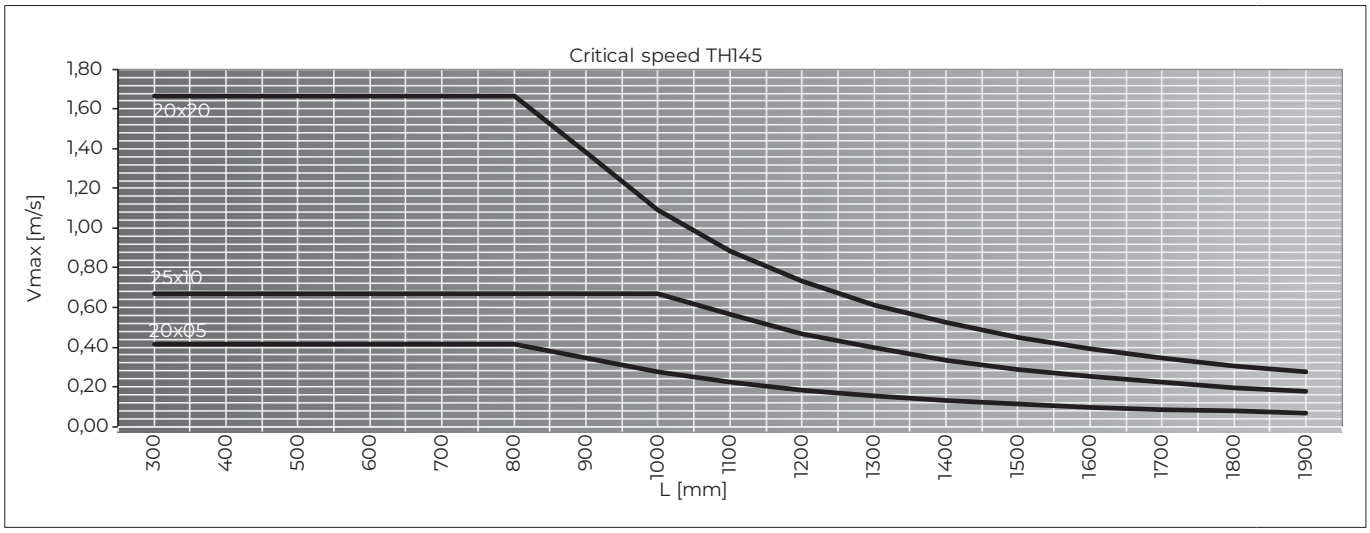

Critical speed TH145
Vmax [m/s]
1,80
1,60
1,40
1,20
1,00
0,80
0,60
0,40
0,20
0,00
20x20
25x10
20x05
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
L [mm]

Fig.36

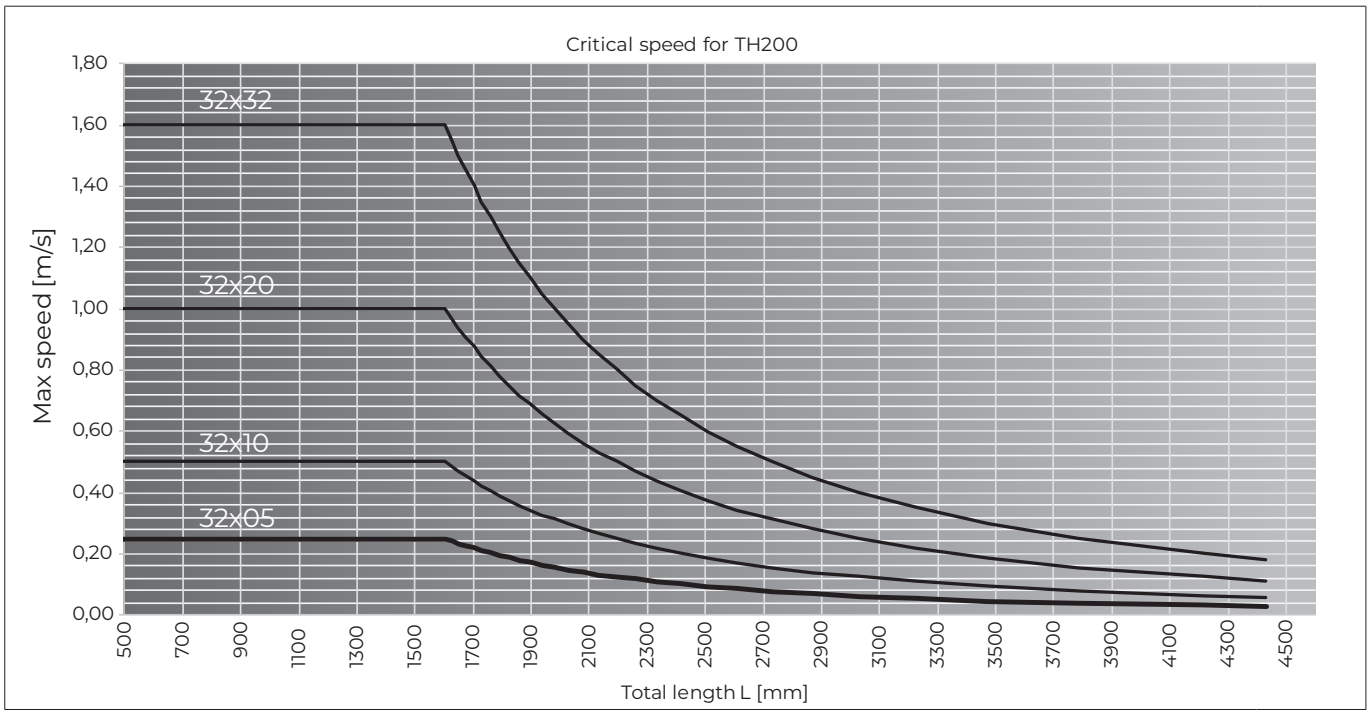

Critical speed for TH200
Max speed [m/s]
1,80
1,60
1,40
1,20
1,00
0,80
0,60
0,40
0,20
0,00
32x32
32x20
32x10
32x05
500
700
900
1100
1300
1500
1700
1900
2100
2300
2500
2700
2900
3100
3300
3500
3700
3900
4100
4300
4500
Total length L [mm]

Fig.37

WARNING AND LEGAL NOTES

Before incorporating the partly completed machinery, we recommend consulting this chapter carefully, in addition to the assembly manual supplied with the individual modules.

The information contained in this chapter and in the manuals for the individual modules, is provided by highly qualified and certified personnel, possessing adequate competence in incorporating the partly completed machinery.

Precaution in installation and handling operations. Significantly heavy equipment.

When handling the axis or system of axes, always make sure that the support or anchoring surfaces do not leave room for bending.

In order to stabilize the axis or system of axes, before handling it is mandatory to securely block the mobile parts. When moving axes with vertical translation (Z AXES) or combination systems (horizontal X and/or more than one vertical Z), it is mandatory to use the vertical movement to put all of the axes at the corresponding lower-limit switch.

Do not overload. Do not subject to torsion stress.

Do not leave exposed to atmospheric agents.

Before mounting the motor on the gearbox, it is advisable to perform a pre-test of the motor itself, without connecting to the gear unit. The testing of this component was not carried out by the manufacturer of the machine. It will therefore be the responsibility of the customer of Rollon to perform the testing of the same, in order to verify its correct operation.

The manufacturer cannot be considered responsible for any consequences derived from improper use or any use other than the purpose the axis or system of axes was designed for, or derived from failure to comply, during incorporation phases, with the rules of Good Technique and with what is indicated in this manual.

Avoid damage. Do not operate with inadequate tools

Warning: moving parts. Do not leave objects on the axis.

Special installations: check the depth of the threads on moving elements

Make sure that the system has been installed on a level floor surface.

In use, accurately comply with the specific performance values declared in the catalog or, in particular cases, the load and dynamic performance characteristics requested in the phase prior to design.

For modules or parts of modular systems with vertical movement (Z axis), it is mandatory to mount self-braking motors to neutralize the risk of the axis dropping.

The images in this manual are to be considered merely an indication and not binding; therefore, the supply received could be different from the images contained in this manual, and Rollon S.r.l. has deemed it useful to insert only one example.

Systems supplied by Rollon S.r.l. were not designed/intended to operate in ATEX environments.

▪ Residual risks

▫ Mechanical risks due to the presence of moving elements (X, Y axes).

▫ Risk of fire resulting from the flammability of the belts used on the axes, for temperatures in excess of 250 °C in contact with the flame.

▫ The risk of the Z axis dropping during handling and installation operations on the partly completed machinery, before com-missioning.

▫ Risk of the Z axis dropping during maintenance operations in the case of a drop in the electrical power supply voltage.

▫ Crushing hazard near moving parts with divergent and convergent motion.

▫ Shearing hazard near moving parts with divergent and convergent motion.

▫ Cutting and abrasion hazards.

▪ Basic components

The Partly Completed Machinery shown in this catalog is to be considered a mere supply of simple Cartesian axes and their accessories agreed when the contract is stipulated with the client. The following are therefore to be considered excluded from the contract:

1. Assembly on the client's premises (direct or final)

2. Commissioning on the client's premises (direct or final)

3. Testing on the client's premises (direct or final)

It is therefore understood that the aforementioned operations in points 1.,2., and 3. are not chargeable to Rollon. Rollon is the supplier of Partly Completed Machinery, the (direct or final) client is responsible for testing and safely checking all equipment which, by definition, cannot be theoretically tested or checked at our facilities where the only movement possible is manual movement (for example: motors or reduction gears, cartesian axes movements that are not manually operated, safety brakes, stopper cylinders, mechanical or induction sensors, decelerators, mechanical limit switches, pneumatic cylinders, etc.). The partly completed machine must not be commissioned until the final machine, in which it is to be incorporated, has been declared compliant, if necessary, with the instructions in Machinery Directive 2006/42/CE.

▪ Instructions of an environmental nature

Rollon operates with respect for the envirorment, in order to limit environmental impact. The following is a list of some instructions of an environmental nature for correct management of our supplies. Our products are mainly composed of:

Material	Details of the supply
Aluminum alloys	Profiles, pleates, various details
Steel with various composition	Screws, racks and pinions, and rails
Plastic	PA6 – Chains PVC – Covers and sliding block scrapers
Rubber of various types	Plugs, seals
Lubrification of various types	Used for the lubrication of sliding rails and bearings
Rust-proof protection	Rust proof protection oil
Wood, polyethylene, cardboard	Transport packaging

At the end of the product's life cycle, it is therefore possible to recover the various elements, in compliance with current regulations on waste issues.

▪ Safety warnings for handling and transport

- The manufacturer has paid the utmost attention to packaging to minimize risks related to shipping, handling and transport.
- Transport can be facilitated by shipping certain components disassembled, and appropriately protected and packaged.
- Handling (loading and unloading) must be carried out in with the information provided directly on the machine, on the packaging, and in the user manuals.
- Personnel authorized to lift and handle the machine and its components shall possess acquired and acknowledged skills and experience in the specific as well as full control of the lifting devices used.
- During transport and/or storage, temperature shall remain within the allowed limits to avoid irreversible damage to electric and electronic components.
- Handling and transport must be carried out with vehicles that have adequate loading capacity, and the machines shall be anchored to the established points indicated on the axes.
- DO NOT attempt to bypass handling methods and the established lifting points in any way.
- During handling and if required by the conditions, make use of one or more assistants to ensure proper communication and safety.
- If the machine has to be moved with vehicles, ensure that they are adequate for the purpose, and perform loading and unloading without risks for the operator and for people directly involved in the process.
- Before transferring the device onto the vehicle, ensure that both the machine and its components are adequately secured, and that their profile does not exceed the maximum permitted dimensions. Place the necessary warning signs, if necessary.
- DO NOT perform handling with an inadequate visual field and when there are obstacles along the route to the final location.
- DO NOT allow people to either transit or linger within the range of action when lifting and handling loads.
- Unload the axes just near the established location and store them in an environment protected against atmospheric agents.
- Failure to comply with the information provided might entail risks for the safety and health of people, and can cause economic loss.
- The Installation Manager must have access to the project documentation to organize and monitor all operative phases.
- The Installation Manager shall ensure that the lifting devices and equipment specified during the contract phase are available.

- The Manager of the established location and the Installation Manager shall implement a safety plan in compliance with the legislation in force for the workplace.
- The The safety plan shall take into account all surrounding work-related activities and the perimeter spaces indicated in the project for the established location.
- Mark and delimit the established location to prevent unauthorized personnel from accessing the installation area.
- The installation site must have adequate environmental conditions (lighting, ventilation, etc.).
- The temperature at the installation site must be within the maximum and minimum range allowed.
- Ensure that the installation site is protected against atmospheric agents, does not contain corrosive substances and is free of the risk of explosion and/or fire.
- Installation in environments presenting a risk of explosion and/or of fire must ONLY be carried out if the machine has been DECLARED COMPLIANT for such use.
- Check that the established location has been correctly fitted out, as defined during the contract phase and based on indications in the corresponding project.
- The established location must be fitted out in advance to carry out complete installation in compliance with the defined methods and schedule.

▪ Note

- Evaluate in advance whether the machine must interact with other production units, and whether integration can be implemented correctly, in compliance with standards and without risks.
- The manager shall assign installation and assembly interventions ONLY to authorized technicians with acknowledged know-how.
- State-of-the-art connections to power sources (electric, pneumatic, etc.) must be ensured, in compliance with relevant regulatory and legislative requirements.
- State-of-the-art connection, alignment and leveling are essential to avoid additional interventions and to ensure correct machine function.
- Upon completion of the connections, run a general check to ascertain that all interventions have been correctly carried out and are in compliance with requirements.
- Failure to comply with the information provided might entail risks for the safety and health of people, and can cause economic loss.

▪ Transport

- Transport, depending on the final destination, can be carried out using different types of vehicles.
- Perform transport with suitable devices that have adequate loading capacity.
- Ensure that the machine and its components are adequately anchored to the vehicle.

▪ Handling and lifting

- Correctly connect the lifting devices to the established points on the packages and/or on the dismantled parts.
- Before handling, read the instructions, especially safety instructions, provided in the installation manual, on the packages and/or on the dismantled parts.
- DO NOT attempt, in any way, to bypass handling methods and the established lifting, moving and handling points of each package and/or dismantled part.
- Slowly lift the package to the minimum necessary height and move it with the utmost caution to avoid dangerous oscillations.
- DO NOT perform handling with an inadequate isual field or when there are obstacles along the route to the final location.
- DO NOT allow people to either transit or linger within the range of action when lifting and handling loads.
- Do NOT stack packages to avoid damaging them and reduce the risk of sudden and dangerous movements.
- In case of prolonged storage, regularly ensure that there are no variations in the storage conditions of the packages.

▪ Check axis integrity after shipment

Every shipment is accompanied by a document (“packing list”) with the list and description of the axes.

- Upon receipt check that the material received corresponds to the specifications in the delivery note.
- Check that the packaging is perfectly intact and, for shipments without packaging, check that each axis is intact.
- In case of damage or missing parts, contact the manufacturer to define the relevant procedures.

beyond motion