







www.motiontech.com.au

TO SUPPORT YOU, WE DESIGN AND PRODUCE

An industrialized process with various levels of customization



ROBOTICS

For over 40 years, Rollon has adopted an approach entailing responsibility and ethics in the design and production of our linear motion solutions for different industrial sectors. The reliability of an international technology group has now been combined with the availability of a local support and service network

VALUES

Rollon's goal is to help our clients become more competitive in their markets through technological solutions, design simplification, productivity, reliability, duration, and low maintenance. PERFORMANCE







COLLABORATION

SOLUTIONS APPLICATIONS

High-level technical consulting and cross-competence allow us to identify the needs of our clients and transform them into guidelines for continuous exchange, whileour strong specialization in the different industrial sectors becomes an factor in developing projects and innovative applications.

> Rollon takes on the task of design and development of linear motion solutions, taking care of everything for our customers, so that they can concentrate on their core business. We offer everything from individual components to specifically designed, mechanically integrated systems: the quality of our applications is an expression of our technology and competence.



MEDICAL





DIVERSIFIED LINEAR SOLUTIONS FOR EVERY APPLICATION REQUIREMENT

Linear and telescopic rails

Linear Line

Linear and curved rails with ball and roller bearings, with hardened raceways, high load capacity, self-alignment, and capable of working in dirty environments.

Telescopic Line

Telescopic rails with ball and roller bearings, with hardened raceways, high load capacities, low bending, resistant to shocks and vibrations. For

partial, total or extended extraction up to 200% of the length of the guide.

Linear actuators and automation systems



Actuator Line

Linear actuators with different rail configurations and transmissions, available with belt, screw, or rack and pinion drives for different needs in terms of precision and speed. Rails with bearings or ball recycle systems for different load capacities and critical environments.

Actuator System Line

Integrated actuators for industrial automation, used in applications in several industrial sectors: automated industrial machinery, precision assembly lines, packaging lines and high speed production lines. The Actuator Line evolves to satisfy the requests of our most discerning clients.

Uniline System



1 Uniline A series	
Uniline A series description	US-2
The components	US-3
A40 A55	US-4
A33 A75	US-0 119-8
Lubrication	US-10
Accessories	US-11
Ordering key	US-14
2 Uniline C series	
Uniline C series description	US-16
The components	US-17
C55	US-18
C75	US-20
	US-22
Accessories Ordering Kov	US-23
ordening key	03-20
3 Uniline E series	
Uniline E series description	US-28
The components	US-29
E35 F75	US-30 US-32
Lubrication	US-34
Accessories	US-35
Ordering key	US-38
4 Uniline ED series	
Uniline ED series description	US-40
The components	US-41
ED75	US-42
Lubrication	US-44
Accessories Ordering Kov	US-45
ordening key	03-40
5 Uniline H series	
Uniline H series description	US-50
The components	US-51
H40	US-52
H35 H75	US-53 US-54
Lubrication	US-55
Accessories	US-56
Ordering key	US-58
6 Belt tension	US-59
7 Installation instructions	
	02-00

Modline



1 MCR/MCH series

MCR/MCH series description	ML-3
The components	ML-4
The linear motion system	ML-5
MCR 65	ML-6
MCH 65	ML-7
MCR 80	ML-8
MCH 80	ML-9
MCR 105	ML-10
MCH 105	ML-11
Linear units in parallel, Accessories	ML-12
Insertable nuts and plates	ML-13
Assembly brackets	ML-14
Ordering key	ML-15
TCR/TCS series	
TCR/TCS series description	ML-17
The components	ML-18
The linear motion system	ML-19
TCR 140	ML-20
TCS 140	ML-21
TCR 170	ML-22
TCS 170	ML-23
TCR 200	ML-24
TCS 200	ML-25
TCR 220	MI -26

2

TCR/TCS series description	ML-17
The components	ML-18
The linear motion system	ML-19
TCR 140	ML-20
TCS 140	ML-21
TCR 170	ML-22
TCS 170	ML-23
TCR 200	ML-24
TCS 200	ML-25
TCR 220	ML-26
TCS 220	ML-27
TCR 230	ML-28
TCS 230	ML-29
TCR 280	ML-30
TCS 280	ML-31
TCR 360	ML-32
TCS 360	ML-33
Lubrication	ML-34
Accessories	ML-35
Assembly brackets	ML-36
Alignment nuts	ML-37
Ordering key	ML-38
3 ZCR/ZCH series	
ZCR/ZCH series description	ML-40
The components	ML-41
The linear motion system	ML-42
ZCH 60	ML-43
ZCR 90	ML-44

Uniline A series 🛛 🗸

Uniline A series description



Uniline is a family of ready-to-install linear actuators. They consist of internal Compact Rail roller sliders and steel-reinforced polyurethane belts in a rigid aluminum profile. Longitudinal seals enclose the system. This arrangement provides the best protection for the actuator from soiling and damage. In the A series, the fixed bearing rail (T-rail) is mounted horizontally in the aluminum profile. Versions with long (L) or double (D) sliders in one axis are possible.

The most important characteristics:

- Compact design
- Protected internal linear guides
- High traversing speeds
- Grease-free operation possible (depending on the application. For further information, please contact our Application Engineering department)
- High versatility
- Long strokes
- Versions with long or multiple sliders available in one linear axis

Preferred areas of application:

Handling and automation

- Multi-axis gantries
- Packaging machines
- Cutting machines
- Displaceable panels
- Painting installations
- Welding robots
- Special machines

Technical data:

- Available sizes [mm]:
 Type A: 40, 55, 75
- Length and stroke tolerances:

For strokes <1 m: +0 mm to +10 mm (+0 in to 0.4 in) For strokes >1 m: +0 mm to +15 mm (+0 in to 0.59 in)

The components

Extruded profile

The anodized 6060 aluminum alloy extrusion used for the profile of the Rollon Uniline A series linear units were designed and manufactured by industry experts to optimize weight while maintaining mechanical strength. (see physical-chemical characteristics below). The dimensional tolerances comply with EN 755-9 standard. be achieved. Optimization of the maximum belt width/body dimension ratio enables the following performance characteristics to be achieved:

- High speed
- Low noise
- Low wear

Carriage

Driving belt

The Rollon Uniline A series linear units use steel reinforced polyurethane drive belts with RPP pitch and parabolic profiles. This belt is ideal due to its high load transmission characteristics, compact size and low noise. Used in conjunction with a backlash-free pulley, smooth alternating motion can

General data about aluminum used: AL 6060

Chemical composition [%]

The carriage of the Rollon Uniline A series linear units are made entirely of anodized aluminum. Each carriage has mounting T-slots for the connection to the moving element (size 40 has threded holes). Rollon offers multiple carriages to accommodate a vast array of applications.

AI	Mg	Si	Fe	Mn	Zn	Cu	Impurites
Remaining	0.35-0.60	0.30-0.60	0.30	0.10	0.10	0.10	0.05-0.15
							Tab. 1

Physical characteristics

Density	Coeff. of elasticity	Coeff. of thermal expansion (20°-100°C)	Thermal conductivity (20°C)	Specific heat (0°-100°C)	Resistivity	Melting point
kg dm ³	kN mm²	10 ⁻⁶ K	W 	J kg.K	Ω.m.10 ⁻⁹	°C
2.7	69	23	200	880-900	33	600-655
						Tab. 2

Mechanical characteristics

Rm	Rp (02)	A	НВ
N mm ²	N mm ²	%	—
205	165	10	60-80
			Tab. 3

U

A40

A40 system



* For information on the motor connection bores, see ordering key. ** The length of the safety stroke is provided on request according to the customer's specific requirements.

Stroke* C* V W Ζ G* Κ Μ A В Ε J Туре [mm] 5 30 2.3 91.5 40 20 14 Ø 14,9 Ø 32 165 0.5 39 1900 A40 51.5 57 43.5 26

For the position of the T-nuts when using our motor adapter plates, see pg. US-11ff

** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 9

A40L with long slider



Tab. 4

Fig. 3

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

Туре	S _{min} [mm]	S _{max} [mm]	Sn [mm]	Z [mm]	Stroke* [mm]	
A40L	240	400	$Sn = S_{min} + n \cdot 10$	91.5	1660	
Maximum stroke for a single-piece guiding rail and a maximum slider plate length S Tab. 5						

For longer strokes, see tab. 9

A40D with double slider



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

Туре	S [mm]	L _{min} [mm]	L _{max} ** [mm]	Ln [mm]	Z [mm]	Stroke* [mm]
A40D	165	235	1900	$Ln = L_{min} + n \cdot 5$	91.5	1660
^r Maximum stroke for a single-piece guiding rail and a minimum slider plate distance L _{min} Tab. 6						

Maximum distance L_{max} between the centres of slider plates at a stroke of 0 mm For longer strokes, see tab. 9

US-4	
------	--

Load ratings, moments and characteristic data

A40



Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Туре	Type of belt	Belt width [mm]	Weight [kg/m]
A40	10RPP5	10	0.041
			Tab. 7

Belt length (mm) = 2 x L - 168 Standard slider **Belt length (mm) =** $2 \times L - S_n - 3$ Long slider **Belt length (mm)** = $2 \times L - L_n - 168$ Double slider

Туре	C [N]	F _y [N]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]
A40	1530	820	300	2.8	5.6	13.1
A40-L	3060	1640	600	5.6	22 to 70	61 to 192
A40-D	3060	1640	600	5.6	70 to 570	193 to 1558
For the calculation of the allowed moments, please observe pages SL-5ff Tal						Tab. 8

Technical data	Туре
	A40
Standard belt tension [N]	160
Moment at no load [Nm]	0.14
Max. traversing speed [m/s]	3
Max. acceleration [m/s ²]	10
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	TLV18
Slider type	CS18 spec.
Moment of inertia ly [cm4]	12
Moment of inertia Iz [cm⁴]	13.6
Pitch diameter of pulley [m]	0.02706
Moment of inertia of each pulley [gmm ²]	5055
Stroke per shaft revolution [mm]	85
Mass of slider [g]	220
Weight with zero stroke [g]	1459
Weight with 1 m stroke [g]	3465
Max. stroke [mm]	3500
Working temperature	from -20 °C to + 80 °C
	Tab. 9

> A55

A55 system



A55	55	71	67.5	25	50.5	27.5	32.5	15	Ø 24.9	1.5	52	2.35	Ø 47	200	28	12	0.5	54
* For the posit	tion of the	e T-nuts v	vhen usin	g our mo	tor adapte	er plates,	see pg. U	S-11ff										

Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 15

A55L with long slider



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

Туре	S _{min} [mm]	S _{max} [mm]	Sn [mm]	Z [mm]	Stroke* [mm]			
A055-L	310	500	$Sn = S_{min} + n \cdot 10$	108	2770			
Maximum stroke for a single-piece guiding rail and a maximum slider plate length S _{max} Tab. 11								

For longer strokes, see tab. 15

A55D with double slider



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

Туре	S [mm]	L _{min} [mm]	L _{max} ** [mm]	Ln [mm]	Z [mm]	Stroke* [mm]
A55D	200	300	3070	$Ln = L_{min} + n \cdot 5$	108	2770
* Maximum stroke for a sing	le-piece guiding	rail and a minir	num slider plate	distance L		Tab. 12

** Maximum distance L_{max} between the centres of slider plates at a stroke of 0 mm

For longer strokes, see tab. 15

108

3070 Tab. 10

Load ratings, moments and characteristic data





Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Туре	Type of belt	Belt width [mm]	Weight [kg/m]
A55	18RPP5	18	0.074
			Tab. 13

Belt length (mm) = 2 x L - 182 Standard slider **Belt length (mm) =** $2 \times L - S_n + 18$ Long slider Belt length (mm) = $2 \times L - L_n - 182$ Double slider

		Fig. 9								
Туре	C [N]	F _y [N]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]				
A55	4260	2175	750	11.5	21.7	54.4				
A55-L	8520	4350	1500	23	82 to 225	239 to 652				
A55-D	8520	4350	1500	23	225 to 2302	652 to 6677				
For the calculation of the allo	wed moments, j	olease observe p	bages SL-5ff			Tab. 14				

Technical data	Туре
	A55
Standard belt tension [N]	220
Moment at no load [Nm]	0.22
Max. traversing speed [m/s]	5
Max. acceleration [m/s ²]	15
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	TLV28
Slider type	CS28 spec.
Moment of inertia ly [cm⁴]	34.6
Moment of inertia Iz [cm⁴]	41.7
Pitch diameter of pulley [m]	0.04138
Moment of inertia of each pulley [gmm ²]	45633
Stroke per shaft revolution [mm]	130
Mass of slider [g]	475
Weight with zero stroke [g]	2897
Weight with 1 m stroke [g]	4505
Max. stroke [mm]	5500
Working temperature	from -20 °C to + 80 °C
	Tab. 15

A75

A75 system



For the position of the T-nuts when using our motor adapter plates, see pg. US-11ff

** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 21

71.5

A75L with long slider

75

90

A75



65

4.85 Ø 55 285

36

14.5 2.3 70.4 116

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

Туре S_{min} [mm] S_{max} [mm] Stroke* Ζ [mm] [mm] [mm] 116 3000 A75-L 440 700 $Sn = S_{min} + n \cdot 10$ $^{
m f}$ Maximum stroke for a single-piece guiding rail and a maximum slider plate length ${
m S}_{
m max}$ Tab. 17 For longer strokes, see tab. 21

35 53.5 38.8 34.5 20 Ø 29.5 5

A75D with double slider



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

Туре	S [mm]	L _{min} [mm]	L _{max} ** [mm]	Ln [mm]	Z [mm]	Stroke* [mm]	
A75D	285	416	3416	$Ln = L_{min} + n \cdot 8$	116	3000	
* Maximum stroke for a single-piece guiding rail and a minimum slider plate distance L _{min} Tab.							

** Maximum distance L_{max} between the centres of slider plates at a stroke of 0 mm For longer strokes, see tab. 21

Fig. 11

3420

Tab. 16

Load ratings, moments and characteristic data

A75



Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Туре	Type of belt	Belt width [mm]	Weight [kg/m]
A75	30RPP8	30	0.185
			Tab. 19

Belt length (mm) = 2 x L - 213 Standard slider **Belt length (mm) =** $2 \times L - S_n + 72$ Long slider **Belt length (mm)** = $2 \times L - L_n - 213$ Double slider

					,,			
Туре	C [N]	F _y [N]	F _z [N]	M _× [Nm]	M _y [Nm]	M _z [Nm]		
A75	12280	5500	1855	43.6	81.5	209		
A75-L	24560	11000	3710	87.2	287 to 770	852 to 2282		
A75-D	24560	11000	3710	87.2	771 to 6336	2288 to 18788		
For the calculation of the allowed moments, please observe pages SL-5ff Tab. 2								

Technical data	Туре
	A75
Standard belt tension [N]	800
Moment at no load [Nm]	1.15
Max. traversing speed [m/s]	7
Max. acceleration [m/s ²]	15
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	TLV43
Slider type	CS43 spec.
Moment of inertia ly [cm4]	127
Moment of inertia Iz [cm ⁴]	172
Pitch diameter of pulley [m]	0.05093
Moment of inertia of each pulley [gmm ²]	139969
Stroke per shaft revolution [mm]	160
Mass of slider [g]	1242
Weight with zero stroke [g]	6729
Weight with 1 m stroke [g]	9751
Max. stroke [mm]	7500
Working temperature	from -20 °C to + 80 °C

Lubrication

The raceways of the guide rails in the Uniline linear axes are prelubricated. To achieve the calculated service life, a lubrication film must always be present between the raceway and the roller. The lubrication film also provides anticorrosion protection to the ground raceways. An approximate value for the lubrication period is every 100 km or every six months. The recommended lubricant is a lithium-based roller bearing grease of medium consistency.

Lubrication of the raceways

Proper lubrication under normal conditions:

- reduces friction
- reduces wear
- reduces stress on the contact faces
- reduces running noise

Lubricants	Thickeners	Temperature range [°C]	Dynamic viscosity [mPas]		
Roller bearing grease	Lithium soap	-30 to +170	<4500		
			Tab. 22		

Relubrication of the guide rails

These types of rails have a lubricating conduit on the side of the slider plate through which the lubricant can be applied directly to the raceways. Lubrication can be done in one of two ways:

1. Relubrication using a grease gun:

This is done by inserting the tip of the grease gun into the conduit at the slider plate and injecting the grease inside (see fig. 14). Please note that the grease has to fill the whole conduit in order to lubricate the rail properly; for this reason sufficient grease must be used.

2. Automatic lubrication system:

To connect the unit to an automatic greasing system, use a proper adapter/connector* that attaches to the threaded hole on the side of the trolley. The advantage of this solution is the possibility of rail re-lubrication with-

Cleaning the guide rails

It is always recommended to clean the slider rail prior to any relubrication, in order to remove grease residues. This can be done while performing maintenance work or during a scheduled machine stop.

- 1. Unscrew the safety screws C (on top of the slider plate) from the belt tensioning device A (see fig. 15).
- 2. Also completely unscrew the belt tensioning screws B and remove the belt tensioning devices A from their housings.
- 3. Lift the toothed belt until the guide rails can be seen. Important: Ensure that the side seal is not damaged.
- 4. Clean the rail raceways with a clean and dry cloth. Ensure that all grease and dirt residues from previous work processes are removed. To ensure that the rails are cleaned over their entire length, the slider plate should be moved once over its entire length.
- 5. Apply a sufficient amount of grease to the raceways.

out machine downtime.

*(Any adapter that may be necessary must be manufactured on site)



- Re-insert the belt tensioning devices A into their housings and mount the belt tensioning screws B. Re-adjust the belt tension (see pg. US-59).
- 7. Fasten the safety screws C.



Fig. 15



Accessories

Adapter plates

Standard motor adapter plates AC2

Mounting plates for the most common motors or gearboxes. The connection bores for the motors or gearboxes must be made on site. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.



Fig. 16

Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	l [mm]	N [mm]
40	110	40	83	12	43.5	20	17.5	14	Ø 20	Ø 32
55	126	55	100	25	50.5	27.5	18	15	Ø 30	Ø 47
75	135	70	106	35	53.5	35	19	17.5	Ø 35	Ø 55
										Tab. 23

NEMA plates AC1-P

Mounting plates for NEMA motors or gearboxes. These plates are delivered ready-to-mount on the linear axes. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Size	NEMA Motors / Gearboxes	
40	NEMA 23	
55	NEMA 34	
75	NEMA 42	
		Tab. 24



Fig. 17

U

Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	l [mm]	N [mm]	0 [mm]	P [mm]	Q [mm]
40	110	70	83	12	43.5	35	17.5	29	20	Ø 32	Ø 39	Ø 5	Ø 66.7
55	126	100	100	25	50.5	50	18	37.5	30	Ø 47	Ø 74	Ø 5.5	Ø 98.4
75	135	120	106	35	53.5	60	19	42.5	35	Ø 55	Ø 57	Ø 7.1	Ø 125.7

Tab. 25

Synchronous use of linear axes in pairs

If two axes are to be used in parallel using a connecting shaft, please specify when ordering, to ensure that the key slots of the pulleys are synchronized.

Fixing brackets APF-2



Fixing clamp for simple mounting of a linear axis on a mounting surface or for connecting two units with or without a connection plate (see pg. US-63).

A spacer* may be necessary.

*(Any spacer that may be necessary must be manufactured on site)

The maximum tightening torque is 10 Nm.





Assembly kits

T-connection plate APC-1

T-connection plate allows two units to be mounted perpendicular to each other (see pg. US-60). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.





Note

In case of use of APC-1 plates with E and ED series, please consult Rollon Technical Dpt. In standard there is an interference between U-rail and APC-1 plate. A special version with shorter U-rail at both extremities will be offered.

Size	Fixing holes for the slider	Fixing holes for the profile
40	Holes 1	Holes 4
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 26

Angle connection plate APC-2

allows the right angle mounting of two units. The trolley of one unit can be mounted to the side of the other (see pg. US-61). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting to the linear units.



Size	Fixing holes for the slider	Fixing holes for the profile
40	Holes 1	Holes 4
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 27

Fig. 21

X connection plate APC-3

X connection plate for mounting two sliders perpendicular to each other (see pg. US-62). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Size	Fixing holes for slider 1	Fixing holes for slider 2
40	Holes 1	Holes 4
55	Holes 2	Holes 5
75	Holes 3	Holes 6

Tab. 28



Fig. 22

Ordering key // 🗸

Identification code for Uniline linear unit



Left / right orientation



Accessories

Standard motor adapter plate

А	07	AC2
	04=40	
	05=55	
	07=75	Standard motor adapter plates see pg. US-11
	Size s	ee pg. US-11
Туре		

Ordering example: A07-AC2

NEMA motor adapter plates

А	07	AC1
	04=40	
	05=55	
	07=75	NEMA motor adapter plates see pg. US-11
	Size	see pg. US-11
Туре		

Ordering example: A07-AC1

T-connection plate	Order code: APC-,1 s. pg. US-12
Angle connection plate	Order code: APC-2, s. pg. US-13
X connection plate	Order code: APC-3, s. pg. US-13
Fixing clamp	Order code: APF-2, s. pg. US-12

Motor connection bores

Hole [Ø]	40	55	75	Head code
	10G8 / 3js9	12G8 / 4js9	14G8 / 5js9	1A
Metric [mm] with slot for key		10G8 / 3js9	16G8 / 5js9	2A
		14G8 / 5js9	19G8 / 6js9	ЗA
		16G8 / 5js9		4A
Metric [mm]			18	1B
coupling			24	2B
Inch [in] with slot for key	3/8 / 1/8	1/2 / 1/8	5⁄8 / 3⁄16	1P
		3/8 / 1/8		2P
		5⁄8 / 3⁄16		3P

The highlighted connection bores are standard connections Metric: key seat for keys to DIN 6885 form A

Inch: key seat for keys to BS 46 Part 1: 1958

Uniline C series // 🗸

Uniline C series description



Uniline is a family of ready-to-install linear actuators. They consist of internal Compact Rail roller sliders and steel-reinforced polyurethane belts in a rigid aluminum profile. Longitudinal seals enclose the system. This arrangement provides the best protection for the actuator from soiling and damage. In the C series, the fixed bearing rail (T-rail) and the compensating bearing rail (U-rail) are mounted in the aluminum profile vertically. Versions with long (L) or double (D) sliders in one axis are possible.

The most important characteristics:

- Compact design
- Protected internal linear guides
- High traversing speeds
- Grease-free operation possible (depending on the application. For further information, please contact our Application Engineering department)
- High versatility
- Long strokes
- Versions with long or multiple sliders available in one linear axis

Preferred areas of application:

- Handling and automation
- Multi-axis gantries
- Packaging machines
- Cutting machines
- Displaceable panels
- Painting installations
- Welding robots
- Special machines

Technical data:

- Available sizes [mm]: Type C: 55, 75
- Length and stroke tolerances:

For strokes <1 m: +0 mm to +10 mm (+0 in to 0.4 in) For strokes >1 m: +0 mm to +15 mm (+0 in to 0.59 in)

The components

Extruded profile

The anodized 6060 aluminum alloy extrusion used for the profile of the Rollon Uniline C series linear units were designed and manufactured by industry experts to optimize weight while maintaining mechanical strength. (see physical-chemical characteristics below). The dimensional tolerances comply with EN 755-9 standard. be achieved. Optimization of the maximum belt width/body dimension ratio enables the following performance characteristics to be achieved:

- High speed
- Low noise
- Low wear

Carriage

Driving belt

The Rollon Uniline C series linear units use steel reinforced polyurethane drive belts with RPP pitch and parabolic profiles. This belt is ideal due to its high load transmission characteristics, compact size and low noise. Used in conjunction with a backlash-free pulley, smooth alternating motion can

General data about aluminum used: AL 6060

Chemical composition [%]

The carriage of the Rollon Uniline C series linear units are made entirely
of anodized aluminum. Each carriage has mounting T-slots for the con-
nection to the moving element. Rollon offers multiple carriages to accom-
modate a vast array of applications.

AI	Mg	Si	Fe	Mn	Zn	Cu	Impurites
Remaining	0.35-0.60	0.30-0.60	0.30	0.10	0.10	0.10	0.05-0.15
							Tab. 30

Physical characteristics

Density	Coeff. of elasticity	Coeff. of thermal expansion (20°-100°C)	Thermal conductivity (20°C)	Specific heat (0°-100°C)	Resistivity	Melting point
kg	kN	10-6		J	Ω . m . 10 ⁻⁹	°C
dm ³	mm ²	К	m . K	kg . K		
2.7	69	23	200	880-900	33	600-655

Tab. 31

U

Mechanical characteristics

Rm	Rp (02)	А	НВ
N mm ²	N mm ²	%	—
205	165	10	60-80
			Tab 32

C55

C55 system



туре	A	B	^	E.	F .	ես	H		J	K	IVI	N	5	X	Ŷ	V	W	2	Stroke**
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
C55	55	71	67.5	50.5	27.5	32.5	15	Ø 24.9	1.5	52	2.35	Ø 47	200	28	12	0.5	54	108	1850
* For the positi	on of the "	T-nuts wh	en using (our motor	adapter p	olates, see	e pg. US-2	23ff											Tab. 33
^^ IVIAXIMUM Str	oke tor a :	sinale-ble	ce aulaina	i rall. For	ionaer sti	okes. see	tap. 38												

C55L with long slider



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

S_{min} [mm] S_{max} [mm] Туре Stroke* Ζ [mm] [mm] [mm] $Sn = S_{_{min}} + n \cdot 10$ C55L 310 500 108 1550 Tab. 34

* Maximum stroke for a single-piece guiding rail and a maximum slider plate length $S_{\rm max}$ For longer strokes, see tab. 38

C55D with double slider



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

Туре	S [mm]	L _{min} [mm]	L _{max} ** [mm]	Ln [mm]	Z [mm]	Stroke* [mm]	
C55D	200	300	1850	$Ln = L_{min} + n \cdot 5$	108	1570	
* Maximum stroke for a single-piece guiding rail and a minimum slider plate distance L _{min}							

** Maximum distance $L_{\rm max}$ between the centres of slider plates at a stroke of 0 mm For longer strokes, see tab. 38

Fig. 25

Load ratings, moments and characteristic data

C55



Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Туре	Type of belt	Belt width [mm]	Weight [kg/m]
C55	18RPP5	18	0.074
			Tab. 36

Belt length (mm) = 2 x L - 182 Standard slider **Belt length (mm) =** $2 \times L - S_n + 18$ Long slider **Belt length (mm)** = $2 \times L - L_n - 182$ Double slider

	Fig. 27							
Туре	C [N]	F _y [N]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]		
C55	560	300	1640	18.5	65.6	11.7		
C55-L	1120	600	3280	37	213 to 525	39 to 96		
C55-D	1120	600	3280	37	492 to 3034	90 to 555		
For the calculation of the allo	Tab. 37							

Technical data	Туре
	C55
Standard belt tension [N]	220
Moment at no load [Nm]	0.3
Max. traversing speed [m/s]	3
Max. acceleration [m/s ²]	10
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	TLV18 / ULV18
Slider type	2 CS18 spec.
Moment of inertia ly [cm⁴]	34.4
Moment of inertia Iz [cm⁴]	45.5
Pitch diameter of pulley [m]	0.04138
Moment of inertia of each pulley [gmm ²]	45633
Stroke per shaft revolution [mm]	130
Mass of slider [g]	549
Weight with zero stroke [g]	2971
Weight with 1 m stroke [g]	4605
Max. stroke [mm]	5500
Working temperature	from -20 °C to + 80 °C

Tab. 38

C75

C75 system



 C75
 75
 90
 71.5
 53.5
 38.8
 34.5
 20
 Ø 29.5
 5
 65
 4.85
 Ø 55
 285

* For the position of the T-nuts when using our motor adapter plates, see pg. US-23ff ** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 44

C75L with long slider



36

14.5

2.3

70.4 116

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

S_{min} [mm] S_{max} [mm] Туре Stroke* Ζ [mm] [mm] [mm] C75L 440 700 $Sn = S_{min} + n \cdot 10$ 116 2610 Tab. 40 * Maximum stroke for a single-piece guiding rail and a maximum slider plate length S_{max}

For longer strokes, see tab. 44

C75D with double slider



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

Туре	S [mm]	L _{min} [mm]	L _{max} ** [mm]	Ln [mm]	Z [mm]	Stroke* [mm]
C75D	285	416	3024	$Ln = L_{min} + n \cdot 8$	116	2610
Maximum stroke for a single-piece guiding rail and a minimum slider plate distance L						

Maximum stroke for a single-piece guiding rail and a minimum slider plate distance L,
 ** Maximum distance L_{max} between the centres of slider plates at a stroke of 0 mm

For longer strokes, see tab. 44

Fig. 29

3000

Tab. 39

Fig. 30

Load ratings, moments and characteristic data

C75



Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Туре	Type of belt	Belt width [mm]	Weight [kg/m]
C75	30RPP8	30	0.185
			Tab. 42

Belt length (mm) = 2 x L - 213 Standard slider **Belt length (mm) =** $2 \times L - S_n + 72$ Long slider **Belt length (mm)** = $2 \times L - L_n - 213$ Double slider

Туре	C [N]	F _y [N]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]		
C75	1470	750	4350	85.2	217	36.1		
C75-L	2940	1500	8700	170.4	674 to 1805	116 to 311		
C75-D	2940	1500	8700	170.4	1809 to 13154	312 to 2268		
For the calculation of the allowed moments, please observe pages SL-5ff								

Technical data	Туре
	C75
Standard belt tension [N]	800
Moment at no load [Nm]	1.3
Max. traversing speed [m/s]	5
Max. acceleration [m/s ²]	15
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	TLV28 / ULV28
Slider type	2 CS28 spec.
Moment of inertia ly [cm⁴]	108
Moment of inertia Iz [cm⁴]	155
Pitch diameter of pulley [m]	0.05093
Moment of inertia of each pulley [gmm ²]	139969
Stroke per shaft revolution [mm]	160
Mass of slider [g]	1666
Weight with zero stroke [g]	6853
Weight with 1 m stroke [g]	9151
Max. stroke [mm]	7500
Working temperature	from -20 °C to + 80 °C
	Tab. 44

Lubrication

The raceways of the guide rails in the Uniline linear axes are prelubricated. To achieve the calculated service life, a lubrication film must always be present between the raceway and the roller. The lubrication film also provides anticorrosion protection to the ground raceways. An approximate value for the lubrication period is every 100 km or every six months. The recommended lubricant is a lithium-based roller bearing grease of medium consistency.

Lubrication of the raceways

Proper lubrication under normal conditions:

- reduces friction
- reduces wear
- reduces stress on the contact faces
- reduces running noise

Lubricants	Thickeners	Temperature range [°C]	Dynamic viscosity [mPas]
Roller bearing grease	Lithium soap	-30 to +170	<4500
			Tab. 45

Relubrication of the guide rails

- 1. Slide the slider plate to one end of the unit.
- At about half the stroke press and manually move the belt in order to see one of the two rails inside the unit (see Fig. 32).
 It may be necessary to release or loosen the belt tension. See chapter Belt tension (pg. US-59).
- 3. By using a grease syringe (not supplied by ROLLON) or an alternative tool (i.e. brush), apply a sufficient quantity of grease on the raceways.
- 4. If required, re-establish the recommended belt tension (see pg. US-59).
- 5. Finally slide the slider plate back and forth over the entire stroke, in order to distribute the grease over the entire length of the rail.

Cleaning the guide rails

It is always recommended to clean the slider rail prior to any relubrication, in order to remove grease residues. This can be done while performing maintenance work or during a scheduled machine stop.

- 1. Unscrew the safety screws C (on top of the slider plate) from the belt tensioning device A (see fig. 33).
- Also completely unscrew the belt tensioning screws B and remove the belt tensioning devices A from their housings.
- Lift the toothed belt until the guide rails can be seen. Important: Ensure that the side seal is not damaged.
- 4. Clean the rail raceways with a clean and dry cloth. Ensure that all grease and dirt residues from previous work processes are removed. To ensure that the rails are cleaned over their entire length, the slider plate should be moved once over its entire length.
- 5. Apply a sufficient amount of grease to the raceways.



6. Re-insert the belt tensioning devices A into their housings and mount the belt tensioning screws B. Re-adjust the belt tension (see pg. US-59).7. Fasten the safety screws C.



Fig. 33



Accessories

Adapter plates

Standard motor adapter plates AC2

Mounting plates for the most common motors or gearboxes. The connection bores for the motors or gearboxes must be made on site. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.



Fig. 34

Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	l [mm]	N [mm]
55	126	55	100	25	50.5	27.5	18	15	Ø 30	Ø 47
75	135	70	106	35	53.5	35	19	17.5	Ø 35	Ø 55

Tab. 46

NEMA plates AC1-P

Mounting plates for NEMA motors or gearboxes. These plates are delivered ready-to-mount on the linear axes. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Size	NEMA Motors / Gearboxes	
55	NEMA 34	
75	NEMA 42	
		Tab. 4



Fig. 35

Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	l [mm]	N [mm]	0 [mm]	P [mm]	Q [mm]
55	126	100	100	25	50.5	50	18	37.5	30	Ø 47	Ø74	Ø 5.5	Ø 98.4
75	135	120	106	35	53.5	60	19	42.5	35	Ø 55	Ø 57	Ø 7.1	Ø 125.7
													Tab. 48

Synchronous use of linear axes in pairs

If two axes are to be used in parallel using a connecting shaft, please specify when ordering, to ensure that the key slots of the pulleys are synchronized.

U

Fixing brackets APF-2



T-nut



Assembly kits

T-connection plate APC-1

T-connection plate allows two units to be mounted perpendicular to each other (see pg. US-60). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.



Fig. 38

Fixing clamp for simple mounting of a linear axis on a mounting surface or for connecting two units with or without a connection plate (see pg. US-63).

A spacer* may be necessary.

*(Any spacer that may be necessary must be manufactured on site)

The maximum tightening torque is 10 Nm.

Note

In case of use of APC-1 plates with E and ED series, please consult Rollon Technical Dpt. In standard there is an interference between U-rail and APC-1 plate. A special version with shorter U-rail at both extremities will be offered.

Size	Fixing holes for the slider	Fixing holes for the profile
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 49

Angle connection plate APC-2

allows the right angle mounting of two units. The trolley of one unit can be mounted to the side of the other (see pg. US-61). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting to the linear units.



Size	Fixing holes for the slider	Fixing holes for the profile
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 50

Fig. 39

X connection plate APC-3

X connection plate for mounting two sliders perpendicular to each other (see pg. US-62). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Size	Fixing holes for slider 1	Fixing holes for slider 2
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 51



Ordering key // 🗸

Identification code for Uniline linear unit



Left / right orientation



Accessories

Standard motor adapter plate

С	07	AC2
	05=55	Standard motor adapter plates see pg. US-23
	07=75	
	Size se	ре рд. US-23
Туре		

Ordering example: C07-AC2

NEMA motor adapter plates

C	07	AC1
	05=55	NEMA mater adapter plates age pg //C 00
	07=75	NEWIA MIOTOR adapter plates see pg. 05-23
	Size se	e pg. US-23
Туре		

Ordering example: C07-AC1

T-connection plate	Order code: APC-1, s. pg. US-24
Angle connection plate	Order code: APC-2, s. pg. US-25
X connection plate	Order code: APC-3, s. pg. US-26
Fixing clamp	Order code: APF-2, s. pg. US-24

Motor connection bores

	Si	ze	
Hole [Ø]	55	75	Head code
	12G8 / 4js9	14G8 / 5js9	1A
Metric [mm]	10G8 / 3js9	16G8 / 5js9	2A
with slot for key	14G8 / 5js9	19G8 / 6js9	ЗA
	16G8 / 5js9		4A
Metric [mm]		18	1B
tor compression coupling		24	2B
	1/2 / 1/8	5⁄ ₈ / 3⁄ ₁₆	1P
Inch [in] with slot for key	3/8 / 1/8		2P
,	5⁄8 / 3⁄16		ЗP
The state is a second	action house and stan	davel as a set a set	Tab. 52

The highlighted connection bores are standard connections Metric: key seat for keys to DIN 6885 form A Inch: key seat for keys to BS 46 Part 1: 1958



Uniline E series description



Uniline is a family of ready-to-install linear actuators. They consist of internal Compact Rail roller sliders and steel-reinforced polyurethane belts in a rigid aluminum profile. Longitudinal seals enclose the system. This arrangement provides the best protection for the actuator from soiling and damage. In the E series, the fixed bearing rail (T-rail) is mounted horizontally in the aluminum profile, and the compensating bearing rail (U-rail) is flanged to the outside of the profile as moment support. Versions with long (L) or double (D) sliders in one axis are possible.

The most important characteristics:

- Compact design
- Protected internal linear guides
- High traversing speeds
- Grease-free operation possible (depending on the application. For further information, please contact our Application Engineering department)
- High versatility
- Long strokes
- Versions with long or multiple sliders available in one linear axis

Preferred areas of application:

- Handling and automation
- Multi-axis gantries
- Packaging machines
- Cutting machines
- Displaceable panels
- Painting installations
- Welding robots
- Special machines

Technical data:

- Available sizes [mm]: Type E: 55, 75
- Length and stroke tolerances:

For strokes <1 m: +0 mm to +10 mm (+0 in to 0.4 in) For strokes >1 m: +0 mm to +15 mm (+0 in to 0.59 in) Fig. 41

The components

Extruded profile

Driving belt

The anodized 6060 aluminum alloy extrusion used for the profile of the Rollon Uniline E series linear units were designed and manufactured by industry experts to optimize weight while maintaining mechanical strength. (see physical-chemical characteristics below). The dimensional tolerances comply with EN 755-9 standard. be achieved. Optimization of the maximum belt width/body dimension ratio enables the following performance characteristics to be achieved:

- High speed
- Low noise
- Low wear

Carriage

The Rollon Uniline E series linear units use steel reinforced polyurethane drive belts with RPP pitch and parabolic profiles. This belt is ideal due to its high load transmission characteristics, compact size and low noise. Used

in conjunction with a backlash-free pulley, smooth alternating motion can

General data about aluminum used: AL 6060

Chemical composition [%]

The carriage of the Rollon Uniline E series linear units are made entirely
of anodized aluminum. Each carriage has mounting T-slots for the con-
nection to the moving element. Rollon offers multiple carriages to accom-
modate a vast array of applications.

AI	Mg	Si	Fe	Mn	Zn	Cu	Impurites
Remaining	0.35-0.60	0.30-0.60	0.30	0.10	0.10	0.10	0.05-0.15
							Tab. 53

Physical characteristics

Density	Coeff. of elasticity	Coeff. of thermal expansion (20°-100°C)	Thermal conductivity (20°C)	Specific heat (0°-100°C)	Resistivity	Melting point
kg	kN	10-6	W	J	0 m 10 ⁻⁹	°C
dm ³	mm ²	К	m . K	kg . K	22.111.10	0
2.7	69	23	200	880-900	33	600-655

Tab. 54

U

Mechanical characteristics

Rm	Rp (02)	А	НВ
N mm ²	N mm ²	%	—
205	165	10	60-80
			Tab 55

E55 >

E55 system



Туре	A [mm]	B [mm]	C* [mm]	D [mm]	E [mm]	F [mm]	G* [mm]	H [mm]	l [mm]	J [mm]	K [mm]	M [mm]	N [mm]	S [mm]	X [mm]	Y [mm]	V [mm]	W [mm]	Z [mm]	Stroke** [mm]
E55	55	71	67.5	25	50.5	27.5	32.5	15	Ø 24.9	1.5	71	2.35	Ø 47	200	28	12	0.5	54	108	3070
 * For the position of the T-nuts when using our motor adapter plates, see pg. US-35ff ** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 61 										Tab. 56										

E55L with long slider



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

Туре	S _{min} [mm]	S _{max} [mm]	Sn [mm]	Z [mm]	Stroke* [mm]			
E55L	310	500	$Sn = S_{min} + n \cdot 10$	108	2770			
* Maximum stroke for a single-piece guiding rail and a maximum slider plate length S _{max} Tab. 5								

For longer strokes, see tab. 61

E55D with double slider



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

Туре	S [mm]	L _{min} [mm]	L _{max} ** [mm]	Ln [mm]	Z [mm]	Stroke* [mm]		
E55D	200	300	3070	$Ln = L_{min} + n \cdot 5$	108	2770		
* Maximum stroke for a single-piece guiding rail and a minimum slider plate distance L _{min} Tab. 5								

** Maximum distance L_{max} between the centres of slider plates at a stroke of 0 mm For longer strokes, see tab. 61

Fig. 43

Fig. 44
Load ratings, moments and characteristic data

E55



Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Туре	Type of belt	Belt width [mm]	Weight [kg/m]
E55	18RPP5	18	0.074
			Tab. 59

Belt length (mm) = 2 x L - 182 Standard slider **Belt length (mm) =** $2 \times L - S_n + 18$ Long slider **Belt length (mm)** = $2 \times L - L_n - 182$ Double slider

Туре	C [N]	F _y [N]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]			
E55	4260	2175	1500	25.5	43.4	54.4			
E55-L	8520	4350	3000	51	165 to 450	239 to 652			
E55-D	8520	4350	3000	51	450 to 4605	652 to 6677			
For the calculation of the allo	wed moments, p	olease observe p	bages SL-5ff			Tab. 60			

Technical data	Туре
	E55
Standard belt tension [N]	220
Moment at no load [Nm]	0.3
Max. traversing speed [m/s]	3
Max. acceleration [m/s ²]	10
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	TLV28 / ULV18
Slider type	CS28 spec. / CPA 18
Moment of inertia ly [cm⁴]	34.6
Moment of inertia Iz [cm⁴]	41.7
Pitch diameter of pulley [m]	0.04138
Moment of inertia of each pulley [gmm ²]	45633
Stroke per shaft revolution [mm]	130
Mass of slider [g]	635
Weight with zero stroke [g]	3167
Weight with 1 m stroke [g]	5055
Max. stroke [mm]	5500
Working temperature	from -20 °C to + 80 °C

> E75

E75 system



Туре	A [mm]	B [mm]	C* [mm]	D [mm]	E [mm]	F [mm]	G* [mm]	H [mm]	l [mm]	J [mm]	K [mm]	M [mm]	N [mm]	S [mm]	X [mm]	Y [mm]	V [mm]	W [mm]	Z [mm]	Stroke** [mm]
E75	75	90	71.5	35	53.5	38.8	34.5	20	Ø 29.5	5	95	4.85	Ø 55	285	36	14.5	2.3	70.4	116	3420
* For the position of the T-nuts when using our motor adapter plates, see pg. US-35ff ** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 67									Tab. 62											

E75L with long slider



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

Туре	S _{min} [mm]	S _{max} [mm]	Sn [mm]	Z [mm]	Stroke* [mm]
E75L	440	700	$Sn = S_{min} + n \cdot 10$	116	3000
* Maximum stroke for a sing	e-piece guiding rail	and a maximum sli	der plate length S _{max}		Tab. 63

For longer strokes, see tab. 67

E75D with double slider



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

Туре	S [mm]	L _{min} [mm]	L _{max} ** [mm]	Ln [mm]	Z [mm]	Stroke* [mm]
E75D	285	416	3416	$Ln = L_{min} + n \cdot 8$	116	3000
* Maximum stroke for a sinc	le-piece quiding	rail and a minir	num slider plate	distance L		Tab. 64

** Maximum distance L_{max} between the centres of slider plates at a stroke of 0 mm For longer strokes, see tab. 67

Load ratings, moments and characteristic data

E75



Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Туре	Type of belt	Belt width [mm]	Weight [kg/m]
E75	30RPP8	30	0.185
			Tab. 65

Belt length (mm) = 2 x L - 213 Standard slider **Belt length (mm) =** $2 \times L - S_n + 72$ Long slider **Belt length (mm)** = $2 \times L - L_n - 213$ Double slider

Туре	C [N]	F _y [N]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]				
E75	12280	5500	3710	85.5	163	209				
E75-L	24560	11000	7420	171	575 to 1540	852 to 2282				
E75-D	24560	11000	7420	171	1543 to 12673	2288 to 18788				
For the calculation of the allo	For the calculation of the allowed moments, please see pages SL-5ff Tab. 66									

Technical data	Туре
	E75
Standard belt tension [N]	800
Moment at no load [Nm]	1.3
Max. traversing speed [m/s]	5
Max. acceleration [m/s ²]	15
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	TLV43 / ULV28
Slider type	CS43 spec. / CPA 28
Moment of inertia ly [cm4]	127
Moment of inertia Iz [cm⁴]	172
Pitch diameter of pulley [m]	0.05093
Moment of inertia of each pulley [gmm ²]	139969
Stroke per shaft revolution [mm]	160
Mass of slider [g]	1772
Weight with zero stroke [g]	7544
Weight with 1 m stroke [g]	10751
Max. stroke [mm]	7500
Working temperature	from -20 °C to + 80 °C

Lubrication

The raceways of the guide rails in the Uniline linear axes are prelubricated. To achieve the calculated service life, a lubrication film must always be present between the raceway and the roller. The lubrication film also provides anticorrosion protection to the ground raceways. An approximate value for the lubrication period is every 100 km or every six months. The recommended lubricant is a lithium-based roller bearing grease of medium consistency.

Lubrication of the raceways

Proper lubrication under normal conditions:

- reduces friction
- reduces wear
- reduces stress on the contact faces
- reduces running noise

Lubricants	Thickeners	Temperature range [°C]	Dynamic viscosity [mPas]
Roller bearing grease	Lithium soap	-30 to +170	<4500
			Tab. 68

Relubrication of the guide rails

These types of rails have a lubricating conduit on the side of the slider plate through which the lubricant can be applied directly to the raceways. Lubrication can be done in one of two ways:

1. Relubrication using a grease gun:

This is done by inserting the tip of the grease gun into the conduit at the slider plate and injecting the grease inside (see fig. 50). Please note that the grease has to fill the whole conduit in order to lubricate the rail properly; for this reason sufficient grease must be used.

2. Automatic lubrication system:

To connect the unit to an automatic greasing system, use a proper adapter/connector* that attaches to the threaded hole on the side of the trolley.

Cleaning the guide rails

It is always recommended to clean the slider rail prior to any relubrication, in order to remove grease residues. This can be done while performing maintenance work or during a scheduled machine stop.

- 1. Unscrew the safety screws C (on top of the slider plate) from the belt tensioning device A (see fig. 51).
- 2. Also completely unscrew the belt tensioning screws B and remove the belt tensioning devices A from their housings.
- 3. Lift the toothed belt until the guide rails can be seen. Important: Ensure that the side seal is not damaged.
- 4. Clean the rail raceways with a clean and dry cloth. Ensure that all grease and dirt residues from previous work processes are removed. To ensure that the rails are cleaned over their entire length, the slider plate should be moved once over its entire length.
- 5. Apply a sufficient amount of grease to the raceways.

The advantage of this solution is the possibility of rail re-lubrication without machine downtime.

*(Any adapter that may be necessary must be manufactured on site)



6. Re-insert the belt tensioning devices A into their housings and mount the belt tensioning screws B. Re-adjust the belt tension (see pg. US-59).7. Fasten the safety screws C.





Accessories

Adapter plates

Standard motor adapter plates AC2

Mounting plates for the most common motors or gearboxes. The connection bores for the motors or gearboxes must be made on site. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.



Fig. 52

Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	l [mm]	N [mm]
55	126	55	100	25	50.5	27.5	18	15	Ø 30	Ø 47
75	135	70	106	35	53.5	35	19	17.5	Ø 35	Ø 55

Tab. 69

NEMA plates AC1-P

Mounting plates for NEMA motors or gearboxes. These plates are delivered ready-to-mount on the linear axes. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Size	NEMA Motors / Gearboxes	
55	NEMA 34	
75	NEMA 42	
		Tab. 7



Fig. 53

U

Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	l [mm]	N [mm]	0 [mm]	P [mm]	Q [mm]
55	126	100	100	25	50.5	50	18	37.5	30	Ø 47	Ø 74	Ø 5.5	Ø 98.4
75	135	120	106	35	53.5	60	19	42.5	35	Ø 55	Ø 57	Ø 7.1	Ø 125.7
													Tab. 71

Synchronous use of linear axes in pairs

If two axes are to be used in parallel using a connecting shaft, please specify when ordering, to ensure that the key slots of the pulleys are synchronized.

Fixing brackets APF-2



T-nut



Assembly kits

T-connection plate APC-1

T-connection plate allows two units to be mounted perpendicular to each other (see pg. US-60). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.



Fig. 56

Fixing clamp for simple mounting of a linear axis on a mounting surface or for connecting two units with or without a connection plate (see pg. US-63).

A spacer* may be necessary.

*(Any spacer that may be necessary must be manufactured on site)

The maximum tightening torque is 10 Nm.

Note

In case of use of APC-1 plates with E and ED series, please consult Rollon Technical Dpt. In standard there is an interference between U-rail and APC-1 plate. A special version with shorter U-rail at both extremities will be offered.

Size	Fixing holes for the slider	Fixing holes for the profile
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 72

Angle connection plate APC-2

allows the right angle mounting of two units. The trolley of one unit can be mounted to the side of the other (see pg. US-61). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting to the linear units.



Fig. 57

Note

This adapter plate can be used with types E and ED only to a limited extent. For further information, please contact our Application Engineering Department.

Size	Fixing holes for the slider	Fixing holes for the profile
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 73

X connection plate APC-3

X connection plate for mounting two sliders perpendicular to each other (see pg. US-62). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Fixing holes for slider 1	Fixing holes for slider 2
Holes 2	Holes 5
Holes 3	Holes 6
	Fixing holes for slider 1 Holes 2 Holes 3

Tab. 74



U S

Ordering key // 🗸

Identification code for Uniline linear unit



Left / right orientation



Accessories

Standard motor adapter plate

Е	07	AC2
	05=55 07=75	Standard motor adapter plates see pg. US-35
	Size se	e pg. US-35
Туре		

Ordering example: E07-AC2

NEMA motor adapter plates

E	07	AC1
	05=55 07=75	NEMA motor adapter plates see pg. US-35
	Size se	e pg. US-35
Туре		
0 1 1	1 507 40	

Ordering example: E07-AC1

T-connection plate	Order code: APC-1, s. pg. US-36
Angle connection plate	Order code: APC-2, s. pg. US-37
X connection plate	Order code: APC-3, s. pg. US-37
Fixing clamp	Order code: APF-2, s. pg. US-36

Motor connection bores

	Si				
Hole [Ø]	55	75	Head code		
	12G8 / 4js9	14G8 / 5js9	1A		
Metric [mm]	10G8 / 3js9	16G8 / 5js9	2A		
with slot for key	14G8 / 5js9	19G8 / 6js9	ЗA		
	16G8 / 5js9		4A		
Metric [mm]		18	1B		
coupling		24	2B		
	1/2 / 1/8	5⁄ ₈ / 3⁄ ₁₆	1P		
Inch [in] with slot for key	3⁄8 / 1⁄8		2P		
	5⁄8 / 3⁄16		ЗP		
The highlighted ears	antion house and store	davel as a set a set	Tab. 75		

The highlighted connection bores are standard connections Metric: key seat for keys to DIN 6885 form A Inch: key seat for keys to BS 46 Part 1: 1958

Uniline ED series // 🗸

Uniline ED series description



Uniline is a family of ready-to-install linear actuators. They consist of internal Compact Rail roller sliders and steel-reinforced polyurethane belts in a rigid aluminum profile. Longitudinal seals enclose the system. This arrangement provides the best protection for the actuator from soiling and damage. In the ED series, a compensating bearing rail (U-rail) is mounted horizontally in the aluminum profile, and for increased moment support, two more compensating bearing rails (U-rail) are flanged to the profile externally. Versions with long (L) or double (D) sliders in one axis are possible.

The most important characteristics:

- Compact design
- Protected internal linear guides
- High traversing speeds
- Grease-free operation possible (depending on the application. For further information, please contact our Application Engineering department)
- High versatility
- Long strokes
- Versions with long or multiple sliders available in one linear axis

Preferred areas of application:

- Handling and automation
- Multi-axis gantries
- Packaging machines
- Cutting machines
- Displaceable panels
- Painting installations
- Welding robots
- Special machines

Technical data:

- Available sizes [mm]: Type ED: 75
- Length and stroke tolerances:

For strokes <1 m: +0 mm to +10 mm (+0 in to 0.4 in) For strokes >1 m: +0 mm to +15 mm (+0 in to 0.59 in)

The components

Extruded profile

The anodized 6060 aluminum alloy extrusion used for the profile of the Rollon Uniline ED series linear units were designed and manufactured by industry experts to optimize weight while maintaining mechanical strength. (see physical-chemical characteristics below). The dimensional tolerances comply with EN 755-9 standard.

be achieved. Optimization of the maximum belt width/body dimension ratio enables the following performance characteristics to be achieved:

- High speed
- Low noise
- Low wear

Carriage

Driving belt

The Rollon Uniline ED series linear units use steel reinforced polyurethane drive belts with RPP pitch and parabolic profiles. This belt is ideal due to its high load transmission characteristics, compact size and low noise. Used in conjunction with a backlash-free pulley, smooth alternating motion can

General data about aluminum used: AL 6060

Chemical composition [%]

The carriage of the Rollon Uniline ED series linear units are made entirely of anodized aluminum. Each carriage has mounting T-slots for the connection to the moving element. Rollon offers multiple carriages to accommodate a vast array of applications.

AI	Mg	Si	Fe	Mn	Zn	Cu	Impurites
Remaining	0.35-0.60	0.30-0.60	0.30	0.10	0.10	0.10	0.05-0.15
							Tab. 76

Physical characteristics

Density	Coeff. of elasticity	Coeff. of thermal expansion (20°-100°C)	Thermal conductivity (20°C)	Specific heat (0°-100°C)	Resistivity	Melting point
kg dm ³	kN mm ²	10 ⁻⁶ K	W 	J kg.K	Ω.m.10 ⁻⁹	°C
2.7	69	23	200	880-900	33	600-655
						Tab. 77

Mechanical characteristics

Rm	Rp (02)	A	HB
N mm ²	N mm²	%	—
205	165	10	60-80
			Tah 78

¢

ED75 >

ED75 system



Туре	A [mm]	B [mm]	C* [mm]	D (mm)	E [mm]	F [mm]	G* [mm]	H (mm)	l [mm]	K [mm]	M [mm]	N [mm]	S (mm)	X (mm)	Y (mm)	V [mm]	W [mm]	Z [mm]	Stroke** [mm]
ED75	75	90	71.5	35	53.5	38.8	34.5	20	Ø 29.5	135	4.85	Ø 55	330	36	49.5	2.3	70.4	116	2900
* For the positi	For the position of the T-nuts when using our motor adapter plates, see pg. US-45ff														Tab. 79				

** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 84

ED75L with long slider



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

Туре	S _{min} * [mm]	S _{max} [mm]	Sn [mm]	Z [mm]	Stroke** [mm]
ED75L	440	700	$Sn = S_{min} + n \cdot 10$	116	2500
* The length of 440 mm is considered standard, all other lengths are considered special dimensions Tab. 8					

** Maximum stroke for a single-piece guiding rail and a maximum slider plate length S_{max} For longer strokes, see tab. 84

ED75D with double slider



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

Туре	S [mm]	L _{min} [mm]	L _{max} ** [mm]	Ln [mm]	Z [mm]	Stroke* [mm]
ED75D	330	416	2864	$Ln = L_{min} + n \cdot 8$	116	2450
* Maximum stroke for a single-piece guiding rail and a minimum slider plate distance L _{min} Tab. 81						

the centres of slider plates at a stroke of 0 mm For longer strokes, see tab. 84

Fig. 62

Type ED



Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Туре	Type of belt	Belt width [mm]	Weight [kg/m]
ED75	30RPP8	30	0.185
			Tab. 82

Belt length (mm) = $2 \times L - 258$ Standard slider Belt length (mm) = $2 \times L - S_n + 72$ Long slider Belt length (mm) = $2 \times L - L_n - 258$ Double slider

Tab. 83

Туре	C [N]	F _y [N]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]
ED75	9815	5500	8700	400.2	868	209
ED75-L	19630	11000	8700	400.2	1174 to 2305	852 to 2282
ED75-D	19630	11000	17400	800.4	3619 to 24917	2288 to 15752

For the calculation of the allowed moments, please see pages SL-5ff

Technical data	Туре
	ED75
Standard belt tension [N]	1000
Moment at no load [Nm]	1.5
Max. traversing speed [m/s]	5
Max. acceleration [m/s ²]	15
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	ULV43 / ULV28
Slider type	CS43 spec. / CS28 spec.
Moment of inertia ly [cm⁴]	127
Moment of inertia Iz [cm⁴]	172
Pitch diameter of pulley [m]	0.05093
Moment of inertia of each pulley [gmm ²]	139969
Stroke per shaft revolution [mm]	160
Mass of slider [g]	3770
Weight with zero stroke [g]	9850
Weight with 1 m stroke [g]	14400
Max. stroke [mm]	7500
Working temperature	from -20 °C to + 80 °C

Tab. 84

Lubrication

The raceways of the guide rails in the Uniline linear axes are prelubricated. To achieve the calculated service life, a lubrication film must always be present between the raceway and the roller. The lubrication film also provides anticorrosion protection to the ground raceways. An approximate value for the lubrication period is every 100 km or every six months. The recommended lubricant is a lithium-based roller bearing grease of medium consistency.

Lubrication of the raceways

Proper lubrication under normal conditions:

- reduces friction
- reduces wear
- reduces stress on the contact faces
- reduces running noise

Lubricants	Thickeners	Temperature range [°C]	Dynamic viscosity [mPas]
Roller bearing grease	Lithium soap	-30 to +170	<4500
			Tab. 85

Relubrication of the guide rails

- 1. Slide the slider plate to one end of the unit.
- At about half the stroke press and manually move the belt in order to see one of the two rails inside the unit (see Fig. 64).
 It may be necessary to release or loosen the belt tension. See chapter

Belt tension (pg. US-59).

- 3. By using a grease syringe (not supplied by ROLLON) or an alternative tool (i.e. brush), apply a sufficient quantity of grease on the raceways.
- 4. If required, re-establish the recommended belt tension (see pg. US-59).
- 5. Finally slide the slider plate back and forth over the entire stroke, in order to distribute the grease over the entire length of the rail.

Cleaning the guide rails

It is always recommended to clean the slider rail prior to any relubrication, in order to remove grease residues. This can be done while performing maintenance work or during a scheduled machine stop.

- 1. Unscrew the safety screws C (on top of the slider plate) from the belt tensioning device A (see fig. 65).
- 2. Also completely unscrew the belt tensioning screws B and remove the belt tensioning devices A from their housings.
- Lift the toothed belt until the guide rails can be seen. Important: Ensure that the side seal is not damaged.
- 4. Clean the rail raceways with a clean and dry cloth. Ensure that all grease and dirt residues from previous work processes are removed. To ensure that the rails are cleaned over their entire length, the slider plate should be moved once over its entire length.
- 5. Apply a sufficient amount of grease to the raceways.



 Re-insert the belt tensioning devices A into their housings and mount the belt tensioning screws B. Re-adjust the belt tension (see pg. US-59).
Fasten the safety screws C.



Fig. 65



> Accessories

Adapter plates

Standard motor adapter plates AC2

Mounting plates for the most common motors or gearboxes. The connection bores for the motors or gearboxes must be made on site. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.



* Area of plate needs to be cut if used for ED75 linear unit. (Adding 20 mm to total length of unit will render this modification unnecessary). Othewise it gets in contact with the outer rail. X = 20 mm; Y = 35 mm

Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	l [mm]	N [mm]
75	135	70	106	35	53.5	35	19	17.5	Ø 35	Ø 55
										Tab 86

NEMA plates AC1-P

Mounting plates for NEMA motors or gearboxes. These plates are delivered ready-to-mount on the linear axes. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Size	NEMA Motors / Gearboxes	
75	NEMA 42	
		Tab. 87

* Area of plate needs to be cut if used for ED75 linear unit. (Adding 20 mm to total length of unit will render this modification unnecessary). Othewise it gets in contact with the outer rail. X = 20 mm; Y = 60 mm



Fig. 67

U

Size	A	B	C	D	E	F	G	H	l	N	0	P	Q
	[mm]	[mm]											
75	135	120	106	35	53.5	60	19	42.5	35	Ø 55	Ø 57	Ø 7.1	Ø 125.7

Synchronous use of linear axes in pairs

If two axes are to be used in parallel using a connecting shaft, please specify when ordering, to ensure that the key slots of the pulleys are synchronized.

Fixing brackets APF-2



T-nut



Assembly kits

T-connection plate APC-1

T-connection plate allows two units to be mounted perpendicular to each other (see pg. US-60). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.



Note

In case of use of APC-1 plates with E and ED series, please consult Rollon Technical Dpt. In standard there is an interference between U-rail and APC-1 plate. A special version with shorter U-rail at both extremities will be offered.

Size	Fixing holes for the slider	Fixing holes for the profile
75	Holes 3	Holes 6
		Tab. 89

Fixing clamp for simple mounting of a linear axis on a mounting surface or for connecting two units with or without a connection plate (see pg. US-63).

A spacer* may be necessary.

*(Any spacer that may be necessary must be manufactured on site)

The maximum tightening torque is 10 Nm.

Angle connection plate APC-2

allows the right angle mounting of two units. The trolley of one unit can be mounted to the side of the other (see pg. US-61). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting to the linear units.



Note

This adapter plate can be used with types E and ED only to a limited extent. For further information, please contact our Application Engineering Department.





X connection plate APC-3

X connection plate for mounting two sliders perpendicular to each other (see pg. US-62). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Size	Fixing holes for slider 1	Fixing holes for slider 2
75	Holes 3	Holes 6
		Tab. 91



Ordering key // 🗸

Identification code for Uniline linear unit



Left / right orientation



Accessories

Standard motor adapter plate

D	07	AC2
	07=75	Standard motor adapter plates see pg. US-45
	Size se	e pg. US-45
Туре		

Ordering example: D07-AC2

NEMA motor adapter plates

D	07	AC1
	07=75	NEMA motor adapter plates see pg. US-45
	Size	see pg. US-45
Туре		

Ordering example: D07-AC1

T-connection plate	Order code: APC-1, s. pg. US-46
Angle connection plate	Order code: APC-2, s. pg. US-47
X connection plate	Order code: APC-3, s. pg. US-47
Fixing clamp	Order code: APF-2, s. pg. US-46

Motor connection bores

	Size	
Hole [Ø]	75	Head code
	14G8 / 5js9	1A
Metric [mm]	16G8 / 5js9	2A
with slot for key	19G8 / 6js9	ЗA
		4A
Metric [mm]	18	1B
tor compression coupling	24	2B
	5⁄ ₈ / 3⁄ ₁₆	1P
Inch [in] with slot for key		2P
		3P
		Tah 92

The highlighted connection bores are standard connections Metric: key seat for keys to DIN 6885 form A Inch: key seat for keys to BS 46 Part 1: 1958



Uniline H series description



Uniline is a family of ready-to-install linear actuators. They consist of internal Compact Rail roller sliders in a rigid aluminum profile. Longitudinal seals enclose the system. This arrangement provides the best protection for the actuator from soiling and damage. In the H series, the compensating bearing rail (U-rail) is mounted horizontally in the aluminum profile. The H series is used as a compensating bearing axis for load absorption of radial forces, and in combination with the other series, as support bearing for the resulting moments. Versions with long (L) or double (D) sliders in one axis are possible. H series is a slave actuator, it has not the driving belt.

The most important characteristics:

- Compact design
- Protected internal linear guides
- High traversing speeds
- Grease-free operation possible (depending on the application. For further information, please contact our Application Engineering department)
- High versatility
- Long strokes
- Versions with long or multiple sliders available in one linear axis

Preferred areas of application:

- Handling and automation
- Multi-axis gantries
- Packaging machines
- Cutting machines
- Displaceable panels
- Painting installations
- Welding robots
- Special machines

Technical data:

- Available sizes [mm]: Type H: 40, 55, 75
- Length and stroke tolerances:

For strokes <1 m: +0 mm to +10 mm (+0 in to 0.4 in) For strokes >1 m: +0 mm to +15 mm (+0 in to 0.59 in)

The components

Extruded profile

The anodized 6060 aluminum alloy extrusion used for the profile of the Rollon Uniline series linear units were designed and manufactured by industry experts to optimize weight while maintaining mechanical strength. (see physical-chemical characteristics below).The dimensional tolerances comply with EN 755-9 standard.

General data about aluminum used: AL 6060

Chemical composition [%]

Carriage

The carriage of the Rollon Uniline H series linear units are made entirely of anodized aluminum. Each carriage has mounting T-slots for the connection to the moving element. Rollon offers multiple carriages to accommodate a vast array of applications.

AI	Mg	Si	Fe	Mn	Zn	Cu	Impurites
Remaining	0.35-0.60	0.30-0.60	0.30	0.10	0.10	0.10	0.05-0.15
							Tab. 93

Physical characteristics

Density	Coeff. of elasticity	Coeff. of thermal expansion (20°-100°C)	Thermal conductivity (20°C)	Specific heat (0°-100°C)	Resistivity	Melting point
kg	kN	10-6	W	J		
					Ω.m.10-9	°C
dm ³	mm ²	К	m.K	kg . K		
2.7	69	23	200	880-900	33	600-655

Tab. 94

Mechanical characteristics

Rm	Rp (02)	A	НВ
$\frac{N}{mm^2}$	N mm ²	%	—
205	165	10	60-80
			Tab 04

Tab. 95

H40

H40 system



Туре*	A [mm]	B _{nom} [mm]	B _{min} [mm]	B _{max} [mm]	D [mm]	H [mm]	J [mm]	K [mm]	S [mm]	X [mm]	Y [mm]	Z [mm]	Stroke** [mm]
H40	40	51.5	51.2	52.6	-	14	5	30	165	-	-	12	1900
Including long or double slider. See chapter 3 Product dimensions Types AL and AD										Tab. 96			

 * Including long or double slider. See chapter 3 Product dimensions Types A...L and A...D ** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 98

H40



Туре	C [N]	F, [N]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]	
H40	1530	820				13.1	
H40-L	3060	1640	0	0	0	61 to 192	
H40-D	3060	1640				192 to 1558	
For the calculation of the allowed moments, please see pages SL-5ff							

Technical data	Туре
	H40
Max. traversing speed [m/s]	3
Max. acceleration [m/s ²]	10
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	ULV18
Slider type	CS18 spec.
Moment of inertia ly [cm4]	12
Moment of inertia Iz [cm4]	13.6
Mass of slider [g]	220
Weight with zero stroke [g]	860
Weight with 1 m stroke [g]	3383
Max. stroke [mm]	3500
Working temperature	from -20 °C to + 80 °C
	T I 00

H55

H55 system



Туре*	A [mm]	B _{nom} [mm]	B _{min} [mm]	B _{max} [mm]	D [mm]	H [mm]	J [mm]	K [mm]	S [mm]	X [mm]	Y [mm]	Z [mm]	Stroke** [mm]
H55	55	71	70.4	72.3	25	15	1.5	52	200	28	12	13	3070
* Including long or double slider. See chapter 3 Product dimensions Types AL and AD										Tab. 99			

* Including long or double slider. See chapter 3 Product dimensions Types A...L and A...D ** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 101

H55



Туре	C [N]	F, [Ň]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]	
H55	4260	2175				54.5	
H55-L	8520	4350	0	0	0	239 to 652	
H55-D	8520	4350				652 to 6677	
For the calculation of the allowed moments, please see pages SL-5ff Tab. 100							

Technical data	Туре
	H55
Max. traversing speed [m/s]	5
Max. acceleration [m/s ²]	15
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	ULV28
Slider type	CS28 spec.
Moment of inertia ly [cm4]	34.6
Moment of inertia Iz [cm4]	41.7
Mass of slider [g]	475
Weight with zero stroke [g]	1460
Weight with 1 m stroke [g]	4357
Max. stroke [mm]	5500
Working temperature	from -20 °C to + 80 °C
	T 1 404



U S

H75

H75 system



Туре*	A [mm]	B _{nom} [mm]	B _{min} [mm]	B _{max} [mm]	D [mm]	H [mm]	J [mm]	K [mm]	S [mm]	X [mm]	Y [mm]	Z [mm]	Stroke** [mm]
H75	75	90	88.6	92.5	35	20	5	65	285	36	14.5	13	3420
Including long or double slider. See chapter 3 Product dimensions Types AL and AD							Tab. 102						

Including long or double slider. See chapter 3 Product dimensions Types A...L and A...D
** Maximum stroke for a single-piece guiding rail. For longer strokes, see tab. 104

H75



Туре	C [N]	F, [Ň]	F _z [N]	M _x [Nm]	M _y [Nm]	M _z [Nm]
H75	12280	5500				209
H75-L	24560	11000	0	0	0	852 to 2282
H75-D	24560	11000				2288 to 18788
For the calculation of the allowed moments, please see pages SL-5ff Tab. 103						

Technical data	Туре
	H75
Max. traversing speed [m/s]	7
Max. acceleration [m/s ²]	15
Repeat accuracy [mm]	0.1
Compact Rail guiding rail	ULV43
Slider type	CS43 spec.
Moment of inertia ly [cm4]	127
Moment of inertia Iz [cm ⁴]	172
Mass of slider [g]	1242
Weight with zero stroke [g]	4160
Weight with 1 m stroke [g]	9381
Max. stroke [mm]	7500
Working temperature	from -20 °C to + 80 °C
	Tab. 104

Lubrication

The raceways of the guide rails in the Uniline linear axes are prelubricated. To achieve the calculated service life, a lubrication film must always be present between the raceway and the roller. The lubrication film also provides anticorrosion protection to the ground raceways. An approximate value for the lubrication period is every 100 km or every six months. The recommended lubricant is a lithium-based roller bearing grease of medium consistency.

Lubrication of the raceways

Proper lubrication under normal conditions:

- reduces friction
- reduces wear
- reduces stress on the contact faces
- reduces running noise

Lubricants	Thickeners	Temperature range [°C]	Dynamic viscosity [mPas]
Roller bearing grease	Lithium soap	-30 to +170	<4500
			Tab 105

Relubrication of the guide rails

These types of rails have a lubricating conduit on the side of the slider plate through which the lubricant can be applied directly to the raceways. Lubrication can be done in one of two ways:

1. Relubrication using a grease gun:

This is done by inserting the tip of the grease gun into the conduit at the slider plate and injecting the grease inside (see fig. 80). Please note that the grease has to fill the whole conduit in order to lubricate the rail properly; for this reason sufficient grease must be used.

2. Automatic lubrication system:

To connect the unit to an automatic greasing system, use a proper adapter/connector* that attaches to the threaded hole on the side of the trolley.

Cleaning the guide rails

It is always recommended to clean the slider rail prior to any relubrication, in order to remove grease residues. This can be done while performing maintenance work or during a scheduled machine stop.

- Clean the rail raceways with a clean and dry cloth. Ensure that all grease and dirt residues from previous work processes are removed. To ensure that the rails are cleaned over their entire length, the slider plate should be moved once over its entire length.
- 2. Apply a sufficient amount of grease to the raceways.

The advantage of this solution is the possibility of rail re-lubrication without machine downtime.

*(Any adapter that may be necessary must be manufactured on site)



Accessories

Fixing brackets APF-2



T-nut



Assembly kits

T-connection plate APC-1

T-connection plate allows two units to be mounted perpendicular to each other (see pg. US-60). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.





Fixing clamp for simple mounting of a linear axis on a mounting surface or for connecting two units with or without a connection plate (see pg. US-63).

A spacer* may be necessary.

*(Any spacer that may be necessary must be manufactured on site)

The maximum tightening torque is 10 Nm.

Note

In case of use of APC-1 plates with E and ED series, please consult Rollon Technical Dpt. In standard there is an interference between U-rail and APC-1 plate. A special version with shorter U-rail at both extremities will be offered.

Size	Fixing holes for the slider	Fixing holes for the profile
40	Holes 1	Holes 4
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 106

Angle connection plate APC-2

allows the right angle mounting of two units. The trolley of one unit can be mounted to the side of the other (see pg. US-61). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting to the linear units.



Size	Fixing holes for the slider	Fixing holes for the profile
40	Holes 1	Holes 4
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		Tab. 107

Fig. 84

X connection plate APC-3

X connection plate for mounting two sliders perpendicular to each other (see pg. US-62). The plate will not interfere with the strokes of either unit. All plates are delivered with M6 x 10 screws to DIN 912 and T-nuts for mounting on the linear units.

Size	Fixing holes for slider 1	Fixing holes for slider 2
40	Holes 1	Holes 4
55	Holes 2	Holes 5
75	Holes 3	Holes 6
		T I 400

Tab. 108



U S



Identification code for Uniline linear unit



In order to create identification codes for Actuator Line, you can visit: http://configureactuator.rollon.com

Left / right orientation





All Uniline linear axes are all supplied with a standard belt tension suitable for most applications (see tab. 109).

Size	40	55	75	ED75
Belt tension [N]	160	220	800	1000
				Tah 100



The belt tensioning system (located at the ends of the slider plates for sizes 45 to 75) allows the toothed belt tension to be set in accordance with requirements.

To set the belt tension for sizes 40 to 75, the following steps must be followed (the reference values are standard values):

- 1. Determine the deviation of the belt tension from the standard value.
- Figures 87 and 88 show how many turns the belt tensioning screws B must be for the required belt tension deviation.
- 3. Calcualte the length of the belt (m), with the formula:
 - L = 2 x stroke (m) + 0.515 m (size 40);
 - L = 2 x stroke (m) + 0.630 m (size 55);
 - L = 2 x stroke (m) + 0.792 m (size 75).
- 4. Multiply the number of turns (see step 2) by the toothed belt length m (see step 3) to calculate the required number of turns to achieve the new desired belt tension..
- 5. Unscrew the safety screw C.
- 6. Turn the belt tensioning screws B in accordance with the above explanation. Re-tighten the safety screw C.

Example:

Increasing the belt tension from 220 N to 330 N for an A55 - 1070: 1. deviation = 330 N - 220 N = 110 N.

- Figures 87 and 88 show that the value by which the belt tensioning screws B must be turned to increase the belt tension by 110 N is 0.5 turns.
- 3. Formula for calculating the toothed belt length:
 - L = 2 x stroke (m) + 0.630 m = 2 x 1.070 + 0.630 = 2.77 m.





4. This means that the required number of turns is: 0.5 rpm x 2.77 m = 1.4 turns.

- 5. Unscrew the safety screw C.
- 6. Turn the belt tensioning screws B by 1.4 turns with the aid of an external reference.
- 7. Re-tighten the safety screw C.

Note:

If the linear unit is used such that the load acts directly on the toothed belt, it is important not to exceed the specified values for the belt tension. Otherwise, the positional accuracy and stability of the toothed belt cannot be guaranteed. If higher values are required for the belt tension, please contact our Application Engineering Department.

Installation instructions

Motor adapter plates AC2 and AC1-P, sizes 40 - 75

To connect the linear units to the motor and gearbox, suitable adapter plates must be used. Rollon offers these plates in two different designs (see chapter Accessories). The standard plates are already provided with the holes required for mounting to the linear unit. The fixing holes must be made on site. Ensure that the mounted plate will not interfere with the stroke of the traversing slider plate.

Connection to motor and gearbox

- 1. Attach the motor adapter plate to the motor or gearbox.
- 2. Connect the T-nuts by inserting the screws without tightening them and align the nuts in parallel to the slots of the unit.
- 3. Insert the connecting shaft into the drive head by aligning the key in the key slot.
- 4. Attach the motor adapter plate to the drive head of the linear axis by means of nuts and make sure that the nuts in the slots were rotated by 90° (see Accessories). Ensure correct fit of the adapter plate.

T-connection plate APC-1, sizes 40 - 75

Connection of two linear axes is achieved by means of the T-connection plate APC-1 (see chapter Accessories). To mount the above-mentioned configuration, the following steps should be carried out:

- 1. Prepare the connection plate by inserting the screws into the existing holes on the APC-1 (see fig. 90).
- 2. Connect the T-nuts by introducing the screws without tightening them and align the nuts in parallel to the slots of the unit.
- 3. Place the plate against the long side of unit 1 and tighten the screws. Ensure that the nuts in the slots were rotated by 90°.
- 4. To fasten the plate to unit 2, insert the screws from the the long side of unit 1 (see fig. 91).
- 5. Connect the T-nuts by introducing the screws without tightening them and align the nuts in parallel to the slots of the slider plate of unit 2.
- Place the plate against the slider plate and tighten the screws. Important: Please make sure that the nuts in the slots were rotated by 90°.



Fig. 89

Note:

- The connecting plates for the Uniline A40 are delivered with four fixing holes, even though only two holes are required for the connection. The presence of four holes give the plate a symmetric design which allows it to be used on any side of the unit.
- Due to the constructive design of the aluminum profile, only three fixing holes can be used the for the Uniline C series. (see pg. US-18, fig. 24).



Fig. 90



Fig. 91

Example 1: System consisting of 2 X-axes and 1 Y-axis

The connection of the two units is attained by means of the parallel slider plates and the drive heads. For this configuration, we recommend using our connection plate APC-1.



Fig. 92

Angle connection plate APC-2, sizes 40 - 75

Connection of two linear axes is achieved by means of the angle connection plate APC-2. To mount the above-mentioned configuration, the following steps should be carried out:

- 1. Insert the screws to be used for the connection to unit 1 into the prepared holes (see fig. 93).
- 2. Connect the T-nuts by inserting the screws without tightening them and align the nuts in parallel to the slots of the slider plates.
- 3. Place the connection plate against the slider plate and tighten the screws. Ensure that the nuts in the slots were rotated by 90°.
- 4. To fix the connection plate to unit 2, insert the screws into the prepared holes on the short plate side (see fig. 94).
- 5. Connect the T-nuts by inserting the screws without tightening them and align the nuts in parallel to the slots of the aluminum profile of unit 2.
- Place the connection plate against the slider plate and tighten the screws. Ensure that the nuts in the slots were rotated by 90°.

Fig. 93



Fig. 94

Example 2 – System consisting of 1 X-axis and 1 Z-axis

With this configuration, the Z-axis is connected to the slider plate of the X-axis by means of the angle connection plate APC-2.



X connection plate APC-3, sizes 40 - 75

Connection of the two linear axes is achieved by means of the X connection plate APC-3 (see chapter Accessories). To mount the above-mentioned configuration, the following steps should be carried out:

- 1. Insert the screws from one side of the connection plate into the prepared holes (see fig. 96).
- 2. Connect the T-nuts by inserting the screws without tightening them and align the nuts in parallel to the slots of the slider plate of unit 1.
- 3. Place the connection plate against the slider plate and tighten the screws. Ensure that the nuts in the slots were rotated by 90°.
- 4. Insert the screws from the other side of the connection plate (see fig. 97).
- 5. Connect the T-nuts by inserting the screws without tightening them and align the nuts in parallel to the slots of the slider plate of unit 2.6. Place the connection plate against the slider plate and tighter the
- Place the connection plate against the slider plate and tighten the screws. Ensure that the nuts in the slots were rotated by 90°.



Fig. 96



Example 3 – System consisting of 2 X-axes, 1 Y-axis and 1 Z-axis

Connect four linear units to create a 3-axis gantry. The vertical axis is arranged to be self-supporting on the central unit. To do so, connect the two slider plates to each other, using the X connection plate APC-3.

The connection of the two parallel axes to the central unit is attained by means of the T-connection plate APC-1.





Fixing clamp APF-2, sizes 40 - 75

Connection of two linear axes is achieved by means of the fixing clamps APF-2 (see chapter Accessories). To mount the above-mentioned configuration, the following steps should be carried out:

1. Insert the fastening screws into the clamp and, if necessary, place a spacer* between the clamp and the slider plate.

*(Any spacer that is to be used must be manufactured on site)

- 2. Connect the T-nuts by inserting the screws without tightening them and align the nuts in parallel to the slots of the slider plates.
- 3. Insert the projecting part of the clamp into the lower slot of the aluminum profile of unit 1.
- 4. Position the clamp lengthwise according to the desired position of the slider plate of unit 2.

- 5. Tighten the fastening screws. Ensure that the nuts in the slots were rotated by 90°.
- 6. Repeat this operation for the required number of fixing clamps.



Example 4 – System consisting of 1 Y-axis and 2 Z-axes

The connection of the Y-axis to the parallel slider plates is attained via the fixing clamps APF-2.



Fig. 100

Static load and service life

Static load

In the static load test, the radial load rating F_y , the axial load rating F_z , and the moments M_x , M_y und M_z indicate the maximum allowed load values. Higher loads will impair the running characteristics. To check the static load, a safety factor S_0 is used, which accounts for the special conditions of the application defined in more detail in the table below:

All load capacity values refer to the actuator well fixed to a rigid structure. For cantilever applications the deflection of the actuator profile must be taken in account.

Safety factor S₀

No shocks or vibrations, smooth and low-frequency change in direction High mounting accuracy, no elastic deformations, clean environment	2 - 3
Normal assembly conditions	3 - 5
Shocks and vibrations, high-frequency changes in direction, substantial elastic deformations	5 - 7
	Fig. 1

The ratio of the actual to the maximum allowed load must not be higher than the reciprocal value of the assumed safety factor S_{n} .

$$\frac{\mathsf{P}_{fy}}{\mathsf{F}_{y}} \leq \frac{1}{\mathsf{S}_{0}} \qquad \frac{\mathsf{P}_{fz}}{\mathsf{F}_{z}} \leq \frac{1}{\mathsf{S}_{0}} \qquad \frac{\mathsf{M}_{1}}{\mathsf{M}_{x}} \leq \frac{1}{\mathsf{S}_{0}} \qquad \frac{\mathsf{M}_{2}}{\mathsf{M}_{y}} \leq \frac{1}{\mathsf{S}_{0}} \qquad \frac{\mathsf{M}_{3}}{\mathsf{M}_{z}} \leq \frac{1}{\mathsf{S}_{0}}$$

Fig. 2

Fig. 3

The above formulae only apply to a one load case. If one or more of the forces described are acting simultaneously, the following calculation must be carried out:

$$\frac{P_{fy}}{F_{y}} + \frac{P_{fz}}{F_{z}} + \frac{M_{1}}{M_{x}} + \frac{M_{2}}{M_{y}} + \frac{M_{3}}{M_{z}} \le \frac{1}{S_{0}} \qquad P_{fy} = \text{acting load (y direction) (N)} \\ P_{fz} = \text{acting load (z direction) (N)} \\ M_{1}, M_{2}, M_{3} = \text{external moments (Nm)} \\ M_{x}, M_{y}, M_{z} = \text{maximum allowed moments in the different load directions (Nm)} \end{cases}$$

The safety factor S_0 can be at the lower limit given if the acting forces can be determined with sufficient accuracy. If shocks and vibrations act on the system, the higher value should be selected. In dynamic applications, higher safeties are required. For further information, please contact our Application Engineering Department.

Belt safety factor referred to the dynamic F_x

Impact and vibrations	Speed / acceleration	Orietation	Safety Factor
No impacts	Low	horizontal	1.4
and/or vibrations	LOW	vertical	1.8
Light impacts	Modium	horizontal	1.7
and/or vibrations	Medium	vertical	2.2
Strong impacts	Lliab	horizontal	2.2
and/or vibrations	High	vertical	3
			Tab. 1

Service life

Calculation of the service life

The dynamic load rating C is a conventional quantity used for calculating the service life. This load corresponds to a nominal service life of 100 km.

The calculated service life, dynamic load rating and equivalent load are linked by the following formula:

$$L_{km} = 100 \text{ km} \cdot (\frac{\text{Fz-dyn}}{\text{P}_{eq}} \cdot \frac{1}{\text{f}_{i}})^{3}$$

 $\begin{array}{ll} L_{km} & = \mbox{theoretical service life (km)} \\ \mbox{Fz-dyn} & = \mbox{dynamic load rating (N)} \\ P_{eq} & = \mbox{acting equivalent load (N)} \\ f_i & = \mbox{service factor (see tab. 2)} \end{array}$

Fig. 4

The effective equivalent load P_{eq} is the sum of the forces and moments acting simultaneously on a slider. If these different load components are known, P is obtained from the following equation:

For SP types

$$P_{eq} = P_{fy} + P_{fz} + (\frac{M_1}{M_x} + \frac{M_2}{M_y} + \frac{M_3}{M_z}) \cdot F_y$$

Fig. 5

For CI and CE types

$$P_{eq} = P_{fy} + (\frac{P_{fz}}{F_{z}} + \frac{M_{1}}{M_{x}} + \frac{M_{2}}{M_{y}} + \frac{M_{3}}{M_{z}}) \cdot F_{y}$$

Fig. 6

The external constants are assumed to be constant over time. Short-term loads that do not exceed the maximum load ratings have no relevant effect on the service life and can therefore be neglected in the calculation.

Service factor f_i

f _i	
no shocks or vibrations, smooth and low-frequency changes in direction; (α < 5m/s ²) clean operating conditions; low speeds (<1 m/s)	1.5 - 2
Slight vibrations; medium speeds; (1-2 m/s) and medium-high frequency of the changes in direction (5m/s ² < α < 10 m/s ²)	2 - 3
Shocks and vibrations; high speeds (>2 m/s) and high-frequency changes in direction; (α > 10m/s ²) high contamination, very short stroke	> 3
	Tab. 2

Speedy Rail A Lifetime

The rated lifetime for SRA actuators is 80,000 Km.
Static load and service life Uniline



Static load

In the static load test, the radial load rating F_{y} , the axial load rating F_{z} , and the moments M_{x} , M_{y} und M_{z} indicate the maximum allowed load values. Higher loads will impair the running characteristics. To check the static load, a safety factor S_{0} is used, which accounts for the special conditions of the application defined in more detail in the table below:

Safety factor S_o

No shocks or vibrations, smooth and low-frequency change in direction High mounting accuracy, no elastic deformations, clean environment	1 - 1.5
Normal assembly conditions	1.5 - 2
Shocks and vibrations, high-frequency changes in direction, substantial elastic deformations	2 - 3.5
	Fig. 7

The ratio of the actual to the maximum allowed load must not be higher than the reciprocal value of the assumed safety factor S_n .

$$\frac{P_{fy}}{F_{y}} \leq \frac{1}{S_{0}} \qquad \frac{P_{fz}}{F_{z}} \leq \frac{1}{S_{0}} \qquad \frac{M_{1}}{M_{x}} \leq \frac{1}{S_{0}} \qquad \frac{M_{2}}{M_{y}} \leq \frac{1}{S_{0}} \qquad \frac{M_{3}}{M_{z}} \leq \frac{1}{S_{0}}$$

The above formulae apply to a one load case. If one or more of the forces described are acting simultaneously, the following test must be carried out:

$$\frac{P_{fy}}{F_{y}} + \frac{P_{fz}}{F_{z}} + \frac{M_{1}}{M_{x}} + \frac{M_{2}}{M_{y}} + \frac{M_{3}}{M_{z}} \leq \frac{1}{S_{0}}$$

The safety factor S_0 can be at the lower limit given if the acting forces can be determined with sufficient accuracy. If shocks and vibrations act on the system, the higher value should be selected. In dynamic applications, higher safeties are required. For further information, please contact our Application Engineering Department.

P _{fy}	= acting load (y direction) (N)
F _y	= static load rating (y direction) (N)
P _{fz}	= acting load (z direction) (N)
Fz	= static load rating (z direction) (N)
M ₁ , M ₂ , M ₃	= external moments (Nm)
M _x , M _y , M _z	= maximum allowed moments
	in the different load directions (Nm)

Fig. 9

Fig. 8

Calculation formulae

Moments $\rm M_{v}$ and $\rm M_{z}$ for linear units with long slider plate

The allowed loads for the moments $M_{_y}$ and $M_{_z}$ depend on the length of the slider plate. The allowed moments $M_{_{Zn}}$ and $M_{_{yn}}$ for each slider plate length are calculated by the following formulae:

$$S_{n} = S_{min} + n \cdot \Delta S$$
$$M_{zn} = (1 + \frac{S_{n} - S_{min}}{K}) \cdot M_{z min}$$
$$M_{yn} = (1 + \frac{S_{n} - S_{min}}{K}) \cdot M_{y min}$$

M_{zn}	=	allowed moment (Nm)
$M_{\rm zmin}$	=	minimum values (Nm)
M _{yn}	=	allowed moment (Nm)
M _{y min}	=	minimum values (Nm)
S _n	=	length of the slider plate (mm)
S_{\min}	=	minimum length of the slider plate (mm)
ΔS	=	factor of the change in slider length
Κ	=	constant

Fig. 10

Туре	M _{y min}	M _{z min}	S _{min}	ΔS	К
	[Nm]	[Nm]	[mm]		
A40L	22	61	240		74
A55L	82	239	310		110
A75L	287	852	440		155
C55L	213	39	310		130
C75L	674	116	440	10	155
E55L	165	239	310		110
E75L	575	852	440		155
ED75L (M _z)	1174	852	440		155
ED75L (M _y)	1174	852	440		270
					Tab. 3

Moments M_v and M_z for linear units with two slider plates

Μ.,

M_z

The allowed loads for the moments $\mathrm{M_{v}}$ and $\mathrm{M_{z}}$ are related to the value of the distance between the centers of the sliders. The allowed moments $\rm M_{_{\rm VN}}$ and $M_{_{\! 7\! 1\!}}$ for each distance between the centers of the sliders are calculated by the following formulae:

$$\begin{split} L_n &= L_{min} + n \cdot \Delta L \\ M_y &= allowed moment (Nm) \\ M_z &= allowed moment (Nm) \\ M_z &= allowed moment (Nm) \\ M_{y min} &= minimum values (Nm) \\ M_{z min} &= minimum values (Nm) \\ L_n &= distance between the centers of the sliders (mm) \\ L_{min} &= minimum value for the distance between the centers of the sliders (mm) \\ \Delta L &= factor of the change in slider length \end{split}$$

Fig. 11

Туре	M _{y min}	M _{z min}	L _{min}	ΔL
	[Nm]	[Nm]	[mm]	
A40D	70	193	235	5
A55D	225	652	300	5
A75D	771	2288	416	8
C55D	492	90	300	5
C75D	1809	312	416	8
E55D	450	652	300	5
E75D	1543	2288	416	8
ED75D	3619	2288	416	8
				Tab. 4

Service life

Calculation of the service life

The dynamic load rating C is a conventional quantity used for calculating the service life. This load corresponds to a nominal service life of 100 km. The corresponding values for each liner unit are listed in Table 45 shown

$$L_{km} = 100 \text{ km} \cdot (\frac{C}{P} \cdot \frac{f_c}{f_i} \cdot f_h)^3$$

The effective equivalent load P is the sum of the forces and moments acting simultaneously on a slider. If these different load components are known, P is obtained from the following equation:

below. The calculated service life, dynamic load rating and equivalent load are linked by the following formula:

$$\begin{array}{ll} \mathsf{L}_{\mathsf{km}} &= \text{theoretical service life (km)} \\ \mathsf{C} &= \text{dynamic load rating (N)} \\ \mathsf{P} &= \text{acting equivalent load (N)} \\ \mathsf{f}_{i} &= \text{service factor (see tab. 5)} \\ \mathsf{f}_{c} &= \text{contact factor (see tab. 6)} \\ \mathsf{f}_{h} &= \text{stroke factor (see fig. 13)} \end{array}$$

Fig. 12

$$P = P_{fy} + (\frac{P_{fz}}{F_z} + \frac{M_1}{M_x} + \frac{M_2}{M_y} + \frac{M_3}{M_z}) \cdot F_y$$

Fig. 13

The external constants are assumed to be constant over time. Short-term loads that do not exceed the maximum load ratings have no relevant effect on the service life and can therefore be neglected in the calculation.

Service factor f_i

f _i	
No shocks or vibrations, smooth and low-frequency changes in direction; clean operating conditions; low speeds (<1 m/s) $$	1 - 1.5
Slight vibrations; medium speeds; (1-2,5 m/s) and medium-high frequency of the changes in direction	1.5 - 2
Shocks and vibrations; high speeds (>2.5 m/s) and high-frequency changes in direction; high contamination	2 - 3.5
	Tab. 5

Contact factor f



Stroke factor f_h

The stroke factor f_h accounts for the higher stress on the raceways and rollers when short strokes are carried out at the same total run distance. The following diagram shows the corresponding values (for strokes above 1 m, f_h remains 1):



Determination of the motor torque

The torque C_m required at the drive head of the linear axis is calculated by the following formula:

$$C_m = C_v + (F \cdot \frac{D_p}{2})$$

- C_m = torque of the motor (Nm)
- C_v = starting torque (Nm)
- F = force acting on the toothed belt (N)
- D_n = pitch diameter of pulley (m)

Warnings 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 connection 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 objectson 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.p.A has deemed it useful to insert only one example.



Systems supplied by Rollon S.p.A. were not designed/envisaged 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 commissioning.
- Risk of the Z axis dropping during maintenance operations in the case

Basic components

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.

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.

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
Alluminum 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 protectione	Rust proof protection oil
Wood, polyethylene, cardboard	Transport packaging

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

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.

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 dismantled and appropriately protected and packaged.
- Handling (loading and unloading) must be carried out in compliance with information directly provided on the machine, on the packing 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 sector, besides having 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 presenting 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 receive adequate warnings.
- 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 bulk allowed. 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.
- Download 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 the project to organize and monitor all operative phases.
- The Installation Manager shall ensure that the lifting devices and equipment defined 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 "safety plan" shall take into account all surrounding work-related

activities and the perimeter spaces indicated in the project for the es tablished 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.).
- Installation site temperature 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 relative 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 that 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 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, also based on the final destination, can be done with different 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 visual field and when there are obstacles along the route to reach 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 specifications in the delivery note.
- Check that packaging is perfectly intact and, for shipments without packaging, check that each axis is intact.
- In case of damages or missing parts, contact the manufacturer to define the relevant procedures.

Data sheet // 🗸

General data:	Date: Inquiry N°:
Address:	Contact:
Company:	Zip Code:
Phone:	Fax:
E-Mail:	

Technical data:

				X axis	Y axis	Z axis
Useful stroke (Including safety overtravel)		S	[mm]			
Load to be translated		Р	[kg]			
Location of Load in the	X-Direction	LxP	[mm]			
	Y-Direction	LyP	[mm]			
	Z-Direction	LzP	[mm]			
Additional force	Direction (+/-)	Fx (Fy, Fz)	[N]			
Position of force	X-Direction	Lx Fx (Fy, Fz)	[mm]			
	Y-Direction	Ly Fx (Fy, Fz)	[mm]			
	Z-Direction	Lz Fx (Fy, Fz)	[mm]			
Assembly position (Horizontal/Vertical/Transversal						
Max. speed		V	[m/s]			
Max. acceleration		а	[m/s ²]			
Positioning repeatability		∆s	[mm]			
Required life		L	yrs			



Attention: Please enclose drawing, sketches and sheet of the duty cycle



Distributors for Australia & New Zealand MOTION TECHNOLOGIES PTY LIMITED



sales@motiontech.com.au www.motiontech.com.au

© 13/07/2023

Consult the other ranges of products



All addresses of our global sales partners can also be found at www.rollon.com

The content of this document and its use are subject to the general terms of sale of ROLLON available on the web site www.rollon.com Changes and errors expected. The text and images may be used only with our permission.