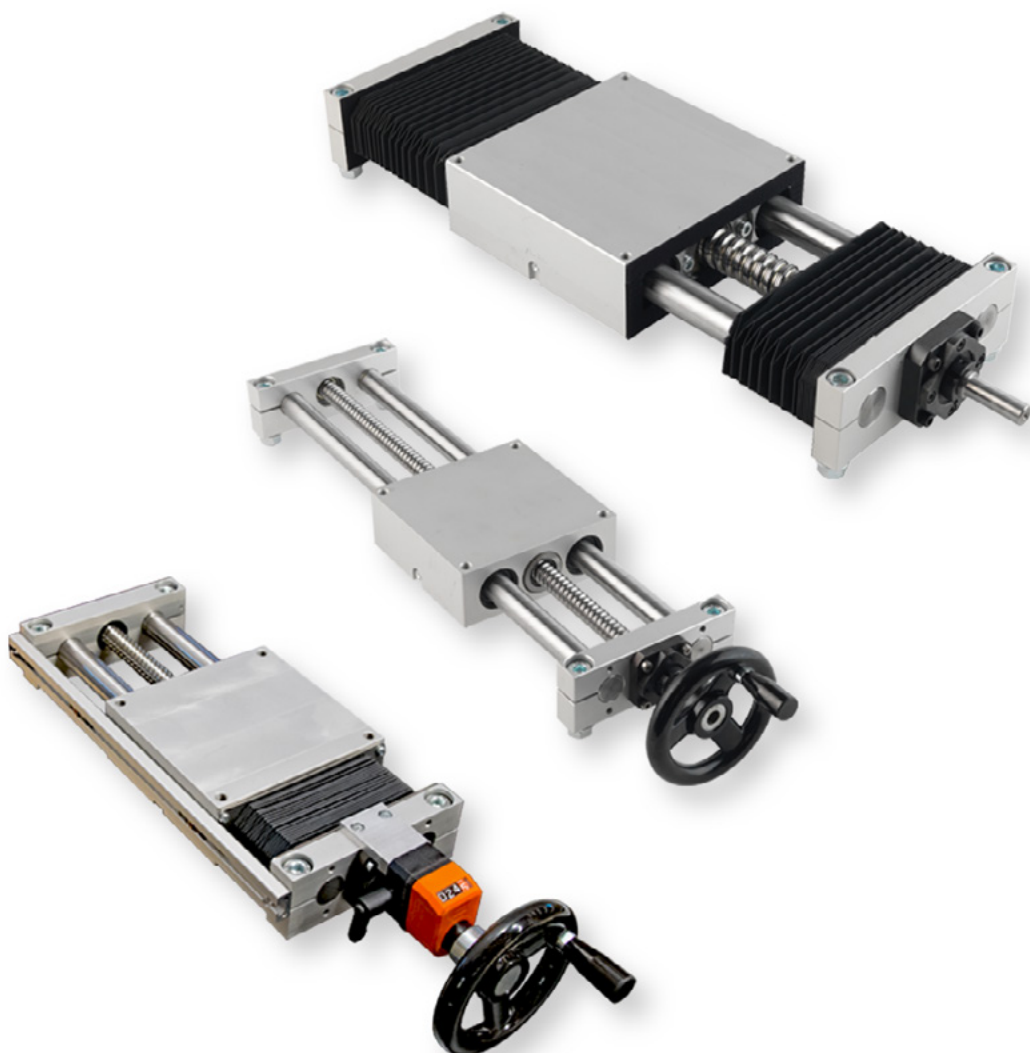


# **TECHNICAL INFORMATION**

## **LINEAR UNIT QME**

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## Product overview

By using Linear Unit QME from Rollco you save both time and money. The units are designed to fulfil the need of an easy to mount unit for medium precision requirements. The units are ready to mount linear tables guided with linear ball bearings on hardened shafts and driven by ball- or lead-screw. There is a wide variety of executions available for quick delivery from our workshop.

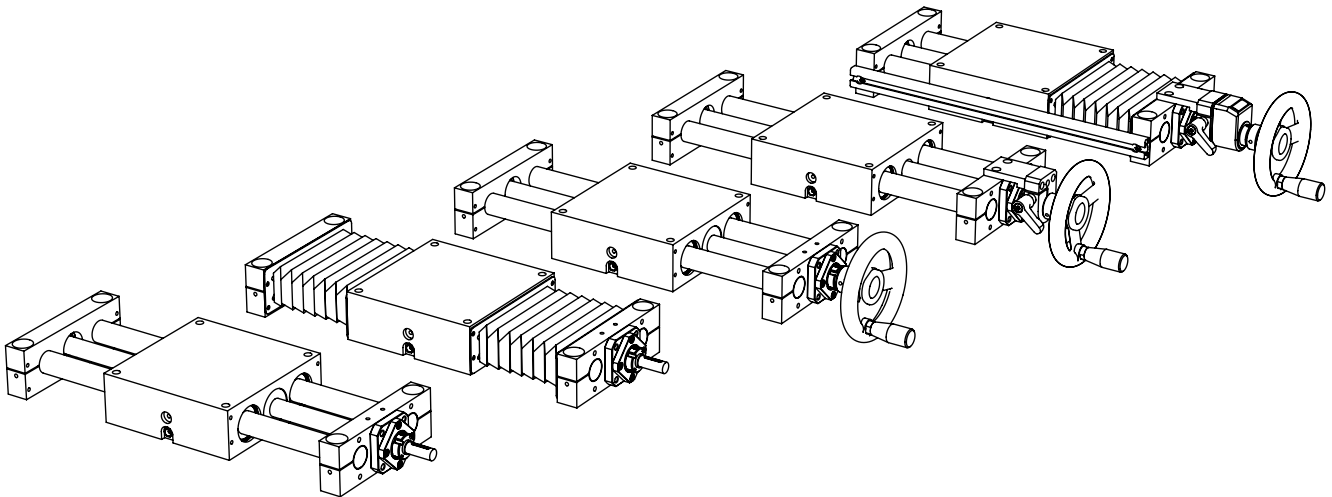
Selectable standard options are:

- Bellows
- Hand wheel
- Screw locking
- Mechanical position counter
- Left+Right drive units
- Magnetic end position switches

Ask us if you need higher level of corrosion resistance, low/high temperature versions, other screw-leads or -types, customized machining of the drive- and mounting-interfaces and so on.

## Characteristics

- Linear ball bearings used for lowest friction and minimal and persistent play.
- With low backlash ball screw for motor-drive or trapezoidal screw with bronze nut for manual operation.
- Customized mounting flange for motor and/or customized end-machining of the screw shaft available.
- Corrosion resistant version as option.



# Weight

## Units without bellows

Size	Zero stroke (kg)	Moving part (kg)	+/100 mm stroke (kg)
QME 12	1,02	0,55	0,22
QME 20	3,52	1,76	0,65
QME 30	12,3	5,77	1,73

Table 1

## Units L+R without bellows

Size	Zero stroke (kg)	Moving part (kg)	+/100 mm stroke (kg)
QME 12	1,72	0,55	0,43
QME 20	5,92	1,76	1,29
QME 30	20,2	5,77	3,46

Table 2

## Units with bellows

Size	Zero stroke (kg)	Moving part (kg)	+/100 mm stroke (kg)
QME 12	1,04	0,57	0,32
QME 20	3,56	1,80	0,71
QME 30	12,4	5,91	1,86

Table 3

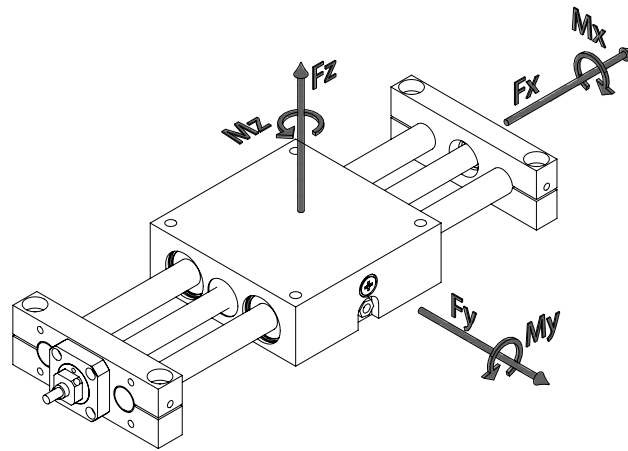
## Units L+R with bellows

Size	Zero stroke (kg)	Moving part (kg)	+/100 mm stroke (kg)
QME 12	1,76	0,57	0,65
QME 20	6,00	1,80	1,42
QME 30	20,5	5,91	3,71

Table 4

Masses may deviate +/- 5% depending on screw type and other options.

# Load and speed



## Load capacity of the linear guiding

Size	Fz		Fy		Mx		My		Mz	
	static (N)	dynamic (N)	static (N)	dynamic (N)	static (Nm)	dynamic (Nm)	static (Nm)	dynamic (Nm)	static (Nm)	dynamic (Nm)
QME12	3160	2080	3160	2080	71	47	74	47	74	49
QME20	5600	3520	5600	3520	202	127	216	127	216	136
QME30	11200	6400	11200	6400	728	416	678	416	678	387

Table 5

All capacity values are theoretical maximal values without any safety factor. Permissible load depends on desired life time and/or permissible deflection of the shafts. For motor driven units in automation applications, a dynamic safety factor of at least 5 is recommended.

## Permissible load Fz & Fy (N)

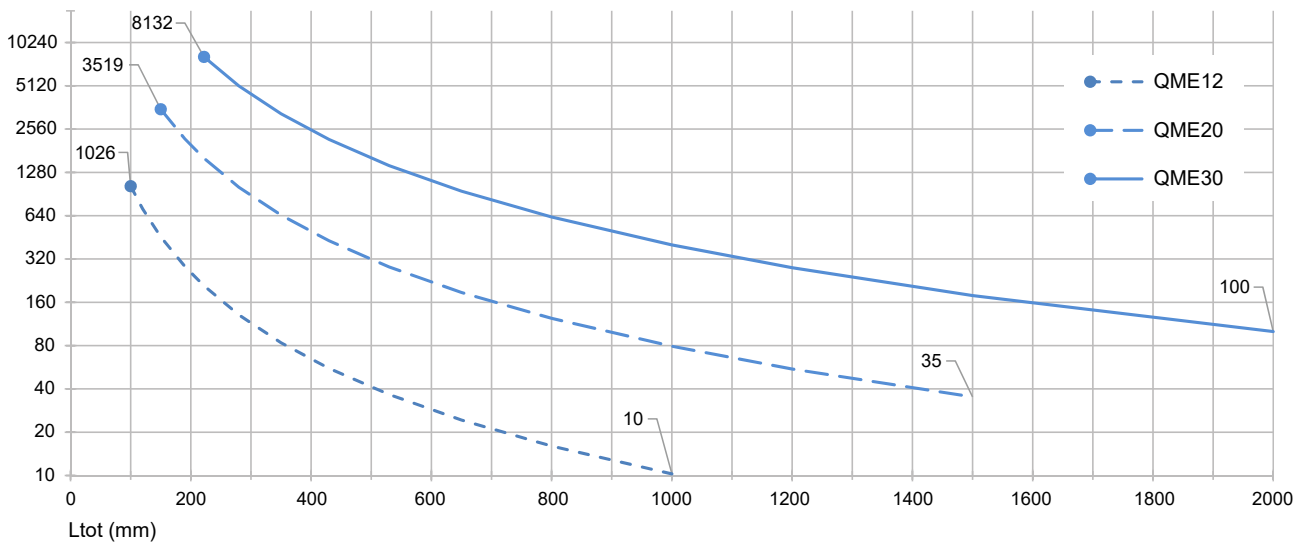


Diagram 1

Permissible load based on a shaft deflection of 1/1000 of Ltot. For long units, actual load may need to be reduced to achieve a deflection acceptable for the application.

## Loads in the feed-direction (Fx)

Size	Screw type	Dynamic capacity Ca (N)	Permissible Fx (N)
QME12	SR082,5	2030	1400
QME12	TR1203	n/a	1400
QME20	SR1605	7100	2500
QME20	TR1604	n/a	2500
QME30	SR/SL3205	9500	3200
QME30	SR3210	9500	3200
QME30	SR3220	9500	3200
QME30	TR3006	n/a	3200

Table 6

Permissible loads above will be limited for long units according to diagram 2. The dynamic capacity (Ca) is used for life time calculations. Ca is not defined for TR-screws and they can not be life time calculated.

## Permissible load Fx (N)

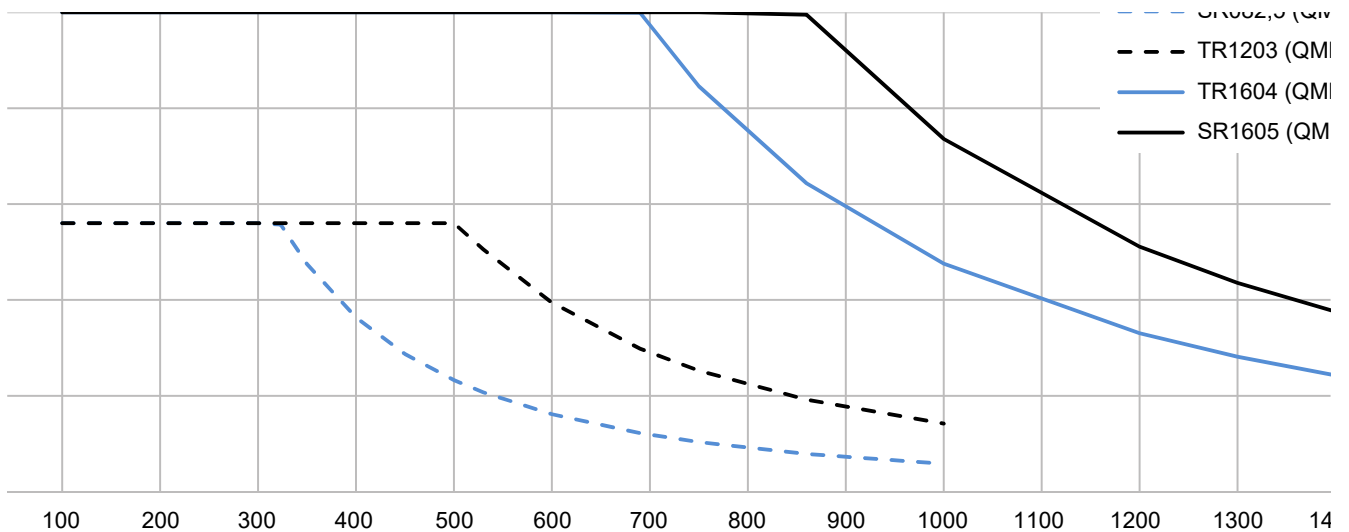


Diagram 2

Permissible load is based on the buckling limit of the screw.

For load in extension, permissible load will not decrease with length (L<sub>tot</sub>). In QME30, oversized screws are used and no buckling will occur.

## Permissible linear speed (mm/s)

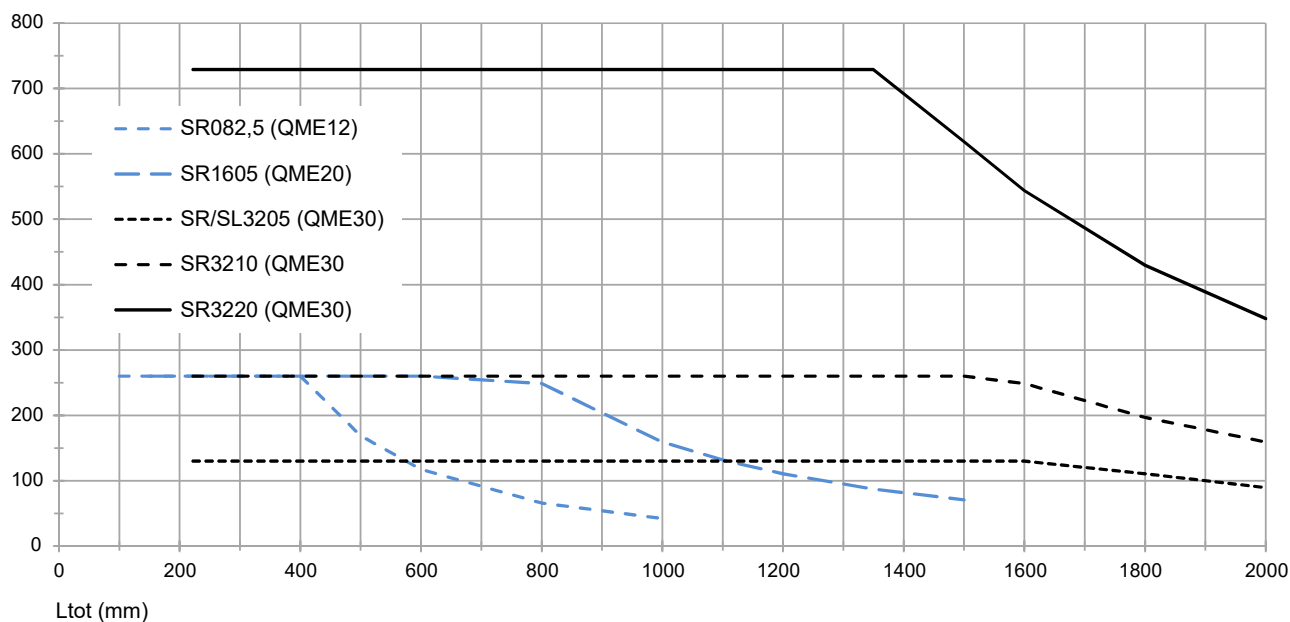


Diagram 3

## Life time calculations

The linear bearings and the ball screw drive transmission can be life time calculated according to classic  $L_{10}$  theory.

For the linear bearings, the nominal life is > 6000 km if the recommended dynamic safety factor of at least 5 is used. For more demanding applications and complex load cases, please consult Rollco.

In vertical applications or any other application with high and continuous  $F_x$  loads, the drive screw need to be calculated.

\*  $C_a$  value from table 6

\*  $P_x$  is the equivalent load in N on the screw

\*  $p$  is the screw lead in mm

$L_{10}$  gives the nominal life of the screw drive in millions of revolutions.

$$L_{10} = \left( \frac{C_a}{P_x} \right)^3$$

$L_{10d}$  gives is the nominal life in km.

$$L_{10d} = \left( \frac{C_a}{P_x} \right)^3 \cdot p$$



## Service and maintenance

The unit is delivered ready to use lubricated with grease of NLGI 1,5 class.

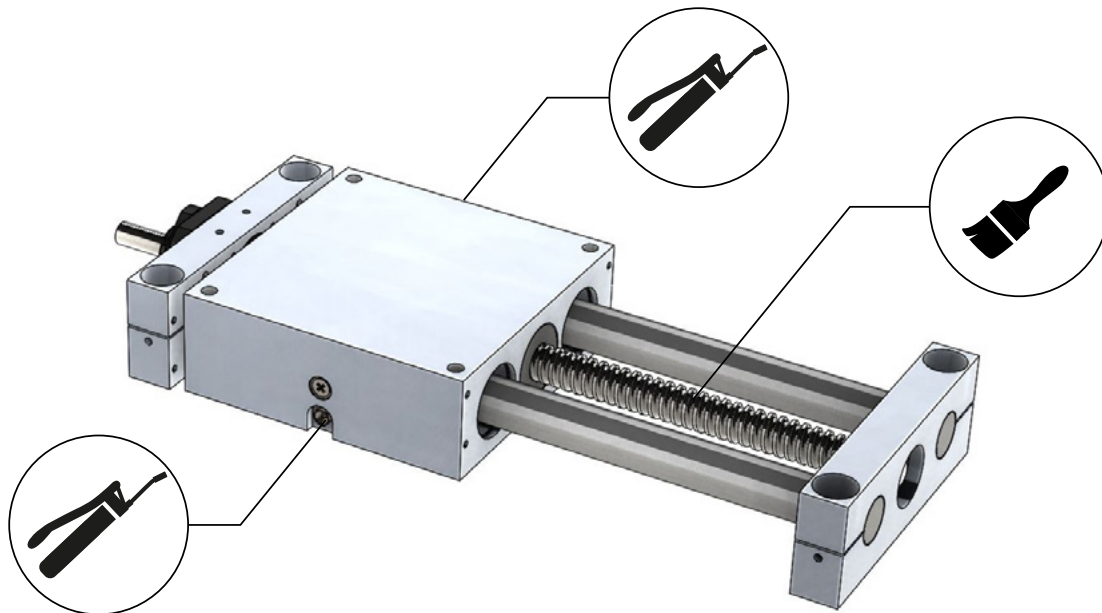
The linear bearings only need to be re-lubricated once a year with a similar grease, most mineral oil based grease using lithium thickener and having an NLGI 1,5 to 2 consistence will work fine.

The drive screw may require more intense lubrication if used at high load and intensity. To reach the calculated lifetime for a ball screw, re-lubrication is required after 50 million revolutions. (250 km travel for lead of 5 mm).

To reach a long life for a Tr-screw, very frequent lubrication is required. In general, Tr-screw is only recommended for hand-drive or very slow and low frequent use. In such use, re-lubrication once a year is sufficient.

The drive screw bearings are sealed and are not possible to re-lubricate. They have an expected grease life of 5 years.

For demanding operational conditions, please consult Rollco Technical support.



### Instruction

- Clean the shafts and the drive screw from dirt and old grease with a clean cloth or paper towel.
- Pump in a single stroke of grease thru the grease nipples with a pointy nozzle, on both sides.
- Apply a thin layer of grease on the full length of the drive screw using a brush.
- Run the unit slowly a couple of strokes to spread out the grease before taking it into full operation.

# Linear Unit QME

QME20 - 2x360 - 1194 - BWILM - SR/SL1605 - Z

**Product type**

QME12 = ø12 shaft + linear ball bearing LME12UU  
 QME20 = ø20 shaft + linear ball bearing SBE20UU  
 QME30 = ø30 shaft + linear ball bearing SBE30UU

**Stroke**

Stroke between mechanical stops (mm)  
 Prefix "2x" means 2 moving parts with left+right -hand drive screw

**Ltot**

Length distance between mounting holes (mm)

**Options**

B = with bellows  
 W = with hand wheel  
 WL = hand wheel and locking device on drive screw  
 WIL = hand wheel, locking device and position indicator  
 M = with magnet and rail for end/position switches (switches ordered separately)

**Screw type(1)**

SR082,5 Ball screw lead 2,5 mm for QME12  
 TR1203 Tr screw lead 3 mm for QME12  
 TL1203 Left hand Tr screw lead 3 mm for QME12  
 SR1605 Ball screw lead 5 mm for QME20  
 TR1604 Tr screw lead 4 mm for QME20  
 TL1604 Left hand Tr screw lead 4 mm for QME20  
 SR3205 Ball screw lead 5 mm for QME30  
 SL3205 Left hand ball screw lead 5 mm for QME30  
 SR3210 Ball screw lead 10 mm for QME30  
 SR3220 Ball screw lead 20 mm for QME30  
 TR3006 Tr screw lead 6 mm for QME30

**Customisation**

Z = according to custom drawing/specification

<sup>(1)</sup> In case of left+right unit, screws of same lead and type must be selected, for example TR1203 and TL1203.



**ALWAYS THE RIGHT  
SOLUTION AT THE RIGHT TIME.**

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