

# Linear Motion Systems with Belt Drive and Slide Guide

## Overview

### Movopart M



#### Features

- Can be installed in any orientation
- Patented self-adjusting prism slide guides
- Resistant to shock loads and vibrations
- Low cost

Parameter		M50
Profile size (width × height)	[mm]	50 × 50
Stroke length (Smax), maximum	[mm]	5000
Linear speed, maximum	[m/s]	5,0
Dynamic carriage load (Fz), maximum	[N]	400
Remarks		no cover band
Page		96

### Movopart M



#### Features

- Can be installed in any orientation
- Self-adjusting stainless steel cover band
- Patented self-adjusting prism slide guides
- Wash down and enhanced wash down protected versions available

Parameter		M55	M75	M100
Profile size (width × height)	[mm]	58 × 55	86 × 75	108 × 100
Stroke length (Smax), maximum	[mm]	7000	12000	11900
Linear speed, maximum	[m/s]	5,0	5,0	5,0
Dynamic carriage load (Fz), maximum	[N]	400	1485	3005
Remarks		-	-	-
Page		98	100	102

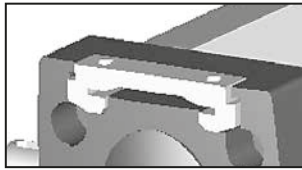
# Linear Motion Systems with Belt Drive and Slide Guide

## Overview

### M-Series Technical Presentation

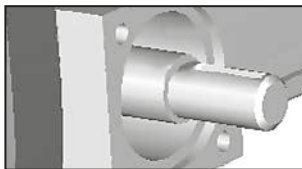
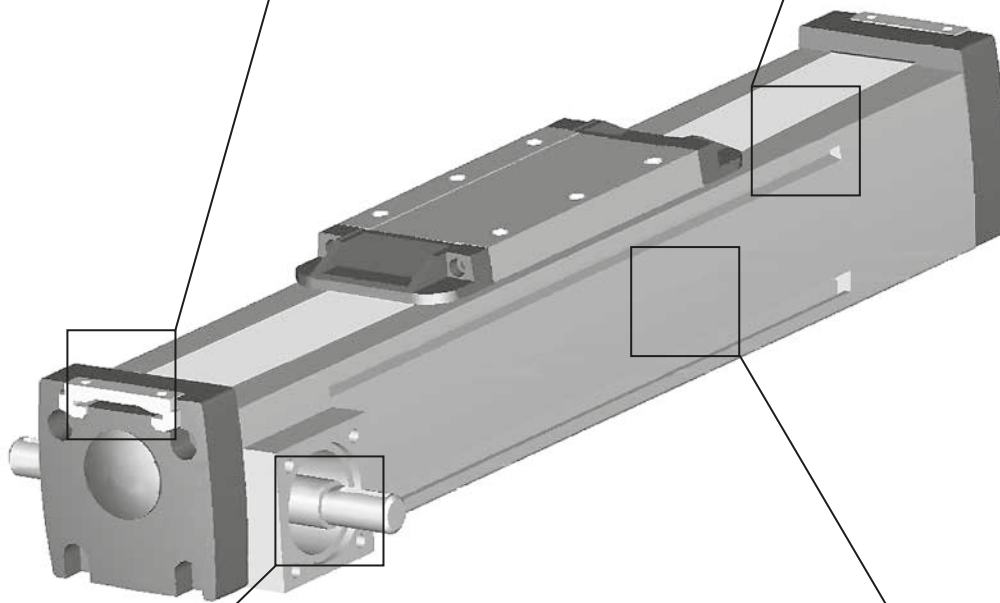
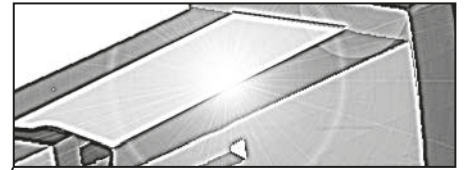
**Cover band**

The self-adjusting magnetically sealed stainless steel cover band protects the unit from the penetration of dirt, dust and liquids.



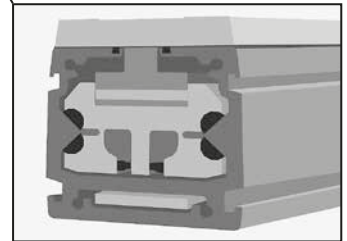
**Environmental protection**

The standard unit can operate in harsh environments but is also available in wash down or enhanced wash down protected versions for the toughest environments.



**Belt drive**

The belt runs on the inside of the profile and can easily be re-tensioned without removing the load from the carriage.



**Prism slide guides**

The patented self-aligning prism slide guides are accurate, durable and are resistant to vibrations and shock loads.

**Note!** the unit is pictured without a RediMount™ flange



# M50

## Belt Drive, Slide Guide

- » Ordering key - see page 206
- » Accessories - see page 131
- » Additional data - see page 180

### General Specifications

Parameter	M50
Profile size (w × h) [mm]	50 × 50
Type of belt	GT 5MR-19
Carriage sealing system	none
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubricated for life
Included accessories	none

### Performance Specifications

for Units with Single Standard Carriage (A00)

Parameter		M50
Stroke length (Smax), maximum	[mm]	5000
Total length (L tot), maximum	[mm]	5296
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,2
Input speed, maximum	[rpm]	2300
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum	[N]	
< 2,5 m/s		400
> 2,5 m/s		200
Dynamic load (Fy), maximum	[N]	400
Dynamic load (Fz), maximum	[N]	400
Dynamic load torque (Mx), maximum	[Nm]	5
Dynamic load torque (My), maximum	[Nm]	21
Dynamic load torque (Mz), maximum	[Nm]	21
Drive shaft force (Frd), maximum <sup>1</sup>	[N]	350
Input/drive shaft torque (Mta), maximum	[Nm]	10
Pulley diameter	[mm]	41,38
Stroke per shaft revolution	[mm]	130
Weight	[kg]	
of unit with zero stroke		0,71
of every 100 mm of stroke		0,96
of carriage		0,33

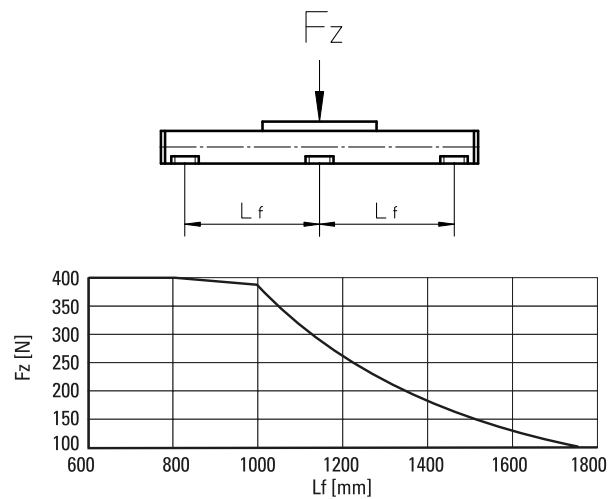
<sup>1</sup> Only relevant for units without RediMount flange.

### Carriage Idle Torque (M idle) [Nm]

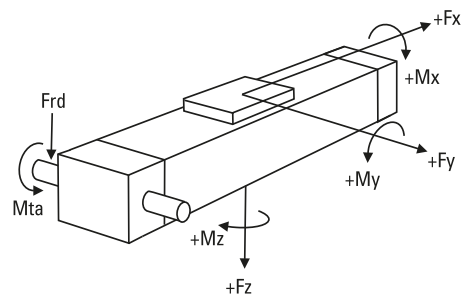
Input speed [rpm]	Idle torque [Nm]
150	2,1

M idle = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile




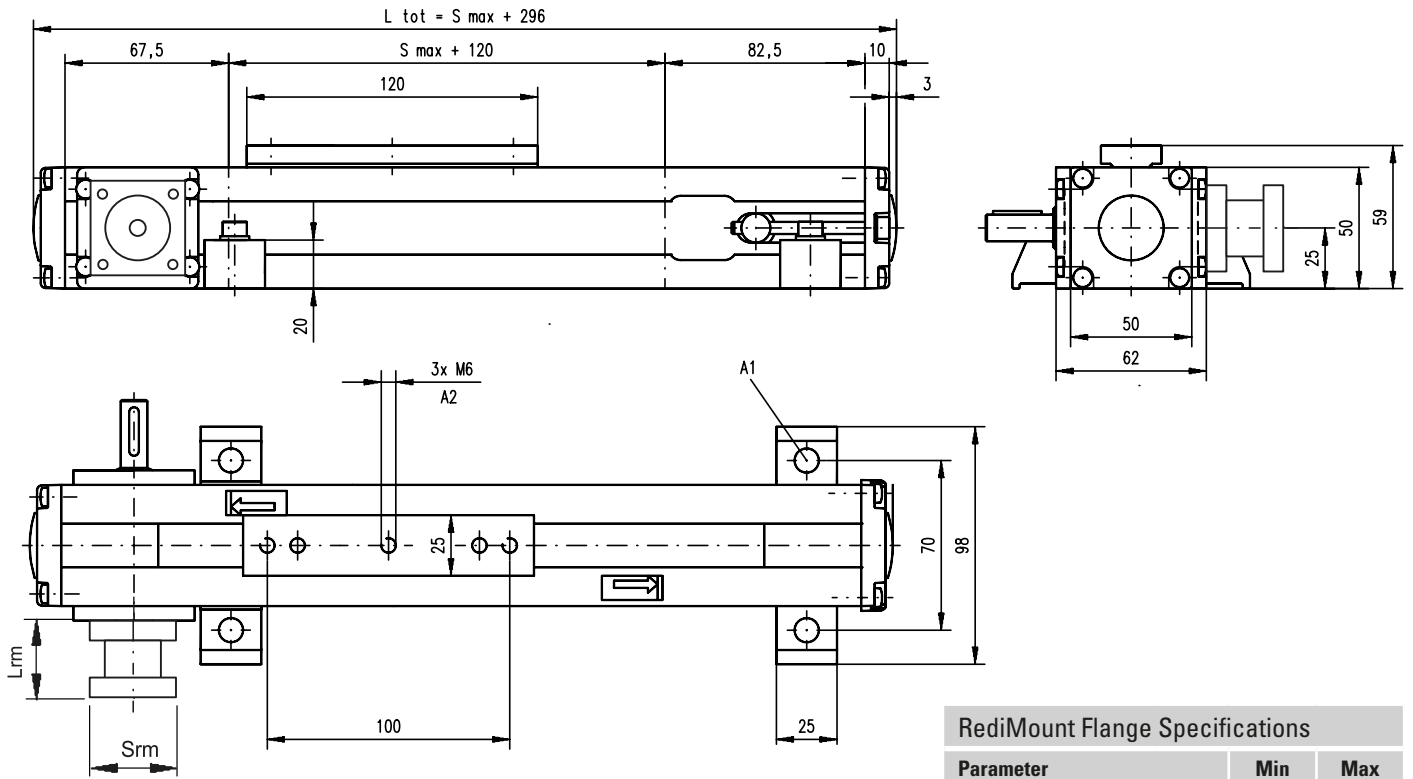
### Definition of Forces



# M50

## Belt Drive, Slide Guide

<b>Dimensions</b>	<b>Projection</b>	<b>Online Sizing &amp; Selection!</b>
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>



A1: ø6,5 for M6 screw  
 A2: depth 9, Heli coil

Parameter		Min	Max
Flange length (Lrm)	[mm]	57	92
Flange square (Srm)	[mm]	60	139
Flange weight *	[kg]	1,84	

\* Max. weight including coupling and fastening screws

# M55

## Belt Drive, Slide Guide

- » Ordering key - see page 206
- » Accessories - see page 131
- » Additional data - see page 180

### General Specifications

Parameter	M55
Profile size (w × h) [mm]	58 × 50
Type of belt	22-STD SM5-HP
Carriage sealing system	self-adjusting steel cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubricated for life
Included accessories	none

### Performance Specifications

for Units with Single Standard Carriage (A)<sup>1</sup>

Parameter		M55
Stroke length (Smax), maximum	[mm]	7000
Total length (L tot), maximum	[mm]	7313
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,2
Input speed, maximum	[rpm]	2850
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum	[N]	
< 2,5 m/s		400
> 2,5 m/s		200
Dynamic load (Fy), maximum	[N]	400
Dynamic load (Fz), maximum	[N]	400
Dynamic load torque (Mx), maximum	[Nm]	9
Dynamic load torque (My), maximum	[Nm]	21
Dynamic load torque (Mz), maximum	[Nm]	21
Drive shaft force (Frd), maximum <sup>2</sup>	[N]	200
Input/drive shaft torque (Mta), maximum	[Nm]	7
Pulley diameter	[mm]	33,42
Stroke per shaft revolution	[mm]	105
Weight	[kg]	
of unit with zero stroke		4,10
of every 100 mm of stroke		0,41
of carriage		1,10

<sup>1</sup> See next page for deviating values of units with other carriage types.

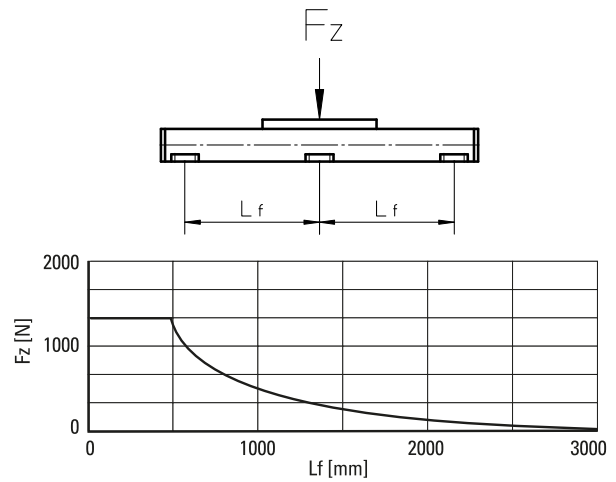
<sup>2</sup> Only relevant for units without RediMount flange.

### Carriage Idle Torque (M idle) [Nm]

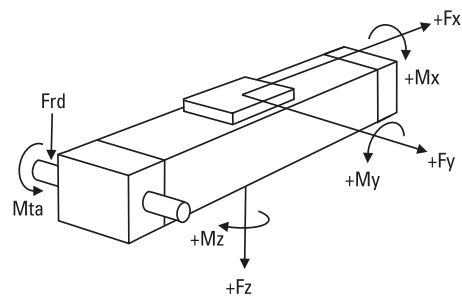
Input speed [rpm]	Single Carriage	Double Carriages
150	2,1	3,8

M idle = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile




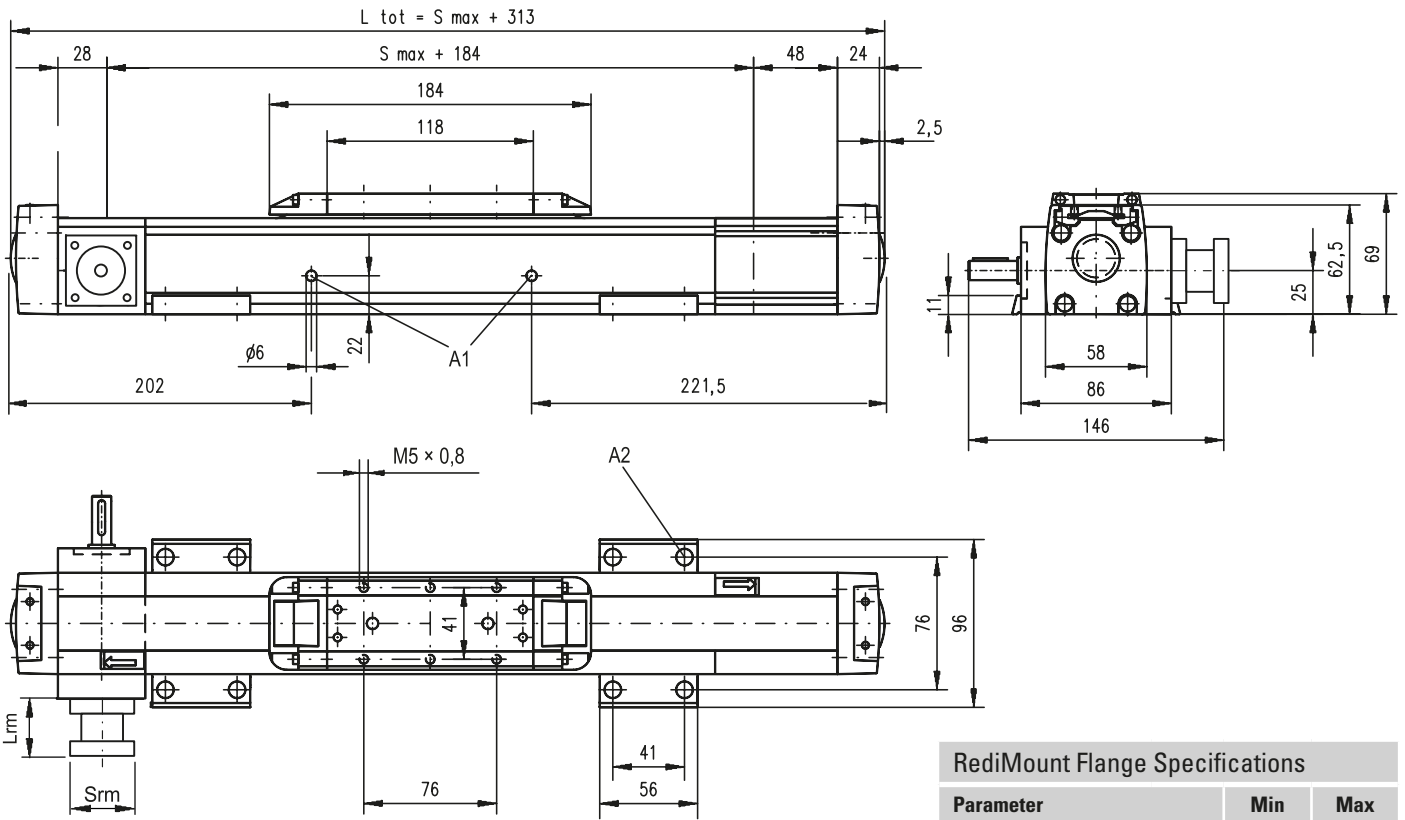
### Definition of Forces



# M55

## Belt Drive, Slide Guide

<b>Dimensions</b>	<b>Projection</b>	<b>Online Sizing &amp; Selection!</b>
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>



A1: slide guide tensioning holes  
 A2:  $\varnothing 9,5/\varnothing 5,5$  for socket head cap screw M5

Parameter	Min	Max
Flange length (Lrm) [mm]	57	92
Flange square (Srm) [mm]	60	139
Flange weight * [kg]	1,84	

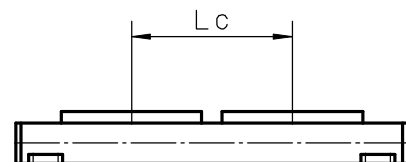
\* Max. weight including coupling and fastening screws

### Performance Specifications

for Units with Double Standard Carriage (C)

Parameter	M55
Stroke length (Smax), maximum [mm]	6800
Total length (L tot), maximum [mm]	7313
Minimum distance between carriages (Lc) [mm]	200
Dynamic load (Fy), maximum [N]	600
Dynamic load (Fz), maximum [N]	600
Dynamic load torque (My), maximum [Nm]	$Lc^1 \times 0,3$
Dynamic load torque (Mz), maximum [Nm]	$Lc^1 \times 0,3$
Force required to move second carriage [N]	35
Total length (L tot) [mm]	$Smax + Lc + 313$
Weight of unit with zero stroke of carriages [kg]	6,00 2,20

<sup>1</sup> Value in mm



# M75

## Belt Drive, Slide Guide

- » Ordering key - see page 206
- » Accessories - see page 131
- » Additional data - see page 180

### General Specifications

Parameter	M75
Profile size (w × h) [mm]	86 × 75
Type of belt	STD5-40
Carriage sealing system	self-adjusting steel cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubricated for life
Included accessories	none

### Performance Specifications

for Units with Single Standard Carriage (A)<sup>1</sup>

Parameter		M75
Stroke length (Smax), maximum	[mm]	12000
Total length (L tot), maximum	[mm]	12368
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,2
Input speed, maximum	[rpm]	2300
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum	[N]	
< 2,5 m/s		900
> 2,5 m/s		450
Dynamic load (Fy), maximum	[N]	1485
Dynamic load (Fz), maximum	[N]	1485
Dynamic load torque (Mx), maximum	[Nm]	49
Dynamic load torque (My), maximum	[Nm]	85
Dynamic load torque (Mz), maximum	[Nm]	85
Drive shaft force (Frd), maximum <sup>2</sup>	[N]	600
Input/drive shaft torque (Mta), maximum	[Nm]	30
Pulley diameter	[mm]	41,38
Stroke per shaft revolution	[mm]	130
Weight	[kg]	
of unit with zero stroke		6,30
of every 100 mm of stroke		0,67
of carriage		1,50

<sup>1</sup> See next page for deviating values of units with other carriage types.

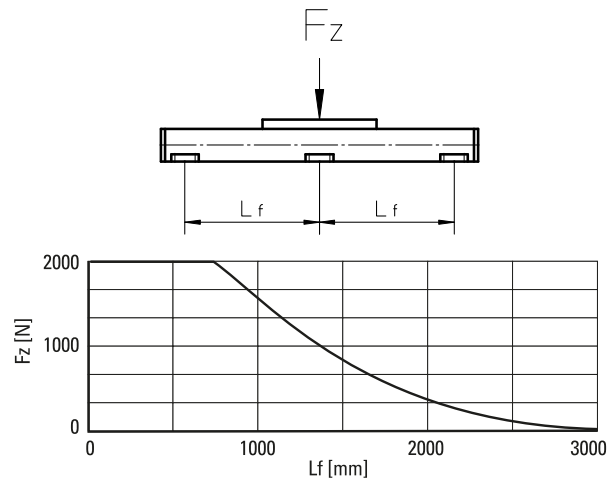
<sup>2</sup> Only relevant for units without RediMount flange.

### Carriage Idle Torque (M idle) [Nm]

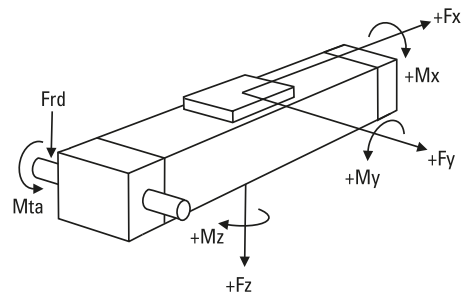
Input speed [rpm]	Single Carriage	Double Carriages
150	2,2	4,0

M idle = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile




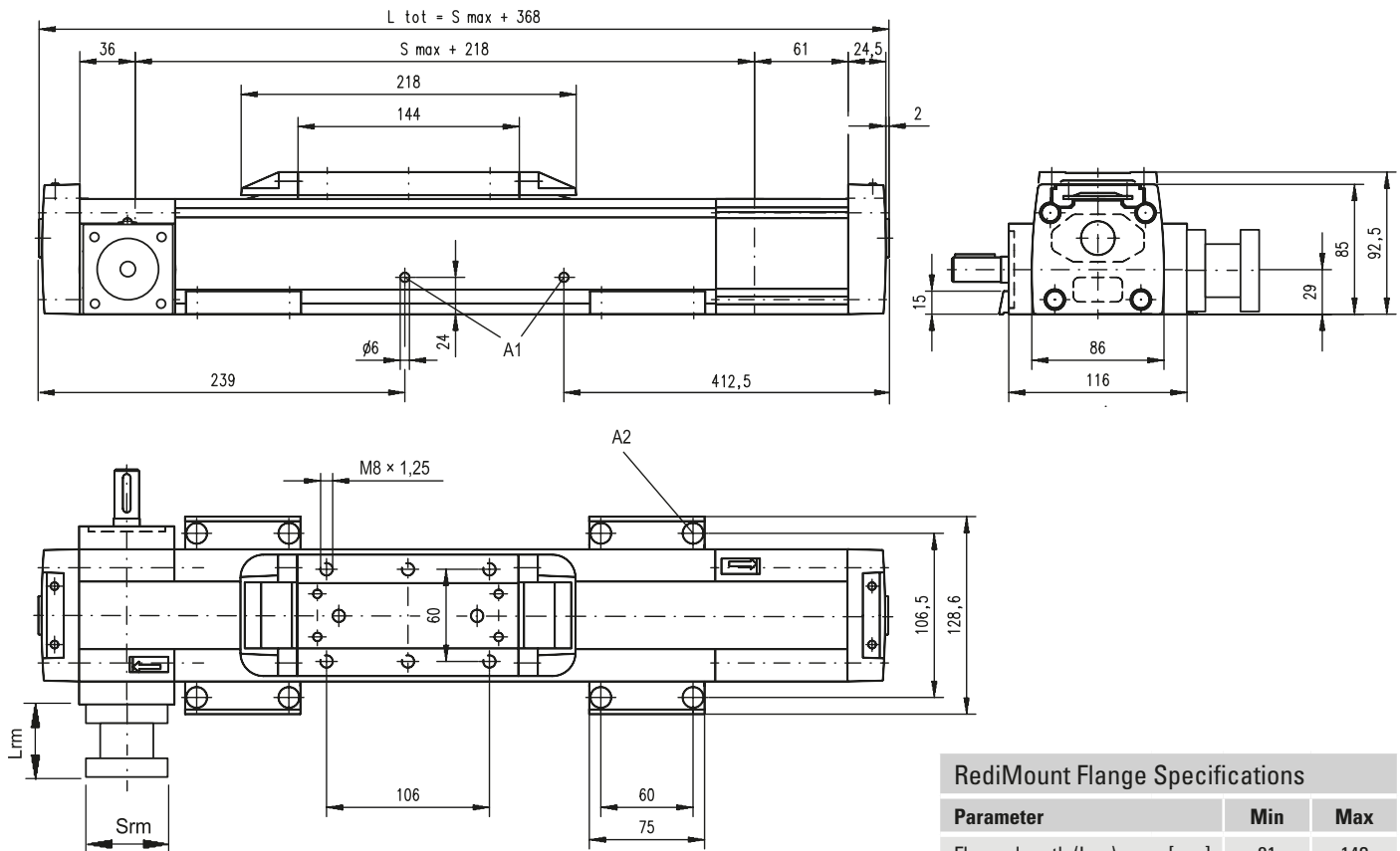
### Definition of Forces



# M75

## Belt Drive, Slide Guide

<b>Dimensions</b>	<b>Projection</b>	<b>Online Sizing &amp; Selection!</b>
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>



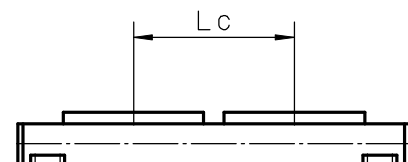
A1: slide guide tensioning holes  
 A2:  $\varnothing 13,5/\varnothing 8,5$  for socket head cap screw M8

Parameter	Min	Max
Flange length (Lrm)	81	143
Flange square (Srm)	90	200
Flange weight *	6,00	

\* Max. weight including coupling and fastening screws

### Performance Specifications for Units with Double Standard Carriage (C)

Parameter	M75
Stroke length (Smax), maximum [mm]	11750
Total length (L tot), maximum [mm]	12368
Minimum distance between carriages (Lc) [mm]	250
Dynamic load (Fy), maximum [N]	2227
Dynamic load (Fz), maximum [N]	2227
Dynamic load torque (My), maximum [Nm]	$Lc^1 \times 1,114$
Dynamic load torque (Mz), maximum [Nm]	$Lc^1 \times 1,114$
Force required to move second carriage [N]	40
Total length (L tot) [mm]	$Smax + Lc + 368$
Weight of unit with zero stroke of carriages [kg]	9,50 3,00



<sup>1</sup> Value in mm

# M100

## Belt Drive, Slide Guide

- » Ordering key - see page 206
- » Accessories - see page 131
- » Additional data - see page 180

### General Specifications

Parameter	M100
Profile size (w × h) [mm]	108 × 100
Type of belt	STD8-50
Carriage sealing system	self-adjusting steel cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubricated for life
Included accessories	none

### Performance Specifications

for Units with Single Standard Carriage (A)<sup>1</sup>

Parameter		M100
Stroke length (S <sub>max</sub> ), maximum	[mm]	11900
Total length (L <sub>tot</sub> ), maximum	[mm]	12331
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,2
Input speed, maximum	[rpm]	1700
Operation temperature limits	[°C]	-20 – 70
Dynamic load (F <sub>x</sub> ), maximum	[N]	
< 2,5 m/s		1250
> 2,5 m/s		625
Dynamic load (F <sub>y</sub> ), maximum	[N]	3005
Dynamic load (F <sub>z</sub> ), maximum	[N]	3005
Dynamic load torque (M <sub>x</sub> ), maximum	[Nm]	117
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	279
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	279
Drive shaft force (F <sub>rd</sub> ), maximum <sup>2</sup>	[N]	1000
Input/drive shaft torque (M <sub>ta</sub> ), maximum	[Nm]	45
Pulley diameter	[mm]	56,02
Stroke per shaft revolution	[mm]	176
Weight	[kg]	
of unit with zero stroke		11,10
of every 100 mm of stroke		1,16
of carriage		2,40

<sup>1</sup> See next page for deviating values of units with other carriage types.

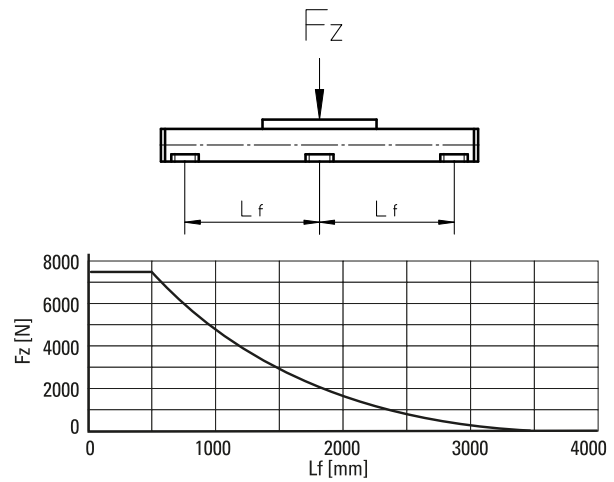
<sup>2</sup> Only relevant for units without RediMount flange.

### Carriage Idle Torque (M<sub>idle</sub>) [Nm]

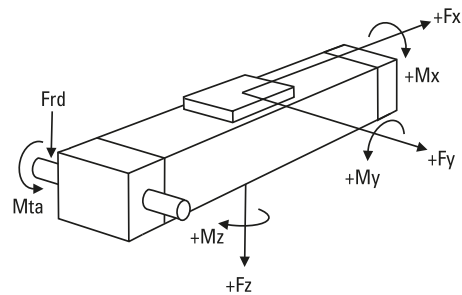
Input speed [rpm]	Single Carriage	Double Carriages
150	3,8	5,8

M<sub>idle</sub> = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile




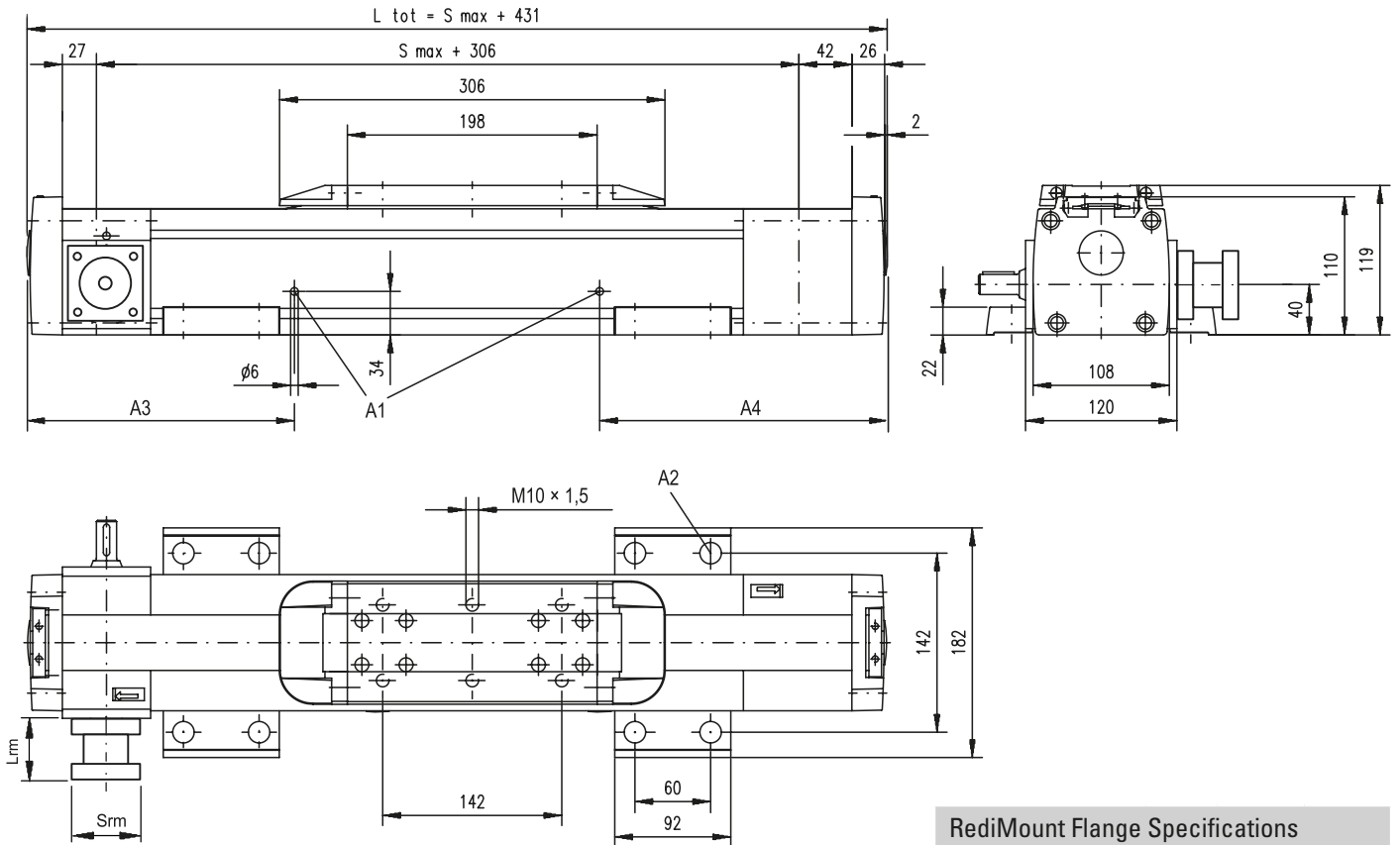
### Definition of Forces



# M100

## Belt Drive, Slide Guide

<b>Dimensions</b>	<b>Projection</b>	<b>Online Sizing &amp; Selection!</b>
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>



- A1: slide guide tensioning holes
- A2:  $\varnothing 17/\varnothing 10,5$  for socket head cap screw M10
- A3: 170 (L tot  $\leq$  1056 mm), 270 (L tot  $>$  1056 mm)
- A4: 186 (L tot  $\leq$  1056 mm), 436 (L tot  $>$  1056 mm)

Parameter	Min	Max
Flange length (Lrm)	81	143
Flange square (Srm)	90	200
Flange weight *	6,00	

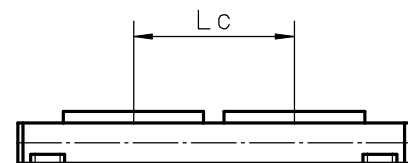
\* Max. weight including coupling and fastening screws

### Performance Specifications

for Units with Double Standard Carriage (C)

Parameter		M100
Stroke length (Smax), maximum	[mm]	11550
Total length (L tot), maximum	[mm]	12331
Minimum distance between carriages (Lc)	[mm]	350
Dynamic load (Fy), maximum	[N]	4508
Dynamic load (Fz), maximum	[N]	4508
Dynamic load torque (My), maximum	[Nm]	$Lc^1 \times 2,254$
Dynamic load torque (Mz), maximum	[Nm]	$Lc^1 \times 2,254$
Force required to move second carriage	[N]	45
Total length (L tot)	[mm]	$Smax + Lc + 431$
Weight of unit with zero stroke of carriages	[kg]	17,40 4,80

<sup>1</sup> Value in mm





# Accessories

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# Accessories

## Mounting Kits

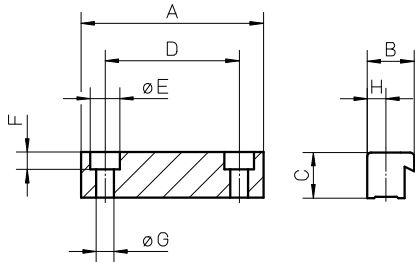
### Mounting Clamps Type N1 and N2 (single clamp)<sup>1</sup>

Unit type	N1	N2	A	B	C	D	øE	F	øG	H	Screws	Ms [Nm]
WH40	890 885 0001	–	54	16	9,5	40	10	5,7	5,5	7	ISO4762-8.8	5,4
WH50	890 885 0001	–	54	16	9,5	40	10	5,7	5,5	7	ISO4762-8.8	5,4
WH80 / WB60	890 190 02	–	68	17,5	17	50	11	6,5	6,6	7	ISO4762-8.8	9
WH120	890 192 13	–	80	25	18	50	15	8,5	9	10	ISO4762-8.8	20
WM40 / WB40	890 885 001	–	54	16	9,5	40	10	5,7	5,5	7	ISO4762-8.8	5,4
WM60 / WV60 / WZ60	890 190 02	–	68	17,5	17	50	11	6,5	6,6	7	ISO4762-8.8	9
WM80 / WV80 / WZ80	890 190 02	–	68	17,5	17	50	11	6,5	6,6	7	ISO4762-8.8	9
WM60Z / WM80Z	890 190 02	–	68	17,5	17	50	11	6,5	6,6	7	ISO4762-8.8	9
WM120 / WV120	890 192 13	–	80	25	18	50	15	8,5	9	10	ISO4762-8.8	20
MLS60	890 190 02	890 192 26	68/120	17,5	17	50	11	6,5	6,6	7	ISO4762-8.8	9
MLS80	890 192 13	890 192 31	80/200	25	18	50	15	8,5	9	10	ISO4762-8.8	20

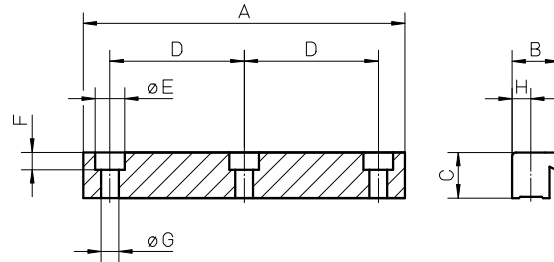
<sup>1</sup> Screws included in the shipment of above clamps

Ms = tightening torque of screws

N1



N2



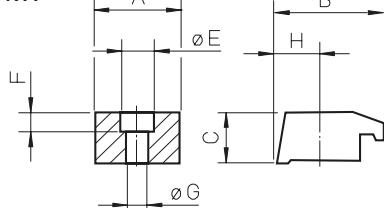
### Mounting Clamps Type M1 and M2 (single clamp)<sup>1</sup>

Unit type	M1	M2	A	B	C	D	øE	F	øG	H	Screws	Ms [Nm]
M50 <sup>1</sup>	D312 248	–	25	30	20	–	–	–	6,5	14	ISO4762-8.8	9,4
M55 <sup>1</sup>	D313 403	D313 402	25/56	25,5	10,7	41	9,5	5,3	5,5	10,2	ISO4762-8.8	5,5
M75 <sup>1</sup>	D312 747	D312 748	30/75	28,5	15	60	14	8,5	8,5	11	ISO4762-8.8	23
M100 <sup>1</sup>	D312 339	D312 334	45/92	46,5	22	60	17	10,5	10,5	20	ISO4762-8.8	45

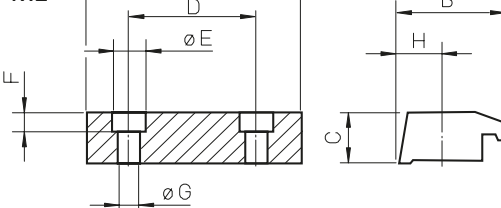
<sup>1</sup> No screws included in the shipment of above clamps

Ms = tightening torque of screws

M1



M2



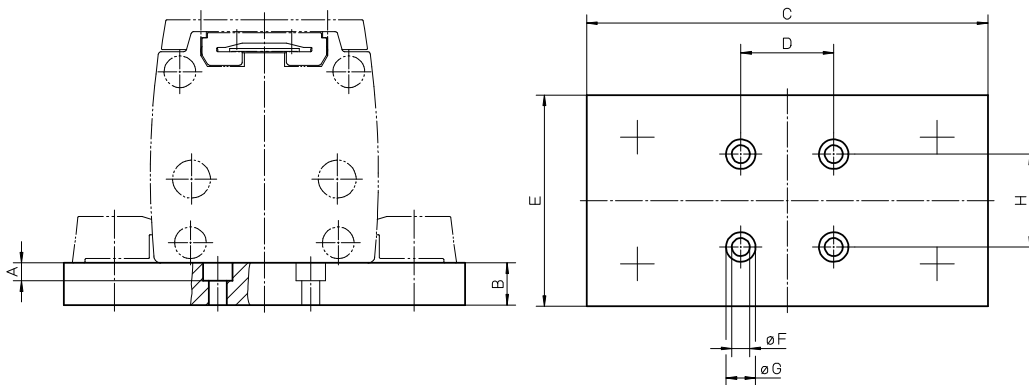
# Accessories

## Mounting Kits

### Mounting Clamps Type M2 with Plate<sup>1</sup>

Unit type	p/n	A	B	C	D	E	øF	øG	H
M50	D312 117	7	20	105	35	30	6,5	11	–
M55	D313 474	8,5	15	100	44	70	8,5	14	44
M75	D312 718	8,5	15	134	44	80	8,5	14	44
M100	D312 317	8,5	20	190	44	100	8,5	14	44

<sup>1</sup>two mounting clamps of version M2 (see page 132) and screws to connect these to the plate are included in shipment



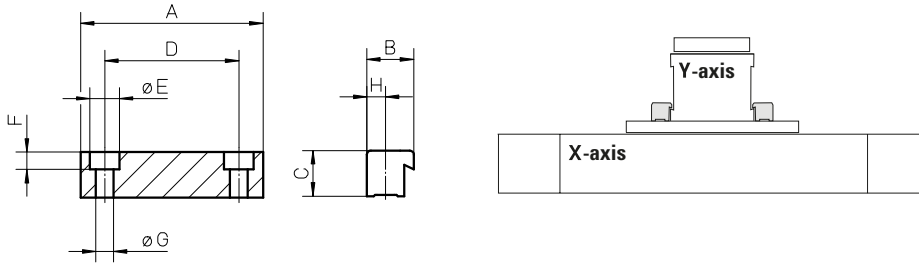
# Accessories

## Mounting Kits

### Mounting Clamps Type N1 for Multi Axis Systems<sup>1</sup>

Unit type X-axis	Unit type Y-axis	Clamps	A	B	C	D	øE	F	øG	H
WM40 / WH40	WM40 / WH40	on request	–	–	–	–	–	–	–	–
WM60	WM60	890 191 94	58	17,5	17	40	11	6,5	6,6	7

<sup>1</sup> all necessary screws are included in the shipment



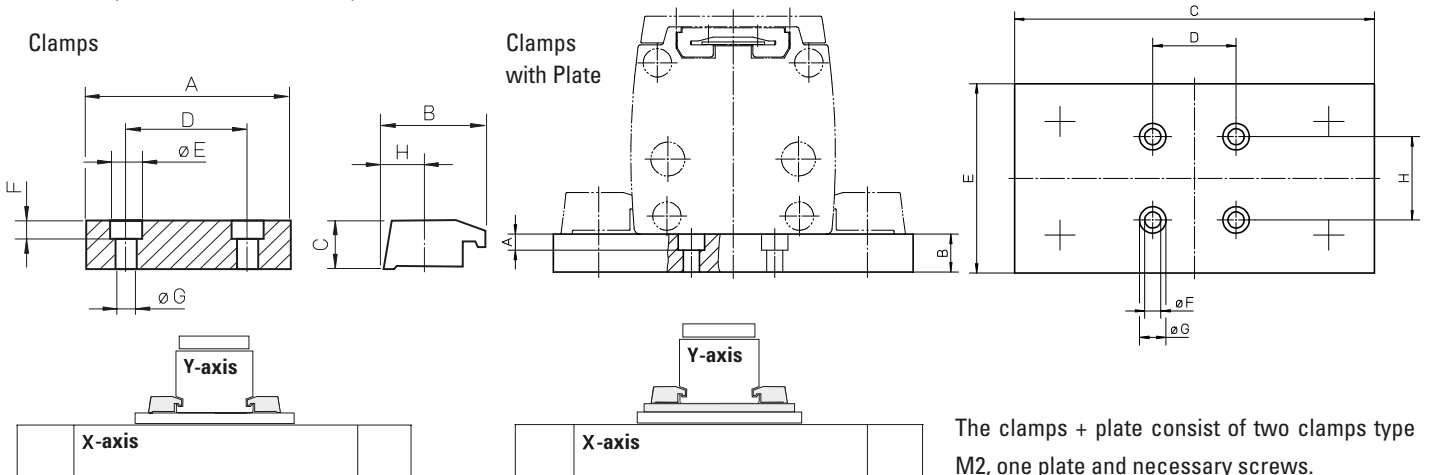
### Mounting Clamps Type M2 for Multi Axis Systems<sup>1</sup>

Unit type X-axis	Unit type Y-axis	p/n	A	B	C	D	øE	F	øG	H
M55	M55	D313 424	56	25,5	10,7	41	9,5	5,3	5,5	10,2
M75	M75	D312 719	75	28,5	15	60	14	8,5	8,5	11
M100	M100	D312 304	92	46,5	22	60	17	10,5	10,5	20

### Mounting Clamps Type M2 with Plate for Multi Axis Systems<sup>1</sup>

Unit type X-axis	Unit type Y-axis	p/n	A	B	C	D	E	øF	øG	H
M55	M75	D313 470	5,5	15	134	76	80	5,5	9,5	41
M75	M55	D313 060	8,5	15	134	106	80	8,5	14	60
M75	M100	D313 062	8,5	20	190	106	100	8,5	14	60
M100	M75	D313 292	10,5	20	190	142	100	10,5	17	60

<sup>1</sup> all necessary screws are included in the shipment



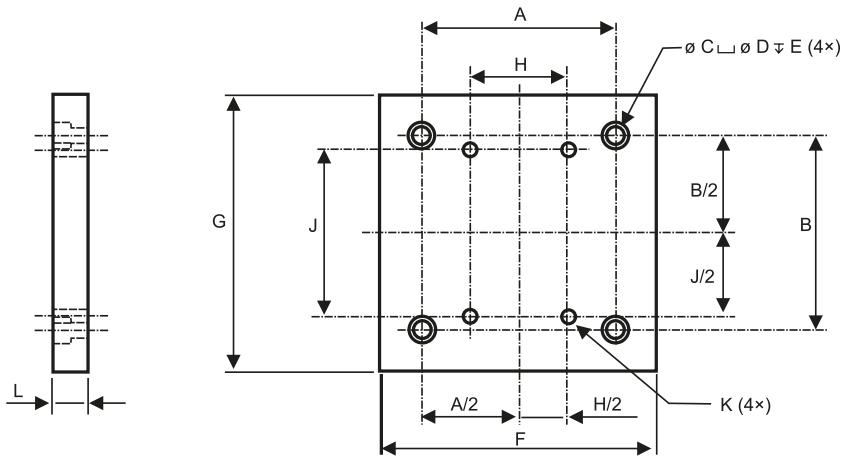
The clamps + plate consist of two clamps type M2, one plate and necessary screws.

# Accessories

## Mounting Kits

### Mounting Plates for Multi Axis Systems

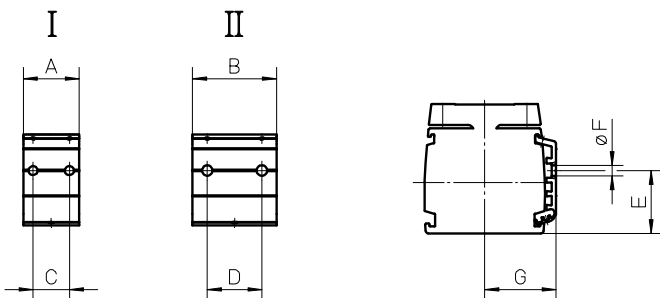
Unit type X-axis	Unit type Y-axis	p/n	A	B	C	D	E	F	G	H	J	K	L
MS33	MS33	MSXYP33-33	30	30	6	9	6	60	120	30	100	M5 x 0,8 - 6H	12,7
MS33	MS25	MSXYP33-25	30	30	5,5	9	6	60	60	42	42	M3 x 0,5 - 6H	12,7
2HB10	MS25	2HXYP10-MS25	70	70	5,5	9	6	100	100	42	42	M3 x 0,5 - 6H	12,7
2HB10	MS33	2HXYP10-MS33	70	70	6	9	6	100	120	30	100	M5 x 0,8 - 6H	12,7
2HB10	2HB10	2HXYP10-10	70	70	5,5	9	6	100	100	35	75	M5 x 0,8 - 6H	12,7
2HB20	2HB10	2HXYP20-10	145	145	10,5	16,5	11	200	200	35	75	M5 x 0,8 - 6H	22
2HB20	2HB20	2HXYP20-10	145	145	10,5	16,5	11	200	200	85	120	M8 x 1,25 - 6H	22



Combinations for other units are available. Plates to connect X and Z axes are also available for the Microstage units size MS25 and MS33. Contact customer support for details.

### Adapter Plates

Unit type	I	II	A	B	C	D	E	øF	G
M55	D313 422	D313 423	40	60	20	38	25,5	6,5	37
M75	D312 746	-	40	-	26	-	45	6,5	51
M75	-	D312 745	-	60	-	39	45	7,5	51
M100	D312 338	-	40	-	26	-	69	6,5	62
M100	-	D312 337	-	60	-	39	69	7,5	62



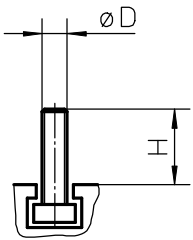
Adapter plates are fitted in the grooves along the profile and can be used to attach sensors, switches, cable ducts etc. to the unit.

# Accessories

## Mounting Kits

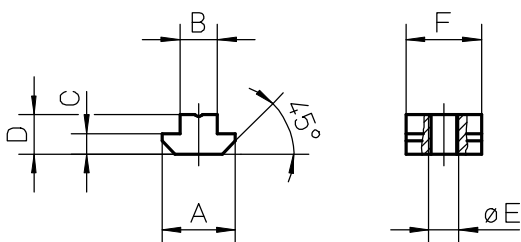
### T-slot Bolts

Unit type	p/n	øD	H
M50	D312 221	M5	14
Z2	D800 089	M10	28
Z3	D800 089	M10	28



### T-slot Nuts

Unit type	p/n	A	B	C	D	øE	F
ZB	D900 151	18	11	1,5	6,3	M6	25
ZB	D900 150	18	11	1,5	6,3	M8	25
MLS60	920 303 0037	16	8	4	6	M6	16
MLS80	920 303 0039	19,5	10	5,5	10,5	M8	20
WH120	911 044 19	15	10	6	12	M8	15
WM120	911 044 19	15	10	6	12	M8	15
2RB12, 2HB10, 2HB20	TNUT-01-M3	7	4	1,75	3	M3	9
2RB16, 2HB10	TNUT-02-M4	9,5	5,5	2,25	4	M4	12
2RB12	TNUT-03-M4	12	7	2,5	5	M4	15
2RB16, 2HB20	TNUT-04-M4	16,5	7,9	4,8	6	M4	16
2RB16, 2HB20	TNUT-04-M5	16,5	7,9	4,8	6	M5	16
2RB16, 2HB20	TNUT-04-M6	16,5	7,9	4,8	6	M6	16

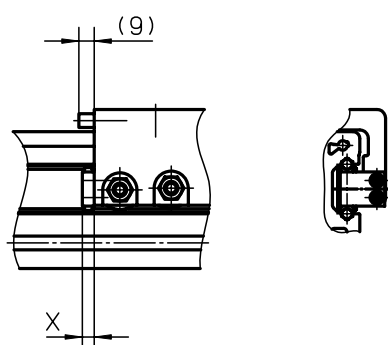


# Accessories

## Cover and Protection Kits

### FA Felt Pad Wiper

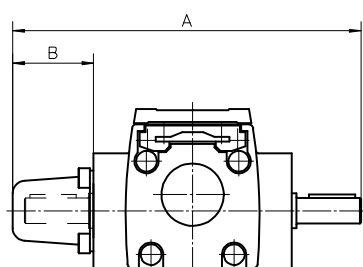
Unit type	Number of carriages on the unit	p/n	X
WH50	1	890 885 0064	6
WH50	2	2 × 890 885 0064	6
WH80	1	890 890 0069	7
WH80	2	2 × 890 890 0069	7
WH120	1	890 895 0058	8
WH120	2	2 × 890 895 0058	8
WHZ50	1	890 885 0064	6
WHZ50	2	2 × 890 885 0064	6
WHZ80	1	890 890 0069	7
WHZ80	2	2 × 890 890 0069	7



The felt pad wipers remove dust and dirt from the guides and are located on the carriage(s). They may increase the driving torque slightly but do not reduce the stroke of the unit. The felt pad wipers comes mounted from factory as standard on all WH and WHZ units but can also be ordered here as a spare part.

### Shaft Protection Cover

Unit type	p/n	A	B
M50	D312 201	126	35
M55	D312 201	151	35
M75	D700 178	198	45
M100	D700 178	202	45



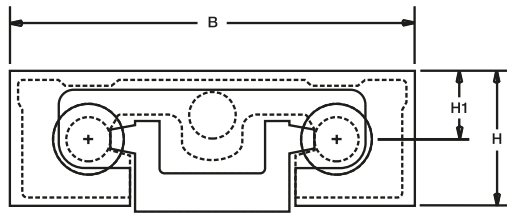
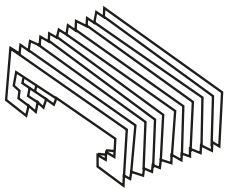
The shaft protection cover is used to cover shafts which are not being used. The covers are fitted by the customer.

# Accessories

## Cover and Protection Kits

### Protective Bellows type 2D

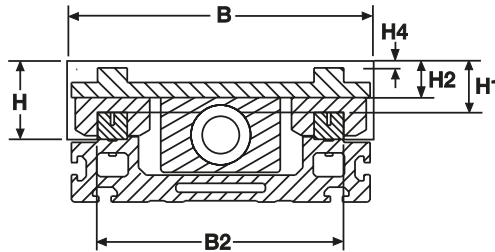
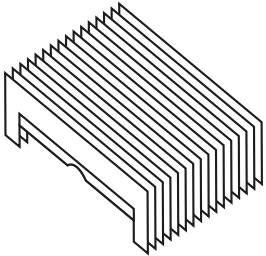
Unit type	p/n	H	H1	B
2DB08	BEL-2DB-08	48	34	130
2DB12	BEL-2D-12	61	36,5	152,5
2DB12	BEL-2D-16	73	43	190,5



Bellows protect the unit from dirt and dust. Note that the bellows option reduces the available stroke of the unit by 28%. Bellows can be ordered and mounted at the factory - see ordering key. Bellows can also be ordered separately and fitted by the customer. In that case, order two pieces of bellows where the length of each bellows piece = stroke length of the unit  $\times$  0.86.

### Protective Bellows type 2H

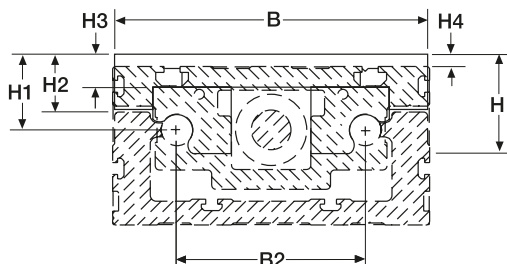
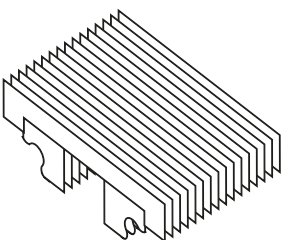
Unit type	p/n	B	B2	H	H1	H2	H4
2HB10	BEL-2H-10	103	81	26	11	10	0
2HB20	BEL-2H-20	199	167	48	30	15	5



Bellows protect the unit from dirt and dust. Note that the bellows option reduces the available stroke of the unit by 28%. Bellows can be ordered and mounted at the factory - see ordering key. Bellows can also be ordered separately and fitted by the customer. In that case, order two pieces of bellows where the length of each bellows piece = stroke length of the unit  $\times$  0.86.

### Protective Bellows type 2R

Unit type	p/n	B	B2	H	H1	H2	H3	H4
2RB12	BEL-2R-12	128	75	48	37	29	15	12
2RB16	BEL-2R-16	158	95	52	43	30	15	10



Bellows protect the unit from dirt and dust. Note that the bellows option reduces the available stroke of the unit by 28%. Bellows can be ordered and mounted at the factory - see ordering key. Bellows can also be ordered separately and fitted by the customer. In that case, order two pieces of bellows where the length of each bellows piece = stroke length of the unit  $\times$  0.86.

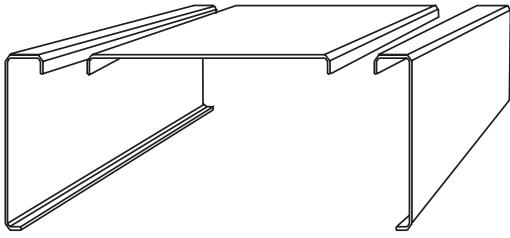


# Accessories

## Cover and Protection Kits

### Protective Shrouds

Unit type	
2HB10	see ordering key of the unit for order or <a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>
2HB20	see ordering key of the unit for order or <a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>



The protective shrouds are made of metal and protect the drive mechanism of the unit from dust and dirt but leave the guides unprotected. Shrouds do not reduce the stroke of the unit but they will add 4 mm to the width of the unit. Shrouds are ordered mounted from factory and are stated in the ordering key of the unit.

# Accessories

## Cover and Protection Kits

Environment Protection Option Type S1 and S2, compatibility table

Unit type	Drive type	Guide type	S1	S2	Ordering
M55	ball screw	slide	•		see ordering key of the unit for order
M55	belt drive	slide	•	•	see ordering key of the unit for order
		ball	•		see ordering key of the unit for order
M75	ball screw	slide	•		see ordering key of the unit for order
M75	belt drive	slide	•	•	see ordering key of the unit for order
		ball	•		see ordering key of the unit for order
M100	ball screw	slide	•		see ordering key of the unit for order
M100	belt drive	slide	•	•	see ordering key of the unit for order
		ball	•		see ordering key of the unit for order
WM60 / WM80 / WM120	ball screw	ball	•		see ordering key of the unit for order
WV60 / WV80 / WV120	ball screw	no guide	•		see ordering key of the unit for order
WH50 / WH80 / WH120	belt drive	wheel	•	•	see ordering key of the unit for order
WHZ50 / WHZ80	belt drive	wheel	•		see ordering key of the unit for order

The S1 and S2 environment protection options are available for some of the units as per table above. All performance data and the life expectancy are the same as for standard units except for WH and WHZ units (contact customer service for more information). S1 can be ordered for both ball screw and belt driven units with ball, slide or wheel guides while S2 only is possible for belt driven units with slide or wheel guides. Never use chemical agents and/or cleaning detergents before contacting your local Thomson customer service for advice.

### S1 - Wash down protection

Typical places where S1 is used are in slaughter houses, dairy plants, food plants or in any other light wash down application.

### S2 - Enhanced wash down protection

Typical places where S2 is used are in moderately wet areas such as in paper mills, galvanizing equipment, food industries or in any other harsh environment application where enhanced wash down capabilities are required.

## Accessories

### Cover and Protection Kits

#### Environment Protection Options Type S1 and S2, technical specification

Item	S1	S2
External screws, bolts and nuts	stainless material class A2 or better	stainless material class A4 or better
Internal screws, bolts and nuts	standard material	stainless material class A2 or better
Drive shaft, ball screw driven units	standard material	-
Drive shaft, belt driven units	stainless material SS2333 or better	stainless material SS2343 or better
Tension wheel shaft	standard material	stainless material SS2333 or better
Bearings type	standard bearings	2RS
Bearing sealings, belt driven units	radial sealings	radial sealings
Surface treatment of machined extruded aluminum parts	none	anodizing
Surface treatment of machined casted aluminum parts	none	anodizing
Cam rollers and idler shafting (WH and WHZ units)	standard material	stainless material
Belt retainer (WH units)	none	stainless material

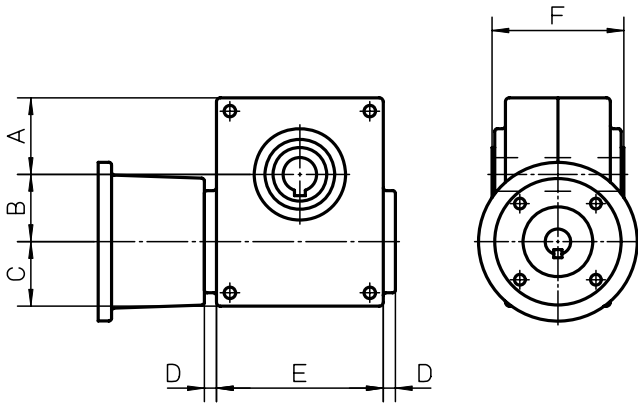
# Accessories

## Gears and Transmission Kits

### BS40 Worm Gears, dimensions

Gear	A	B	C	D	E	F
BS40	54	40	46	10	100	92

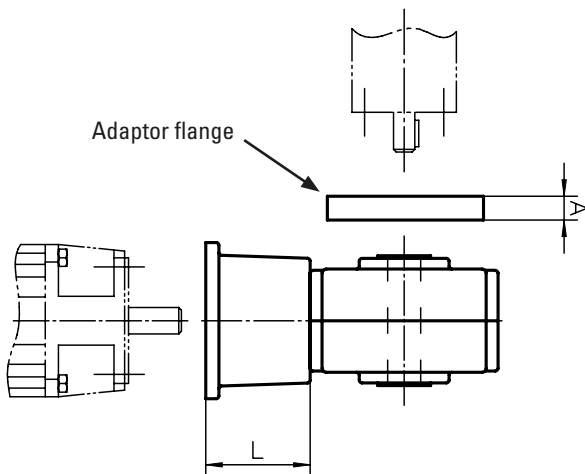
The worm gear includes the gear, the bell house and a matching coupling.



### BS40 Worm Gears, compatibility table

Unit	BS40	IEC71B14	IEC80B14	IEC90B14	A	L
Z2 (MGZ2K32)	•	•			17	58
Z2 (MGZ2K32)	•		•		17	68

To be able to install the gear to the unit an adaptor flange must be used between the gear and the unit. In addition, the adaptor flange must be ordered separately.



# Accessories

## Gears and Transmission Kits

### BS40 Worm Gears, ordering key

	1	2	3
Example	<b>BS40</b>	<b>-10</b>	<b>-71</b>
<b>1. Type and size of worm gear</b> BS40 = BS40 worm gear	<b>2. Gear ratio</b> -3 = 3:1 -5,5 = 5,5:1 -7,5 = 7,5:1 -10 = 10:1 -15 = 15:1 -20 = 20:1 -24 = 24:1 -30 = 30:1 -40 = 40:1 -48 = 48:1 -60 = 60:1		<b>6. Motor size</b> no code = without bell house and coupling -71 = IEC71B14 -80 = IEC80B14

### Adaptor flanges for BS40 Worm Gears, part numbers

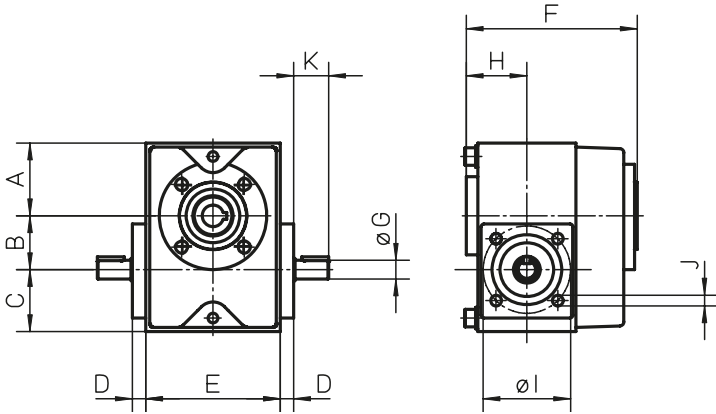
Unit	p/n
Z2 (MGZ2K32)	D606 250

# Accessories

## Gears and Transmission Kits

### TBS40 Worm Gears, dimensions

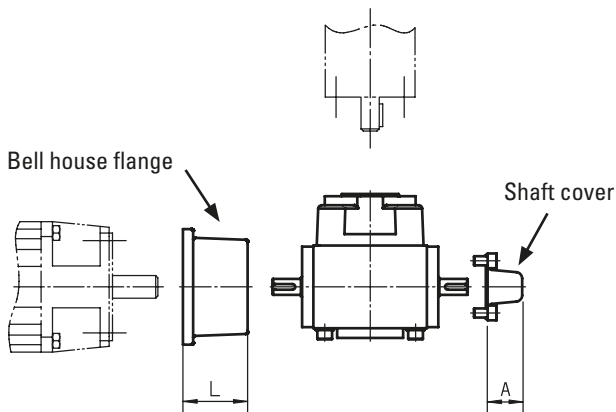
Gear	A	B	C	D	E	F	øG	H	øI	J	K
TBS40	54	40	46	10	100	125	14j6	45	65	M8 (4x)	25



The worm gear is installed directly to the unit and requires no intermediate coupling between the two.

### TBS40 Worm Gears, compatibility table

Unit	TBS40	IEC71B14	IEC80B14	A	L
Z2 (MGZ2K25)	•	•		32	58
Z2 (MGZ2K25)	•		•	32	68
Z3 (MGZ3K25)	•	•		32	58
Z3 (MGZ3K25)	•		•	32	68
M75	•	•		32	58
M75	•		•	32	68
M100	•	•		32	58
M100	•		•	32	68



To be able to install the gear to the motor a bell house flange must be used between the gear and the motor. The bell house flange, which includes a matching coupling, is ordered separately. A shaft cover can be ordered to cover the second primary shaft on the gear in case it is not being used.

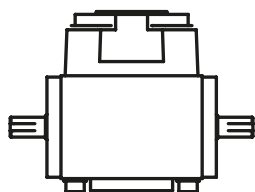
# Accessories

## Gears and Transmission Kits

### TBS40 Worm Gears, ordering key

	1	2	3
Example	TBS40	-3	-216

<b>1. Type and size of worm gear</b> TBS40 = TBS40 worm gear	<b>2. Gear ratio</b> -3 = 3:1 -5,5 = 5,5:1 -7,5 = 7,5:1 -10 = 10:1 -15 = 15:1 -20 = 20:1 -24 = 24:1 -30 = 30:1 -40 = 40:1 -48 = 48:1 -60 = 60:1	<b>3. Fixed code</b> -216
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### Bell house flanges for TBS40 Worm Gears, part numbers

Motor size	p/n
IEC71B14	D701 011
IEC80B14	D701 015



### Shaft Cover for TBS40 Worm Gears, part numbers

Gear type	p/n
TBS40	D701 020



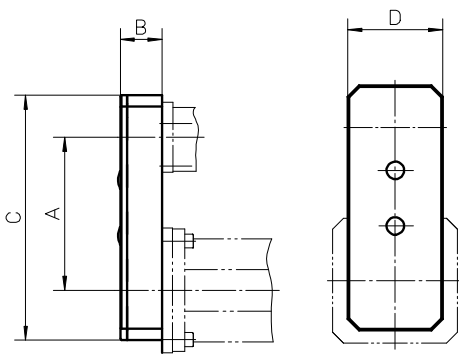
# Accessories

## Gears and Transmission Kits

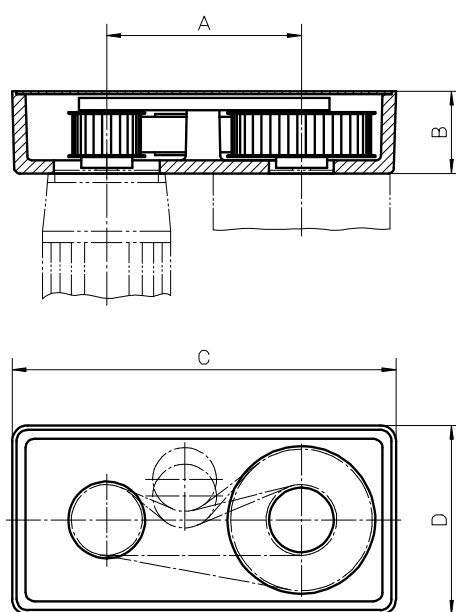
### RT Belt Gears, dimensions

Gear	A	B	C	D
RT40	110	30	176	68
RT60	175	74	345	170
RT80	175	74	345	170

RT40



RT60/80



### RT Belt Gears, data

Gear	i	$n_{max}$ [rpm]	$M_{max}$ [Nm]	$M_{idle}$ [Nm]	$\eta$	J [kgm <sup>2</sup> ]	Weight [kg]
RT40	1:1	3000	1,75	0,3	0,80	0,000025	0,62
RT60	1:1	3000	15	0,7	0,85	0,000438	5,6
RT60	2:1	3000	15	0,7	0,85	0,001011	7,1
RT80	1:1	3000	30	0,7	0,85	0,000465	5,5
RT80	2:1	3000	30	0,7	0,85	0,001038	7

i = gear ratio

$n_{max}$  = max. input speed

$M_{max}$  = max. input torque

$M_{idle}$  = idle torque

$\eta$  = efficiency factor

J = inertia



# Accessories

## Gears and Transmission Kits

### RT Belt Gears, compatibility table

Gear	WH40 / WM40	WM60 / WV60 / WZ60 / MLSM60D	WH80 / WM80 / WV80 / WM120 / WV120 / MLSM60D / MLSM80D
RT40	•		
RT60		•	
RT80			•

### RT Belt Gears, ordering key

	1	2	3	4	5
Example	RT80	-2	-•••	-P-N	-05

#### 1. Type and size of belt gear

RT40 = RT belt gear size 40  
 RT60 = RT belt gear size 60  
 RT80 = RT belt gear size 80

#### 2. Gear ratio

-1 = 1:1  
 -2 = 2:1

#### 3. Motor code

- xxy = alphanumeric motor code (e.g. -AK5).  
 There are several motors that fit each gear and the list of suitable motors is continuously being updated. Please contact customer support for help to see which motors are currently on the list or if your preferred motor can be added to the list.

#### 4. Type of mounting

-P-M = gear supplied mounted to the unit  
 -P-N = gear supplied unmounted

#### 5. Compatible unit type

-01 = WH40  
 -02 = WH50  
 -03 = WH80  
 -04 = WH120  
 -05 = WM40  
 -06 = WM60  
 -07 = WM80  
 -08 = WM120  
 -09 = WV60  
 -10 = WV80  
 -11 = WV120  
 -12 = WHZ50  
 -13 = WHZ80  
 -14 = WZ60  
 -15 = WZ80  
 -16 = MLSH60Z  
 -18 = MLSM80Z  
 -19 = MLSM60D  
 -20 = MLSM80D

RT belt gears can only be used on units without a RediMount flange.

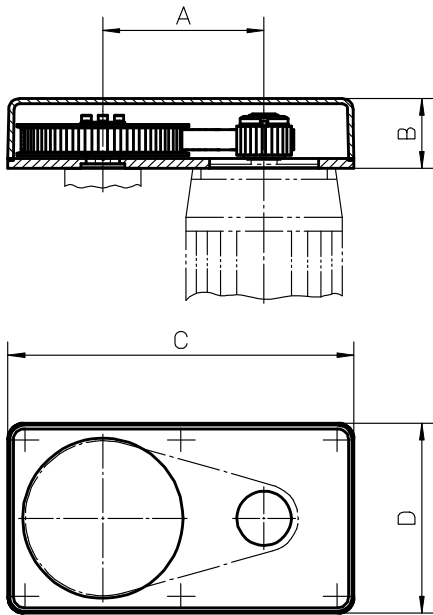
# Accessories

## Gears and Transmission Kits

### BGM Belt Gears, dimensions

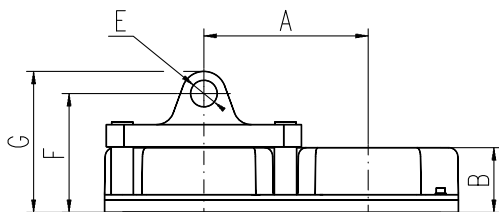
Gear	A	B	C	D	øE	F	G	H	I	J
BGM09	118,7	52	255	140	20 H9	95	115	60	–	–
BGM41	155,2	70	305	165	25 H9	122	147	70	–	–
BGM81	200	73	399	224	30 H9	134	159	90	90H14	170

BGM09/41/81 - WITHOUT CLEVIS OPTION

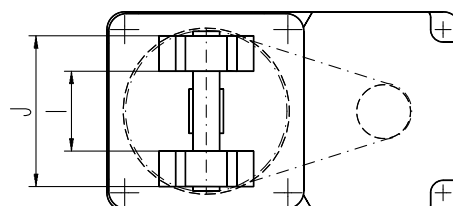
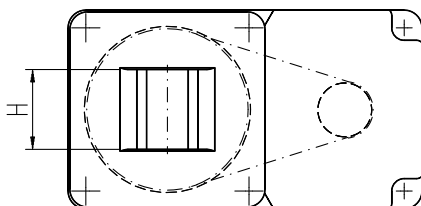
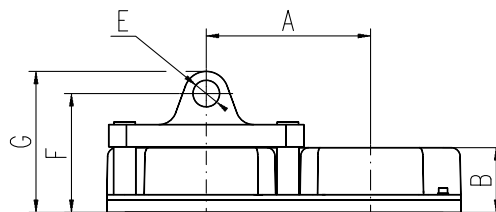


BGM belt gears can only be used on units without a RediMount flange. The belt gear comes in parts and is assembled to the unit and motor by the customer.

BGM09/41/81 - WITH CLEVIS OPTION TYPE S



BGM81 - WITH CLEVIS OPTION TYPE R





# Accessories

## Gears and Transmission Kits

### BGM 09 Belt Gears, ordering key

	1	2	3	4	5	6	7	8
Example	<b>BGM09</b>	<b>-2</b>	<b>-CC</b>	<b>063</b>	<b>P</b>	<b>050</b>	<b>X</b>	<b>+XX</b>

**1. Type and size of belt gear**

BGM09 = BGM belt gear size 09

**2. Gear ratio**

-1 = 1,04:1

-2 = 1,85:1

-3 = 2,85:1

**3. Type of couplings**

-CC = conical couplings

**4. Motor size<sup>1</sup>**

063 = IEC 63 B14

071 = IEC 71 B14

S80 = servo motor size 80

AK4 = servo motor type AKM 4

**5. Type of mounting**

P = standard

**6. Compatible unit type**

W06 = WM60, WV60, WZ60

WB6 = WB60

050 = M50

060 = M55

070 = M75

**7. Clevis option**

X = no clevis option

S = clevis option type S

**8. Protection**

+XX = standard

+S1 = wash down protection

<sup>1</sup>This is only a selection of all motors that fit this gear. Please contact customer support to see if your preferred motor fits the gear.

### BGM 41 Belt Gears, ordering key

	1	2	3	4	5	6	7	8
Example	<b>BGM41</b>	<b>-1</b>	<b>-CC</b>	<b>071</b>	<b>P</b>	<b>070</b>	<b>X</b>	<b>+S1</b>

**1. Type and size of belt gear**

BGM41 = BGM belt gear size 41

**2. Gear ratio**

-1 = 1:1

-2 = 2:1

-3 = 3:1

**3. Type of couplings**

-CC = conical couplings

**4. Motor size<sup>1</sup>**

071 = IEC 71 B14

080 = IEC 80 B14

S80 = servo motor size 80

S95 = servo motor size 95

AK5 = servo motor type AKM 5

**5. Type of mounting**

P = standard

**6. Compatible unit type**

W06 = WM60, WV60, WZ60

W08 = WM80, WV80

070 = M75

10B = M100 (MF/G10B)

10K = M100 (MF/G10K/C/D)

**7. Clevis option**

X = no clevis option

S = clevis option type S

**8. Protection**

+XX = standard

+S1 = wash down protection

<sup>1</sup>This is only a selection of all motors that fit this gear. Please contact customer support to see if your preferred motor fits the gear.

# Accessories

## Gears and Transmission Kits

### BGM 81 Belt Gears, ordering key

	1	2	3	4	5	6	7	8
Example	<b>BGM81</b>	<b>-1</b>	<b>-CC</b>	<b>090</b>	<b>P</b>	<b>M8D</b>	<b>X</b>	<b>+XX</b>

**1. Type and size of belt gear**

BGM81 = BGM belt gear size 81

**2. Gear ratio**

- 1 = 1:1
- 2 = 2,25:1
- 3 = 3,13:1

**3. Type of couplings**

-CC = conical couplings

**4. Motor size<sup>1</sup>**

- 090 = IEC 90 B14
- 100 = IEC 100/121 B14
- A20 = servo motor size A200
- AK6 = servo motor type AKM 6

**5. Type of mounting**

P = standard

**6. Compatible unit type**

- W12 = WM120, WV120
- M8D = MLSM80D

**7. Clevis option**

- X = no clevis option
- S = clevis option type S
- R = clevis option type R

**8. Protection**

- +XX = standard
- +S1 = wash down protection

<sup>1</sup>This is only a selection of all motors that fit this gear. Please contact customer support to see if your preferred motor fits the gear.

# Accessories

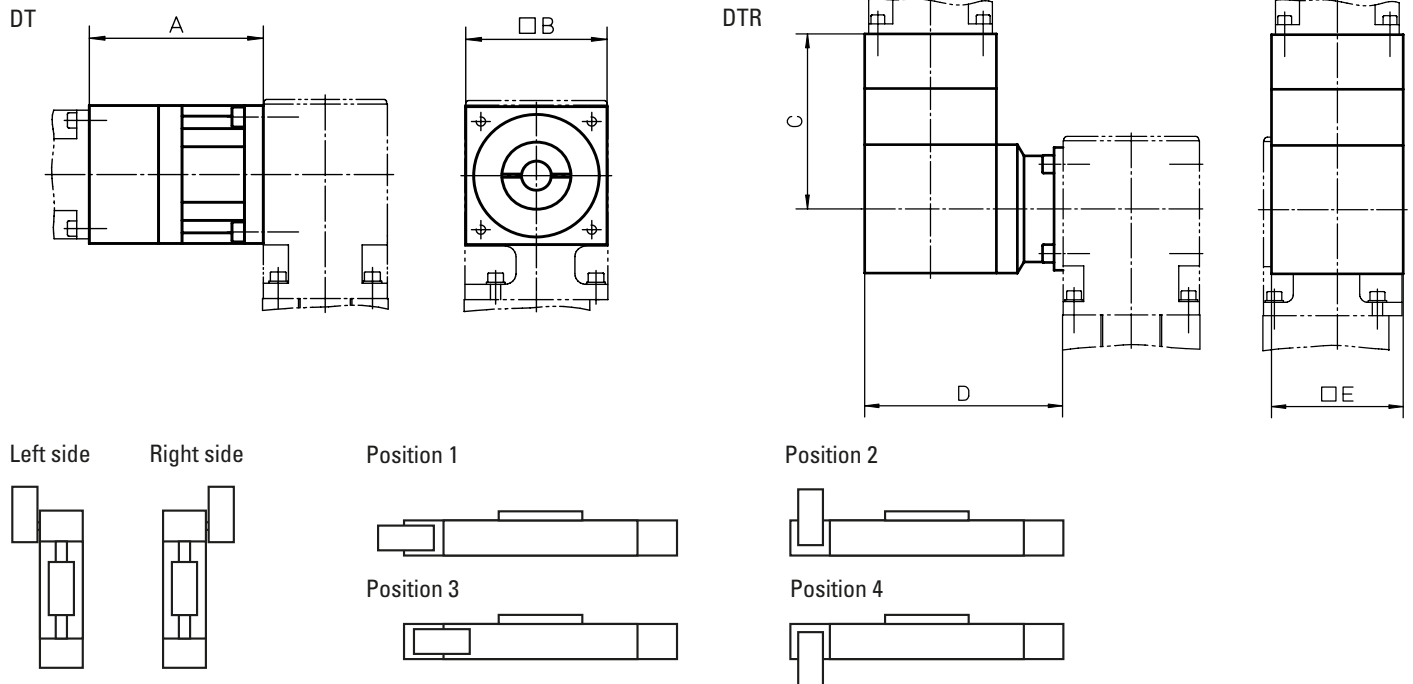
## Gears and Transmission Kits

### Micron DT, DTR Planetary Gears, compatibility and dimensions

Unit	Gear	i	□A	B	C	□D	E	Weight [kg]	Backlash [arc min]	Efficiency [%]
WH50	DT60-SS	3:1 - 10:1	89,7	60	–	–	–	1	8	90
	DT60-DS	15:1 - 100:1	106,9	60	–	–	–	1,2	9	85
	DTR60-SS	5:1 - 50:1	–	–	110,2	104,1	60	2,5	9	90
	DTR60-DS	60:1 - 500:1	–	–	127,3	104,1	60	2,7	9	85
WH80	DT90-SS	3:1 - 10:1	110,9	90	–	–	–	3	9	90
	DT90-DS	15:1 - 100:1	133,5	90	–	–	–	3,7	9	85
	DTR90-SS	5:1 - 50:1	–	–	145,4	138,2	90	4,8	9	90
	DTR90-DS	60:1 - 500:1	–	–	168,0	138,2	90	5,5	9	85
WH120	DT115-SS	3:1 - 10:1	136,4	110	–	–	–	12,7	8	90
	DT115-DS	15:1 - 100:1	167,4	110	–	–	–	16,2	9	85
	DTR115-SS	5:1 - 50:1	–	–	185,7	173,5	115	11	8	90
	DTR115-DS	60:1 - 500:1	–	–	216,7	173,5	115	12	9	85
WM60Z	DT60-SS	3:1 - 10:1	89,7	60	–	–	–	1	8	90
	DT60-DS	15:1 - 100:1	106,9	60	–	–	–	1,2	9	85
	DTR60-SS	5:1 - 50:1	–	–	110,2	104,1	60	2,5	9	90
	DTR60-DS	60:1 - 500:1	–	–	127,3	104,1	60	2,7	9	85
WM80Z	DT90-SS	3:1 - 10:1	110,9	90	–	–	–	3	9	90
	DT90-DS	15:1 - 100:1	133,5	90	–	–	–	3,7	9	85
	DTR90-SS	5:1 - 50:1	–	–	145,4	138,2	90	4,8	9	90
	DTR90-DS	60:1 - 500:1	–	–	168,0	138,2	90	5,5	9	85

Micron gears can only be used on units without a RediMount flange. Micron DT and DTR planetary gears comes mounted on the unit from factory.

i = gear ratio



# Accessories

## Gears and Transmission Kits

### Micron DT, DTR Planetary Gears, how to order

When ordering a DT or DTR planetary gear you need to state the size and type of gear, which side of the unit the gear shall be installed, the gear ratio and which motor that you wish to use. For DTR you also must state the preferred mounting position of the gear. With this information we can check if your choice of motor is possible or not and give you the correct ordering code for the gear.

#### Micron DT, ordering data

##### 1. Size of planetary gear

DT60  
DT90  
DT115

##### 2. Type of gear

-SS  
-DS

##### 3. Mounting side of the unit

Left  
Right

##### 4. Gear ratio

3:1 (only for -SS models)  
5:1 (only for -SS models)  
10:1 (only for -SS models)  
15:1 (only for -DS models)  
25:1 (only for -DS models)  
30:1 (only for -DS models)  
50:1 (only for -DS models)  
100:1 (only for -DS models)

##### 5. Motor

Specify your choice of motor.

#### Micron DTR, ordering data

##### 1. Type and size of planetary gear

DTR60  
DTR90  
DTR115

##### 2. Type of gear

-SS  
-DS

##### 3. Mounting position of the gear

Position 1  
Position 2  
Position 3  
Position 4

##### 4. Mounting side of the unit

Left  
Right

##### 5. Gear ratio

5:1 (only for -SS models)  
6:1 (only for -SS models)  
9:1 (only for -SS models)  
10:1 (only for -SS models)  
12:1 (only for -SS models)  
15:1 (only for -SS models)  
20:1 (only for -SS models)  
25:1 (only for -SS models)  
30:1 (only for -SS models)  
40:1 (only for -SS models)  
50:1 (only for -SS models)  
60:1 (only for -DS models)  
75:1 (only for -DS models)  
90:1 (only for -DS models)  
100:1 (only for -DS models)  
120:1 (only for -DS models)  
125:1 (only for -DS models)  
150:1 (only for -DS models)  
200:1 (only for -DS models)  
250:1 (only for -DS models)  
300:1 (only for -DS models)  
400:1 (only for -DS models)  
500:1 (only for -DS models)

##### 6. Motor

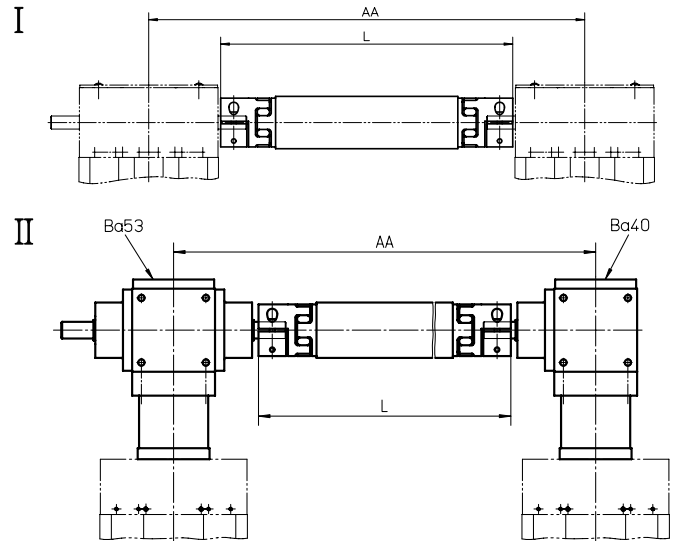
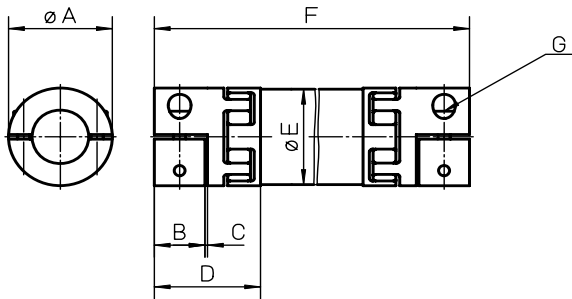
Specify your choice of motor.

# Accessories

## Gears and Transmission Kits

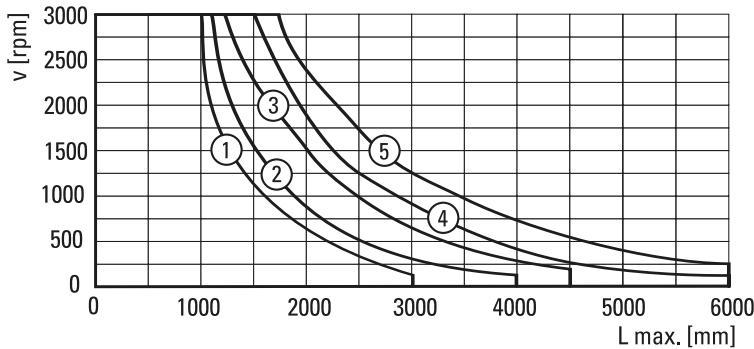
### VWZ Intermediate Shafts, dimensions

Shaft	øA	B	C	D	øE	F min.	G
VWZ-30	32	15	1,5	34	30	99	M4
VWZ-40	42	17	1,5	46	40	133	M5
VWZ-60	56	30	2	63	60	177	M6
VWZ-60V	67	35	2	73	60	205	M8
VWZ-80	82	40	2	84	80	249	M10
VWZ-100	102	50	2	97	100	283	M12



The VWZ intermediate shafts can be installed in two ways. Either directly to belt driven units (I) or to screw driven units using KRG bevel gears (II) of type VL50, VL100 or VL200. However, belt driven units with a RediMount flange can not be combined with VWZ shafts while screw driven units can, but in which case the unit must be ordered with the RediMount ID code that fits the bevel gear in question. The intermediate shaft includes tube and couplings.

### Critical Speed of Shaft



- 1: VWZ-30
- 2: VWZ-40
- 3: VWZ-60 and VWZ-60V
- 4: VWZ-80
- 5: VWZ-100

### VWZ Intermediate Shafts, data

Shaft	Mmax [Nm]	Gs [kg/m]	Gc [kg]	Js [kgm <sup>2</sup> /m]	Jc [kgm <sup>2</sup> ]	Ms [Nm]
VWZ-30	4,8	0,58	0,14	0,00011	0,00001	4
VWZ-40	6,4	0,76	0,36	0,00020	0,00008	8
VWZ-60	22,7	0,97	0,94	0,00080	0,00024	15
VWZ-60V	60,6	0,97	1,42	0,00080	0,00046	35
VWZ-80	122,7	2,00	2,98	0,00300	0,00240	70
VWZ-100	169,7	2,47	4,62	0,00580	0,00600	120

Mmax = max. shaft torque  
Gs = weight of shaft

Gc = weight of coupling  
Js = inertia of shaft

Jc = inertia of coupling  
Ms = tightening torque



# Accessories

## Gears and Transmission Kits

### VWZ Intermediate Shafts, compatibility table

Unit	I	II	VWZ-30	VWZ-40	VWZ-60	VWZ-60V	VWZ-80	VWZ-100	AA [mm]
WH40	•			•					AA = L + 56
WH50 / WHZ50	•				•				AA = L + 54
WM60Z	•				•				AA = L + 64
WH80 / WHZ80	•					•			AA = L + 84
WH120	•							•	AA = L + 124
WM80Z	•					•			AA = L + 84
MLSH60Z	•					•			AA = L + 164
WB40 / WM40		VL50	•						AA = L + 170
WB60		VL100			•				AA = L + 184
WM60 / WV60 / WZ60		VL100			•				AA = L + 184
WM80 / WV80 / MLSM60D		VL100				•			AA = L + 176
MLSM80Z	•						•		AA = L + 244
WM120 / WV120 / MLSM60D / MLSM80D		VL200					•		AA = L + 244

AA = C/C distance between units

L = total length of shaft and coupling assembly

### VWZ Intermediate Shafts, ordering key

	1	2	3
Example	VWZ-060	-02	-0700

#### 1. Intermediate shaft size

VWZ-030 = VWZ-30  
 VWZ-040 = VWZ-40  
 VWZ-060 = VWZ-60  
 VWZ-06V = VWZ-60V  
 VWZ-080 = VWZ-80  
 VWZ-100 = VWZ-100

#### 2. Type of unit and type of mounting

-01 = WH40 for type I mounting  
 -02 = WH50 / WHZ50 for type I mounting  
 -03 = WM80Z for type I mounting  
 -04 = WH80 / WHZ80 for type I mounting  
 -05 = WH120 for type I mounting  
 -06 = WM60Z for type I mounting  
 -07 = MLSH60Z for type I mounting  
 -08 = WB40 / WM40 for type II mounting on VL50 gears  
 -09 = WB60 for type II mounting on VL100 gears  
 -10 = WM60 / WV60 / WZ60 for type II mounting on VL100 gears  
 -11 = WM80 / WV80 / MLSM60D for type II mounting on VL100 gears  
 -12 = MLSM80Z for type I mounting  
 -13 = WM120 / WV120 / MLSM60D / MLSM80D for type II mounting on VL200 gears

#### 3. C/C distance between units (AA)

- xxxx = distance in mm

# Accessories

## Gears and Transmission Kits

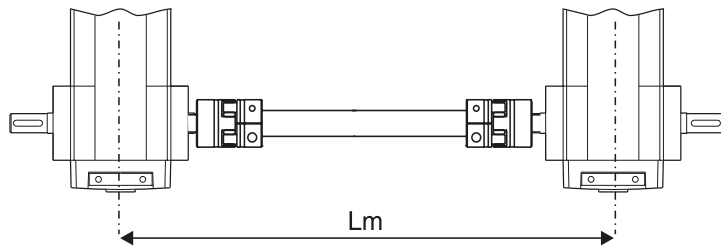
### DSP Intermediate Shafts, data

Shaft	Weight of shaft [kg]	Max. speed [rpm]	Shaft diameter [mm]
DSP-05B	$0,3 + 1,3 \times Lm$	1500	20
DSP-06B	$0,3 + 1,3 \times Lm$	1500	20
DSP-07B	$0,6 + 2,6 \times Lm$	1500	30
DSP-10B	$0,6 + 2,6 \times Lm$	1500	30
DSB--ZB	$0,6 + 2,6 \times Lm$	1500	30
DSP-TBS	$0,6 + 2,6 \times Lm$	1500	30

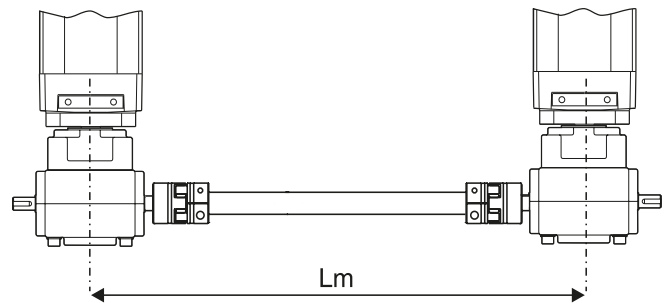
Lm = C/C distance between units in cm

The DSP intermediate shaft can be installed directly between two belt driven units or between two screw driven units using a TBS worm gear. The DSP shaft can not be used on units with a Redi-Mount flange. Couplings and tube are included in the shipment. Support bearings may need to be installed if the critical speed of the shaft is exceeded. See diagram. Support bearings can be ordered from your local bearing supplier.

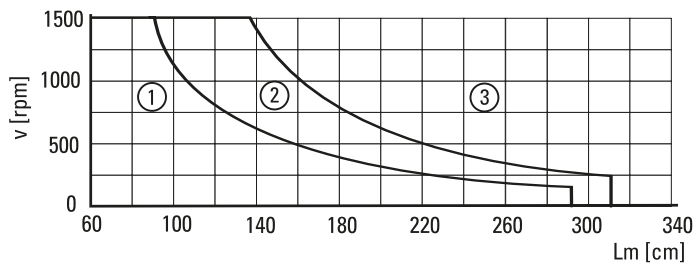
DSP-05B/06B/07B/10B/-ZB



DSP-TBS



### Critical Speed of Shaft



- 1: No support bearing required
- 2: Support bearing required for DSP-05B and DSP-06B
- 3: Support bearing always required

## Accessories

### Gears and Transmission Kits

#### DSP Intermediate Shafts, compatibility table

Unit	Drive type	DSP-05B	DSP-06B	DSP-07B	DSP-10B	DSP--ZB	DSP-TBS
M50	belt	•					
M55	belt		•				
M75	belt			•			
M100	belt				•		
ZB	belt					•	
M55	screw						•
M75	screw						•
M100	screw						•

#### DSP Intermediate Shafts, ordering key

	1	2
Example	DSP-06B	-305

##### 1. Intermediate shaft size and type

DSP-05B = for belt driven M50 units  
 DSP-06B = for belt driven M55 units  
 DSP-07B = for belt driven M75 units  
 DSP-10B = for belt driven M100 units  
 DSP--ZB = for belt driven ZB units  
 DSP-TBS = for screw driven M55, M75 or M100 units with TBS worm gear

##### 2. C/C distance between units in cm (Lm)

- xxx = length in cm

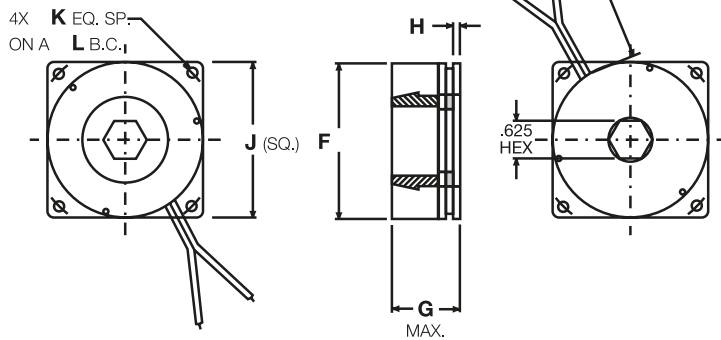
# Accessories

## Gears and Transmission Kits

### Spring Set Brake

Unit type	p/n	Nema size	Static torque [lbf-in]	Supply voltage [VDC]	Dimensions [in]							Brake hub p/n <sup>1</sup>	Brake adaptor p/n
					F	G	H	J	K	L	HEX		
2DB08	TEB23A	23	NEMA 23	24	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23A	MB08-23
2DB12	TEB23B	23	NEMA 23	24	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23B	none required
2HB10, 2RB12	TEB23D	23	NEMA 23	24	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23D	none required
2RB16	TEB23E	23	NEMA 23	24	2.25	1.10	0.11	2.25	0.22	2.625	5/8	HEXHUB23E	none required
2DB16	TEB34A	34	NEMA 34	24	2.25	1.10	0.11	3.25	0.22	3.875	5/8	HEXHUB34A	none required
2HB20	TEB34C	34	NEMA 34	24	2.25	1.31	0.11	3.25	0.22	3.875	7/8	HEXHUB34A	none required

<sup>1</sup> Hub included in spring set brake



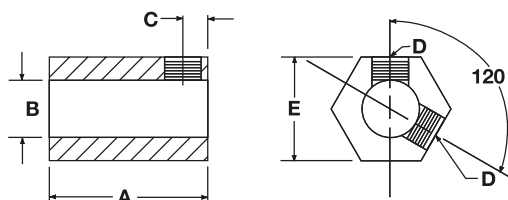
Mounts to support end of 2HB, 2RB, and 2DB units. The brake engages upon loss of power and provides resistance to back drive rotation of ball screws due to gravitational forces when power is interrupted to the brake unit. They are pre-burnished for maximum torque capacity and come with standard NEMA 23, 34 or 42 mounting patterns for easy field retrofit. Compact size minimizes change to the overall system envelope. The 2HB, 2RB, and 2DB ordering keys can be configured with the brake as part of the assembly. See ordering keys or [www.LinearMotioneering.com](http://www.LinearMotioneering.com) for details. The part numbers listed here are for the brake parts as separate items.

### Spring Set Brake Hubs

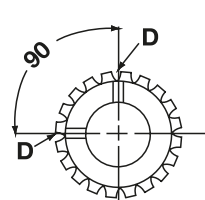
Brake type	p/n	Unit type	Set screw torque [in-lb] <sup>1</sup>	Dimensions [in (mm)]				
				A	B	C	D	E
TEB23A	HEXHUB23A	2DB08	36	1.53	3/16	0.15	#10/32	5/8
TEB23B	HEXHUB23B	2DB12	36	1.31	1/4	0.26	#10/32	5/8
TEB23D	HEXHUB23D	2HB10, 2RB12	36	(20)	(8)	(5)	M4	5/8
TEB23E	HEXHUB23E	2RB16	36	(20)	(20)	(5)	M4	5/8
TEB34A	HEXHUB34A	2DB16	36	1.67	3/8	0.44	#10/32	5/8
TEB34C	HEXHUB34A	2HB20	36	(32)	14	(6)	M5	7/8

<sup>1</sup> It is suggested a serviceable thread locking compound be used.

HEXHUB •••



SPLHUB42A



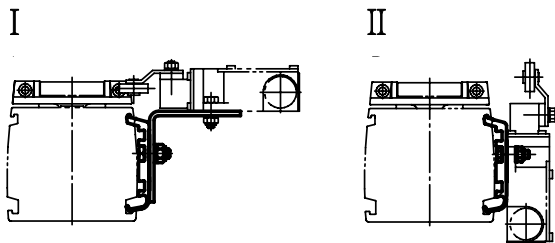
# Accessories

## Electrical Feedback Devices

### Limit Switch Brackets<sup>1</sup>

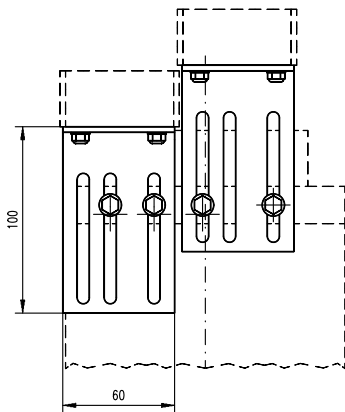
Unit type	I	For limit switch type	II	For limit switch type
M50	D393 035	ZCM-D21	–	–
M55	D313 427	ZCM-D21	D313 428	ZCM-D21
M75	D312 860	XCK-M115	D312 861	XCK-M115
M100	D312 330	XCK-M115	D312 331	XCK-M115

<sup>1</sup> No limit switches included in the shipment.



### Limit Switch Brackets for Z3

Unit type	p/n	For limit switch type
Z3	D800 042	XCK-M115



The limit switch brackets are adjustable in height. The limit switches on the brackets are operated by the maximum extended and maximum retracted end of stroke bars on top of the Z3 units. Two brackets are required.

### Limit Switches

Switch type	p/n	Protection degree	Contacts	Cable
XCK-M115	D535 107	IP67	NO + NC	–
ZCM-D21	D535 102	IP67	NO + NC	1 meter

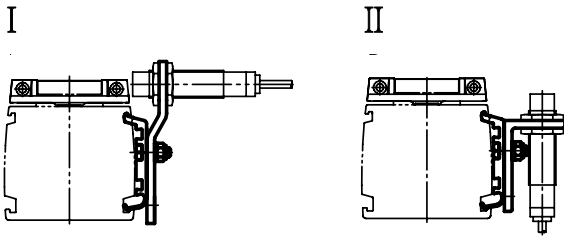
## Accessories

### Electrical Feedback Devices

#### Sensor Brackets for Cylindrical Sensors<sup>1</sup>

Unit type	I	For sensor diameter	II	For sensor diameter
M55	D313 429	M12	D313 430	M12
M75	D312 862	M18	D312 863	M18
M100	D312 332	M18	D312 333	M18

<sup>1</sup> no sensors included in the shipment



#### Cylindrical Inductive Sensors

Sensor type	p/n	Diameter	Input voltage	Max. current	Protection degree	Contacts	Cable
PNP	D535 085	M12	12 - 48 Vdc	0,2 A	IP67	NO	connector
PNP	D535 089	M18	12 - 48 Vdc	0,2 A	IP67	NO	connector

#### Cylindrical Inductive Sensor Connectors

For sensor diameter	p/n
M12	D535 092
M18	D535 091

# Accessories

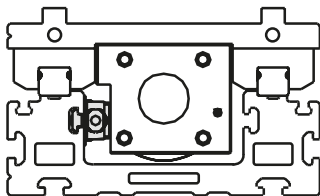
## Electrical Feedback Devices

### Sensor Packages

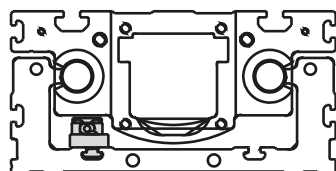
Unit type	Package type	p/n	Output type	Output operation	Frequency <sup>1</sup>	Supply voltage [VDC]	Cable length [m]	Sdetract [mm]
2HB10	One home sensor	LSP2HBM10-N-1	NPN	NO	1 × V	12 - 24	5	-
		LSP2HBM10-P-1	PNP	NO	1 × V	12 - 24	5	-
	Two limit switch sensors	LSP2HBM10-N-2	NPN	NC	2 × S	12 - 24	5	30
		LSP2HBM10-P-2	PNP	NC	2 × S	12 - 24	5	30
	One home and two limit switch sensors	LSP2HBM10-N-3	NPN	1 × NC, 2 × NO	1 × V, 2 × S	12 - 24	5	30
		LSP2HBM10-P-3	PNP	1 × NC, 2 × NO	1 × V, 2 × S	12 - 24	5	30
2HB20	One home sensor	LSP2HBM20-N-1	NPN	NO	1 × V	12 - 24	5	-
		LSP2HBM20-P-1	PNP	NO	1 × V	12 - 24	5	-
	Two limit switch sensors	LSP2HBM20-N-2	NPN	NC	2 × S	12 - 24	5	30
		LSP2HBM20-P-2	PNP	NC	2 × S	12 - 24	5	30
	One home and two limit switch sensors	LSP2HBM20-N-3	NPN	1 × NC, 2 × NO	1 × V, 2 × S	12 - 24	5	30
		LSP2HBM20-P-3	PNP	1 × NC, 2 × NO	1 × V, 2 × S	12 - 24	5	30
2RB12	One home sensor	LSP2RM12-N-1	NPN	NO	1 × V	12 - 24	5	-
		LSP2RM12-P-1	PNP	NO	1 × V	12 - 24	5	-
	Two limit switch sensors	LSP2RM12-N-2	NPN	NC	2 × S	12 - 24	5	35
		LSP2RM12-P-2	PNP	NC	2 × S	12 - 24	5	35
	Home and limit switch sensors	LSP2RM12-N-3	NPN	1 × NC, 2 × NO	1 × V, 2 × S	12 - 24	5	35
		LSP2RM12-P-3	PNP	1 × NC, 2 × NO	1 × V, 2 × S	12 - 24	5	35
2RB16	One home sensor	LSP2RM16-N-1	NPN	NO	1 × V	12 - 24	5	-
		LSP2RM16-P-1	PNP	NO	1 × V	12 - 24	5	-
	Two limit switch sensors	LSP2RM16-N-2	NPN	NC	2 × S	12 - 24	5	35
		LSP2RM16-P-2	PNP	NC	2 × S	12 - 24	5	35
	One home and two limit switch sensors	LSP2RM16-N-3	NPN	1 × NC, 2 × NO	1 × V, 2 × S	12 - 24	5	35
		LSP2RM16-P-3	PNP	1 × NC, 2 × NO	1 × V, 2 × S	12 - 24	5	35

<sup>1</sup> V = varied frequency. S = standard frequency.

#### LIMIT SWITCH POSITION 2HBE



#### LIMIT SWITCH POSITION 2RB



Each 2HB and 2RB can be equipped with sensors inside of the profile where they are protected from mechanical damage. The systems are provided with access holes on each side of each end plate for passage of the sensor package cable. Using limit switch sensors will reduce the effective stroke. The standard position will approximately reduce the stroke by the distance listed in the Sdetract column. The 2HB, 2RB, 2HE and 2RE ordering keys can be configured with the limit switches and/or a home sensor as part of the assembly. See ordering keys or [www.LinearMotioneering.com](http://www.LinearMotioneering.com) for details. The part numbers listed above are for the limit switches and/or home sensors as separate items.

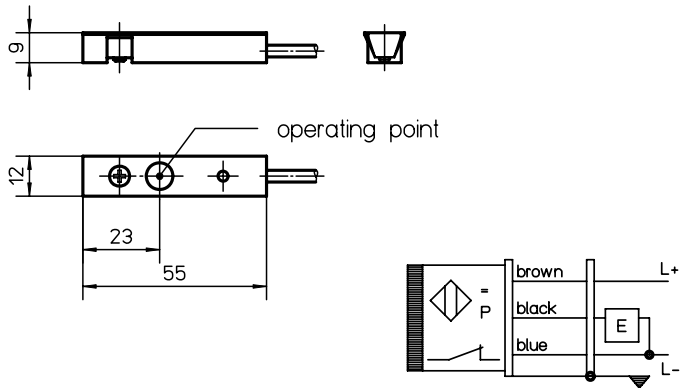
# Accessories

## Electrical Feedback Devices

### EN2 Inductive Sensors, part numbers

Sensor type	Cable length [m]	p/n
Normally closed	2	671 545 0305
Normally open	2	671 545 0304
Normally closed	10	671 545 0307
Normally open	10	671 545 0306

To be able to mount the EN2 inductive sensors on a unit the ENT14x16 sensor rail is required (see page 178) except for units WM120 and WV120 where they can be fitted directly to the profile of the unit.

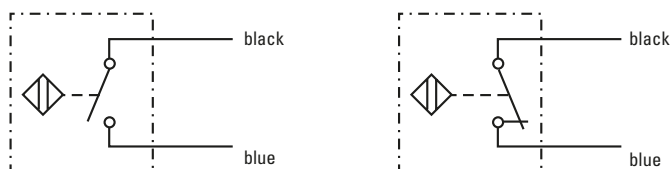


### EN2 Inductive Sensors, data

Parameter		EN2
Supply voltage	[Vdc]	10 – 30
Max. load current	[A]	0,2
Operating distance	[mm]	2
LED indicator for switch		yes
Protection class		IP67
Cable type		screened
Weight	[kg]	
with cable L = 2 m		0,04
with cable L = 10 m		0,19

### Magnetic Sensors, data

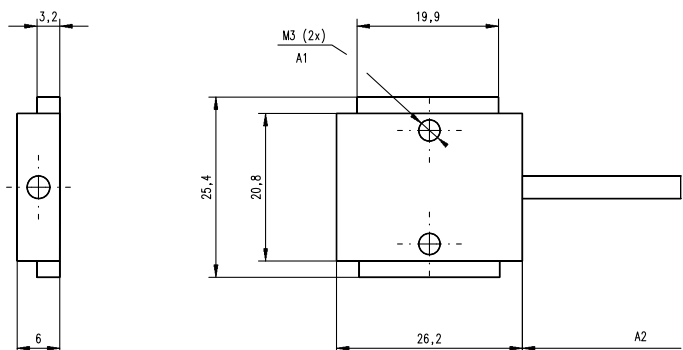
Parameter		
Max. power	[W]	10
Max. voltage	[Vdc]	100
Max. current	[A]	0,5
LED indicator for switch		no
Protection class		IP67
Cable length	[m]	3
Cable cross section	[mm <sup>2</sup> ]	2 × 0,15
Operating temperature limits	[°C]	-25 – 65
Weight	[kg]	0,050



### Magnetic Sensors, part numbers

Sensor type	suitable units	p/n
Normally closed	M50, Z2, Z3	D535 071
Normally open	M50, Z2, Z3	D535 070

On M50 the magnetic sensors are mounted directly in the sensor slot of the profiles of the units and require no mounting bracket while Z2 and Z3 require magnetic sensor mounting brackets. The sensor is fixed in position by two M3 size locking screws (A1). The cable (A2) is molded into the sensor.





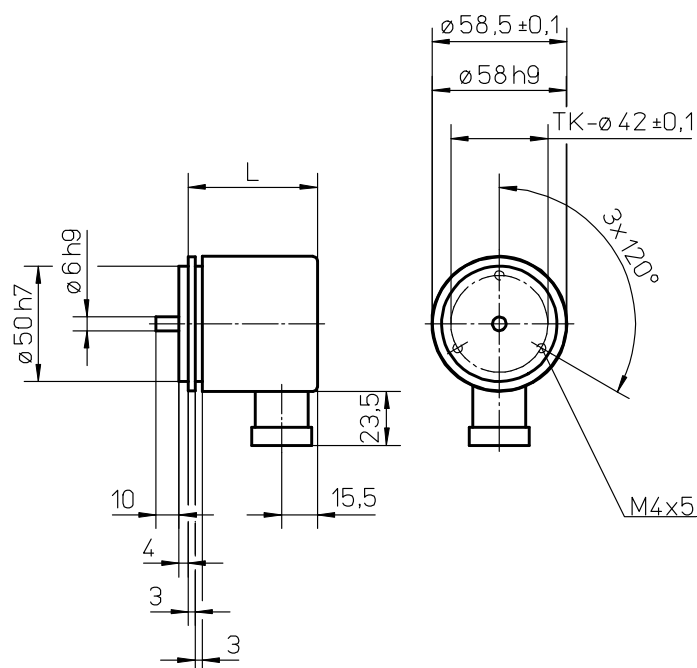
## Accessories

### Electrical Feedback Devices

#### IG602 Encoders, data

Parameter	IG602
Supply voltage [Vdc]	
Type 1	5 ±10%
Type 2	10 – 30
Output type	
Type 1	line driver
Type 2	push-pull
Pulses per revolution [ppr]	
Type 1	100 – 2500
Type 2	100 – 600
Length (L) [mm]	
Type 1	51,5
Type 2	56,0
Weight [kg]	
Type 1	0,36
Type 2	0,36

The IG602 encoders come with mounting screws but no coupling or connector. To be able to mount the encoder to the unit, the unit must have a shaft for encoders. See the ordering keys of the units. The encoders can also be ordered mounted to the unit from factory. See ADG encoder option kit on page 170.



#### IG602 Encoders, part numbers

Encoder type	Supply voltage [Vdc]	Pulses per revolution	p/n
Type 1	5	100	671 521 0194
Type 1	5	200	671 521 0195
Type 1	5	500	671 521 0196
Type 1	5	600	671 521 0197
Type 1	5	1000	671 521 0198
Type 1	5	1250	671 521 0199
Type 1	5	1500	671 521 0200
Type 1	5	2000	671 521 0192
Type 1	5	2500	671 521 0201
Type 2	10 – 30	100	671 521 0193
Type 2	10 – 30	200	671 521 0202
Type 2	10 – 30	500	671 521 0203
Type 2	10 – 30	600	671 521 0204
Type 2	10 – 30	600	

#### STE001 Encoder Connector, data

Parameter	STE001
Number of poles	12
Protection class	IP67
Execution	jack
Cable entrance	straight
Weight [kg]	0,04
Part number	6715600153

#### Encoder Cable, data

Parameter	p/n
5 m cable length	671 555 0068
10 m cable length	671 555 0069

The encoder cables come fitted with a STE001 encoder connector in one of the ends.

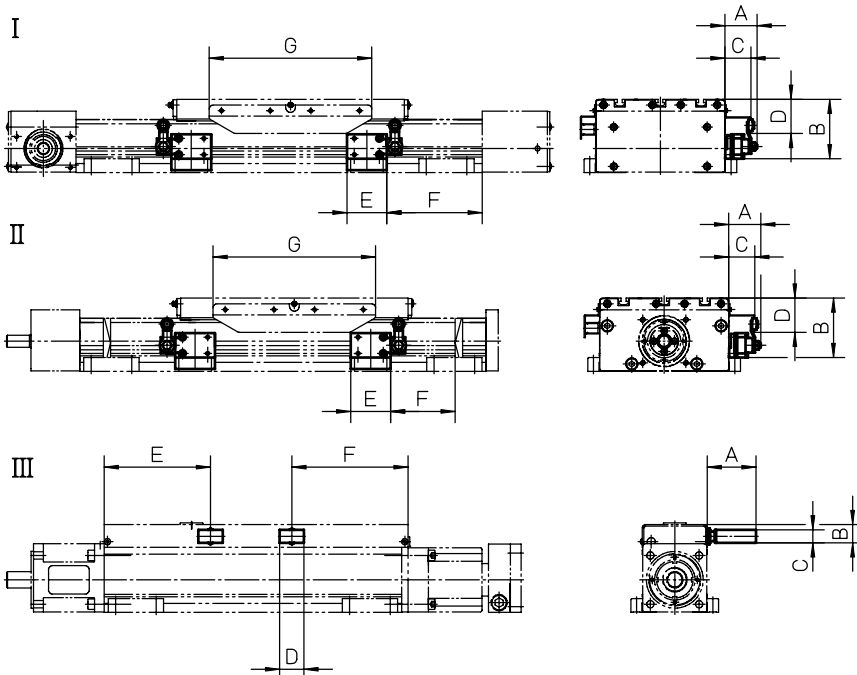
# Accessories

## Electrical Feedback Devices

### ES Limit Switch Option Kit

Unit type	I	II	III	A	B	C	D	E	F	G
WH50 <sup>1</sup>	•			34	60,5	10	26	49	58,5	196
WH80	•			31	76	10	39	49	78,5	196
WH120	•			34	88	10	51	49	78,5	196
WHZ50	•			34	61	10	26	49	58,5	196
WHZ80	•			31	76	10	39	49	78,5	196
WM60		•		40	69	32	38	50	63	200
WM80		•		40	73	32	42	50	79	200
WM120		•		40	89	32	58	50	94	200
WM60Z	•			40	69	32	38	50	73	200
WM80Z <sup>2</sup>	•			40	73	32	42	50	99 (89)	200
WV60		•		40	69	32	38	50	33	200
WV80		•		40	73	32	42	50	39	200
WV120		•		40	89	32	58	50	59	200
MLSM60D		•		40	73	32	32	50	79	200
MLSH60Z	•			40	73	32	42	50	79	200
MLSM80D		•		40	85	32	54	50	101	200
MLSM80Z		•		40	85	32	54	50	101	200
WZ60 <sup>1</sup>			•	60	22,5	16	30	113	53	–
WZ80 <sup>1</sup>			•	60	22,5	16	30	112	84	–

<sup>1</sup> Limit switches for these units can not be moved. On all other units the switches can be re-positioned by the customer. <sup>2</sup> Value in brackets = for short carriage.



The ES limit switch assembly is an option that is mounted at the factory. The limit switches are placed 10 mm from the mechanical ends of the unit. Each limit switch has one NO and one NC contact with positive opening action. Protection degree is IP67. Type I and II switches can be repositioned along the profile by the customer. Note! The ES limit switch option and any of the sensor rail options ENT14x16, ENF14x16 or ENK can not be mounted on the same side of the unit.

# Accessories

## Electrical Feedback Devices

### ES Limit Switch Option Kit, ordering key

	1	2	3	4
Example	<b>ESK07</b>	<b>-L</b>	<b>-01</b>	<b>-10</b>

**1. Compatible unit**

- ESK02 = WH50
- ESK03 = WH80
- ESK04 = WH120
- ESK05 = WM40
- ESK06 = WM60 / WM60Z
- ESK07 = WM80 / WM80Z
- ESK08 = WM120
- ESK09 = WV60
- ESK10 = WV80
- ESK11 = WV120
- ESK12 = WHZ50
- ESK13 = WHZ80
- ESK14 = WZ60
- ESK15 = WZ80
- ESK16 = MLSH60Z
- ESK18 = MLSM80Z
- ESK19 = MLSM60D
- ESK20 = MLSM80D

**2. Mounting side of the unit**

- L = left side
- R = right side

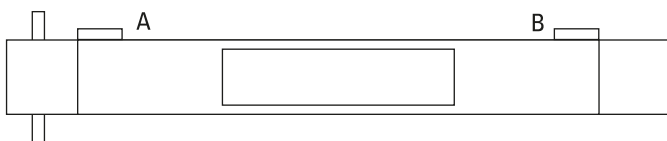
**3. Switch configuration on side A**

- 00 = no switch on side A
- 01 = switch with 1 m cable
- 05 = switch with 5 m cable
- 10 = switch with 10 m cable

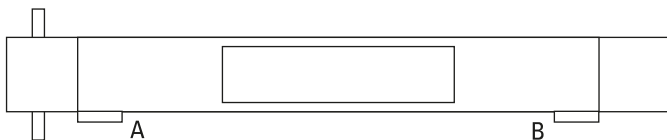
**4. Switch configuration on side B**

- 00 = no switch on side B
- 01 = switch with 1 m cable
- 05 = switch with 5 m cable
- 10 = switch with 10 m cable

ES-••-R-••-••



ES-••-L-••-••

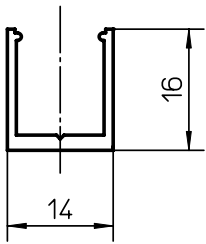


# Accessories

## Electrical Feedback Devices

### ENT14x16 Inductive Sensor Rail

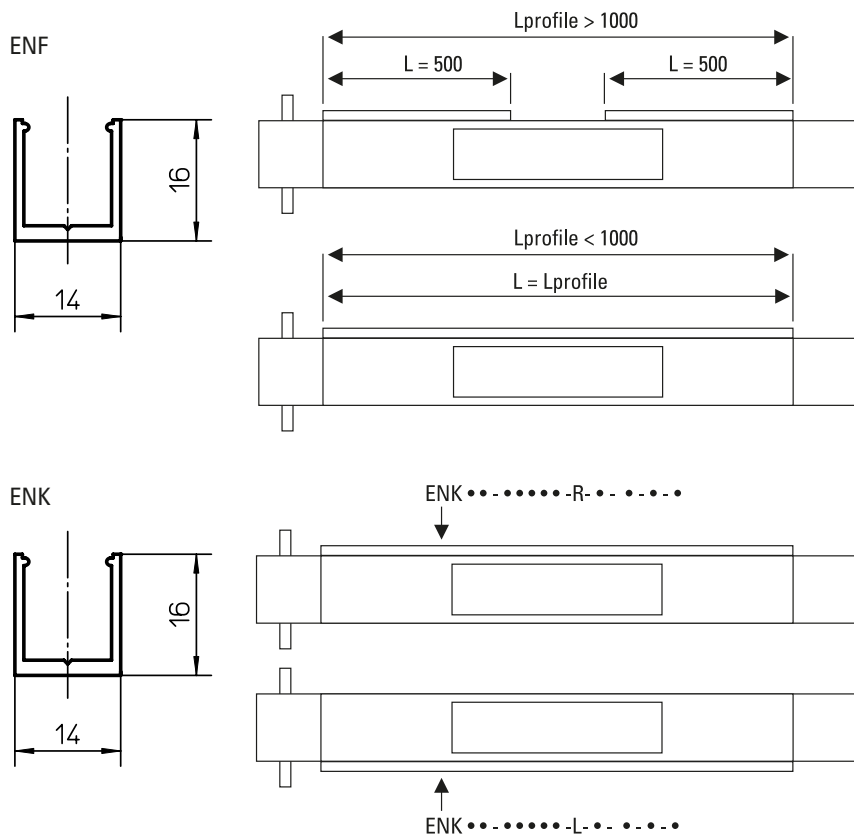
Unit type	p/n
WH40 / WH50 / WH80 / WH120 / WHZ50 / WHZ80 / WM40 / WM60 / WM80 / WM60Z / WM80Z / WV60 / WV80 / MLSM60D / MLSM80D / MLSH60Z / MLSM80Z / WZ60 / WZ80 / WB40 / WB60	671 545 0283



The ENT14x16 inductive sensor rail is mounted to the side of a unit or along any type of beam or profile. Sensors of type EN2 can be mounted in the rail. The rail can also serve as a cable duct for the sensor cables. The rail is sealed with a cover which comes with the rail. The rail comes in lengths of max 3000 mm. Drilling in the profile of the unit is required when mounting the rail. When ordering, specify part number and length of the rail. **Note1!** WM120 and WV120 units do not require any rail as the EN2 sensors can be fitted directly to the profile of the units. **Note2!** ES limit switch option and ENT14x16 rail can not be mounted on the same side of the unit.

### ENF and ENK Inductive Sensor Rail Option Kit, compatibility table

Unit type	ENF / ENK
WH40 / WH50 / WH80 / WH120 / WHZ50 / WHZ80 / WM40 / WM60 / WM80 / WM60Z / WM80Z / WV60 / WV80 / MLSM60D / MLSM80D / MLSH60Z / MLSM80Z / WZ60 / WZ80 / WB40 / WB60 / M50 / M75 / M100	.



The ENF and ENK inductive sensor rail option kits are mounted at the factory. The ENF option consists of two 500 mm long ENT14x16 sensor rails mounted in each end of the unit on the left or right side of the profile. In cases where the unit is too short to allow two 500 mm sensor rails to be mounted, then one rail is mounted along the entire profile of the unit. The ENK option also consists of ENT14 x16 sensor rails but the ENK option has sensor profiles that run along the entire profile of the unit. In the shipment of both ENF and ENK the specified amount and type of EN2 sensors are included. The sensors are fitted to the sensor rail by the customer at the desired positions.

**Note1!** WM120 and WV120 units do not require any ENF or ENK options as the EN2 sensors can be fitted directly to the profile of the units.

**Note2!** The ES limit switch option and ENF rail can not be mounted on the same side of the unit.

**Note3!** Movopart M50/75/100 units require adapter plates for mounting the ENF/ENK to the profile. See page 135 for adapter plate dimensions.

# Accessories

## Electrical Feedback Devices

### ENK and ENF Inductive Sensor Rail Option Kit, ordering key

	1	2	3	4	5	6	7	8
Example	<b>ENK16</b>	<b>-S</b>	<b>-04000</b>	<b>-R</b>	<b>-2</b>	<b>-0</b>	<b>-1</b>	<b>-6</b>

#### 1. Type of rail and compatible unit

ENK01 = ENK rail for WH40	ENF01 = ENF rail for WH40
ENK02 = ENK rail for WH50	ENF02 = ENF rail for WH50
ENK03 = ENK rail for WH80	ENF03 = ENF rail for WH80
ENK04 = ENK rail for WH120	ENF04 = ENF rail for WH120
ENK05 = ENK rail for WM40	ENF05 = ENF rail for WM40
ENK06 = ENK rail for WM60 / WV60	ENF06 = ENF rail for WM60 / WV60
ENK07 = ENK rail for WM80 / WV80	ENF07 = ENF rail for WM80 / WV80
ENK08 = ENK rail for WM120 / WV120	ENF08 = ENF rail for WM120 / WV120
ENK09 = ENK rail for WM60Z	ENF09 = ENF rail for WM60Z
ENK10 = ENK rail for WM80Z	ENF10 = ENF rail for WM80Z
ENK11 = ENK rail for WHZ50	ENF11 = ENF rail for WHZ50
ENK12 = ENK rail for WHZ80	ENF12 = ENF rail for WHZ80
ENK13 = ENK rail for WZ60	ENF13 = ENF rail for WZ60
ENK14 = ENK rail for WZ80	ENF14 = ENF rail for WZ80
ENK15 = ENK rail for MLSH60Z	ENF15 = ENF rail for MLSH60Z
ENK17 = ENK rail for MLSM80Z	ENF17 = ENF rail for MLSM80Z
ENK18 = ENK rail for MLSM60D	ENF18 = ENF rail for MLSM60D
ENK19 = ENK rail for MLSM80D	ENF19 = ENF rail for MLSM80D
ENK20 = ENK rail for WB40	ENF20 = ENF rail for WB40
ENK21 = ENK rail for WB60	ENF21 = ENF rail for WB60
ENK28 = ENK rail for MF/MG07K	ENF28 = ENF rail for MF/MG07K
ENK29 = ENK rail for MF/MG06K	ENF29 = ENF rail for MF/MG06K
ENK30 = ENK rail for MF/MG06B	ENF30 = ENF rail for MF/MG06B
ENK31 = ENK rail for MF/MG07B	ENF31 = ENF rail for MF/MG07B
ENK32 = ENK rail for MF/MG10K	ENF32 = ENF rail for MF/MG10K
ENK33 = ENK rail for MF/MG10B	ENF33 = ENF rail for MF/MG10B

#### 2. Number of carriages

- S = single carriage
- D = double carriages

#### 3. Total length of unit (L tot)

- vvvvv = distance in mm

#### 4. Mounting side of the unit

- L = left side
- R = right side

#### 5. Number of EN2 sensors with NC contact and 2 m cable

- w = 0 – 9 sensors / normally closed / 2 m cable

#### 6. Number of EN2 sensors with NO contact and 2 m cable

- x = 0 – 9 sensors / normally open / 2 m cable

#### 7. Number of EN2 sensors with NC contact and 10 m cable

- y = 0 – 9 sensors / normally closed / 10 m cable

#### 8. Number of EN2 sensors with NO contact and 10 m cable

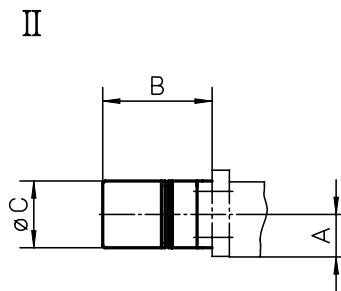
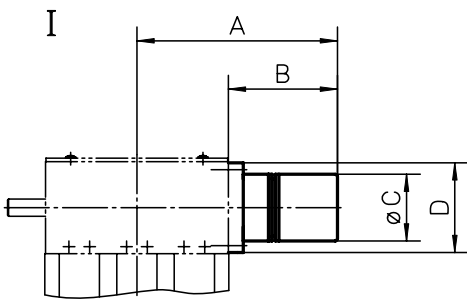
- z = 0 – 9 sensors / normally open / 10 m cable

# Accessories

## Electrical Feedback Devices

### ADG Encoder Option Kit

Unit type	Mounting type I	Mounting type II	A	B	∅C	D
WH40	•		115	95	58,5	∅60
WH50 / WHZ50	•		120	96	58,5	50 × 50
WH80 / WHZ80	•		139	100	58,5	90 × 90
WH120	•		153	93	58,5	100 × 100
WM40		•	25	95	58,5	–
WM60		•	31	95	58,5	–
WM80		•	40	95	58,5	–
WM120		•	74	95	58,5	–
WM60Z	•		124	94	58,5	60 × 60
WM80Z	•		138	98	58,5	65 × 65
WB40		•	20,8	95	58,5	–
WB60		•	32,5	95	58,5	–
MLSM60D		•	37	95	58,5	–
MLSM80D		•	46	95	58,5	–
MLSH60Z	•		174,5	95	58,5	78 × 59
MLSM80Z	•		214,5	95	58,5	100 × 80



The ADG encoder option kit is an option that is mounted to the unit at the factory. It includes an IG602 encoder, a STE001 encoder connector and an encoder mounting flange with coupling. Cable can also be supplied in 5 or 10 meter lengths.

# Accessories

## Electrical Feedback Devices

### ADG Encoder Option Kit, ordering key

	1	2	3
Example	<b>ADG-08</b>	<b>-05-0600</b>	<b>-00</b>

#### 1. Compatible unit

ADG-01 = WH40  
 ADG-02 = WH50 / WHZ50  
 ADG-03 = WH80 / WHZ80  
 ADG-04 = WH120  
 ADG-05 = WM40  
 ADG-06 = WM60 / WV60  
 ADG-07 = WM80 / WV80  
 ADG-08 = WM120 / WV120  
 ADG-09 = WM60Z  
 ADG-10 = WM80Z  
 ADG-11 = MLSH60Z  
 ADG-13 = MLSM80Z  
 ADG-14 = MLSM60D  
 ADG-15 = MLSM80D  
 ADG-16 = WB40  
 ADG-17 = WB60

#### 2. Supply voltage and number of pulses

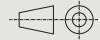
-05-0100 = 5 volts, 100 pulses per revolution  
 -05-0200 = 5 volts, 200 pulses per revolution  
 -05-0500 = 5 volts, 500 pulses per revolution  
 -05-0600 = 5 volts, 600 pulses per revolution  
 -05-1000 = 5 volts, 1000 pulses per revolution  
 -05-1250 = 5 volts, 1250 pulses per revolution  
 -05-2000 = 5 volts, 2000 pulses per revolution  
 -05-2500 = 5 volts, 2500 pulses per revolution  
 -24-0100 = 10 - 30 volts, 100 pulses per revolution  
 -24-0200 = 10 - 30 volts, 200 pulses per revolution  
 -24-0500 = 10 - 30 volts, 500 pulses per revolution  
 -24-0600 = 10 - 30 volts, 600 pulses per revolution

#### 3. Cable and connector configuration

-00 = no cable only STE001 encoder connector  
 -05 = 5 m cable with STE001 encoder connector in one of the ends  
 -10 = 10 m cable with STE001 encoder connector in one of the ends

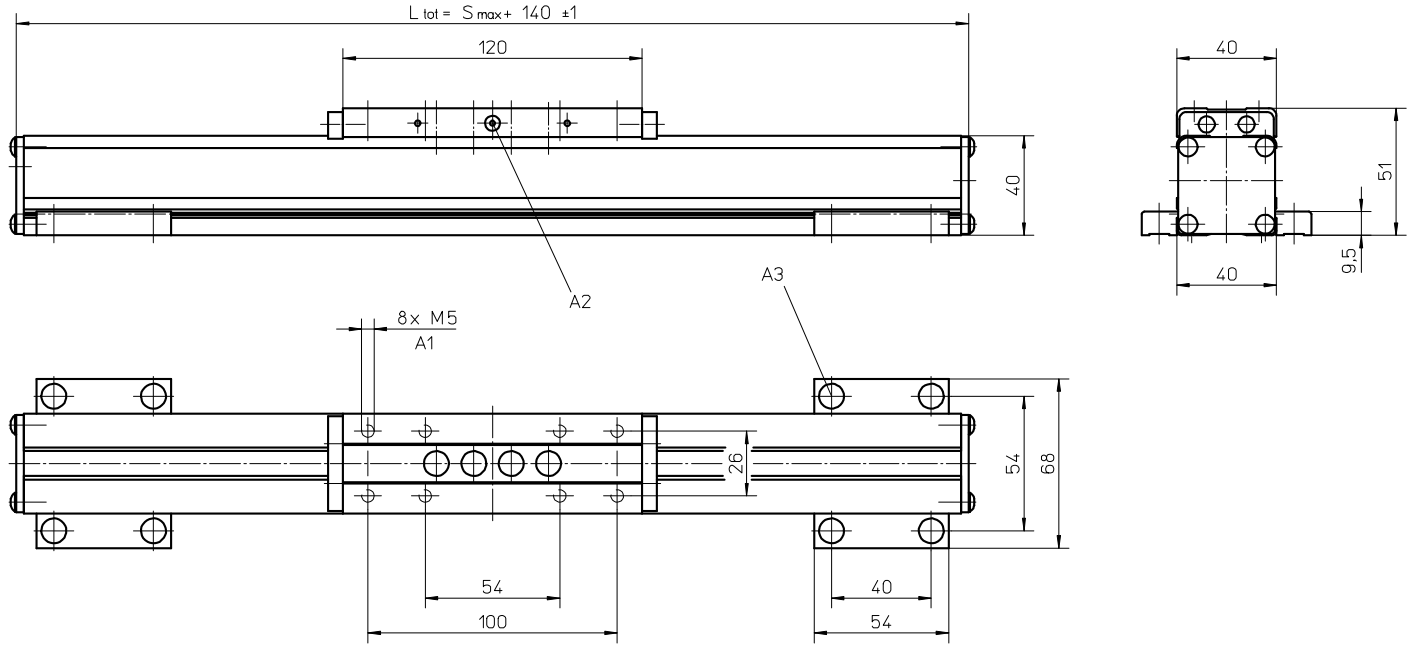
# Accessories

## Non-driven Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

### WH40N

» Ordering key - see page 211  
» Technical data - see page 78

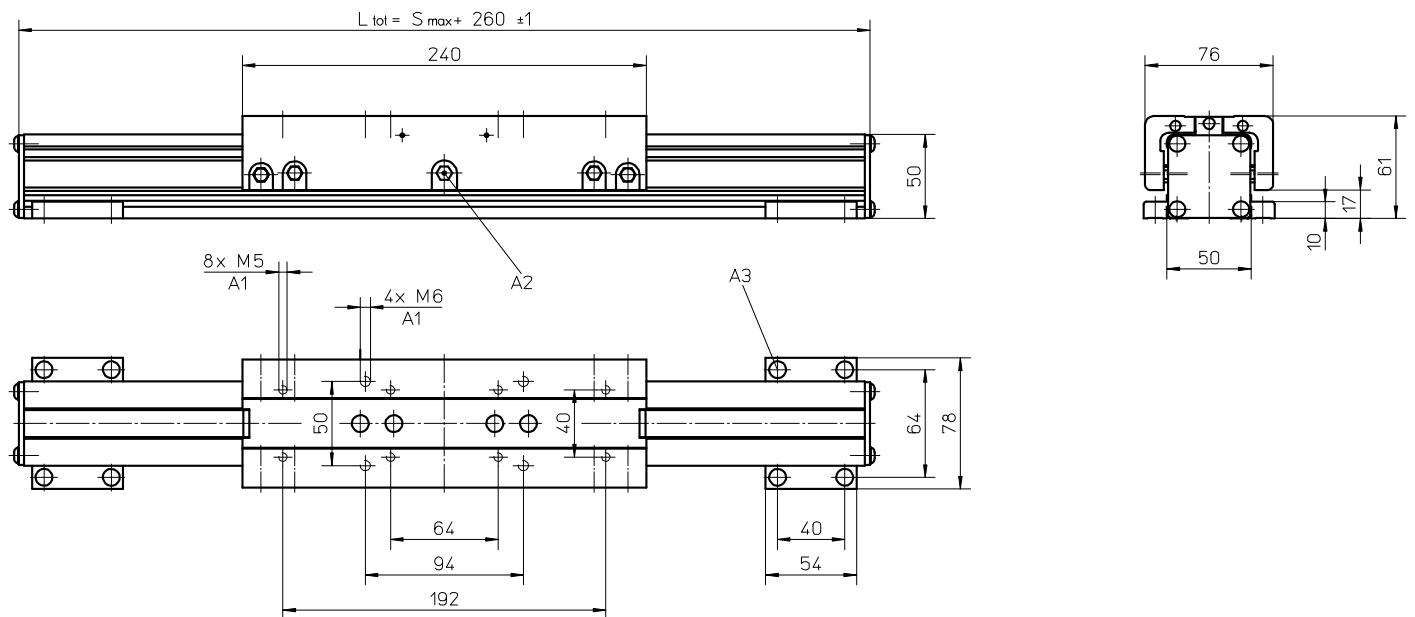


A1: depth 10  
A2: lubricating nipple on both sides DIN3405 D 1/A

A3: socket cap screw ISO4762-M5x12 8.8

### WH50N

» Ordering key - see page 211  
» Technical data - see page 106




A1: depth 10  
A2: funnel type lubricating nipple DIN3405-M6x1-D1

A3: socket cap screw ISO4762-M5x12 8.8



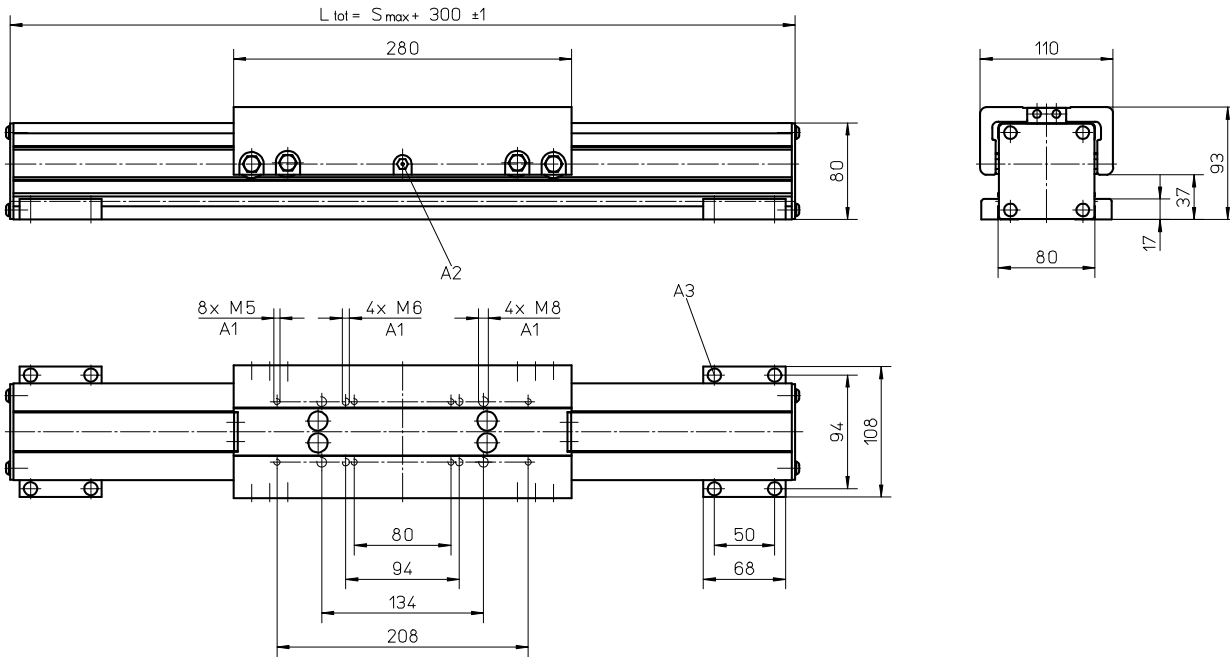
# Accessories

## Non-driven Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

### WH80N

» Ordering key - see page 211  
 » Technical data - see page 108

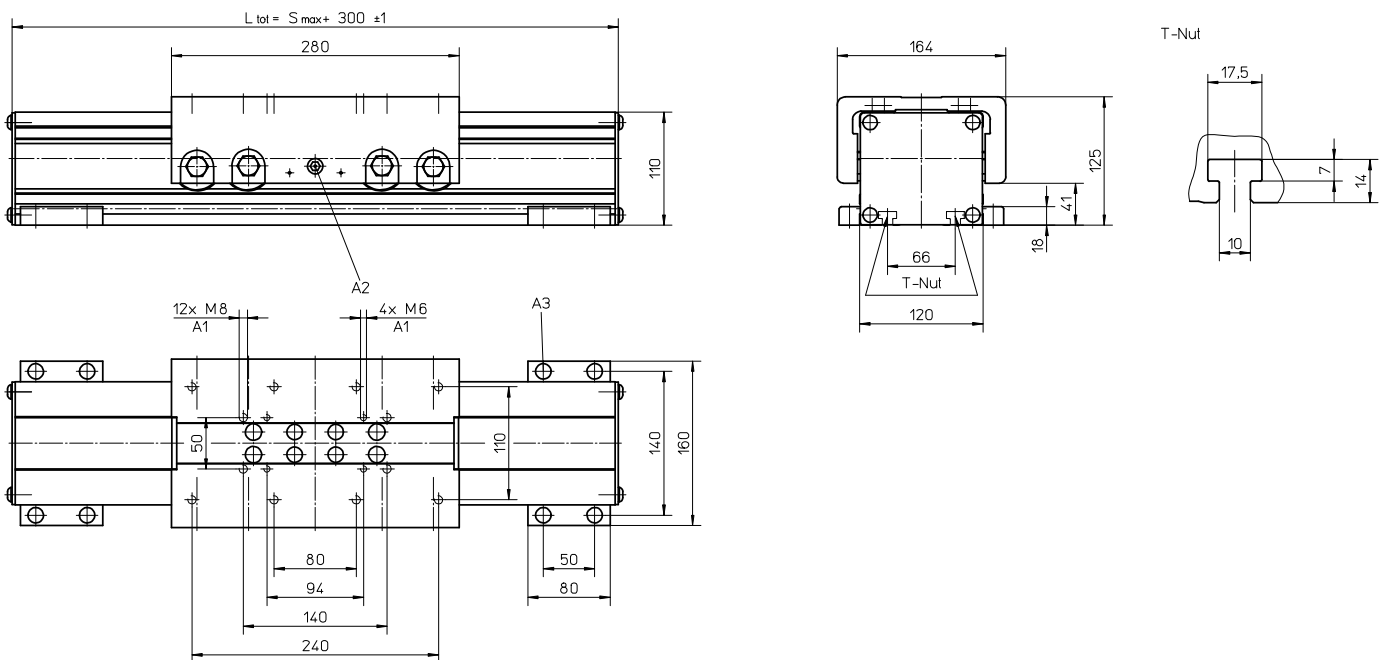


A1: depth 12  
 A2: funnel type lubricating nipple DIN3405-M6x1-D1

A3: socket cap screw ISO4762-M6x20 8.8

### WH120N

» Ordering key - see page 211  
 » Technical data - see page 110



A1: depth 12  
 A2: funnel type lubricating nipple DIN3405-M6x1-D1

A3: socket cap screw ISO4762-M8x20 8.8

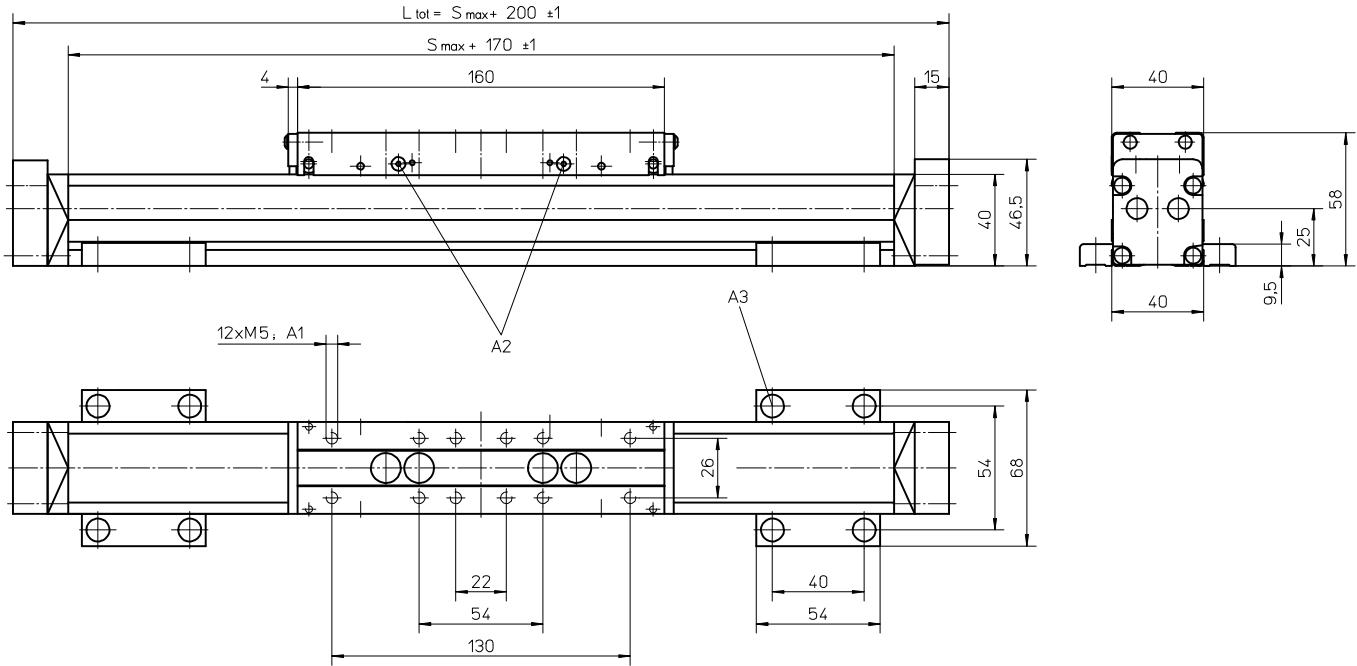
# Accessories

## Non-driven Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

### WM40N

» Ordering key - see page 211  
» Technical data - see page 14

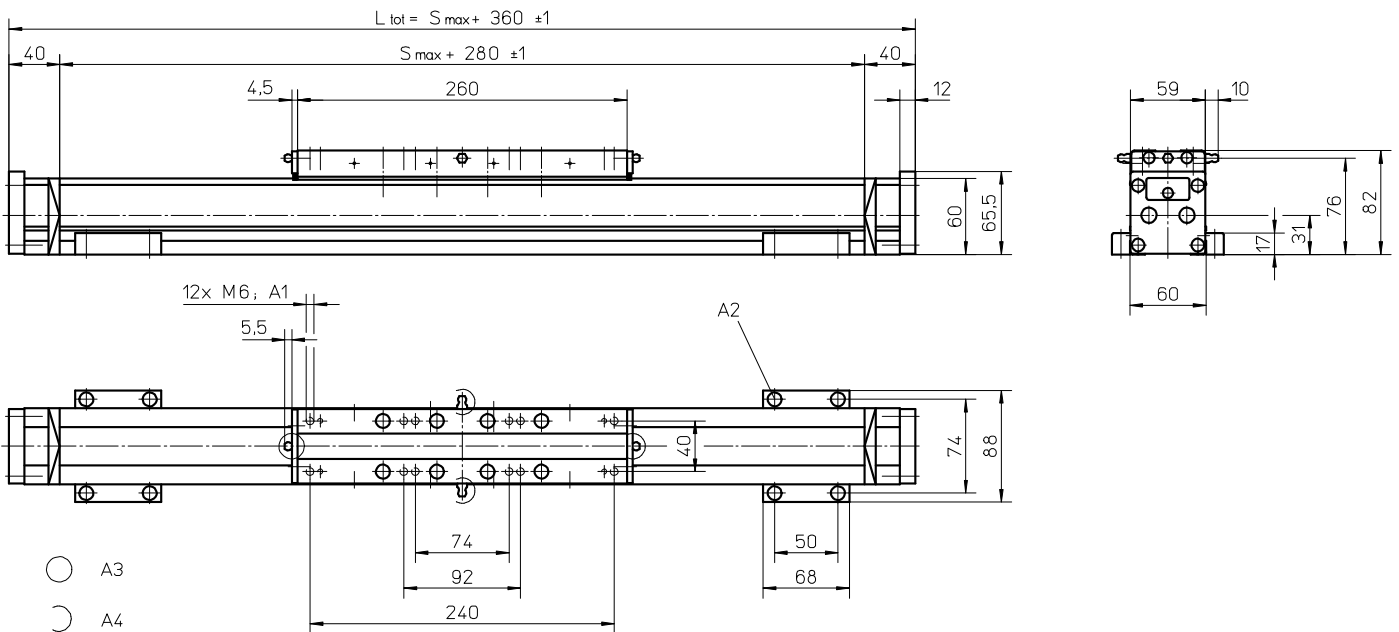


A1: depth 7  
A2: lubricating nipple on both sides DIN3405 D 1/A

A3: socket cap screw ISO4762-M5x12 8.8

### WM60N

» Ordering key - see page 211  
» Technical data - see page 18




- A3
- A4

A1: depth 11  
A2: socket cap screw ISO4762-M6x20 8.8

A3: tapered lubricating nipple to DIN71412 AM6  
A4: can be changed over to one of the three alternative lubricating points by the customer

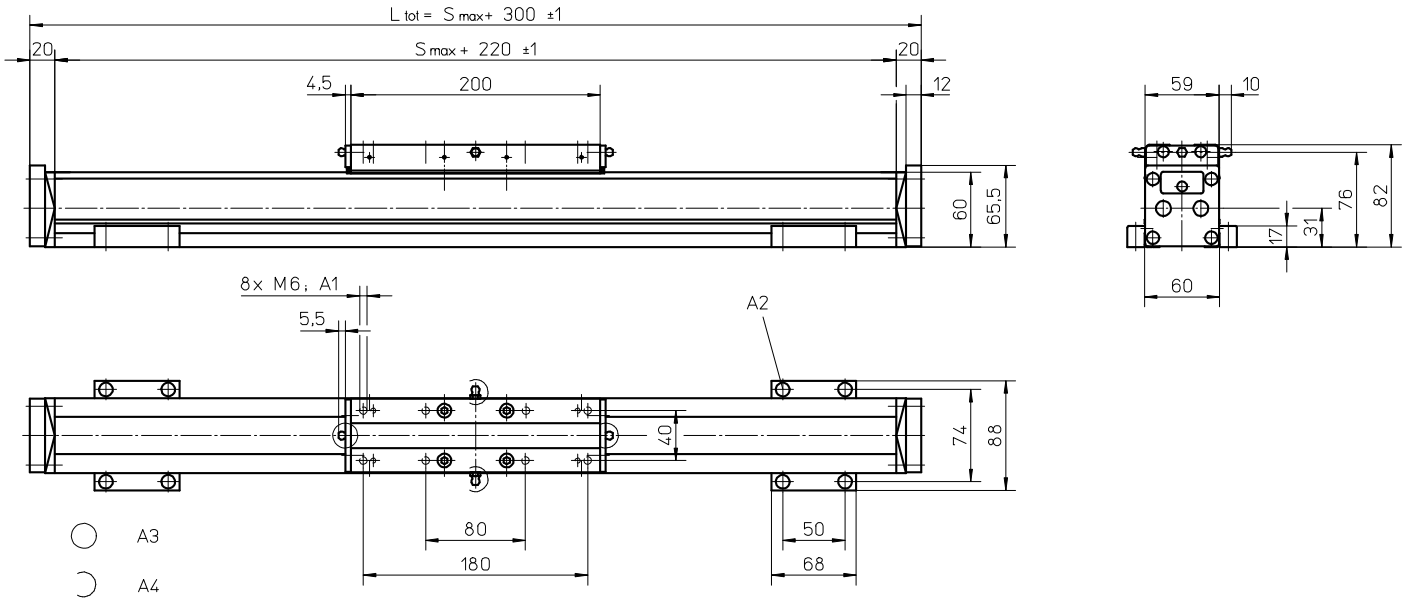
# Accessories

## Non-driven Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

### WM60N with Single Short Carriage

» Ordering key - see page 211  
 » Technical data - see page 20

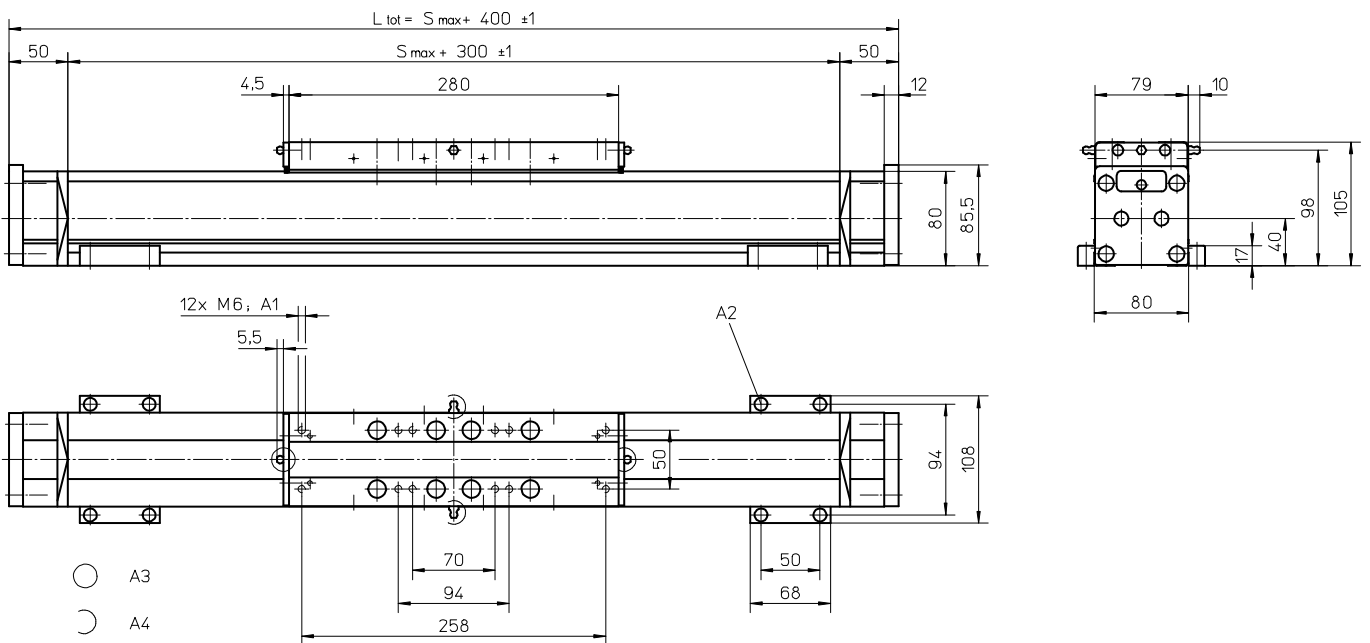


A1: depth 11  
 A2: socket cap screw ISO4762-M6x20 8.8

A3: tapered lubricating nipple to DIN71412 AM6  
 A4: can be changed over to one of the three alternative lubricating points by the customer

### WM80N

» Ordering key - see page 211  
 » Technical data - see page 24



A1: depth 12  
 A2: socket cap screw ISO4762-M6x20 8.8

A3: tapered lubricating nipple to DIN71412 AM6  
 A4: can be changed over to one of the three alternative lubricating points by the customer

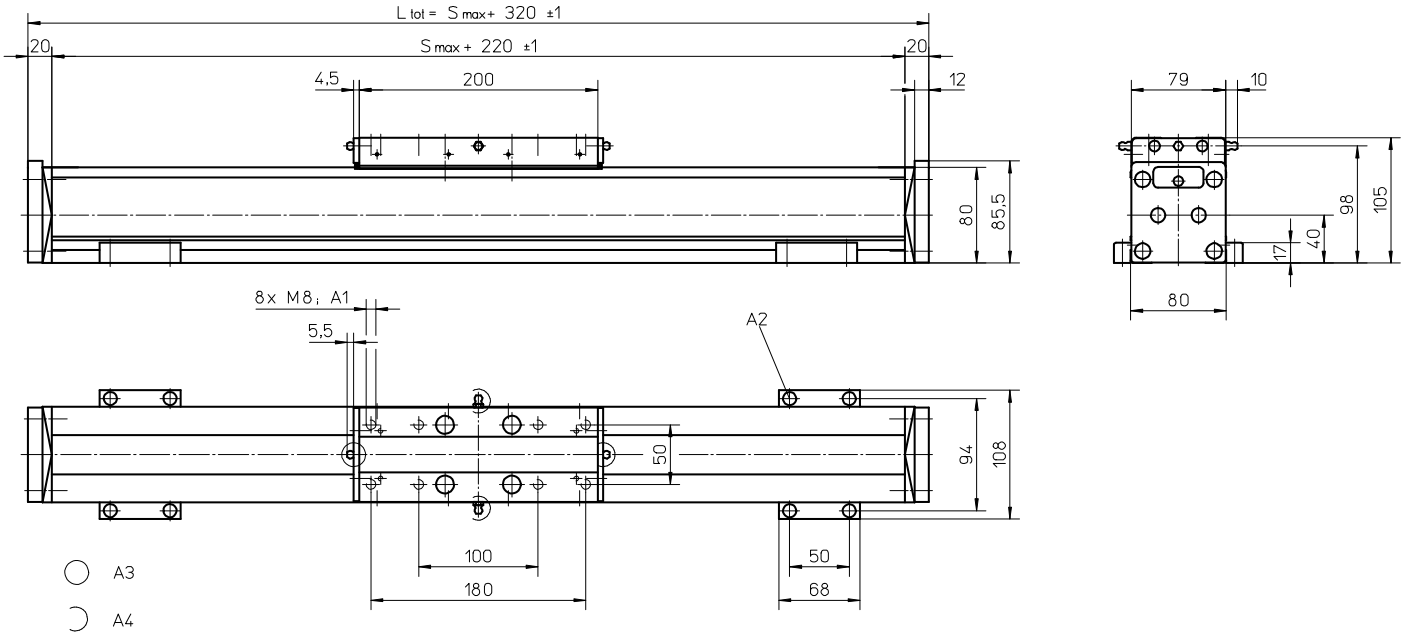
# Accessories

## Non-driven Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

### WM80N with Single Short Carriage

» Ordering key - see page 211  
» Technical data - see page 26

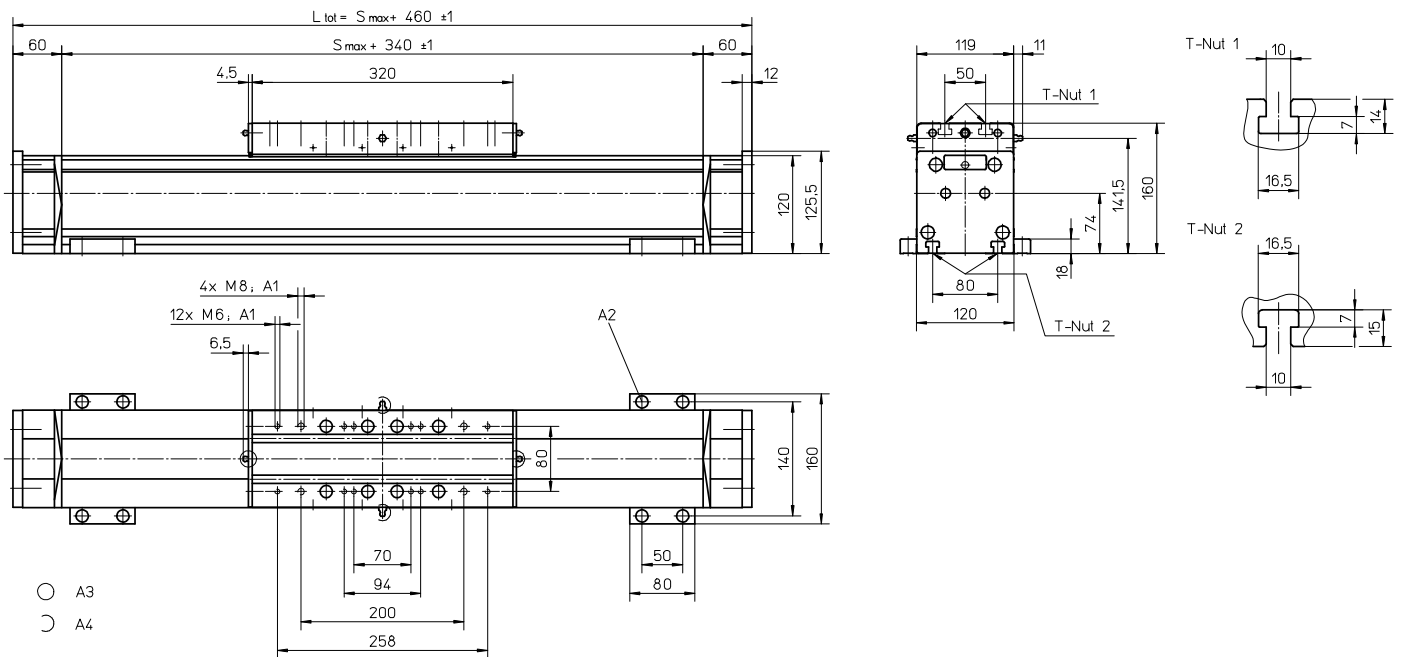


A1: depth 12  
A2: socket cap screw ISO4762-M6x20 8.8

A3: tapered lubricating nipple to DIN71412 AM6  
A4: can be changed over to one of the three alternative lubricating points by the customer

### WM120N

» Ordering key - see page 211  
» Technical data - see page 34




A1: depth 22  
A2: socket cap screw ISO4762-M8x20 8.8

A3: tapered lubricating nipple to DIN71412 M8x1  
A4: can be changed over to one of the three alternative lubricating points by the customer

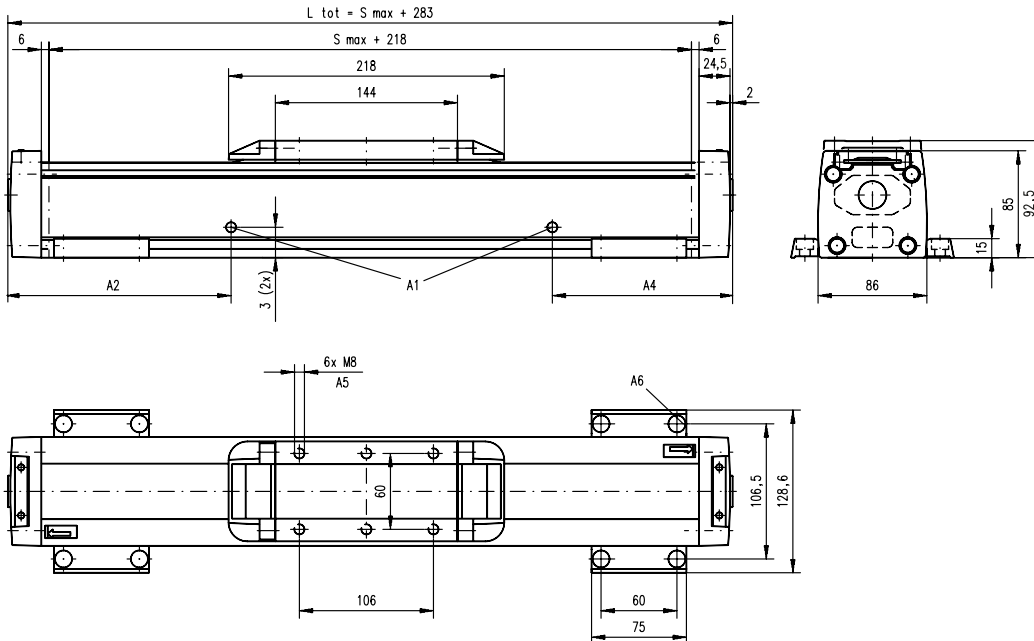
# Accessories

## Non-driven Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

### M75N

» Ordering key - see page 212  
 » Technical data - see page 42

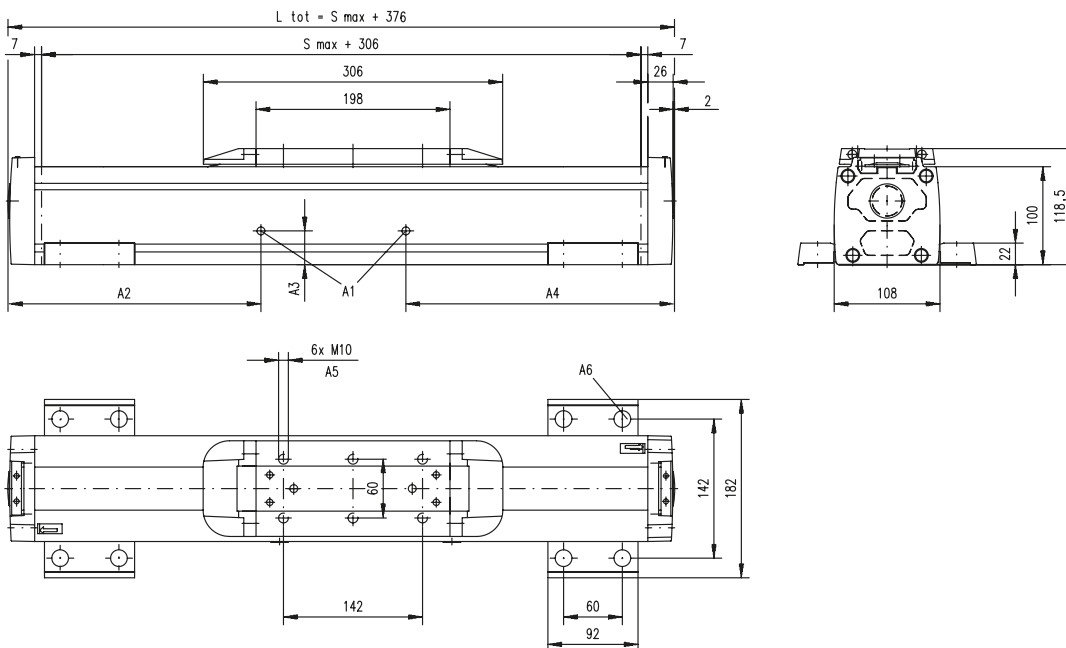


A1: slide guide tensioning holes  $\phi 6$  (MG07N), lubrication holes  $\phi 10$  (MF07N)  
 A2: 177 (MG07N), 127 (MF07N)  
 A3: 24 (MG07N), 43 (MF07N)

A4: 326 (MG07N), 346 (MF07N)  
 A5: depth 8 Heli coil  
 A6:  $\phi 13,5 / \phi 8,5$  for socket head cap screw M8

### M100N

» Ordering key - see page 212  
 » Technical data - see page 44




A1: slide guide tensioning holes  $\phi 6$  (MG10N),  $\phi 10$  (MF10N)  
 A2: 127,5 if  $L_{tot} \leq 1055$ mm,  
 227,5 if  $L_{tot} > 1055$ mm (MG10N), 292,5 (MF10N)  
 A3: 34,5 (MG10N), 56,5 (MF10N)

A4: 127,5 if  $L_{tot} \leq 1055$ mm, 377,5 if  $L_{tot} > 1055$ mm (MG10N),  
 292,5 if  $L_{tot} \Rightarrow 755$ mm, no hole if  $L_{tot} < 755$ mm (MF10N)  
 A5: depth 10 Heli coil  
 A6:  $\phi 17 / \phi 10,5$  for socket head cap screw M10



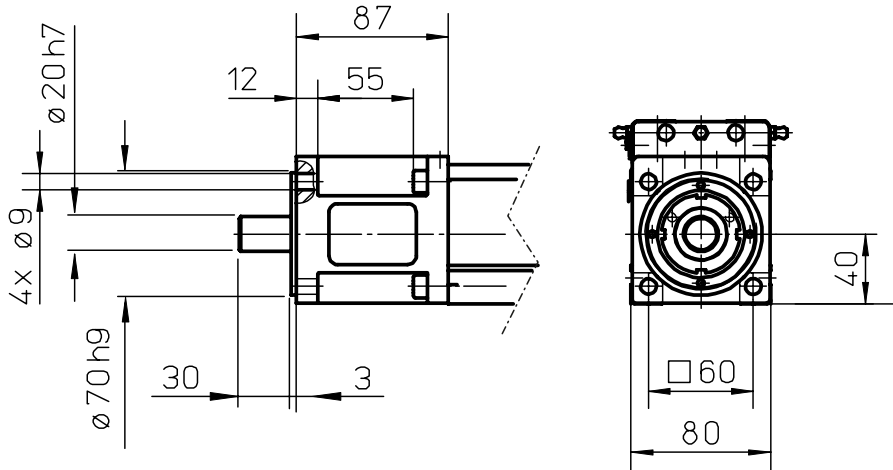
# Accessories

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

## Non-RediMount Linear Motion Systems

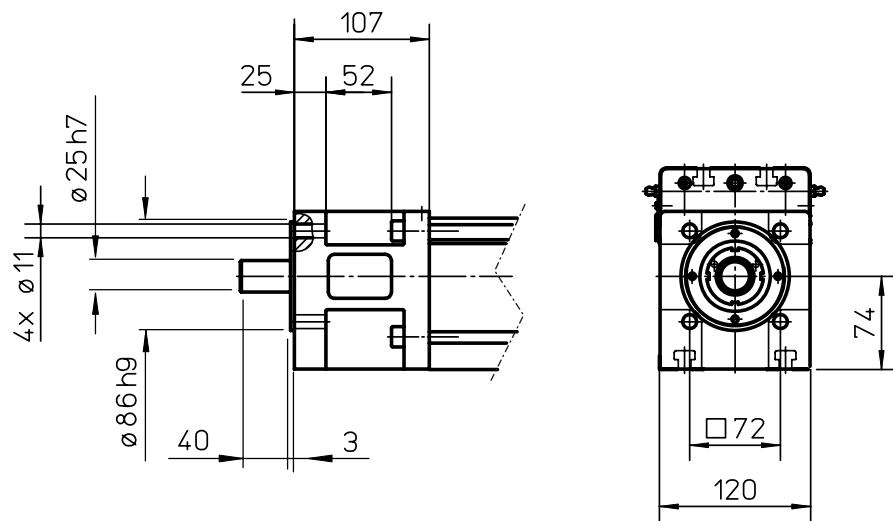
### WM80, WV80

- » Ordering key - see page 193, 194
- » Technical data - see page 24 - 27, 32



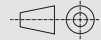
### WM120, WV120

- » Ordering key - see page 193, 194
- » Technical data - see page 28, 32



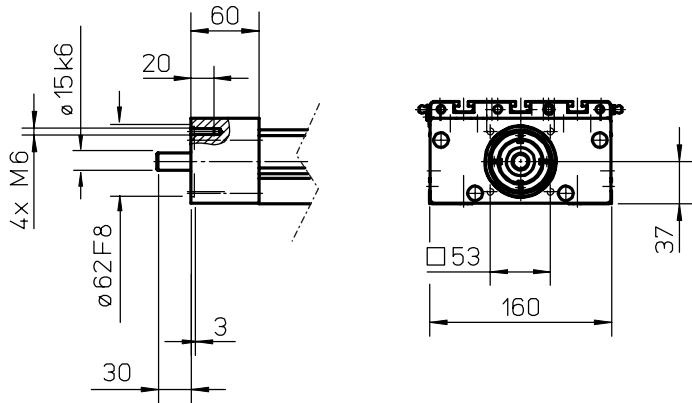
# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

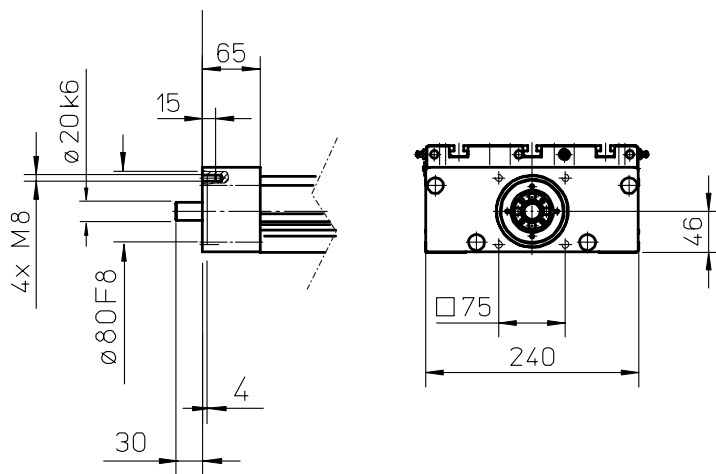
### MLSM60D

» Ordering key - see page 195  
» Technical data - see page 36



### MLSM80D


» Ordering key - see page 195  
» Technical data - see page 38





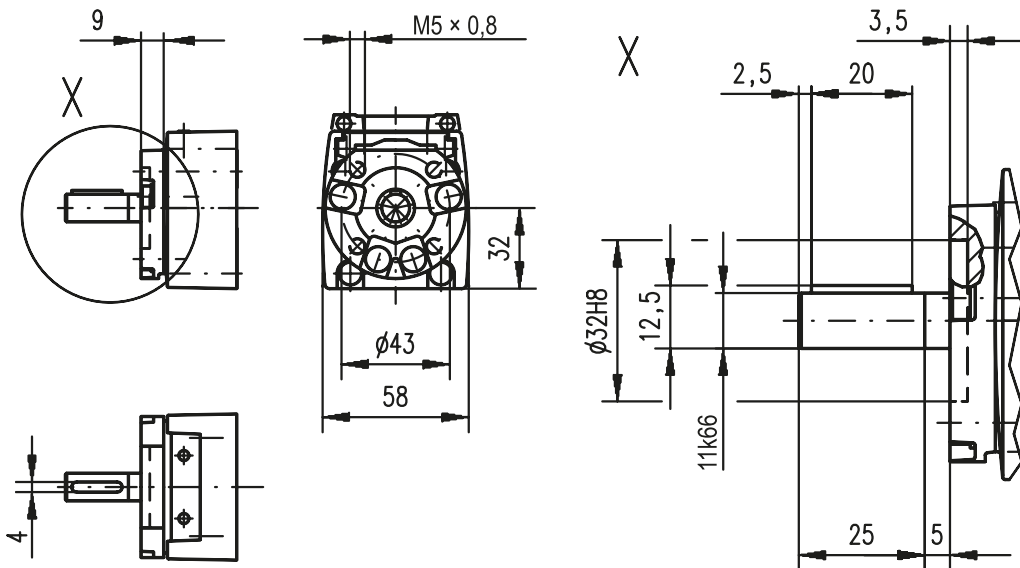
# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

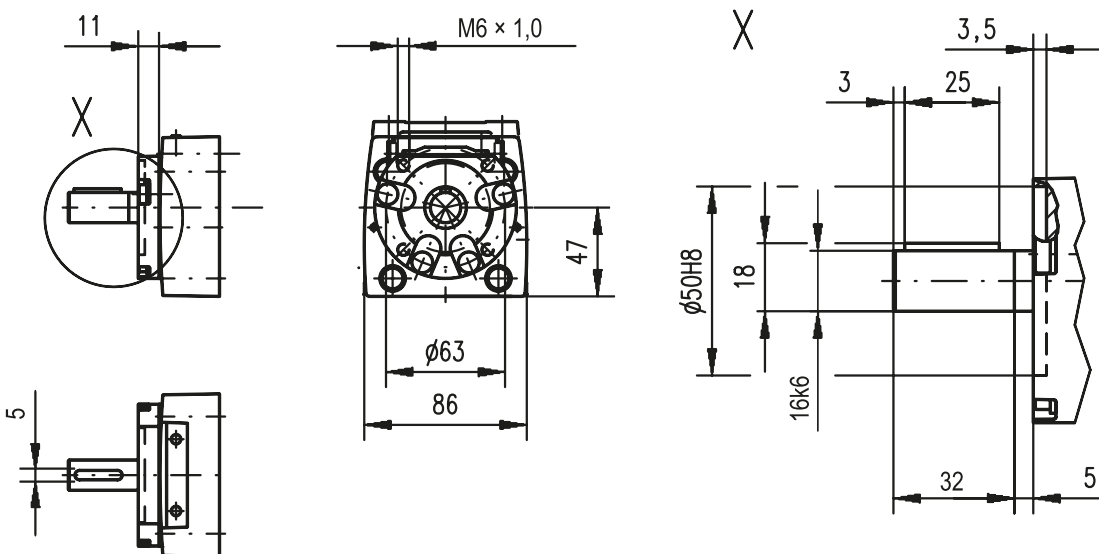
### M55 with ball screw drive

» Ordering key - see page 196, 201  
 » Technical data - see page 40, 70



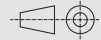
### M75 with ball screw drive

» Ordering key - see page 196, 201  
 » Technical data - see page 42, 72



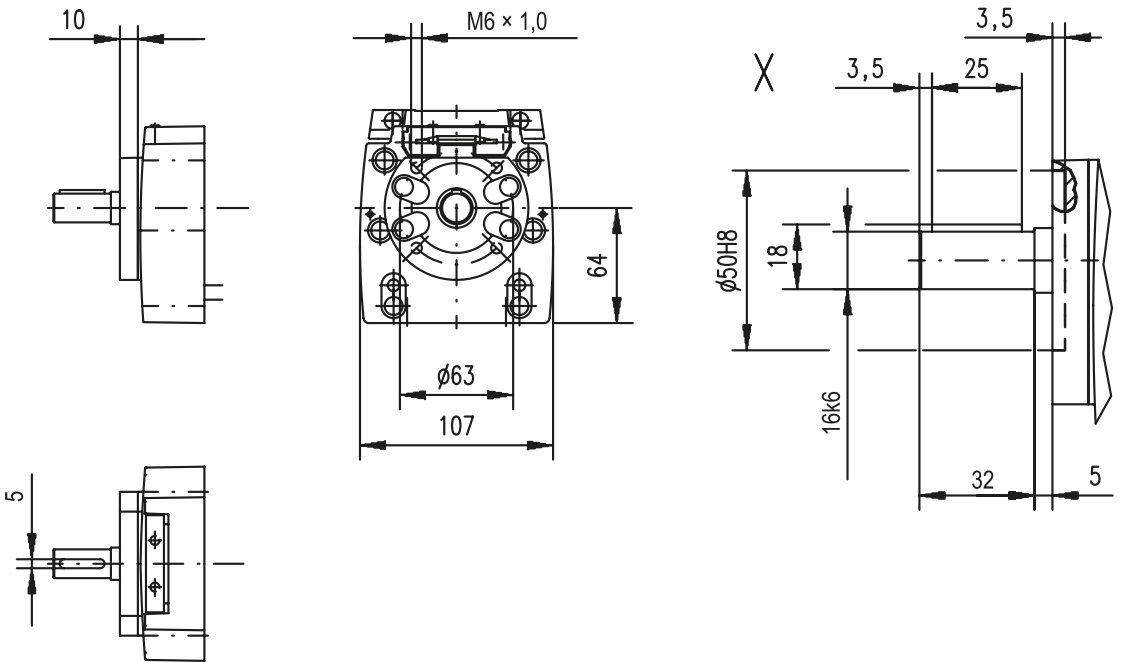
# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

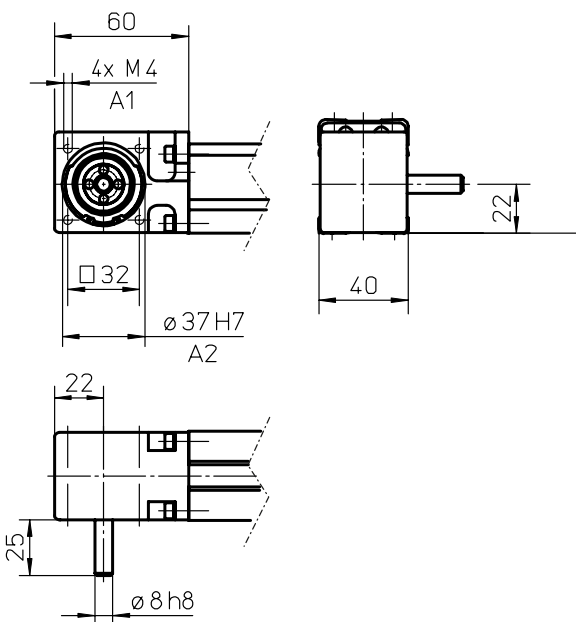
### M100 with ball screw drive

» Ordering key - see page 196, 201  
» Technical data - see page 44, 74



### WH40

» Ordering key - see page 202  
» Technical data - see page 78



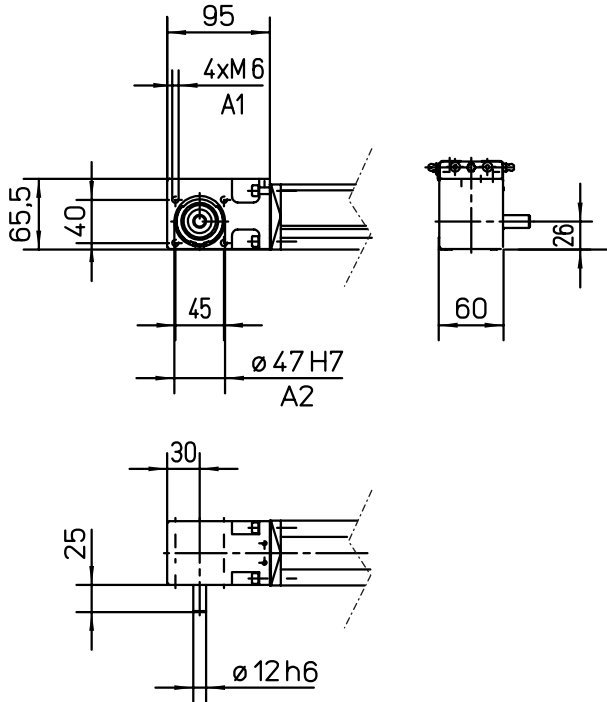
A1: depth 10  
A2: depth 3

# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

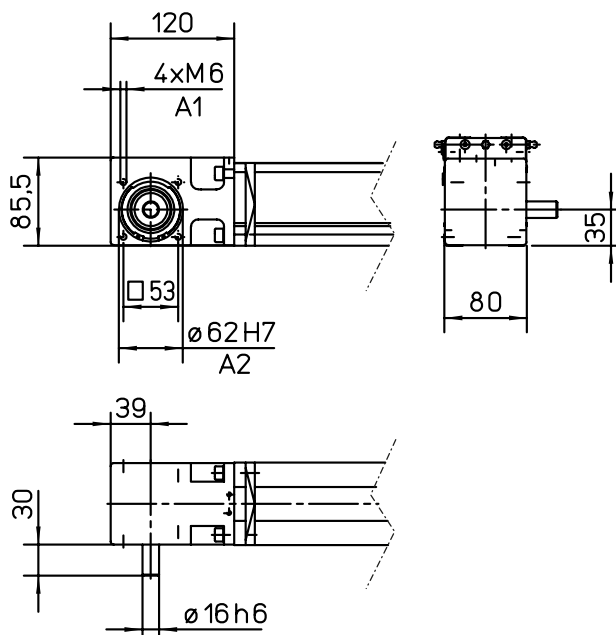
### WM60Z



A1: depth 15  
A2: depth 4

» Ordering key - see page 203  
» Technical data - see page 80

### WM80Z



A1: depth 15  
A2: depth 2,5

» Ordering key - see page 203  
» Technical data - see page 82

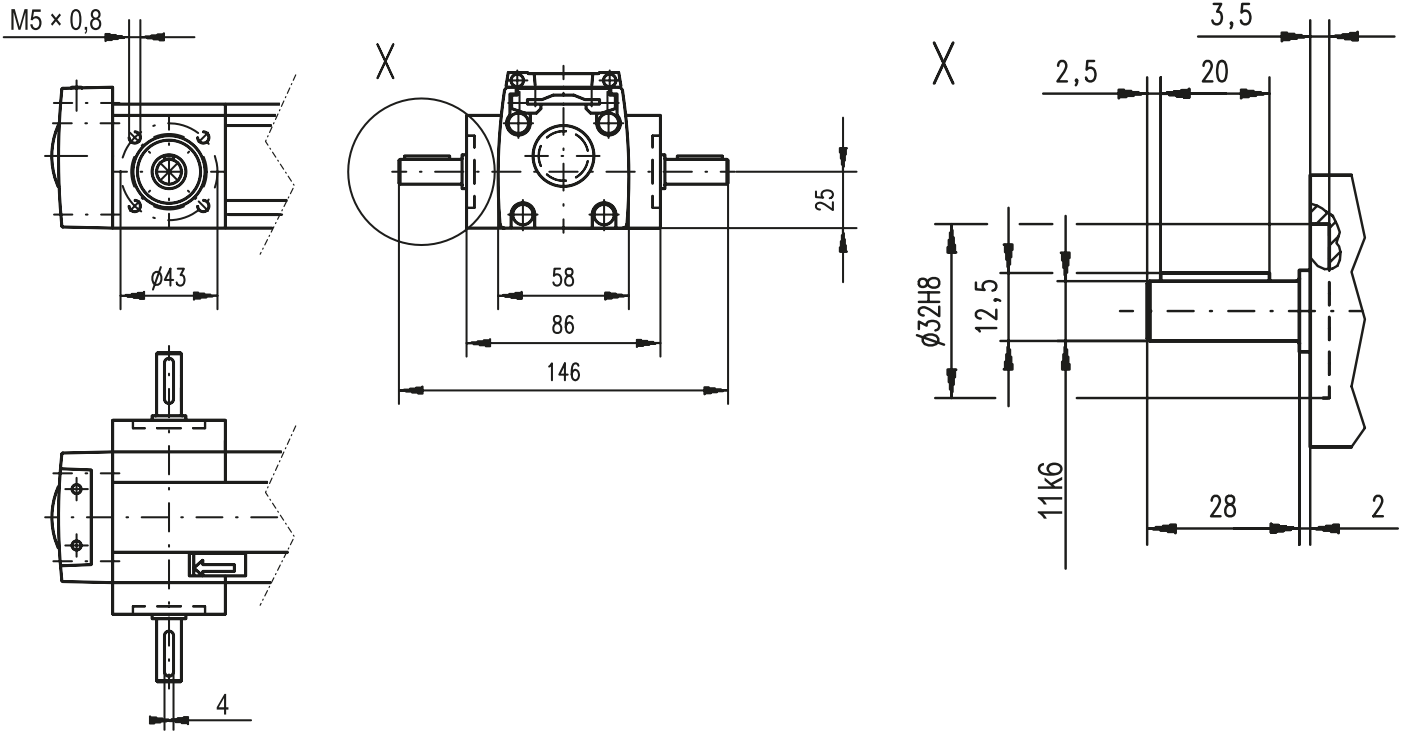
# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

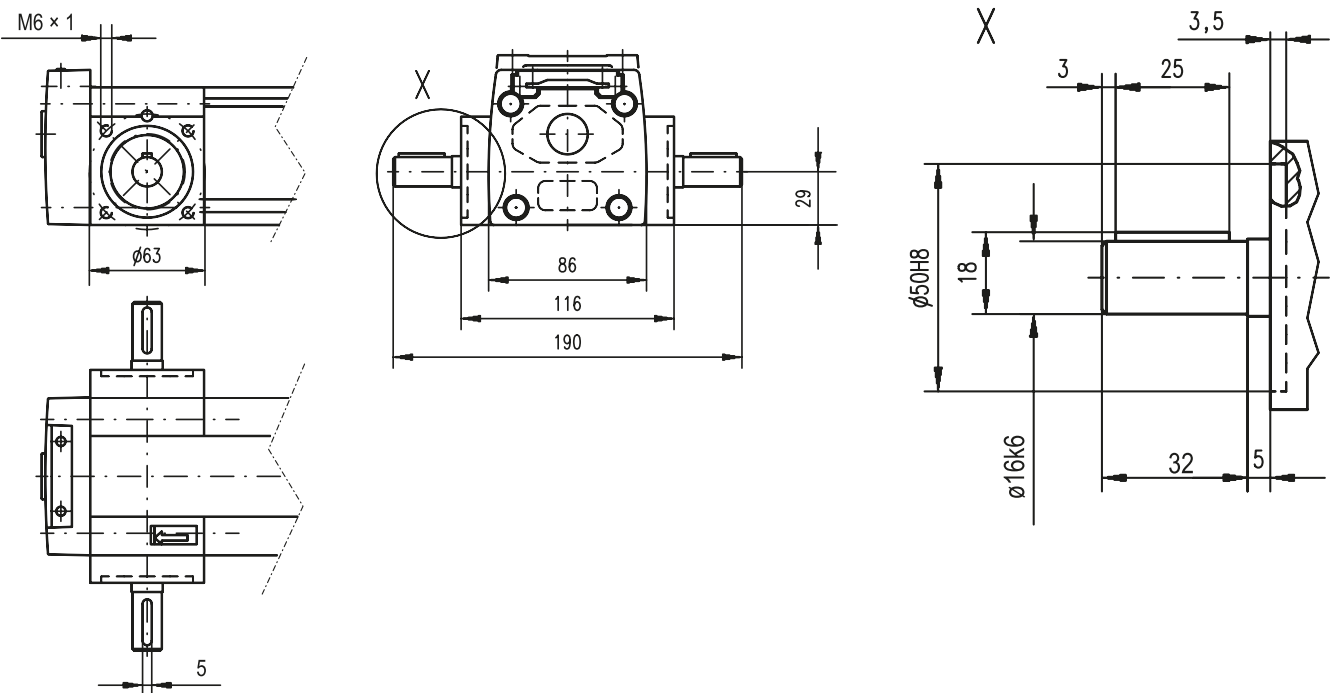
### M55 with belt drive

» Ordering key - see page 204, 206  
» Technical data - see page 86, 98




### M75 with belt drive

» Ordering key - see page 204, 206  
» Technical data - see page 88, 100



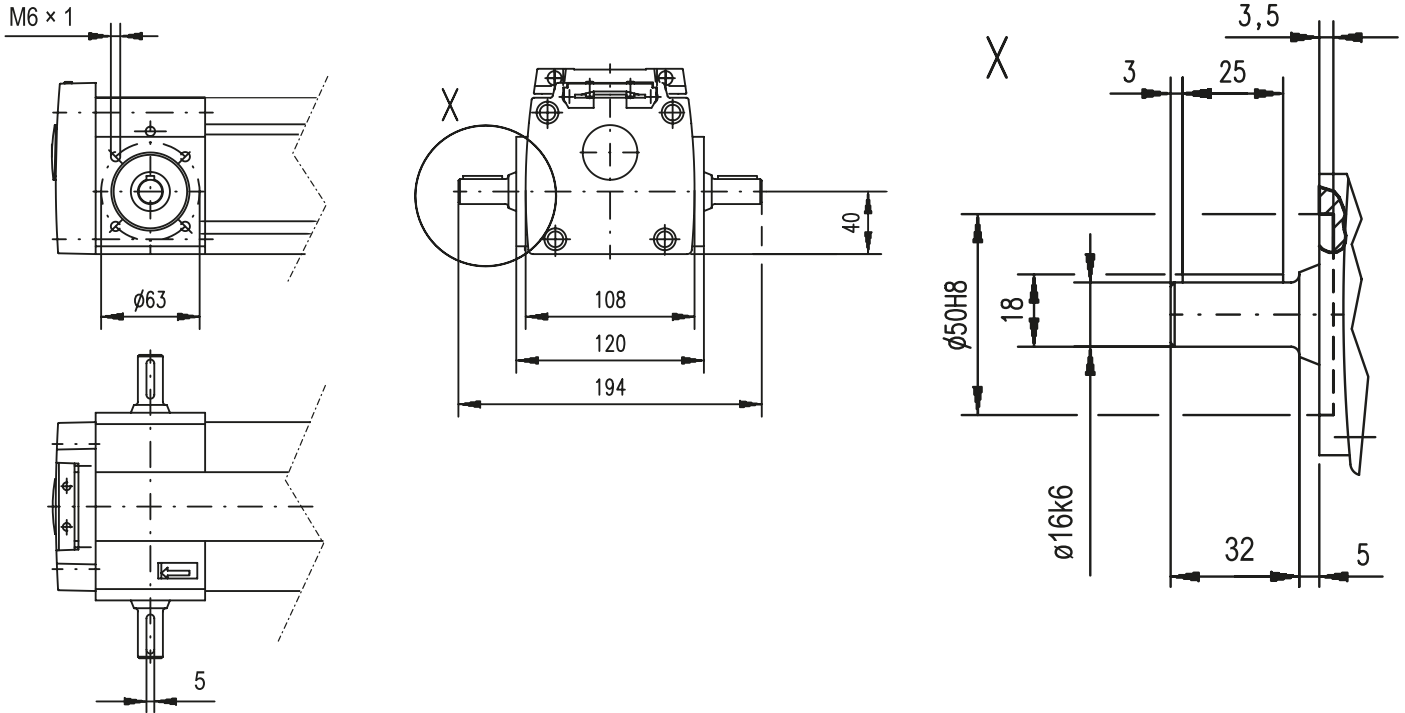
# Accessories

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

## Non-RediMount Linear Motion Systems

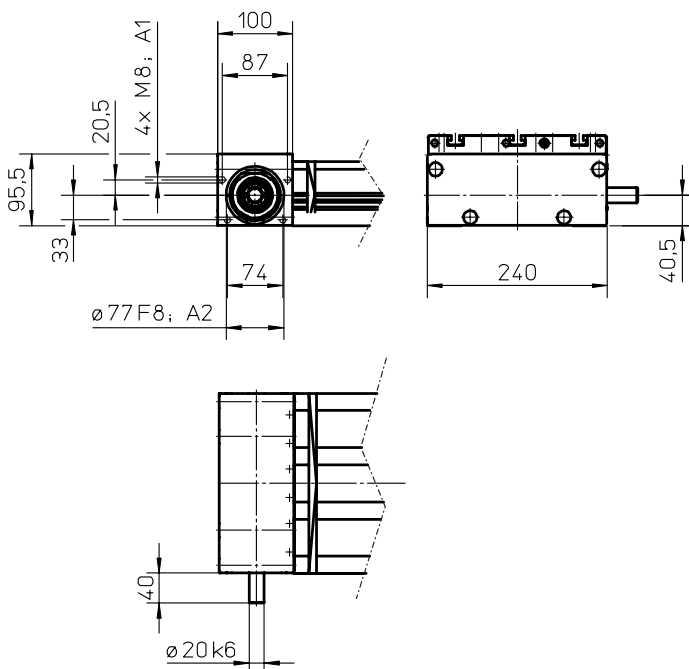
### M100 with belt drive

» Ordering key - see page 204, 206  
 » Technical data - see page 90, 102



### MLSM80Z

» Ordering key - see page 205  
 » Technical data - see page 92



A1: depth 18  
 A2: depth 4

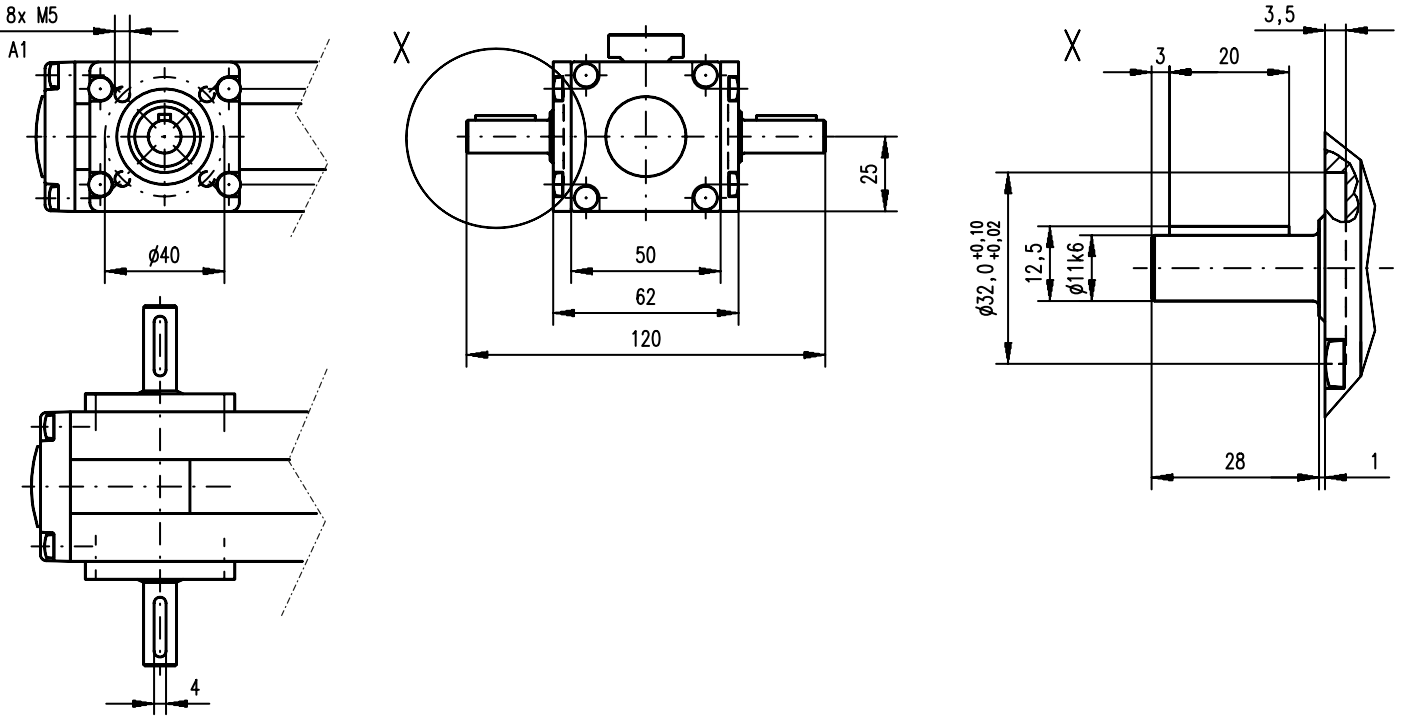
# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

» Ordering key - see page 206  
» Technical data - see page 96

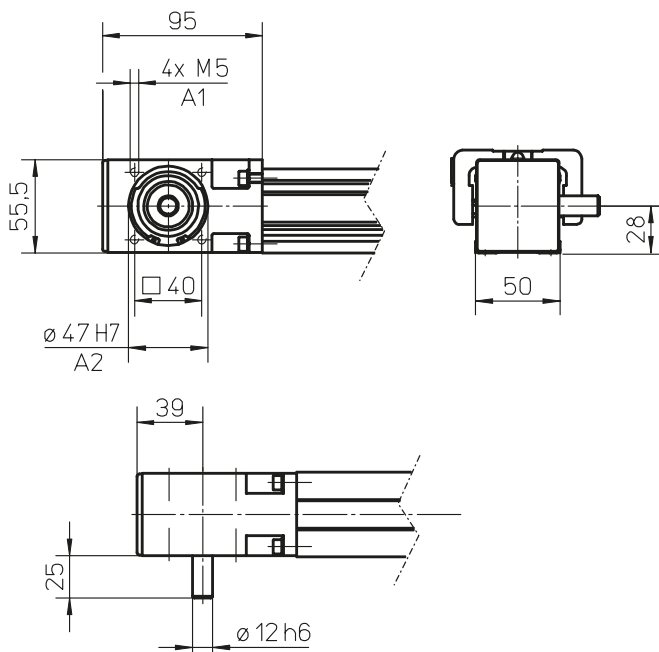
### M50



A1: depth 8,5

» Ordering key - see page 207  
» Technical data - see page 106

### WH50



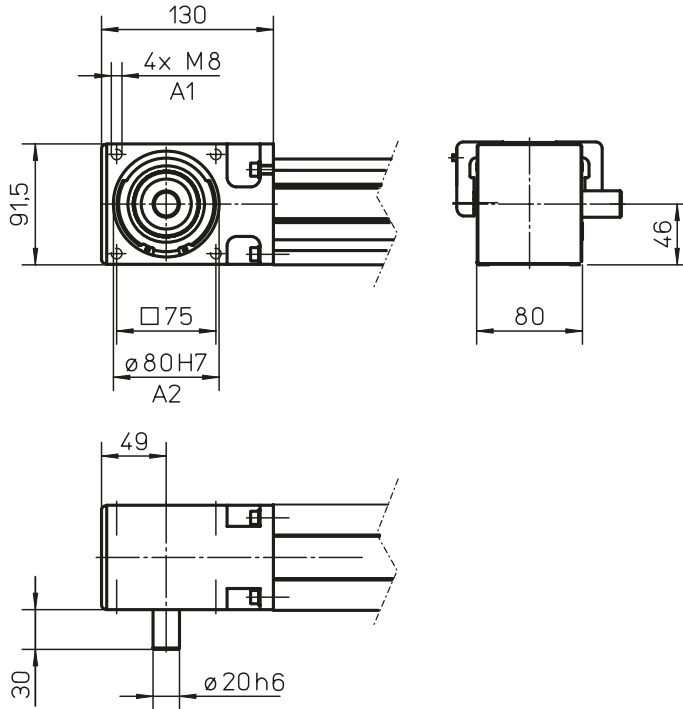
A1: depth 10  
A2: depth 3

# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

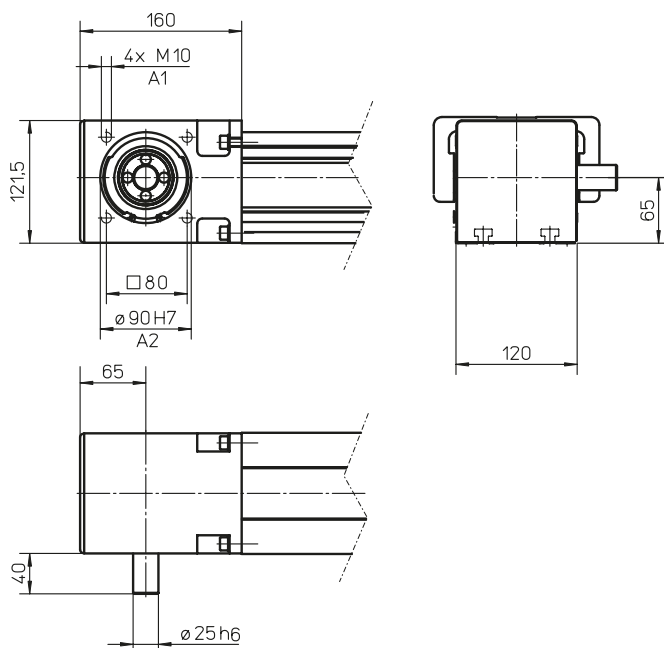
### WH80



A1: depth 16  
A2: depth 2,5

» Ordering key - see page 207  
» Technical data - see page 108

### WH120

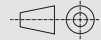


A1: depth 20  
A2: depth 7

» Ordering key - see page 207  
» Technical data - see page 110

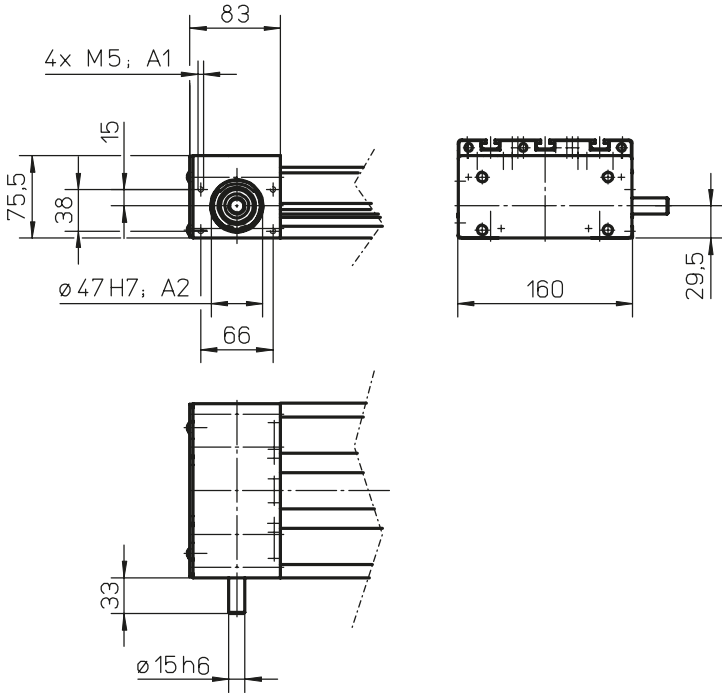
# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

### MLSH60Z

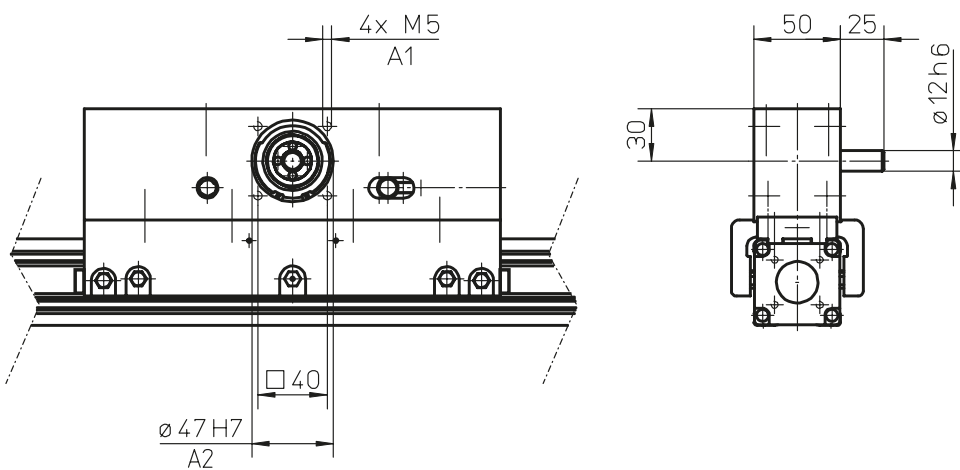
» Ordering key - see page 208  
» Technical data - see page 112



A1: depth 10  
A2: depth 4

### WHZ50

» Ordering key - see page 209  
» Technical data - see page 116




A1: depth 12  
A2: depth 3,5



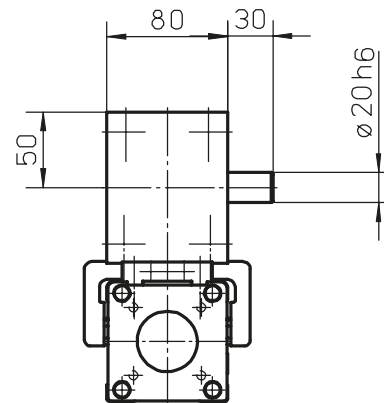
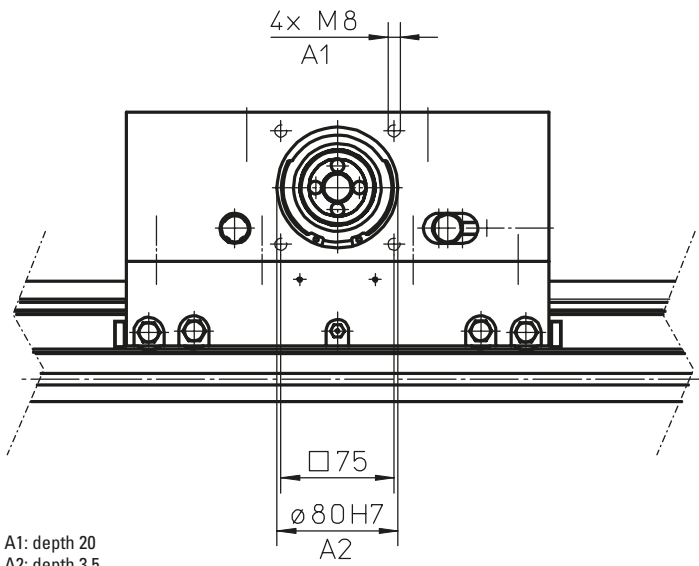
# Accessories

## Non-RediMount Linear Motion Systems

Dimensions	Projection	Online Sizing & Selection!
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>

### WHZ80

- » Ordering key - see page 209
- » Technical data - see page 118



# Additional Technical Data

## Linear Motion Systems with Lead or Ball Screw Drive and Ball Guides

Technical Data									
Parameter		WM40S	WM40D	WM60D	WM60S	WM60X	WM80D	WM80S	WM120D
Geometrical moment of inertia of the profile (I <sub>y</sub> )	[mm <sup>4</sup> ]	10,8 × 10 <sup>4</sup>	10,8 × 10 <sup>4</sup>	5,8 × 10 <sup>5</sup>	5,8 × 10 <sup>5</sup>	5,8 × 10 <sup>5</sup>	1,85 × 10 <sup>6</sup>	1,85 × 10 <sup>6</sup>	7,7 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (I <sub>z</sub> )	[mm <sup>4</sup> ]	13,4 × 10 <sup>4</sup>	13,4 × 10 <sup>4</sup>	5,9 × 10 <sup>5</sup>	5,9 × 10 <sup>5</sup>	5,9 × 10 <sup>5</sup>	1,94 × 10 <sup>6</sup>	1,94 × 10 <sup>6</sup>	9,4 × 10 <sup>6</sup>
Friction factor of the guide system (μ)		0,05	0,05	0,1	0,1	0,1	0,1	0,1	0,1
Efficiency of the unit		0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
Bending factor (b)		0,0003	0,0003	0,0003	0,0003	0,0003	0,0003	0,0003	0,0003
Inertia of ball screw (j <sub>sp</sub> )	[kgm <sup>2</sup> /m]	1,13 × 10 <sup>-5</sup>	1,13 × 10 <sup>-5</sup>	8,46 × 10 <sup>-5</sup>	8,46 × 10 <sup>-5</sup>	8,46 × 10 <sup>-5</sup>	2,25 × 10 <sup>-4</sup>	2,25 × 10 <sup>-4</sup>	6,34 × 10 <sup>-4</sup>
Dynamic load rating of ball screw (C <sub>x</sub> )	[N]								
05 mm lead		4400	4400	10500	10500	10500	12300	12300	21500
10 mm lead		-	-	-	-	-	13200	13200	33400
20 mm lead		-	-	11600	11600	-	13000	13000	29700
40 mm lead		-	-	-	-	-	-	-	14900
50 mm lead		-	-	8400	8400	-	15400	15400	-
Dynamic load rating of ball guide (C <sub>y</sub> )	[N]	2 × 2650	2 × 2650	4 × 11495	2 × 12964	4 × 11495	4 × 14356	2 × 18723	4 × 18723
Dynamic load rating of ball guide (C <sub>z</sub> )	[N]	2 × 3397	2 × 3397	4 × 10581	2 × 11934	4 × 10581	4 × 13739	2 × 17919	4 × 17919
Distance between ball guide carriages (L <sub>x</sub> )	[mm]	87	136	141,7	-	141,7	154	-	186
Distance between ball guide carriages (L <sub>y</sub> )	[mm]	-	-	35	35	35	49,75	49,75	80,75

Parameter		WV60	WV80	WV120	MLSM60D	MLSM80D
Geometrical moment of inertia of the profile (I <sub>y</sub> )	[mm <sup>4</sup> ]	5,8 × 10 <sup>5</sup>	1,85 × 10 <sup>6</sup>	7,7 × 10 <sup>6</sup>	1,19 × 10 <sup>6</sup>	3,77 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (I <sub>z</sub> )	[mm <sup>4</sup> ]	5,9 × 10 <sup>5</sup>	1,94 × 10 <sup>6</sup>	9,4 × 10 <sup>6</sup>	1,08 × 10 <sup>7</sup>	4,71 × 10 <sup>7</sup>
Friction factor of the guide system (μ)		no guides	no guides	no guides	0,1	0,1
Efficiency of the unit		0,8	0,8	0,8	0,8	0,8
Bending factor (b)		0,0003	0,0003	0,0003	0,0003	0,0003
Inertia of ball screw (j <sub>sp</sub> )	[kgm <sup>2</sup> /m]	8,46 × 10 <sup>-5</sup>	2,25 × 10 <sup>-4</sup>	6,34 × 10 <sup>-4</sup>	2,25 × 10 <sup>-4</sup>	6,34 × 10 <sup>-4</sup>
Dynamic load rating of ball screw (C <sub>x</sub> )	[N]					
05 mm lead		10500	12300	21500	12300	21500
10 mm lead		-	13200	33400	13200	33400
20 mm lead		11600	13000	29700	13000	29700
25 mm lead		-	-	14900	-	-
40 mm lead		-	-	-	-	14900
50 mm lead		8400	15400	-	15400	-
Dynamic load rating of ball guide (C <sub>y</sub> )	[N]	no guides	no guides	no guides	4 × 13770	4 × 17965
Dynamic load rating of ball guide (C <sub>z</sub> )	[N]	no guides	no guides	no guides	4 × 13770	4 × 17965
Distance between ball guide carriages (L <sub>x</sub> )	[mm]	no guides	no guides	no guides	163	185
Distance between ball guide carriages (L <sub>y</sub> )	[mm]	no guides	no guides	no guides	105	164

## Additional Technical Data

### Linear Motion Systems with Ball Screw and Slide Guides

Technical Data				
Parameter		M55	M75	M100
Geometrical moment of inertia of the profile (I <sub>y</sub> )	[mm <sup>4</sup> ]	4,27 × 10 <sup>5</sup>	1,9 × 10 <sup>6</sup>	5,54 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (I <sub>z</sub> )	[mm <sup>4</sup> ]	3,4 × 10 <sup>5</sup>	1,15 × 10 <sup>6</sup>	3,86 × 10 <sup>6</sup>
Friction factor of the guide system (μ)		0,15	0,15	0,15
Efficiency ball nut unit		0,8	0,8	0,8
Efficiency composite nut unit		0,5	0,5	0,5
Bending factor (b)		0,0005	0,0005	0,0005
Inertia of ball screw (J <sub>sp</sub> )	[kgm <sup>2</sup> /m]	4,1 × 10 <sup>-5</sup>	1,6 × 10 <sup>-4</sup>	2,5 × 10 <sup>-4</sup>
Dynamic load rating of ball screw (C <sub>x</sub> )	[N]			
05 mm lead		9300	10400	12500
05,8 mm lead		5420	-	-
08 mm lead		-	-	-
10 mm lead		15400	-	20600
12,7 mm lead		-	17960	-
20 mm lead		1900	10400	-
25 mm lead		-	-	11800
32 mm lead		2000	-	-

### Linear Motion Systems with Belt Drive and Ball Guides

Technical Data								
Parameter		WH40	WM60Z	WM80Z	M55	M75	M100	MLSM80Z
Geometrical moment of inertia of the profile (I <sub>y</sub> )	[mm <sup>4</sup> ]	12,6 × 10 <sup>4</sup>	5,62 × 10 <sup>5</sup>	1,85 × 10 <sup>6</sup>	4,59 × 10 <sup>5</sup>	1,9 × 10 <sup>6</sup>	5,54 × 10 <sup>6</sup>	3,77 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (I <sub>z</sub> )	[mm <sup>4</sup> ]	15,3 × 10 <sup>4</sup>	5,94 × 10 <sup>5</sup>	1,94 × 10 <sup>6</sup>	3,56 × 10 <sup>5</sup>	1,15 × 10 <sup>6</sup>	3,86 × 10 <sup>6</sup>	4,71 × 10 <sup>7</sup>
Friction factor of the guide system (μ)		0,05	0,1	0,1	0,02	0,02	0,02	0,1
Efficiency of the unit		0,85	0,85	0,85	0,95	0,95	0,95	0,85
Bending factor (b)		0,0005	0,0005	0,0005	0,0005	0,0005	0,0005	0,0005
Specific mass of belt	[kg/m]	0,032	0,074	0,14	0,09	0,16	0,31	0,517
Inertia of pulleys (J <sub>syn</sub> )	[kgm <sup>2</sup> ]	8,8 × 10 <sup>-6</sup>	2,13 × 10 <sup>-5</sup>	1,12 × 10 <sup>-4</sup>	1,7 × 10 <sup>-5</sup>	6,8 × 10 <sup>-5</sup>	8,5 × 10 <sup>-5</sup>	5,077 × 10 <sup>-4</sup>
Dynamic load rating of ball guide (C <sub>y</sub> )	[N]	2 × 2650	2 × 12964	4 × 18723 (2 × 18723) <sup>1</sup>	2 × 2717	2 × 8206	2 × 13189	4 × 17965
Dynamic load rating of ball guide (C <sub>z</sub> )	[N]	2 × 3397	2 × 11934	4 × 13739 (2 × 17919)	2 × 3484	2 × 15484	2 × 24885	4 × 17965
Distance between ball guide carriages (L <sub>x</sub> )	[mm]	72	-	154 (-)	78	96	140	185
Distance between ball guide carriages (L <sub>y</sub> )	[mm]	-	35	49,75	-	-	-	164

<sup>1</sup> Value in brackets = for short carriage.

## Additional Technical Data

### Linear Motion Systems with Belt Drive and Slide Guides

Technical Data					
Parameter		M50	M55	M75	M100
Geometrical moment of inertia of the profile (I <sub>y</sub> )	[mm <sup>4</sup> ]	$2,61 \times 10^5$	$4,59 \times 10^5$	$1,9 \times 10^6$	$5,54 \times 10^6$
Geometrical moment of inertia of the profile (I <sub>z</sub> )	[mm <sup>4</sup> ]	$2,44 \times 10^5$	$3,56 \times 10^5$	$1,15 \times 10^6$	$3,86 \times 10^6$
Friction factor of the guide system (μ)		0,15	0,15	0,15	0,15
Efficiency of the unit		0,85	0,85	0,85	0,85
Bending factor (b)		0,0005	0,0005	0,0005	0,0005
Specific mass of belt	[kg/m]	0,086	0,09	0,16	0,31
Inertia of pulleys (J <sub>syn</sub> )	[kgm <sup>2</sup> ]	$3,1 \times 10^{-5}$	$1,7 \times 10^{-5}$	$6,8 \times 10^{-5}$	$8,5 \times 10^{-5}$

### Linear Motion Systems with Belt Drive and Wheel Guides

Technical Data					
Parameter		WH50	WH80	WH120	MLSH60Z
Geometrical moment of inertia of the profile (I <sub>y</sub> )	[mm <sup>4</sup> ]	$3,3 \times 10^5$	$1,93 \times 10^6$	$6,69 \times 10^6$	$1,29 \times 10^6$
Geometrical moment of inertia of the profile (I <sub>z</sub> )	[mm <sup>4</sup> ]	$2,65 \times 10^5$	$1,8 \times 10^6$	$6,88 \times 10^6$	$1,2 \times 10^7$
Friction factor of the guide system (μ)		0,1	0,1	0,1	0,1
Efficiency of the unit		0,85	0,85	0,85	0,85
Bending factor (b)		0,0005	0,0005	0,0005	0,0005
Specific mass of belt	[kg/m]	0,055	0,21	0,34	0,119
Inertia of pulleys (J <sub>syn</sub> )	[kgm <sup>2</sup> ]	$1,928 \times 10^{-5}$	$2,473 \times 10^{-4}$	$1,004 \times 10^{-3}$	$4,604 \times 10^{-5}$
Dynamic load rating of wheel guide (C <sub>y</sub> )	[N]	-	-	-	$4 \times 1266$
Dynamic load rating of wheel guide (C <sub>z</sub> )	[N]	$4 \times 1270$	$4 \times 3670$	$4 \times 16200$	$4 \times 1266$
Distance between carriage wheels (L <sub>x</sub> )	[mm]	198	220	180	109
Distance between carriage wheels (L <sub>y</sub> )	[mm]	39	65	97	102,5

# Additional Technical Data

## Linear Lifting Systems

Technical Data					
Parameter		WHZ50	WHZ80	Z2	Z3
Geometrical moment of inertia of the profile (Ix)	[mm <sup>4</sup> ]	-	-	$1,87 \times 10^7$	$1,87 \times 10^7$
Geometrical moment of inertia of the profile (Iy)	[mm <sup>4</sup> ]	$3,3 \times 10^5$	$1,93 \times 10^6$	$2,19 \times 10^7$	$2,19 \times 10^7$
Geometrical moment of inertia of the profile (Iz)	[mm <sup>4</sup> ]	$2,65 \times 10^5$	$1,8 \times 10^6$	-	-
Dynamic load rating of ball screw (Fx)	[N]	belt drive	belt drive	-	-
Dynamic load rating of ball screw (Fz)	[N]				
ball screw $\varnothing$ 25 lead 10 mm				21248	21248
ball screw $\varnothing$ 25 lead 25 mm				11182	11182
ball screw $\varnothing$ 32 lead 10 mm				47200	47200
Friction factor of the guide system ( $\mu$ )		0,1	0,1	0,15	0,15
Efficiency of the unit		0,85	0,85	0,8	0,8
Specific mass of belt	[kg/m]	0,055	0,119	-	-
Inertia of pulleys (Jsyn)	[kgm <sup>2</sup> ]	$6,906 \times 10^{-5}$	$5,026 \times 10^{-4}$	-	-
Inertia of ball screw (jsp)	[kgm <sup>2</sup> /m]				
ball screw $\varnothing$ 25 lead 10		-	-	$2,1 \times 10^{-4}$	$2,1 \times 10^{-4}$
ball screw $\varnothing$ 25 lead 25		-	-	$2,6 \times 10^{-4}$	$2,6 \times 10^{-4}$
ball screw $\varnothing$ 32 lead 10		-	-	$6,43 \times 10^{-4}$	$6,43 \times 10^{-4}$
Dynamic load rating of ball guide (Cx)	[N]	-	-	slide guide	slide guide
Dynamic load rating of ball guide (Cy)	[N]	$4 \times 1270$	$4 \times 3670$	slide guide	slide guide
Distance between ball guide carriages (Lx)	[mm]	198	220	-	-
Distance between ball guide carriages (Ly)	[mm]	39	65	slide guide	slide guide
Distance between ball guide carriages (Lz)	[mm]	-	-	slide guide	slide guide
Definition of forces					

# Additional Technical Data

## Linear Rod Units

Technical Data			
Parameter		WZ60	WZ80
Geometrical moment of inertia of the profile (Iy)	[mm <sup>4</sup> ]	$5,8 \times 10^5$	$1,85 \times 10^6$
Geometrical moment of inertia of the profile (Iz)	[mm <sup>4</sup> ]	$5,9 \times 10^5$	$1,94 \times 10^6$
Friction factor of the guide system ( $\mu$ )		0,1	0,1
Efficiency of the unit		0,8	0,8
Inertia of ball screw (j <sub>sp</sub> )	[kgm <sup>2</sup> /m]		
05 mm lead		$8,46 \times 10^{-5}$	$2,25 \times 10^{-4}$
10 mm lead		-	$2,25 \times 10^{-4}$
20 mm lead		$8,46 \times 10^{-5}$	$2,25 \times 10^{-4}$
25 mm lead		-	-
32 mm lead		-	-
40 mm lead		-	-
50 mm lead		$8,46 \times 10^{-5}$	$2,25 \times 10^{-4}$
Dynamic load rating of ball screw (C <sub>x</sub> )	[N]		
05 mm lead		10500	12300
10 mm lead		-	13200
20 mm lead		11600	13000
25 mm lead		-	-
32 mm lead		-	-
40 mm lead		-	-
50 mm lead		8400	15400
Dynamic load rating of ball guide (C <sub>y</sub> )	[N]	$2 \times 12964$	$2 \times 18723$
Dynamic load rating of ball guide (C <sub>z</sub> )	[N]	$2 \times 11943$	$2 \times 17919$
Distance between ball guide carriages (L <sub>x</sub> )	[mm]	-	-
Distance between ball guide carriages (L <sub>y</sub> )	[mm]	35	50
Dynamic rating of the ball bushing	[N]	8300	13700

# Ordering Keys

## Linear Motion Systems with Ball Screw Drive and Ball Guides

### WM40S, WM40D, WM60S, WM60D, WM60X, WM80S, WM80D, WM120D

1	2	3	4	5	6	7	8	9	10
WM06D	20	LX	ZZ6	-02545	-03715	A	Z	0520	S1

#### 1. Type of unit

WM04S = WM40S unit with single ball nut  
 WM04D = WM40D unit with double ball nuts  
 WM06S = WM60S unit with single ball nut  
 WM06D = WM60D unit with double ball nuts  
 WM06X = WM60X unit with left/right screw  
 WM08S = WM80S unit with single ball nut  
 WM08D = WM80D unit with double ball nuts  
 WM12D = WM120D unit with double ball nuts

#### 2. Screw lead<sup>1</sup>

05 = 5 mm  
 10 = 10 mm  
 20 = 20 mm  
 40 = 40 mm  
 50 = 50 mm

#### 3. Transmission type

LX = inline style, directly coupled, RediMount flange  
 SX = inline style, directly coupled, no RediMount flange

#### 4. RediMount motor ID code

vvw = alphanumeric motor code for suitable RediMount flange when motor is known  
 999 = RediMount code used when motor is unknown  
 XXX = for units without RediMount flange

#### 5. Maximum stroke (Smax)

- xxxxx = distance in mm

#### 6. Total length of unit (L tot)

- yyyyy = distance in mm

#### 7. Drive shaft / RediMount configuration<sup>2</sup>

A = single shaft without key way  
 C = single shaft with key way or RediMount  
 G = double shafts, first without key way and second for encoder  
 I = double shafts, first with key way or RediMount and second for encoder<sup>3</sup>

#### 8. Carriage configuration<sup>4</sup>

N = single standard carriage  
 S = single short carriage  
 L = single long carriage  
 Z = double standard carriages  
 Y = double short carriages  
 M = double long carriages

#### 9. Distance between double carriages (Lc)

0000 = always for single carriages  
 zzzz = distance in mm

#### 10. Protection option<sup>5</sup>

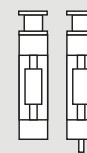
S1 = wash down protection (not available for WM04 units)

<sup>1</sup> See table below for available combinations of units and ball screw leads.

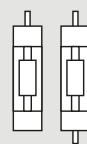
Type of unit	Available screw leads [mm]				
	5	10	20	40	50
WM04S	x				
WM04D	x				
WM06S	x		x		x
WM06D	x		x		x
WM06X	x				
WM08S	x	x	x		x
WM08D	x	x	x		x
WM12D	x	x	x	x	

<sup>2</sup> See below for the definition of shafts.

Single and double shafts with RediMount



Single and double shafts without RediMount



<sup>3</sup> Drive shaft configuration I not available for WM 40.

<sup>4</sup> See table below for available combinations of units and carriage types.

Type of unit	Available carriage types					
	N	S	L	Z	Y	M
WM04S	x			x		
WM04D			x			x
WM06S		x			x	
WM06D	x		x	x		
WM06X	x	x	x			
WM08S		x			x	
WM08D	x		x	x		
WM12D	x		x	x		

<sup>5</sup> Leave position blank if no additional protection is required.

Note! for ordering of options type EN, ES, KR6, RT, ADG and MGK, see accessory index on page 131.

# Ordering Keys

## Linear Motion Systems with Ball Screw Drive and No Guides

### WV60, WV80, WV120

1	2	3	4	5	6	7	8	9	10
WV08D	20	SX	XXX	-02745	-03295	G	N	0000	

#### 1. Type of unit

WV06D = WV60 unit  
WV08D = WV80 unit  
WV12D = WV120 unit

#### 2. Ball screw lead<sup>1</sup>

05 = 5 mm  
10 = 10 mm  
20 = 20 mm  
40 = 40 mm  
50 = 50 mm

#### 3. Transmission type

LX = inline style, directly coupled,  
RediMount flange  
SX = inline style, directly coupled,  
no RediMount flange

#### 4. RediMount motor ID code

vww = alphanumeric motor code for suitable  
RediMount flange when motor is known  
999 = RediMount code used when motor is  
unknown  
XXX = for units without RediMount flange

#### 5. Maximum stroke (Smax)

- xxxxx = distance in mm

#### 6. Total length of unit (L tot)

- yyyyy = distance in mm

#### 7. Drive shaft / RediMount configuration<sup>2</sup>

A = single shaft without key way  
C = single shaft with key way or RediMount  
G = double shafts, first without key way and  
second for encoder  
I = double shafts, first with key way or  
RediMount and second for encoder<sup>3</sup>

#### 8. Carriage configuration

N = single standard carriage

#### 9. Distance between double carriages (Lc)

0000 = always for single carriages

#### 10. Protection option<sup>3</sup>

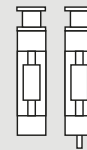
S1 = wash down protection

<sup>1</sup> See table below for available combinations of units and ball screw leads.

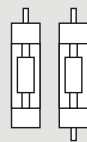
Type of unit	Available screw leads [mm]				
	5	10	20	40	50
WV06D	x		x		x
WV08D	x	x	x		x
WV12D	x	x	x	x	

<sup>2</sup> See below for the definition of shafts.

Single and double shafts with RediMount



Single and double shafts without RediMount



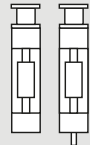
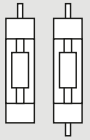
<sup>3</sup> Leave position blank if no additional protection is required.

Note! for ordering of options type EN, ES, KRG, RT, ADG and MGK, see accessory index on page 131.



# Ordering Keys

## Linear Motion Systems with Lead or Ball Screw Drive and Ball Guides

MLSM60D, MLSM80D																															
1	2	3	4	5	6	7	8	9																							
MLSM06D	20	LX	PP1	-03800	-04645	C	L	0000																							
<p><b>1. Type of unit</b>                      MLSM06D = MLSM60 unit                      MLSM08D = MLSM80 unit</p> <p><b>2. Ball screw lead</b>                      05 = 5 mm                      10 = 10 mm                      20 = 20 mm                      40 = 40 mm                      50 = 50 mm</p> <p><b>3. Transmission type</b>                      LX = inline style, directly coupled, RediMount flange                      SX = inline style, directly coupled, no RediMount flange</p> <p><b>4. RediMount motor ID code</b>                      vvww = alphanumeric motor code for suitable RediMount flange when motor is known                      999 = RediMount code used when motor is unknown                      XXX = for units without RediMount flange</p>			<p><b>5. Maximum stroke (Smax)</b>                      - xxxxx = distance in mm</p> <p><b>6. Total length of unit (L tot)</b>                      - yyyyy = distance in mm</p> <p><b>7. Drive shaft / RediMount configuration<sup>2</sup></b>                      A = single shaft without key way                      C = single shaft with key way or RediMount                      G = double shafts, first without key way and second for encoder                      I = double shafts, first with key way or RediMount and second for encoder<sup>3</sup></p> <p><b>8. Carriage configuration</b>                      N = single standard carriage                      L = single long carriage                      Z = double standard carriages</p> <p><b>9. Distance between double carriages (Lc)</b>                      0000 = always for single carriages                      zzzz = distance in mm</p>			<p><sup>1</sup> See table below for available combinations of units and ball screw leads.</p> <table border="1"> <thead> <tr> <th rowspan="2">Type of unit</th> <th colspan="5">Available screw leads [mm]</th> </tr> <tr> <th>5</th> <th>10</th> <th>20</th> <th>40</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>MLSM06D</td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>MLSM08D</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> </tbody> </table> <p><sup>2</sup> See below for the definition of shafts.</p> <p>Single and double shafts with RediMount</p>  <p>Single and double shafts without RediMount</p> 			Type of unit	Available screw leads [mm]					5	10	20	40	50	MLSM06D	x		x		x	MLSM08D	x	x	x	x	
Type of unit	Available screw leads [mm]																														
	5	10	20	40	50																										
MLSM06D	x		x		x																										
MLSM08D	x	x	x	x																											

# Ordering Keys

## Linear Motion Systems with Ball Screw Drive and Ball Guides

### M55, M75, M100

1	2	3	4	5	6	7	8	9	10
MF07S	05	LX	MC8	-01000	-01500	X	N	0000	S1

#### 1. Type of unit

MF06S = M55 unit, ball guides, ball screw  
MF07S = M75 unit, ball guides, ball screw  
MF10S = M100 unit, ball guides, ball screw

#### 2. Screw lead and tolerance class<sup>1</sup>

05 = 5 mm  
10 = 10 mm  
12 = 12,7 mm  
20 = 20 mm  
25 = 25 mm

#### 3. Transmission type

LX = inline style, directly coupled,  
RediMount flange  
SX = inline style, directly coupled,  
no RediMount flange

#### 4. RediMount motor ID code

vvw = alphanumeric motor code for suitable  
RediMount flange when motor is known  
999 = RediMount code used when motor is  
unknown  
XXX = for units without RediMount flange

#### 5. Maximum stroke (Smax)

- xxxxx = distance in mm

#### 6. Total length of unit (L tot)

- yyyyy = distance in mm

#### 7. Screw supports

X = no screw supports  
S = single screw supports  
D = double screw supports

#### 8. Carriage configuration

N = single standard carriage  
Z = double standard carriages

#### 9. Distance between carriages (Lc)

0000 = for all single standard carriage units  
zzzz = distance in mm between carriages

#### 10. Protection option<sup>2</sup>

S1 = wash down protection

<sup>1</sup> See table below for available combinations of units and ball screw type, lead and tolerance.

Ball screw type	Type of unit		
	M55	M75	M100
05	x	x	x
10	x		x
12		x	
20	x	x	
25			x

<sup>2</sup> Leave position blank if no additional protection is required.

# Ordering Keys

## Linear Motion Systems with Lead or Ball Screw Drive and Ball Guides

### 2HB10, 2HB20

1	2	3	4	5	6	7	8	9	10	11
2HB10	H0	N1285	-038	N	001	A	0	A	0	0

#### 1. Type of unit

2HB10 = 2HB10 unit

2HB20 = 2HB20 unit

#### 2. Ball screw diameter, lead and nut type

G0 = 16 mm, 5 mm, preloaded (2HB10 only)

H0 = 16 mm, 10 mm, preloaded (2HB10 only)

L0 = 25 mm, 5 mm, preloaded (2HB20 only)

M0 = 25 mm, 10 mm, preloaded (2HB20 only)

N0 = 25 mm, 25 mm, preloaded (2HB20 only)

#### 3. Ordering length (L)

N xxxxx = distance in mm

#### 4. Y-distance

- 038 = standard distance in mm between motor end plate to first set of mounting holes on 2HB10

- 043 = standard distance in mm between motor end plate to first set of mounting holes on 2HB20

- yyy = custom distance in mm between motor end plate to first set of mounting holes

#### 5. Brake option

N = no brake

B = brake

#### 6. RediMount motor ID code

001 = NEMA 23

002 = NEMA 34

zzz = consult [www.LinearMotioneering.com](http://www.LinearMotioneering.com) for complete list of available standard RediMount motor flanges

#### 7. Ball guide rail coating option

A = standard

D = Duralloy

#### 8. Ball guide carriage coating option

0 = standard

1 = Duralloy

#### 9. Profile cover option

A = none

B = bellows (bellows will reduce stroke length app. 28%)

C = shrouds

#### 10. Hardware option

0 = alloy plated

1 = stainless steel

#### 11. Home and end of stroke sensor option

0 = no sensors

1 = home sensor, NPN type

2 = end of stroke sensors, NPN type

3 = home and end of stroke sensors, NPN type

4 = home sensor, PNP type

5 = end of stroke sensors, PNP type

6 = home and end of stroke sensors, PNP type

# Ordering Keys

## Linear Motion Systems with Lead or Ball Screw Drive and Ball Guides

### 2RB12, 2RB16

1	2	3	4	5	6	7	8	9	10	11
2RB12	J0	N1000	-100	N	002	B	0	A	0	0

#### 1. Type of unit

2RB12 = 2RB12 unit

2RB16 = 2RB16 unit

#### 2. Ball screw diameter, lead and nut type

G0 = 16 mm, 5 mm, preloaded (2RB12 only)

H0 = 16 mm, 10 mm, preloaded (2RB12 only)

I0 = 20 mm, 5 mm, preloaded (2RB16 only)

J0 = 20 mm, 10 mm, preloaded (2RB16 only)

K0 = 20 mm, 25 mm, preloaded (2RB16 only)

#### 3. Ordering length (L)

N xxxx = distance in mm

#### 4. Y-distance

- 075 = standard distance in mm between motor end plate to first set of mounting holes on 2RB12

- 100 = standard distance in mm between motor end plate to first set of mounting holes on 2RB16

- yyy = custom distance in mm between motor end plate to first set of mounting holes

#### 5. Brake option

N = no brake

B = brake

#### 6. RediMount motor ID code

001 = NEMA 23

002 = NEMA 34

zzz = consult [www.LinearMotioneering.com](http://www.LinearMotioneering.com) for complete list of available standard RediMount motor flanges

#### 7. Ball guide shaft coating option

A = standard, 60 Case

B = stainless steel (440C)

C = chrome plated

E = armoloy

#### 8. Bearing option

0 = standard

1 = corrosion resistance

#### 9. Profile cover option

A = none

B = bellows (bellows will reduce stroke length app. 28%)

#### 10. Hardware option

0 = alloy plated

1 = stainless steel

#### 11. Home and end of stroke sensor option

0 = no sensors

1 = home sensor, NPN type

2 = end of stroke sensors, NPN type

3 = home and end of stroke sensors, NPN type

4 = home sensor, PNP type

5 = end of stroke sensors, PNP type

6 = home and end of stroke sensors, PNP type

# Ordering Keys

## Linear Motion Systems with Lead or Ball Screw Drive and Ball Guides

### MS25, MS33

1	2	3	4	5	6	7	8	9	10	11
MS25	LC	N0300	-056	N	505	A	0	A	0	0

#### 1. Type of unit

MS25 = MS25 unit

MS33 = MS33 unit

#### 2. Lead screw diameter, lead and nut type

LA = MS25, 0,25 inch, 0,025 in, preloaded

LB = MS25, 0,25 inch, 0,050 in, preloaded

LC = MS25, 0,25 inch, 0,062 in, preloaded

LD = MS25, 0,25 inch, 0,200 in, preloaded

LE = MS25, 0,25 inch, 0,250 in, preloaded

LF = MS25, 0,25 inch, 0,500 in, preloaded

LG = MS25, 0,25 inch, 1,000 in, preloaded

LH = MS25, 0,25 inch, 1,5 mm, preloaded

LI = MS25, 0,25 inch, 2,0 mm, preloaded

LJ = MS25, 0,25 inch, 3,0 mm, preloaded

LA = MS33, 0,375 inch, 0,0625 in, preloaded

LB = MS33, 0,375 inch, 0,100 in, preloaded

LC = MS33, 0,375 inch, 0,125 in, preloaded

LD = MS33, 0,375 inch, 0,200 in, preloaded

LE = MS33, 0,375 inch, 0,250 in, preloaded

LF = MS33, 0,375 inch, 0,375 in, preloaded

LG = MS33, 0,375 inch, 0,500 in, preloaded

LH = MS33, 0,375 inch, 1,000 in, preloaded

LI = MS33, 0,375 inch, 1,200 in, preloaded

LJ = MS33, 0,375 inch, 2,0 mm, preloaded

#### 3. Ordering length (L)

N xxxx = distance in mm

#### 4. Y-distance

- 045 = standard distance in mm between motor end plate to first set of mounting holes on MS25

- 055 = standard distance in mm between motor end plate to first set of mounting holes on MS33

- yyy= custom distance in mm between motor end plate to first set of mounting holes

#### 5. Brake option

N = no brake (standard)

#### 6. RediMount motor ID code

505 = NEMA 17

001 = NEMA 23

zzz = consult [www.LinearMotioneering.com](http://www.LinearMotioneering.com) for complete list of available standard RediMount motor flanges

#### 7. Linear guides shafting option

A = 60 case (1566)

B = stainless steel (440C)

C = chrome plated

#### 8. Bearing type option

0 = standard

1 = corrosion resistant

#### 9. Profile cover option

A = none

B = bellows (bellows will reduce stroke length app. 28%)

#### 10. Hardware option

0 = alloy plated

1 = stainless steel

#### 11. Home and end of stroke limit switch option

0 = no home or end of stroke limit switches

7 = home position limit switch

8 = end of stroke limit switches

# Ordering Keys

## Linear Motion Systems with Lead or Ball Screw Drive and Ball Guides

### 2DB08, 2DB12, 2DB16

1	2	3	4	5	6	7	8	9	10	11
2DB12	F0	N0250	-300	N	002	A	0	A	0	0

#### 1. Type of unit

2DB08 = 2DB08 unit  
2DB12 = 2DB12 unit  
2DB16 = 2DB16 unit

#### 2. Screw type, diameter, lead and nut type

A0 = leadscrew, 0.375 in, 0.100 in, preloaded (2DB08 only)  
B0 = leadscrew, 0.375 in, 0.250 in, preloaded (2DB08 only)  
C0 = leadscrew, 0.375 in, 0.500 in, preloaded (2DB08 only)  
D0 = leadscrew, 0.375 in, 0.750 in, preloaded (2DB08 only)  
E0 = leadscrew, 0.375 in, 1.000 in, preloaded (2DB08 only)

F0 = ballscrew, 0.631 in, 0.200 in, non-preloaded (2DB12 only)  
V0 = ballscrew, 0.631 in, 0.200 in, preloaded (2DB12 only)  
QJ = ballscrew, 0.500 in, 0.500 in, preloaded (2DB12 only)

G0 = ballscrew, 0.750 in, 0.200 in, non-preloaded (2DB16 only)  
W0 = ballscrew, 0.750 in, 0.200 in, preloaded (2DB16 only)  
RJ = ballscrew, 0.750 in, 0.500 in, preloaded (2DB16 only)  
LJ = ballscrew, 0.631 in, 1.0 in, preloaded (2DB16 only)  
D0 = ballscrew, 20 mm, 5 mm, preloaded (2DB16 only)

#### 3. Ordering length (L)

N xxxx = distance in inch (e.g. 0250 = 25 inch)

#### 4. Y-distance

- 200 = standard distance in inch between motor end plate to first set of mounting holes for 2DB08 (e.g. 200 = 2 in)  
- 300 = standard distance in inch between motor end plate to first set of mounting holes for 2DB12 and 2DB16 (e.g. 300 = 3 in)  
- yyy = custom distance in inch between motor end plate to first set of mounting holes

#### 5. Brake option

N = no brake  
B = brake

#### 6. RediMount motor ID code

001 = NEMA 23  
002 = NEMA 34  
zzz = consult [www.LinearMotioneering.com](http://www.LinearMotioneering.com) for complete list of available standard RediMount motor flanges

#### 7. Ball guide shaft coating option

A = standard, 60 Case  
B = stainless steel (440C)  
C = chrome plated  
E = Armoloy

#### 8. Bearing option

0 = standard  
1 = corrosion resistance

#### 9. Profile cover option

A = none  
B = bellows (bellows will reduce stroke length app. 28%)

#### 10. Hardware option

0 = alloy plated  
1 = stainless steel

#### 11. Home and end of stroke sensor option

0 = no sensors  
7 = home  
8 = ends of travel  
9 = both

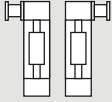
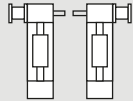
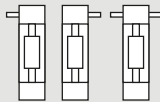
# Ordering Keys

## Linear Motion Systems with Ball Screw Drive and Slide Guides

M55, M75, M100																																				
1	2	3	4	5	6	7	8	9	10																											
MG07S	05	LX	PP2	-01000	-01500	X	N	0000	S1																											
<p><b>1. Type of unit</b>                      MG06S = M55 unit, slide guides, ball screw                      MG07S = M75 unit, slide guides, ball screw                      MG10S = M100 unit, slide guides, ball screw</p> <p><b>2. Screw lead and tolerance class<sup>1</sup></b>                      05 = 5 mm                      10 = 10 mm                      12 = 12,7 mm                      20 = 20 mm                      25 = 25 mm</p> <p><b>3. Transmission type</b>                      LX = inline style, directly coupled, RediMount flange                      SX = inline style, directly coupled, no RediMount flange</p> <p><b>4. RediMount motor ID code</b>                      vvw = alphanumeric motor code for suitable RediMount flange when motor is known                      999 = RediMount code used when motor is unknown                      XXX = for units without RediMount flange</p>			<p><b>5. Maximum stroke (Smax)</b>                      - xxxxx = distance in mm</p> <p><b>6. Total length of unit (L tot)</b>                      - yyyyy = distance in mm</p> <p><b>7. Screw supports</b>                      X = no screw supports                      S = single screw supports                      D = double screw supports</p> <p><b>8. Carriage configuration</b>                      N = single standard carriage                      Z = double standard carriages</p> <p><b>9. Distance between carriages (Lc)</b>                      0000 = for all single standard carriage units                      zzzz = distance in mm between carriages</p> <p><b>10. Protection option<sup>2</sup></b>                      S1 = wash down protection</p>			<p><sup>1</sup> See table below for available combinations of units and ball screw type, lead and tolerance.</p> <table border="1"> <thead> <tr> <th rowspan="2">Ball screw type</th> <th colspan="3">Type of unit</th> </tr> <tr> <th>M55</th> <th>M75</th> <th>M100</th> </tr> </thead> <tbody> <tr> <td>05</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>10</td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>12</td> <td></td> <td>x</td> <td></td> </tr> <tr> <td>20</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>25</td> <td></td> <td></td> <td>x</td> </tr> </tbody> </table> <p><sup>2</sup> Leave position blank if no additional protection is required.</p>				Ball screw type	Type of unit			M55	M75	M100	05	x	x	x	10	x		x	12		x		20	x	x		25			x
Ball screw type	Type of unit																																			
	M55	M75	M100																																	
05	x	x	x																																	
10	x		x																																	
12		x																																		
20	x	x																																		
25			x																																	

# Ordering Keys

## Linear Motion Systems with Belt Drive and Ball Guides

WH40							
1	2	3	4	5	6	7	8
WH04Z	LX	FB7	-01400	-01755	H	L	0400
<p><b>1. Type of unit</b> WH04Z = WH40 unit</p> <p><b>2. Transmission type</b> LX = inline style, directly coupled, RediMount flange SX = inline style, directly coupled, no RediMount flange</p> <p><b>3. RediMount motor ID code</b> vvw = alphanumeric motor code for suitable RediMount flange when motor is known 999 = RediMount code used when motor is unknown XXX = for units without RediMount flange</p> <p><b>4. Maximum stroke (Smax)</b> - xxxxx = distance in mm</p> <p><b>5. Total length of unit (L tot)</b> - yyyyy = distance in mm</p> <p><b>6. Drive shaft / RediMount flange configuration<sup>1</sup></b> A = shaft on left side without key way B = shaft on right side without key way C = shaft on left side with key way or RediMount D = shaft on right side with key way or RediMount E = shaft on left side without key way, shaft on right side with key way or RediMount F = shaft on left side with key way or RediMount, shaft on right side without key way G = shaft on left side without key way, shaft on right side for encoder H = shaft on left side for encoder, shaft on right side without key way I = shaft on left side with key way or RediMount, shaft on right side for encoder J = shaft on left side for encoder, shaft on right side with key way or RediMount L = shaft on left and right side without key way M = shaft on left side with key way or RediMount, shaft on right side with key way N = shaft on left side with key way, shaft on right side with key way or RediMount W = hollow shaft on both sides with clamping unit</p>				<p><b>7. Carriage configuration</b> N = single standard carriage L = single long carriage Z = double standard carriages</p> <p><b>8. Distance between double carriages (Lc)</b> 0000 = always for single carriages zzzz = distance in mm</p> <p><sup>1</sup> See below for the definition of shafts. Left, right or both sides with shafts with RediMount</p>  <p>Left or right with RediMount and other side a shaft without RediMount</p>  <p>Left or right without RediMount</p> 			

Note! for ordering of options type EN, ES, KRG, RT, ADG and MGK, see accessory index on page 131.



# Ordering Keys

## Linear Motion Systems with Belt Drive and Ball Guides

### WM60Z, WM80Z

1	2	3	4	5	6	7	8
WM06Z	LX	AG5	-01400	-01755	H	L	0400

**1. Type of unit**

WM06Z = WM60Z unit  
 WM08Z = WM80Z unit

**2. Transmission type**

LX = inline style, directly coupled, RediMount flange  
 SX = inline style, directly coupled, no RediMount flange

**3. RediMount motor ID code**

vww = alphanumeric motor code for suitable RediMount flange when motor is known

999 = RediMount code used when motor is unknown

XXX = for units without RediMount flange

**4. Maximum stroke (Smax)**

- xxxxx = distance in mm

**5. Total length of unit (L tot)**

- yyyyy = distance in mm

**6. Drive shaft / RediMount flange configuration<sup>1</sup>**

A = shaft on left side without key way

B = shaft on right side without key way

C = shaft on left side with key way or RediMount

D = shaft on right side with key way or RediMount

E = shaft on left side without key way,  
 shaft on right side with key way or RediMount

F = shaft on left side with key way or RediMount,  
 shaft on right side without key way

G = shaft on left side without key way,  
 shaft on right side for encoder

H = shaft on left side for encoder,  
 shaft on right side without key way

I = shaft on left side with key way or RediMount,  
 shaft on right side for encoder

J = shaft on left side for encoder,  
 shaft on right side with key way or RediMount

L = shaft on left and right side without key way

M = shaft on left side with key way or RediMount,  
 shaft on right side with key way

N = shaft on left side with key way,  
 shaft on right side with key way or RediMount

W = hollow shaft on both sides with clamping unit

**7. Carriage configuration<sup>2</sup>**

N = single standard carriage

S = single short carriage

L = single long carriage

Z = double standard carriages

Y = double short carriages

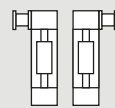
**8. Distance between double carriages (Lc)**

0000 = always for single carriages

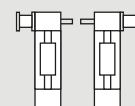
zzzz = distance in mm

<sup>1</sup> See below for the definition of shafts.

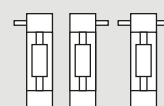
Left, right or both sides with shafts with RediMount



Left or right with RediMount and other side a shaft without RediMount



Left or right without RediMount



<sup>2</sup> See table below for available combinations of units and carriage types.

Type of unit	Available carriage types				
	N	S	L	Z	Y
WM06Z		x			x
WM08Z	x	x	x	x	x

Note! for ordering of options type EN, ES, KR6, RT, ADG and MGK, see accessory index on page 131.

# Ordering Keys

## Linear Motion Systems with Belt Drive and Ball Guides

### M55, M75, M100

1	2	3	4	5	6	7	8	9
MF10B	LX	999	-01000	-01500	D	N	0000	S1

#### 1. Type of unit

MF06B = M55 unit, ball guides, belt drive  
 MF07B = M75 unit, ball guides, belt drive  
 MF10B = M100 unit, ball guides, belt drive

#### 2. Transmission type

LX = inline style, directly coupled, RediMount flange  
 SX = inline style, directly coupled, no RediMount flange

#### 3. RediMount motor ID code

vww = alphanumeric motor code for suitable RediMount flange when motor is known  
 999 = RediMount code used when motor is unknown  
 XXX = for units without RediMount flange

#### 4. Maximum stroke (Smax)

- xxxxx = distance in mm

#### 5. Total length of unit (L tot)

- yyyyy = distance in mm

#### 6. Drive shaft / RediMount flange configuration<sup>1</sup>

C = shaft on left side with key way or RediMount  
 D = shaft on right side with key way or RediMount  
 M = shaft on left side with key way or RediMount, shaft on right side with key way  
 N = shaft on left side with key way, shaft on right side with key way or RediMount

#### 7. Carriage configuration

N = single standard carriage  
 Z = double standard carriages

#### 8. Distance between carriages (Lc)

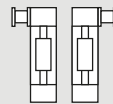
0000 = for all single standard carriage units  
 zzzz = distance in mm between carriages

#### 9. Protection option

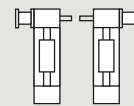
S1 = wash down protection (blank if no protection option required).

<sup>1</sup> See below for the definition of shafts.

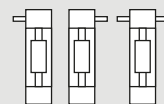
Left, right or both sides with shafts with RediMount



Left or right with RediMount and other side a shaft without RediMount

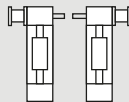


Left or right without RediMount



# Ordering Keys

## Linear Motion Systems with Belt Drive and Ball Guides

MLSM80Z							
1	2	3	4	5	6	7	8
MLSM08Z	SX	XXX	-03800	-04645	C	L	0000
<p><b>1. Type of unit</b> MLSM08Z = MLSM80 unit</p> <p><b>2. Transmission type</b> LX = inline style, directly coupled, RediMount flange SX = inline style, directly coupled, no RediMount flange</p> <p><b>3. RediMount motor ID code</b> vvw = alphanumeric motor code for suitable RediMount flange when motor is known 999 = RediMount code used when motor is unknown XXX = for units without RediMount flange</p> <p><b>4. Maximum stroke (Smax)</b> - xxxxx = distance in mm</p> <p><b>5. Total length of unit (L tot)</b> - yyyyy = distance in mm</p> <p><b>6. Drive shaft / RediMount flange configuration<sup>1</sup></b> A = shaft on left side without key way B = shaft on right side without key way C = shaft on left side with key way or RediMount D = shaft on right side with key way or RediMount E = shaft on left side without key way, shaft on right side with key way or RediMount F = shaft on left side with key way or RediMount, shaft on right side without key way G = shaft on left side without key way, shaft on right side for encoder H = shaft on left side for encoder, shaft on right side without key way I = shaft on left side with key way or RediMount, shaft on right side for encoder J = shaft on left side for encoder, shaft on right side with key way or RediMount L = shaft on left and right side without key way M = shaft on left side with key way or RediMount, shaft on right side with key way N = shaft on left side with key way, shaft on right side with key way or RediMount W = hollow shaft on both sides with clamping unit</p>				<p><b>7. Carriage configuration</b> N = single standard carriage L = single long carriage Z = double standard carriages</p> <p><b>8. Distance between double carriages</b> 0000 = always for single carriages zzzz = distance in mm</p> <p><sup>1</sup> See below for the definition of shafts. Left, right or both sides with shafts with RediMount</p>  <p>Left or right with RediMount and other side a shaft without RediMount</p>  <p>Left or right without RediMount</p> 			

# Ordering Keys

## Linear Motion Systems with Belt Drive and Slide Guides

### M50, M55, M75, M100

1	2	3	4	5	6	7	8	9
MG07B	LX	DE5	-01000	-01500	D	N	0000	S1

#### 1. Type of unit

MG05B = M50 unit, slide guides, belt drive  
 MG06B = M55 unit, slide guides, belt drive  
 MG07B = M75 unit, slide guides, belt drive  
 MG10B = M100 unit, slide guides, belt drive

#### 2. Transmission type

LX = inline style, directly coupled, RediMount flange  
 SX = inline style, directly coupled, no RediMount flange

#### 3. RediMount motor ID code

vww = alphanumeric motor code for suitable RediMount flange when motor is known  
 999 = RediMount code used when motor is unknown  
 XXX = for units without RediMount flange

#### 4. Maximum stroke (Smax)

-xxxxx = distance in mm

#### 5. Total length of unit (L tot)

-yyyyy = distance in mm

#### 6. Drive shaft / RediMount flange configuration<sup>1</sup>

C = shaft on left side with key way or RediMount  
 D = shaft on right side with key way or RediMount  
 M = shaft on left side with key way or RediMount, shaft on right side with key way  
 N = shaft on left side with key way, shaft on right side with key way or RediMount

#### 7. Carriage configuration

N = single standard carriage  
 Z = double standard carriages (not possible for MG05B)

#### 8. Distance between carriages (Lc)

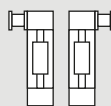
0000 = for all single standard carriage units  
 zzzz = distance in mm between carriages (not possible for MG05B)

#### 9. Protection option<sup>2</sup>

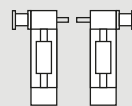
S1 = wash down protection (not possible for MG05B)  
 S2 = enhanced wash down protection (not possible for MG05B)

<sup>1</sup> See below for the definition of shafts.

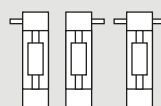
Left, right or both sides with shafts with RediMount



Left or right with RediMount and other side a shaft without RediMount



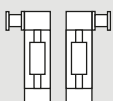
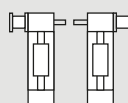
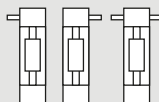
Left or right without RediMount



<sup>2</sup> Leave position blank if no additional protection is required.

# Ordering Keys

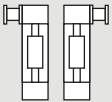
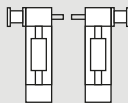
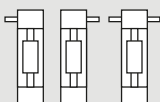
## Linear Motion Systems with Belt Drive and Wheel Guides

WH50, WH80, WH120								
1	2	3	4	5	6	7	8	9
WH08Z	LX	BT8	-02300	-02710	N	L	0000	S2
<p><b>1. Type of unit</b>                      WH05Z = WH50 unit                      WH08Z = WH80 unit                      WH12Z = WH120 unit</p> <p><b>2. Transmission type</b>                      LX = inline style, directly coupled, RediMount flange                      SX = inline style, directly coupled, no RediMount flange</p> <p><b>3. RediMount motor ID code</b>                      vvww = alphanumeric motor code for suitable RediMount flange when motor is known                      999 = RediMount code used when motor is unknown                      XXX = for units without RediMount flange</p> <p><b>4. Maximum stroke (Smax)</b>                      - xxxxx = distance in mm</p> <p><b>5. Total length of unit (L tot)</b>                      - yyyyy = distance in mm</p>			<p><b>6. Drive shaft / RediMount flange configuration<sup>1</sup></b>                      A = shaft on left side without key way                      B = shaft on right side without key way                      C = shaft on left side with key way or RediMount                      D = shaft on right side with key way or RediMount                      E = shaft on left side without key way, shaft on right side with key way or RediMount                      F = shaft on left side with key way or RediMount, shaft on right side without key way                      G = shaft on left side without key way, shaft on right side for encoder                      H = shaft on left side for encoder, shaft on right side without key way                      I = shaft on left side with key way or RediMount, shaft on right side for encoder                      J = shaft on left side for encoder, shaft on right side with key way or RediMount                      K = hollow shaft on both sides without clamping unit                      L = shaft on left and right side without key way                      M = shaft on left side with key way or RediMount, shaft on right side with key way                      N = shaft on left side with key way, shaft on right side with key way or RediMount                      V = hollow shaft on both sides for Micron DT/DTR planetary gear option                      W = hollow shaft on both sides with clamping unit</p>			<p><b>7. Carriage configuration</b>                      N = single standard carriage                      L = single long carriage                      Z = double standard carriages</p> <p><b>8. Distance between double carriages</b>                      0000 = always for single carriages                      zzzz = distance in mm</p> <p><b>9. Protection option<sup>2</sup></b>                      S1 = wash down protection                      S2 = enhanced wash down protection</p> <p><sup>1</sup> See below for the definition of shafts.                      Left, right or both sides with shafts with RediMount</p>  <p>Left or right with RediMount and other side a shaft without RediMount</p>  <p>Left or right without RediMount</p>  <p><sup>2</sup> Leave position blank if no additional protection is required.</p>		

Note! for ordering of options type EN, ES, KRG, RT, ADG and MGK, see accessory index on page 131.

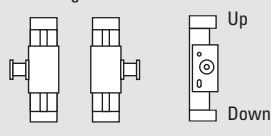
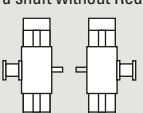
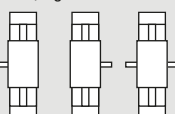
# Ordering Keys

## Linear Motion Systems with Belt Drive and Wheel Guides

MLSH60Z							
1	2	3	4	5	6	7	8
MLSH06Z	SX	XXX	-04500	-05580	D	D	0600
<p><b>1. Type of unit</b> MLSH06Z = MSLH60 unit</p> <p><b>2. Transmission type</b> LX = inline style, directly coupled, RediMount flange SX = inline style, directly coupled, no RediMount flange</p> <p><b>3. RediMount motor ID code</b> vvw = alphanumeric motor code for suitable RediMount flange when motor is known 999 = RediMount code used when motor is unknown XXX = for units without RediMount flange</p> <p><b>4. Maximum stroke (Smax)</b> - xxxxx = distance in mm</p> <p><b>5. Total length of unit (L tot)</b> - yyyyy = distance in mm</p> <p><b>6. Drive shaft / RediMount flange configuration<sup>1</sup></b> A = shaft on left side without key way B = shaft on right side without key way C = shaft on left side with key way or RediMount D = shaft on right side with key way or RediMount E = shaft on left side without key way, shaft on right side with key way or RediMount F = shaft on left side with key way or RediMount, shaft on right side without key way G = shaft on left side without key way, shaft on right side for encoder H = shaft on left side for encoder, shaft on right side without key way I = shaft on left side with key way or RediMount, shaft on right side for encoder J = shaft on left side for encoder, shaft on right side with key way or RediMount L = shaft on left and right side without key way M = shaft on left side with key way or RediMount, shaft on right side with key way N = shaft on left side with key way, shaft on right side with key way or RediMount</p>				<p><b>7. Carriage configuration</b> N = single standard carriage L = single long carriage Z = double standard carriages</p> <p><b>8. Distance between double carriages</b> 0000 = always for single carriages zzzz = distance in mm</p> <p><sup>1</sup> See below for the definition of shafts.</p> <p>Left, right or both sides with shafts with RediMount</p>  <p>Left or right with RediMount and other side a shaft without RediMount</p>  <p>Left or right without RediMount</p> 			

# Ordering Keys

## Linear Lifting Units

WHZ50, WHZ80								
1	2	3	4	5	6	7	8	9
WHZ05Z	LX	KB5	-01000	-01410	A	N	0000	
<p><b>1. Type of unit</b> WHZ05Z = WHZ50 unit WHZ08Z = WHZ80 unit</p> <p><b>2. Transmission type</b> LX = inline style, directly coupled, RediMount flange SX = inline style, directly coupled, no RediMount flange</p> <p><b>3. RediMount motor ID code</b> vvw = alphanumeric motor code for suitable RediMount flange when motor is known 999 = RediMount code used when motor is unknown XXX = for units without RediMount flange</p> <p><b>4. Maximum stroke (Smax)</b> - xxxxx = distance in mm</p> <p><b>5. Total length of unit (L tot)</b> - yyyyy = distance in mm</p> <p><small>Note! for ordering of options type EN, ES, KR6, RT, ADG and MGK, see accessory index on page 131.</small></p>			<p><b>6. Drive shaft / RediMount flange configuration<sup>1</sup></b> A = shaft on left side without key way B = shaft on right side without key way C = shaft on left side with key way or RediMount D = shaft on right side with key way or RediMount E = shaft on left side without key way, shaft on right side with key way or RediMount F = shaft on left side with key way or RediMount, shaft on right side without key way G = shaft on left side without key way, shaft on right side for encoder H = shaft on left side for encoder, shaft on right side without key way I = shaft on left side with key way or RediMount, shaft on right side for encoder J = shaft on left side for encoder, shaft on right side with key way or RediMount L = shaft on left and right side without key way M = shaft on left side with key way or RediMount, shaft on right side with key way N = shaft on left side with key way, shaft on right side with key way or RediMount V = hollow shaft on both sides for Micron DT/DTR planetary gear option W = hollow shaft on both sides with clamping unit</p>			<p><b>7. Carriage configuration</b> N = single standard carriage L = single long carriage Z = double standard carriages</p> <p><b>8. Distance between double carriages</b> 0000 = always for single carriages zzzz = distance in mm</p> <p><b>9. Protection option<sup>2</sup></b> S1 = wash down protection</p> <p><sup>1</sup> See below for the definition of shafts.</p> <p>Left or right with RediMount</p>  <p>Left or right with RediMount and other side a shaft without RediMount</p>  <p>Left, right or both sides with shafts without RediMount</p>  <p><sup>2</sup> Blank if no additional protection is required.</p>		

## Z2, Z3

1	2	3	4
MGZ3K	25259	-250	450
<p><b>1. Type of unit</b> MGZ2K = Z2 unit MGZ3K = Z3 unit</p> <p><b>2. Ball screw diameter, lead and tolerance class</b> 25109 = 25 mm, 10 mm, T9 25259 = 25 mm, 25 mm, T9 32207 = 32 mm, 20 mm, T7</p>		<p><b>3. Minimum retracted length (L min)</b> - ••• = distance in cm</p> <p><b>4. Maximum extended length (L max)</b> ••• = distance in cm</p>	

# Ordering Keys

## Linear Rod Units

WZ60, WZ80																								
1	2	3	4	5	6																			
WZ06S	20	-00350	-00780	C	N																			
<b>1. Type of unit</b> WZ06S = WZ60 unit WZ08S = WZ80 unit  <b>2. Ball screw lead</b> 05 = 5 mm 10 = 10 mm 20 = 20 mm 50 = 50 mm		<b>3. Maximum stroke (Smax)</b> - xxxxx = distance in mm  <b>4. Total length of unit (L tot)</b> - yyyyy = distance in mm  <b>5. Drive shaft configuration</b> A = shaft without key way C = shaft with key way  <b>6. Extension tube configuration</b> N = standard		<sup>1</sup> See table below for available combinations of units and screw leads.																				
				<table border="1"> <thead> <tr> <th rowspan="2">Type of unit</th> <th colspan="4">Available screw leads [mm]</th> </tr> <tr> <th>5</th> <th>10</th> <th>20</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>WZ06S</td> <td>x</td> <td></td> <td>x</td> <td>x</td> </tr> <tr> <td>WZ08S</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> </tbody> </table>		Type of unit	Available screw leads [mm]				5	10	20	50	WZ06S	x		x	x	WZ08S	x	x	x	x
Type of unit	Available screw leads [mm]																							
	5	10	20	50																				
WZ06S	x		x	x																				
WZ08S	x	x	x	x																				

Note! for ordering of options type EN, ES, KRG, RT and MGK, see accessory index on page 131.



# Ordering Keys

## Non-driven Linear Motion Systems

WH40N, WH50N, WH80N, WH120N							
1	2	3	4	5	6	7	8
WH04N00	SX	XXX	-04500	-04640	K	L	0000
<b>1. Type of unit</b> WH04N00 = WH40N unit WH05N00 = WH50N unit WH08N00 = WH80N unit WH12N00 = WH120N unit  <b>2. Transmission type</b> SX = inline style, directly coupled, no RediMount flange  <b>3. RediMount motor ID code</b> XXX = for units without RediMount flange			<b>4. Maximum stroke (Smax)</b> - xxxxx = distance in mm  <b>5. Total length of unit (L tot)</b> - yyyyy = distance in mm  <b>6. Drive shaft / RediMount flange configuration</b> K = no shaft or RediMount flange		<b>7. Carriage configuration</b> N = single standard carriage L = single long carriage Z = double standard carriages  <b>8. Distance between double carriages</b> 0000 = always for single carriages zzzz = distance in mm		

WM40N, WM60N, WM80N, WM120N																																										
1	2	3	4	5	6	7	8																																			
WM08N00	SX	XXX	-07100	-07210	K	N	0000																																			
<b>1. Type of unit</b> WM04N00 = WM40N unit WM06N00 = WM60N unit WM08N00 = WM80N unit WM12N00 = WM120N unit  <b>2. Transmission type</b> SX = inline style, directly coupled, no RediMount flange  <b>3. RediMount motor ID code</b> XXX = for units without RediMount flange			<b>4. Maximum stroke (Smax)</b> - xxxxx = distance in mm  <b>5. Total length of unit (L tot)</b> - yyyyy = distance in mm  <b>6. Drive shaft / RediMount flange configuration</b> K = no shaft or RediMount flange  <b>7. Carriage configuration<sup>1</sup></b> N = single standard carriage S = single short carriage L = single long carriage Z = double standard carriages Y = double short carriages		<b>8. Distance between double carriages</b> 0000 = always for single carriages zzzz = distance in mm  <table border="1"> <thead> <tr> <th rowspan="2">Type of unit</th> <th colspan="5">Available carriage types</th> </tr> <tr> <th>N</th> <th>S</th> <th>L</th> <th>Z</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>WM04N</td> <td>x</td> <td></td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>WM06N</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>WM08N</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>WM12N</td> <td>x</td> <td></td> <td>x</td> <td>x</td> <td></td> </tr> </tbody> </table>			Type of unit	Available carriage types					N	S	L	Z	Y	WM04N	x		x	x		WM06N	x	x	x	x	x	WM08N	x	x	x	x	x	WM12N	x		x	x	
Type of unit	Available carriage types																																									
	N	S	L	Z	Y																																					
WM04N	x		x	x																																						
WM06N	x	x	x	x	x																																					
WM08N	x	x	x	x	x																																					
WM12N	x		x	x																																						

# Ordering Keys

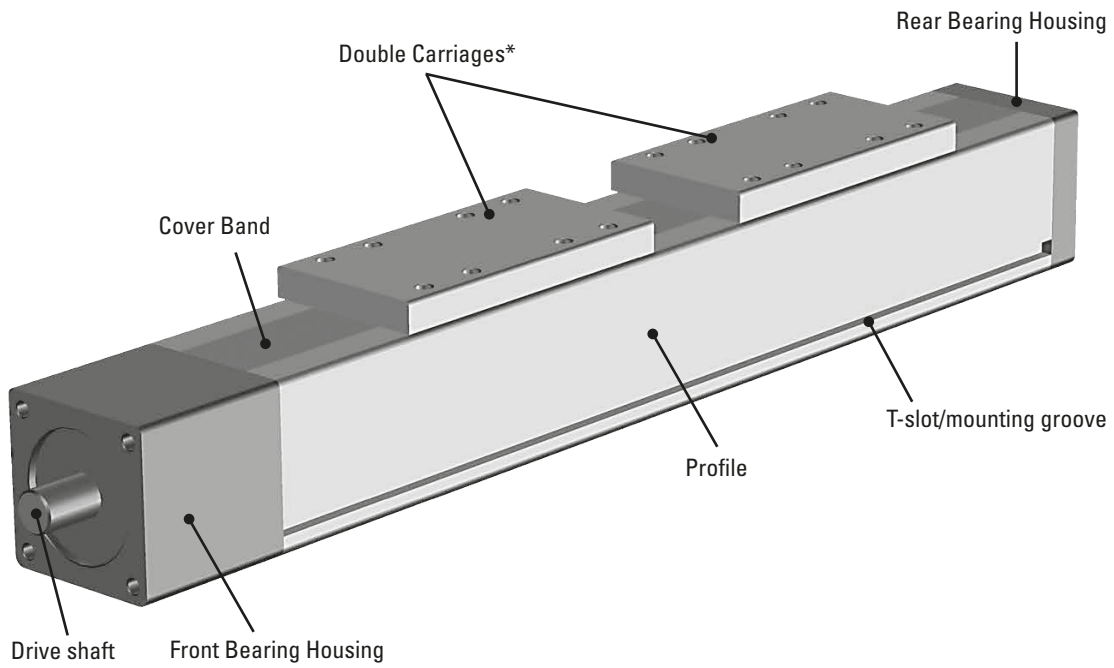
## Non-driven Linear Motion Systems

M75N, M100N								
1	2	3	4	5	6	7	8	9
MG10N00	SX	XXX	-04500	-04800	K	N	0000	S1
<p><b>1. Type of unit</b>            MG07N00 = M75N unit with slide guides            MG10N00 = M100N unit with slide guides            MF07N00 = M75N unit with ball guides            MF10N00 = M100N unit with ball guides</p> <p><b>2. Transmission type</b>            SX = inline style, directly coupled,            no RediMount flange</p> <p><b>3. RediMount motor ID code</b>            XXX = for units without RediMount flange</p>			<p><b>4. Maximum stroke (Smax)</b>            - xxxxx = distance in mm</p> <p><b>5. Total length of unit (L tot)</b>            - yyyyy = distance in mm</p> <p><b>6. Drive shaft / RediMount flange configuration</b>            K = no shaft or RediMount flange</p>			<p><b>7. Carriage configuration</b>            N = single standard carriage            Z = double standard carriages</p> <p><b>8. Distance between double carriages</b>            0000 = always for single carriages            zzzz = distance in mm</p> <p><b>6. Protection option<sup>1</sup></b>            S1 = wash down protection</p> <p><sup>1</sup>Leave blank if no protection option required.</p>		

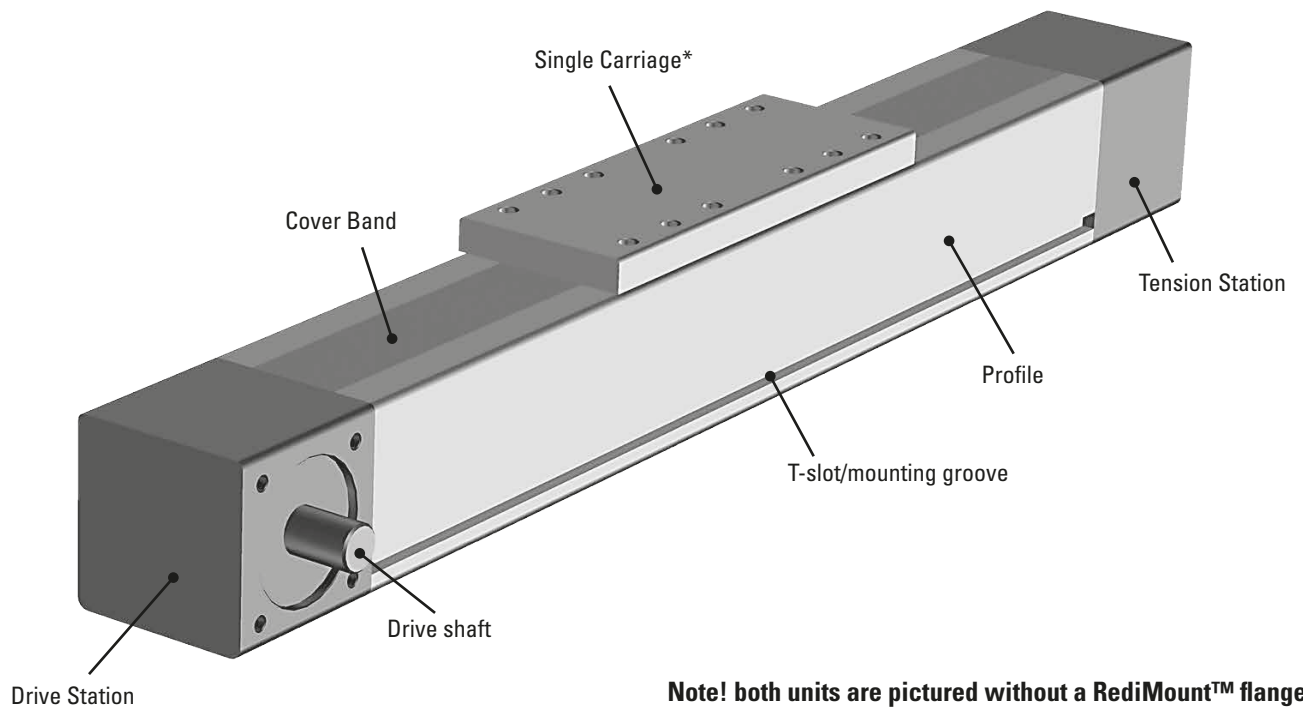
# Terminology

## Basic Linear Motion System Terminology

### Screw Driven Unit



### Belt Driven Unit



**Note! both units are pictured without a RediMount™ flange**

\* Both screw and belt driven units can have single or double carriages.

# Glossary

## A - Belt D

### Acceleration

Acceleration is a measure of the rate of speed change going from standstill (or a lower speed) to a higher speed. Please contact customer service if your application is critical to which acceleration rate is acceptable or needed.

### Accuracy

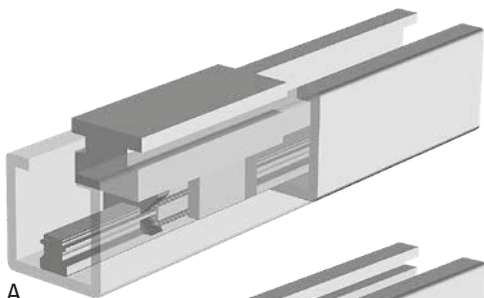
There are several types of accuracy and many different factors that will affect the overall accuracy of a system. Also see "Repeatability", "Positioning Accuracy", "Resolution", "Lead Accuracy" and "Backlash".

### Backlash

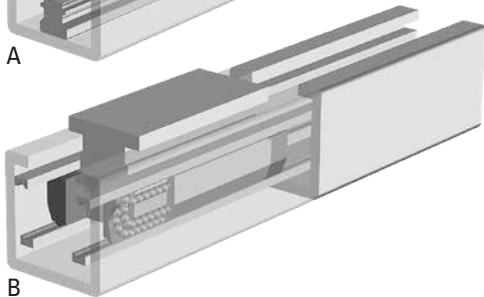
Backlash is the stack up of tolerances (play) within the leadscrew/belt transmission assembly and gearing which creates a dead band when changing directions. The result is that the motor can rotate some before any motion can be seen on the carriage when reversing the direction of the motor rotation. The backlash varies depending of the linear motion system model.

### Ball Guides

A ball guide consists of a ball rail and a ball bushing. The ball rail is made of hardened steel and runs along the inside of the profile. The ball bushing is attached to the carriage of the unit and contains balls that roll against the rail. The balls in the bushing can be recirculating or have fixed ball positions depending on the type of ball guide. The recirculating type has a longer life and better load capability while the fixed type typically is much smaller. Thomson uses three major types of ball guides in its linear motion systems. Either the compact single rail type with recirculating ball bushing (A), the stronger double rail type also with recirculating ball bushings (B) or the fixed ball position ball bushings type (not shown) which require very little space and are used in the smallest units. Ball guides offer high accuracy, high loads and medium speed.



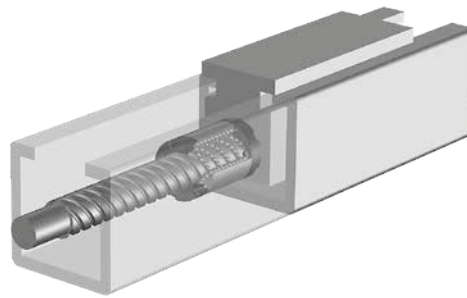
A



B

### Ball Screw Drive

A ball screw is made up of a rotating screw and a moving ball nut. The ball nut is attached to the carriage of the unit. It does not have a normal thread, instead balls circulate inside the nut making it work as an efficient ball bearing that travels along the screw. Ball screws come in a large variety of leads, diameters and tolerance classes. The tolerance class (T3, T5, T7 or T9) indicates the lead tolerance of the screw. The lower the number, the higher the tolerance. High load capability and high accuracy are typical features of ball screw driven units.



### Bearing Housing

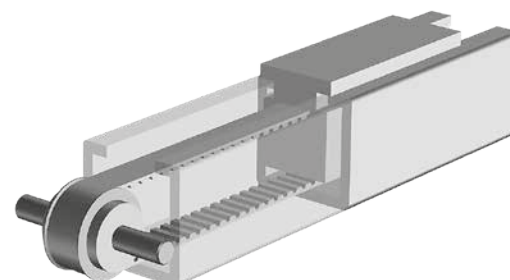
Screw driven units has two bearing housings, front and rear. The front bearing housing has a drive shaft while the rear has none. Sometimes however the rear housing can have an optional output shaft which is used to connect to an encoder.

### Bell House Flange

A bell house flange is used when a motor should be connected directly to the drive shaft of a linear motion system, i.e when it is direct driven. The bell house has the bolt pattern of the motor flange in one end and the bolt pattern of the drive shaft flange in the other while the two shafts are joined by a coupling. Also see "Direct Drive".

### Belt Drive

A belt drive consists of a toothed belt which is attached to the carriage of the unit. The belt runs between two pulleys positioned at either end of the profile. One pulley is attached to the motor via the drive shaft in the drive station while the other is mounted in a tension station. The belts are made of plastic reinforced with steel cords. High speeds, long stroke, low noise and low overall weight are typical features of belt driven units



# Glossary

## Belt G - C

### Belt Gear

A belt gear consists of a timing belt that runs between two pulley wheels of different diameters. The difference between the diameters determines the gear ratio. Belt gears are quiet, have medium accuracy and require no maintenance but are susceptible to belt breakage under overload conditions.

### Brake

None of the units are equipped with a brake or are self-locking which means that a vertical unit will drop the carriage/load if no external brake (such as a brake in the motor, etc.) is applied to the drive shaft. In the case of belt driven units care must be taken as the carriage/load will drop immediately in the case of a belt breakage. This is particularly important in vertical applications. You also may want to incorporate a brake in to the system to ensure fast and secure stops at an emergency stop or a power failure. In this case the brake should be of the failsafe type, i.e. a brake that is engaged when power is off and lifted when it is on.

### Carriage

The carriage is the moving member which travel along the profile of the unit to which the load is attached. Some units can have multiple carriages in order to distribute the weight of the load over a greater distance, this will however reduce the available stroke for a given profile length. There are also units having the option of short or long carriage. The short can carry less weight than a standard one but has a slightly longer stroke for a given profile length while the longer works the other way around. It is possible to fix the carriage(s) to the foundation and let the profile act as the moving member if so desired. This is often the case in vertical applications where you let the profile lift and lower the load.

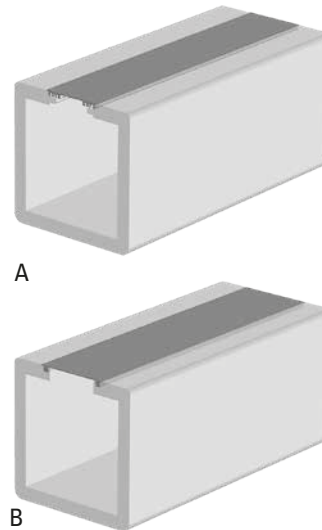
### CE Certificate

Linear motion systems do not need and do therefore not have any CE certification. All Thomson linear motion systems are however designed in accordance with the CE regulations and comes with a manufacturers declaration to prove this. Once the linear motion system is used or made in to a machine it is the responsibility of the end customer to make sure the entire machine that the linear motion system is a part of is in accordance with the applicable CE regulations, produce the documents that proves this and apply a CE mark to the machine.

### Cover Band

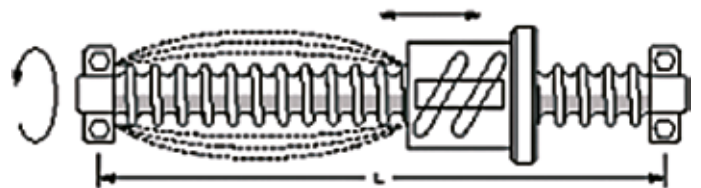
Cover bands are used on some units to protect them from the ingress of foreign objects through the opening in the profile where the carriage runs and can be made of plastic (A) or stainless steel (B). In the case of plastic the cover band seals the profile by snapping into small grooves running along the carriage opening. In the case of stainless steel the cover band seal the profile magnetically using magnet strips mounted on each side of the carriage opening. Some units also have a self-adjusting

cover band tensioning mechanism that eliminates any slack in the cover band that can occur from temperature changes, thus improving the sealing degree and the expected life of the cover band.



### Critical Speed

All ball screws have a critical speed where the screw starts to vibrate and eventually bend or warp the screw. The exact limit is a function of how long the screw is and the speed. For some units this means that the allowed maximum speed found in the performance specifications can be higher than the critical speed when the stroke exceeds a certain distance. In this case, either the speed must be reduced to the critical speed, the amount of stroke must be reduced, or you must use the screw support option if the unit in question allows this. Otherwise you must select another unit that can manage the speed at that stroke. The critical speed limits can be found in the "Critical Speed" diagrams on the product pages of the units that this concern.



### Customization

Despite the large range of linear motion systems offered by Thomson you may not find the exact unit to suit your application. But whatever your need is, Thomson is ready to help you to customize a unit according to your requirements. Please contact customer service for more information.

### Cycle

One cycle is when the carriage has travelled back and forth over the complete stroke of the unit one time.

# Glossary

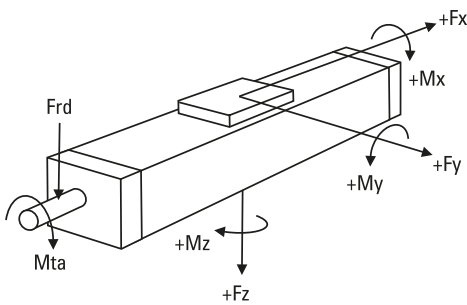
## D - E

### Deceleration

Deceleration is a measure of the rate of speed change going from a higher speed to a lower speed (or standstill). Please contact customer service if your application is critical to which deceleration rate is acceptable or needed.

### Definition of Forces

The designations of the forces that acts on the unit are defined on the product page of each unit in the "Definition of Forces" drawing (see example below). Please always use the same definitions whenever communicating with Thomson.



### Deflection of the Profile

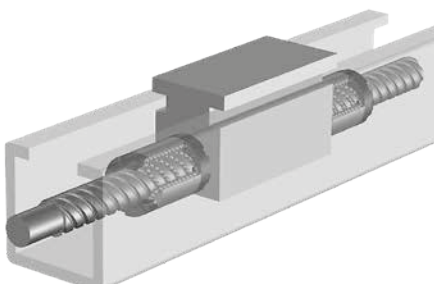
Some units require support along the whole profile whilst some are self-supporting over a specified span. Further details can be found on the product data pages. The recommended support intervals should be followed to minimize deflection of the unit. The maximum distance between the support points is shown on the product data pages. The deflection of the unit can also be calculated using the information in the "Additional data and calculations" section.

### Direct Drive

Direct drive means that there is no gearing between the motor and the drive shaft of the linear motion system. Instead the motor is connected to the unit directly via a coupling and a bell house adapter flange. Also see "Bell House Flange".

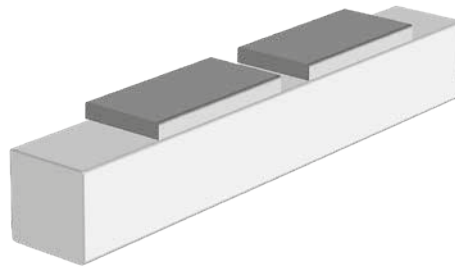
### Double Ball Nuts

Using double ball nuts will increase the repeatability of the unit. The ball nuts are installed so that they are pre-tensioned against each other eliminating the play between the nuts and the screw. A double nut unit will have a slightly shorter stroke for a given overall length.



### Double Carriages

Double carriage units have two carriages which gives them higher load capabilities than single carriage units. When ordering a double carriage unit the distance between the two carriages needs to be defined. This distance is called  $L_A$  or  $L_c$  depending on the model.



### Drive Shaft

The drive shaft is the shaft to which the motor is connected, either directly, via a bell house flange or via a gear box. There are many sizes and types of drive shafts, such as shafts with or without key way or hollow shafts, depending on the type and size of the unit. Belt driven units can often have two drive shafts (same or different type and size), one on each side of the drive station, while screw driven only have one pointing out of the end of the unit. Customized drive shafts are possible, please contact customer service for more information.

### Drive Station

The drive station is the mechanical assembly in one of the ends of a belt driven unit where the drive shaft is situated.

### Duty Cycle

All units are designed for a 100% duty cycle. However, where the unit runs at extreme load, speed, acceleration and temperature or for long operating periods the expected life time may be reduced.

### Encoder Feedback

Encoders provide a digital output signal in the form of a square shaped pulse train that can be used to determine the position of the extension tube. The encoder signal in a servo motor system is connected to the motion control so that it can control the servo drive and hence close the position feedback loop.

### End of Stroke Limit Switches

If a unit runs at speed to the ends of its stroke there is a risk of damage. Damage can be prevented by using end of stroke limit switches to detect and engage a brake and/or cut power to the motor when the unit nears the end of the unit. You must ensure that there is sufficient distance between the end of stroke limit switch and the end of the unit, to allow the carriage to come to a complete stop before colliding with the end. The required stopping distance depends on the speed and the load and will have to be calculated for each application. The stopping distance must be taken into account when defining the necessary stroke.

# Glossary

## G - M

### Guides

Guides are in essence a form of linear bearings on which the carriage(s) travel. Thomson uses three main types of guides that all have different characteristics and which to choose depends on the demands of the application. Also see "Ball Guides", "Slide Guides" and "Wheel Guides".

### Idle Torque

Idle torque is the torque needed to move the carriage with no load in it by rotating the drive shaft. The idle torque will vary with the input speed and the idle torque tables on the product pages gives a value for some speeds. The value given in the table is for a unit having a single carriage of standard length. If you need the exact value for another speed, multiple carriages or short/long carriages, please contact our customer service.

### Inertia

Inertia is the property of an object to resist speed changes and is dependent on the shape and the mass of the object. The inertia is important when sizing and selecting and also when tuning a servo system to optimum performance. Consult customer service for more information.

### Input Shaft

The input shaft is the shaft to which the power source (motor) is connected to on a gear box. Primary shaft is another term for this. Sometimes the drive shaft on a linear unit also is referred to as the input shaft.

### Input Speed

Input speed is the rotational speed that the drive shaft/input shaft of a linear motion system or a gear box is subjected to.

### Installation and Service Manual

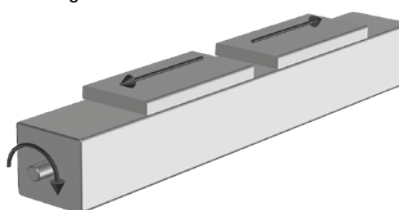
Each linear motion system has an installation and service manual to answer typical questions about mounting and servicing the unit.

### Lead Accuracy

Lead accuracy is a measure of how accurate the lead of a ball screw is. For a ball screw with a lead of 25 mm, the screw should in theory move the nut 25 mm per each revolution. In reality there will be a deviation between the expected traveling distance and what is actually achieved. The deviation is typically for a ball screw 0,05 mm per 300 mm of stroke. Contact customer service for more information.

### Left/right Moving Carriages

Units with left/right moving carriages have two carriages moving in opposite directions when the drive shaft is rotated. This type of unit has a ball screw where half of the screw has a left hand thread and the other half a right hand thread.



### Lifetime Expectancy

When determining the lifetime for a linear motion system it is necessary to evaluate all forces and moments that are acting on the unit. The data and formulas given in this catalogue serve as a basis for this. For a more detailed lifetime calculation please use our sizing and selection software. Please contact us for further guidance.

### Linear Lifting System

A linear lifting system is in essence a linear motion system specially designed for vertical lifting applications. Some units can be used in horizontal applications as well under certain criteria. Please contact us if you plan to mount a lifting unit in any other position than vertically with the load carrying plate pointing down.

### Linear Motion System

A linear motion system is a mechanical assembly that translates the rotating motion of a motor to the linear motion of a carriage that travel along a load supporting beam/profile. Other names for linear motion systems are linear units, linear drive units and rodless actuators among others.

### Load Rating

There are many types of load ratings that all needs to be considered. Normally when you speak about the load you refer to the load that the carriage will move; which is the dynamic load. But there may also be static, side, moment and forces from acceleration, deceleration, gravity and friction that are all equally important. For some units the load and load torque values are given for both the complete unit and the guiding system. The values for the complete unit are the values under which the unit can operate. The values for the guiding system should only be used when comparing different units and do not describe the actual performance of the complete unit.

### Maintenance

Most units require lubrication. General lubrication requirements can be found in the general specifications table on the product data pages. The lubrication intervals, grease qualities and specific lubrication instructions can be found in the installation and service manual of each unit. No other regular maintenance is needed except for normal cleaning and inspection. Units with a cover band may also require irregular cover band replacement due to wear. The belt in belt driven units should not require re-tensioning under normal operating conditions.

### Manufacturers Declaration

All Thomson linear motion systems comes with a manufacturers declaration to prove that it is built according to the CE regulations.

### Mounting

Most units can be mounted in any direction. Any restrictions on mounting positions are shown on the product presentation pages at the beginning of each product category chapter. Even where units may be mounted in any direction there are some considerations. None of the units are self-locking which means that a vertical unit will drop the carriage/load if no



# Glossary

## N - Sc

external brake (such as a brake in the motor, etc.) is applied to the drive shaft of the unit. In the case of belt driven units care must be taken as the carriage/load will drop immediately in the case of a belt breakage. This is particularly important in vertical applications. All ball screw driven units are equipped with a safety nut to prevent the carriage/load being released in case of ball breakage.

### Non-driven Linear Motion Systems

A non-driven linear motion system has no drive shaft or any type of transmission. In reality a non-driven linear motion system is a guide that has the same look and outer dimensions as the driven version. Normally a non-driven unit is used together with a parallel working driven unit that are mechanically linked where the non-driven unit help to share to load with the driven one.

### Non-guided Linear Motion Systems

A non-guided linear motion system has a drive shaft and a ball screw but no guides. In reality a non-guided linear motion system is a enclosed ball screw assembly with a carriage that has the same look and outer dimensions as the driven version. Using a non-guided unit requires some kind of external guide to which the carriage can be attached.

### Operation and Storage Temperature

Operational temperature limits can be found in the performance tables on the product data pages. Units can be stored or transported within the same temperature range. Please contact us if the unit will be exposed to higher/lower temperatures than recommended during storage or transportation.

### Output Shaft

The output shaft is the shaft on a gear box that is connected to object being driven by the gear box. Another term for output shaft is secondary shaft.

### Packages and Multi Axis Kits

Thomson can offer complete pre-defined packages (linear motion system, gear and servo motor assembled and shipped with servo drive and cables) as well as mounting kits for the creation of two and three axis systems. Please contact us for further information.

### Positioning Accuracy

Positioning accuracy is the error between the the expected and actual position and is the sum of all factors that will reduce the accuracy (i.e. repeatability, backlash, resolution, screw/belt accuracy, and the accuracy of the motor, drive and motion control system). Some of these factors, such as backlash and lead accuracy, can sometimes be compensated for in the software of the motion control system being used. Also see "Accuracy".

### Position Feedback

The position of the carriage/rod/lifting profile can be obtained in many ways. The most common way is to equip the unit with an encoder or to use a motor which has a built in feedback device (encoder, resolver, etc.). To many units there are encoders or/and encoder mounting kits available. See the accessory chapter.

### Repeatability

Repeatability is the ability for a positioning system to return to a location when approaching from the same distance, at the same speed and deceleration rate. Some of the factors that affect the repeatability are the angular repeatability of the motor, drive and motion control system, system friction and changes in load, speed and deceleration.

### Resolution

Resolution is the smallest move increment that the system can perform. Some of the factors that affect the resolution are the angular repeatability of the motor, drive and motion control system, system friction, the drive train reduction, the lead/type of the ball screw/belt and changes in load, speed and deceleration.

### Resolver

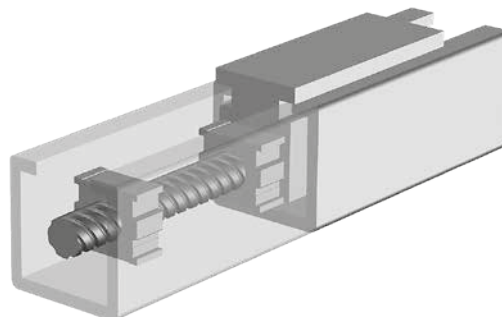
A resolver is basically a type of rotary electrical transformer used for measuring degrees of rotation and are commonly used on AC servo motors as a feedback device to control the commutation of the motor windings. The resolver is mounted to the end of motor shaft and when the motor rotates the resolver will transmit the position and direction of the rotor to the servo drive which then can control the motor. Most servo drives for AC servo motors on the market today can convert the resolver signal in to a pulse train (encoder signal simulation) which can be used by a motion control to determine and control the position of the motor. Also see "Encoder Feedback".

### RoHS Compliance

The RoHS directive stands for "the restriction of the use of certain hazardous substances in electrical and electronic equipment". This directive bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants. All linear motion systems and accessories sold in the EU are RoHS compliant.

### Screw Supports

Screw supports allow screw driven units to travel at high speed even when stroke becomes longer. The supports reduce the unsupported length of the screw, that otherwise would be subjected to vibrations. Screw supports come in single (one screw support on each side of the carriage) or double (two supports on each side) versions. Screw support units will have a slightly shorter stroke for a given overall length.



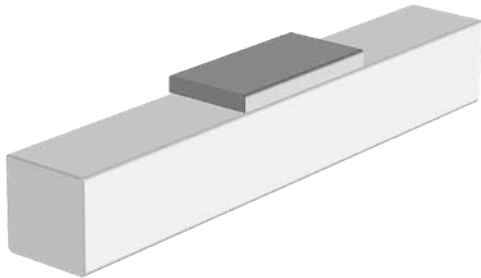


# Glossary

## Si - W

### Single Carriage

Single carriage units have one carriage. Some linear motion system models also have the option of long or short single carriages. The long carriages handle higher loads but will have a longer overall length for a given stroke.

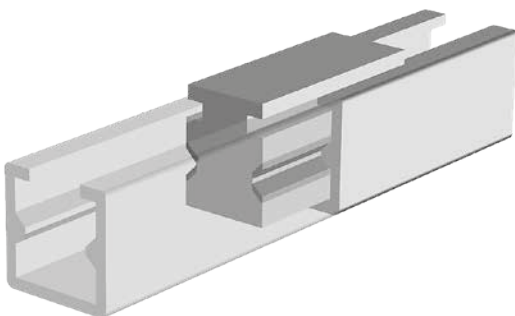


### Sizing and Selection

This catalog can give you an overview of what Thomson can offer you and an indication of which products that may suit your application. But in order to get the best solution it is necessary to know your specific application and to carry out detailed sizing and selection calculations. Please contact customer service for further help.

### Slide Guides

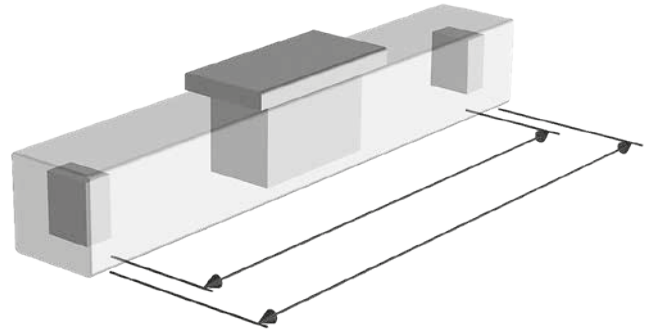
A slide guide consists of a guide attached to the inside of the profile and a slide bushing attached to the carriage. The guide can be made of different materials (e.g. polished hardened steel, anodized aluminum) while the bushing is made of a polymer material. There are two types of bushings, fixed and prism. Prism bushings can move in relation to the guide which results in longer life and higher load capabilities. Slide bushings are silent, simple, reliable and robust and can be used in dirty and dusty environments. They are also resistant to shock loads, have a long life expectancy and require little or no maintenance.



### Stroke

The theoretical maximum stroke ( $S_{max}$ ) is the length that the carriage can travel from one end of the unit to the other. However, using the maximum stroke means that the carriage will collide with the ends of the profile. The practical stroke is therefore shorter. We recommend that you specify a unit that have at least 100 mm longer stroke than the maximum stroke you need so that the unit can stop before colliding with

the ends and also allow for some adjustment of the unit position at the mounting.

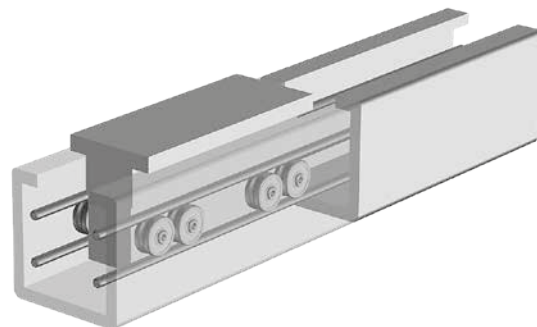


### Tension Station

The tension station is the mechanical assembly situated in the opposite end of the drive station on a belt driven unit. The tension station has a mechanism that allows the belt pulley position to be adjusted thus changing the tension of the belt. Adjustment of the belt tension is normally only necessary when replacing a broken or worn out belt with a new.

### Wheel Guides

A wheel guide consists of ball bearing wheels that run on a hardened steel rail. Wheel guides are a simple and robust guiding method offering high speeds, high loads and medium accuracy.



### Working Environment

All units are designed for use in normal industrial environments. Units which have an open profile (i.e. have no cover band) are more sensitive to dust, dirt and fluids. These units require some kind of cover if they are used in environments where dust, dirt or fluids are present. Wash down or enhanced wash down protection can be ordered for our closed profile units. Please refer to the accessory pages. In all cases where a unit will be exposed to aggressive chemicals, heavy vibrations or other potentially harmful processes we recommend that you contact us for further advice.

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