HMR – Linear Drive
Driving the future.

ORIGA – simply the first

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

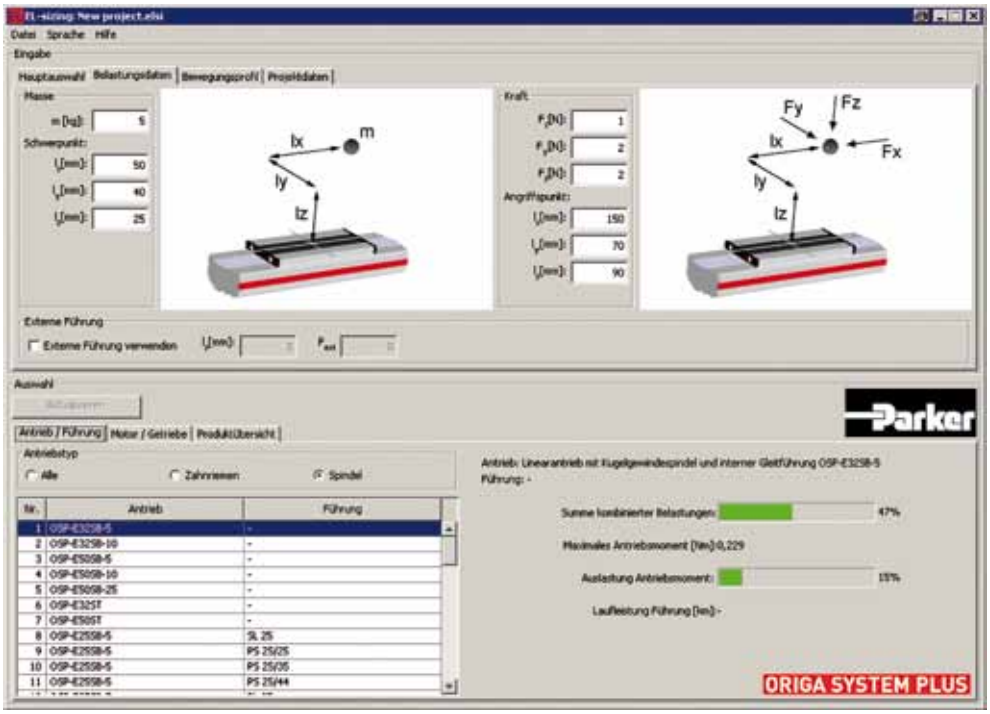
Parker

ENGINEERING YOUR SUCCESS.

EL Sizing

The dimensioning program for electric linear drives

Available on CD-Rom or as a download



Coming soon for HMR – ORIGA DRIVE SYSTEM

ORIGA
Linear Drives

HMR series

Table of Contents

ORIGA HMR Electromechanical Linear Actuators

Profile designs

- Basic profile for assembling directly to the machine base
- Reinforced profile for self-supporting assembly

Mounting systems

- Integrated T-slots for attaching from below and from the side

Protection classes

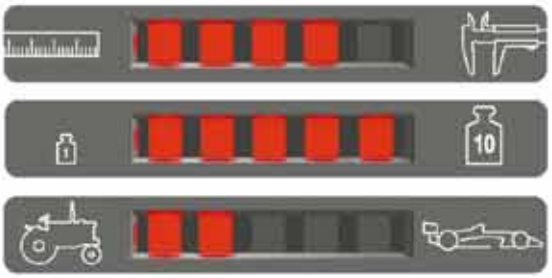
- Without cover: IP20
- With cover: IP54

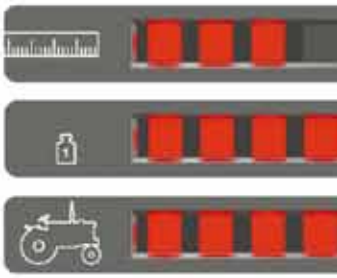
Guide systems

- Plain bearing guide
- Recirculating ball bearing guide

Lubrication

- Central lubrication via externally accessible lubricating nippels





Screw drive

The solution for precise path and position control for heavy loads

Toothed belt drive

The solution for fast path and position control for medium load

We drive the future - with screw, toothed belt or linear motor.

Position sensing

- Integrated, adjustable position switch for end positions and homing

Impact protection

- Integrated shock absorbers for both end positions

Distance measurement

- Contact-free, incremental displacement measuring system

Brake system

- Holding brake can be implemented for horizontal and vertical movements

Cable drag chains

- Directly attachable drag chains for various cabling

s

Linear drive

The solution for fast travel with the greatest possible dynamics and precision

ORIGA
Linear Drives

HMR series

Profile versions

Sizes
150, 180, 240 mm

Designs

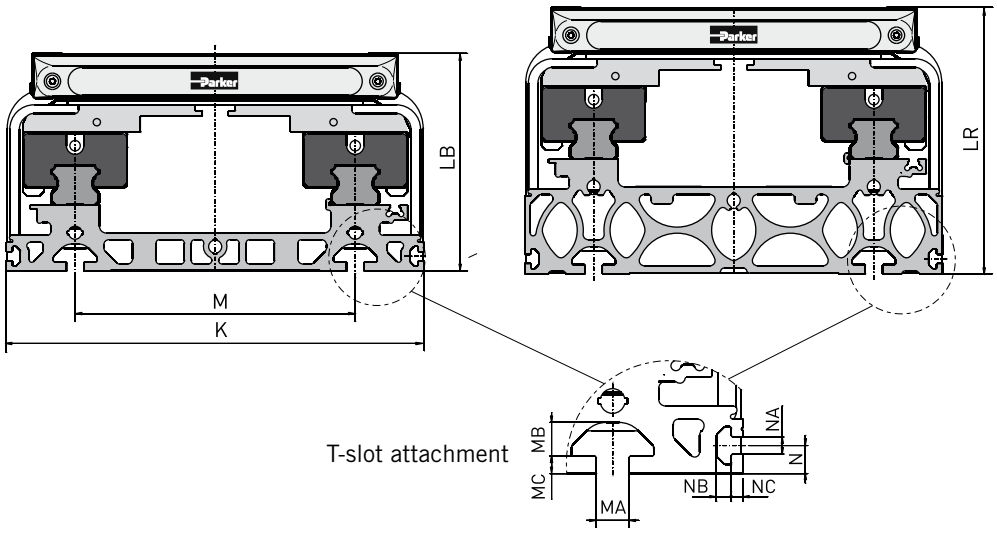
– Basic

– Reinforced

The HMR linear drive system can be equipped with a “basic” or “reinforced” profile as standard.
The “basic” profile is suitable for fitting directly to a machine base that has a corresponding support surface.
The “reinforced” profile, on the other hand, is the preferred choice for self-supporting systems or for use in conjunction with a base surface offering limited support.

“Basic” profile

“Reinforced” profile



T-slot attachment

Dimension Table – Profile versions

Size	K	LB	LR	M	MA	MB	MC	N	NA	NB	NC
HMRx150	150.0	90.0	114.0	96.0	6.2	6.8	3.0	6.5	5.2	4.6	3.5
HMRx180	180.0	111.5	134.5	116.0	8.0	7.8	4.5	8.5	5.2	4.5	3.5
HMRx240	240.0	125.0	153.0	161.0	10.0	10.2	5.3	8.5	5.2	4.5	3.5

Dimensions in mm

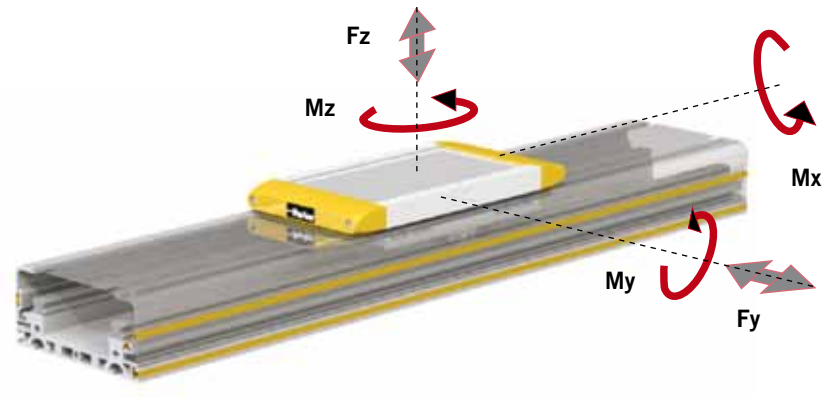
ORIGA Linear Drives

HMR series

Ball bearing guide

Sizes
150, 180, 240 mm

Loads, forces and bending moments



Load requirements for guides and installation size.

The occurring loads, forces and bending moments depend on the application. The mass of the construction attached to the carriage has a center of gravity.
This mass creates static forces (F = m · g) and bending moments (M = m · g · l).

Additional dynamic moments (M = m · a · l) arise in dependence of the acceleration during travel.
Care should be taken when selecting suitable guides that the permissible sum of loads does not exceed 1.

Combined loads

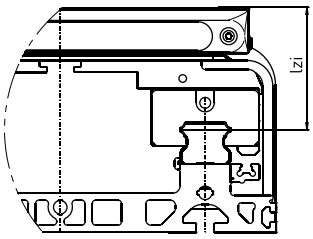
The maximum permissible load for linear drives subject to simultaneous multiple loads, forces and bending moments are calculated using the formula below.

Maximum permissible loads must not be exceeded.

$$L = \frac{Fy}{Fy_{(max)}} + \frac{Fz}{Fz_{(max)}} + \frac{Mx}{Mx_{(max)}} + \frac{My}{My_{(max)}} + \frac{Mz}{Mz_{(max)}} \leq 1$$

The sum of all loads must under no circumstance be > 1.

Internal lever arm l_{zi}



Dimension table - l_{zi}

Product size		l_{zi}
HMR-150	[mm]	50.0
HMR-180	[mm]	57.5
HMR-240	[mm]	68.0

Maximum permissible load based on a service life of 8000 km

Product size		HMRx15	HMRx18	HMRx24	HMRx15	HMRx18	HMRx24
Carriage			Standard			Tandem	
Max, permissible force							
F_{Z8000} F_{Y8000}	[N]	6,000	11,000	18,200	9,000	16,500	27,300
Max. bending moment							
M_{X8000}	[Nm]	290	640	1,460	435	960	2,190
M_{Y8000}	[Nm]	380	840	1,660	570	1,260	2,490
M_{Z8000}	[Nm]	380	840	1,660	570	1,260	2,490

Maximum permissible load based on a service life of 2540 km

Product size		HMRx15	HMRx18	HMRx24	HMRx15	HMRx18	HMRx24
Carriage			Standard			Tandem	
Max. permissible force							
F_{Z2540} F_{Y2540}	[N]	8,800	16,200	26,600	13,200	24,300	39,900
Max. bending moment							
M_{X2540}	[Nm]	430	940	2,150	645	1,410	3,225
M_{Y2540}	[Nm]	560	1,230	2,430	840	1,845	3,645
M_{Z2540}	[Nm]	560	1,230	2,430	840	1,845	3,645

HMRS
Ball screw

ORIGA Linear Drives

Series HMRS

Ball screw

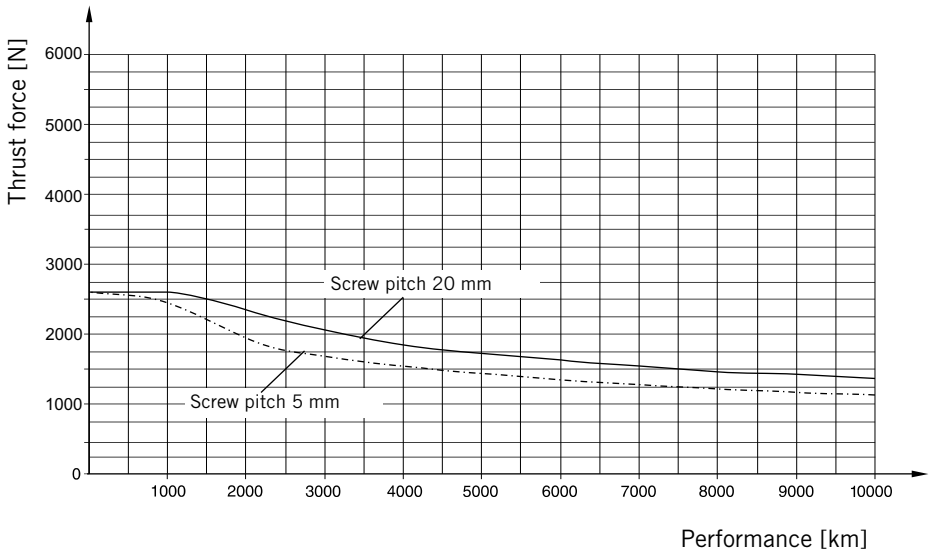
Drive data

Sizes
150, 180, 240 mm

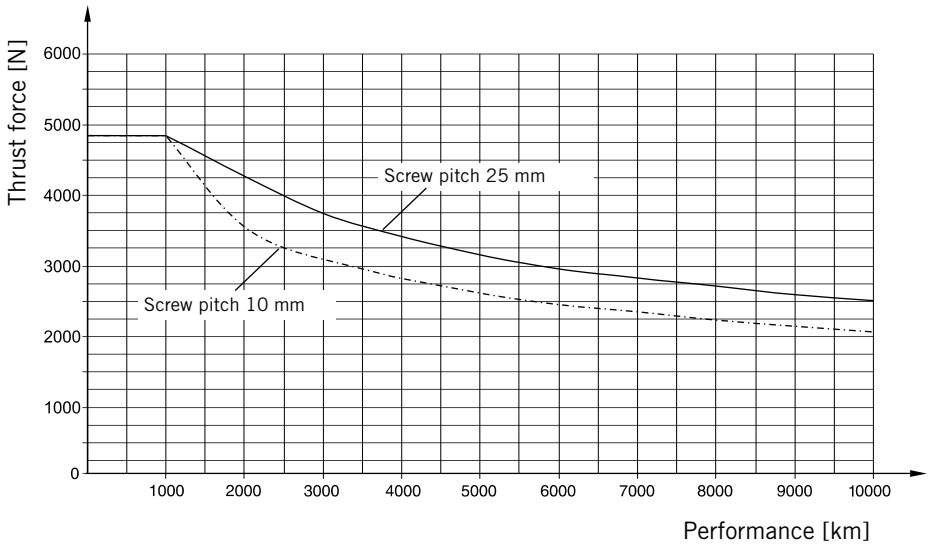
Technical Data HMRS

Product size			HMRS15		HMRS18		HMRS24	
Type of screw			20 x 5	20 x 20	25 x 10	25 x 25	32 x 10	32 x 32
Pitch	p	[mm]	5	20	10	25	10	32
Max. speed	$v_{max.}$	[m/s]	0.25	1.00	0.50	1.25	0.50	1.60
Max. acceleration	$a_{max.}$	[m/s²]	10		10		10	
Repeatability		[µm]	± 20		± 20		± 20	
Max. order stroke		[mm]	2500		3400		4000	
	Thrust force and torque							
Max. thrust force	Fa_{max}	[N]	2600	2600	4800	4800	5500	5500
	F_{A2540}	[N]	1800	2160	3300	3960	3500	4880
Max. torque at drive shaft	M_{amax}	[Nm]	2.2	9.0	8.3	20.8	9.5	30.4
	M_{A2540}	[Nm]	1.6	7.5	5.7	17.1	6.1	27.0
No load torque	M_0	[Nm]	0.7	0.9	0.9	1.0	1.0	1.1
Max. permissible speed at order stroke	**Stroke dependent speed**							
	200 mm		250	1000	500	1250	500	1600
	400 mm		250	1000	500	1250	500	1600
	600 mm		250	1000	500	1250	500	1600
	800 mm		169	678	382	956	423	1354
	1000 mm		122	486	277	694	312	997
	1200 mm		91	366	211	526	239	765
	1400 mm		71	285	165	413	189	605
	1600 mm		57	228	133	333	153	491
	1800 mm		47	187	109	274	127	406
	2000 mm		39	156	92	229	107	342
	2200 mm		33	132	78	195	91	291
	2400 mm		28	113	67	167	79	251
	2600 mm		-	-	58	145	68	219
	2800 mm		-	-	51	128	60	193
	3000 mm		-	-	45	113	53	171
	3200 mm		-	-	40	100	48	152
	3400 mm		-	-	-	-	43	137
	3600 mm		-	-	-	-	39	123
	3800 mm		-	-	-	-	35	112
	4000 mm		-	-	-	-	32	102

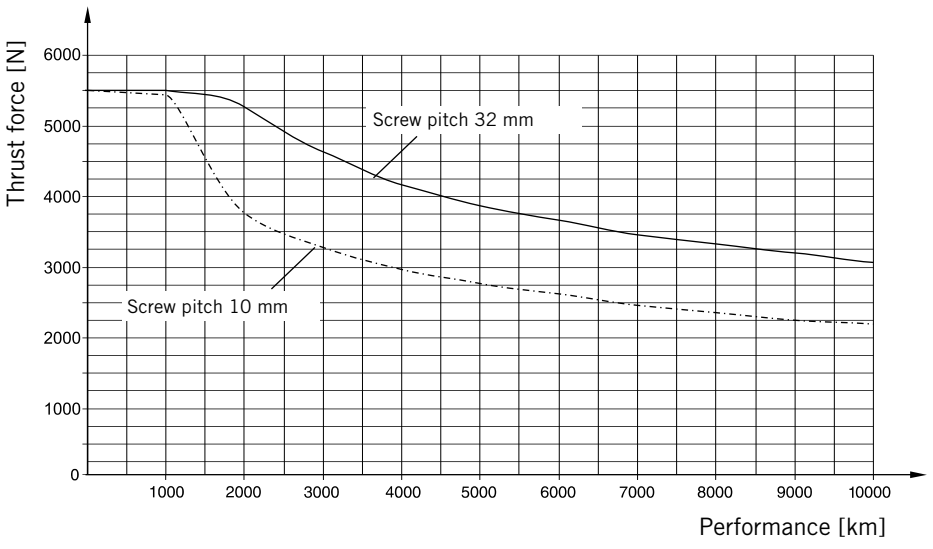
HMR-150 Performance / thrust force



HMR-180 Performance / thrust force



HMR-240 Performance / thrust force



ORIGA Linear Drives

Series HMRS

Ball screw

Performance / thrust force

Sizes
150, 180, 240 mm

Performance expectancy depends on the application's required force. An increase in force will reduce performance.

ORIGA Linear Drives

Series HMRS

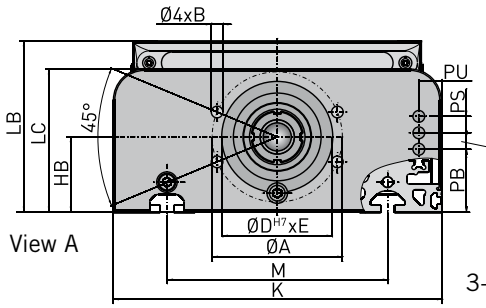
Ball screw

Dimensions

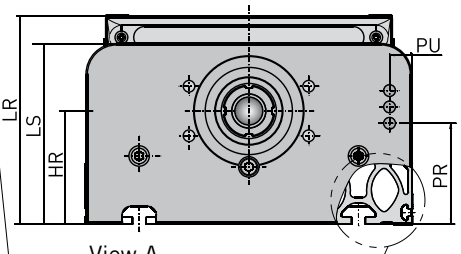
Sizes
150, 180, 240 mm

Basic dimensions

"Basic" profile

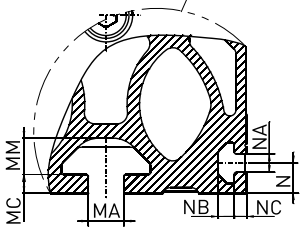


"Reinforced" profile



3-PIN M8 connections

T-slot attachment



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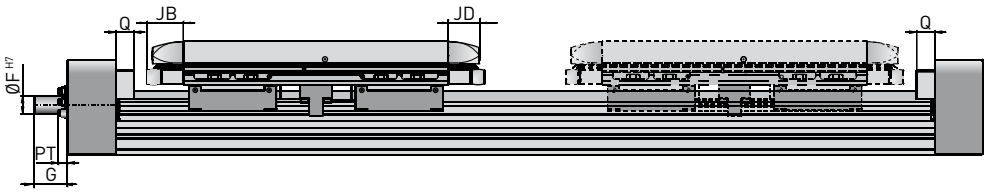
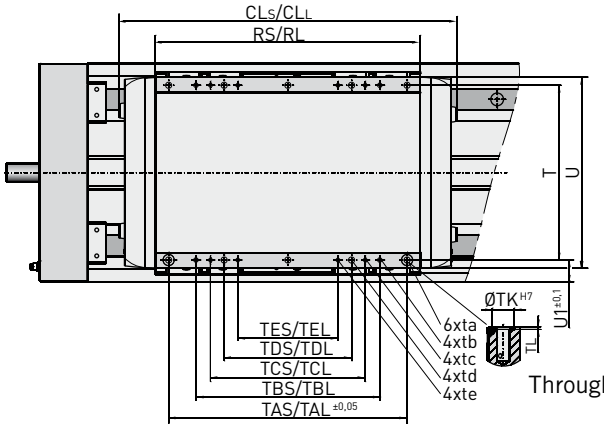




Carriage dimensions

Through-hole attachment

Dimension table - HMRS

Prod. size	ØA	B	ØD H7	E	ØF H7	G	HB	HR	K	LB	LC	LR	LS
HMRS15	72.0	M8	54.0	4.0	12.0	31.0	36.0	60.0	150.0	90.0	74.0	114.0	98.0
HMRS18	80.0	M8	64.0	2.5	15.0	33.0	44.0	67.5	180.0	111.5	93.5	134.5	116.5
HMRS24	95.0	M10	80.0	2.5	20.0	37.0	55.0	83.0	240.0	125.0	104.5	153.0	132.5

Prod. size	M	MA	MB	MC	N	NA	NB	NC	PB	PR	PS	PT	PU	Q
HMRS15	96.0	6.2	6.8	3.0	6.5	5.2	4.6	3.5	15.0	39.0	12.0	9.0	15.0	20.0
HMRS18	116.0	8.0	7.8	4.5	8.5	5.2	4.5	3.5	28.0	51.0	12.0	9.0	18.0	20.0
HMRS24	161.0	10.0	10.2	5.3	8.5	5.2	4.5	3.5	46.0	74.0	12.0	9.0	16.5	20.0

Dimension table - carriage standard HMRS

Prod. size	JB	JD	CL_S	RS	T	TAS	ta	TBS	tb	TCS	tc	TDS	td	TES	te	ØTK H7	TL	U	U1
HMRS15	37.5	34	266	191	120	170	M5x12	110	M5x12	-	-	70	M5x12	-	-	7	1.5	135	15
HMRS18	40.0	34	311	231	150	202	M6x12	170	M5x10	110	M5x10	90	M6x12	-	-	9	1.5	165	15
HMRS24	40.0	34	371	291	192	262	M8x16	202	M6x12	170	M5x10	140	M8x16	110	M5x10	12	1.5	210	24

Dimensions in mm

Weight and mass HMRS

Product size			**HMRS15**				**HMRS18**				**HMRS24**			
			Weight of actuator											
Version of actuator (see order code)			**B**	**C**	**R**	**S**	**B**	**C**	**R**	**S**	**B**	**C**	**R**	**S**
Weight actuator. 0 - order stroke	m_0	[kg]	5.2	6.1	7.1	7.9	8.9	10	11.2	12.3	16.5	18.1	20.5	22.2
Weight actuator per 1 meter	m_{mt}	[kg/m]	12.1	13.9	15.5	17.2	15.5	17.7	19.1	21.4	25.6	28.3	30.7	33.4
			Moving mass											
Version of carriage (see order code)			**0**		**1**		**0**		**1**		**0**		**1**	
Weight actuator	m_c	[kg]	2.6		1.8		4.7		3.7		9.2		7.3	

Total mass HMRS: $m_{tot} = m_0 + m_C$ + order stroke * m_{mt}

Inertia HMRS

Product size			**HMRS15**		**HMRS18**		**HMRS24**	
Pitch (see order code)			**5**	**20**	**10**	**25**	**10**	**32**
Inertia actuator. 0 - order stroke	J_0	[kgmm²]	14		35		96	
Inertia actuator per 1 meter	J_{mt}	[kgmm²/m]	107		245		639	
Inertia per 1 kg moving mass	J_{kg}	[kgmm²/kg]	0.6	10.1	2.5	15.8	2.5	25.9

Total inertia HMRS: $J_{tot} = J_0$ + order stroke * $J_{mt} + m_C * J_{kg} + m * J_{kg}$

ORIGA Linear Drives

Series HMRS

Ball screw

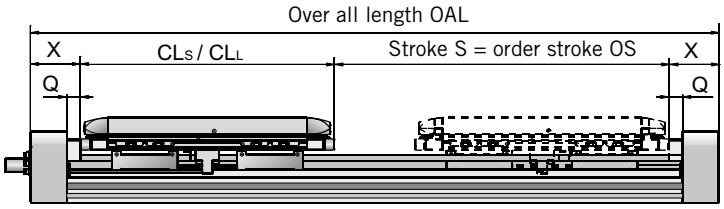
Order stroke

Sizes
150, 180, 240 mm

Order stroke dependent dimensions

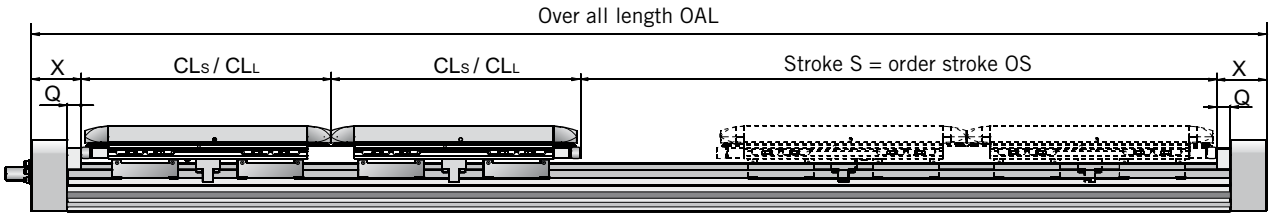
- ES = Effective Stroke
- SS = Safety Stroke
- CD = Carriage distance
- CL_S = Carriage length Standard
- CL_L = Carriage length long
- S = Stroke
- OS = Order Stroke
- OAL = Over All Length

Standard design with one carriage



Order stroke OS = Effective stroke ES + 2 x Safety stroke SS
Over all length OAL = order stroke OS + carrier length CL + 2 x dimension end cap X

Tandem design with two carriages



Order stroke OS = Effective stroke ES + 2 x Safety stroke SS + Carrier distance CD (not shown)
Over all length OAL = Order stroke OS + 2 x carrier length CL + 2 x dimension end cap X

Dimensions - Carriage and end cap HMRS

Product size	CL_S	CL_L	Q	X
HMRS15	266.0	-	20.0	62.0
HMRS18	311.0	-	20.0	66.0
HMRS24	371.0	-	20.0	73.0

Dimensions in mm

ORIGA Linear Drives

Series HMRS

Order code	HMR	S	15	B	05	0	-	0000	-	0	0	0	0	0	00	00

Type of actuator

S	Ball screw drive

Product size

15	Product width 150 mm
18	Product width 180 mm
24	Product width 240 mm

Actuator design

B	Basic Profile with ball bearing guide and IP20 without cover
C	Basic Profile with ball bearing guide and IP54 with outer cover
R	Reinforced Profile with ball bearing guide and IP20 without cover
S	Reinforced Profile with ball bearing guide and IP54 with outer cover

Pitch

Product size HMRS		**15**	**18**	**24**
05	Pitch 5 mm with plane drive shaft	☑		
10	Pitch 10 mm with plane drive shaft		☑	☑
20	Pitch 20 mm with plane drive shaft	☑		
25	Pitch 25 mm with plane drive shaft		☑	
32	Pitch 32 mm with plane drive shaft			☑

Carriage

0	Standard
1	Tandem

Order stroke

0000	4 digits input in mm

Reference switch (one switch)

0	Without
1	R2NO-I: Reed, 2-wire, NO, internal
A	P3NO-I: PNP, 3-wire, NO, internal
3	R2NO-P: Reed, 2-wire, NO, M8 plug, 0.3 m cable, external
5	R2NO-C5: Reed, 2-wire, NO, flying leads, 3 m cable, external
C	P3NO-P: PNP, 3-wire, NO, M8 plug, 0.3 m cable, external
E	P3NO-C5: PNP, 3-wire, NO, flying leads, 3 m cable, external

End position switch (one switch per end position)

0	Without
2	R2NC-I: Reed, 2-wire, NC, internal
B	P3NC-I: PNP, 3-wire, NC, internal
4	R2NC-P: Reed, 2-wire, NC, M8 plug, 0.3 m cable, external
6	R2NC-C5: Reed, 2-wire, NC, flying leads, 3 m cable, external
D	P3NC-P: PNP, 3-wire, NC, M8 plug, 0.3 m cable, external
F	P3NC-C5: PNP, 3-wire, NC, flying leads, 3 m cable, external

Positioning of Magnetic Sensors

0	Without sensor
1	10 mm
2	20 mm
	⋮
A	100 mm
B	110 mm
	⋮
H	170 mm
J	180 mm
K	190 mm
L	200 mm

Mounting Kit* or Motor mounting							
Product size HMRS		**15**	**18**	**24**			
00	Without mounting kit or motor mounting	☑	☑	☑			
Mounting Kit Gear							
A7	PS60	☑	☑				
A8	PS90		☑				
A9	PS115			☑			
C1	PV60-TA / LP070	☑	☑				
C2	PV90-TA / LP090		☑				
C3	PV115-TA / LP120			☑			
Mounting Kit Motor							
Size Gear mounting		**15**	**18**	**24**	**Bx**	**Cx**	**Dx**
A2	SMx60 8/11, MH56 5/11, NX2	☑			☑		
A3	SMx82 8/14	☑	☑		☑	☑	
A4	SMx100 5/19, MH105 5/19	☑	☑	☑		☑	☑
A5	SMx115 5/24, SMx142 5/24, MH145 5/24		☑	☑		☑	☑

* Mounting kit: contains gear housing, motor coupling and flange

Guide mounting				
Product size HMRS		**15**	**18**	**24**
00	Without	☑	☑	☑
B1	LP070 i = 3	☑	☑	
B2	LP070 i = 5	☑	☑	
B3	LP070 i = 10	☑	☑	
C1	LP090 i = 3		☑	
C2	LP090 i = 5		☑	
C3	LP090 i = 10		☑	
D1	LP120 i = 3			☑
D2	LP120 i = 5			☑
D3	LP120 i = 10			☑

HMRB
Belt

ORIGA Linear Drives

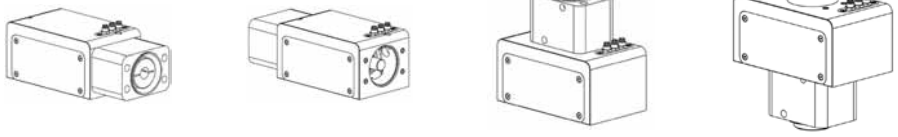
Series HMRB

Belt

Drive data

Sizes
150, 180, 240 mm

Description Motor mounting position



horizontal	upright
090° / 270°	000° / 180°
BD, DD	AP, CP, AD, CD

Type and orientation of the belt is given by the motor mounting position.

Technical data HMRB

Production size			**HMRB15**	
Motor mounting position			090°/270°	000°/180°
Lead constant	$s_{lin.}$	[mm]	100	125
Max. speed	$v_{max.}$	[m/s]	5	
Max. acceleration	$a_{max.}$	[m/s²]	50	
Repeatability		[µm]	±50	
Max. order stroke		[mm]	6000	
Thrust force and torque				
Max. thrust force	$F_{A\,max.}$	[N]	1050	630
Max. torque on drive shaft	$M_{A\,max.}$	[Nm]	17	13
No load torque	M_0	[Nm]	1.2	1.2
Production size			**HMRB18**	
Motor mounting position			090°/270°	000°/180°
Lead constant	$s_{lin.}$	[mm]	130	150
Max. speed	$v_{max.}$	[m/s]	5	
Max. acceleration	$a_{max.}$	[m/s²]	50	
Repeatability		[µm]	±50	
Max. order stroke		[mm]	6000	
Thrust force and torque				
Max. thrust force	$F_{A\,max.}$	[N]	1300	1000
Max. torque on drive shaft	$M_{A\,max.}$	[Nm]	27	24
No load torque	M_0	[Nm]	2.0	2.0
Production size			**HMRB24**	
Motor mounting position			090°/270°	000°/180°
Lead constant	$s_{lin.}$	[mm]	160	224
Max. speed	$v_{max.}$	[m/s]	5	
Max. acceleration	$a_{max.}$	[m/s²]	50	
Repeatability		[µm]	±50	
Max. order stroke		[mm]	6000	
Thrust force and torque				
Max. thrust force	$F_{A\,max.}$	[N]	4000	3750
Max. torque on drive shaft	$M_{A\,max.}$	[Nm]	101	134
No load torque	M_0	[Nm]	4.0	4.0

Valid action forces HMRB

Version motor mounting position				
Product size			**HMRB15**	
Motor mounting position			090°/270°	000°/180°
Thrust force F_A corresponding to speed v	$F_{v<1}$	[N]	1050	630
	$F_{v<2}$	[N]	990	630
	$F_{v<3}$	[N]	930	630
	$F_{v<4}$	[N]	890	630
	$F_{v<5}$	[N]	840	630
Thrust force F_A corresponding to order stroke length OS	$F_{A(OS<1000)}$	[N]	1050	630
	$F_{A(OS<2000)}$	[N]	820	490
	$F_{A(OS<3000)}$	[N]	570	340
	$F_{A(OS<4000)}$	[N]	445	265
	$F_{A(OS<5000)}$	[N]	365	215
	$F_{A(OS<6000)}$	[N]	305	185
Product size			**HMRB18**	
Motor mounting position			090°/270°	000°/180°
Thrust force F_A corresponding to speed v	$F_{v<1}$	[N]	1300	1000
	$F_{v<2}$	[N]	1300	1000
	$F_{v<3}$	[N]	1300	1000
	$F_{v<4}$	[N]	1300	1000
	$F_{v<5}$	[N]	1300	1000
Thrust force F_A corresponding to order stroke length OS	$F_{A(OS<1000)}$	[N]	1300	1000
	$F_{A(OS<2000)}$	[N]	1000	775
	$F_{A(OS<3000)}$	[N]	710	550
	$F_{A(OS<4000)}$	[N]	550	430
	$F_{A(OS<5000)}$	[N]	450	350
	$F_{A(OS<6000)}$	[N]	380	295
Product size			**HMRB24**	
Motor mounting position			090°/270°	000°/180°
Thrust force F_A corresponding to speed v	$F_{v<1}$	[N]	4000	3750
	$F_{v<2}$	[N]	4000	3380
	$F_{v<3}$	[N]	3650	3140
	$F_{v<4}$	[N]	3370	2950
	$F_{v<5}$	[N]	3200	2800
Thrust force F_A corresponding to order stroke length OS	$F_{A(OS<1000)}$	[N]	4000	3750
	$F_{A(OS<2000)}$	[N]	4000	3360
	$F_{A(OS<3000)}$	[N]	3370	2440
	$F_{A(OS<4000)}$	[N]	2860	1880
	$F_{A(OS<5000)}$	[N]	2350	1540
	$F_{A(OS<6000)}$	[N]	2000	1300

Example:
HMRB18 with motor mounting position 1 (090° front), speed v = 2 m/s (F = 710 N)
and order stroke length OS (F = 1.088 N).
The maximum permissible thrust force F = 710 N must not be exceeded.

ORIGA Linear Drives

Series HMRB

Belt

Action force

Sizes
150, 180, 240 mm

The permissible thrust force from the table is depending on speed level and order stroke length.

The minimum thrust force value must not be exceeded in the application.

Information:
Limiting the torque from the motor may avoid exceeding permitted thrust force.

ORIGA
Linear Drives

Series HMRB

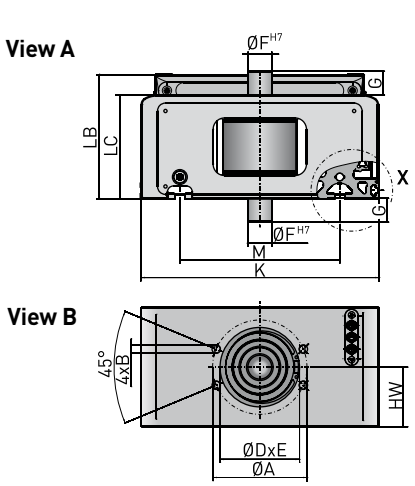
Belt

Dimensions

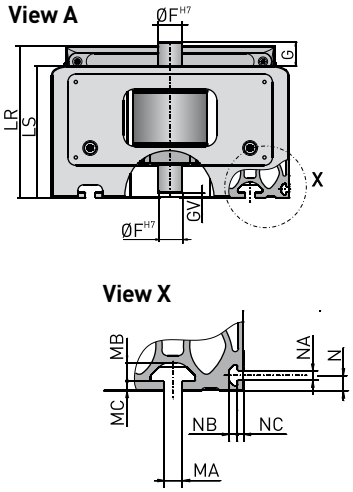
Sizes
150 180, 240 mm

Dimensions

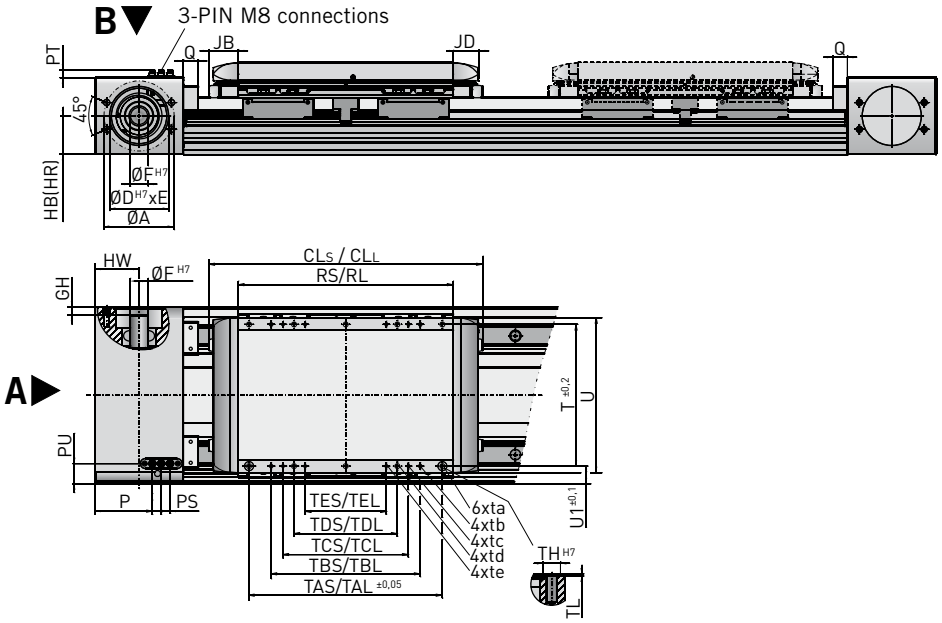
“Basic” profile



“Reinforced” profile



Dimensions carrier



Dimension table - HMRB

Size	Ø A	B	Ø D H7	E	Ø F H7	G	GV	GH	HB	HR	HW	K	LB	LC
HMRB15	72	M8	54	2.1	15	19.3	7.0	5.5	36.5	60.5	45	150	90.0	74.0
HMRB18	80	M8	64	4.0	18	21.8	1.5	8.0	45.0	68.0	50	180	111.5	93.5
HMRB24	95	M10	80	2.5	24	24.0	4.0	11.0	52.5	80.5	60	240	125.0	104.5

	LR	LS	M	MA	MB	MC	N	NA	NB	NC	P	PS	PT	PU	Q
HMRB15	114.0	98.0	96	6.2	6.8	3.0	6.5	5.2	4.6	3.5	48	12	9	21.0	20
HMRB18	134.5	116.5	116	8.0	7.8	4.5	8.5	5.2	4.5	3.5	58	12	9	28.0	20
HMRB24	153.0	132.5	161	10.0	10.2	5.3	8.5	5.2	4.5	3.5	78	12	9	28.6	20

Dimension table - carrier standard HMRB

Size	JB	JD	JS	RS	T	TAS	ta	TBS	tb	TCS	tc	TDS	td	TES	te	ØTK H7	TL	U	U1
HMRB15	37.5	37.5	260	191	120	170	M5x12	110	M5x12	-	-	70	M5x12	-	-	7	1.5	135	15
HMRB18	40.0	40.0	300	231	150	202	M6x12	170	M5x10	110	M5x10	90	M6x12	-	-	9	1.5	165	15
HMRB24	40.0	40.0	360	291	192	262	M8x16	202	M6x12	170	M5x10	140	M8x16	110	M5x10	12	1.5	210	24

Dimensions in mm

Weight and mass HMRB

Product size			**HMRB15**				**HMRB18**				**HMRB24**			
			Weight of actuator											
Version actuator (see order code)			**B**	**C**	**R**	**S**	**B**	**C**	**R**	**S**	**B**	**C**	**R**	**S**
			Weight of actuator											
Weight, 0 - order stroke	m_0	[kg]	6.7	7.5	9.4	10.3	11.6	12.8	15.6	16.7	21.5	23.1	28.0	29.6
Weight per 1 m order stroke	m_{mt}	[kg/m]	8.2	9.9	11.5	13.3	12.8	15.1	16.5	18.7	21.6	24.4	26.7	29.5
			Moving mass carrier											
Version of carrier (see order code)			**0**		**1**		**0**		**1**		**0**		**1**	
Weight carrier	m_c	[kg]	2.7		1.9		4.6		3.7		9.0		7.2	

Total mass HMRB: $m_{tot} = m_0 + m_C$ + order stroke * m_{mt}

Inertia HMRB									
Product size			**HMRB15**		**HMRB18**		**HMRB24**		
Motor mounting position (see order code)			090°/270°	000°/180°	090°/270°	000°/180°	090°/270°	000°/180°	
Inertia									
Inertia 0 - order stroke	J_0	[kgmm^2]	102	145	297	394	1178	2758	
Inertia per 1 m order stroke	J_{mt}	[kgmm^2/m]	79	79	134	222	689	900	
Inertia per 1 kg moving mass	J_{kg}	[kgmm^2/kg]	253	396	428	570	649	1271	

Inertia total HMRB: $J_{tot} = J_0$ + order stroke * $J_{mt} + m_C * J_{kg} + m * J_{kg}$

ORIGA Linear Drives

Series HMRB

Belt

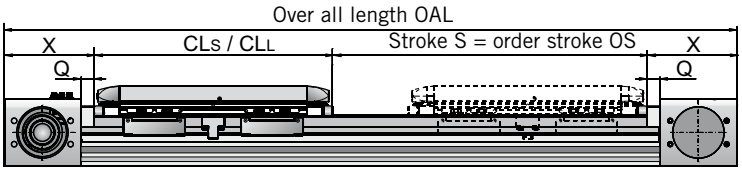
Order stroke

Sizes
150, 180, 240 mm

Stroke depending dimensions

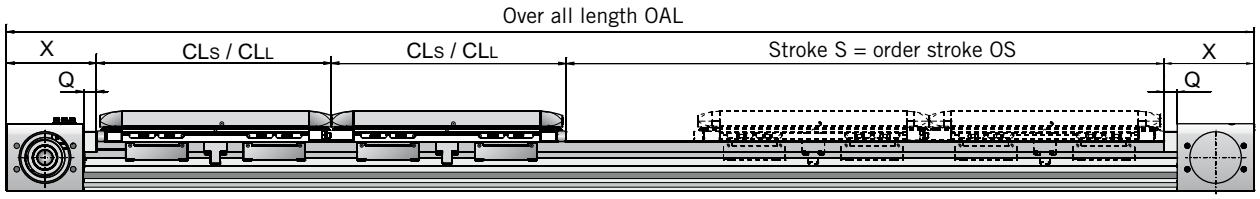
- ES = Effective Stroke
- SS = Safety Stroke
- CD = Carriage distance
- CL_S = Carriage length Standard
- CL_L = Carriage length long
- S = Stroke
- OS = Order Stroke
- OAL = Over All Length

Option Carrier Standard



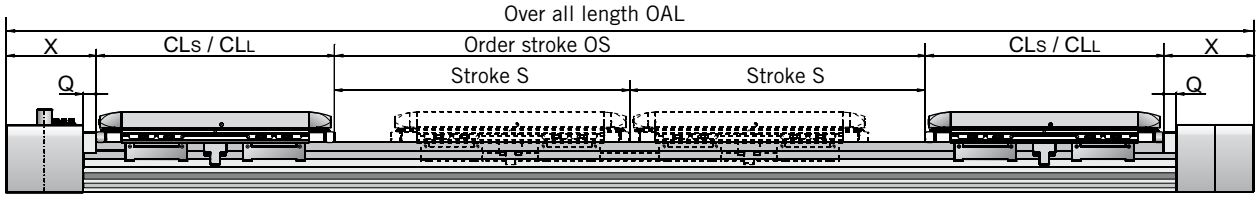
Order stroke OS = Effective stroke ES + 2 x Safety stroke SS
Over all length OAL = Order stroke OS + Carrier length CL + 2 x End cap length X

Option Carrier Tandem



Order stroke OS = Effective stroke ES + 2 x Safety stroke SS + Carrier distance CD (not shown)
Over all length OAL = Order stroke OS + 2 x Carrier length CL + 2 x End cap length X

Option Carrier Bi-part for opposite movements



Order stroke OS = 2 x Stroke S = 2 x Effective stroke ES + 4 x Safety stroke SS + Carrier distance CD (not shown)
Over all length OAL = Order stroke OS + 2 x Carrier length CL + 2 x End cap length X

Dimensions - Carriage and end cap HMRB

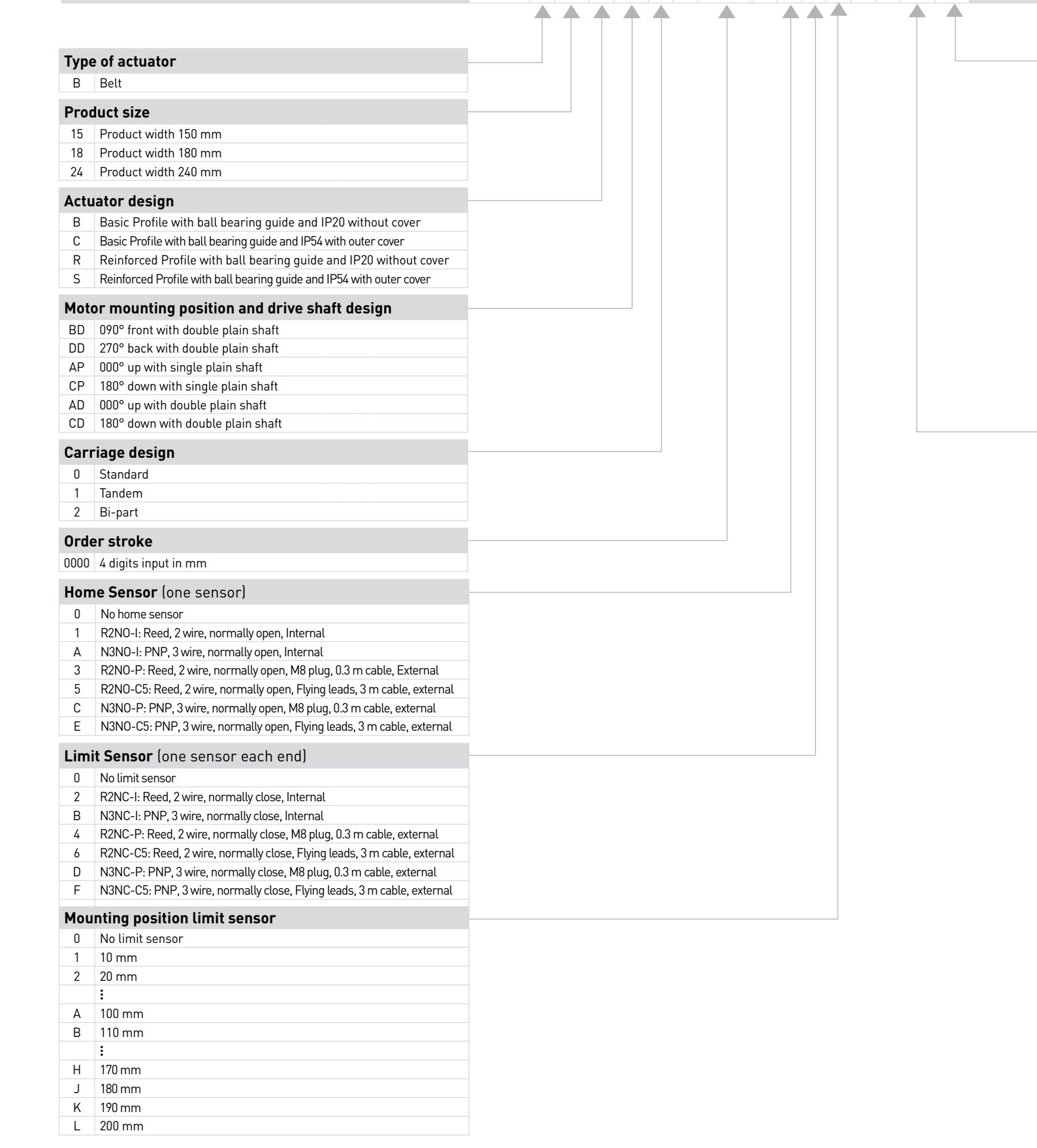
Product size	CL_S	CL_L	Q	X
HMRB15	266.0	–	20.0	110.0
HMRB18	311.0	–	20.0	120.0
HMRB24	371.0	–	20.0	140.0

Dimensions in mm

ORIGA Linear Drives

Product series HMRB

Order code	HMR	B	15	B	05	0	-	0000	-	0	0	0	0	0	00	00



Type of actuator

B	Belt

Product size

15	Product width 150 mm
18	Product width 180 mm
24	Product width 240 mm

Actuator design

B	Basic Profile with ball bearing guide and IP20 without cover
C	Basic Profile with ball bearing guide and IP54 with outer cover
R	Reinforced Profile with ball bearing guide and IP20 without cover
S	Reinforced Profile with ball bearing guide and IP54 with outer cover

Motor mounting position and drive shaft design

BD	090° front with double plain shaft
DD	270° back with double plain shaft
AP	000° up with single plain shaft
CP	180° down with single plain shaft
AD	000° up with double plain shaft
CD	180° down with double plain shaft

Carriage design

0	Standard
1	Tandem
2	Bi-part

Order stroke

0000	4 digits input in mm

Home Sensor (one sensor)

0	No home sensor
1	R2NO-I: Reed, 2 wire, normally open, Internal
A	N3NO-I: PNP, 3 wire, normally open, Internal
3	R2NO-P: Reed, 2 wire, normally open, M8 plug, 0.3 m cable, External
5	R2NO-C5: Reed, 2 wire, normally open, Flying leads, 3 m cable, external
C	N3NO-P: PNP, 3 wire, normally open, M8 plug, 0.3 m cable, external
E	N3NO-C5: PNP, 3 wire, normally open, Flying leads, 3 m cable, external

Limit Sensor (one sensor each end)

0	No limit sensor
2	R2NC-I: Reed, 2 wire, normally close, Internal
B	N3NC-I: PNP, 3 wire, normally close, Internal
4	R2NC-P: Reed, 2 wire, normally close, M8 plug, 0.3 m cable, external
6	R2NC-C5: Reed, 2 wire, normally close, Flying leads, 3 m cable, external
D	N3NC-P: PNP, 3 wire, normally close, M8 plug, 0.3 m cable, external
F	N3NC-C5: PNP, 3 wire, normally close, Flying leads, 3 m cable, external

Mounting position limit sensor

0	No limit sensor
1	10 mm
2	20 mm
	⋮
A	100 mm
B	110 mm
	⋮
H	170 mm
J	180 mm
K	190 mm
L	200 mm

Mounting kit * or motor mounting							
Product size HMRS		**15**	**18**	**24**			
00	No mounting kit or motor mounting	☑	☑	☑			
Mounting kit Gear		**15**	**18**	**24**			
A7	PS60	☑	☑				
A8	PS90		☑				
A9	PS115			☑			
C1	PV60-TA / LP070	☑	☑				
C2	PV90-TA / LP090		☑				
C3	PV115-TA / LP120			☑			
Mounting kit Motor							
Size Gear mounting		**15**	**18**	**24**	**Bx**	**Cx**	**Dx**
A2	SMx60 8/11, MH56 5/11, NX2	☑			☑		
A3	SMx82 8/14	☑	☑		☑	☑	
A4	SMx100 5/19, MH105 5/19	☑	☑	☑		☑	☑
A5	SMx115 5/24, SMx142 5/24, MH145 5/24		☑	☑		☑	☑

* Mounting kit, consisting coupling housing, motor coupling and flange

Gear mounting				
Product size HMRB		**15**	**18**	**24**
00	No Gear mounting	☑	☑	☑
B1	LP070 i = 3	☑	☑	
B2	LP070 i = 5	☑	☑	
B3	LP070 i = 10	☑	☑	
C1	LP090 i = 3		☑	
C2	LP090 i = 5		☑	
C3	LP090 i = 10		☑	
D1	LP120 i = 3			☑
D2	LP120 i = 5			☑
D3	LP120 i = 10			☑

HMR
Options

ORIGA
Linear Drives

HMR series

Option

Protection Class

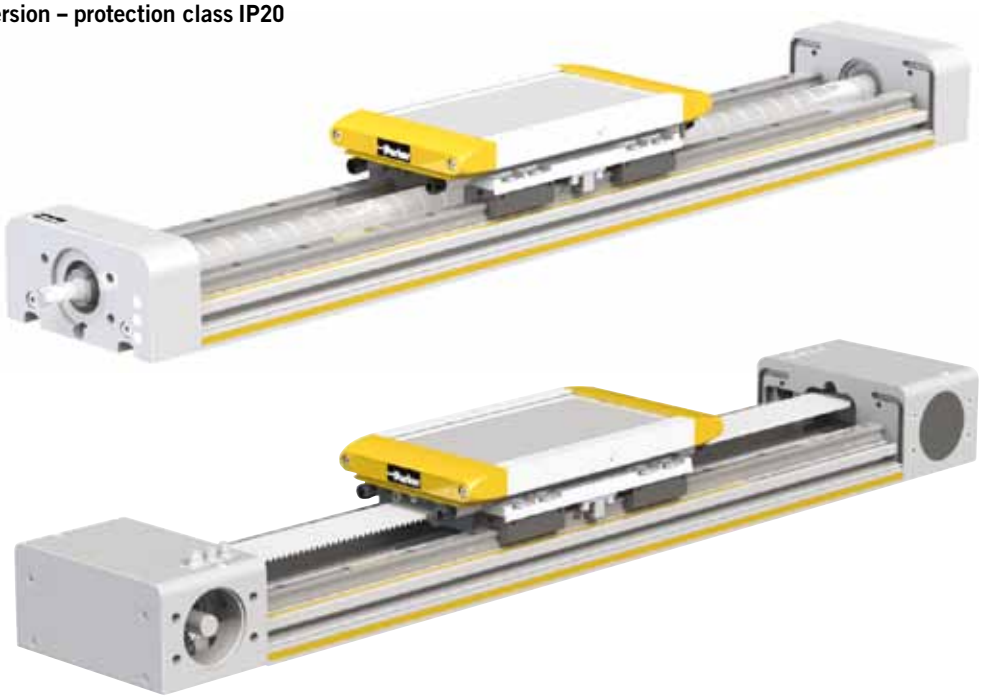
Versions:

IP20 – without cover

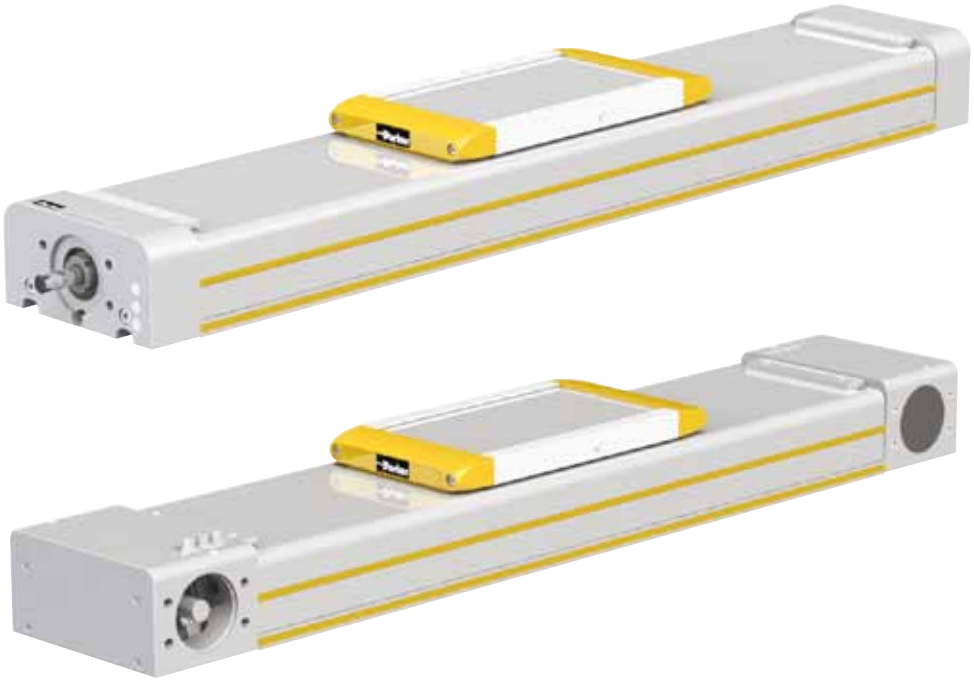
IP54 – with cover

HMR got developed for various environment conditions. The basic design has an IP20 protection class.
HMR can be equipped with a cover to correspond to an IP54 protection class if a higher rating is required.

Version – protection class IP20



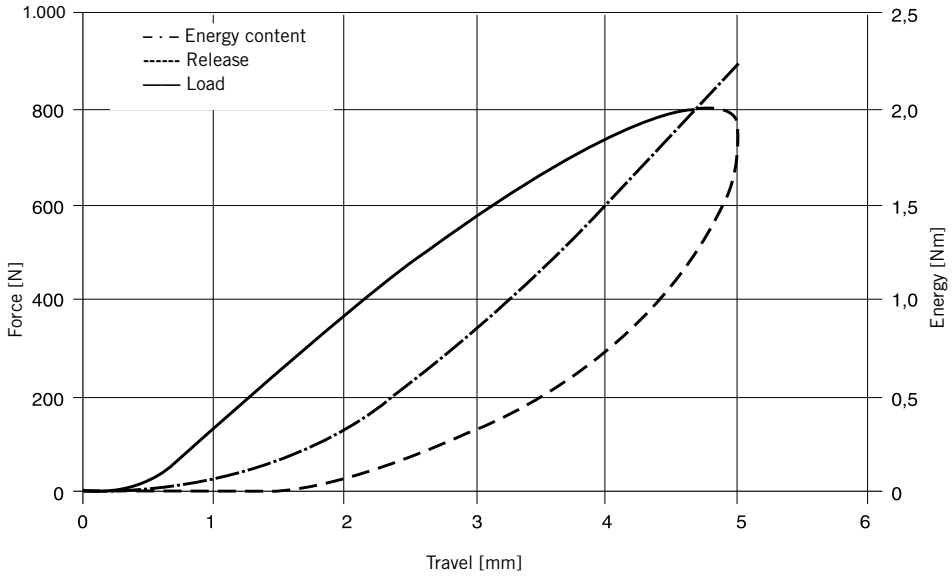
Version – protection class IP54



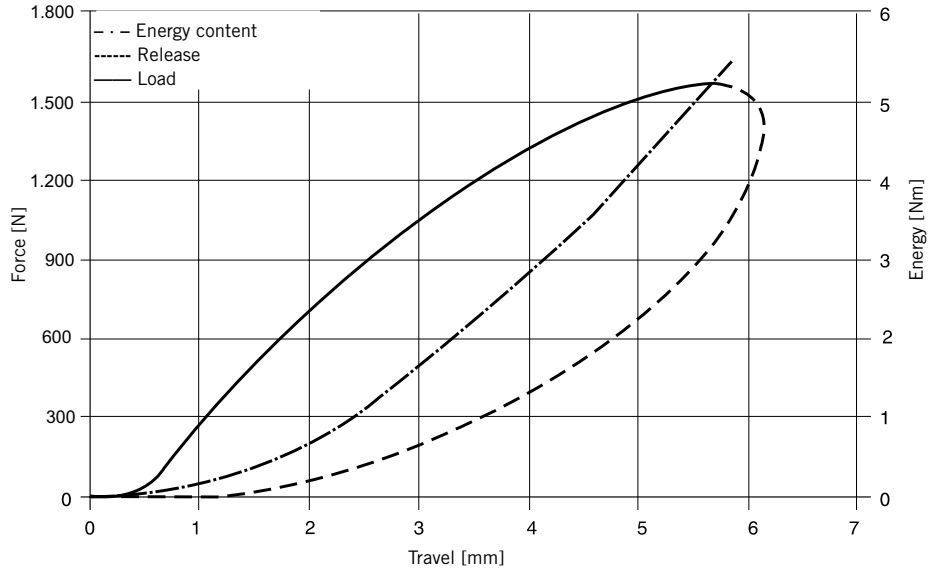
Shock absorbers for impact protection

Product size		HMRx15	HMRx18	HMRx24
Shock absorber		TA12-5	TA17-7	TA17-7
Energy absorption	[Nm/stroke]	3.0	8.5	8.5
Maximum stroke	[mm]	5.0	7.0	7.0

Distance-force and energy-distance characteristic curve (dynamic) – production size HMR-145



Distance-force and energy-distance characteristic curve (dynamic) – production size HMR-175, HMR-225



ORIGA Linear Drives

HMR series

Option

Impact protection

HMR can be equipped with impact protection. The mounted structure shock absorbers can compensate the energy released by unintentional impact and afford protection against mechanical damage.

Two structure shock absorbers are fitted to each side of the carriage prior to delivery.

ORIGA Linear Drives

HMR series

Option

Position detection

Magnetic switches for:

– End positions

– Homing

Type P8S
The new generation of t-slot sensors convince with easy mounting avoiding special tools and with a drop in mountage. Due to new electronic the hysterisis is very small and allows a very accurate switching point.

Magnetic sensors are used for contactless electric sensing of the carrier position, e.g. for end or homing positions of a linear acutator. The field of magnets mounted as standard into the carriage activate the sensor.

The possible speed of the load-bearing element or carriage must take the minimum response time of downstream devices into account.
Contact travel is considered accordingly in the calculations.

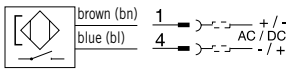
$$\text{Minimum response time} = \frac{\text{Contact travel}}{\text{Overrun speed}}$$

Technical Data	Unit	P8S-GR P8S-GE	P8S-GP P8S-GQ P8S-GN P8S-GM
Magnetic Sensor			
Electrical specifications			
Switch output / -function		Reed / NO Reed / NC	PNP / NO PNP / NC NPN / NO NPN / NC
Connection type		2-pole	3-pole
Display LED yellow		yes (not Reed NC)	
Operating voltage Ub	V	10 - 30 AC/DC	10 - 30 DC
Ripple of Ub	%	≤ 10	≤ 10
Voltage drop	V	≤ 3	≤ 2
Current consumption unloaded Ub = 24V	mA	–	≤ 10
Permanent current	mA	≤ 500	≤ 200
Switching capacity	W	≤ 6	–
Switchable capacity @ 100 W @ 24 VDC	nF	100	–
Switching frequency	Hz	≤ 400	≤ 1.000
Switching time (On/Off)	ms	1.5 / 0,5	0.5 / 0.5
Switch-point accuracy	mm	≤ 0.2	≤ 0.2
Hysteresis	mm	2	2
EMC to EN 60947-5-2		yes	yes
Hysteresis		≥ 20 10^6 cycles	unlimited
Short-circuit protection		–	yes
Reverse polarity protection		–	yes
Power-up pulse suppression		–	yes
Protection for inductive load		–	yes
ATEX certification		–	on request
Mechanical specifications			
Housing			PA12
Connection cable		PUR, black	
Cable cross-section	mm^2	2 x 0.14	3 x 0.14
Bending radius fixed installation	mm	≥ 30	
Bending radius moving	mm	≥ 45	
Ambient conditions			
Protection (EN 60529)	IP	68	
Ambient temperature range	°C	- 30 up to + 80	
Vibration EN 60068-2-6	G	30, 11 ms, 10 up to 55 Hz, 1 mm	
Shock EN 60068-2-27	G	50, 11 ms	

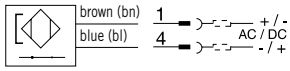
Switching function and electrical connection

Reed 2-pole

normally open

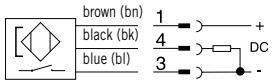


normally closed

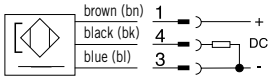


PNP 3-pole

normally open

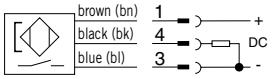


normally closed

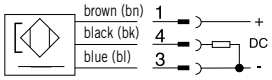


NPN 3-pole

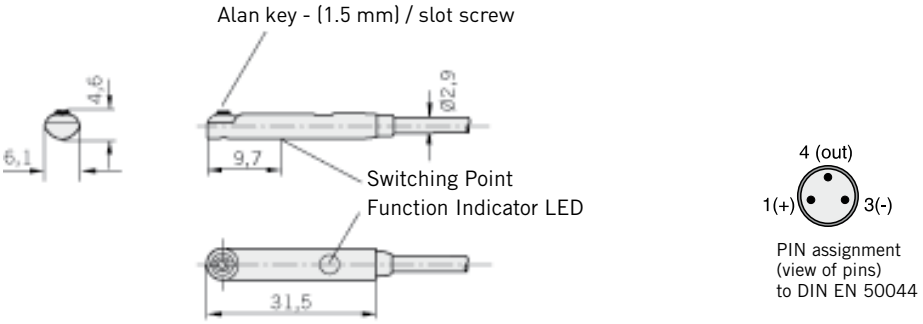
normally open



normally closed



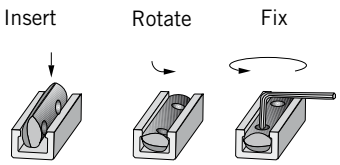
Dimensions (mm) - Type P8S



Cable with flying leads: see tabel below.

Cable with M8 snap in connector: see tabel below.

Installation for Magnetic T-Slot Sensors



Order Numbers

Magnetic Sensors for all HMR Products

	M8 plug, snap in	FL = flying lead	
	0.3 m	3 m	10 m
Reed Normally Open (2-wire)	P8S-GRSHX	P8S-GRFAX	P8S-GRFDX
Reed Normally Closed (2-wire)	P8S-GESNX	P8S-GEFFX	P8S-GEFRX
PNP Normally Open	P8S-GPSHX	P8S-GPFAX	P8S-GPFDX
PNP Normally Closed	P8S-GQSHX	P8S-GQFAX	P8S-GQFDX
NPN Normally Open	P8S-GNSHX	P8S-GNFAX	P8S-GNFDX
NPN Normally Closed	P8S-GMSHX	P8S-GMFAX	P8S-GMFDX
Connection Cables suitable for cable chain			
M8 Plug with 5 m cable	KL3186		
M8 Plug with 10 m cable	KL3217		
M8 Plug with 15 m cable	KL3216		

ORIGA Linear Drives

HMR series

Option

Position detection

Magnetic switches

RS and ES

Electric Service Life Protective Measures

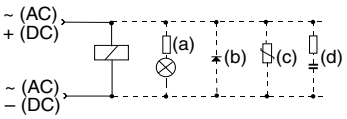
Type RS magnetic sensors are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With resistive and capacitative loads with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

Connection Examples

Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity



For the type ES, external protective circuits are not normally needed.

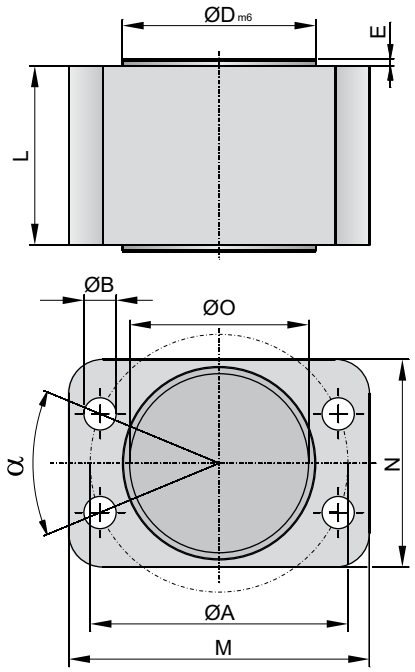
HMR
Accessories

ORIGA
Linear Drives

HMR series

Accessories

Coupling housing



Dimension table - Coupling housing long HMRS / HMRB

Product size	Ø A	Ø B	Ø D_{m6}	E	Ø O	L	M	N	Order no.
HMRx15	72	9.0	54	2	50	54	84	58	50353FIL
HMRx18	80	9.0	64	2	60	70	90	68	50655FIL
HMRx24	95	11.0	80	2	77	85	107	85	56415FIL

☑ suitable for all types of HMR

☑ suitable for HMR with motor orientation 000° top (HMRBxxxAP; HMRBxxxAD)

☑ suitable for HMR with motor orientation 180° bottom and profile version Basic (HMRBxxBCP; HMRBxxBCD; HMRBxxCCP; HMRBxxCCD)

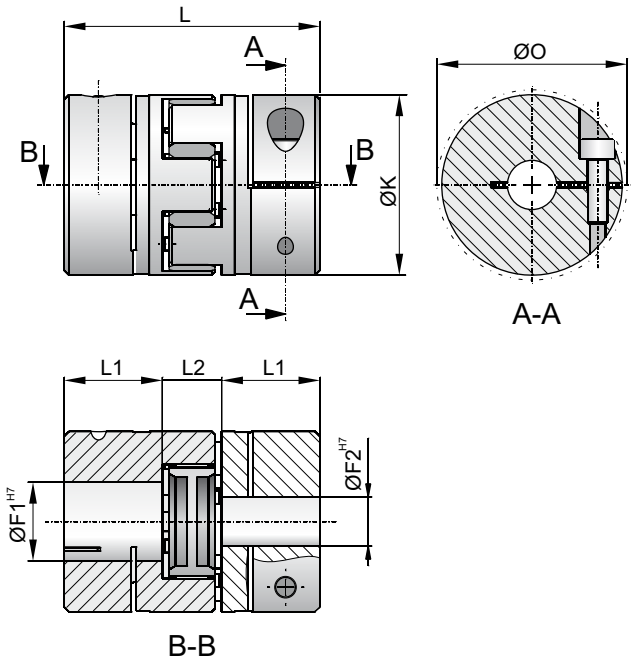
Dimension table - Coupling housing short HMRB

Product size	Ø A	Ø B	Ø D_{m6}	E	Ø O	L	M	N	Order no.
HMRB15	72	9.0	54	2	50	30	84	58	56412FIL
HMRB18	80	9.0	64	2	60	42	90	68	56413FIL
HMRB24	95	11.0	80	2	77	60	107	85	56414FIL

☑ suitable for HMR with motor orientation 090° front and 270° rear (HMRBxxxBD; HMRBxxxDD)

☑ suitable for HMR with motor orientation 180° bottom re-inforced profile (HMRBxxRCP; HMRBxxRCD; HMRBxxSCP; HMRBxxSCD)

Dimensions in mm



Ball screw

Dimension table - motor coupling HMRS

Product size	F_1	F_2	F	K	L	L_1	L_2	Ø O	Order no.
HMRS15	12	9	8 - 24	40	66	25	16	58	56400FIL
HMRS18	15	14	10 - 28	55	78	30	18	68	56402FIL
HMRS24	20	14	14 - 38	65	90	35	20	73	56510FIL

Belt

Dimension table - motor coupling HMRB

Product size	F_1	F_2	F	K	L	L_1	L_2	Ø O	Order no.
HMRB15	15	10	8 - 24	40	66	25	16	58	16239FIL
HMRB18	18	14	10 - 28	55	78	30	18	68	56411FIL
HMRB24	24	15	14 - 38	65	90	35	20	73	16260FIL

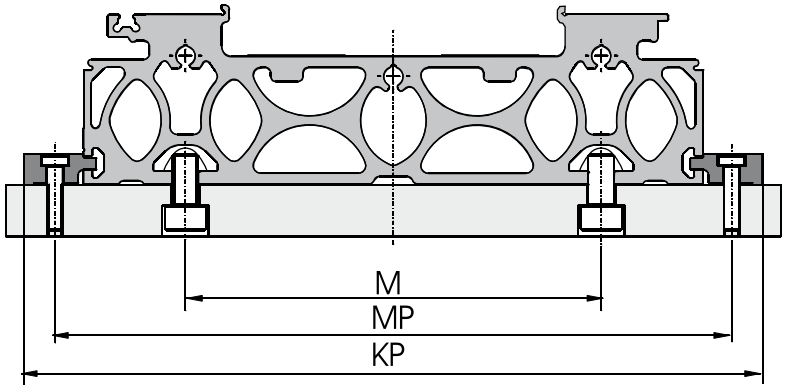
Dimensions in mm

ORIGA
Linear Drives

HMR series

Accessories

Mountings



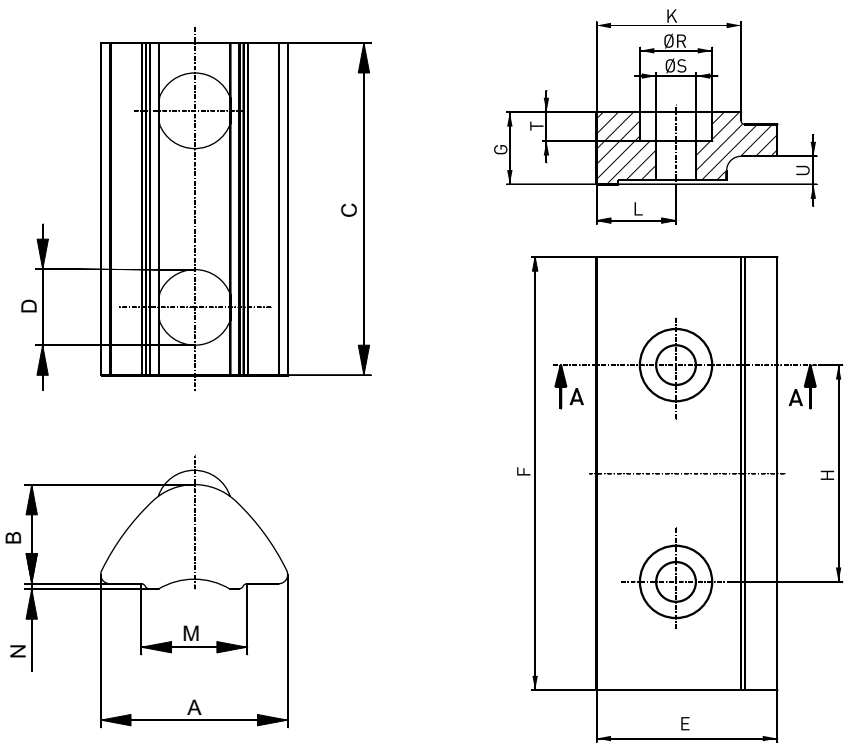
Dimension table - Product width HMR

	T-slot fixture		T-slot mounting
Product size	**MP**	**KP**	**M**
HMRx15	170	190	96
HMRx18	202	226	1160
HMRx24	262	286	161

Max. axial holding force per mounting set

Product size		**T-slot fixture**	**T-slot mounting**	**min. number of sets required**
HMRx15	N	1820	1600	2
HMRx18	N	2610	2700	2
HMRx24	N	2610	3200	3

Dimensions in mm



ORIGA
Linear Drives

HMR series

Accessories

T-slot mounting

T-slot fixture

Dimension table - T-slot mounting HMR

Product size	A	B	C	Ø D	M	N	Order no. *
HMRx15	10.5	6.4	22.5	M6	6.4	0.6	56352FIL
HMRx18	13.5	6.7	22.5	M8	8.5	1.0	56353FIL
HMRx24	16.5	8.9	28.5	M10	10.5	1.0	56354FIL

* Packing unit 10 pc

Dimension table - T-slot fixture HMR

Product size	E	F	G	H	K	L	Ø R	Ø S	T	U	Order no. *
HMRx15	25	60	10	30	20	11	10	5.5	4.0	3.9	56355FIL
HMRx18	28	80	12	40	23	12	11	6.6	4.7	5.9	56356FIL
HMRx24	28	80	12	40	23	12	11	6.6	4.7	5.9	56356FIL

* Packing unit 1 pair incl. screws

Dimensions in mm

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