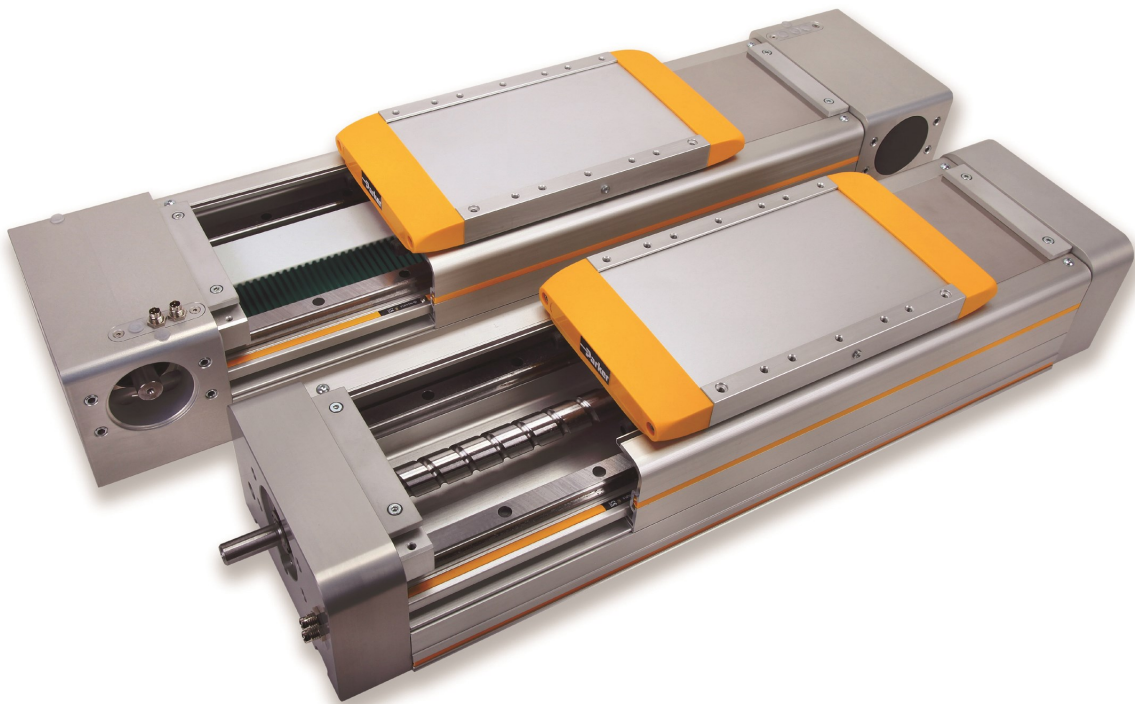


MANUAL NO. 109-0523-01
REV F
EFFECTIVE: August 3, 2020
SUPERCEDES: December 13, 2018

HMR Series Positioners



Assembly and Operating Instructions

Warranty

These operating instructions are subject to changes including changes in technical details with respect to the information and figures contained herein.

Parker-Hannifin grants no quality or durability guarantees nor any guarantees as to the suitability for specific purposes. Such guarantees must be expressly agreed upon in writing.

Public statements, recommendations or advertising do not in any way represent quality specifications.

The operator's warranty rights require that the operator immediately report any defects and precisely describe said defects in the complaint. Parker-Hannifin is not responsible under any circumstances for damage to the product itself or any consequential damage caused by the product resulting from improper handling of the product. If Parker-Hannifin is responsible for a defect, Parker-Hannifin shall be authorized, at its discretion, to undertake improvements or deliver replacements.

In compliance with ISO 9000, all HMR products are equipped with a type plate that is connected to an HMR unit. The type plate must not be removed or damaged under any circumstances.

Parker-Hannifin shall not be held liable, regardless of any legal basis, except for cases of intent or gross negligence; injuries to life, body or health; or defects of malicious nondisclosure or whose absence was expressly guaranteed in writing. Furthermore, if there is compulsory liability under the Product Liability legislation for personal injury and property damage to privately used objects, in the event of negligent breach of significant contractual obligations, Parker-Hannifin shall also be liable for cases of ordinary negligence; however, this is limited to damages that are contractually typical and foreseeable.

Further claims are hereby excluded.

Failure to adhere to these operating instructions or the relevant statutory provisions as well as any other information from the supplier shall invalidate the warranty.

In particular, we are not responsible for failures caused by modifications made by the customer or other parties. In such cases, the normal repair costs will be calculated. These costs will likewise be calculated for a check of the unit if no fault can be determined on the unit.

This regulation also applies during the warranty period.

No claims exist as to the availability of previous versions or to the retrofitting capacity of the units delivered to adapt them to the respectively current model version.

Copyright

The copyright to these operating instructions shall remain with **Parker-Hannifin**.

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These operating instructions may not be reproduced or copied, either in full or in part, utilized for the purposes of competition without authorization, or distributed to third parties. Noncompliance could have legal consequences.

Product Monitoring

Our goal is to provide safe, state-of-the-art products. Therefore, we monitor our products on a continuous basis, even after delivery. Please notify us immediately of any recurring malfunctions or problems with the HMR.

Language of the Operating Instructions

For our international customers, these assembly and operating instructions are translated into various languages.

Revision Notes

Revision—8/15/15
Original Document

Revision A - 9/23/2015
Revised graphs with updated information

Revision B— 12/2/15
Fixed chart on pg 15 with correct MP values, added revision page (renumbered)

Revision C— 8/31/17
Added not that limit/ home choice is restricted with short travel options p 53, 55

Revision D— 7/20/18
Updated T nut part numbers for sizes 15, 18 and 24 on p 14

Revision E— 12/13/18
Updated beginning of sensor descriptions on pages 53,55 to match catalog

Revision F—8/3/20
Revised spare part numbers. Added install instructions for outer band, belt shafts, and impact protection.
Removed unnecessary procedures.

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1 Foreword to the Operating Instructions

The operating instructions contain important information and assist in preventing hazards, repair costs and downtimes; they also increase the reliability and service life of the HMR.

Everyone that works with the HMR must read and adhere to the operating instructions, e.g.:

- Operation, including setup, fault elimination in the work sequence, handling and disposal of hazardous substances (operating materials and auxiliary materials)
- Maintenance (cleaning, maintenance, inspection, repair)

The information in these operating instructions, particularly the safety section, must be observed.

2 Safety

In addition to the operating instructions and the regulations regarding accident prevention and environmental protection that are applicable and mandatory in the country of use and at the site of use, the recognized technical regulations for safe and professional working must also be observed.

Explanation of symbols and notes

☐ This symbol is used as a handling prompt.

The symbol describes assembly steps, for example.

Notes that are identified with the following symbols assist in preventing risks to life and limb. Distribute this information to all users.

Example of Symbols		Explanation
		DANGER Warns of personal injury that already exists at the moment of the warning
		WARNING Warns of personal injury if there is improper handling or failure to comply with instructions
		CAUTION Warns of potential personal injury of which workers should be aware
		ATTENTION Warns of property damage or malfunctions.
		NOTE Warns of potential worsening of results and/or provides tips.

Operator's obligation

The following are the obligations of the operator:

- Adherence to Machinery Directive 2006/42/EC.
- Proper use of the HMR.
- Adherence to the regulations in these operating instructions.
- Adherence to the valid, national regulations on occupational safety.

Operators

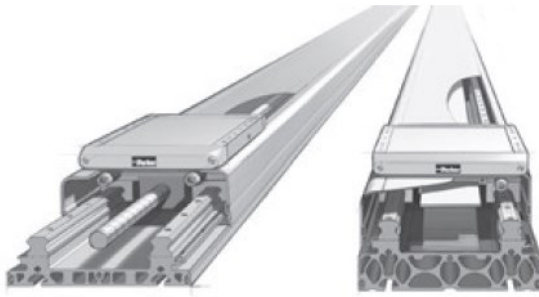
Operators for the overall system must ensure that the HMR is only operated by authorized and qualified personnel.

Authorized personnel include trained specialists from the operator, from the manufacturer (Parker-Hannifin) and from an approved service partner.

Working in a safety-conscious manner

Check at reasonable intervals that personnel are working in a safety-conscious manner and adhering to the operating instructions.

3 Product Information



Ball screw drive

Belt drive

3.1 Scope of Application

The description in these operating instructions relates to the products.

3.1.1 Ball Screw Drive

Linear drive with ball screw drive and dual ball bearing rail guides.

HMR508
HMR511
HMR515
HMR518
HMR524

3.1.2 Belt Drive

Linear drive with toothed belt and dual ball rail guide

HMRB08
HMRB11
HMRB15
HMRB18
HMRB24



3.2 Type Plate



4 Application, Proper Use

The operational safety of the HMR is only ensured with proper use.

Proper use of the HMR only includes the following:

- Moving loads
- Positioning masses
- Exerting force

The HMR is driven with ball screw or timing belt.

The catalog data and the conditions specified in the order confirmation must be taken into account. Please note the limits from the technical data and the corresponding characteristic curves as per the catalog information.

The values apply to continuous operation. With intermittent operation, the combination of speed and load may accommodate higher values for short periods. However, the individual maximum values indicated must not be exceeded.

If the HMR is used in any other manner, this does not constitute proper use.

Obvious misuse

Any use to transport persons or applications of any manner in the private sector (consumers) is not authorized. This may result in personal injury and damage to property. We shall accept no liability for any injury or damage resulting here from. The user shall bear sole responsibility and risk.

The following are not authorized:

- Unauthorized modifications to the HMR
- Processes that affect the safety of the HMR

Note all of the information attached to the HMR.

Keep this information in a fully legible condition.

In addition, note the manufacturer's information regarding lubricants, solvents and cleaning agents.

4.1 Prerequisite for Product Usage

The installation must always be carried out such that:

- The HMR is installed without delay
- All connections and control components are accessible
- The type plate with the product name remains legible
- The ambient conditions are maintained corresponding to design delivered (IP20 or IP54)

The operator must secure any hazardous sources that may result during installation in machines and systems between Parker-Hannifin products and customer equipment, according to CE conformity.

4.2 Conversions and Modifications

HMR linear drives may not be modified with respect to the design or safety-related features without the written approval of Parker-Hannifin. Any unauthorized modification in this respect will exclude any liability on the part of Parker-Hannifin.

If special attachments are to be used, the assembly regulations of the manufacturer must be observed.

The following also apply:

- Relevant accident prevention regulations
- Generally recognized safety rules
- EU directives
- Country-specific provisions.

4.3 Spare Parts and Accessories

Original spare parts and accessories authorized by the manufacturer are intended to protect your safety. The use of other parts could change the properties of the HMR.

We shall accept no liability for any resulting consequences.

5 Transportation and Storage

5.1 Transportation

The electric HMR linear drives are extremely precise products. Impacts could damage the mechanical system of the drive, resulting in a negative influence on functionality.

To prevent damage during transportation, place the units in appropriate protective packaging.

 WARNING	
	Lifted or suspended loads can tip over or crash down
	This could result in severe injuries or damage to property.
	⚠ Never walk under suspended loads.
	⚠ Transport loads as close to the floor as possible.
	⚠ Securely fasten the load for transportation and note the center of gravity

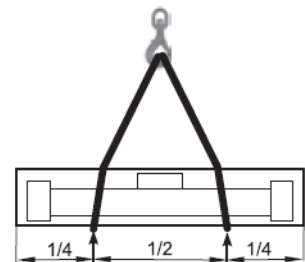
 Caution	
	Heavy parts can slip during handling!
	This could result in severe injuries or damage to property.
	⚠ Hold parts or units securely.
	⚠ Wear safety gloves.
	⚠ Use tools and supports.

 Attention	
	The profile may bend or snap!
	⚠ Support the drive profile appropriately during transportation and handling

Transport packed or unpacked HMR units using a crane or forklift

- In storage and handling static deflection of the actuator should not exceed 0.1% of total length.
- Larger deformations could result in a reduced service life, increased wear, and increased friction. These must therefore be avoided!
- Attach ropes as shown/use fork as shown.

 NOTE	
	Notify the shipping company and Parker-Hannifin or the delivery company immediately, in writing, of any transportation damage or missing parts.



5.2 Storage

The storage location must be:

- Dry, free of dust and vibrations
- On a flat surface.

Deflection of the HMR must be avoided!

- Support the drive profile appropriately during transportation and handling.

6 Brief Description and Function

6.1 General

The **HMR catalog** contains extensive information on the following:

- Dimensions, space requirements
- Load-carrying capacity, forces and torques
- Weights and further technical data

The electric linear drives from the HMR series may only be operated within the permissible specifications.

We reserve the right to make technical changes.

6.2 Setup and Mode of Action

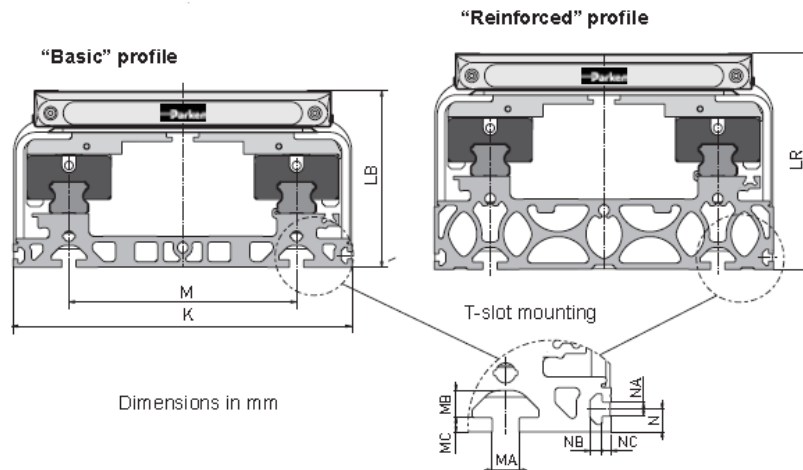
The electric HMR linear drives are used for the linear moving and positioning of an external payload. A combination of multiple linear drives allows the spatially oriented movements to be achieved. When the linear drive and the payload are in motion, a force is exerted in the direction of movement.

- A payload is fastened at the pre-existing threaded holes on the carriage.
- The carriage is connected to a Drive Type (screw, toothed belt) and is moved by this Drive Type.
- The carriage is mounted on a linear guide system in a movable manner; the linear guide system is fastened to the profile version.
- The profile version is fastened directly onto a substructure.
- The “reinforced” profile can also be used as a self-supporting structure. In doing so, attention must be paid to the permissible loads.
- A cover can be constructed on the linear drive to reduce the penetration and discharge of dirt or abrasion.
- Lubrication can be carried out during service as needed via external lubricating nipples.
- A position signal can occur through magnetic switches mounted on the inside or outside, which are switched by a magnetic package on the carriage.
- A displacement signal of the linearly moving carriage can be achieved by means of an installed displacement measuring system.

6.3 Profile versions and Carrier

A carriage is moved and force exerted through a rotational movement at the drive shaft.

- Temperature range: -20°C to +80°C
- Installation position: Any
- Humidity: Non-condensing.



Dimension table - Profile versions

Series	K	LB	LR	M	MA	MB	MC	N	NA	NB	NC
HMRx08	85	60	71	50	5.2	4.5	2.5	4.5	3.4	3	2.5
HMRx11	110	69.5	89.5	70	5.2	4.5	2.8	4.5	3.4	3	2.5
HMRx15	150	90	114	96	6.2	6.8	3	6.5	5.2	4.6	3.5
HMRx18	180	111.5	134.5	116	8	7.8	4.5	8.5	5.2	4.5	3.5
HMRx24	240	125	153	161	10	10.2	5.3	8.5	5.2	4.5	3.5

6.3.1 HMRS Ball Screw Drive

A carriage is linearly moved by a rotating ball screw drive driven by the motor; the carriage is mounted on a guide system in a movable manner. The screw turns clockwise.

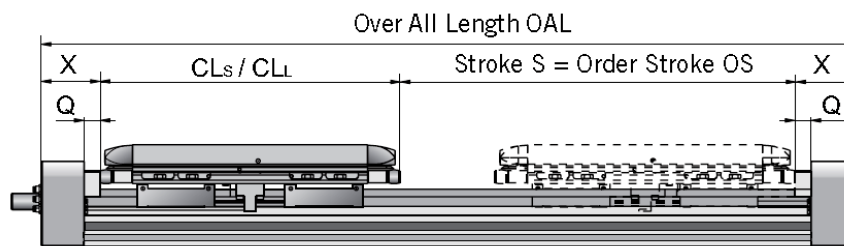
The load to be moved is fastened onto the carriage.

The permissible thrust force, speed and the linear displacement per rotation of the drive shaft depends on the design of the screw used.

The dimensioning is as per the ordering process (HMR catalog)

- 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

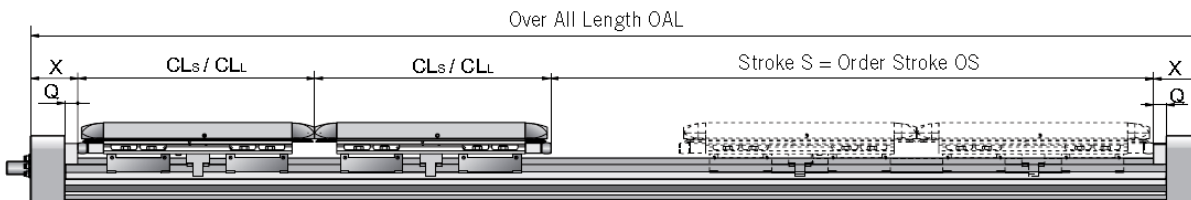
Standard design with one carriage



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 + Carriage distance CD

Over All Length OAL = Order Stroke OS + 2 x Carrier Length CL + 2 x dimension end cap X

Dimension table - Carriage and Over All Length HMRS

Product size	CL _s	CL _L	Q	X
HMRS08	195	in advance	16	54
HMRS11	225		20	65
HMRS15	266		20	62
HMRS18	311		20	66
HMRS24	371		20	73

Dimensions in mm

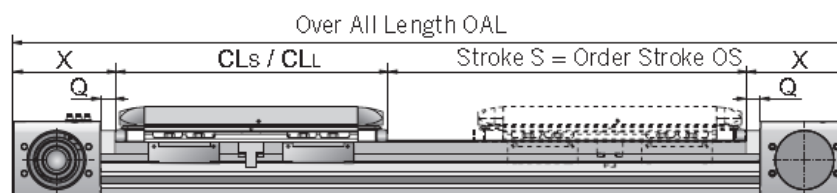
6.3.2 HMRB Belt Drive

A carriage is linearly moved by a toothed belt driven by the motor; the carriage is mounted on a guide system in a movable manner. The load to be moved is fastened onto the carriage. The permissible thrust force, speed and the lead constant per rotation of the drive shaft depends on the design and on the toothed belt used.

The dimensioning is as per the ordering process (HMR catalog)

- 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

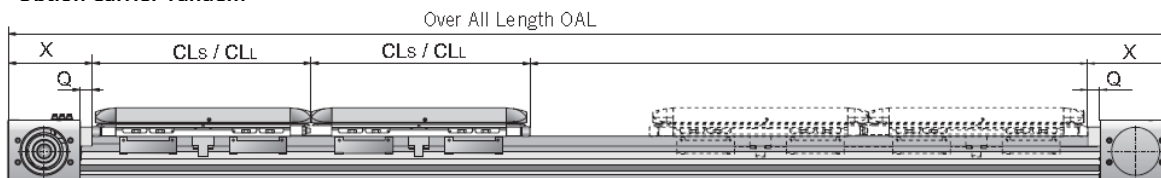
Option Carrier Standard



Order Stroke OS = Effective Stroke ES + 2 x Safety Stroke SS

Over All Length OAL = Order Stroke OS + Carrier Length CL + 2 x dimension end cap X

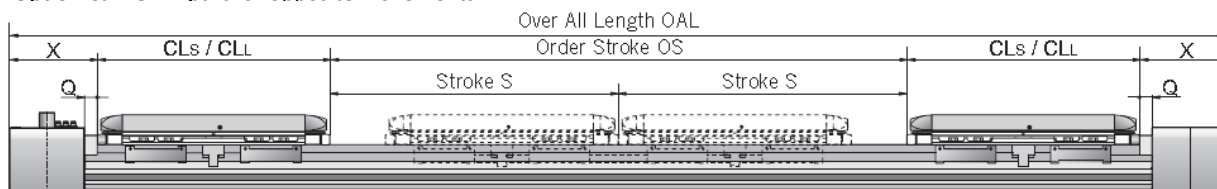
Option Carrier Tandem



Order Stroke OS = Effective Stroke ES + 2 x Safety Stroke SS + Carriage distance CD

Over All Length OAL = Order Stroke OS + 2 x Carrier Length CL + 2 x dimension end cap 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 + Carriage distance CD

Over All Length OAL = Order Stroke OS + 2 x Carrier Length CL + 2 x dimension end cap X

Dimension table - Carriage and Over All Length HMRS

Product size	CL _S	CL _L	Q	X
HMRB08	195	in advance	16	74
HMRB11	225		20	85
HMRB15	266		20	110
HMRB18	311		20	120
HMRB24	371		20	140

Dimensions in mm

6.4 Profile versions

The user must fasten the profile version onto the corresponding substructure.

	NOTE
	The stop edge is equipped with a groove

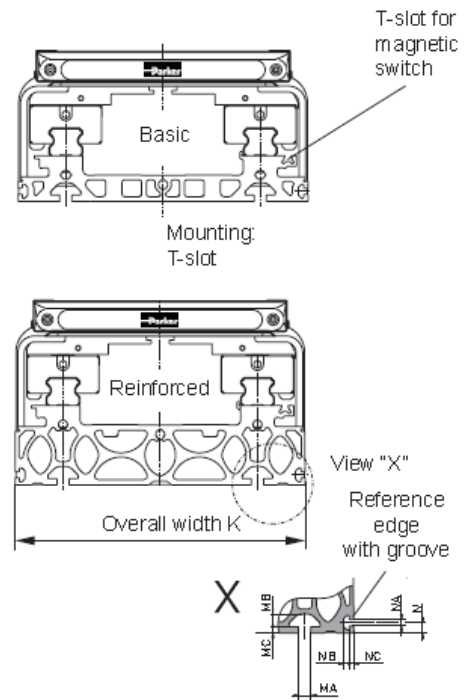
Designs:

“Basic” Profile

For assembly on a continuous substructure.

“Reinforced” profile

For an extensively self-supporting substructure.
Due to the reinforced profile geometry, and the resulting inherent stiffness, resistance to deflection of twist is increased.



6.5 Guide System

The guide system is mounted onto the profile version. It accommodates the static and dynamic loads from the externally moving load as well as the external forces. The permissible load data must not be exceeded.

Ball bearing guide

Runner blocks with balls are moved linearly on a precision guide rail made of steel.
The maintenance schedule recommended by Parker Hannifin in section 9 must be followed.

6.6 Carriage

The carriage moves an externally connected load in a linear fashion. The external load may only be fastened at the pre-existing threaded holes. Following **versions**:

Standard carriage

A carriage that is connected to the drive type (figure).

Tandem carriage

Includes a second carriage that can be freely moved on the guide system.
The external load is distributed onto two carriages that are mounted at a fixed distance, facing one another.

Carriage Bi-part “Bidirectional”

(only HMRB, belt, motor mounting position AP, CP, AD, CD)

With a second carriage that is driven from the belt in the opposite direction to the first carriage.

6.7 Noise Emission

Depending on the drive types, guide system, load and speed, noise emissions of varying intensities result, which are constrained by the setup. The operator is responsible for adhering to the applicable provisions and regulations.

7 Assembly

7.1 Important Information

HMR installation, and all other installations, may only be carried out by trained mechanical technicians or electricians. The information in these instructions must be strictly observed.

Tightening torques for screws

Thread	Tightening torque	Tolerance
M3	1.2 Nm	± 0.2 Nm
M4	3 Nm	± 0.5 Nm
M5	5.5 Nm	± 0.8 Nm
M6	10 Nm	± 1.5 Nm
M8	20 Nm	± 3 Nm
M10	40 Nm	± 6 Nm

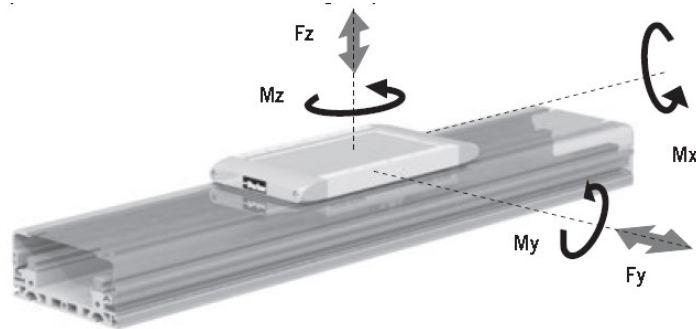
Remarks regarding use and operation:

	ATTENTION
	Excessive forces or loads
	Overload of the HMR would be possible
	Adhere to catalog data

Mechanical

Additional drill holes or other machining may not be implemented on the HMR!

- ☐ Only attach the payload **at the threaded holes on the carriage** in section 7.3.
- ☐ Adhere to the permissible load limits such as weight, speed and acceleration.
- ☐ Adhere to the permissible load limits such as weight, speed and acceleration.



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.

$$L = \frac{F_y}{F_{y(max)}} + \frac{F_z}{F_{z(max)}} + \frac{M_x}{M_{x(max)}} + \frac{M_y}{M_{y(max)}} + \frac{M_z}{M_{z(max)}} \leq 1$$

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

Take note of the additional information in the Parker HMR **catalog** on the “**Maximum permissible load**”.

Electrical information

- ☐ The controller, motor, position detection and all other necessary electrical elements must be connected according to technical rules, within the responsibility of the operator.
- ☐ Do not place magnetic switches in the vicinity of ferritic parts or moving loads.
- ☐ Only use the seating grooves and/or the mounting holes on the aluminum profile for the assembly and mounting of the profile version, as described in detail in the HMR catalog.

7.2 Installation of Linear Drive

All installation measurements can be found under “6.3 Carrier profile and drive body” and in the HMR catalog.

ⓘ During assembly, the HMR must be sufficiently supported and securely placed in a machine/system.

	ATTENTION
	Straightness tolerance exceeded
	The screw-on surface is important!
	ⓘ Ensure evenness and straightness

The maximum straightness and evenness in the running direction of the linear system can only be achieved if the corresponding mounting points or surfaces are within the required tolerance.
The mounting surface for the profile version must have evenness of at least 0.2 mm/m at the clamping points.

	NOTE
ⓘ Adhere to the tightening torques for screws according to section 7.1.	



7.2.1 Mounting with T-slots

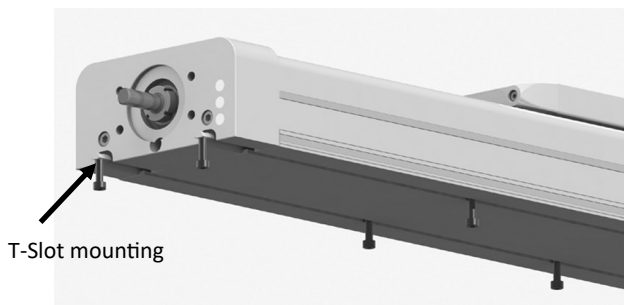
ⓘ Use of T-slot profiles. Mounting from below.

Standard screws and sliding blocks or rails from the common profile systems can be used.

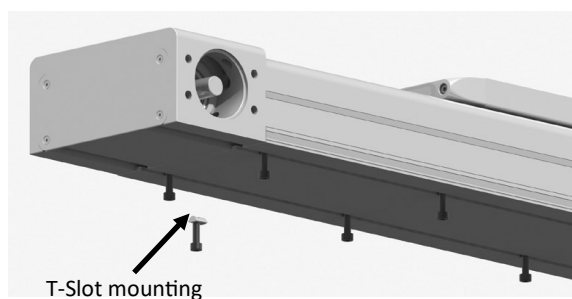
Mounting parts such as sliding blocks are available as accessories.

ⓘ Please observe the required number of T-sliding blocks in accordance with the axial holding force for secure assembly (see table below and HMR catalog).

HMRs



HMRB

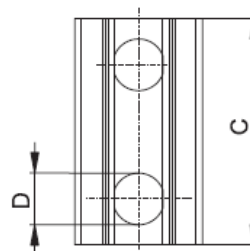
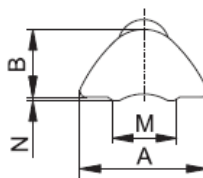


Max, axial holding force per mounting set

Product size	T-slot	Min, number of sets required per meter			
	N	horizontal	horiz,	over	vertical
HMRx08	1,000	4	11	19	5
HMRx11	1,000	4	11	19	5
HMRx15	1,600	4	5	10	5
HMRx18	2,700	4	5	10	5
HMRx24	3,200	4	4	8	5

Dimension table-T-slot mounting HMR

Product	A	B	C	ØD	M	N	Order no.
HMRx08	8.0	4.0	11.5	M5	5.0	0.5	56351FIL
HMRx11	8.0	4.0	11.5	M5	5.0	0.5	56351FIL
HMRx15	10.5	6.4	22.5	M6	6.4	0.6	56352FIL
HMRx18	13.5	6.7	22.5	M8	8.5	1.00	56353FIL
HMRx24	16.5	8.9	28.5	M10	10.5	1.00	56354FIL



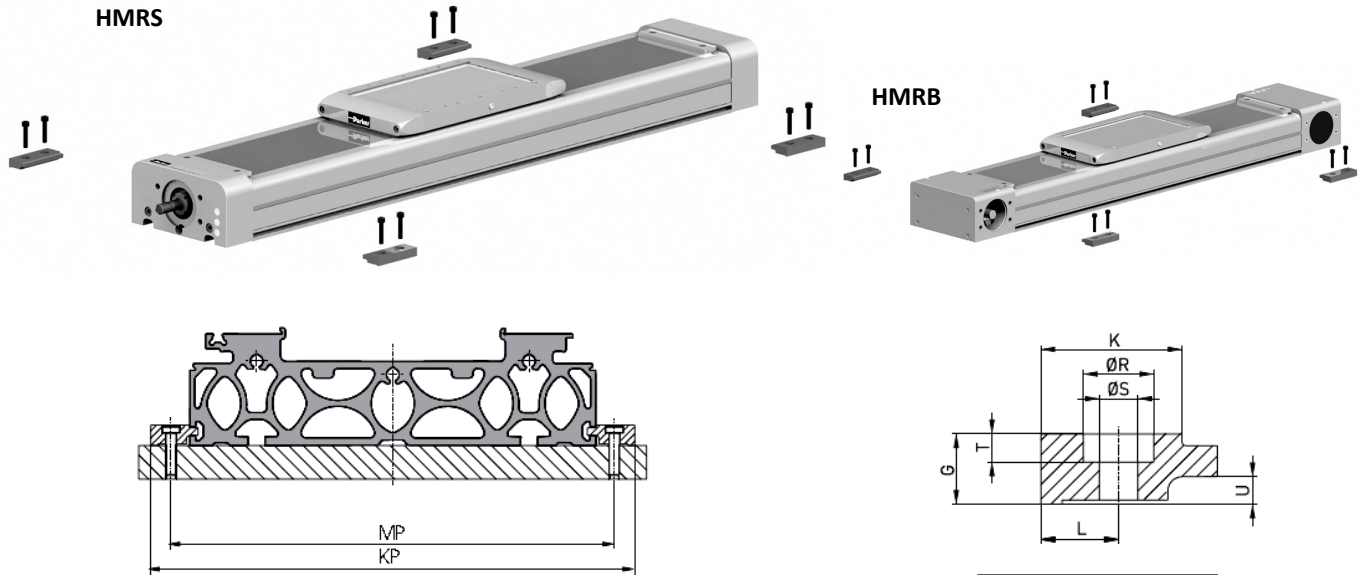
7.2.2 Mounting with T-slot fixture

Use of the side T-slot profile. Screwing direction downwards.

Clamps can be supplied as accessories, see Parker **HMR catalog**.

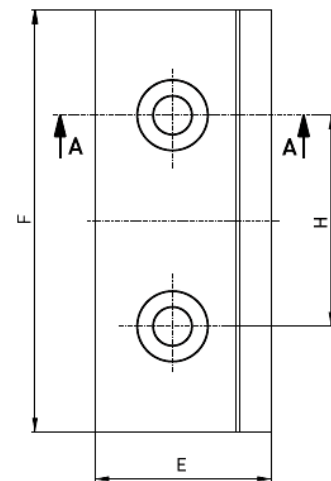
	NOTE
	Adhere to the tightening torques for screws according to section 7.1.

Please observe the required number of T-sliding blocks in accordance with the axial holding force for secure assembly (see table below and HMR catalog)



Max, axial holding force per fixing pair

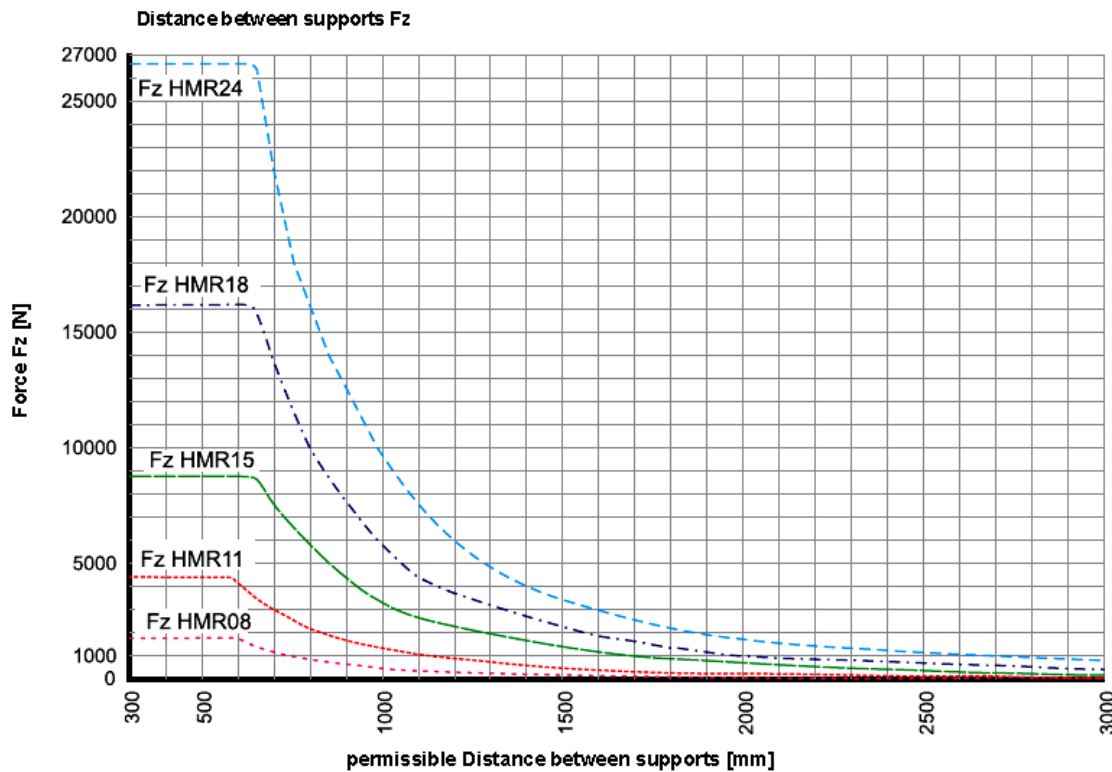
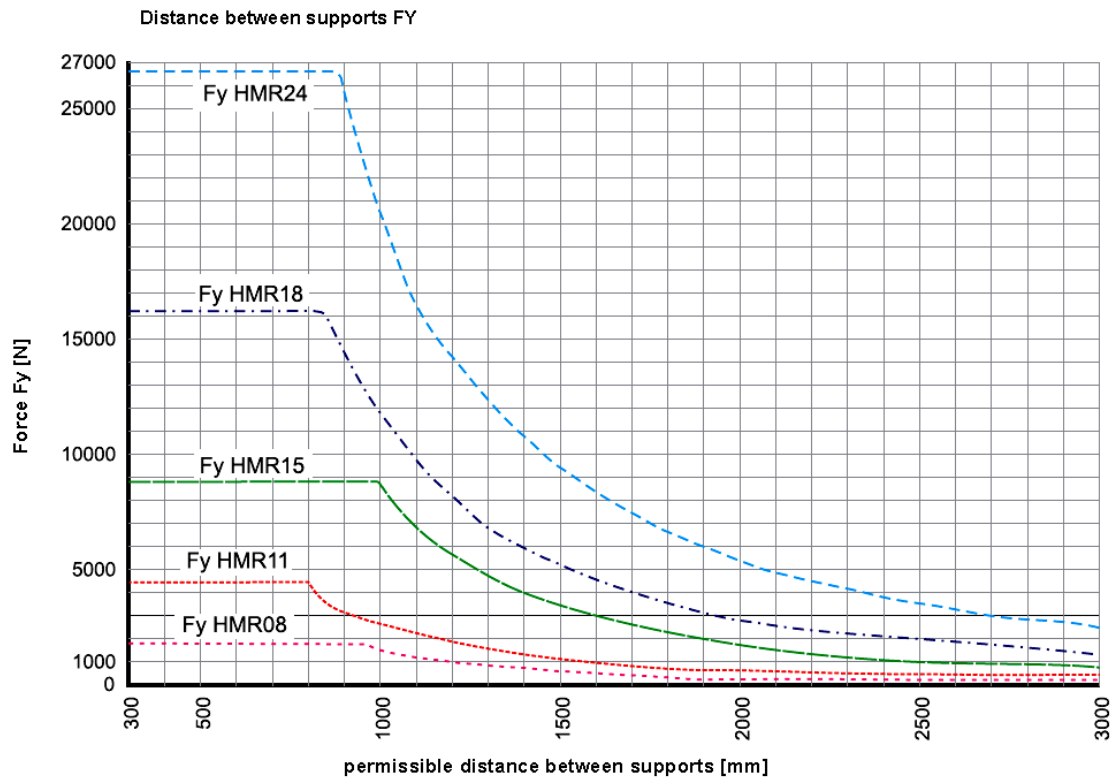
Product size	T-slot mounting	Min, number of sets required per meter			
	N	horizontal	horiz, side	over head	vertical
HMRx08	800	3	6	10	4
HMRx11	800	3	5	9	4
HMRx15	1,820	3	4	6	4
HMRx18	2,610	3	4	5	4
HMRx24	2,610	3	4	5	4



Dimension table - T-slot fixture

Product size	E	F	G	H	K	KP	L	MP	Ø R	Ø S	T	U	Order no.
HMRx08	18	40	7.5	20	15	115	9	97	0	4.5		2.8	56363FIL
HMRx11	18	40	7.5	20	15	140	9	122	0	4.5		2.8	56363FIL
HMRx15	25	60	10	30	20	190	10	170	10	5.5	4	3.9	56355FIL
HMRx18	28	80	12	40	23	226	12	202	11	6.6	4.7	5.9	56356FIL
HMRx24	28	80	12	40	23	286	12	262	11	6.6	4.7	5.9	56356FIL

7.2.3 Distance between supports

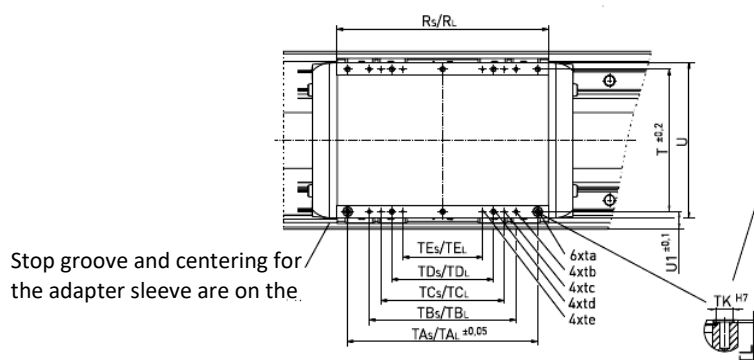


7.3 Attaching the Payload

The user is responsible for the use of the HMR and makes decisions on the attachment of loads as well as the operating status with speed, acceleration and frequency of movements. The HMR may only be installed according to the catalog's specifications.

 WARNING	
	Danger due to fracture or deformation of components, incorrect arrangement of loads and crashing of loads
	This could result in severe injuries and damage to property.
	⚠ Attach components according to technical rules.
	⚠ Move heavy parts with a hoist; wear safety gloves.
⚠ Observe HMR catalog data with respect to arrangement	
 ATTENTION	
	Risk of damage to the carriage
	Additional holes will weaken or damage important components and are not permitted.
	⚠ Do not drill or counter bore.
	⚠ Distribute load forces as required.
 NOTE	
⚠ Adhere to the tightening torques for screws according to section 7.1.	

The carriage has two dowel holes into which dowel sleeves can be inserted. This makes it possible to repeat the disassembly/assembly of the payload without realignment. Dowel sleeves function as a typical dowel pin but allow access to the threaded hole in the carriage when the sleeve is in place



Centering/alignment of payload

Suitable **dowel sleeves**:

Type	Item no.
HMR-08	56455FIL
HMR-11	56455FIL
HMR-15	56455FIL
HMR-18	56457FIL
HMR-24	56459FIL

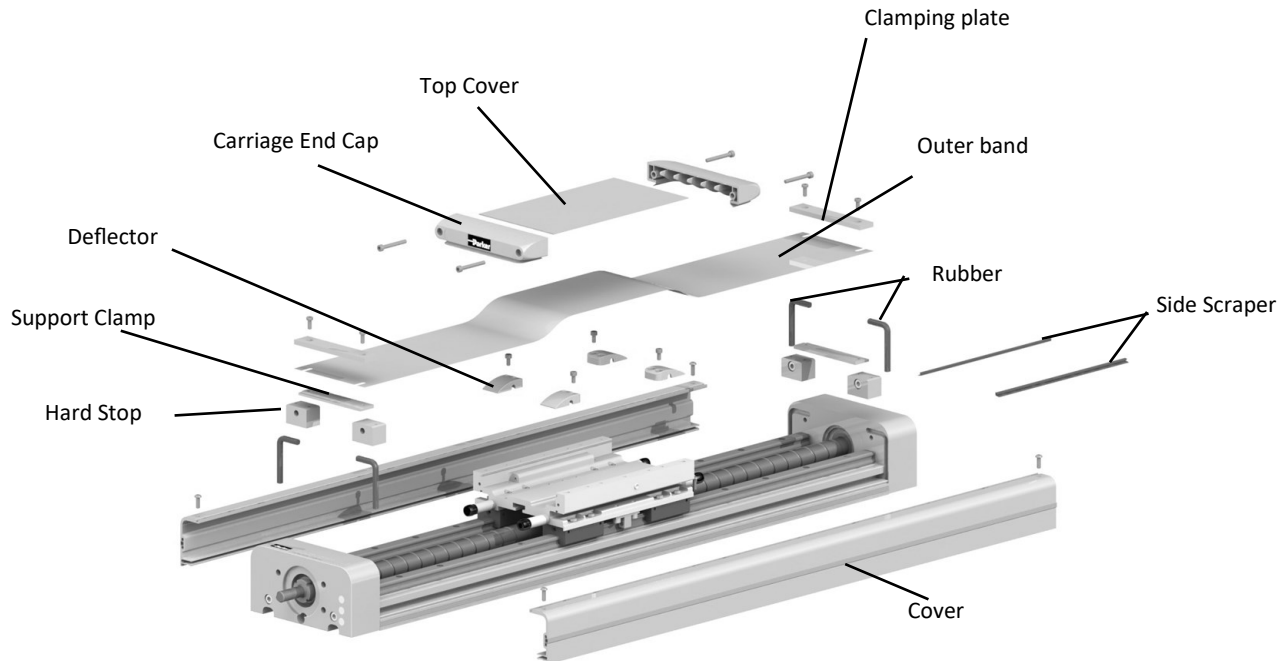
Dimension table - Carriage length Standard HMRS																					
Type	R _S	R _L	T	TA _S	TA _L	ta	TB _S	TB _L	tb	TC _S	TC _L	tc	TD _S	TD _L	td	TE _S	TE _L	te	TK ^{H7}	U	U1
HMRS08	128	-*	74	97	-*	M4x12	70	-*	M4x12	40	-*	M4x12	-	-*	-	-	-*	-	7	83	5,5
HMRS11	150	-*	96	122	-*	M5x12	97	-*	M5x12	65	-*	M5x12	25	-*	M5x12	-	-*	-	7	105	7,0
HMRS15	191	-*	120	170	-*	M5x12	122	-*	M5x12	-	-*	-	70	-*	M5x12	-	-*	-	7	135	15,0
HMRS18	231	-*	150	202	-*	M6x12	170	-*	M5x10	122	-*	M5x10	90	-*	M6x12	-	-*	-	9	165	15,0
HMRS24	291	-*	192	262	-*	M8x16	202	-*	M6x12	170	-*	M5x10	140	-*	M8x16	122	-*	M5x10	12	210	24,0

* in advance

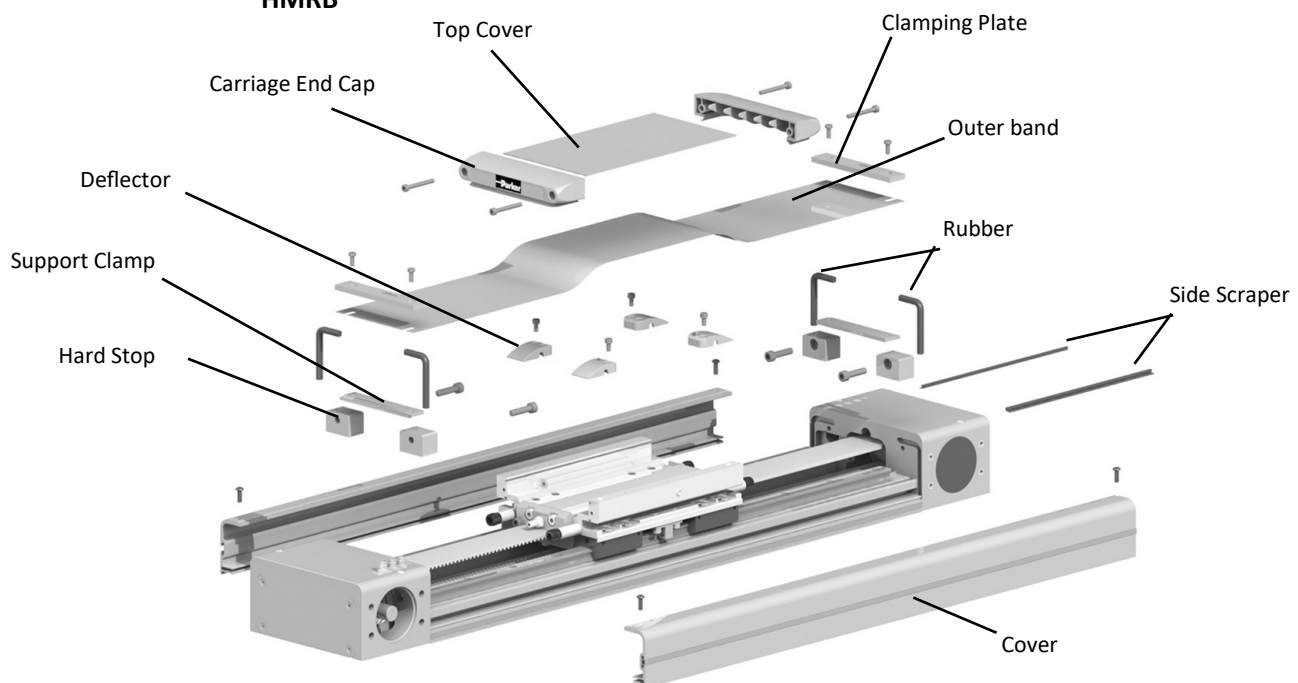
7.4 Cover for IP54

It is also possible to install various assemblies and equipment as a retrofit.
When doing so, remove the cover as necessary.

HMRS

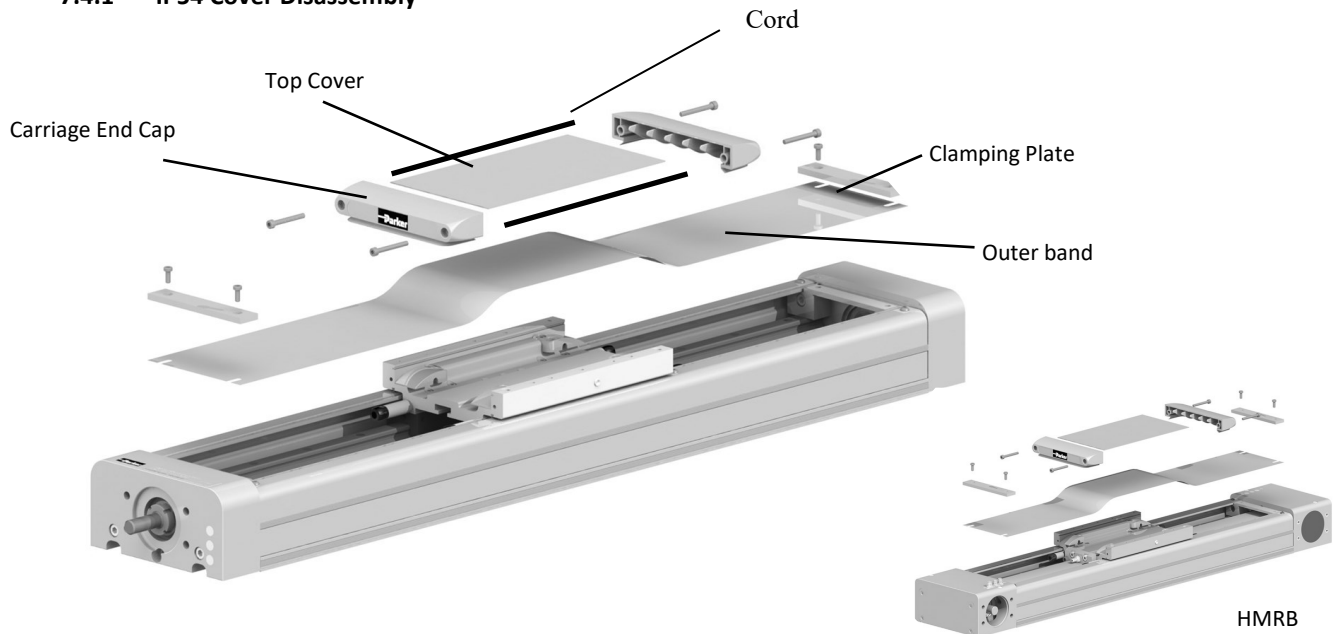


HMRB

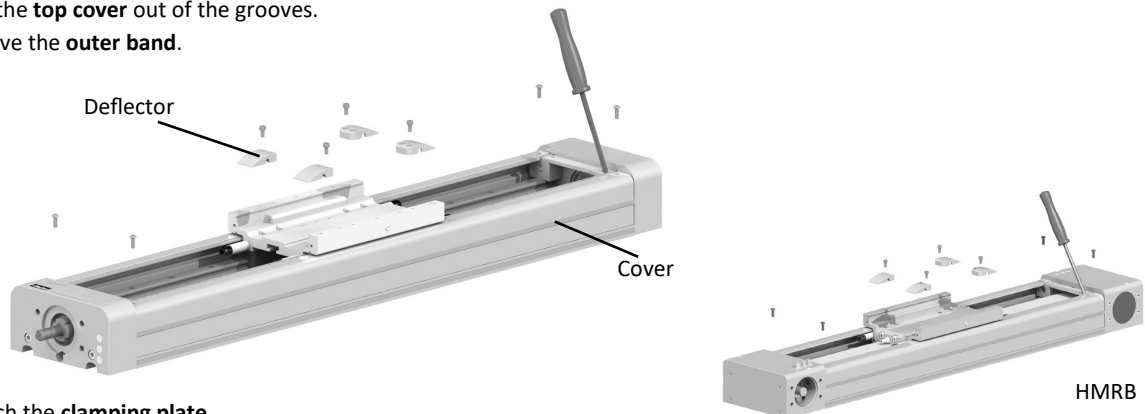


For HMR installation, maintenance purposes or conversion:

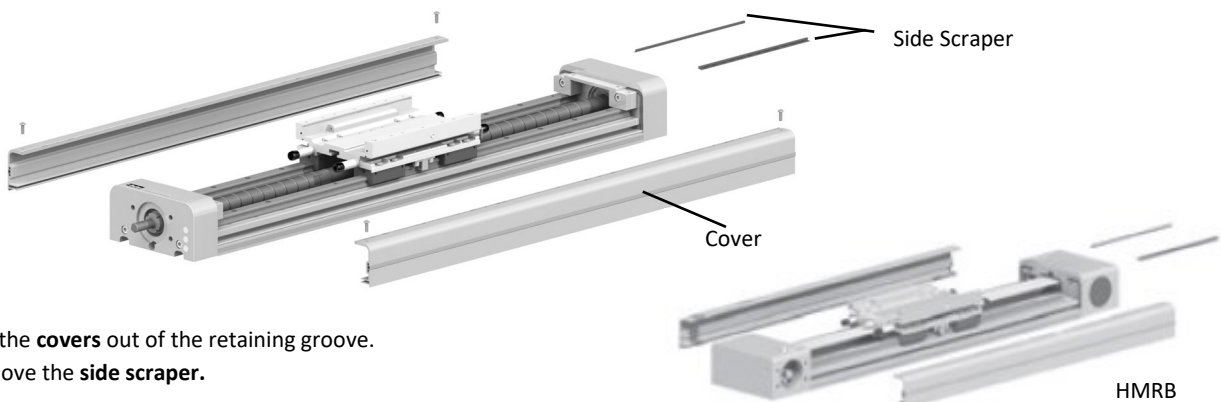
7.4.1 IP54 Cover Disassembly



- Remove the **clamping plate** of the **outer band** on the end caps.
- Disassemble the **carriage top cover**. Note that if only replacing outer band, do not remove top cover—remove end caps only.
- Push the **top cover** out of the grooves.
- Remove the **outer band**.



- Detach the **clamping plate**.
- Unscrew the lateral **covers**.
- Only HMR08, 11: Loosen the fastening screws with slot nuts located in T slot under cover material and remove the cover.
- Only HMR15, 18, 24: To loosen the **covers**, lever one end with a screwdriver from the inside.



- Pull the **covers** out of the retaining groove.
- Remove the **side scraper**.

7.4.2 IP54 Cover Assembly

The cover can be retrofitted; refer to section 11.1.

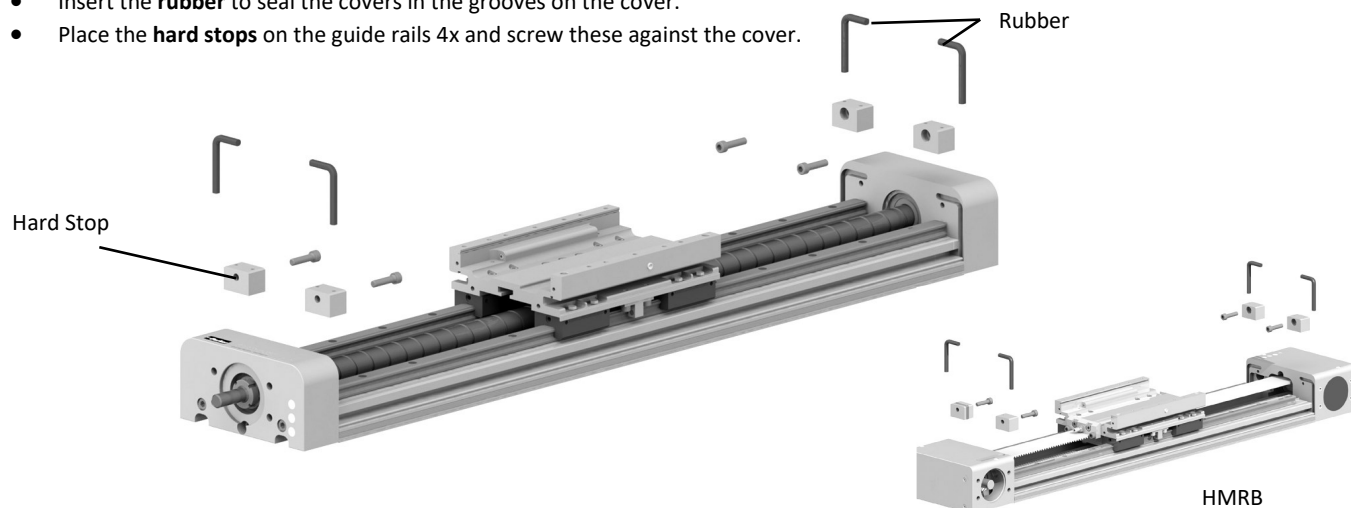
The following instructions also apply to retrofitting, converting or maintaining the HMR.

For information on necessary disassembly, refer to section 7.4.1.

 ATTENTION	
	It is possible to implement an incorrect assembly sequence.
	The cover covers the limit switches on the inside.
	Pay attention to the sequence! Make sure you differentiate between:
	- HMR installation - Subsequent assembly of the cover and maintenance of the HMR

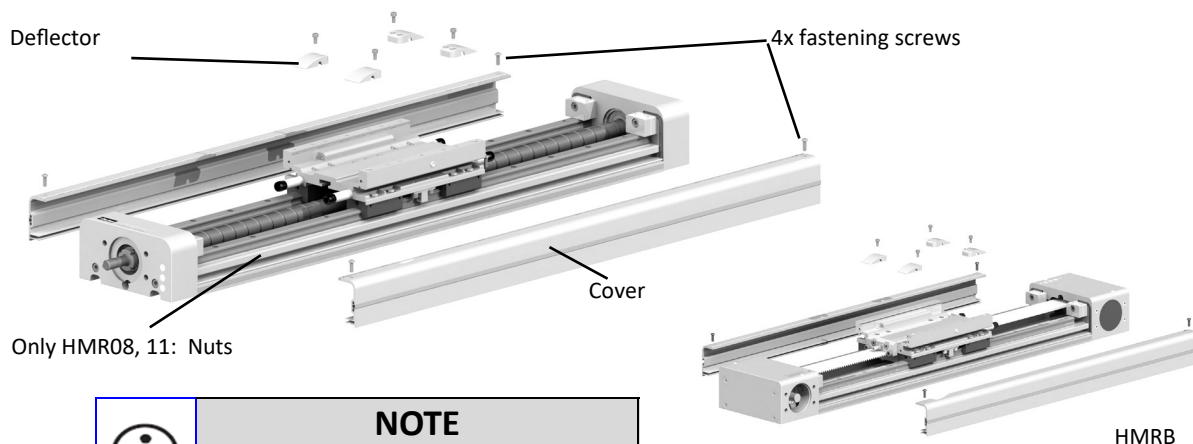
Assemble Hard Stop

- Insert the **rubber** to seal the covers in the grooves on the cover.
- Place the **hard stops** on the guide rails 4x and screw these against the cover.



Mount the deflectors and side covers

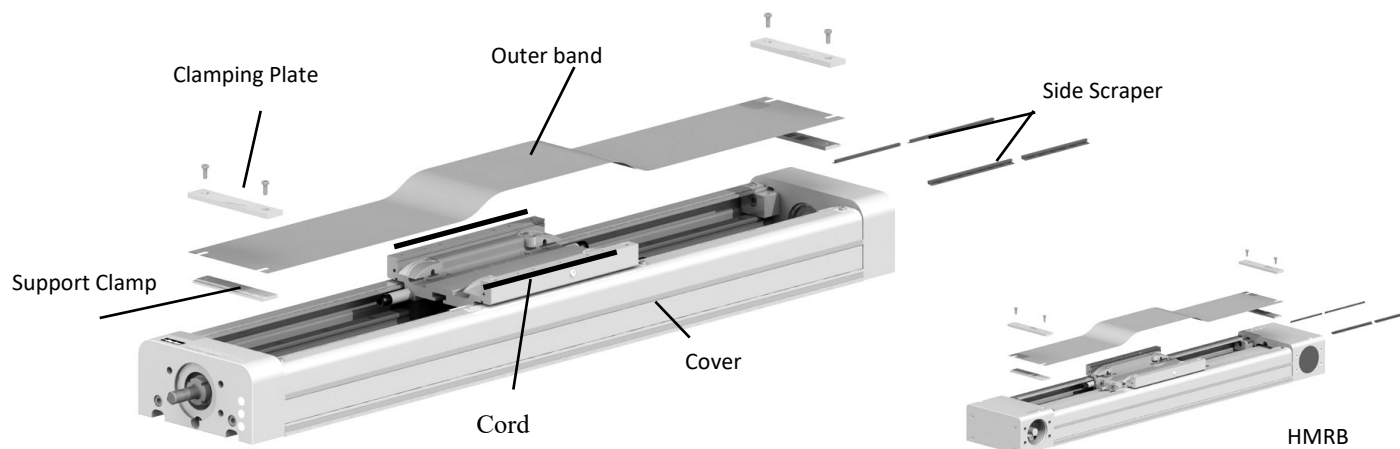
- Screw 4x deflectors onto the carriage and grease lightly.
- Only HMR15, 18, 24: Push the **covers** into the longitudinal grooves on the carrier (clip in) and screw in the four **fastening screws**.
- Only HMR08, 11: Use **slot nuts** (number corresponding to the stroke length) and screw in the four **fastening screws**.



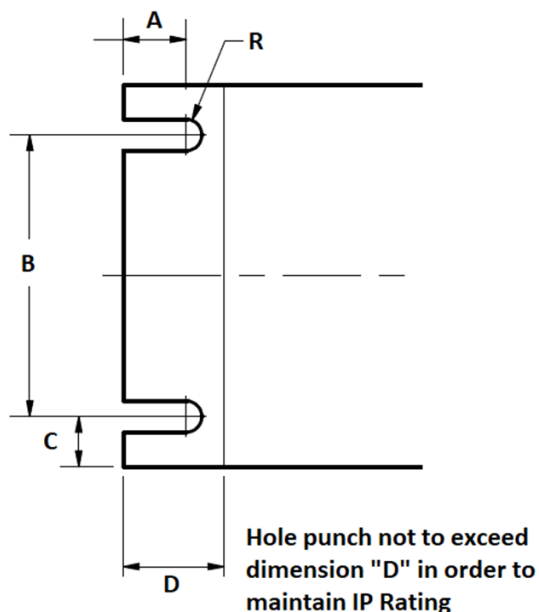
NOTE

Adhere to the tightening torques for screws according to section 7.1

7.4.3 Outer Band Install



	Attention
	Premature wear of the outer band
	Careful tightening of the clamping strip
	- Outer band not twisted - Install without forming any ripples.
	NOTE
	Adhere to the tightening torques for screws according to section 7.1. If replacing outer band only , do not remove top cover—remove end caps only.

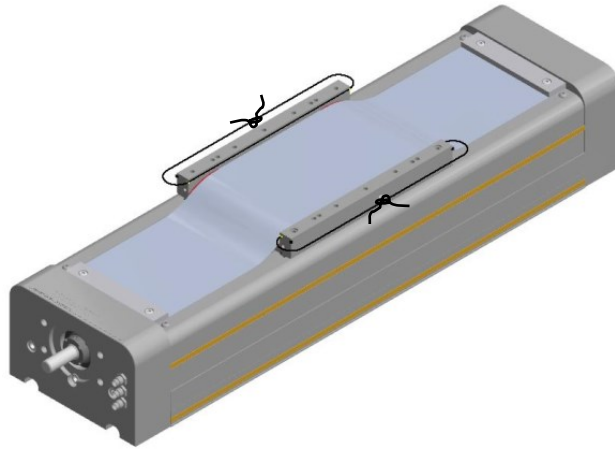


- Cut one end of the outer band according to dimensions below then lay across the table as in the figure above. All outer band clamps, carriage end caps and top plate should be removed. Once fit is established, cut and punch the other end of outer band.
- Each end of the outer band should have a slight gap against each end block for the float in process.

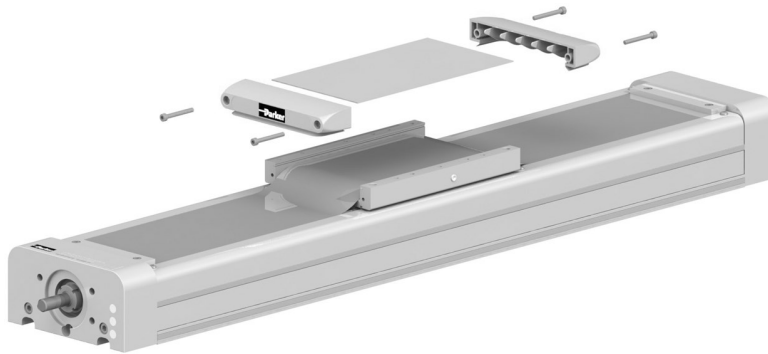
Frame Size	A (mm)	B (mm)	C (mm)	D (mm)	R radius (mm)
HMR08	10	45	8	16	2.5
HMR11	10	62	8	20	2.5
HMR15	11	78	13	20	2.5
HMR18	11	90	21	22	2.5
HMR24	14	126	23	24	3

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- Insert **side scrapers** into the grooves on the carriage - lips should face outward.
- Wrap black **cord** around carriage and tie. Cord to be trimmed at the end of outer band install.



- Place **support clamps** in cover holders with cushion tape facing upwards and towards the carriage.
- With Carriage at center of table, lay across and center **outer band**.
- Lightly grease the bottom of the carriage **top cover** and slide into grooves of the carriage. Install carriage **end caps**.
- Fasten **clamping plate**, do not torque yet.



- Slide carriage to drive end. Loosen clamping plate to allow outer band to seat itself. Tighten and torque clamping plate per torque specs in chart 7.1. Move carriage to non driven end and repeat.

The outer band must have contact with the entire profile length without any ripples or bubbles to achieve IP rating. If bubbling occurs, loosen clamping plates and remove carriage end caps. Press down on the outer band under the carriage top plating using a shim and tighten clamping plate

7.5 Position Detection with Magnetic Switches

ATTENTION	
	Potential damage to equipment!
	Missing or incorrect signals from the end position switches in the controller
	Essentially, clamp and set up end switches before commissioning

7.5.1 Definition End position switch

The use of end position switches is highly recommended for operating electric linear drives to prevent mechanical damage in the end positions. End position switches must be implemented in the NC (normally closed) function so that any cable breaks can be detected by the controller.

Homing switch

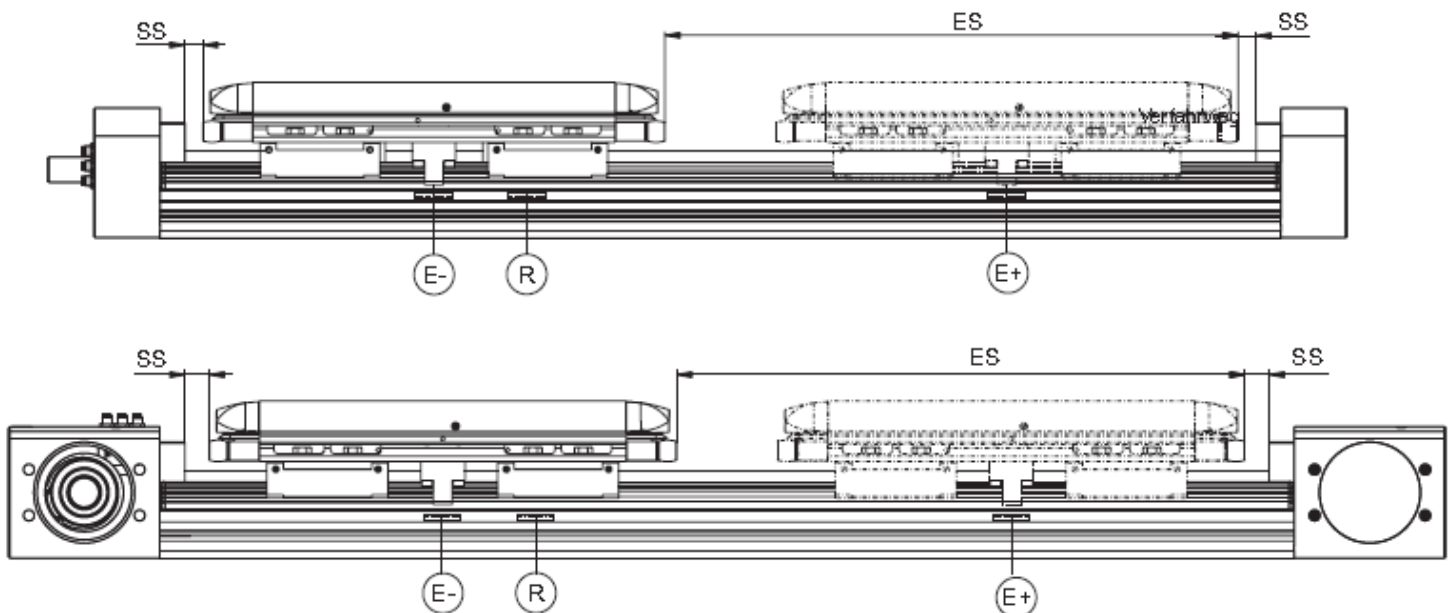
In addition to the end position switches, a homing switch can be used to assign a repeatable zero point to the linear system. Homing switches are normally implemented in the NO (normally open) function. In this process, the homing switch must be between the end position switches.

Switch types

The magnetic switches described in the following can be used as switches. The switch function is triggered by the magnetic package mounted under the carriage. The user can use mechanical switches, proximity sensors etc. in the same manner.

Setting up switch points

SS = Safety Stroke
ES = Effective Stroke

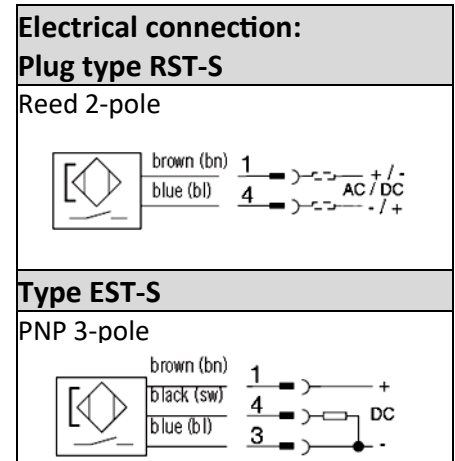
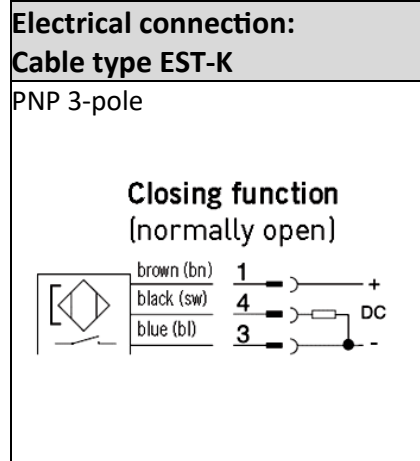
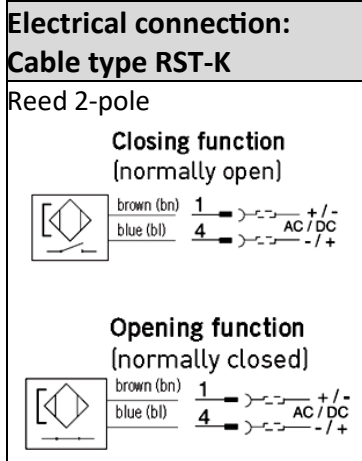


The switch point for the end position switches must be selected on both sides of the linear drive so as to ensure braking of the payload up to a standstill (depending on the motor system used) within the safety distance and at any time during operation. Depending on the application, the homing switch can be set up anywhere between the end position switches. If the switch points are not indicated when ordering, the user must carry out the alignment as well as the connection of the magnetic switches.

NOTE	
	Essentially, the user is responsible for checking each linear drive from proper setup and the function of the magnetic switches

Example: Product code with digit in bold which displays the position of the safety distance
HMRxxxx-xxxx-xxxx**2**xxx => **2 = 20 mm safety distance.**

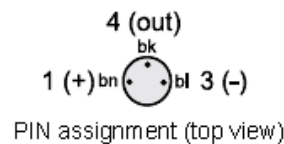
7.5.2 Magnetic Switch Types



7.5.3 Connection Assignment for M8 Connector

The connector assignment complies with DIN EN 50044

3-pin connector assignment

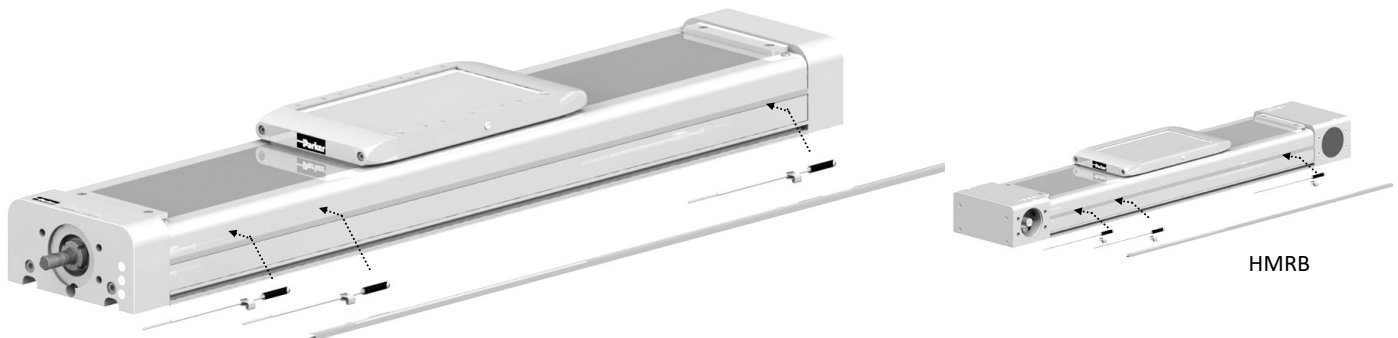


7.5.4 Setting up the External Magnetic Switches

Only possible with the IP54 cover!

Retrofitting:

All magnetic switches are mounted via a switch rail to be affixed onto the IP54 cover.



Remove the **strip** from the IP54 cover.

Setting up the magnetic switches

Insert the previously aligned magnetic switches into the switch rail (size 1.5 Allen key).

	NOTE
	Adjust the carriage to the desired position (end position / homing) and then move the magnetic switch in the T-slot until the switch point is reached

Adjusting the switch points (setup)

Move the magnetic switches until the switch point is reached.

Tightly clamp the magnetic switch with a size 1.5 Allen key.

Connecting the magnetic switches

Connect the respective connection cable with the M8 connector for the magnetic switch.

Secure the loose cable in the T-slot with the cable holders.

Insert the connection cable in the controller

7.5.5 Setting up and replacement of internal magnetic switches

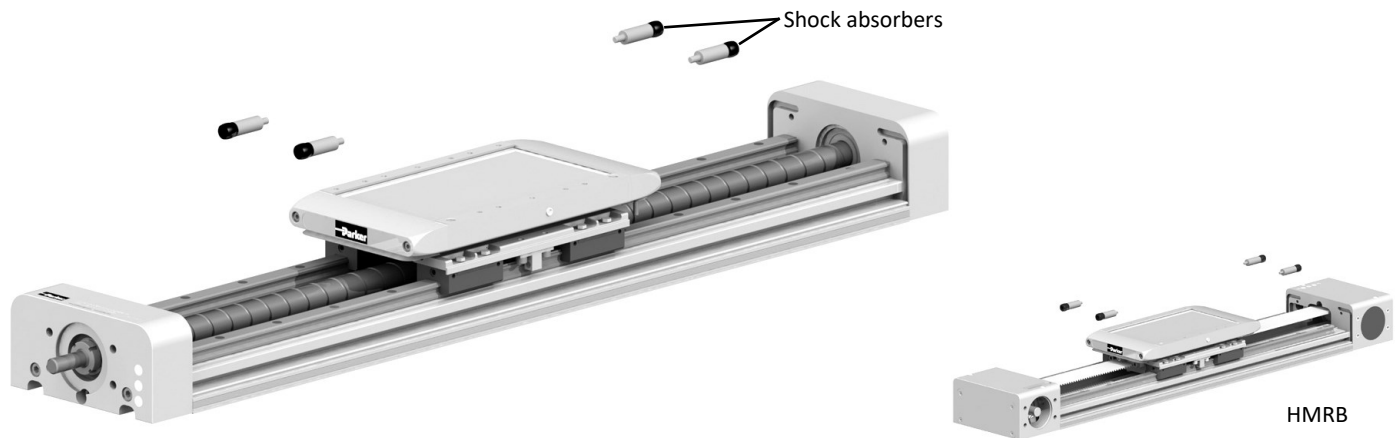
For service on internal magnetic switches, please contact the factory for support.

7.6 Impact Protection

Impact protection reduces the risk of mechanical damage from an unbraked, unforeseeable impact in the end position. If the safety distance of the end positions is crossed by the carriage and payload, the shock absorbers compensate, in full or in part, for the residual energy. The shock absorbers are only intended to protect a foreseeable impact of the carriage in the mechanical end position and not for continuous operation. The permissible energy absorption is listed in the HMR catalog. If there is an overload, the impact protection must be replaced.

The use of end position switches with the safety distance required for the application, as described in section 7.5.1, is not affected by this.

The IP54 cover must be opened as per section 7.4.1 when retrofitting or replacing the impact protection.



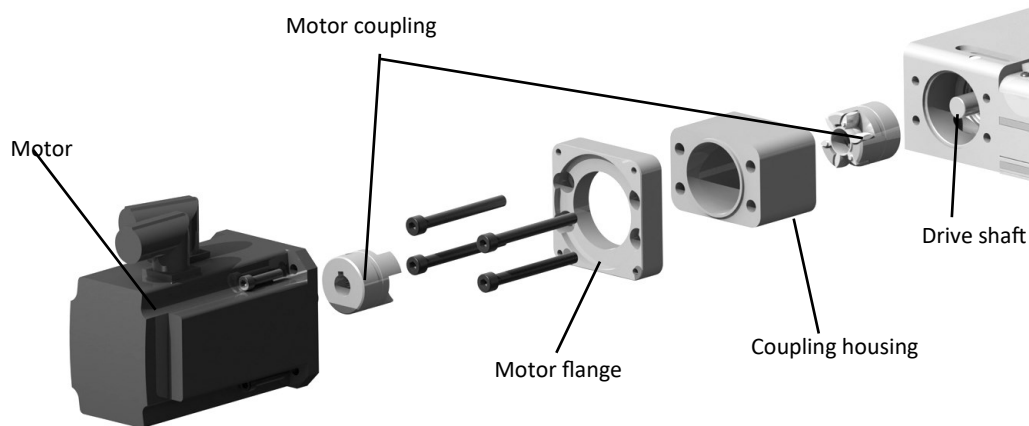
	NOTE
	Adhere to the tightening torques for screws according to section 7.1.

7.6.1 Impact Protection Install

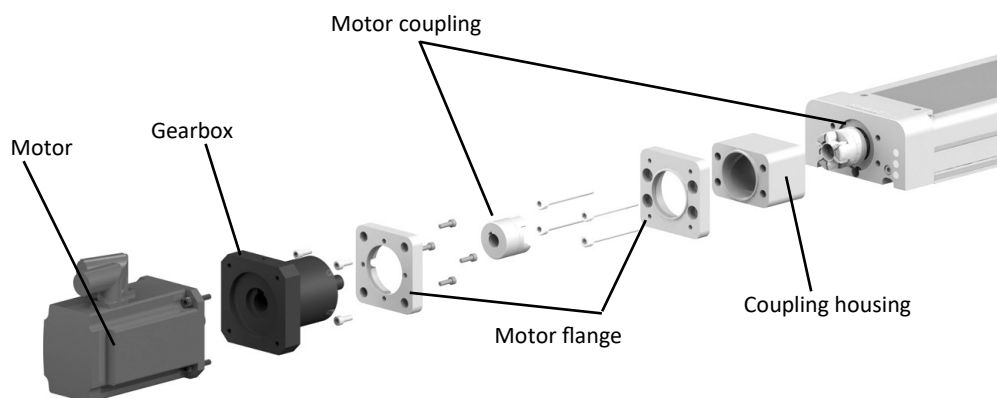
Remove **outer band** and **carriage end caps**. Remove **side covers** if on unit. Unscrew **standoff** from carriage and replace.

7.7 Motor and Gearbox Mounting

Overview / exploded view of motor installation with a flange plate, using a toothed belt as an example.



Overview / exploded view of gearbox installation with two flange plates, using a spindle drive as an example.



	NOTE
	The motor flange usually consists of one flange plate. If the geometric requirements are unfavorable in the assembly, the motor flange can consist of two flange plates. The motor flange designation always remains the same and does not depend on whether a motor or a gearbox with motor is to be installed on the linear drive.

7.7.1 Using the Correct Drive System

The drive system consists of a motor and/or gearbox and is connected to the linear drive in order to move the carriage linearly along with the mounted payload.

 WARNING	
	Hazard due to over-dimensioned drive system motor and gearbox
	Severe injuries and damage to property that could even occur after longer periods of operation
	Corrected dimensioning of the drive system and matching to linear drive is necessary

To ensure that the linear drive is operated within the permissible load limits, the proper arrangement and selection of the motor system must be carried out by Parker-Hannifin or the operator.

EL-sizing, the software-based design program from Parker-Hannifin, also provides reliable combinations of linear drive and drive system. The maximum torque on the drive shaft of the linear drive must not be exceeded at any time.

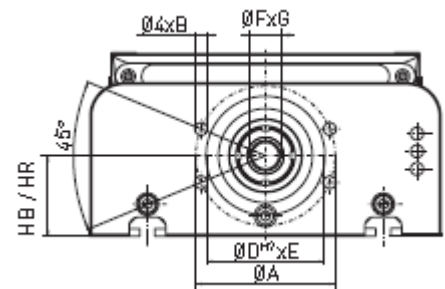
7.7.2 Coupling Housing, Motor Coupling and Flange

 WARNING	
	Shaft breakage due to Non-alignment
	Severe injuries and damage to property caused by unbraked payload.
	Centering of drive shaft and motor shaft/gearbox shaft via coupling housing and flange

The drive system, which consists of the motor and/or gearbox, must be properly connected to the drive shaft of the linear drive. To ensure the shafts are aligned with one another, a tailored combination of a coupling housing, motor coupling and motor flange (for externally supplied motors/gearboxes as well) must be fitted. Therefore, it is best if you only use suitable products offered by the manufacturer.

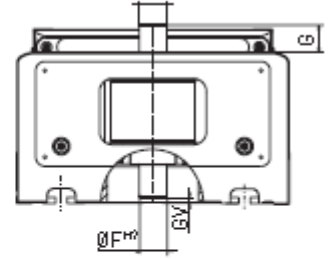
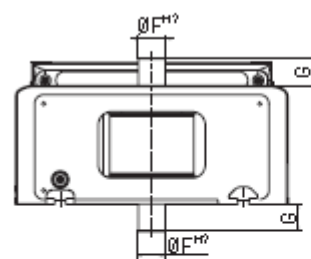
Connection dimensions screw drive - HMRS

Product	ØA	B	ØD ^{H7}	E	ØF ^{H7}	G	HB	HR
							Basic	Reinforced
HMRS08	42	M4	34	3.0	6	11	26	37.0
HMRS11	51	M6	39	5.0	10	18	32	52.0
HMRS15	72	M8	54	4.0	12	31	36	60.0
HMRS18	80	M8	64	2.5	15	33	44	67.5
HMRS24	95	M10	80	2.5	20	37	55	83.0



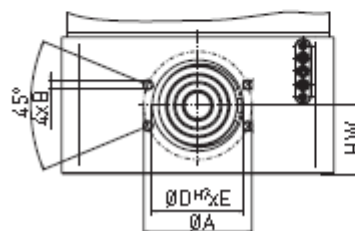
Basic

reinforced



Connection dimensions belt drive - HMRB

Product	ØA	B	ØD ^{H7}	E	ØF ^{H7}	G	GV	HW
HMRS08	42	M4	34	2.5	10	13.5	2.5	25
HMRB11	51	M6	39.0	1.2	12	20	0.0	31
HMRB15	72	M8	54.0	2.1	15	19.3	7.0	45
HMRB18	80	M8	64	4.0	18	21.8	1.5	50
HMRB24	95	M10	80	2.5	24	24	4.0	60



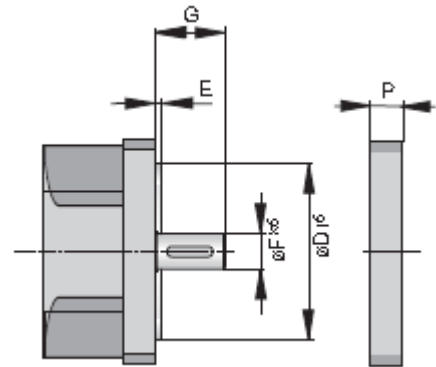
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7.7.3 Drive System Installation

		NOTE
		When installed, both parts of the motor coupling must have a defined gap dimension "Y". Also note the clearance dimensions in the following table in relation to the shaft of the motor or gearbox used.

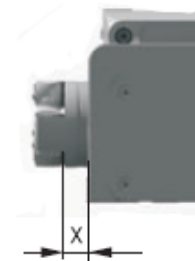
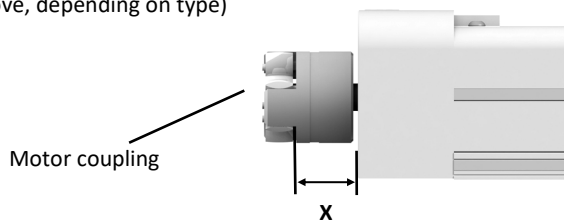
Motor dimensions (mm)

	D _{min}	E _{max}	F	G _{min}	G _{max}	P	X	X ₀₉₀₋₂₇₀	Y	Z
HMRS08 HMRB08	30	5	6-14	15	20	15	12	-3	1	8
		10		20	25	20				13
		15		25	30	25				18
HMRS11 HMRB11	35	5	6-16	15	20	15	20	-2	1.5	8
		10		20	25	20				13
		15		25	30	25				18
HMRS15 HMRB15	50	5	8-24	20	30	20	28	4	2	5
		15		31	40	30				15
		25		41	50	40				25
HMRS18 HMRB18	60	5	10-28	30	40	20	32	4	2	10
		15		41	50	30				20
		25		51	60	40				30
HMRS24 HMRB24	77	4	14-38	40	50	20	35	10	2.5	15
		14		51	60	30				25
		24		61	70	40				35

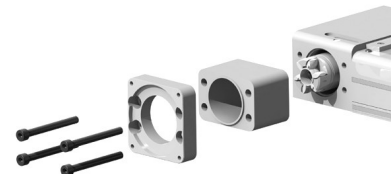
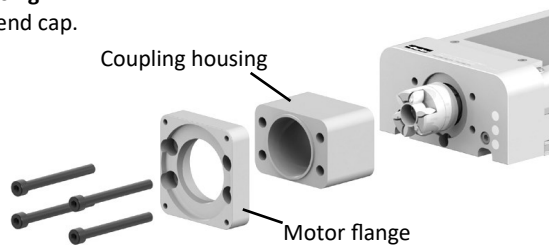


	NOTE
	Adhere to the tightening torques for screws according to section 7.1.

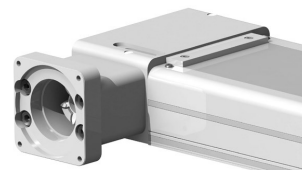
- Mount the **motor coupling** on the drive shaft with clearance "**X**" (see table above, depending on type)



- Insert the **coupling housing** centered into the end cap.

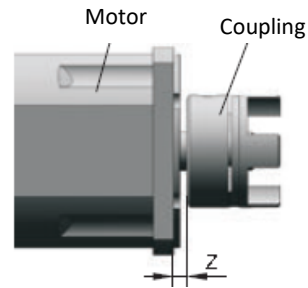
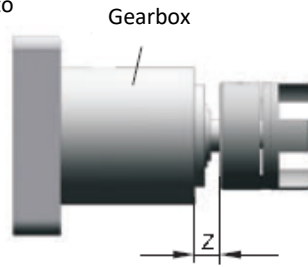


- Center the **motor flange** on the **coupling housing** and tighten the screws.



HMR Series Positioners

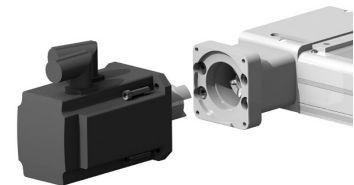
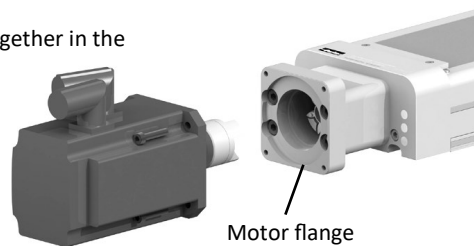
- Mount the motor coupling with clearance “Z” to the motor shaft or gearbox shaft



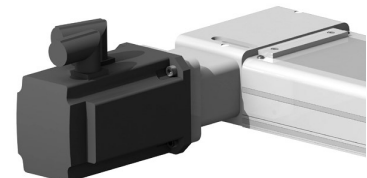
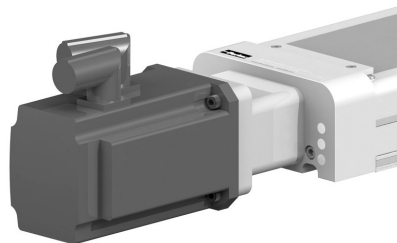
 WARNING	
	Shaft breakage due to Non-Alignment
	Severe injuries and damage to property caused by unbraked payload.
	Centering of drive shaft and motor shaft / gearbox shaft via coupling housing and flange.

Assembly motor flange with one flange plate

- Insert both parts of the motor coupling together in the coupling housing.

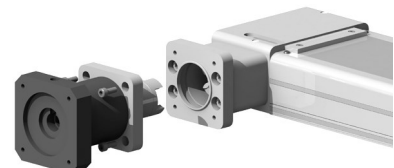
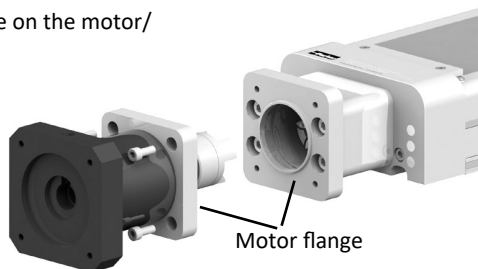


- Center the motor and secure with screws

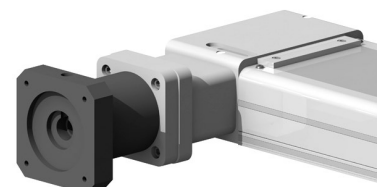
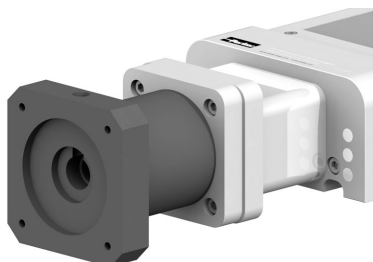


Assembly motor flange with two flange plates

- Center and secure the second flange plate on the motor/ gearbox side.



- Insert both parts of the motor coupling together in the coupling housing.
- Center and secure the flange plates to one another.



- Completion: Installation of motor on gearbox.

8 Commissioning

The HMR linear drive can generate quick linear movements with great force. This can result in injuries due to crushing of body parts or damage caused by collision with other system parts if the safety regulations are not observed. An EMERGENCY STOP device must be available. The run-out path (distance after an EMERGENCY STOP) must be secured.

8.1 First Commissioning

 WARNING	
	Crushing hazard when moving Crushing hazard caused by incorrect direction of travel
	This could result in severe injuries and damage to property
	Keep hands out of the operating area of the linear drive.
	Conduct a start-up check in the collision-free stroke area with slow, short movements.
	Check the direction of movement of the motor and carriage with a brief start-up.

Before the first and each additional commissioning, check the following:

- Are the connection conditions correct?
- Can anyone enter the area of action?
- Are there any obstacles or tools in the movement area of the load?

 ATTENTION	
	Overload hazard due to excessive load, excessive mass or excessive speed.
	Review and adhere to the catalog specifications on configuration of the HMR.
	The linear drive must first run through the entire movement area at slow speed to determine any potential collision areas. Any items blocking the drive area must be removed immediately!

8.2 Operation

After HMR installation, the entire system may only be operated under operating conditions in compliance with the valid machinery directive.

A risk analysis with the CE conformity granted as a result is a prerequisite for safe operation according to proper use. Installation of the EMERGENCY STOP device must be checked for proper function.

Observe the operating instructions for the entire system.

9 Maintenance and Repair

9.1 Customer Service

To obtain the address for spare parts and customer service, see the back of these operating instructions.

9.2 General Cleaning

Maintenance and repair work may only be carried out by trained personnel

 Caution	
	Crushing hazard due to unexpected movements
	This could result in severe injuries or damage to property
	Bring system to a standstill and secure.

Only use lint-free cloths and mild substances that will not harm the material for cleaning.

Potential designs:

IP20 (without cover)

The linear drive must always be kept free of contamination in the area of the guides and the drive unit. Clean regularly according to the environmental conditions.

IP54 (with cover)

Routine cleaning on the outside, particularly the surface between the Outer band and the support on the aluminum profile. The sealing lips on the yellow covers of the carriage and on the lateral wipers can become clogged. Clean as required.

9.3 Lubrication Intervals

The HMR drive unit is lubricated when delivered. The lubrication channels within the carriage that run to the runner blocks (and the ball screw nut for the ball screw drive) are filled and sealed off.

The amount of relubrication required depends on the operating mode, the requirements and, lastly, the type of guide.

We recommend a check of the linear drive **after a service time of:**

HMR08: 120 km
HMR11: 1000 km
HMR15, -18, -24: max. 2000 km or an operating period of 12 months, depending on the application..

Here you must also take into account load, speed, temperature, and ambient conditions

Use of grease:

 NOTE	
	For lubrication we recommend grease from Klüber named ISOFLEX TOPAS NCA 52 or a comparable product.

- Lubricate the runner blocks (and the ball screw nuts for linear drives with screw) via the lateral lubricating nipples on the carriage.

Visual inspection for lubrication:

- For the design with **IP54 cover**: Ensure that the Outer band has a thin layer of lubrication on both sides.
- Ensure that the guide rail and, if necessary, the ball screw drive are covered with a clean, thin layer of lubrication.

9.4 Checking the Play of the Guide System

Horizontal and vertical play can occur after a certain number of operating hours and service time. Checks for play should only be evaluated and conducted by trained mechanical technicians.

	NOTE
	With the ball bearing guide, no play must be discernible when the carriage is rotated by hand.

9.5 Checking the Bearing Play

If increased noise development occurs when operating the HMR, check the bearings for wear. The shaft bearings have lifelong lubrication.

A check should be done every 2000 km or every 12 months.

9.6 Checking the Play in the Ball Screw Drive and Nut

A check should be done every 2000 km or every 12 months.

- Loosen and remove the motor / gearbox / drive unit.

Check the ease of movement of the screw with nut.

- Move the carriage by hand by rotating the drive shaft over the entire stroke in both directions of rotation.

	NOTE
	Movement should be without jerks, smooth and without any noticeable running noises within the permissible no load torque (refer to catalog).

Check the axial play between the screw and the nut

- Fix the ball screw drive in position radially and axially by blocking.
- Move the carriage by hand axially in both directions.

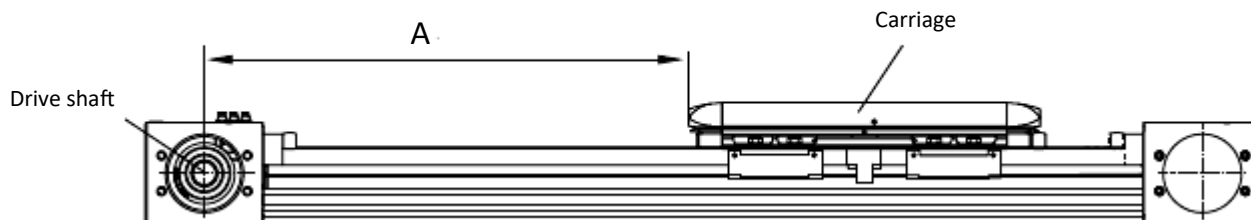
	NOTE
	While the drive shaft or screw is blocked, it should not be possible to move the carriage by hand.

9.7 Check and adjust belt tensioning

Retensioning of the belt within performance is not necessary. With a nominal loading by 75% of the permitted thrust force a replacement of the belt after 10,000 km is advised.

A check of the right belt tensioning should be done every **2,000 km** or **every 12 months**.

Measurement can be carried out using different methods:



Measurement A for adjusting the belt tension

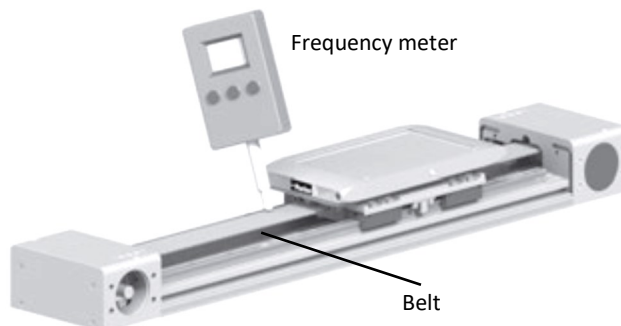
9.7.1 Check belt tensioning

The most certain results measuring belt tensioning can be adjusted and reviewed in practice by an experienced specialist. However, the toothed belt tension is measured and adjusted most reliably by using a belt tension measuring device. One method is to adjust using the **frequency meter**.

	Attention
	The max. permissible pulling force of the toothed belt may not be exceeded under any circumstances.

Please direct any queries related to purchasing or loan of a rate monitor to the manufacturer directly.

- If present the IP54 cover must be removed described in section. 7.4.1.
- The payload must be removed from vertical oriented positioners.
- Move the carriage unloaded in both directions so the belt will subside.
- Adjust **distance A** from the center of the **drive shaft** to the **carriage** with 500 mm or 250 mm on short positioners.



- Activate the **toothed belt** by pulling the center of the clear toothed belt until it vibrates.
- Measure the resulting frequency in the center of the clear toothed belt length with the **frequency meter**.
Take the measurement three times.
- Check the measured frequency with values from following table.

Product size,	Belt	Clear belt length 500mm	Clear belt length 250mm
Motor mounting position		Frequency	Frequency
HMR08	20 AT 3	85 Hz	170 Hz
HMR11	25 RPP 5	83 Hz	166 Hz
HMR15/090°/270°	40 RPP 5	85 Hz	170 Hz
HMR15/0°/180°	25 RPP 5	83 Hz	166 Hz
HMR18/090°/270°	50 RPP 5	86 Hz	172 Hz
HMR18/0°/180°	40 RPP 5	83 Hz	166 Hz
HMR24/90°/270°	75 RPP 8	88 Hz	176 Hz
HMR24/0°/180°	50 RPP 8	108 Hz	216 Hz

- Follow the instructions depending of the measured variance:

$f < 70\%$	Replacement of the belt.
$70\% < f < 90\%$	Retension the belt.
$90\% < f < 110\%$	No action necessary.

	NOTE
	After retensioning the belt twice a replacement is necessary

9.7.2 Testing the toothed belt tension with a force/displacement measuring device

Please direct any queries on the force/displacement measuring device to Parker, ID no. 037-000202.

Measurement process:

- For vertical alignment of the drive, first dismantle the payload.
- The IP54 cover must be opened so that the toothed belt is accessible, in accordance with section 7.4.1.
- Move the carriage without loads in both directions, so that the toothed belt can settle.
- Adjust **Measurement A** from the middle **drive shaft** to the **carriage** with 500 mm or 250 mm for short drives
- For a correct belt tension the belt must be able to be pushed through 6 to 7 mm for an uncovered belt length of 500 mm or 3 to 3.5 mm for 250 mm.

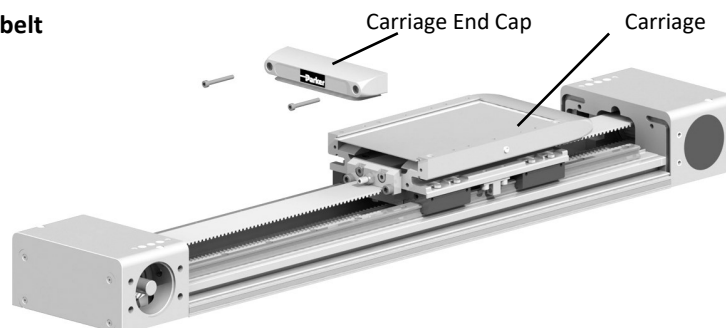
With a force/displacement measuring device (Dynamometer FDN200 with test pins, ID No. 16187FIL) the following force should be read:

Toothed belt force

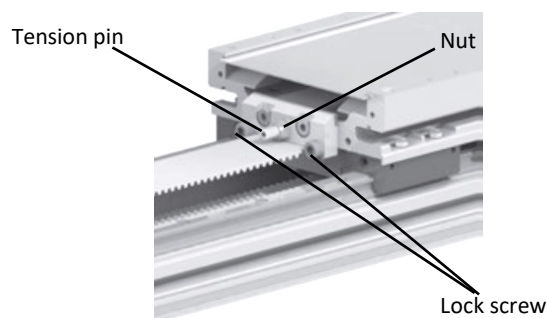
Product size, Motor units	Belt	Clear belt length 500mm Force for 7 mm	Clear belt length 250mm Force for 3.5 mm
HMR08	20 AT 3	20 ± 1 N	20 ± 1 N
HMR11	25 RPP 5	43 ± 1 N	43 ± 1 N
HMR15 / 090°/270°	40 RPP 5	62 ± 1 N	62 ± 1 N
HMR15 / 0°/180°	25 RPP 5	43 ± 1 N	43 ± 1 N
HMR18 / 090°/270°	50 RPP 5	71 ± 1 N	71 ± 1 N
HMR18 / 0°/180°	40 RPP 5	60 ± 1 N	60 ± 1 N
HMR24 / 90°/270°	75 RPP 8	161 ± 2 N	161 ± 2 N
HMR24 / 0°/180°	50 RPP 8	196 ± 2 N	196 ± 2 N

If the value measured is lower than the value stated in the table above, the toothed belt must be replaced.

9.7.3 Tensioning of the belt



- Remove the **carriage end cap** in order to reach the parts underneath

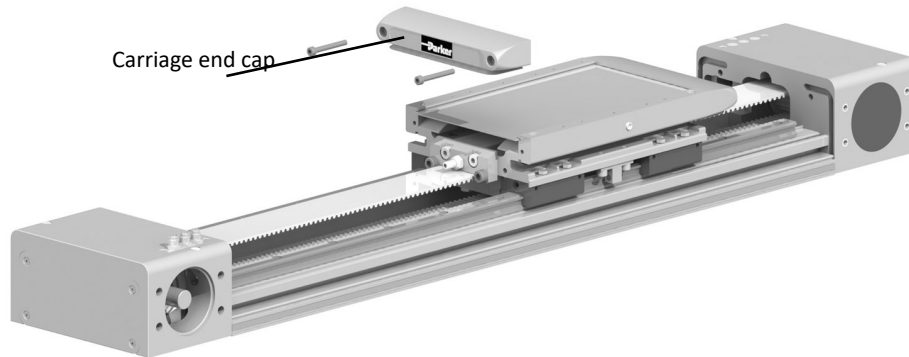


- Loosen the **nut** from **spiral tension pin** and **lock screw**.
- Check the belt tensioning while screwing the **Tension pin** as per section 9.7.1.
- If the belt tensioning is adjusted the **nut** of the **Tension pin** can be tightened and the **lock screws** equally fixed by 10% of the shown value.

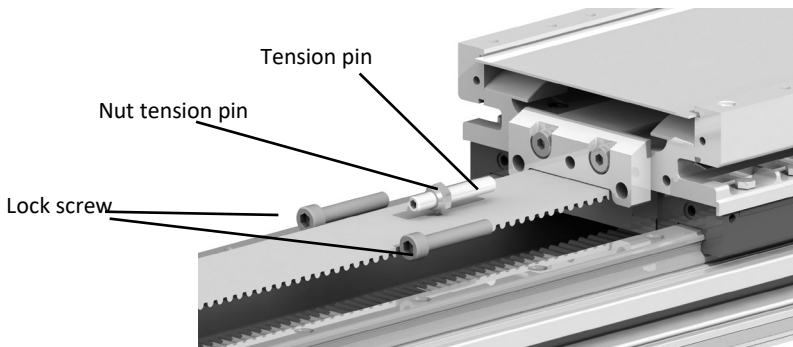
9.8 Disassembly of Drive Type Belt

If present, the IP54 cover must be removed as per section 7.4.1 .

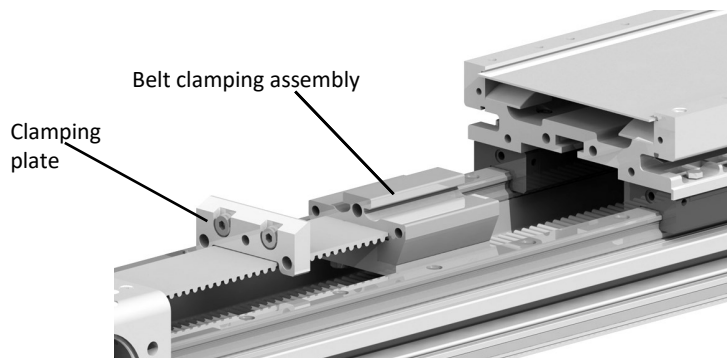
The belt tensioning block needs to be removed on both sides. Following the procedure is described for one side.



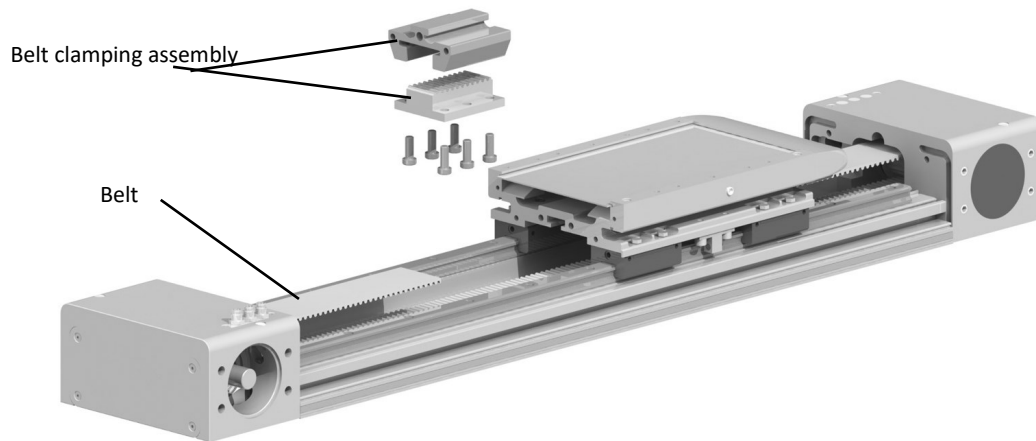
- Loosen the **carriage cover** in order to reach the parts underneath.



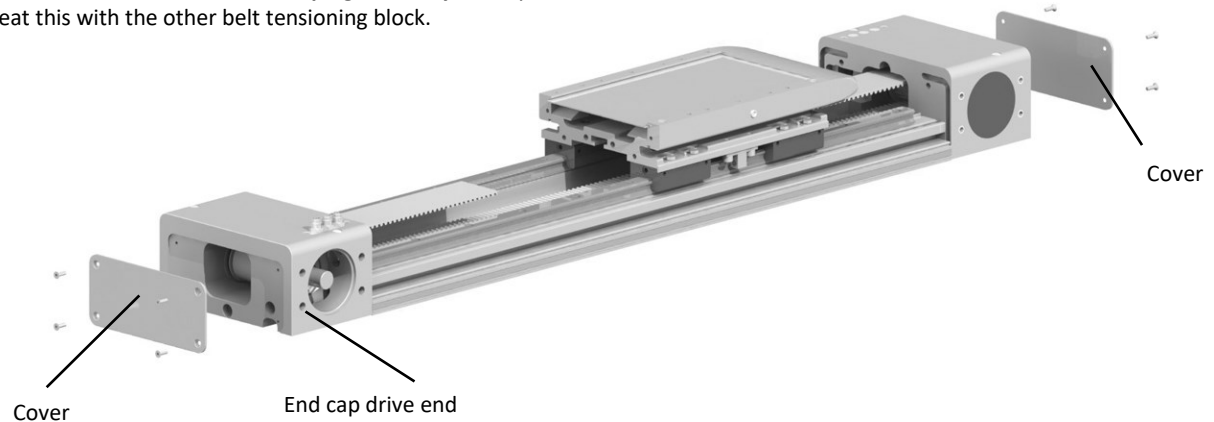
- Remove the **lock screws**.
- Loosen the **nut** of the **tension pin** a bit and release the **pin**.



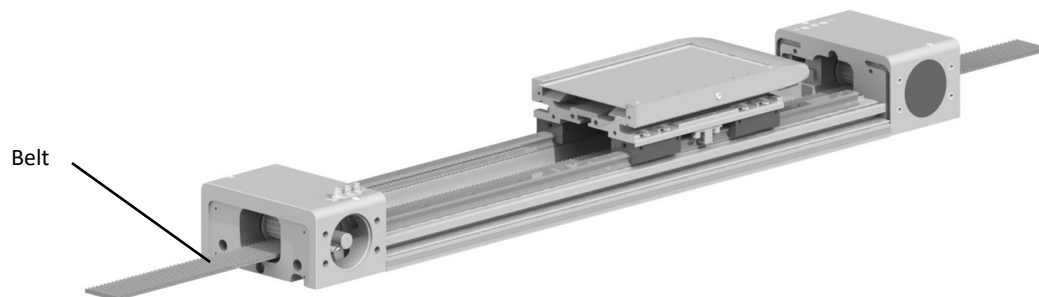
- Loosen the screws of the **clamping plate** and remove it.
- Pull out the **belt clamping assembly**.



- Remove the screws of the **belt clamping assembly** and lay out the belt.
- Repeat this with the other belt tensioning block.



- Remove **cover** from the **end cap drive end** and **end cap non drive end side**.



- Lay out the **belt** and take it out.

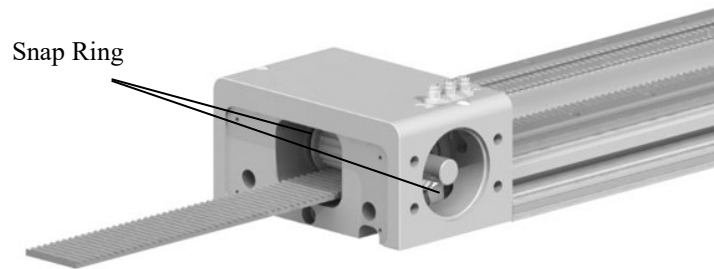
9.9 Installing Drive Belt

Installation can be done in opposite sequence as disassembly.
Tension the belt as per section 9.7.2.

	NOTE
	Adhere to the tightening torques for screws according to section 7.1

9.10 Drive Shaft Installation for Belt Units

- Disassemble belt from instructions in previous section **9.10.3 Disassembling of Drive Belt**.



- Remove **snap rings** from each side of shaft.
- Remove old **drive shaft** and replace. Insert new **snap rings** into grooves inside end block housing.
- Reinstall **end block covers** and belt **clamping assembly**.
- Retension the belt per section **9.7.1 Check Belt Tensioning**.

10 Decommissioning

10.1 Disassembly of a Machine or System

Disassembly and the final decommissioning of the HMR must be carried out by trained mechanical or electrical specialists.
No stored energy (springs, fluid, pressure).

 Caution	
	Crushing hazard due to unexpected movements
	This could result in severe injuries or damage to property
	Bring system to a standstill and secure.

- Pay attention to the weight of any loads being lifted during vertical installation.
- Screws and toothed belts are not self-locking, which means that the Drive Type, carriage and load could free fall.

10.2 Disposal

The HMR does not contain any hazardous substances that require special attention during disposal. Lubricant residue is possible and should be expected.

In addition to the main aluminum component, there are also installed steel parts and plastics such as PU and NBR.

Non-ferrous metal is present in small quantities only.

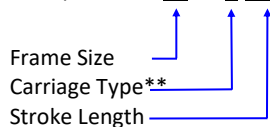
Electrical components (if used during operation) such as the motor and electronic switches must be disposed of according to the local regulations in force.

11 Retrofit Kits

11.1 IP54 Cover

If the cover is to be completely retrofitted, the product key must be indicated.

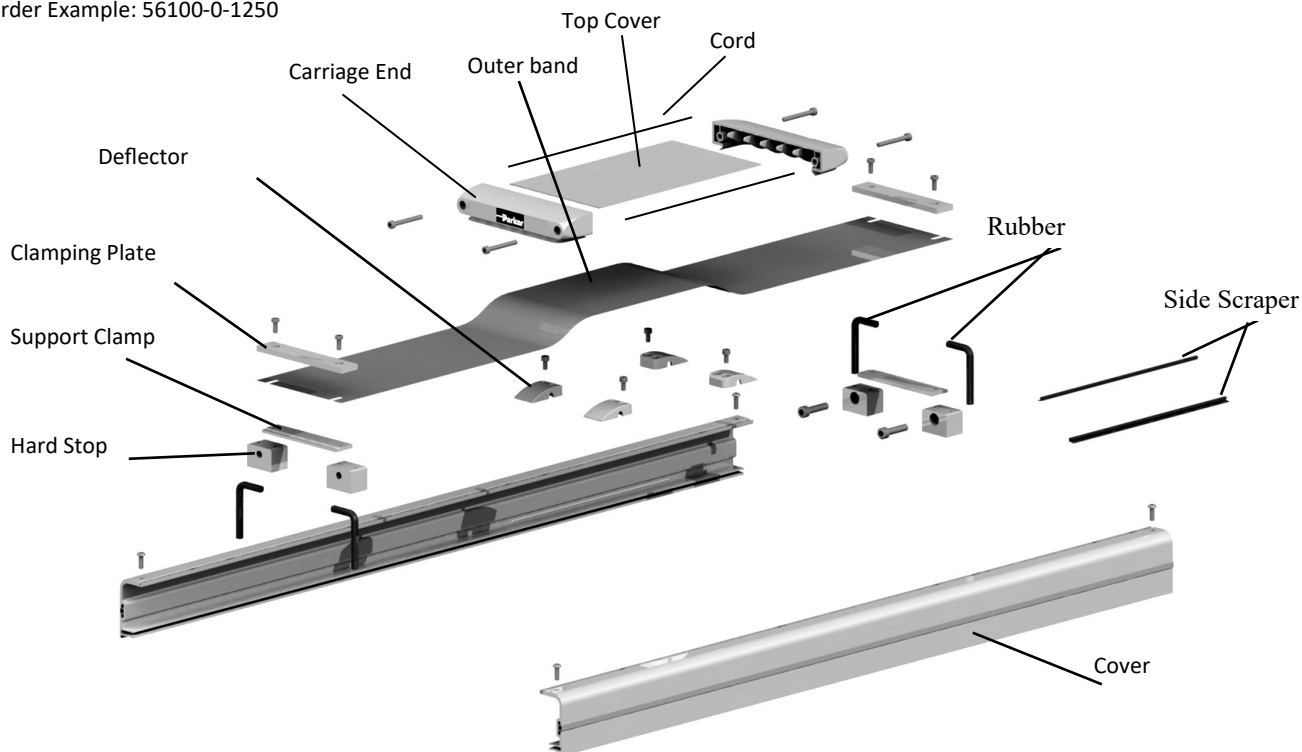
Example: HMRS15C050-1250-00000K1AF



**Carriage type includes
0 = Standard (One Carriage)
1 = Tandem (Two Carriages)
2 = Bi Parting (Two Carriages)

To ensure that the cover and the outer band are delivered in the correct design and length, the following information is needed: frame size, carriage type, and stroke.

Order Example: 56100-0-1250



Carriage Type: 0

HMR 08	56123-0-XXXX
HMR 11	56124-0-XXXX
HMR 15	56100-0-XXXX
HMR 18	56101-0-XXXX
HMR 24	56102-0-XXXX

Carriage Type: 1,2

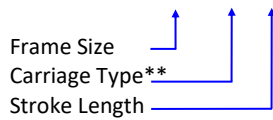
HMR 08	56123-1-XXXX
HMR 11	56124-1-XXXX
HMR 15	56100-1-XXXX
HMR 18	56101-1-XXXX
HMR 24	56102-1-XXXX

12 Spare Part / Wearing Part Kits

12.1 Outer Band Package

If the outer band package needs to be replaced, the product key must be indicated.

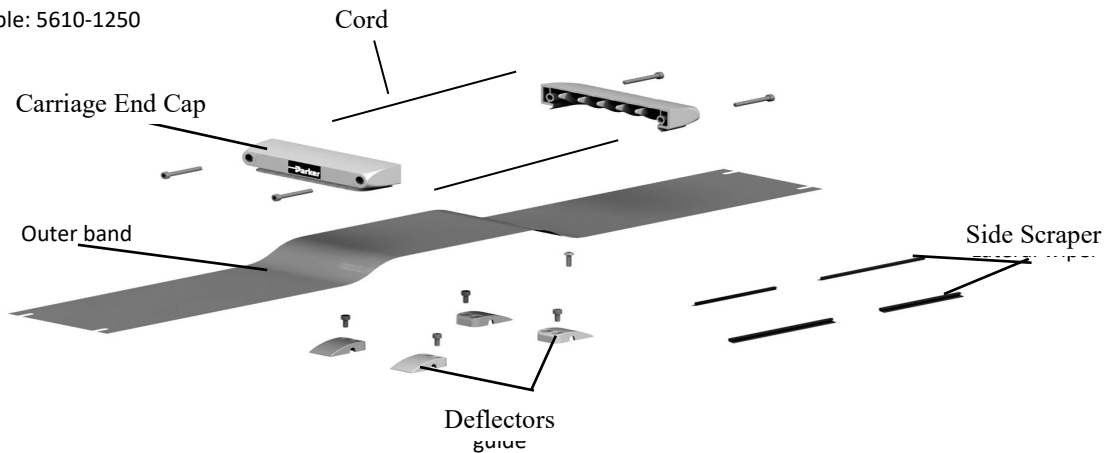
Example: HMRS15C050-1250-00000K1AF



**Carriage type includes

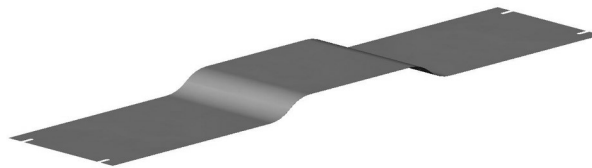
- 0 = Standard (One Carriage)
- 1 = Tandem (Two Carriages)
- 2 = Bi Parting (Two Carriages)

Order Example: 5610-1250



12.2 Outer Band

Order Example: 56106-0-1250



Carriage Type: 0

	Outer Band Package	Outer Band
HMR 08	56125-0-XXXX	56127-0-XXXX
HMR 11	56126-0-XXXX	56128-0-XXXX
HMR 15	56103-0-XXXX	56106-0-XXXX
HMR 18	56104-0-XXXX	56107-0-XXXX
HMR 24	56105-0-XXXX	56108-0-XXXX

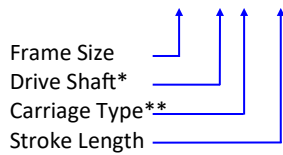
Carriage Type: 1,2

	Outer Band Package	Outer Band
HMR 08	56125-1-XXXX	56127-1-XXXX
HMR 11	56126-1-XXXX	56128-1-XXXX
HMR 15	56103-1-XXXX	56106-1-XXXX
HMR 18	56104-1-XXXX	56107-1-XXXX
HMR 24	56105-1-XXXX	56108-1-XXXX

12.3 Belt

If the belt is to be replaced, the product key must be indicated.

Example: HMRB15CBDD-0-1250-00000K1AF



* Drive Shaft Options
BD/DD =Front/Back
AP/CP/AD/CD=UP/Down

**Carriage type includes
0 = Standard (One Carriage)
1 = Tandem (Two Carriages)
2 = Bi Parting (Two Carriages)



Carriage Type: 0

HMRB08	BD/DD	56209-0-XXXX
HMRB08	AP/CP/AD/CD	56209-0-XXXX
HMRB11	BD/DD	56210-0-XXXX
HMRB11	AP/CP/AD/CD	56210-0-XXXX
HMRB15	BD/DD	56200-0-XXXX
HMRB15	AP/CP/AD/CD	56201-0-XXXX
HMRB18	BD/DD	56202-0-XXXX
HMRB18	AP/CP/AD/CD	56203-0-XXXX
HMRB24	BD/DD	56204-0-XXXX
HMRB24	AP/CP/AD/CD	56205-0-XXXX

Carriage Type: 1

HMRB08	BD/DD	56209-1-XXXX
HMRB08	AP/CP/AD/CD	56209-1-XXXX
HMRB11	BD/DD	56210-1-XXXX
HMRB11	AP/CP/AD/CD	56210-1-XXXX
HMRB15	BD/DD	56200-1-XXXX
HMRB15	AP/CP/AD/CD	56201-1-XXXX
HMRB18	BD/DD	56202-1-XXXX
HMRB18	AP/CP/AD/CD	56203-1-XXXX
HMRB24	BD/DD	56204-1-XXXX
HMRB24	AP/CP/AD/CD	56205-1-XXXX

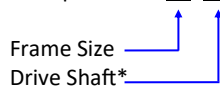
Carriage Type: 2

HMRB08	AP/CP/AD/CD	56209-2-XXXX
HMRB11	AP/CP/AD/CD	56210-2-XXXX
HMRB15	AP/CP/AD/CD	56201-2-XXXX
HMRB18	AP/CP/AD/CD	56203-2-XXXX
HMRB24	AP/CP/AD/CD	56205-2-XXXX

12.4 Drive Shafts Belt

If the belt is to be replaced, the product key must be indicated.

Example: HMRB15C**BD** 0-1250-00000K1AF



- Product size (**15** = width 150 mm)
- Motor mounting position (**BD** = 090° front with double plain shaft)

* Drive Shaft Options

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

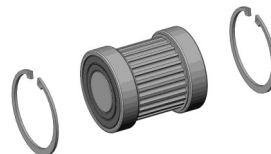
Plain shaft "P"



Double plain shaft "D"



Non drive end shaft



Drive Shaft	Motor Mounting	Order Number
HMRB 08 BD/DD	090/270, drive and non drive end	56213FIL
HMRB 08 AP/CP	000/180, plain shaft	56214FIL
HMRB 08 AD/CD	000/180, double plain shaft	56213FIL
HMRB 08 AP/CP/AD/CD	000/180, non drive end	56215FIL
HMRB 11 BD/DD	090/270, drive and non drive end	56216FIL
HMRB 11 AP/CP	000/180, plain shaft	56217FIL
HMRB 11 AD/CD	000/180, double plain shaft	56216FIL
HMRB 11 AP/CP/AD/CD	000/180, non drive end	56218FIL
HMRB 15 BD/DD	090/270, drive and non drive end	56150FIL
HMRB 15 AP/CP	000/180, plain shaft	56151FIL
HMRB 15 AD/CD	000/180, double plain shaft	56152FIL
HMRB 15 AP/CP/AD/CD	000/180, non drive end	56153FIL
HMRB 18 BD/DD	090/270, drive and non drive end	56154FIL
HMRB 18 AP/CP	000/180, plain shaft	56155FIL
HMRB 18 AD/CD	000/180, double plain shaft	56156FIL
HMRB 18 AP/CP/AD/CD	000/180, non drive end	56157FIL
HMRB 24 BD/DD	090/270, drive and non drive end	56158FIL
HMRB 24 AP/CP	000/180, plain shaft	56159FIL
HMRB 24 AD/CD	000/180, double plain shaft	56160FIL
HMRB 24 AP/CP/AD/CD	000/180, non drive end	56161FIL

** Order number includes assembled pulley shaft, bearings, and snap rings.

12.5 Impact protection

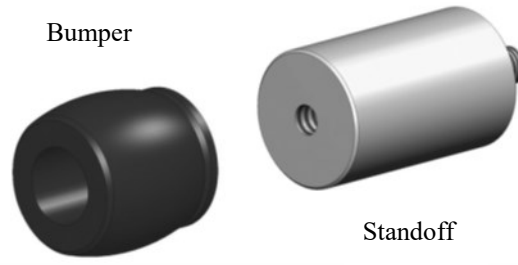
If the impact protection is to be replaced, the product key must be indicated.

Example: HMRS**15**C10**0**-1200-000000000

Example: HMRB**15**CBD**0**-1200-000000000

To ensure that a suitable impact protection can be delivered, the following must be known at the very least:

- Product size (**15** = width 150mm)
- Carriage: (0 = Standard)



Profile Size	Order Number
HMR 08	56135FIL
HMR 11	56118FIL
HMR 15	56118FIL
HMR 18	56119FIL
HMR 24	56119FIL

** Each order number includes 4 bumpers and 4 standoffs per carriage.

13 Compliance Documentation**RoHS Compliance Statement**

We hereby certify that the following item(s) produced by Parker Hannifin Corporation complies with the requirements of the EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in the electrical and electronic equipment (RoHS) and other national and international legislation similarly restricting the use of materials.

Substance	RoHS Threshold
Cadmium (Cd)	0.01% or 100ppm
Lead (Pb)	0.1% or 1000ppm
Mercury (Hg)	0.1% or 1000ppm
Hexavalent Chromium (Cr(VI))	0.1% or 1000ppm
Polybrominated biphenyls (PBB)	0.1% or 1000ppm
Polybrominated diphenyl ethers (PBDE)	0.1% or 1000ppm

DECLARATION OF INCORPORATION

ACCORDING TO EC DIRECTIVE 2006/42/EC (ANNEX II, PART 1, SECTION B) FOR PARTLY COMPLETED MACHINERIES

EN ISO 12100	Safety of Applications Plant and Machinery
EN/IEC 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: general requirements

HMR Series Positioners

14 Configurable Order Number

14.1 HMRS

HMRS Order Code

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

HMR S 15 B 5 0 - 0250 - A L D 0 0 F1 AF

① HMR

② Type of Actuator

S Ball Screw Drive

③ Frame Size

8 Profile Width- 085mm 18 Profile Width- 180mm
11 Profile Width- 110mm 24 Profile Width- 240mm
15 Profile Width- 150mm

④ Actuator Design

B Basic Profile with Ball Bearing Guide- No Outer Cover
C Basic Profile with Ball Bearing Guide- IP54 with Outer Cover
R Reinforced Profile with Ball Bearing Guide- No Outer Cover
S Reinforced Profile with Ball Bearing Guide- IP54 with Outer Cover

⑤ Screw Lead -Profile Width

05 5mm Lead with Plain Drive Shaft 20 20mm Lead with Plain Drive Shaft
10 10mm Lead with Plain Drive Shaft 25 25mm Lead with Plain Drive Shaft
12 12mm Lead with Plain Drive Shaft 32 32mm Lead with Plain Drive Shaft
16 16mm Lead with Plain Drive Shaft

⑥ Carriage Design

0 Standard 1 Tandem

⑦ Order Stroke

0000 4 digits input in mm

*If travel is less than 75 mm, either home or limits may be chosen, but not both.

⑧ Home Sensor (one sensor) *

0 No home sensor
A PNP, 3 Wire, N.O., Internal Mounting
K NPN, 3 Wire, N.O., Internal Mounting
C PNP, 3 Wire, N.O., M8 Plug, 0.3m Cable, External Mounting
M NPN, 3 Wire, N.O., M8 Plug, 0.3m Cable, External Mounting

*If travel is less than 20 mm, only a home can be chosen.

⑨ Limit Sensor (one sensor each end) *

0 No limit sensor
B PNP, 3 Wire, N.C., Internal Mounting
L NPN, 3 Wire, N.C., Internal Mounting
D PNP, 3 Wire, N.C., M8 Plug, 0.3m Cable, External Mounting
N NPN, 3 Wire, N.C., M8 Plug, 0.3m Cable, External Mounting

⑩ Home Sensor Position

0 No Home Sensor 6 60mm B 110mm G 160mm
1 10mm 7 70mm C 120mm H 170mm
2 20mm 8 80mm D 130mm J 180mm
3 30mm 9 90mm E 140mm K 190mm
4 40mm A 100mm F 150mm L 200mm
5 50mm

⑪ Place Holder

⑫ Place Holder



⑬ Mounted Gearhead

Mounted Gearhead (with flange and coupling for motor as selected in position 14)

00	No Gearhead Mounted	H1	PS115-003-S2- 3:1	K3	PV60TA-010 10:1
F1	PS60-003-S2- 3:1	H2	PS115-005-S2- 5:1	L1	PV90TA-003 3:1
F2	PS60-005-S2- 5:1	H3	PS115-010-S2- 10:1	L2	PV90TA-005 5:1
F3	PS60-010-S2- 10:1	J2	PV40TA-005 5:1	L3	PV90TA-010 10:1
G1	PS90-003-S2- 3:1	J3	PV40TA-010 10:1	M1	PV115TA-003 3:1
G2	PS90-005-S2- 5:1	K1	PV60TA-003 3:1	M2	PV115TA-005 5:1
G3	PS90-010-S2- 10:1	K2	PV60TA-005 5:1	M3	PV115TA-010 10:1

⑭ Mounting Kits (Includes flange & coupling) & Mounted Motors

00 No Motor Mounting

Gearhead Mounting Kit

A7	PS60	C1	PV60-TA	BX	PX60/ PV60FB
A8	PS90	C2	PV90-TA	BY	PX90/ PV90FB
A9	PS115	C3	PV115-TA	BZ	PX115/ PV115FB
C0	PV40-TA				

Motor Mounting Kit (Flange and Coupling)For direct drive motor or flanges on mounted gearhead

A2	Motor Mounting Kit (75/M5/60/3/11/23)	AL	MPP092(100/M6/80/3/16/40)
A4	MPP100(115/M8/95/4/19/40)	AQ	MPP142(165/M10/130/4/28/60)
A5	SMx115 5/24, SMx142 5/24, MH125 5/24	AN	MPE060/PM-FBL(70/M5/50/3/14/30)
AB	LV/HV23(66A/M4/38A/3/06A/20A)	AP	MPE080/PM-FCL(90/M6/70/3/19/40)
AC	SM23X-N/PV23FE(66A/M5/38A/3/09A/20A)	B0	Motor Mounting Kit (75/M6/60/3/14/30)
AD	BE23X-N/SM23X-L(66A/M5/38A/3/09A/31A)	B1	Motor Mounting Kit (90/M5/60/3/11/23)
AE	LV/HV34X(98A/M6/73A/3/12A/37A)	B2	Motor Mounting Kit (90/M5/60/3/14/30)
AF	BE34X(98A/M5/73A/3/12A/31A)	B3	Motor Mounting Kit (95/M6/50/3/14/30)
AG	Motor Mounting Kit (75/M5/60/3/11/23)	B6	Motor Mounting Kit (63/M4/40/3/9/23)
AH	Motor Mounting Kit (63/M5/40/3/9/23)	B7	Motor Mounting Kit (70/M5/50/3/8/30)
AJ	SMx82 8/19, MH105 7/19, NX4	B8	Motor Mounting Kit (63/M4/40/3/9/20)
AK	MPP115(115/M8/95/4/19/40)		

Mounted Motor (Direct Driven Motor)

00	No Motor Mounted	M3	MPP1003D1E-KPSB	MB	MPP1424C1E-KPSB
K4	PM-FBL04AMK	M4	MPP1003R1E-KPSN	MC	MPP1424R1E-KPSN
K5	PM-FBL04AMK2 (w/ Brake)	M5	MPP1003R1E-KPSB	MD	MPP1424R1E-KPSB
K6	PM-FCL10AMK	M6	MPP1154B1E-KPSN	K0	BE233FJ-KPSN
K7	PM-FCL10AMK2 (w/ Brake)	M7	MPP1154B1E-KPSB	K1	BE233FJ-KPSN w/ Brake (CM233FJ-115027)
M0	MPP0923D1E-KPSN	M8	MPP1154P1E-KPSN	K2	BE344LJ-KPSN
M1	MPP0923D1E-KPSB	M9	MPP1154P1E-KPSB	K3	BE344LJ-KPSB
M2	MPP1003D1E-KPSN	MA	MPP1424C1E-KPSN		

Mounted Motor (Motor Mated to Mounted Gearhead)

00	No Gearhead and Motor Mounting	MA	MPP1424C1E-KPSN
K4	PM-FBL04AMK	MB	MPP1424C1E-KPSB
K5	PM-FBL04AMK2 (w/ Brake)	MC	MPP1424R1E-KPSN
K6	PM-FCL10AMK	MD	MPP1424R1E-KPSB
K7	PM-FCL10AMK2 (w/ Brake)	K0	BE233FJ-KPSN
M0	MPP0923D1E-KPSN	K1	BE233FJ-KPSN w/ Brake (CM233FJ-115027)
M1	MPP0923D1E-KPSB	K2	BE344LJ-KPSN
M2	MPP1003D1E-KPSN	K3	BE344LJ-KPSB

HMR Series Positioners

14.2 HMRB

HMRB Order Code:

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
HMR	B	18	C	DD	1	- 0250	- A	B	9	0	0	G3	B6

① HMR

② Type of Actuator

B Timing Belt Drive

③ Frame Size

8	Profile Width- 085mm	18	Profile Width- 180mm
11	Profile Width- 110mm	24	Profile Width- 240mm
15	Profile Width- 150mm		

④ Actuator Design

- B Basic Profile with Ball Bearing Guide- No Outer Cover
- C Basic Profile with Ball Bearing Guide- IP54 with Outer Cover
- R Reinforced Profile with Ball Bearing Guide- No Outer Cover
- S Reinforced Profile with Ball Bearing Guide- IP54 with Outer Cover

⑤ Motor Mounting Position and Drive Shaft Design (Belt Version)

BD	090° Front with Double Plain Shaft	CP	180° Down with Single Plain Shaft
DD	270° Back with Double Plain Shaft	AD	000° Up with Double Plain Shaft
AP	000° Up with Single Plain Shaft	CD	180° Down with Double Plain Shaft

⑥ Carriage Design

0	Standard	2	Bi-parting
1	Tandem		

⑦ Order Stroke

0000 4 digits input in mm

⑧ Home Sensor (one sensor)

- 0 No home sensor
- A PNP, 3 Wire, N.O., Internal Mounting
- K NPN, 3 Wire, N.O., Internal Mounting
- C PNP, 3 Wire, N.O., M8 Plug, 0.3m Cable, External Mounting
- M NPN, 3 Wire, N.O., M8 Plug, 0.3m Cable, External Mounting

⑨ Limit Sensor (one sensor each end)

- 0 No limit sensor
- B PNP, 3 Wire, N.C., Internal Mounting
- L NPN, 3 Wire, N.C., Internal Mounting
- D PNP, 3 Wire, N.C., M8 Plug, 0.3m Cable, External Mounting
- N NPN, 3 Wire, N.C., M8 Plug, 0.3m Cable, External Mounting

⑩ Home Sensor Position

0	No Home Sensor	6	60mm	B	110mm	G	160mm
1	10mm	7	70mm	C	120mm	H	170mm
2	20mm	8	80mm	D	130mm	J	180mm
3	30mm	9	90mm	E	140mm	K	190mm
4	40mm	A	100mm	F	150mm	L	200mm
5	50mm						

*If travel is less than 75 mm, either home or limits may be chosen, but not both.

*If travel is less than 20 mm, only a home can be chosen.



⑪ Place Holder

⑫ Place Holder

⑬ Mounted Gearhead

Mounted Gearhead (with flange and coupling for motor as selected in position 14)

00	No Gearhead Mounted	H1	PS115-003-S2- 3:1	K3	PV60TA-010 10:1
F1	PS60-003-S2- 3:1	H2	PS115-005-S2- 5:1	L1	PV90TA-003 3:1
F2	PS60-005-S2- 5:1	H3	PS115-010-S2- 10:1	L2	PV90TA-005 5:1
F3	PS60-010-S2- 10:1	J2	PV40TA-005 5:1	L3	PV90TA-010 10:1
G1	PS90-003-S2- 3:1	J3	PV40TA-010 10:1	M1	PV115TA-003 3:1
G2	PS90-005-S2- 5:1	K1	PV60TA-003 3:1	M2	PV115TA-005 5:1
G3	PS90-010-S2- 10:1	K2	PV60TA-005 5:1	M3	PV115TA-010 10:1

⑭ Mounting Kits (Includes flange & coupling) & Mounted Motors

00 No Motor Mounting

Gearhead Mounting Kit

A7	PS60	C1	PV60-TA	BX	PX60/ PV60FB
A8	PS90	C2	PV90-TA	BY	PX90/ PV90FB
A9	PS115	C3	PV115-TA	BZ	PX115/ PV115FB
C0	PV40-TA				

Motor Mounting Kit (Flange and Coupling)For direct drive motor or flanges on mounted gearhead

A2	Motor Mounting Kit (75/M5/60/3/11/23)	AL	MPP092(100/M6/80/3/16/40)
A4	MPP100(115/M8/95/4/19/40)	AQ	MPP142(165/M10/130/4/28/60)
A5	SMx115 5/24, SMx142 5/24, MH125 5/24	AN	MPE060/PM-FBL(70/M5/50/3/14/30)
AB	LV/HV23(66A/M4/38A/3/06A/20A)	AP	MPE080/PM-FCL(90/M6/70/3/19/40)
AC	SM23X-N/PV23FE(66A/M5/38A/3/09A/20A)	B0	Motor Mounting Kit (75/M6/60/3/14/30)
AD	BE23X-N/SM23X-L(66A/M5/38A/3/09A/31A)	B1	Motor Mounting Kit (90/M5/60/3/11/23)
AE	LV/HV34X(98A/M6/73A/3/12A/37A)	B2	Motor Mounting Kit (90/M5/60/3/14/30)
AF	BE34X(98A/M5/73A/3/12A/31A)	B3	Motor Mounting Kit (95/M6/50/3/14/30)
AG	Motor Mounting Kit (75/M5/60/3/11/23)	B6	Motor Mounting Kit (63/M4/40/3/9/23)
AH	Motor Mounting Kit (63/M5/40/3/9/23)	B7	Motor Mounting Kit (70/M5/50/3/8/30)
AJ	SMx82 8/19, MH105 7/19, NX4	B8	Motor Mounting Kit (63/M4/40/3/9/20)
AK	MPP115(115/M8/95/4/19/40)		

Mounted Motor (Motor Mated to Mounted Gearhead)

00	No Gearhead and Motor Mounting	MA	MPP1424C1E-KPSN
K4	PM-FBL04AMK	M3	MPP1003D1E-KPSB
K5	PM-FBL04AMK2 (w/ Brake)	M4	MPP1003R1E-KPSN
K6	PM-FCL10AMK	M5	MPP1003R1E-KPSB
K7	PM-FCL10AMK2 (w/ Brake)	M6	MPP1154B1E-KPSN
M0	MPP0923D1E-KPSN	M7	MPP1154B1E-KPSB
M1	MPP0923D1E-KPSB	M8	MPP1154P1E-KPSN
M2	MPP1003D1E-KPSN	M9	MPP1154P1E-KPSB
		K0	BE233FJ-KPSN
		K1	BE233FJ-KPSN w/ Brake (CM233FJ-115027)
		K2	BE344LJ-KPSN
		K3	BE344LJ-KPSB

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