

HLE-SR Series

Features

- ❑ Heavy duty steel square rail bearing system for greater load capacity
- ❑ Standard travel to 6 meters*
- ❑ Load capacities up to 600 kg
- ❑ Velocity up to 3 meters/sec.
- ❑ ± 0.2 mm positional repeatability
- ❑ Timing belt and pulley drive mechanism
- ❑ IP30 strip seal

*Longer travels available with splice kits.



Housing

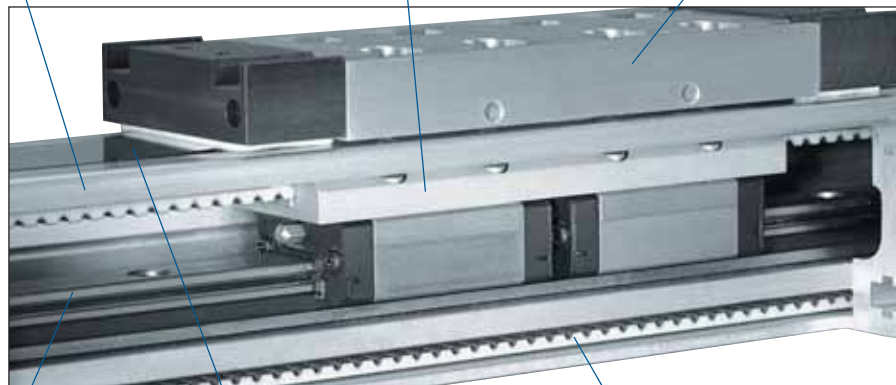
The HLE-SR housing, like the RB, is a light-weight, compact and self-supporting extruded aluminum section. It is available in two cross-sections: 60 x 60 mm (HLE60) and 100 x 100 mm (HLE100). T-slots along the length are utilized for clamping mechanical components, joining units, and attaching sensors or mechanical switches.

Carriage

A rigid carriage assembly is built upon two bearing housings which contain several rows of recirculating ball bearings designed to ride in grooves ground into a steel square rail linear raceway. Longer or custom carriages are also available.

Load Attachment Plate

Longitudinal grooves integrated on the top of this plate facilitate the assembly of attachments to the HLE-SR. Utilization of these grooves together with standard clamping profiles enables easy straight-forward construction of multi-axis systems.



Bearing Raceway

A high strength steel alloy bearing rail features precision ground "gothic arch" raceways to provide precise translation and high strength support of the recirculating ball bearings.

Optional IP30 Strip Seal

Magnetically attached stainless steel seal strip (not shown in this illustration) provides environmental protection to interior components.

Drive Belt

A zero backlash, steel reinforced timing belt provides high speed, high acceleration and high bidirectional repeatability. A serrated clamp mechanism between belt and carriage guarantees a safe and strong connection.

HLE60-SR and HLE100-SR Series

HLE-SR Bearing System

The bearing system is the principal distinction between the RB type modules and the "SR" (Square Rail) type. The SR employs a square rail bearing system, which permits greater load carrying capability without increasing overall size. Square rail bearings are recirculating ball bearings designed to move heavy loads on a precise linear path. Linear guides, which house several rows of re-circulating ball bearings, ride on a high strength, steel square rail. The steel square rail cross section enables bearing ways to be

ground into the sides of the rail. These bearing ways are shaped in an arch which approximates the same radius as the ball bearing. This increases the contact surface between the ball and the rail, thereby increasing the load capacity of the linear bearing.

HLE-SR Drive Principle

The HLE-SR employs the same high performance belt and pulley drive mechanism as the HLE-RB. It features a zero backlash steel reinforced timing belt drive, which provides high speeds, high acceleration, and

good bidirectional repeatability. A belt tension station, conveniently located at the end of the unit provides for quick and easy belt adjustment. The drive station is designed to accept planetary gear reducers as well as a wide variety of servo and stepper motors.

Proven Technology

Proven in numerous applications, the HLE-SR series offers the following advantages:

- Low running friction
- Low wear
- Low maintenance
- Quiet operation
- High efficiency
- Long service life
- High dynamic performance due to high load capacity square rail systems
- Easily accessible lubrication points
- Minimal preventive maintenance required
- T-slots integrated on sides of the profile for mounting attachments or for use as a cable duct
- Timing belts can be replaced without removing load attachment plate
- Multiple configuration options due to T-slots available on both the profile and load plate

Typical Fields of Application

As part of advanced, cost-effective construction of machines and handling systems:

- **Materials handling:** palletizing, depalletizing, feeding, part removal
- **Clean room technology:** water transport, water coating
- **Warehouse technology:** parts picking, storage and retrieval
- **Machine tool automation:** workpiece loading and unloading, tool changing
- **Construction:** formwork, placing reinforcing steel bars in concrete
- **Process engineering:** painting, coating, bonding
- **Testing technology:** guiding ultrasonic sensors, laboratory equipment
- **Textile machinery building:** cross-cutting, slitting and stacking, quilting, seam stitching

Optional Features

- Direct mounting for planetary gear reducers
- Adjustable "end of travel" limit switches and "Home" position sensor
- Cable carrier systems
- Performance matched Parker servo systems
- Structural components for vertical and multi-axis mounting
- Toe clamps and hardware for fast/easy mounting
- External bumpers
- Link shafts and support bearing for dual unit axes
- Splice plates for extending travels beyond length available in a single profile



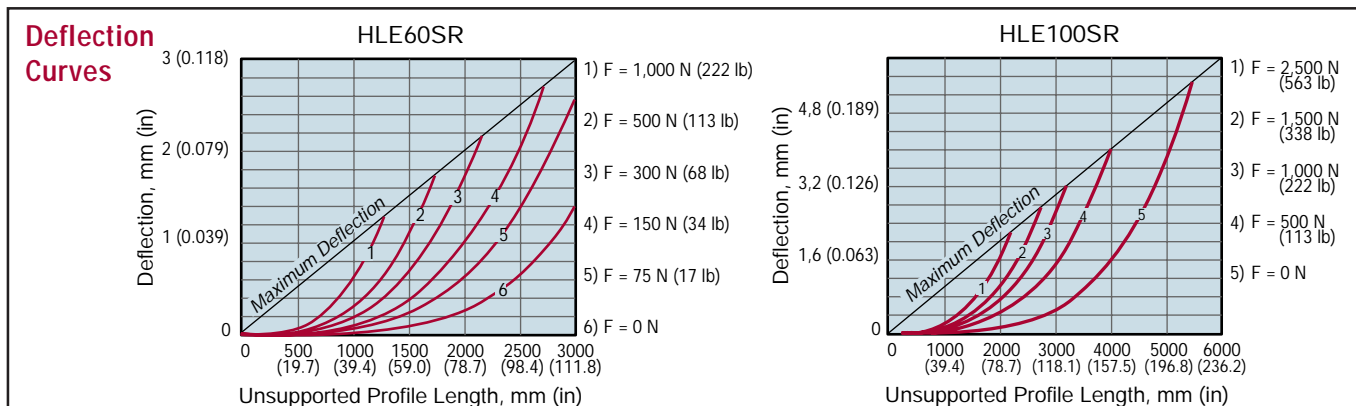
Belt Driven Modules

HLE-SR Series Specifications

Characteristic	Units	HLE60-SR	HLE100-SR
Unit Weight (basic unit without stroke)			
Standard Carriage, NL	kg (lb)	3.5 (7.7)	16.2 (35.7)
Extended Carriage, VL	kg (lb)	5.91 (13)	20.0 (44.1)
Carriage Weight			
Standard Carriage, NL	kg (lb)	0.82 (4.0)	2.2 (4.9)
Extended Carriage, VL	kg (lb)	1.12 (2.47)	3.8 (8.4)
Weight per meter of additional length	kg/m (lb/ft)	5.5 (3.7)	13.3 (8.9)
Moment of Inertia (related to the drive shaft)			
Standard Carriage, NL	kg-cm ² (lb-in ²)	3.52 (1.20)	34.8 (11.9)
Extended Carriage, VL	kg-cm ² (lb-in ²)	5.36 (1.83)	52.2 (17.9)
Travel and Speed			
Maximum Speed ⁽¹⁾	m/s (in/s)	3 (120)	3 (120)
Maximum Acceleration ⁽¹⁾	m/s ² (in/s ²)	10 (393)	10 (393)
Maximum Travel ⁽²⁾ , NL	m (in)	3.05 (120)	6.15 (242)
Maximum Travel ⁽²⁾ , VL	m (in)	2.8 (114)	6.0 (236)
Geometric Data			
Cross Section, Square	mm (in)	57.2 (2.25)	100 (3.94)
Moment of Inertia I _x	cm ⁴ (in ⁴)	48.3 (1.16)	377 (9.06)
Moment of Inertia I _y	cm ⁴ (in ⁴)	59.5 (1.43)	432 (10.38)
Moment of Elasticity	N/mm ² (lb/in ²)	0.72 x 10 ⁵ (0.1044 x 10 ⁹)	0.72 x 10 ⁵ (0.1044 x 10 ⁹)
Pulley Data, Torques, Forces			
Travel Distance per Revolution	mm/rev (in/rev)	125 (4.92)	234.2 (9.22)
Pulley Diameter	mm (in)	39.8 (1.57)	74.5 (2.93)
Maximum Drive Torque ⁽³⁾	Nm (lb-in)	8.87 (79)	61.5 (544)
Maximum Belt Traction ⁽³⁾ (effective load)	N (lb)	668 (150)	1650 (371)
Repeatability ⁽⁴⁾	mm (in)	±0.02 (±0.008)	±0.02 (±0.008)

For the following deviations from the above standards, please contact Parker engineering:

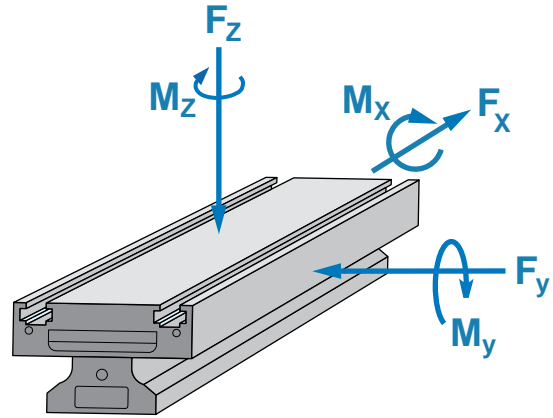
- (1) Greater speeds and accelerations may be achieved.
- (2) Splicing possible for longer travel distances. This may cause reductions in effective load, drive torque, speed, acceleration, and repeatability.
- (3) Increased timing belt tension required.
- (4) Nominal value - component dependant. For improved repeatability consult factory.



HLE-SR Performance Curves

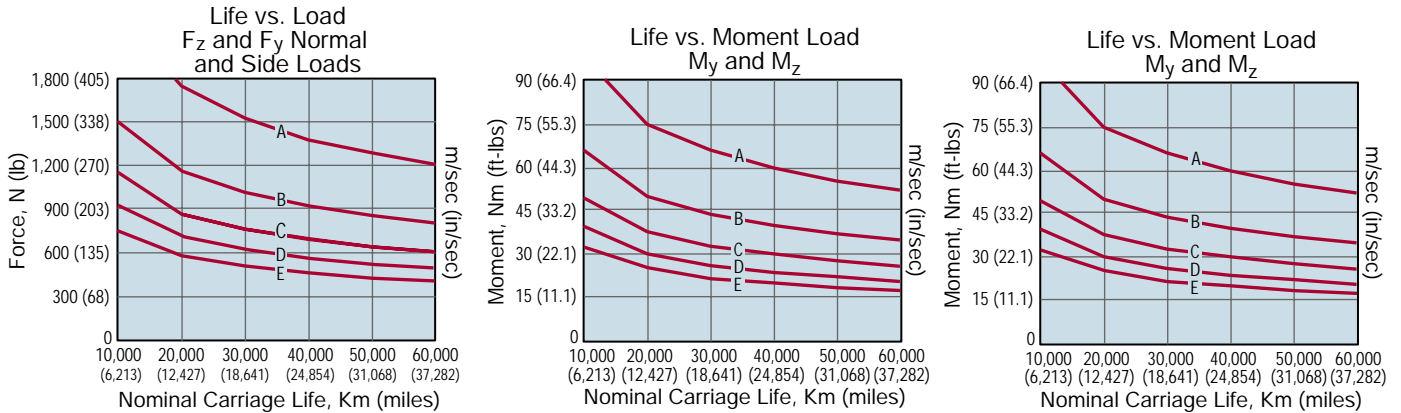
The force and moment capabilities of the carriage and the timing belt are speed dependent. The load curves shown in the graphs are valid for a standard (NL order code) carriage. These curves show the allowable force or moment versus the nominal carriage life.

Refer to HLE-RB section for timing belt loading diagrams.

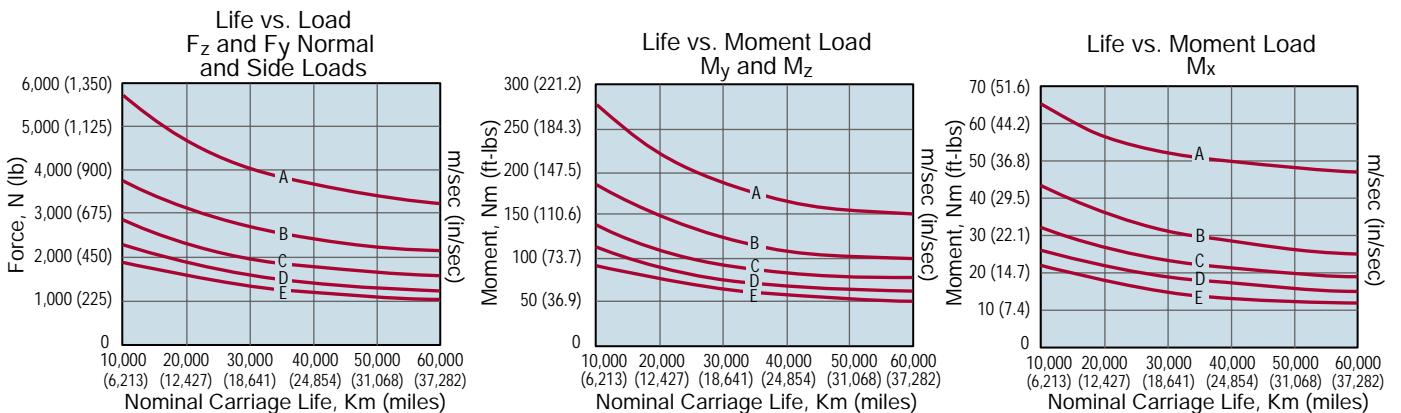


LEGEND	
Curve	Velocity
	m/sec. (in/sec.)
A	0.25 (10)
B	0.50 (20)
C	1.00 (40)
D	2.00 (80)
E	3.00 (120)

HLE-60SR



HLE-100SR

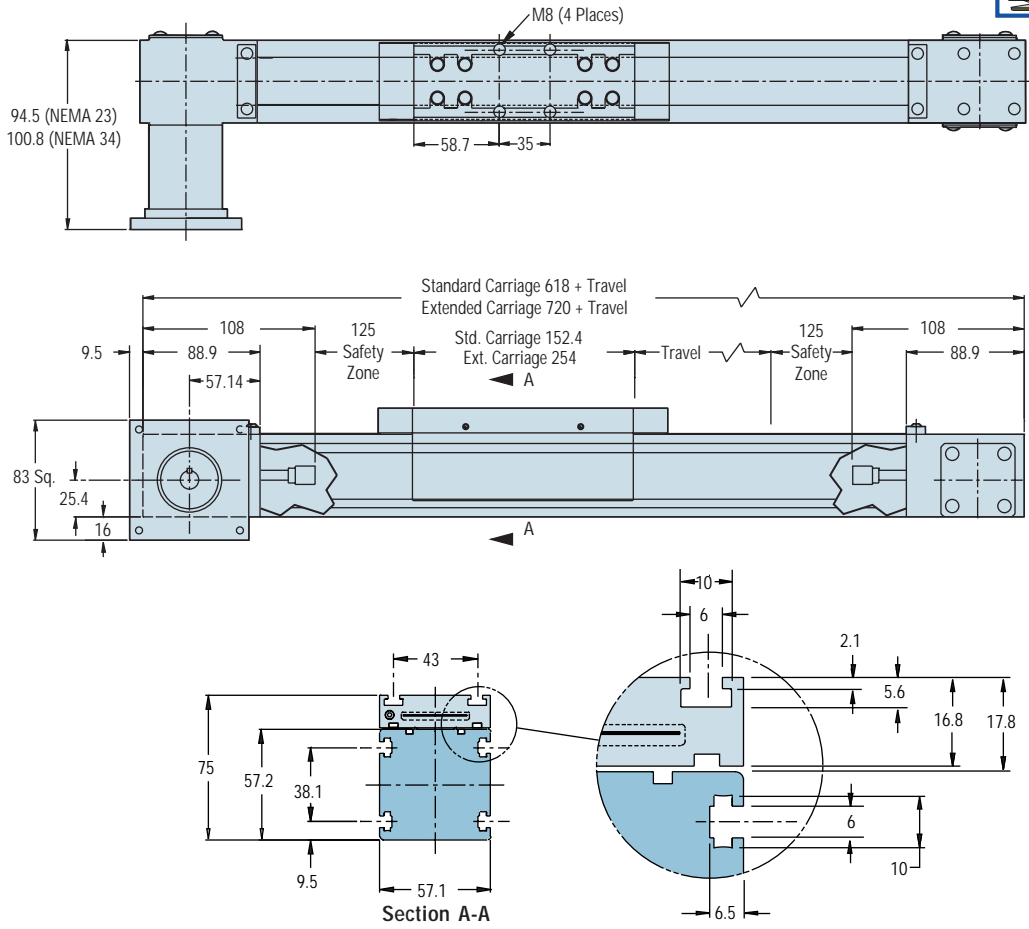


Belt Driven Modules

HLE60-SR Dimensions (mm)

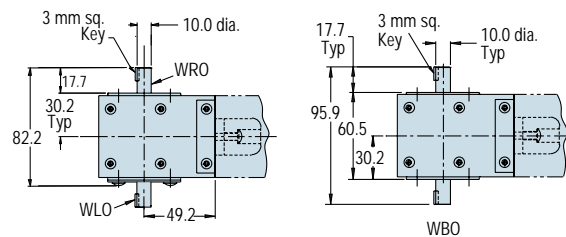


Drive Unit

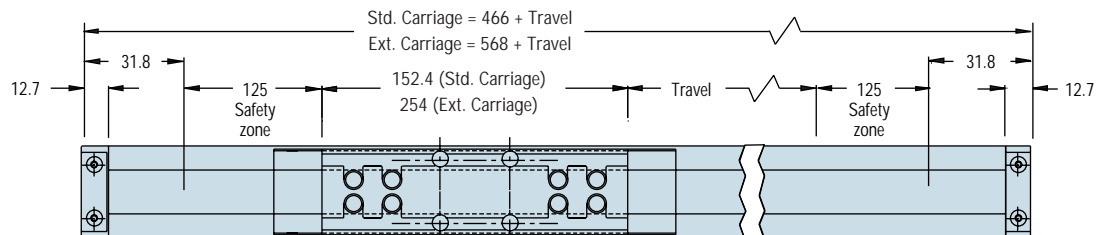


Drive Shaft Option

- WRO Shaft on Right
- WLO Shaft on Left
- WBO Shaft on Both Sides

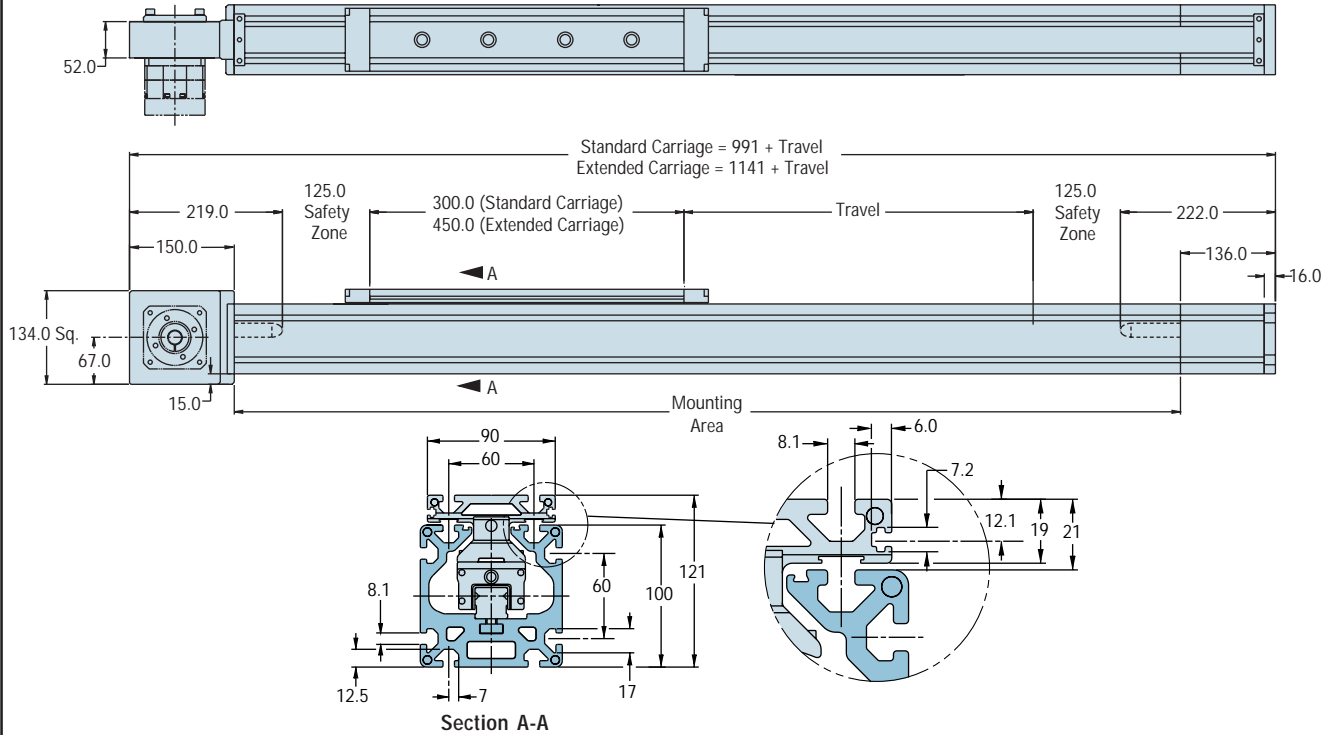


Idler Unit (top view)



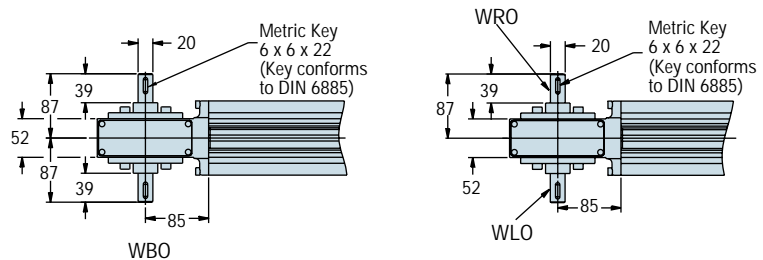
HLE100-SR Dimensions (mm)

Drive Unit

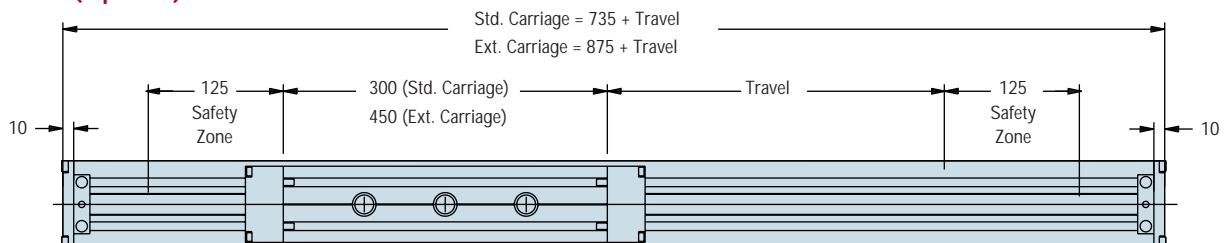


Drive Shaft Option

- WRO Shaft on Right
- WLO Shaft on Left
- WBO Shaft on Both Sides



Idler Unit (top view)



Belt Driven Modules



HLE60-SR How to Order

Order Example: HLE060 SR NL E 2000 DA0000 MBR SP5

Model Series HLE060

Bearing Type
SR SR

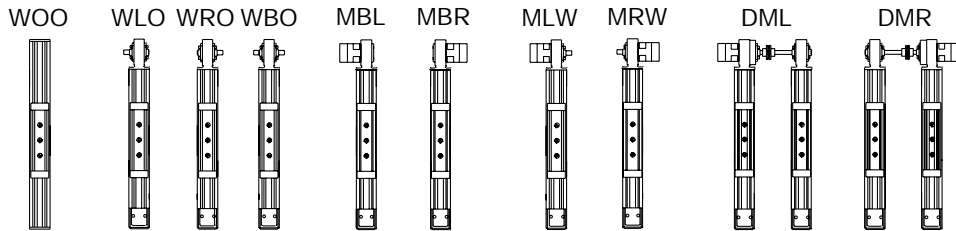
Carriage Type
Standard Carriage NL
Extended Carriage VL

Unit Type
Idler M
Timing Belt Drive, Nominal Thrust, Maximum Life E
Timing Belt Drive, Nominal Life, Maximum Thrust F

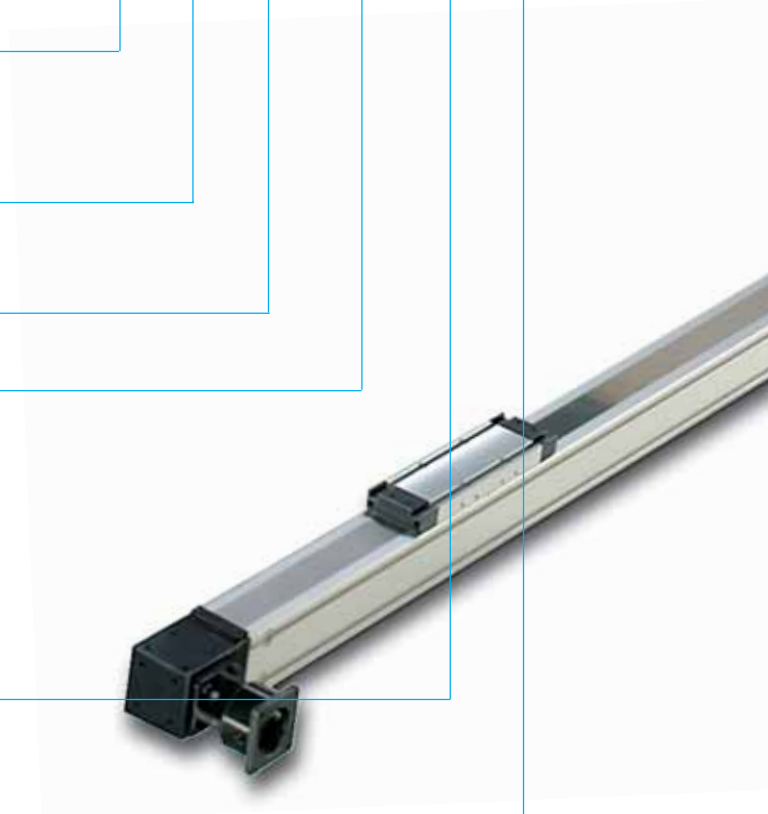
Travel Length
nnnn (nnnn=mm) nnnn

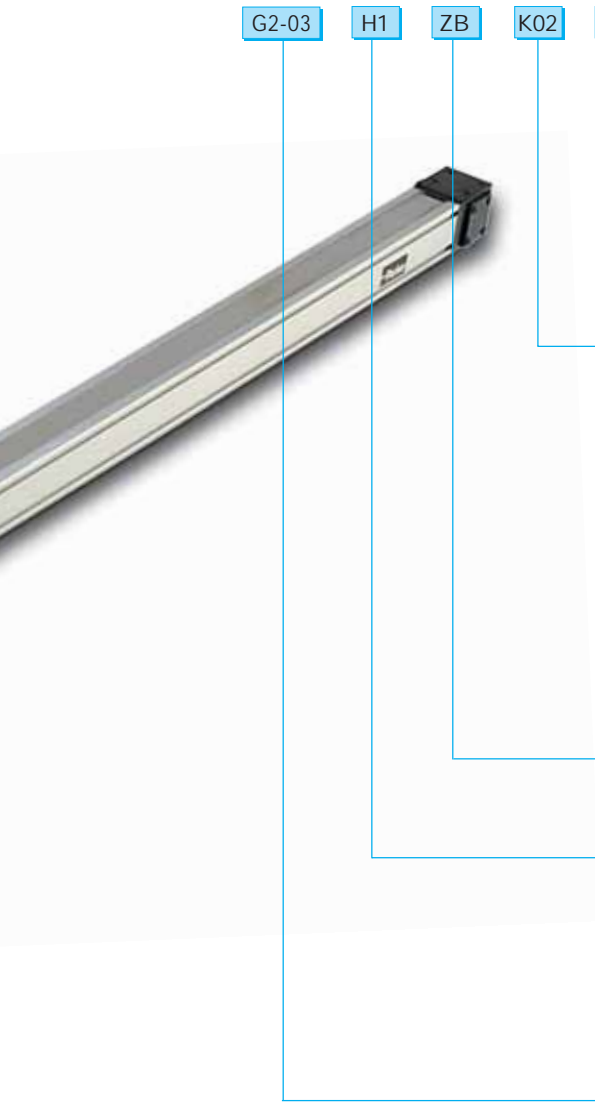
Drive Shaft Option - Center to Center
DA0000: No Drive Shaft - Single Axis or Idler Unit DA0000
DAnnnn (nnnn=mm) DAnnnn

Shaft Configuration Options
No Shaft, Idler Unit WOO
Shaft Left WLO
Shaft Right WRO
Double Shaft WBO
Motor Block Left MBL
Motor Block Right MBR
Motor Block Left, Shaft Right MLW
Motor Block Right, Shaft Left MRW
Double Axis, Motor Block Left DML
Double Axis, Motor Block Right DMR



Drive Station Interface
Idler, Requires WOO Option SP0
No Motor Block, Requires WRO, WLO, or WBO SP1
Motor Block - NEMA 23 with .375 in. coupling SP2
Motor Block - NEMA 23 with .250 in. coupling SP3
Motor Block - NEMA 34 with .375 in. coupling SP4
Motor Block - NEMA 34 with .500 in. coupling SP5
Motor Block - NEMA 23 without coupling SP8
Motor Block - NEMA 34 without coupling SP9
Motor Block - PTN / PTR-060 with 14 mm coupling SP10
Motor Block - GTN / GTR with 16 mm coupling SP11





Limit/Home Switch Option

- LH0 No Limit Switch Assembly
- LH3 Three NPN Prox Switches, 10-30 VDC
- LH4 Three PNP Prox Switches, 10-30 VDC

Motor Kit Option

- K00 No Motor Kit
- K01 ES2*, OS2, S57*, SM23*, SE23* to PT-060
- K02 BE23* to PT-060
- K03 J034*, N034*, BE34*, TS3* to PT-060
- K04 RS3*, OEM83*, ES3*, ZETA83* to PT-060
- K05 J070*, N070* to PT-060
- K06 J070*, N070* to GT-070
- K07 SM230, SE230, ES2*, OS2, S57* to GT-070
- K08 SM, SE 231, 232, 233 to GT-070
- K09 J09*, N09* to GT-070

Strip Seal Option

- ZA Unit with Strip Seal (IP30)
- ZB Unit without Strip Seal

Mounting Orientation

- H1 Carriage Up
- H2 Carriage Down
- H3 Carriage on Side, Drive Station Up
- H4 Carriage on Side, Drive Station Down

Gearbox Option

- G0-00 No Gearbox
- G2-nn PTN-060**
- G3-nn PTR-060**
- G4-nn GTN-070*
- G5-nn GTR-070*

* Single stage ratios: 3, 4, 5, 8, 10 Dual stage ratios: 12, 15, 16, 20, 25
 **Single stage ratios: 3, 4, 5, 8 Dual stage ratios: 9, 12, 15, 16, 20, 25

Belt Driven Modules

HLE100SR How to Order

Order Example: HLE100 SR NL E 2000 DA0000 ARO SP2

Model Series HLE100

Bearing Type
SR SR

Carriage Type
Standard Carriage NL

Extended Carriage VL

Unit Type
Idler M

Timing Belt Drive, Nominal Thrust, Maximum Life E

Timing Belt Drive, Nominal Life, Maximum Thrust F

Travel Length
nnnn (nnnn=mm) nnnn

Drive Shaft Option - Center to Center
DA0000: No Drive Shaft - Single Axis or Idler Unit DA0000

DAAnnn (nnnn=mm) DAAnnn

Shaft Configuration Options
No Shaft, Idler Unit WOO

Shaft Left WLO

Shaft Right WRO

Double Shaft WBO

Reducer Left ALO

Reducer Right ARO

Reducer Left, Shaft Right ALW

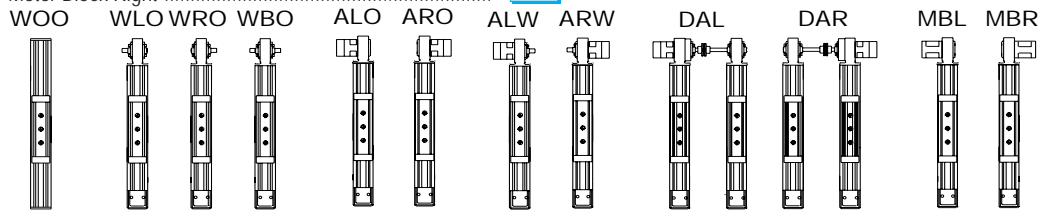
Reducer Right, Shaft Left ARW

Double Axis, Drive Left DAL

Double Axis, Drive Right DAR

Motor Block Left MBL

Motor Block Right MBR



Drive Station Interface
Idler or Shaft Option SP0

Drive Housing for GTN /GTR-090 SP1

Drive Housing for GTN / GTR / PEN / PER-115 SP2

Motor Block - NEMA 34 with .500 in. coupling SP3

Motor Block - NEMA 34 with .375 in. coupling SP4

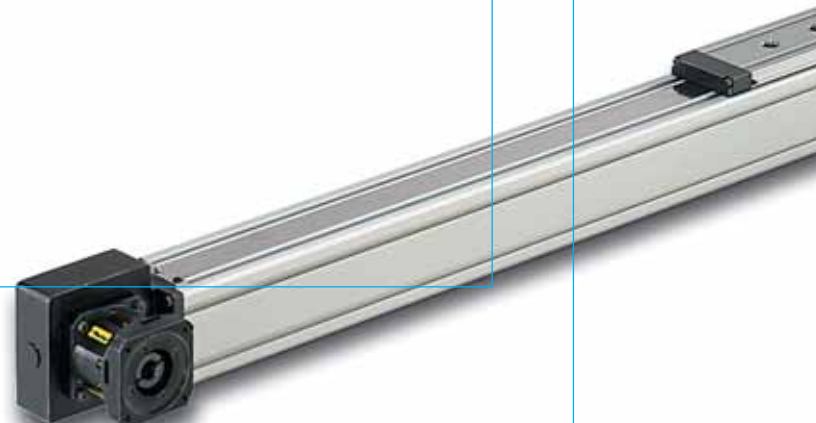
Motor Block - NEMA 34 without coupling SP5

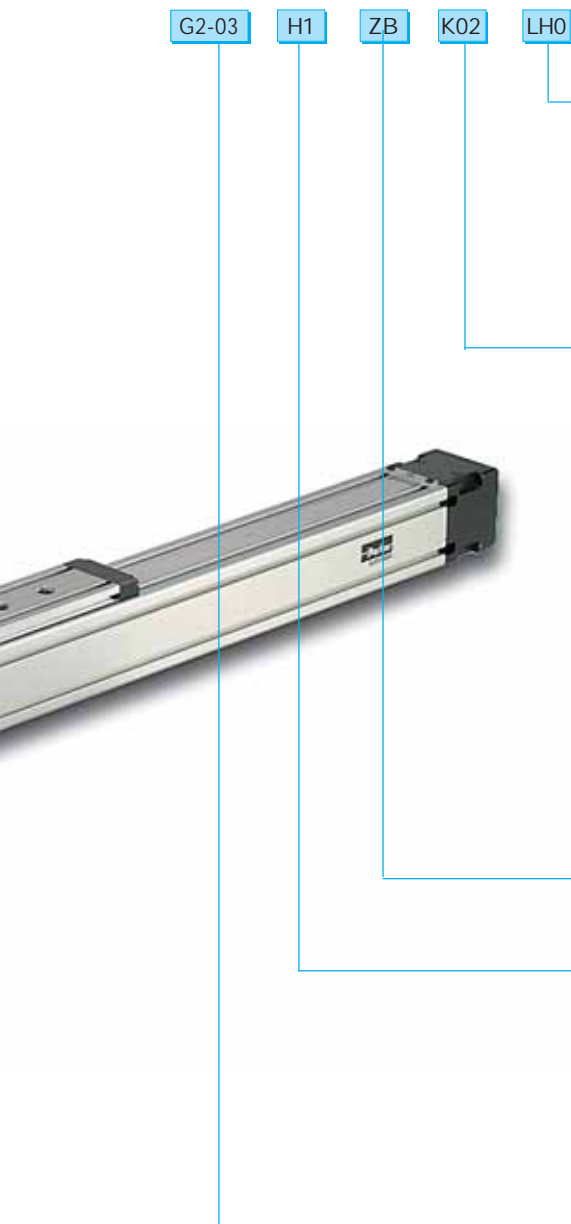
Motor Block - with coupling for JO923 direct drive SP6

Motor Block - NEMA 42 with .625 in. coupling SP7

Motor Block - NEMA 42 without coupling SP8

Drive Housing for PEN / PER-090 SP9





Limit/Home Switch Option

- LH0** No Limit Switch Assembly
- LH3** Three NPN Prox Switches, 10-30 VDC
- LH4** Three PNP Prox Switches, 10-30 VDC

Motor Kit Option

- K00** No Motor Kit
- K01** J034* , N034* , BE34* , TS3* to GTN , PEN-090
- K02** J070* , N070* to GTN , PEN-090
- K03** J090* , N090* to GTN , PEN-090
- K04** M105* to GTN , PEN-090
- K05** ES3* , OEM83-* , ZETA83-* , S83-* , RS3* to GTN,PEN-0-90
- K06** J034* , N034* , BE34* , TS3* to GTN,PEN-115
- K07** J090* , N090* to PE-115 or GTN,PEN-115
- K08** M105* to PE-115 or GTN,PEN-115
- K09** ES3* , OEM83-* , ZETA83-* , S83-* , RS3* to GTN,PEN-115
- K10** RS42, RE42, S106-205 to GTN,PEN-115
- K11** S106-178, S106-250 to GTN,PEN-115
- K12** M145 to GTN,PEN-115ZETA57-83-MO-S

Strip Seal Option

- ZA** Unit with Strip Seal (IP30)
- ZB** Unit without Strip Seal

Mounting Orientation

- H1** Carriage Up
- H2** Carriage Down
- H3** Carriage on Side, Drive Station Up
- H4** Carriage on Side, Drive Station Down

Gearbox Option

- G0-00** No Gearbox
- G2-nn** PEN-090**
- G3-nn** PER-090**
- G4-nn** PEN-115**
- G5-nn** PER-115**
- G6-nn** GTN-090*
- G7-nn** GTR-090*
- G8-nn** GTN-115*
- G9-nn** GTR-115*

* Single stage ratios: 3, 4, 5, 8, 10 Dual stage ratios: 12, 15, 16, 20, 25
 **Single stage ratios: 3, 4, 5, 8 Dual stage ratios: 9, 12, 15, 16, 20, 25

Belt Driven Modules