

## HZR Series

### Features

- Designed as a vertical axis unit
- Load lifting capacities up to 150 kg
- Velocity up to 5 meters/sec.
- Positional repeatability of  $\pm 0.2$  mm
- Torsion-resistant housing
- Roller wheel bearings for smooth vertical motion
- High vertical acceleration

The HZR is a rugged vertical axis unit unique to the high speed automation industry. It is specifically designed to satisfy the mechanical demands placed on the vertical axis of a multi-axis gantry robot – utilized for high throughput lifting and transporting of heavy or bulky loads.

The payload is supported by a high strength extruded aluminum profile which is lifted and guided through a torsion-resistant cast aluminum housing. Maintenance-free, heavy duty polyamide bearing wheels evenly distribute and support the high forces induced by rapid horizontal acceleration of the load. A wear-free, steel cord reinforced timing belt transmits large traction forces to provide high accelerations and lifting capability in the vertical direction.

### Typical Fields of Application

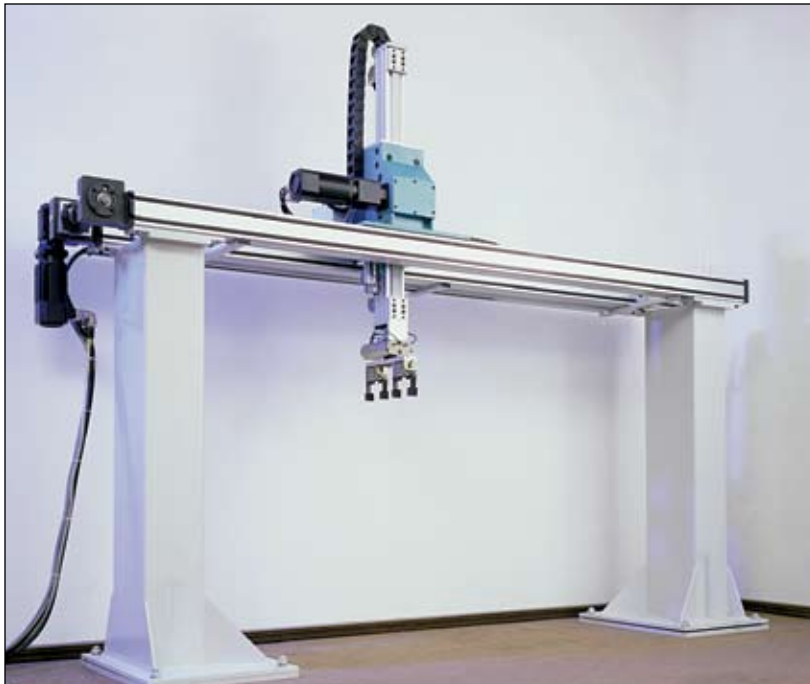
- Materials handling: palletization, feeding, removal
- Textile machinery building: crosscutting, slitting and stacking, quilting, seam stitching
- Process engineering: painting, coating, bonding
- Storage technology: commissioning, inventory
- Machine tool building: workpiece loading, tool changing
- Testing technology: guiding ultrasonic sensors



## HZR Series Specifications

Characteristics	Units	HZR50P (Standard)		HZR50E (Extended)		HZR80		HZR100	
<b>Unit Weight</b>									
Basic Unit (based on 1 meter travel)	kg (lb)	15.3	(33.73)	17.2	(37.92)	37	(81.8)	60	(132.3)
Weight of additional length	kg/m (lb/ft)	2.9	(1.95)	2.9	(1.95)	7.4	(4.9)	10.2	(6.85)
<b>Moment of Inertia (based on 1 meter travel)</b>									
Inertia reflected to drive pulley	kg-cm <sup>2</sup> (lb-in <sup>2</sup> )	66.11	(22.58)	66.51	(22.72)	250	(85.4)	357	(122.0)
<b>Travel and Speed<sup>1</sup></b>									
Maximum Speed	m/s (in/s)	5	(200)	5	(200)	5	(200)	5	(200)
Maximum Acceleration	m/s <sup>2</sup> (in/s <sup>2</sup> )	5	(197)	5	(197)	10	(393)	10	(393)
Maximum Travel	m (in)	1.5	(59.1)	1.5	(59.1)	1.5	(59.1)	2.0	(78.7)
<b>Geometric Data</b>									
Cross Section (square profile)	mm (in)	50	(1.97)	50	(1.97)	80	(3.2)	100	(3.9)
Moment of Inertia I <sub>x</sub>	cm <sup>4</sup> (in <sup>4</sup> )	29.9	(0.72)	29.9	(0.72)	187.1	(4.5)	383.3	(9.2)
Section Modulus, W	cm <sup>3</sup> (in <sup>3</sup> )	29.9	(1.82)	29.9	(1.82)	46.7	(2.85)	76.6	(4.67)
<b>Pulley Data, Torques, Forces</b>									
Travel Distance per Revolution	mm/rev (in/rev)	180	(7.09)	180	(7.09)	240	(9.45)	240	(9.45)
Pulley Diameter	mm (in)	57.3	(2.26)	57.3	(2.26)	76.4	(3.01)	76.4	(3.01)
Maximum Drive Torque	Nm (lb-in)	47	(416.3)	47	(416.3)	108	(956.7)	168	(1488.1)
Static Load	kg (lb)	45	(99.2)	45	(99.2)	75	(165)	150	(331)
Maximum Belt Traction (effective load)	N (lb)	1654	(371.8)	1654	(371.8)	2822	(635)	4410	(992)
Repeatability	mm (in)	±0.2	(±0.008)	±0.2	(±0.008)	±0.2	(±0.008)	±0.2	(±0.008)

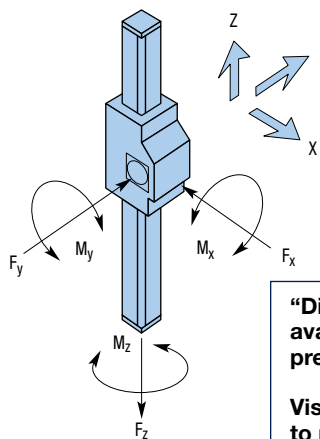
1 For higher speeds, accelerations or longer travel consult Parker Application Engineering for assistance.



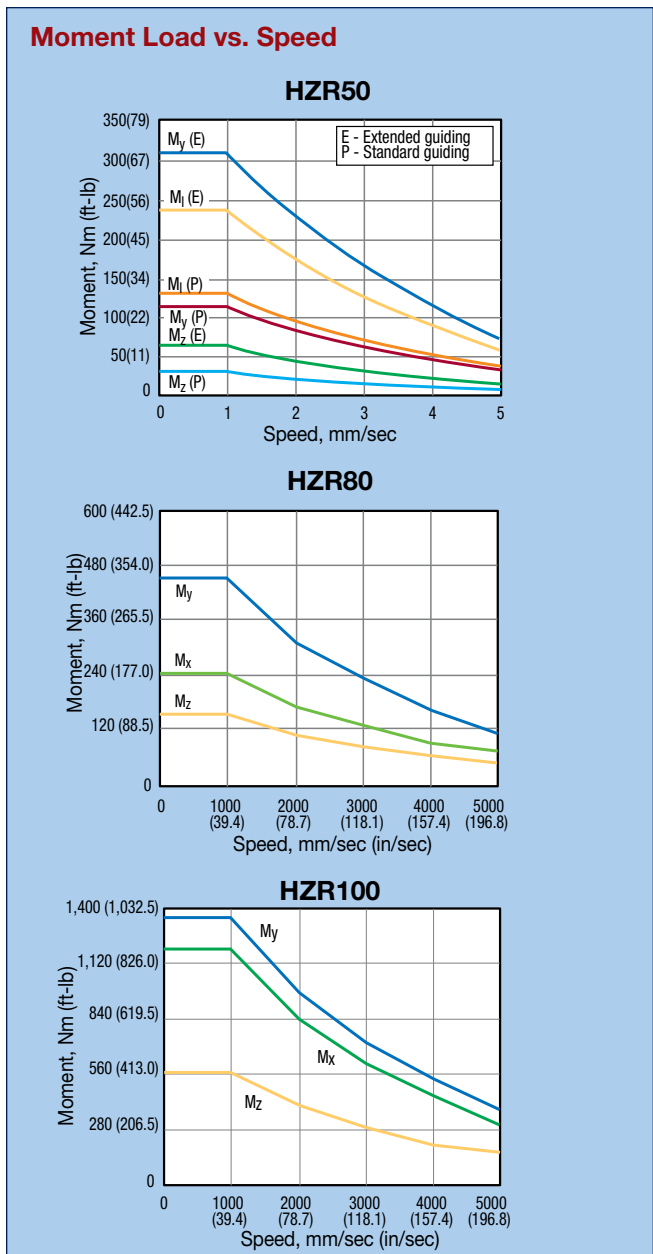
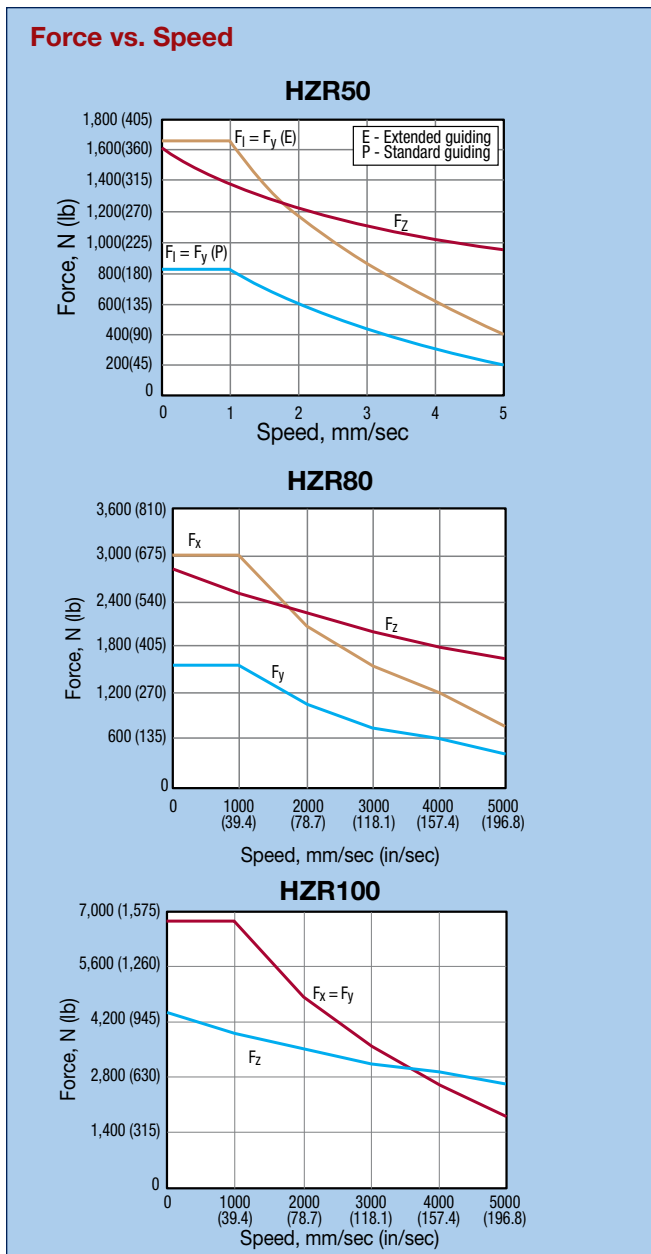
**Force and Moment Loads**

The forces and moments that the carriage is capable of transferring are speed-dependent. The curves shown in the graphs apply to a standard guiding (P). With the extended guiding (E), all the values apart from  $F_x$  (load-bearing capacity of timing belt) can be doubled if the load is applied equally to both halves of the carriage or distributed uniformly along its entire length.

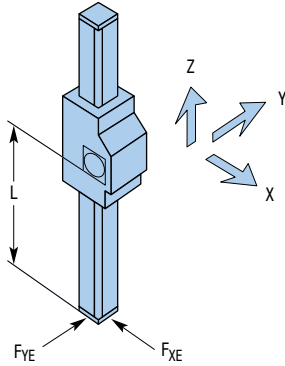
The curves show the maximum load-bearing capacity of a carriage in one direction of force or torque. If several loads are applied in different directions, the values given by the curves must be derated, i.e. the load or speed should be reduced if necessary.



**“DimAxes” software is available for determination of precise carriage loading.**  
Visit [www.parkermotion.com](http://www.parkermotion.com) to request a Gantry Robot CD.



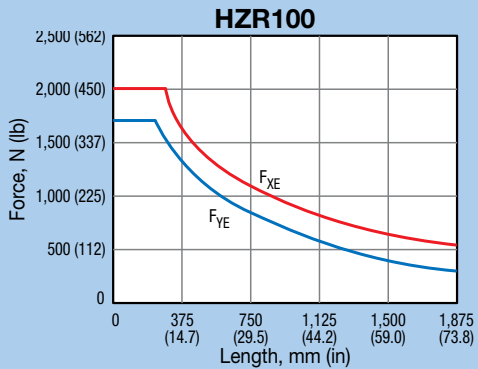
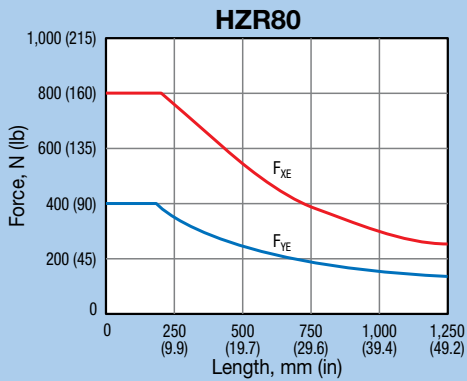
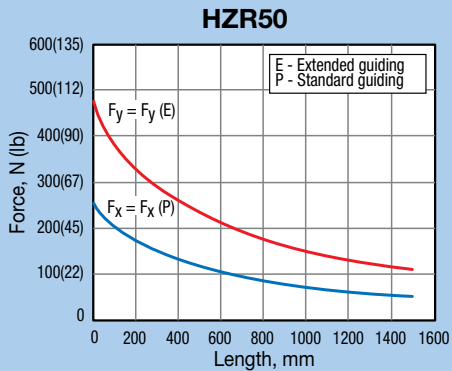
## Extension Loads



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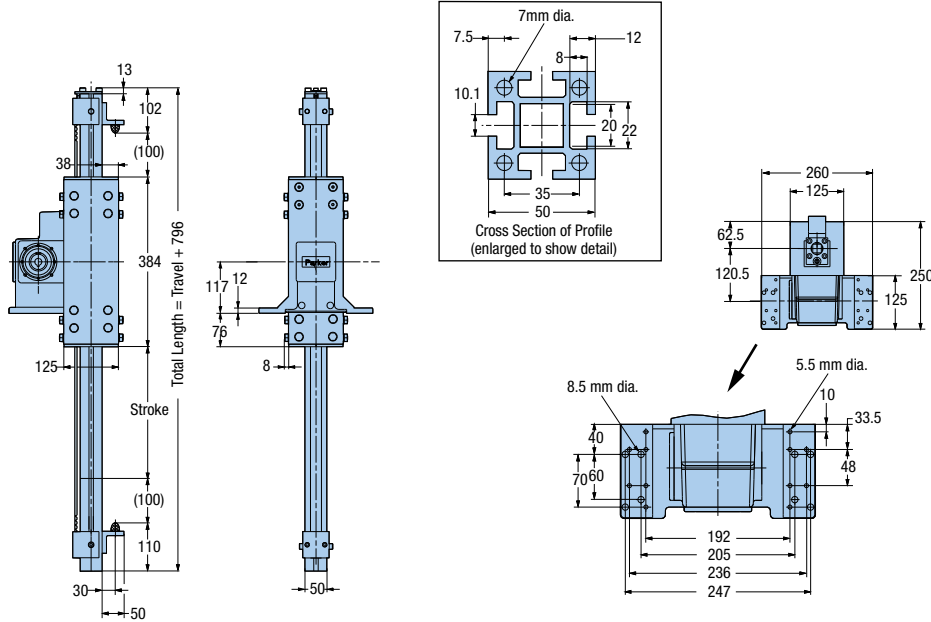
### Force vs. Extended Length



Belt Driven Tables

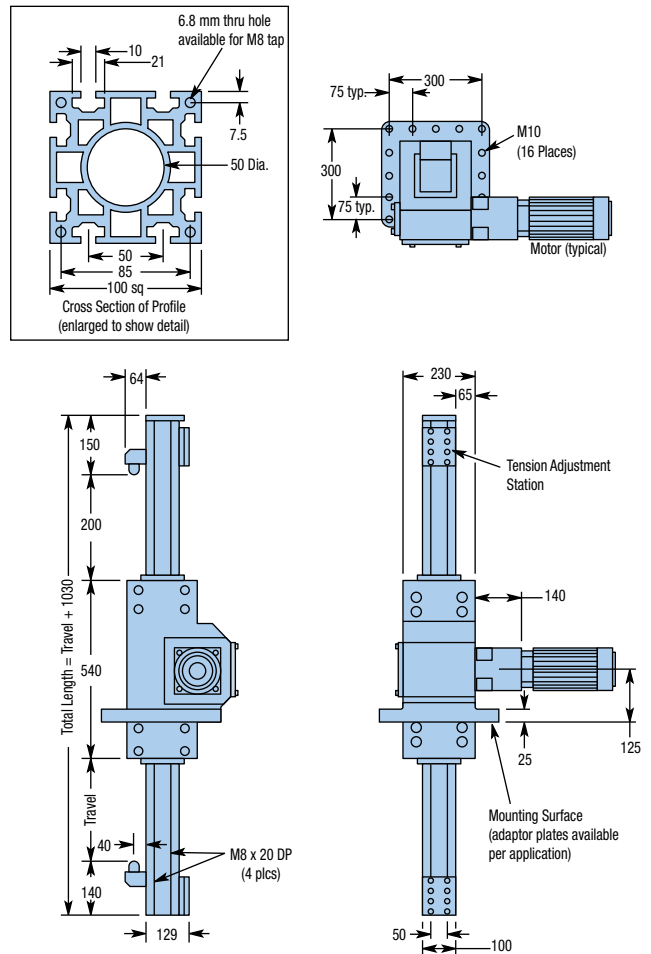
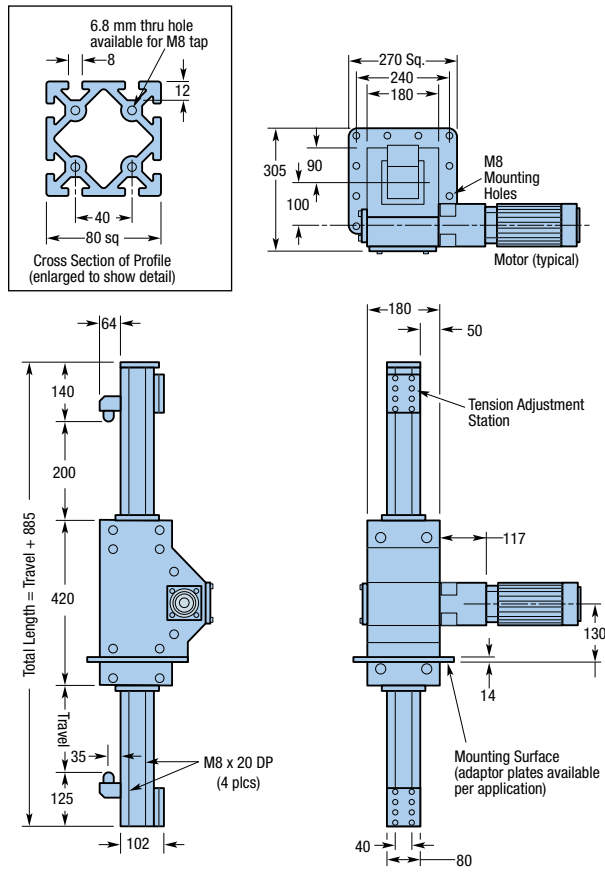
**HZR50**

Dimensions (mm)



**HZR80**

**HZR100**



Fill in an order code from each of the numbered fields to create a complete model order code.

	①	②	③	④	⑤	⑥	⑦	⑧	⑨
<b>Order Example:</b>	HZR80	1000	A	SP2	ARO	G2-03	K02	LH1	E

**① Series**

HZR50  
HZR80  
HZR100

**② Table Travel**

nnnn Specified travel in mm (nnnn = mm)

**③ Mounting Flange Options**

A No Mounting Flange  
B HZR Mounting to HPLA80  
C HZR Mounting to HLE100  
D HZR Mounting to HPLA120  
E HZR Mounting to HLE150

**④ Drive Station Interface**

SP0 Drive Housing Set-Up for GTN090 (HZR50 & HZR80)  
SP2 Drive Housing Set-Up for GTN070 (HZR50)  
SP3 Drive Housing Set-Up for PEN090 (HZR50 & HZR80)  
SP9 Drive Housing Set-Up for GTN/PTN115 (HZR80 & HZR100)

**⑤ Orientation Options**

ARO Gearbox Right  
ALO Gearbox Left

**⑥ Gearbox Option**

G0-00 No Gearbox  
G1-nn Customer Supplied  
G2-nn GTN070\*  
G3-nn GTN090\*  
G4-nn GTN115\*  
G5-nn PEN090\*\*  
G6-nn PEN115\*\*

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

**⑦ 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-115  
K13 J070\*, N070\* to GTN-070  
K14 SM230, SE230, ES2\*, OS2, S57-\* to GTN-070  
K15 SM, SE 231, 232, 233 to GTN-070 J09\*, N09\* to GTN-070 J090\*  
K16 N090\* to GTN-070

**⑧ Limit Switch Assembly**

LH0 No Switch Assembly  
LH1 Three mechanical switches, with 1 NO and 1 NC contact per switch (HZR80 and HZR100)  
LH2 Two mechanical switches and 1 NPN proximity switch (HZR80 and HZR100)  
LH3 Three NPN proximity switches NO/NC, 10-30 VDC (HZR80 and HZR100)  
LH4 Three PNP proximity switches NO/NC, 10-30 VDC (HZR80 and HZR100)  
LH5 Three NPN proximity switches NO "Home"; NC Travel Limits 10-30 VDC (HZR50 only)  
LH6 Three NPN proximity switches NO "Home"; NC Travel Limits 10-30 VDC (HZR50 only)

**⑨ Extended Option**

E 16 Additional Rollers (HZR50 only)

Belt Driven Tables