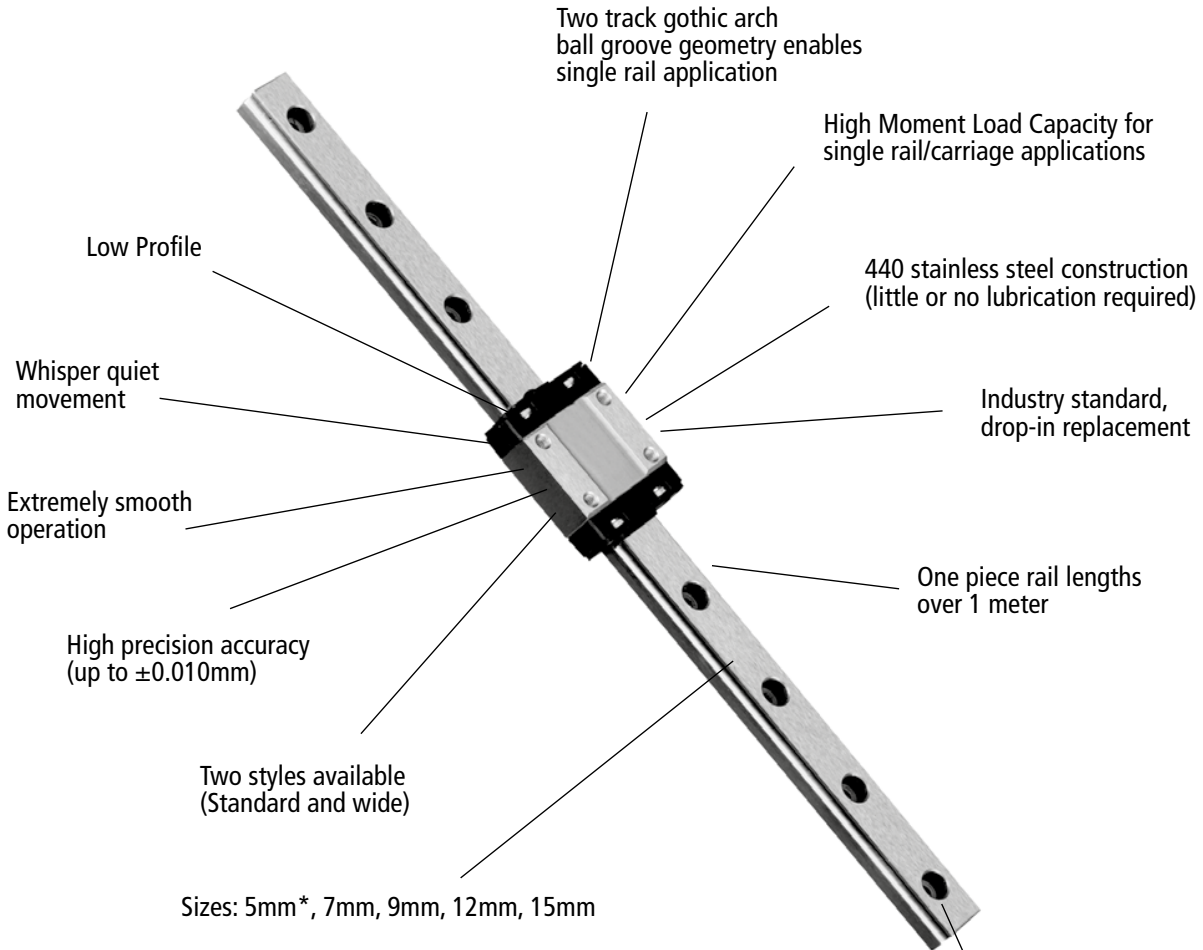
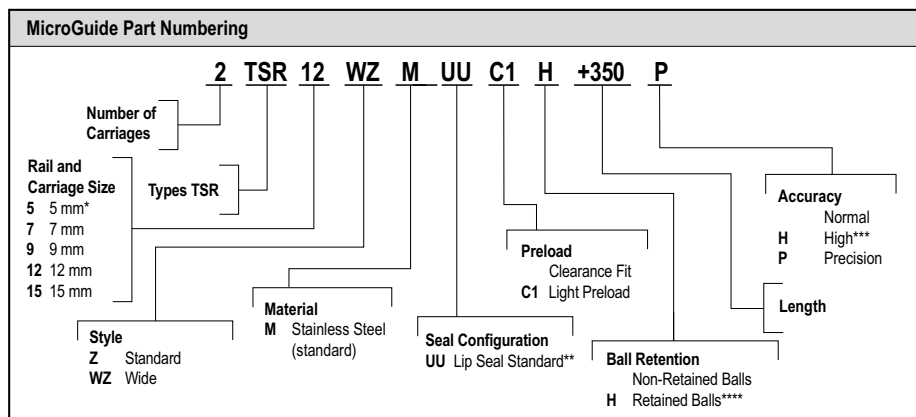


Profile Rail Linear Guides

MicroGuide™ Profile Rail



Note! The Microguide linear guide series carriages do not have retained balls. Removing the carriage from the rail without an arbor will result in the balls falling out.



\*For 5 mm size, there are only 2 mounting holes per carriage.

\*\*Seals are not available for 5 mm size.

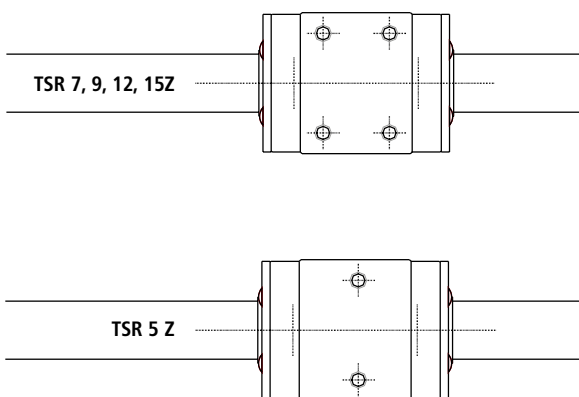
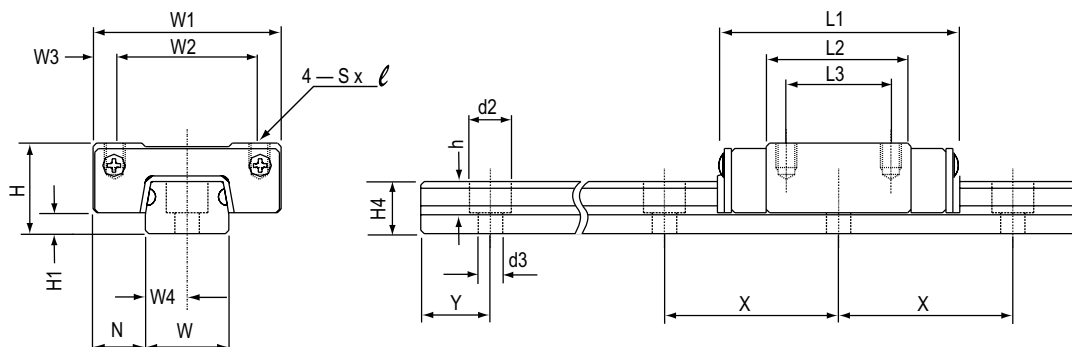
\*\*\*High accuracy not available in size 5.

\*\*\*\* Retained balls not available in sizes 5 or 15.



## MicroGuide™ Profile Rail

### TSR-Z Standard



### Standard Lengths of Rail

Sizes	5	7	9	12	15
Standard Lengths	40	40	55	70	150
	55	55	75	95	230
	70	70	95	120	310
	100	85	115	145	430
	130	100	135	170	550
	160	130	155	195	670
			1000	220	1030
				245	
				270	
				320	
			370		
			470		
			1020		
X	15	15	20	25	40
Y	5	5	7.5	10	15

Longer lengths may be supplied as single rail or butt joints. Please contact customer service for more information.

### MicroGuide™ TSR-Z (Standard)

Size	Assembly Dimensions			Carriage Dimensions							Rail Dimensions							
	H	H1	N	W1	W2	W3	L1	L2	L3	Sxℓ	W	W4	H4	d2	d3	h	Y	X
5	6	1.5	3.5	12	8	2	19	11	-	M2X1.5'	5	2.5	4	3.5	2.4	1	5	15
7	8	1.5	5	17	12	2.5	23.5	13.5	8	M2X2.5	7	3.5	4.7	4.2	2.4	2.3	5	15
9	10	2.2	5.5	20	15	2.5	31	20.0	10	M3X3	9	4.5	5.5	6	3.5	3.3	7.5	20
12	13	3	7.5	27	20	3.5	35	20.8	15	M3X3.5	12	6	7.5	6	3.5	4.5	10	25
15	16	4	8.5	32	25	3.5	43	25.7	20	M3X4	15	7.5	9.5	6	3.5	4.5	15	40

(1) For 5mm size, there are only 2 mounting holes per carriage.

Note All: Dimensions in mm except where noted otherwise. Longer lengths are available with butt joints on sizes 7-15. Sizes in between standards are available, Y dimensions will be the same unless specified at time of ordering.

## MicroGuide™ Profile Rail

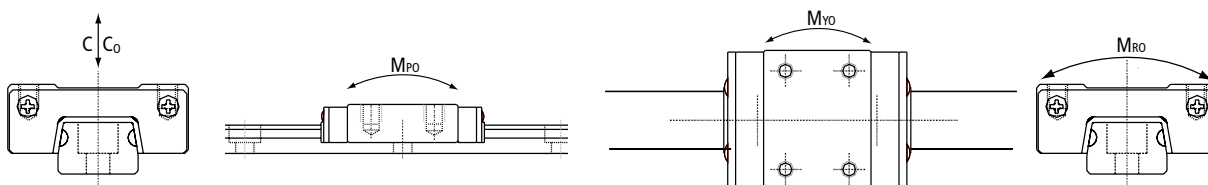
### TSR-Z Standard

#### Dynamic Load and Moment Ratings

C = Dynamic load rating

#### Static Load and Moment Capacities

C<sub>0</sub> = Static load rating  
M<sub>PO</sub> = Static pitch moment capacity  
M<sub>YO</sub> = Static yaw moment capacity  
M<sub>RO</sub> = Static roll moment capacity



Size	Load Capacity (N)		Moments (Nm)			Mass	
	Dynamic C <sup>1</sup>	Limit Co <sup>2,3</sup>	M <sub>PO</sub>	M <sub>YO</sub>	M <sub>RO</sub>	Carriage [kg]	Rail [kg/m]
5 <sup>4</sup>	336	620	0.8	0.8	1.47	0.01	0.14
7	924	1440	2.55	2.55	5.10	0.02	0.23
9	1544	2360	5.10	5.10	10.4	0.02	0.32
12	2780	4220	8.04	8.72	14.7	0.04	0.58
15	4410	6570	16.5	17.9	30.2	0.07	0.93

#### Notes:

1. The dynamic load and moment ratings are based upon 50km travel life.
2. The static load and moment capacities are the maximum radial load and moment load that should be applied to the bearing while there is no relative motion between the carriage and rail.
3. The load limit is the maximum load that may be applied to a system. It is important to analyze the application so that peak and/or shock loads do not exceed the load limit.
4. Size 5 does not have end seals. Pan head screws required to mount rail.

#### Load/Life Calculations

To determine proper carriage size: $C_{min} = F \cdot \left(\frac{50}{L}\right)^{1/3}$ C <sub>min</sub> = minimum required dynamic load capacity of carriage (N) F = equivalent load on carriage (N) L = required travel life (km)	To determine travel life: $L = \left(\frac{C}{F}\right)^3 \cdot 50$ L = normal travel life (km) C = rated dynamic load capacity of carriage (N) F = equivalent load on carriage (N)
--	---

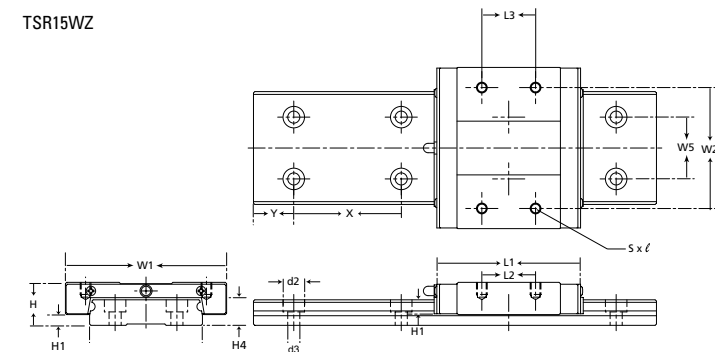
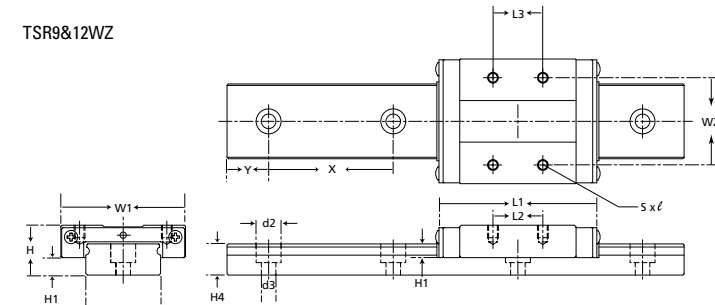
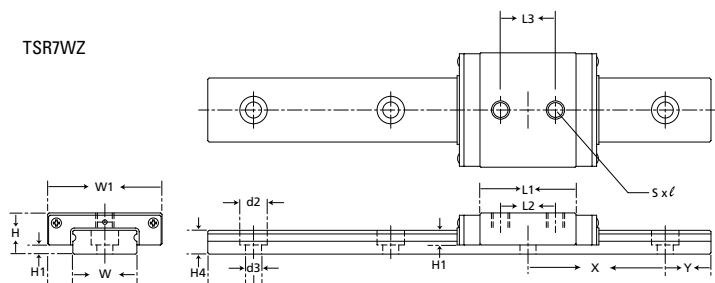
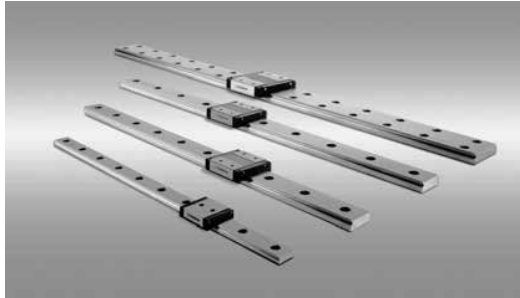
#### Operating Parameters

Maximum Velocity: 3 m/s  
Maximum Acceleration: 50 m/s



## MicroGuide™ Profile Rail

### TSR-WZ Wide



### Standard Lengths of Rail

Sizes	7	9	12	15
Standard Lengths	50	50	70	110
	85	110	150	190
	170	260	310	270
	100	350	390	430
	130	440	470	590
	260	530	630	750
	350	620	790	910
	440	800	950	1030
	530	1010	1030	
	620			
	800			
	1010			
X	30	30	40	40
Y	10	10	15	15

### MicroGuide™ TSR-WZ Wide

Size	Assembly Dimensions			Carriage Dimensions						Rail Dimensions							
	H	H1	N	W1	W2	L1	L2	L3	S x l	W	W5	H4	d2	d3	h	Y	X
7*	9	2	5.5	25	-	31	21.5	12	M4X3.5	14	-	5.2	6	3.5	3.2	10	30
9	12	4.2	6	30	21	39	28	12	M2.6X3	18	-	7.5	6	3.5	4.5	10	30
12	14	4	8	40	28	44.5	30.5	15	M3X3.5	24	-	8.5	8	4.5	4.5	15	40
15	16	4	9	60	45	55.5	38.5	20	M4X4.5	42	23	9.5	8	4.5	4.5	15	40

Note: All dimensions in mm except where noted otherwise. Longer lengths are available with butt joints.  
 Sizes in between standards are available, Y dimensions will be the same unless specified at time of ordering.

\* For 7 mm size, there are only 2 mounting holes per carriage.

## MicroGuide™ Profile Rail

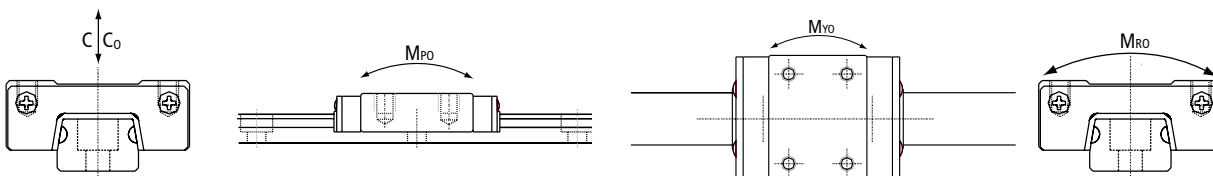
### TSR-WZ Wide

#### Dynamic Load and Moment Ratings

C = Dynamic load rating

#### Static Load and Moment Capacities

C<sub>0</sub> = Static load rating  
M<sub>PO</sub> = Static pitch moment capacity  
M<sub>YO</sub> = Static yaw moment capacity  
M<sub>RO</sub> = Static roll moment capacity



Size	Load Capacity (N)		Moments (Nm)			Mass	
	Dynamic C <sup>1</sup>	Limit C <sub>0</sub> <sup>2,3</sup>	M <sub>PO</sub>	M <sub>YO</sub>	M <sub>RO</sub>	Carriage [kg]	Rail [kg/m]
7	1370	2160	5.39	5.39	15.2	0.03	0.51
9	2450	3920	16.3	16.3	36.0	0.04	1.08
12	4020	6080	17.2	18.6	47.6	0.08	1.5
15	6660	9800	35.2	38.2	137	0.17	3.0

#### Notes:

- The dynamic load and moment ratings are based upon 50 km travel life.
- The static load and moment capacities are the maximum radial load and moment load that should be applied to the bearing while there is no relative motion between the carriage and rail.
- The load limit is the maximum load that may be applied to a system. It is important to analyze the application so that peak and/or shock loads do not exceed the load limit.

#### Load/Life Calculations

To determine proper carriage size:	To determine travel life:
$C_{min} = F \cdot \left(\frac{50}{L}\right)^{1/3}$	$L = \left(\frac{C}{F}\right)^3 \cdot 50$
C <sub>min</sub> = minimum required dynamic load capacity of carriage (N)	L = normal travel life (km)
F = equivalent load on carriage (N)	C = rated dynamic load capacity of carriage (N)
L = required travel life (km)	F = equivalent load on carriage (N)

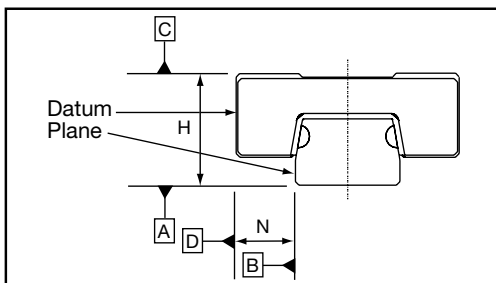
#### Operating Parameters

Maximum Velocity: 3 m/s  
Maximum Acceleration: 50 m/s<sup>2</sup>



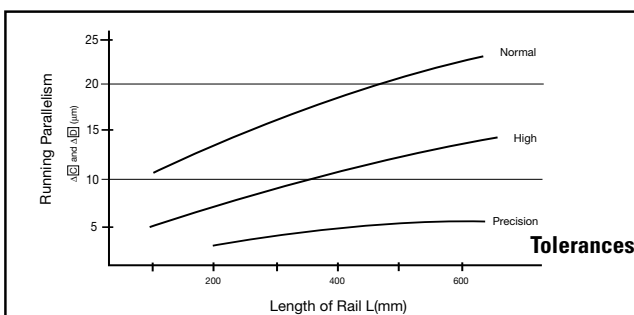
## MicroGuide™ Profile Rail

### TSR-Z (Standard) Accuracy Tolerance



Accuracy of each part		TSR5 Z		TSR7 Z, TSR9 Z, TSR12 Z & TSR15 Z		
		Normal (blank)	Precision P	Normal (blank)	High H	Precision P
Height H	Dimensional Tolerance	±0.030	±0.015	±0.040	±0.020	±0.010
	Pair Tolerance	0.015	0.005	0.030	0.015	0.007
Width N	Dimensional Tolerance	±0.030	±0.015	±0.040	±0.025	±0.015
	Pair Tolerance	0.015	0.005	0.030	0.020	0.010

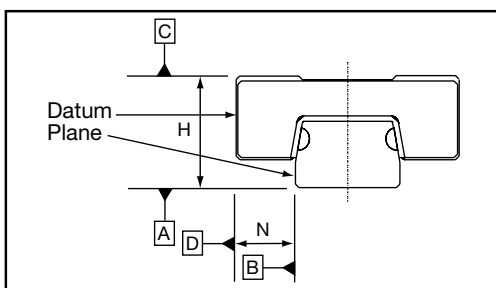
### TSR-Z (Standard) Running Parallelism



### TSR-Z (Standard) Fit Up

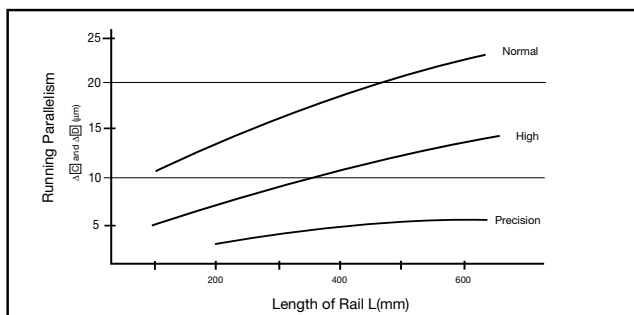
Series Type, Size and Style	Radial Clearances (µm)	
	clearance fit (blank)	light preload C1
TSR5 Z	0~+1.5	-1.5~0
TSR7 Z	±2	-3~0
TSR9 Z	±2	-4~0
TSR12 Z	±3	-6~0
TSR15 Z	±5	-10~0

### TSR-WZ (Wide) Accuracy Tolerance



Accuracy of each part		TSR WZ		
		Normal (blank)	High H	Precision P
Height H	Dimensional Tolerance	±0.040	±0.020	±0.010
	Pair Tolerance	0.030	0.015	0.007
Width N	Dimensional Tolerance	±0.040	±0.025	±0.015
	Pair Tolerance	0.030	0.020	0.010

### TSR-WZ (Wide) Running Parallelism



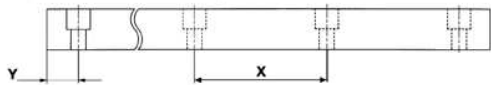
### TSR-WZ (Wide) Fit Up

Series Type, Size and Style	Radial Clearances (µm)	
	clearance fit (blank)	light preload C1
TSR7 WZ	±2	-3~0
TSR9 WZ	±2	-4~0
TSR12 WZ	±3	-6~0
TSR15 WZ	±5	-10~0

MicroGuide™ Profile Rail

Standard Lengths of Rail

Sizes	7 WZ	9 WZ	12 WZ	15 WZ
Standard Lengths	50	50	70	110
	110	110	150	190
	170	170	230	270
	260	260	310	430
	350	350	390	590
	440	440	470	750
	530	530	630	910
	620	620	790	1030
	800	800	950	
	1010	1010	1030	
X	30	30	40	40
Y	10	10	15	15



Load/Life Calculations

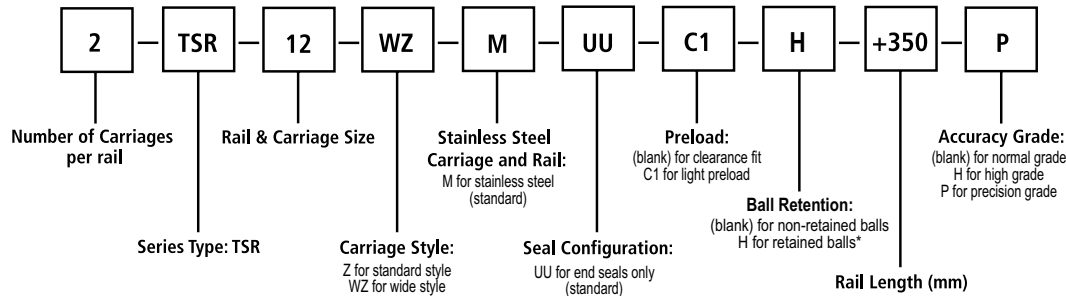
To determine proper carriage size: $C_{min} = F \cdot (\frac{50}{L})^{1/3}$ $C_{min}$ = minimum required dynamic load capacity of carriage (N) F = equivalent load on carriage (N) L = required travel life (km)	To determine travel life: $L = (\frac{F}{C})^3 \cdot 50$ L = normal travel life (km) C = rated dynamic load capacity of carriage (N) F = equivalent load on carriage (N)
--	--

Conversions

1 lbf = 4.448 N	1 km = 39,370 inches
1 kgf = 9.8 N	1 Nm = 0.7376 lbf - ft

Maximum Travel Speed:  $V_{max} = 3$  m/s  
Maximum Acceleration:  $a_{max} = 50$  m/s<sup>2</sup>

How To Order



\* Retained balls not available in sizes 5 or 15.

MicroGuide



**NOTES:**

A large, empty grid of small squares, intended for taking notes or drawing technical diagrams.