RSB-E Series Datasheet

- Speeds up to 1,200 rpm
- Continuous 360° rotation stage
- Multiple motor configurations
- Encoder position feedback with slip/stall detection and automatic recovery
- Optional integrated power-off brake
- Designed for use with an X-MCC Series stepper motor controller or any 2-phase stepper motor controller
- With AutoDetect, the X-MCC controller configures its settings automatically for the connected peripheral

RSB-E Series Overview

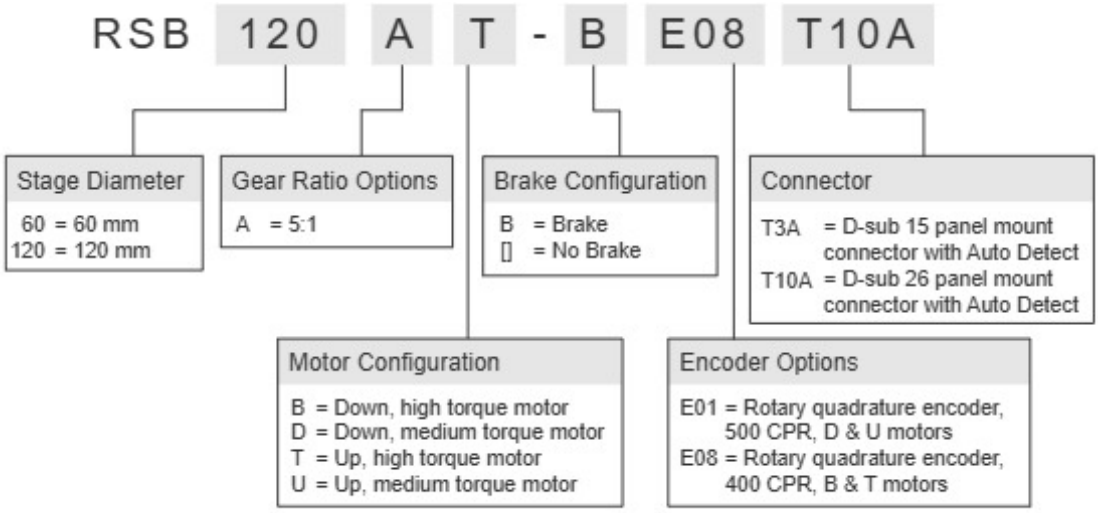
Zaber's RSB-E Series motorized rotation stages feature a compact footprint, low profile, and a load capability of up to 50 kg. With a maximum rotational speed of 1,200 rpm, these rotation stages are ideal for the rapid positioning of light loads. A built-in motor encoder allows for closed-loop operation and slip/stall recovery features.

There are two motor configurations available: up and down. Motor up configurations allow flush mounting of the device to a flat surface, and motor down configurations allow for full 360° movement of loads that extend past the edge of the stage top. An optional power-off brake is available to protect the payload from unintended motion in the event of power loss.

The stages are designed to connect directly to our X-MCC Series universal motor controllers, or they can be used with any 2-phase stepper motor controller through the panel mount DB15 connector or DB26 connector for brake variants. Set up is easy with AutoDetect. Once connected, the X-MCC controller will automatically detect and configure the RSB-E.

For more information visit: https://www.zaber.com/products/rotary-stages/RSB-E

RSB-E Series Part Numbering & Options



RSB-E Series Drawings

- RSB060-E.png (Drawing for the RSB060-E)
- RSB120-E_B&T_configs.png (Drawing for the RSB120-E B&T configs)
- RSB120-BE_B&T_configs.png (Drawing for the RSB120-BE_B&T_configs)
- RSB120-E_D&U_configs.png (Drawing for the RSB120-E D&U configs)

RSB-E Series Specifications

Microstep Size (Default Resolution)	**0.005625° (98.173 µrad)**
Built-in Controller	No
Recommended Controller	X-MCC (48 V) Recommended
AutoDetect	Yes
Range	360°
Repeatability	< 0.001° (< 0.017 mrad)
Minimum Speed	0.003434°/s (59.934 µrad/s)
Speed Resolution	0.003434°/s (59.934 µrad/s)
Encoder Type	Rotary quadrature encoder
Angular Motion Per Motor Rev	72°
Motor Type	Stepper (2 phase)
Default Resolution	1/64 of a step
Mechanical Drive System	Synchronous belt
Limit or Home Sensing	Magnetic home sensor
CE Compliant	Yes
Vacuum Compatible	No

Part Number	**Accuracy (unidirectional)**	**Backlash**	**Maximum Speed**	**Encoder Resolution**
RSB060AD-E01T3A	0.2° (3.490000 mrad)	< 0.1° (< 1.745 mrad)	7200°/s (1200 rpm)	500 CPR (2000 states/rev)
RSB060AU-E01T3A	0.2° (3.490000 mrad)	< 0.1° (< 1.745 mrad)	7200°/s (1200 rpm)	500 CPR (2000 states/rev)
RSB120AB-E08T3A	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	5400°/s (900 rpm)	400 CPR (1600 states/rev)
RSB120AB-BE08T10A	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	3600°/s (600 rpm)	400 CPR (1600 states/rev)
RSB120AD-E01T3A	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	3000°/s (500 rpm)	500 CPR (2000 states/rev)
RSB120AT-E08T3A	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	5400°/s (900 rpm)	400 CPR (1600 states/rev)
RSB120AT-BE08T10A	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	3600°/s (600 rpm)	400 CPR (1600 states/rev)
RSB120AU-E01T3A	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	3000°/s (500 rpm)	500 CPR (2000 states/rev)

Part Number	Maximum Continuous Torque	Maximum Brake Torque	Maximum Centered Load	Maximum Moment (Transverse)
RSB060AD-E01T3A	230 N-cm (325.7 oz-in)		200 N (44.9 lb)	410 N-cm (580.6 oz-in)
RSB060AU-E01T3A	230 N-cm (325.7 oz-in)		200 N (44.9 lb)	410 N-cm (580.6 oz-in)
RSB120AB-E08T3A	750 N-cm (1062.1 oz-in)		500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
RSB120AB-BE08T10A	750 N-cm (1062.1 oz-in)	750 N-cm (1062.1 oz-in)	500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
RSB120AD-E01T3A	250 N-cm (354.0 oz-in)		500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
RSB120AT-E08T3A	750 N-cm (1062.1 oz-in)		500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
RSB120AT-BE08T10A	750 N-cm (1062.1 oz-in)	750 N-cm (1062.1 oz-in)	500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
RSB120AU-E01T3A	250 N-cm (354.0 oz-in)		500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)

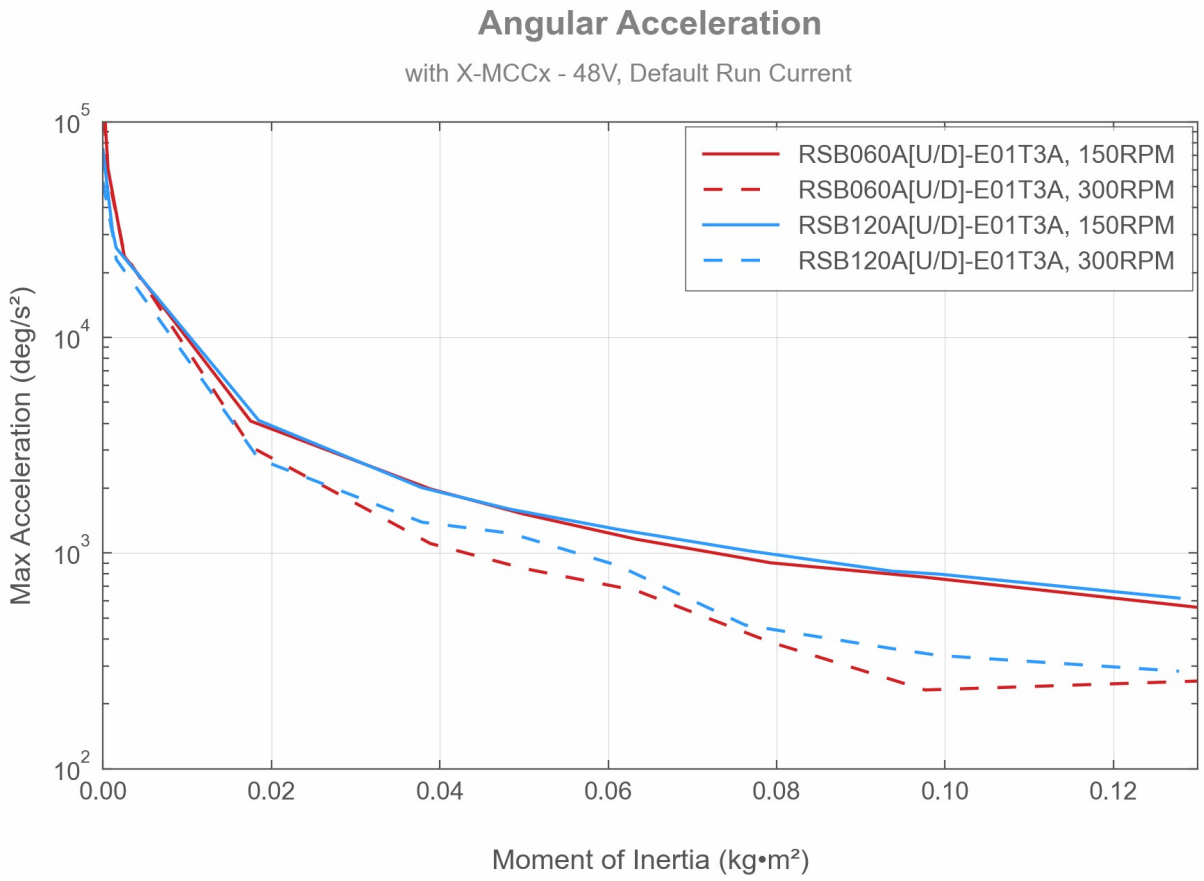
Part Number	Stage Top Dimension	Radial Error Motion	Axial Error Motion	Tilt Error Motion
RSB060AD-E01T3A	60 mm (2.362")	+/- 4 µm (+/- 0.000157")	< 4 µm (< 0.000157")	+/- 0.0033° (+/- 57.60 µrad)
RSB060AU-E01T3A	60 mm (2.362")	+/- 4 µm (+/- 0.000157")	< 4 µm (< 0.000157")	+/- 0.0033° (+/- 57.60 µrad)
RSB120AB-E08T3A	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
RSB120AB-BE08T10A	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
RSB120AD-E01T3A	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
RSB120AT-E08T3A	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
RSB120AT-BE08T10A	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
RSB120AU-E01T3A	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)

Part Number	Bearing Plane Offset	Motor Rated Current	Motor Winding Resistance	Inductance
RSB060AD-E01T3A	16.37 mm (0.644")	2300 mA/phase	1 ohms/phase	2.2 mH/phase

Part Number	Bearing Plane Offset	Motor Rated Current	Motor Winding Resistance	Inductance
RSB060AU-E01T3A	16.37 mm (0.644")	2300 mA/phase	1 ohms/phase	2.2 mH/phase
RSB120AB-E08T3A	20 mm (0.787")	3000 mA/phase	0.53 ohms/phase	2 mH/phase
RSB120AB-BE08T10A	20 mm (0.787")	3000 mA/phase	0.53 ohms/phase	2 mH/phase
RSB120AD-E01T3A	20 mm (0.787")	2100 mA/phase	2.9 ohms/phase	7.2 mH/phase
RSB120AT-E08T3A	20 mm (0.787")	3000 mA/phase	0.53 ohms/phase	2 mH/phase
RSB120AT-BE08T10A	20 mm (0.787")	3000 mA/phase	0.53 ohms/phase	2 mH/phase
RSB120AU-E01T3A	20 mm (0.787")	2100 mA/phase	2.9 ohms/phase	7.2 mH/phase

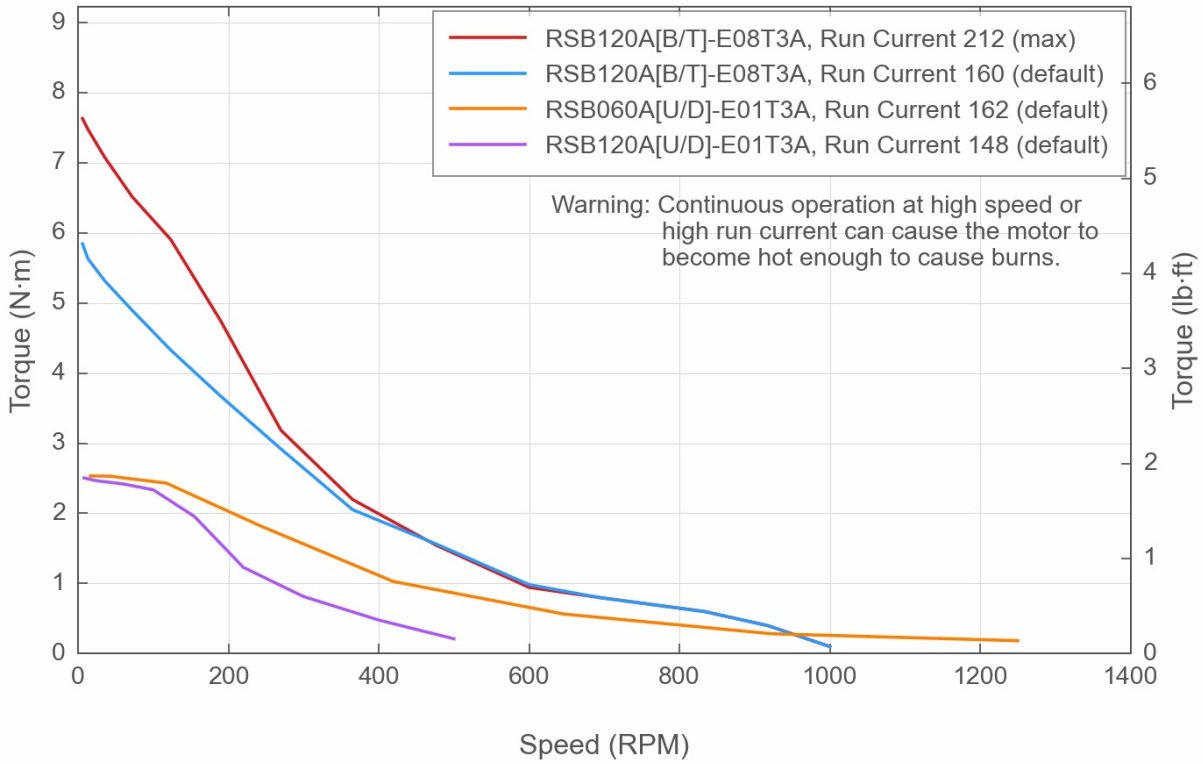
Part Number	Motor Connection	Mounting Interface	Weight
RSB060AD-E01T3A	D-sub 15	M6 and #8-32 threaded holes	0.84 kg (1.852 lb)
RSB060AU-E01T3A	D-sub 15	M6 and #8-32 threaded holes	0.84 kg (1.852 lb)
RSB120AB-E08T3A	D-sub 15	Kinematic with M2.5 and M6 threaded holes	2.1 kg (4.630 lb)
RSB120AB-BE08T10A	D-sub 26	Kinematic with M2.5 and M6 threaded holes	2.726 kg (6.010 lb)
RSB120AD-E01T3A	D-sub 15	Kinematic with M2.5 and M6 threaded holes	2.10 kg (4.630 lb)
RSB120AT-E08T3A	D-sub 15	Kinematic with M2.5 and M6 threaded holes	2.1 kg (4.630 lb)
RSB120AT-BE08T10A	D-sub 26	Kinematic with M2.5 and M6 threaded holes	2.726 kg (6.010 lb)
RSB120AU-E01T3A	D-sub 15	Kinematic with M2.5 and M6 threaded holes	2.10 kg (4.630 lb)

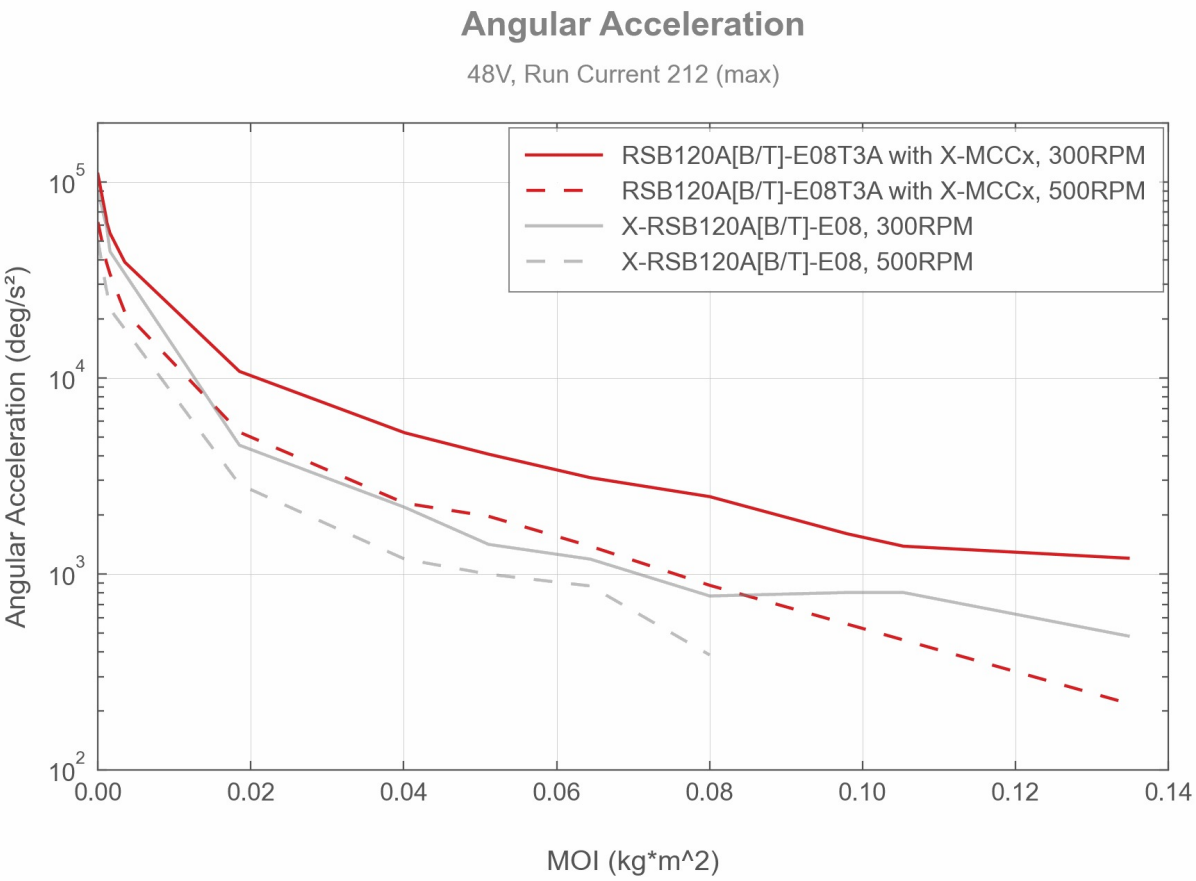
RSB-E Series Charts

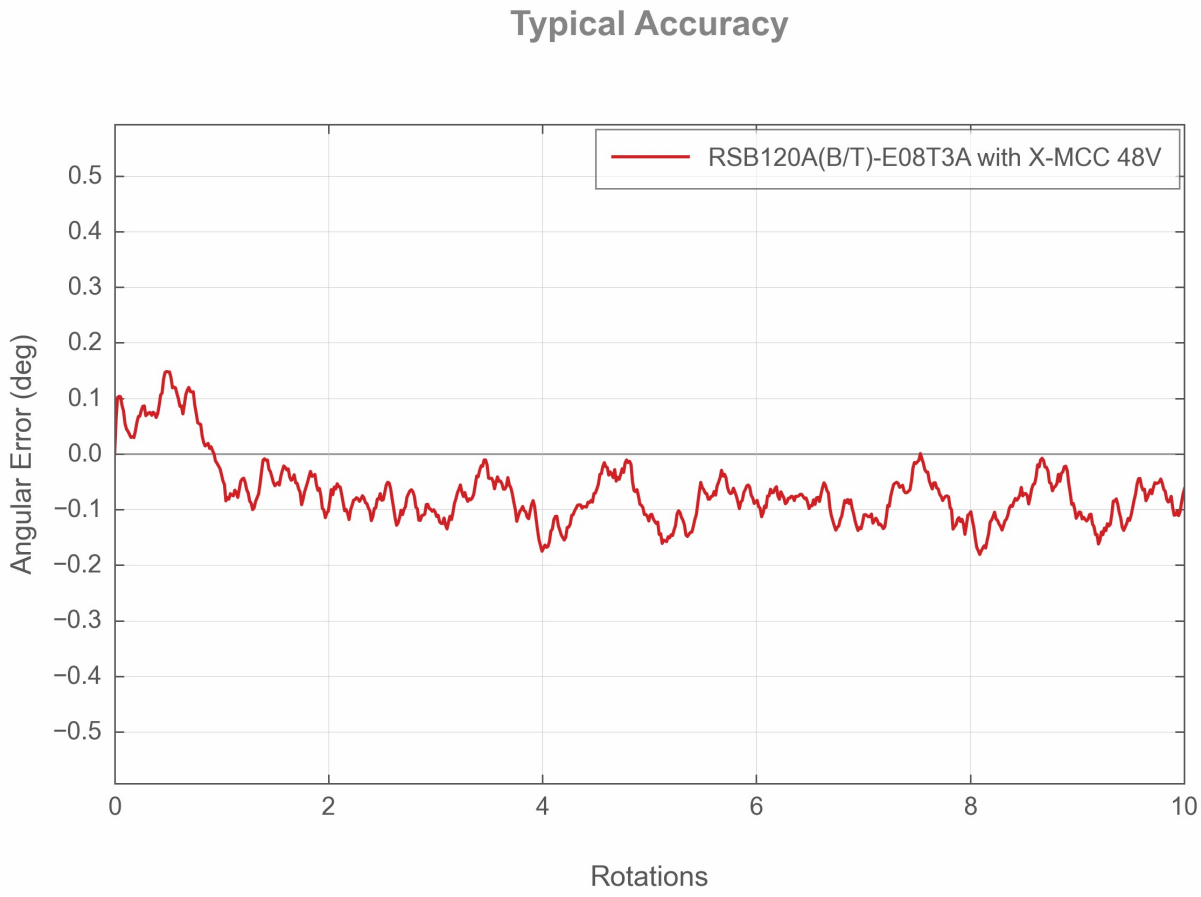


Torque Speed Performance

with X-MCCx 48V




Angular Acceleration
48V, Run Current 212 (max)
RSB120A[B/T]-E08T3A with X-MCCx, 300RPM
RSB120A[B/T]-E08T3A with X-MCCx, 500RPM
X-RSB120A[B/T]-E08, 300RPM
X-RSB120A[B/T]-E08, 500RPM
Angular Acceleration (deg/s²)
10^5
10^4
10^3
10^2
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
MOI (kg*m^2)



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