



## Precise, efficient linear motion

This compact actuation system combines the Reliance Cool Muscle servo system with a rack and pinion drive to give precise linear motion for high speed applications.



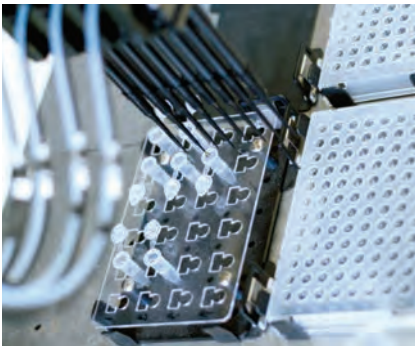
Multiple configurations are available developing peak forces up to 150 N and rated speeds of 300 mm per second, with resolutions of better than 1 micron and standby power consumption of less than 1.7 watts. The assembly has a number of different mounting options for ease of mechanical installation.

The Rackuator™ has built-in closed loop control with an integrated 32 bit CPU, magnetic encoder and PLC. This intelligent assembly can be programmed to decide for itself where it should be at any given time and to send out continuous motion data such as speed, position and torque. The unit is fully integrated, saving space and cost, and makes system integration faster and simpler with control at the point of use. The Rackuator™ is fully programmable and can store onboard discrete

positions, speeds, accelerations, timers, torque limits and custom variables, all to be recalled by up to 15 separate motion control programs. It also has built-in maths and S curve functions for advanced motion control.

Multiple Rackutors™ can work in sequence, either to produce circles, ellipses, or complex arc motions, or in a daisy chain network to automate pick-and-place machines. The Rackuator™ can be operated independently or communicate with a PC host via RS232 or USB. It can also be fitted with a traditional stepper motor, being driven by step and direction signals or with CW/CCW pulses to bring the advantages of an AC servo system to any stepper motor application.

The Rackuator™ is available with both solid and tubular racks, suitable for a variety of applications from scientific research to food preparation and packaging.



Laboratory automation



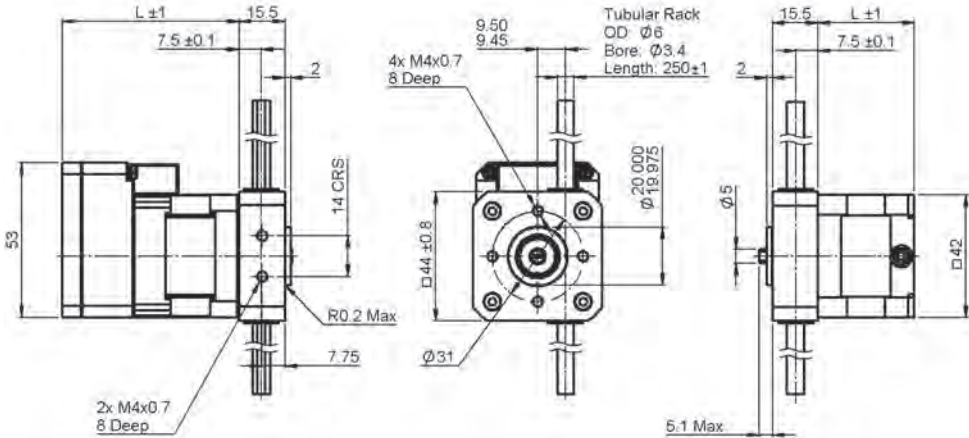
Industrial automation



### Associated Products

Hardware: page 13-1

All dimensions in mm



Reliance Cool Muscle Motor Option

Hybrid Stepper Motor Option

## Part number selection table

Part Number	Motor	Pinion Material	L	Axial Load (N)	Momentary Load (N)	Travel Range (mm)
<b>RCMRA17S-6-250-C</b>	Reliance Cool Muscle Motor <sup>1</sup>	PEEK	60.5	3	12	200
<b>RCMRA17L-6-250-C-S</b>		St steel	75.3	15	25	
<b>RRA17-6-250</b>	Hybrid Stepper Motor <sup>2</sup>	PEEK	33.0	3	12	
<b>RRA17-6-250-S</b>		St steel	33.0	15	25	

<sup>1</sup> Reliance Cool Muscle motor option, see pages 2-6 and 2-7 for motor details (if a pulse interface is required change -C to a -P)

<sup>2</sup> Hybrid stepper motor option, see page T2-10 for motor details

## Technical specification

	RCMRA17 Reliance Cool Muscle	RRA17 Hybrid Stepper
Resolution	0.00085 mm with 50,000 steps/rev	0.21 mm with 200 steps/rev
Max speed	300 mm/sec	
Temperature range	Between 0°C and 40°C	Between -20°C and +50°C
Repeatability	0.025 mm	
Side wobble (fully extended)	±0.2 mm	
Life time	5 million cycles minimum	
Wire length	N/A	200 mm
Backlash	0.08 mm linear movement	
Rack material	316 grade stainless steel	
Lubrication	St steel	PTFE based grease
	PEEK	Lubrication free, provides smooth quiet operation

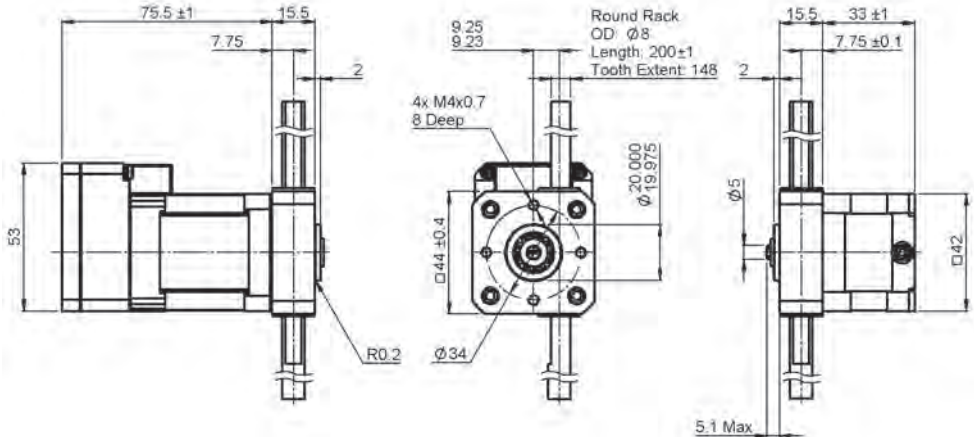
## Technical support

- Product overviews see pages 2-2, 2-14 and 6-2 • Technical information see pages T2-9 and T6-1



All dimensions in mm

Associated Products  
Hardware: page 13-1



Reliance Cool Muscle Motor Option

Hybrid Stepper Motor Option

## Part number selection table

Part Number	Motor	Pinion Material	Axial Load (N)	Momentary Load (N)	Travel Range (mm)
<b>RCMRAK17L-8-200-C</b>	Reliance Cool Muscle Motor <sup>1</sup>	St steel 304	25	50	100
<b>RRAK17-8-200</b>	Hybrid Stepper Motor <sup>2</sup>		25	50	

<sup>1</sup> Reliance Cool Muscle motor option, see page 2-7 for motor details (if a pulse interface is required change -C to a -P)

<sup>2</sup> Hybrid stepper motor option, see page T2-5 for motor details

## Technical information

	RCMRAK17 Reliance Cool Muscle	RRAK17 Hybrid Stepper
Resolution	0.00075 mm with 50,000 steps/rev	0.19mm with 200 steps/rev
Max speed	500 mm/sec	
Temperature range	Between 0°C and +40°C	Between -20°C and +50°C
Repeatability	0.025 mm	
Side wobble (fully extended)	±0.29 mm	
Life time	5 million cycles minimum	
Wire length	N/A	200 mm
Backlash	0.08 mm linear movement	
Rack material	304 grade stainless steel	
Lubrication	PTFE based grease	

## Technical support

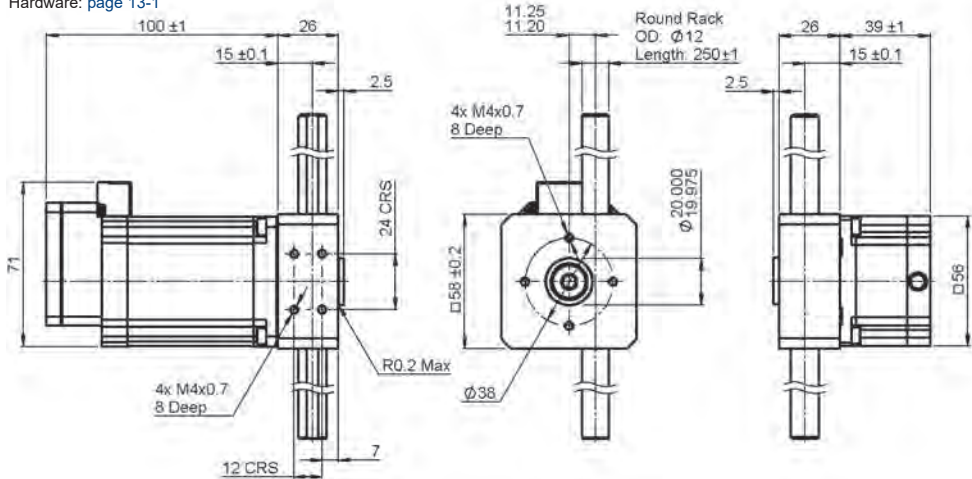
- Product overviews see pages 2-2, 2-14 and 6-2
- Technical information see pages T2-9 and T6-1



### Associated Products

Hardware: page 13-1

All dimensions in mm



### Reliance Cool Muscle Motor Option

### Part number selection table

Part Number	Motor	Pinion Material	Axial Load (N)	Momentary Load (N)	Travel Range (mm)
<b>RCMRA23L-12-250-C</b>	Reliance Cool Muscle Motor <sup>1</sup>	St steel 17-4Ph coated	90	150	150
<b>RRA23-12-250</b>	Hybrid Stepper Motor <sup>2</sup>		90	150	

<sup>1</sup> Reliance Cool Muscle motor option, see page 2-9 for motor details (if a pulse interface is required change -C to a -P)

<sup>2</sup> Hybrid stepper motor option, see page T2-5 for motor details

### Technical information

	RCMRA23 Reliance Cool Muscle	RRA23 Hybrid Stepper
Resolution	0.0008 mm with 50,000 steps/rev	0.2 mm with 200 steps/rev
Max speed	300 mm/sec	
Temperature range	Between 0°C and 40°C	Between -10°C and +50°C
Repeatability	0.012 mm	
Side wobble (50mm from housing)	±0.2 mm	
Life time	5 million cycles minimum (based on 40 mm stroke)	
Wire length	N/A	200 mm
Backlash	0.06 mm linear movement	
Rack material	440B grade stainless steel	
Lubrication	PTFE based grease	

### Technical support

- Product overviews see pages 2-2, 2-14 and 6-2 • Technical information see pages T2-9 and T6-1