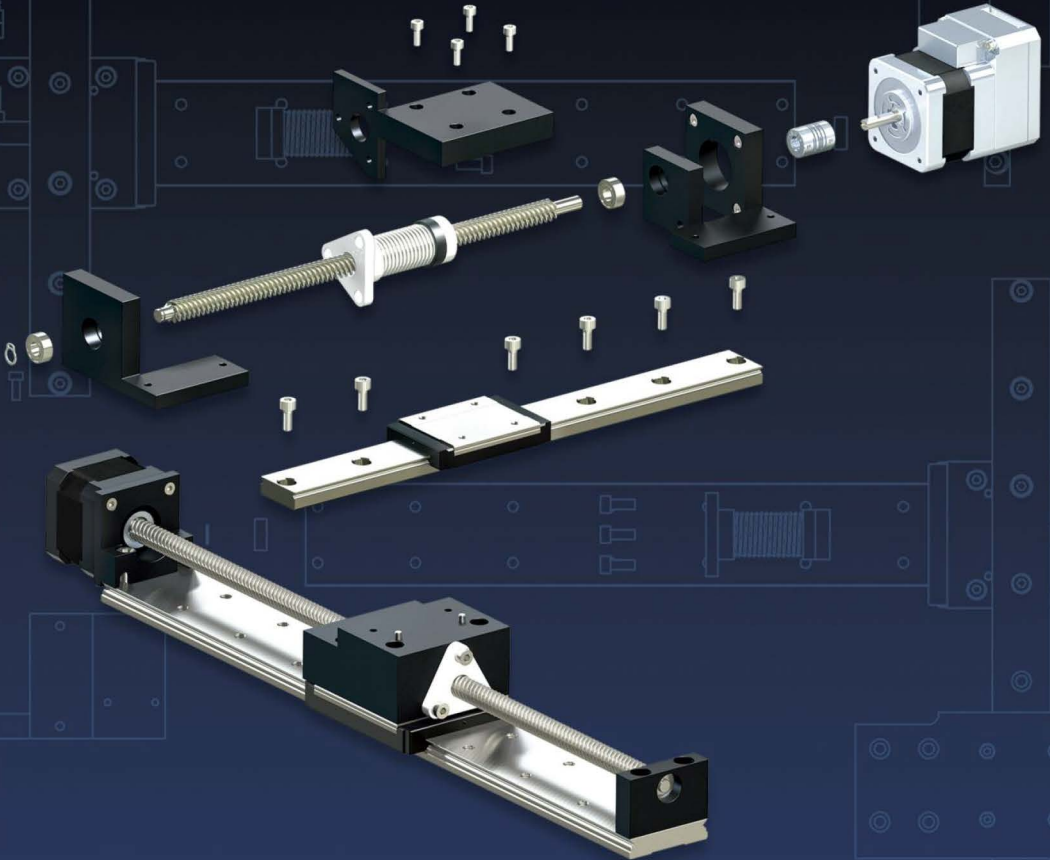














Reliance[®] Precision Limited



Precise Motion Control Solutions

Introduction to Reliance

	<i>Introduction to Reliance</i>	<i>i</i>
	<i>Systems Overview</i>	<i>1</i>
	Intelligent Motors and Motorised Actuators	2
	Planetary and Right Angle Gearboxes	3
	Brass, Ground and Precision Spur Gears	4
	Worms and Wheels, Bevels and Internal Gears	5
	Round and Rectangular Racks and Pinions	6
	Leadscrews and Leadscrew Assemblies	7
	Flexible Shaft Couplings, Clutches and Collars	8
	Linear Guides and Slides	9
	Belts and Pulleys	10
	Gear Clamps and Accessories	11
	Bearings and Spacers	12
	Machine Screws, Dowel Pins and Hardware	13
	<i>Technical Information</i>	<i>14</i>
	<i>Appendices and Index</i>	<i>15</i>



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please see appendices page A-6



Reliance On-line

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www.relianceprecision.nl
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Component data and information included in this RG36 catalogue supersedes that stated in all previous publications. Reliance Precision Limited is committed where possible to supply products listed in previous catalogues; please contact us if the component or part number is not listed in RG36.

Reliance would like to acknowledge the support of its customers and suppliers who have kindly given permission to show images of their equipment.

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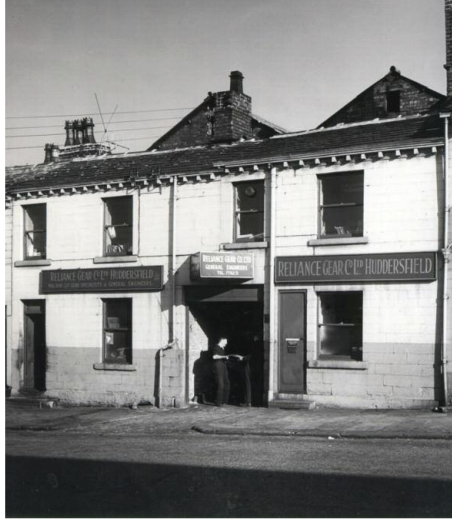
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Rowley Mills, Huddersfield
1980 to present



Union Street, Huddersfield,
right 1920 to 1955



St Helen's Gate, Huddersfield,
below 1955 to 1996



Bandon, Ireland
1969 - present

Introduction to Reliance





Reliance - a specialist engineering company

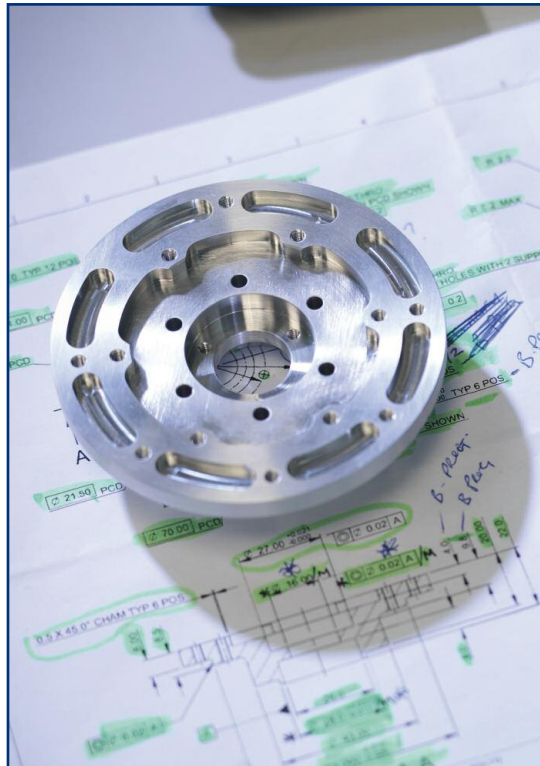
Welcome to Reliance. We are a specialist engineering company, unique in our offering of catalogue products and fully bespoke solutions.

Our product catalogue provides a one-stop-shop for the design engineer – from basic essentials, such as captive screws, to complete sub-assemblies for rotary and linear motion. We offer a carefully selected mix of in-house designed and manufactured products together with products from leading global manufacturers, all of which can be modified to suit individual requirements. We are able to provide design support at the early stages of new product development to create complete prototyping solutions and cost-effective integrated assemblies for full production requirements.

As well as providing catalogue products we have extensive design, development, manufacturing, assembly and test facilities in the UK and Ireland, recently enhanced by a £6million investment programme. From here we offer turnkey technical services for customers requiring bespoke components, assemblies, and systems, not only helping bring new products to market, but also resolving technical problems and extending the life of established products.

Our aim is to provide choice and flexibility for our customers. From standard ex-stock components to custom-designed and manufactured sub-systems or even complete instruments.

Wherever your starting point is with Reliance you should expect technical excellence, high quality solutions and our total commitment to the success of your project.



Managing Director



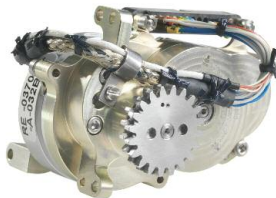
Standard Components



Modified Components



Integrated Solutions



Bespoke Assemblies



Satellite Antenna Pointing Mechanism gear,
in production for SSTL, and now working in orbit



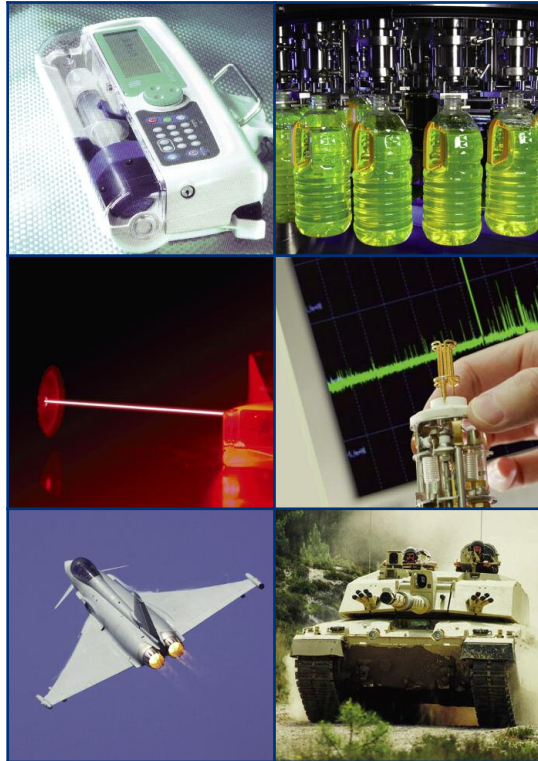
Reliance - established in diverse, global markets

We are an accredited supplier to global OEMs and product developers, covering a wide variety of markets and applications.

In Switzerland our tubular round racks provide a space-saving solution for laboratory automation, locating fluid tubes and fibre optic cables inside the rack to give a more compact instrument. In the UK over 5,000 syringe drive mechanisms, using our motors and leadscrews, are in operation in drug dispensing systems. In Asia our precision anti-backlash gears are used in military applications where our innovative, two-piece gear design is ideal for high reliability applications.

Our gears and leadscrews provide motorised actuation for the fingers and thumb of the bebionic prosthetic hand. This is a demanding application requiring high efficiency, high gripping force and low noise, to be achieved under tight space and weight constraints in order to give the patient the necessary dexterity, strength and practical wearability.

Our appetite for problem-solving and for providing creative technical solutions, underpinned by a culture of strong teamwork, has led to long-standing relationships built on close technical, operational and commercial co-operation. An enquiry for a standard catalogue gear was the first step in our journey with RSL Steeper, developers of the prosthetic hand. As we began to develop an understanding of the hand at a complete product level a design engineering relationship began which has strengthened year-on-year.

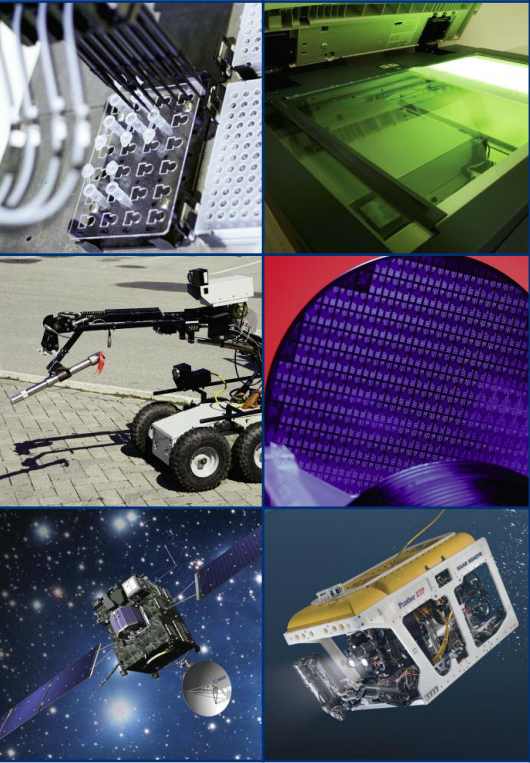


"We appreciate it's a total team effort to deliver a project, it's a pleasure to work with a company so well co-ordinated who keep us informed all the way through."

RSL Steeper



Introduction to Reliance



Providing solutions for diverse markets



BS EN ISO 9001



AS9100



BS EN ISO 14001



SC21 Supply Chain



Reliance – helping you make an informed choice

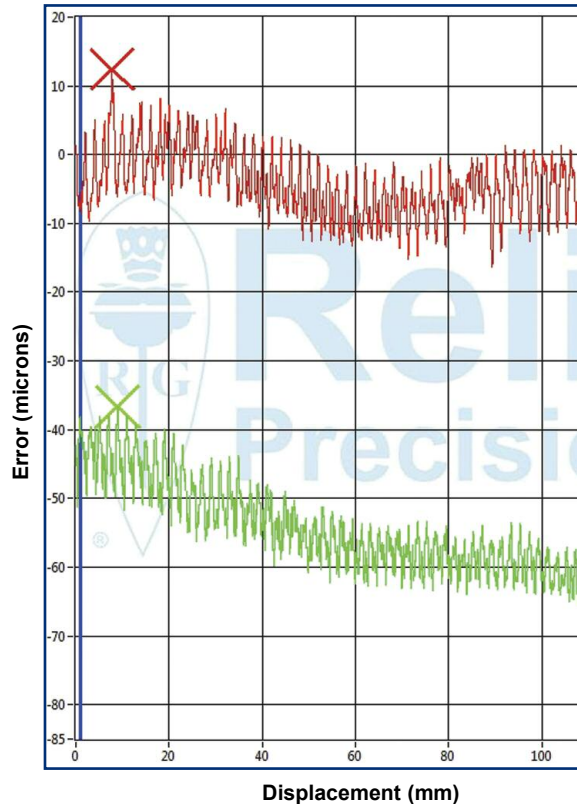
As an engineering company it is important to us to build a thorough understanding of your wider system design and application in order to recommend the most appropriate product. We consider not only the technical specification, but also the product's suitability to the operational environment and any implications of technical and commercial trade-offs.

Discussion of the technical, operational and commercial requirements are a key part of our product support philosophy. Our aim is to help you make an informed choice about our products before you make a purchasing decision; we want to be confident that what we deliver is going to work for you.

Underpinning our engineering knowledge is a sustained investment in test development facilities, which provide an in-depth understanding of the capabilities of our catalogue products. In discussing their suitability for your application we are able to draw upon our test data and experience of designing and supplying components and assemblies into a diverse range of markets.

As a manufacturer we are able to provide a high level of versatility in our range with extensive modifications available. In our precision gears range we offer, for example, options in materials, gear quality, bore diameters, face widths and an extensive choice of teeth cut to order in short lead-times. Our manufacturing capability also helps provide insight into the fitness-for-purpose of the products, based on an understanding of the manufacturing methods used, quality control, surface finish, accuracies and other key criteria which ultimately impact on the performance of your product.

You can contact us by telephone, email or via our website. Alternatively we are happy to arrange a visit to your premises, which has often proved to be an efficient, effective route to understanding the wider aspects of your design programme and providing the appropriate support.

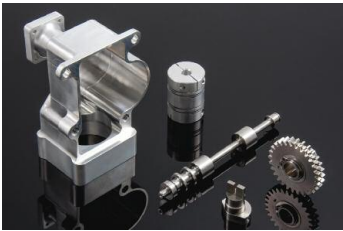




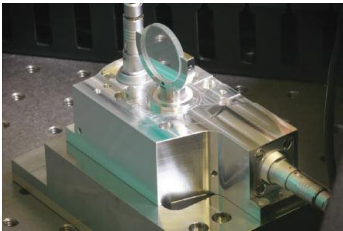
Applications Engineering



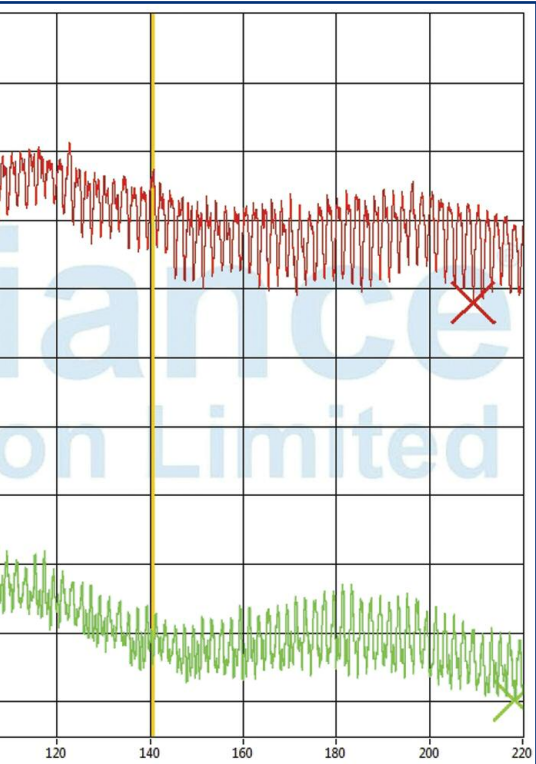
Test Development



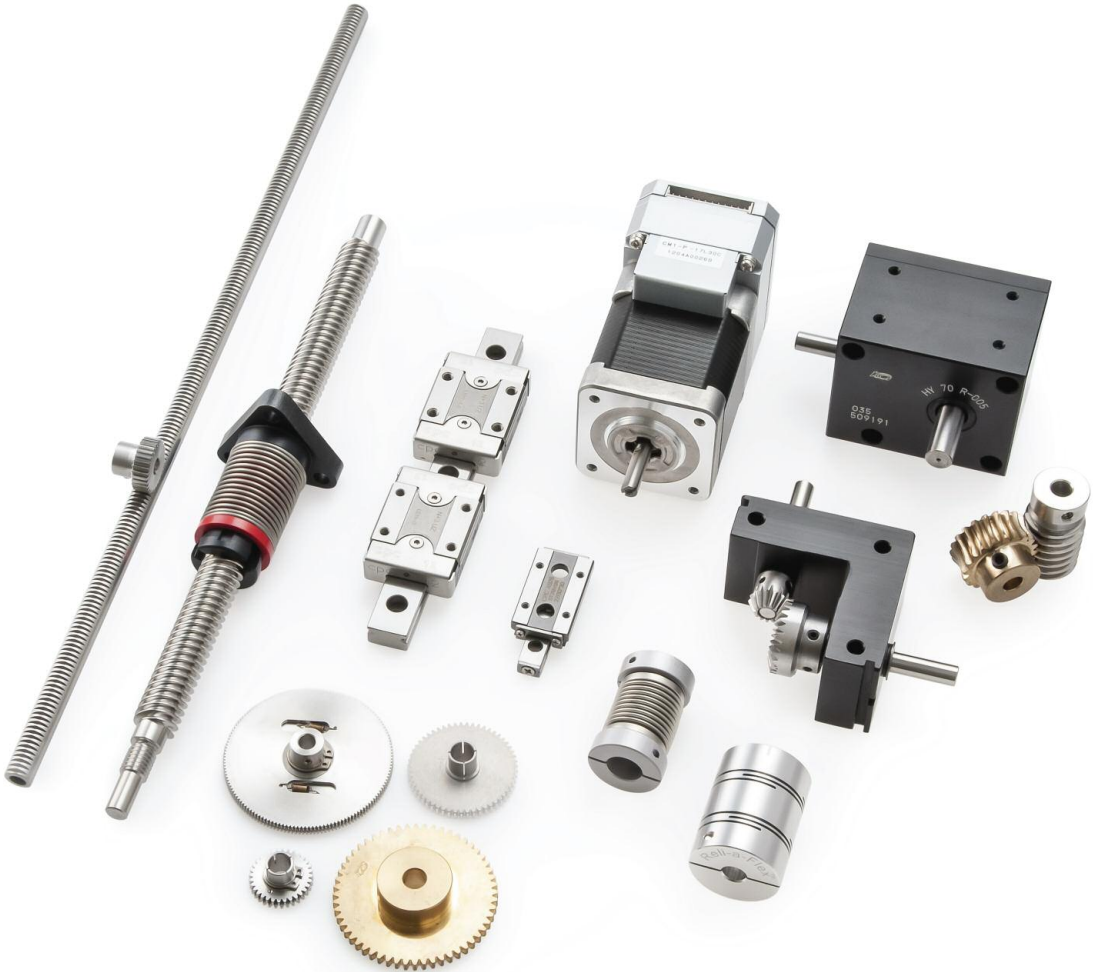
Manufacturing



Production Test



Gearbox transmission error measurement



Section Contents

IntroductionPage 1-2

Rotary MotionPage 1-4

Linear MotionPage 1-6

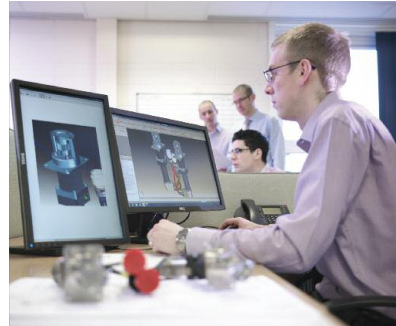
Integrated SolutionsPage 1-8

Bespoke SolutionsPage 1-12

Precise motion control solutions

The Reliance catalogue provides a one-stop-shop - from components and assemblies for rotary and linear motion to intelligent control and actuation products. Each product is offered with a refined, considered range of options and associated products, such as circlips and screws, all of which have been engineered to interface correctly.

To help design engineers develop prototypes quickly and effectively, we are able to supply small quantities at stock prices, whilst our manufacturing facilities enable larger quantities to be supplied for full production requirements, available with scheduled delivery, consignment stocking and stock management services.



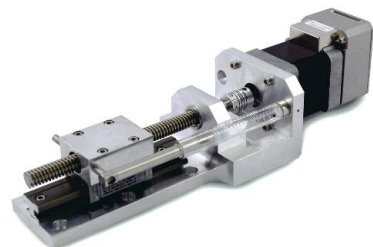
Our catalogue products can be readily modified to support applications which require a tailored solution. If you are not sure whether we offer the specification you need for any of the products in this catalogue then please contact us and we will endeavour to find a solution.

For design engineers seeking integrated solutions, we are able to combine catalogue products and assemblies to provide cost-effective sub-systems. Should a fully bespoke solution be required, further in-depth design engineering support can also be provided which, together with specialist manufacturing, assembly and test facilities, enables production of a wide range of custom-designed electro-mechanical, opto-mechanical, clean and high-vacuum solutions.

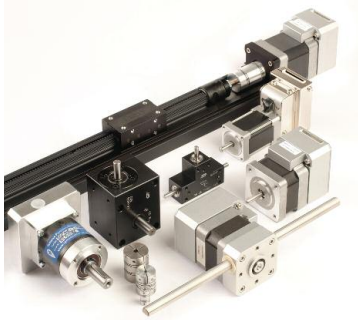
The following pages give an overview of the range of products available in the catalogue, shown in the context of both rotary and linear motion systems. We have also provided case study examples of how the catalogue products, together with engineering, manufacturing, assembly and test support, have been used to provide integrated solutions. Highlights of some of our custom design and manufacturing capabilities are also shown on [pages 1-12](#) to [1-15](#).



Rotary motion



Linear motion



Intelligent Motion Control

Reliance Cool Muscle Motors	Section 2
Reliance Cool Muscle Stage	Section 2
Rack Actuators	Section 2
Linear Rail Actuators	Section 2
Hybrid Linear Actuators	Section 2
Motorised Leadscrew Linear Slide	Section 2
Bespoke Motorised Actuators	Section 2
Planetary Gearboxes	Section 3
Bevel Gearboxes	Section 3
Epicyclic Gearbox Modules	Section 3
Custom-Designed Gearboxes	Section 3

Components and Assemblies



Anti-Backlash Gears	Section 4
Spur Gears	Section 4
Ground Gears	Section 4
Brass Gears	Section 4
Custom-Designed Gears	Section 4
Worms and Wheels	Section 5
Bevel Gears	Section 5
Racks and Pinions	Section 6
Leadscrews and Nut Assemblies	Section 7
Leadscrew Actuators	Section 7
Couplings	Section 8
Linear Guides and Slides	Section 9
Belts and Pulleys	Section 10

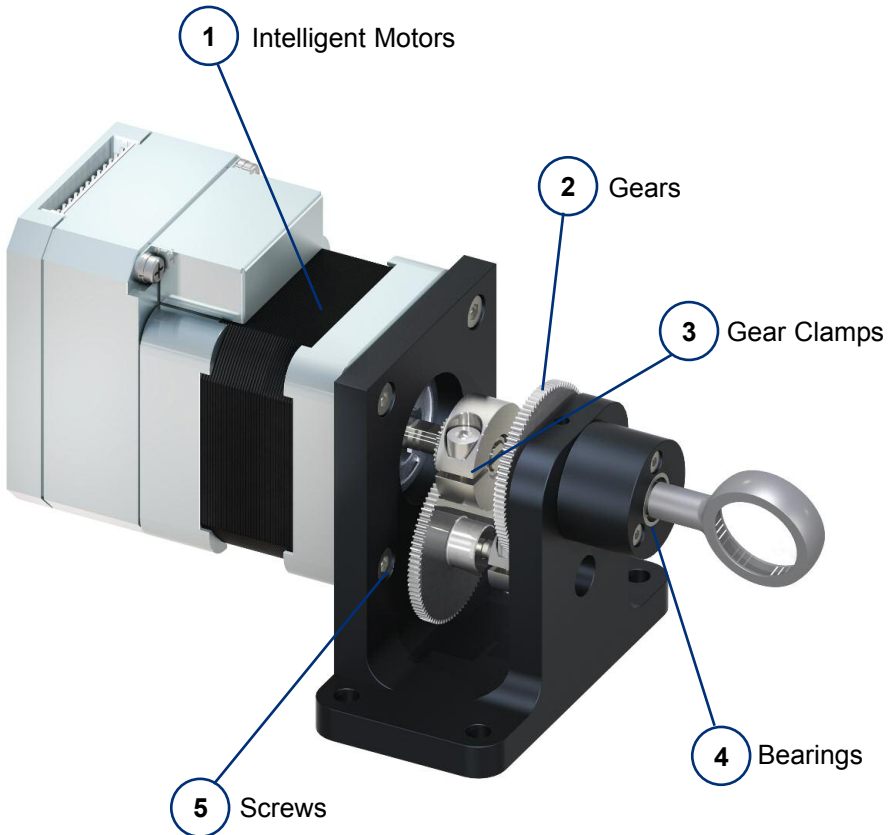
Essential Hardware



Gear Clamps and Collars	Section 11
Shafts and Accessories	Section 11
Bearings	Section 12
Bearing Pre-loaded Washers	Section 12
Bearing Spacers	Section 12
Machine Screws	Section 13
Shoulder Screws	Section 13
Dowel Pins	Section 13
Circlips	Section 13
Washers	Section 13

Motorised rotary drive system

A motorised rotary system for a medical device, using the Reliance Cool Muscle intelligent servo system together with standard precision gears, which provide very low velocity fluctuation at the final drive, enabling predictable scanning.





- ① Reliance Cool Muscle Intelligent Servo System
Section 2



- ② Precision Pin Hub and Clamp Hub Gears
Section 4



- ③ Gear Clamps, Shafts and Accessories
Section 11



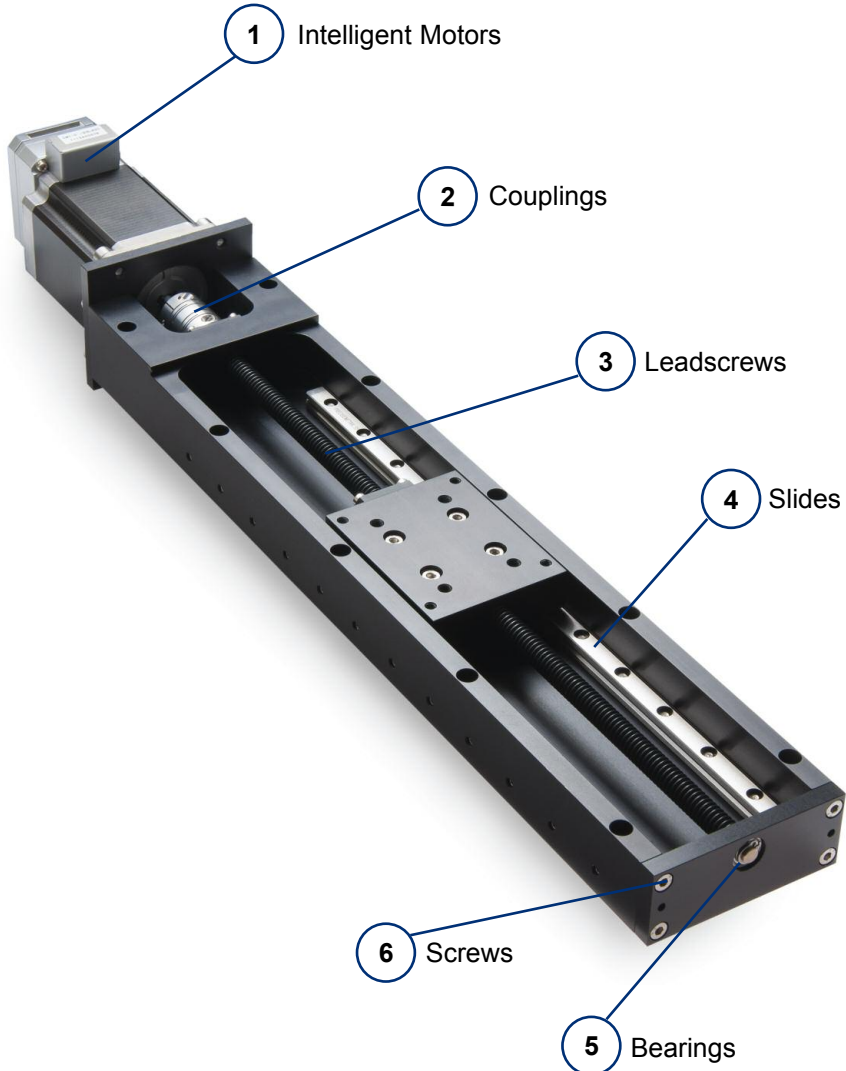
- ④ Shaft Bearings
Section 12



- ⑤ Machine Screws, Dowel Pins and Circlips
Section 13

Motorised linear stage

A motorised linear stage containing high stiffness crossed roller slides, for use in an application requiring vertical motion with a very high moment load.





- ① Reliance Cool Muscle Intelligent Servo System
Section 2



- ② Flexible Shaft Couplings
Section 8



- ③ Precision Leadscrews
Section 7



- ④ Linear Guides and Slides
Section 9



- ⑤ Shaft Bearings
Section 12

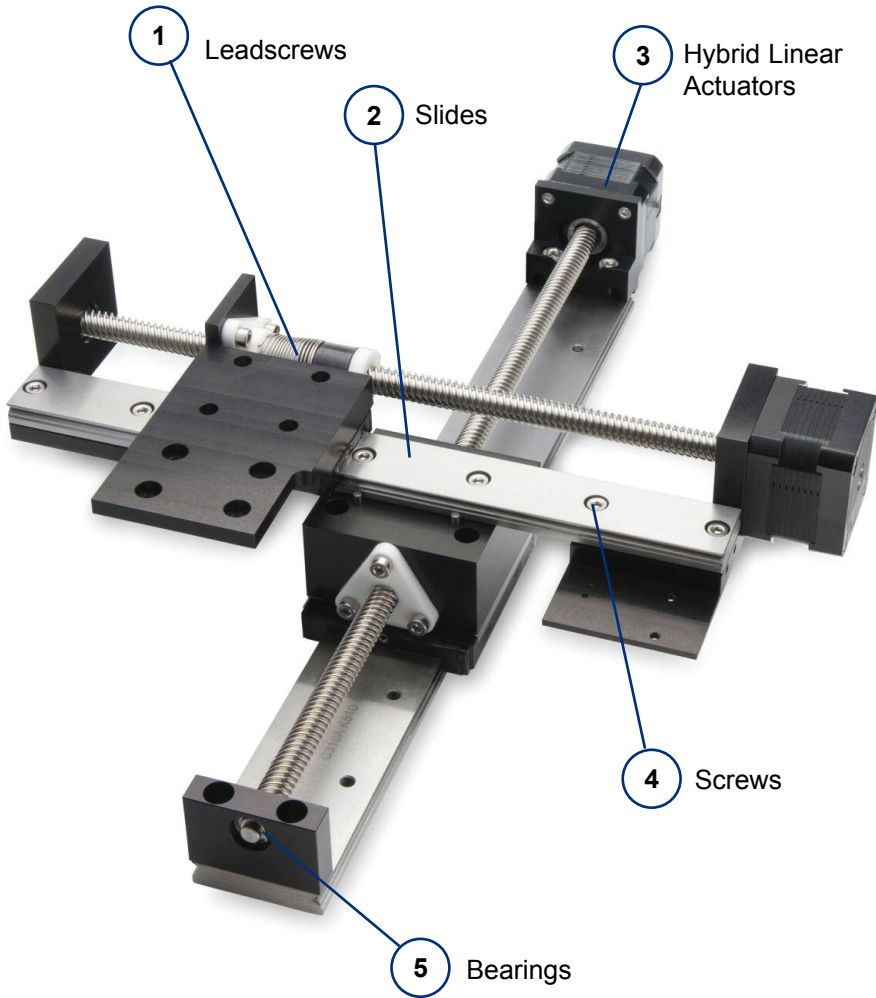


- ⑥ Machine Screws, Dowel Pins and Circlips
Section 13



XY positioning stage

A self-contained XY positioning stage utilising extra wide slides to cater for moment loads and internal screw motors for reduced part count, with anti-backlash leadscrews providing accurate positional repeatability.





- ① Precision Anti-Backlash Leadscrew and Nut Assemblies
Section 7



- ② Linear Guides and Slides
Section 9



- ③ Hybrid Linear Actuators
Section 2



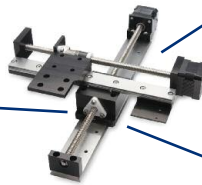
- ④ Machine Screws, Dowel Pins and Circlips
Section 13



- ⑤ Shaft Bearings
Section 12



Applications Engineering



Bracket Manufacture



Assembly and Test



Leadscrew actuator

A geared leadscrew actuator which provides low backlash and quiet operation, whilst balancing the difficulties of high speed and non-backdrivability.





- ① Precision Pin Hub and Clamp Hub Gears
Section 4



- ② Bespoke Leadscrew and Nut Assembly
Section 7



- ③ Machine Screws, Circlips and Hardware
Section 13



- ④ Shaft Bearings
Section 12

Systems Overview



Design and Development



Housing Manufacture



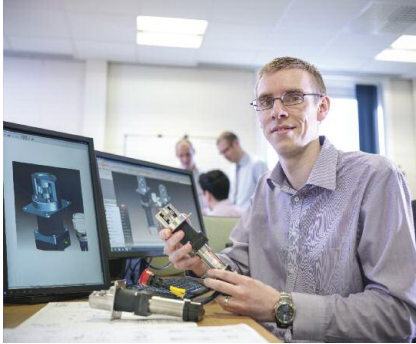
Assembly and Test



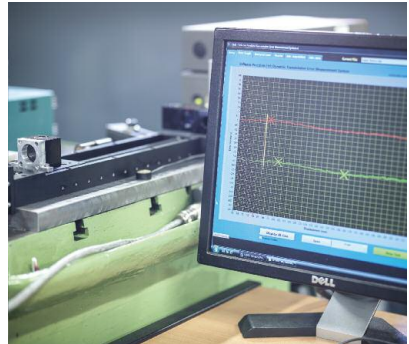
Bespoke geared system

A ring gear motion control system containing an actuation motor with integral brake and with separate coarse and fine positional feedback.





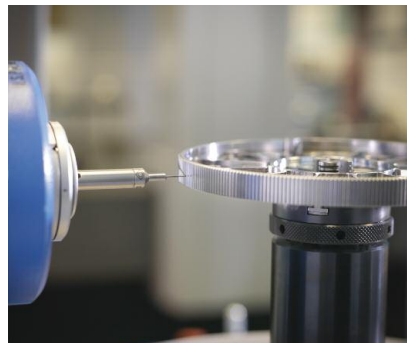
System design to specification



Prototyping and validation testing



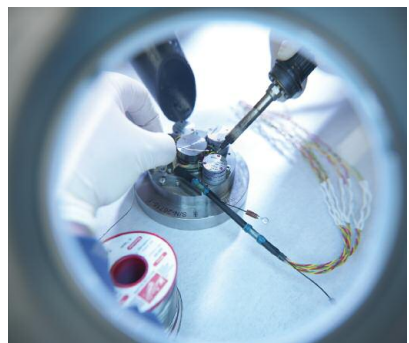
Gear manufacture



Gear metrology



Housing manufacture

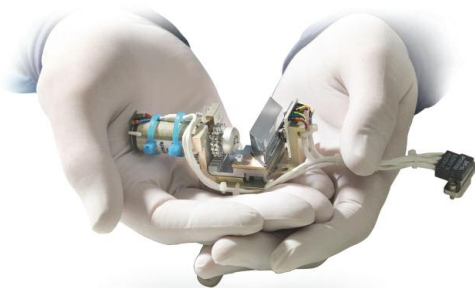
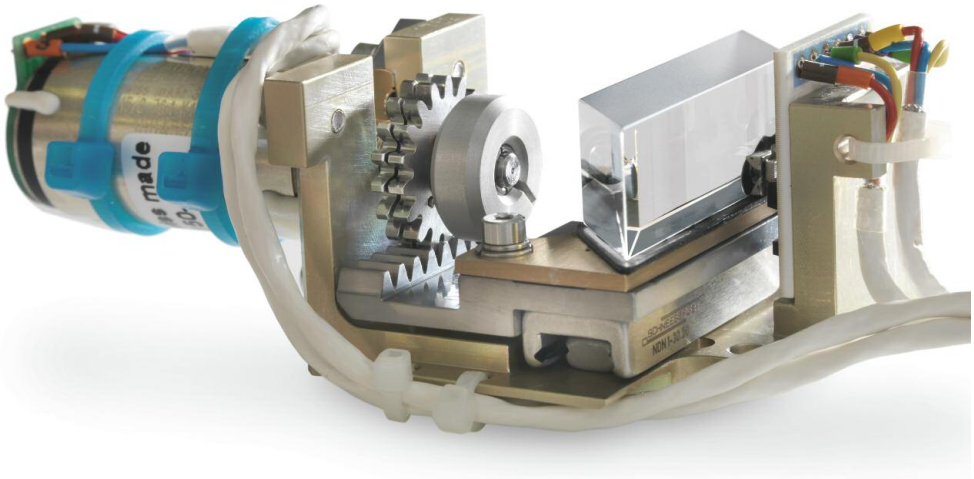


Electro-mechanical assembly



Opto-mechanical assembly

An opto-mechanical switch assembly combining precision motion control with precise optical placement.





Catalogue gears



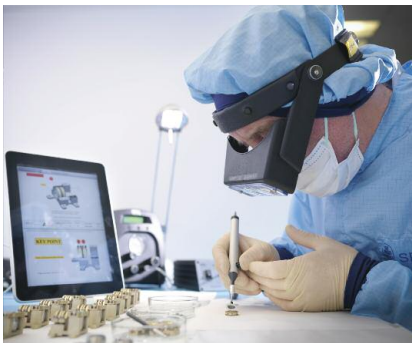
Rack and housing manufacture



Optic inspection



Wiring



Opto-mechanical assembly



Recyclable packaging

Systems Overview

Systems Overview	1
Intelligent Motors and Motorised Actuators	2
Planetary and Right Angle Gearboxes	3
Brass, Ground and Precision Spur Gears	4
Worms and Wheels, Bevels and Internal Gears	5
Round and Rectangular Racks and Pinions	6
Leadscrews and Leadscrew Assemblies	7
Flexible Shaft Couplings, Clutches and Collars	8
Linear Guides and Slides	9
Belts and Pulleys	10
Gear Clamps and Accessories	11
Bearings and Spacers	12
Machine Screws, Dowel Pins and Hardware	13
Technical Information	14



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RG36 issue A1