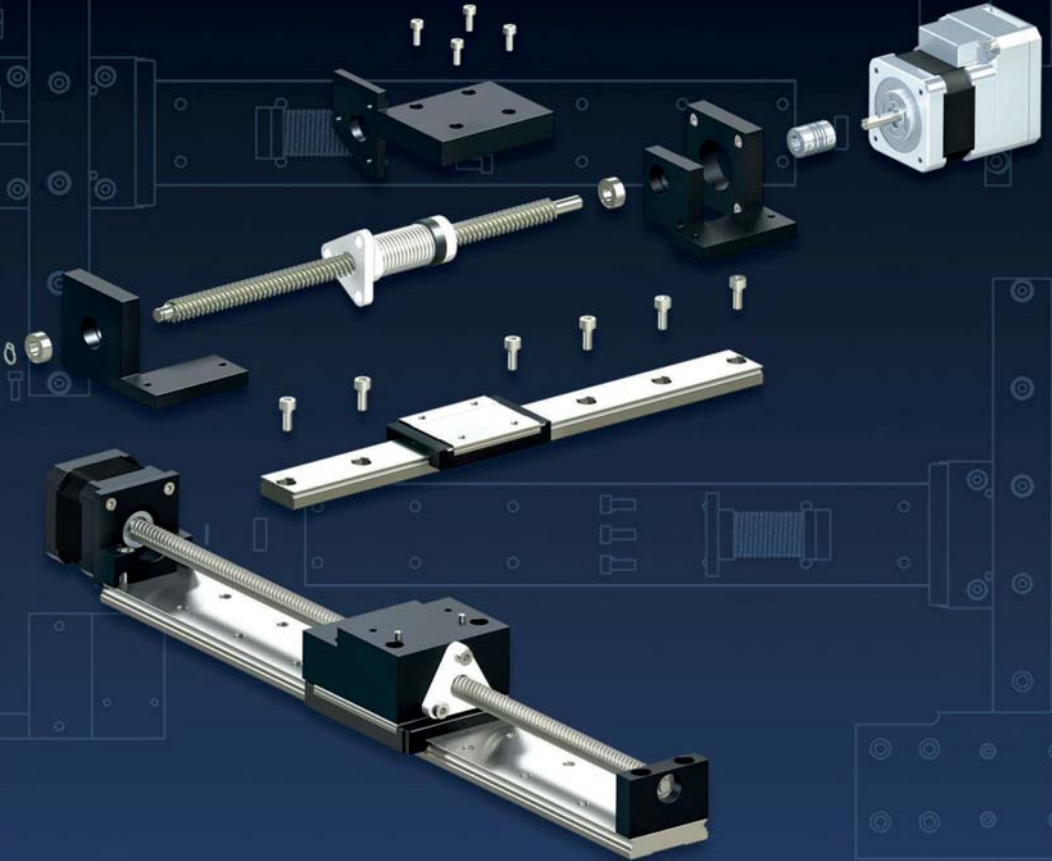








Reliance[®] Precision Limited



Precise Motion Control Solutions
Leadscrews and Leadscrew Assemblies

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Precise, efficient linear motion

Reliance's leadscrew and nut assemblies provide a flexible, integrated solution for linear motion. Available in a wide choice of leadscrew sizes and nut styles, with options for custom designed nuts and leadscrew end modifications, the range offers the flexibility to address a wide variety of requirements.



Leadscrews are provided with leads from 0.3 mm to 92 mm, screw diameters from 3 mm to 19 mm and thread lengths of up to 4 metres, making them an effective solution, even for high linear speed applications. They are available in a range of materials and coatings, with a choice of cut or standard interfacing ends, or with the option of custom machined ends. The screw thread form has been specifically designed for long life and quiet operation. It is manufactured using a rolled process, a highly consistent method of production resulting in a cost-effective, quality product.

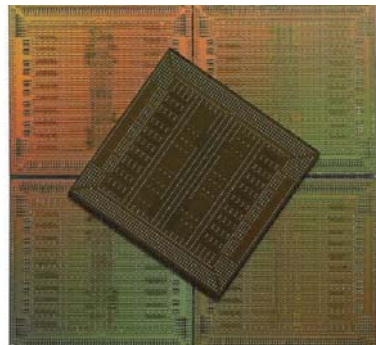
The leadscrew and nut assemblies have been designed specifically for motion control applications, rather than using adaptations of general purpose screws and nuts. There are 11 different leadscrew nut styles, with a choice of mounts and also options for custom-designed nuts. The leadscrew nuts are made from moulded plastic, which enables custom nuts to be produced with features of the drive system, such as bushings, carriages, pulleys and gears, integrated within the nut. This type of custom, multi-functional nut can offer a significant reduction in part count, reducing cost and assembly time in the overall mechanism.

The polyacetal nuts have a lubricating additive to provide longer life which, when combined with low friction leadscrew coatings, can extend the life of a standard leadscrew assembly by up to 300%. The assemblies are self-lubricating, making them ideally suited to medical and laboratory applications.

With lead accuracies up to 0.0001 mm/mm and positional bi-directional repeatability within 1.5 micron (0.0015 mm) on anti-backlash designs, the leadscrew and nut assemblies are ideal for applications requiring precise, efficient linear motion.



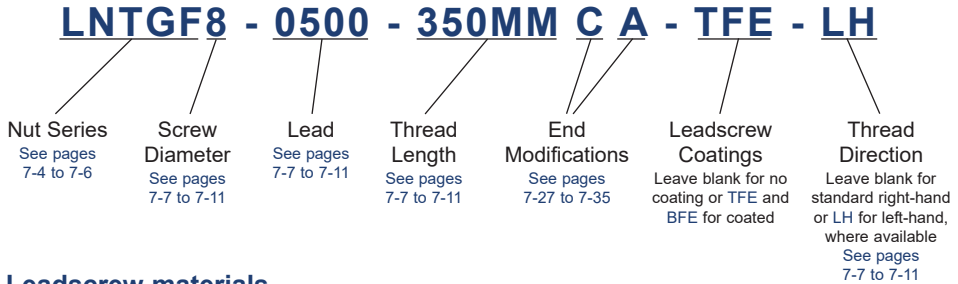
Micro dispensing syringe drives



Semiconductor microchip production



Part number structure



Leadscrew materials

Leadscrews are rolled from a premium grade, corrosion resistant and non-magnetic 303 stainless steel. Other materials are available including 316 and 400 series stainless steel, precipitation hardened steels, aluminium and titanium. These materials are ideally suited for industries such as medical, vacuum, cleanroom, food and human contact, salt spray and cryogenics.

Leadscrew coatings

Standard leadscrew nuts are manufactured from self-lubricating plastics. We also offer soft TFE and hard BFE low friction coatings for the leadscrew; lubrication to the screw/nut interface occurs by the nut picking up TFE particles from the coating as well as from migration of the internal lubricant from within the plastic nut.

We also supply leadscrews with specialist nickel/TFE coatings and offer a choice of coatings used in medium vacuum applications (up to 10^{-5}). Alternatively a BFE coating can be provided. This is a special proprietary hard coating which shares many of the benefits of TFE coating but offers exceptional durability in more aggressive environments and where reduced friction and a permanent coating is desired.

Although care should be taken to ensure that chips and voids do not occur in the coating, small voids have been shown to have little effect on the system performance. The lubricant, although solid, has some of the "spreading" ability of fluid lubricants. When machining bearing ends, soft fixtures are recommended to protect the coating.

TFE coated screws provide the maximum level of self-lubrication and should not be additionally lubricated or used in environments where oils or other lubricant contamination is possible.

Coatings, available for only a small additional cost, give the best results on wear life, coefficient of friction and torque to drive the leadscrew assembly. To select a coating add -TFE or -BFE to the part number shown above.

Leadscrew ends

Leadscrews are provided with the options of cut ends or a range of standard end modifications suitable for interfacing with ball bearings, circlips, couplings, pulleys and gears. Alternatively custom end modifications can be supported. See [pages 7-27 to 7-35](#).



LBF MINI series - Miniature nut for applications that do not require anti-backlash or wear compensation.



LPX series - Long life for applications that do not require anti-backlash or wear compensation.



LNTG series - Adjustable drag, compact design, anti-backlash nut assembly allows drag torque to be pre-set according to system requirements.



LAB series - Incorporates a lockable, adjustable sleeve to set the drag torque of the nut and to provide manual backlash control.



LNTB MINI series - Miniature anti-backlash nut for applications requiring axial stiffness through life with minimal drag torque.



LNTB series - Flexible design, self-compensating anti-backlash nut assembly maintains axial stiffness throughout its life with minimum system drag torque.



LAF series - Light loads. Precise position accuracy and repeatability. Anti-backlash.



LAK series - Moderate loads. Delivers increased load capacity and greater axial stiffness with low drag torque. Anti-backlash.



LWD series - Moderate loads. An anti-backlash, self-lubricating acetal nut. Compact design provides stiffness and accuracy for precise positioning.



LCM series - Light loads, compact design. Anti-backlash.



LAX series - Heavy loads. Delivers maximum load carrying capacity with highest axial and radial stiffness. Anti-backlash.



Custom Design - Specials to suit your application.



Alternative nut styles

Reliance offers a wide variety of standard nut designs and the matrix below is intended as a general guide to help select the most appropriate nut for the application. More detailed technical data is provided on pages 7-12 to 7-25.

Comparative star rating:	
●●●	best
●	good
☒	not applicable

Nut feature matrix

Nut Feature	Nut Style									
	LBF	LPX	LNTG	LAB	LNTB	LAF	LAK	LWD	LCM	LAX
Compactness	●●●	●●●	●●●	●●	●●	●●	●●	●●●	●●●	●
Dynamic load capability	●●●	●●●	●●	●●	●●	●	●●	●●	●●	●●●
Minimal drag torque	☒	☒	●●	●●	●●	●●	●●●	●●	●	●●●
Vibration damping (horizontal)	☒	☒	●●	●●●	●	●●●	●●	●	●	●●
Vibration damping (vertical)	☒	☒	●	●●●	●	●●●	●	●	●	●
Smoothness of operation (printing/scanning)	●	●	●●●	●●●	●●	●●	●●	●●	●	●●
Backlash/wear compensation capability	☒	☒	●	●	●●●	●●	●●●	●●●	●●●	●●●
Ease of user adjustment of drag torque/backlash	☒	☒	●●●	●●●	●	☒	●●	☒	☒	●●
Stiffness (less axial bi-directional compliance)	☒	☒	●●	●●	●●●	●●	●●●	●●●	●●●	●●●
Ability to add modifications	●●●	●●●	●	●	●●●	●●	●	●	●	●
Ability to manufacture with custom material	●●●	●●●	●●	●●	●●●	●●	●	●	●	●
Ability to work with finer leads <5.08 mm	●●●	●●●	●●●	●●●	●●	●●●	●●●	●●●	●●●	●●●
Ability to work with long leads >25.4 mm	●●●	●●●	●	●●●	●●●	●●●	●●●	●●●	●●●	●●●

Nut mounting options

The nuts are available in several different designs including anti-backlash, adjustable anti-backlash, general purpose and miniature. Most nuts are available with a triangular, round or threaded mount. Custom requirements can be supported using specialist mould designs, see [page 7-26](#)

Modified and custom nuts

All of the nuts can be modified to some degree to help tailor them to specific requirements, alternatively fully customised nuts can be supplied, see [page 7-26](#).

Nut materials

Due to the controlled manufacturing processes, we can offer nuts in different types of plastics that can be moulded, e.g. PEEK, special carbon or other fibre filled plastics. Even though the standard design and materials developed for the leadscrew nut assemblies are commonly plastics, metal nuts made from bronze, brass or aluminium alloy can also be supplied. For the optimum technical and cost effective solution, we are able to supply special moulded nuts impregnated with carbon fibre for strength, or nuts over-moulded on metal to help minimise the number of components in the assembly.



Nominal Screw Diameter	Property	LBF ¹ LPX ² Series	LNTG Series	LAB Series	LNTB Series	LAF Series	LAK Series	LWD Series	LCM Series	LAX Series
3 mm	Dynamic load	11 kg	2.3 kg		2.3 kg					
	Static friction drag torque	free wheeling	0.001 - 0.004Nm		0.001 - 0.004Nm					
5 mm	Dynamic load	11 kg	2.3 kg		2.3 kg			4.5 kg	2.3 kg	
	Static friction drag torque	free wheeling	0.001 - 0.004Nm		0.001 - 0.004Nm			0.03 Nm max	0.03 Nm	
6 mm	Dynamic load	20 kg	4.6 kg	2.3 kg	4.6 kg	2.3 kg		4.5 kg	2.3 kg	
	Static friction drag torque	free wheeling	0.004 - 0.014Nm	0.004 - 0.014Nm	0.004 - 0.014Nm	0.002Nm		0.03Nm max	0.03Nm	
8 mm	Dynamic load	35 kg	10 kg	5 kg	10 kg	5 kg	10 kg	11.3 kg	3.6 kg	
	Static friction drag torque	free wheeling	0.007 - 0.02Nm	0.01 - 0.02Nm	0.01 - 0.02Nm	0.01 - 0.03Nm	0.01 - 0.02Nm	0.04Nm max	0.04Nm	
10 mm	Dynamic load	35 kg	10 kg	5 kg	10 kg	5 kg	10 kg	11.3 kg	3.6 kg	
	Static friction drag torque	free wheeling	0.007 - 0.02Nm	0.01 - 0.02Nm	0.01 - 0.02Nm	0.01 - 0.03Nm	0.01 - 0.02Nm	0.04Nm max	0.04Nm	
11 mm	Dynamic load	40 kg		7 kg	13 kg	7 kg		34 kg		
	Static friction drag torque	free wheeling		0.014 - 0.03Nm	0.007 - 0.02Nm	0.014 - 0.04Nm		0.06Nm max		
13 mm	Dynamic load	68 kg		11 kg	45 kg	11 kg		34 kg		68 kg
	Static friction drag torque	free wheeling		0.014 - 0.03Nm	0.014 - 0.04Nm	0.02 - 0.05Nm		0.06Nm max		0.014 - 0.04Nm
16 mm	Dynamic load	100 kg		16 kg	56 kg	16 kg				113 kg
	Static friction drag torque	free wheeling		0.02 - 0.05Nm	0.014 - 0.04Nm	0.028 - 0.055Nm				0.014 - 0.04Nm
19 mm	Dynamic load	160 kg		25 kg	68 kg					159 kg
	Static friction drag torque	free wheeling		0.03 - 0.063Nm	0.02 - 0.05Nm					0.02 - 0.05Nm
See Pages		7-12 to 7-14	7-15 & 7-16	7-17	7-18 to 7-20	7-21	7-22	7-23	7-24	7-25

¹ LBF available in 3 mm and 5 mm screw diameter only.

² LPX available from 6mm screw diameter.

i Information

- For technical information see pages T7-1 to T7-5
- Larger screw diameters available, contact us



Compatible Nut Styles	Lead mm	Nominal Screw Diameter	Part Number	Root Dia mm	Outside Diameter	Efficiency %*	Left Hand Available
LBF	0.30	2 mm	2-0012	1.73	2.01	24**	
	0.40		2-0016	1.47	1.91	30**	
	0.50		2-M005	1.45	1.96	36**	
	1.00		2-M010	1.50	2.01	52**	
	2.00		2-M020	1.45	1.96	66**	
LBF, LNTG, LNTB	0.61	3.2 mm	3.2-0024	2.36	3.28	44	✓ LH only
	1.00		3.2-M010	2.39	3.28	57	
	1.22		3.2-0048	2.36	3.28	61	
	1.91		3.2-0075	2.36	3.28	70	
	2.44		3.2-0096	2.36	3.28	75	
3.18	3.2-0125	1.98	3.18	80			
LBF, LNTG, LNTB	0.50	3.3 mm	3.3-M005	2.64	3.35	42	
	1.00		3.3-M010	2.03	3.35	61	
	2.00		3.3-M020	2.03	3.35	75	
	4.00		3.3-M040	2.03	3.35	84	
	8.00		3.3-M080	2.03	3.35	87	
LBF, LNTG, LNTB	0.30	3.6 mm	3.6-0012	3.12	3.56	26	
	0.61		3.6-0024	2.67	3.56	43	
	1.22		3.6-0048	2.06	3.56	62	
	2.44		3.6-0096	2.06	3.56	75	
	10.00		3.6-M100	2.59	3.56	86	
LBF, LNTG, LNTB	0.84	4 mm	4-0033	2.95	3.96	45	✓ LH Only
	1.27		4-0050	2.44	3.96	59	
	2.39		4-0094	3.25	4.17	67	
	3.18		4-0125	3.30	4.27	74	
	6.35		4-0250	3.30	3.96	83	
	9.53		4-0375	3.30	3.96	85	
	12.7		4-0500	3.30	3.96	86	
LNTB, LNTG, LBF, LWD, LCM	0.50	5 mm	5-M005	4.14	4.78	30	✓
	0.64		5-0025	3.81	4.78	39	
	1.00		5-M010	3.66	4.78	47	
	1.27		5-0050	3.15	4.78	58	
	2.54		5-0100	3.45	4.78	69	
	4.76		5-0188	4.24	4.78	78	
	5.08		5-0200	3.15	4.78	82	
	9.53		5-0375	4.09	4.78	84	
	10.16		5-0400	3.15	4.78	84	
	10.85		5-0427	4.11	4.78	85	
	12.70		5-0500	3.61	4.78	86	

* Listed efficiencies are theoretical values based on a TFE coated leadscrew

** Listed efficiencies for 2mm diameter leadscrews are theoretical values based on non-coated leadscrews

Note: Thread lengths can be specified up to 4m, depending on diameter and lead.



Compatible Nut Styles	Lead mm	Nominal Screw Diameter	Part Number	Root Dia mm	Outside Diameter	Efficiency	Left Hand Available
						%*	
LNTB, LNTG, LBF, LWD	0.61	5.6 mm	5.6-0024	4.60	5.54	31	
	0.79		5.6-0031	4.06	5.18	39	
	1.22		5.6-0048	3.96	5.49	50	
	1.27		5.6-0050	3.43	5.08	52	
	1.59		5.6-0063	3.61	5.54	60	
	2.44		5.6-0096	3.96	5.54	66	
	4.88		5.6-0192	3.96	5.54	78	
	6.35		5.6-0250	3.56	5.18	81	
	9.75		5.6-0384	4.04	5.54	86	
LCM, LAF, LAB, LNTB, LNTG, LPX, LWD	0.61	6 mm	6-0024	5.54	6.35	28	
	0.64		6-0025	5.44	6.35	30	
	0.79		6-0031	5.28	6.35	34	
	1.00		6-M010	4.83	6.35	40	
	1.22		6-0048	4.83	6.35	45	
	1.27		6-0050	4.85	6.35	46	
	1.50		6-M015	4.37	6.35	52	
	1.59		6-0063	4.32	6.35	52	
	2.00		6-M020	4.32	6.35	59	
	2.44		6-0096	4.83	6.35	61	
	2.54		6-0100	4.83	6.35	62	
	3.00		6-M030	4.45	6.35	68	
	3.18		6-0125	4.83	6.35	67	
	5.00		6-M050	4.37	6.35	72	
	5.08		6-0200	4.32	6.35	65	
	6.35		6-0250	4.27	6.35	79	
	7.94		6-0313	4.67	6.35	81	
	8.46		6-0333	4.32	6.35	82	
10.00	6-M100	4.32	6.35	78			
10.16	6-0400	4.32	6.35	84			
12.70	6-0500	4.29	6.35	85			
19.05	6-0750	4.32	6.35	86			
25.40	6-1000	4.32	6.35	84			
LCM, LAF, LAB, LNTB, LNTG, LPX, LWD, LAK	1.00	8 mm	8-M010	6.63	8.00	34	
	1.44		8-0057	6.17	8.00	43	
	1.88		8-0074	5.36	7.92	51	
	2.82		8-0111	5.89	7.92	60	
	4.24		8-0167	5.36	7.92	69	
	6.35		8-0250	5.94	7.92	76	
	12.70		8-0500	5.89	7.92	83	
20.32	8-0800	6.17	7.77	86			
LCM, LAF, LAB, LAK, LNTB, LNTG, LPX, LWD	0.64	10 mm	10-0025	8.56	9.53	21	
	1.00		10-M010	8.89	10.01	28	
	1.06		10-0042	8.13	9.53	34	
	1.27		10-0050	7.65	9.53	36	
	1.40		10-0055	7.70	9.53	38	

* Listed efficiencies are theoretical values based on a TFE coated leadscrew

Note: Thread lengths can be specified up to 4 m, depending on diameter and lead.



Compatible Nut Styles	Lead mm	Nominal Screw Diameter	Part Number	Root Dia mm	Outside Diameter	Efficiency	Left Hand Available
						%*	
LCM, LAF, LAB, LAK, LNTB, LNTG, LPX, LWD	1.50	10 mm	10-M015	7.95	9.88	38	✓
	1.73		10-0068	7.49	9.86	42	
	2.00		10-M020	6.71	9.53	47	
	2.12		10-0083	7.44	9.53	48	
	2.54		10-0100	6.76	9.53	53	✓
	3.18		10-0125	7.49	9.53	59	
	4.00		10-M040	6.96	9.53	65	
	4.23		10-0167	6.63	9.42	61	
	5.00		10-M050	6.76	9.53	69	
	5.08		10-0200	6.76	9.53	69	✓
	6.35		10-0250	6.81	9.53	70	
	7.62		10-0300	6.48	9.53	76	
	8.46		10-0333	6.22	9.53	78	
	9.22		10-0363	6.60	9.53	79	✓
	9.53		10-0375	6.73	9.53	79	
	10.00		10-M100	6.60	9.53	79	
	10.16		10-0400	7.44	9.53	79	
	12.00		10-M120	7.29	9.86	82	
	12.70		10-0500	6.73	9.86	81	✓
	16.94		10-0667	6.93	9.53	83	
19.05	10-0750	6.93	9.86	84			
25.00	10-M250	6.65	9.53	84			
25.40	10-1000	6.45	9.73	84			
30.48	10-1200	6.45	9.73	84	✓		
31.75	10-1250	7.06	9.53	84			
38.10	10-1500	6.71	9.53	83			
LAF, LAB, LNTB, LPX, LWD	1.27	11 mm	11-0050	9.19	11.10	30	
	1.59		11-0063	9.09	11.07	38	✓
	2.00		11-M020	9.50	11.99	42	
	2.82		11-0111	8.31	11.10	52	
	3.00		11-M030	9.22	11.13	52	
	3.18		11-0125	9.07	11.13	54	
	5.00		11-M050	8.00	11.13	65	
	6.00		11-M060	7.95	11.00	70	
	6.35		11-0250	8.26	11.23	70	
	7.80		11-0307	8.71	11.30	73	
	8.26		11-0325	8.69	11.28	74	
	10.00		11-M100	8.41	11.33	78	
	12.00		11-M120	8.08	11.13	80	
	12.70		11-0500	8.31	11.48	80	
	15.62		11-0615	9.55	12.07	82	

* Listed efficiencies are theoretical values based on a TFE coated leadscrew

Note: Thread lengths can be specified up to 4 m, depending on diameter and lead.



Leadscrew & Nut Assemblies

Compatible Nut Styles	Lead mm	Nominal Screw Diameter	Part Number	Root Dia mm	Outside Diameter	Efficiency	Left Hand Available
						%*	
LAF, LAB, LNTB, LAX, LPX, LWD	1.27	13 mm	13-0050	11.00	12.57	29	
	2.00		13-M020	9.02	12.01	41	
	2.50		13-M025	9.73	12.70	46	
	2.54		13-0100	9.25	12.45	46	✓
	3.18		13-0125	9.50	12.70	51	
	4.00		13-M040	9.75	12.70	58	
	4.06		13-0160	9.86	12.70	67	
	4.23		13-0167	9.75	12.70	58	
	5.00		13-M050	9.27	12.70	62	
	5.08		13-0200	9.30	12.50	63	✓
	6.35		13-0250	9.70	12.70	67	
	8.46		13-0333	9.19	12.62	73	✓
	10.00		13-M100	9.19	12.62	76	
	10.16		13-0400	9.25	12.62	76	
	12.70		13-0500	8.94	12.40	79	
	16.00		13-M160	9.50	12.70	80	
	19.05		13-0750	10.13	13.34	83	
	20.32		13-0800	9.40	12.70	83	
	25.00		13-M250	9.37	12.70	84	
	25.40		13-1000	9.45	12.45	84	✓
38.10	13-1500	9.50	12.45	85			
50.80	13-2000	9.60	12.40	87			
LAF, LAB LNTB, LAX LPX	2.54	16 mm	16-0100	12.65	15.62	40	
	3.18		16-0125	11.94	15.88	45	✓
	5.08		16-0200	12.57	15.88	53	
	6.35		16-0250	11.91	15.88	63	
	8.00		16-M080	12.52	15.93	68	
	12.70		16-0500	12.14	15.88	76	✓
	16.00		16-M160	12.47	15.88	78	
	25.40		16-1000	12.22	15.88	83	
	38.10		16-1500	12.67	15.88	85	
	50.80		16-2000	12.67	15.88	86	✓
LAB, LNTB LAX, LPX	1.59	19 mm	19-0063	17.04	19.05	25	
	2.50		19-M025	15.90	18.85	35	
	2.54		19-0100	15.85	18.95	35	✓
	4.23		19-0167	16.38	18.47	47	
	5.00		19-M050	15.85	18.92	51	
	5.08		19-0200	16.05	18.82	52	
	6.35		19-0250	16.23	18.57	57	
	7.00		19-M070	15.85	19.05	59	
	8.46		19-0333	15.85	19.05	64	
	12.70		19-0500	15.82	18.90	73	
	14.00		19-M140	15.85	19.05	73	
	15.00		19-M150	15.82	19.02	74	

* Listed efficiencies are theoretical values based on a TFE coated leadscrew
 Note: Thread lengths can be specified up to 4 m, depending on diameter and lead.



Compatible Nut Styles	Lead mm	Nominal Screw Diameter	Part Number	Root Dia mm	Outside Diameter	Efficiency	Left Hand Available
						%*	
LAB LNTB LAX LPX	18.00	19 mm	19-M180	16.51	19.81	77	
	19.00		19-M190	13.89	17.07	80	
	20.00		19-M200	16.46	19.81	78	
	20.32		19-0800	15.70	19.05	79	
	24.00		19-M240	16.08	18.64	80	
	25.40		19-1000	15.72	18.87	81	✓
	38.10		19-1500	14.99	18.08	84	✓
	50.00		19-M500	15.75	19.08	84	
	50.80		19-2000	15.52	18.85	84	✓
	60.96		19-2400	15.75	19.05	84	✓
	92.00		19-M920	16.10	19.05	87	✓

* Listed efficiencies are theoretical values based on a TFE coated leadscrew

Note: Thread lengths can be specified up to 4m, depending on diameter and lead.

i Information

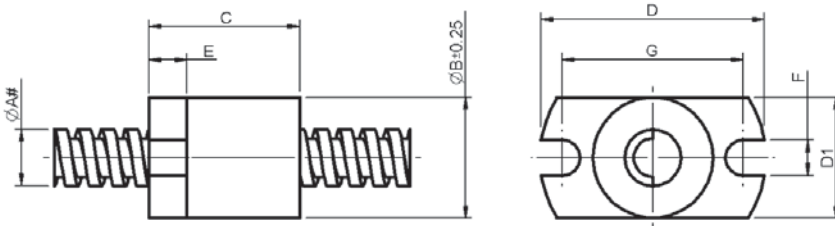
- Larger screw diameters available, visit www.reliance.co.uk/shop
- For leadscrew and nut ordering configurations - see page 7-3
- For leadscrew end modifications - see pages 7-27 to 7-35
- For product overview - see pages 7-2 to 7-6
- For technical information - see pages T7-1 to T7-5



All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

Associated Products
 Reli-a-Flex® couplings: page 8-6
 Linear slides: page 9-1
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 Plain bearings: page 12-1

Leadscrew & Nut Assemblies

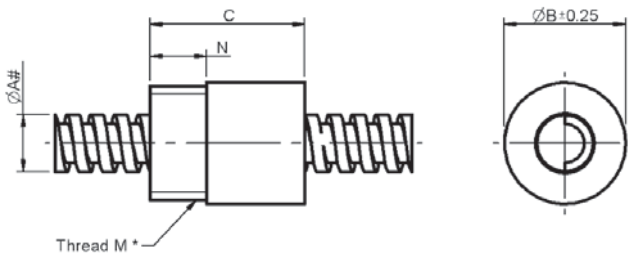


Part number selection table - LBB and LBF series, barrel and flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange D	Flange Width E	Flange Height D1	Slot F	Centres G	Dynamic Load kg	Drag Torque Nm
LBB2-	2.0	5.5	8	--	--	5.08	--	--	4.5	Free wheeling
LBF2-	2.0	5.5	8	11.9	2.0	5.5	1.80	9.00	4.5	
LBF3-	3 ¹	10.2	13	19.1	3.2	10.2	3.05	15.24	11	
LBF4-	4.0									
LBF5-	5 ²									

¹LBF3 for Ø 3.2, 3.3 and 3.6 ²LBF5 for Ø 5.0 and 5.6

The LBB nut series is a flangeless style barrel nut with two flats at 5.08mm diametrically opposed running the full length of the nut.



Part number selection table - LBY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LBY3-	3 ¹	10.2	13	3/8-24	4.75	11	Free wheeling
LBY4-	4.0						
LBY5-	5 ²						

¹LBY3 for Ø 3.2, 3.3 and 3.6 ²LBY5 for Ø 5.0 and 5.6

*Thread shown imperial as standard, metric available, please specify diameter and pitch

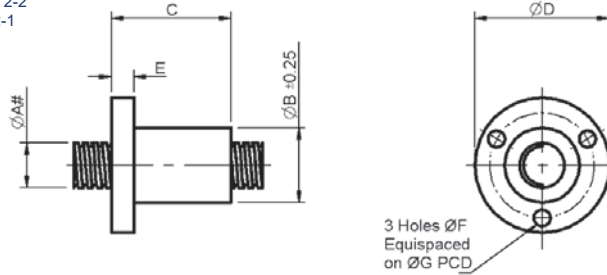
For the full range of nominal diameters, see table on pages 7-7 to 7-11



Associated Products

Reli-a-Flex® couplings: page 8-6
 Linear slides: page 9-1
 Intelligent motors: page 2-2
 Plain bearings: page 12-1

All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

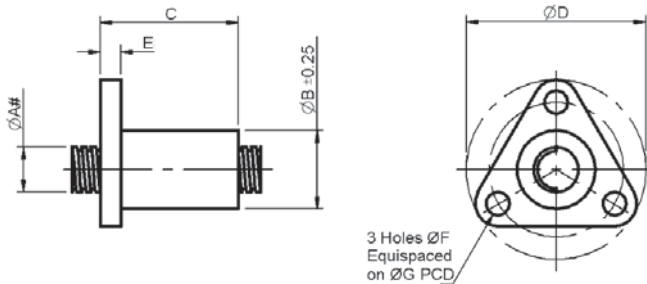


Leadscrew & Nut Assemblies

Part number selection table - LPX series, flange mount

Nut Series	Nominal Screw $\varnothing A\#$	Nut $\varnothing B$	Nut Length C	Flange $\varnothing D$	Flange Width E	Hole Dia $\varnothing F$	Mounting Holes PCD $\varnothing G$	Dynamic Load kg	Drag Torque Nm	
LPX6-	6.4	12.7	25.4	25.4	4.8	3.56	19.05	20	Free wheeling	
LPX8-	8.0	15.9		28.7			22.23	5.16		35
LPX10-	9.6	19.1		38.1						
LPX11-	11.3		68							
LPX13-	12.7	22.2	51	44.4		6.4	30.18	100		
LPX16-	15.9							160		
LPX19-	19.1	28.4				36.53				

Screw sizes 22 and 24 mm available



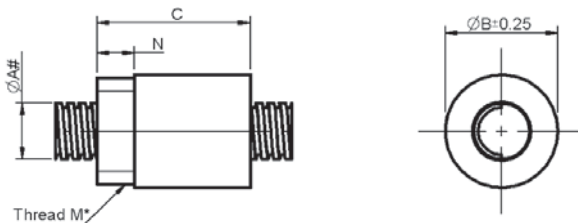
Part number selection table - LPXZ series, flange mount

Nut Series	Nominal Screw $\varnothing A\#$	Nut $\varnothing B$	Nut Length C	Flange $\varnothing D$	Flange Width E	Hole Dia $\varnothing F$	Mounting Holes PCD $\varnothing G$	Dynamic Load kg	Drag Torque Nm
LPXZ6-	6.4	12.7	25.4	25.4	4.3	3.63	19.05	20	Free wheeling
LPXZ8-	8.0	16.6	48.3	38.1		5.00	28.58	35	
LPXZ10-	9.6							40	
LPXZ11-	11.3	19.1						68	
LPXZ13-	12.7								



All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

Associated Products
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 Linear slides: page 9-1
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 Plain bearings: page 12-1



Leadscrew & Nut Assemblies

Part number selection table - LPXY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LPXY6-	6.4	15.9	25.4	9/16-18	4.75	20	Free wheeling
LPXY8-	8.0	19.1		5/8-18	6.35	35	
LPXY10-	9.6					40	
LPXY11-	11.3	25.4	38	15/16-16	9.53	68	
LPXY13-	12.7					100	
LPXY16-	15.9						
LPXY19-	19.1	38.1	51	1 3/8-16	12.70	160	

Note: All LPX, LPXZ and LPXY nuts are free wheeling

*Thread shown imperial as standard, metric available, please specify diameter and pitch

Screw sizes 22 and 24 mm available

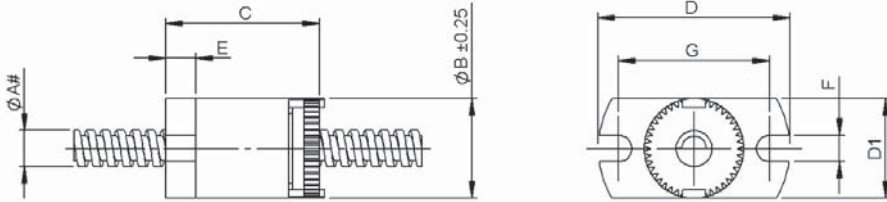
For the full range of nominal diameters, see table on pages 7-7 to 7-11



Associated Products

Reli-a-Flex® couplings: page 8-6
 Linear slides: page 9-1
 Intelligent motors: page 2-2
 Plain bearings: page 12-1

All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

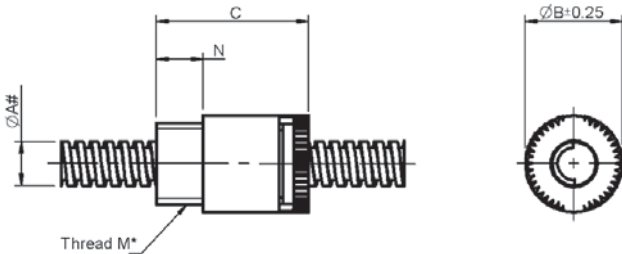


Leadscrew & Nut Assemblies

Part number selection table - LNTGF series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange D	Flange Width E	Flange Height D1	Slot F	Centres G	Dynamic Load kg	Drag Torque Nm
LNTGF3-	3 ¹	10.2	12.7	19.1	3.2	10.2	3.05	15.24	2.3	0.004
LNTGF4-	4.0									
LNTGF5-	5 ²									

¹LNTGF3 for \varnothing 3.2, 3.3 and 3.6 ²LNTGF5 for \varnothing 5.0 and 5.6



Part number selection table - LNTGY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LNTGY3-	3 ¹	10.2	12.7	3/8-24	4.06	2.3	0.004
LNTGY4-	4.0						
LNTGY5-	5 ²						

¹LNTGY3 for \varnothing 3.2, 3.3 and 3.6 ²LNTGY5 for \varnothing 5.0 and 5.6

*Thread shown imperial as standard, metric available, please specify diameter and pitch

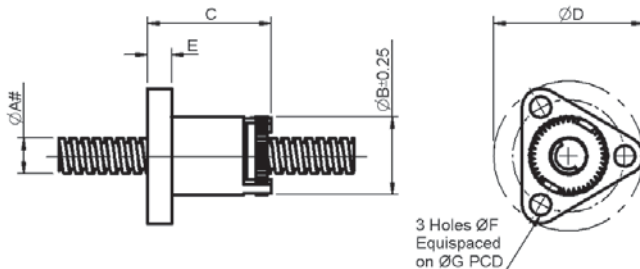
For the full range of nominal diameters, see table on pages 7-7 to 7-11



All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

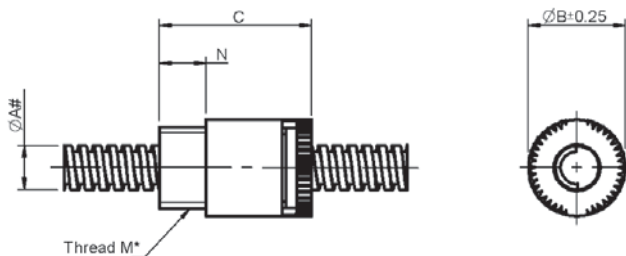
Associated Products
 Reli-a-Flex® couplings: page 8-6
 Linear slides: page 9-1
 Intelligent motors: page 2-2
 Plain bearings: page 12-1

Leadscrew & Nut Assemblies



Part number selection table - LNTGF series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Hole Dia ØF	Mounting Holes PCD ØG	Dynamic Load kg	Drag Torque Nm
LNTGF6-	6.4	13.2	20.3	25.4	4.0	3.63	19.1	4.5	0.004-0.014
LNTGF8-	8.0	20.3	25.4	38.1	5.1	5.00	28.6	9.1	0.007-0.02
LNTGF10-	9.6								



Part number selection table - LNTGY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LNTGY6-	6.4	13.2	22	7/16-20	6.35	4.5	0.004-0.014
LNTGY8-	8.0	20.3	30	3/4-20	9.53	9.1	0.007-0.02
LNTGY10-	9.6						

*Thread shown imperial as standard, metric available, please specify diameter and pitch
 # For the full range of nominal diameters, see table on pages 7-7 to 7-11

Light Duty Adjustable Anti-Backlash Nuts

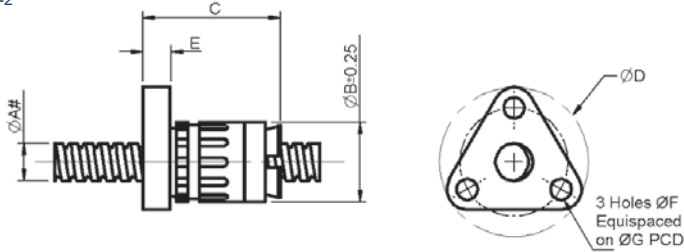
LAB & LABY
Series



Associated Products

Reli-a-Flex® couplings: page 8-6
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Intelligent motors: page 2-2
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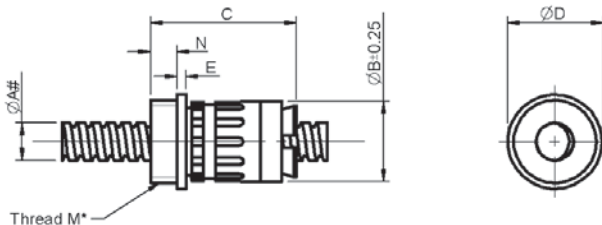
All dimensions in mm
General tolerances ± 0.5 mm
Detailed tolerances: Please contact us
Material: Polyacetal



Part number selection table - LAB series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Hole Dia ØF	Mounting Holes PCD ØG	Dynamic Load kg	Drag Torque Nm
LAB6-	6.4	13.5	25.4	25.4	4.6	3.6	19.05	2.3	0.004-0.014
LAB8-	8.0	18.8	48.0	38.1					
LAB10-	9.6								
LAB11-	11.3	20.3	50.8	41.2	7.1	5.1	28.58	7.0	0.014-0.03
LAB13-	12.7	22.6							
LAB16-	15.9	26.9		44.5	34.93			16.0	0.02-0.05

Screw sizes 19, 22 and 24 mm available



Part number selection table - LABY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm	
LABY6-	6.4	13.5	33.0	20.3	3.1	5/8 - 18	4.1	2.3	0.004-0.014	
LABY8-	8.0	18.8	56.0	25.4	3.8					
LABY10-	9.6									
LABY11-	11.3	20.3	59.0	26.4	2.5	15/16 - 16	9.7	7.0	0.014-0.03	
LABY13-	12.7	22.6								
LABY16-	15.9	26.9		26.9	3.6			12.7	16.0	0.02-0.05

*Thread shown imperial as standard, metric available, please specify diameter and pitch

For the full range of nominal diameters, see table on pages 7-7 to 7-11

Contact us for product information, design support and custom solutions
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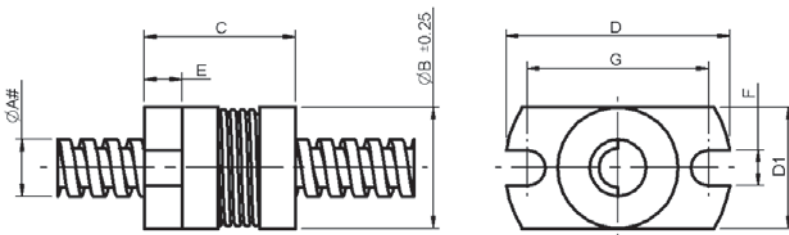
Leadscrew &
Nut Assemblies



All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

Associated Products
 Reli-a-Flex® couplings: page 8-6
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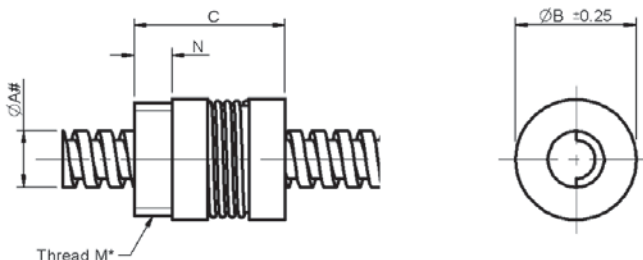
Leadscrew & Nut Assemblies



Part number selection table - LNTBF series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange D	Flange Width E	Flange Height D1	Slot F	Centres G	Dynamic Load kg	Drag Torque Nm
LNTBF3-	3 ¹	10.2	12.7	19.1	3.2	10.2	3.05	15.24	2.3	0.004
LNTBF4-	4.0									
LNTBF5-	5 ²									

¹LNTBF3 for Ø 3.2, 3.3 and 3.6 ²LNTBF5 for Ø 5.0 and 5.6



Part number selection table - LNTBY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LNTBY3-	3 ¹	10.2	12.7	3/8-24	3.18	2.3	0.004
LNTBY4-	4.0						
LNTBY5-	5 ²						

¹LNTBY3 for Ø 3.2, 3.3 and 3.6 ²LNTBY5 for Ø 5.0 and 5.6

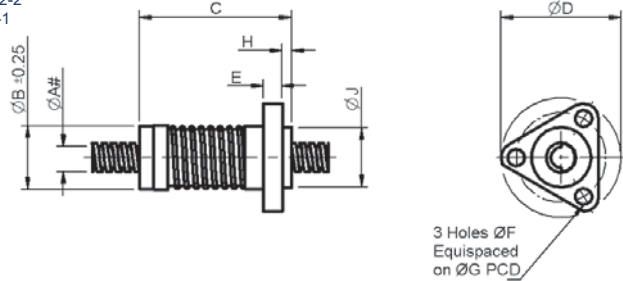
*Thread shown imperial as standard, metric available, please specify diameter and pitch

For the full range of nominal diameters, see table on pages 7-7 to 7-11

Associated Products

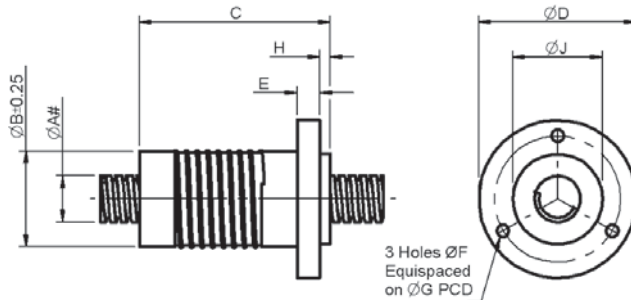
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 Plain bearings: page 12-1

All dimensions in mm
 General tolerances ±0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal



Part number selection table - LNTBF series, flange mount

Nut Series	Nom Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Hole Dia ØF	Mounting Holes PCD ØG	Hub Width H	Hub ØJ	Dynamic Load kg	Drag Torque Nm
LNTBF6-	6.4	13.2	28	25.4	4.0	3.63	19.1	2.00	12.7	4.5	0.004-0.014
LNTBF8-	8.0	20.3	46	38.1	5.1	5.08	28.6	2.54	19.1	9.1	0.007-0.02
LNTBF10-	9.6										
LNTBF11-	11.3	22.9		41.2	5.7		31.8		22.2	13.6	



Part number selection table - LNTBF series, flange mount

Nut Series	Nom Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Hole Dia ØF	Mounting Holes PCD ØG	Hub Width H	Hub ØJ	Dynamic Load kg	Drag Torque Nm
LNTBF13-	12.7	26.9	54	44.5	6.4	5.59	35.71	3.0	25.4	45.5	0.014-0.04
LNTBF16-	15.9	34.9	59	54.1	7.0		44.45	2.5	31.8	56.8	
LNTBF19-	19.1	39.6	67	60.5	7.9		50.80		38.1	68.2	0.02-0.05

Screw sizes 22 and 24 mm available

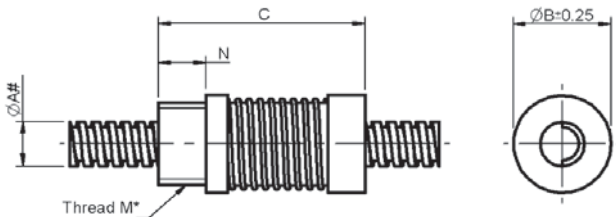
For the full range of nominal diameters, see table on pages 7-7 to 7-11



All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

Associated Products
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Leadscrew &
Nut Assemblies



Part number selection table - LNTBY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LNTBY6-	6.4	13.2	28	7/16 - 20	6.4	4.5	0.004-0.014
LNTBY8-	8.0	20.3	45	3/4 - 20	9.5	9.1	0.007-0.02
LNTBY10-	9.6					13.6	
LNTBY11-	11.3	22.9	46	13/16 - 16		45.5	0.014-0.04
LNTBY13-	12.7	26.9	54	15/16 - 16		56.8	
LNTBY16-	15.9	34.9	59	1 1/8 - 16		12.7	68.2
LNTBY19-	19.1	39.6	67	1 3/8 - 16			

*Thread shown imperial as standard, metric available, please specify diameter and pitch

Screw sizes 22 and 24 mm available

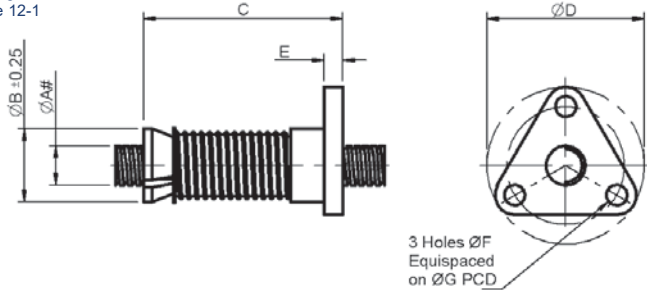
For the full range of nominal diameters, see table on [pages 7-7 to 7-11](#)



Associated Products

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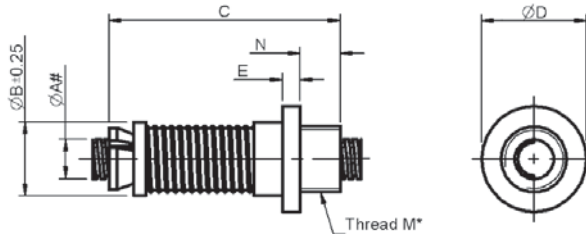
All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal



Leadscrew & Nut Assemblies

Part number selection table - LAF series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Hole Dia ØF	Mounting Holes PCD ØG	Dynamic Load kg	Drag Torque Nm
LAF6-	6.4	12.7	26	25.4	4.6	3.6	19.1	2.3	0.004-0.02
LAF8-	8.0	17.8	48	38.1					
LAF10-	9.6								
LAF11-	11.3	20.3	51	41.2	6.6	5.1	7	0.014-0.04	
LAF13-	12.7	22.6		44.5			11	0.02-0.05	
LAF16-	15.9	26.9		34.9			16	0.028-0.055	



Part number selection table - LAFY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LAFY6-	6.4	12.7	33	20.3	5.6	5/8 - 18	4.1	2.3	0.004-0.02
LAFY8-	8.0	17.8	56	25.4	4.3		9.7	5.0	0.007-0.03
LAFY10-	9.6								
LAFY11-	11.3	20.3	59	25.9	3.1	15/16 - 16		7.0	
LAFY13-	12.7	22.6		26.9			11.0	0.02-0.05	
LAFY16-	15.9	26.9	61	26.9	3.8		12.7	16.0	0.028-0.055

*Thread shown imperial as standard, metric available, please specify diameter and pitch

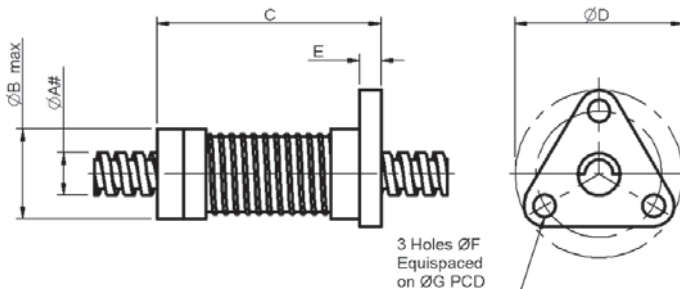
For the full range of nominal diameters, see table on pages 7-7 to 7-11



All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

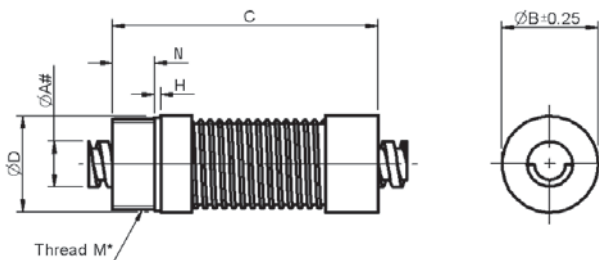
Associated Products
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Leadscrew & Nut Assemblies



Part number selection table - LAK series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Hole Dia ØF	Mounting Holes PCD ØG	Dynamic Load kg	Drag Torque Nm
LAK8-	8.0	20.3	50.8	38.1	4.8	5.08	28.58	10	0.007-0.02
LAK10-	9.6								



Part number selection table - LAKY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Flange ØD	Nut Length C	Thread M*	Thread Length N	Hub Width H	Dynamic Load kg	Drag Torque Nm
LAKY8-	8.0	20.3	19.1	55.9	3/4-20	8.9	1.27	10	0.007-0.02
LAKY10-	9.6								

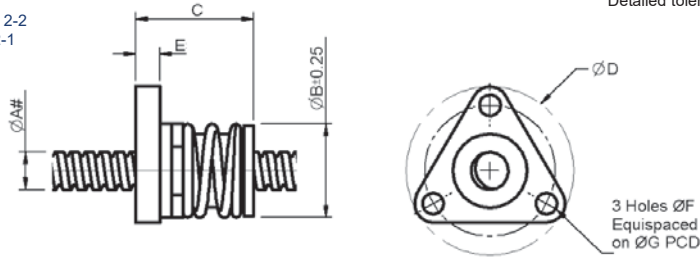
*Thread shown imperial as standard, metric available, please specify diameter and pitch
 # For the full range of nominal diameters, see table on pages 7-7 to 7-11



Associated Products

Reli-a-Flex® couplings: page 8-6
 Linear slides: page 9-1
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 Plain bearings: page 12-1

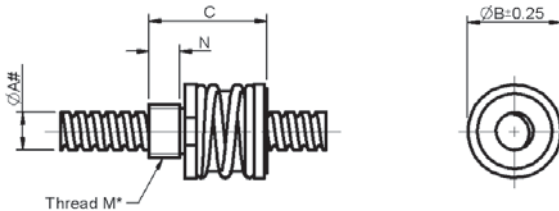
All dimensions in mm
 General tolerances ±0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal



Leadscrew & Nut Assemblies

Part number selection table - LWD series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Hole Dia ØF	Mounting Holes PCD ØG	Dynamic Load kg	Drag Torque Nm
LWD5-	5.0	16	26.6	28.6	4.10	3.7	22.2	4.5	0.03
LWD5.6-	5.6								
LWD6-	6.4								
LWD8-	8.0	19	33.5	38.1	5.10	5.1	28.6	11.3	0.04
LWD10-	9.6								
LWD11-	11.3	25.4	52.8	44.5	6.35	5.6	35.7	34.0	0.06
LWD13-	12.7								



Part number selection table - LWDY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LWDY5-	5.0	16	26.6	9/16 - 18	6.1	4.5	0.03
LWDY5.6-	5.6						
LWDY6-	6.4						
LWDY8-	8.0	19	33.5	5/8 - 18	8.1	11.3	0.04
LWDY10-	9.6						
LWDY11-	11.3	25.4	52.8	15/16 - 16	12.7	34.0	0.06
LWDY13-	12.7						

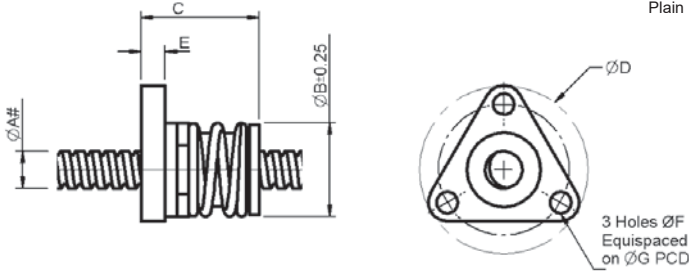
*Thread shown imperial as standard, metric available, please specify diameter and pitch

For the full range of nominal diameters, see table on pages 7-7 to 7-11



All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal

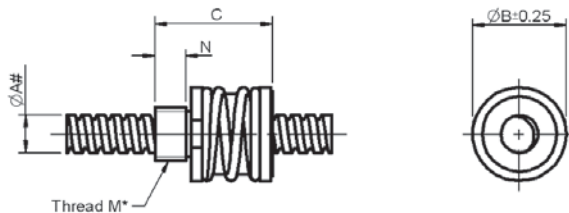
Associated Products
 Reli-a-Flex® couplings: page 8-6
 Linear slides: page 9-1
 Intelligent motors: page 2-2
 Plain bearings: page 12-1



Part number selection table - LCM series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Hole Dia ØF	Mounting Holes PCD ØG	Dynamic Load kg	Drag Torque Nm
LCM5-	5	16	26.6	28.6	4.1	3.7	22.2	2.3	0.03
LCM5.6-	5.6								
LCM6-	6.4								
LCM8-	8.0	19	33.5	38.1	5.1	5.1	28.6	3.6	0.04
LCM10-	9.6								

The LCM5, 5.6 and 6 nuts are available with a pilot hub, $\varnothing 15.9$ mm x 2.04 wide
 The LCM8 and 10 nuts are available with a pilot hub, $\varnothing 19.1$ mm x 3.05 wide, please contact us



Part number selection table - LCMY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LCMY5-	5.0	16	26.6	9/16 - 18	6.1	2.3	0.03
LCMY5.6-	5.6						
LCMY6-	6.4						
LCMY8-	8.0	19	33.5	5/8 -18	8.1	3.6	0.04
LCMY10-	9.6						

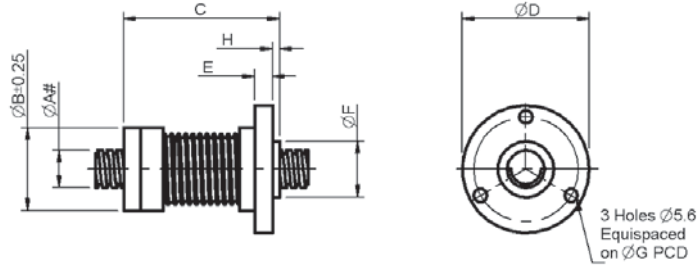
*Thread shown imperial as standard, metric available, please specify diameter and pitch
 # For the full range of nominal diameters, see table on pages 7-7 to 7-11



Associated Products

Reli-a-Flex® couplings: page 8-6
 Linear slides: page 9-1
 Intelligent motors: page 2-2
 Plain bearings: page 12-1

All dimensions in mm
 General tolerances ± 0.5 mm
 Detailed tolerances: Please contact us
 Material: Polyacetal with bronze
 anti-backlash mechanism

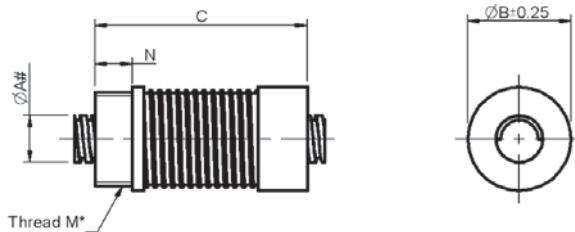


Leadscrew & Nut Assemblies

Part number selection table - LAX series, flange mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Mounting Holes PCD ØG	Hub Length H	Hub ØF	Dynamic Load kg	Drag Torque Nm
LAX13-	12.7	28.5	59	44.5	5.9	35.71	3.1	23.62	68	0.014-0.02-0.05
LAX16-	15.9	35.1	66	53.0	7.1	44.45	--	--	113	
LAX19-	19.1	41.2	71	60.5	7.9	50.80	--	--	159	

Screw size 22 available



Part number selection table - LAXY series, thread mount

Nut Series	Nominal Screw ØA#	Nut ØB	Nut Length C	Thread M*	Thread Length N	Dynamic Load kg	Drag Torque Nm
LAXY13-	12.7	28.5	64	15/16-16	12.7	68	0.014-0.04-0.05
LAXY16-	15.9	35.1	72	1 1/4-16		113	
LAXY19-	19.1	41.2	79	1 3/8-16		159	

*Thread shown imperial as standard, metric available, please specify diameter and pitch
 Screw size 22 available

For the full range of nominal diameters, see table on pages 7-7 to 7-11

Modified, custom and multi-functional nuts

In addition to the standard nut types, custom configurations are available as well as simple modifications such as different mounting hole patterns or mounting threads, small dimensional changes or special materials.

Custom nut designs can offer multi-functionality, eliminating additional components, simplifying product manufacture, saving space and reducing cost. Multi-functional nuts can be produced using custom moulds and special machining to integrate components into the nut, such as guide bushings, carriages, timing pulleys, gears, syringe components, sensor mounts and flags, encoder features, clamps and many other complementary elements. In addition, custom designed nuts can offer quick release mounts, partial thread engagement, half nut construction or alternative shapes and geometries.

Special materials are available to extend the performance of the assemblies. We offer a range of Kerkite® composite polymers. Each member of the Kerkite® family is compounded with lubricants, reinforcements and thermoplastic polymers formulated to provide optimum performance in its target conditions and applications. In addition to the Kerkite® composite polymers, materials such as PEEK, polyester, Torlon, Vespel, PVDF, UHMW, Ertalyte® are available. Materials can be chosen for extreme temperature, chemical compatibility, autoclaving, agency approvals, special loadings and many other specific requirements.

Custom geometries and materials can be combined for a wide variety of product application requirements. Small quantities of custom nuts can be machined individually to suit specific requirements, alternatively large quantities can be moulded for reduced costs.

To achieve the most effective nut design we consider a combination of tolerancing and geometric shape of the nut. Tighter tolerances can be achieved by designing in geometric features to control important diameters, for example use of a ribbed feature on a bearing location diameter will reduce the need for tighter manufacturing tolerances.



End modifications

Leadscrews are supplied with cut ends as standard. Alternatively we supply a selection of standard machined ends suitable for interfacing with a range of associated products including; bearings, circlips, couplings, pulleys and gears.

End **A** - Ball bearing : page 7-28

End **B** - Ball bearing & circlip : page 7-29

End **C** - Ball bearing & coupling : page 7-30

End **D** - Twin bearings & coupling : page 7-31

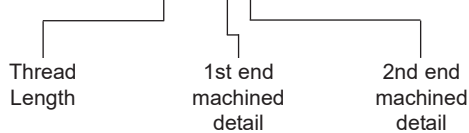
End **E** - Ball bearing & pulley : page 7-32

End **F** - Ball bearing & gear : page 7-33

Ordering your modified end detail

To order a leadscrew with machined ends, use the ordering example below. If only one end is to be machined leave the 2nd end machining suffix blank.

Example part no. - **LPX10 - M050 - 350MM - C A**



Custom machined leadscrew ends

We are also able to supply custom machined ends to drawing; the drawing and specification details required and tolerances available are provided on [page 7-34](#) and [7-35](#). Please contact us to discuss your requirements.

Associated products

Leadscrew Diameter	Standard Bearing P/No. ¹	Standard Circlip P/No.	Standard Coupling P/No. ²
6	B1-104-S-P4	D1400-0040-SS	RCLA13C-*.*
10	B1-106-S-P4	D1400-0060-SS	RCLA16C-*.*
11	B1-108-S-P4	D1400-0080-SS	RCLA20C-*.*
13	B1-108-S-P4	D1400-0080-SS	RCLA20C-*.*

¹ Bearings for low to medium loads, see [page 12-2](#). For high loads please contact us.

² Add bore diameters to complete part number, see [pages 8-10, 8-12, 8-14](#)

Leadscrew Diameter	Standard Pulley P/No. ³	Standard Shim P/No.	Standard Gear P/No. ⁴
6	TPMP25 F6-**.*	SS1-104	P**S1B4 F4A**.*
10	TPMP25 F6-**.*	SS1-108	P**S1B6 F4A**.*
11	TPMP25 F6-**.*	SS1-112	P**S1B8 F6A**.*
13	TPMP25 F6-**.*	SS1-112	P**S1B8 F6A**.*

³ Add required number of teeth to complete part number, see [page 10-3](#)

⁴ Add gear module and required number of teeth to complete part number, see from [page 4-1](#)

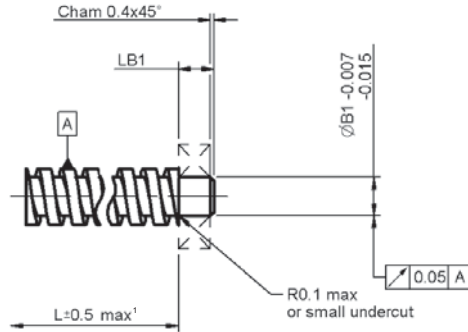
For all other accessories shown above, please refer to sections 12 and 13.



All dimensions in mm
General tolerances ± 0.13 mm

Ball bearing journal, End A

Leadscrew &
Nut Assemblies



Drawing dimension table

Leadscrew Diameter	Screw Diameter	Journal	
		Diameter ØB1	Length LB1
6	6.35	4	4.5
10	9.53	6	5.5
11	11.11	8	6.5
13	12.70	8	6.5

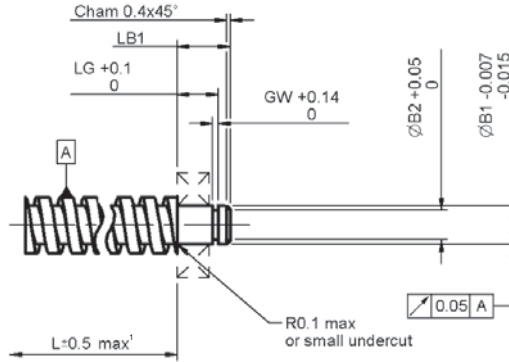
¹ L tolerance is dependent on the length of the leadscrew - see page 7-35 for actual tolerance.



i Information

- Ordering instructions - see page 7-3 and 7-27
- Associated products - see page 7-27
- Custom end machining - see page 7-34 and 7-35
- Technical information - see pages T7-1 to T7-5

Ball bearing journal with circlip groove, End B



Drawing dimension table

Leadscrew Diameter	Screw Diameter	Journal		Groove		Length
		Dia ØB1	Length LG	Dia ØB2	Width GW	
6	6.35	4	4.8	3.75	0.5	7.0
10	9.53	6	6.1	5.65	0.8	8.5
11	11.11	8	7.2	7.54	0.9	9.5
13	12.70	8	7.2	7.54	0.9	9.5

¹ L tolerance is dependent on the length of the leadscrew - see page 7-35 for actual tolerance.

i Information



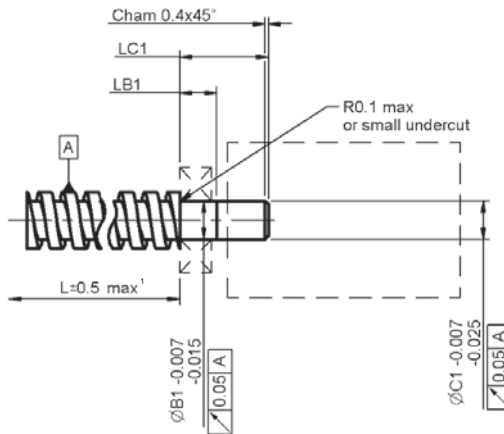
- Ordering instructions - see page 7-3 and 7-27
- Associated products - see page 7-27
- Custom end machining - see page 7-34 and 7-35
- Technical information - see pages T7-1 to T7-5



All dimensions in mm
General tolerances ± 0.13 mm

Ball bearing journal for coupling, End C

Leadscrew & Nut Assemblies



Drawing dimension table

Leadscrew Diameter	Screw Diameter	Journal		Coupling Diameter ØC1	Length LC1
		Dia ØB1	Length LB1		
6	6.35	4	4.5	4	14.0
10	9.53	6	5.5	6	15.0
11	11.11	8	6.5	8	20.5
13	12.70	8	6.5	8	20.5

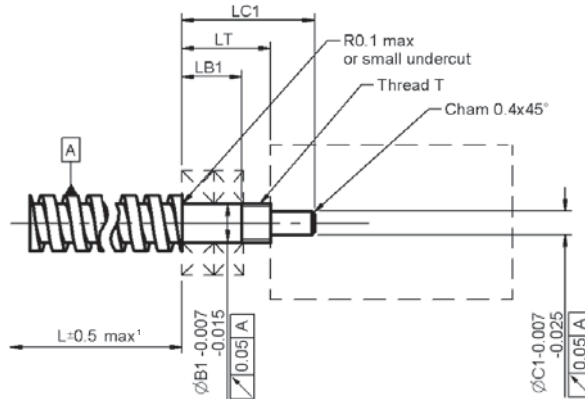
¹ L tolerance is dependent on the length of the leadscrew - see page 7-35 for actual tolerance.



i Information

- Ordering instructions - see page 7-3 and 7-27
- Associated products - see page 7-27
- Custom end machining - see page 7-34 and 7-35
- Technical information - see pages T7-1 to T7-5

Twin ball bearing journal for coupling, End D



Drawing dimension table

Leadscrew Diameter	Screw Dia	Journal		Thread		Coupling	
		Dia \O B1	Length LB1	Distance LT	T	Dia \O C1	Length LC1
6	6.35	4	7.5	11.2	M4	3	17.5
10	9.53	6	9.5	15.0	M6	4	22.5
11	11.11	8	11.5	18.5	M8	6	28.5
13	12.70	8	11.5	18.5	M8	6	28.5

¹ L tolerance is dependent on the length of the leadscrew - see page 7-35 for actual tolerance.



i Information

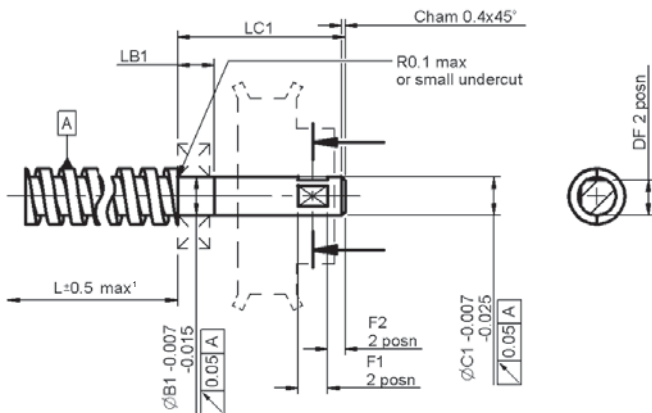
- Ordering instructions - see page 7-3 and 7-27
- Associated products - see page 7-27
- Custom end machining - see page 7-34 and 7-35
- Technical information - see pages T7-1 to T7-5



All dimensions in mm
General tolerances ± 0.13 mm

Ball bearing journal for drive pulley, End E

Leadscrew &
Nut Assemblies



Drawing dimension table

Leadscrew Diameter	Screw Dia	Journal		Pulley Dia ØC1	Length LC1	Flats		
		Dia ØB1	Length LB1			Width F1	Length F2	Distance DF
6	6.35	4	4.5	4	27.5	4	3	3.5
10	9.53	6	5.5	6	28.5	5	3	5.5
11	11.11	8	6.5	8	29.5	6	3	7.5
13	12.70	8	6.5	8	29.5	6	3	7.5

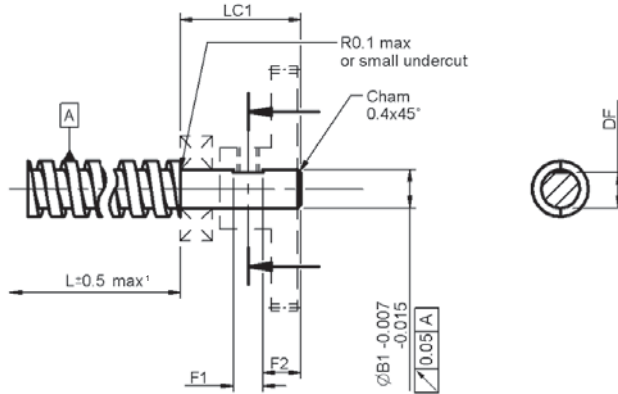
¹ L tolerance is dependent on the length of the leadscrew - see page 7-35 for actual tolerance.



i Information

- Ordering instructions - see page 7-3 and 7-27
- Associated products - see page 7-27
- Custom end machining - see page 7-34 and 7-35
- Technical information - see pages T7-1 to T7-5

Ball bearing journal for drive gear, End F



Drawing dimension table

Leadscrew Diameter	Screw Dia	Journal		Flat Width F1	Length F2	Flat Distance DF
		Dia $\varnothing B1$	Length LC1			
6	6.35	4	17.5	4	5.0	3.5
10	9.53	6	20.5	5	6.5	5.5
11	11.11	8	21.5	6	6.0	7.5
13	12.70	8	21.5	6	6.0	7.5

¹ L tolerance is dependent on the length of the leadscrew - see page 7-35 for actual tolerance.



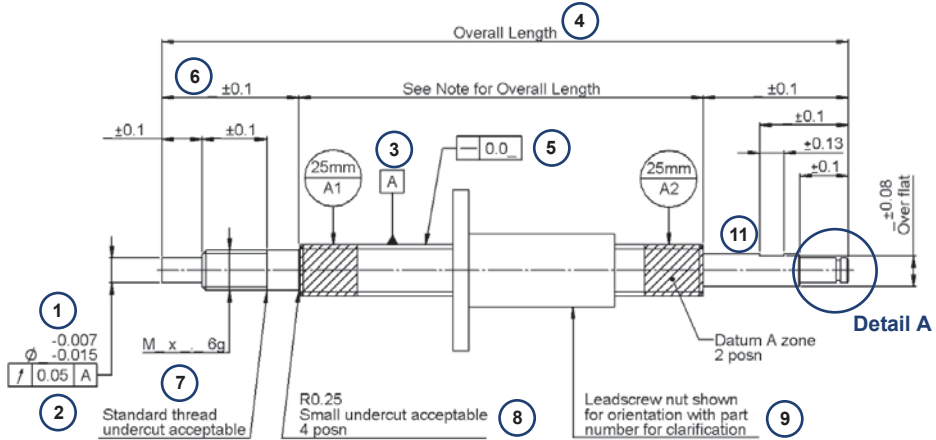
i Information

- Ordering instructions - see page 7-3 and 7-27
- Associated products - see page 7-27
- Custom end machining - see page 7-34 and 7-35
- Technical information - see pages T7-1 to T7-5

All dimensions in mm

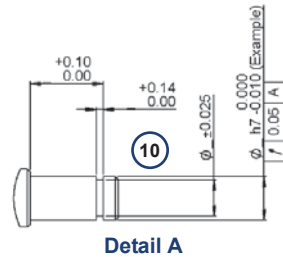
Required drawing details

To order a leadscrew with custom machined ends please provide the following drawing information:



Drawing tolerances

General manufacturing tolerance ISO2768-mK.
 If a shoulder is required for bearing location at the extremities of the leadscrew thread then a bearing journal diameter of less than the leadscrew thread root should be selected.
 All journals that are larger than the thread root of the leadscrew will have the scroll of the leadscrew thread root evident.



Further machined features

- Cross holes: Symmetry 0.25mm
 Hole position 0.1mm
 Hole diameter 0.025mm
- Bored end holes; drilled depth 0.5mm
 Bored hole depth 0.25mm
- For bored holes up to a length of 4 x the diameter a tolerance of 0.013mm can be achieved.
- For bored holes over a length of 4 x the diameter a tolerance of 0.025mm can be achieved.
- Width of keyways 0.025mm.

- 1 Machined journal recommended tolerances**
For journals over $\text{Ø}3.2$ mm and under 19 mm long and for use with Reliance bearings and gears for the optimum assembly and function we recommend a tolerance of or greater than:
-0.005
-0.017
For journals under $\text{Ø}3.2$ mm and over 19mm long and for use with Reliance couplings, pulleys etc. we recommend a diameter tolerance of or greater than:
-0.005
-0.027
For an additional charge Reliance can provide a minimum journal tolerance of 0.008 mm. This is dependant upon the journal length, geometry, diameter and material.
- 2 Runout**
To geometrically control journals and end machined features, Reliance measure runout as opposed to concentricity. The standard runout tolerance is 0.05 mm referenced to the datum A zones.
0.035 mm is available for precision journals of lengths less than 25 mm.
0.025 mm is achievable for journals less than 13 mm.
- 3 Datum**
The leadscrews are manufactured using a cold rolling process therefore a datum is located on the outside diameter of the leadscrew thread. The datum is specified at the marked datum 1 zones which are as standard 25 mm from each end of the leadscrew thread.
- 4 Overall length and leadscrew thread length**
Tolerancing for lengths:
From 25.4 mm to 228 mm tolerance ± 0.25
Over 228 mm to 812 mm tolerance ± 0.5
Over 812 mm tolerance ± 1.0
- 5 Straightness**
0.025 mm per 100mm of length.
For screws less than 300 mm long the default value is 0.075 mm.
- 6 Journal length**
The tolerance of ± 0.1 or greater should be used in general. For shorter journals of less than 25 mm ± 0.06 can be achieved.
- 7 Secondary threads**
Include the size and pitch of the required thread e.g. M6x1, and include the thread fit tolerance i.e. 6g. A standard thread undercut may be used at the discretion of Reliance, the undercut will be 1-3 x thread pitches wide and to the thread root diameter.
- 8 Corner radius**
A small manufacturing undercut may be required to achieve the required corner radius, dependant upon the manufacturing method used. In general this will be for a corner radius of 0.25 mm or smaller.
- 9 Leadscrew nut**
Reliance strongly recommends that wherever possible the leadscrew nut is included on the leadscrew drawing and they are supplied as an assembly. This ensures the fit between leadscrew nut and leadscrew is completely controlled. The orientation of the nut should be defined.
- 10 Circlip grooves**
Circlip grooves can be achieved when manufactured in line with the tolerances shown above.
- 11 Flats**
If the flat is for location purposes then we recommend specification of a flatness of 0.03 mm across the face.



Introduction

Reliance's range of Leadscrew Linear Slides and ScrewRail™ assemblies provide a further level of component integration as opposed to a standalone leadscrew and nut assembly. These higher level assemblies combine leadscrew and nut assemblies with additional system elements such as bearings, carriages and housings, helping to simplify the design and manufacture of motion systems.



Leadscrew linear slide



ScrewRail™ assembly

Leadscrew linear slide

The leadscrew driven slide offers reliable, continuous linear speed whilst maintaining accurate positioning. It is not limited by critical screw speed, allowing high rpm and linear speeds. It has a unique, compact profile that provides exceptional torsional stiffness and stability for its size and weight.

The unit is a single piece aluminium extrusion which houses a stainless steel leadscrew together with an integrated pre-loaded nut and carriage. It is designed for connection to a motor drive mechanism and is provided with appropriate leadscrew machined end(s) and bearing(s) for connection via a coupling, a series of pulleys or a geared system.

It is a fully supported leadscrew actuator, which enables longer travel, higher speeds and higher loads, compared to a standard leadscrew and nut assembly arrangement, without the need for additional support elements. The integral mounting base provides support over the entire length.

The Leadscrew Linear Slide provides linear actuation with 0.0006 mm/mm lead accuracy. It is offered in an extensive range of travel lengths, from 11 mm up to 1000 mm, range of diameters to support loads up to 46 kg and range of leads to provide different linear speeds. It has a double bearing design and is Teflon coated across all surfaces, giving smooth, accurate movement.

This robust, integrated unit is suitable for a variety of applications including laboratory automation equipment and industrial automation.



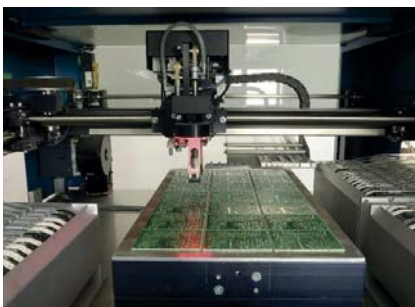
ScrewRail™ assembly

Where linear motion has traditionally required separate components to handle both the drive and support/guidance the compact ScrewRail™ combines both functions in a single, coaxial component. By eliminating the need for external rail-to-screw alignment the ScrewRail™ simplifies the design, manufacture and assembly of the motion system, saving as much as 80% of the space used by a two-rail system and helping reduce component and assembly costs.

The ScrewRail™ consists of a precision rolled leadscrew, supported by sealed bearings, contained within a concentric steel guide rail, driving an integrated nut/bushing. Because all the alignment requirements are achieved within the ScrewRail™, support and positioning of the ScrewRail™ is much less critical than with traditional slide assemblies. TFE coating and self-lubricating nut/bushing materials ensure long life, without maintenance. Standard end supports are available to mount the ScrewRails™.

With lengths of up to 1200 mm and with four diameter options, the ScrewRail™ is capable of moving loads from 5 kg up to 45 kg. Two versions are available, with either plain or anti-backlash nuts.

The ScrewRail™ gives three-dimensional motion from a single unit. When mounted vertically it can be used to simultaneously lift and rotate (Z-theta motion). With one motor driving the screw and a second rotating the rail, a compact pick and place mechanism can be created.



Semi-conductor pick and place robotics



Laboratory automation



All dimensions in mm

Materials:

Guide and carriage - Aluminium alloy TFE coated

Leadscrew - Stainless steel TFE coated

Follower nut - Polyacetal

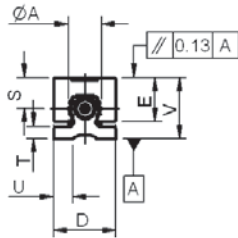
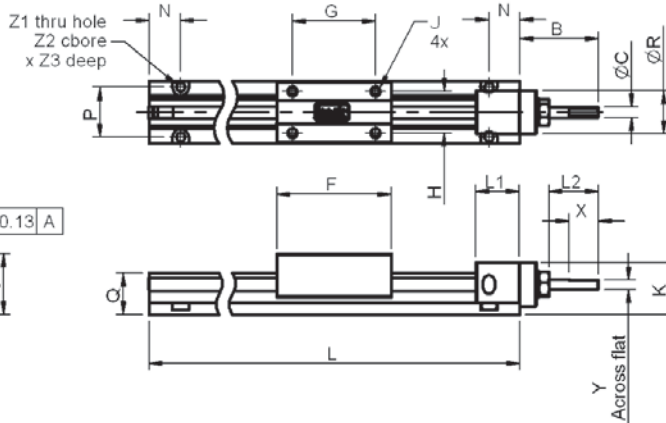
Associated Products

Intelligent motors: page 2-2

Reli-a-Flex® couplings: page 8-6

Hardware: page 13-1

Dimensional Tolerances	
$L < 4$	± 0.1
$4 < L \leq 16$	± 0.15
$16 < L \leq 63$	± 0.2
$63 < L \leq 250$	± 0.3



Technical specification

Total Travel = L - L1 - F

Series	A Nominal Rail Ø	B	ØC	D	E	F	G	H	J ¹	K	L1	L2	N
RGLS6	10.2	21.1	3.175	19.1	13.5	36	25.4	12.7	4-40 UNC 4.45 deep	15	13.5	11.9	9.53
RGLS10	15.2	31.8	4.762	28.6	20.1	51	38.1	19.1	6-32 UNC 6.35 deep	23	20.3	20.3	12.70
RGLS13	20.3	38.1	6.350	40.6	26.9	69	44.45	25.4	10-24 UNC 9.60 deep	33	27.7	19.6	15.88
RGLS16	25.4	44.5	7.938	50.8	33.5	83	57.15	31.8	1/4-20 UNC 10.80 deep	41	33.0	33.0	19.05

¹Metric mounting configuration available, please enquire

Series	P	Q	ØR	S	T	U	V	X	Y	Z1	Z2	Z3
RGLS6	15.24	12.7	13.2	9.4	3.8	5.8	18.5	9.7	2.92	2.8	5.1	2.3
RGLS10	22.86	18.8	20.3	14.0	5.6	8.9	27.9	12.7	4.32	3.6	6.4	3.3
RGLS13	31.75	25.4	26.4	18.8	7.6	13.0	37.3	17.8	5.59	5.1	8.4	4.8
RGLS16	38.10	31.8	33.0	23.4	9.5	16.3	46.5	22.4	7.11	6.6	12.7	5.6



Standard product sizes

Lead mm	Series (Screw Size)																			
	RGLS6				RGLS10					RGLS13					RGLS16					
	Guide Length L ±1 mm																			
	152	203	254	305	254	305	381	457	610	914	254	305	457	610	914	254	305	457	610	914
2.54	★	★	★	★	★	★	★	★	★			★						★		
5.08	★	★	★	★	★	★	★	★	★			★						★		
12.7	★	★	★	★		★	★	★	★			★	★	★				★	★	★
25.4	★	★	★	★		★		★	★	★		★	★	★	★			★	★	★

★Indicates standard available lengths

Product performance

Basic Part Number	Lead mm	Typical Drag Torque* Nm	Life @ ¼ Design Load m	Torque To Move Load Nm/kg	Design Load kg	Screw Inertia kgm ² /m
RGLS6-0100	2.54	0.02	2,540,000	0.016	7	6.5 x10 ⁻⁶
RGLS6-0200	5.08	0.03		0.023		
RGLS6-0500	12.70	0.04		0.039		
RGLS6-1000	25.40	0.04		0.070		
RGLS10-0100	2.54	0.03	2,540,000	0.016	16	4.2 x10 ⁻⁶
RGLS10-0200	5.08	0.04		0.023		
RGLS10-0500	12.70	0.04		0.039		
RGLS10-1000	25.40	0.05		0.070		
RGLS13-0100	2.54	0.04	2,540,000	0.018	22	20 x10 ⁻⁶
RGLS13-0200	5.08	0.04		0.027		
RGLS13-0500	12.70	0.05		0.047		
RGLS13-1000	25.40	0.06		0.096		
RGLS16-0100	2.54	0.04	2,540,000	0.020	46	3.9 x10 ⁻⁵
RGLS16-0200	5.08	0.05		0.031		
RGLS16-0500	12.70	0.05		0.047		
RGLS16-1000	25.40	0.06		0.101		

* Assemblies with lengths over 915 mm and/or leads higher than 12.7 mm are likely to have higher drag torques than listed values.

Part number structure

RGLS6-0100-1-305

Linear Slide and Series Designator

- RGLS6 series = 6 mm screw
- RGLS10 series = 10 mm screw
- RGLS13 series = 13 mm screw
- RGLS16 series = 16 mm screw

Lead

No. of Carriages

- 1 = 1 driven (standard)
- 2 = 1 driven & 1 passive
- 3 = 1 driven & 2 passive

Guide Length

(Dimension "L")

i Product options

- Special carriage, rail, screw or mounting configuration
- Higher accuracy leadscrew, Left Hand (LH) or Left/Right (L/R) threads
- Alternative guide lengths up to 1000 mm available

? Technical support

- Product overview - see [page 7-36](#)

All dimensions in mm

Materials:

Guide - Aluminium alloy TFE coated

Leadscrew - Stainless steel TFE coated

Nut - Aluminium and

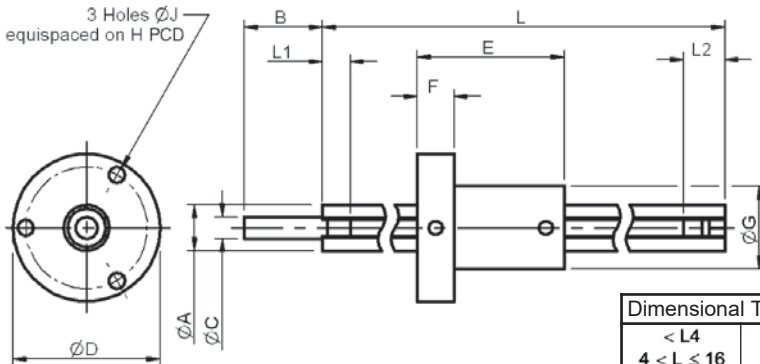
polyacetal composite

Associated Products

Reli-a-Flex® couplings: page 8-6

Intelligent motors: page 2-2

Hardware: page 13-1



Dimensional Tolerances	
$< L4$	± 0.1
$4 < L \leq 16$	± 0.15
$16 < L \leq 63$	± 0.2
$63 < L \leq 250$	± 0.3

Technical specification

$$\text{Total Travel} = L - (L1 + L2 + E)$$

Series	ØA	B	ØC	ØD	E	F	ØG	ØH	ØJ	L1	L2
RSRA5	9.24/9.33	9.56	3.16/3.18	24.9	25.4	7.2	14.3	19.1	2.39	9.4	9.66
RSRA6	12.42/12.5	15.75	4.75/4.76	31.8	36.0	9.5	19.1	26.2	3.56	6.6	9.1
RSRA10	18.77/18.85	19.05	6.33/6.34	44.5	51.0	12.7	28.4	37.6	4.39	9.7	17.8
RSRA13	25.12/25.2	19.05	6.33/6.34	56.6	64.0	15.9	38.0	48.8	5.08	12.2	19.6

Standard product sizes - RSRA5 and RSRA6 ScrewRail®

Lead mm	Series													
	RSRA5							RSRA6						
	Length L ± 1 mm													
	102	152	203	254	305	381	457	102	152	203	254	305	381	457
1.27	★	★	★	★				★	★	★	★			
2.54														
5.08														
6.35			★	★	★	★				★	★	★	★	
12.70				★	★	★	★				★	★	★	★
25.40				★	★	★	★				★	★	★	★

★Indicates standard lengths



Standard product sizes - RSRA10 and RSRA13 ScrewRail®

Lead mm	Series													
	RSRA10						RSRA13							
	Length L ±1 mm													
	152	203	254	305	381	457	610	914	254	305	381	457	610	914
1.27														
2.54	★	★	★	★	★					★				
5.08		★	★	★	★					★				
6.35														
12.70		★	★	★	★		★			★		★	★	
25.40				★	★	★	★	★		★		★	★	★

★Indicates standard available lengths

Product performance

Basic Part Number	Nominal Rail Dia. mm	Nominal Screw Dia. mm	Lead mm	Max. Drag Torque Nm	Life @ ¼ Design Load m	Torque to Move Load Nm/kg	Design Load kg	Screw Inertia kgm²/m	Equiv. Dia. *
RSRA5-0050	9.53	4.76	1.27	0.014	2,500,000	0.007	5	0.4 x 10 ⁻⁶	7.6
RSRA5-0100			2.54	0.018		0.016			
RSRA5-0250			6.35	0.020		0.019			
RSRA5-0370			9.53	0.025		0.030			
RSRA6-0050	12.70	6.35	1.27	0.015	3,800,000	0.007	10	1.3 x 10 ⁻⁶	9.9
RSRA6-0250			6.35	0.020		0.023			
RSRA6-0500			12.70	0.030		0.039			
RSRA6-1000			25.40	0.040		0.070			
RSRA10-0100	19.05	9.53	2.54	0.020	4,500,000	0.016	20	6.5 x 10 ⁻⁶	15.2
RSRA10-0200			5.08	0.030		0.023			
RSRA10-0500			12.70	0.040		0.039			
RSRA10-1000			25.40	0.045		0.070			
RSRA13-0100	25.40	12.70	2.54	0.030	7,100,000	0.016	45	20 x 10 ⁻⁶	20.5
RSRA13-0200			5.08	0.040		0.023			
RSRA13-0500			12.70	0.045		0.039			
RSRA13-1000			25.40	0.060		0.070			

* ScrewRail® stiffness may be modelled using Classical Beam Deflection Theory with equivalent solid stainless steel beam of diameter given.

Part number structure

RSRA6-1000-305MM

ScrewRail® and Series Designator

Lead

Screw Length

i Product options

- End support modifications
- Higher accuracy leadscrew, Left Hand (LH) or Left/Right (L/R) threads
- Alternative ScrewRail® lengths up to 1200 mm available
- Other leads available as custom orders

? Technical support

- Product overview - see [page 7-37](#)

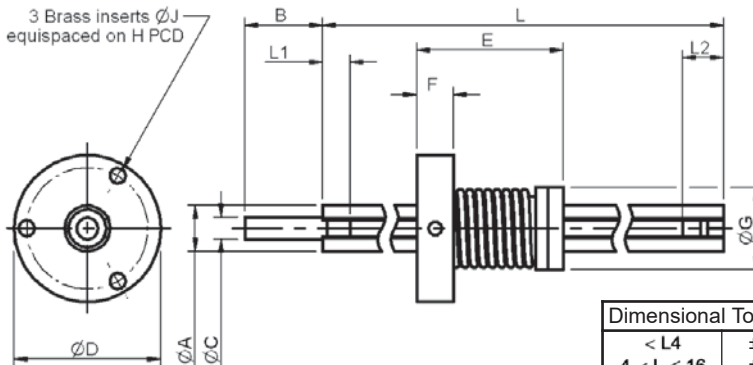


All dimensions in mm

Materials:
 Guide - Aluminium alloy TFE coated
 Leadscrew - Stainless steel TFE coated
 Nut - Aluminium and polyacetal composite

Associated Products
 Reli-a-Flex® couplings: page 8-6
 Intelligent motors: page 2-2
 Hardware: page 13-1

Leadscrew & Nut Assemblies



Dimensional Tolerances	
$L < 4$	± 0.1
$4 < L \leq 16$	± 0.15
$16 < L \leq 63$	± 0.2
$63 < L \leq 250$	± 0.3

Technical specification

Total Travel = $L - (L1 + L2 + E)$

Series	ØA	B	ØC	ØD	E	F	ØG	ØH	ØJ Brass Inserts	L1	L2
RSRZ5	9.24/9.32	9.56	3.16/3.18	24.9	27.94	7.2	18.5	19.05	2-56 UNC	9.4	9.66
RSRZ6	12.42/12.5	15.75	4.75/4.76	33.3	36	9.5	24.7	26.2	6-32 UNC	6.6	9.1
RSRZ10	18.77/18.85	19.05	6.33/6.34	46.0	51	12.7	35.1	37.6	10-32 UNF	9.7	17.8
RSRZ13	25.12/25.2	19.05	6.33/6.34	58.4	64	15.9	43.7	48.8	10-32 UNF	12.2	19.6

Standard product sizes - RSRZ5 and RSRZ6 ScrewRail®

Lead mm	Series													
	RSRZ5							RSRZ6						
	Length L ±1 mm													
	102	152	203	254	305	381	457	102	152	203	254	305	381	457
1.27	★	★	★	★				★	★	★	★			
2.54														
5.08														
6.35			★	★	★	★				★	★	★	★	
12.70				★	★	★	★				★	★	★	★
25.40				★	★	★	★				★	★	★	★

★Indicates standard lengths



Standard product sizes - RSRZ10 and RSRZ13 ScrewRail®

Lead mm	Series														
	RSRZ10									RSRZ13					
	Length L ±1 mm														
	152	203	254	305	381	457	533	610	914	254	305	381	457	610	914
1.27															
2.54	★	★	★	★	★						★				
5.08		★	★	★	★						★				
6.35															
12.70		★	★	★	★		★	★			★		★	★	
25.40				★	★	★	★	★	★		★		★	★	★

★Indicates standard lengths

Product performance

Basic Part Number	Nominal Rail Dia. mm	Nominal Screw Dia. mm	Lead mm	Max. Drag Torque Nm	Life @ ¼ Design Load m	Torque to Move Load Nm/kg	Design Load kg	Screw Inertia kgm ² /m	Equiv. Dia. *
RSRZ5-0050	9.53	4.76	1.27	0.014	1,300,000	0.007	5	0.4 x 10 ⁻⁶	7.6
RSRZ5-0100			2.54	0.018		0.016			
RSRZ5-0250			6.35	0.020		0.019			
RSRZ5-0370			9.53	0.025		0.030			
RSRZ6-0050	12.70	6.35	1.27	0.020	1,900,000	0.007	10	1.3 x 10 ⁻⁶	9.9
RSRZ6-0250			6.35	0.030		0.023			
RSRZ6-0500			12.70	0.040		0.039			
RSRZ6-1000			25.40	0.045		0.070			
RSRZ10-0100	19.05	9.53	2.54	0.045	2,300,000	0.016	20	6.5 x 10 ⁻⁶	15.2
RSRZ10-0200			5.08	0.047		0.023			
RSRZ10-0500			12.70	0.050		0.039			
RSRZ10-1000			25.40	0.053		0.070			
RSRZ13-0100	25.40	12.70	2.54	0.057	3,500,000	0.016	45	20 x 10 ⁻⁶	20.5
RSRZ13-0200			5.08	0.060		0.023			
RSRZ13-0500			12.70	0.064		0.039			
RSRZ13-1000			25.40	0.067		0.070			

* ScrewRail® stiffness may be modelled using Classical Beam Deflection Theory with equivalent solid stainless steel beam of diameter given.

Part number structure

RSRZ6-1000-305MM

ScrewRail® and Series Designator

Lead

Screw Length

i Product options

- End support modifications
- Higher accuracy leadscrew, Left Hand (LH) or Left/Right (L/R) threads
- Alternative ScrewRail® lengths up to 1200 mm available
- Other leads available as custom orders

? Technical support

- Product overview - see page 7-37





FEATURES

Reliance's precision leadscrew assemblies are designed specifically for motion control applications where accuracy must be maintained. Rather than being adaptations of general purpose screws or nuts they have a precision rolled screw thread which has been designed for maximum life and quiet operation.

A further enhancement available on stainless steel leadscrews up to 2.4 metres long is a specially formulated TFE coating which can extend normal nut life by up to 300%.

Innovative anti-backlash nut designs provide assemblies which are wear compensating with low frictional drag torques and excellent positional repeatability.

Reliance stainless steel leadscrews offer the following:

1. High Accuracy

Precision thread rolling process provides a standard lead accuracy of 0.0006 mm/mm. Higher accuracies up to 0.0001 mm/mm can be provided.

The unloaded repeatability of anti-backlash assemblies is within 0.0013 mm.

2. Long Life

More than 7.5 million metres of travel can be expected.

3. Low Drag Torque

An anti-backlash nut design which does not require high spring forces to maintain bi-directional anti-backlash characteristics gives very low nut to screw friction.

4. Low Maintenance

Self lubricating and wear compensating nuts eliminate the need for repeated lubrication or adjustment.

5. Wide Range

Diameters from 3.2 mm to 24 mm.

Leads from 0.30 mm to 92 mm.

Lengths up to 4 metre.

6. Custom Thread Design

Unique thread form designed specifically for leadscrews in anti-backlash applications.

7. Smooth Quiet Operation

No recirculating ball noise or metal to metal contact.

8. Lower Cost

Less than comparable ball screws or ground leadscrews, while still providing high accuracy and long life.

9. Modifications

Special leadscrew ends and other leads are available on the stainless steel leadscrew range in selected sizes. Please contact Reliance Technical Sales or refer to the leadscrews modification section of this brochure.



ENGINEERING DATA

1. Lead

The lead of the screw is the amount of linear movement of the nut for one revolution of the leadscrew.

2. Drive Torque

The required motor torque to drive a leadscrew assembly is the sum of three components: inertial torque, static friction torque and torque to move the load. Additional torque associated with driving and supporting the leadscrew must also be considered.

Inertial torque: $T = I\alpha$ $I =$ Inertia of leadscrew (kgm^2)
 $\alpha =$ Angular acceleration (rads/s^2)

Static friction torque: Anti-backlash leadscrews are typically supplied with a static frictional torque of 0.007 - 0.05 Nm. Higher pre-load forces lead to higher frictional drag torques but better anti-backlash characteristics.

Torque to move load: The torque to move a certain load is a function of the lead and efficiency of the leadscrew assembly.

$$\text{Torque} = \frac{\text{Load} \times \text{Lead}}{2\pi \times \text{Efficiency}}$$

Torque = Newton metres
 Load = Newtons
 Lead = Metres

(Note - efficiency of 70% would require 0.7 in these equations)

4. Backdriving

In general when the screw pitch is less than 1/3 its diameter and the screw is uncoated, backdriving will not occur. (Coated screws require to be 1/4 diameter). For higher leads where backdriving is likely, the torque required for holding a load is as follows:

$$\text{Backdrive torque} = \frac{\text{Load} \times \text{Lead} \times \text{Efficiency}}{2\pi}$$

Torque = Newton metres
 Load = Newtons
 Lead = Metres

Small vibrations in the system may break the static friction initiating backdriving, therefore, for small critical applications use smaller lead or an external locking device.

5. Traverse Speed

The polyacetal nut materials provide long wear-life over a wide variety of conditions, but very high loads and/or high speeds will accelerate nut wear. We recommend the following maximum linear traversing speeds for optimum life:

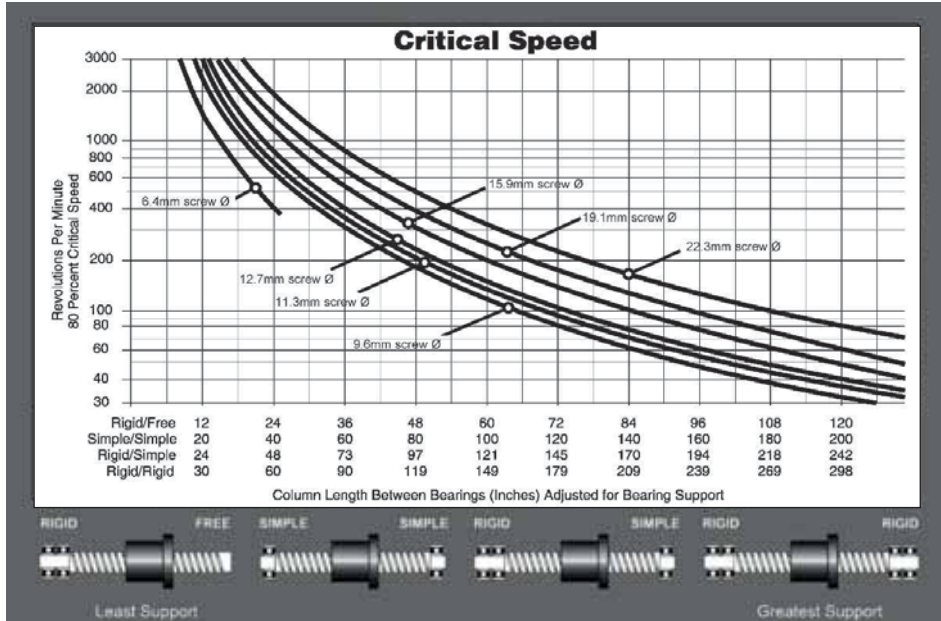
Lead	Maximum traverse speed
2.5 mm - 12 mm	100 mm/sec
12 mm - 25 mm	250 mm/sec
25 mm - 60 mm	760 mm/sec



6. Critical Speed

This is the rotational speed at which a leadscrew will experience vibration or other dynamic problems. See the critical speed chart below to determine if the application parameters result in speeds approaching critical.

To minimise critical speed problems use a longer lead, choose a larger diameter screw or increase the bearing mount support.



7. Maximum Load

Although the leadscrew assemblies are able to withstand relatively high loads without catastrophic failure, these units have been designed to operate with the loads shown on the product pages.

8. Efficiency

The efficiency of a leadscrew varies with the lead angle of the screw. The theoretical maximum efficiencies of all our leadscrews are given in the part number tables on the product pages. These have been calculated using the static coefficient of friction 0.08. For applications where the dynamic efficiency is critical please contact Reliance Technical Sales.

9. Leadscrew Inertia

Values of leadscrew inertia are given in the Typical Mechanical Properties chart on the next page.

10. Screw Straightness

Typical screw straightness is 0.25 mm/metre.

11. Leadscrew Interfacing

Examples of machined end options can be found on pages 7-27 to 7-35.



Physical Properties					
Leadscrew		Nuts		Assembly	
Material	Surface Finish	Material	Tensile Strength	Operating Temp. Range	Coefficient of Friction Nut to Screw
Stainless steel 303 series	Better than 0.4 µm	Polyacetal with lubricating additive	67 N/mm ² 9,700 psi	0 - 93°C	Static = 0.08 0.08# Dynamic = 0.15 0.09# # - with TFE coating

Typical Mechanical Properties				
Leadscrew Series	Static Frictional Drag Torque (Nm)	Screw Inertia kg m ² /m	Anti-backlash Life +	
			Plain Screw	TFE Coated Screw
LPX6 LPX10 LPX11 LPX13 LPX16 LPX19 LPX22 LPX24	Free wheeling	8.340x10 ⁻⁷ 4.170x10 ⁻⁶ 9.730x10 ⁻⁶ 1.446x10 ⁻⁵ 3.948x10 ⁻⁵ 8.479x10 ⁻⁵ 1.612x10 ⁻⁴ 2.030x10 ⁻⁴	N/A Typical Backlash 0.076-0.25 mm	N/A Typical Backlash 0.076-0.25 mm
LNTG6 LNTG8 LNTG10	0.004-0.01 0.01-0.02 0.01-0.02	8.340x10 ⁻⁷ 1.390x10 ⁻⁶ 4.170x10 ⁻⁶	0.12 - 0.25 million metres	0.38 - 1.0 million metres
LAB6 LAB10 LAB11 LAB13 LAB16 LAB19 LAB22 LAB24	0.004-0.01 0.01-0.02 0.015-0.03 0.015-0.03 0.02-0.05 0.03-0.063 0.03-0.063 0.03-0.063	8.340x10 ⁻⁷ 4.170x10 ⁻⁶ 9.730x10 ⁻⁶ 1.446x10 ⁻⁵ 3.948x10 ⁻⁵ 8.479x10 ⁻⁵ 1.612x10 ⁻⁴ 2.030x10 ⁻⁴	0.12 - 0.25 million metres	0.38 - 1.0 million metres
LAF6 LAF8 LAF10 LAF11 LAF13 LAF16	0.004-0.02 0.01-0.03 0.01-0.03 0.015-0.04 0.02-0.05 0.03-0.055	8.340x10 ⁻⁷ 1.390x10 ⁻⁶ 4.170x10 ⁻⁶ 9.730x10 ⁻⁶ 1.446x10 ⁻⁵ 3.948x10 ⁻⁵	1.0 - 1.5 million metres	3.8 - 5.0 million metres
LAK8 LAK10	0.01-0.02 0.01-0.02	1.390x10 ⁻⁶ 4.170x10 ⁻⁶	2.0 - 2.5 million metres	4.5 - 5.8 million metres
LWD6 LWD8 LWD10 LWD11 LWD13	0.03 max 0.04 max 0.04 max 0.06 max 0.06 max	8.340x10 ⁻⁷ 1.390x10 ⁻⁶ 4.170x10 ⁻⁶ 9.730x10 ⁻⁶ 1.446x10 ⁻⁵	2.5 - 3.15 million metres	5.0 - 6.35 million metres

Technical Information



Typical Mechanical Properties (continued)

Leadscrew Series	Static Frictional Drag Torque (Nm)	Screw Inertia Kg m ² /m	Anti-backlash Life +	
			Plain Screw	TFE Coated Screw
LNTB6	0.004-0.01	8.340x10 ⁻⁷	2.5 - 3.15 million metres	5.0 - 6.35 million metres
LNTB8	0.01-0.02	1.390x10 ⁻⁶		
LNTB10	0.01-0.02	4.170x10 ⁻⁶		
LNTB11	0.01-0.02	9.730x10 ⁻⁶		
LNTB13	0.015-0.04	1.446x10 ⁻⁵		
LNTB16	0.015-0.04	3.948x10 ⁻⁵		
LNTB19	0.02-0.05	8.479x10 ⁻⁵		
LNTB22	0.03-0.06	1.612x10 ⁻⁴		
LNTB24	0.03-0.06	2.030x10 ⁻⁴		
LCM6	0.03	8.340x10 ⁻⁷	1.0 - 1.5 million metres	3.8 - 5.0 million metres
LCM8	0.04	1.390x10 ⁻⁶		
LCM10	0.04	4.170x10 ⁻⁶		
LAX13	0.015-0.04	1.446x10 ⁻⁵	5.0 - 5.7 million metres	7.6 - 8.8 million metres
LAX16	0.015-0.04	3.948x10 ⁻⁵		









+ Life will vary with loading, operating environment and duty cycle.
Longer screw leads generally give longer life.

TFE COATED LEADSCREW ASSEMBLIES

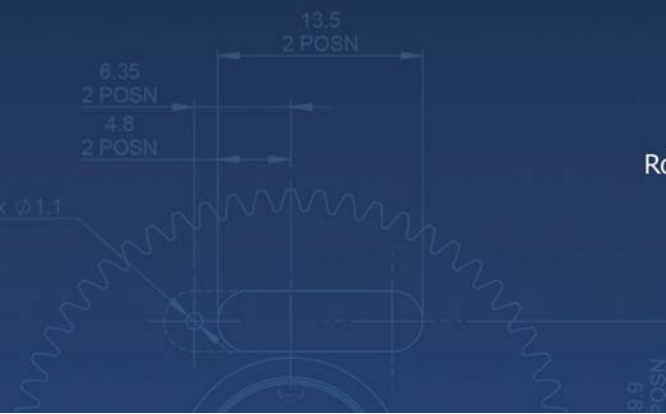
The TFE coating is designed to supply a more even distribution of lubricant than is normally achieved when using standard self lubricating plastics on steel. The entire screw surface is coated which gives an extremely even lubrication distribution and an expected increase in normal nut life of up to 300%. Lubrication to the screw/nut interface occurs by the nut picking up TFE particles from the coating as well as from migration of the internal lubricant from within the plastic nut.

Although care should be taken to ensure that chips and voids do not occur in the coating, small voids have been shown to have little effect on the system performance. The lubricant, although solid, has some of the "spreading" ability of fluid lubricants. When machining for bearing ends, soft fixtures are recommended.

TFE coated screws provide the maximum level of self-lubrication and should not be additionally lubricated or used in environments where oils or other lubricant contamination is possible.

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