

PLANETARY ROLLER SCREWS

ENDURANCE TECHNOLOGYSM
A Tolomatic Design Principle

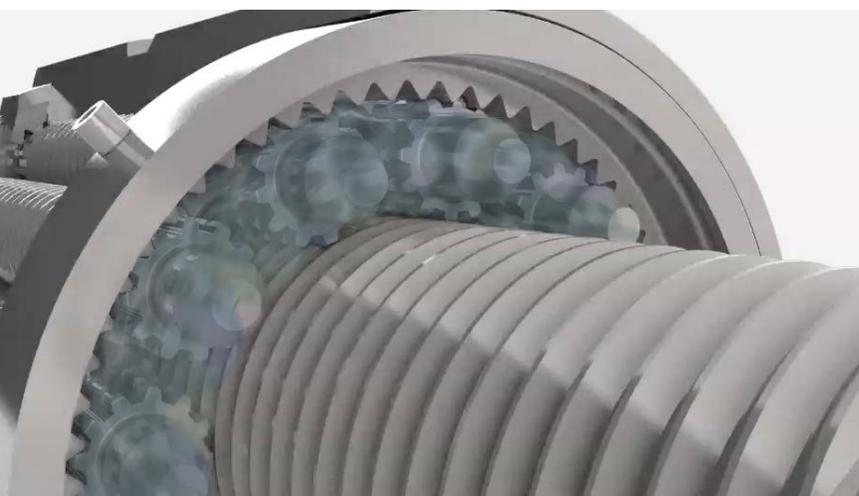


LINEAR SOLUTIONS MADE EASY

Planetary Roller Screws

PLANETARY ROLLER SCREW OVERVIEW

Roller screws are designed to provide high force and efficient operation in a compact package. This unique design offers higher forces and longer life in a smaller package compared to ball screws, increasing a machine designer's ability to create compact machine concepts. Tolomatic roller screws are manufactured using state-of-the-art equipment to ensure strict tolerances and the highest quality standards confirming that each roller screw provides top-tier performance.



Tolomatic's Planetary Roller Screws:

- Verified and tested extensively in Tolomatic's research & development lab
- Proven long, reliable life in thousands of demanding applications world-wide through use in Tolomatic's ERD, IMA, RSA, RSX and ServoWeld actuator platforms.
- Configurable stroke lengths
- Option to machine screw ends to OEM specifications
- Industry best lead times

Available Configurations



SCREW SIZE	LEAD
mm	mm
15	4, 5, 10
20	4, 5, 10
30	5, 10
36	5, 10
39	10
48	12
63	10

See page 6 for complete list of screw sizes, lead availability, dimensions and specifications



*Lead times are dependent on quantity and machined end specifications

TOLOMATIC'S ELECTRIC ROD-STYLE ACTUATORS

	ERD	RSH	RSA	GSA	RSX	IMA
						
	Rod-Style Actuator	Hygienic Rod-Style Actuator	Rod-Style Actuator	Guided Rod-Style Actuator	Rod-Style Actuator	Integrated Servo Actuator
Force up to:	2.22 kN (500 lbf)	35.3 kN (7,943 lbf)	58 kN (13,039 lbf)	4.23 kN (950 lbf)	222.4 kN (50,000 lbf)	30.6 kN (6,875 lbf)
Speed up to:	1473 mm/sec (58 in/sec)	500 mm/sec (19.7 in/sec)	3,124 mm/sec (123 in/sec)	3,124 mm/sec (123 in/sec)	760 mm/sec (29.9 in/sec)	1,334 mm/sec (52.5 in/sec)
Stroke Length up to:	609.6 mm (24 in)	1200 mm (48 in)	1,524 mm (60 in)	914 mm (36 in)	890 mm (35 in)	457 mm (18 in)
Screw/Nut Type	Solid & Ball	Ball & Roller	Solid, Ball & Roller	Solid & Ball	Roller	Ball & Roller
	<i>For complete information see www.tolomatic.com or literature number:</i>					
Literature Number:	2190-4000	2100-4010	3600-4166	3600-4166	2171-4001	2700-4000

(Not all models deliver maximum values listed, i.e.: Maximum thrust may not be available with maximum speed)

Roller Screws vs. Ball Screws

Roller Screw



Capable of handling heavy loads, planetary roller screws contain precision ground rollers engaged with a precision ground screw and nut. When compared with a ball screw of the same size and lead, the roller screw components are designed to increase points of contact and a larger contact radius. This results in less stress per point of contact and allows roller screws to carry higher loads.

- Higher DLR = longer life
- Higher loads per given size
- Allows for smaller, lighter weight designs and machine concepts
- Compact design allows for flexibility in machine design
- Quiet, efficient operation

ROLLER AND BALL SCREW PERFORMANCE COMPARISONS

	ROLLER SCREW	BALL SCREW
Dynamic load rating	Very High	Medium
Lifetime	Very long, many times greater than ball screw	Moderate
Shock Loads	Very high	Moderate
Relative Space Required	Minimal	Moderate
Acceleration	High	Moderate

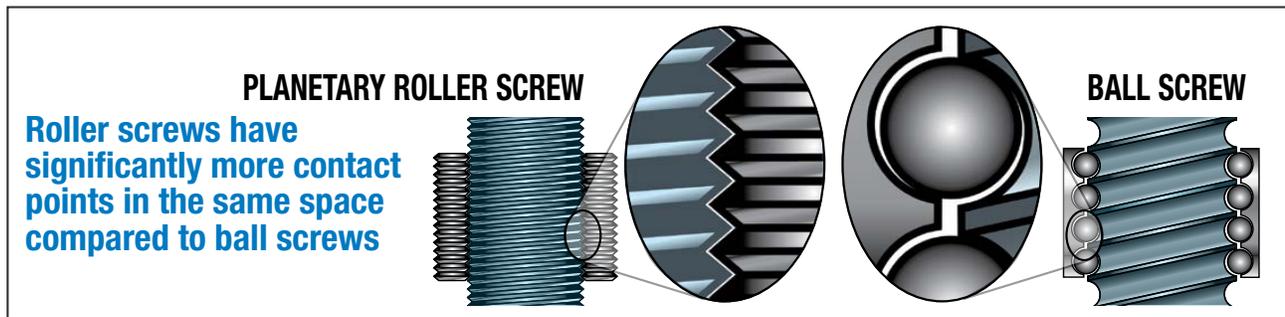
Ball Screw



Capable of handling moderate loads, ball screw nut assemblies contain multiple ball bearings that cannot be made below a minimum size. When compared to a roller screw of similar size and lead, the ball bearings' radius requires a coarser pitch resulting in fewer points of contact. Combined with the smaller contact radius and a design that allows the bearings to contact each other, limits the ball screw's DLR leading to lower forces and shorter life.



DLR (Dynamic Load Rating) is an industry standard term that represents an applicable constant load (in direction and magnitude) where a ball bearing device (or power screw) will achieve 1,000,000 revolutions of rated life or L10 life estimation at 90% reliability.



Industries & Applications

- Aerospace
- Ball Screw Replacement
- Clamping
- Defense
- Hydraulic Replacement
- Injection Molding
- Lifting
- Machine Tools
- Motion Simulators
- Pressing
- Pumping
- Punching
- Riveting
- Valve Control

PLANETARY ROLLER SCREWS

ENDURANCE TECHNOLOGYSM

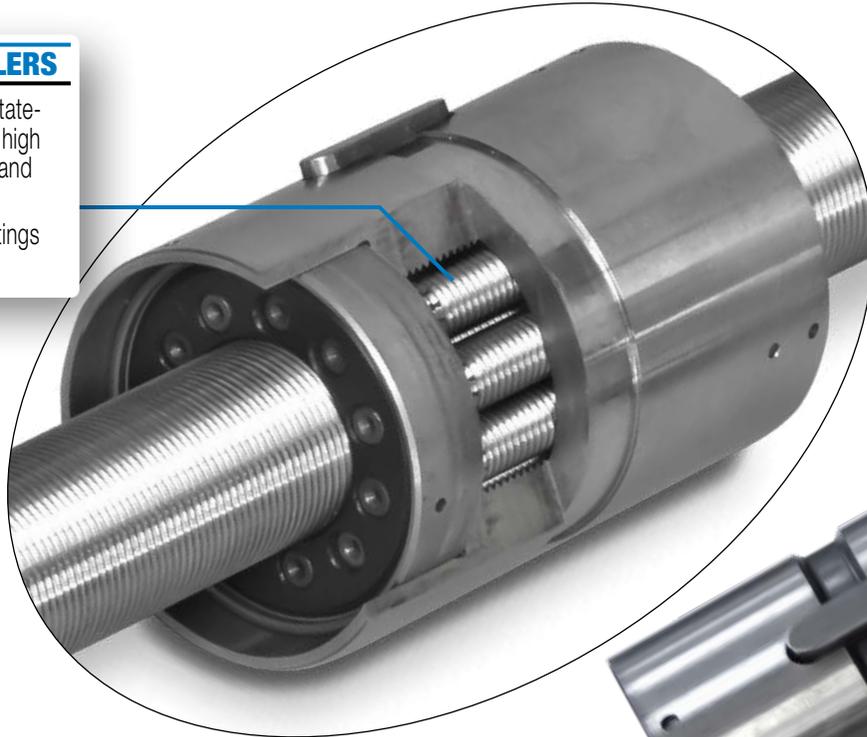
Endurance Technology features are designed for maximum durability to provide extended service life.

A Tolomatic Design Principle

Tolomatic planetary roller screws offer machine designers a robust, compact, high force linear motion solution. Long life, flexible design and efficient operation ensure minimal downtime and maximize ROI. Now available in standard sizes, leads, and lengths built-to-order.

PLANETARY ROLLERS

- Precision ground on state-of-the-art machines to high tolerances for smooth and efficient operation
- High dynamic load ratings for long life



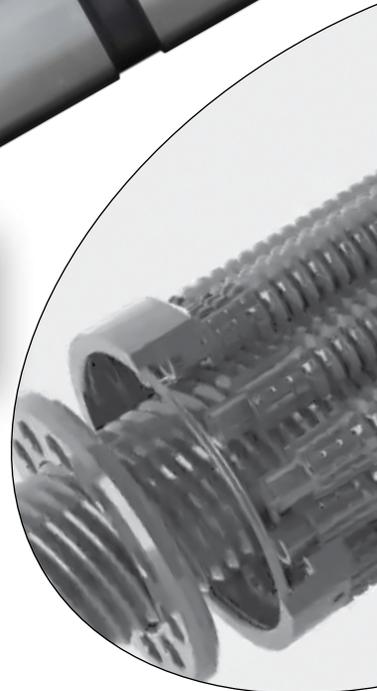
*Lead times are dependent on quantity and machined end specifications

ROLLER NUT

Increased contact points for high load carrying capacity

ROLLER SCREW

State-of-the-art manufacturing coupled with extensive statistical testing methods ensures high performance within tight specifications



Tolomatic™... MAXIMUM DURABILITY

EXCELLENCE IN MOTION

HARDENED STEEL

- Screw, nut and rollers are manufactured with specially hardened steel for maximum durability and long life
- Designed and tested for demanding applications
- High load capacities

MACHINED ENDS

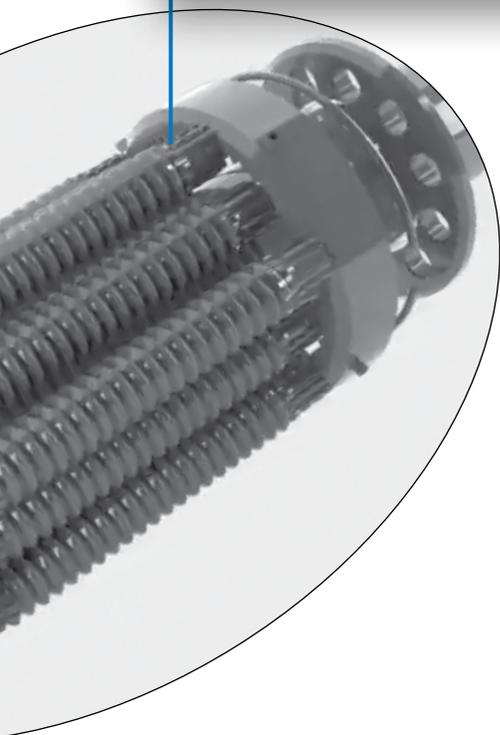
- Screw ends and bearing journals custom machined to fit most application requirements
- Easy integration into machine designs and concepts

PLANETARY GEARS

High tech quality control & measurement lab assures superior performance for every component

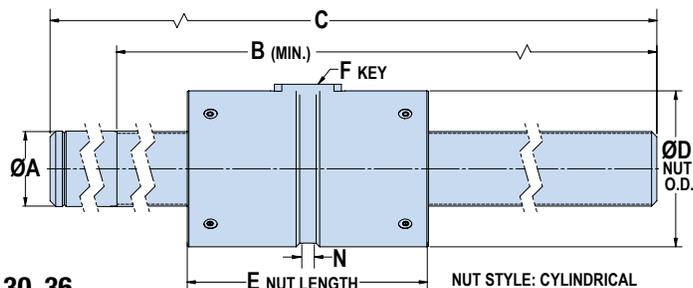
SCREW SIZE	LEAD
<i>mm</i>	<i>mm</i>
15	4, 5, 10
20	4, 5, 10
30	5, 10
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See page 6 for complete list of screw sizes, lead availability, dimensions and specifications



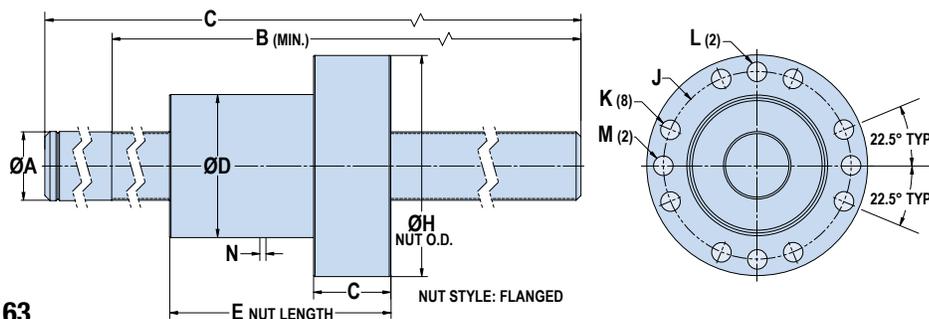
Planetary Roller Screws

DIMENSIONS & SPECIFICATIONS:



Size: 15, 20, 30, 36

CONFIG. CODE	SCREW SIZE	LEAD	SCREW DIAMETER A	THREAD LENGTH * B	SHAFT LENGTH * C	NUT O.D. D	NUT LENGTH E	KEY SIZE F HxWxL	LUBE PORT Z	DLR (C)	SLR (Co)	DLR (C)	SLR (Co)	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	kN	kN	lbf	lbf	
CYLINDRICAL	15.4	15	4	15.29	743.9	990.6	34.983	44.88	4x4x14	2.0	41.1	38.7	9,240	8,700
	15.5	15	5	15.29	743.9	990.6	34.983	44.88	4x4x14	2.0	53.6	34.9	12,050	7,846
	15.10	15	10	15.55	743.9	990.6	34.983	44.88	4x4x14	2.0	47.2	47.3	10,611	10,633
	20.4	20	4	19.80	1101.1	1219.2	41.981	64.87	4x4x18	3.0	67.2	83.9	15,107	18,861
	20.5	20	5	19.80	1101.1	1219.2	41.981	64.87	4x4x18	3.0	73.3	70.9	16,478	15,939
	20.5 XR	20	5	19.80	1101.1	1219.2	41.981	64.87	4x4x18	3.0	91.7	78.1	20,615	17,558
	20.10	20	10	20.07	1101.1	1219.2	41.981	64.87	4x4x18	3.0	76.4	74	17,175	16,636
	30.5	30	5	30.37	1049.0	1219.2	61.976	68.85	5x5x22	3.0	65.5	104.6	14,725	23,515
	30.10	30	10	30.71	1049.0	1219.2	61.976	68.85	5x5x22	3.0	116.1	105	26,100	23,605
	36.5	36	5	36.32	1036.3	1219.2	74.983	81.85	5x5x22	3.0	96.6	175.3	21,717	39,409
	36.10	36	10	36.75	1036.3	1219.2	74.983	81.85	5x5x22	3.0	160.8	160.1	36,149	35,992



Size: 39, 48, 63

CONFIG. CODE	SCREW SIZE	LEAD	SCREW DIAMETER A	THREAD LENGTH * B	SHAFT LENGTH * C	NUT O.D. D	NUT LENGTH E	FLANGE THICKNESS G	FLANGE DIAMETER H	BOLT CIRCLE J	HOLE DIAMETER K	HOLE DIAMETER L	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
FLANGED	39.10	39	10	39.70	1003.3	1219.2	80.000	91.83	25.0	108.0	94.00	9.00	7.92 / 8.08
	48.12	48	12	48.56	971.6	1219.2	85.976	140.87	35.0	122.0	104.00	11.00	9.53 / 9.70
	63.10	63	10	63.70	906.8	1219.2	126.974	169.80	45.0	187.0	158.00	16.27	12.00 / 12.18

CONFIG. CODE	SCREW SIZE	LEAD	HOLE DIAMETER M	LUBE PORT Z	PILOT P	DLR (C)	SLR (Co)	DLR (C)	SLR (Co)	
	mm	mm	mm	mm	mm	kN	kN	lbf	lbf	
FLANGED	39.10	39	10	11.50	1/4-28 x 4.6mm	Ø72.08 / 73.02 x 2.02 DP	182.7	214.3	41,073	48,177
	48.12	48	12	13.50	1/4-28 x 4.6mm	Ø78.00 / 78.04 x 2.02 DP	269.3	485.6	60,541	109,167
	63.10	63	10	16.27	1/4-28 x 4.6mm	Ø116.86 / 116.90 x 3.30 DP	442.9	818.7	99,568	184,051

* For longer lengths, contact Tolomatic.

Lead Accuracy: 0.023 mm/300 mm Backlash: 0.03 mm

Planetary Roller Screws



*Lead times are dependent on quantity and machined end specifications

ORDERING

PRS 15

04 SM 150

MODEL
PRS Planetary Roller Screw

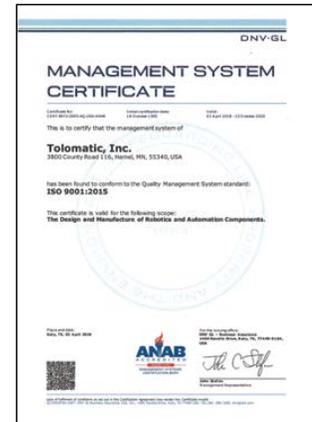
DIAMETER
15, 20, 30, 36, 39, 48, 63

LEAD
See page 6 for valid roller screw lead & diameter combinations
04, 05, 10, 12

STROKE LENGTH
SM ____ Enter desired stroke length in millimeters (round to nearest mm)
See page 6 for maximum stroke length for DIAMETER and LEAD chosen

Designed and Tested for Long Life

Tolomatic's engineering, research & development, and test departments utilize modern design tools and test equipment to ensure each roller screw design is capable of meeting industry leading performance standards. Thousands of hours of design and testing stand behind each planetary roller screw design. Tolomatic roller screws have a record of proven performance in demanding applications as the key component in its many electric actuator platforms. (ERD, IMA, RSA, RSX, ServoWeld)



Company with
Quality System Certified
by DNV GL
= ISO 9001 =
Certified site: Hamel, MN

The Tolomatic Difference Expect More From the Industry Leader:



INNOVATIVE PRODUCTS

Unique linear actuator solutions with Endurance TechnologySM to solve your challenging application requirements.



FAST DELIVERY

The fastest delivery of catalog products... Built-to-order with configurable stroke lengths and flexible mounting options.



ACTUATOR SIZING

Online sizing that is easy to use, accurate and always up-to-date. Find a Tolomatic electric actuator to meet your requirements.



YOUR MOTOR HERE

Match your motor with compatible mounting plates that ship with any Tolomatic electric actuator.



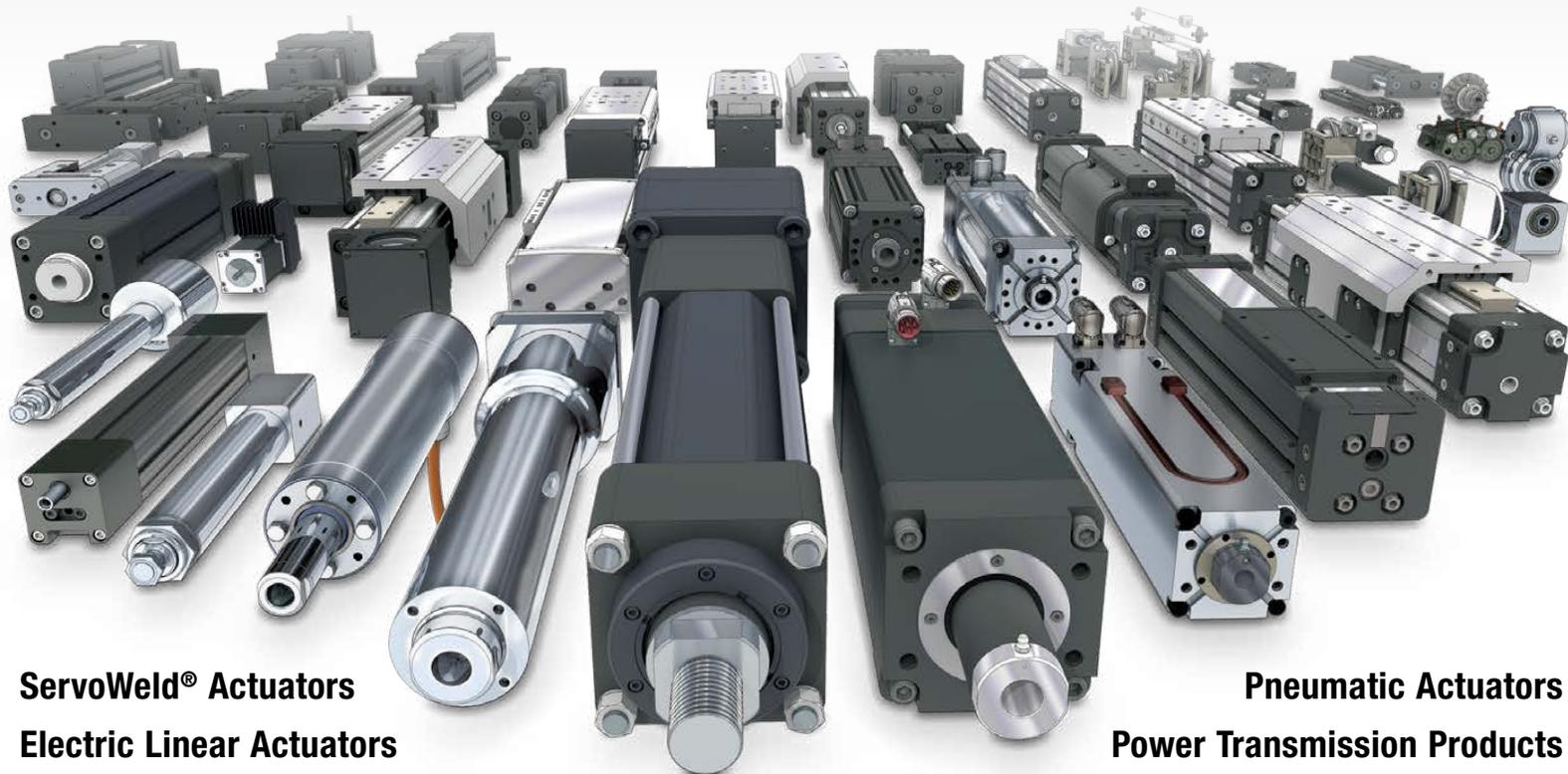
LIBRARY

Easy to access CAD files available in the most popular formats to place directly into your assembly.



TECHNICAL SUPPORT

Extensive motion control knowledge: Expect prompt, courteous replies to any application and product questions from Tolomatic's industry experts.



ServoWeld[®] Actuators
Electric Linear Actuators

Pneumatic Actuators
Power Transmission Products

Tolomatic[™]

EXCELLENCE *IN MOTION*

COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV GL
= ISO 9001 =
Certified site: Hamel, MN

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