

# PLANETARY ROLLER SCREWS

 **ENDURANCE TECHNOLOGY**™

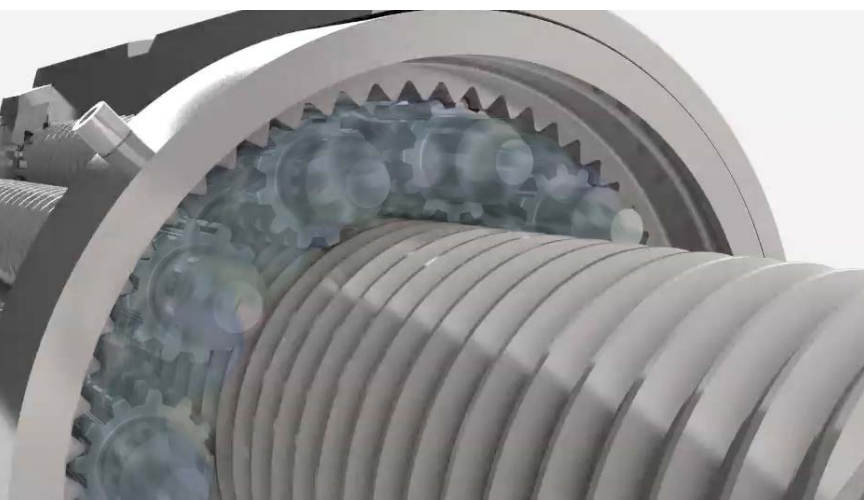


**LINEAR SOLUTIONS MADE EASY**

# 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

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 ROLLER SCREW ACTUATORS

	ERD	RSA	RSX	IMA	ServoWeld SWA
					
<b>Thrust</b> up to:	35 kN (7,868 lbf)	58 kN (13,039 lbf)	133.5 kN (30,000 lbf)	30.6 kN (6,875 lbf)	17.8 kN (4,000 lbf)
<b>Speed</b> up to:	1473 mm/sec (58 in/sec)	3,124 mm/sec (123 in/sec)	760 mm/sec (29.9 in/sec)	1,334 mm/sec (52.5 in/sec)	584 mm/sec (23.0 in/sec)
<b>Stroke Length</b> up to:	1000 mm (39.4 in)	1,524 mm (60 in)	1500 mm (59 in)	457 mm (18 in)	150 mm (6 in)
<i>For complete information see <a href="http://www.tolomatic.com">www.tolomatic.com</a> or literature number:</i>					
<b>Literature Number:</b>	2190-4000	3600-4166	2171-4001	2700-4000	2750-4004

(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



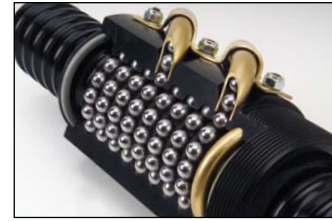
Capable of handling heavy loads, planetary roller screws contain precision ground rollers engaged with a precision ground screw and nut. When compared with a ball screw of the same size and lead, the roller screw components are designed to increase points of contact and a larger contact radius. This 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
<b>Dynamic load rating</b>	Very High	Medium
<b>Lifetime</b>	Very long, many times greater than ball screw	Moderate
<b>Shock Loads</b>	Very high	Moderate
<b>Relative Space Required</b>	Minimal	Moderate
<b>Acceleration</b>	High	Moderate

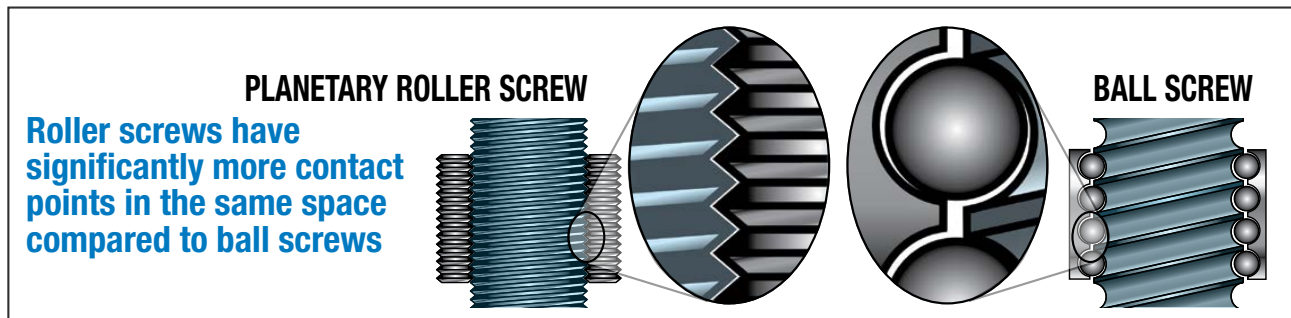
## Ball Screw



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

# PLANETARY ROLLER SCREWS

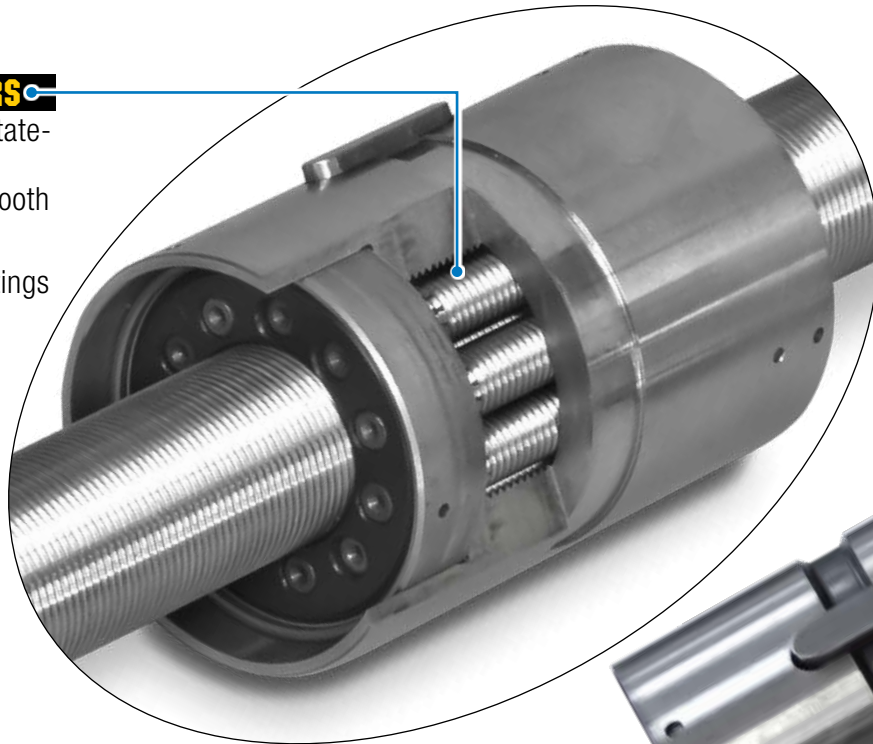
## ENDURANCE TECHNOLOGY<sup>SM</sup>

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

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



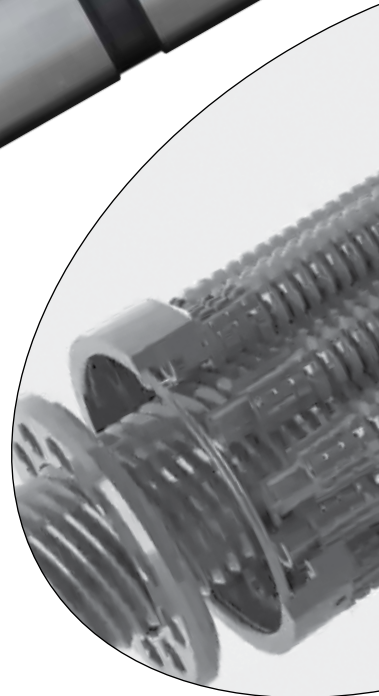
\*Lead times are dependent on quantity and machined end specifications

### ROLLER SCREW

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

### ROLLER NUT

- Increased contact points for high load carrying capacity



**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
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39	10
48	12

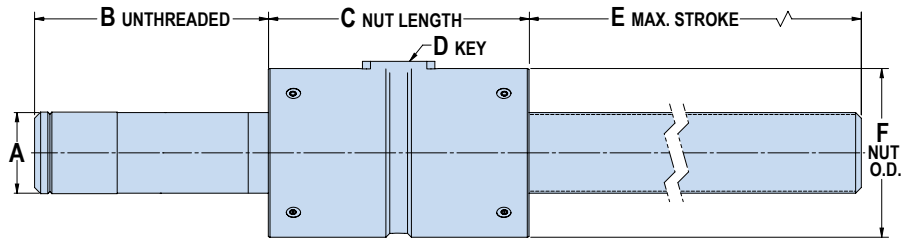
See page 6 for complete list of screw sizes, lead availability, dimensions and specifications



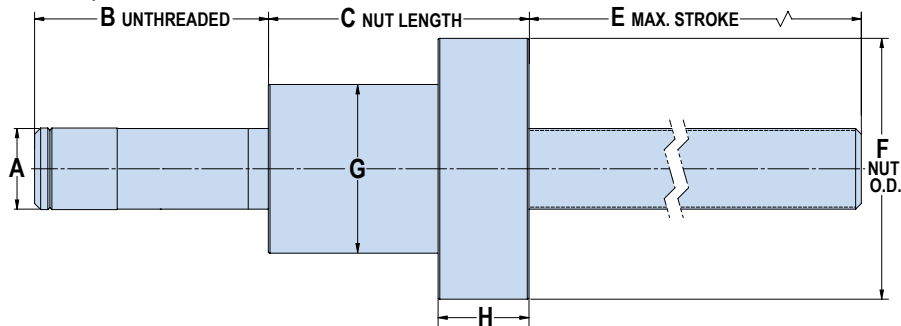
# Planetary Roller Screws

## DIMENSIONS & SPECIFICATIONS:

Size: 15, 20, 30, 36



Size: 39, 48



CONFIG.	SCREW SIZE	LEAD	A	B	C	D	E	F	G	H	DLR (C)	SLR
			SCREW DIA.	UNTHREADED	NUT LENGTH	KEY SIZE HxWxL	*MAX. STROKE	NUT O.D.				(CO)
			mm	mm	mm	mm	mm	mm	mm	mm	kN	kN
15.04	15	4	15.29	119.63	44.88	4x4x14	800.69	34.983	-	-	41.1	38.7
15.05	15	5	15.29	119.63	44.88	4x4x14	800.69	34.983	-	-	53.6	34.9
15.10	15	10	15.55	119.63	44.88	4x4x14	800.69	34.983	-	-	47.2	47.3
20.04	20	4	19.80	118.11	64.87	4x4x18	1036.22	41.981	-	-	67.2	83.9
20.05	20	5	19.80	118.11	64.87	4x4x18	1036.22	41.981	-	-	73.3	70.9
20.10	20	10	20.07	118.11	64.87	4x4x18	1036.22	41.981	-	-	76.4	74.0
30.05	30	5	30.37	170.18	68.85	5x5x22	1691.37	61.976	-	-	65.5	104.6
30.10	30	10	30.71	170.18	68.85	5x5x22	1691.37	61.976	-	-	116.1	105.0
36.05	36	5	36.32	182.88	81.85	5x5x22	1665.67	74.983	-	-	96.6	175.3
36.10	36	10	36.75	182.88	81.85	5x5x22	1665.67	74.983	-	-	160.8	160.1
39.10	39	10	39.70	215.90	91.83	-	1622.67	108.00	80.00	25.08	182.7	214.3
48.12	48	12	48.56	247.65	117.03	-	1565.72	122.00	85.97	35.08	269.3	485.6

Lead Accuracy: 0.01 mm/300 mm Backlash: 0.03 mm

CONFIG.	SCREW SIZE	LEAD	A	B	C	D	E	F	G	H	DLR (C)	SLR
			SCREW DIA.	UNTHREADED	NUT LENGTH	KEY SIZE HxWxL	*MAX. STROKE	NUT O.D.				(CO)
			in	in	in	in	in	in	in	in	lbf	lbf
15.04	15	0.157	0.602	4.710	1.767	.157x.157x.551	31.523	1.377	-	-	9,240	8,700
15.05	15	0.197	0.602	4.710	1.767	.157x.157x.551	31.523	1.377	-	-	12,050	7,846
15.10	15	0.394	0.612	4.710	1.767	.157x.157x.551	31.523	1.377	-	-	10,611	10,633
20.04	20	0.157	0.780	4.650	2.554	.157x.157x.709	40.796	1.653	-	-	15,107	18,861
20.05	20	0.197	0.780	4.650	2.554	.157x.157x.709	40.796	1.653	-	-	16,478	15,939
20.10	20	0.394	0.790	4.650	2.554	.157x.157x.709	40.796	1.653	-	-	17,175	16,636
30.05	30	0.197	1.196	6.700	2.711	.197x.197x.866	66.589	2.440	-	-	14,725	23,515
30.10	30	0.394	1.209	6.700	2.711	.197x.197x.866	66.589	2.440	-	-	26,100	23,605
36.05	36	0.197	1.430	7.200	3.222	.197x.197x.866	65.578	2.952	-	-	21,716	39,409
36.10	36	0.394	1.447	7.200	3.222	.197x.197x.866	65.578	2.952	-	-	36,149	35,992
39.10	39	0.394	1.563	8.500	3.615	-	63.885	4.252	3.150	0.987	41,072	48,176
48.12	48	0.472	1.912	9.750	4.607	-	61.643	4.803	3.385	1.381	60,541	109,167

Lead Accuracy: 0.0004 in/ft Backlash: 0.0012 in

# Planetary Roller Screws



\*Lead times are dependent on quantity and machined end specifications

## ORDERING

PRS 15

04 SM 0150 00

MODEL
PRS Planetary Roller Screw

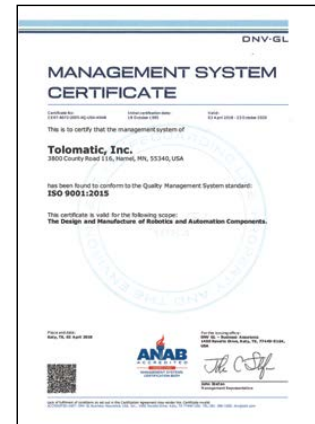
DIAMETER
15, 20, 30, 36, 39, 48

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

STROKE LENGTH
SM ____ Enter desired stroke length in millimeters
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 Technology<sup>SM</sup> 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.

## Also Consider These Other Tolomatic Products:

### Electric Products

Rod & Guided Rod Style Actuators, High Force Actuators, Screw & Belt Drive Rodless Actuators, Motors, Drives and Controllers

"Foldout" Brochure #9900-9074



### Pneumatic Products

Rodless Cylinders: Band Cylinders, Cable Cylinders, Magnetically Coupled Cylinders/Slides; Guided Rod Cylinder Slides

"Foldout" Brochure #9900-9075



### Power Transmission Products

Gearboxes: Float-A-Shaft<sup>®</sup>, Slide-Rite<sup>®</sup>; Disc Cone Clutch; Caliper Disc Brakes

"Foldout" Brochure #9900-9076



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