

PLANETARY ROLLER SCREWS

ENDURANCE TECHNOLOGYSM
A Tolomatic Design Principle

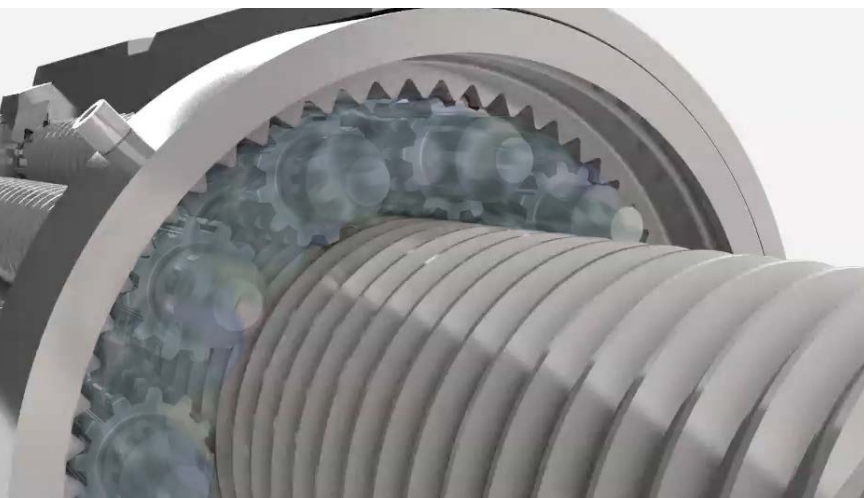


LINEAR SOLUTIONS MADE EASY

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	RSA	RSX	GSA	IMA
					
	Rod-Style Actuator	Rod-Style Actuator	Rod-Style Actuator	Guided Rod-Style Actuator	Integrated Servo Actuator
Force up to:	35 kN (7,868 lbf)	58 kN (13,039 lbf)	222.4 kN (50,000 lbf)	4.23 kN (950 lbf)	30.6 kN (6,875 lbf)
Speed up to:	1473 mm/sec (58 in/sec)	3,124 mm/sec (123 in/sec)	760 mm/sec (29.9 in/sec)	3,124 mm/sec (123 in/sec)	1,334 mm/sec (52.5 in/sec)
Stroke Length up to:	1000 mm (39.4 in)	1,524 mm (60 in)	890 mm (35 in)	914 mm (36 in)	457 mm (18 in)
Screw/Nut Type	Solid, Ball & Roller	Solid, Ball & Roller	Roller	Solid & Ball	Ball & Roller
For complete information see www.tolomatic.com or literature number:					
Literature Number:	2190-4000	3600-4166	2171-4001	3600-4166	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

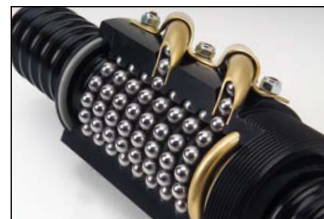
ROLLER AND BALL SCREW PERFORMANCE COMPARISONS

	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



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.

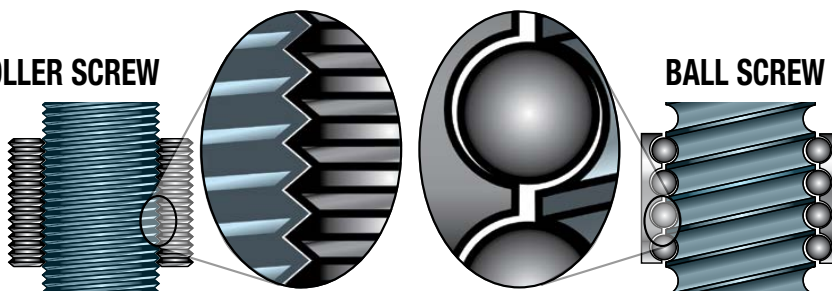
Ball Screw



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.

PLANETARY ROLLER SCREW

Roller screws have significantly more contact points in the same space compared to ball screws



BALL SCREW

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 TECHNOLOGYSM

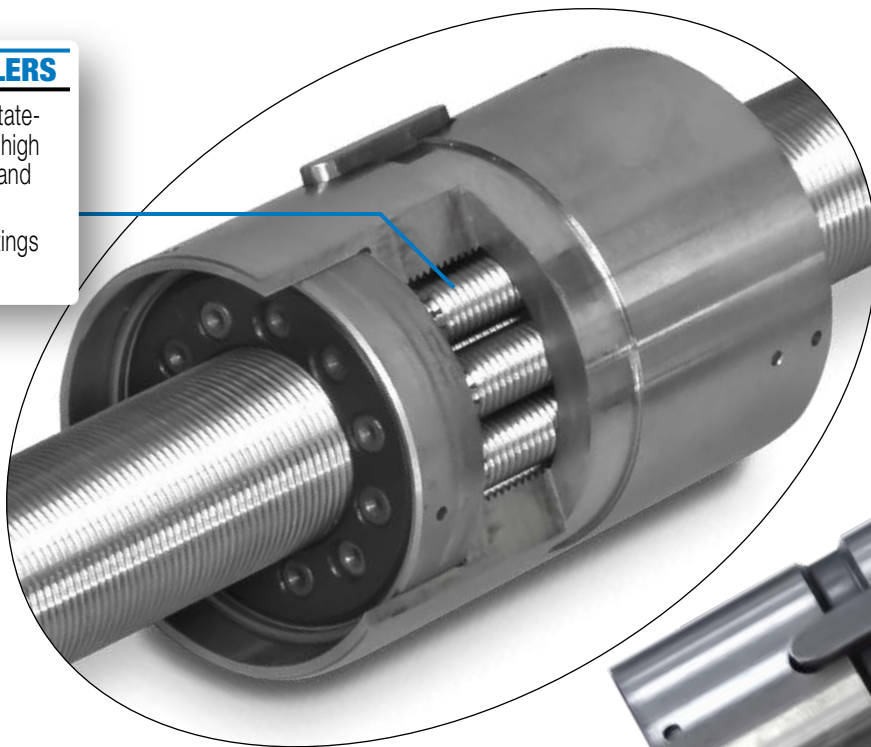
A Tolomatic Design Principle

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



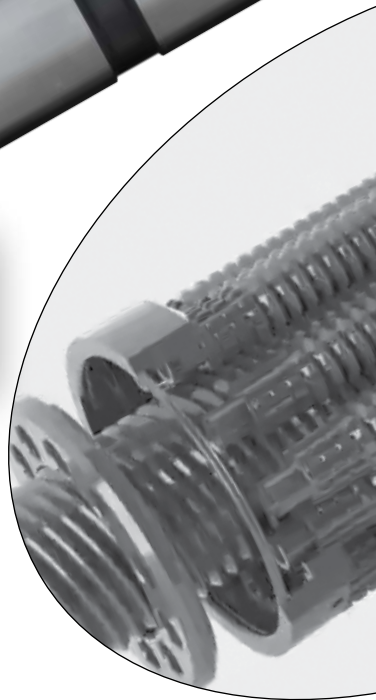
*Lead times are dependent on quantity and machined end specifications

ROLLER 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



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

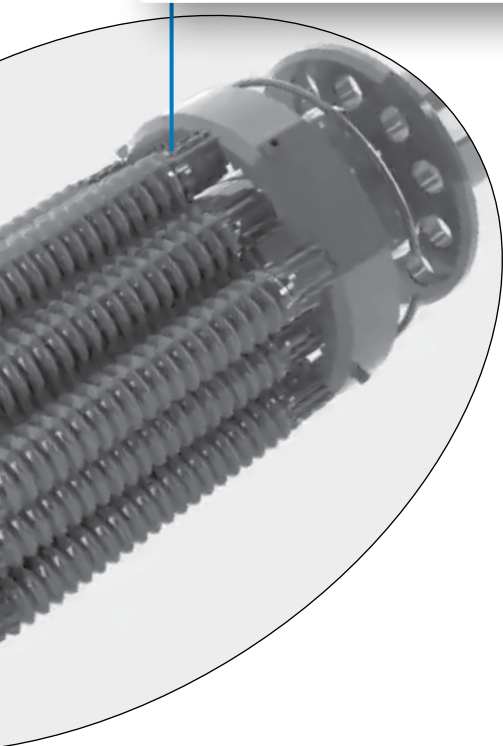
- Screw ends and bearing journals custom machined to fit most application requirements
- Easy integration into machine designs and concepts

PLANETARY GEARS

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

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

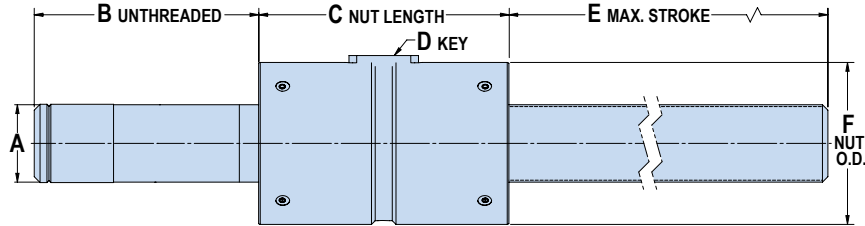
SCREW SIZE	LEAD
<i>mm</i>	<i>mm</i>
15	4, 5, 10
20	4, 5, 10
30	5, 10
36	5, 10
39	10
48	12
63	10



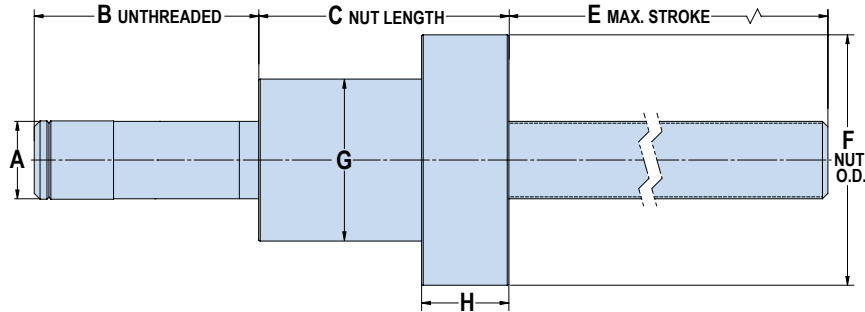
Planetary Roller Screws

DIMENSIONS & SPECIFICATIONS:

Size: 15, 20, 30, 36



Size: 39, 48, 63



CONFIG.	SCREW SIZE	LEAD mm	A SCREW DIA. mm	B UNTHREADED mm	C NUT LENGTH mm	D KEY SIZE HxWxL mm	E MAX. STROKE mm	F NUT O.D. mm	G mm	H mm	DLR (C) kN	SLR (CO) kN
15.04	15	4	15.29	119.63	44.88	4x4x14	699.0	34.983	—	—	41.1	38.7
15.05	15	5	15.29	119.63	44.88	4x4x14	699.0	34.983	—	—	53.6	34.9
15.10	15	10	15.55	119.63	44.88	4x4x14	699.0	34.983	—	—	47.2	47.3
20.04	20	4	19.80	118.11	64.87	4x4x18	1036.2	41.981	—	—	67.2	83.9
20.05	20	5	19.80	118.11	64.87	4x4x18	1036.2	41.981	—	—	73.3	70.9
20.10	20	10	20.07	118.11	64.87	4x4x18	1036.2	41.981	—	—	76.4	74.0
30.05	30	5	30.37	170.18	68.85	5x5x22	980.2	61.976	—	—	65.5	104.6
30.10	30	10	30.71	170.18	68.85	5x5x22	980.2	61.976	—	—	116.1	105.0
36.05	36	5	36.32	182.88	81.85	5x5x22	954.5	74.983	—	—	96.6	175.3
36.10	36	10	36.75	182.88	81.85	5x5x22	954.5	74.983	—	—	160.8	160.1
39.10	39	10	39.70	215.90	91.83	—	911.5	108.00	80.00	25.08	182.7	214.3
48.12	48	12	48.56	247.65	117.03	—	830.7	122.00	85.97	35.08	269.3	485.6
63.10	63	10	63.70	312.4	170	—	737.0	187.00	126.974	45.08	442.8	818.7

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

CONFIG.	SCREW SIZE	LEAD in	A SCREW DIA. in	B UNTHREADED in	C NUT LENGTH in	D KEY SIZE HxWxL in	E MAX. STROKE in	F NUT O.D. in	G in	H in	DLR (C) lbf	SLR (CO) lbf
15.04	15	0.157	0.602	4.710	1.767	.157x.157x.551	27.52	1.377	—	—	9,240	8,700
15.05	15	0.197	0.602	4.710	1.767	.157x.157x.551	27.52	1.377	—	—	12,050	7,846
15.10	15	0.394	0.612	4.710	1.767	.157x.157x.551	27.52	1.377	—	—	10,611	10,633
20.04	20	0.157	0.780	4.650	2.554	.157x.157x.709	40.80	1.653	—	—	15,107	18,861
20.05	20	0.197	0.780	4.650	2.554	.157x.157x.709	40.80	1.653	—	—	16,478	15,939
20.10	20	0.394	0.790	4.650	2.554	.157x.157x.709	40.80	1.653	—	—	17,175	16,636
30.05	30	0.197	1.196	6.700	2.711	.197x.197x.866	38.59	2.440	—	—	14,725	23,515
30.10	30	0.394	1.209	6.700	2.711	.197x.197x.866	38.59	2.440	—	—	26,100	23,605
36.05	36	0.197	1.430	7.200	3.222	.197x.197x.866	37.58	2.952	—	—	21,716	39,409
36.10	36	0.394	1.447	7.200	3.222	.197x.197x.866	37.58	2.952	—	—	36,149	35,992
39.10	39	0.394	1.563	8.500	3.615	—	35.89	4.252	3.150	0.987	41,072	48,176
48.12	48	0.472	1.912	9.750	4.607	—	32.70	4.803	3.385	1.381	60,541	109,167
63.10	63	0.394	2.508	12.3	6.693	—	29.02	7.362	4.9990	1.775	99,545	184,051

Lead Accuracy: 0.0004 in/ft Backlash: 0.0012 in

Planetary Roller Screws

ORDERING

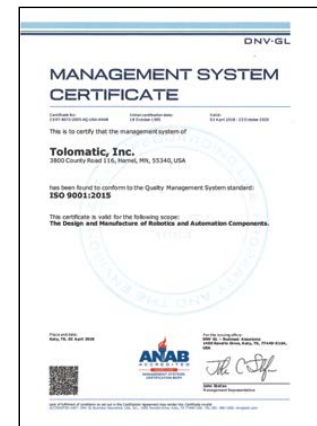
MODEL	LEAD	STROKE LENGTH
PRS Planetary Roller Screw	See page 6 for valid roller screw lead & diameter combinations 04, 05, 10, 12	SM ____ Enter desired stroke length in millimeters (round to nearest mm) See page 6 for maximum stroke length for DIAMETER and LEAD chosen
DIAMETER		
15, 20, 30, 36, 39, 48, 63		



FAST DELIVERY*
*Lead times are dependent on quantity and machined end specifications

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.



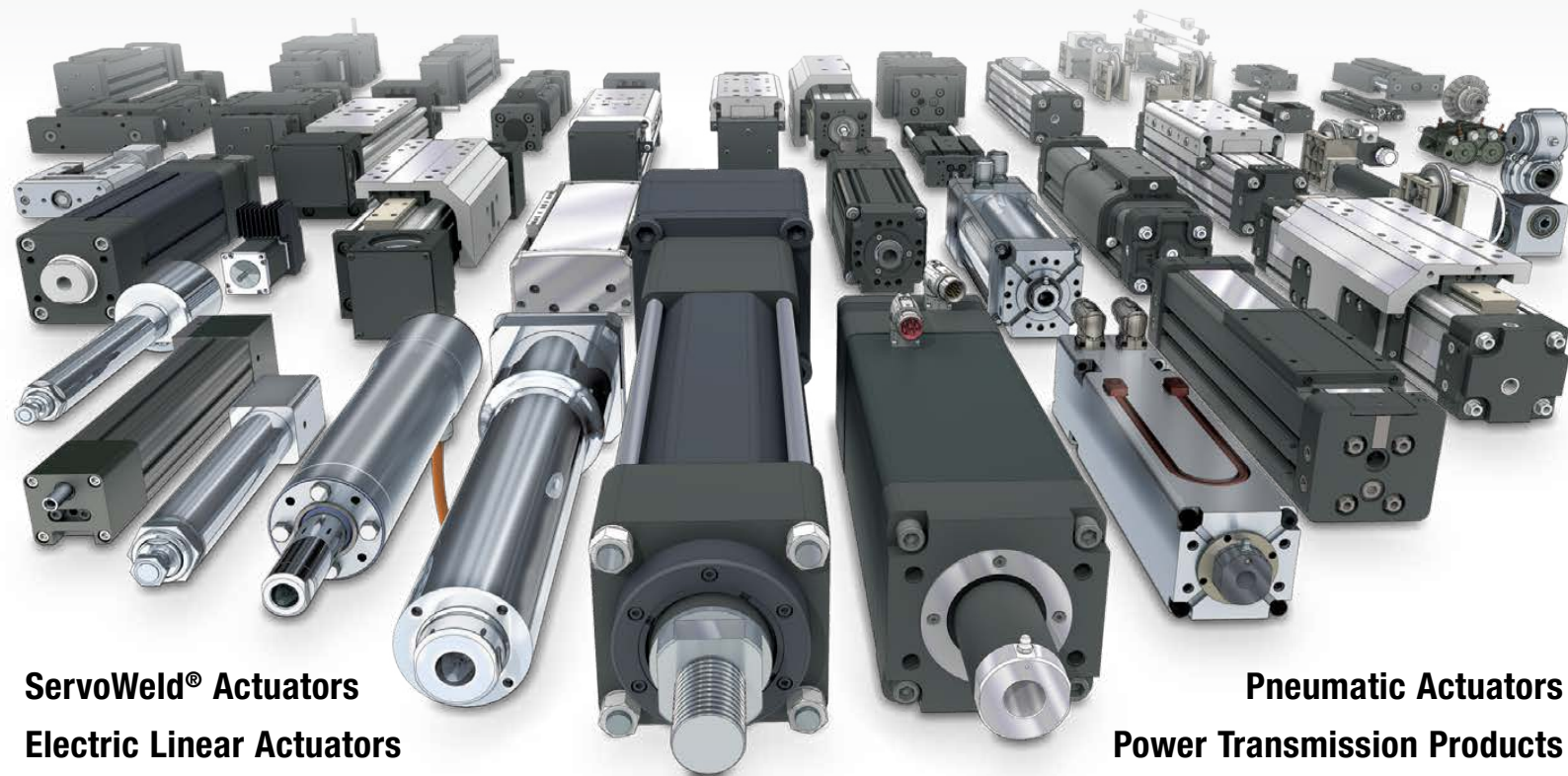
LIBRARY

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

TolomaticTM

EXCELLENCE IN MOTION

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

USA - Headquarters

Tolomatic Inc.

3800 County Road 116
Hamel, MN 55340, USA
Phone: (763) 478-8000
Toll-Free: **1-800-328-2174**
sales@tolomatic.com
www.tolomatic.com

MEXICO

Centro de Servicio

Parque Tecnológico Innovación
Int. 23, Lateral Estatal 431,
Santiago de Querétaro,
El Marqués, México, C.P. 76246
Phone: +1 (763) 478-8000
help@tolomatic.com

EUROPE

Tolomatic Europe GmbH

Elisabethenstr. 20
65428 Rüsselsheim
Germany
Phone: +49 6142 17604-0
help@tolomatic.eu

CHINA

Tolomatic Automation Products (Suzhou) Co. Ltd.

No. 60 Chuangye Street, Building 2
Huqiu District, SND Suzhou
Jiangsu 215011 - P.R. China
Phone: +86 (512) 6750-8506
ServoWeldChina@tolomatic.com

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