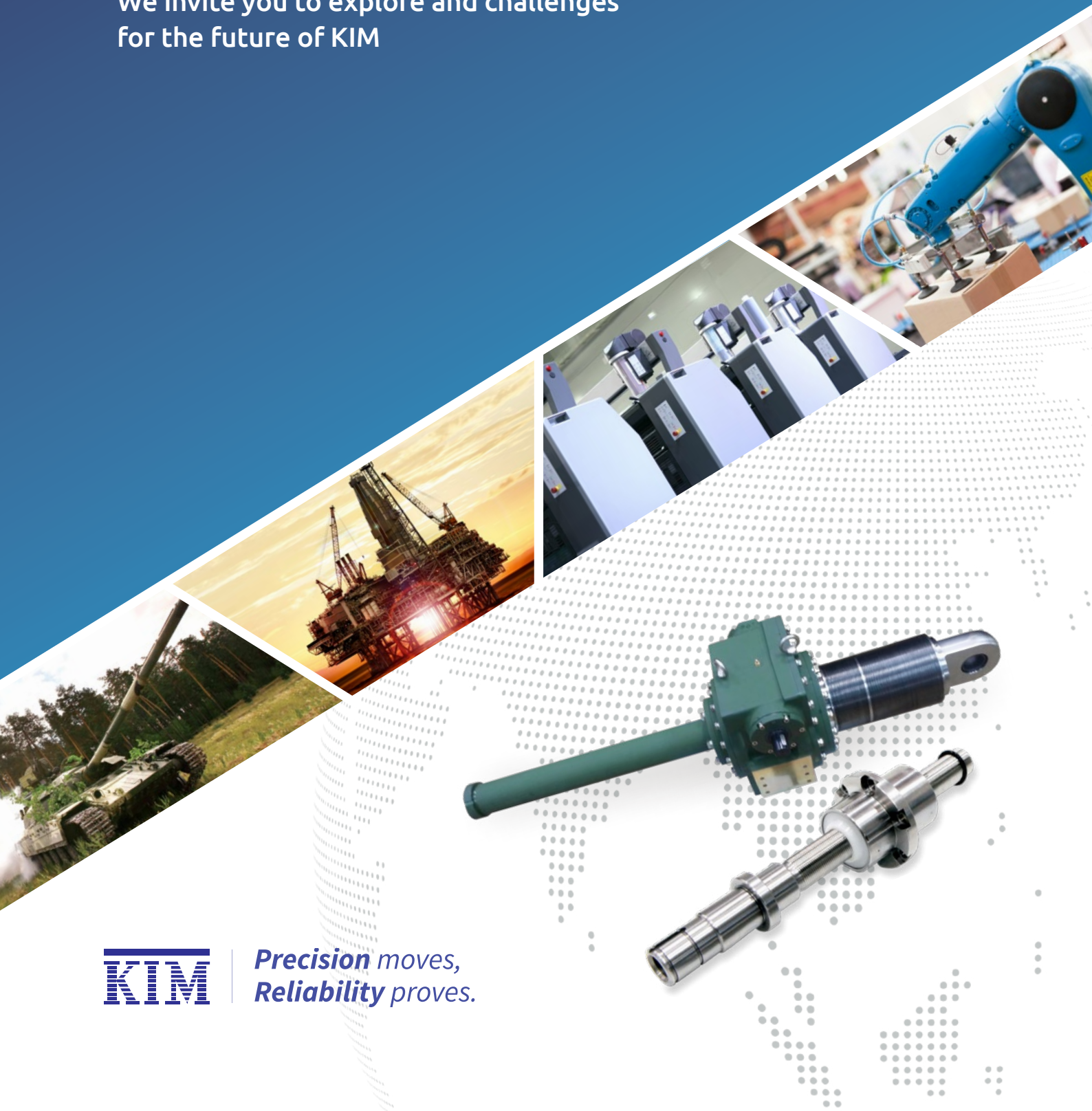




Planetary Roller Screw

We invite you to explore and challenges
for the future of KIM



Precision moves,
Reliability proves.

CONTENTS

05



KIM Co., Ltd.

06



**Product
Overview**

08



**Design
Guidelines**

Identification System	08
Types of Planetary Roller Screw	08
Types of Connecting	09
Accuracy Tolerance according to Quality Grade	10
Lubrication	13
Axial Play and Preloading	13
Calculation Example	14
Guarantee of Reliability	17

18



Product Information

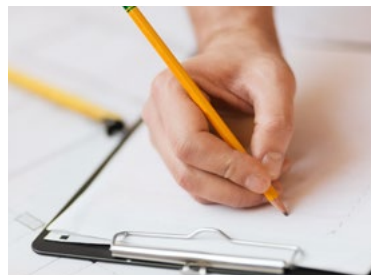
SG Type	18
RG Type	21
IG Type	22
Examples of Customized Roller Screw	23

24



Service Range

25



Application Configuration Worksheet



The Global Leader of Mechanical Engineering Solution

KIM Co., Ltd.





As a result of continuous investment in R&D on precision gears for decades, KIM Co. has grown to a specialist in driving device.

From designing, manufacturing to solution offer, KIM Co. can serve everything customers require with simple specification provided.

Applications



Defense Industry



Telescopes



Robotics



Servo Presses



Medical



Aeronautics



Chemical Industry



Fields of High Technology

Product Overview

Planetary roller screw converts rotary motion to linear movement. Planetary roller screw system consists of a main screw and several number of planetary rollers and a internal thread.

Features

A planetary roller screw is a mechanism for converting rotary torque into linear motion and capable of carrying heavy loads.

KIM Co.'s planetary roller screws provide high speeds, high stiffness and shock load resistance. This makes many attractive choice instead of hydraulic or pneumatic motion.



High Load Rating, Long Life

Roller screw pitch is very small, heavy load is possible and life is long. Because the contact area between shaft and nut is a very large without a lead.

Shock Resistance

The shock resistance is very high because it has a large contact area between shaft and nut.

Smooth Rotation

Roller screw has not a ball tube for return such as a ball screw, so rotation is very smooth, jam is very few.

High Speed, High Acceleration

None cyclic planetary roller screw is a multi screw. It has a large lead, high-speed transfer is possible. Since the rotation is more stable, it can be high acceleration and it is very suitable for frequent round movement and stop transfer.

Environmental Resistance

None cyclic planetary roller screw is capable of correct operation even in adverse conditions (dust contamination or lack of lubrication, etc.) than the ball screw so that the rollers always in contact with the rotating shaft.

Planetary Roller Screw

Roller screws convert rotational motion to linear motion, or vice versa. KIM Co. can deliver roller screws with G3-G9 precision that its diameter starts from 3mm to 1,000mm.



The Difference between Planetary Roller Screw and Ball Screw

Planetary roller screw system is similar to ball screw, but the difference is load transfer elements are threaded rollers. The main advantage of planetary roller screw is a high number of contact to support the load. The high number of contact points enables to support very heavy loads, and gives many strong points compared to other devices on table 1.

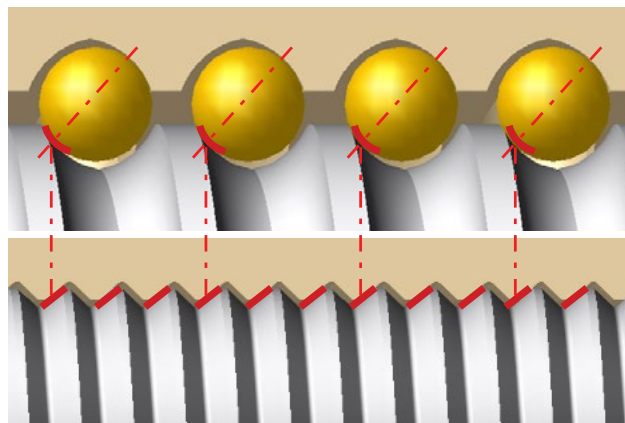


table 01 The strong point of planetary roller screw compared to other devices

No.	Items	Planetary Roller Screw	Ball Screw	Acme Screw	Hydraulic Cylinders	Pneumatic Cylinders
1	Load Capacity	Very High	High	High	Very High	High
2	Life Span	Very Long (10 × Ball Screw)	Moderate	Very Low	Long with Good Maintenance	Long with Good Maintenance
3	Speed	Very High (5,000 Rpm)	Moderate (2,000 Rpm)	Low	Moderate	Very High
4	Acceleration	Very High	Moderate	Low	Moderate	Very High
5	Positioning Control	Very Easy	Very Easy	Moderate	Difficult	Very Difficult
6	Rigidity & Strength	Very High	Moderate	Moderate	Very High	Very Low
7	Shock Loads	Very High	Moderate	Very High	Very High	Very Low
8	Space Requirement	Minimum	Moderate	Moderate	High	High
9	Friction	Low	Low	High	High	Moderate
10	Efficiency	> 90%	> 90%	< 40%	< 50%	< 50%
11	Lead & Pitch	Wide Range (Min 0.25)	Limited	Wide Range	Limited	Limited
12	Installation	Easy	Easy	Moderate	Difficult	Very Difficult
13	Maintenance	Very Row Cost	Moderate	High Cost	Very High	High
14	Environment	Good	Good	Good	Oil Leaks & Disposal	High Noise Levels

Design Guidelines

Identification System



① Roller Screw Type : SG, RG, IG

② Normal Screw Diameter (mm)

③ Screw Lead (mm)

④ Connecting Type : CL, FF, RF

⑤ Nut Type : SN, PN, DN

⑥ Lead Direction : R, L, B

⑦ Seal : 1. With Seal, 2. Without Seal

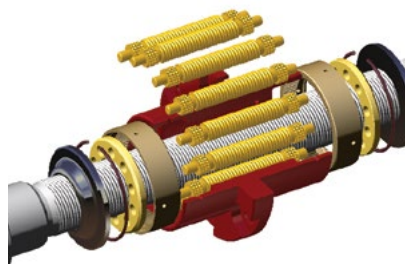
⑧ Thread Accuracy : G1, G3, G5, G9

Types of Planetary Roller Screw

Satellite Type : SG

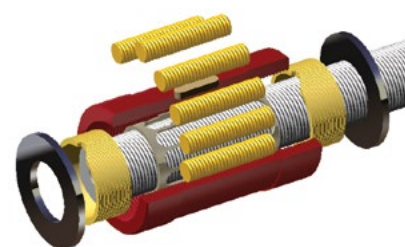
The main elements of SG are main screw, planetary roller screw, nut. The gear teeth in planetary roller screws engage in internal gears fixed nut. This guides the rollers parallel to the axis to ensure perfect function between each parts.

SG type operate without recirculation and give high reliability and speed capability, but low noise. SG type is useful to apply for big lead and heavy duty load.



Recycling Type : RG

The main elements of RG are fine threaded main screw, nut, and grooved roller screw. The rollers move to axially within the nut and return to started position. RG type is suitable for fine pitch and compact space. The small lead and angle can provide a low back driving torque or self locking function according to requirement.



Inverted Type : IG

The principle is same to SG type, but nut system is reversed. The gear teeth in planetary roller screw engage in main screw gear teeth. The nut is thread along it's entire length and is much longer than SG type. IG type operate without recirculation and give design flexibility. Guiding and sealing functions easily integrated on nut or shaft. Non rotating and translating component acting directly as the push tube.



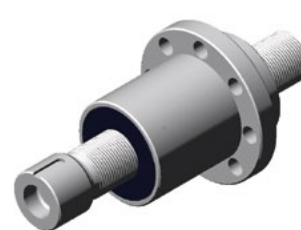
Types of Connecting



Cylindrical with Key : CL



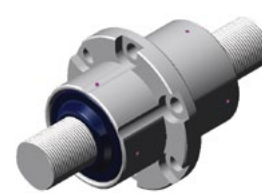
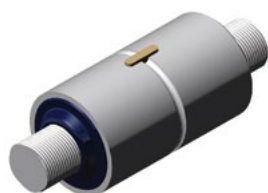
Flat-Sided Flange : FF



Round Flange : RF

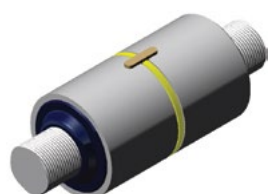
Single Nut

Nut is one piece with standard axial backlash



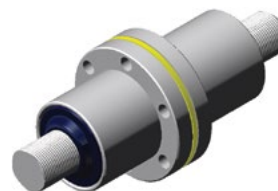
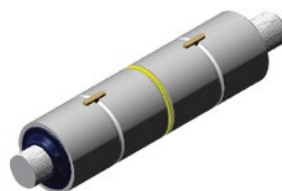
Split Nut

Nut is two pieces preloaded and without backlash



Double Nut

Two single nuts, preloaded and without backlash



Design Guidelines

Accuracy Tolerance according to Quality Grade

Lead Error

KIM Co.'s planetary roller screws are produced in quality classes according to ISO 1, 3 and 5 standard. Positioning control purposes are supplied in tolerance asses of G1, G3, G5 and transport purposes in G9. Industry standard is G5 tolerance unless otherwise specified.

table 02 Accuracy grade

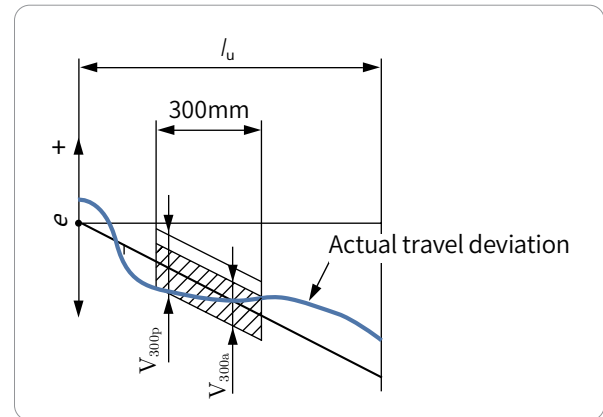
Accuracy Grade	V300p
G1	6 μ m / 300mm
G3	12 μ m / 300mm
G5	23 μ m / 300mm
G9	200 μ m / 300mm

Here,

V300p = Maximum permitted travel variation over 300mm

V300a = Measured travel variation over 300mm

Diagram 01 Definition of lead error measurement



Accuracy tolerance base on DIN69051

table 03 Accuracy tolerance

Lu(mm)		Ep(μ m)		
From	to	G1	G3	G5
	315	6	12	23
315	400	7	13	25
400	500	8	15	27
500	630	9	16	30
630	800	10	18	35
800	1,000	11	21	40
1,000	1,250	13	24	46
1,250	1,600	15	29	54

Here,

Lu : Effective travel(mm)

Ep : Difference between required lead and nominal lead(μ m)

Accuracy Tolerance according to Quality Grade

Outside Tolerance of roller screw correspond in standard of ISO3408-3

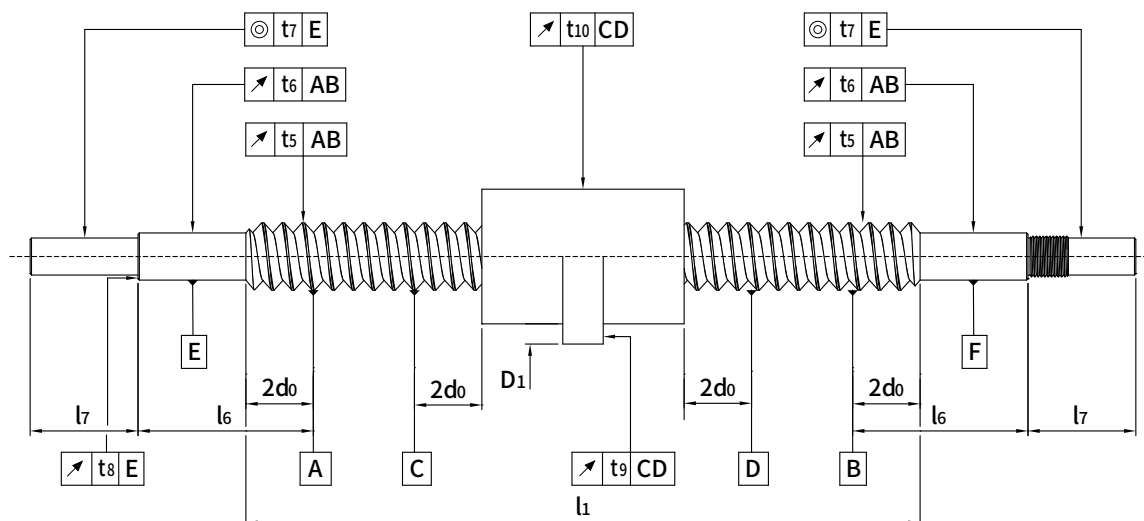


table 04 Outside tolerance of class G1

Nominal Diameter d_0 (mm)	Threaded Length l_1 (mm)	Within Threaded Length t_5 (μ m)	Over Threaded Length		t_6 (μ m)	t_6 Min. (μ m)	t_7 (μ m)	t_7 Min. (μ m)	t_8 (μ m)	t_9 (μ m)	t_{10} (μ m)
			l_1/d_0	t_5 (μ m)							
6 ~ 12	320	20	≤ 40	40	$0.12 \times L_6$	10	$0.06 \times L_7$	5	3		
12 ~ 20	640	20	≤ 60	60	$0.12 \times L_6$	10	$0.06 \times L_7$	6	3	10	10
20 ~ 25	640	20	≤ 60	60	$0.10 \times L_6$	12	$0.05 \times L_7$	8	3	10	10
25 ~ 32	1,260	20	≤ 80	60	$0.10 \times L_6$	12	$0.05 \times L_7$	8	3	10	10
32 ~ 50	1,260	20	≤ 80	100	$0.10 \times L_6$	12	$0.05 \times L_7$	8	3	12	12
50 ~ 63	2,520	20	≤ 100	100	$0.08 \times L_6$	16	$0.05 \times L_7$	8	3	12	12
63 ~ 100	2,520	20	≤ 100	160	$0.08 \times L_6$	16	$0.04 \times L_7$	8	4	16	16
100 ~ 125	5,000	20			$0.08 \times L_6$	16	$0.04 \times L_7$	8	4	16	16
125 ~ 200	5,000	20								20	20
200 ~ 250										20	20
250 ~ 500											

Design Guidelines

table 05 Outside tolerance of class G3

Nominal Diameter d0(mm)	Threaded Length l1(mm)	Within Threaded Length t5 (μm)	Over Threaded Length		t6 (μm)	t6 min. (μm)	t7 (μm)	t7 min. (μm)	t8 (μm)	t9 (μm)	t10 (μm)
			l1/d0	t5 (μm)							
6 ~ 12	320	25	≤ 40	50	$0.15 \times L6$	12	$0.08 \times L7$	6	4		
12 ~ 20	640	25	≤ 60	75	$0.15 \times L6$	12	$0.08 \times L7$	6	4	12	12
20 ~ 25	640	25	≤ 60	75	$0.15 \times L6$	16	$0.06 \times L7$	8	4	12	12
25 ~ 32	1,260	25	≤ 80	125	$0.15 \times L6$	16	$0.06 \times L7$	8	4	12	12
32 ~ 50	1,260	25	≤ 80	125	$0.13 \times L6$	16	$0.06 \times L7$	8	4	16	16
50 ~ 63	2,520	25	≤ 100	200	$0.10 \times L6$	16	$0.05 \times L7$	10	4	16	16
63 ~ 100	2,520	25	≤ 100	200	$0.10 \times L6$	20	$0.05 \times L7$	10	5	20	20
100 ~ 125	5,000	25			$0.08 \times L6$	20	$0.05 \times L7$	10	5	20	20
125 ~ 200	5,000	25			$0.08 \times L6$	25	$0.04 \times L7$	12	6	25	25
200 ~ 250										25	25
250 ~ 500										32	32

table 06 Outside tolerance of class G5

Nominal Diameter d0(mm)	Threaded Length l1(mm)	Within Threaded Length t5 (μm)	Over Threaded Length		t6 (μm)	t6 min. (μm)	t7 (μm)	t7 min. (μm)	t8 (μm)	t9 (μm)	t10 (μm)
			l1/d0	t5 (μm)							
6 ~ 12	320	32	≤ 40	64	$0.25 \times L6$	20	$0.10 \times L7$	8	5		
12 ~ 20	640	32	≤ 60	96	$0.25 \times L6$	20	$0.10 \times L7$	8	5	16	16
20 ~ 25	640	32	≤ 60	96	$0.20 \times L6$	25	$0.08 \times L7$	10	5	16	16
25 ~ 32	1,260	32	≤ 80	160	$0.20 \times L6$	25	$0.08 \times L7$	10	5	16	16
32 ~ 50	1,260	32	≤ 80	160	$0.20 \times L6$	25	$0.08 \times L7$	10	5	20	20
50 ~ 63	2,520	32	≤ 100	256	$0.16 \times L6$	32	$0.06 \times L7$	12	5	20	20
63 ~ 100	2,520	32	≤ 100	256	$0.16 \times L6$	32	$0.06 \times L7$	12	6	25	25
100 ~ 125	5,000	32			$0.16 \times L6$	32	$0.06 \times L7$	12	6	25	25
125 ~ 200	5,000	32			$0.13 \times L6$	40	$0.05 \times L7$	16	8	32	32
200 ~ 250										32	32
250 ~ 500										40	40

Lubrication

Generally, oil and grease lubricant are used for planetary roller screws. Proper lubrication is very important for good function of a planetary roller screw. Lubrication service must be proceeded according to service manual.

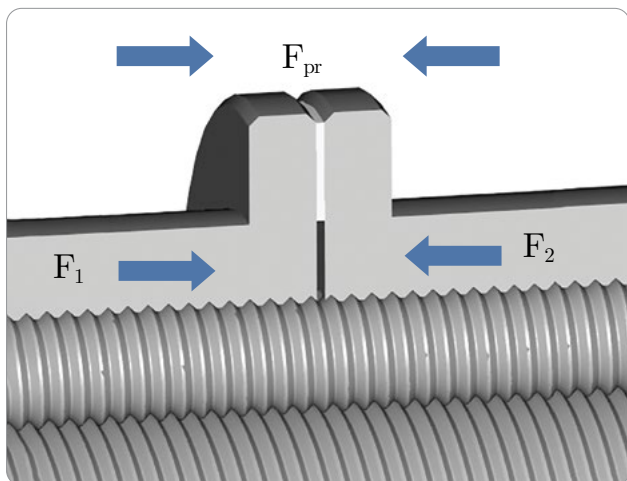
Oil Lubrication

A recirculating lubrication system is ideal due to its good ability proper filtering system and temperature control, oil flowrate control are very important to continue long life. The suitable lubricating oil is a mineral base with EP additives to enhance resistance to aging and corrosion protection in compliance with DIN 51517 part 2. Operating speed, ambient temperature and operating temperature are all factors in determining the required viscosity of the lubricant. The required volume depends on the screw diameter, the number of supporting rollers and the amount of heat to be dissipated. The operating temperature of standard steel under normal operating condition is $-20^{\circ}\text{C} \sim +110^{\circ}\text{C}$. Above $+110^{\circ}\text{C}$ or below -20°C , please consult KIM Co. technical part for advice.

Grease Lubrication

Grease is the most common lubricating system for planetary roller screws. The viscosity of grease is rated with ISO VG levels just as oils and grease type is according to DIN 51825 part 3. Regressing interval depend on the screw arrangement, size and operating conditions. The operating temperature range is $-50^{\circ}\text{C} \sim 120^{\circ}\text{C}$ under normal operating condition. Over above specification, please consult KIM Co. technical part for advice.

Axial Play and Preloading



The axial play of standard roller screws are $0.02 \sim 0.03\text{mm}$. But maximum axial play is depending on model size.

Roller screws can be manufactured without axial play by preloaded nuts to eliminate thread backlash and increase rigidity. Best preloading force can be calculated to achieve the highest rate of efficiency and the longest lifetime.

If the customer needs no axial play, all detail data can be informed to operate best condition.

Design Guidelines

Calculation Example

Model Selecting

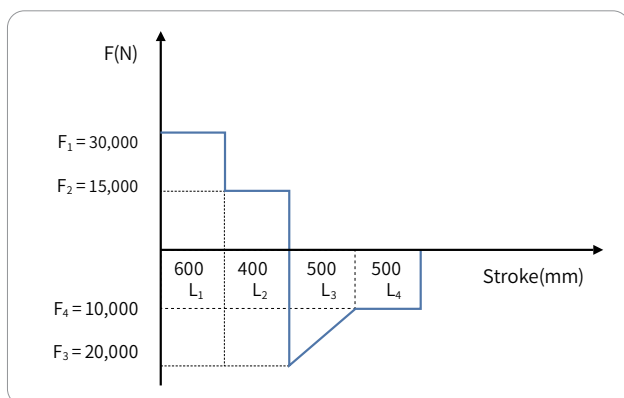
① Specification of roller screw

- d0 : Nominal diameter = 30 (mm)
d1 = 30.63 (mm)
d2 = 29.01 (mm)
- PL: Lead = 10 (mm)

② Operating speed

- S : Stroke = 1,000 (mm)
- T : Time per stroke = 30 (sec)
- N : Speed = $\frac{60 \cdot S}{P_L \cdot T} = \frac{60 \times 1,000}{10 \times 30} = 200$ (RPM)
- Load cycle

Diagram 02 Load cycle



- Operating time
1 cycle/60(sec) = 60 cycle/hr.
4 hr/day, 100 days/year, 5 years
L10, min = 60 × 4 × 100 × 5
= 120,000 cycles

③ Calculation of dynamic load

- Equivalent mean load : Fm

table 07 Mean load

Load (N)	Stroke Length (mm)
F1 = 30,000	L1 = 600
F2 = 15,000	L2 = 400
F3 = 20,000	L3 = 500
F4 = 10,000	L4 = 500

$$F_{3m} = \frac{2F_3 + F_4}{3}$$

$$= 16,667 \text{ (N)}$$

$$F_m = \sqrt[3]{\frac{\sum F_i^3 \times L_i}{\sum L_i}}$$

$$= 21,675 \text{ (N)}$$

$$L_{10} = L_{10, \min} \times \frac{\sum L_i}{P_L}$$

$$= 120,000 \times \frac{600 + 400 + 500 + 500}{10}$$

$$= 24 \times 10^6 \text{ revolutions}$$

Requirement of minimum dynamic load

$$C_{a, \text{req}} = F_m (L_{10})^{1/3}$$

$$= 21,675 (24)^{1/3}$$

$$= 62,522 \text{ (N)}$$

$$= 62.5 \text{ (KN)}$$

Checking on table, select model

SG30×10

$$C_a = 89.9 \text{ (KN)} > C_{a, \text{req}} = 62.5 \text{ (KN)}$$

This model is satisfied with the requirement of minimum dynamic load capacity.

Critical Speed

The critical speed of screw shaft is calculated as followings.

$$n_{cr} = \frac{f_1 \cdot d_0 \cdot 10^7}{L^2}$$

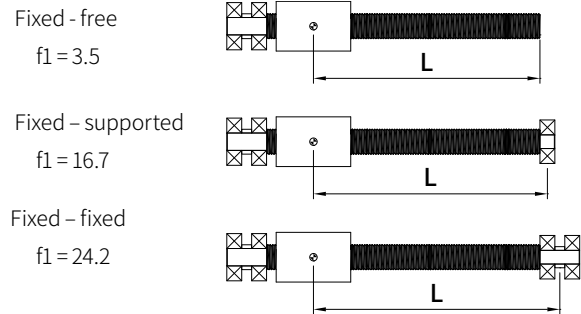
$$= \frac{16.7 \times 30 \times 10^7}{1,050^2} = 4,544 \text{ (RPM)}$$

Here, n_{cr} : Critical speed of screw shaft (RPM)

f_1 : End support stiffness factor

d_0 : Screw nominal diameter (mm)

End support stiffness factor f_1



Efficiency

The efficiency is dependent on its operating parameters. The efficiency calculation is as followings.

$$\eta = \frac{1}{1 + \frac{\pi \cdot d_0}{P_L} \cdot \mu}$$

$$= \frac{1}{1 + \frac{\pi \cdot d_0}{P_L} \times 0.012} = 0.898$$

$$\eta' = 2 - \frac{1}{\eta}$$

$$= 2 - \frac{1}{0.898} = 0.886$$

$$\eta_p = \eta \cdot 0.9$$

$$= 0.898 \times 0.9 = 0.81$$

Here, η : Theoretical direct efficiency

η' : Theoretical indirect efficiency

η_p : Practical efficiency

P_L : Lead of main screw (mm)

d_0 : Pitch diameter of main screw (mm)

μ : Coefficient of friction

Driving Torque

The required motor torque can be calculated as followings.

$$T = \frac{F_{max} \cdot P_L}{2,000 \cdot \pi \cdot \eta_p}$$

$$= \frac{30,000 \times 10}{2,000 \times \pi \times 0.81} = 58.9 \text{ (Nm)}$$

Braking Torque

The braking torque to restrain axial load is calculated as followings.

$$T_b = \frac{F_{max} \cdot P_L \cdot \eta'}{2,000 \cdot \pi}$$

$$= \frac{30,000 \times 10 \times 0.886}{2,000 \times \pi} = 42.3 \text{ (Nm)}$$

Design Guidelines

Motor Power

The motor power is calculated by application load $F_{\max} = 30,000 \text{ N}$ and the rotation speed $n = 200 \text{ RPM}$.

$$P = \frac{F_{\max} \cdot n \cdot P_L}{60,000 \cdot \eta_p} = \frac{30,000 \times 200 \times 10}{60,000 \times 0.81} = 1,235 \text{ (W)}$$

Buckling Strength

In case of compressive loading conditions, the buckling capacity of the screw must be evaluated.

The buckling strength of the screw can be calculated as followings.

$$F_c = \frac{34 \cdot f_3 \cdot d_2^4 \cdot 10^3}{L^2}$$

$$= \frac{34 \times 2.0 \times 29.01^4 \times 10^3}{1,050^2}$$

$$= 43,684 \text{ (N)} > F_1 = 30,000 \text{ (N)} \rightarrow \text{OK}$$

Here, F_c : Buckling strength (N)

f_3 : Shaft stiffness factor

d_2 : Screw shaft root diameter (mm)

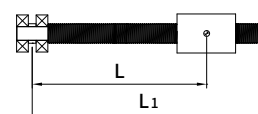
L : Free length

(Distance between support bearing)

Shaft stiffness factor f_3

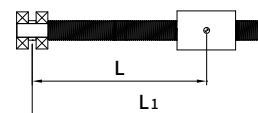
Fixed - free

$f_3 = 0.25$



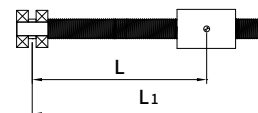
Fixed - supported

$f_3 = 2.0$



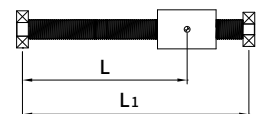
Fixed - fixed

$f_3 = 4.0$



Supported - supported

$f_3 = 1.0$



Static Axial Stiffness of Assembly

The axial stiffness of assembly has many parameters to calculate. For example: shaft stiffness, nut stiffness, bearing and housing stiffness, etc. (Please contact with us for more information). Static axial stiffness of assembly can be calculated as followings.

$$R_t = \left(\frac{1}{R_s} + \frac{1}{R_n} + \frac{1}{R_p} + \frac{1}{R_h} \right)^{-1}$$

Here,

R_t : Stiffness of a complete assembly (N/ μm)

R_s : Shaft stiffness (N/ μm)

R_n : Nut stiffness (N/ μm)

R_p : Support bearing stiffness (N/ μm)

R_h : Housing stiffness (N/ μm)

Shaft stiffness

① Fixed-free and fixed-supported type

$$R_s = 165 \frac{d_2^2}{L} \text{ (N}/\mu\text{m})$$

② Fixed-fixed type

$$R_s = 165 \frac{d_2^2 L_1}{L(L_1 - L)} \text{ (N}/\mu\text{m})$$

Nut stiffness

$$R_n = f_n (F_{ax})^{\frac{1}{3}} \text{ (N}/\mu\text{m})$$

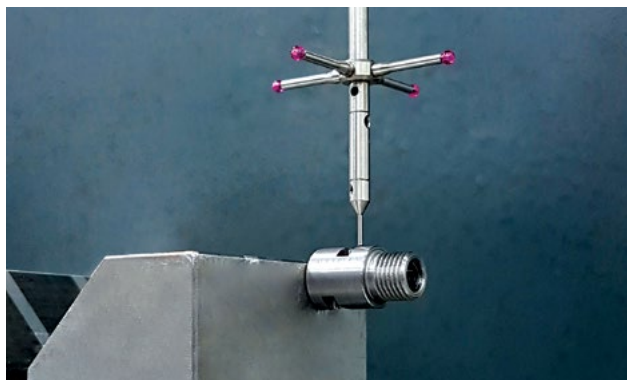
Here,

f_n : Nut stiffness (provided on request)

F_{ax} : Applied load (N)

Guarantee of Reliability

Outside Tolerance of Roller Screw Correspond in Standard of ISO3408-3



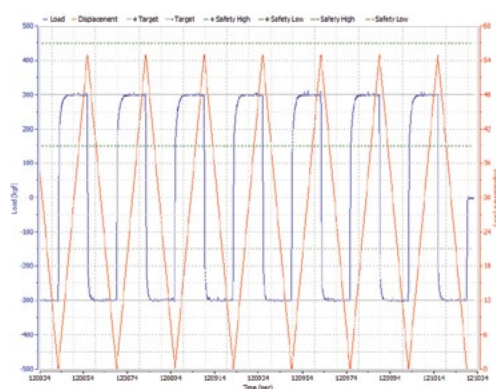
Cert'	AS9100D
No.	SEO6019691
Description	Design & Development and manufacture of gear box, electromechanical control systems, servo-actuators and components for aviation, defense and industries

KIM Co.'s quality management system is built up based on ISO 9001:2015 / AS 9100D. Considering clients' requirements, Inspection/ test equipment are highly advanced and automated. This equipment ensures the reproducibility and reliability of inspection by preventing human error.

Load Test

Actual driving torque can be calculated and checked by load test system. We confirm the requirements of the planetary roller screw by performing left/right operating test under the designed maximum load of the planetary roller screw. This system guarantees reliability of roller screws.

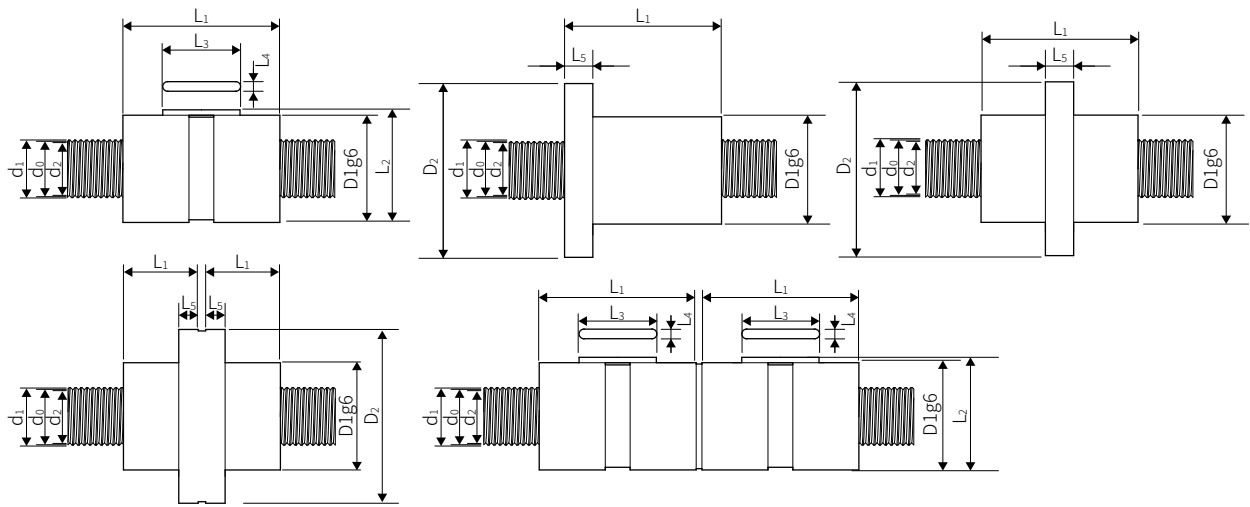
Load test system



Additionally, we can test noise level and operating temperature, life time etc. under full load conditions.

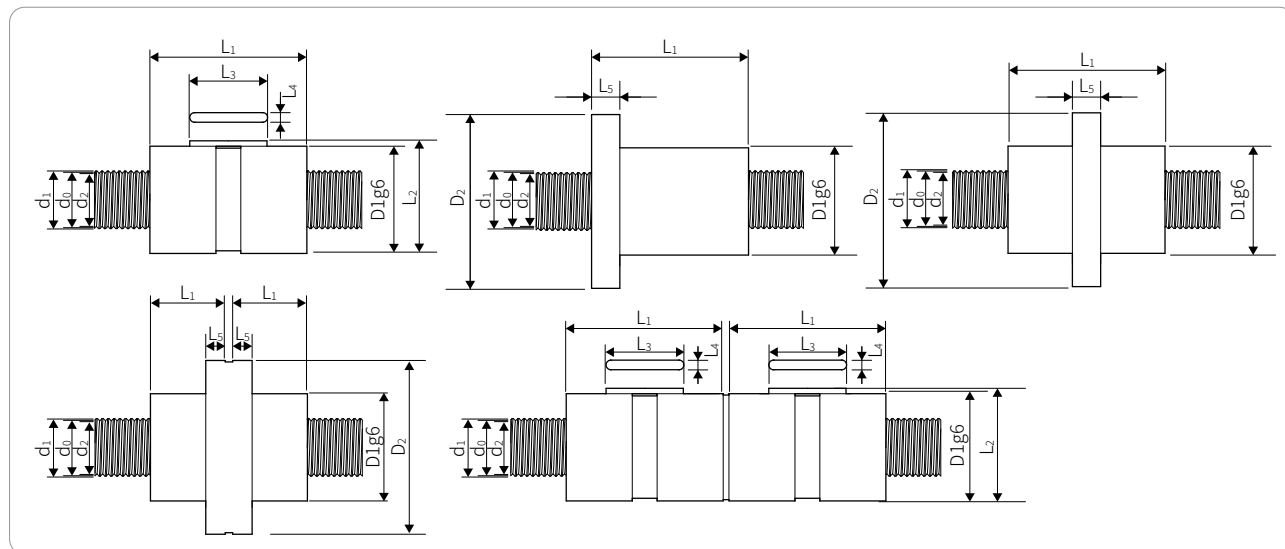
Product Overview

SG Type (Ø3.5 ~ Ø12 mm)



Screw Size		d0	d1	d2	Efficiency	Single Nut, with Backlash and Double Nut		Split Nut, Preloaded, Without Backlash		D1	D2	Without Wipers	With Wipers	L2	L3	L4	L5
Screw Diameter (mm)	Lead (mm)					Dynamic Load C (KN)	Static Load C0 (KN)	Dynamic Load C (KN)	Static Load C0 (KN)			L1	L1				
3.5	1	3.5	3.62	3.35	0.86	8.4	6.6	5.3	3.2	15	35	31	41	16	10	2	13
5	1	4.5	4.62	4.35	0.85	10.4	7.9	6.6	3.9	19	39	31	41	20.3	10	3	13
5	2	4.5	4.71	4.17	0.88	7.3	7.9	4.5	3.9	19	39	31	41	20.3	10	3	13
7	1	7	7.09	6.89	0.84	11.8	11	7.5	5.6	19	41	31	41	20.3	10	3	13
7	2	7	7.16	6.76	0.88	9.4	11.5	6	5.8	19	41	31	41	20.3	10	3	13
7	3	7	7.23	6.62	0.89	7.7	11.2	4.8	5.7	19	41	31	41	20.3	10	3	13
8	1	8	8.09	7.89	0.83	11.6	10.8	7.3	5.5	21	41	31	41	22.3	10	3	13
8	2	8	8.17	7.76	0.87	9.3	11.5	5.9	5.8	21	41	31	41	22.3	10	3	13
8	3	8	8.24	7.63	0.89	7.6	11.1	4.7	5.6	21	41	31	41	22.3	10	3	13
8	4	8	8.3	7.49	0.89	6.8	11.2	4.2	5.7	21	41	31	41	22.3	10	3	13
8	5	8	8.35	7.33	0.89	5.9	10.8	3.7	5.4	21	41	31	41	22.3	10	3	13
10	1	10	10.09	9.89	0.8	18.9	17.8	11.9	8.9	26	48	31	41	27.3	10	3	13
10	2	10.5	10.64	10.31	0.86	13.2	18.3	8.4	9.2	24	46	31	41	25.3	10	3	13
10	3	10.5	10.7	10.21	0.88	11.4	18.1	7.2	9.1	24	46	31	41	25.3	10	3	13
10	4	10.5	10.75	10.1	0.89	10.6	18.4	6.7	9.2	24	46	31	41	25.3	10	3	13
10	5	10.5	10.79	9.98	0.89	9.7	18.1	6.1	9.1	24	46	31	41	25.3	10	3	13
12	1	12	12.09	11.89	0.79	19.2	17.4	12.1	8.7	30	50	31	41	31.3	10	3	13
12	2	12	12.14	11.81	0.85	12.9	18.2	8.2	9.1	26	46	31	41	27.3	10	3	13
12	3	12	12.22	11.74	0.87	11.3	18.3	7.2	9.2	26	46	31	41	27.3	10	3	13
12	4	12	12.25	11.65	0.89	10.1	18	6.4	9	26	46	31	41	27.3	10	3	13
12	5	12	12.32	11.56	0.89	10.6	18.3	6.7	9.2	26	46	31	41	27.3	10	3	13

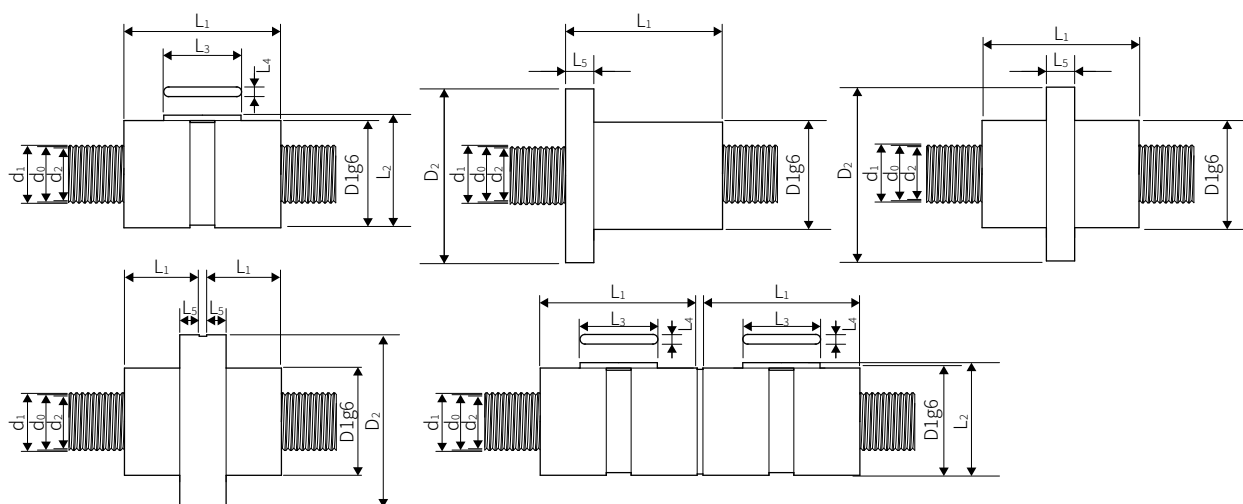
SG Type (Ø15 ~ Ø44 mm)



Screw Size		d0	d1	d2	Efficiency	Single Nut, with Backlash and Double Nut		Split Nut, Preloaded, Without Backlash		D ₁	D ₂	Without Wipers	With Wipers	L ₂	L ₃	L ₄	L ₅
Screw Diameter (mm)	Lead (mm)					Dynamic Load C (KN)	Static Load C ₀ (KN)	Dynamic Load C (KN)	Static Load C ₀ (KN)			L ₁	L ₁				
15	2	15	15.14	14.81	0.84	19.6	26.7	12.4	13.4	34	56	35	51	35.7	14	4	18
15	4	15	15.25	14.65	0.88	16.1	28	10.2	14	34	56	35	51	35.7	14	4	18
15	5	15	15.32	14.56	0.89	15.2	28.2	9.5	14.1	34	56	35	51	35.7	14	4	18
15	8	15	15.46	14.16	0.9	14.1	25.7	8.8	12.8	34	56	35	51	35.7	14	4	18
20	2	19.5	19.65	19.32	0.82	48.3	60.3	30.4	30.1	42	64	55	65	43.7	20	4	20
20	4	19.5	19.8	19.15	0.87	40.6	64.9	25.6	32.5	42	64	55	65	43.7	20	4	20
20	8	19.5	19.98	18.69	0.89	38.6	64.6	24.3	32.3	42	64	55	65	43.7	20	4	20
23	2	22.5	22.65	22.32	0.8	54.9	67.9	34.6	33.9	45	67	55	65	46.7	20	4	20
23	4	22.5	22.79	22.15	0.86	46.7	74.2	29.4	37.2	45	67	55	65	46.7	20	4	20
23	8	22.5	23	21.71	0.89	45	75.2	28.4	37.6	45	67	55	65	46.7	20	4	20
25	2	24	24.14	23.82	0.8	79.6	95.1	50.1	47.5	53	84	64	78	55.5	25	6	20
25	4	24	24.28	23.63	0.85	67.8	104.7	42.7	52.3	53	84	64	78	55.5	25	6	20
25	8	24	24.51	23.21	0.89	76.8	106.9	48.5	53.4	53	84	64	78	55.5	25	6	20
30	4	30	30.29	29.65	0.84	98.8	148.3	62.2	74.2	62	92	71	85	64.7	20	6	27
30	6	30	30.4	29.43	0.86	87.2	151.2	55	75.6	62	92	71	85	64.7	20	6	27
30	10	30	30.63	29.01	0.89	89.9	153.6	56.6	76.8	62	92	71	85	64.7	20	6	27
36	4	36	36.28	35.63	0.82	92.8	142.3	58.5	71.2	74	110	70	84	76.7	28	6	25
36	6	36	36.41	35.44	0.85	84.1	149.3	53	74.6	74	110	70	84	76.7	28	6	25
36	10	36	36.65	35.12	0.88	71.6	151.3	45.1	75.6	74	110	70	84	76.7	28	6	25
44	6	44	44.35	43.54	0.84	123.8	234.7	78	117.3	80	118	80	90	82.7	28	6	25
44	12	44	44.65	43.03	0.88	135.8	244.1	85.6	122.1	80	118	80	90	82.7	28	6	25
44	18	44	44.9	42.47	0.89	138.3	240.3	87.2	120.1	80	118	80	90	82.7	28	6	25

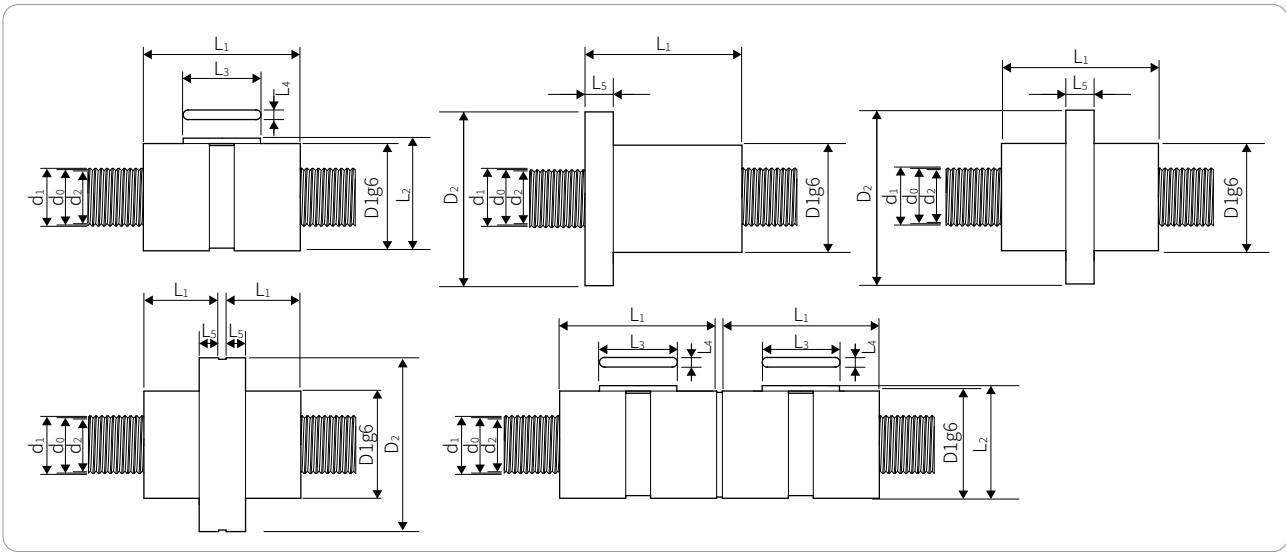
Product Overview

SG Type (Ø48 ~ Ø150 mm)



Screw Size		d0	d1	d2	Efficiency	Single Nut, with Backlash and Double Nut		Split Nut, Preloaded, Without Backlash		D ₁	D ₂	Without Wipers	With Wipers	L ₂	L ₃	L ₄	L ₅
Screw Diameter (mm)	Lead (mm)					L ₁	L ₁										
48	10	48	48.67	47.05	0.87	210.7	418.9	132.8	209.5	100	150	115	127	103	45	8	37
48	20	48	49.21	45.97	0.89	226.6	480.5	142.8	240.3	100	150	115	127	103	45	8	37
48	30	48	49.62	44.75	0.89	174.3	413.6	109.7	206.8	100	150	115	127	103	45	8	37
60	15	60	60.99	58.55	0.87	502.3	1223.9	-	-	122	166	-	189	-	-	-	-
60	20	60	61.26	58.02	0.88	448.8	1202.9	-	-	122	166	-	189	-	-	-	-
60	30	60	61.74	56.87	0.89	370.9	1145.8	-	-	122	166	-	189	-	-	-	-
75	15	75	76.01	73.58	0.86	476.6	1279.9	-	-	150	210	175	191	153	63	10	45
75	20	75	76.31	73.07	0.88	499.7	1284	-	-	150	210	175	191	153	63	10	45
75	30	75	76.83	71.97	0.89	488.2	1780.6	-	-	150	210	-	233	-	-	-	-
80	10	80	80.61	79.27	0.84	388.6	951.5	-	-	138	180	130	158	141.7	50	10	35
80	20	80	81.09	78.39	0.88	415.4	964.1	-	-	138	180	130	158	141.7	50	10	35
80	30	80	81.53	77.48	0.89	431.2	964.1	-	-	138	180	130	158	141.7	50	10	35
100	15	99	100.94	97.61	0.84	988.2	3550.7	-	-	200	245	-	304	-	-	-	-
100	20	99	100.35	97.11	0.86	900.3	3562.7	-	-	200	245	-	304	-	-	-	-
100	30	100	101.6	97.55	0.88	822.1	1942.2	-	-	185	260	230	260	188	63	10	50
120	15	120	121	118.62	0.83	1177.9	4668.2	-	-	240	300	-	354	-	-	-	-
120	20	120	121.37	118.13	0.85	1076.4	4706.4	-	-	240	300	-	354	-	-	-	-
120	30	120	121.98	117.11	0.87	949.7	4749.6	-	-	240	300	-	354	-	-	-	-
135	15	135	136.06	133.62	0.82	1413.9	6123.5	-	-	280	345	-	393	-	-	-	-
135	20	135	136.38	133.14	0.84	1303.3	6237.2	-	-	280	345	-	393	-	-	-	-
135	30	135	137	132.14	0.86	1138.8	6246.3	-	-	280	345	-	393	-	-	-	-
150	15	150	151.06	148.63	0.81	1551.4	7357.9	-	-	320	385	-	437	-	-	-	-
150	20	150	151.39	148.15	0.83	1440.3	7555.8	-	-	320	385	-	437	-	-	-	-
150	30	150	152.02	147.1	0.86	1275.6	7677	-	-	320	385	-	437	-	-	-	-

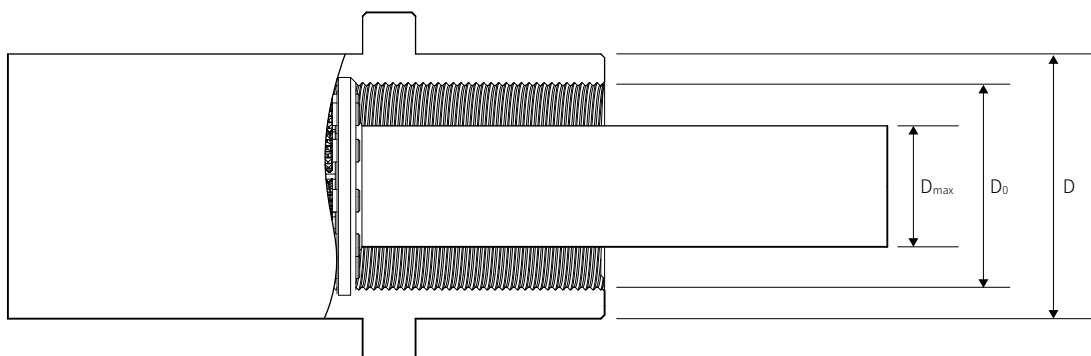
RG Type



Screw Size		d0	d1	d2	Efficiency	Single Nut, with Backlash and Double Nut		Split Nut, Preloaded, Without Backlash		D ₁	D ₂	Without Wipers	With Wipers	L ₂	L ₃	L ₄	L ₅
Screw Diameter (mm)	Lead (mm)					Dynamic Load C (KN)	Static Load C ₀ (KN)	Dynamic Load C (KN)	Static Load C ₀ (KN)			L ₁	L ₁				
8	1	7.63	8	7.19	0.84	8.1	12.2	5.2	6.1	20	43	31	41	20.8	12	2	13
10	1	9.63	10	9.19	0.82	9	14.5	5.7	7.3	22	43	31	41	22.8	12	2	13
10	2	9.63	10	9.19	0.87	9	14.5	5.7	7.3	22	43	31	41	22.8	12	2	13
12	1	11.63	12	11.19	0.8	10.2	17.6	6.4	8.8	24	46	31	41	25.3	10	3	13
12	2	11.63	12	11.19	0.86	10.2	17.5	6.4	8.8	24	46	31	41	25.3	10	3	13
16	1	16	16.37	15.56	0.77	11.2	21.2	7.1	10.6	29	53	31	41	31.2	14	4	13
16	2	16	16.37	15.56	0.84	11.2	21.2	7.1	10.6	29	53	31	41	31.2	14	4	13
20	1	19.63	20	19.19	0.74	17.7	36.4	11.2	18.2	34	56	37	47	35.7	14	4	18
20	2	19.63	20	19.19	0.82	17.7	36.4	11.2	18.2	34	56	37	47	35.7	14	4	18
25	1	25	25.37	24.56	0.7	30.9	71.1	19.5	35.5	42	67	44	54	43.7	14	4	18
25	2	25	25.37	24.56	0.8	30.9	71.1	19.5	35.5	42	67	44	54	43.7	14	4	18
32	1	32	32.37	31.56	0.65	65.8	122.5	41.4	61.3	53	83	55	67	55.2	20	5	20
32	2	32	32.37	31.56	0.77	65.8	122.5	41.4	61.2	53	83	55	67	55.2	20	5	20
40	1	39.63	40	39.19	0.61	84.5	182.9	53.2	91.4	70	104	66	80	72.7	28	6	26
40	2	39.63	40	39.19	0.74	84.5	182.9	53.2	91.4	70	104	66	80	72.7	28	6	26
50	1	49.63	50	49.19	0.56	163.4	329.4	103	164.6	82	124	80	94	84.7	28	6	28
50	2	49.63	50	49.19	0.7	163.4	329.4	102.9	164.6	82	124	80	94	84.7	28	6	28
50	3	49.45	50	48.79	0.76	144.1	334.4	90.8	167.2	82	124	80	94	84.7	28	6	28
50	4	49.26	50	48.38	0.8	133.7	337.2	84.2	168.7	82	124	80	94	84.7	28	6	28
63	2	62.26	63	61.38	0.66	200.8	493.5	126.5	246.7	105	148	110	124	108	40	8	32
63	4	62.26	63	61.38	0.77	200.8	493.4	126.5	246.6	105	148	110	124	108	40	8	32
80	4	78.52	80	76.76	0.74	364.5	842.7	-	-	138	195	175	189	141.7	50	10	35
100	5	98.15	100	95.95	0.74	490.5	1445.3	-	-	170	230	195	215	173.7	56	12	40
125	5	123.15	125	120.95	0.7	856	3102	-	-	220	260	262	282	223	100	12	40

Product Overview

IG Type



Screw Size		D ₀	Efficiency	Dynamic Load C (KN)	Static Load C ₀ (KN)	Min. Nut Outer Diameter D	Max. Push Tube Outer Diameter D _{max}	Max. Stroke S
Screw Diameter (mm)	Lead (mm)							
18	3	30	0.73	38.1	71.5	38	16	50
18	4	30	0.77	36.9	61.7	38	16	50
18	6	30	0.82	40.7	62.4	38	16	50
21	3	35	0.7	59	104	45	18	56
21	4	35	0.75	62.7	103	45	18	56
21	6	35	0.8	63.6	91.3	45	18	56
24	3	40	0.68	67.9	120.2	50	21	65
24	4	40	0.73	72.7	120.2	50	21	65
24	6	40	0.79	75.2	110.1	50	21	65
30	3	50	0.63	100.2	200	60	27	75
30	4	50	0.69	106.1	195.9	60	27	75
30	6	50	0.76	118.2	202	60	27	75
48	3	80	0.52	218.8	561.3	90	44	114
48	4	80	0.59	231.7	551.4	90	44	114
48	6	80	0.68	256.4	553.4	90	44	114

Examples of Customized Roller Screw

The great flexibility of KIM Co.'s Planetary Roller Screw means we can make various types of products that customer requested as shown in the examples below.



Dia	Lead	Length	Grade
Ø 12	0.5 mm	103 mm	G5



Dia	Lead	Length	Grade
Ø 15	5 mm	198 mm	G3



Dia	Lead	Length	Grade
Ø 22	5 mm	137 mm	G5



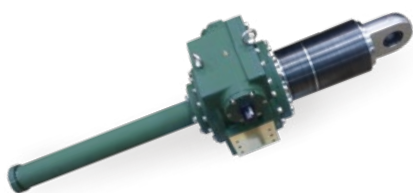
Dia	Lead	Length	Grade
Ø 25	2 mm	258 mm	G5



Dia	Lead	Length	Grade
Ø 51	5 mm	534.5 mm	G5



Dia	Lead	Length	Grade
Ø 60	20 mm	955 mm	G5



Dia	Lead	Length	Grade
Ø 64	24 mm	1152 mm	G5



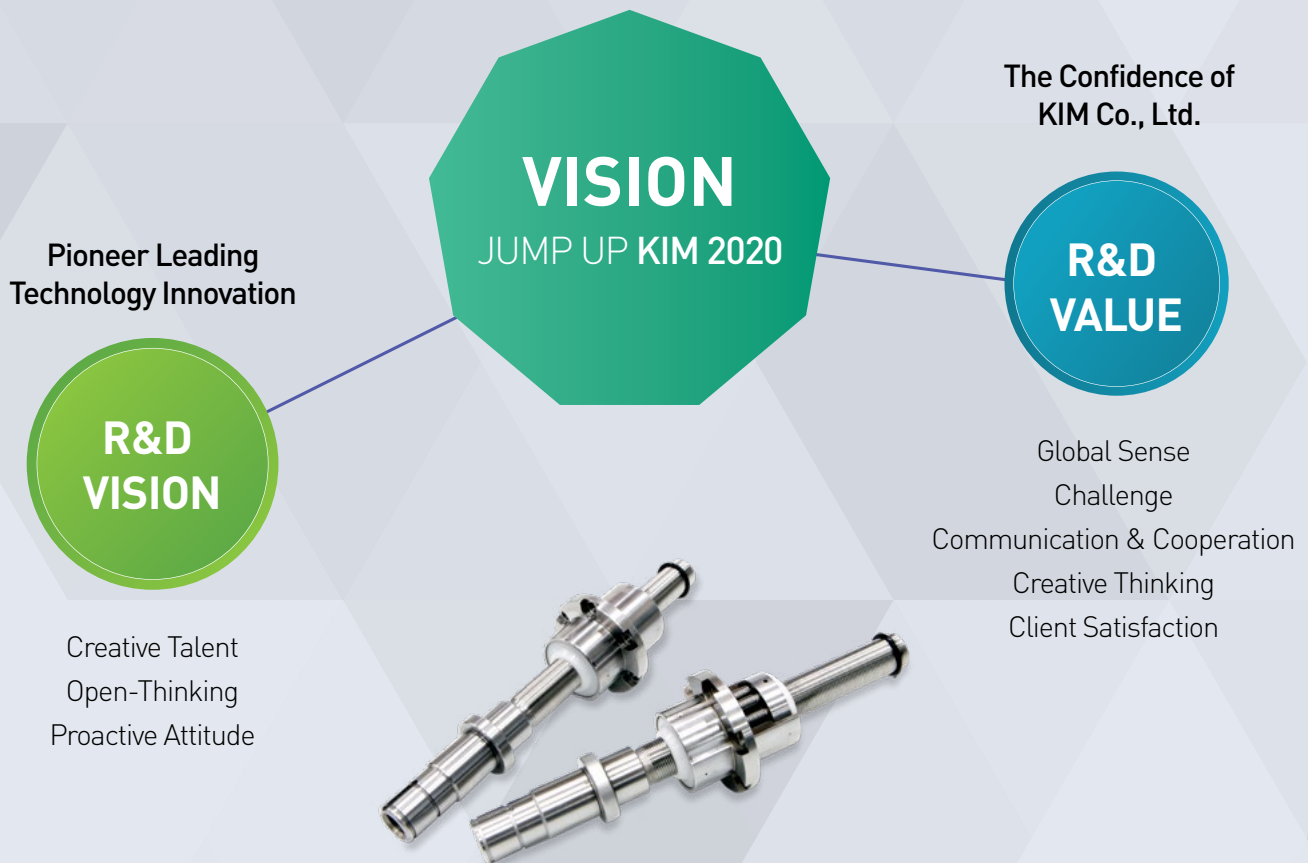
Dia	Lead	Length	Grade
Ø 590	48 mm	1188 mm	G7

Service Range

KIM's Enjoyable Challenge for Moving the World

We design innovative and challenging research and development for precision driving technology.

KIM Co. delivers from Designing to Maintaining. We focused on the highest quality and technological improvements through the joint research, mutual growth with national and international defense companies and precision driving system companies based on a global network. Our objective is to help customers improve productivity and get solutions.





**Precision moves,
Reliability proves.**

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Planetary Roller Screw Application Configuration Worksheet

Company Name

Contact

Load & Life Requirements

Extension Max Load _____ lbf, kN

Extension Mean Load _____ lbf, kN

Retraction Max Load _____ lbf, kN

Retraction Mean Load _____ lbf, kN

Static Load Max _____ lbf, kN

Cycle Rate _____ cycles per min, hour, day

Operating Hours per Day _____

Operating Days per Week _____

Life Requirement _____ Total #cycles, #days, #years

Stroke & Speed Requirements

Maximum Stroke _____ inches, mm

Maximum Speed _____ inches, mm per second

Minimum Speed _____ inches, mm per second

Accuracy Grade _____ inches, mm

(Standard Accuracy Grade is C5T for KIM Co.'s Roller Screw)

Stroke & Speed Requirements

Application? _____

Special Nut Features? _____

Include Motors? _____

Others? _____

Please fill in and E-mail (gear@kimm.co.kr) to be contacted by a KIM Co. sales engineer.



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