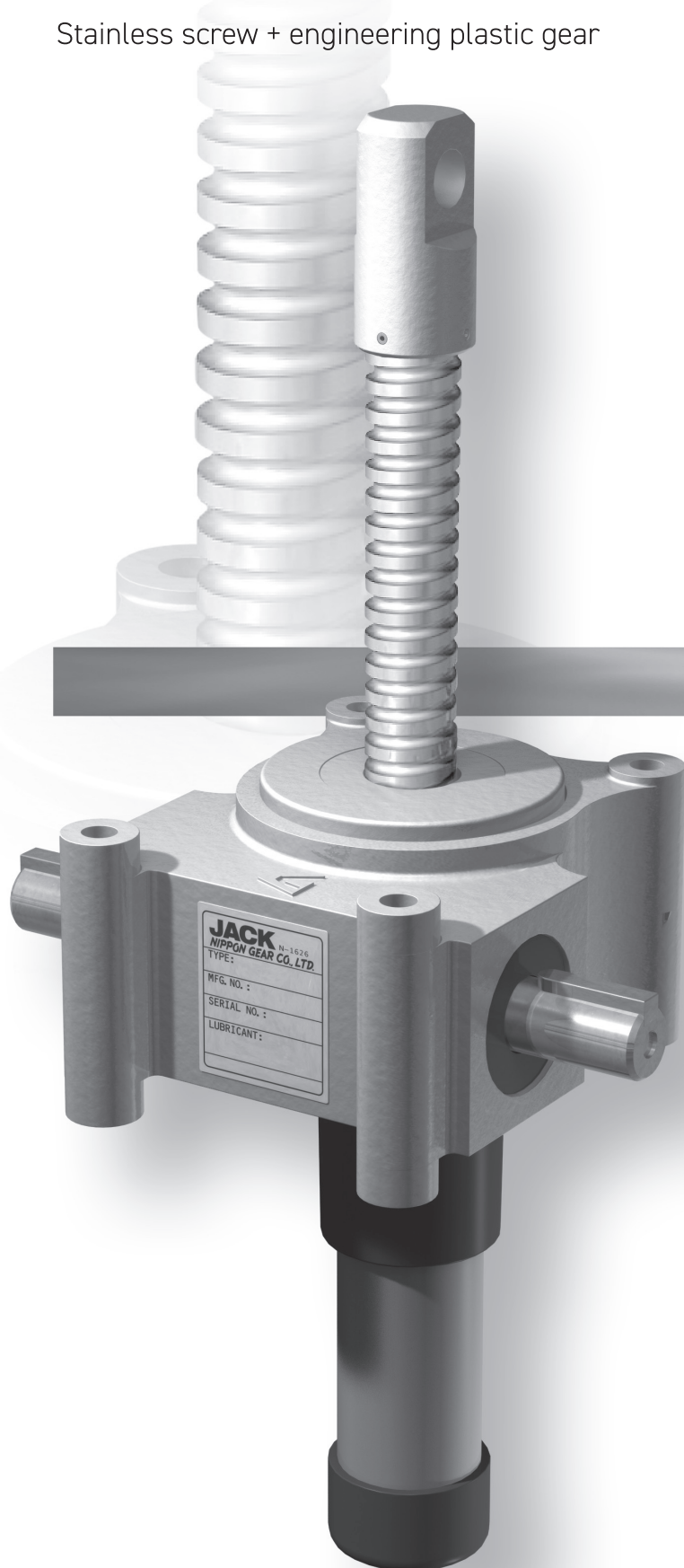


Smoothy Screw Jack

Stainless screw + engineering plastic gear



07

Small Screw Jack /01

Screw Jack /02

Ball Small Jack /03

Ball Screw Jack /04

High-Lead Screw Jack /05

High-Lead Ball Screw Jack /06

Smoothy Screw Jack /07

Rack Jack /08

Bevel Gear Type Jack /09

Hi-Speed Jack /10

Geared Motor Jack /11

Option /12

Bevel Gear Box /13

Coupling /14

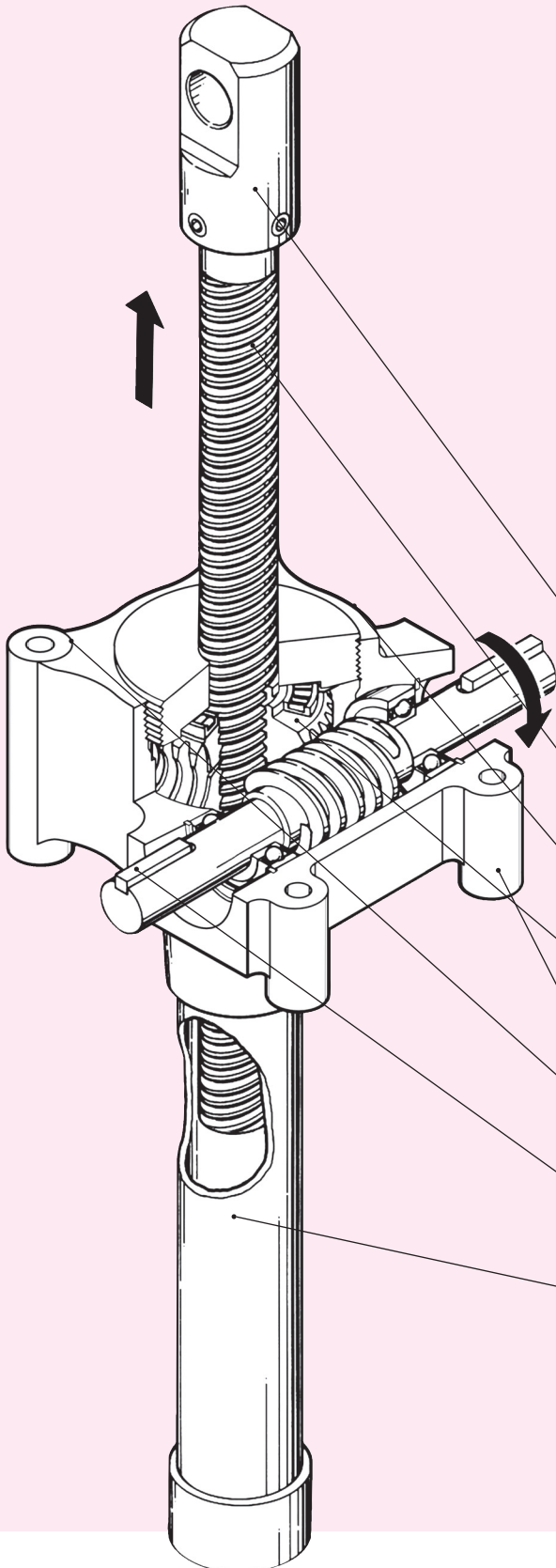
Technical Data /15

Q&A, Caution and
Other Information /16

Smoothy Screw Jack: Structure & Features

This type of jack is considered to be an intermediate type between the small jack and the ball small jack, and its simple structure is a big feature.

Structural Drawing: Upright Translating Smoothy Screw Jack



- The lightest weight possible is achieved, while securing sufficient strength.
- The housing is compact and space-efficient; and its shape and mounting holes are designed to allow either its upper or lower surface to be attached to your device.
- The jack consists of a worm gear and a stainless lifting screw.
- The jack does not require steel balls and a return tube, which are essential for a ball screw, thus significantly saving space.
- As it is self-lubricating, the jack is designed for maintenance-free operation (disassembly of components inside of the housing is not allowed).
- We can also manufacture a jack with anti-rotation mechanism which prevents its lifting screw from drag turning.
- This type of jack does not have a self-locking function, so it is required to install a brake.
- Wide-ranging options are available, including dustproof bellows to protect the lifting screw, limit switch for control, and RC encoder.
- A smoothy screw, consisting of a self-lubricating nut and stainless screw shaft, is also available as a stand-alone product (See p.132-133).

The lifting screw end is designed to allow attaching two types of end fittings (e.g. clevis in the drawing) in order to prevent the lifting screw from drag turning on the side of your device.

- ① The lifting screw is made of stainless steel (right-hand thread).
 - ② The housing is made of lightweight aluminum alloy (the main body not painted; silver color).
- The worm wheel adopts engineering plastic. It is self-lubricating, and provides outstanding wear resistance. (right-hand thread).
- Mounting bolts can be attached to either the upper or lower surface.
- The shape of the Input shaft shape of RMS series: D-cut
The Input shaft key of RSS series: new JIS compliant

Part Names

#	Part name
①	Lifting screw
②	Sub-assy
③	Lifting screw cover

Standard Specifications

Series/size code		RMS	RSS
Capacity		2kN	5kN
Lifting screw diameter		16mm	20mm
Lifting screw lead		5mm	5mm
Worm gear ratio	H	3	5
	L	—	24
Efficiency	H	0.37	0.35
	L	—	0.20
Maximum allowable power per jack		0.2kW	0.2kW
Input shaft torque at no load (b)		0.07N·m	0.15N·m
Torque coefficient (a)	H	0.72	0.45
	L	—	0.16
Required input torque at maximum load	H	1.5N·m	2.4N·m
	L	—	1.0N·m
Speed coefficient (c) (screw lead per rotation of input shaft)	H	1.67mm	1mm
	L	—	0.2mm
Maximum allowable input rotation speed	H	1800min ⁻¹	1500min ⁻¹
	L	—	1500min ⁻¹
Maximum input rotation speed at maximum load	H	1290min ⁻¹	760min ⁻¹
	L	—	1500min ⁻¹
Anti-rotation key torque at maximum load		1.5N·m	3.6N·m
Input shaft allowable overhang load		120N	300N
Amount of filled grease		Maintenance-free	Maintenance-free
Operating temperature range		-15~60℃	-15~60℃

Allowable
buckling
load

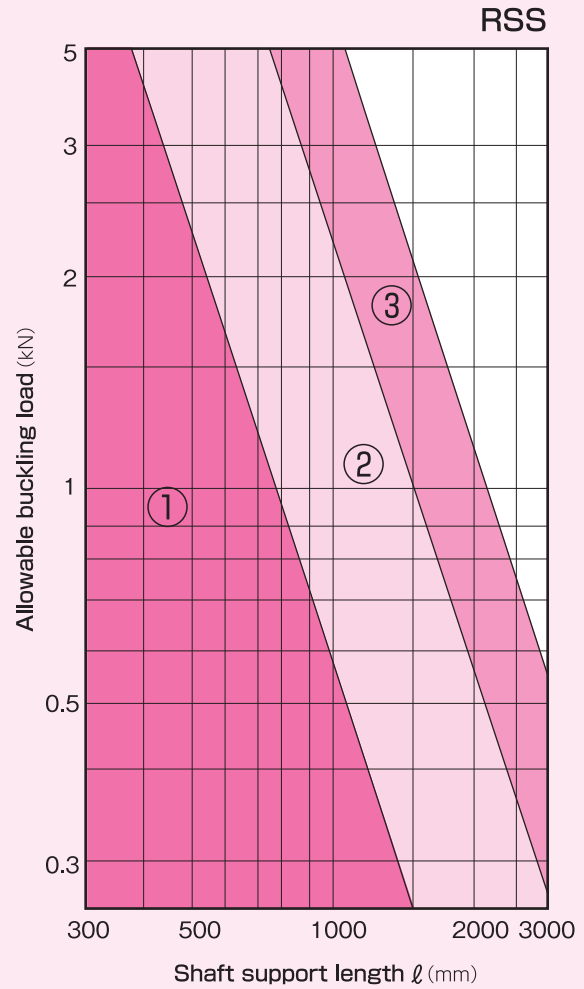
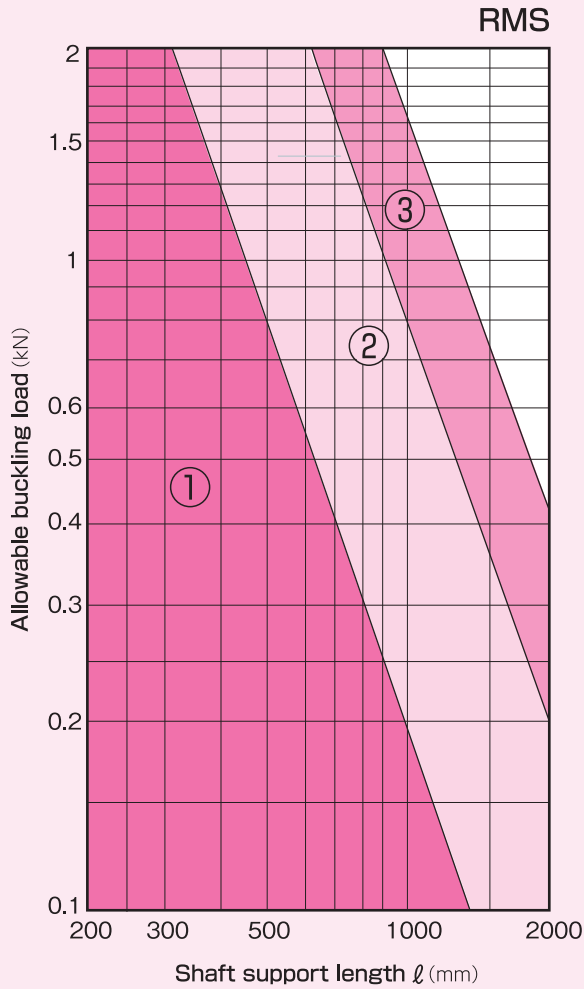
Allowable Buckling Load

Longer stroke lengths with loads in compression are subject to buckling. Buckling loads differ depending on screw ends and whether the main part is fixed or supported. Please refer to the following graphs, and select the series/size at the intersection of load (vertical axis) and shaft support length (horizontal axis) or above it. * When loaded in tension, there is no need to consider buckling.

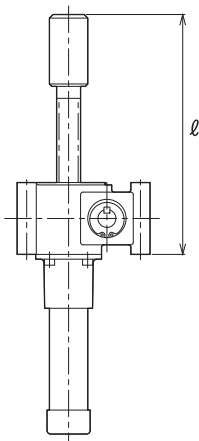
①: Jack fixed / shaft end free $n=1/4$

②: Jack supported / shaft end supported $n=1$

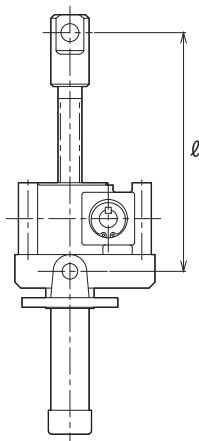
③: Jack fixed / shaft end supported $n=2$



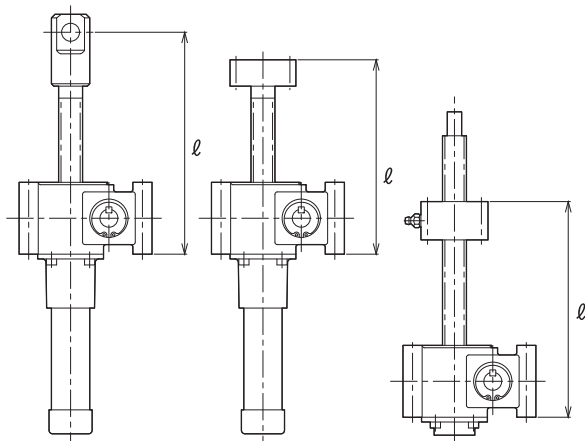
$n=1/4$



$n=1$

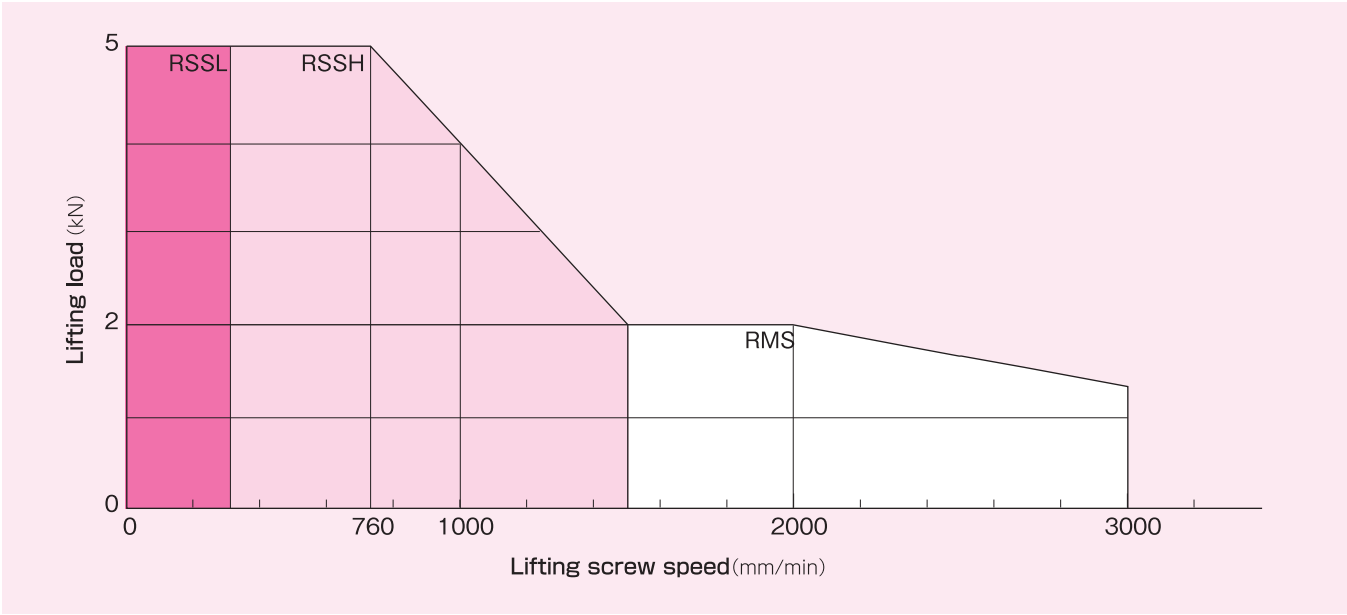


$n=2$



Lifting load/
Lifting screw
speed
graphs

Lifting Load / Lifting Screw Speed Graph



Allowable
side force

Allowable Side Force

■ Upright (N)

Stroke (mm)	100	200	300	400	500
Series/size					
RMS	120	80	60	50	—
RSS	210	130	90	70	60

■ Inverted (N)

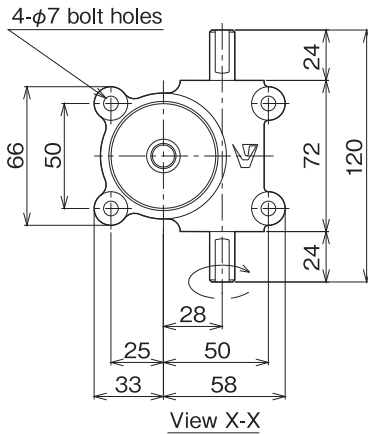
Stroke (mm)	100	200	300	400	500
Series/size					
RMS	120	80	60	50	—
RSS	170	110	80	60	50

RMS
Dimensional
Drawing

Dimensional Drawing: RMS Translating Smoothy Screw Jack

When the input shaft rotates in the direct indicated by an arrow, the lifting screw ascends.

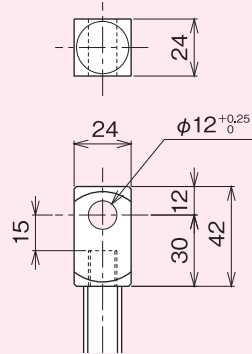
Two-dimensional drawing



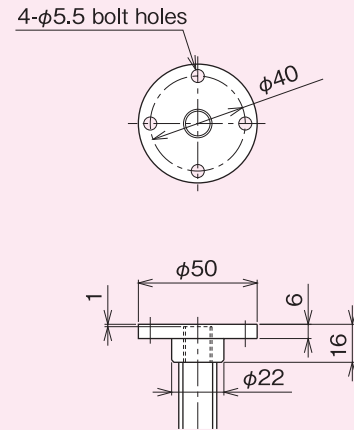
Upright

Dimensional drawing of screw end fittings

Clevis

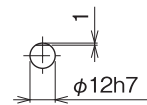


Flange

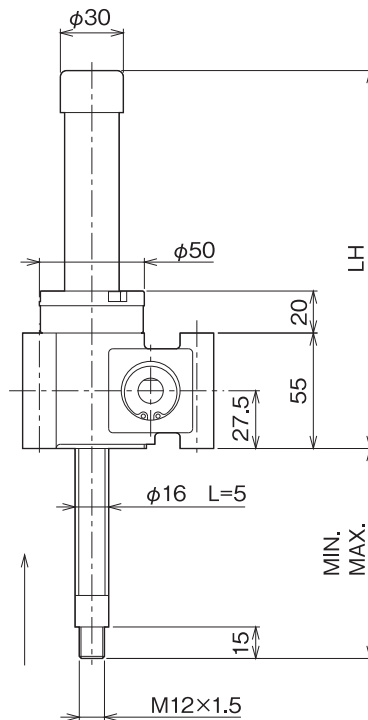
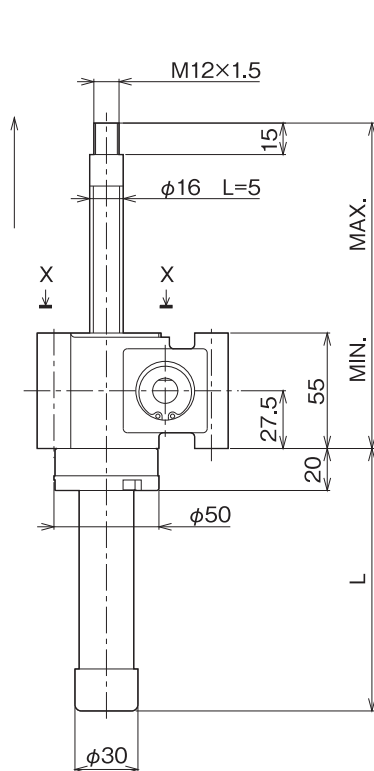
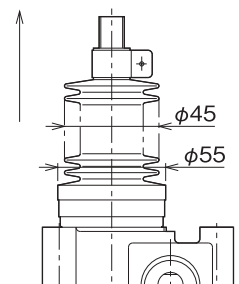


Inverted

Dimensional drawing of input shaft end



Outer diameter of bellows



RMS Smoothy Screw Jack Measurement Table

Stroke	U: Upright					I: Inverted				
	N: Without bellows		B: With bellows		L	N: Without bellows		B: With bellows		LH
	MIN.	MAX.	MIN.	MAX.		MIN.	MAX.	MIN.	MAX.	
100	80	180	125	225	125	25	125	70	170	180
200	80	280	140	340	225	25	225	85	285	280
300	80	380	155	455	325	25	325	100	400	380
400	80	480	180	580	425	25	425	125	525	480

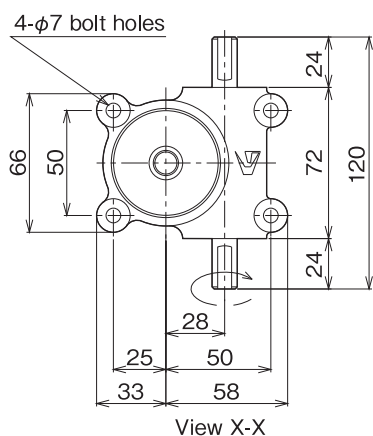
If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

RMS
 Dimensional
 Drawing

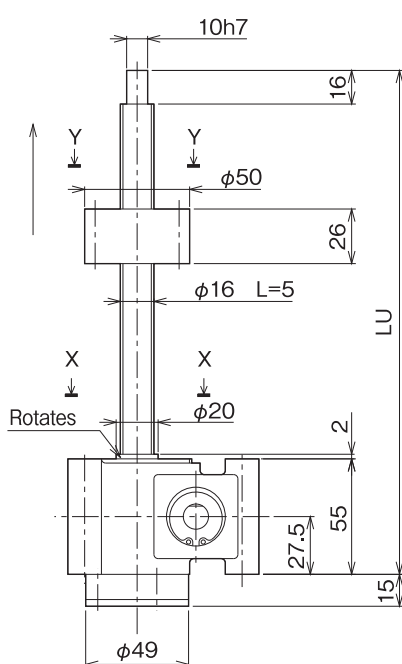
Dimensional Drawing: RMS Traveling Nut Type Smoothy Screw Jack

When the input shaft rotates in the direction indicated by an arrow, the traveling nut ascends.
 For information on sizes of the jack with bellows, please contact us.

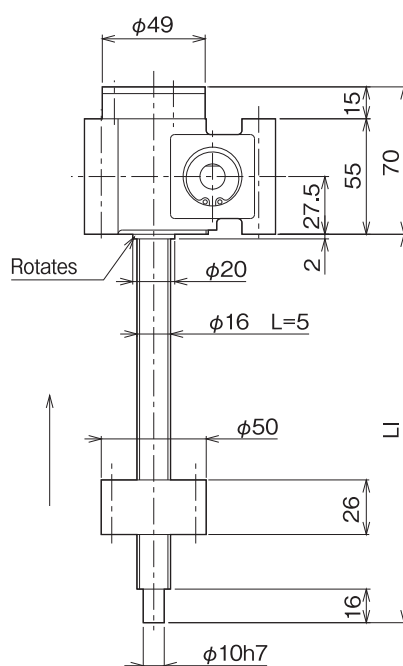
Two-dimensional drawing



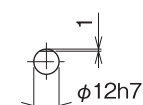
Upright



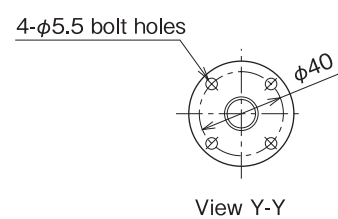
Inverted



Dimensional drawing of input shaft end



Traveling Nut



Approximate Weight (kg)

Stroke	Translating		Traveling nut type
	Without bellows	With bellows	
100	1	1.3	1.4
200	1.2	1.5	1.6
300	1.4	1.7	1.8
400	1.6	1.9	2

RMS

Stroke	Traveling nut type	
	U: Upright LU	I: Inverted LI
100	240	185
200	340	285
300	440	385
400	540	485

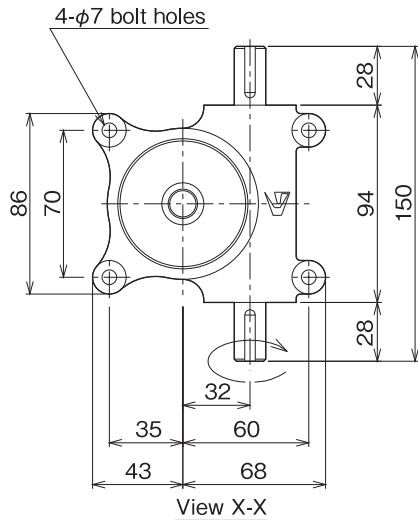
· If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

RSS
Dimensional
Drawing

Dimensional Drawing: RSS Translating Smoothy Screw Jack

When the input shaft rotates in the direction indicated by an arrow, the lifting screw ascends.

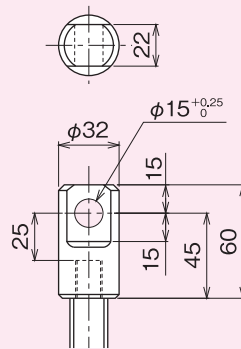
Two-dimensional drawing



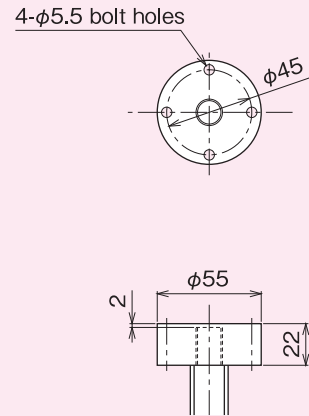
Upright

Dimensional drawing of screw end fittings

Clevis

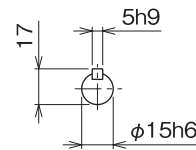


Flange

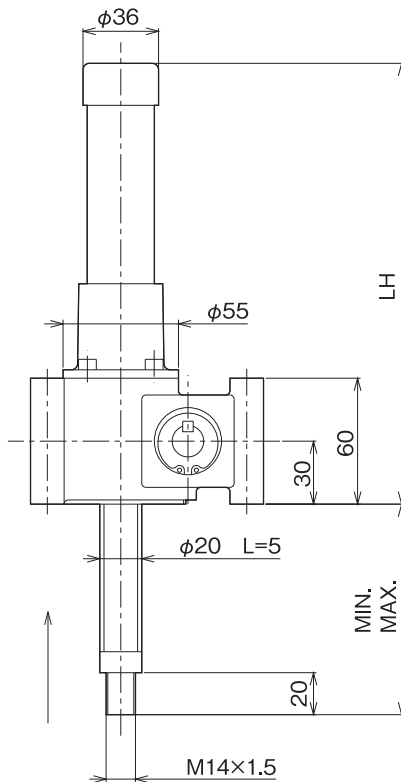
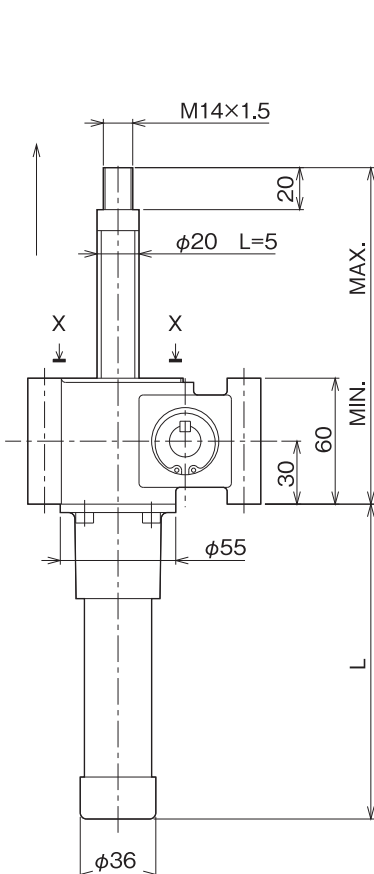
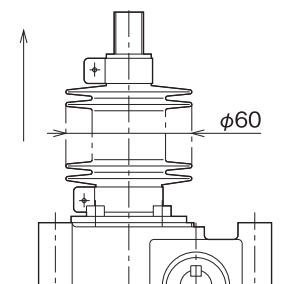


Inverted

Dimensional drawing of input shaft end



Outer diameter of bellows



RSS Smoothy Screw Jack Measurement Table

Stroke	U: Upright					I: Inverted				
	N: Without bellows		B: With bellows		L	N: Without bellows		B: With bellows		LH
	MIN.	MAX.	MIN.	MAX.		MIN.	MAX.	MIN.	MAX.	
100	90	190	150	250	150	30	130	90	190	210
200	90	290	150	350	250	30	230	90	290	310
300	90	390	180	480	350	30	330	120	420	410
400	90	490	180	580	450	30	430	120	520	510

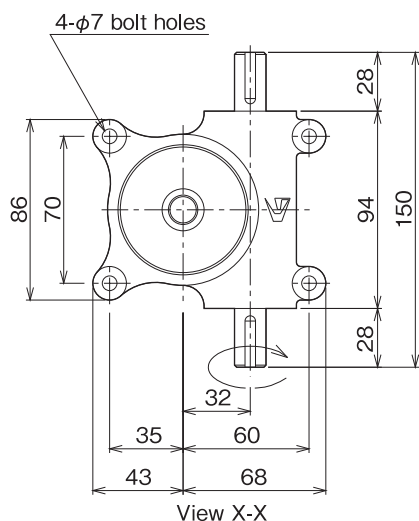
If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

RSS
 Dimensional
 Drawing

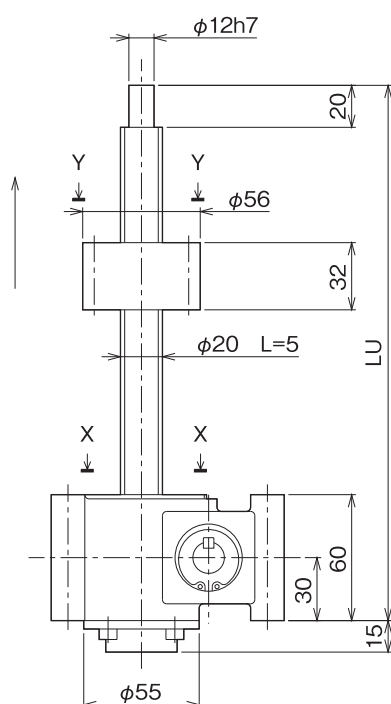
Dimensional Drawing: RSS Traveling Nut Type Smoothy Screw Jack

When the input shaft rotates in the direction indicated by an arrow, the traveling nut ascends.
 For information on sizes of the jack with bellows, please contact us.

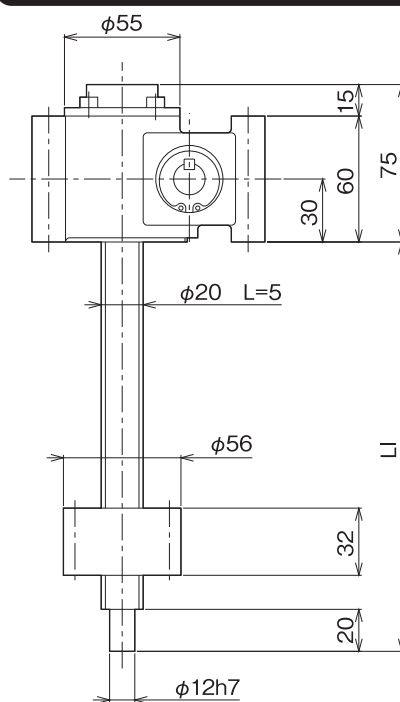
Two-dimensional drawing



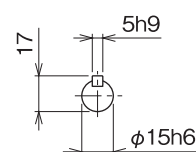
Upright



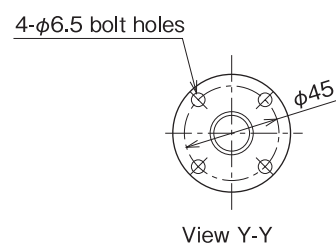
Inverted



Dimensional drawing of input shaft end



Traveling Nut



Approximate Weight (kg)

Stroke	Translating		Traveling nut type
	Without bellows	With bellows	
100	1.8	2.1	2.5
200	2	2.3	2.7
300	2.2	2.7	3
400	2.4	2.9	3.2

RSS

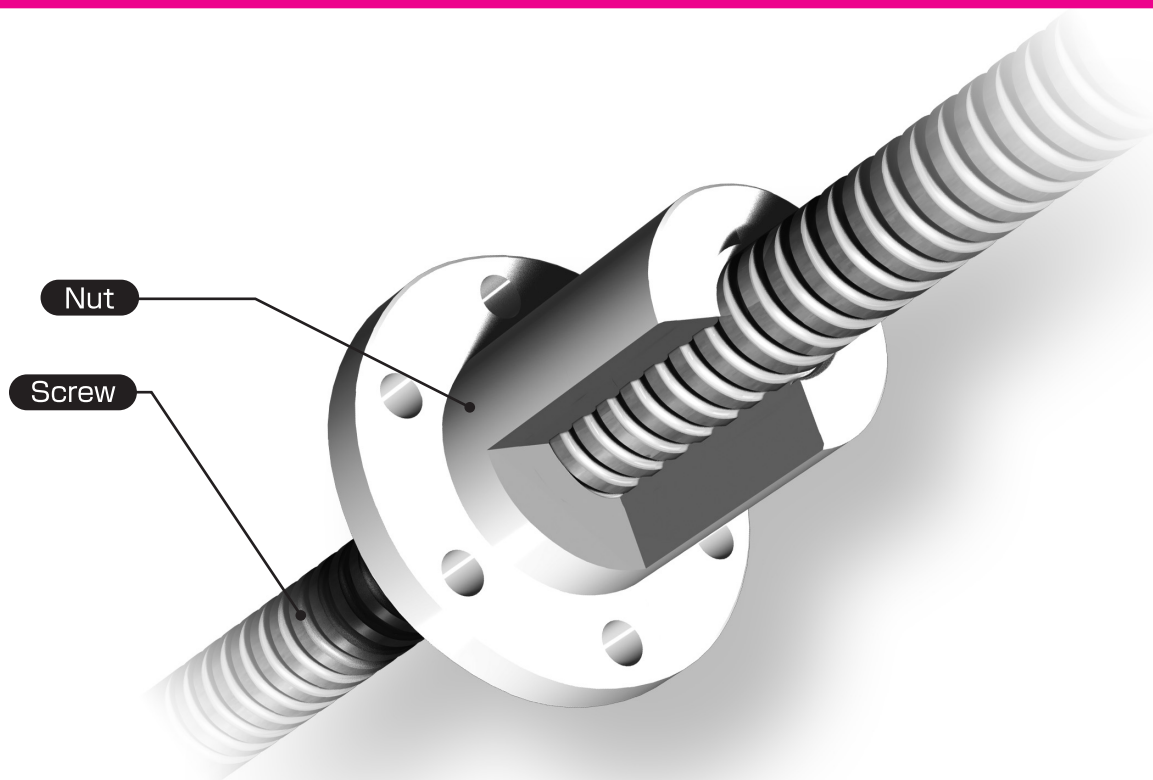
Stroke	Traveling nut type	
	U: Upright LU	I: Inverted LI
100	255	195
200	355	295
300	455	395
400	555	495

· If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

Smoothy Screw

A smoothy screw is composed of an integrated combination of "a nut and balls" of a "ball screw", and is highly efficient. A smoothy screw simply consists of only two components: a nut made of PET (polyethylene terephthalate), and a SUS screw, which has the same shape as the ball screw.

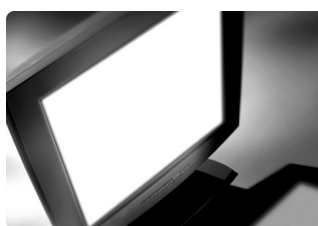
Construction



Features

- **High transmission efficiency (50%)** _____
It realizes much higher efficiency compared to trapezoidal screw.
- **Smooth operation without oiling** _____
The adoption of the nut made of a new material allows for smooth operation, and it can be used without supplying oil.
- **Long life and little wear** _____
The high-strength nut is superior in durability, and can be used reliably for a long time.
- **High quality** _____
Screws are processed, assembled, and inspected at a factory with an adequate quality control system, so we can deliver high-quality products.

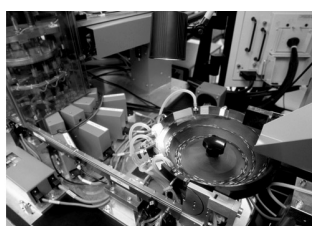
Application



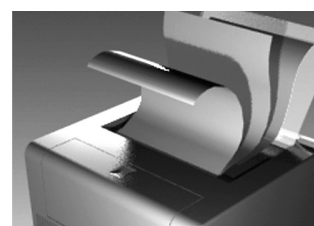
FPD Semiconductor



Food machine

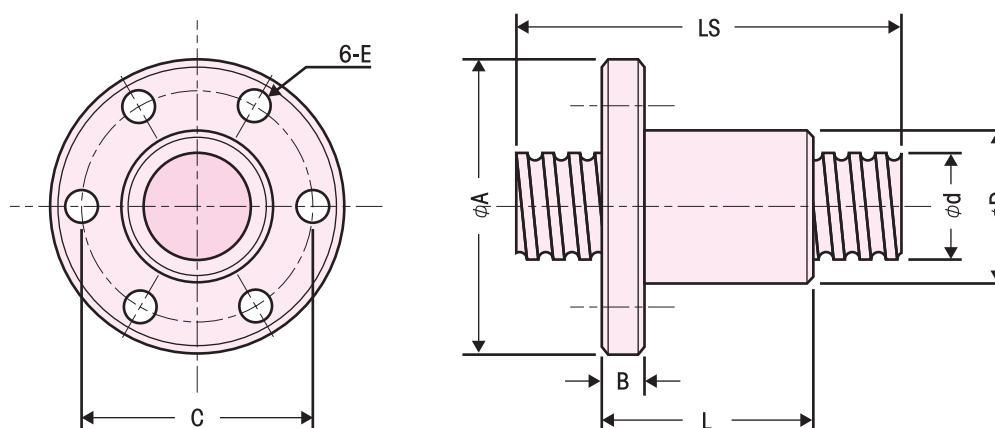


Medical machine



Office automation equipment

Dimensional Drawing



Specifications

UNIT mm

Nominal outer diameter of Screw	Lead	Root diameter of Screw	Allowable load W(N)	Allowable WN value	Nut dimensions						Standard screw length LS
					Outer diameter	Length	Flange		Mounting hole		
					D	L	Outer diameter A	Width B	PCD C	Diameter E	
10	4	8.2	1000	1.9×10 ⁵	19	32	36	5	28	4.5	300,500
12	4	10.2	1500	2.3×10 ⁵	22	38	39	5	31	4.5	300,500
14	5	11.3	3500	4.7×10 ⁵	30	60	50	10	40	4.5	300,500
16	5	13.3	4000	4.6×10 ⁵	30	60	50	10	40	4.5	300,500,1000
18	5	15.3	4500	4.6×10 ⁵	34	60	63	12	49	5.5	300,500,1000
20	5	17.3	6000	5.5×10 ⁵	40	70	60	10	50	5.5	500,1000,1500,2000
25	5	22.3	7500	5.4×10 ⁵	42	70	71	12	57	6.6	500,1000,1500,2000
25	10	21.5	5000	3.7×10 ⁵	44	80	80	15	62	9	500,1000,1500,2000
28	6	24.5	10500	6.8×10 ⁵	50	80	79	15	65	9	500,1000,2000,2500
32	10	27.7	12500	7.1×10 ⁵	55	110	97	18	75	11	500,1000,2000,3000

- Screws must be used within the above-mentioned WN values. WN value is expressed as allowable load W (N) x allowable rotation speed N (min^{-1}).
- MAX min^{-1} : 1200 min^{-1}
- Allowable operating temperature: -20 to 60 degrees C
- Special paste is applied for improving initial conformability at the time of shipment.
As the paste is optionally available, please place an order if your usage conditions demand it.
- The accuracy is equivalent to JIS C-10 (ball screw).

Product code

● Please order smoothy screws using the following product code

