

High-Lead Ball Screw Jack

Seeking to make even higher-speed jacks than standard ball screw jacks

06



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

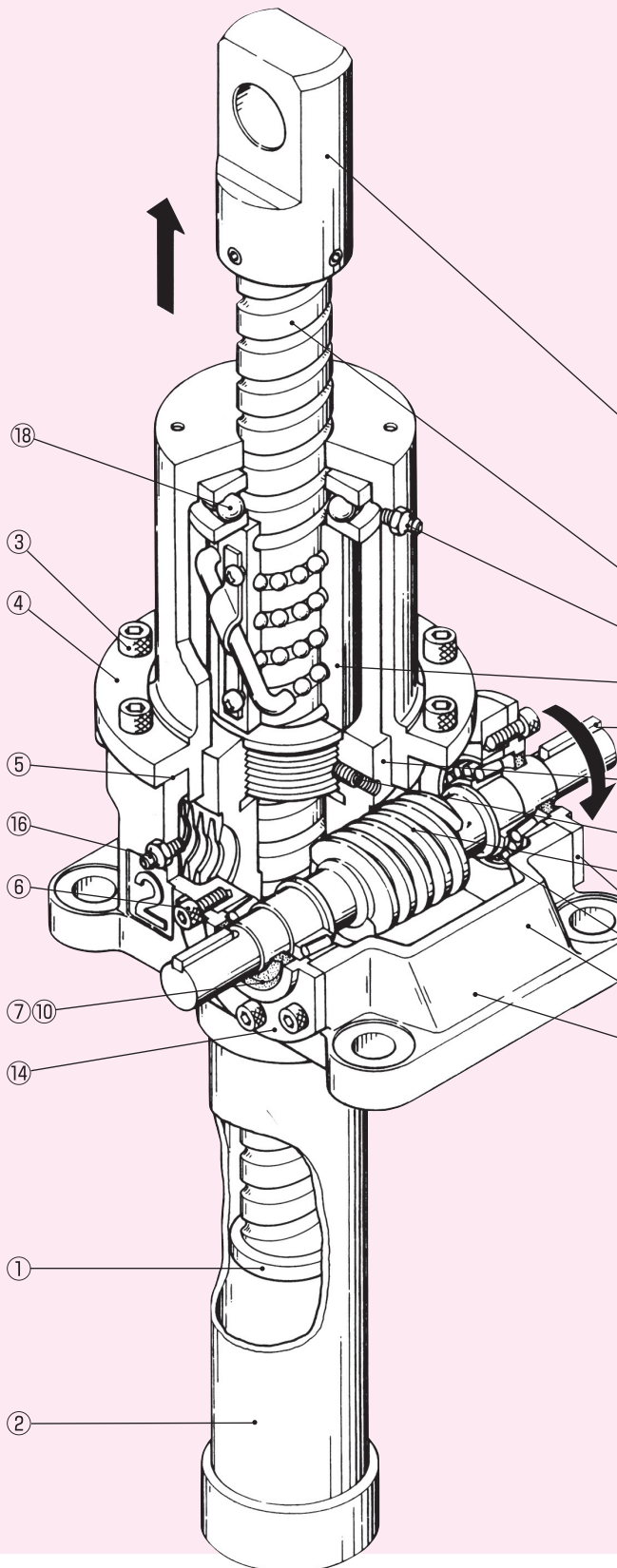


Q&A, Caution and Other Information /16

High-Lead Ball Screw Jack Structure & Features

High-lead type ball screw jack using a ball screw shaft (lifting screw) which is best for high-speed operation

Structural Drawing: Upright Translating High-Lead Ball Screw Jack



- The use of the high-lead ball screw achieves even faster lifting speed than standard ball screw jacks at the same input rotation speed.
- This type uses rolling friction between the nut and lifting screw, and its efficiency is approximately 3 times higher than that of the trapezoidal screw type, realizing energy-saving operation.
- This type of jack does not have a self-locking function, so it is required to install a brake.
- We can also manufacture a jack with anti-rotation mechanism which prevents its lifting screw from drag turning.
- Wide-ranging options are available, including dustproof bellows to protect the lifting screw, trunnion base, limit switch for control, and RC encoder.

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.

- ①⑨ The lifting screw is made of carbon steel (right-hand thread).
- ⑨ The input shaft key is new JIS compliant.
- ①⑦ The worm wheel is made of special bronze (right-hand thread). The ball bearing is used for holding the rotation.
- ①① The worm shaft is made of high-precision chrome molybdenum steel. (right-hand thread).
- ①③ The housing is made of ductile cast iron.

Part Names

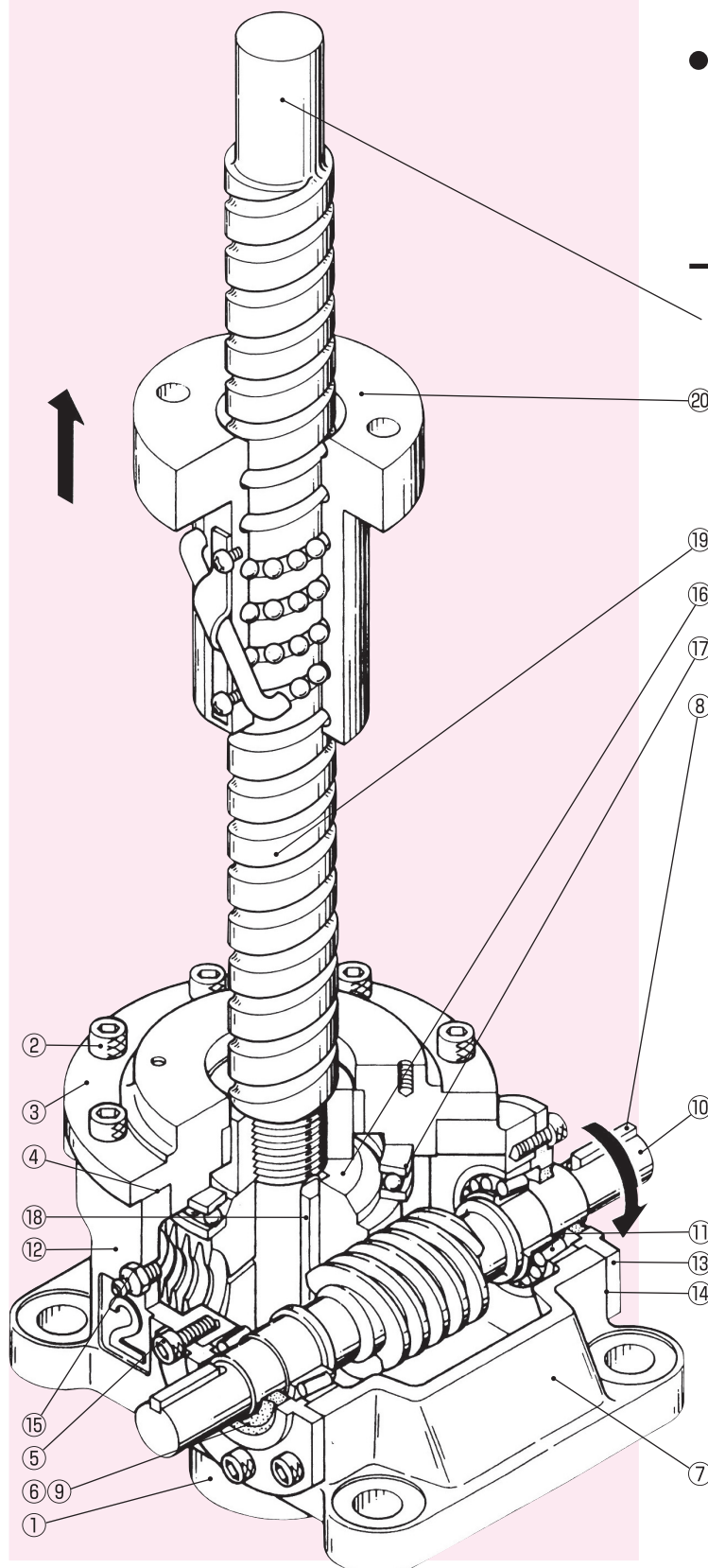
#	Part name	#	Part name
①	Fastening plate	⑫	Bearing
②	Lifting screw cover	⑬	Housing
③	Bolt	⑭	Side cover
④	Housing cover	⑮	Shim for side cover
⑤	Shim for housing cover	⑯	Grease nipple
⑥	Bolt	⑰	Worm wheel
⑦	Snap ring (JOF only)	⑱	Thrust ball bearing
⑧	Plate	⑲	Ball screw
⑨	Key	⑳	Locking screw
⑩	Oil seal (except JOF)	㉑	Ball screw nut
⑪	Worm shaft	㉒	Grease nipple

Traveling Nut Type High-Lead Ball Screw Jack Structure & Features

The screw rotates and the nut travels along it - this type of jacks is called traveling nut type jacks.

■ Structural Drawing:

Traveling Nut Type (Upright) High-Lead Ball Screw Jack



● This type does not require space for up-and-down motion of the screw shaft, so the full stroke length can be effectively utilized. This is especially convenient when available space is limited.

● To prevent side force which ball screw jacks need to avoid, and to ensure steady ascent/descent even in case of a long stroke, the cylinder finish is adopted for the bearing at the screw end.

Instead of a radial bearing, which is usually used to support the screw end, this type adopts a thrust bearing. By partially modifying the shape of the screw end, even in a long stroke, buckling can be prevented.

The cylinder finish which is convenient for supporting the screw end.

②⑩ Traveling nut which reduces friction by the rotation of the ball. (As for orientation of the nut, you can choose either an upward or downward direction. The illustration shows an upward direction.)

①⑨

①⑥ The worm wheel is made of special bronze (right-hand thread).

①⑦

①⑧ The input shaft key is new JIS compliant.

■ Part Names

#	Part name
①	Cover
②	Bolt
③	Housing cover
④	Shim for housing cover
⑤	Bolt
⑥	Snap ring (JOF only)
⑦	Plate
⑧	Key
⑨	Oil seal (except JOF)
⑩	Worm shaft
⑪	Bearing
⑫	Housing
⑬	Side cover
⑭	Shim for side cover
⑮	Grease nipple
⑯	Worm wheel
⑰	Thrust bearing
⑱	Key
⑲	Ball screw
⑳	Traveling nut

Specification

Standard Specifications

Series/size code	RSF	J0F	J1F	J2F	J3F	J4F
Capacity	4kN	10kN	25kN	50kN	100kN	200kN
Lifting screw diameter	16mm	20mm	25mm	36mm	40mm	50mm
Lifting screw lead	16mm	20mm	25mm	36mm	40mm	50mm
Worm gear ratio	5	5	6	6	8	8
Efficiency	0.64	0.64	0.61	0.61	0.59	0.6
Maximum allowable power per jack	0.63kW	0.75kW	1.3kW	2.5kW	3.7kW	6kW
Input shaft torque at no load (b)	0.15N·m	0.3N·m	1N·m	2N·m	3N·m	5N·m
Torque coefficient (a)	0.80	1.0	1.09	1.56	1.34	1.66
Required input torque at maximum load	3.4N·m	10N·m	28N·m	80N·m	137N·m	337N·m
Holding torque at maximum load	1.8N·m	6.6N·m	16N·m	47N·m	61N·m	156N·m
Speed coefficient (c) (screw lead per rotation of input shaft)	3.2mm	4mm	4.17mm	6mm	5mm	6.25mm
Maximum allowable input rotation speed ※ (in case the torque is 1000m ³ or more, in principle, the lubricant is oil)	2000min ⁻¹	1800min ⁻¹	1800min ⁻¹	1800min ⁻¹	1800min ⁻¹	1800min ⁻¹
Anti-rotation key torque at maximum load	1.5N·m	5N·m	15N·m	45N·m	100N·m	250N·m
Input shaft allowable overhang load	300N	300N	450N	700N	1200N	1200N
Amount of filled grease	Maintenance-free	0.15kg	0.6kg	0.9kg	1.5kg	3kg
Operating temperature range	-15~80℃	-15~80℃	-15~80℃	-15~80℃	-15~80℃	-15~80℃

※The lubricant for the lifting screw is grease. RSF, and J0F does not use oil lubricant.

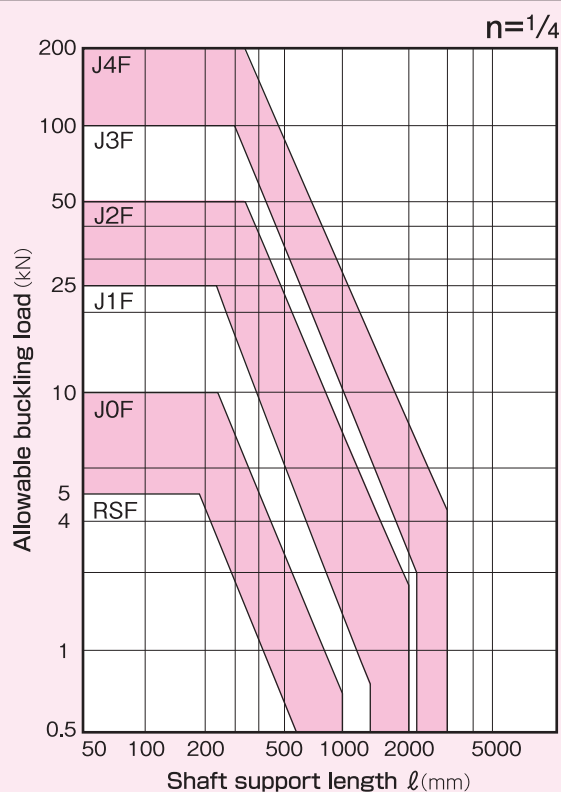
Allowable
buckling
load

Allowable Buckling Load

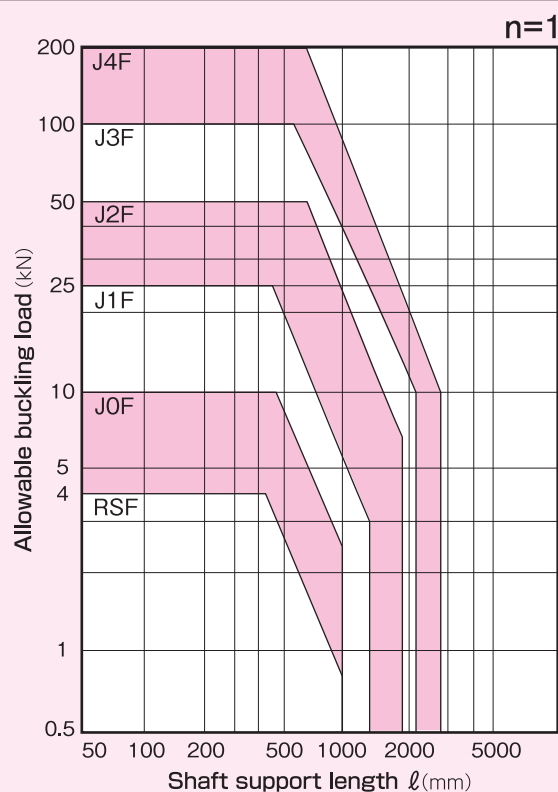
Longer stroke lengths with loads in compression are subject to buckling. Buckling loads differ depending on screw ends and whether the main part is fixed or supported. Please refer to the following graphs, and select the series/size at the intersection of load (vertical axis) and shaft support length (horizontal axis) or above it. To calculate the allowable buckling load, please refer to p.216.

* When loaded in tension, there is no need to consider buckling.

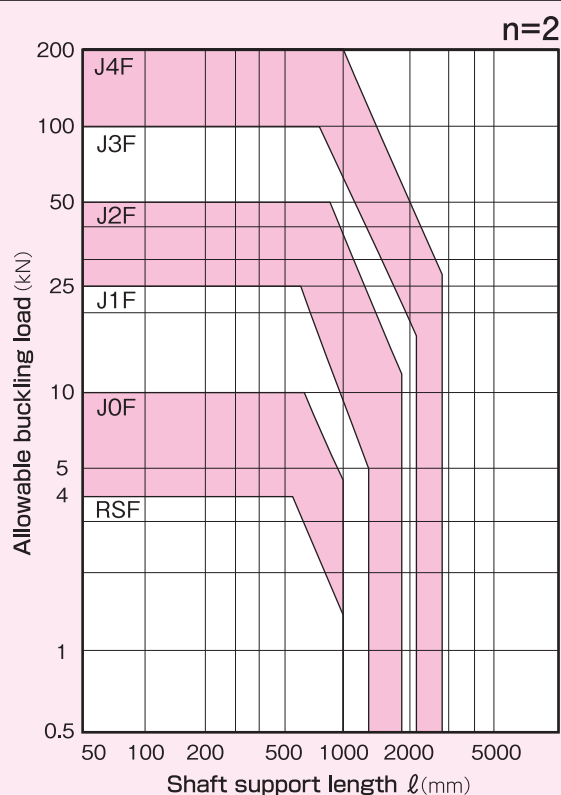
Jack fixed / shaft end free



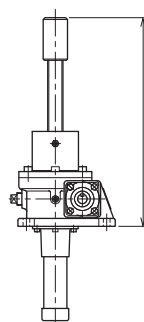
Jack supported / shaft end supported



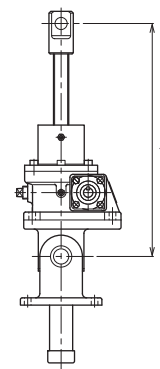
Jack fixed / shaft end supported



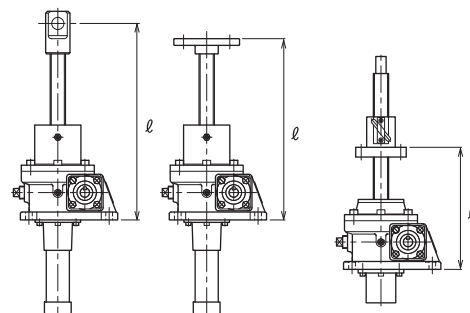
$n=1/4$



$n=1$

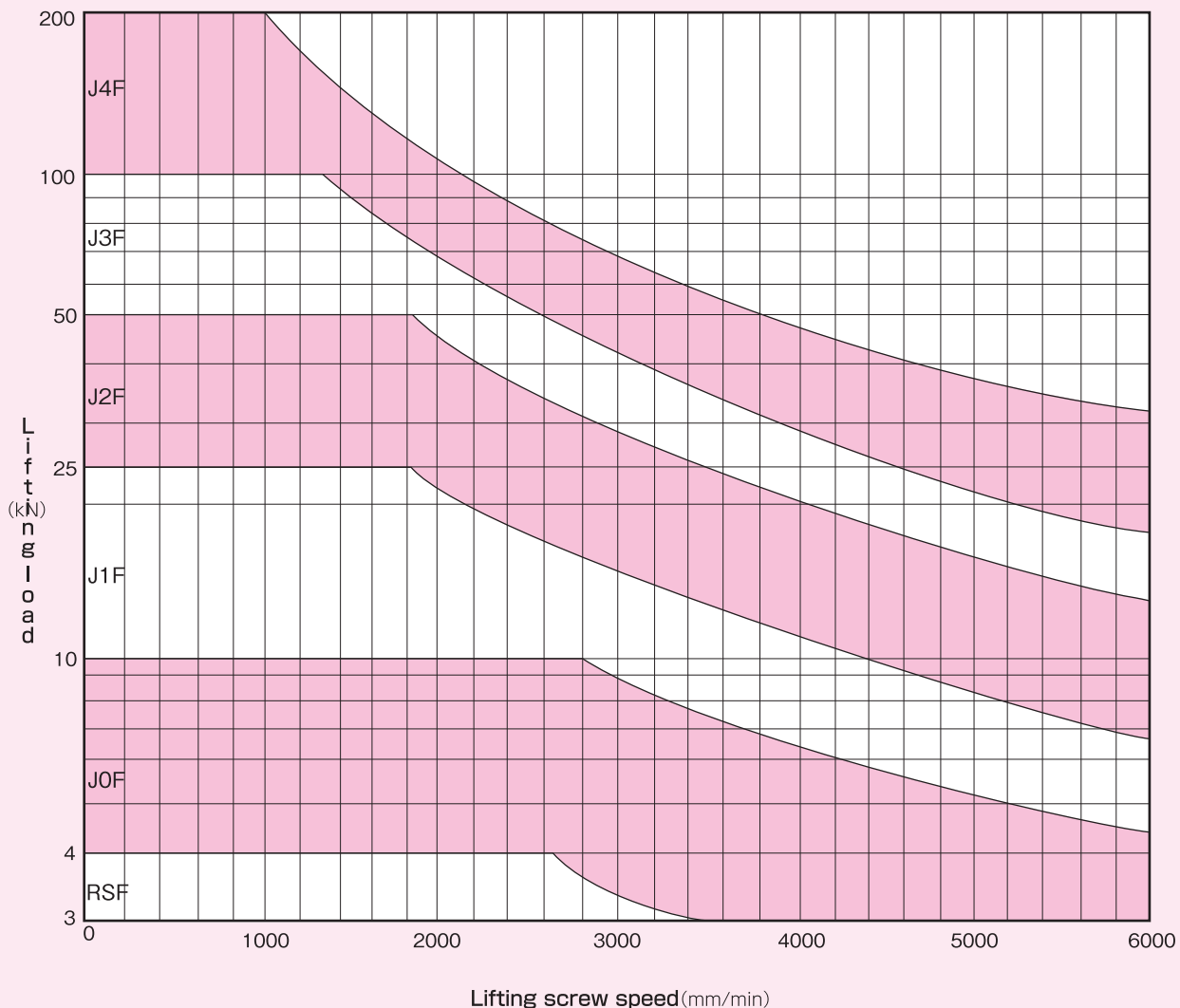


$n=2$



Lifting load/
Lifting screw
speed
graphs

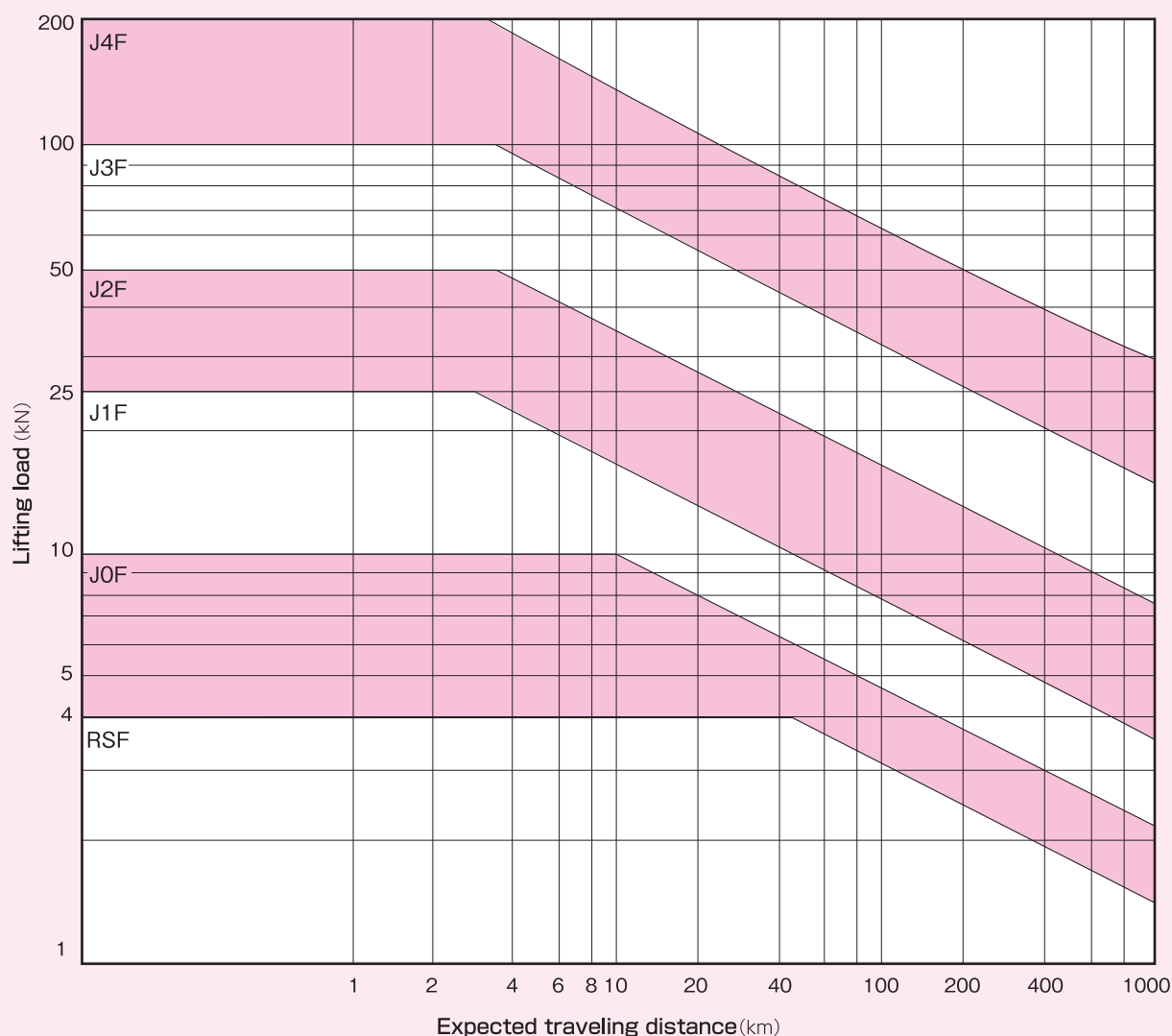
Lifting Load / Lifting Screw Speed Graph



Expected
traveling
distance

Expected Traveling Distance

The ball screw life, similarly to the bearing life, is determined by the flaking of the ball rotating surface due to fatigue. The following graph shows the relationship between load on the ball screw and traveling distance. It is necessary to consider the following factors which affect the ball screw life: installed conditions, loading conditions, frequency of use, operating conditions, lubrication conditions, surrounding environment, maintenance conditions. Furthermore, when selecting a jack, you also need to consider other machine and seal components, taking into account operating conditions. Please contact us to find necessary components.

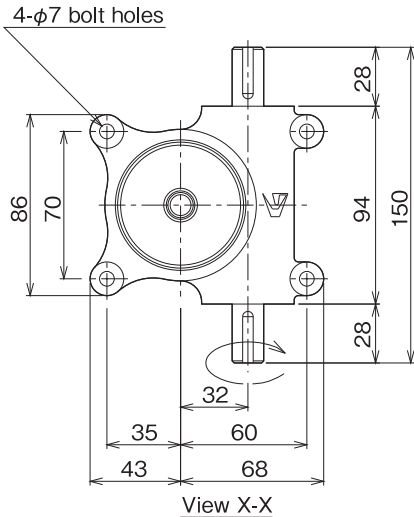


RSF
Dimensional
Drawing

Dimensional Drawing: RSF Translating High-Lead Ball Screw Jack

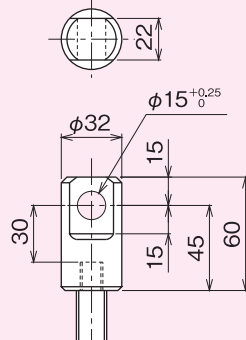
When the input shaft rotates in the direction indicated by an arrow, the lifting screw ascends.

Two-dimensional drawing

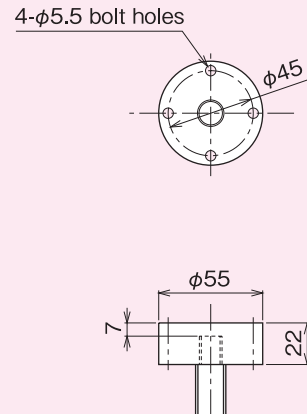


Dimensional drawing of screw end fittings

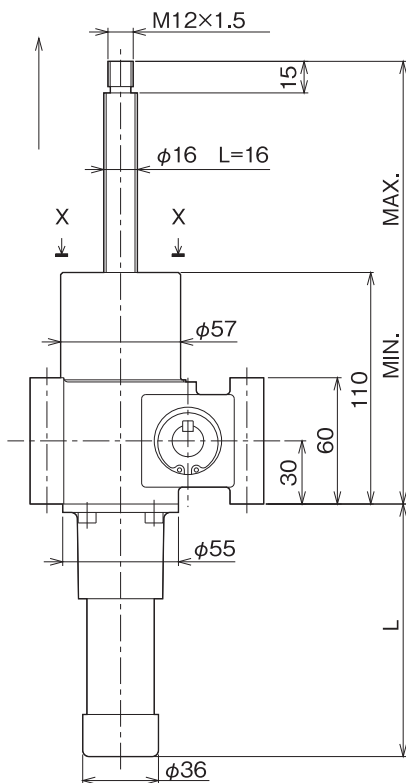
Clevis



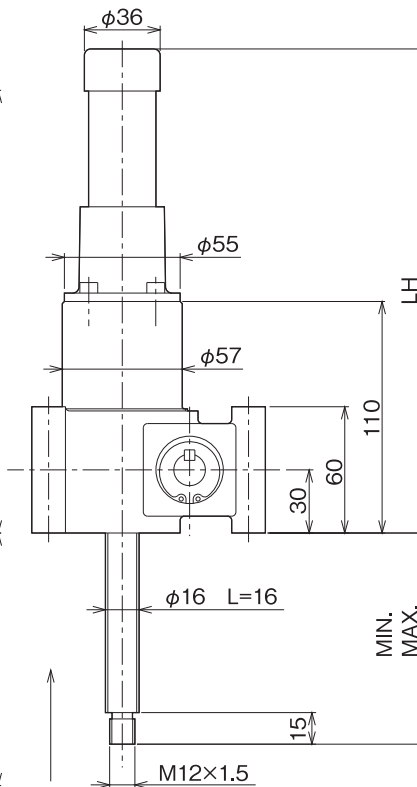
Flange



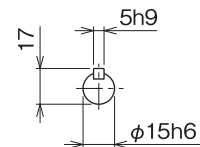
Upright



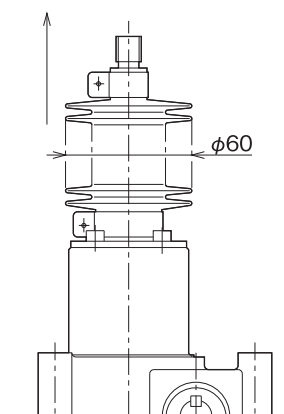
Inverted



Dimensional drawing of input shaft end



Outer diameter of bellows



RSF High-Lead Ball Screw Jack Measurement Table

Stroke	U: Upright			I: Inverted		
	N: Without bellows		B: With bellows	N: Without bellows		B: With bellows
	MIN.	MAX.	L	MIN.	MAX.	LH
100	145	245	150	195	295	250
200	145	345	250	195	395	350
300	145	445	350	225	525	450
400	145	545	450	225	625	550
500	145	645	550	235	735	650
600	145	745	650	235	835	750
800	145	945	850	285	1085	1050

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

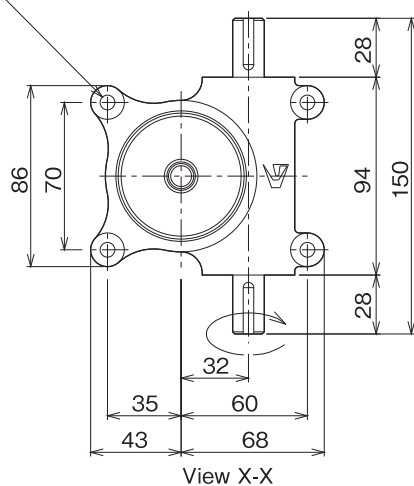
RSF
Dimensional
Drawing

Dimensional Drawing: RSF Traveling Nut Type High-Lead Ball 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

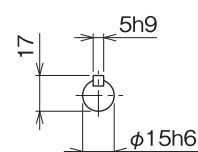
4- $\phi 7$ bolt holes



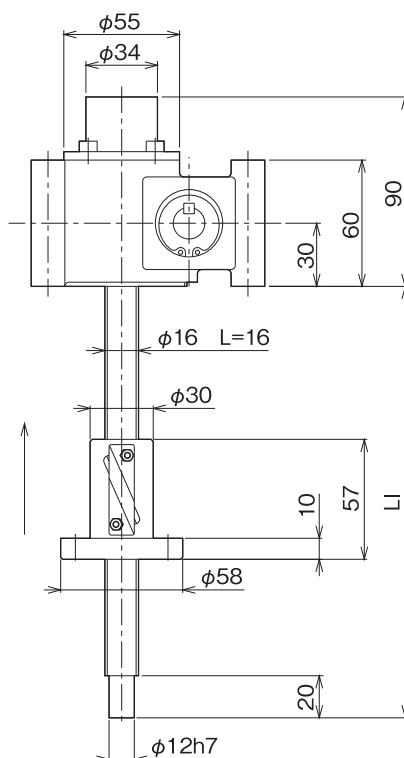
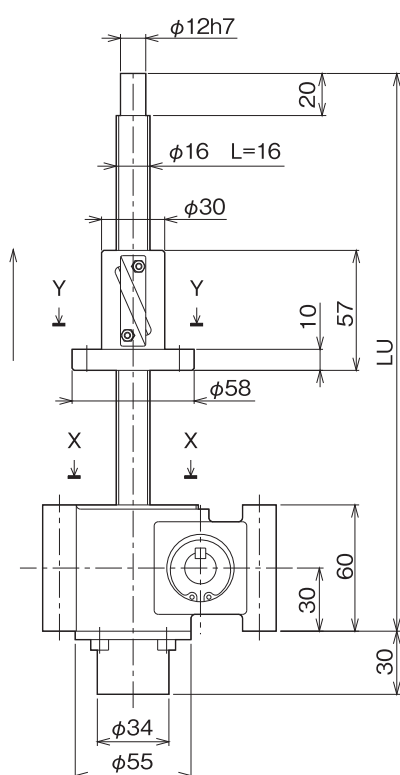
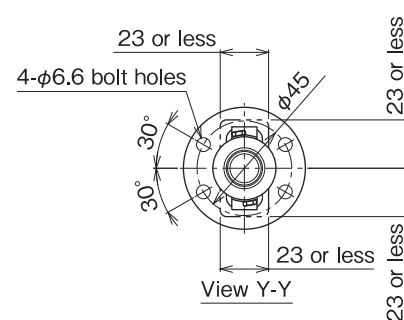
Upright

Inverted

Dimensional drawing of input shaft end



Traveling Nut



■ Approximate Weight (kg)

Stroke	Translating		Traveling nut type
	Without bellows	With bellows	
100	2.6	3	2.6
200	2.8	3.2	2.8
300	3	3.6	3
400	3.2	4	3.2
500	3.4	4.4	3.4
600	3.6	5.2	3.6
800	4	6	4

Stroke	Traveling nut type	
	U: Upright	I: Inverted
	LU	LI
100	280	220
200	380	320
300	480	420
400	580	520
500	680	620
600	780	720
800	980	920

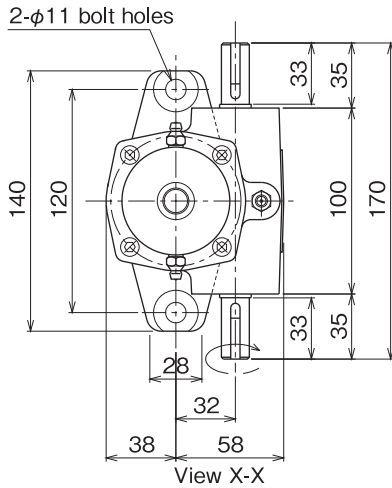
· If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

JOF
Dimensional
Drawing

Dimensional Drawing: JOF Translating High-Lead Ball Screw Jack

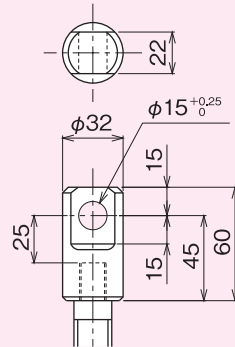
When the input shaft rotates in the direction indicated by an arrow, the lifting screw ascends.

Two-dimensional drawing

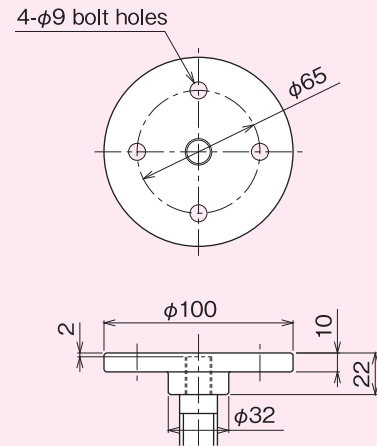


Dimensional drawing of screw end fittings

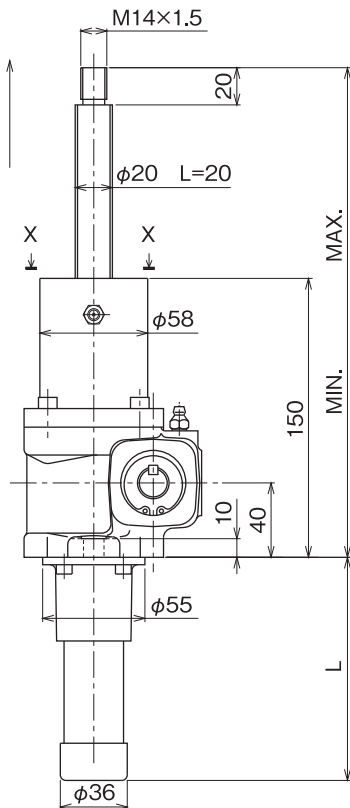
Clevis



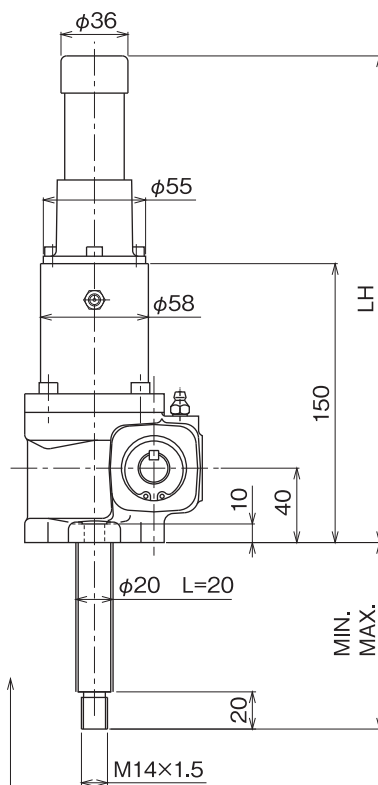
Flange



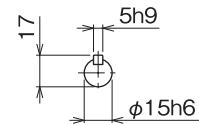
Upright



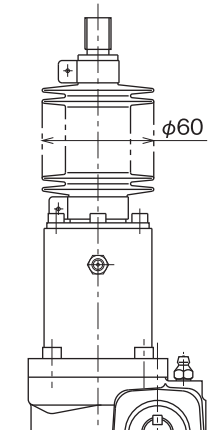
Inverted



Dimensional drawing of input shaft end



Outer diameter of bellows



JOF High-Lead Ball Screw Jack Measurement Table

Stroke	U: Upright			I: Inverted		
	N: Without bellows		B: With bellows	N: Without bellows		B: With bellows
	MIN.	MAX.	L	MIN.	MAX.	LH
100	190	290	150	240	340	250
200	190	390	250	240	440	350
300	190	490	350	270	570	450
400	190	590	450	270	670	550
500	190	690	550	280	780	650
600	190	790	650	280	880	750
800	190	990	850	330	1130	1050

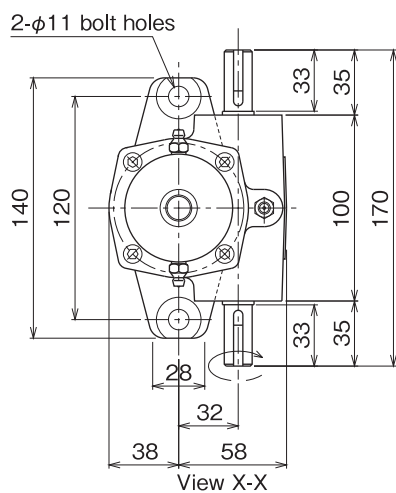
If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

JOF
 Dimensional
 Drawing

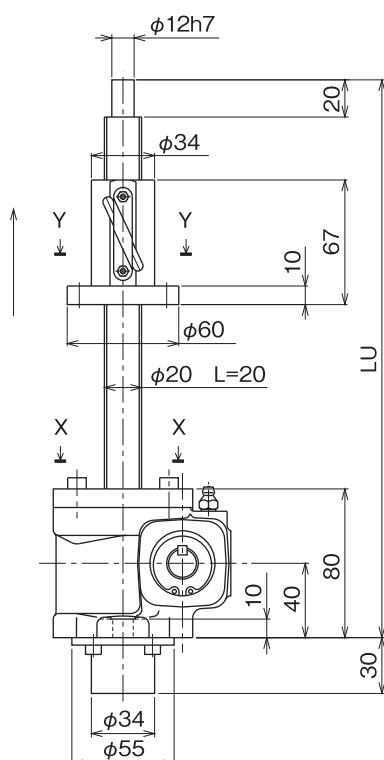
Dimensional Drawing: JOF Traveling Nut Type High-Lead Ball Screw Jack

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.

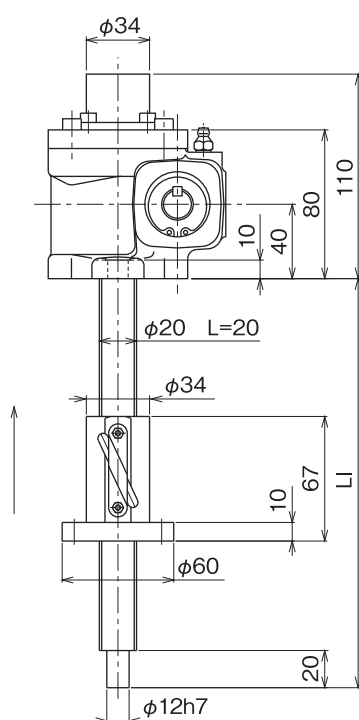
Two-dimensional drawing



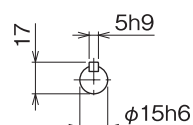
Upright



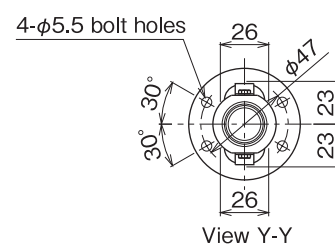
Inverted



Dimensional drawing of input shaft end



Traveling Nut



Approximate Weight (kg)

Stroke	Translating		Traveling nut type
	Without bellows	With bellows	
100	5	5.5	5
200	5.3	6	5.3
300	5.6	6.5	5.5
400	5.9	7	6
500	6.2	7.5	6
600	6.5	8.5	6.2
800	7.1	9.5	7

JOF

Stroke	Traveling nut type	
	U: Upright LU	I: Inverted LI
100	315	235
200	415	335
300	515	435
400	615	535
500	715	635
600	815	735
800	1015	935

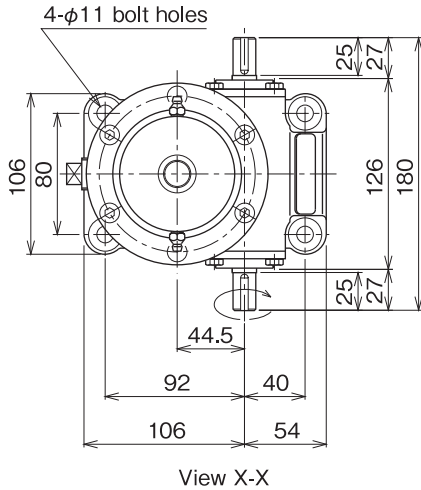
· If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

J1F
Dimensional
Drawing

Dimensional Drawing: J1F Translating High-Lead Ball Screw Jack

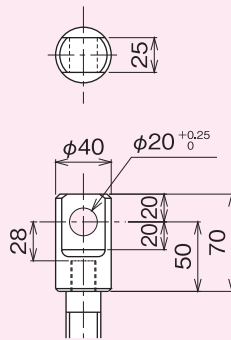
When the input shaft rotates in the direction indicated by an arrow, the lifting screw ascends.

Two-dimensional drawing

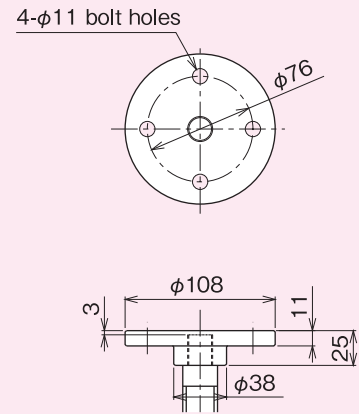


Dimensional drawing of screw end fittings

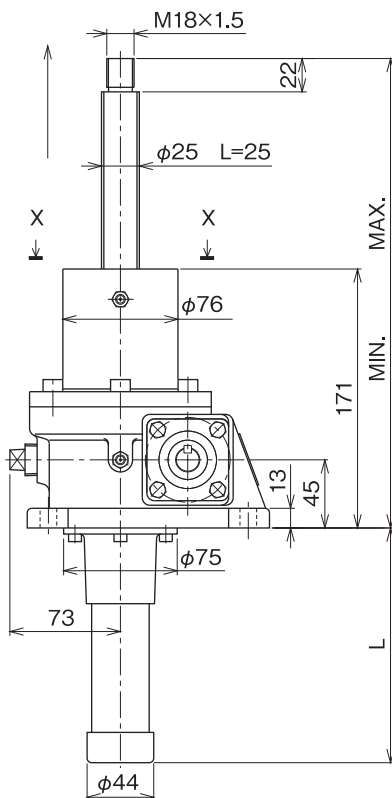
Clevis



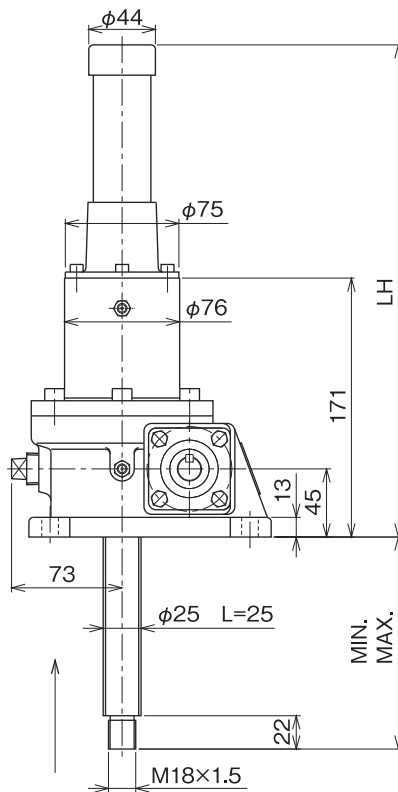
Flange



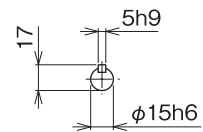
Upright



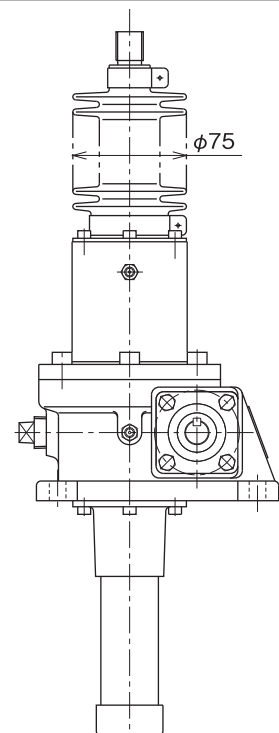
Inverted



Dimensional drawing of input shaft end



Outer diameter of bellows



J1F High-Lead Ball Screw Jack Measurement Table

Stroke	U: Upright						I: Inverted					
	N: Without bellows			B: With bellows			N: Without bellows			B: With bellows		
	MIN.	MAX.	L	MIN.	MAX.	L	MIN.	MAX.	LH	MIN.	MAX.	LH
100	215	315	155	250	350	255	45	145	326	80	180	426
200	215	415	255	250	450	355	45	245	426	80	280	526
300	215	515	355	285	585	455	45	345	526	115	415	626
400	215	615	455	285	685	555	45	445	626	115	515	726
500	215	715	555	285	785	655	45	545	726	115	615	826
600	215	815	655	325	925	855	45	645	826	155	755	1026
800	215	1015	855	325	1125	1055	45	845	1026	155	955	1226

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

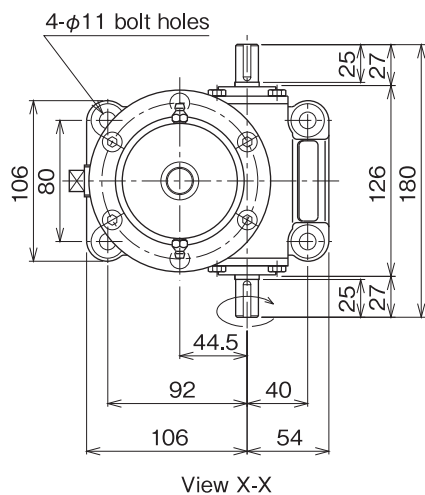
J1F

Dimensional Drawing

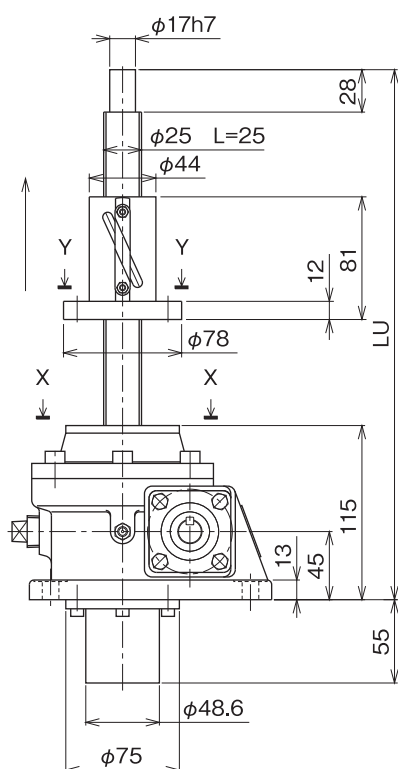
Dimensional Drawing: J1F Traveling Nut Type High-Lead Ball Screw Jack

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.

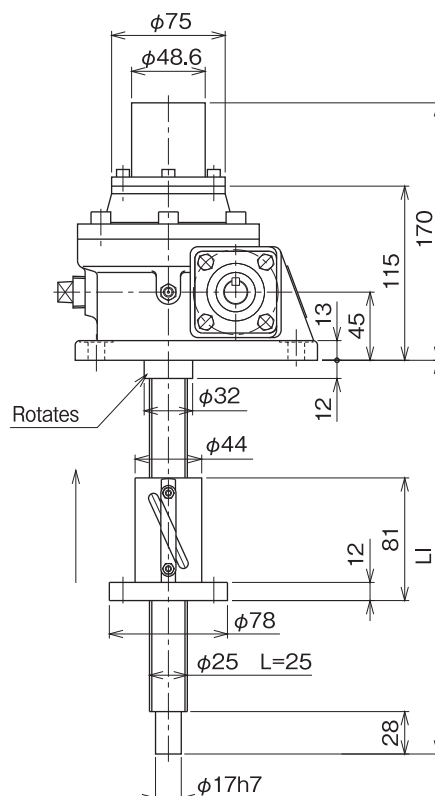
Two-dimensional drawing



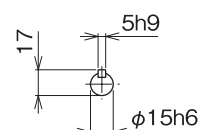
Upright



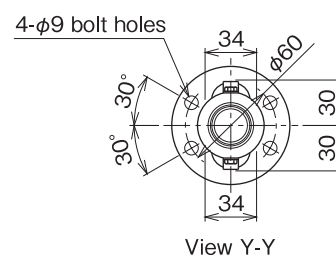
Inverted



Dimensional drawing of input shaft end



Traveling Nut



Approximate Weight (kg)

Stroke	Translating		Traveling nut type
	Without bellows	With bellows	
100	11	11.5	11
200	11.5	12	11.5
300	12	12.5	12
400	12.5	13	12.5
500	13	13.5	13
600	13.5	14.5	13.5
800	14.5	15.5	14

J1F

Stroke	Traveling nut type	
	U: Upright	I: Inverted
	LU	LI
100	370	280
200	470	380
300	570	480
400	670	580
500	770	680
600	870	780
800	1070	980

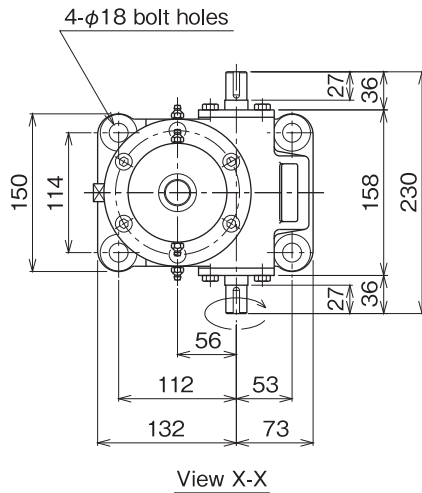
· If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

J2F
Dimensional
Drawing

Dimensional Drawing: J2F Translating High-Lead Ball Screw Jack

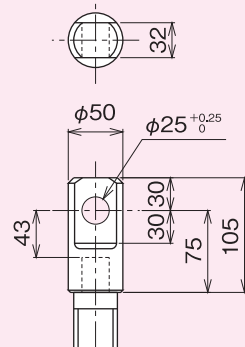
When the input shaft rotates in the direction indicated by an arrow, the lifting screw ascends.

Two-dimensional drawing

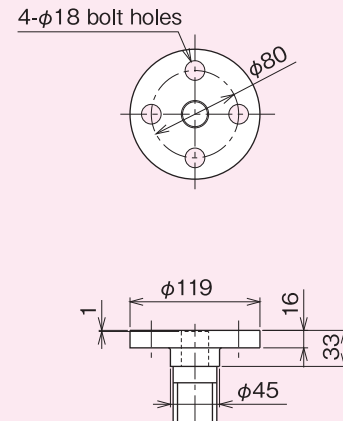


Dimensional drawing of screw end fittings

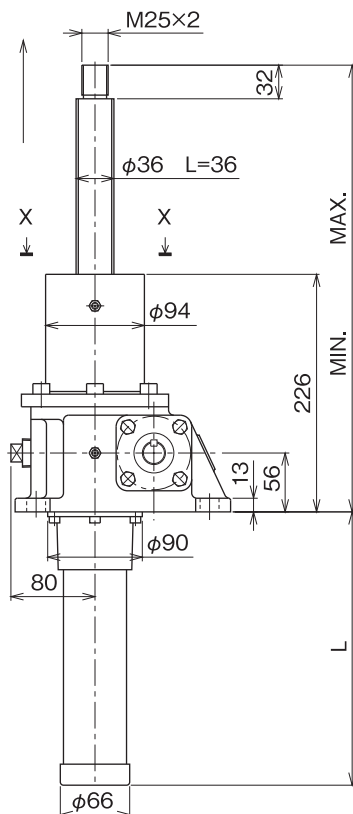
Clevis



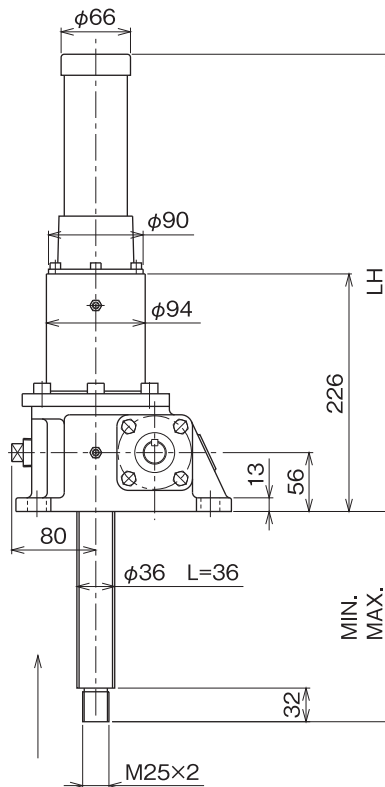
Flange



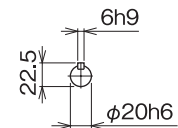
Upright



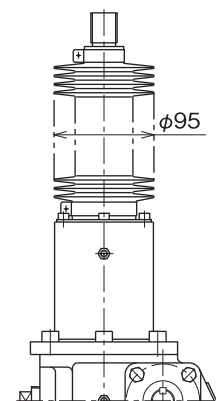
Inverted



Dimensional drawing of input shaft end



Outer diameter of bellows



J2F High-Lead Ball Screw Jack Measurement Table

Stroke	U: Upright						I: Inverted					
	N: Without bellows			B: With bellows			N: Without bellows			B: With bellows		
	MIN.	MAX.	L	MIN.	MAX.	L	MIN.	MAX.	LH	MIN.	MAX.	LH
100	280	380	160	315	415	260	55	155	386	90	190	486
200	280	480	260	315	515	360	55	255	486	90	290	586
300	280	580	360	350	650	460	55	355	586	125	425	686
400	280	680	460	350	750	560	55	455	686	125	525	786
500	280	780	560	350	850	660	55	555	786	125	625	886
600	280	880	660	390	990	860	55	655	886	165	765	1086
800	280	1080	860	390	1190	1060	55	855	1086	165	965	1286

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

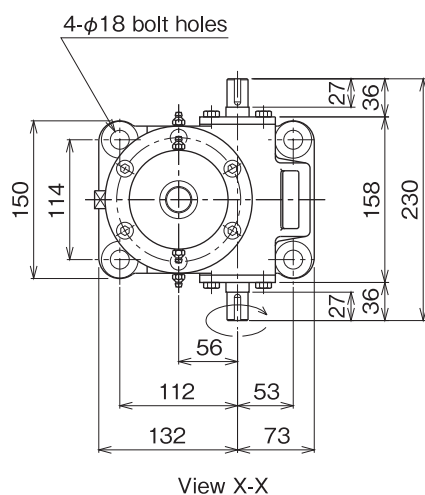
J2F

Dimensional Drawing

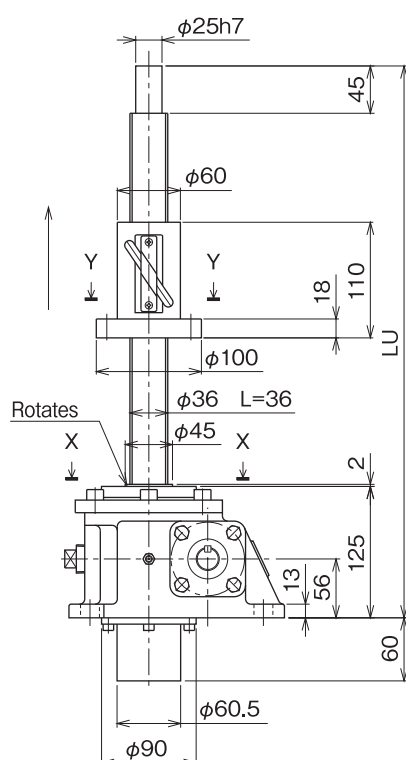
Dimensional Drawing: J2F Traveling Nut Type High-Lead Ball Screw Jack

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.

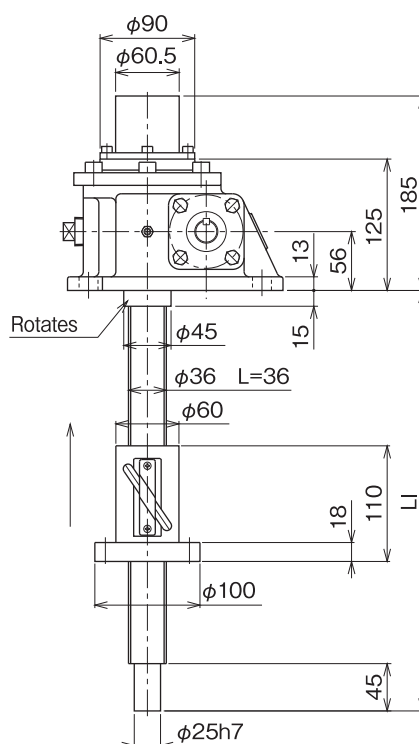
Two-dimensional drawing



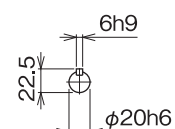
Upright



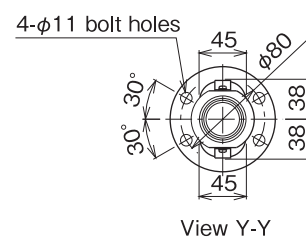
Inverted



Dimensional drawing of input shaft end



Traveling Nut



Approximate Weight (kg)

Stroke	Translating		Traveling nut type
	Without bellows	With bellows	
100	20	21	20
200	21	22	21
300	22	23	22
400	23	24	23
500	24	25	24
600	25	27	25
800	27	29	26

J2F

Stroke	Traveling nut type	
	U: Upright	I: Inverted
	LU	LI
100	425	315
200	525	415
300	625	515
400	725	615
500	825	715
600	925	815
800	1125	1015

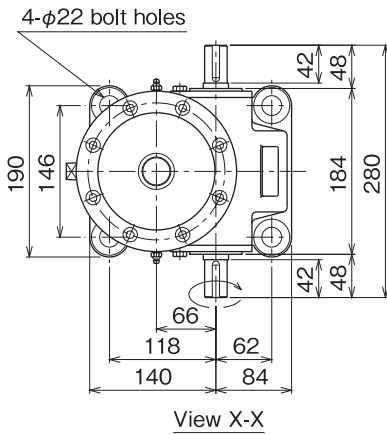
· If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.

J3F
Dimensional
Drawing

Dimensional Drawing: J3F Translating High-Lead Ball Screw Jack

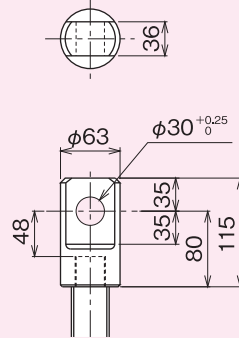
When the input shaft rotates in the direction indicated by an arrow, the lifting screw ascends.

Two-dimensional drawing

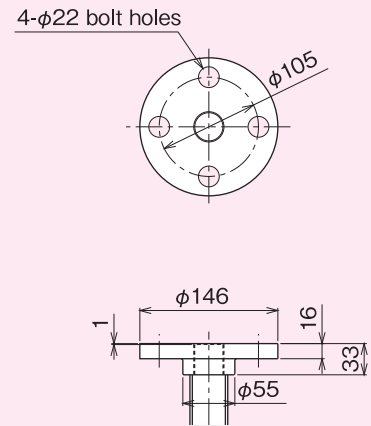


Dimensional drawing of screw end fittings

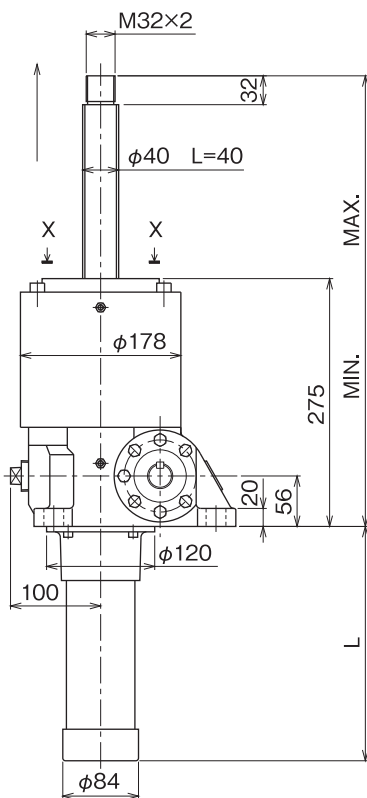
Clevis



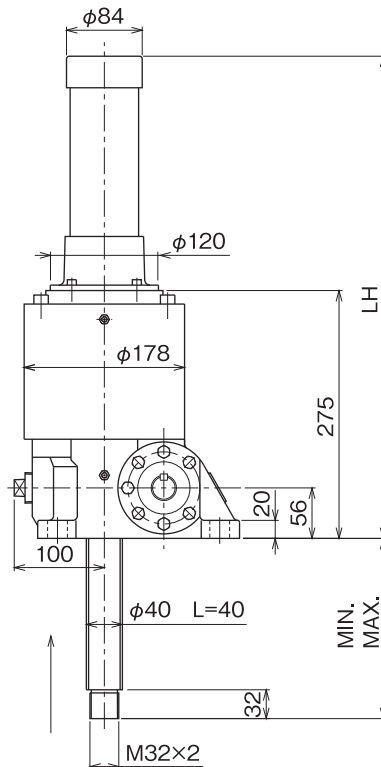
Flange



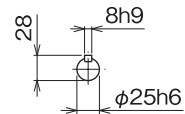
Upright



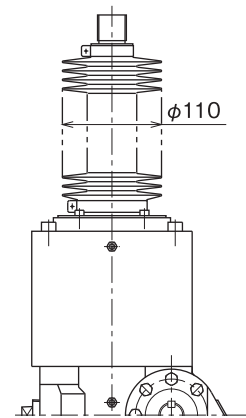
Inverted



Dimensional drawing of input shaft end



Outer diameter of bellows



J3F High-Lead Ball Screw Jack Measurement Table

Stroke	U: Upright						I: Inverted						Approx. Weight kg
	N: Without bellows			B: With bellows			N: Without bellows			B: With bellows			
	MIN.	MAX.	L	MIN.	MAX.	L	MIN.	MAX.	LH	MIN.	MAX.	LH	
100	330	430	160	365	465	260	55	155	435	90	190	535	40
200	330	530	260	365	565	360	55	255	535	90	290	635	41
300	330	630	360	400	700	460	55	355	635	125	425	735	43
400	330	730	460	400	800	560	55	455	735	125	525	835	44
500	330	830	560	400	900	660	55	555	835	125	625	935	45
600	330	930	660	440	1040	860	55	655	935	165	765	1135	46
800	330	1130	860	440	1240	1060	55	855	1135	165	965	1335	49

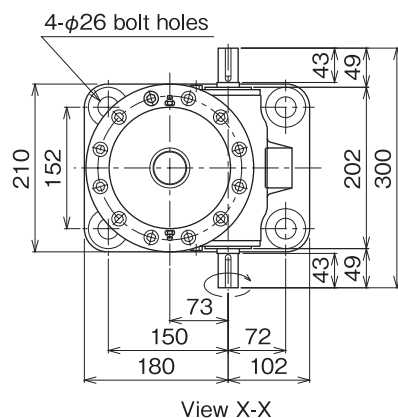
If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.
Approx. weight is for each jack without bellows.

J4F
 Dimensional
 Drawing

Dimensional Drawing: J4F Translating High-Lead Ball Screw Jack

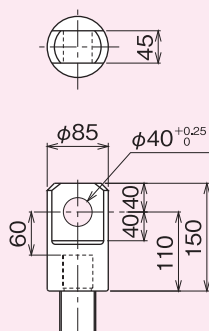
When the input shaft rotates in the direction indicated by an arrow, the lifting screw ascends.

Two-dimensional drawing

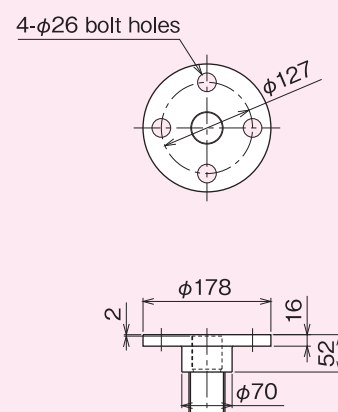


Dimensional drawing of screw end fittings

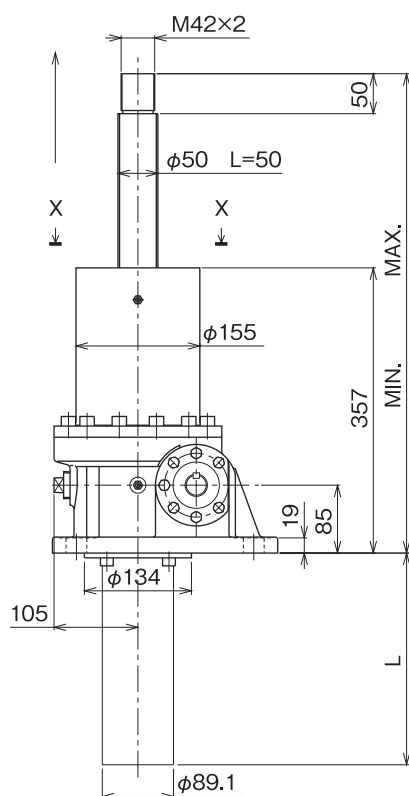
Clevis



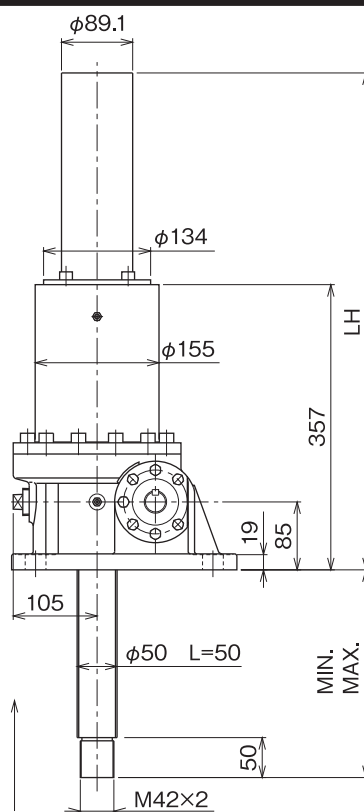
Flange



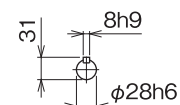
Upright



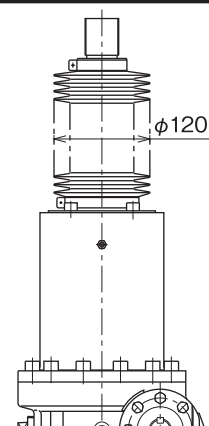
Inverted



Dimensional drawing of input shaft end



Outer diameter of bellows



J4F High-Lead Ball Screw Jack Measurement Table

Stroke	U: Upright						I: Inverted						Approx. Weight kg
	N: Without bellows			B: With bellows			N: Without bellows			B: With bellows			
	MIN.	MAX.	L	MIN.	MAX.	L	MIN.	MAX.	LH	MIN.	MAX.	LH	
100	430	530	165	465	565	265	75	175	522	110	210	622	70
200	430	630	265	465	665	365	75	275	622	110	310	722	73
300	430	730	365	500	800	465	75	375	722	145	445	822	76
400	430	830	465	500	900	565	75	475	822	145	545	922	79
500	430	930	565	500	1000	665	75	575	922	145	645	1022	81
600	430	1030	665	540	1140	860	75	675	1022	185	785	1222	84
800	430	1230	865	540	1340	1065	75	875	1222	185	985	1422	90

· If your required stroke is not shown in the above table, please consult with us, as we can manufacture what you need.
 Approx. weight is for each jack without bellows.

