



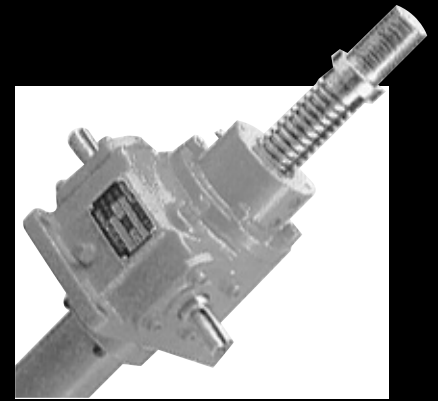
JACK



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JA/JTA/JB/JTB JAH/JBH/NX/BX

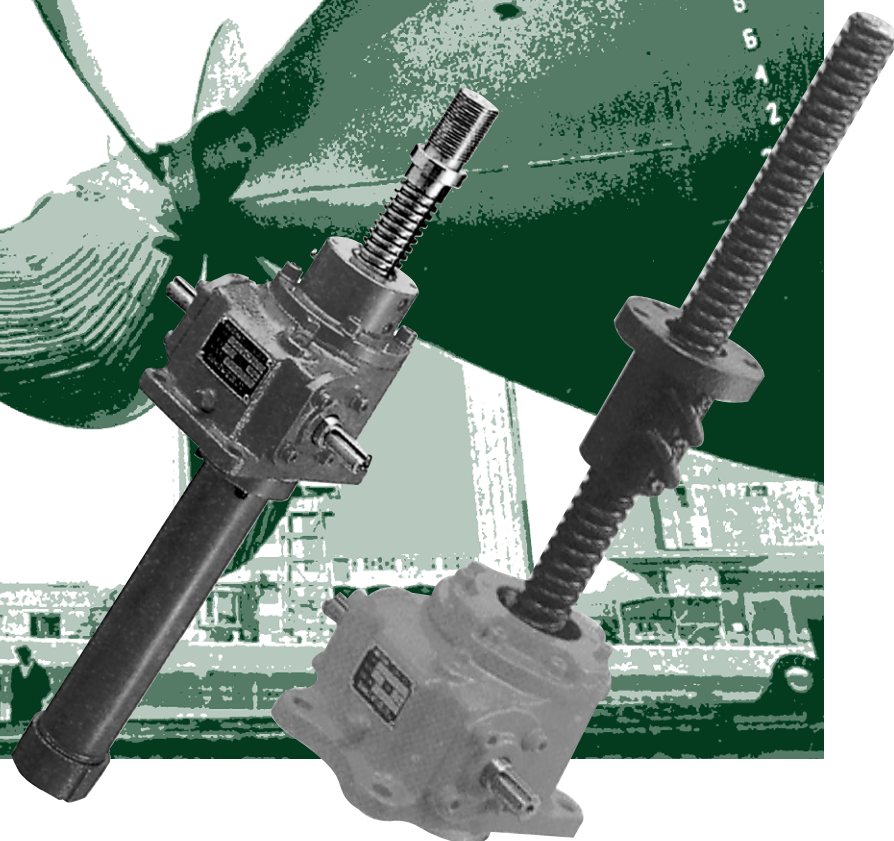
CHALLENGING THE UNLIMITED
POSSIBILITY THROUGH
AN ACCUMULATION OF
ORIGINAL TECHNOLOGY
AND KNOW-HOW
MAKISHINKO PRODUCE
THE DEPENDABLE JACKS.



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Create fostering unique technology
 Prominent jack
 Keep ahead of the industry
 Challenge the unlimited possibility



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		Bevel jack	96		

List of products

please select according to app;ocation. And requiremeent

		JA standard type	JA standard type	JB standard type
				
Type		JA	JA	JB
Screw type		Trapezoidal	Trapezoidal	Ball screw
Jack specification	Nominal capacity (KN)	2~10	25~1250	5& 10 25~1250
	Size	002~010	025~1250	005&010 025~1250
	Screw shaft direction	U&D	U&D	U&D U&D
	Input arrangement	A.B.C	A.B.C	A.B.C A.B.C
	Reduction ratio	H&L	H&L	H&L H&L
	Screw shaft end design	C.S.F	C.S.F	C.S.F C.S.F
	With bellows	●	●	● ●
	With screw stopper	●	●	● ●
Driving machine	With motor	●	●	● ●
	With geared motor	●	●	● ●
	With hydraulic motor	×	●	× ●
	With grea box	●	●	● ●
Stroke controller	With counter switch	●	●	● ●
	With cam switch	×	●	× ●
	With encoder	●	●	● ●
	With electronic counter	●	●	● ●
Feature	Trunnion bracket	●	●	● ●
	Trunnion pin metal	×	●	● ●
Lubricant method	Reducer	grease lubricant	oil bath	grease lubricant oil bath
	Screw	grease lubricant	grease lubricant	grease lubricant grease lubricant
Fittings	Self lock	yes	yes	no no
	Efficiency	low	low	high high
	Frequency	small	small	big big
Page	12~27		28~42	

● Can be manufacture ▲require meeting ×can't be manufactured or not required

※Stainless steel specification (JAS:nominal capacity 25-100KN), please consult

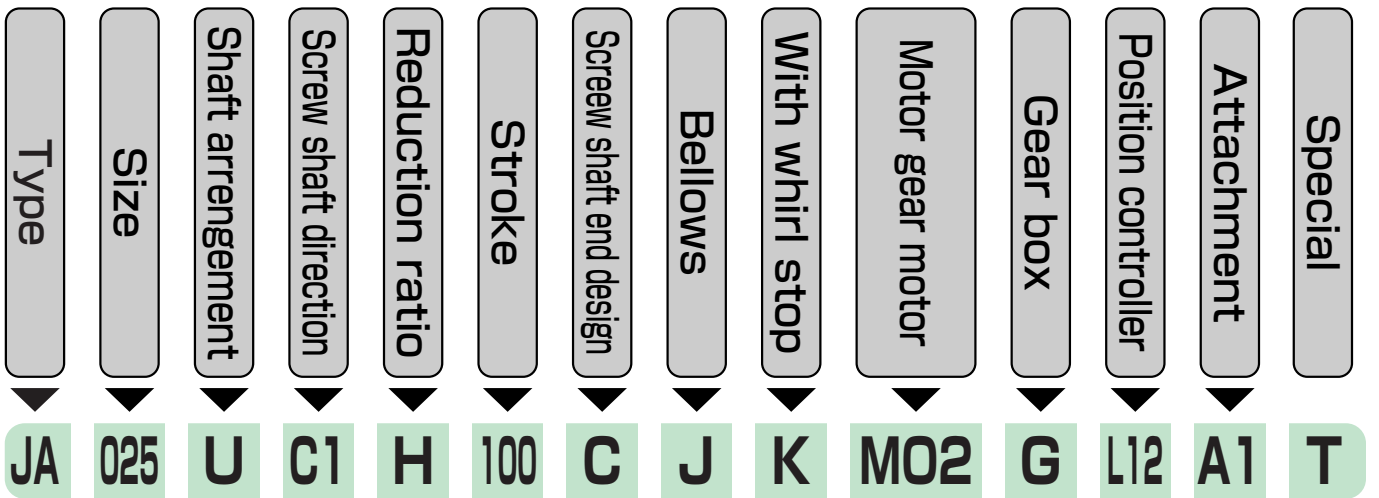
※ High lead specification (JAN&JBN:nominal capacity 25-200KN), please refer to E-78-89

※JA002 reducer is oil bath

JTA traveling nut type	JTA traveling nut type	JTB traveling nut type	JTB traveling nut type	NX·BX bevel gear jack		
JTA	JTA	JTB	JTB	NX·BX	Type	
Trapezoid	Trapezoid	Roller bearing	Roller bearing	Trapezoid & roller bearing	Screw type	
2~10	25~1250	5&10	25~200	20&50	Nominal capacity (KN)	
002~010	025~1250	005&010	025~200	19&25	Size	
U&D	U&D	U&D	U&D	U	Screw shaft direction	
A.B.C	A.B.C	A.B.C	A.B.C	A.B.C.D	Input arrangement	
H&L	H&L	H&L	H&L	2.5or2	Reduction ratio	
P	(P)	P	(P)	C.S.F	Screw shaft end design	
▲	▲	▲	▲	●	With bellows	
x	x	x	x	▲	With screw stopper	
●	●	●	●	▲	With motor	
●	●	●	●	▲	With geared motor	
x	●	x	●	x	With hydraulic motor	
●	●	●	●	x	With grea box	
●	●	●	●	▲	With counter switch	
x	●	x	●	▲	With cam switch	
●	●	●	●	▲	With encoder	
●	●	●	●	▲	With electronic counter	
●	●	●	●	x	Trunnion bracket	
x	●	●	●	x	Trunnion pin metal	
grease lubricant	oil bath	grease lubricant	oil bath	grease lubricant	Reducer	
grease lubricant	grease lubricant	grease lubricant	grease lubricant	grease lubricant	Screw	
yes	yes	no	no	yes/no	Self lock	
low	low	high	high	middle/high	Efficiency	
small	small	big	big	small/big	Frequency	
47~54		55~63		90~92		Page

● Can be manufacture ▲require meeting x can't be manufactured or not required

Nominal type



JA
JTA
JB
JTB
JAS
JAH
JBH

002
005
010
025
050
075
100
150
200
250
300
400
500
750
1000
1250

No	Without bellows
J	With bellows

No	
C	Clevis end
S	Screw end
F	Flange end
P	Plane end

mm Indication

H	Moving speed high
L	Moving speed low

No	Without whirl stop
K	With whirl stop

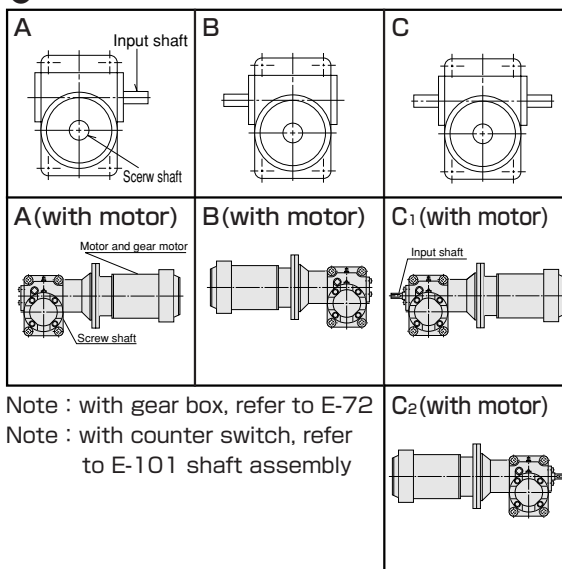
G-refer to E-71

T	Special model number
A1	lug bearing frame
A2	Lug bearing frame/lug pin

L12, 14	Counter switch
W12, 14	Counter switch
L12E	Counter switch (encoder)
W12E, 14E	Counter switch (encoder)
C12	Cam switch
C12P	Cam switch (with potential megter)
E01	Encoder

MO2~37	with motor
P60,90	with motor
MO2B~37B	With brake motor
P60B,90B	With brake motor
GM011~222	With geared motor
GP601,901	With geared motor
GM011B~222B	Gear motor (brake)
GP601B,901B	Gear motor (brake)

Type	Screw shaft direction	
Symbol	U	D
Standard type		
Traveling nut type		



Note : with gear box, refer to E-72
 Note : with counter switch, refer to E-101 shaft assembly

Nominal capacity. Reduction ratio

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Trapezoidal screw

Type	Size	Nominal capacity (kN)	Upright type	
			H	L
JA JTA JAS JAH	002	2	6	18
	005	5	6	18
	010	10	6	18
	025	25	7.67	23
	050	50	7.67	23
	075	75	7.67	23
	100	100	7.67	23
	150	150	7.67	23
	200	200	7.67	23
	250	250	8	24
	300	300	9.33	28
	400	400	10	30
	500	500	10	30
	750	750	9.67	29
	1000	1000	9.67	29
	1250	1250	10.33	31

Note: actual ratio H is one third of L ($H=L/3$)

Note: JAS type, size 025-100

Note: JAH, size 025-100]

Ball screw

Type	Size	Nominal capacity (nK)	Upright type	
			H	L
JB JBH	005	5	6	18
	010	10	6	18
	025	25	7.67	23
	050	50	7.67	23
	075	75	7.67	23
	100	100	7.67	23
	150	150	7.67	23
	200	200	7.67	23
	250	250	8	24
	300	300	9.33	28
	400	400	10	30
	500	500	10	30
	750	750	9.67	29
	1000	1000	9.67	29
	1250	1250	10.33	31
	JTB	005	5	6
010		10	6	18
025		25	7.67	23
050		50	7.67	23
075		75	7.67	23
100		100	7.67	23
150		150	7.67	23
200		200	7.67	23

Note: actual ratio H is one third of L ($H=L/3$)

Note: JBH type, size 025-200

With geared motor

Type	Motor capacity (kW)	Reduction ratio
GM011	0.1	10
GM012	0.1	20
GM013	0.1	30
GM020	0.2	5
GM021	0.2	10
GM022	0.2	20
GM023	0.2	30
GM040	0.4	5
GM041	0.4	10
GM042	0.4	20
GM043	0.4	30
GM070	0.75	5
GM071	0.75	10
GM072	0.75	20
GM073	0.75	30
GM150	1.5	5
GM151	1.5	10
GM152	1.5	20
GM153	1.5	30
GM220	2.2	5
GM221	2.2	10
GM222	2.2	20
GP601	60W	10
GP901	90W	10

With motor

Type	Motor capacity (kW)
M02	0.2
M04	0.4
M07	0.75
M15	1.5
M22	2.2
M37	3.7
P60	60W
P90	90W

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Model number selection

Required condition for selection

- (1) Load conditions
 - Push-pull force
 - Installation
 - Support condition of load
- (2) Operation conditions
 - Stroke
 - Operation speed
 - Input shaft speed
- (3) Condition of use
 - With or without screw shaft stopper
 - Prime mover
 - Number of condition (screw jack)
- (4) Actual operation conditions
 - Installation, mounting position
 - Mounting position while operate
 - Operation cycle time
 - Frequency of operation

Note: Confirm the position of filler plug and drain plug when if already decided actual operation condition and position of installation

Selection procedure

- (1) Loading condition
 - Make sure the condition of selection, select the type from the products list.
- (2) Based on basic specification, select type whose operation load is more than nominal load.
- (3) When compression load work on the jack, decide whether the selected model number of step (2) is qualified or not according to permissible shaft direction load curve.
- (4) Decide whether the selected model number is qualified according to permissible operation load velocity curve.

- (5) Calculate required power (Pw) per following formula

$$P_w = \frac{W \cdot V}{60 \cdot \eta_j} + \frac{N \cdot T_1}{9550}$$

Pw: required power (kW)

W: load of each jack (kN)

V: operation speed (m/min)

R: reduction ratio

η_j : jack efficiency (decimal)

N: input shaft speed (rpm)

T_1 : torque of jack, no load (N · m)

Operation speed

$$V = \frac{N \cdot \ell}{1000 \times R}$$

ℓ : screw pitch (mm)

R: reduction ratio

- (6) Take the transmission efficiency in the following table into the consideration when connect multiple jacks η_n

$$P_w = \frac{n \cdot W \cdot V}{60 \times \eta_j \cdot \eta_n} + \frac{N \cdot T_1 \cdot n}{9550}$$

n: number of jacks

η_n : transmission efficiency (η_n)

Transmission efficiency

(η_n)

Number of connection	2sets	3sets	4sets	n sets
Transmission efficiency(η_n)	0.94	0.91	0.88	0.97^n

In the above formula does not including no load torque and efficiency of speed reducer, gear box, therefore, in the system example on E-9, calculate power after considering these factors.

- (7) Calculate required input shaft torque, and use the jack within the value doesn't exceed permissible input shaft torque range.

$$T = \frac{9550 \cdot P_w'}{N} \text{ (N} \cdot \text{m)}$$

Necessary confirming condition for selection

JA · JTA · JB · JTB

Model number	002	005	010	025	050	075	100	150	200	250	300	400	500	750	1000	1250
Permissible input shaft torque	8	11	25	31	52	94	177	301	315	315	513	675	993	2845	3904	5303

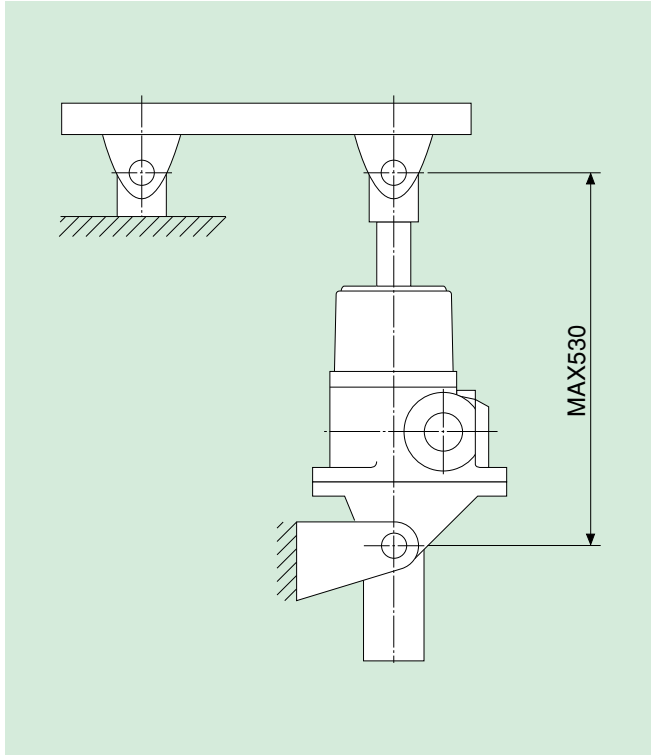
Note: Input shaft torque of jack for operation can't exceed aforesaid value.

※ 1 kN · m = 1,000 N · m (≒ 102 kgf · m)

: N · m

Example of selection

Use two sets of jacks in the following equipment, and lifting stroke is 300mm in a minute, please select the jack model number. In addition, the usage load of one is 30kN, and the jack is self lock.



- (1) Select JA type from the list of products.
- (2) According to basic specification of JA (E-14), select JA050-H whose nominal capacity is 50kN.
- (3) It is suitable since 50kN at operation speed of -0.3m/min is permissible operation load per load speed chart (E-17).
- (4) Observe curve 2 of permissible axial direction load (E-20)

$$\eta_r = 1 \quad L = 530$$

it is suitable since permissible axial direction load of JA050 is 50kN.

- (5) Operation speed $V = 300\text{mm/min}$, input shaft speed N is:

$$N = \frac{1000 \times R \cdot V}{\ell}$$

$$= \frac{1000 \times 7.67 \times 0.3}{8}$$

$$\approx 288 \text{ (rpm)}$$

ℓ : screw pitch, 8mm R: reduction ratio, 7.67

V : operation speed, 0.3m/min

- (6) The required power is:

$$P_w = \frac{n \cdot W \cdot V}{60 \cdot \eta_j \cdot \eta_n} + \frac{N \cdot T_1 \cdot n}{9550}$$

$$= \frac{2 \times 30 \times 0.3}{60 \times 0.24 \times 0.94} + \frac{288 \times 0.8 \times 2}{9550}$$

$$\approx 1.38\text{kW}$$

η_j : jack efficiency, 0.24 (JA specification table)

η_n : connection efficiency, 0.94 (connect 2 sets)

n : connected 2 sets

T_1 : no load torque. 0.8N.m

N : input speed, 288rpm

- (7) The requires input torque T is

$$T = 9550 \times \frac{P_w}{N} = \frac{9550 \times 1.38}{288}$$

$$= 45.7\text{N} \cdot \text{m} < 52\text{N} \cdot \text{m}$$

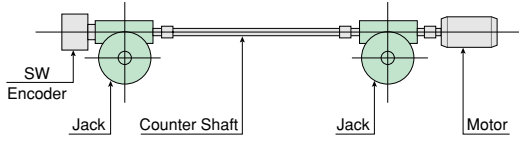
Conversion from previous unit to SI unit

$$1000\text{kgf} = 9800\text{N} = 9.8\text{kN}$$

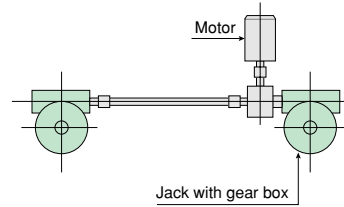
$$100\text{kgf} \cdot \text{m} = 980\text{N} \cdot \text{m} = 0.98\text{kN} \cdot \text{m}$$

System example

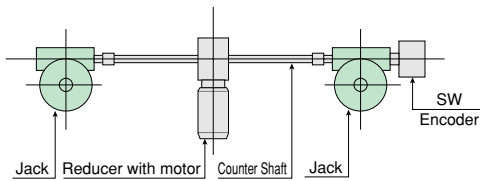
Example 1 saving space



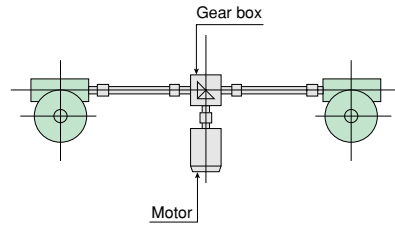
Example 5 saving power



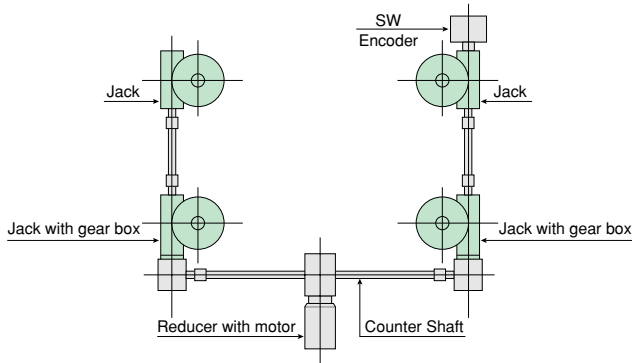
Example 2 equally distribution



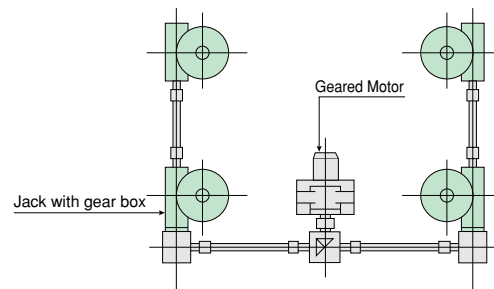
Example 6 equally distribution



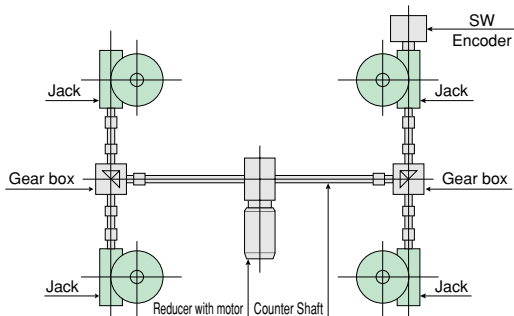
Example 3 Effectively use middle of equipment



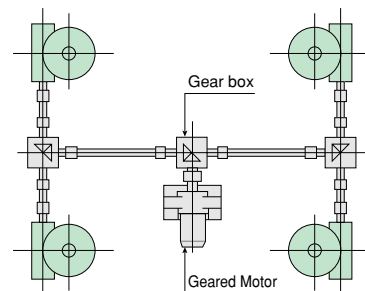
Example 7 Effectively use middle of equipment



Example 4 equally distribution of power

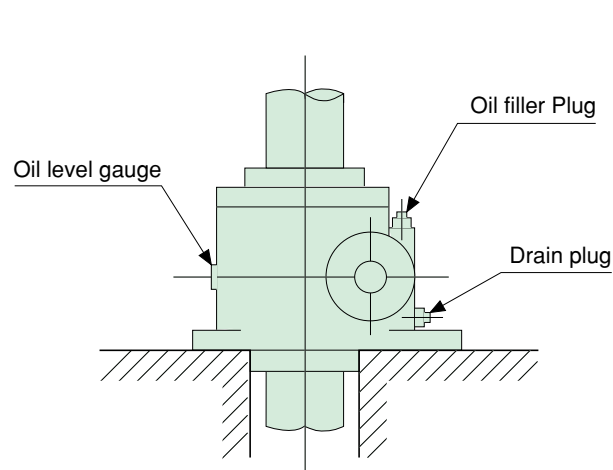


Example 8 equally distribution of power



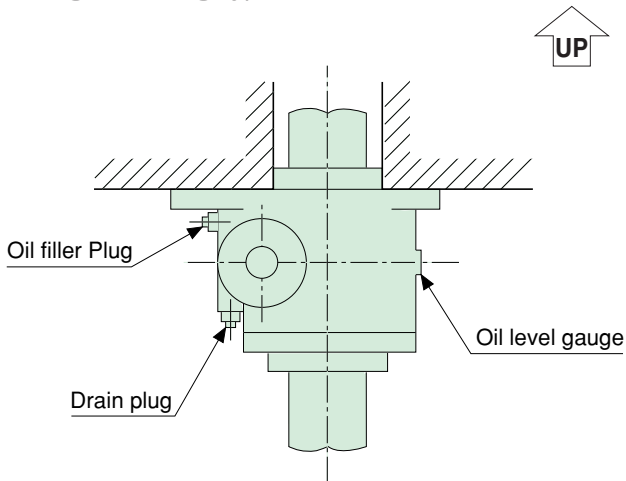
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Standard mounting

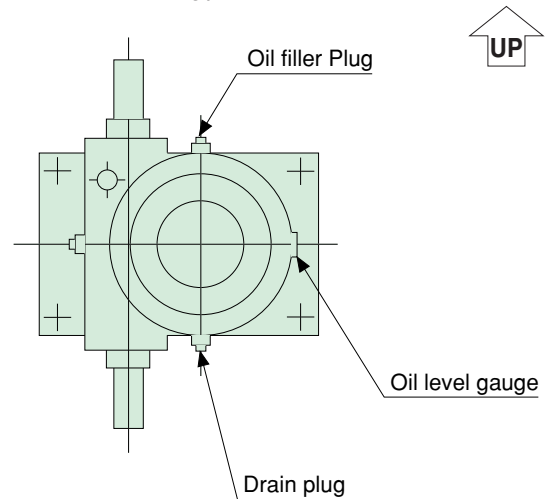


Special assemble (please send out instruction)

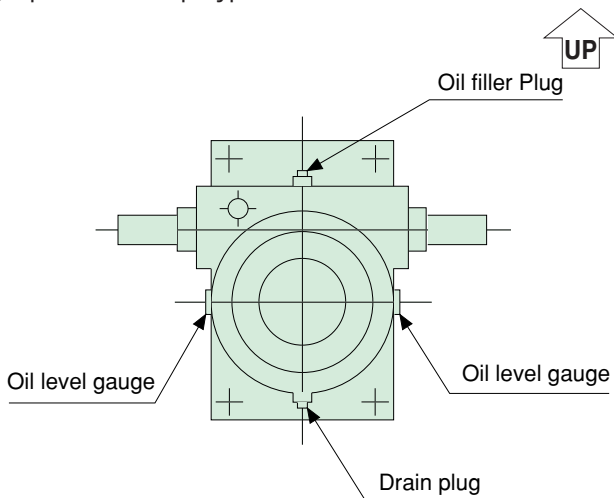
① Ceiling mounting type 01



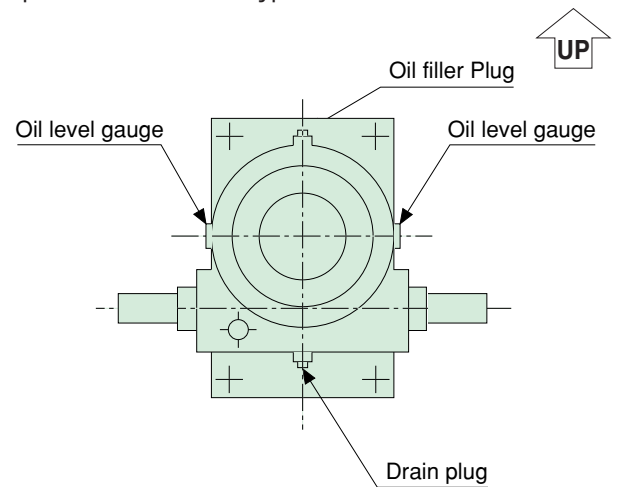
② Input shaft vertical type 02



③ Input shaft top type 03



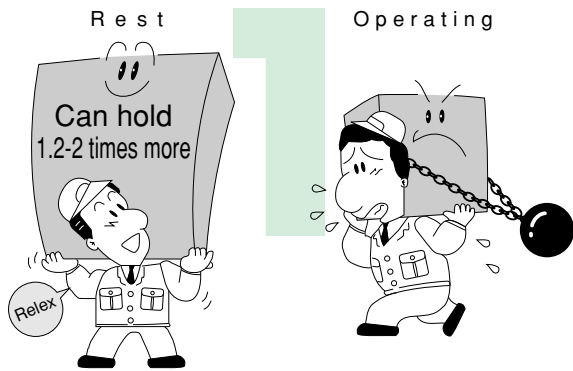
④ Input shaft bottom type 04



Screw jack Q&A-1

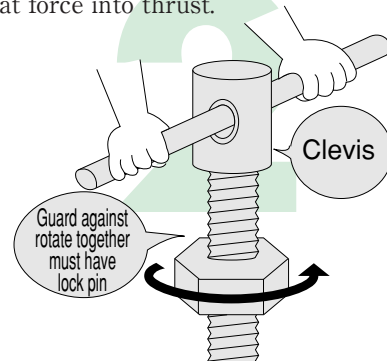
Q Permissible load of jack while rest and operating is equal or not.

A permissible load at rest is more than 1.2-2 times of operating load.



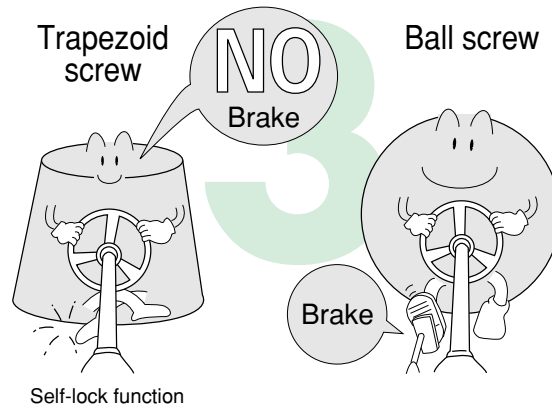
Q Why need screw shaft whirl stop

A The force to rotate toward same direction as worm wheel is acting on screw shaft. Function of whirl stop is to stop rotation of screw shaft, and to change that force into thrust.



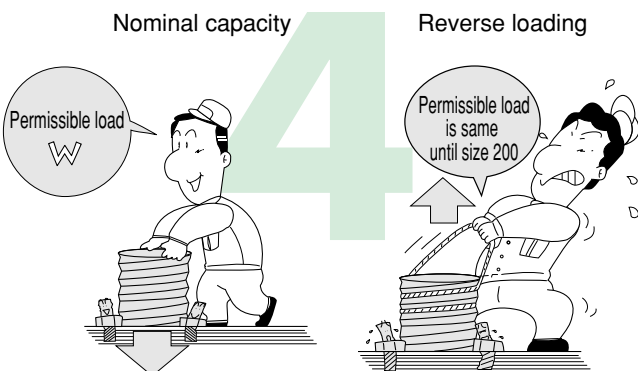
Q What is the difference between trapezoid screw and ball screw?

A Trapezoid screw has self protection (self-lock) function. It has excellent safety such as prevent falling. Efficiency of ball screw is high and can be make smaller backlash but no self-locking feature, expensive.



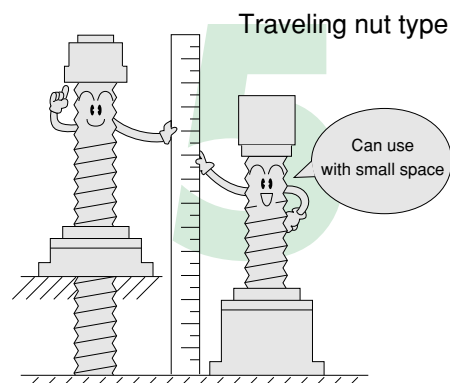
Q Push-Up type and Push-Down type, Is there any difference in permissible load even changed the direction of load

A Due to mechanism, permissible load is not same.



Q in order to minimize the installation space of screw shaft direction.

A It can be shorten the total length of jack if used traveling nut type.



JACK

Self-locking feature and safety design. Standardized the capacity of 2kN~1250kN for wide variety of application.

- It is possible to hold the screw shaft even if power failed due to effectiveness of self-locking feature of using trapezoid screw.
- Lubrication of reducer part is grease for 5kN, 10kN and oil splash method for 2kN, 25kN or more. Good for high input speed.
- Ideal bearing structure and high performance Standardized 2kN-1250kN
- Experienced in manufacturing of up to 2000kN.

J A

Self-locking feature and
safety design.
Standardized the capacity
of 2kN~1250kN
for wide variety of application

JACK

JA structure, feature

[in the case of JA002~JA010]

Screw shaft end

Many selection of connector

High precision, large screw shaft

Trapezoid screw

Ideal bearing structure

Using tapered roller bearing that can hold both radial and thrust load

High precision worm wheel

Special aluminum bronze material, high precision cut, sufficient strength

Large input shaft

Sufficient strength for connection of multiple jacks

Screw shaft guide

Screw shaft guide is provided on the worm wheel and cover to prevent fluctuation of screw.

Grease lubrication

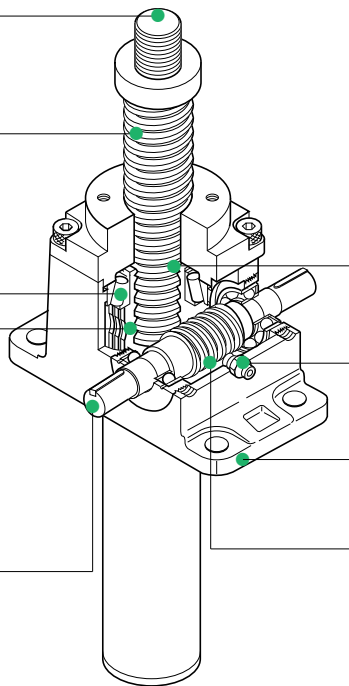
(JA002 is oil lubrication)
Easy maintenance

Light weight housing

Housing of fabricated by aluminum, light weight and compact.

High efficiency speed reducer

Design with benefit of experience in manufacturing of speed reducer



It consist of worm gear and screw jack (30 degree trapezoid screw), suitable for special heavy load, and have sufficient holding force. Worm wheel (nut) rotate by turning input shaft and that transmit rotating force into the thrust of screw shaft.

The lubrication of screw shaft is grease.

Note: for JA002, the lubrication of worm is oil.

[In the case of JA025-JA1250] ※Explanations focuses only on different points from JA002~JA010.

Ideal bearing structure

Use tapered roller bearing, in the case of heavy load, use self-aligning ball bearing.

Oil bath lubrication

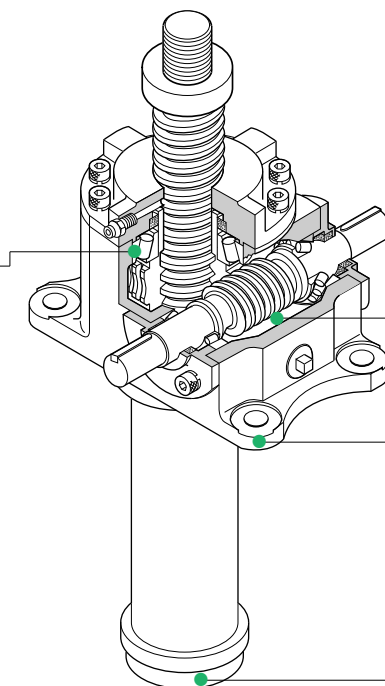
Possible in high speed operation and easy maintenance

Solid and strong housing

Housing material for above size 100 is cast steel and size 025~075 is ductile cast iron

End cap

Convenience for inspection of crew shaft



The lubrication is oil bath for worm and grease for screw shaft

JA basic specification

JAseries

Size	002	005	010	025	050	075	100	150	200	250	300	400	500	750	1000	1250		
Nominal capacity (kN)	2	5	10	25	50	75	100	150	200	250	300	400	500	750	1000	1250		
Screw shaft diameter (mm)	14	22	25	30	40	50	55	60	65	70	85	90	110	120	140	160		
Screw shaft root diameter (mm)	10.8	16.5	19.5	23.5	31.5	39.5	42.5	47.5	52.5	55	68	73	93	101	121	139		
Screw pitch (mm)	3	5	5	6	8	10	12	12	12	14	16	16	16	18	18	20		
Reduction ratio	H	6	6	6	7.67	7.67	7.67	7.67	7.67	8	9.33	10	10	9.67	9.67	10.33		
	L	18	18	18	23	23	23	23	23	24	28	30	30	29	29	31		
Travelling distance per one input shaft rotation	H (mm/rev)	0.50	0.83	0.83	0.78	1.04	1.30	1.56	1.56	1.56	1.75	1.71	1.60	1.60	1.86	1.86	1.94	
	L (mm/rev)	0.16	0.28	0.28	0.26	0.35	0.43	0.52	0.52	0.52	0.58	0.57	0.53	0.53	0.62	0.62	0.65	
Efficiency (%)	H (30rpm)	(1800rpm)	21	24	22	21	21	21	23	22	20	22	21	18	18	18	16	16
		(1800rpm)	28	29	27	26	26	27	29	27	26	27	26	22	22	22	20	19
	L (30rpm)	(1800rpm)	14	16	15	14	13	13	15	14	13	15	14	11	12	13	12	12
		(1800rpm)	22	23	22	21	22	22	24	23	22	23	22	20	19	20	18	17
Max input speed (rpm)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1200	900	900	
Standard stroke (mm)	Stroke 50-500(every 50), more than 500-1000(every 100)																	
Screw torque (N·m)	2.7	15	30	85	230	425	635	1015	1440	1975	2835	3955	5825	9580	14530	20665		
Input no load torque (N·m)	0.14	0.15	0.2	0.5	0.8	1.2	1.8	2.5	2.5	3.2	4.0	5.0	6.0	7.0	8.0	10		
Input starting torque	H (N·m)	1.4	3.2	6.9	17.0	45.6	85.9	122.2	196.7	277.2	358.5	440.8	654.8	799.4	1356.4	1999.5	2625.7	
	L (N·m)	0.8	1.8	3.8	9.7	26.3	49.9	68.0	110.4	155.1	197.0	242.8	371.2	447.3	702.3	1012.9	1314.3	
Reversing load (kN)	2	5	10	25	50	75	100	150	200	200	200	250	300	400	500	700		
Load at rest (kN)	3	8	15	30	60	80	140	170	250	300	400	500	700	900	1200	1500		
Weight (kg)	2	2.5	3.5	20	25	35	55	65	80	90	120	150	200	500	600	700		

Note: 1. Weight is rough estimate of stroke 300 mm unit 2. *mark is efficiency of max, input speed
 3. Contact us for above 1250kN capacity 4. Screw torque and input starting torque is value for nominal capacity.

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Comparison table for JA and old model number

Nominal capacity (kN)	2	5	10	20	25	40	50	60	75	100	120	150	200
JA	002	005	010		025		050		075	100		150	200
Old model number (NJ)		25	32	40		50		60		70	80		

*Type for size 25 and 32 is BJV.

Nominal capacity (kN)	150	200	250	300	350	400	500	600	750	1000	1250
JA			250	300		400	500		750	1000	1250
Old model number (NJ)	90	100	120		135		155		175	200	

Arrow indicates equivalent size, and inclined arrow indicates improved in capacity that old model number.
 (The listed value is the corresponded capacity.)

For nominal capacity

Refer to E-5

JA capacity table (reduction ratio H)

Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
002	Load(kN)	2	2	2	2	2	2	2	2	2	2
	Speed(m/min)	0.900	0.750	0.600	0.500	0.450	0.375	0.250	0.125	0.050	0.025
	Efficiency	0.276	0.273	0.271	0.268	0.266	0.264	0.258	0.249	0.240	0.235
	Lost power(k.W)	0.026	0.022	0.018	0.015	0.013	0.011	0.007	0.004	0.001	0.001
	Power(k.W)	0.135	0.114	0.091	0.077	0.069	0.058	0.040	0.020	0.008	0.004
005	Load(kN)	5	5	5	5	5	5	5	5	5	5
	Speed(m/min)	1.500	1.250	1.000	0.833	0.750	0.625	0.417	0.208	0.083	0.042
	Efficiency	0.286	0.283	0.281	0.278	0.276	0.273	0.268	0.258	0.247	0.243
	Lost power(k.W)	0.028	0.024	0.019	0.016	0.014	0.012	0.008	0.004	0.002	0.001
	Power(k.W)	0.465	0.391	0.316	0.265	0.240	0.202	0.137	0.071	0.030	0.015
010	Load(kN)	10	10	10	10	10	10	10	10	10	10
	Speed(m/min)	1.500	1.250	1.000	0.833	0.750	0.625	0.417	0.208	0.083	0.042
	Efficiency	0.266	0.262	0.259	0.257	0.256	0.254	0.248	0.238	0.227	0.223
	Lost power(k.W)	0.038	0.031	0.025	0.021	0.019	0.016	0.010	0.005	0.002	0.001
	Power(k.W)	0.979	0.826	0.669	0.562	0.507	0.427	0.291	0.151	0.063	0.032
025	Load(kN)	18.5	19.9	22.0	23.2	24.2	25	25	25	25	25
	Speed(m/min)	1.408	1.173	0.939	0.782	0.704	0.587	0.391	0.196	0.078	0.039
	Efficiency	0.264	0.260	0.256	0.253	0.251	0.249	0.243	0.232	0.220	0.215
	Lost power(k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power(k.W)	1.741	1.574	1.408	1.249	1.179	1.020	0.698	0.364	0.153	0.079
050	Load(kN)	23.6	25.2	27.4	29.9	30.9	32.7	38.0	47.5	50	50
	Speed(m/min)	1.877	1.565	1.252	1.043	0.939	0.782	0.522	0.261	0.104	0.052
	Efficiency	0.264	0.262	0.259	0.255	0.253	0.250	0.244	0.233	0.219	0.212
	Lost power(k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power(k.W)	2.946	2.629	2.313	2.128	1.991	1.773	1.396	0.907	0.405	0.209
075	Load(kN)	28.9	31.3	34.0	36.6	38.3	40.0	47.5	59.3	74.3	75
	Speed(m/min)	2.347	1.956	1.565	1.304	1.173	0.978	0.652	0.326	0.130	0.065
	Efficiency	0.266	0.263	0.261	0.258	0.255	0.251	0.245	0.234	0.220	0.211
	Lost power(k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power(k.W)	4.480	4.066	3.555	3.217	3.046	2.691	2.167	1.409	0.746	0.393
100	Load(kN)	44.3	48.1	52.4	56.3	58.8	62.7	73.1	91.3	100	100
	Speed(m/min)	2.816	2.347	1.877	1.565	1.408	1.173	0.782	0.391	0.156	0.078
	Efficiency	0.288	0.286	0.283	0.281	0.278	0.275	0.268	0.257	0.244	0.235
	Lost power(k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power(k.W)	7.551	6.871	6.019	5.405	5.125	4.602	3.642	2.358	1.086	0.565
150	Load(kN)	56.6	61.2	67.2	71.2	74.9	80.3	93.3	116.7	147.0	150
	Speed(m/min)	2.816	2.347	1.877	1.565	1.408	1.173	0.782	0.391	0.156	0.078
	Efficiency	0.272	0.269	0.266	0.264	0.264	0.260	0.253	0.242	0.229	0.219
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	10.237	9.284	8.215	7.288	6.906	6.244	4.950	3.205	1.701	0.905
200	Load(kN)	67.9	73.4	80.6	85.4	89.9	96.3	112.0	140.0	176.4	200
	Speed(m/min)	2.816	2.347	1.877	1.565	1.408	1.173	0.782	0.391	0.156	0.078
	Efficiency	0.256	0.254	0.251	0.249	0.248	0.245	0.238	0.228	0.216	0.207
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	12.900	11.709	10.369	9.204	8.726	7.894	6.265	4.062	2.157	1.274
250	Load(kN)	77.9	93.5	105.9	113.1	117.7	126.2	146.7	183.7	233.6	250
	Speed(m/min)	3.150	2.625	2.100	1.750	1.575	1.313	0.875	0.438	0.175	0.088
	Efficiency	0.273	0.271	0.269	0.267	0.266	0.263	0.255	0.245	0.232	0.223
	Lost power(k.W)	0.603	0.503	0.402	0.335	0.302	0.251	0.168	0.084	0.034	0.017
	Power(k.W)	15.571	15.562	14.208	12.714	11.938	10.770	8.551	5.548	2.968	1.652
300	Load(kN)	100.0	109.7	119.3	127.5	134.4	141.7	165.2	206.7	259.7	300
	Speed(m/min)	3.087	2.572	2.058	1.715	1.543	1.286	0.857	0.429	0.171	0.086
	Efficiency	0.261	0.260	0.257	0.255	0.254	0.251	0.244	0.235	0.222	0.213
	Lost power(k.W)	0.754	0.628	0.503	0.419	0.377	0.314	0.209	0.105	0.042	0.021
	Power(k.W)	20.452	18.734	16.435	14.716	13.985	12.409	9.883	6.401	3.383	2.035
400	Load(kN)	138.6	156.2	168.7	178.9	187.7	198.9	234.4	293.0	368.8	400
	Speed(m/min)	2.880	2.400	1.920	1.600	1.440	1.200	0.800	0.400	0.160	0.080
	Efficiency	0.224	0.223	0.221	0.219	0.218	0.216	0.210	0.201	0.189	0.181
	Lost power(k.W)	0.942	0.785	0.628	0.524	0.471	0.393	0.262	0.131	0.052	0.026
	Power(k.W)	30.659	28.814	25.040	22.310	21.158	18.816	15.154	9.834	5.261	2.980
500	Load(kN)	142.4	170.9	213.6	250.3	264.7	281.5	327.2	411.5	500	500
	Speed(m/min)	2.880	2.400	1.920	1.600	1.440	1.200	0.800	0.400	0.160	0.080
	Efficiency	0.217	0.216	0.215	0.213	0.212	0.211	0.205	0.198	0.188	0.181
	Lost power(k.W)	1.131	0.942	0.754	0.628	0.565	0.471	0.314	0.157	0.063	0.031
	Power(k.W)	32.598	32.523	32.604	32.004	30.539	27.199	21.574	13.984	7.148	3.712
750	Load(kN)	131.8	158.2	197.8	237.3	263.7	316.4	425.8	531.4	671.6	750
	Speed(m/min)	3.351	2.792	2.234	1.861	1.675	1.396	0.931	0.465	0.186	0.093
	Efficiency	0.223	0.222	0.221	0.219	0.218	0.217	0.212	0.205	0.194	0.187
	Lost power(k.W)	1.319	1.099	0.880	0.733	0.660	0.550	0.366	0.183	0.073	0.037
	Power(k.W)	34.368	34.268	34.168	34.306	34.398	34.538	31.470	20.330	10.805	6.270
1000	Load(kN)	164.6	197.6	247.0	296.4	329.3	395.1	538.7	674.3	849.5	1000
	Speed(m/min)	3.351	2.792	2.234	1.861	1.675	1.396	0.931	0.465	0.186	0.093
	Efficiency	0.198	0.198	0.197	0.196	0.195	0.193	0.190	0.183	0.174	0.168
	Lost power(k.W)	1.508	1.257	1.005	0.838	0.754	0.628	0.419	0.209	0.084	0.042
	Power(k.W)	47.933	47.793	47.710	47.768	47.970	48.192	44.351	28.767	15.200	9.277
1250	Load(kN)	203.5	244.2	305.3	366.4	407.1	488.5	679.8	850.9	1079.2	1250
	Speed(m/min)	3.485	2.904	2.323	1.936	1.742	1.452	0.968	0.484	0.194	0.097
	Efficiency	0.194	0.194	0.193	0.192	0.191	0.190	0.187	0.180	0.172	0.166
	Lost power(k.W)	1.885	1.571	1.257	1.047	0.942	0.785	0.524	0.262	0.105	0.052
	Power(k.W)	62.812	62.571	62.476	62.487	62.755	63.050	59.071	38.416	20.346	12.217

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JA capacity table (reduction ratio L)

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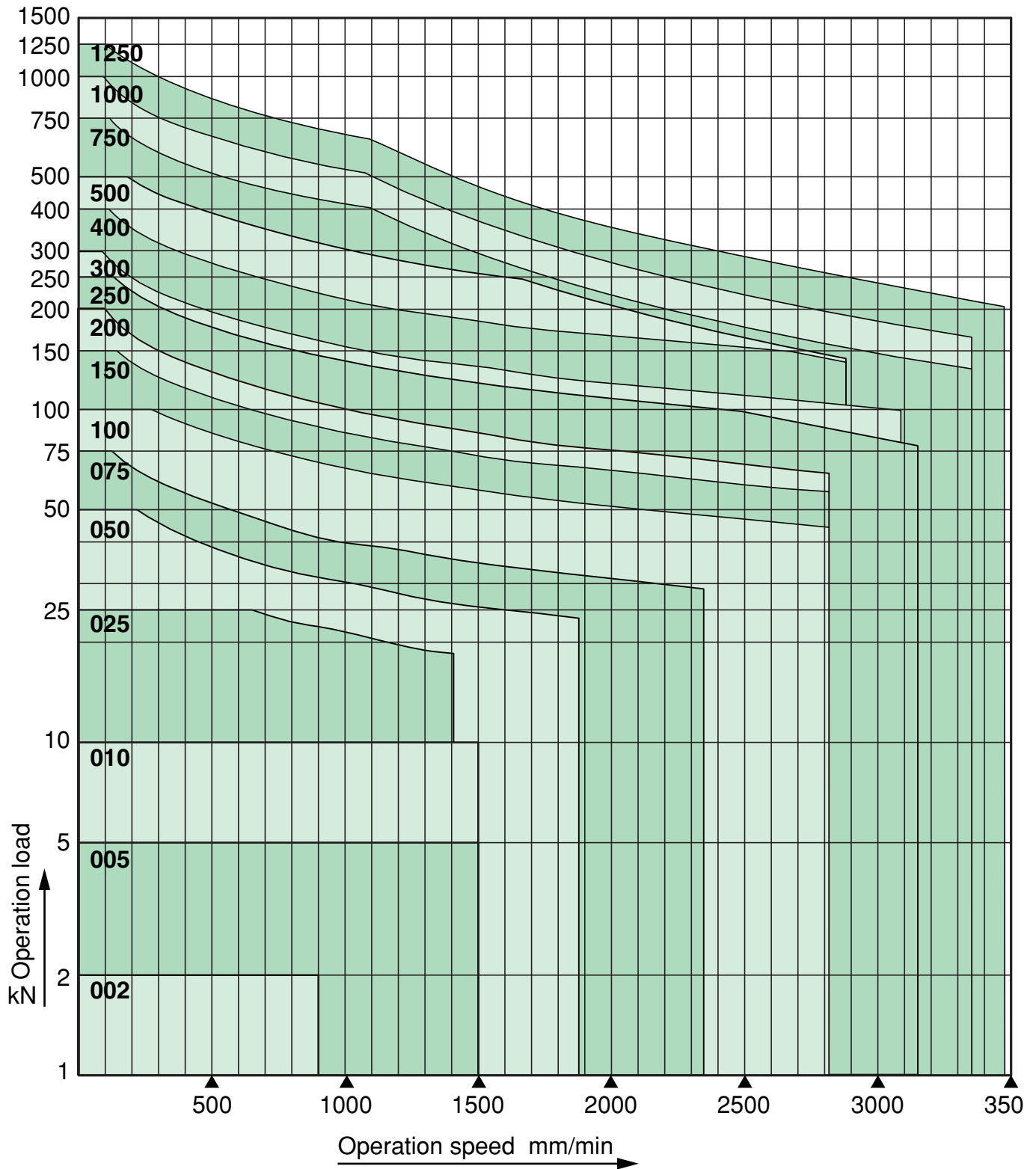
Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
002	Load(kN)	2	2	2	2	2	2	2	2	2	2
	Speed(m/min)	0.300	0.250	0.200	0.167	0.150	0.125	0.083	0.042	0.017	0.008
	Efficiency	0.223	0.219	0.215	0.209	0.207	0.202	0.194	0.180	0.167	0.161
	Lost power(k.W)	0.026	0.022	0.018	0.015	0.013	0.011	0.007	0.004	0.001	0.001
	Power(k.W)	0.071	0.060	0.049	0.041	0.037	0.032	0.022	0.011	0.005	0.002
005	Load(kN)	5	5	5	5	5	5	5	5	5	5
	Speed(m/min)	0.500	0.417	0.333	0.278	0.250	0.208	0.139	0.069	0.028	0.014
	Efficiency	0.230	0.225	0.221	0.216	0.213	0.208	0.199	0.184	0.170	0.164
	Lost power(k.W)	0.028	0.024	0.019	0.016	0.014	0.012	0.008	0.004	0.002	0.001
	Power(k.W)	0.209	0.178	0.145	0.123	0.112	0.095	0.066	0.035	0.015	0.008
010	Load(kN)	10	10	10	10	10	10	10	10	10	10
	Speed(m/min)	0.500	0.417	0.333	0.278	0.250	0.208	0.139	0.069	0.028	0.014
	Efficiency	0.218	0.212	0.206	0.203	0.201	0.196	0.187	0.173	0.158	0.153
	Lost power(k.W)	0.038	0.031	0.025	0.021	0.019	0.016	0.010	0.005	0.002	0.001
	Power(k.W)	0.421	0.359	0.294	0.249	0.226	0.193	0.134	0.072	0.031	0.016
025	Load(kN)	19.8	21.4	23.0	24.4	25	25	25	25	25	25
	Speed(m/min)	0.470	0.391	0.313	0.261	0.235	0.196	0.130	0.065	0.026	0.013
	Efficiency	0.214	0.207	0.199	0.194	0.192	0.189	0.178	0.163	0.146	0.140
	Lost power(k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power(k.W)	0.819	0.755	0.667	0.599	0.557	0.471	0.332	0.180	0.079	0.041
050	Load(kN)	26.2	27.6	30.2	31.8	32.8	35.2	39.8	47.2	50	50
	Speed(m/min)	0.626	0.522	0.417	0.348	0.313	0.261	0.174	0.087	0.035	0.017
	Efficiency	0.215	0.211	0.204	0.197	0.194	0.189	0.180	0.164	0.145	0.137
	Lost power(k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power(k.W)	1.422	1.261	1.132	1.019	0.959	0.872	0.683	0.439	0.208	0.110
075	Load(kN)	32.7	34.9	38.1	40.4	41.6	44.2	50.4	60.0	74.0	75
	Speed(m/min)	0.783	0.652	0.522	0.435	0.391	0.326	0.217	0.109	0.043	0.022
	Efficiency	0.218	0.213	0.208	0.202	0.198	0.191	0.182	0.165	0.146	0.135
	Lost power(k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power(k.W)	2.181	1.971	1.743	1.574	1.487	1.351	1.069	0.691	0.380	0.207
100	Load(kN)	47.4	50.7	55.4	58.8	60.6	64.4	73.7	87.4	100	100
	Speed(m/min)	0.939	0.783	0.626	0.522	0.470	0.391	0.261	0.130	0.052	0.026
	Efficiency	0.243	0.238	0.233	0.228	0.223	0.217	0.206	0.189	0.170	0.157
	Lost power(k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power(k.W)	3.396	3.060	2.706	2.429	2.294	2.080	1.645	1.054	0.531	0.286
150	Load(kN)	61.2	65.8	70.3	76.0	78.7	84.1	94.9	113.7	141.0	150
	Speed(m/min)	0.939	0.783	0.626	0.522	0.470	0.391	0.261	0.130	0.052	0.026
	Efficiency	0.231	0.225	0.219	0.216	0.214	0.206	0.194	0.177	0.158	0.146
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	4.620	4.201	3.658	3.328	3.114	2.855	2.259	1.459	0.800	0.461
200	Load(kN)	73.4	78.9	84.3	91.2	94.4	101.0	114.0	136.4	169.3	190.6
	Speed(m/min)	0.939	0.783	0.626	0.522	0.470	0.391	0.261	0.130	0.052	0.026
	Efficiency	0.218	0.212	0.207	0.203	0.202	0.195	0.183	0.167	0.149	0.137
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	5.751	5.240	4.570	4.164	3.899	3.581	2.840	1.839	1.012	0.616
250	Load(kN)	95.0	102.0	110.1	117.8	121.9	130.8	146.8	175.8	218.6	245.9
	Speed(m/min)	1.050	0.875	0.700	0.583	0.525	0.438	0.292	0.146	0.058	0.029
	Efficiency	0.234	0.230	0.224	0.220	0.218	0.212	0.199	0.182	0.163	0.151
	Lost power(k.W)	0.603	0.503	0.402	0.335	0.302	0.251	0.168	0.084	0.034	0.017
	Power(k.W)	7.703	6.984	6.146	5.541	5.197	4.758	3.754	2.428	1.335	0.810
300	Load(kN)	107.5	113.5	123.8	131.3	138.3	147.3	166.4	196.2	243.0	270.7
	Speed(m/min)	1.029	0.857	0.686	0.571	0.514	0.429	0.286	0.143	0.057	0.029
	Efficiency	0.224	0.220	0.214	0.210	0.208	0.202	0.190	0.174	0.156	0.144
	Lost power(k.W)	0.754	0.628	0.503	0.419	0.377	0.314	0.209	0.105	0.042	0.021
	Power(k.W)	8.991	8.009	7.119	6.373	6.063	5.512	4.380	2.783	1.526	0.917
400	Load(kN)	156.7	170.6	180.9	195.0	201.6	216.7	245.4	291.7	361.2	400
	Speed(m/min)	0.960	0.800	0.640	0.533	0.480	0.400	0.267	0.133	0.053	0.027
	Efficiency	0.190	0.188	0.184	0.179	0.177	0.174	0.162	0.148	0.130	0.119
	Lost power(k.W)	0.942	0.785	0.628	0.524	0.471	0.393	0.262	0.131	0.052	0.026
	Power(k.W)	14.155	12.891	11.137	10.208	9.589	8.703	6.985	4.513	2.523	1.517
500	Load(kN)	193.2	211.5	223.6	242.0	249.3	267.6	303.5	361.7	447.6	500
	Speed(m/min)	0.960	0.800	0.640	0.533	0.480	0.400	0.267	0.133	0.053	0.027
	Efficiency	0.186	0.185	0.181	0.177	0.175	0.173	0.162	0.150	0.132	0.122
	Lost power(k.W)	1.131	0.942	0.754	0.628	0.565	0.471	0.314	0.157	0.063	0.031
	Power(k.W)	17.716	16.201	13.901	12.748	11.938	10.812	8.623	5.533	3.071	1.852
750	Load(kN)	275.1	297.5	318.7	343.4	355.8	378.7	432.1	517.7	639.9	728.0
	Speed(m/min)	1.117	0.931	0.745	0.621	0.559	0.466	0.310	0.155	0.062	0.031
	Efficiency	0.197	0.195	0.193	0.189	0.187	0.183	0.175	0.161	0.144	0.134
	Lost power(k.W)	1.319	1.099	0.880	0.733	0.660	0.550	0.366	0.183	0.073	0.037
	Power(k.W)	27.378	24.804	21.373	19.549	18.410	16.568	13.167	8.475	4.668	2.855
1000	Load(kN)	351.4	378.1	409.2	434.4	455.8	483.2	553.9	664.8	822.0	934.3
	Speed(m/min)	1.117	0.931	0.745	0.621	0.559	0.466	0.310	0.155	0.062	0.031
	Efficiency	0.176	0.175	0.173	0.171	0.169	0.166	0.159	0.147	0.132	0.123
	Lost power(k.W)	1.508	1.257	1.005	0.838	0.754	0.628	0.419	0.209	0.084	0.042
	Power(k.W)	38.683	34.770	30.296	27.187	25.912	23.234	18.444	11.934	6.517	3.980
1250	Load(kN)	447.8	480.2	516.9	553.2	582.2	613.6	699.7	845.1	1043.5	1186.1
	Speed(m/min)	1.161	0.968	0.774	0.645	0.581	0.484	0.323	0.161	0.065	0.032
	Efficiency	0.173	0.173	0.171	0.169	0.167	0.164	0.158	0.145	0.132	0.122
	Lost power(k.W)	1.885	1.571	1.257	1.047	0.942	0.785	0.524	0.262	0.105	0.052
	Power(k.W)	51.861	46.471	40.288	36.284	34.690	30.967	24.311	15.884	8.621	5.258

JACK

Allowable operation load • Operation Speed

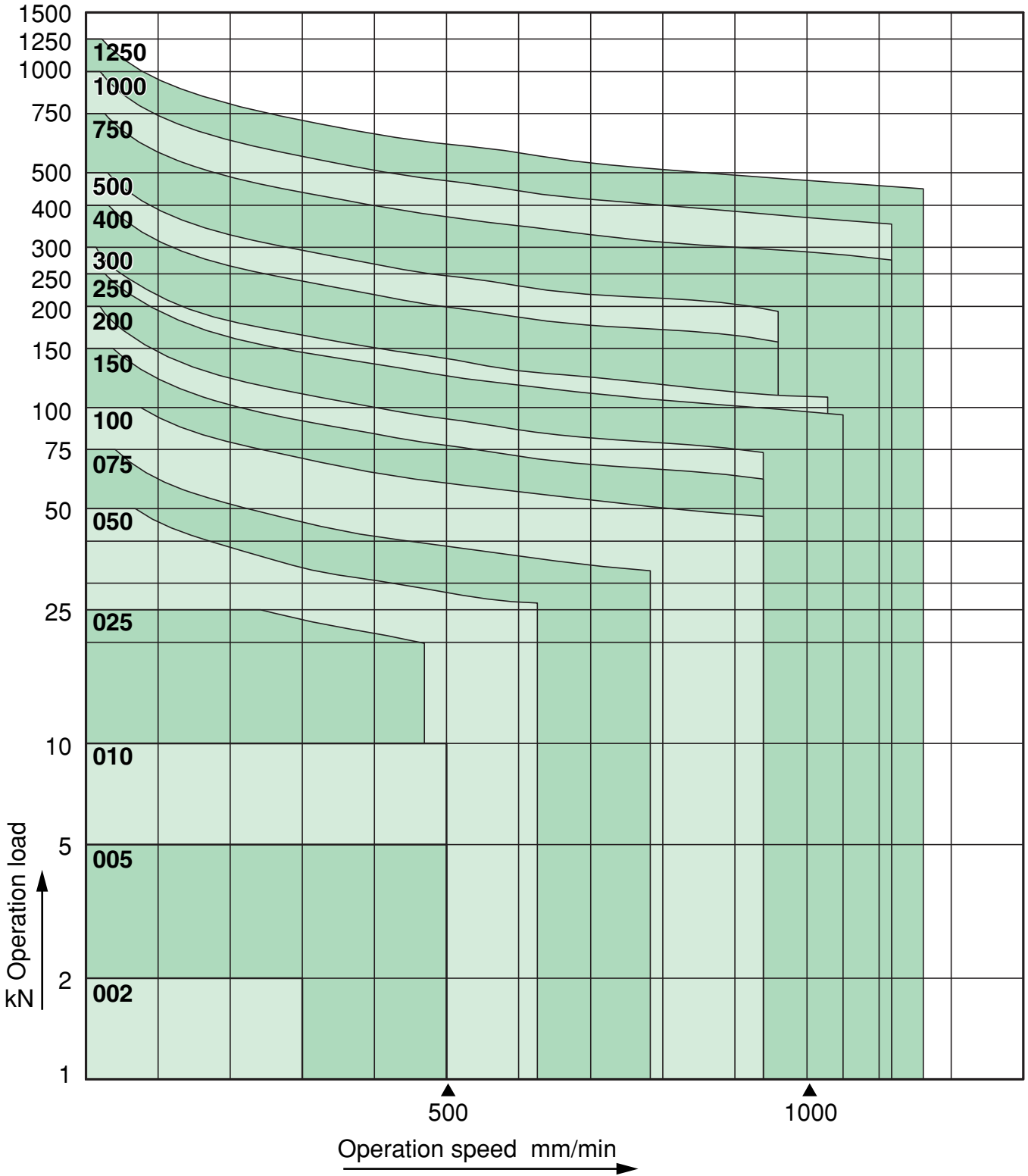
Please use within the range of load velocity load.

Load • Velocity chart(reduction ratio H)



JACK

Load · Velocity chart(reduction ratio L)



JACK

JA Allowable axial direction load

Screw jack, depend on application, must prevent effect of buckling on screw, there is limitation of apply of the axial direction load.

Allowable bucking-load can be calculated by the following formula.

$$W = \frac{n_f \cdot \pi^2 \cdot E \cdot I \cdot \alpha}{L^2} \text{ (Eulers formula)}$$

W:permissible bucking Load(N)

E :vertical modulus elasticity factor 2.06×10^5 (N/mm²)

I :minimum sectional secondary moment of screw shaft(mm⁴)

$$I = \frac{\pi d^4}{64}$$

D:screw shaft root diameter(mm)

L :shaft supporting length(mm)

n_f :factor by installation method

Fixed-free $n_f = 1/4$ (0.25)

Supported-supported $n_f = 1$

Fixed-supported $n_f = 2$

α : safety factor 0.25

Example of calculation

Jack size JA050

From the basic specification, screw shaft root diameter $d=31.5$ mm, minimum sectional secondary moment of screw shaft is,

$$I = \frac{\pi \times 31.5^4}{64} = 48329 \text{ (mm}^4\text{)}$$

Shaft supporting length $L=1000$ (mm)

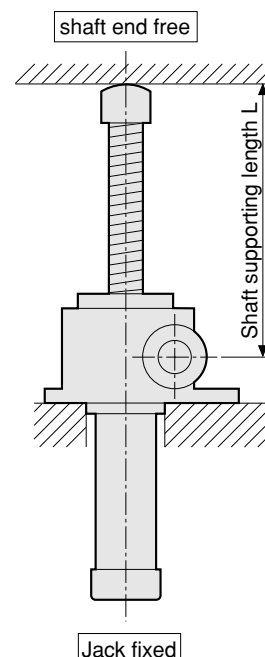
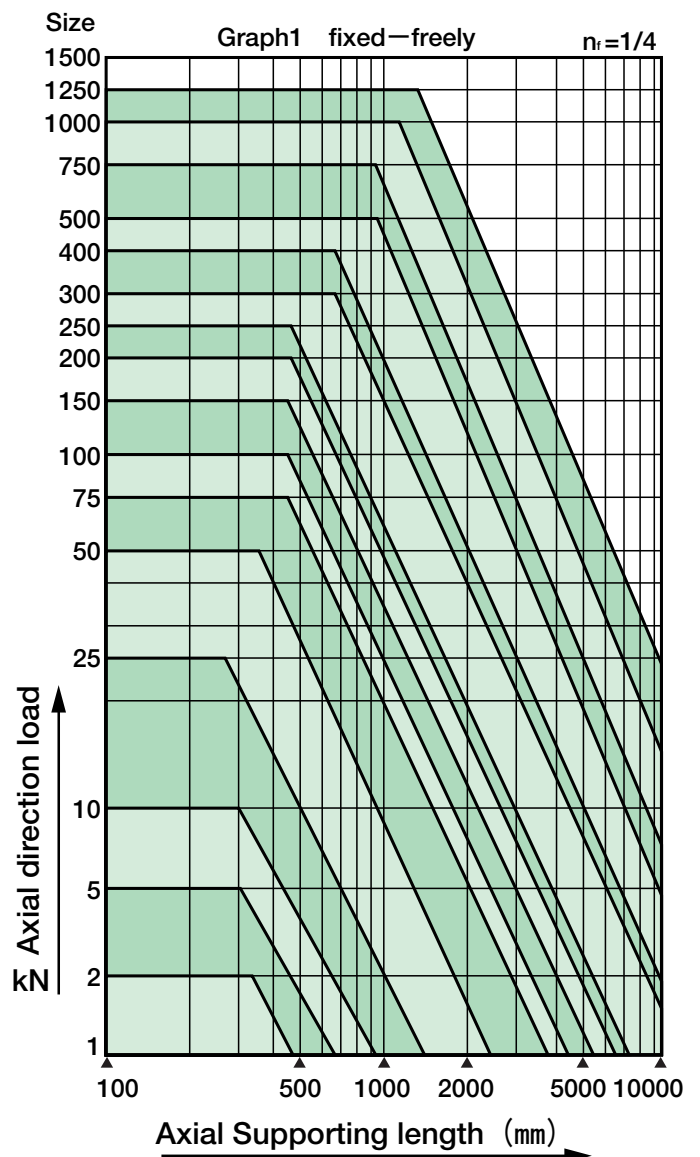
Installation method: fixed-free $n_f = 1/4$

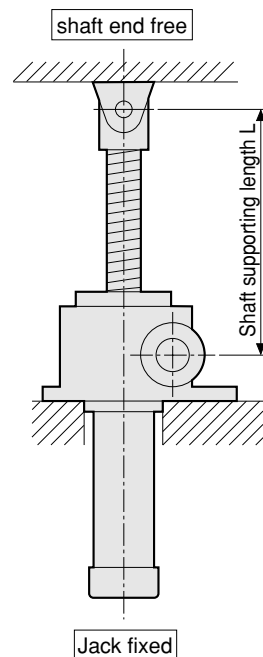
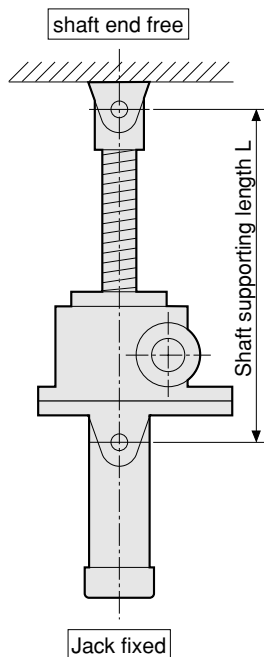
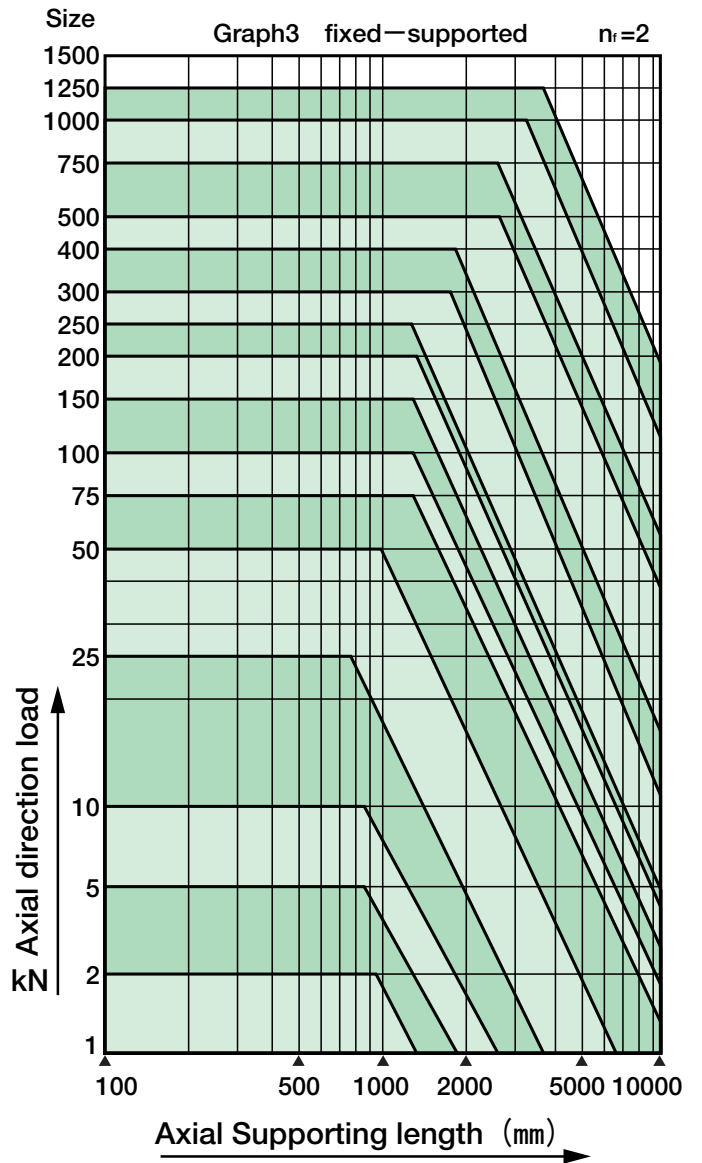
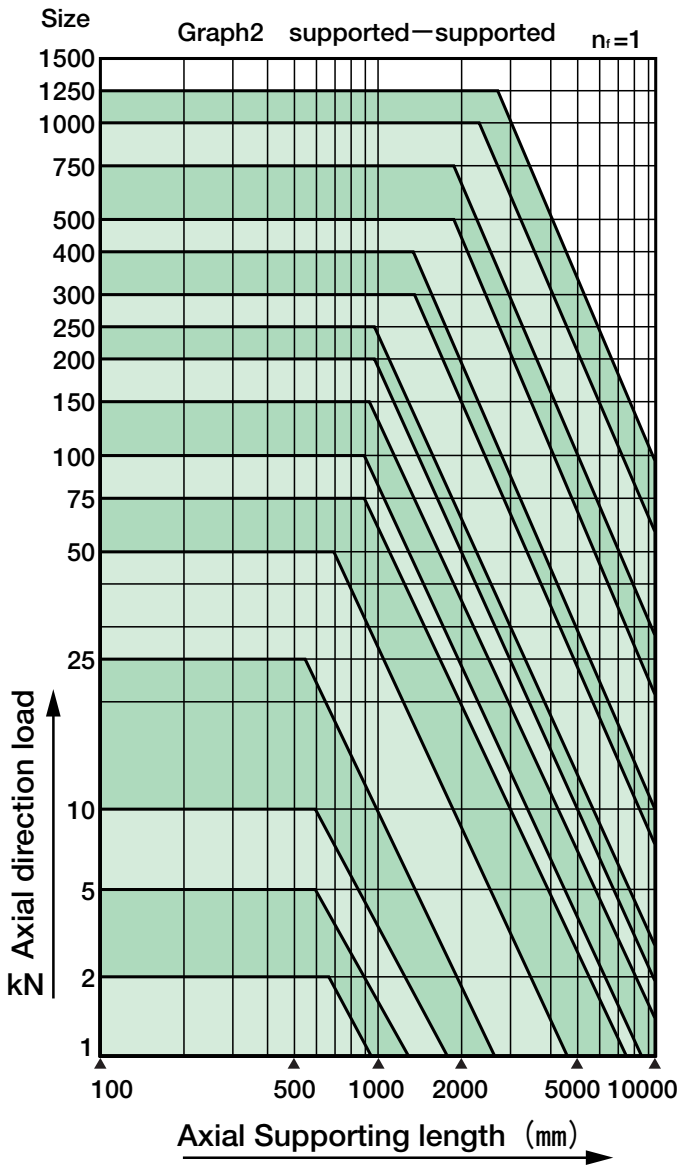
Permissible bucking load

$$W = \frac{0.25 \times 3.14^2 \times 2.06 \times 10^5 \times 48329 \times 0.25}{1000^2}$$

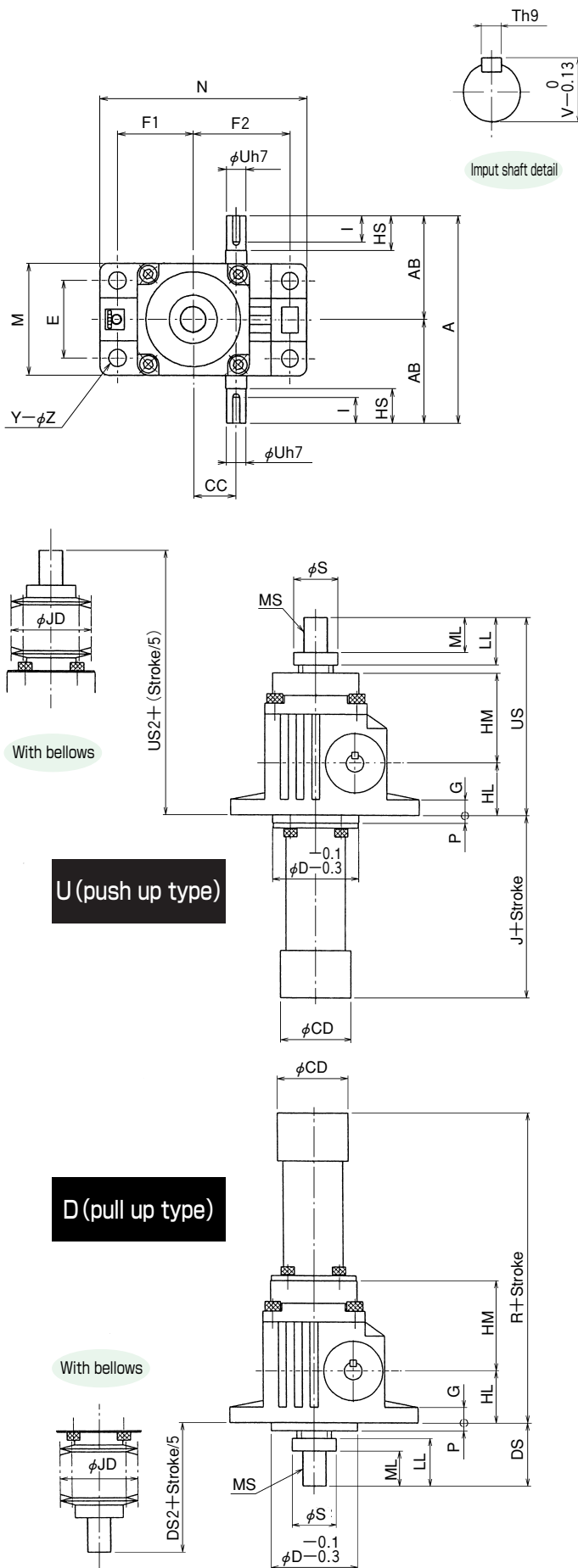
$$\approx 6135 \text{ (N)} = 6.1 \text{ (kN)}$$

In addition, in the case of permissible bucking load exceeds nominal capacity, the permissible axial direction load should be limited to nominal capacity.





JA005&JA010 Outline dimensions



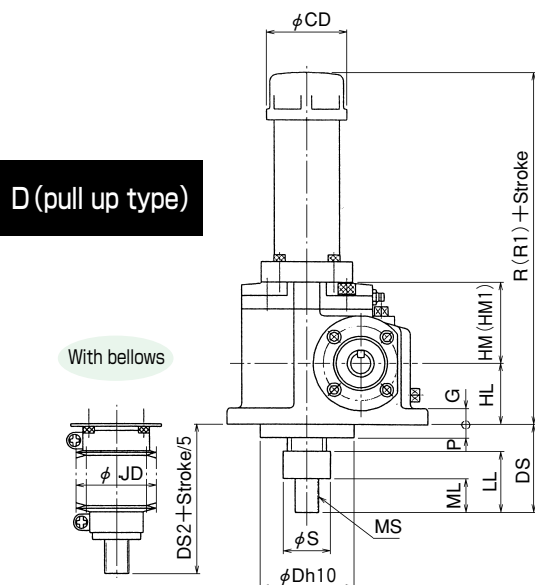
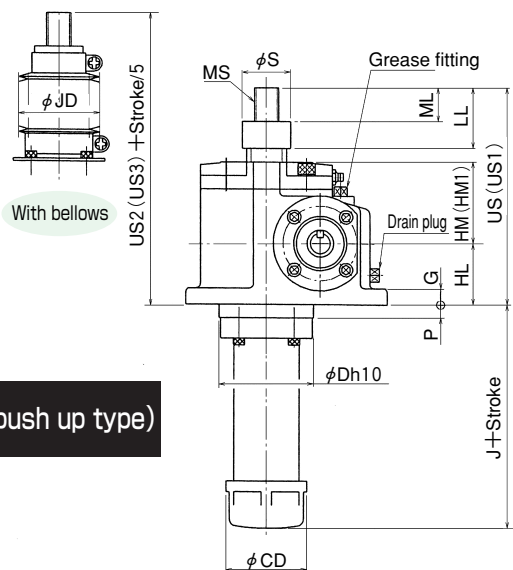
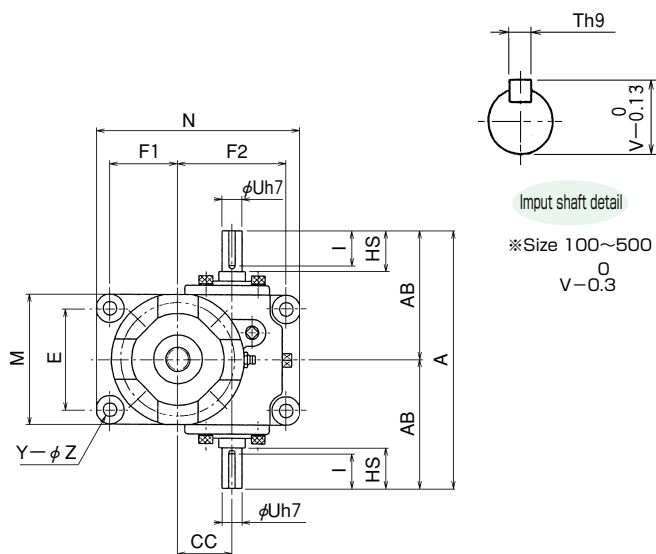
Standard dimension

Size	005	010
A	120	140
AB	60	70
HL	33	37
HM	57	63
D	55	65
CC	25	32
E	45	55
F1	44	49
F2	56	66
M	65	75
N	120	135
HS	20	25
U	11	14
T	4	5
V	12.5	16
I	15	20
G	10	10
Z	10	10
Y	4	4
S	28	30
CD	45	49
P	5	5
DS	40	45
R	120	130
US	125	140
J	35	35
LL	30	35
ML	22	25
MS	M15×1	M17×1

Dimension with bellows

Size	005	010
US2	137	155
DS2	52	60
JD	50	55

※For dimension of JA002, please refer to E-26.



Standard dimension

Size	025	050	075	100	150	200	250	300	400	500
A	190	220	260	300	330	350	380	420	450	490
AB	95	110	130	150	165	175	190	210	225	245
US	160	190	213	250	275	325	360	370	405	450
HL	45	50	60	70	80	90	95	95	110	125
HM	60	70	78	95	100	120	125	130	140	155
J	70	75	80	90	95	130	130	135	140	150
ML	25	35	40	45	55	60	75	80	90	100
LL	45	60	65	75	85	95	120	125	135	150
MS	M18×1.5	M24×1.5	M33×1.5	M36×2	M40×2	M50×2	M50×2	M64×2	M70×2	M80×2
D	70	90	110	125	140	140	170	180	190	225
CC	40	50	60	70	80	80	90	100	120	135
E	75	90	105	115	130	130	160	180	190	210
F1	50	65	80	95	105	105	125	130	150	170
F2	80	100	120	145	155	155	170	185	215	240
M	96	120	140	165	180	180	216	240	260	290
N	150	195	235	285	305	305	345	371	430	485
HS	30	30	40	45	50	50	55	60	60	65
U	15	18	22	28	32	32	32	38	42	48
T	5	6	6	8	10	10	10	10	12	14
V	17	20.5	24.5	31	35	35	35	41	45	51.5
I	25	25	35	38	43	43	47	53	52	55
G	12	15	16	20	20	20	22	25	28	35
Z	11	14	18	22	22	22	26	30	33	39
Y	4	4	4	4	4	4	4	4	4	4
S	38	48	58	63	68	78	78	96	106	127
CD	60	73	91	105	105	102	133	161	161	189
P	10	10	10	10	10	20	10	10	10	10
R	165	180	203	235	260	310	325	335	365	405
DS	65	85	90	105	110	145	165	170	180	195

Dimension with whirl stop

Size	025	050	075	100	150	200	250	300	400	500
US1	185	215	238	275	300	352	385	395	435	485
R1	190	205	228	260	285	337	350	360	395	440
HM1	85	95	103	120	125	147	150	155	170	190

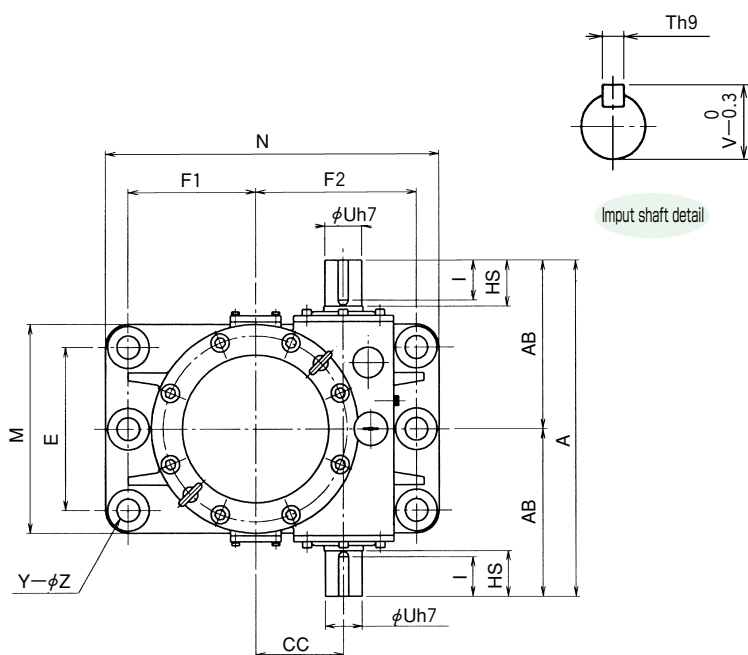
Dimension with bellows

Size	025	050	075	100	150	200	250	300	400	500
US2	180	210	235	272	297	347	382	392	427	472
DS2	85	105	112	127	132	167	187	192	202	217
JD	60	75	90	90	105	108	125	150	170	180

Dimension with bellows, with whirl stop

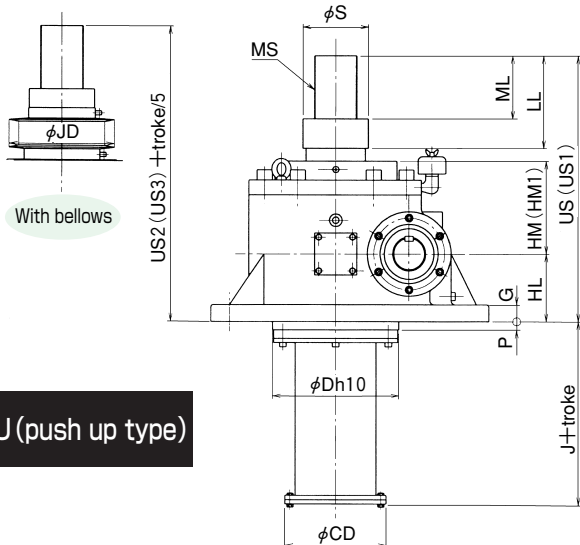
Size	025	050	075	100	150	200	250	300	400	500
US3	205	235	260	297	322	374	407	417	457	507
JD	60	75	90	90	105	108	125	150	170	180

JA750~JA1250 Outline dimensions



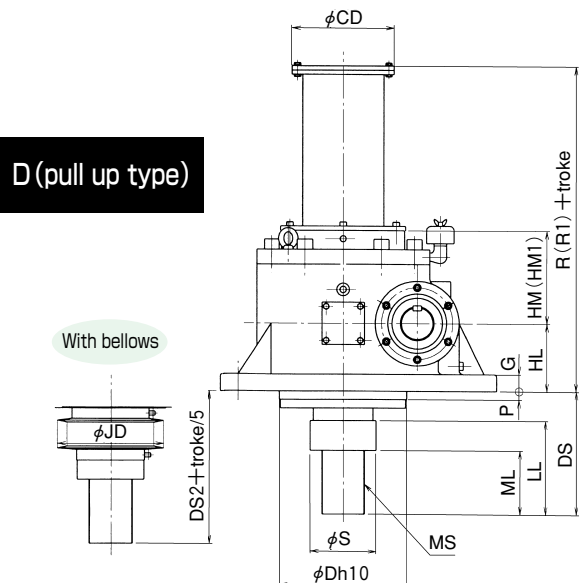
Standard dimension

Size	750	1000	1250
A	590	660	790
AB	295	330	395
US	535	630	725
HL	130	160	195
HM	190	220	260
J	190	200	205
ML	120	150	160
LL	185	220	240
MS	M90×2	M100×2	M120×2
D	250	300	350
CC	155	175	200
E	260	320	390
F1	195	250	310
F2	285	320	390
M	350	410	500
N	564	660	796
HS	80	90	100
U	68	75	85
T	20	20	22
V	72.5	79.5	90
I	69	78	87
G	35	40	45
Z	45	45	52
Y	4	6	6
S	135	155	175
CD	240	240	280
P	20	20	20
R	470	540	620
DS	255	290	310



Dimension with whirl stop

Size	750	1000	1250
US1	570	665	765
R1	505	575	660
HM1	225	255	300



Dimension with bellows

Size	750	1000	1250
US2	570	660	755
DS2	290	320	340
JD	230	250	280

Dimension with bellows, with whirl stop

Size	750	1000	1250
US3	605	695	795
JD	230	250	280

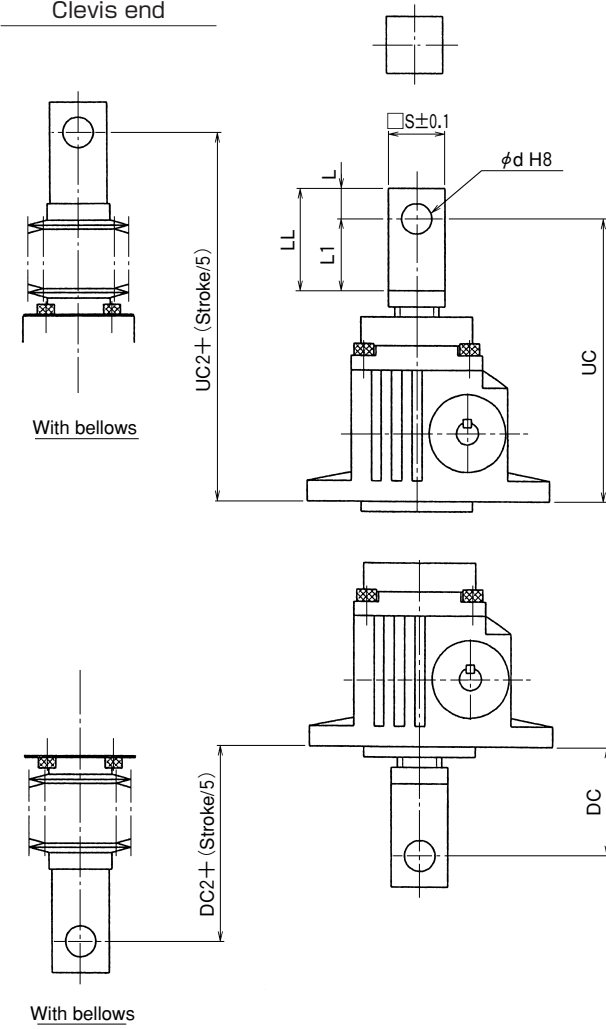
Standard dimension

Size	005	010
S	28	32
L	15	15
L1	35	40
LL	50	55
ML	22	25
d	15	16
FD	60	70
BD	30	32
BL	25	28
TL	10	10
FP	45	50
Y	4	4
FZ	7	9
UC	138	155
UC2	150	170
UF	128	143
UF2	140	158
DC	53	60
DC2	65	75
DF	43	48
DF2	55	63

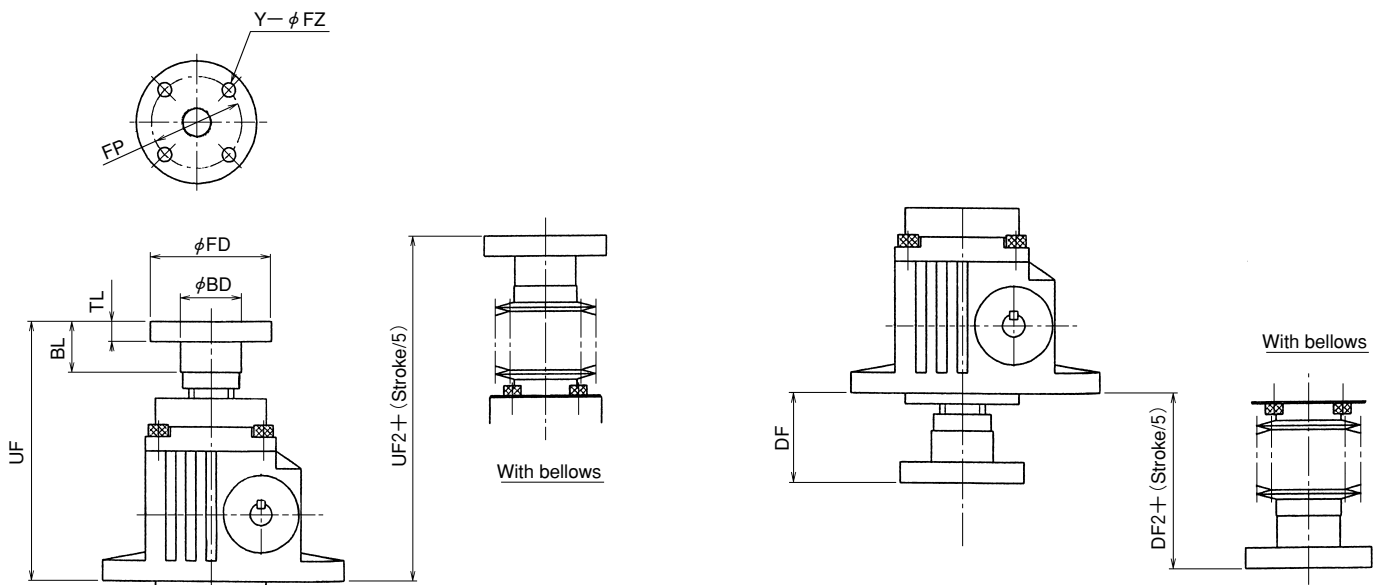
※For shaft end connector of JA002, please refer to E-27.

JACK

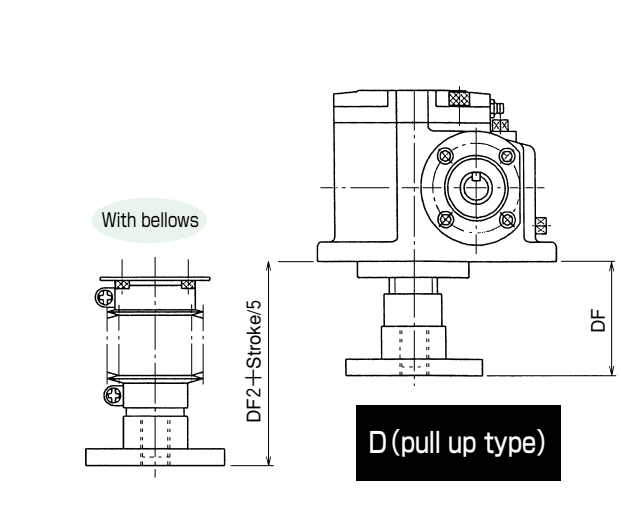
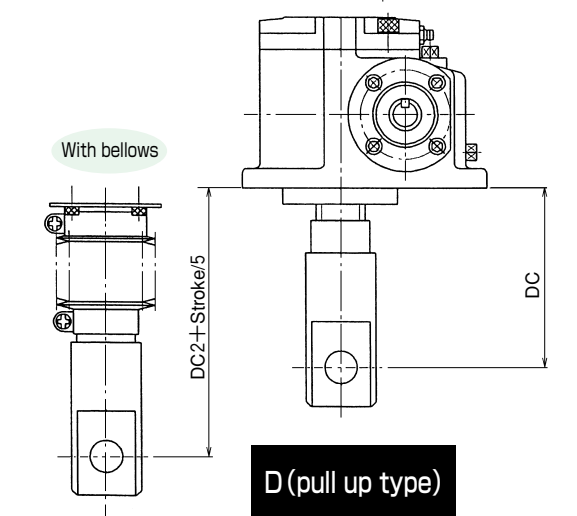
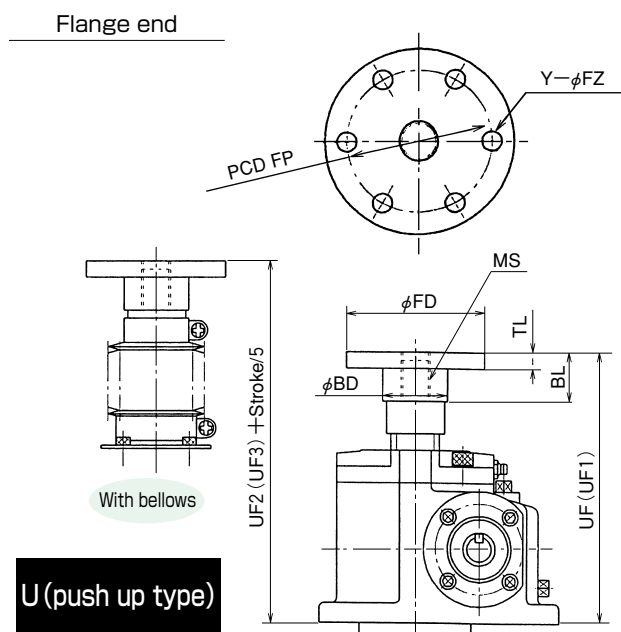
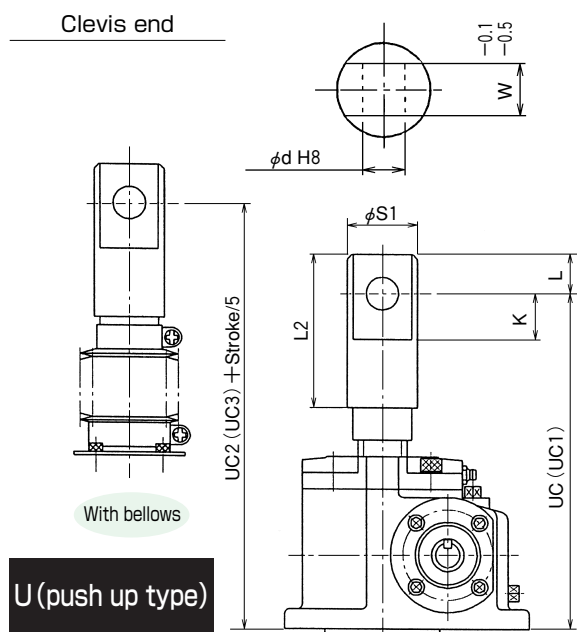
Clevis end



Flange end



JA025~JA1250 Shaft end connector, installation



Standard dimension

Size	025	050	075	100	150	200	250	300	400	500	750	1000	1250
S1	43	58	63	74	93	93	103	113	132	143	172	198	218
L2	94	130	155	180	210	225	240	255	270	300	335	415	445
MS	M18×1.5	M24×1.5	M33×1.5	M36×2	M40×2	M50×2	M50×2	M64×2	M70×2	M80×2	M90×2	M100×2	M120×2
L	24	35	45	50	60	65	70	70	70	80	95	110	120
K	28	40	50	55	65	70	75	75	75	85	100	115	125
W	24	35	40	45	60	65	70	80	90	100	120	125	140
d	20	28	30	35	45	50	56	60	70	75	95	110	120
FD	86	104	128	146	166	179	197	225	250	276	328	358	405
FP	66	80	100	110	122	135	145	173	190	210	250	280	315
BD	40	50	60	65	75	85	85	100	125	140	170	200	225
BL	30	40	45	50	60	65	80	85	95	105	125	155	165
TL	10	12	15	20	20	25	25	25	30	35	40	40	45
FZ	9	11	14	18	22	22	22	26	30	39	39	39	45
Y	6	6	6	6	6	6	6	6	6	6	8	8	8
UC	205	250	283	335	370	425	455	475	515	570	655	785	890
UC1	230	275	308	360	395	452	480	500	545	605	690	820	930
DC	110	145	160	190	205	245	260	275	290	315	375	445	465
UF	165	195	218	255	280	330	365	375	410	455	540	635	730
UF1	190	220	243	280	305	357	390	400	440	490	575	670	770
DF	70	90	95	110	115	150	170	175	185	200	260	295	315
UC2	225	270	305	357	392	447	477	497	537	592	690	815	920
DC2	130	165	182	212	227	267	282	297	312	337	410	475	495
UF2	185	215	240	277	302	352	387	397	432	477	575	665	760
DF2	90	110	117	132	137	172	192	197	207	222	295	325	345
UC3	250	295	330	382	417	474	502	522	567	627	725	850	960
UF3	210	240	265	302	327	379	412	422	462	512	610	700	800

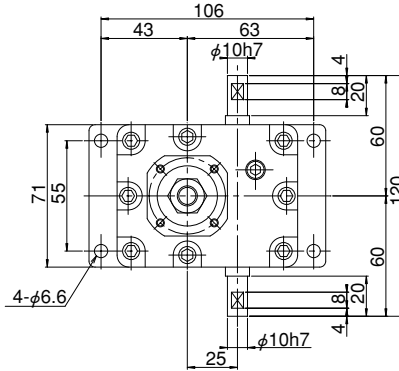
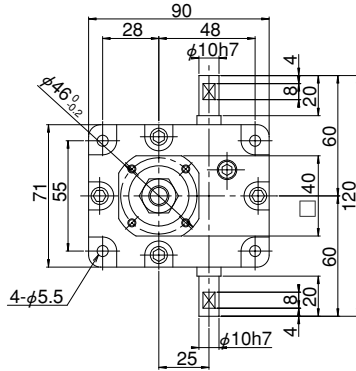
※UF1&US1 is dimension with stopper.

UF2,US2,DF2 and DS2 are dimension with bellows.

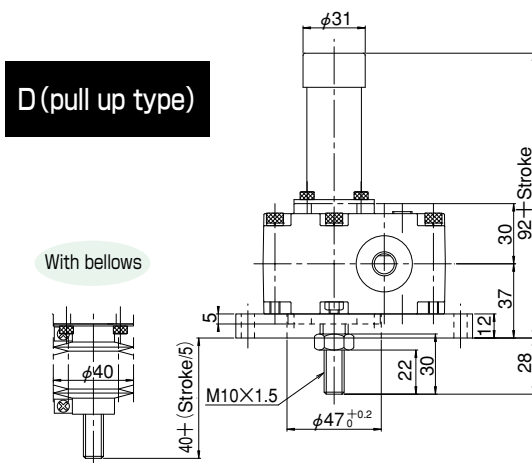
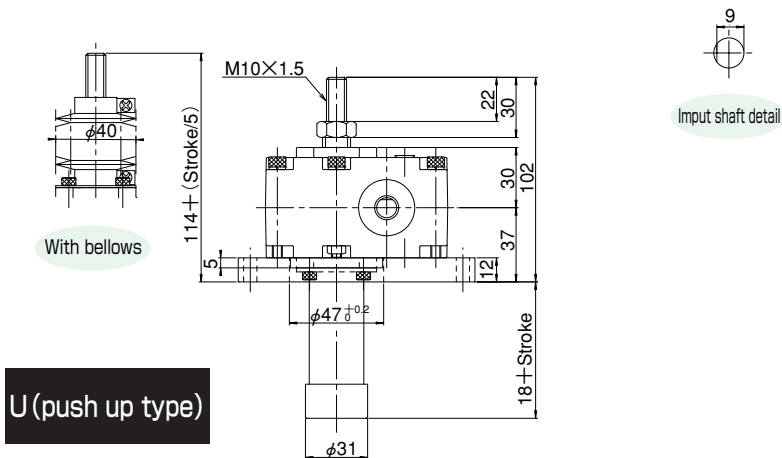
UF3,US3 is dimension with stopper and bellows.

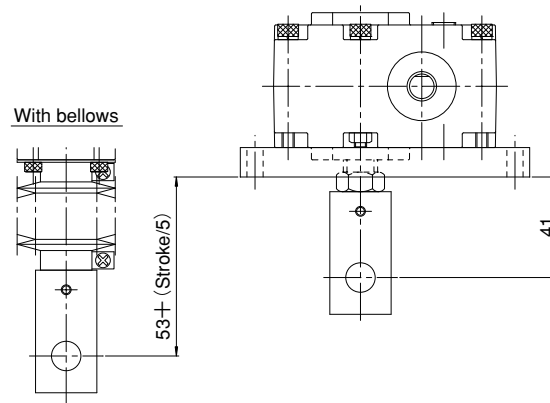
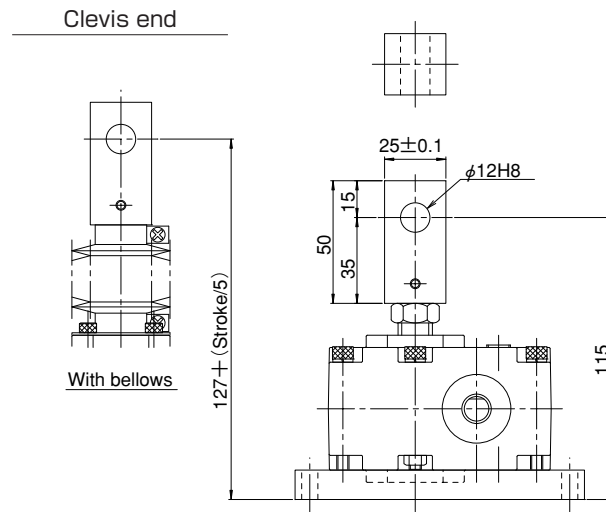
Without base plate

With base plate

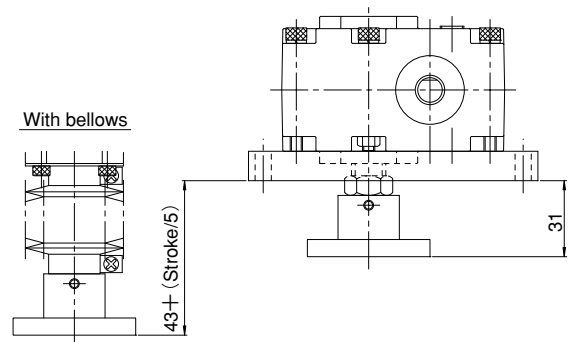
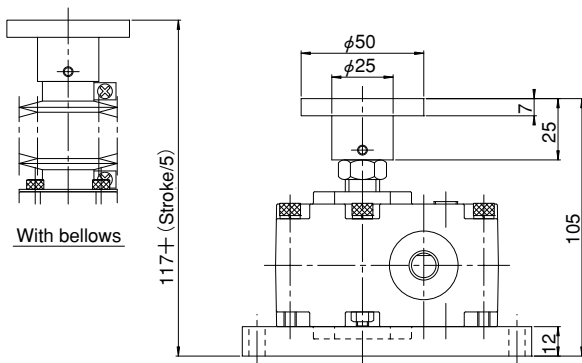
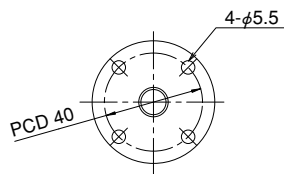


※This drawing is for shaft arrangement "C"





Flange end



**High performance ball screw ensure
quite operation, high efficiency.**

JB

- Using high precision ball screw.
Integral ball nut and worm wheel.
- Oil bath or grease lubricant ensure
high speed operation.
- Ideal bearing structure, excellent
performance.
Wide range of standard jack.
Available 5KN-1250KN.

JB structure, feature

[In the case of JB005~JB010]

Screw shaft end

Many selection of connector.

High precision, large screw shaft

Use ball screw.

Ideal bearing structure

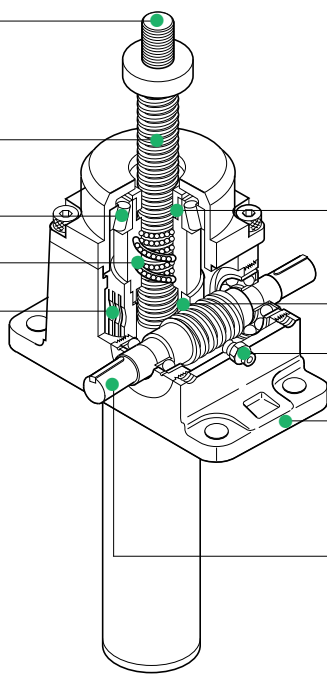
Using tapered roller bearing that can hold both radial and thrust load.

Integral ball nut and worm wheel

Because of unique structure and work balanced load on ball nut, safety and long life.

High precision worm wheel

Special aluminum bronze material, high precision cur, sufficient strength.



Screw shaft guide

Screw shaft guide is provide on the worm wheel and cover to prevent fluctuation of screw.

High efficiency speeder reducer

Designed with benefit of experience in manufacturing of speed reducer.

Grease lubrication

Easy Maintenance.

Light weight housing

Housing is fabricated by aluminum, light weight and compact.

Large input shaft

Sufficient strength for connection of multiple jacks.

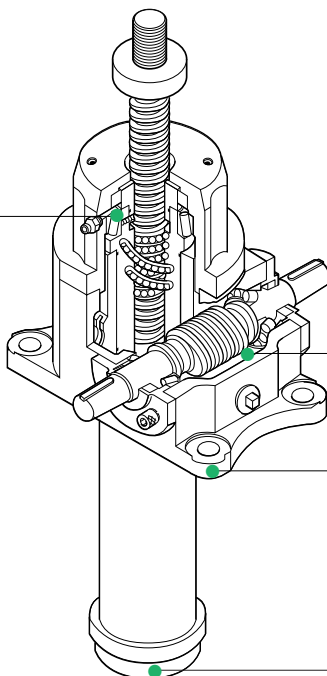
It consist of worm gear and ball screw and high precision and efficiency, suitable for frequent use. Worm Wheel rotate by turning input shaft (worm shaft) that transmit propulsive force to screw jack. Lubrication of worm and screw is both grease.

※Ball screw has no self-locking function, brake system is required.

[In case of JB025-JB1250] ※Explanations focuses only on different point from JB005~JB010.

Ideal bearing structure

Use tapered roller bearing, in case of heavy load, use self-aligning bearing.



Oil bath lubrication

Can run in high speed operation and easy maintenance.

Solid and strong housing

Housing material for above size 100 is cast steel and size 025 075 is ductile cast iron (FCD450)

End cap

Convenience for inspection of screw shaft.

Lubrication is oil bath for worm and grease for screw.

※Ball screw has no self-locking feature, it is required break.

JB basic specification

Size	005	010	025	050	075	100	150	200	250	300	400	500	750	1000	1250		
Nominal capacity (kN)	5	10	25	50	75	100	150	200	250	300	400	500	750	1000	1250		
Screw shaft diameter (mm)	16	20	25	32	40	45	50	63	63	80	90	100	110	125	140		
Screw shaft root diameter (mm)	13.5	17.5	20	27	35	38	42	55	55	72	82	90	97	109	121		
Screw pitch (mm)	5	5	10	10	10	12	16	16	16	20	20	20	25	32	32		
Reduction ratio	H	6	6	7.67	7.67	7.67	7.67	7.67	7.67	8	9.33	10	10	9.67	9.67	10.33	
	L	18	18	23	23	23	23	23	23	24	28	30	30	29	29	31	
Traveling distance per one input shaft rotation	H (mm/rev)	0.83	0.83	1.30	1.30	1.30	1.56	2.09	2.09	2.00	2.14	2.00	2.00	2.59	3.31	3.10	
	L (mm/rev)	0.28	0.28	0.44	0.44	0.44	0.52	0.70	0.70	0.67	0.71	0.67	0.67	0.86	1.10	1.03	
Efficiency (%)	H (30rpm)	(1800rpm)	58	59	57	57	56	59	58	58	59	59	52	61	61	62	63
		(1800rpm)	71	72	71	72	72	73	74	74	74	74	74	66	75	75	75
	L (30rpm)	(1800rpm)	39	40	37	36	35	39	38	38	39	39	33	40	43	44	45
		(1800rpm)	57	59	58	58	59	62	63	63	63	63	56	64	66	67	67
Max input speed (rpm)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1200	900	900	
Standard stroke (mm)	Stroke 50-500(interval 50), more than 500-1000(interval 100)																
Screw torque (N·m)	5	10	45	90	140	220	425	575	720	1080	1460	1855	3415	5745	7275		
Input no load torque (N·m)	0.15	0.2	0.5	0.8	1.2	1.8	2.5	2.5	3.2	4.0	5.0	6.0	7.0	8.0	10		
Input starting torque	H (N·m)	1.4	2.7	10.6	21.5	32.5	49.2	98.2	130.2	153.3	197.1	280.3	294.0	564.6	939.9	1086.7	
	L (N·m)	0.8	1.5	6.2	12.6	19.2	27.9	55.7	73.4	85.1	109.6	160.1	166.2	294.3	478.2	546.9	
Holding torque	H (N·m)	0.4	0.7	2.4	4.4	6.3	12.3	23.8	31.7	40.4	51.8	58.0	90.7	176.0	316.1	379.8	
	L (N·m)	0.1	0.2	1.1	2.5	4.1	4.2	9.3	12.4	12.4	16.1	26.8	21.9	23.7	24.1	17.7	
Reversing load (kN)	5	10	25	50	75	100	150	200	200	200	250	300	400	500	700		
Load at rest (kN)	8	15	30	60	80	140	170	250	300	400	500	700	900	1200	1500		
Weight (kg)	2.5	3.5	20	25	35	55	65	80	90	120	150	200	500	600	700		

Note: 1. Weight is rough estimate of stroke 300 mm unit. 2. ※ mark is efficiency of max, input speed.
 3. Consult us for above 1250kN capacity
 4. Screw torque and input starting torque is value for nominal capacity.

Comparison table for JB and old model number

Nominal capacity (kN)	5	8	10	20	25	40	50	60	75	100	120	150	200
JB	005		010		025		050		075	100		150	200
Old model number (NJ)	25	32		40		50		60		70	80		

※Type for size 25 and 32 is BJV.

Nominal capacity (kN)	150	200	250	300	350	400	500	600	750	1000	1250
JB			250	300		400	500		750	1000	1250
Old model number (BXJ)	90	100	120		135		155		175	200	

Arrow indicates equivalent size, and inclined arrow indicates improved in capacity that old model number. (The listed value is the corresponded capacity.)

For nominal capacity

Refer to E-5

JB capacity table (reduction ratio H)

Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
005	Load(kN)	5	5	5	5	5	5	5	5	5	5
	Speed(m/min)	1.500	1.250	1.000	0.833	0.750	0.625	0.417	0.208	0.083	0.042
	Efficiency	0.707	0.699	0.693	0.688	0.682	0.675	0.662	0.637	0.610	0.600
	Lost power(k.W)	0.028	0.024	0.019	0.016	0.014	0.012	0.008	0.004	0.002	0.001
	Power(k.W)	0.205	0.173	0.139	0.117	0.106	0.089	0.060	0.031	0.013	0.007
010	Load(kN)	10	10	10	10	10	10	10	10	10	10
	Speed(m/min)	1.500	1.250	1.000	0.833	0.750	0.625	0.417	0.208	0.083	0.042
	Efficiency	0.718	0.709	0.700	0.695	0.692	0.686	0.670	0.644	0.615	0.604
	Lost power(k.W)	0.038	0.031	0.025	0.021	0.019	0.016	0.010	0.005	0.002	0.001
	Power(k.W)	0.386	0.325	0.263	0.221	0.199	0.168	0.114	0.059	0.025	0.013
025	Load(kN)	25	25	25	25	25	25	25	25	25	25
	Speed(m/min)	2.347	1.956	1.565	1.304	1.173	0.978	0.652	0.326	0.130	0.065
	Efficiency	0.713	0.703	0.691	0.683	0.680	0.674	0.656	0.628	0.595	0.581
	Lost power(k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power(k.W)	1.466	1.238	1.006	0.848	0.767	0.644	0.440	0.229	0.097	0.049
050	Load(kN)	50	50	50	50	50	50	50	50	50	50
	Speed(m/min)	2.347	1.956	1.565	1.304	1.173	0.978	0.652	0.326	0.130	0.065
	Efficiency	0.715	0.709	0.699	0.689	0.683	0.675	0.661	0.631	0.593	0.573
	Lost power(k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power(k.W)	2.888	2.424	1.965	1.662	1.507	1.270	0.864	0.451	0.192	0.099
075	Load(kN)	75	75	75	75	75	75	75	75	75	75
	Speed(m/min)	2.347	1.956	1.565	1.304	1.173	0.978	0.652	0.326	0.130	0.065
	Efficiency	0.719	0.712	0.705	0.697	0.690	0.680	0.663	0.633	0.596	0.571
	Lost power(k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power(k.W)	4.306	3.622	2.926	2.465	2.238	1.893	1.291	0.675	0.286	0.149
100	Load(kN)	100	100	100	100	100	100	100	100	100	100
	Speed(m/min)	2.816	2.347	1.877	1.565	1.408	1.173	0.782	0.391	0.156	0.078
	Efficiency	0.733	0.726	0.719	0.715	0.707	0.698	0.682	0.654	0.621	0.597
	Lost power(k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power(k.W)	6.746	5.668	4.578	3.837	3.487	2.942	2.005	1.043	0.439	0.228
150	Load(kN)	114.7	124.1	136.4	144.4	150	150	150	150	150	150
	Speed(m/min)	3.755	3.129	2.503	2.086	1.877	1.565	1.043	0.522	0.209	0.104
	Efficiency	0.735	0.728	0.720	0.715	0.713	0.702	0.683	0.655	0.619	0.593
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	10.237	9.284	8.215	7.288	6.820	5.768	3.948	2.055	0.868	0.453
200	Load(kN)	146.0	158.0	173.5	183.8	193.4	200	200	200	200	200
	Speed(m/min)	3.755	3.129	2.503	2.086	1.877	1.565	1.043	0.522	0.209	0.104
	Efficiency	0.735	0.728	0.720	0.715	0.713	0.702	0.683	0.655	0.619	0.593
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	12.900	11.709	10.369	9.204	8.726	7.625	5.221	2.719	1.149	0.599
250	Load(kN)	211.2	228.2	250	250	250	250	250	250	250	250
	Speed(m/min)	3.600	3.000	2.400	2.000	1.800	1.500	1.000	0.500	0.200	0.100
	Efficiency	0.739	0.734	0.726	0.721	0.718	0.710	0.690	0.663	0.628	0.603
	Lost power(k.W)	0.603	0.503	0.402	0.335	0.302	0.251	0.168	0.084	0.034	0.017
	Power(k.W)	17.752	16.039	14.171	11.895	10.744	9.053	6.204	3.225	1.360	0.708
300	Load(kN)	226.3	248.1	269.9	288.5	300	300	300	300	300	300
	Speed(m/min)	3.859	3.215	2.572	2.144	1.929	1.608	1.072	0.536	0.214	0.107
	Efficiency	0.739	0.734	0.726	0.721	0.718	0.710	0.690	0.663	0.628	0.602
	Lost power(k.W)	0.754	0.628	0.503	0.419	0.377	0.314	0.209	0.105	0.042	0.021
	Power(k.W)	20.452	18.734	16.435	14.716	13.808	11.634	7.973	4.144	1.748	0.911
400	Load(kN)	339.7	368.8	398.2	400	400	400	400	400	400	400
	Speed(m/min)	3.600	3.000	2.400	2.000	1.800	1.500	1.000	0.500	0.200	0.100
	Efficiency	0.661	0.658	0.653	0.646	0.643	0.637	0.619	0.594	0.557	0.533
	Lost power(k.W)	0.942	0.785	0.628	0.524	0.471	0.393	0.262	0.131	0.052	0.026
	Power(k.W)	31.793	28.814	25.040	21.157	19.145	16.086	11.028	5.743	2.446	1.277
500	Load(kN)	500	500	500	500	500	500	500	500	500	500
	Speed(m/min)	3.600	3.000	2.400	2.000	1.800	1.500	1.000	0.500	0.200	0.100
	Efficiency	0.748	0.745	0.739	0.733	0.730	0.725	0.707	0.683	0.648	0.624
	Lost power(k.W)	1.131	0.942	0.754	0.628	0.565	0.471	0.314	0.157	0.063	0.031
	Power(k.W)	41.243	34.490	27.821	23.378	21.116	17.703	12.109	6.257	2.635	1.368
750	Load(kN)	615.7	669.6	736.9	750	750	750	750	750	750	750
	Speed(m/min)	4.654	3.878	3.102	2.585	2.327	1.939	1.293	0.646	0.259	0.129
	Efficiency	0.749	0.746	0.743	0.737	0.734	0.728	0.714	0.688	0.653	0.627
	Lost power(k.W)	1.319	1.099	0.880	0.733	0.660	0.550	0.366	0.183	0.073	0.037
	Power(k.W)	65.097	59.103	52.135	44.576	40.312	33.838	23.007	11.933	5.026	2.612
1000	Load(kN)	684.0	746.8	825.0	872.7	912.6	999.2	1000	1000	1000	1000
	Speed(m/min)	5.957	4.964	3.971	3.309	2.978	2.482	1.655	0.827	0.331	0.165
	Efficiency	0.752	0.751	0.748	0.744	0.740	0.734	0.723	0.696	0.662	0.638
	Lost power(k.W)	1.508	1.257	1.005	0.838	0.754	0.628	0.419	0.209	0.084	0.042
	Power(k.W)	91.759	83.573	74.014	65.504	61.985	56.908	38.577	20.029	8.410	4.364
1250	Load(kN)	985.5	1074.3	1185.0	1250	1250	1250	1250	1250	1250	1250
	Speed(m/min)	5.576	4.647	3.717	3.098	2.788	2.323	1.549	0.774	0.310	0.155
	Efficiency	0.754	0.753	0.751	0.748	0.743	0.738	0.728	0.699	0.669	0.644
	Lost power(k.W)	1.885	1.571	1.257	1.047	0.942	0.785	0.524	0.262	0.105	0.052
	Power(k.W)	123.316	112.014	99.069	87.338	79.074	66.372	44.842	23.334	9.756	5.060

JACK

JB capacity table (reduction ratio L)

JBseries

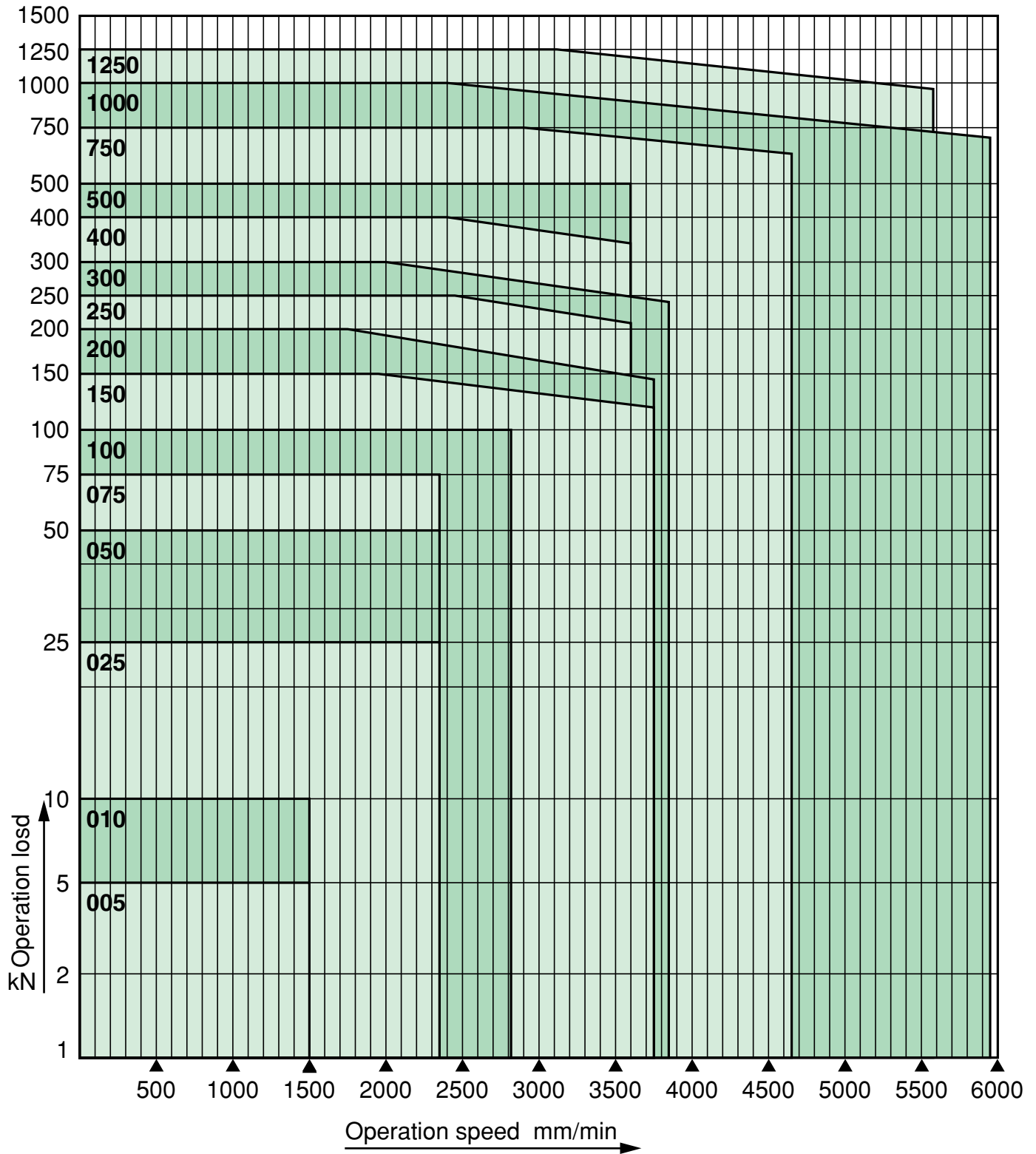
Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
005	Load (kN)	5	5	5	5	5	5	5	5	5	5
	Speed (m/min)	0.500	0.417	0.333	0.278	0.250	0.208	0.139	0.069	0.028	0.014
	Efficiency	0.568	0.556	0.545	0.534	0.526	0.514	0.491	0.455	0.420	0.406
	Lost power (k.W)	0.028	0.024	0.019	0.016	0.014	0.012	0.008	0.004	0.002	0.001
	Power (k.W)	0.102	0.086	0.070	0.059	0.054	0.046	0.031	0.017	0.007	0.004
010	Load (kN)	10	10	10	10	10	10	10	10	10	10
	Speed (m/min)	0.500	0.417	0.333	0.278	0.250	0.208	0.139	0.069	0.028	0.014
	Efficiency	0.589	0.573	0.558	0.549	0.544	0.530	0.506	0.467	0.427	0.413
	Lost power (k.W)	0.038	0.031	0.025	0.021	0.019	0.016	0.010	0.005	0.002	0.001
	Power (k.W)	0.179	0.153	0.125	0.105	0.095	0.081	0.056	0.030	0.013	0.007
025	Load (kN)	25	25	25	25	25	25	25	25	25	25
	Speed (m/min)	0.783	0.652	0.522	0.435	0.391	0.326	0.217	0.109	0.043	0.022
	Efficiency	0.580	0.559	0.538	0.526	0.519	0.511	0.481	0.440	0.396	0.379
	Lost power (k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power (k.W)	0.657	0.565	0.467	0.397	0.361	0.305	0.215	0.116	0.051	0.027
050	Load (kN)	50	50	50	50	50	50	50	50	50	50
	Speed (m/min)	0.783	0.652	0.522	0.435	0.391	0.326	0.217	0.109	0.043	0.022
	Efficiency	0.581	0.572	0.552	0.533	0.524	0.511	0.487	0.443	0.392	0.370
	Lost power (k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power (k.W)	1.273	1.077	0.889	0.764	0.698	0.594	0.414	0.226	0.101	0.053
075	Load (kN)	75	75	75	75	75	75	75	75	75	75
	Speed (m/min)	0.783	0.652	0.522	0.435	0.391	0.326	0.217	0.109	0.043	0.022
	Efficiency	0.590	0.576	0.563	0.546	0.535	0.518	0.491	0.446	0.395	0.365
	Lost power (k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power (k.W)	1.886	1.604	1.308	1.120	1.028	0.882	0.616	0.336	0.150	0.081
100	Load (kN)	100	100	100	100	100	100	100	100	100	100
	Speed (m/min)	0.939	0.783	0.626	0.522	0.470	0.391	0.261	0.130	0.052	0.026
	Efficiency	0.617	0.605	0.592	0.580	0.568	0.551	0.525	0.480	0.431	0.400
	Lost power (k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power (k.W)	2.874	2.439	1.988	1.689	1.548	1.325	0.923	0.500	0.221	0.118
150	Load (kN)	124.2	133.4	142.6	150	150	150	150	150	150	150
	Speed (m/min)	1.252	1.043	0.835	0.696	0.626	0.522	0.348	0.174	0.070	0.035
	Efficiency	0.625	0.609	0.593	0.583	0.579	0.558	0.525	0.480	0.428	0.394
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	4.620	4.201	3.658	3.244	2.940	2.534	1.788	0.972	0.432	0.234
200	Load (kN)	158.0	169.8	181.4	196.3	200	200	200	200	200	200
	Speed (m/min)	1.252	1.043	0.835	0.696	0.626	0.522	0.348	0.174	0.070	0.035
	Efficiency	0.625	0.609	0.593	0.583	0.579	0.558	0.525	0.480	0.428	0.394
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	5.751	5.240	4.570	4.164	3.842	3.313	2.341	1.274	0.567	0.307
250	Load (kN)	224.9	241.5	250	250	250	250	250	250	250	250
	Speed (m/min)	1.200	1.000	0.800	0.667	0.600	0.500	0.333	0.167	0.067	0.033
	Efficiency	0.634	0.621	0.605	0.595	0.590	0.572	0.538	0.493	0.442	0.408
	Lost power (k.W)	0.603	0.503	0.402	0.335	0.302	0.251	0.168	0.084	0.034	0.017
	Power (k.W)	7.703	6.984	5.914	5.004	4.542	3.891	2.748	1.492	0.662	0.357
300	Load (kN)	243.2	256.7	280.1	297.1	300	300	300	300	300	300
	Speed (m/min)	1.286	1.071	0.857	0.714	0.643	0.536	0.357	0.179	0.071	0.036
	Efficiency	0.633	0.621	0.605	0.594	0.590	0.572	0.537	0.493	0.441	0.407
	Lost power (k.W)	0.754	0.628	0.503	0.419	0.377	0.314	0.209	0.105	0.042	0.021
	Power (k.W)	8.991	8.009	7.119	6.373	5.830	4.994	3.533	1.915	0.852	0.460
400	Load (kN)	369.8	400	400	400	400	400	400	400	400	400
	Speed (m/min)	1.200	1.000	0.800	0.667	0.600	0.500	0.333	0.167	0.067	0.033
	Efficiency	0.560	0.554	0.542	0.528	0.522	0.513	0.479	0.437	0.383	0.352
	Lost power (k.W)	0.942	0.785	0.628	0.524	0.471	0.393	0.262	0.131	0.052	0.026
	Power (k.W)	14.155	12.810	10.472	8.936	8.134	6.890	4.903	2.676	1.212	0.658
500	Load (kN)	500	500	500	500	500	500	500	500	500	500
	Speed (m/min)	1.200	1.000	0.800	0.667	0.600	0.500	0.333	0.167	0.067	0.033
	Efficiency	0.642	0.636	0.625	0.611	0.604	0.594	0.559	0.515	0.455	0.420
	Lost power (k.W)	1.131	0.942	0.754	0.628	0.565	0.471	0.314	0.157	0.063	0.031
	Power (k.W)	16.714	14.039	11.427	9.719	8.845	7.486	5.284	2.855	1.283	0.692
750	Load (kN)	665.6	720.0	750	750	750	750	750	750	750	750
	Speed (m/min)	1.552	1.293	1.034	0.862	0.776	0.647	0.431	0.216	0.086	0.043
	Efficiency	0.661	0.655	0.649	0.635	0.627	0.617	0.587	0.543	0.484	0.449
	Lost power (k.W)	1.319	1.099	0.880	0.733	0.660	0.550	0.366	0.183	0.073	0.037
	Power (k.W)	27.378	24.804	20.807	17.716	16.120	13.659	9.548	5.147	2.299	1.236
1000	Load (kN)	750.9	808.0	874.4	928.4	974.0	1000	1000	1000	1000	1000
	Speed (m/min)	1.986	1.655	1.324	1.103	0.993	0.828	0.552	0.276	0.110	0.055
	Efficiency	0.669	0.665	0.659	0.648	0.641	0.630	0.604	0.557	0.502	0.466
	Lost power (k.W)	1.508	1.257	1.005	0.838	0.754	0.628	0.419	0.209	0.084	0.042
	Power (k.W)	38.683	34.770	30.296	27.187	25.912	22.522	15.646	8.462	3.746	2.014
1250	Load (kN)	1087.9	1166.6	1250	1250	1250	1250	1250	1250	1250	1250
	Speed (m/min)	1.858	1.548	1.239	1.032	0.929	0.774	0.516	0.258	0.103	0.052
	Efficiency	0.674	0.671	0.664	0.656	0.649	0.637	0.615	0.565	0.512	0.476
	Lost power (k.W)	1.885	1.571	1.257	1.047	0.942	0.785	0.524	0.262	0.105	0.052
	Power (k.W)	51.861	46.471	40.110	33.825	30.770	26.098	18.016	9.774	4.304	2.311

JACK

Allowable operation load • Operation speed

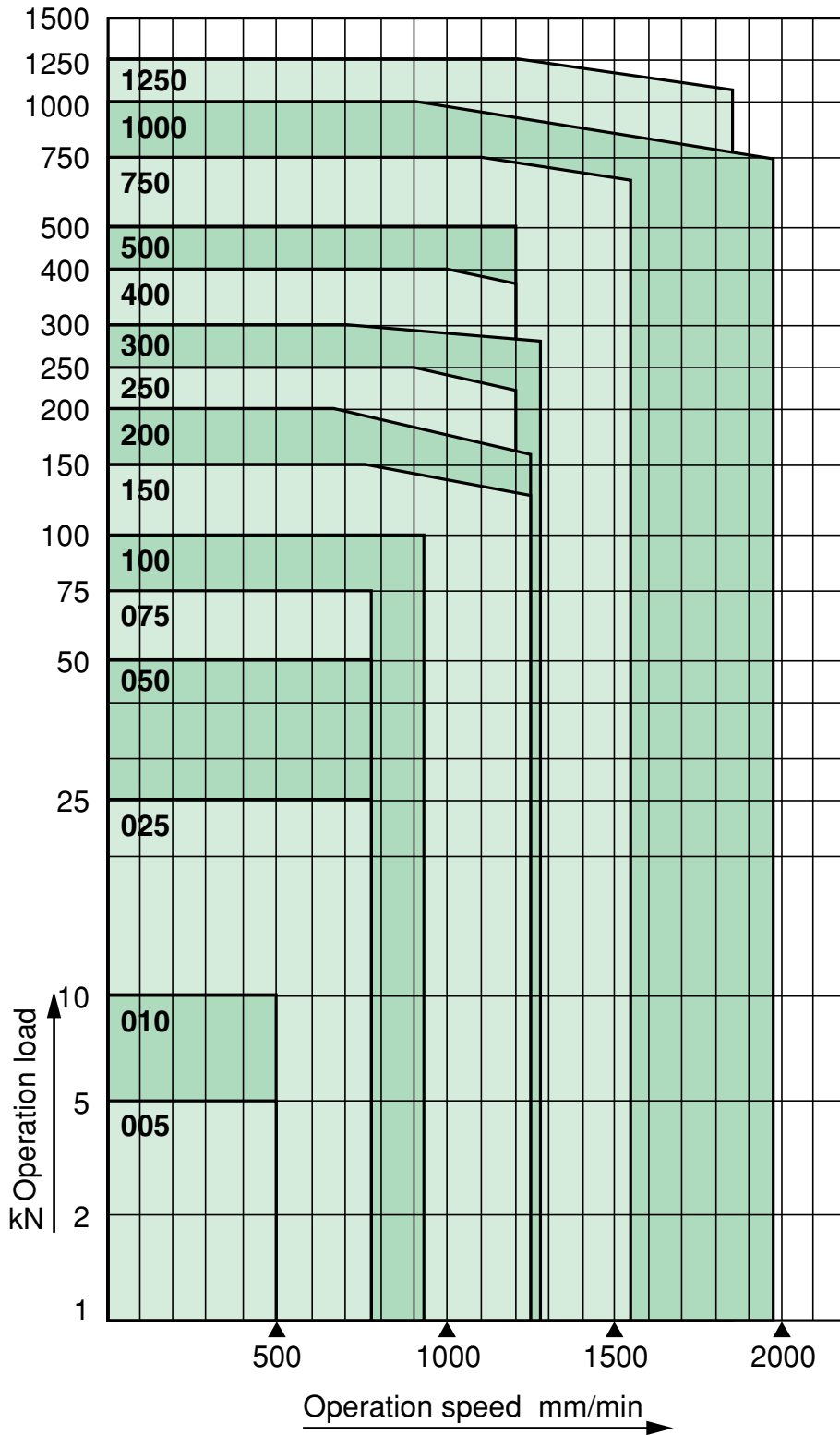
Please use within the range of load, velocity chart.

Load • velocity chart(reduction ratio H)



JACK

Load · velocity chart(reduction ratio L)



JACK

JB Allowable axial direction load

Ball screw jack, depend on application, must prevent effect of buckling on screw, there is limitation of apply of axial direction load.

Allowable bucking-load can be calculated by the following formula.

$$W = \frac{n_f \cdot \pi^2 \cdot E \cdot I \cdot \alpha}{L^2} \text{ (Eulers formula)}$$

W:permissible bucking-load(N)

E:vertical modulus elasticity factor 2.06×10^5 (N/mm²)

I :minimum sectional secondary moment of screw shaft(mm⁴)

$$I = \frac{\pi d^4}{64}$$

d:screw shaft root diameter(mm)

L :shaft supporting length(mm)

n_f:factor by installation method

Fixed-free $n_f = 1/4$ (0.25)

Supported-supported $n_f = 1$

Fixed-supported $n_f = 2$

α:safety factor 0.25

Example of calculation

Jack size JB100

From the basic specification, screw shaft root diameter d=38mm, minimum sectional secondary moment of screw shaft is,

$$I = \frac{\pi \times 38^4}{64} = 102353 \text{ (mm}^4\text{)}$$

Shaft supporting length L=1000(mm)

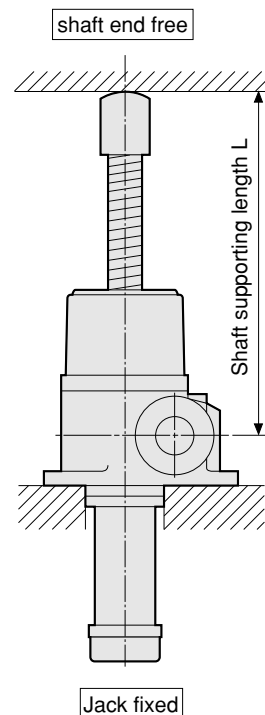
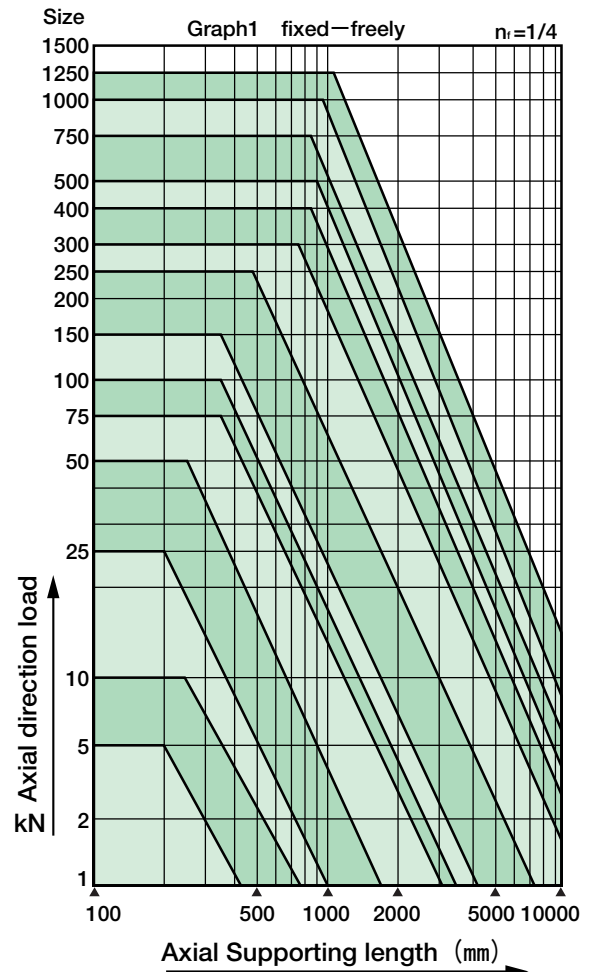
Installation method: fixed-freely n_f=1/4

Permissible bucking-load is:

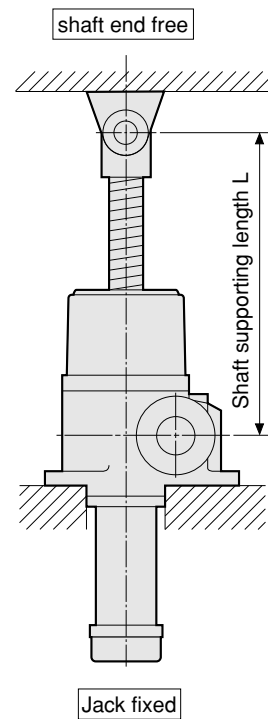
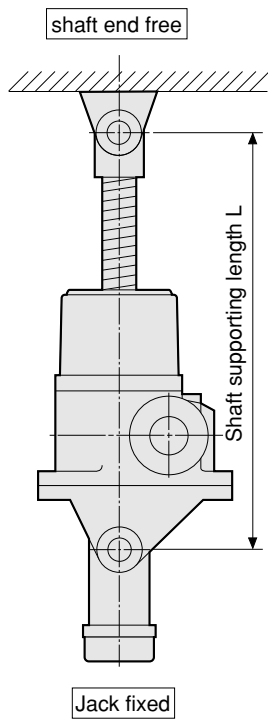
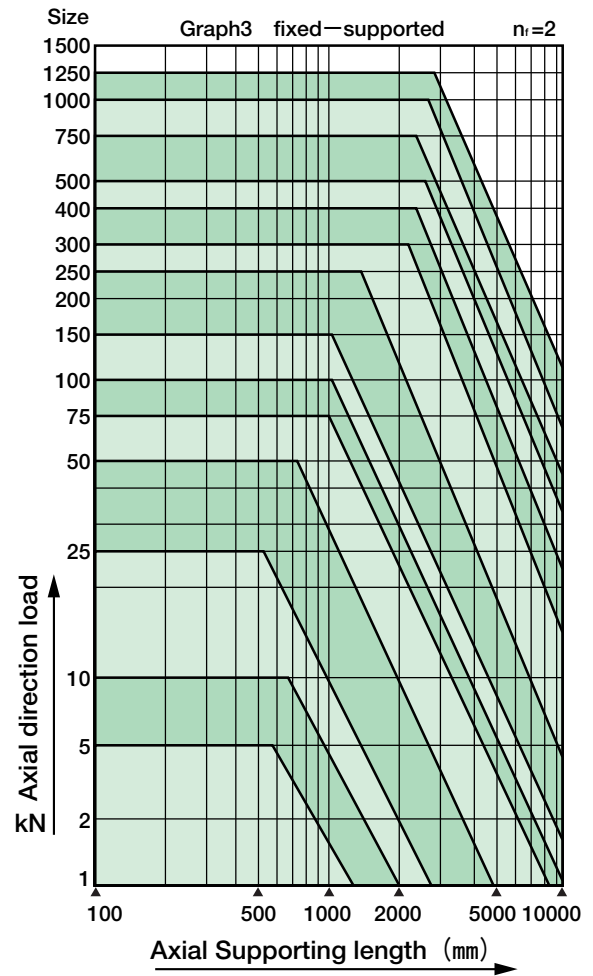
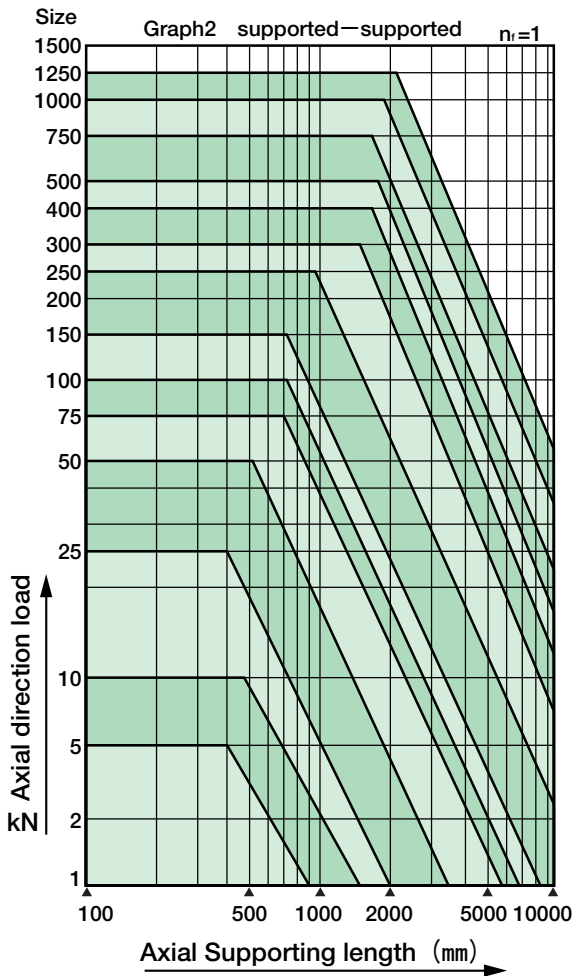
$$W = \frac{0.25 \times 3.14^2 \times 2.06 \times 10^5 \times 102353 \times 0.25}{1000^2}$$

$$\doteq 12993 \text{ (N)} = 13.0 \text{ (kN)}$$

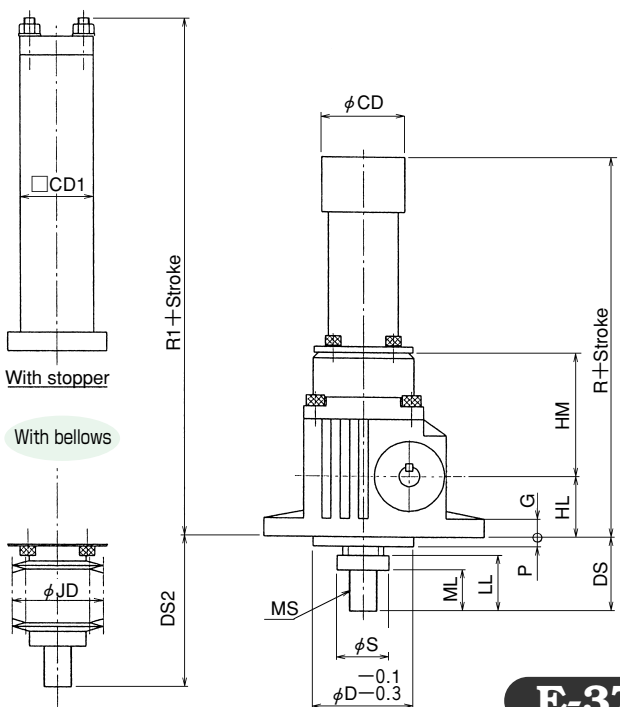
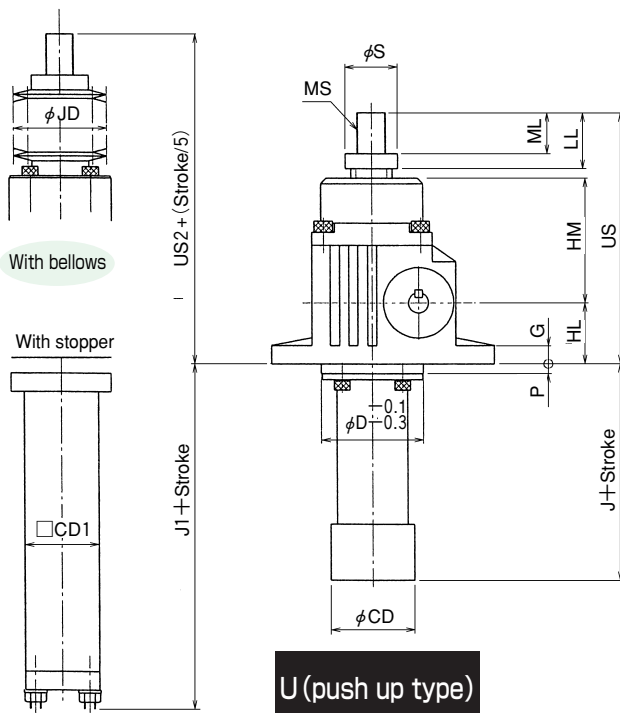
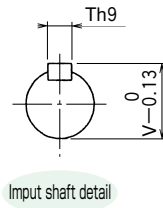
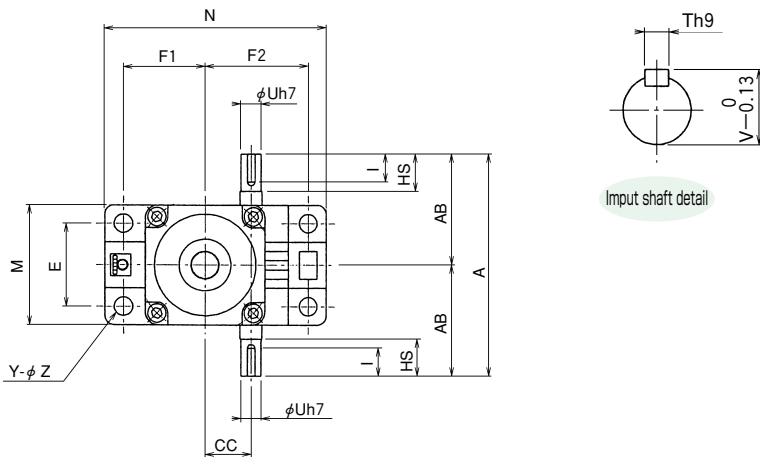
In addition, in the case of permissible bucking-load exceeds nominal capacity, the permissible axial direction load should be limited to nominal capacity.



JACK



JB005 & JB010 Outline dimensions



Standard dimension

Size	005	010
A	120	140
AB	60	70
HL	33	37
HM	67	73
D	55	65
CC	25	32
E	45	55
F1	44	49
F2	56	66
M	65	75
N	120	135
HS	20	25
U	11	14
T	4	5
V	12.5	16
I	15	20
G	10	10
Z	10	10
Y	4	4
S	28	30
CD	45	49
P	5	5
DS	40	45
R	130	140
US	135	150
J	35	35
LL	30	35
ML	22	25
MS	M12×1	M15×1

Dimension with bellows

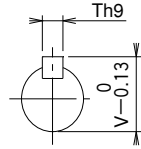
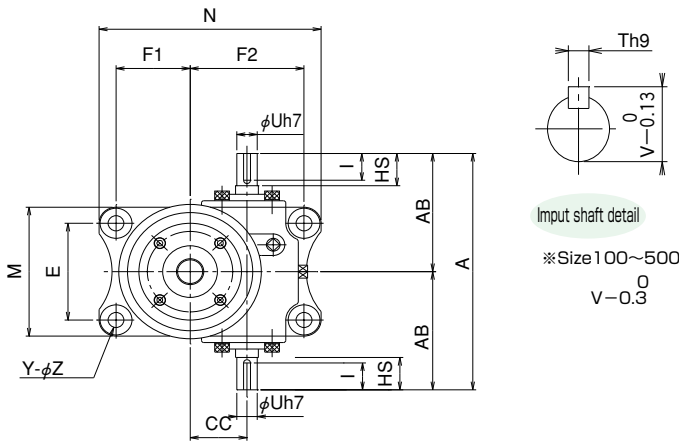
Size	005	010
US2	147	165
DS2	52	60
JD	50	55

Dimension with whirl stop

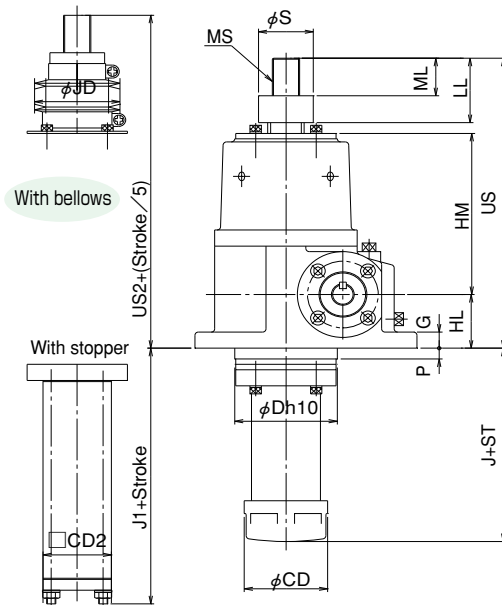
Size	005	010
J1	85	85
R1	180	190
CD1	40	40

Dimension of J1 & R1 with whirl stop is only for reference.

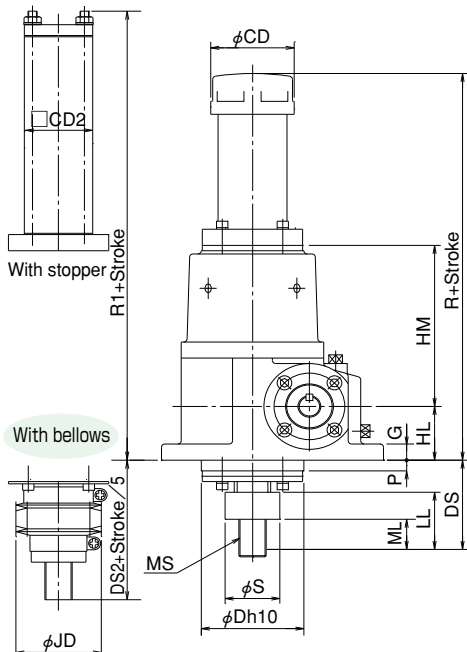
JACK



Input shaft detail
 ※Size100~500
 V-0.3



Push up type



Pull up type

Standard dimension

Size	025	050	075	100	150	200	250	300	400	500
A	190	220	260	300	330	350	380	420	450	490
AB	95	110	130	150	165	175	190	210	225	245
US	210	265	290	352	415	465	485	515	615	660
HL	45	50	60	70	80	90	95	95	110	125
HM	115	150	160	197	240	260	250	275	350	365
J	75	80	85	102	110	130	130	135	140	150
MS	M18×1.5	M24×1.5	M33×1.5	M36×2	M40×2	M50×2	M50×2	M64×2	M70×2	M80×2
ML	25	35	40	45	55	60	75	80	90	100
LL	45	60	65	75	85	95	120	125	135	150
D	70	90	110	125	140	140	170	180	190	225
CC	40	50	60	70	80	80	90	100	120	135
E	75	90	105	115	130	130	160	180	190	210
F1	50	65	80	95	105	105	125	130	150	170
F2	80	100	120	145	155	155	170	185	215	240
M	96	120	140	165	180	180	216	240	260	290
N	150	195	235	285	305	305	345	371	430	485
HS	30	30	40	45	50	50	55	60	60	65
U	15	18	22	28	32	32	32	38	42	48
T	5	6	6	8	10	10	10	10	12	14
V	17	20.5	24.5	31	35	35	35	41	45	51.5
I	25	25	35	38	43	43	47	53	52	55
G	12	15	16	20	20	20	22	25	28	35
Z	11	14	18	22	22	22	26	30	33	39
Y	4	4	4	4	4	4	4	4	4	4
S	38	48	58	63	68	78	78	96	106	126
CD	60	73	91	105	105	102	133	161	161	189
P	10	10	10	10	10	20	10	10	10	10
R	220	260	285	337	400	450	450	480	575	615
DS	65	85	90	117	125	145	165	170	180	195

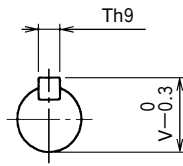
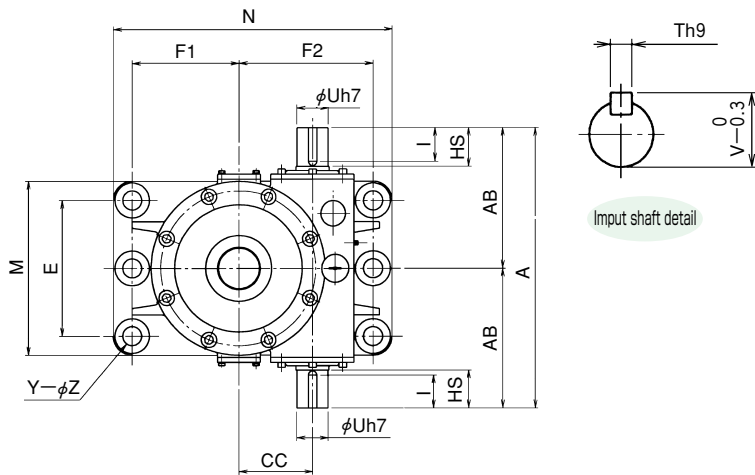
Dimension with bellows

Size	025	050	075	100	150	200	250	300	400	500
US2	230	285	312	374	437	487	507	537	637	682
DS2	85	105	112	139	147	167	187	192	202	217
JD	60	75	90	90	105	108	125	150	170	180

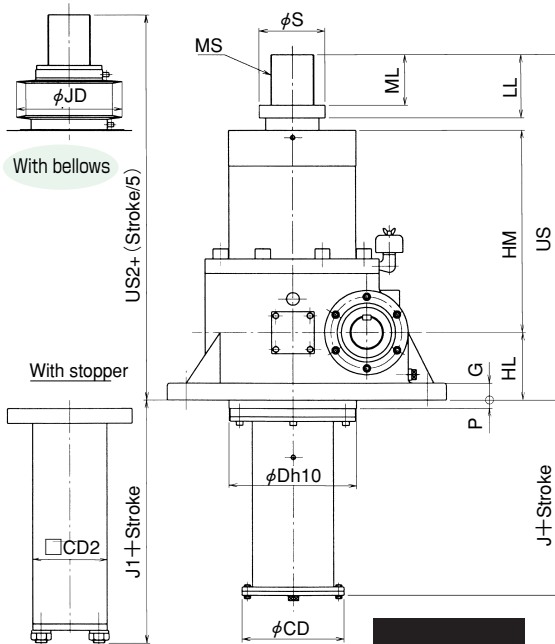
Dimension with whirl stop

Size	025	050	075	100	150	200	250	300	400	500
J1	118	148	163	177	187	238	262	262	262	290
R1	263	328	363	422	477	558	582	607	697	755
CD2	50	60	75	80	100	100	125	125	125	150

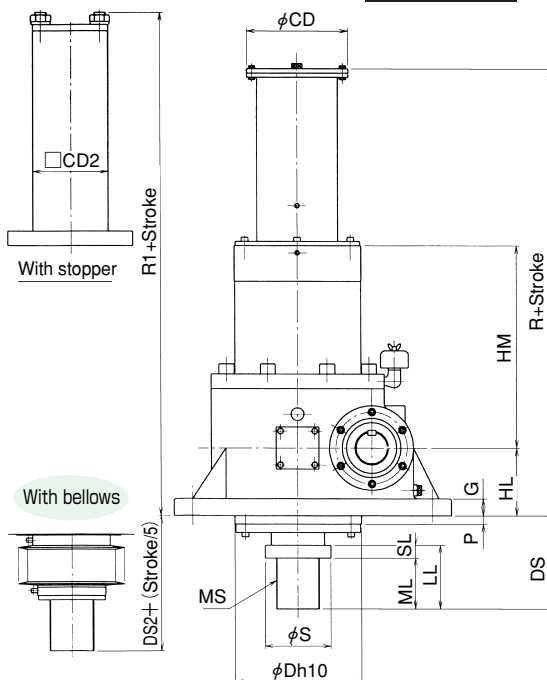
Dimension of J1 & R1 with stopper is only for reference.



Input shaft detail



Push up type



Pull up type

Standard dimension

Size	750	1000	1250
A	590	660	790
AB	295	330	395
US	782	890	965
HL	130	160	195
HM	437	480	500
J	190	200	205
MS	M90×2	M100×2	M120×2
ML	120	150	160
LL	185	220	240
D	250	300	350
CC	155	175	200
E	260	320	390
F1	195	250	310
F2	285	320	390
M	350	410	500
N	564	660	796
HS	80	90	100
U	68	75	85
T	20	20	22
V	72.5	79.5	90
I	69	78	87
G	35	40	45
Z	45	45	52
Y	4	6	6
S	135	155	175
CD	240	240	280
P	20	20	20
R	717	800	860
DS	255	290	310

Dimension with bellows

Size	750	1000	1250
US2	817	920	995
DS2	290	320	340
JD	230	250	280

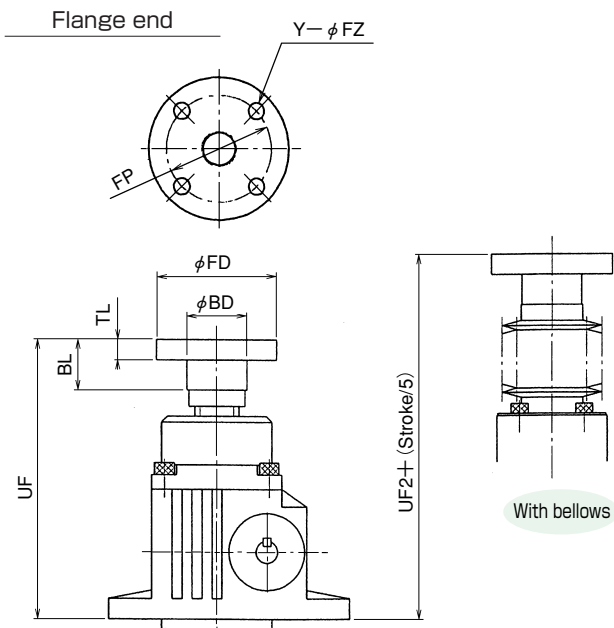
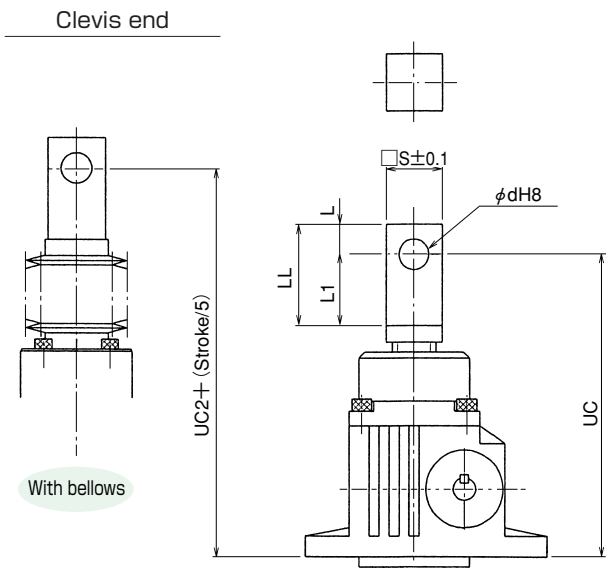
Dimension with whirl stop

Size	750	1000	1250
J1	375	393	430
R1	885	1013	1105
CD2	175	200	250

Dimension of J1 & R1 with whirl stop is only for reference.

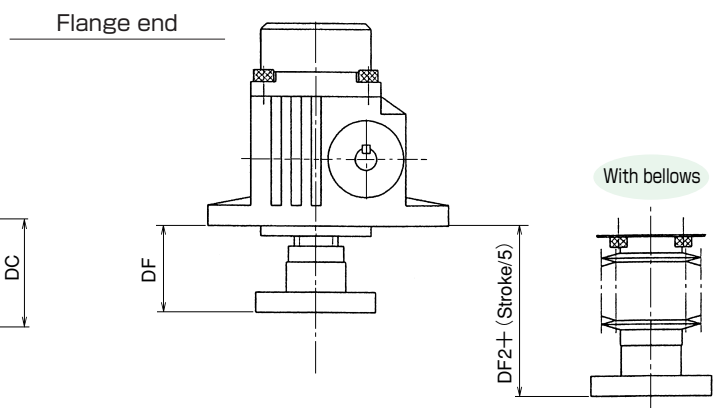
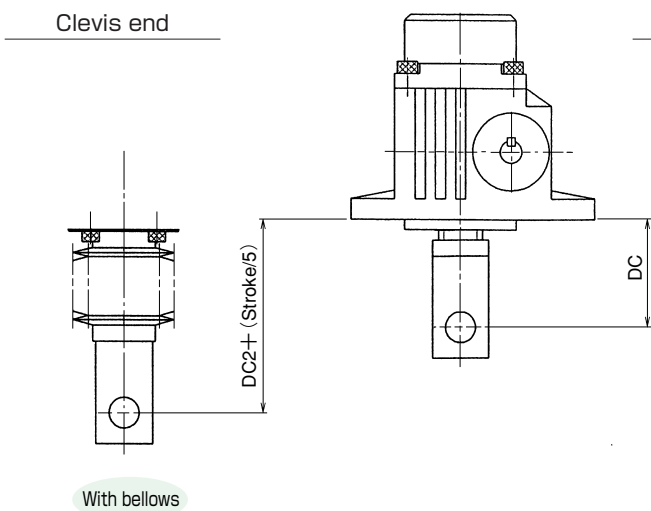
JB005 & JB010 Shaft end connector, installation

JBseries



Standard dimension

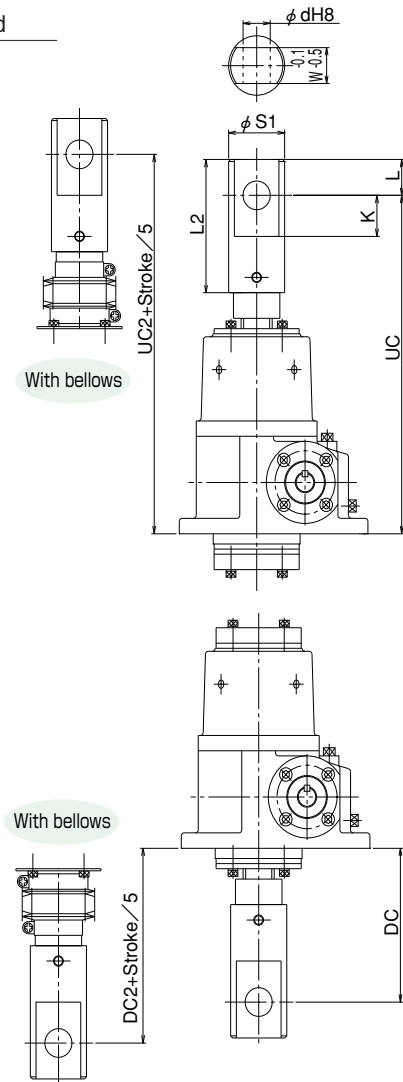
Size	005	010
S	28	32
L	15	15
L1	35	40
LL	50	55
ML	22	25
d	15	16
FD	60	70
BD	30	32
BL	25	28
TL	10	10
FP	45	50
Y	4	4
FZ	7	9
UC	148	165
UC2	160	180
UF	138	153
UF2	150	168
DC	53	60
DC2	65	75
DF	43	48
DF2	55	63



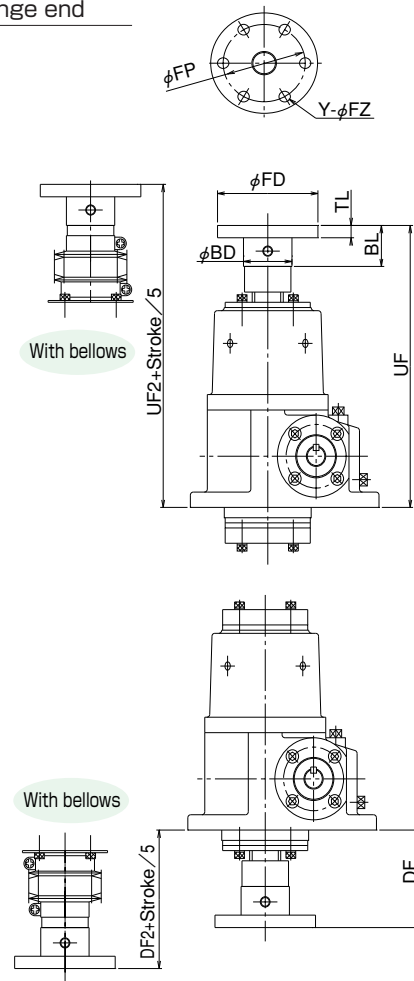
JACK

JBO25~JB1250 Shaft end connector, installation

Clevis end



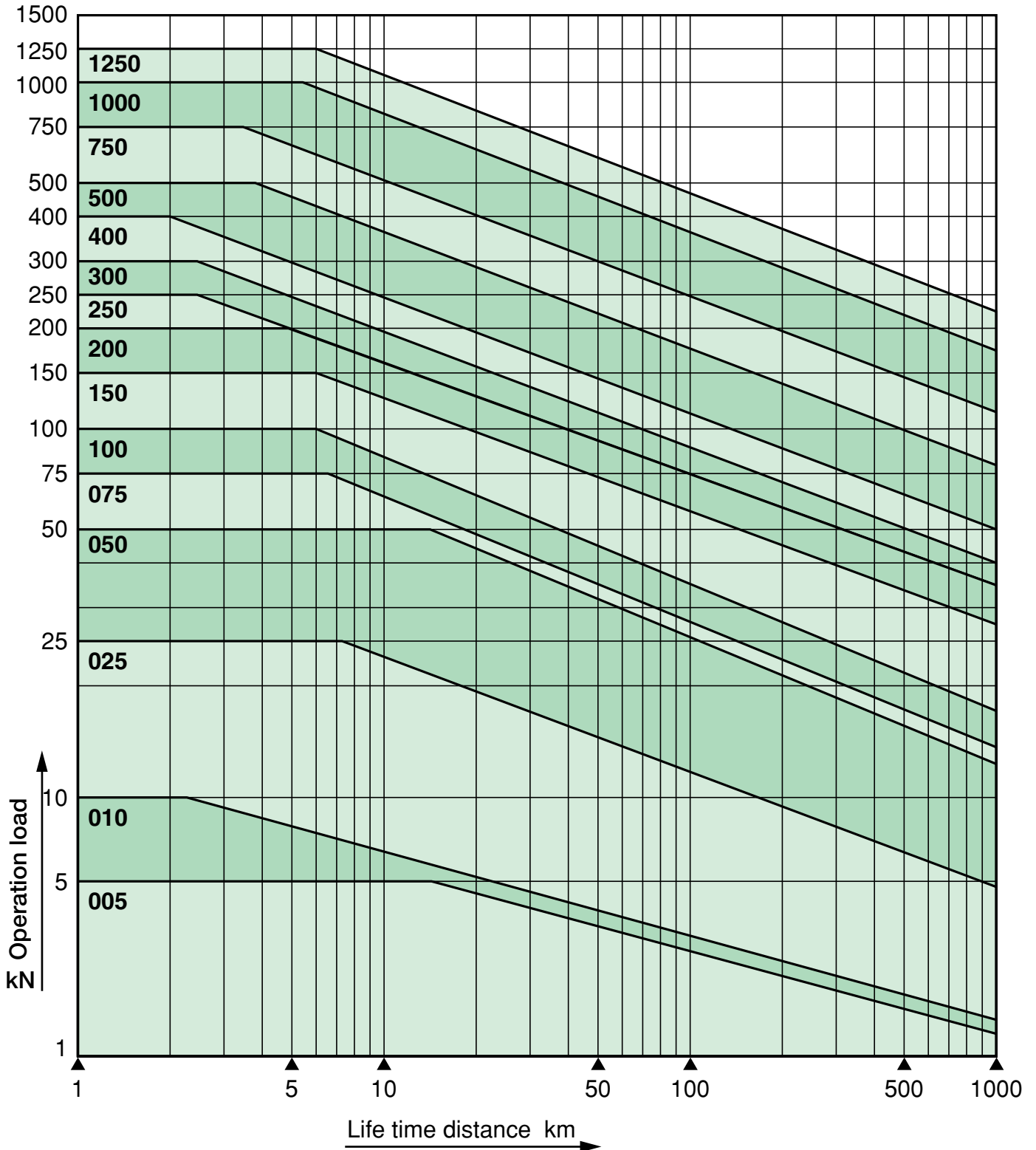
Flange end



Standard dimension

Size	025	050	075	100	150	200	250	300	400	500	750	1000	1250
S1	43	58	63	74	93	93	103	113	132	143	172	198	218
L2	94	130	155	180	210	225	240	255	270	300	335	415	445
L	24	35	45	50	60	65	70	70	70	80	95	110	120
K	28	40	50	55	65	75	75	75	75	85	100	115	125
W	24	35	40	45	60	65	70	80	90	100	120	125	140
d	20	28	30	35	45	50	56	60	70	75	95	110	120
FD	86	104	128	146	166	179	197	225	250	276	328	358	405
FP	66	80	100	110	122	135	145	173	190	210	250	280	315
BD	40	50	60	65	75	85	85	100	125	140	170	200	225
BL	30	40	45	50	60	65	80	85	95	105	125	155	165
TL	10	12	15	20	20	25	25	25	30	35	40	40	45
FZ	9	11	14	18	22	22	22	26	30	39	39	39	45
Y	6	6	6	6	6	6	6	6	6	6	8	8	8
UC	255	325	360	437	510	565	580	620	725	780	902	1045	1130
DC	110	145	160	202	220	245	260	275	290	315	375	445	475
UF	215	270	295	357	420	470	490	520	620	665	787	895	970
DF	70	90	95	122	130	150	170	175	185	200	260	295	315
UC2	275	345	382	459	532	587	602	642	747	802	937	1075	1160
DC2	130	165	182	224	242	267	282	297	312	337	410	475	505
UF2	235	290	317	379	442	492	512	542	642	687	822	925	1000
DF2	90	110	117	144	152	172	192	197	207	222	295	325	345

life time traveling distance chart



Caution on handling

For operation

Check the following matters before operation.

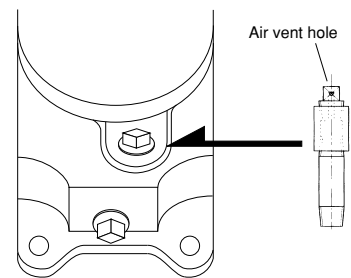
- Check lubricant.
Check lubricant quantity.

For oil bath, level of oil must reach the center of oil level gauge. (JA,JTA,JB,JTB type)

If the oil quantity is reduced, please re-fill the same kind of lubricant.

- Check grease
Check grease of screw shaft

- Check air vent hole
In order to prevent oil leakage during the transportation, used solid plug when leaving factory. Up on confirmed installation and operation style, please change solid plug with attached air vent plug before starting. If not changed, the lubricant may leak.
In addition, if lubricant leak from air vent plug, raise the vent plug position with appropriate pipe.



- Run-in operation
It is required to conduct run-in operation in order to perform full performance.
Therefore, conduct run-in operation for 2-4 hours with 1/3-1/2 of rated load before starting.

- Caution on stroke
The stroke can overrun up and down in both direction within 5-20 mm. When the stroke overrun more than above, screw shaft will be stopped at the place where the stopper to be mounted on the screw shaft bump the housing stopper. But don't try to conduct any work when the product is energized. Always turn off the power switch supply to avoid the product damage. However, screw shaft is locked then you must take off cover of output shaft. We recommended you to use the safety device such as torque limiter and others. But excessive over load to stopper may cause the products damaged.

Handing of accessories

- With bellows
The standard bellow is made from nylon tarpaulin. Unit with bellow must use if jack operation in such bad environment as outdoor or area filled dust or cutting power.
- With key for whirl stop (in case of JA)
It is the structure that enables the screw shaft to move up and down by screw jack itself. The key is fixed to cover of output screw and the key way is in the screw shaft. After used for long period of time, its frictional force worm out, widening the gap between the break disks. When key way exceed a certain distance, excitation of the screw shaft dose no longer a ctivate its armatures, then replace parts.
- With motor
It is the type that the flange type motor is connected directly to the products by coupling. As it adopts the oil bath system in reducer part, it can move at high speed (confirm the attached instruction by motor maker)
- With bevel gear box
It is the type that the bevel gear box is connected directly to the product. As you can position input shaft at right angle to the standard input shaft direction, it is useful to connect many devices.
Don't add the over hung load on the input shaft of bevel gear side.

Installation

●Mounting base

Mounting surface must be rigid enough and secure a flat surface processed mechanically. Otherwise, vibration and noise will cause the jack damage. If mount the reducer, motor, align the product properly.

●Mounting bolt

For mounting bolt of jack, in case load force work on mounting bolt itself, use bolt of strength classification 10.9 or more.

Maintenance

●Change lubricant

For oil bath type, after 50 hours of operation, change the lubricant for first time. After that, change every 6 months. Specially, for first time, unit must be drained, flushed wearing powder with light oil. For grease lubricant type, filled the grease through grease fitting. Excessive grease must removed from screw end cap cover.

●Change screw shaft grease

The lubricant for screw shaft is grease. Change it with new grease at earlier stage. (in about one week). Wipe off old grease and coat with new grease. In addition, it is recommendable to change the grease even if idle unit for long period (more than 6 months).

●Check wear of female screw

Check the wear of female screw.

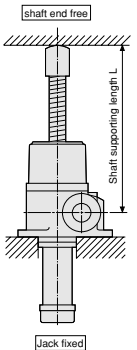
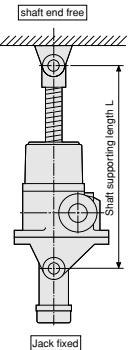
Standard of changing female screw is depend on loading rate and frequency. For normal case, change the screw when maximum screw backlash reached the 1/4 of screw pitch.

●Check worm gear

Check the gear of worm wheel whether if abnormal wear appears or damaged.

Check list for screw JACK

Date :

Client :	User :		
	Using machine name :		
	Application		
	Sales man		
Load condition	Operational condition	Application condition	
The load when move : Compression tf/unit	Nominal stroke : MM	Operation frequency (Reciprocation) times/day	
	Actual stroke : MM		
Tension tf/unit	Drive power : <input type="checkbox"/> Manual <input type="checkbox"/> Electric motor <input type="checkbox"/> Geared motor <input type="checkbox"/> Hydraulik motor <input type="checkbox"/> Air motor <input type="checkbox"/> Engine	Frequency day/month day/year	
The load when stop : Compression tf/unit		Ambient conditions : <input type="checkbox"/> Indoor <input type="checkbox"/> Outdoor	
Tension tf/unit	Powe source (AC, DC) : () V()HZ	Dust : <input type="checkbox"/> Much <input type="checkbox"/> Little <input type="checkbox"/> Nil	
Screw shaft end shap <input type="checkbox"/> Clevis end <input type="checkbox"/> Screw end <input type="checkbox"/> Plain end <input type="checkbox"/> Flange end <input type="checkbox"/> Others		Input revolution Speed : RPM	Bellows : <input type="checkbox"/> Need <input type="checkbox"/> Nil
		Elevation speed : MM/MIN	Ambient temperature : °C
Required model :	Rotation stopper : <input type="checkbox"/> Need <input type="checkbox"/> No need	Limit switch : <input type="checkbox"/> Need <input type="checkbox"/> Nil	
Required quantity :	Brake motor : <input type="checkbox"/> Need <input type="checkbox"/> No need		
Required delivery :		Shaft position A B C	
When compressive load is applied on the screw shaft :		Note :	
① One end fixed One end free	② Both end fixed By clevis		
③ One end fixed One end guided			
			

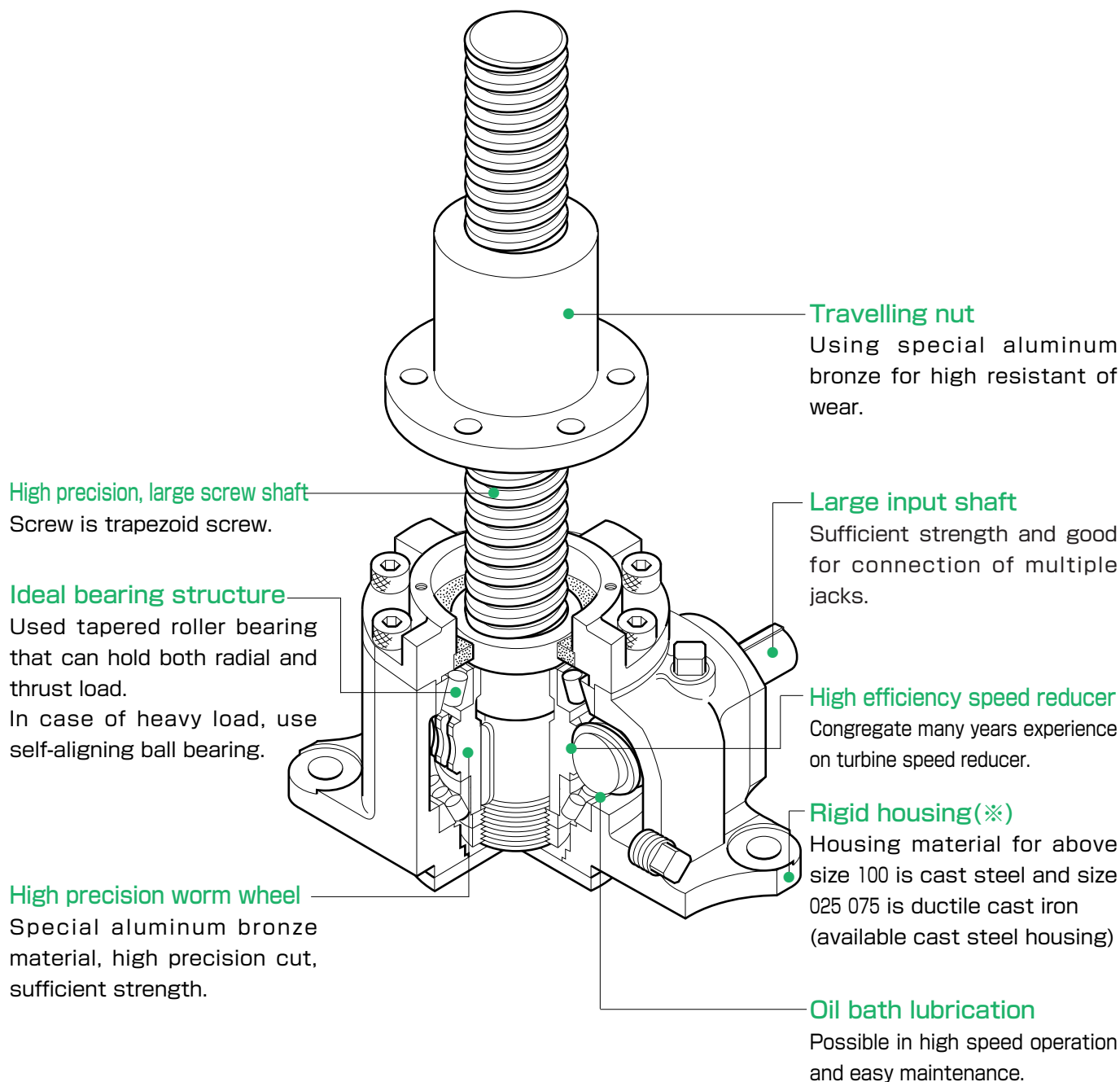
JACK

Suitable for installation of space saving.

JTA
JTB

- Because of function of traveling nut, Installation space in axial direction can be reduced.

JTA structure, feature



JACK

※Material of housing is aluminum for size 002-010.

Function is that worm wheel turns when rotate input shaft (worm) and then travelling nut move. Therefore, it is suitable to use in limited space. For lubricant of size 005 010, grease bath for worm and grease lubricant for screw. For size 002, and 025-1250, oil bath for worm and grease lubricant for screw. Whirl stop for traveling nut is required.

※Note: The stopper for traveling nut is required.

JTA basic specification

JTAseries

Size	002	005	010	025	050	075	100	150	200	250	300	400	500	750	1000	1250		
Nominal capacity (kN)	2	5	10	25	50	75	100	150	200	250	300	400	500	750	1000	1250		
Screw shaft diameter (mm)	14	22	25	30	40	50	55	60	65	70	85	90	110	120	140	160		
Screw shaft root diameter (mm)	10.8	16.5	19.5	23.5	31.5	39.5	42.5	47.5	52.5	55	68	73	93	101	121	139		
Screw pitch (mm)	3	5	5	6	8	10	12	12	12	14	16	16	16	18	18	20		
Reduction ratio	H	6	6	6	7.67	7.67	7.67	7.67	7.67	8	9.33	10	10	9.67	9.67	10.33		
	L	18	18	18	23	23	23	23	23	24	28	30	30	29	29	31		
Travelling distance per one input shaft rotation	H (mm/rev)	0.50	0.83	0.83	0.78	1.04	1.30	1.56	1.56	1.56	1.75	1.71	1.60	1.60	1.86	1.86	1.94	
	L (mm/rev)	0.16	0.28	0.28	0.26	0.35	0.43	0.52	0.52	0.52	0.58	0.57	0.53	0.53	0.62	0.62	0.65	
Efficiency (%)	H (30rpm)	(1800rpm)	21	24	22	21	21	21	23	22	20	22	21	18	18	18	16	16
		(1800rpm)	28	29	27	26	26	27	29	27	26	27	26	22	22	22	19	19
	L (30rpm)	(1800rpm)	14	16	15	14	13	13	15	14	13	15	14	11	12	13	12	12
		(1800rpm)	22	23	22	21	22	22	24	23	22	23	22	20	19	19	17	17
Max input speed (rpm)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1200	900	900	
Standard stroke (mm)	Stroke 50-500(interval 50), more than 500-1000(interval 100)																	
Screw torque (N·m)	2.7	15	30	85	230	425	635	1015	1440	1975	2835	3955	5825	9580	14530	20665		
Input no load torque (N·m)	0.14	0.15	0.2	0.5	0.8	1.2	1.8	2.5	2.5	3.2	4.0	5.0	6.0	7.0	8.0	10		
Input starting torque	H (N·m)	1.4	3.2	6.9	17.0	45.6	85.9	122.2	196.7	277.2	358.5	440.8	654.8	799.4	1356.4	1999.5	2625.7	
	L (N·m)	0.8	1.8	3.8	9.7	26.3	49.9	68.0	110.4	155.1	197.0	242.8	371.2	447.3	702.3	1012.9	1314.3	
Reversing load (kN)	2	5	10	25	50	75	100	150	200	200	200	250	300	400	500	700		
Load at rest (kN)	3	8	15	30	60	80	140	170	250	300	400	500	700	900	1200	1500		
Weight (kg)	2	2.5	3.5	20	25	35	55	65	80	90	120	150	200	500	600	700		

Note: 1. Weight is rough estimate of stroke 300 mm unit 2. ※mark is efficiency of max input speed
 3. Contact us for above 1250kN capacity 4. Screw torque and input starting torque is value for nominal capacity.

JACK

For capacity table

Please refer to JA. (E-15, 16)

For permitted operation load and operation velocity

Please refer to JA (E-17, 18)

For ordering information

Please refer to E-5.

Allowable axial direction load

Screw jack, depend on application, must prevent effect of buckling on screw, there is limitation of apply of the axial direction load.

Allowable buckling-load can be calculated by the following formula.

$$W = \frac{n_r \cdot \pi^2 \cdot E \cdot I \cdot \alpha}{L^2} \quad (\text{Eulers formula})$$

W:permissible buckling load (N)

E :vertical modulus elasticity factor $2.06 \times 10^5 (\text{N}/\text{mm}^2)$

I :minimum sectional secondary moment of screw shaft(mm^4)

$$I = \frac{\pi d^4}{64}$$

d :screw shaft root diameter

L :shaft supporting length

n_r :factor by installation method

Fixed-freely $n_r=1/4(0.25)$

Supported-supported $n_r=1$

Fixed-supported $n_r=2$

α : safety factor 0.25

Example of calculation

Jack size JTA050

From the basic specification, screw shaft root diameter $d=31.5 (\text{mm})$, minimum sectional secondary moment of screw shaft.

$$I = \frac{\pi \times 31.5^4}{64} = 48329 (\text{mm}^4)$$

The shaft supporting length $L=1000 (\text{mm})$

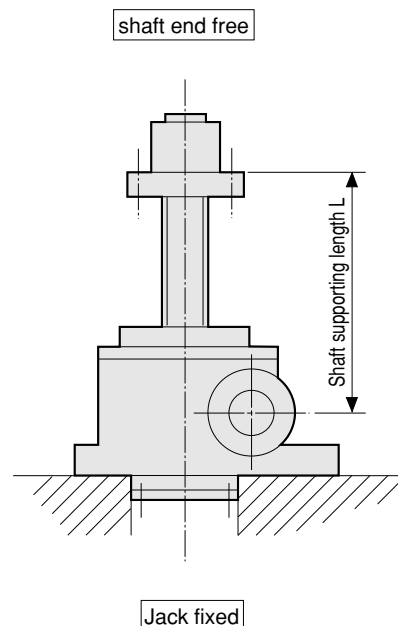
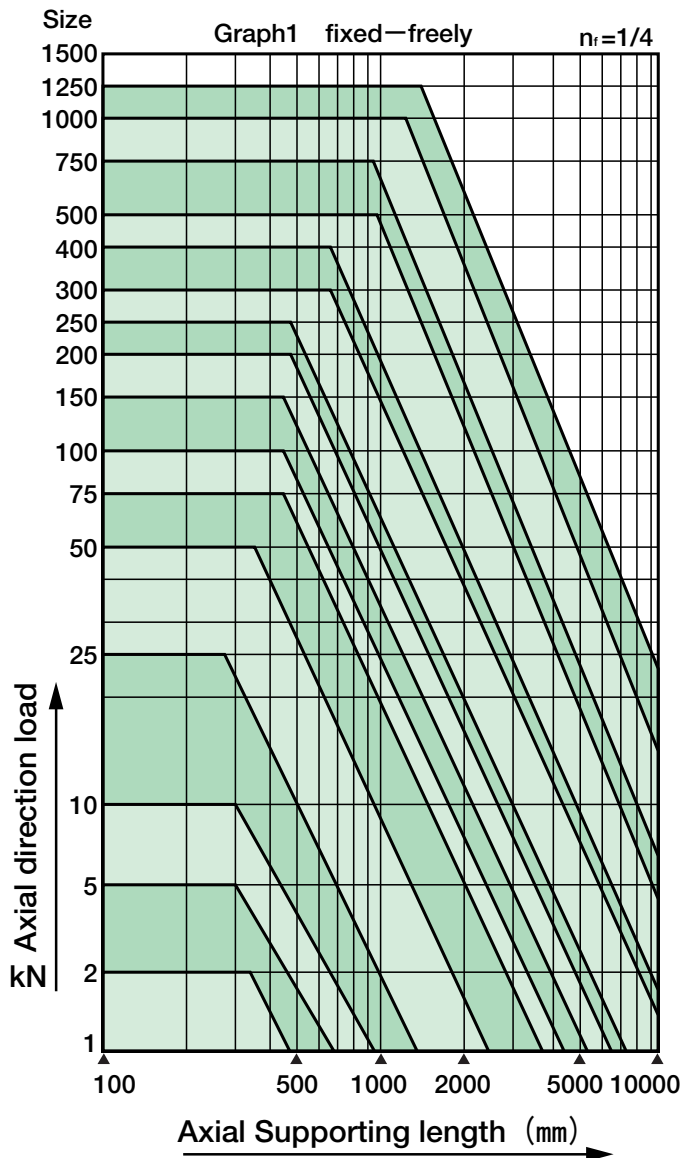
Installation method: fixed-freely

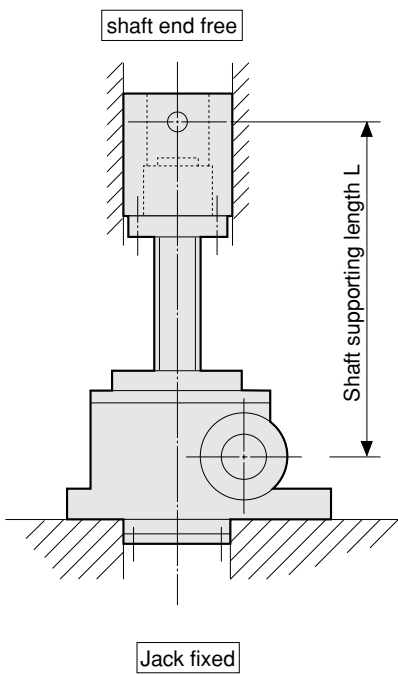
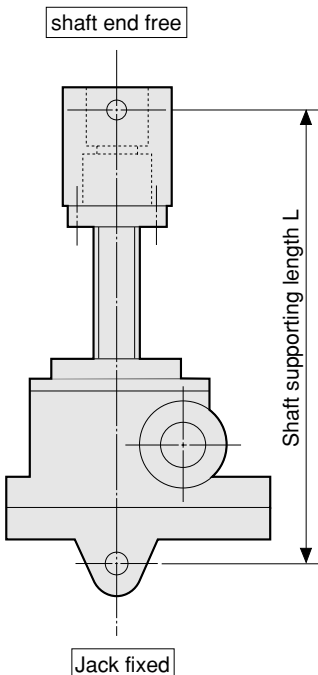
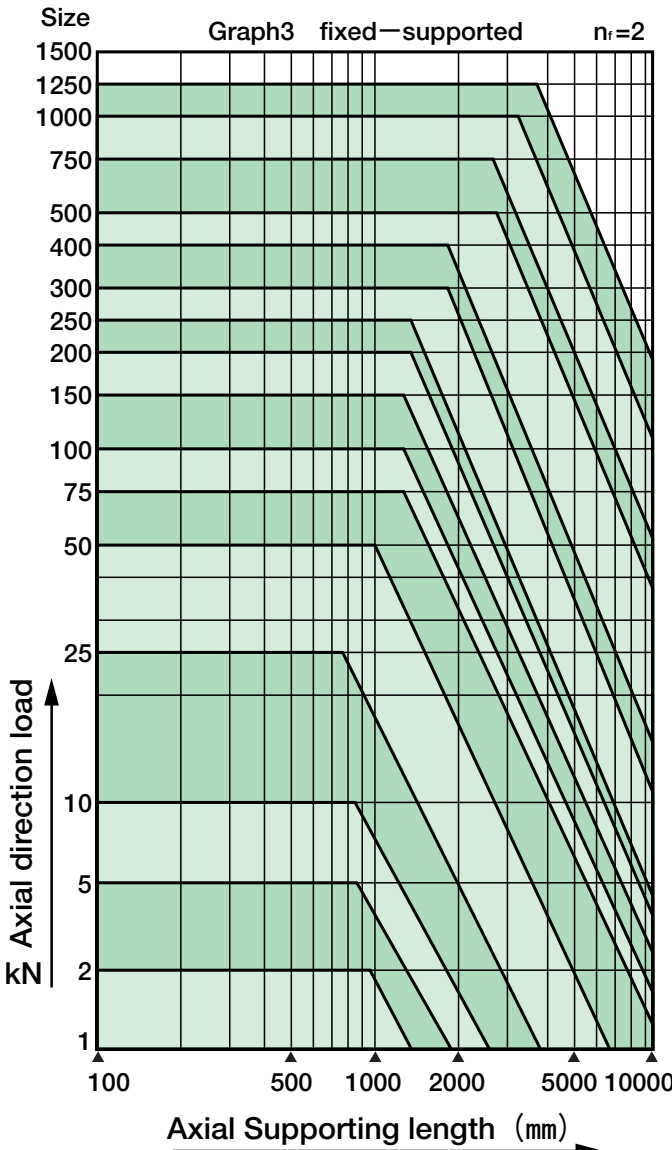
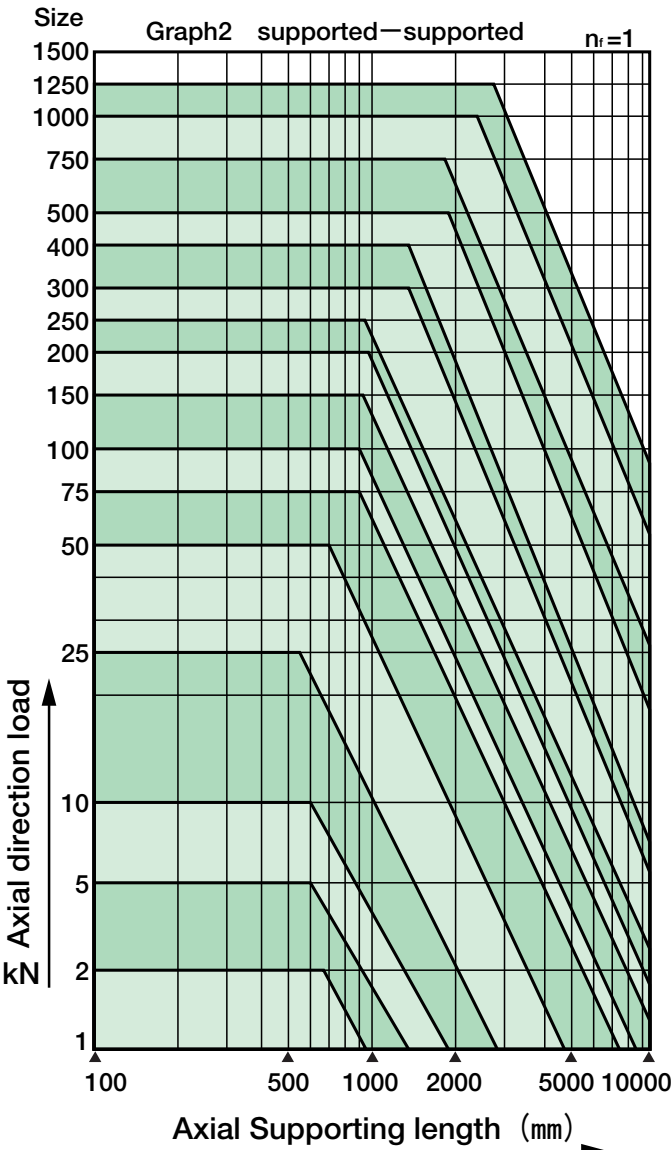
Permissible buckling load is:

$$W = \frac{0.25 \times 3.14^2 \times 2.06 \times 10^5 \times 48329 \times 0.25}{1000^2}$$

$$\approx 6135 (\text{N}) = 6.1 (\text{kN})$$

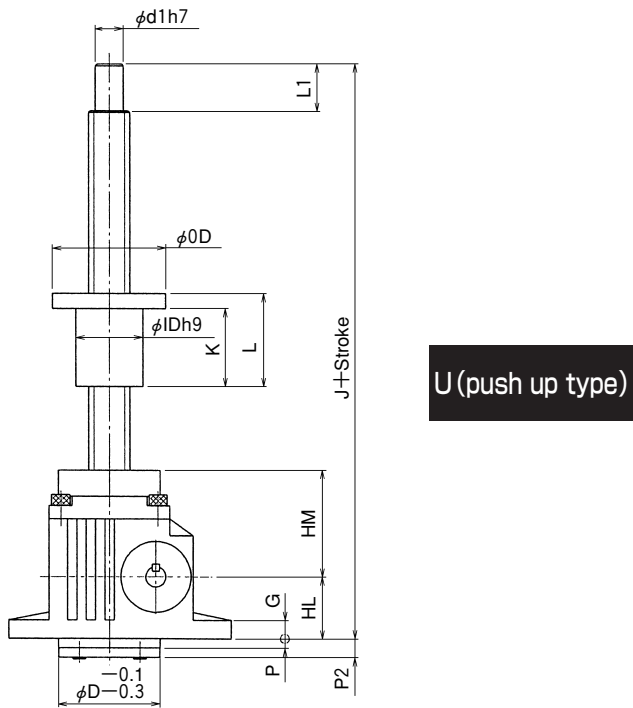
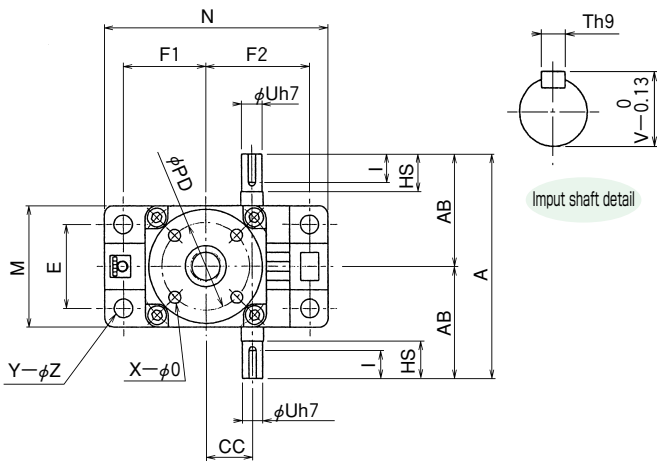
In addition, in the case of permissible buckling load exceeds nominal capacity, the permissible axial direction load should be limited to nominal capacity, the permissible axial direction load should be limited to nominal capacity.



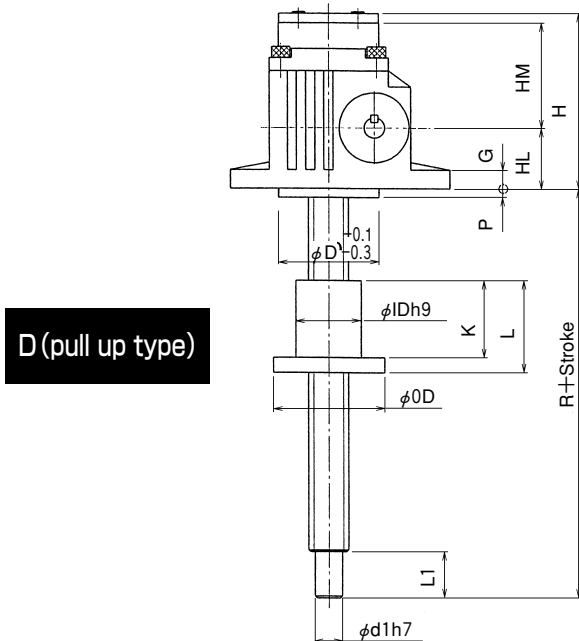


JACK

JTA005 & JTA010 Outline dimensions



U (push up type)



D (pull up type)

Standard dimension

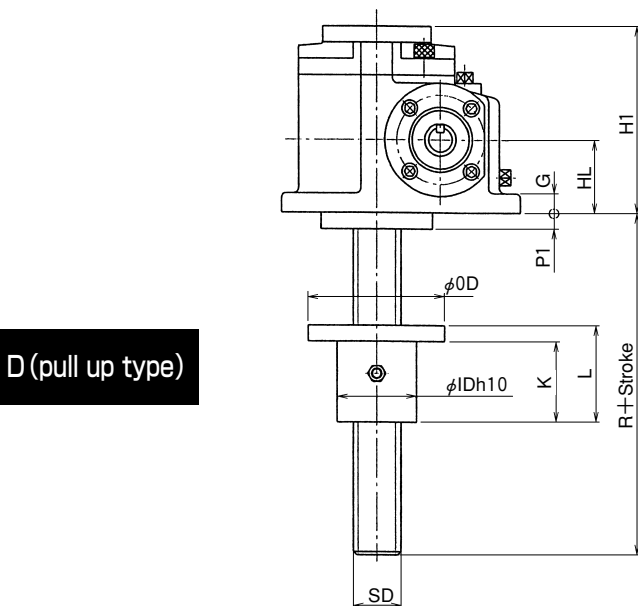
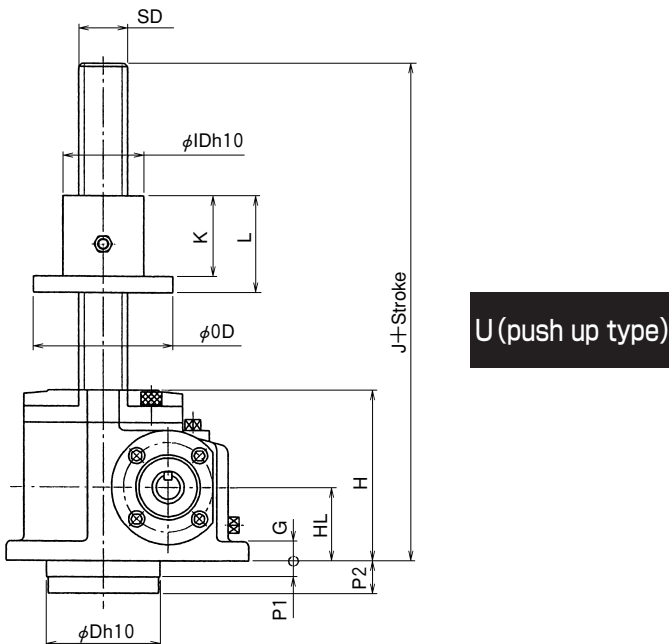
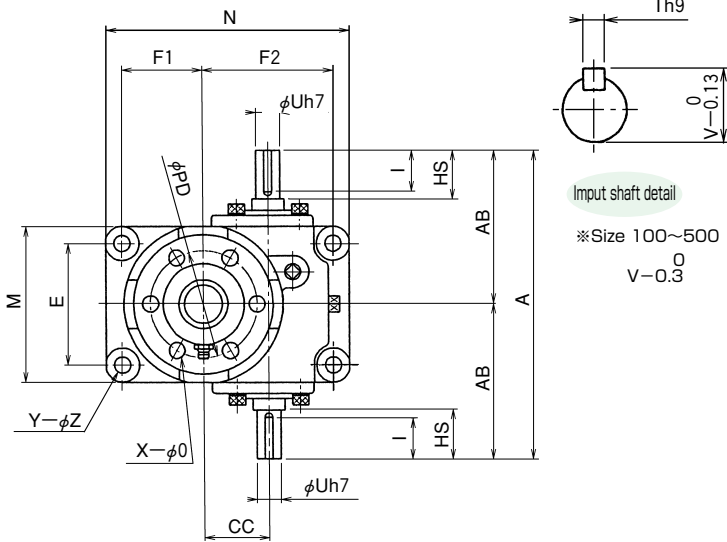
Size	005	010
A	120	140
AB	60	70
HL	33	37
HM	57	63
D	55	65
CC	25	32
E	45	55
F1	44	49
F2	56	66
M	65	75
N	120	135
HS	20	25
U	11	14
T	4	5
V	12.5	16
I	15	20
G	10	10
Z	10	10
Y	4	4
P	5	5
P2	10	10
R	124	126
H	95	105
J	190	200
d1	15	17
K	42	40
L	50	50
L1	25	30
ID	36	40
OD	61	76
PD	47	56
O	6.5	9
X	4	4

For dimension of JA002, please refer to E-54.

JACK

JTA025~JTA500 Outline dimensions

JTAseries

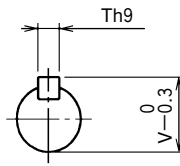
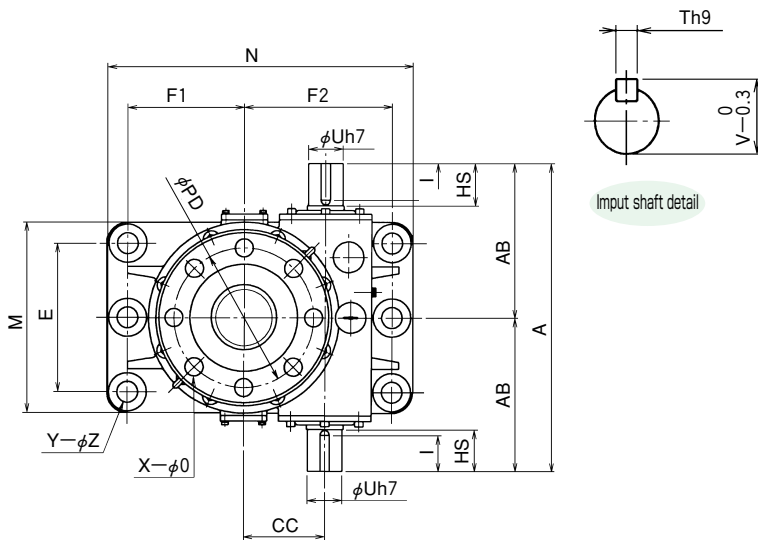


Standard dimension

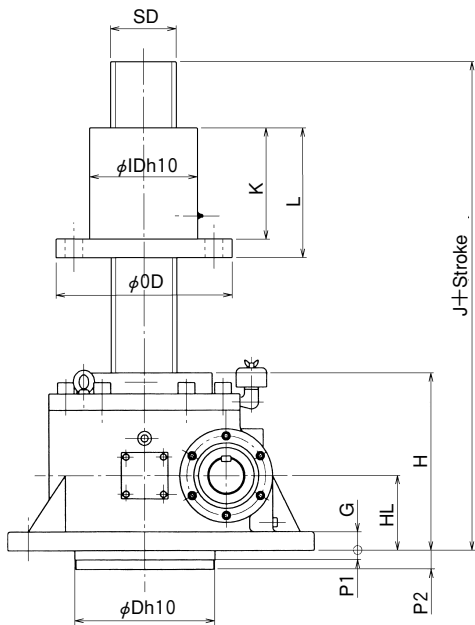
Size	025	050	075	100	150	200	250	300	400	500
A	190	220	260	300	330	350	380	420	450	490
AB	95	110	130	150	165	175	190	210	225	245
H	105	120	138	165	180	210	220	225	250	280
H1	115	130	148	180	192	228	240	250	265	300
HL	45	50	60	70	80	90	95	95	110	125
J	200	235	275	320	350	410	410	450	490	560
K	50	68	85	92	100	115	115	145	150	180
L	60	80	100	110	120	140	140	170	180	220
D	70	90	110	125	140	140	170	180	190	225
P1	10	10	10	10	10	20	10	10	10	10
P2	20	20	20	25	22	38	30	35	25	25
CC	40	50	60	70	80	80	90	100	120	135
E	75	90	105	115	130	130	160	180	190	210
F1	50	65	80	95	105	105	125	130	150	170
F2	80	100	120	145	155	155	170	185	215	240
M	96	120	140	165	180	180	216	240	260	290
N	150	195	235	285	305	305	345	371	430	485
HS	30	30	40	45	50	50	55	60	60	65
U	15	18	22	28	32	32	32	38	42	48
T	5	6	6	8	10	10	10	10	12	14
V	17	20.5	24.5	31	35	35	35	41	45	51.5
I	25	25	35	38	43	43	47	53	52	55
G	12	15	16	20	20	20	22	25	28	35
Z	11	14	18	22	22	22	26	30	33	39
Y	4	4	4	4	4	4	4	4	4	4
O	10	12	14	14	18	22	22	26	30	33
X	6	6	6	6	6	6	6	6	6	6
ID	50	65	80	90	100	110	110	135	145	176
PD	66	85	104	114	132	145	145	183	200	242
OD	86	109	132	142	168	189	189	235	260	315
R	110	135	155	180	190	230	220	260	270	310
SD	TM30×6	TM40×8	TM50×10	TM55×12	TM60×12	TM65×12	TM70×14	TM85×16	TM90×16	TM110×16

JACK

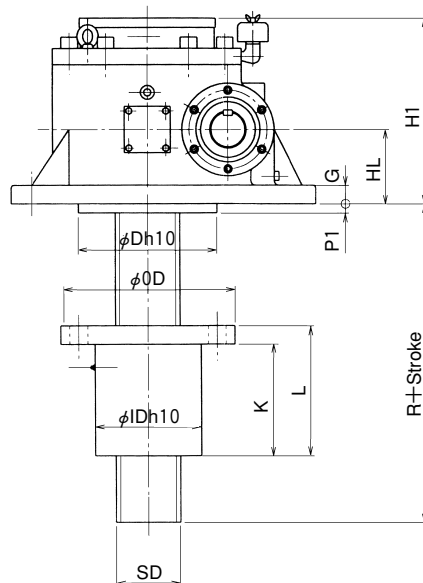
JTA750~JTA1250 Outline dimensions



Input shaft detail



U (push up type)

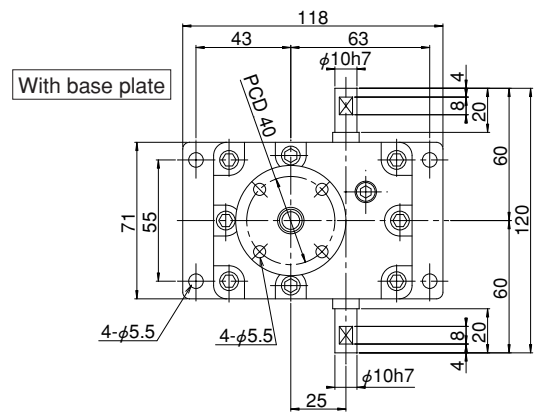
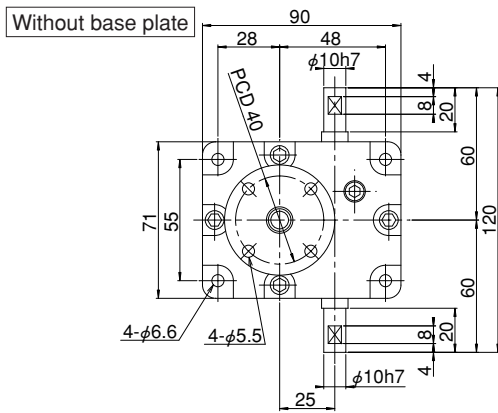


D (pull up type)

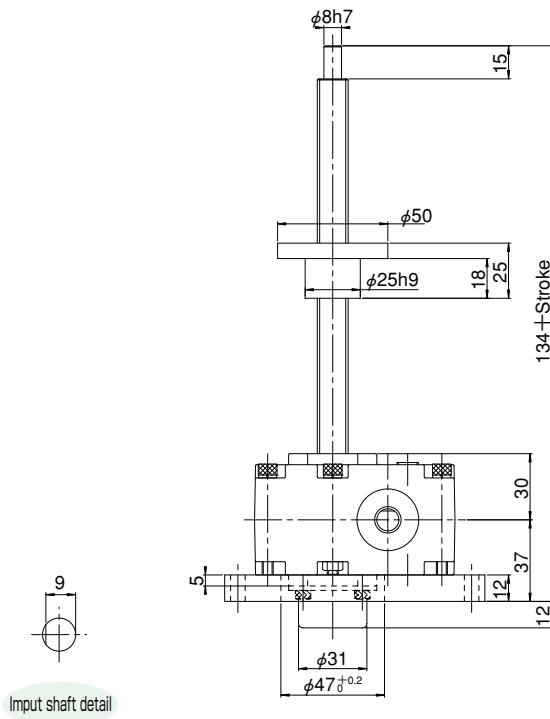
Standard dimension

Size	750	1000	1250
A	590	660	790
AB	295	330	395
H	320	380	455
H1	345	400	475
HL	130	160	195
J	645	745	855
K	200	240	275
L	240	280	320
D	250	300	350
P1	20	20	20
P2	45	45	45
CC	155	175	200
E	260	320	390
F1	195	250	310
F2	285	320	390
M	350	410	500
N	564	660	800
HS	80	90	100
U	68	75	85
T	20	20	22
V	72.5	79.5	90
I	69	78	87
G	35	40	45
Z	45	45	52
Y	4	6	6
O	39	39	45
X	8	8	8
ID	200	230	250
PD	270	300	335
OD	348	378	425
R	385	425	465
SD	TM120×18	TM140×18	TM160×20

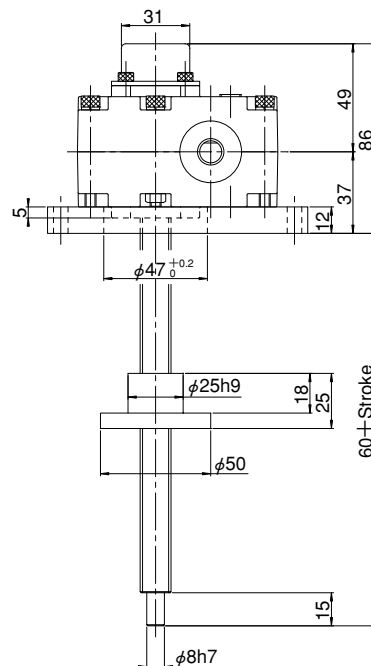
JACK



※The figure is shaft arrangement C.

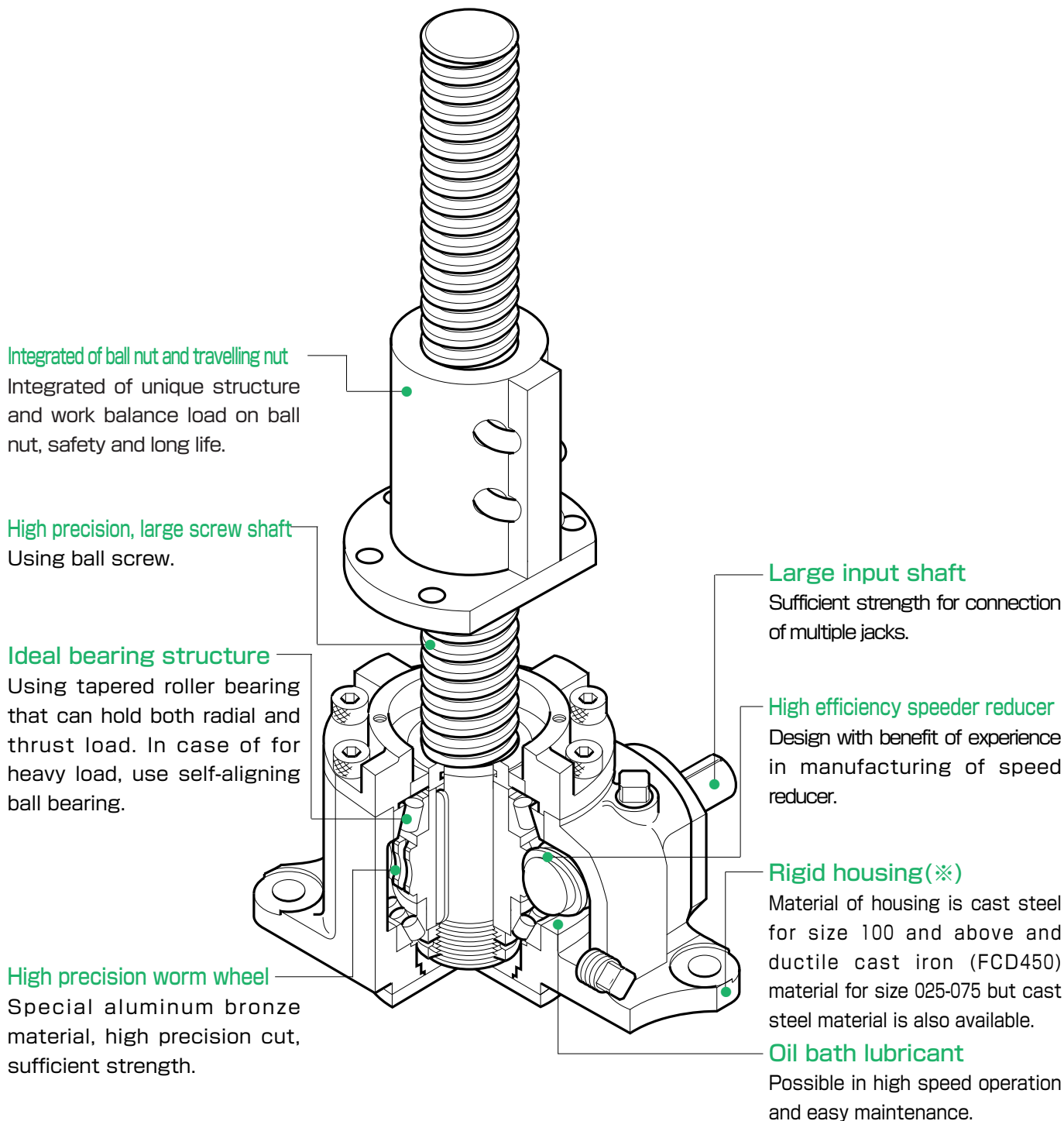


U (push up type)



D (pull up type)

JTB structure, feature



JACK

※Material of housing is aluminum for size 005-010.

Function is that worm wheel turns when rotate input (worm) and then travelling nut move. Therefore, it is suitable to use in limited space. For lubricant of size 005 010, grease bath for worm and grease lubricant for screw. For size 025~1250, oil bath for worm and grease lubricant for screw. Whirl stop travelling nut is required. (Please refer to screw torque in basic specification)

JTB basic specification

JTBseries

Size	005	010	025	050	075	100	150	200	
Nominal capacity (kN)	5	10	25	50	75	100	150	200	
Screw shaft diameter (mm)	20	25	25	36	40	50	50	63	
Screw shaft root diameter (mm)	17.5	22	19	30	35	45	42	55	
Screw pitch (mm)	5	5	10	10	10	10	16	16	
Reduction ratio H	6	6	7.67	7.67	7.67	7.67	7.67	7.67	
L	18	18	23	23	23	23	23	23	
Travelling distance per H	0.83	0.83	1.30	1.30	1.30	1.30	2.09	2.09	
one input shaft rotation L (mm/rev)	0.28	0.28	0.44	0.44	0.44	0.44	0.70	0.70	
Efficiency (%)	H (30rpm)	58	59	57	57	56	59	58	58
	(1800rpm)	71	72	71	72	72	73	74	74
	L (30rpm)	39	40	37	36	35	39	38	38
	(1800rpm)	57	59	58	58	59	62	62	62
Max input speed (rpm)	1800	1800	1800	1800	1800	1800	1800	1800	
Standard stroke (mm)	Stroke 50-500(interval 50), more than 500-1000(interval 100)								
Screw torque (N·m)	5	10	45	90	140	190	425	575	
Input no load torque (N·m)	0.15	0.2	0.5	0.8	1.2	1.8	2.5	2.5	
Input starting torque	H (N·m)	1.4	2.7	10.6	21.5	32.5	41.3	98.2	130.2
	L (N·m)	0.8	1.5	6.2	12.6	19.2	23.5	55.7	73.4
Holding torque	H (N·m)	0.4	0.7	2.4	4.4	6.3	10.3	23.8	31.7
	L (N·m)	0.1	0.2	1.1	2.5	4.1	3.5	9.3	12.4
Reversing load (kN)	5	10	25	50	75	100	150	200	
Load at rest (kN)	8	15	30	60	80	140	170	250	
Weight (kg)	2.5	3.5	20	25	35	55	65	80	

Note: 1. Weight is rough estimate of stroke 300 mm unit 2. ※mark is efficiency of max. input speed
 3. Contact us for above 200kN capacity 4. Screw torque and input starting torque is value for nominal capacity.

JACK

For ordering information

Please refer to E-5.

JTB capacity table (reduction ratio H)

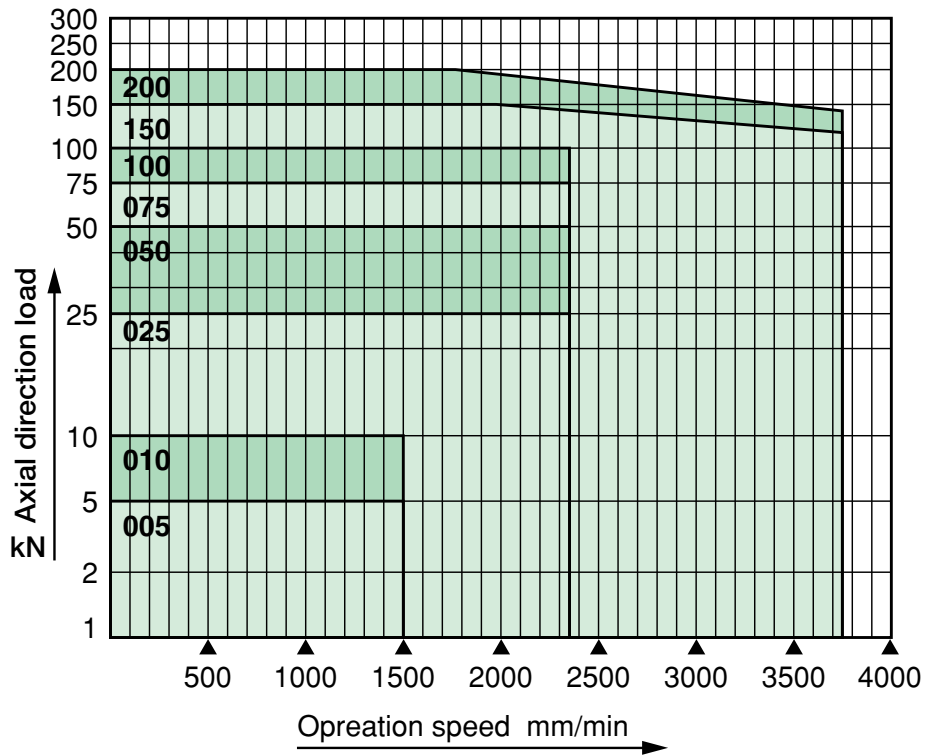
Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
005	Load (kN)	5	5	5	5	5	5	5	5	5	5
	Speed (m/min)	1.500	1.250	1.000	0.833	0.750	0.625	0.417	0.208	0.083	0.042
	Efficiency	0.707	0.699	0.693	0.688	0.682	0.675	0.662	0.637	0.610	0.600
	Lost power (k.W)	0.028	0.024	0.019	0.016	0.014	0.012	0.008	0.004	0.002	0.001
	Power (k.W)	0.205	0.173	0.139	0.117	0.106	0.089	0.060	0.031	0.013	0.007
010	Load (kN)	10	10	10	10	10	10	10	10	10	10
	Speed (m/min)	1.500	1.250	1.000	0.833	0.750	0.625	0.417	0.208	0.083	0.042
	Efficiency	0.718	0.709	0.700	0.695	0.692	0.686	0.670	0.644	0.615	0.604
	Lost power (k.W)	0.038	0.031	0.025	0.021	0.019	0.016	0.010	0.005	0.002	0.001
	Power (k.W)	0.386	0.325	0.263	0.221	0.199	0.168	0.114	0.059	0.025	0.013
025	Load (kN)	25	25	25	25	25	25	25	25	25	25
	Speed (m/min)	2.347	1.956	1.565	1.304	1.173	0.978	0.652	0.326	0.130	0.065
	Efficiency	0.713	0.703	0.691	0.683	0.680	0.674	0.656	0.628	0.595	0.581
	Lost power (k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power (k.W)	1.466	1.238	1.006	0.848	0.767	0.644	0.440	0.229	0.097	0.049
050	Load (kN)	50	50	50	50	50	50	50	50	50	50
	Speed (m/min)	2.347	1.956	1.565	1.304	1.173	0.978	0.652	0.326	0.130	0.065
	Efficiency	0.715	0.709	0.699	0.689	0.683	0.675	0.661	0.631	0.593	0.573
	Lost power (k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power (k.W)	2.888	2.424	1.965	1.662	1.507	1.270	0.864	0.451	0.192	0.099
075	Load (kN)	75	75	75	75	75	75	75	75	75	75
	Speed (m/min)	2.347	1.956	1.565	1.304	1.173	0.978	0.652	0.326	0.130	0.065
	Efficiency	0.719	0.712	0.705	0.697	0.690	0.680	0.663	0.633	0.596	0.571
	Lost power (k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power (k.W)	4.306	3.622	2.926	2.465	2.238	1.893	1.291	0.675	0.286	0.149
100	Load (kN)	100	100	100	100	100	100	100	100	100	100
	Speed (m/min)	2.347	1.956	1.565	1.304	1.173	0.978	0.652	0.326	0.130	0.065
	Efficiency	0.733	0.726	0.719	0.715	0.707	0.698	0.682	0.654	0.621	0.597
	Lost power (k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power (k.W)	5.678	4.770	3.852	3.229	2.934	2.475	1.687	0.877	0.369	0.192
150	Load (kN)	114.7	124.1	136.4	144.4	150	150	150	150	150	150
	Speed (m/min)	3.755	3.129	2.503	2.086	1.877	1.565	1.043	0.522	0.209	0.104
	Efficiency	0.735	0.728	0.720	0.715	0.713	0.702	0.683	0.655	0.619	0.593
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	10.237	9.284	8.215	7.288	6.820	5.768	3.948	2.055	0.868	0.453
200	Load (kN)	146.0	158.0	173.5	183.8	193.4	200	200	200	200	200
	Speed (m/min)	3.755	3.129	2.503	2.086	1.877	1.565	1.043	0.522	0.209	0.104
	Efficiency	0.735	0.728	0.720	0.715	0.713	0.702	0.683	0.655	0.619	0.593
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	12.900	11.709	10.369	9.204	8.726	7.625	5.221	2.719	1.149	0.599

JTB capacity table (reduction ratio L)

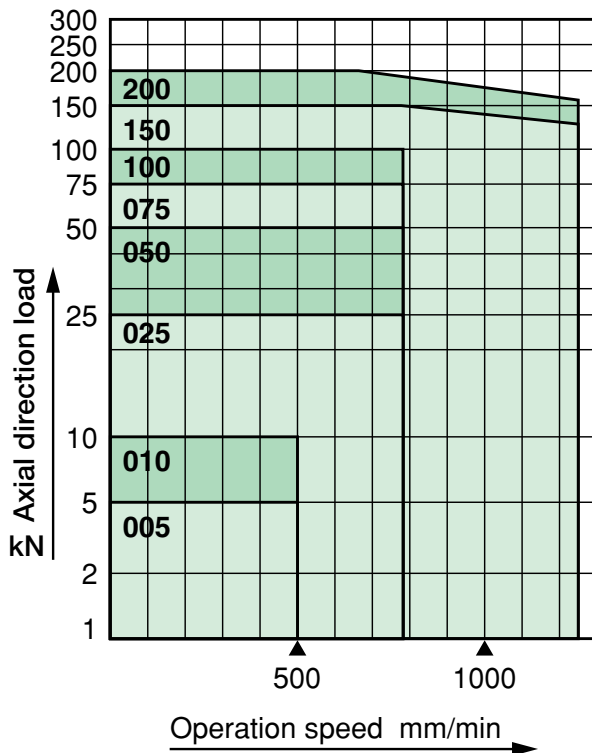
Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
005	Load (kN)	5	5	5	5	5	5	5	5	5	5
	Speed (m/min)	0.500	0.417	0.333	0.278	0.250	0.208	0.139	0.069	0.028	0.014
	Efficiency	0.568	0.556	0.545	0.534	0.526	0.514	0.491	0.455	0.420	0.406
	Lost power (k.W)	0.028	0.024	0.019	0.016	0.014	0.012	0.008	0.004	0.002	0.001
	Power (k.W)	0.102	0.086	0.070	0.059	0.054	0.046	0.031	0.017	0.007	0.004
010	Load (kN)	10	10	10	10	10	10	10	10	10	10
	Speed (m/min)	0.500	0.417	0.333	0.278	0.250	0.208	0.139	0.069	0.028	0.014
	Efficiency	0.589	0.573	0.558	0.549	0.544	0.530	0.506	0.467	0.427	0.413
	Lost power (k.W)	0.038	0.031	0.025	0.021	0.019	0.016	0.010	0.005	0.002	0.001
	Power (k.W)	0.179	0.153	0.125	0.105	0.095	0.081	0.056	0.030	0.013	0.007
025	Load (kN)	25	25	25	25	25	25	25	25	25	25
	Speed (m/min)	0.783	0.652	0.522	0.435	0.391	0.326	0.217	0.109	0.043	0.022
	Efficiency	0.580	0.559	0.538	0.526	0.519	0.511	0.481	0.440	0.396	0.379
	Lost power (k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power (k.W)	0.657	0.565	0.467	0.397	0.361	0.305	0.215	0.116	0.051	0.027
050	Load (kN)	50	50	50	50	50	50	50	50	50	50
	Speed (m/min)	0.783	0.652	0.522	0.435	0.391	0.326	0.217	0.109	0.043	0.022
	Efficiency	0.581	0.572	0.552	0.533	0.524	0.511	0.487	0.443	0.392	0.370
	Lost power (k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power (k.W)	1.273	1.077	0.889	0.764	0.698	0.594	0.414	0.226	0.101	0.053
075	Load (kN)	75	75	75	75	75	75	75	75	75	75
	Speed (m/min)	0.783	0.652	0.522	0.435	0.391	0.326	0.217	0.109	0.043	0.022
	Efficiency	0.590	0.576	0.563	0.546	0.535	0.518	0.491	0.446	0.395	0.365
	Lost power (k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power (k.W)	1.886	1.604	1.308	1.120	1.028	0.882	0.616	0.336	0.150	0.081
100	Load (kN)	100	100	100	100	100	100	100	100	100	100
	Speed (m/min)	0.783	0.652	0.522	0.435	0.391	0.326	0.217	0.109	0.043	0.022
	Efficiency	0.617	0.605	0.592	0.580	0.568	0.551	0.525	0.480	0.431	0.400
	Lost power (k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power (k.W)	2.452	2.080	1.695	1.439	1.318	1.128	0.785	0.425	0.187	0.100
150	Load (kN)	124.2	133.4	142.6	150	150	150	150	150	150	150
	Speed (m/min)	1.252	1.043	0.835	0.696	0.626	0.522	0.348	0.174	0.070	0.035
	Efficiency	0.625	0.609	0.593	0.583	0.579	0.558	0.525	0.480	0.428	0.394
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	4.620	4.201	3.658	3.244	2.940	2.534	1.788	0.972	0.432	0.234
200	Load (kN)	158.0	169.8	181.4	196.3	200	200	200	200	200	200
	Speed (m/min)	1.252	1.043	0.835	0.696	0.626	0.522	0.348	0.174	0.070	0.035
	Efficiency	0.625	0.609	0.593	0.583	0.579	0.558	0.525	0.480	0.428	0.394
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	5.751	5.240	4.570	4.164	3.842	3.313	2.341	1.274	0.567	0.307

Please use the unit within following load, velocity chart.

Load, velocity chart(reduction ratio H)



Load, velocity chart(reduction ratio L)



JTB Allowable axial direction load

Screw jack, depend on application, must prevent effect of buckling on screw, there is limitation of apply of axial direction load.

Allowable buckling-load can be calculated by the following formula.

$$W = \frac{n_r \cdot \pi^2 \cdot E \cdot I \cdot \alpha}{L^2} \quad (\text{Eulers formula})$$

W:permissible buckling load (N)

E:vertical modulus elasticity factor $2.06 \times 10^5 (\text{N}/\text{mm}^2)$

I :minimum sectional secondary moment of screw shaft(mm^4)

$$I = \frac{\pi d^4}{64}$$

d:screw shaft root diameter (mm)

L :shaft supporting length (mm)

n_r :factor by installation method

Fixed-freely $n_r = 1/4 (0.25)$

Supported-supported $n_r = 1$

Fixed-supported $n_r = 2$

α : safety factor 0.25

Example of calculation:

Jack size JTB 150

From the basic specification, screw shaft root diameter $d=42(\text{mm})$, minimum sectional secondary moment of screw.

$$I = \pi \times 42^4 / 64 = 152745 (\text{mm}^4)$$

The shaft supporting length $L=1200(\text{mm})$

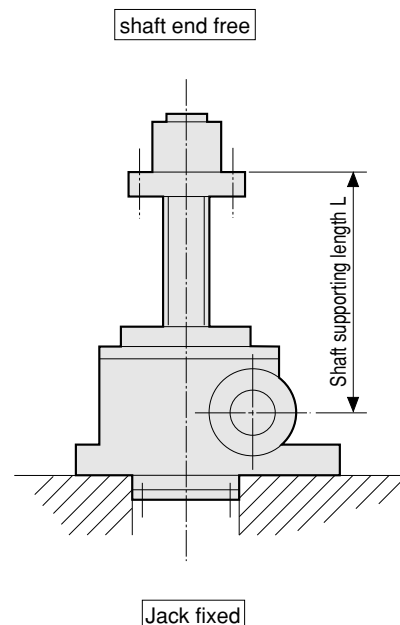
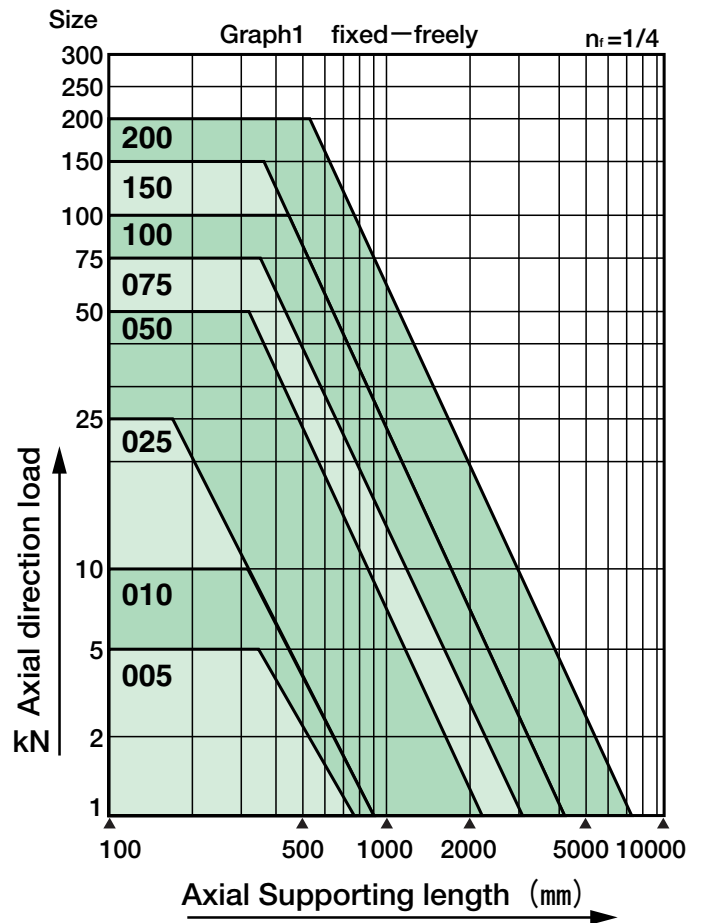
Installation method: fixed-supported $n_r=2$

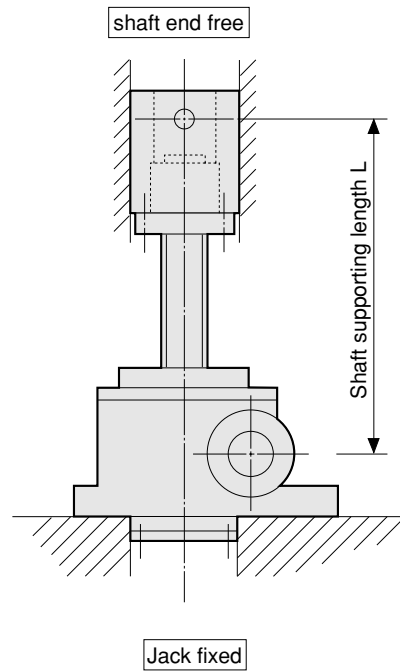
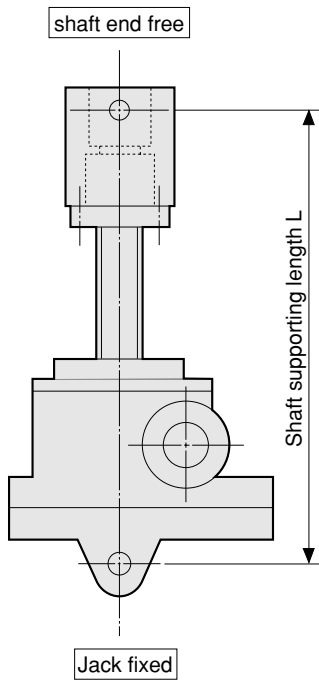
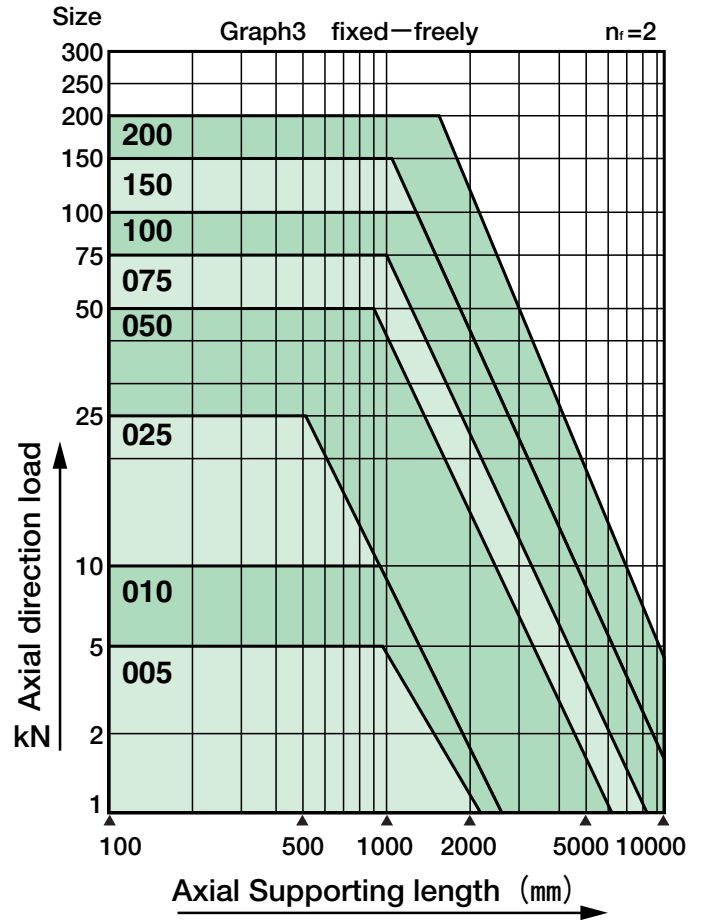
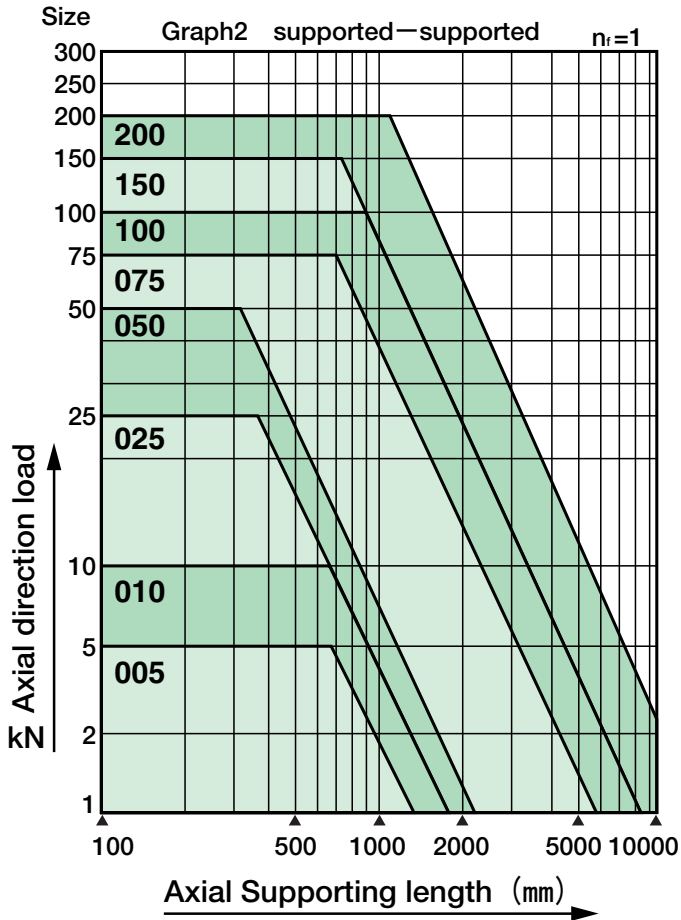
Permissible buckling load is

$$W = \frac{2 \times 3.14^2 \times 2.06 \times 10^5 \times 152745 \times 0.25}{1200^2}$$

$$\doteq 107800 (\text{N}) = 107.8 (\text{kN})$$

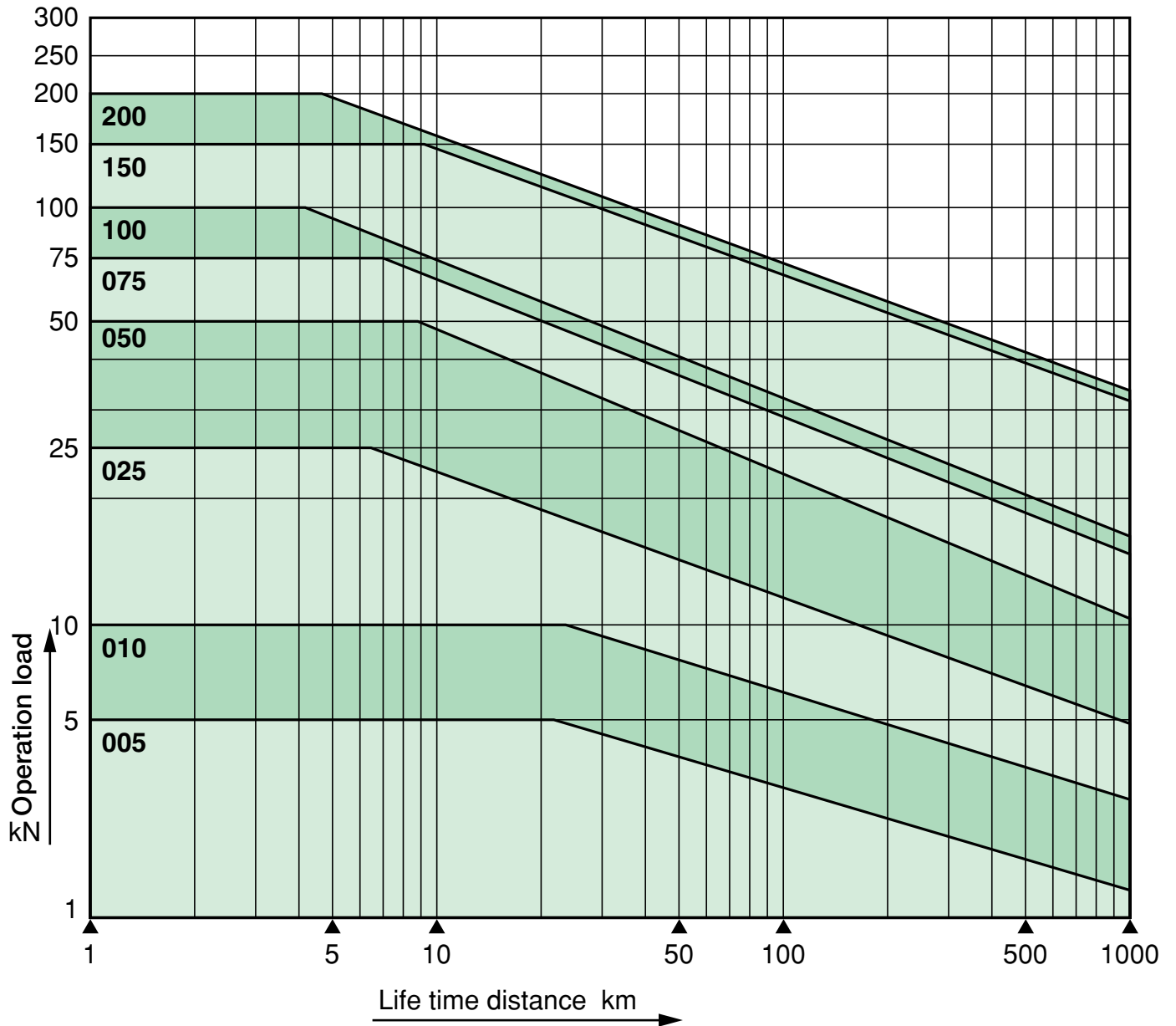
In addition, in the case of permissible buckling load exceeds nominal capacity, the permissible axial direction load should be limited to nominal capacity.





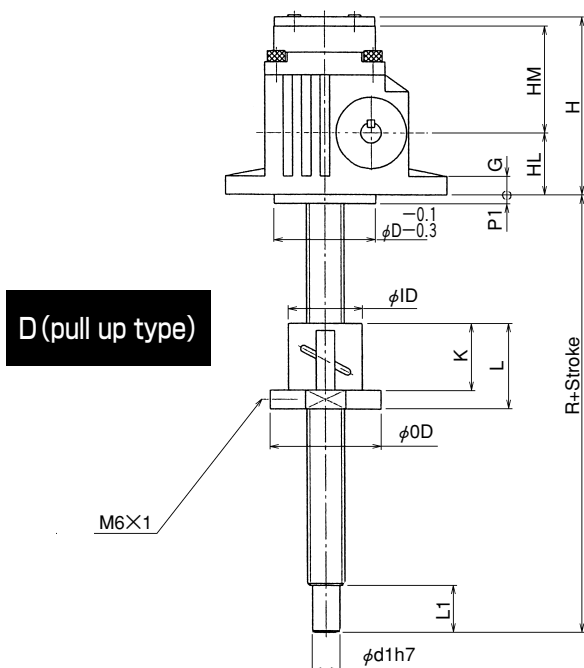
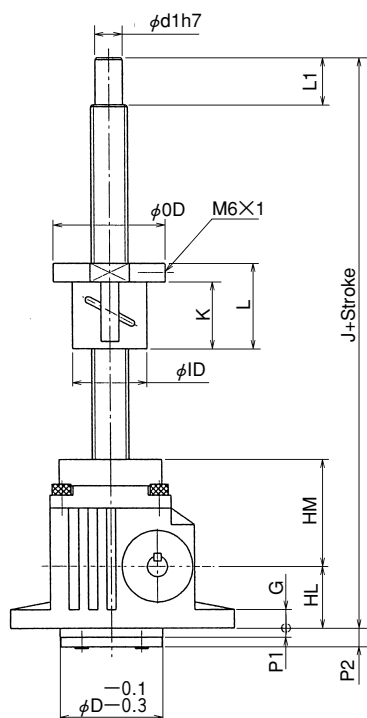
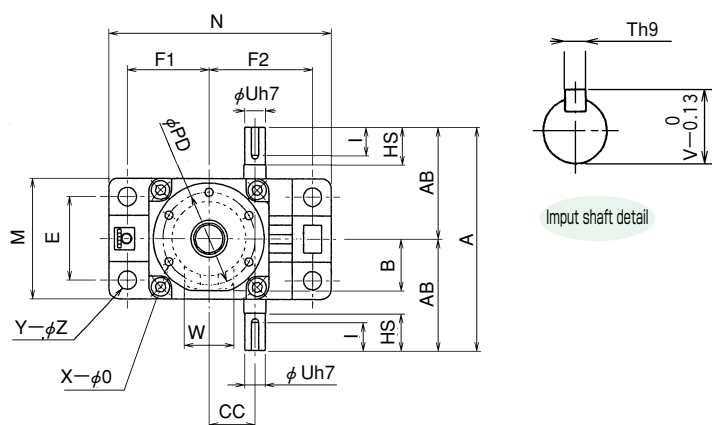
JTB life time traveling distance

Life time traveling distance chart



JACK

JTBO05&JTBO10 Outline dimensions JT Bseries

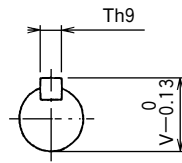
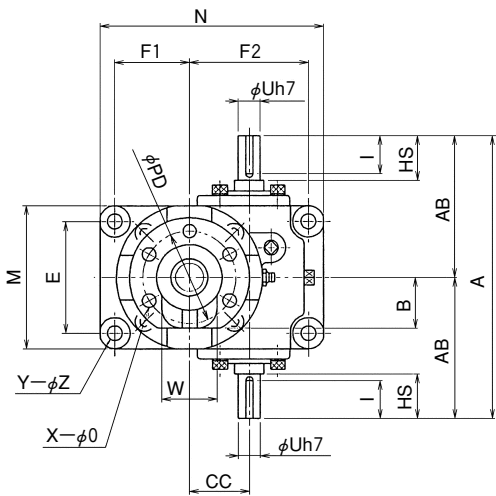


Standard dimension

Size	005	010
A	120	140
AB	60	70
HL	33	37
HM	57	63
D	55	65
CC	25	32
E	45	55
F1	44	49
F2	56	66
M	65	75
N	120	135
HS	20	25
U	11	14
T	4	5
V	12.5	16
I	15	20
G	10	10
Z	10	10
Y	4	4
P1	5	5
P2	10	10
R	124	146
H	95	105
J	190	220
d1	15	17
K	36	54
L	46	66
L1	25	30
ID	40	42
OD	60	71
PD	50	57
O	4.5	6.6
X	5	5
B	28	28
W	27	31

JACK

JTBO25~JTB200 Outline dimensions

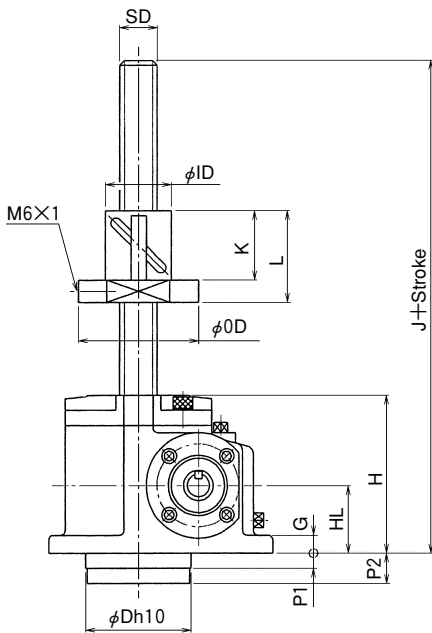


Input shaft detail

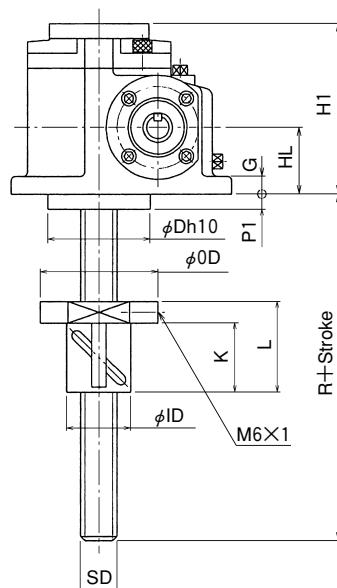
*Size 100~500
V-0.3

Standard dimension

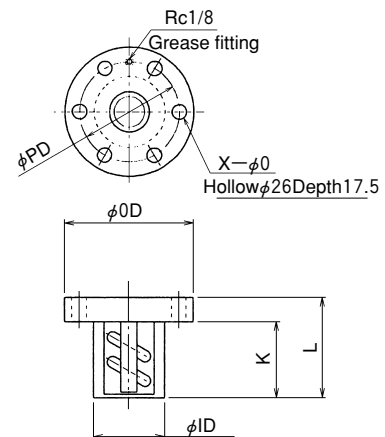
Size	025	050	075	100	150	200
A	190	220	260	300	330	350
AB	95	110	130	150	165	175
H	105	120	138	165	180	210
H1	115	130	148	180	192	228
HL	45	50	60	70	80	90
J	205	260	310	340	380	445
K	47	80	100	100	118	130
L	62	98	120	122	146	158
D	70	90	110	125	140	140
P1	10	10	10	10	10	20
P2	20	20	20	25	22	38
CC	40	50	60	70	80	80
E	75	90	105	115	130	130
F1	50	65	80	95	105	105
F2	80	100	120	145	155	155
M	96	120	140	165	180	180
N	150	195	235	285	305	305
HS	30	30	40	45	50	50
U	15	18	22	28	32	32
T	5	6	6	8	10	10
V	17	20.5	24.5	31	35	35
I	25	25	35	38	43	43
G	12	15	16	20	20	20
Z	11	14	18	22	22	22
Y	4	4	4	4	4	4
O	9	11	14	18	22	18
X	5	5	5	5	5	6
ID	44	60	65	80	85	122
PD	62	80	90	110	125	150
OD	80	102	114	140	163	180
R	115	160	190	200	220	265
SD	φ25×10	φ36×10	φ40×10	φ50×10	φ50×16	φ63×16
B	34	42	44	52	57	—
W	37	46	50	59	63	—



U (push up type)



D (pull up type)



Above dimension, shape of traveling nut is only for JTB200

JACK

With driving machine

**Motor
Geared motor
Bevel gear**

Select best driving model.

JACK

Capacity table with motor

JA, JTA with motor

Size	Type	Capacity (kW)	Reduction ratio (H)				Reduction ratio (L)			
			Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)		Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)	
			Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)
025	M02	0.2	1173	1.5	1408	1	391	3.5	470	2.5
	M04	0.4	1173	4	1408	3	391	10	470	8
	M07	0.75	1173	8.5	1408	7	391	21.5	470	17.5
050	M04	0.4	1565	2.5	1877	2	522	6.5	626	5
	M07	0.75	1565	6	1877	5	522	15	626	12
	M15	1.5	1565	13.5	1877	11	522	33	626	27
075	M15	1.5	1956	10.5	2347	8.5	652	25	783	21.5
	M22	2.2	1956	16	2347	13.5	652	38.5	783	33
100	M22	2.2	2347	14	2816	11.5	783	35	939	28.5
	M37	3.7	2347	22.5	2816	18.5	783	58	939	47
150	M37	3.7	2347	22.5	2816	18.5	783	58	939	47

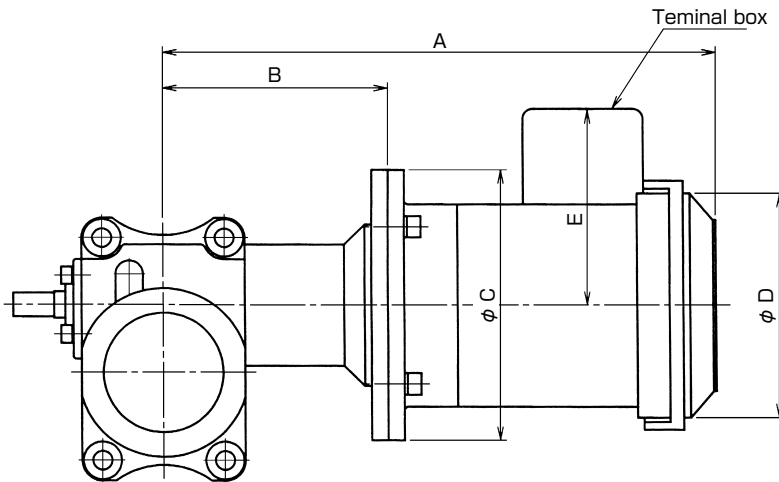
JB with motor

Size	Type	Capacity (kW)	Reduction ratio (H)				Reduction ratio (L)			
			Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)		Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)	
			Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)
025	M02	0.2	1956	2.5	2347	1.5	653	6	783	4.5
	M04	0.4	1956	6.5	2347	5.5	653	16.5	783	13.5
	M07	0.75	1956	14	2347	11.9	653	※ 25	783	※ 25
050	M04	0.4	1956	6	2347	4.5	653	14	783	11
	M07	0.75	1956	13.5	2347	10.5	653	32.5	783	26.5
	M15	1.5	1956	29.5	2347	24.5	653	※ 50	783	※ 50
075	M15	1.5	1956	28.5	2347	23	653	70	783	57.5
	M22	2.2	1956	43.5	2347	36	653	※ 75	783	75
100	M22	2.2	2347	35.5	2816	28.5	783	88	939	73.5
	M37	3.7	2347	63.5	2816	52	783	※100	939	※100
150	M37	3.7	3129	46	3755	38	1044	116	1252	95.5

JTB with motor

Size	Type	Capacity (kW)	Reduction ratio (H)				Reduction ratio (L)			
			Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)		Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)	
			Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)
025	M02	0.2	1956	2.5	2347	1.5	653	6	783	4.5
	M04	0.4	1956	6.5	2347	5.5	653	16.5	783	13.5
	M07	0.75	1956	14	2347	11.9	653	※ 25	783	※ 25
050	M04	0.4	1956	6	2347	4.5	653	14	783	11
	M07	0.75	1956	13.5	2347	10.5	653	32.5	783	26.5
	M15	1.5	1956	29.5	2347	24.5	653	※ 50	783	※ 50
075	M15	1.5	1956	28.5	2347	23	653	70	783	57.5
	M22	2.2	1956	43.5	2347	36	653	※ 75	783	75
100	M22	2.2	1956	42.5	2347	34.5	653	※100	783	88
	M37	3.7	1956	76.5	2347	62.5	653	※100	783	※100
150	M37	3.7	3129	46	3755	38	1044	116	1252	95.5

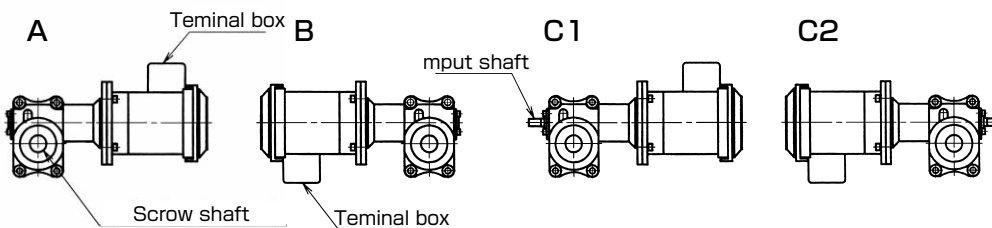
Note: Star mark indicates that capacity of motor exceeds permissible load of jack. Therefore, please use within the value indicated in this list. Contact us for other combination.



Size	Type	Capacity (kW)	A	B	C	D	E
025	M02	0.2	337 (369)	131	160	119 (127)	126 (126)
	M04	0.4	346 (361)	131	160	133 (124)	123.5 (112)
	M07	0.75	358 (373)	143	200	166 (163)	145 (145)
050	M04	0.4	397 (466)	175	200	133 (124)	123.5 (112)
	M07	0.75	387 (456)	165	200	166 (163)	145 (145)
	M15	1.5	453.5 (530)	165	200	202 (202)	158 (158)
075	M15	1.5	473.5 (550)	185	200	202 (202)	158 (158)
	M22	2.2	516 (592)	195	250	207 (214)	169 (169)
100	M22	2.2	541 (617)	220	250	207 (215)	169 (169)
	M37	3.7	571 (652)	220	250	228 (228)	180 (182)
150	M37	3.7	622.5 (696)	230	250	266 (268)	197 (197)

Note) 1. Dimension indicated in () is for brake motor.
 2. There is no self-locking feature, Please use brake motor for prome mover for ball acrew model.
 3. We may use different motor without notice, please check with us case by case.

Shaft arrangement



Capacity table for jack with geared motor

JA, JTA with geared motor

Size	Type	Capacity (kW)	Reduction ratio	Reduction ratio (H)				Reduction ratio (L)			
				Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)		Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)	
				Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)
025	GM011	0.1	10	117	9.5	140	8	—	—	—	—
	GM012	0.1	20	58	19.5	70	16	19	※ 25	23	※ 25
	GM013	0.1	30	39	※ 25	46	24.5	13	※ 25	15	※ 25
	GM020	0.2	5	234	9.5	281	8	78	21.5	93	17.5
	GM021	0.2	10	117	20	140	16.5	—	—	—	—
	GM022	0.2	20	58	※ 25	70	※ 25	—	—	—	—
050	GM021	0.2	10	156	14.5	187	12	—	—	—	—
	GM022	0.2	20	78	29	93	24	26	※ 50	31	46.5
	GM023	0.2	30	52	42.5	62	35	17	※ 50	20	※ 50
	GM040	0.4	5	312	15.5	375	12.5	104	33	125	27
	GM041	0.4	10	156	30.5	187	25.5	—	—	—	—
	GM042	0.4	20	78	※ 50	93	49.5	—	—	—	—
075	GM041	0.4	10	195	24	234	20	—	—	—	—
	GM042	0.4	20	97	47.5	117	39	32	※ 75	39	※ 75
	GM043	0.4	30	65	68.5	78	56.5	21	※ 75	26	※ 75
	GM070	0.75	5	391	23.5	469	19.5	130	50	156	41
	GM071	0.75	10	195	46	234	38.5	—	—	—	—
	GM072	0.75	20	97	※ 75	117	74.5	—	—	—	—
100	GM071	0.75	10	234	41.5	281	34	—	—	—	—
	GM072	0.75	20	117	81	140	67.5	39	※100	47	※100
	GM073	0.75	30	78	※100	93	※100	26	※100	31	※100
	GM150	1.5	5	469	43	563	35.5	156	94.5	187	82
	GM151	1.5	10	234	84.5	281	70	—	—	—	—
	GM152	1.5	20	117	※100	140	※100	—	—	—	—
150	GM151	1.5	10	234	77	281	66.5	—	—	—	—
	GM152	1.5	20	117	149.5	140	130	39	※150	47	※150
	GM153	1.5	30	78	※150	93	※150	26	※150	31	※150
	GM220	2.2	5	469	61	563	50.5	156	131.5	187	115
	GM221	2.2	10	234	114	281	99	—	—	—	—
	GM222	2.2	20	117	※150	140	※150	—	—	—	—

Note: Star mark indicated that capacity of motor exceeds permissible load of jack, therefore, please use unit within the value of above list. Contact us for other combination.

Capacity table for jack with geared motor

JACK

JB, JTB with geared motor

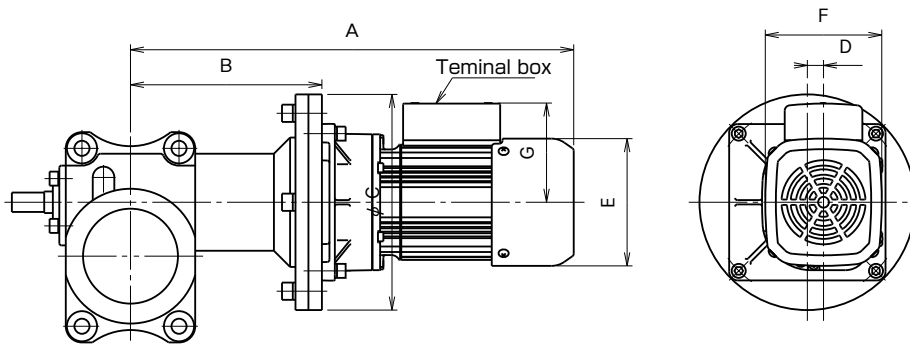
Size	Type	Capacity (kW)	Reduction ratio	Reduction ratio (H)				Reduction ratio (L)			
				Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)		Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)	
				Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)
025	GM011	0.1	10	195	15.5	234	12.5	—	—	—	—
	GM012	0.1	20	97	※ 25	117	※ 25	32	※ 25	39	※ 25
	GM013	0.1	30	65	※ 25	78	※ 25	21	※ 25	26	※ 25
	GM020	0.2	5	391	16	469	13	130	※ 25	156	※ 25
	GM021	0.2	10	195	※ 25	234	※ 25	—	—	—	—
050	GM012	0.1	20	—	—	—	—	32	※ 50	39	49.5
	GM013	0.1	30	—	—	—	—	21	※ 50	26	※ 50
	GM021	0.2	10	195	31	234	26	—	—	—	—
	GM022	0.2	20	97	※ 50	117	※ 50	—	—	—	—
	GM023	0.2	30	65	※ 50	78	※ 50	—	—	—	—
	GM040	0.4	5	391	33	469	27	130	※ 50	156	※ 50
075	GM022	0.2	20	—	—	—	—	32	※ 75	39	※ 75
	GM023	0.2	30	—	—	—	—	21	※ 75	26	※ 75
	GM041	0.4	10	195	64	234	53.5	—	—	—	—
	GM042	0.4	20	97	※ 75	117	※ 75	—	—	—	—
	GM043	0.4	30	65	※ 75	78	※ 75	—	—	—	—
	GM070	0.75	5	391	62.5	469	52.5	130	※ 75	156	※ 75
100	GM042	0.4	20	—	—	—	—	39 (32)	※100	47 (39)	※100
	GM043	0.4	30	—	—	—	—	26 (21)	※100	31 (26)	※100
	GM071	0.75	10	234 (195)	※100	281 (234)	87.5 (※100)	—	—	—	—
	GM072	0.75	20	117 (97)	※100	140 (117)	※100	—	—	—	—
	GM073	0.75	30	78 (65)	※100	93 (78)	※100	—	—	—	—
	GM150	1.5	5	469 (391)	※100	563 (469)	92 (※100)	156 (130)	※100	187 (156)	※100
150	GM072	0.75	20	—	—	—	—	52	※150	62	※150
	GM073	0.75	30	—	—	—	—	34	※150	41	※150
	GM151	1.5	10	312	※150	375	133.5	—	—	—	—
	GM152	1.5	20	156	※150	187	※150	—	—	—	—
	GM153	1.5	30	104	※150	125	※150	—	—	—	—
	GM220	2.2	5	625	120.5	751	101	208	※150	250	※150

Note: Star mark indicated that capacity of motor exceeds permissible load of jack, therefore, please use unit within the value of above list. Contact us for other combination.

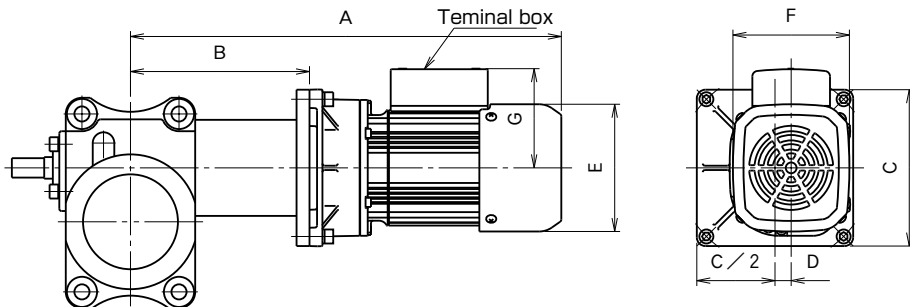
■ Capacity in () for size 100 is capacity of JTB.

JACK

Dimension table for JA, JB, JTA with geared motor



Size	Type	Capacity (kW)	Reduction ratio	A	B	C	D	G	E×F
025	GM011	0.1	10	333 (384)	150.5	200	15	87 (92)	118×108
	GM012	0.1	20	333 (384)	150.5	200	15	87 (92)	118×108
	GM013	0.1	30	333 (384)	150.5	200	15	87 (92)	118×108
	GM020	0.2	5	358 (406)	150.5	200	15	87 (92)	118×108
	GM021	0.2	10	358 (406)	150.5	200	15	87 (92)	118×108
050	GM022	0.2	20	358 (406)	150.5	200	15	87 (92)	118×108
	GM012	0.1	20	360 (411)	177.5	200	15	87 (92)	118×108
	GM013	0.1	30	360 (411)	177.5	200	15	87 (92)	118×108
	GM021	0.2	10	385 (433)	177.5	200	15	87 (92)	118×108
	GM022	0.2	20	385 (433)	177.5	200	15	87 (92)	118×108
	GM023	0.2	30	385 (433)	177.5	200	15	87 (92)	118×108
	GM040	0.4	5	419 (471)	179.5	200	18	93 (98)	130×120
075	GM041	0.4	10	419 (471)	179.5	200	18	93 (98)	130×120
	GM042	0.4	20	419 (471)	179.5	200	18	93 (98)	130×120
	GM022	0.2	20	405 (453)	197.5	200	15	87 (92)	118×108
	GM023	0.2	30	405 (453)	197.5	200	15	87 (92)	118×108
	GM041	0.4	10	439 (491)	199.5	200	18	93 (98)	130×120
	GM042	0.4	20	439 (491)	199.5	200	18	93 (98)	130×120
	GM043	0.4	30	439 (491)	199.5	200	18	93 (98)	130×120
	GM070	0.75	5	510 (573)	200.5	260	20	138	150×150
	GM071	0.75	10	510 (573)	200.5	260	20	138	150×150
	GM072	0.75	20	510 (573)	200.5	260	20	138	150×150



Size	Type	Capacity (kW)	Reduction ratio	A	B	C	D	G	E×F
100	GM042	0.4	20	468.5 (520.5)	229	□145	18	93 (98)	130×120
	GM043	0.4	30	468.5 (520.5)	229	□145	18	93 (98)	130×120
	GM071	0.75	10	539.5 (602.5)	230	□185	20	138	150×150
	GM072	0.75	20	539.5 (602.5)	230	□185	20	138	150×150
	GM073	0.75	30	539.5 (602.5)	230	□185	20	138	150×150
	GM150	1.5	5	597 (669)	233	□205	30	148	175×175
	GM151	1.5	10	597 (669)	233	□205	30	148	175×175
150	GM152	1.5	20	597 (669)	233	□205	30	148	175×175
	GM072	0.75	20	549.5 (612.5)	240	□185	20	138	150×150
	GM073	0.75	30	549.5 (612.5)	240	□185	20	138	150×150
	GM151	1.5	10	607 (679)	243	□205	30	148	175×175
	GM152	1.5	20	607 (679)	243	□205	30	148	175×175
	GM153	1.5	30	607 (679)	243	□205	30	148	175×175
	GM220	2.2	5	652 (719)	242	□255	30	160	206×206
	GM221	2.2	10	652 (719)	242	□255	30	160	206×206
	GM222	2.2	20	652 (719)	242	□255	30	160	206×206

Note: 1. Dimension in () is for with brake motor type.
 2. Ball screw is different from trapezoid screw, without self lock function, therefore, please use brakemotor for prime mover.
 3. Please refer shaft arrangement of with motor type.
 Standard is Mitsubishi motor (0.1~2.2kw) (0.1Kw~2.2Kw)
 Without brake: GM-SF series
 With brake: GM-SFB series

Brake wiring point and brake coasting time

Braking coasting time of brake for geared motor with brake unit is different from brake wiring method (time of brake start after switch off).

Please wire with best method in accordance with application.

● Please pay attention that three phase 0.1-0.4KW motor with brake unit is connected by simultaneous turn-off when leave factory.

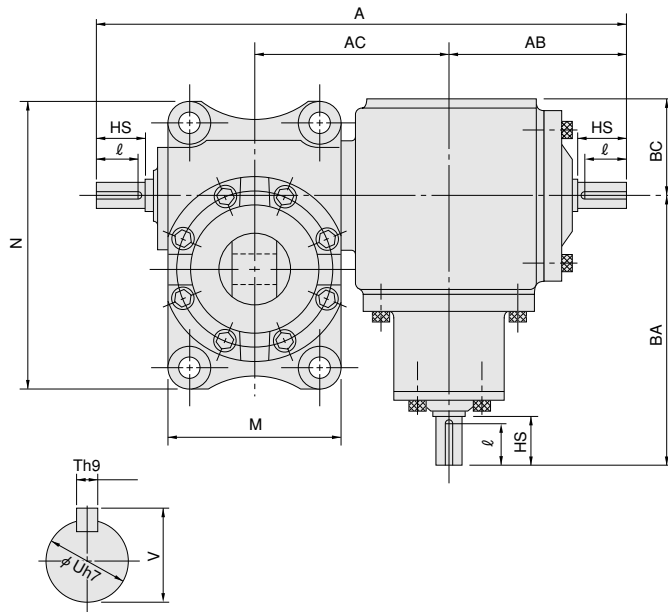
Motor					
Input	Output	At shipment	Simultaneous turn-off	Separate turn-off	DC turn-off (rapid turn-off)
Single phase	0.1 ~ 0.4 kW				
		Coasting time	0.2-0.55 second	0.1-0.3 second	0.01-0.04 second
Three phase	0.1 ~ 2.2 kW				
		Coasting time	0.2-0.55 second	0.1-0.3 second	0.01-0.04 second
Inverter drive	0.1 ~ 2.2 kW		/		
			/		
		Coasting time	/		0.01-0.04 second

- Note:
1. Stark mark indicates connection lead line. Please must connect it to U-B2 (upper). But must remove it for in case of separate turn-off.
 2. In case of separate turn off and DC turn off (rapid turn-off), fasten-connector on the terminal platform should be removed in accordance with wiring method of above chart.
 3. Terminal platform of 0.1-3.7KW is divided into two sections. Wiring of motor and brake power supply must be connected with upper terminal screw. Brake dose not release if connected with lower section.
 4. Above example is for wiring of Mitsubishi motor.

JA, JB-G (with bevel gear box) outline dimension table

Shorten of centering, eliminate coupling.

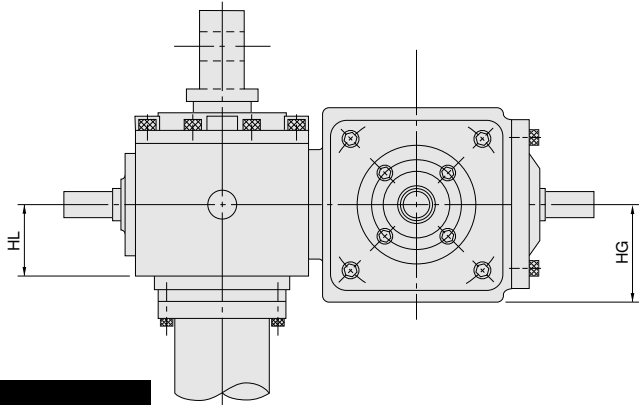
Standard dimension



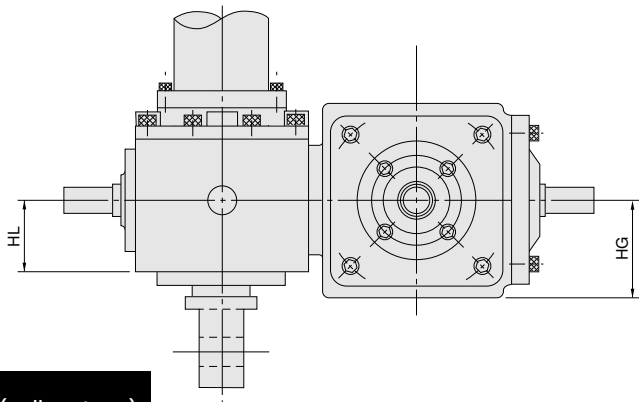
Size	025	050	075	100	150	200
A	315	345	435	472.5	535	560
AB	110	110	145	150	170	170
AC	110	125	160	172.5	200	215
BA	165	165	220	225	280	280
BC	60	60	80	80	105	105
HL	45	50	60	70	80	90
HG	52	52	83	83	103	103
M	96	120	140	165	180	180
N	150	195	235	285	305	305
HS	30	30	40	45	50	50
U	15	18	22	28	32	32
T	5	6	6	8	10	10
V	17 ⁰ _{-0.13}	20.5 ⁰ _{-0.13}	24.5 ⁰ _{-0.13}	31 ⁰ _{-0.3}	35 ⁰ _{-0.3}	35 ⁰ _{-0.3}
I	25	25	35	38	43	43

- Note: 1. Please pay attention when install. Bottom of gear box is lower than jack mounting base.
 2. Reduction ratio of gear box is 1:1.
 3. the gear is spiral bevel gear.
 4. Applicable to traveling type(JTA, JTB).

Input shaft detail



U(push up type)

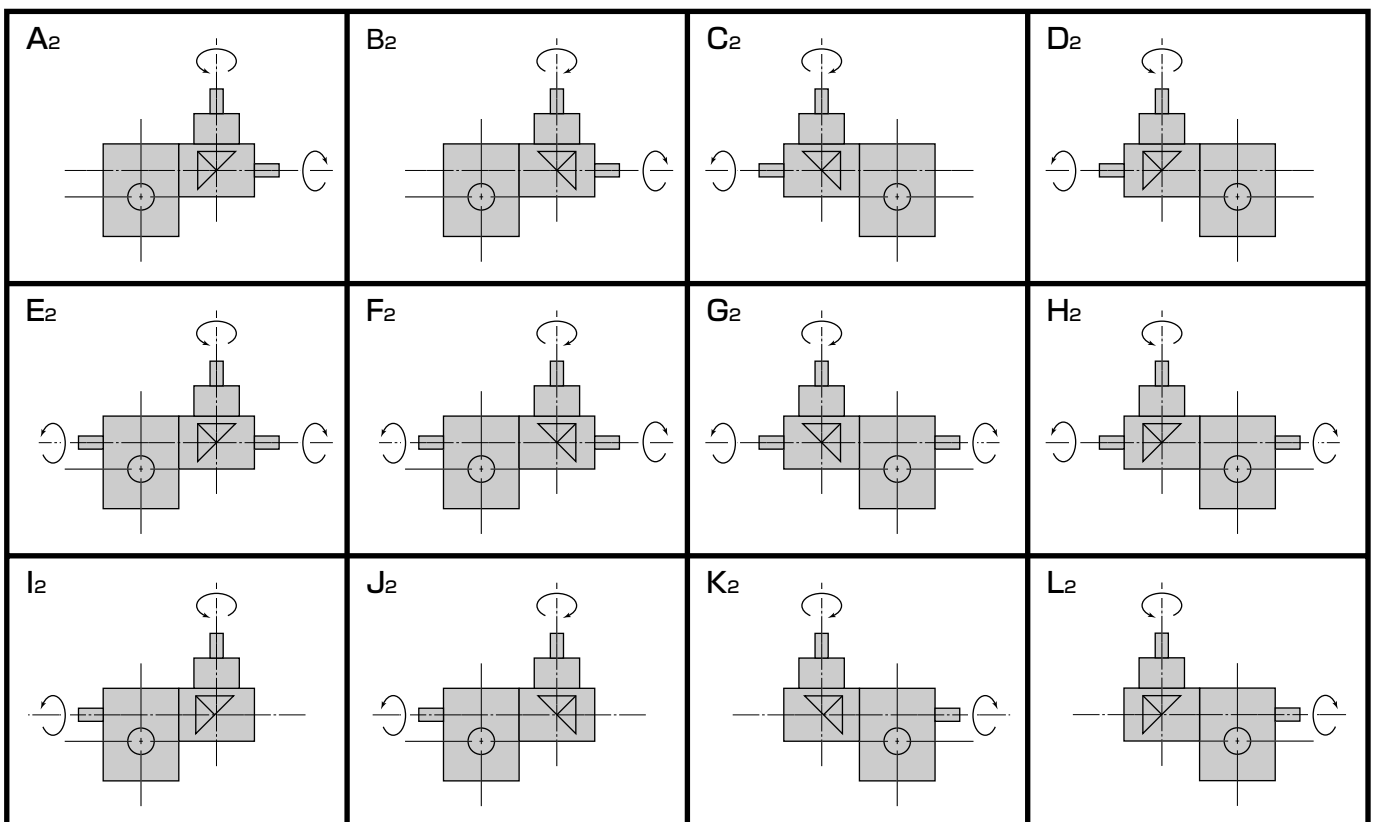
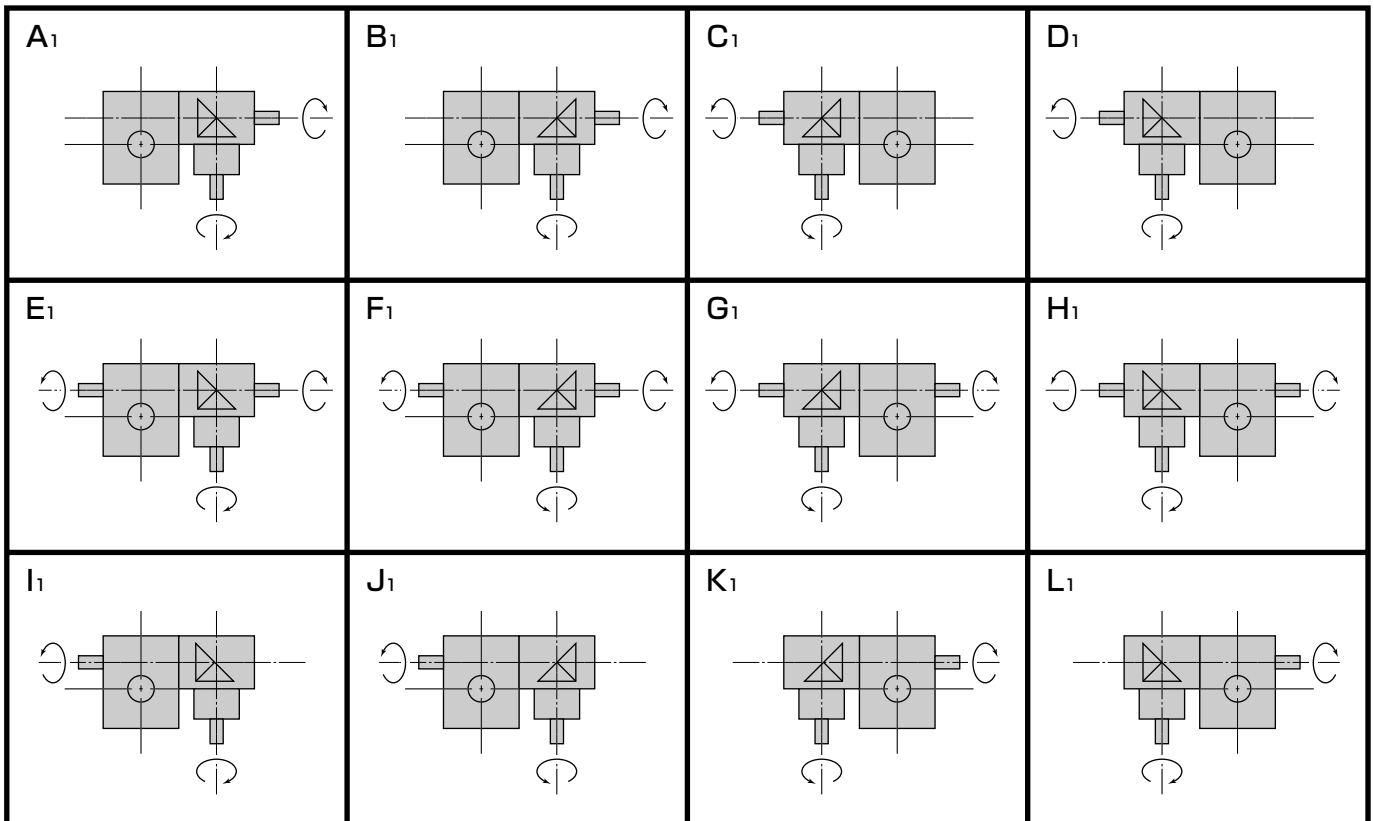


D(pull up type)

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JA, JB-G (with bevel gearbox) shaft arrangement

JACK

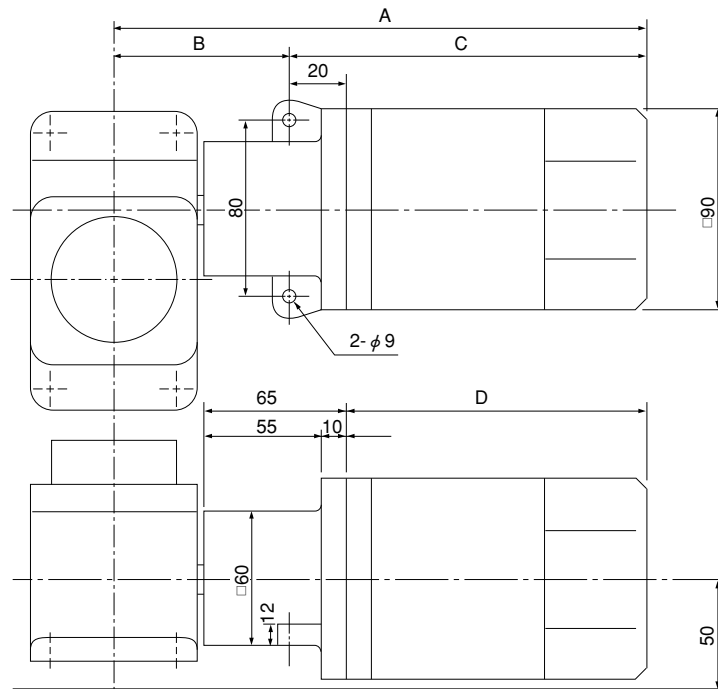


JACK

Capacity for size 005&010 with motor-unit.

Size	Type	Capacity (kW)	Reduction ratio	Reduction ratio (H)				Reduction ratio (L)			
				Frequency 50HZ (1200rpm)		Frequency 60HZ (1450rpm)		Frequency 50HZ (1200rpm)		Frequency 60HZ (1450rpm)	
				Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)
JA JTA	005	P60	60	1000	0.5	1208	0.4	333	1.5	402	1.1
		P90	90	1000	0.9	1208	0.8	333	2.5	402	2.0
	010	P60	60	1000	0.5	1208	0.3	333	1.2	402	0.8
		P90	90	1000	0.9	1208	0.7	333	2.2	402	1.7
JB JTB	005	P60	60	1000	1.5	1208	1.2	333	2.7	402	3.7
		P90	90	1000	2.7	1208	2.1	333	5.0	402	5.0
	010	P60	60	1000	1.3	1208	0.9	333	3.2	402	2.3
		P90	90	1000	2.5	1208	1.9	333	5.9	402	4.6

Outline dimension table of motor-unit type



Outline dimension table of motor-unit type

Size	Type	Capacity	A	B	C	D
005	P60	60W	220(247)	80	140 (167)	120 (147)
	P90	90W	235(262)	80	155 (182)	135 (162)
010	P60	60W	225(252)	85	140 (167)	120 (147)
	P90	90W	240(267)	85	155 (182)	135 (162)

Note: 1. Dimension in () is for with brake motor type.

2. Ball screw is different from trapezoid screw, without self lock function, therefore, please use brakemotor for driving force.

※ The motor speed of rotation in the table shows the numerical value at 100% load.

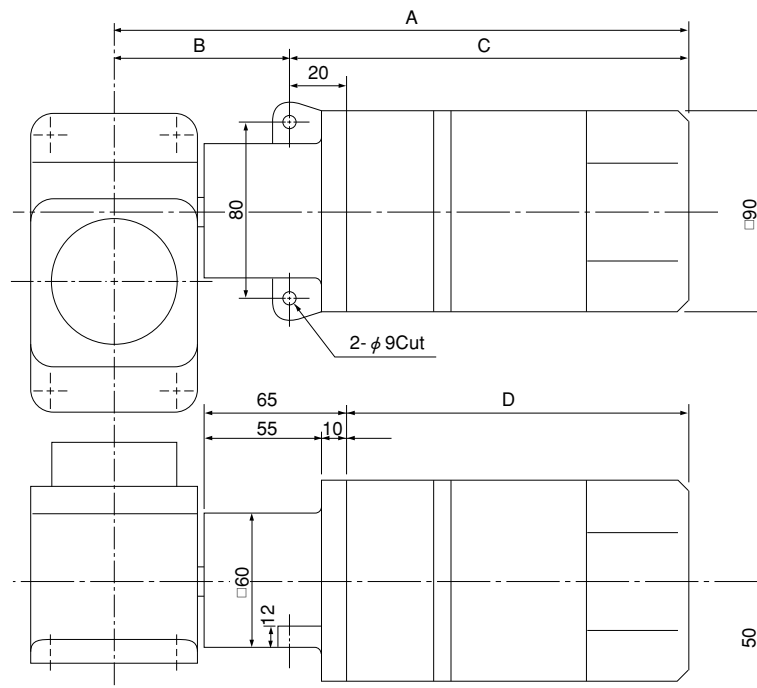
The motor speed of rotation will increase under no load by about 20% for the specific of the motor.

Capacity for size 005&010 with geared motor-unit.



Category	Size	Type	Capacity (kW)	Reduction ratio	Reduction ratio (H)				Reduction ratio (L)			
					Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)		Frequency 50HZ (1500rpm)		Frequency 60HZ (1800rpm)	
					Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)	Operation speed (mm/min)	Load (kN)
JA JTA	005	GP601	60	10	100	5	120	5	33	5	40	5
	010	GP601	60	10	100	5	120	5	33	5	40	5
			GP901	90	10	100	10	120	8.5	33	10	40
JB JTB	005	GP601	60	10	100	5	120	5	33	5	40	5
	010	GP901	90	10	100	10	120	10	33	10	40	10

Outline dimension table of geared motor unit



Note: The motor is 3 phase induction motor AC200C, 4P

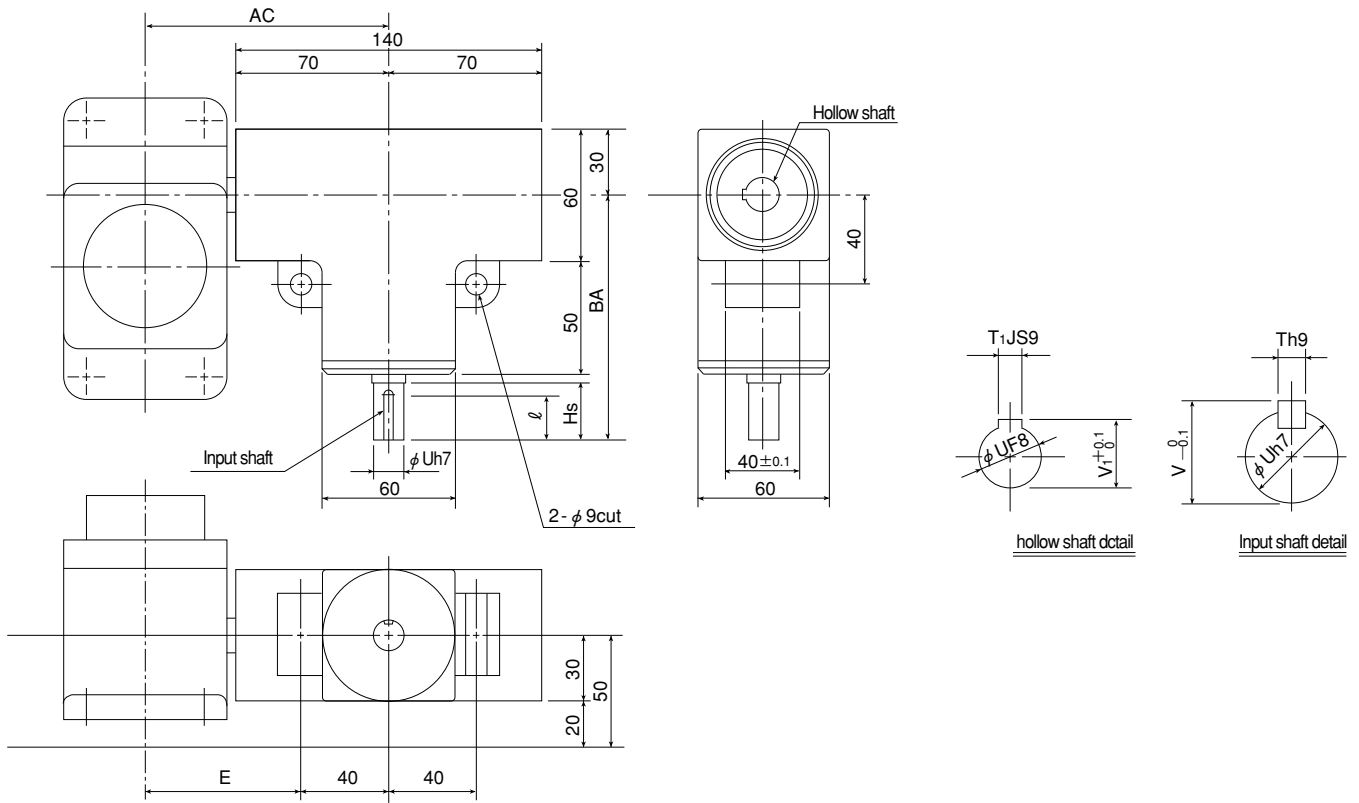
Size	Type	Capacity	A	B	C	D
005	GP601	60W	260(287)	80	180 (207)	160 (187)
	GP901	90W	280(307)	85	195 (222)	175 (202)

Note: 1. dimension in () is for with brake motor type.

2. Ball screw is different from trapezoid screw, without self lock function, therefore, please use brake motor for driving force.

Outline dimension of Size number 005&010 with gearbox-unit (G)

- Install size 005.010 jack and gearbox-unit individually (Because they aren't integrated type)
- For installation of geared motor, please use enclosed adjust bolt for centering of jack (accuracy of centering must be within 0.1 mm.)
- Usage: insert the input shaft of jack into hollow hole.

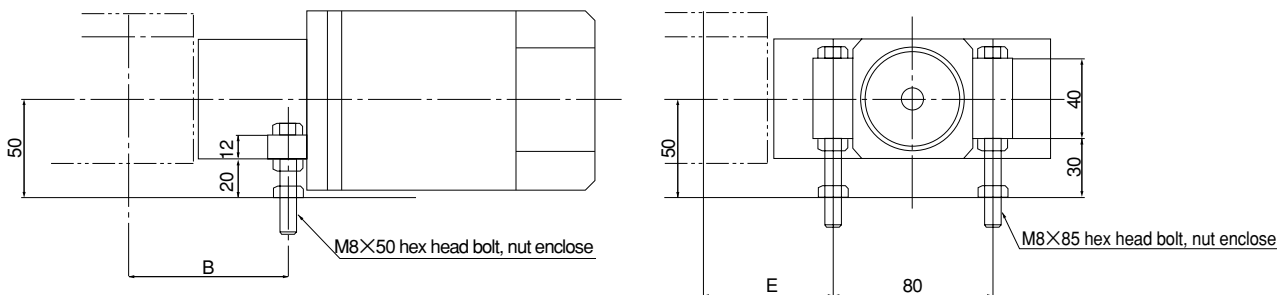


Size	Type	AC	BA	E	HS	U	T	V	l	T ₁	V ₁
005	G25	110	105	70	20	11	4	12.5	17	4	12.8
010	G32	115	110	75	25	14	5	16	23	5	16.3

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Installation

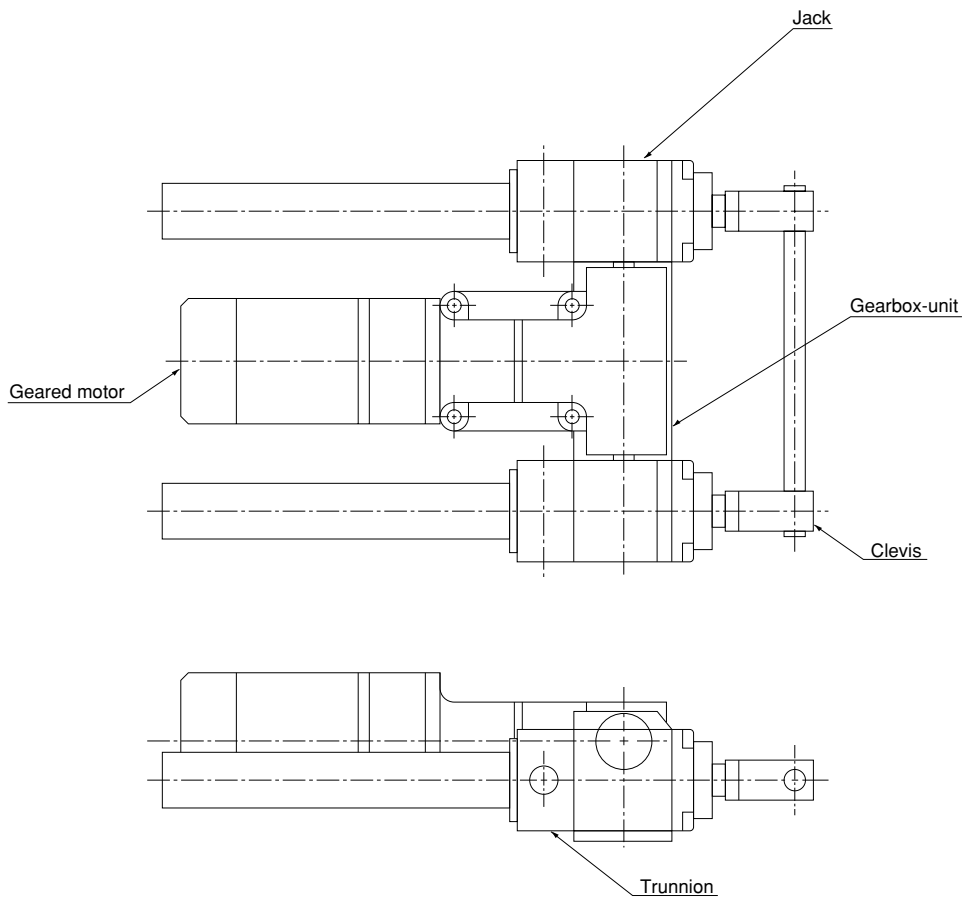
- For installation of geared motor, please use enclosed adjust bolt for centering of jack (accuracy of centering must be within 0.1 mm.)



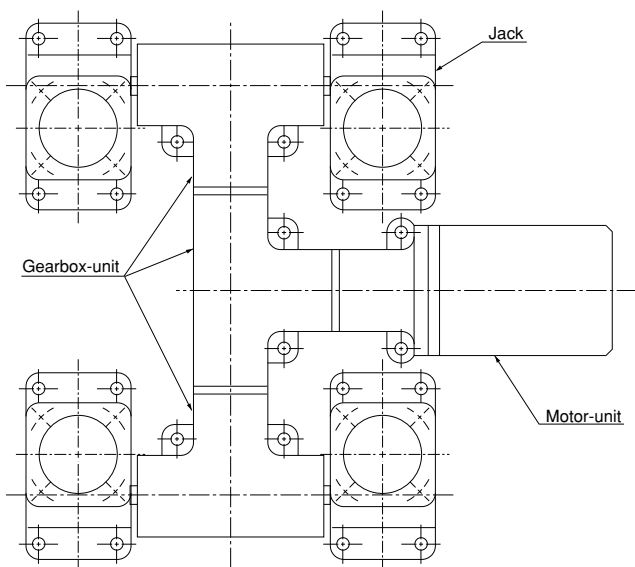
Size 005 & 010 jack, system example

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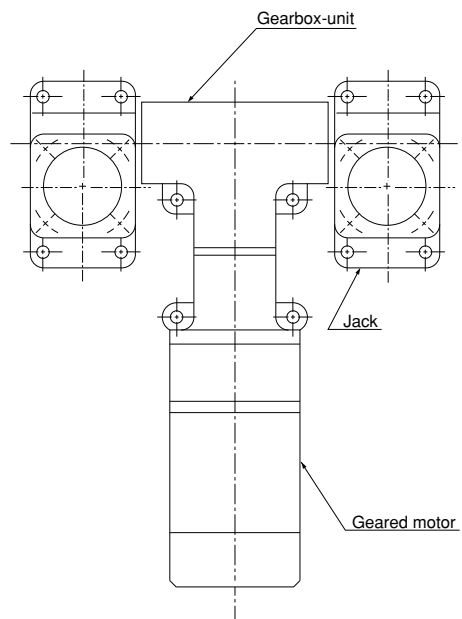
Example A. Most fit for connection of 2 units



Example B. modular 1



Example C. modular 2



JACK

Size 005&010 jack, motor specification, wiring diagram

Motor specification

Standard specification

Power supply	Three phase
Protection method	IP20
Capacity	60 · 90W
Insulation grade	E type
Voltage	200V
Frequency	50/60Hz

Motor feature

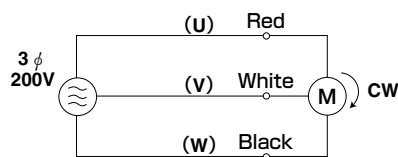
Capacity	Rated current (A)	Rated rotating speed (rpm)	
	Three phase 200V	50Hz	60Hz
60W	0.65	1200	1450
90W	0.90	1200	1450

Brake feature

Braking method	Brake unit without magnetization
Power supply	AC100/200V (half wave rectifier) DC45/90V
Current	0.2/0.1 A
Braking torque	0.5Nm

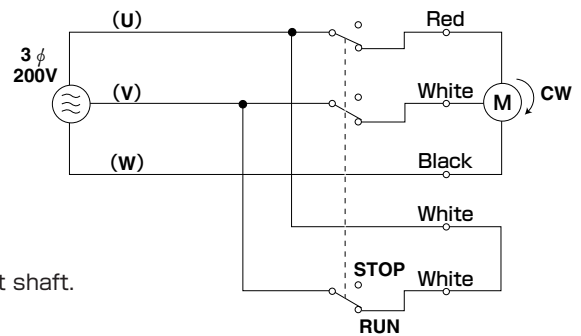
Connection

AC three phase without brake



※The rotation direction is that observed from motor output shaft.

AC three phase with brake



Hi-lead specification Larger lead of screw for high speed jack

JAH

- High speed operation is possible (velocity is 2 times JA type)
- In case of same operation speed of JA standard type, noise is less due to slow input speed.
- Higher efficiency if compared with JA type, (more than 30%)
(Because of large screw lead, there is no self-locking feature)
- Standardized 25KN-200KN.

JAH basic specification

Size	002	005	010	025	050	075	100	150	200		
Nominal capacity (kN)	2	5	10	25	50	75	100	150	200		
Screw shaft diameter (mm)	14	22	25	30	40	50	55	60	65		
Screw shaft root diameter (mm)	11	17.5	19.5	23.5	31.5	39.5	42.5	47.5	52.5		
Screw pitch (mm)	12	16	20	12	16	20	24	24	24		
Reduction ratio	H	6	6	6	7.67	7.67	7.67	7.67	7.67		
	L				23	23	23	23	23		
Traversing distance per one input shaft rotation	H (mm/rev)	2.00	2.66	3.33	1.56	2.09	2.61	3.13	3.13		
	L (mm/rev)				0.52	0.70	0.87	1.04	1.04		
Efficiency (%)	H (30rpm)	(1800rpm)	32	30	32	31	31	31	34	32	30
		(1800rpm)	38	36	39	39	39	39	42	40	38
	L (30rpm)	(1800rpm)				20	20	20	23	21	20
		(1800rpm)				32	32	32	36	34	33
Max input speed (rpm)	1800	1800	1800	1800	1800	1800	1800	1800	1800		
Standard stroke (mm)	Stroke 50-500(interval 50), more than 500-1000(interval 100)										
Screw torque (N·m)	6.4	22.6	54.4	110	293	550	837	1320	1846		
Input no load torque (N·m)	0.14	0.15	0.2	0.5	0.8	1.2	1.8	2.5	2.5		
Input starting torque	H (N·m)	2.4	8.1	18.3	22.7	61.2	115.6	167.1	264.6	367.5	
	L (N·m)				13.0	35.2	67.0	92.8	148.1	205.2	
Reversing load (kN)	2	5	10	25	50	75	100	150	200		
Load at rest (kN)	3	8	15	30	60	80	140	170	250		
Weight (kg)	2	2.5	3.5	20	25	35	55	65	80		

Note: 1. Weight is rough estimate of stroke 300 mm.

2. Screw torque and input starting torque is value for nominal capacity.

For ordering information

Please refer to E-5

Structure

Is same as E-29.

JAH capacity table (reduction ratio H)

JAHseries

Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
002	Load (kN)	1	1.1	1.4	1.6	1.7	1.9	2	2	2	2
	Speed (m/min)	3.600	3.000	2.400	2.000	1.800	1.500	1.000	0.500	0.200	0.100
	Efficiency	0.380	0.380	0.370	0.370	0.370	0.370	0.360	0.350	0.330	0.330
	Lost power (k.W)	0.026	0.022	0.018	0.015	0.013	0.011	0.007	0.004	0.001	0.001
	Power (k.W)	0.184	0.167	0.169	0.159	0.151	0.139	0.100	0.051	0.022	0.011
005	Load (kN)	1.3	1.5	1.8	2.1	2.3	2.7	3.5	5	5	5
	Speed (m/min)	4.800	4.000	3.200	2.666	2.400	2.000	1.333	0.666	0.266	0.133
	Efficiency	0.368	0.364	0.361	0.355	0.355	0.348	0.341	0.328	0.317	0.309
	Lost power (k.W)	0.028	0.024	0.019	0.016	0.014	0.012	0.008	0.004	0.002	0.001
	Power (k.W)	0.311	0.298	0.285	0.279	0.273	0.270	0.236	0.173	0.071	0.037
010	Load (kN)	2.3	2.6	3	3.5	3.9	4.6	6	8.1	10	10
	Speed (m/min)	6.000	5.000	4.000	3.333	3.000	2.500	1.666	0.833	0.333	0.166
	Efficiency	0.393	0.389	0.384	0.379	0.377	0.373	0.364	0.350	0.337	0.327
	Lost power (k.W)	0.038	0.031	0.025	0.021	0.019	0.016	0.010	0.005	0.002	0.001
	Power (k.W)	0.622	0.589	0.546	0.534	0.536	0.530	0.468	0.327	0.167	0.086
025	Load (kN)	13.7	14.7	16.3	17.2	18.0	19.1	21.9	25	25	25
	Speed (m/min)	2.816	2.347	1.877	1.565	1.408	1.173	0.782	0.391	0.156	0.078
	Efficiency	0.391	0.385	0.379	0.374	0.372	0.369	0.359	0.344	0.326	0.318
	Lost power (k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power (k.W)	1.741	1.574	1.408	1.249	1.179	1.053	0.820	0.487	0.205	0.105
050	Load (kN)	17.5	18.6	20.3	22.2	22.9	24.3	28.2	35.2	44.2	50
	Speed (m/min)	3.755	3.129	2.503	2.086	1.877	1.565	1.043	0.522	0.209	0.104
	Efficiency	0.392	0.389	0.383	0.377	0.374	0.370	0.362	0.346	0.325	0.314
	Lost power (k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power (k.W)	2.946	2.629	2.313	2.128	1.991	1.773	1.396	0.907	0.481	0.281
075	Load (kN)	21.4	23.2	25.2	27.1	28.4	29.7	35.2	44.0	55.1	64.3
	Speed (m/min)	4.694	3.911	3.129	2.608	2.347	1.956	1.304	0.652	0.261	0.130
	Efficiency	0.394	0.390	0.386	0.382	0.378	0.372	0.363	0.347	0.326	0.313
	Lost power (k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power (k.W)	4.480	4.066	3.555	3.217	3.046	2.691	2.167	1.409	0.746	0.453
100	Load (kN)	32.3	35.1	38.2	41.0	42.8	45.7	53.2	66.5	83.3	97.6
	Speed (m/min)	5.632	4.694	3.755	3.129	2.816	2.347	1.565	0.782	0.313	0.156
	Efficiency	0.420	0.416	0.412	0.410	0.405	0.400	0.391	0.375	0.356	0.342
	Lost power (k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power (k.W)	7.551	6.871	6.019	5.405	5.125	4.602	3.642	2.358	1.240	0.753
150	Load (kN)	41.9	45.3	49.8	52.7	55.5	59.5	69.2	86.5	109.0	128.4
	Speed (m/min)	5.632	4.694	3.755	3.129	2.816	2.347	1.565	0.782	0.313	0.156
	Efficiency	0.403	0.399	0.394	0.392	0.391	0.385	0.374	0.359	0.339	0.325
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	10.237	9.284	8.215	7.288	6.906	6.244	4.950	3.205	1.701	1.043
200	Load (kN)	51.1	55.3	60.7	64.3	67.6	72.5	84.3	105.4	132.8	156.3
	Speed (m/min)	5.632	4.694	3.755	3.129	2.816	2.347	1.565	0.782	0.313	0.156
	Efficiency	0.386	0.382	0.378	0.375	0.374	0.368	0.358	0.344	0.325	0.311
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	12.900	11.709	10.369	9.204	8.726	7.894	6.265	4.062	2.157	1.323

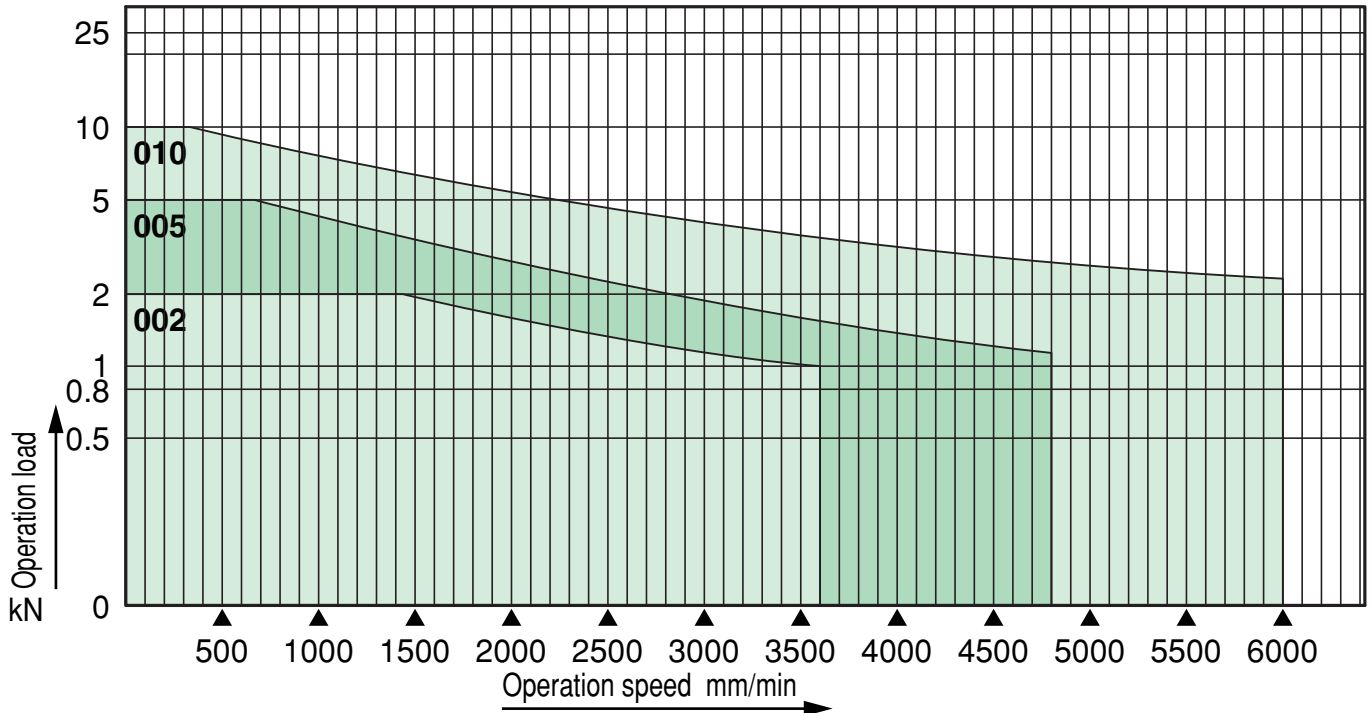
JACK

JAH capacity table (reduction ratio L)

Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
025	Load(kN)	14.7	15.9	17.1	18.1	18.7	19.8	22.7	25	25	25
	Speed(m/min)	0.939	0.783	0.626	0.522	0.470	0.391	0.261	0.130	0.052	0.026
	Efficiency	0.318	0.306	0.295	0.288	0.285	0.280	0.263	0.241	0.217	0.208
	Lost power(k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power(k.W)	0.819	0.755	0.667	0.599	0.561	0.501	0.400	0.238	0.105	0.055
050	Load(kN)	20.5	21.6	23.6	24.9	25.7	27.5	31.1	36.9	45.4	50
	Speed(m/min)	1.252	1.043	0.835	0.696	0.626	0.522	0.348	0.174	0.070	0.035
	Efficiency	0.336	0.331	0.319	0.308	0.303	0.296	0.282	0.256	0.227	0.214
	Lost power(k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power(k.W)	1.422	1.261	1.132	1.019	0.959	0.872	0.683	0.439	0.240	0.140
075	Load(kN)	25.6	27.3	29.8	31.6	32.6	34.6	39.5	46.9	57.9	65.3
	Speed(m/min)	1.565	1.304	1.043	0.870	0.783	0.652	0.435	0.217	0.087	0.043
	Efficiency	0.341	0.333	0.326	0.316	0.309	0.299	0.284	0.258	0.229	0.211
	Lost power(k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power(k.W)	2.181	1.971	1.743	1.574	1.487	1.351	1.069	0.691	0.380	0.230
100	Load(kN)	34.6	36.9	40.3	42.8	44.2	46.9	53.6	63.7	78.8	88.8
	Speed(m/min)	1.878	1.565	1.252	1.043	0.939	0.783	0.522	0.261	0.104	0.052
	Efficiency	0.354	0.347	0.339	0.332	0.325	0.316	0.301	0.275	0.247	0.229
	Lost power(k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power(k.W)	3.396	3.060	2.706	2.429	2.294	2.080	1.645	1.054	0.574	0.346
150	Load(kN)	45.4	48.7	52.1	56.3	58.3	62.3	70.4	84.3	104.5	117.7
	Speed(m/min)	1.878	1.565	1.252	1.043	0.939	0.783	0.522	0.261	0.104	0.052
	Efficiency	0.342	0.334	0.325	0.320	0.317	0.306	0.287	0.263	0.235	0.216
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	4.620	4.201	3.658	3.328	3.114	2.855	2.259	1.459	0.800	0.487
200	Load(kN)	55.3	59.4	63.5	68.7	71.1	76.0	85.8	102.7	127.4	143.4
	Speed(m/min)	1.878	1.565	1.252	1.043	0.939	0.783	0.522	0.261	0.104	0.052
	Efficiency	0.328	0.320	0.311	0.306	0.304	0.293	0.275	0.252	0.225	0.207
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	5.751	5.240	4.570	4.164	3.899	3.581	2.840	1.839	1.012	0.616

Please use within the range of following load,velocity chart.

Load,velocity chart (reduction ratio H)



JAH Permissible axial direction load

Please refer to E-19,20.

JAH025-JAH200 outline dimension

Same as E-22.

JAH025-JAH200 shaft end connector and installation dimension

Same as E-25.

JAH002 outline dimension

Same as E-26.

JAH002 shaft end connector and installation dimension

Same as E-27.

JAH005-JAH010 outline dimension

Same as E-21.

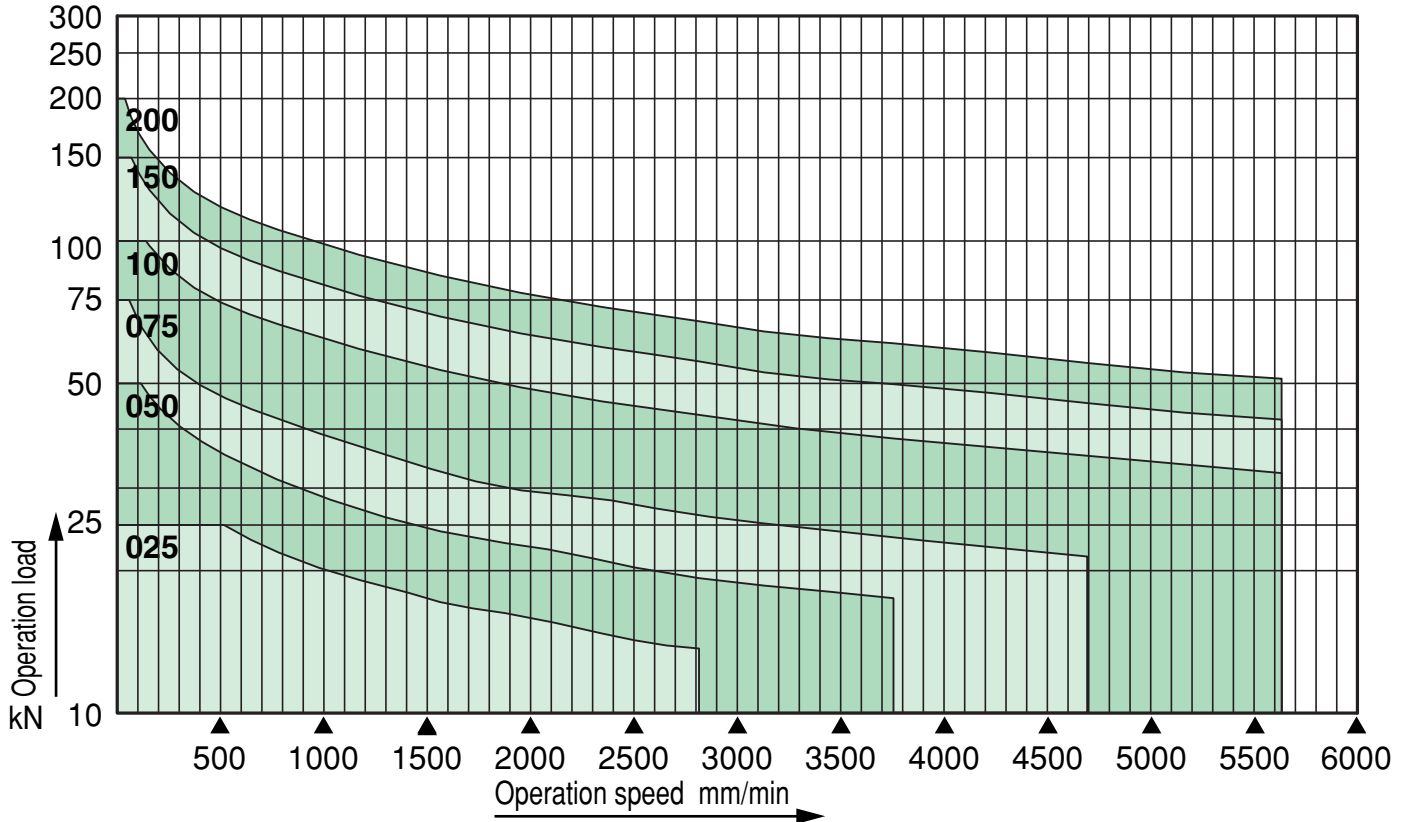
JAH005-JAH010 shaft end connector and installation dimension

Same as E-24.

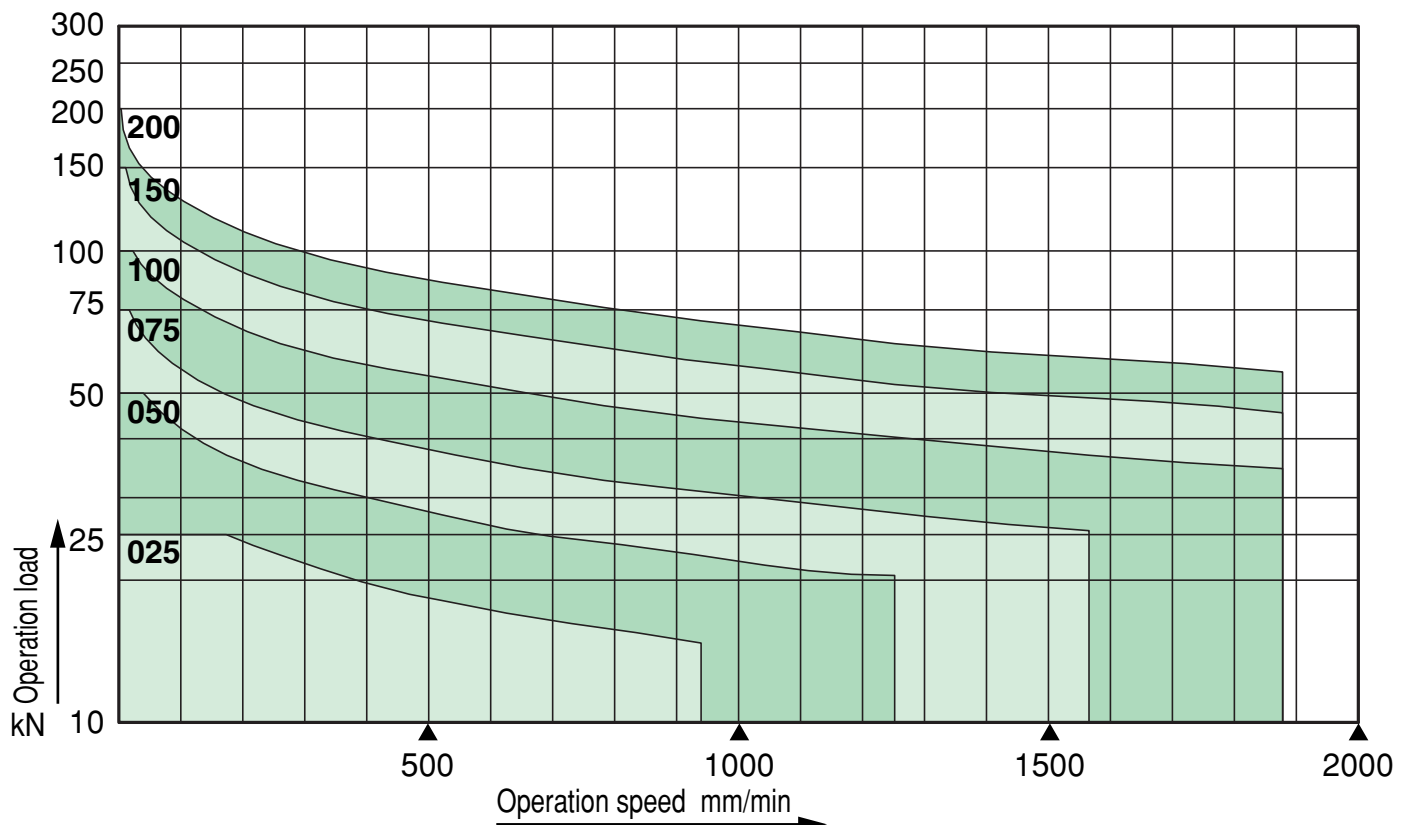
Allowable operation speed • load

Please use within the range of following load,velocity chart.

Load,velocity chart (reduction ratio H)



Load,velocity chart (reduction ratio L)



JACK

Hi-lead specification

High speed jack, using larger lead ball screw

JBH

- High speed operation
It is possible to operate in high speed and max operation speed of each type is 5.9-8.4
- In case of same operation speed of JB standard type, due to low input speed, noise is less.
- Standardized 25KN-200KN.

JBH basic specification

Size	005	010	025	050	075	100	150	200
Nominal capacity (kN)	5	10	25	50	75	100	150	200
Screw shaft diameter (mm)	16	20	25	36	40	45	50	63
Screw shaft root diameter (mm)	13.6	17.3	21	31	34	38	42	55
Screw pitch (mm)	16	20	25	36	32	32	32	32
Reduction ratio	H	6	6	7.67	7.67	7.67	7.67	7.67
	L			23	23	23	23	23
Travering distance per one input shaft rotation	H (mm/rev)	2.67	3.33	3.26	4.69	4.17	4.17	4.17
	L (mm/rev)			1.09	1.57	1.39	1.39	1.39
Efficiency (%)	H (30rpm)	58	59	57	57	56	59	58
	(1800rpm)	71	72	71	72	72	73	74
	L (30rpm)			37	36	35	39	38
	(1800rpm)			58	58	59	62	63
Max input speed (rpm)	1800	1800	1800	1800	1800	1800	1800	1800
Standard stroke (mm)	Stroke 50-500(every 50), more than 500-1000(every 100)							
Screw torque (N·m)	13.2	33	103	297	399	534	805	1086
Input no load torque (N·m)	0.15	0.2	0.5	0.8	1.2	1.8	2.5	2.5
Input starting torque	H (N·m)	1.9	4.8	25.9	75.3	101.5	128.1	194.0
	L (N·m)			14.7	43.3	58.9	71.3	108.9
Holding torque	H (N·m)	1.1	2.9	5.9	15.8	20.2	32.9	47.6
	L (N·m)			2.7	9.0	13.0	11.2	18.6
Reversing load (kN)	5	10	25	50	75	100	150	200
Load at rest (kN)	8	15	25	50	80	140	170	250
Weight (kg)	2.5	3.5	20	25	35	55	65	80

Note: 1. Weight is rough estimate of stroke 300 mm.

2. Screw torque and input starting torque is value for nominal capacity.

For ordering information

Please refer to E-5

Structure

Is same as E-29.

JBH capacity table (reduction ratio H)

JBHseries

Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
005	Load (kN)	3.2	3.8	4.5	5	5	5	5	5	5	5
	Speed (m/min)	4.800	4.000	3.200	2.666	2.400	2.000	1.333	0.666	0.266	0.133
	Efficiency	0.707	0.699	0.693	0.688	0.682	0.675	0.662	0.637	0.610	0.600
	Lost power (k.W)	0.028	0.024	0.019	0.016	0.014	0.012	0.008	0.004	0.002	0.001
	Power (k.W)	0.390	0.386	0.365	0.339	0.307	0.259	0.176	0.091	0.038	0.019
010	Load (kN)	5.4	6.3	7.8	9.1	10	10	10	10	10	10
	Speed (m/min)	6.000	5.000	4.000	3.333	3.000	2.500	1.666	0.833	0.333	0.166
	Efficiency	0.718	0.709	0.700	0.695	0.692	0.686	0.670	0.644	0.615	0.604
	Lost power (k.W)	0.038	0.031	0.025	0.021	0.019	0.016	0.010	0.005	0.002	0.001
	Power (k.W)	0.790	0.771	0.768	0.749	0.741	0.624	0.425	0.220	0.092	0.047
025	Load (kN)	12.0	12.9	14.3	15.1	15.7	16.8	19.2	23.9	25	25
	Speed (m/min)	5.867	4.889	3.911	3.259	2.934	2.445	1.630	0.815	0.326	0.163
	Efficiency	0.713	0.703	0.691	0.683	0.680	0.674	0.656	0.628	0.595	0.581
	Lost power (k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power (k.W)	1.741	1.574	1.408	1.249	1.179	1.053	0.820	0.529	0.234	0.120
050	Load (kN)	14.2	15.1	16.5	18.0	18.6	19.7	22.9	28.6	35.9	41.3
	Speed (m/min)	8.449	7.040	5.632	4.694	4.224	3.520	2.347	1.173	0.469	0.235
	Efficiency	0.715	0.709	0.699	0.689	0.683	0.675	0.661	0.631	0.593	0.573
	Lost power (k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power (k.W)	2.946	2.629	2.313	2.128	1.991	1.773	1.396	0.907	0.481	0.286
075	Load (kN)	24.4	26.5	28.7	31.0	32.4	33.8	40.1	50.2	62.8	73.4
	Speed (m/min)	7.510	6.258	5.007	4.172	3.755	3.129	2.086	1.043	0.417	0.209
	Efficiency	0.719	0.712	0.705	0.697	0.690	0.680	0.663	0.633	0.596	0.571
	Lost power (k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power (k.W)	4.480	4.066	3.555	3.217	3.046	2.691	2.167	1.409	0.746	0.453
100	Load (kN)	42.2	45.9	49.9	53.6	56.0	59.7	69.6	87.0	100	100
	Speed (m/min)	7.510	6.258	5.007	4.172	3.755	3.129	2.086	1.043	0.417	0.209
	Efficiency	0.733	0.726	0.719	0.715	0.707	0.698	0.682	0.654	0.621	0.597
	Lost power (k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power (k.W)	7.551	6.871	6.019	5.405	5.125	4.602	3.642	2.358	1.139	0.592
150	Load (kN)	57.4	62.1	68.2	72.2	76.0	81.4	94.7	118.3	149.2	150
	Speed (m/min)	7.510	6.258	5.007	4.172	3.755	3.129	2.086	1.043	0.417	0.209
	Efficiency	0.735	0.728	0.720	0.715	0.713	0.702	0.683	0.655	0.619	0.593
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	10.237	9.284	8.215	7.288	6.906	6.244	4.950	3.205	1.701	0.892
200	Load (kN)	73.0	79.0	86.8	91.9	96.7	103.6	120.5	150.6	189.8	200
	Speed (m/min)	7.510	6.258	5.007	4.172	3.755	3.129	2.086	1.043	0.417	0.209
	Efficiency	0.735	0.728	0.720	0.715	0.713	0.702	0.683	0.655	0.619	0.593
	Lost power (k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power (k.W)	12.900	11.709	10.369	9.204	8.726	7.894	6.265	4.062	2.157	1.185

JACK

JBH capacity table (reduction ratio L)

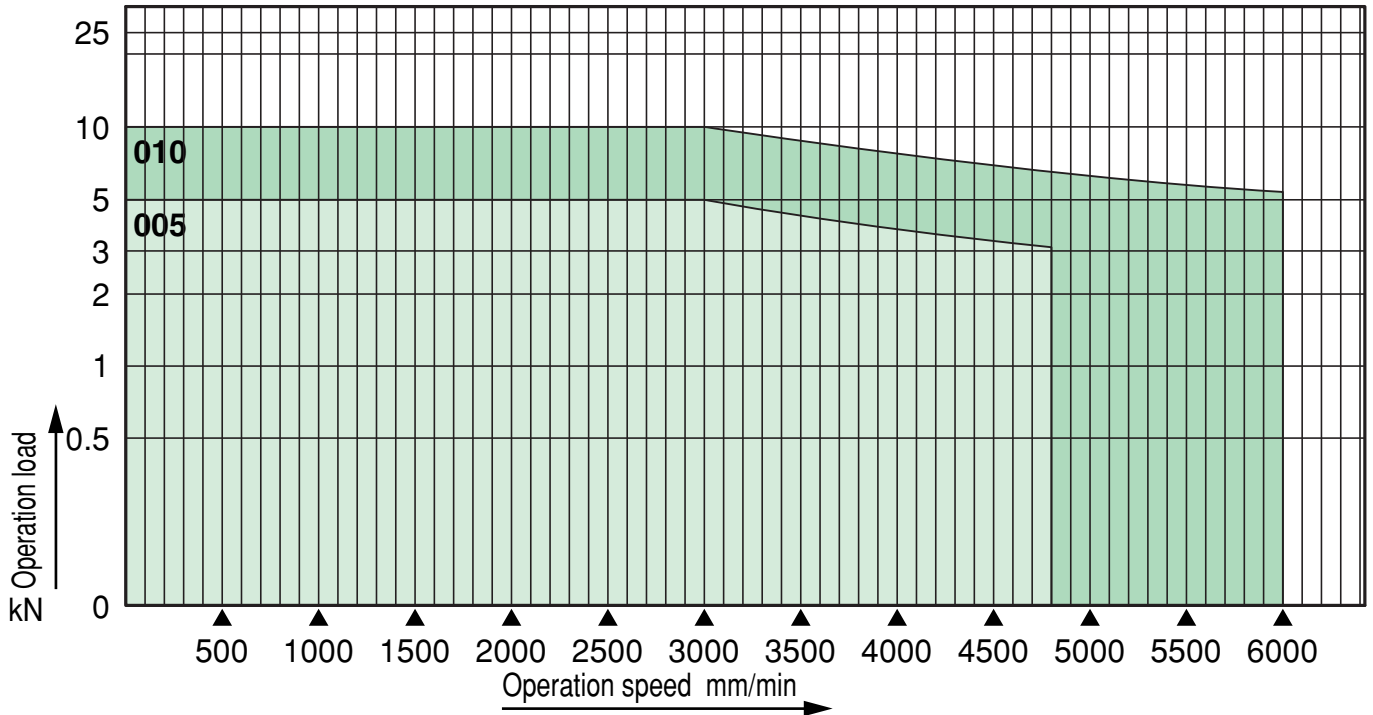
Size	Input shaft speed (rpm)	1800	1500	1200	1000	900	750	500	250	100	50
025	Load(kN)	12.9	13.9	15.0	15.9	16.4	17.4	19.8	23.4	25	25
	Speed(m/min)	1.957	1.630	1.304	1.087	0.978	0.815	0.543	0.272	0.109	0.054
	Efficiency	0.580	0.559	0.538	0.526	0.519	0.511	0.481	0.440	0.396	0.379
	Lost power(k.W)	0.094	0.079	0.063	0.052	0.047	0.039	0.026	0.013	0.005	0.003
	Power(k.W)	0.819	0.755	0.667	0.599	0.561	0.501	0.400	0.254	0.120	0.062
050	Load(kN)	15.7	16.6	18.2	19.1	19.7	21.1	23.9	28.4	34.9	39.1
	Speed(m/min)	2.817	2.348	1.878	1.565	1.409	1.174	0.783	0.391	0.157	0.078
	Efficiency	0.581	0.572	0.552	0.533	0.524	0.511	0.487	0.443	0.392	0.370
	Lost power(k.W)	0.151	0.126	0.101	0.084	0.075	0.063	0.042	0.021	0.008	0.004
	Power(k.W)	1.422	1.261	1.132	1.019	0.959	0.872	0.683	0.439	0.240	0.142
075	Load(kN)	27.6	29.5	32.2	34.1	35.2	37.4	42.6	50.7	62.5	70.6
	Speed(m/min)	2.504	2.087	1.670	1.391	1.252	1.043	0.696	0.348	0.139	0.070
	Efficiency	0.590	0.576	0.563	0.546	0.535	0.518	0.491	0.446	0.395	0.365
	Lost power(k.W)	0.226	0.188	0.151	0.126	0.113	0.094	0.063	0.031	0.013	0.006
	Power(k.W)	2.181	1.971	1.743	1.574	1.487	1.351	1.069	0.691	0.380	0.230
100	Load(kN)	45.2	48.3	52.8	56.0	57.8	61.4	70.2	83.3	100	100
	Speed(m/min)	2.504	2.087	1.670	1.391	1.252	1.043	0.696	0.348	0.139	0.070
	Efficiency	0.617	0.605	0.592	0.580	0.568	0.551	0.525	0.480	0.431	0.400
	Lost power(k.W)	0.339	0.283	0.226	0.188	0.170	0.141	0.094	0.047	0.019	0.009
	Power(k.W)	3.396	3.060	2.706	2.429	2.294	2.080	1.645	1.054	0.557	0.300
150	Load(kN)	62.1	66.7	71.3	77.1	79.8	85.3	96.3	115.4	143.0	150
	Speed(m/min)	2.504	2.087	1.670	1.391	1.252	1.043	0.696	0.348	0.139	0.070
	Efficiency	0.625	0.609	0.593	0.583	0.579	0.558	0.525	0.480	0.428	0.394
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	4.620	4.201	3.658	3.328	3.114	2.855	2.259	1.459	0.800	0.454
200	Load(kN)	79.0	84.9	90.7	98.1	101.6	108.6	122.6	146.8	182.2	200
	Speed(m/min)	2.504	2.087	1.670	1.391	1.252	1.043	0.696	0.348	0.139	0.070
	Efficiency	0.625	0.609	0.593	0.583	0.579	0.558	0.525	0.480	0.428	0.394
	Lost power(k.W)	0.471	0.393	0.314	0.262	0.236	0.196	0.131	0.065	0.026	0.013
	Power(k.W)	5.751	5.240	4.570	4.164	3.899	3.581	2.840	1.839	1.012	0.601

Allowable operation load and speed

JBHseries

Please use within the range of following table of load,velocity chart.

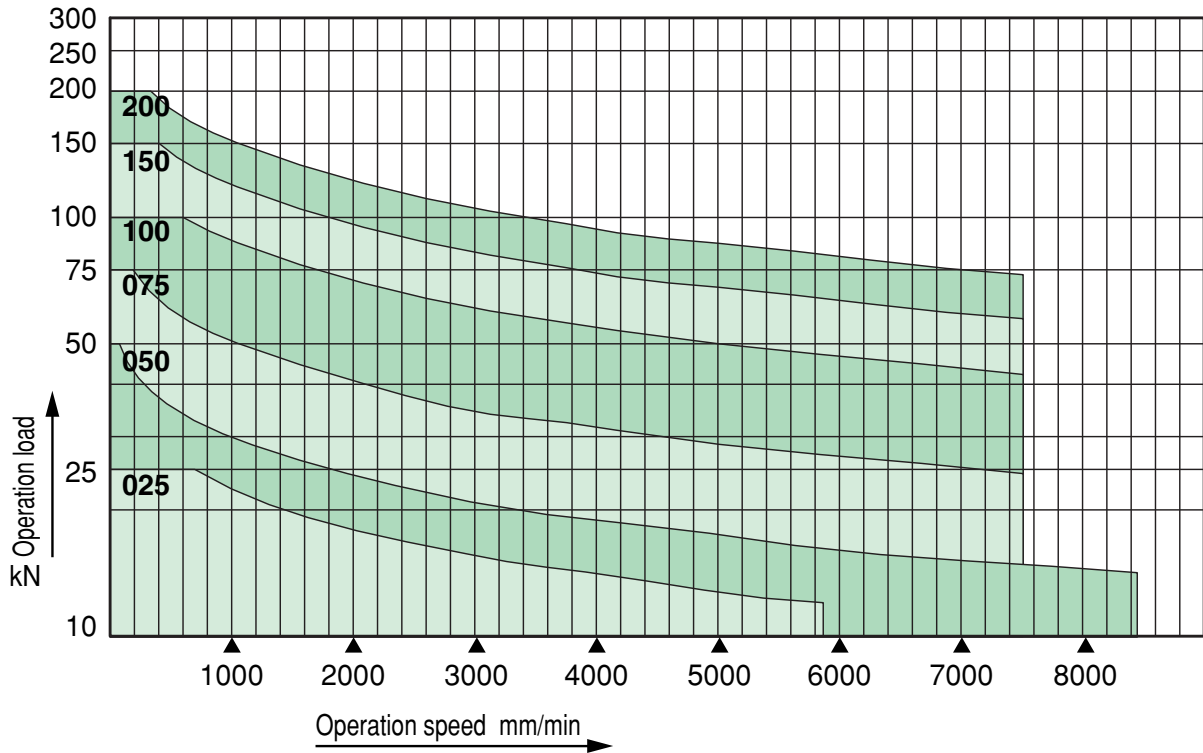
Load,velocity chart (reduction ratio H)



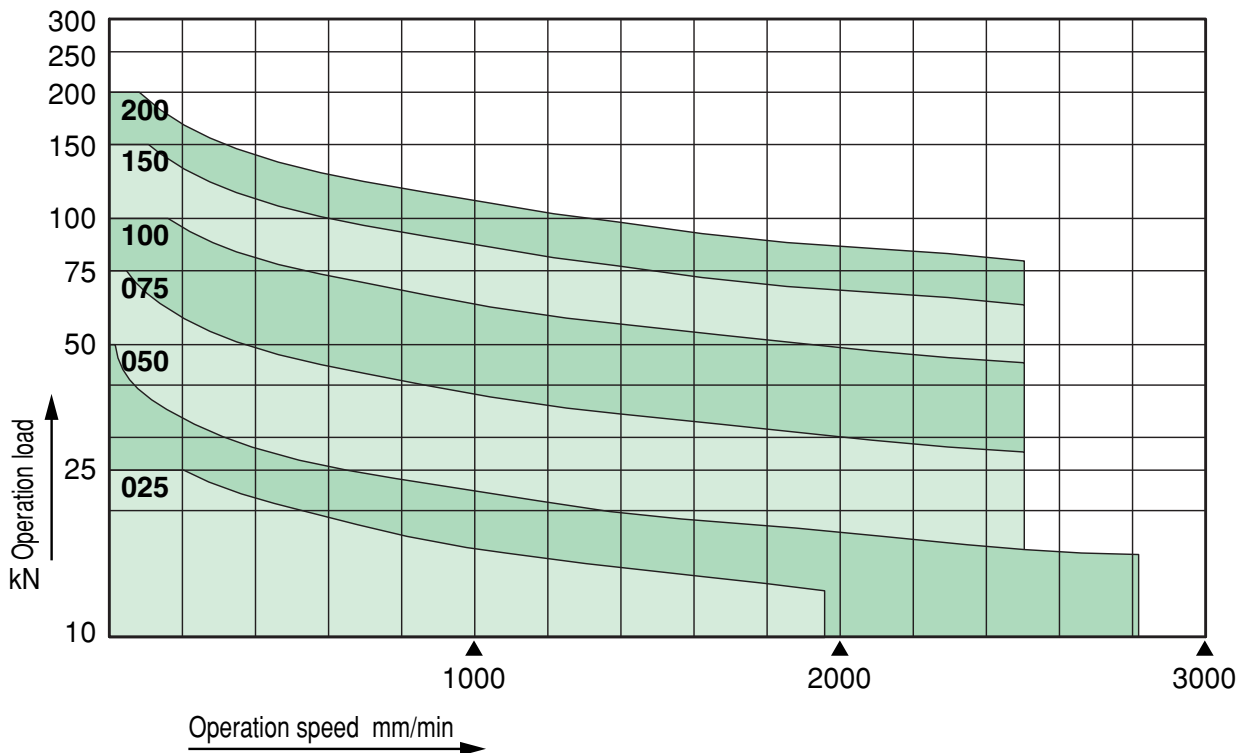
JBH Allowable operation load and speed

Please use within the range of following table of load,velocity chart.

Load,velocity chart (reduction ratio H)



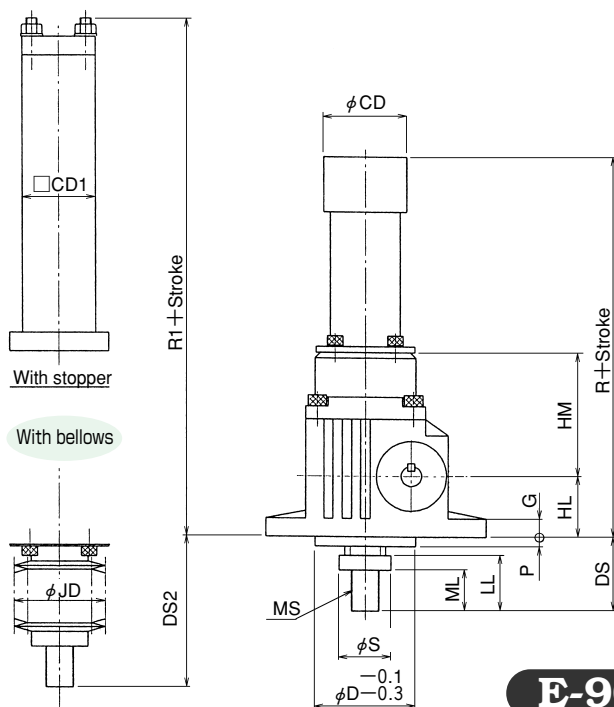
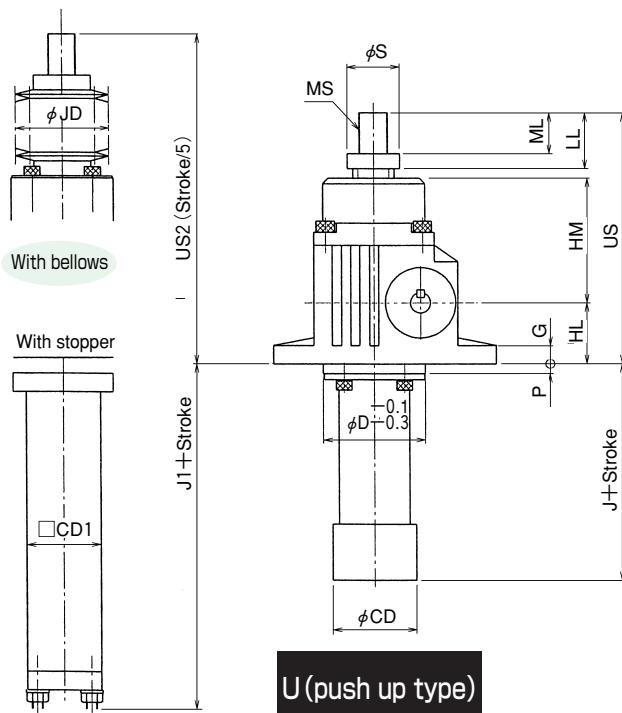
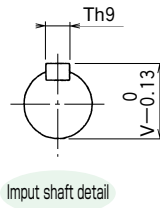
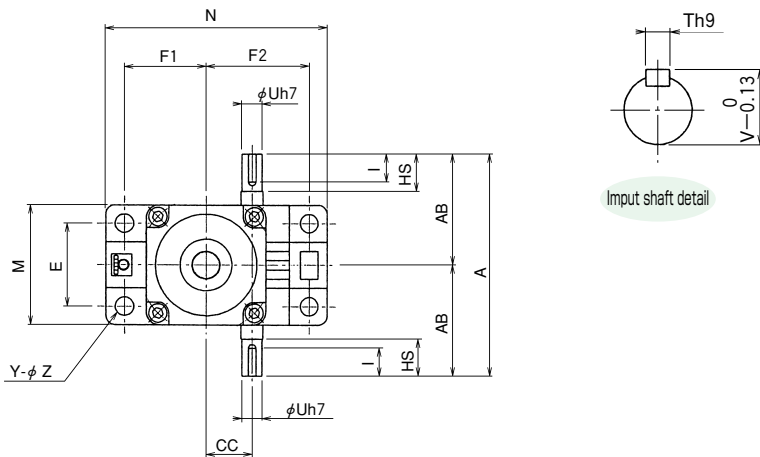
Load,velocity chart (reduction ratio L)



JACK

JBH005~JBH010 Outline dimensions

JBHseries



Standard dimension

Size	005	010
A	120	140
AB	60	70
HL	33	37
HM	75	88
D	55	65
CC	25	32
E	45	55
F1	44	49
F2	56	66
M	65	75
N	120	135
HS	20	25
U	11	14
T	4	5
V	12.5	16
I	15	20
G	10	10
Z	10	10
Y	4	4
S	28	30
CD	45	49
P	5	5
DS	40	45
R	138	155
US	143	165
J	35	35
LL	30	35
ML	22	25
MS	M12×1	M15×1

Dimension with bellows

Size	005	010
US2	155	180
DS2	52	60
JD	50	55

Dimension with stopper

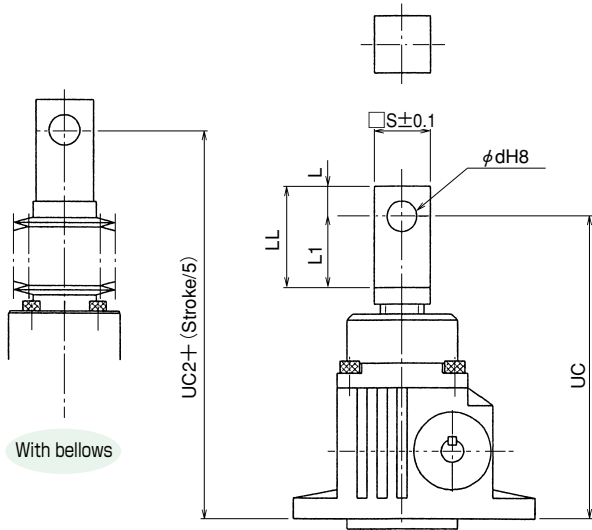
Size	005	010
J1	85	85
R1	180	190
CD1	40	40

Dimension of J1 & R1 with stopper is only for reference.

JACK

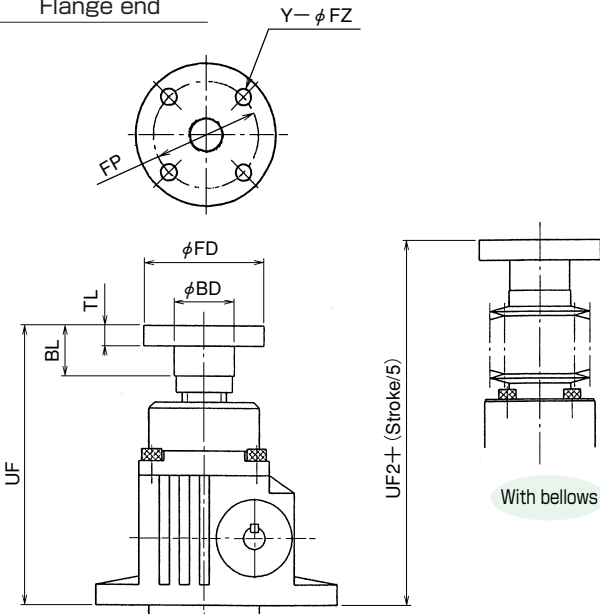
JBH005~JBH010 Shaft end connector and installation

Clevis end



With bellows

Flange end

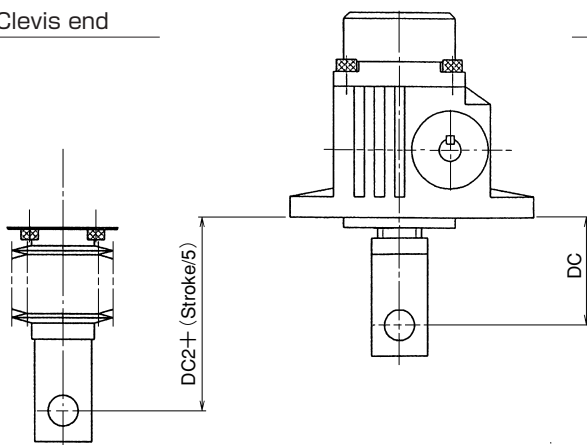


With bellows

Standard dimension

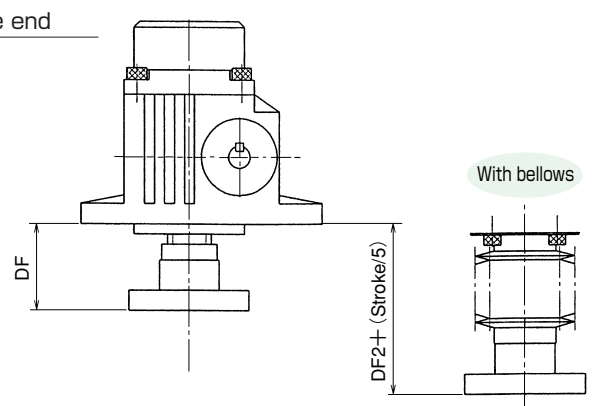
Size	005	010
S	28	32
L	15	15
L1	35	40
LL	50	55
ML	22	25
d	15	16
FD	60	70
BD	30	32
BL	25	28
TL	10	10
FP	45	50
Y	4	4
FZ	7	9
UC	156	180
UC2	168	195
UF	146	168
UF2	158	183
DC	53	60
DC2	65	75
DF	43	48
DF2	55	63

Clevis end



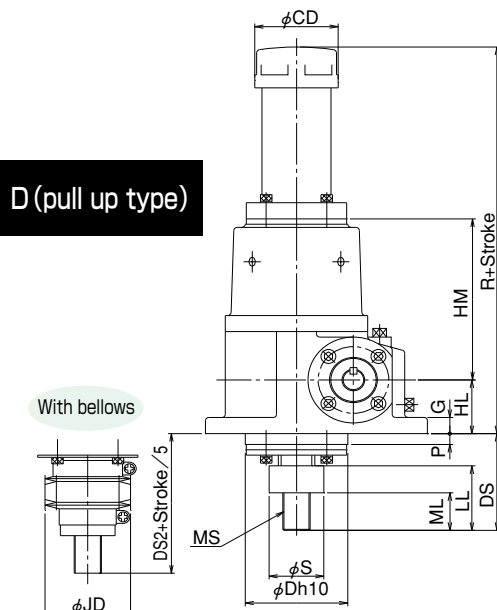
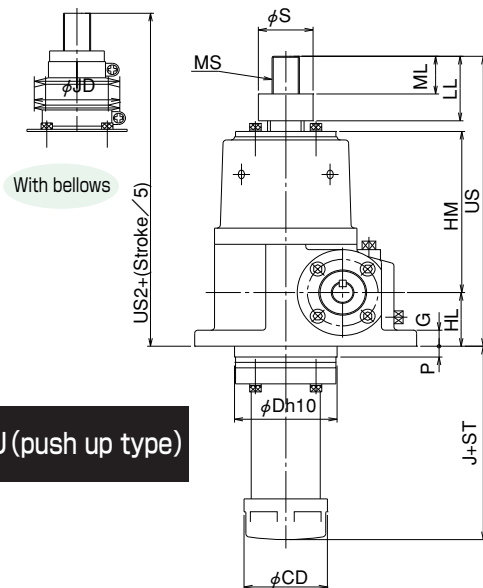
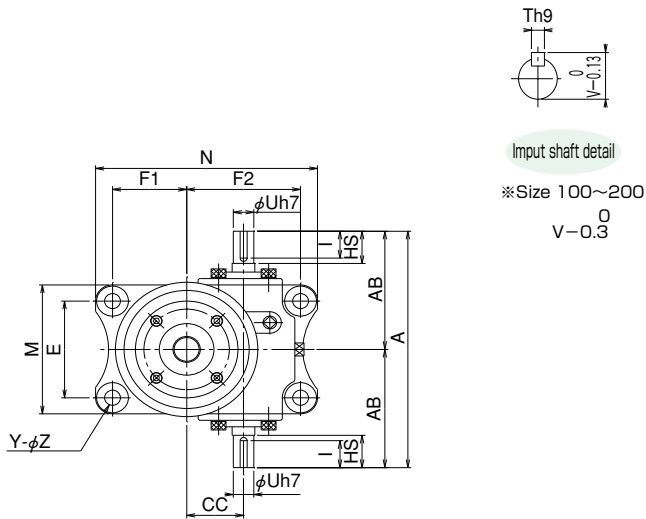
With bellows

Flange end



With bellows

JBH025~JBH200 Outline dimensions **JAHseries**



Standard dimension

Size	025	050	075	100	150	200
A	190	220	260	300	330	350
AB	95	110	130	150	165	175
US	220	270	325	367	415	465
HL	45	50	60	70	80	90
HM	120	150	190	212	240	260
J	75	80	85	102	110	130
MS	M18×1.5	M24×1.5	M33×1.5	M36×2	M40×2	M50×2
ML	25	35	40	45	55	60
LL	45	60	65	75	85	95
D	70	90	110	125	140	140
CC	40	50	60	70	80	80
E	75	90	105	115	130	130
F1	50	65	80	95	105	105
F2	80	100	120	145	155	155
M	96	120	140	165	180	180
N	150	195	235	285	305	305
HS	30	30	40	45	50	50
U	15	18	22	28	32	32
T	5	6	6	8	10	10
V	17	20.5	24.5	31	35	35
I	25	25	35	38	43	43
G	12	15	16	20	20	20
Z	11	14	18	22	22	22
Y	4	4	4	4	4	4
S	38	48	58	63	68	78
CD	60	73	91	105	105	119
P	10	10	10	10	10	20
R	225	260	315	352	400	450
DS	70	90	95	117	125	145

Dimension with bellows

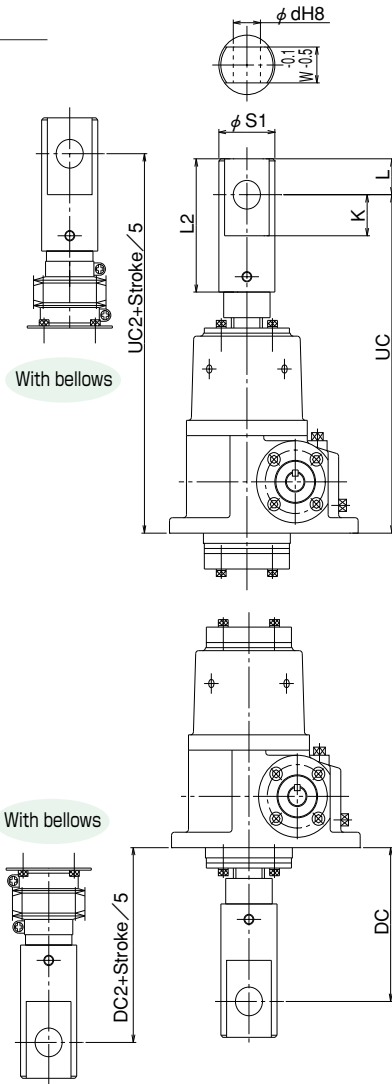
Size	025	050	075	100	150	200
US2	240	290	347	389	437	487
DS2	90	110	117	139	147	167
JD	60	75	90	90	105	108

Dimension with whirl stop

Size	025	050	075	100	150	200
J1	118	148	163	177	187	238
R1	268	328	393	437	477	558
CD2	50	60	75	80	100	100

JBH025~JBH200 Shaft end connector and installation

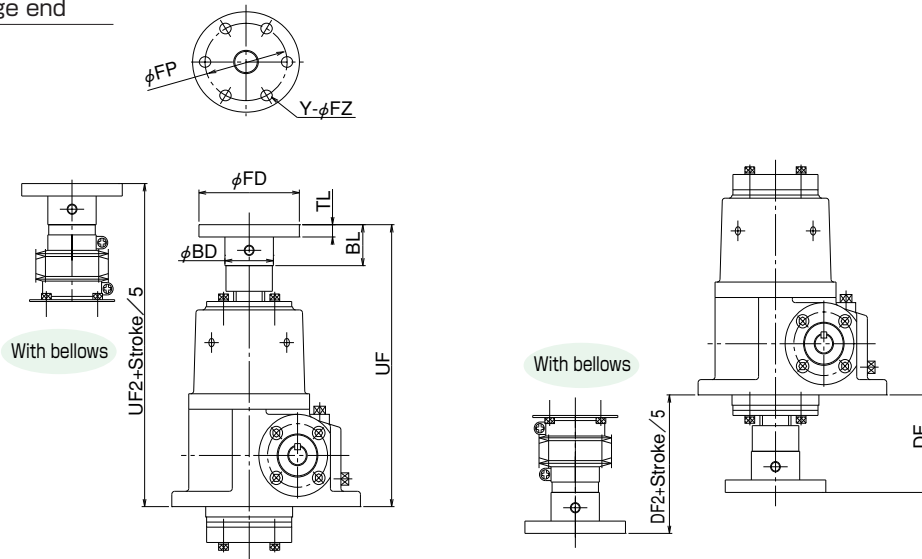
Clevis end



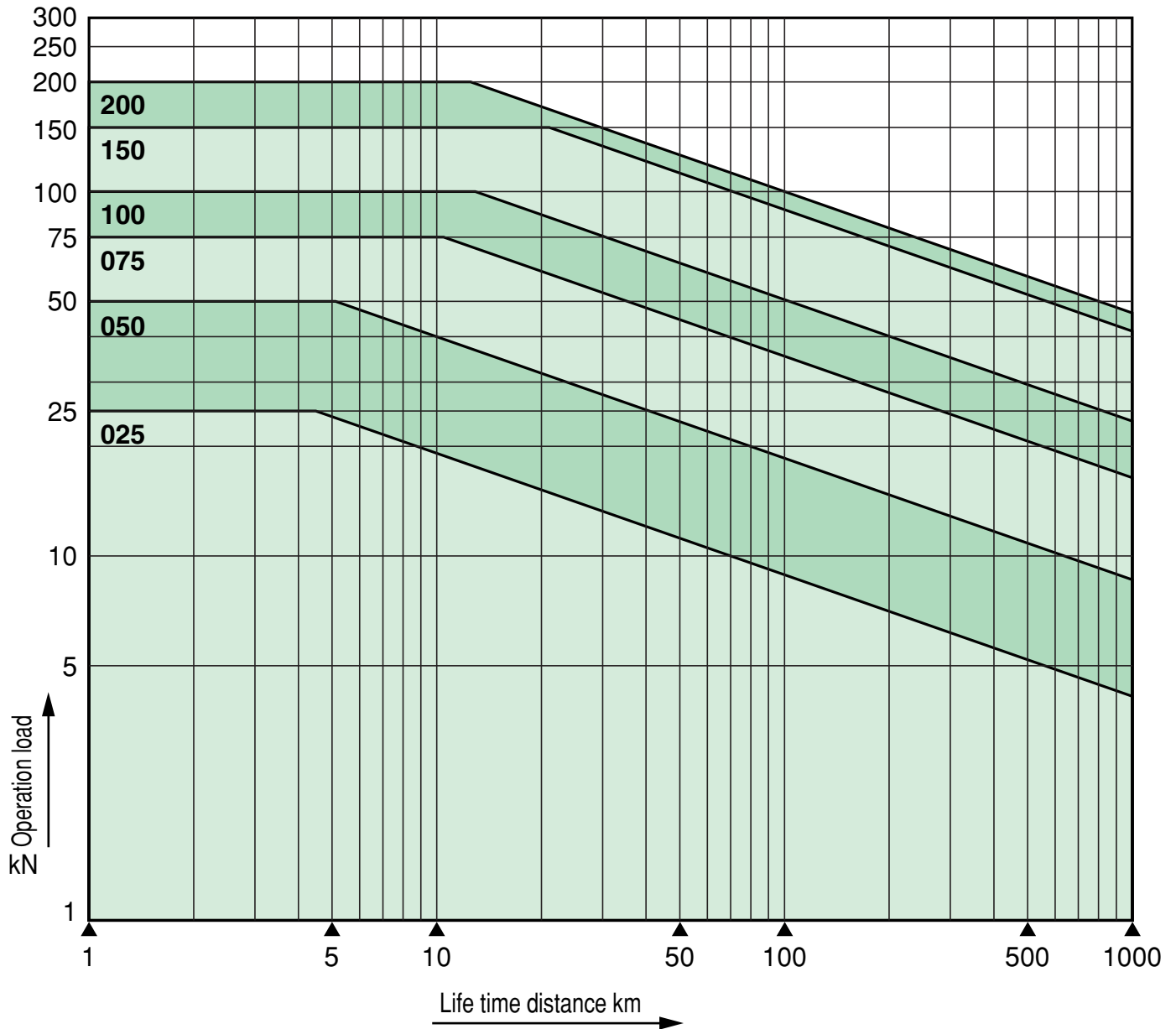
Standard dimension

Size	025	050	075	100	150	200
S1	43	58	63	74	93	93
L2	94	130	155	180	210	225
L	24	35	45	50	60	65
K	28	40	50	55	65	75
W	24	35	40	45	60	65
d	20	28	30	35	45	50
FD	86	104	128	146	166	179
FP	66	80	100	110	122	135
BD	40	50	60	65	75	85
BL	30	40	45	50	60	65
TL	10	12	15	20	20	25
FZ	9	11	14	18	22	22
Y	6	6	6	6	6	6
UC	265	330	395	452	510	565
DC	115	150	165	202	220	245
UF	225	275	330	372	420	470
DF	75	95	100	122	130	150
UC2	285	350	417	474	532	587
DC2	135	170	187	224	242	267
UF2	245	295	352	394	442	492
DF2	95	115	122	144	152	172

Flange end



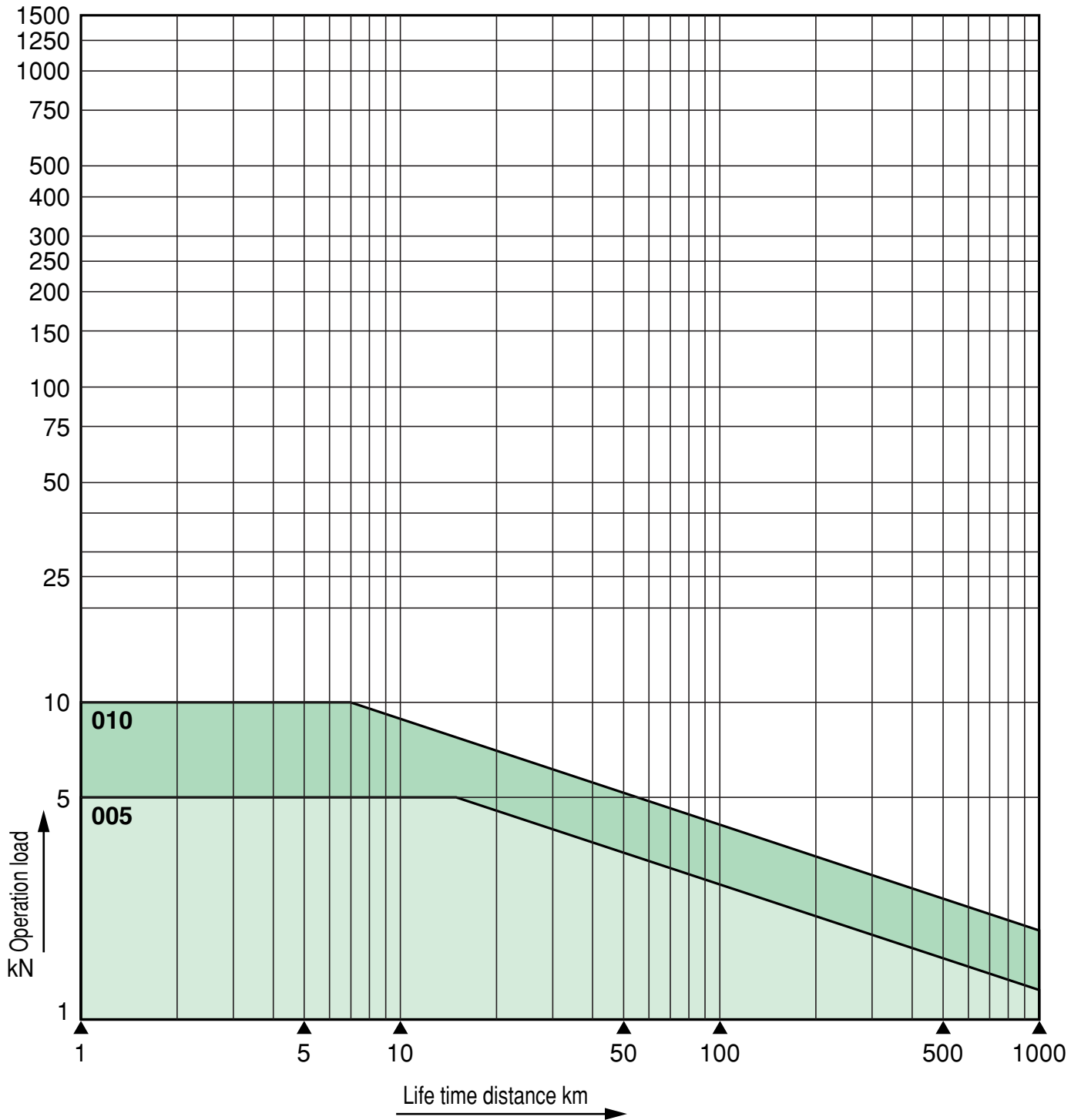
Life time traveling distance chart



JACK

JBH life time traveling distance

Life time traveling distance chart



JACK

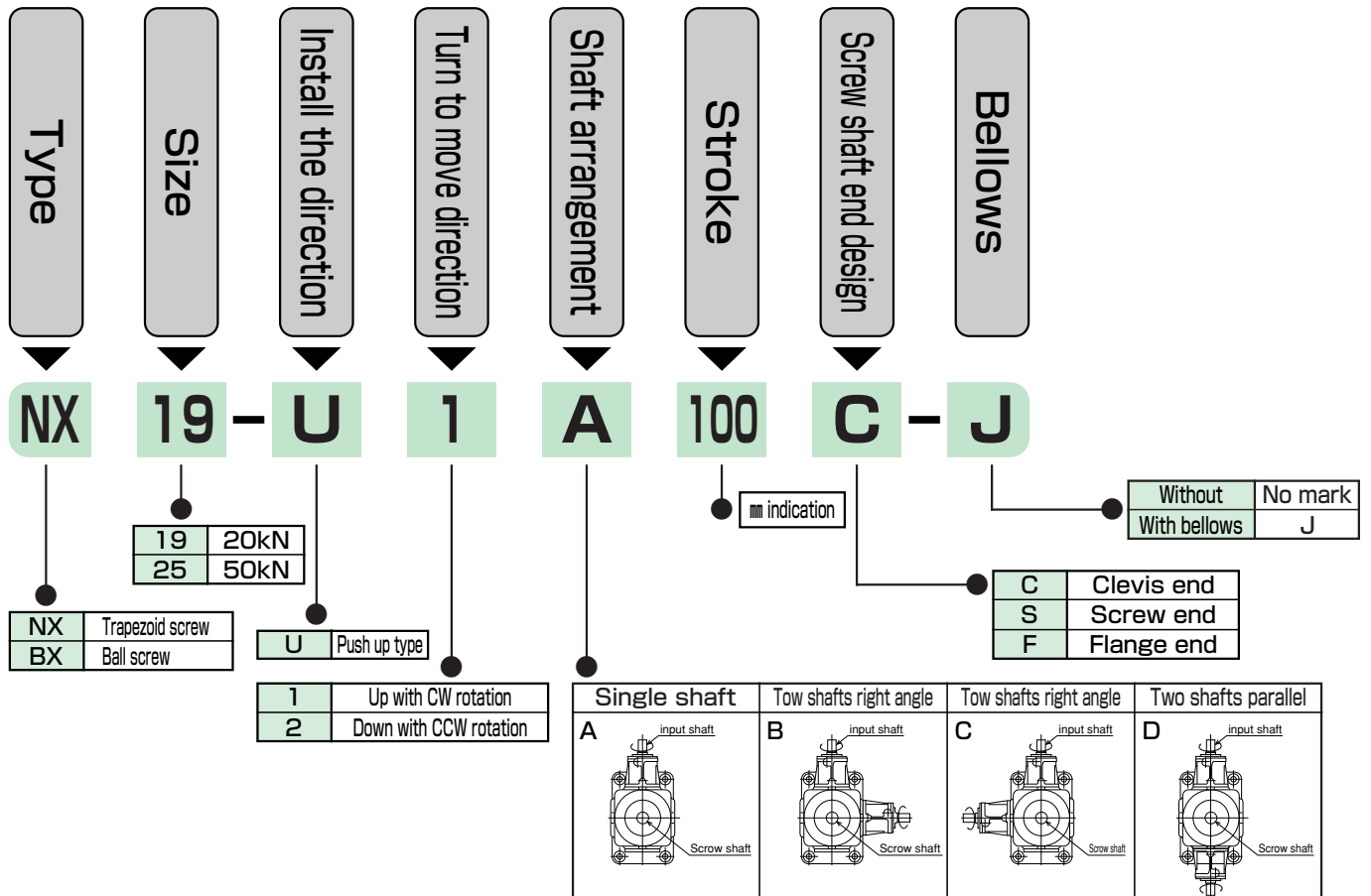
Bevel jack

Bevel jack

- **Easy for synchronization operation.**
Easy for synchronization operation of multiple jacks.
- **Most fitted for low speed operation.**
The driving system has lower noise because of input rotating speed is lower.
- **High efficiency.**
Driven by bevel gear.
- **Simple for use.**
Both trapezoid screw and ball screw are standardized. Therefore, it is convenience for selecting according to application.

Bevel jack nominal type and basic specification

Nominal type



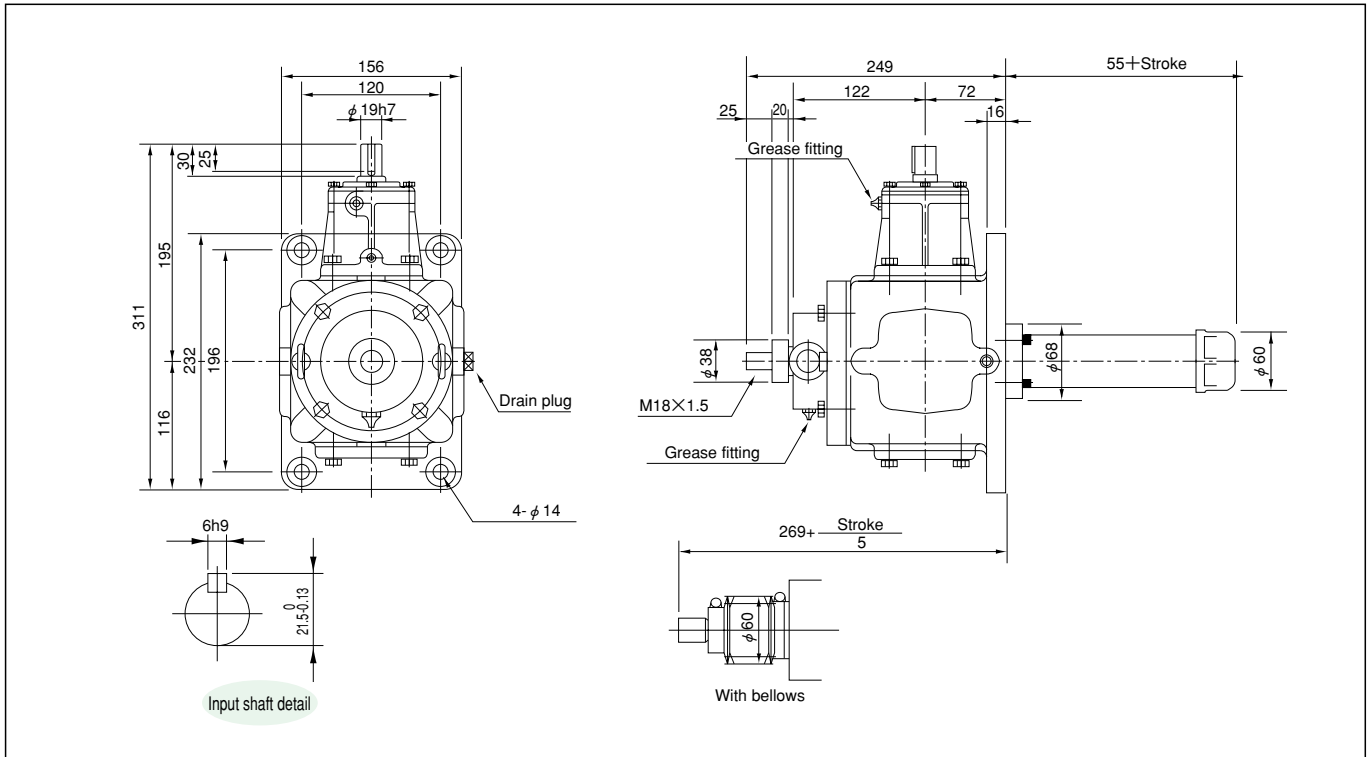
Basic specification

Type	NX		BX	
Size	19	25	19	25
Nominal capacity (kN)	20	50	20	50
Screw shaft diameter (mm)	30	50	25	40
Screw shaft root diameter (mm)	23.5	39.5	20	35
Screw thread pitch (mm)	6	10	10	10
Reduction ratio	2.5	2	2.5	2
Efficiency (%)	30	30	80	80
Max input rev (rpm)	400	400	400	400
Stroke	100 · 200 · 300 · 400 · 500			
Traveling distance per one input shaft rotation (mm/rev)	2.4	5.0	4.0	5.0
Screw torque (N)	70	280	32	85
No load torque (N·m)	1.2	1.8	1.2	1.8
Starting torque (N·m)	35	170	25	65
Reverse load (kN)	10	20	10	20
Load at rest (kN)	30	60	30	60
Weight (kg)	25	35	25	35

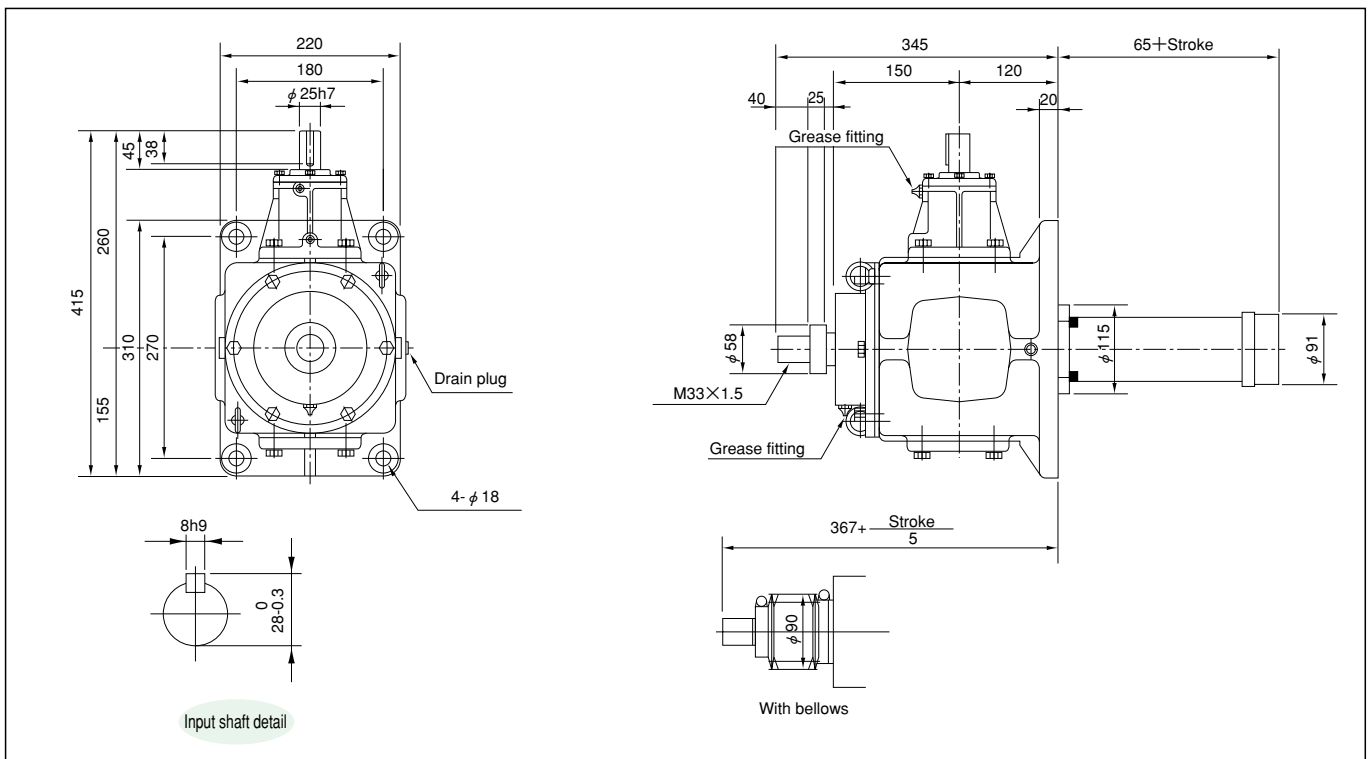
- For permitted axial direction load, for NX, please refer to JA (page E-19, 20), for BX, please refer to JB (page E-35, 36)
- For life of ball screw, please refer to JB lift time traveling distance (page E-42)
- For shaft end connector, NX19 is the same as JA025, NX25 is the same as JA075, Please refer to page E-25. Bx19 is the same as JB025, BX25 is the same as JB075. Please refer to page E-41.

Bevel jack (trapezoid screw, ball screw) outline dimensions **JACK**

NX19·BX19



NX25·BX25



JACK

Position detector Stroke controller

ACCESSORIES

Available "WITHCONTROL" version
easy to read the movement
of stroke.

Accessories (stroke controller)

- The position detector is mounted on the jack directly in replacement of limit switch to be Used separately.
- Can count number and position correctly and easy to make adjustment.

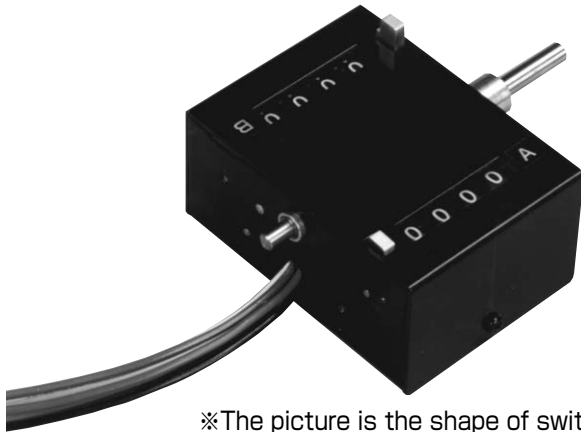
W type counter switch

ACCESSORIES

General

Basically, switch has the same function of L type

And it is more compact than L type.



※The picture is the shape of switch itself.

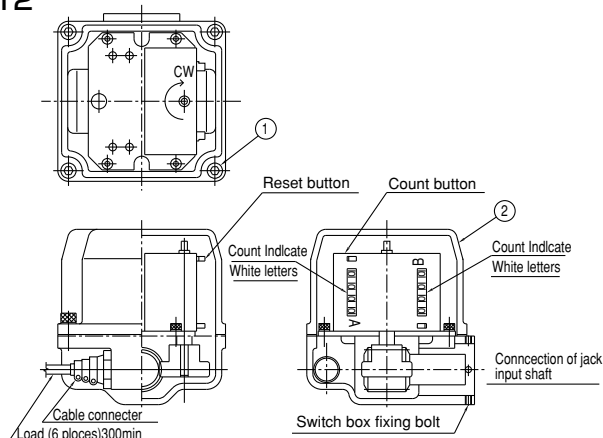
Basic specification

Item	Specification	
Type	W12 · W12E	W14 · W14E
Display	White letters×2	White letters×4
Display figure	4	
Setting mode	Reset button(lock type)	
Setting figure	4	
Setting range	9999~2000(8000Count)	
Switch type	AVT3254(Panasonic electric)[AC250V-3A]	
Number of switch	2	4
Allowable input speed	1800rpm(Counter single body 500rpm)	
Ambient temperature	-20~70℃	
Humidity range	Less than 85%RH	
Self holding range	0000Signal~1999	
Count number	1/rev(Single counter 10/rev)	
Direction of rotation	in case of clockwise rotation(CW), indication of B is increase number and A is decrease number (can rotate clockwise or counter clockwise)	

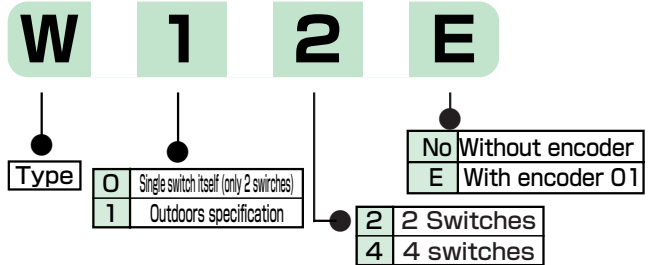
■For encoder specification, please refer to E-85.

Counter switch nominal symbol

W12

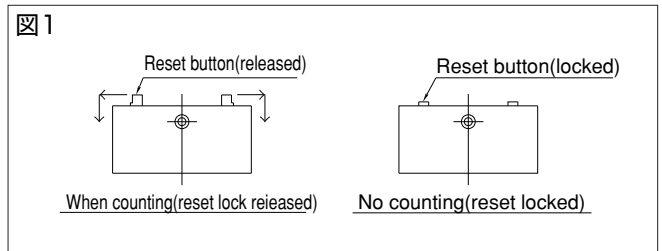


Counter switch nominal symbol



Structure explanation

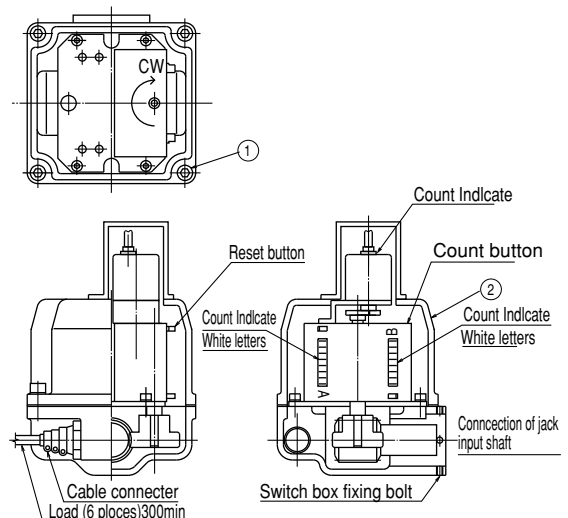
- ①②cover can be removed if loosen bolts.
- 2.Switch will be at locked condition if slide the counter switch reset button and push down.
- 3.It is ready to operate when output is at locked condition(NO-COM).



Reset released state / Reset locked state

- 4.Set up position to upper limit or lower limit, then release re-set button in counter switch.
- 5.By releasing the lock of counter switch, located position will be at 0000 count, then complete set up (when screw shaft replaced at original position by turning input shaft, make sure to start count toward reduction side).

W12E



JACK

W type counter switch

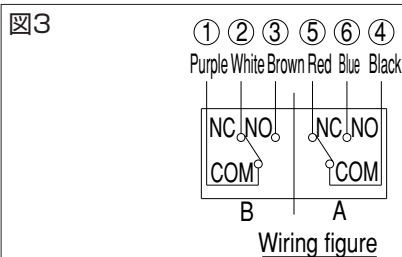
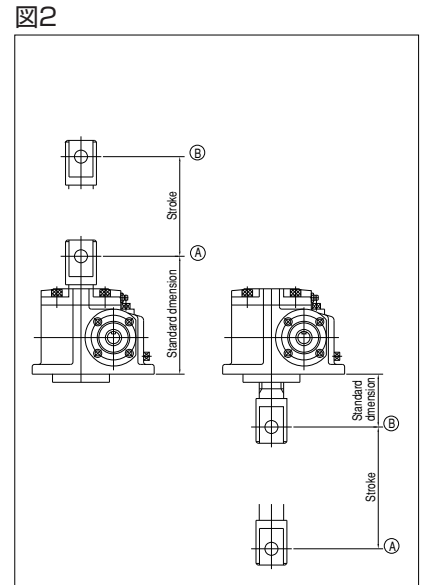
Setting procedure

This switch is almost maintenance free type. Basically, switch is shipped without setting the counter. Adequate setting is required in accordance with following setting procedure. Makishinko can set up the switch prior to shipment upon requested,

- Lock the reset button, then start setting while operation states.
- At the position of (A) or (B), release both re-set button in counter switch. (refer to figure 2.)
- Rotate the screw to desired position by rotating input shaft, then set to the release condition by pushing the re-set button of add-count side. (please refer to figure 1 structure explanation)
- Push back the screw to the original position by rotating input shaft to the opposite direction, then set to the release condition by pushing re-set button in add-count side. Completed the setting.

(Example 1) When set to 200
9800 (10000-200)
Digit of display when
transmit:0000

(Example 2) When set to 5005
4995 (10000-5005)
Digit of display when
transmit:0000



Reduction	Load	A operation	B operation	A	B
CW	① ②	—	—	Setting value	0000 (Transmit)
	① ③	—	—	Setting value	0000 (Transmit)
CCW	④ ⑤	—	—	0000 (Transmit)	Setting value
	④ ⑥	—	—	Setting value	Setting value

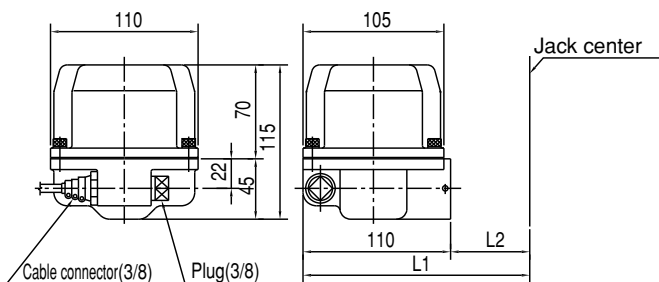
Set range
Transmitpoint Transmitpoint

Operation explanation
 Connection (on)
 Connection point (off)

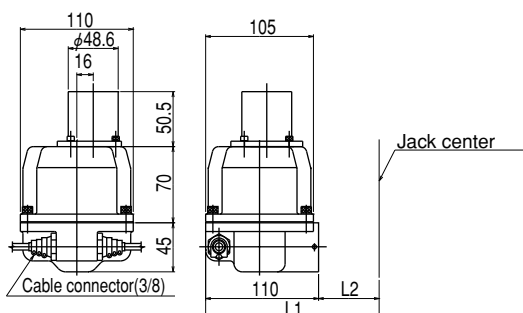
Dimension table

If looked from upper face of jack, screw will be moved toward upper direction of jack when input shaft rotate arrow direction.

W12



W12E

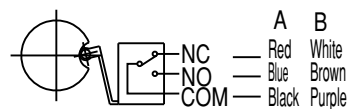


Size	005	010	025	050	075	100	150	200	250	300	400	500
L1	148	151	169	184	194	218	228	243	246	258	270	286
L2	38	41	59	74	84	108	118	133	136	148	160	176

Output status of micro-switch

(1) In output status

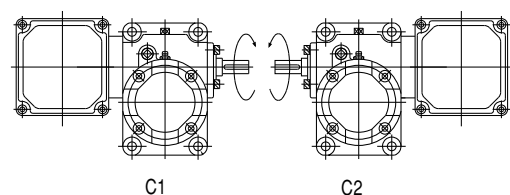
(Output self holding indicate 0000-1999)



(2) In setting status (indicate 9999-20000)

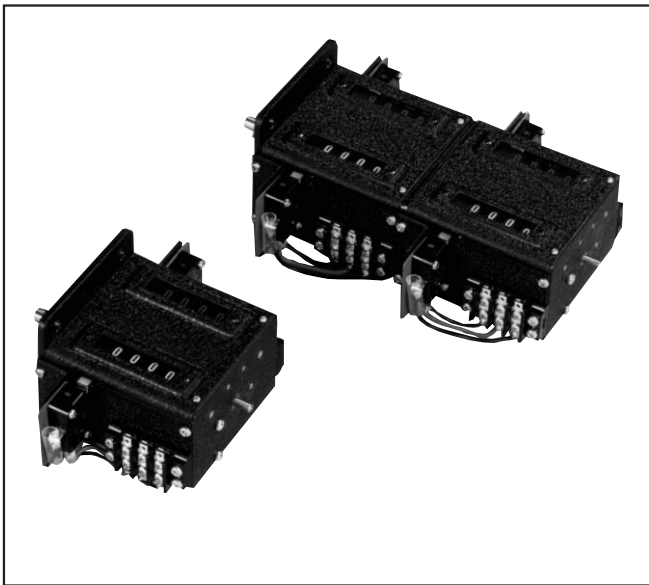


Shaft arrangement

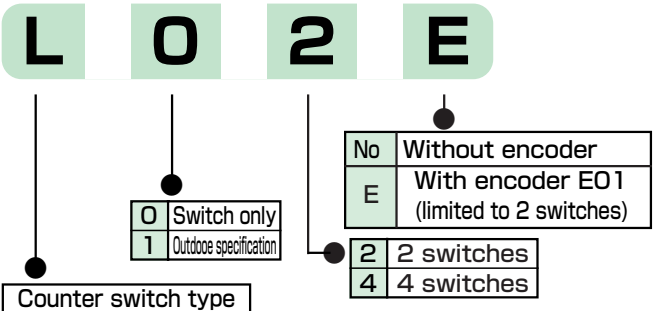


L type counter switch

ACCESSORIES



Counter switch nominal symbol



General

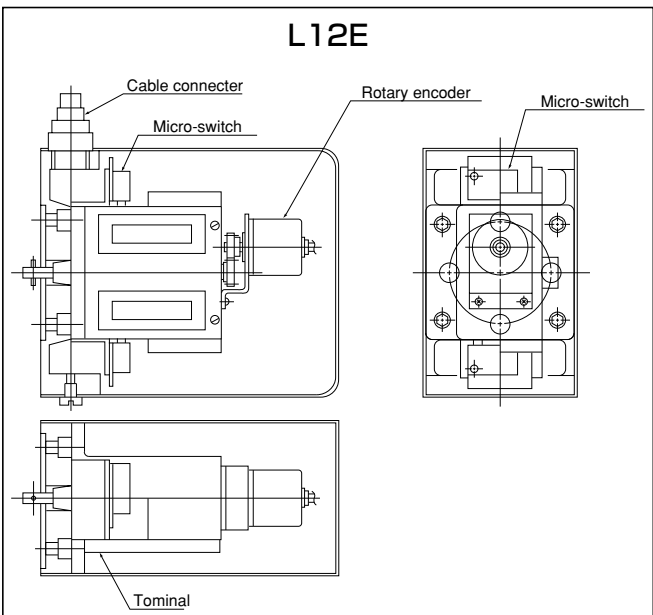
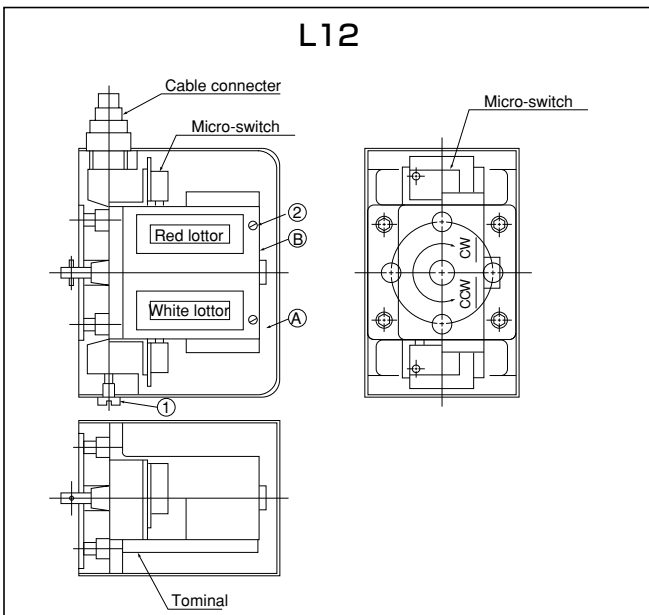
The switch is composed of two sets of mechanical counters and two micro-switches which linked with counters. Switch can be mounted directly to input shaft, accuracy of detector is high. Also available type use together with encoder. Method of counting is one counter per one input revolution.

Basic specification

Item	Specification	
Type	L02 · L12	L04 · L14
Display	Red letter×1, White letter×1	Red letter×2, White letter×2
Display figure	4	
Setting mode	Ring letter (figure) adjustment	
Setting figure	4	
Setting range	0000~9999	
Switch type	V5514D (Panasonic electric) [AC250V-5A]	
Number of switch	2	4
Allowable input speed	2000rpm	
Ambient temperature	-20°C~70°C	
Humidity range	Less than 85%RH	
Self holding range	0000Signal~0999	
Count number	1/rev	
Direction of rotation	Clockwise rotation (CW), red letters is decrease number display	

■ For encoder specification, please refer to E-85.

Counter switch nominal symbol



JACK

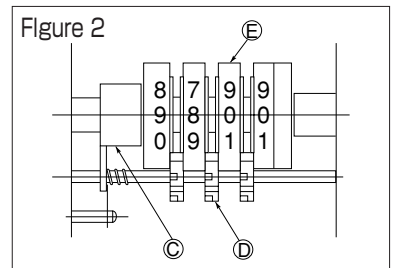
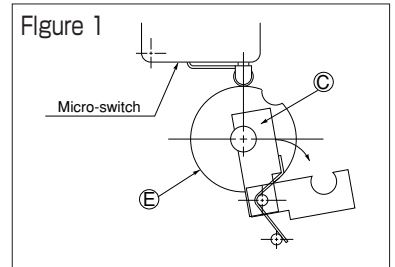
L type counter switch

Handling

Basically, switch is shipped without setting the counter. Adequate setting is required in accordance with following setting procedure. Makishinko can set up the switch prior to shipment upon requested,

Setting procedure

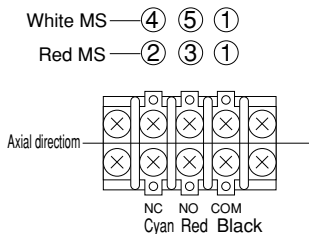
1. Unfasten small screw ①, then remove cover (A). (structure figure)
2. Unfasten lock screw ②, then remove cover (B). (figure 1)
3. Turn the spacer (c) and lower to downward per fig.1. If slide the ring letter to left, then ring letter will be freely rotate and can be set up desired number. When adjust ring letter (figure), make sure to position it at center of window, pinion (D) must be at same stand in a line.
4. Replace the space (D) at original position
5. Tighten the screw ② after put back cover (B).
6. Tighten the small screw ! after put back cover (A).



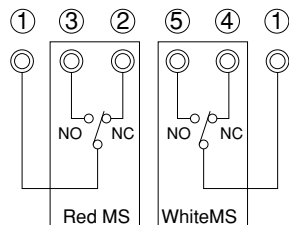
Notes

1. When set-up, display figure must be at center position as per fig.2
2. When replaced the spacer, make sure to check if spacer being replaced at original position with 0.2 0.3 mm clearance between letter (figure) rings.
3. As shown in fig 2. confirm the center of pinion and letter ring correctly. If not, it cause to damage of gear. (longer pin and shorter pin must be line up)
4. After setting, make sure to work switch at setting position.

Terminal



Wiring diagram

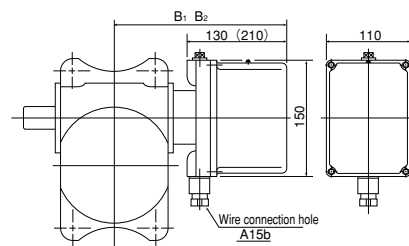


Operation mode

Reduction	Terminal number	Brown MS	White MS	Brown MS	White MS
CW	① ②	-----	-----	0000 (Transmit)	Setting value
	① ③	-----	-----		
CCW	① ④	-----	-----	Setting value	0000 (Transmit)
	① ⑤	-----	-----		

Outline dimension

※The figure shows L12 type with C2 arrangement. (Opposite arrangement is C1)



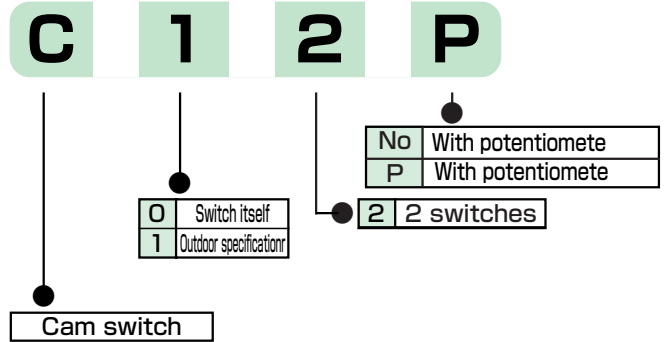
Type	025	050	075	100	150	200	250	300	400	500
L12 B ₁	195	210	220	235	247	262	265	283	298	313
L14 B ₂	275	290	300	315	327	342	345	363	378	393
L12E										

Cam switch type C

ACCESSORIES



Counter switch nominal symbol



General

Function of cam switch is detection of position by each cam with movement of 2 individual cam. Use it for maximum stroke eith one cam revolution. Therefore, application is for rough positioning and limit switch purpose. Analog indication is possible if use it with potentiometer and connect with display tools.

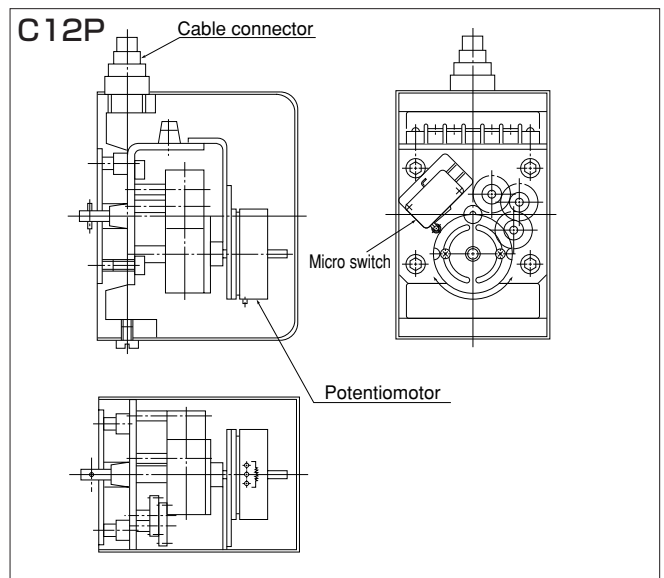
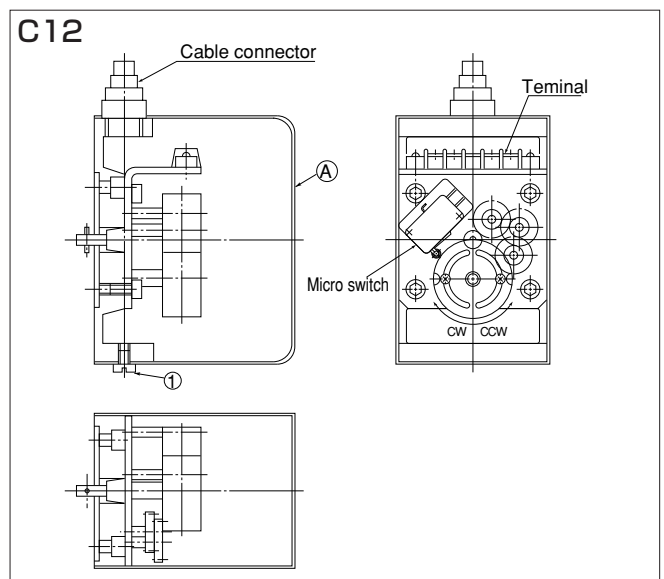
Cam switch basic specification

Type	C02 · C12
Display	no
Display figure	Adjustment of cam position
Setting method	0~950rpm
Measuring range	V5514D(Panasonic electric) [AC250V-5A]
Switch type	2
Quantity of switch	2000rpm
Allowable input speed	1000 : 1
Cam revolution per	
one input shaft rotation Ambient temperature	-20°C~70°C
Humidity range	Less than 85%RH
Direction of rotation	Input shaft and cam shaft rotate in the same direction

Potentiometer specification

Electric	Type	C02P · C12P
	Total resistance value	1kΩ
	Total resistance value	±15%
	Linear	±0.5%(accuracy±0.1%)
	Rated power	3W/70°C
	Insulated resistance	100MΩ Many than DC1000V
	Withstand voltage	AC1000V Per minute
	Resistance temperature coefficient	±400ppm/°C
	Output sommthness	0.1% Less than
	Middle terminal	Min. Angle 20" 16pieces
Connecting quantity	8 connecting	
Mechanical	Mechanical angle	360° cycle
	Rotating torque	Less than 18g cm (connecting), from the second connecting increase 15g cm
	weight	60g. Add 10g for every connecting

Structure figure



JACK

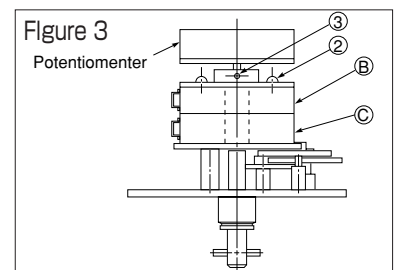
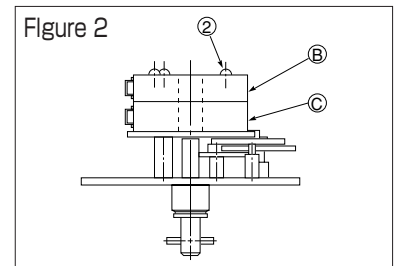
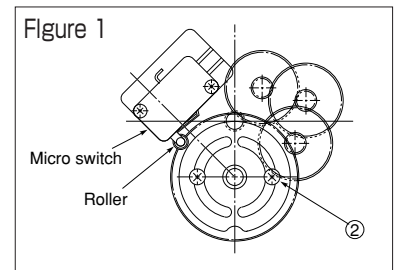
Cam switch type C

Handling (example of push up type U)

Basically, switch is shipped without setting the cam. Adequate setting is required in accordance with following setting procedure. Makishinko can set up the cam switch prior to shipment upon requested.

Setting procedure

1. Loosen the small screw ①, then remove cover (A). (structure figure)
2. Loosen the adjustment screw ②, then (B) and (c) cam will be in free condition. (figure 2)
3. Place the screw of jack at upper limit position, then tighten the screw ② after groove of cam (c) matched with roller of micro-switch.. Make sure to positioned cam (c) correctly.
4. Loosen the adjustment screw ② after placed screw of jack at lower limit position.
5. Tighten the adjustment screw after matched the groove cam (B) to roller of micro switch ②.
6. Put back cover (A), then tighten the small screw ①.
7. Adjust potentiometer after loosen the screw ③.



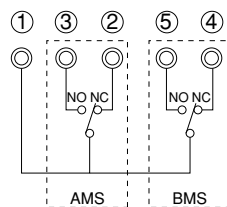
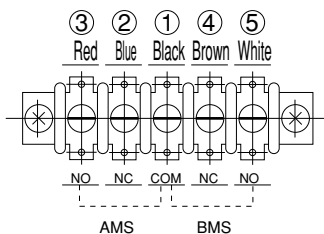
Notes

1. After adjusted the cam position, must confirm upper and lower stop position.
2. Confirm if adjustment screw ② is tighten enough or not. If it is loosen, it may not stop at desired position.

Terminal

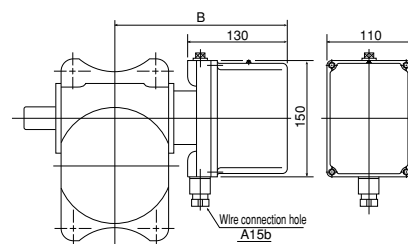
Wiring diagram

Operation mode



Reduction	terminal number	A-MS	B-MS
CW	① ②		
	① ③		
CCW	① ④		
	① ⑤		

Outline dimension

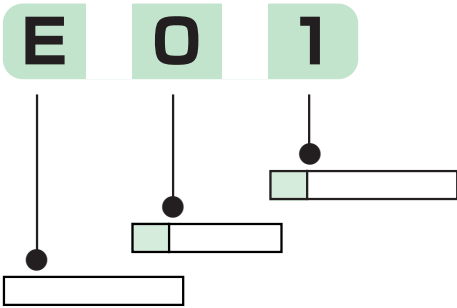


Type	025	050	075	100	150	200	250	300	400	500
B	195	210	220	235	247	262	265	283	298	313

Encoder (incremental type) type E

ACCESSORIES

Encoder nominal symbol



Basic specification

Electric specification

Type	CE
Power supply voltage	DC5~12V ±5%
Output signal	90° degree Phase difference 2 signals
Output voltage (H)	Supply voltage - 1V
Output voltage (L)	Less than 0.5V (with 20mA current)
Max reaction speed	30KHz
Current consumption	Less than 40mA
Input current from outside	Less than 20mA
Output impedance	2kΩ
Range of temperature	-10~70°C

General

The encoder transmit input shaft revolution as pulse signal.

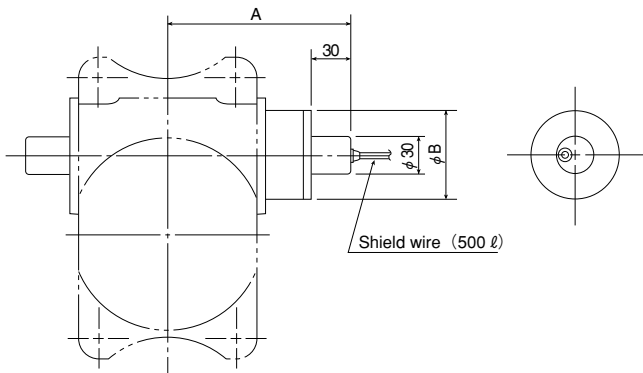
It is compact and can be mounted directly on input shaft and possible to use together with electronic counter, sequencer.

◆ Available electron counter as an accessory.

Mechanical specification

Type	CE
Allowable max speed	6000rpm
Shaft inertia moment	$1 \times 10^{-4} \text{ N}\cdot\text{cm}^2$ Less than
Starting torque	$1 \times 10^{-3} \text{ N}\cdot\text{cm}$ Less than
Rotating angle acceleration	$1 \times 10^4 \text{ rad}/\text{sec}^2$
Allowable radial load	10N
Allowable thrust load	5N
Anti vibration	50Hz10G·1h
Anti impact	30G/1ms
w e i g h t	50g

Outline dimension

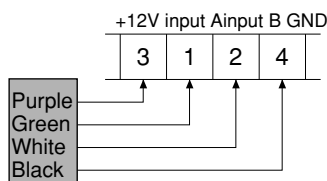


※The figure indicates shaft arrangement C2. (C1 is opposite arrangement)

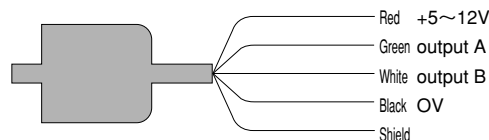
Type	005	010	025	050	075	100	150	200	250	300	400	500
A	93	98	118	133	143	158	170	185	188	206	221	236
B	50	50	70	70	70	70	70	70	70	80	85	90

Wiring

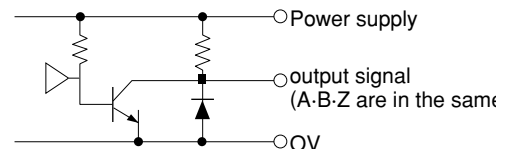
Connection with election counter



Main diagram



output circuit



Electronic counter



Specification

Type	G48-315
Display	With backlight LCD letter size 10x5mm
Display bit	6
Setting figure	6
Setting range	2
Input mode	-99999~999999
Input signal	Connection/open collector
Count speed	open collector input current 10nA (H:6-30V, L:0~5V)
Counter mode	30Hz, 1kHz, 5kHz Selectable
Count way	addition, subtraction, and combination(input addition and subtraction count separately, instruct input addition and subtraction, 90phase difference input)
Counter range	-99999~999999
Input prohibition	Input prohibition is possible with addition count or subtraction count(1 input mode)at input B mode.
Pre scale	0.001~99.999 (Setting is not possible)
Specification of decimal position	0.0, 0.00, 0.000 Or without decimal
Writing	-99999~999999
Reset	Front reset, remote reset, auto-reset
Remote reset time	2msec Or 20msec
Acting mode	Select either A, B, C, D, E, F, G (Fixed output mode with A model if other than standard output)
Memory	E ² PROM (Memory time in every time: 10 years, memory times: 10 thousand)
Output	Relay output 1a connecter (MAX resistance load)
Output delay time	Relay output 30Hz:20msec 5kHz:7msec
Output mode	Possible selection of standard equal, upper/lower limit, upper/upper limit
Output time	In case of standard, can select either one short (10~9999msec·10msec) or hope in case of other than standard output, output is hold-fix and self holding while meet with condition.
Key protect	Selectable level 1-4, Effective by key protect input
Error indication	Indicate if over count the count range.(overflow, $\bar{O}-E_r$, underflow, $\bar{U}-E_r$) But it is limited to combination of addition/subtraction mode.
Power supply	AC100~240V -15%, +10%
Sensor power supply	DC12V 100mA
Power consumption	About 7VA (AC240V)
Range of temp and humidity	-10~50°C (no ice) 45~85%RH (no dew)
Protection structure	IP54 (Surface panel)
Weight	About 170g

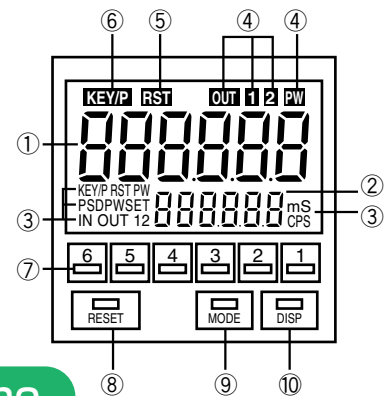
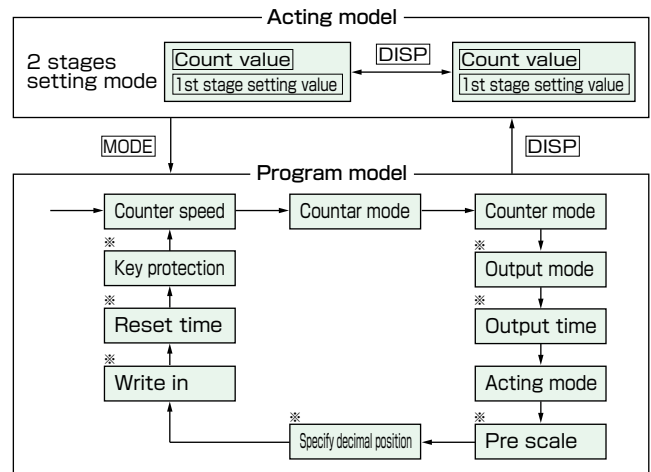
Electron counter nominal symbol

G48-315

Count signal of encoder and display it.
Display the amount of movement in mm.

Basic operation

E48 operate both in acting mode and program mode. Primary setting is required in accordance with input method. For acting mode, pre-setting general counter form and program mode is counter form.



Parts name

- | | |
|---------------------------------|--|
| ① Counter indicate | ④ Output indication |
| ② Setting value indicate | ⑤ Outside reset input indication |
| ③ Set item indicate | ⑥ Outside key protect input indication |
| IN CPS Count speed | ⑦ Figure key |
| IN Input setting | ⑧ Reset key |
| OUT Output setting | ⑨ Mode key |
| OUT ms Output setting time | ⑩ Display key |
| PS Pre scale | |
| DP Specify decimal position | |
| W Writing | |
| RST ms Selection of re-set time | |
| KEY/P Key protect | |
| SET Pre-set display | |
| PW Forecast setting | |

●Output mode: Available following 5 types output mode.

Standard output	Std	Selection of one short model and hold mode for output time setting mode. (hold 1 and 2 mode for 1st stage and forecast for double setting.)
Equal output	EQUAL	Only output only when count value. Each type and each output will be equal output.
Lower limit output	LL	Lower limit comparator output, Suitable for positioning. 1st stage setting will be lower limit output.
Upper limit output	UL	Upper limit comparator output, Suitable for positioning. 1st stage setting will be lower limit output.
Upper/lower limit output	LL-UL	Upper/lower limit comparator output, Suitable for positioning. 1st stage setting is lower limit output and second stage is upper limit output for double setting.
Upper/upper limit output	UL-HUL	Upper limit 1 and 2 is comparator output. For double setting, first stage will be Upper limit output.

●Output time: the output time is once short and hold, hold 1 and hold 2

Hold	Hold	Self hold at setting value	Correspondent to main output for 1 stage setting output 2 stage of double setting, first stage/forecast setting.
Hold 1	Hold-1	Self hold until OUT 2 return timing	Correspondent to forecast output for first stage of double setting, first stage/forecast setting.
Hold 2	Hold-2	Self hold regardless OUT 2.	
Once short	10~9990ms	Possible 10ms unit setting.	Correspondent to suite all types and all output.

If the output mode exceeds standard output, the output time is fixed at HOLD and can operate self-hold which satisfies the condition.

●Acting mode: there are the following 7 types of acting mode

A acting	A	Count during on output	Over run (no auto reset)
B acting	b	Lock count during on output	
C acting	C	Lock count after output	
D acting	d	Edge reset on increasing output	Auto reset
E acting	E	Edge reset on decreasing output (Can set up time is only one shot)	
F acting	F	Edge reset on increasing output indicate latch dunn on output (Can set up time is only one shot)	
G acting	G	Edge reset on decreasing output Count lock dunn on output (Can set up time is only one shot)	

●Pre scale

Can set up the relation between input pulse and indication freely. Set range is 0.001-99.999, 4 bits set range is 0.001-9.999. Pre scale value= indication value/pulse, set after calculated.

Example: Pre scale value is 0.1 if 10 pulse and 1 indication. Pre scale is 2 if 1 pulse and 2 indication.

●Setting of dicimal position

No decimal figure or indicate 3 place(0.0.00.0.000) or 1 digit out of 4.

●Writing

Can write desired figure in display. Count start from written value. When reset, counter display value change to written value.

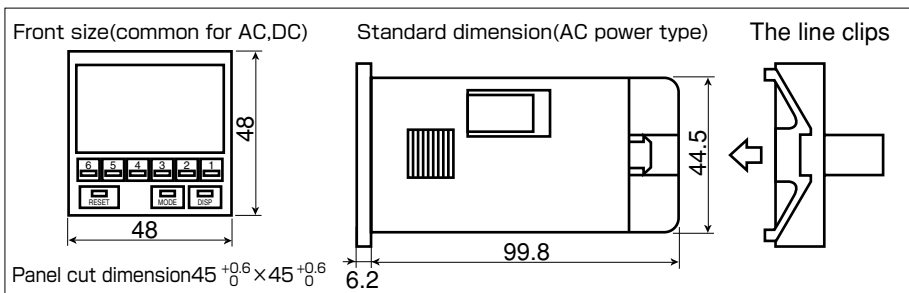
●Reset time

Set up the min pulse time of remote set signal. Specify either 2ms or 20ms.

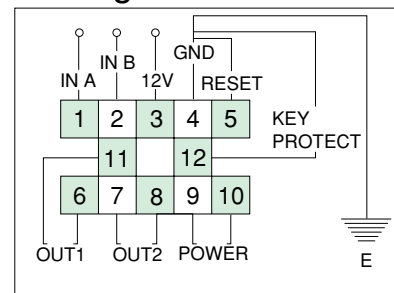
●Key protect: can set up 4 different level.

Level 1	L1	Program prohibition	the selected condition from 4 level in program has effect only when the key protect terminal is ON.
Level 2	L2	Program prohibition, front reset prohibition	
Level 3	L3	Program prohibition, pre set prohibition	
Level 4	L4	Program prohibition, front reset prohibition, pre set prohibition	

Outline dimension



Wiring



Electronic counter

Primary set up method

Release the key protect terminal when conduct primary set up according to the program.

Start to input program mode by operating [MODE] key in front. After started to program model, the setting item of program model will be changed by pressing [MODE] key. Select setting item and set up content by each figure key.

1. Upon power on, display acting mode.
2. Select desired program item by [MODE] key.
3. Select item by the first figure key of each figure key, or set up figure by figure.
4. Setting value will be memorized automatically after 3 second of completion of set up. Also automatically memorized setting value if changed the mode with [MODE] key or [DISP] key

Pre scale set up method

Set pre reversion by program mode. Must keep key protection terminal in releasing state when setting.

1. Upon power on, display acting mode.
2. Display pre scale setting indication (display PS) by [MODE] key. The set value is 1.000 when leave factory.
3. Input desired pre value by each figure key 1-5.
4. Setting value will be memorized automatically after 3 second of completion of set up. Also automatically memorized setting value if changed the mode with [MODE] key or [DISP] key.

Pre scale set up method

The calculation of pre scale value (PS value) is:
$$\text{PS value} = \frac{\text{Desired display value}}{\text{Input pulse}}$$

The setting range is 0.001-99.999.

Example: 1. Display 1 with 10 pulse: PS value is 0.1.

2. Display 1 with 5 pulse: PS value is 0.2

3. Display 2 with 1 pulse: PS value is 2

Pre scale set up method

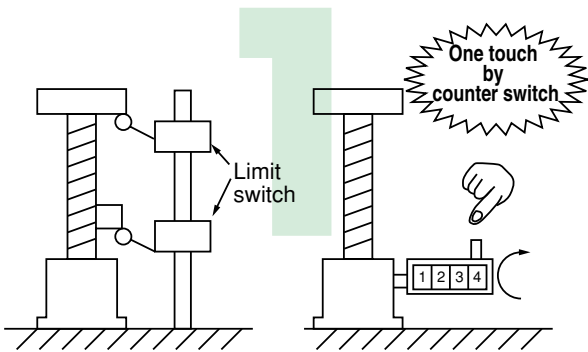
Pre set at acting mode status. When setting pre set prohibition for set up of key protect level, operation must be started after released key protect terminal.

1. Start to indicate acting mode upon switch on. Change to acting mode with [DISP] key when changed to program mode.
2. In case of double setting type, display set 1 and set 2 with [DISP] key. Above is indication of set 2.
3. Input desired value by figure key. For minus setting, it can be indicated (-) display by most upper figure key.
4. Desired value will be memorized in 3 second after released hand from figure setting key, then completion.

Screw jack Q&A-2

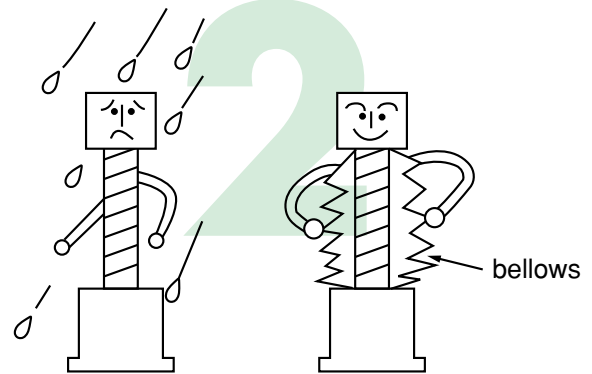
Q What is the convenient method for control of stroke?

A If install counter switch and coder on input shaft, it can be controlled by value.



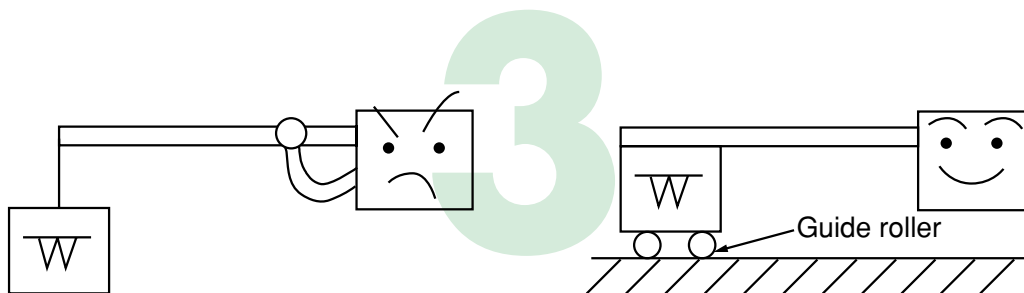
Q If use jack in bad environment, dusty, water.

A Use bellows



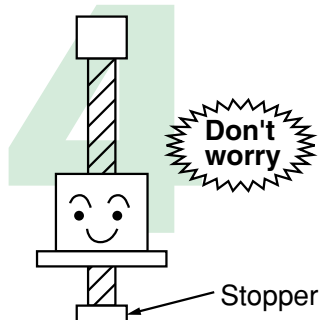
Q Lateral load will be act on screw jack?

A Must use with guide. (please refer to pages of E-106-109 allowable lateral load)



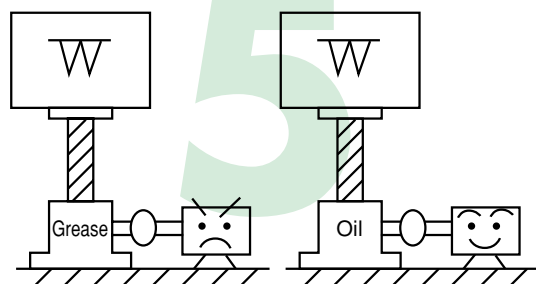
Q Should worry about come off of screw shaft?

A There is stopper to prevent from come off of screw shaft.



Q What's the difference between oil lubricant and grease?

A Oil lubricant is better than grease.
Less resistance at start and high efficient
Possible in high speed operation Etc.



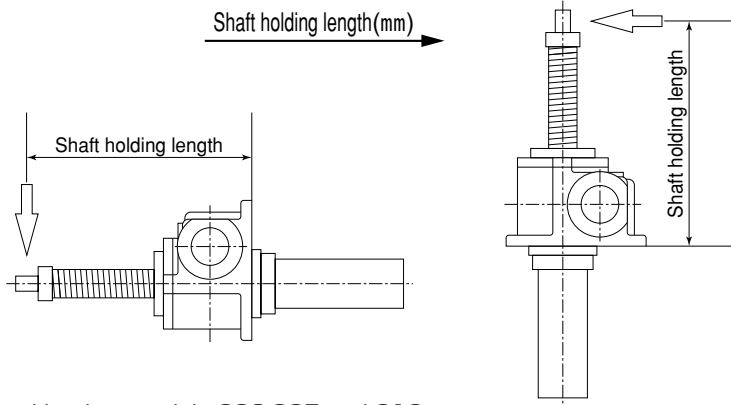
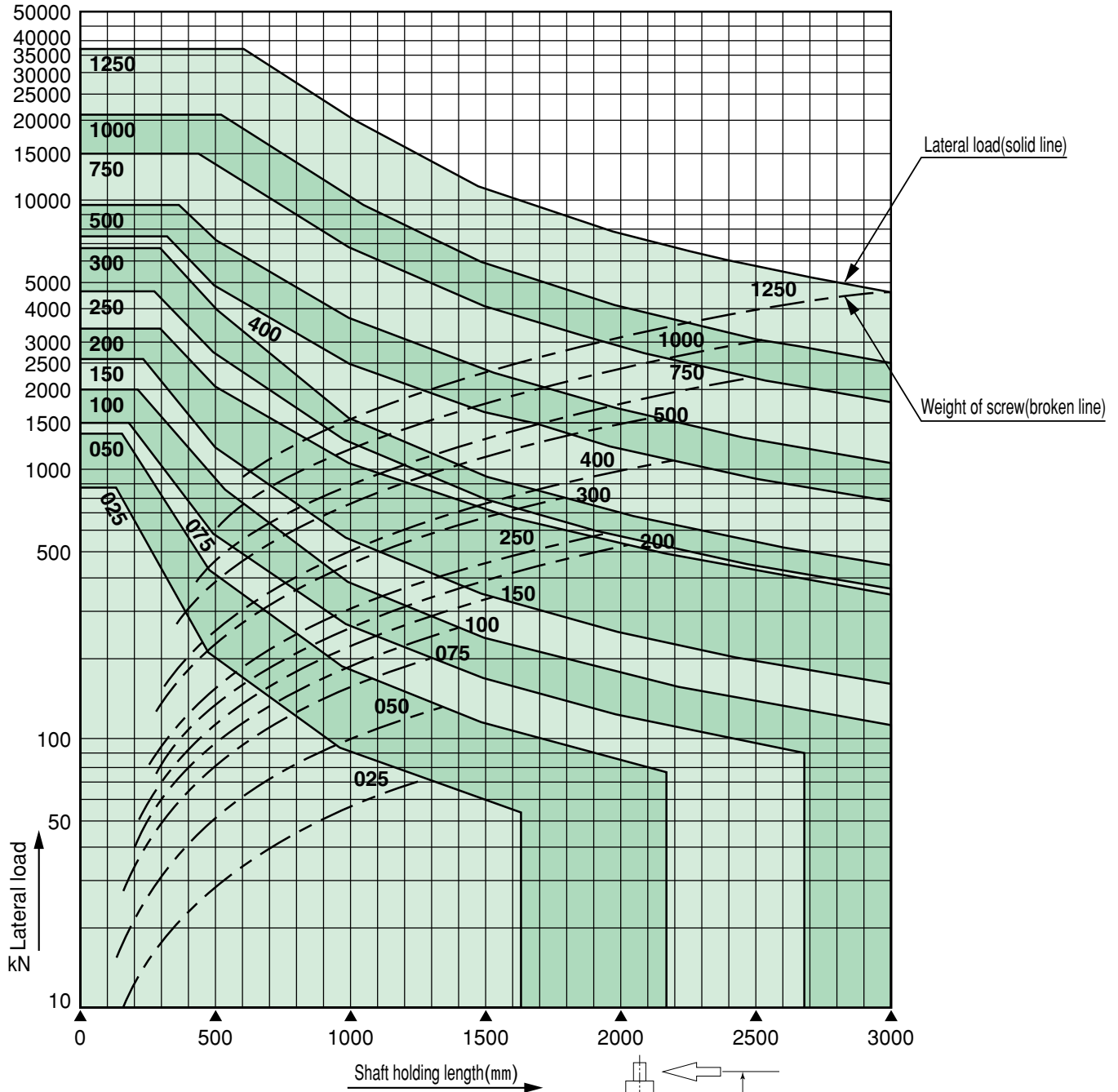
Technical data/mounting

DATA & MAINTENANCE

JACK

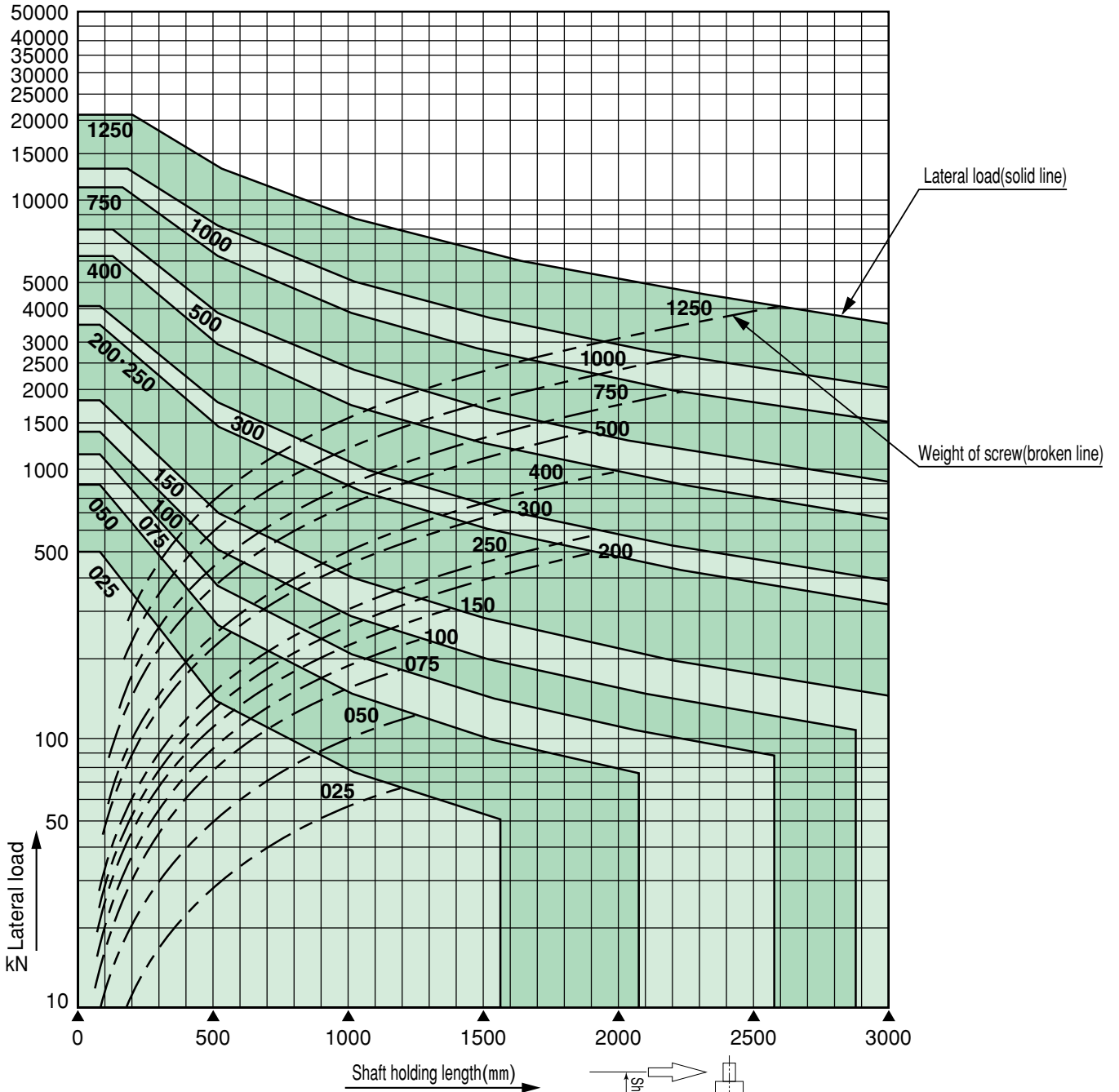
Allowable lateral load

JA screw axial direction type U

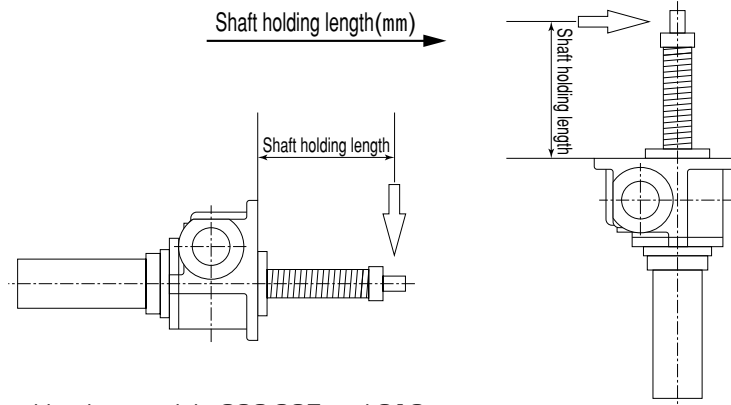


Note: 1. Don't put lateral load on models 002, 005 and 010
 2. In case if use horizontal, refer to weight graph of screw jack. Recommend to use guide if it is possibility of screw shaft bend.

JA screw axial direction type D

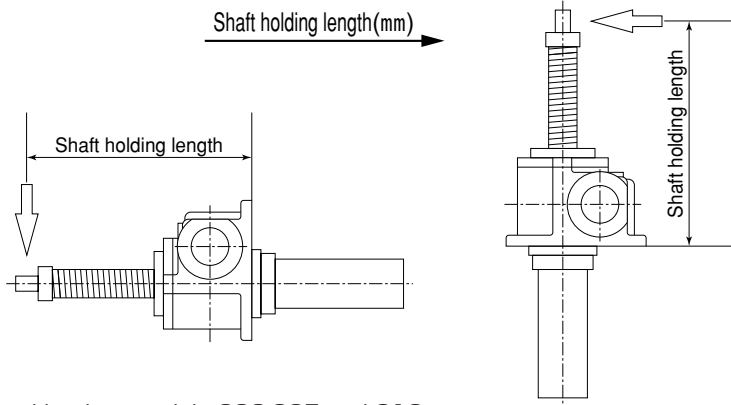
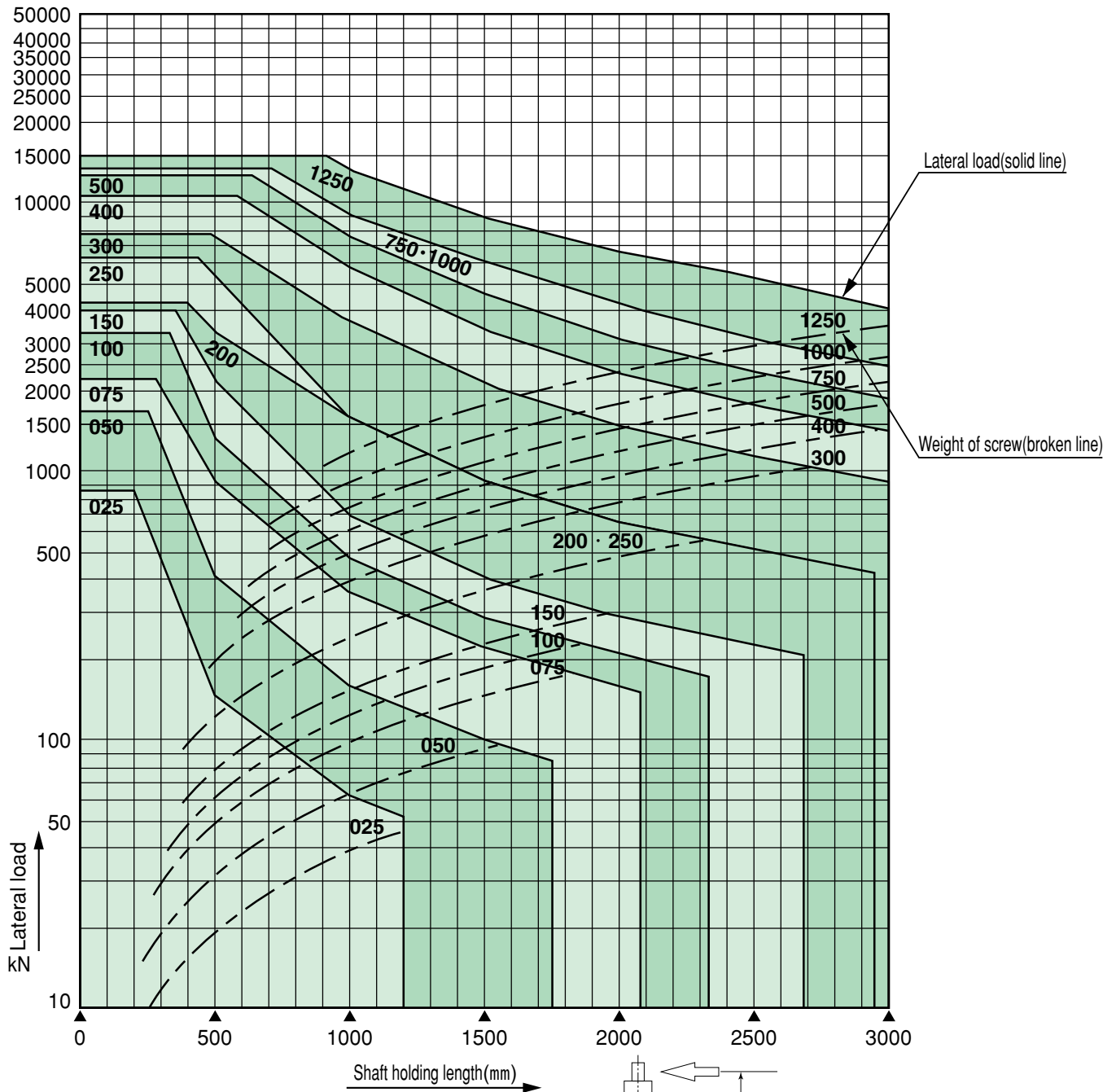


JACK



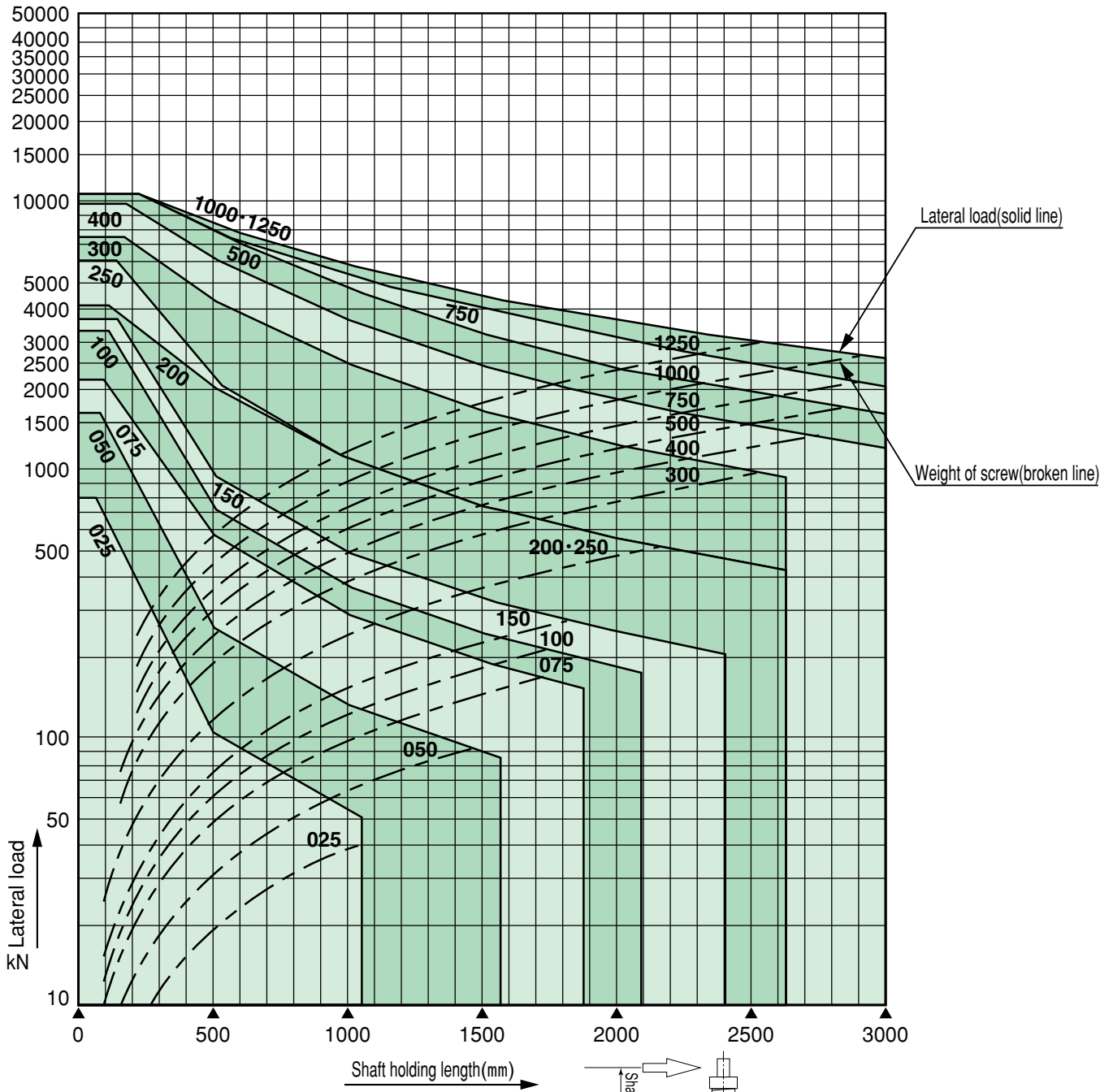
Note: 1. Don't put lateral load on models 002, 005 and 010
 2. In case if use horizontal, refer to weight graph of screw jack. Recommend to use guide if it is possibility of screw shaft bend.

JB screw axial direction type U

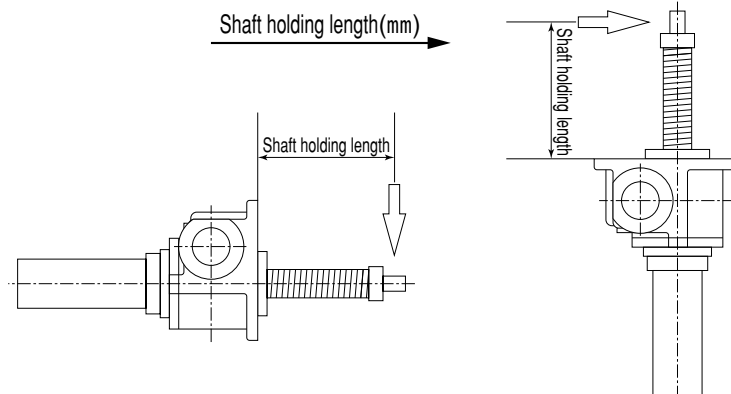


Note: 1. Don't put lateral load on models 002, 005 and 010
 2. In case if use horizontal, refer to weight graph of screw jack. Recommend to use guide if it is possibility of screw shaft bend.

JB screw axial direction type D



JACK

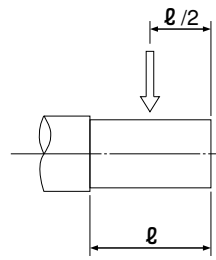


Note: 1. Don't put lateral load on models 002, 005 and 010
 2. In case if use horizontal, refer to weight graph of screw jack. Recommend to use guide if it is possibility of screw shaft bend.

Input shaft overhung load

When connect input shaft of screw jack, using sprocket, gear, pulley etc., overhung load will be worm on input shaft. In this case, consider to use following overhung load factor.

Sprocket	Gear	V belt	Flat belt
1.0	1.25	1.5	2.5



Examination formula of overhung load

$$LR = \frac{T}{R} \cdot f \leq O.H.L$$

LR : Actual overhung load N

T : Input shaft torque N · m

R : Radius of sprocket and gear, etc m

Size	002	005	010	025	050	075	100	150	200	250	300	400	500	750	1000	1250
OHL (N)	80	100	150	300	400	600	1000	1300	1300	1300	1700	2000	2500	3800	4500	5500

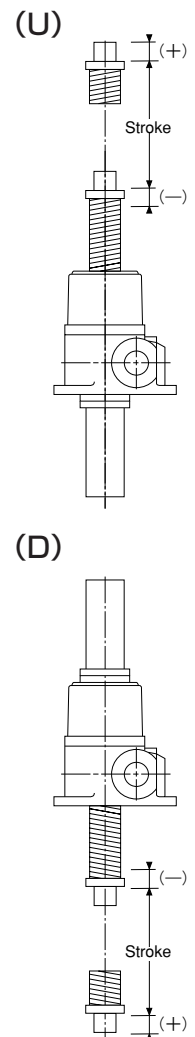
Surplus stroke and max stroke

following is surplus stroke against nominal stroke.

If driven by power source, pay attention to upper and lower limit and use with limit switch. (mm)

Size	Push up type (U)		Pull up type (D)		Max stroke			
	JA	JB	JA	JB	JA	JA	JB	JB
					Without stopper	With stopper	Without stopper	With stopper
002	± 5		± 5		500	300		
005	± 5	± 5	± 5	± 5	500	500	500	
010	± 5	± 5	± 5	± 5	800	500	800	
025	±10	±5(10)	±10	±5(10)	1500	1000	1000	
050	±10	±5(10)	±10	±5(10)	2000	1000	1500	
075	±10	±5(10)	±10	±5(10)	2500	1500	1800	
100	±10	±10	±10	±10	2800	1500	2000	
150	±10	±10	±10	±10	3000	2000	2300	
200	±20	±20	±20	±20	3500	2000	2500	
250	±20	±20	±20	±20	3500	2000	2500	
300	±20	±20	±20	±20	4000	2000	3000	
400	±20	±20	±20	±20	4000	2000	4000	
500	±20	±20	±20	±20	5000	2000	4500	
750	±30	±30	±30	±30	5000	2500	5000	
1000	±30	±30	±30	±30	5000	2500	5000	
1250	±30	±30	±30	±30	5000	2500	5000	

Note: The value of size 025 075 in () is for JBH.



JACK

Input shaft equal moment of inertia

JA · JB · JTA · JTB (× 10⁻⁴kg·m²)

Size	JA	JB	JTA	JTB
002	0.05		0.07	
005	0.08	0.10	0.15	0.15
010	0.20	0.23	0.30	0.30
025	0.35	0.43	0.50	0.48
050	1.10	1.33	1.50	1.45
075	3.00	3.50	4.00	3.50
100	7.75	9.25	9.00	10.3
150	11.8	14.0	15.0	15.5
200	13.0	16.0	18.0	20.0
250	15.5	19.0	21.5	
300	30.3	34.0	40.0	
400	67.5	80.0	76.0	
500	72.5	87.5	115	
750	173	208	188	
1000	350	425	375	
1250	650	950	700	

Note: The value of input shaft equal moment of inertia is for stroke 100 mm.

Note: About same value for JAH and JA, JBH and JB.

Parts List

JA · JTA · JTB

Size	Input oil seal	Output oil seal	Input bearing	Output bearing	Filler, drain plug	Grease fitting		Oil level gauge
						JA	JTA	
025	D20 35 8	D40 52 8	32004	32008	R1/4	R1/8	R1/8	207
050	D20 35 8	D50 65 9	30204	30210	R1/4	R1/4	R1/8	207
075	D25 40 8	D60 82 12	30205	30212	R3/8	R1/4	R1/8	257
100	D30 50 11	D70 95 13	30206	32214	R3/8	R1/4	R1/8	257
150	D35 55 11	D80 105 13	30207	32216	R3/8	R1/4	R1/8	308
200	D35 55 11	D80 105 13	30207	30316D	R3/8	R1/4	R1/8	308
250	D35 55 11	D85 110 13	30207	30317D	R3/8	R1/4	R1/8	308
300	D40 62 12	D100 125 13	30208	29320 30220	R3/8	R1/4	R1/8	308
400	D45 68 12	D110 140 14	30209	29322 30222	R1/2	R1/4	R1/8	308
500	D50 72 12	D130 160 14	30210	29326 30226	R3/4	R1/4	R1/8	308
750	S70 95 13	S150 180 14	30214	29330 30230	R3/4	R1/4	R1/8	308
1000	S80 105 13	S180 210 15	30216	29336 30236	R3/4	R1/4	R1/8	308
1250	S90 115 13	S220 250 15 S200 230 15	30218	29344 30240	R3/4	R1/4	R1/8	308

JB

Size	Input oil seal	Output oil seal	Input bearing	Output bearing	Filler, drain plug	Grease fitting	Oil level gauge
025	D20 35 8	D40 52 8 D60 75 9	32004	32008	R1/4	R1/8	207
050	D20 35 8	D50 65 9 D75 100 13	30204	30210	R1/4	R1/8	207
075	D25 40 8	D60 82 12 D90 115 13	30205	30212	R3/8	R1/8	257
100	D30 50 11	D70 95 13 D105 135 14	30206	32214	R3/8	R1/8	257
150	D35 55 11	D80 105 13 D115 145 14	30207	32216	R3/8	R1/8	308
200	D35 55 11	D80 105 13 D125 155 14	30207	30316D 33217	R3/8	R1/8	308
250	D35 55 11	D85 110 13 D135 165 14	30207	30317D 32217	R3/8	R1/4	308
300	D40 62 12	D100 125 13 D160 190 15	30208	29320 30220	R3/8	R1/4	308
400	D45 68 12	D110 140 14 D180 210 15	30209	29322 30222	R1/2	R1/4	308
500	D50 72 12	D130 160 14 D210 240 15	30210	29326 30226	R3/4	R1/4	308
750	D70 95 13	S150 180 14 S240 270 15	30214	29330 32034	R3/4	R1/4	308
1000	D80 105 13	S180 210 15 S260 300 20	30216	29336 32034	R3/4	R1/4	308
1250	D90 115 13	S220 250 15 S300 340 20	30218	29344 32038	R3/4	R1/4	308

※Please contact us for parts for size 002 010.

Standard screw backlash table

Size	Backlash (mm)	
	JA, JTA, JAH	JB, JTB
002	0.20	
005	0.20	0.20
010	0.20	0.20
025	0.30	0.25
050	0.30	0.25
075	0.35	0.25
100	0.40	0.25
150	0.40	0.25
200	0.40	0.20
250	0.40	0.20
300	0.45	0.20
400	0.45	0.20
500	0.50	0.25
750	0.50	0.35
1000	0.50	0.35
1250	0.50	0.35

Note: Please contact us for JBH model.

Special material of bellows

Standard specification (temperature 0-80) material is nylon tarpaulin (black). For other than standard, available following material in accordance with application, environment.

(1) Neoprene

It is good advantage for heat proof and cold proof (-35-+130 C) Also, superior for alkali proof and acid proof.

Superior for oil proof, solvent proof. (but it can't be used for organic oxygen and toluene)

(2) Heat proof aramid fiber

It is suitable for environment that influence on radiant heat, spark and welding splash etc. The heat proof temperature is about 250.

(3) Steel made bellows.

(4) Bellows with fastener.

It is easy to change the bellows without disassembly the jack from equipment.

Rotating angle of whirl stop for JA

Size	Radian indication $\times 10^{-3}$ rad	Angle indication deg.
005	8.73	0.5
010	8.73	0.5
025	8.73	0.5
050	8.73	0.5
075	8.73	0.5
100	8.73	0.5
150	8.73	0.5
200	8.73	0.5
250	8.73	0.5
300	8.73	0.5
400	8.73	0.5
500	8.73	0.5
750	8.73	0.5
1000	8.73	0.5
1250	8.73	0.5

Rotating angle of whirl stop for JB

Size	Radian indication $\times 10^{-3}$ rad	Angle indication deg.
005	26.2	1.5
010	26.2	1.5
025	8.73	0.5
050	8.73	0.5
075	8.73	0.5
100	8.73	0.5
150	8.73	0.5
200	8.73	0.5
250	8.73	0.5
300	8.73	0.5
400	8.73	0.5
500	8.73	0.5
750	8.73	0.5
1000	8.73	0.5
1250	8.73	0.5

Recommend lubricant

Oil lubricant

Ambient temperature	ISO viscosity grade	Idemitsu	Esso	Sin Nippon Oil	Showa Shell Oil
0°C~50°C	VG150	DAPHNE SUPER GEAR 150	SPARTAN EP150	BONNOC M150	OMALA 150
	VG220	DAPHNE SUPER GEAR 220	SPARTAN EP220	BONNOC M220	OMALA 220

※002: VG220, 025~:VG150

Grease lubricate

Mobil Oil	Idemitsu	Sin Nippon Oil	Showa Shell Oil
Mobilux EP2	Daphne Eponex SR No.2	Epinox Grease AP2	Alvania EP2

Using Daphne Eponex SR No.2 when leave factory

Quantity of oil and grease (JA,JB,JTA,JTB)

Size	Oil quantity (reducer)	※Grease quantity(screw shaft)	※Grease quantity(screw shaft)
	JA·JB·JTA·JTB	JA·JTA	JB·JTB
002	0.07 ℓ	5g	
005	40g	8g	5g
010	50g	10g	5g
025	0.2 ℓ	40g	30g
050	0.3 ℓ	50g	40g
075	0.5 ℓ	60g	50g
100	0.75 ℓ	80g	60g
150	0.8 ℓ	100g	70g
200	1.5 ℓ	110g	90g
250	1.6 ℓ	120g	90g
300	1.8 ℓ	150g	110g
400	4.0 ℓ	180g	130g
500	6.0 ℓ	220g	160g
750	8.0 ℓ	280g	200g
1000	10.0 ℓ	350g	250g
1250	12.0 ℓ	450g	320g

Note: 1,Lubricant of reducer and screw for size 005, 010 is both grease.
2.※mark is quantity of stroke 300 mm.