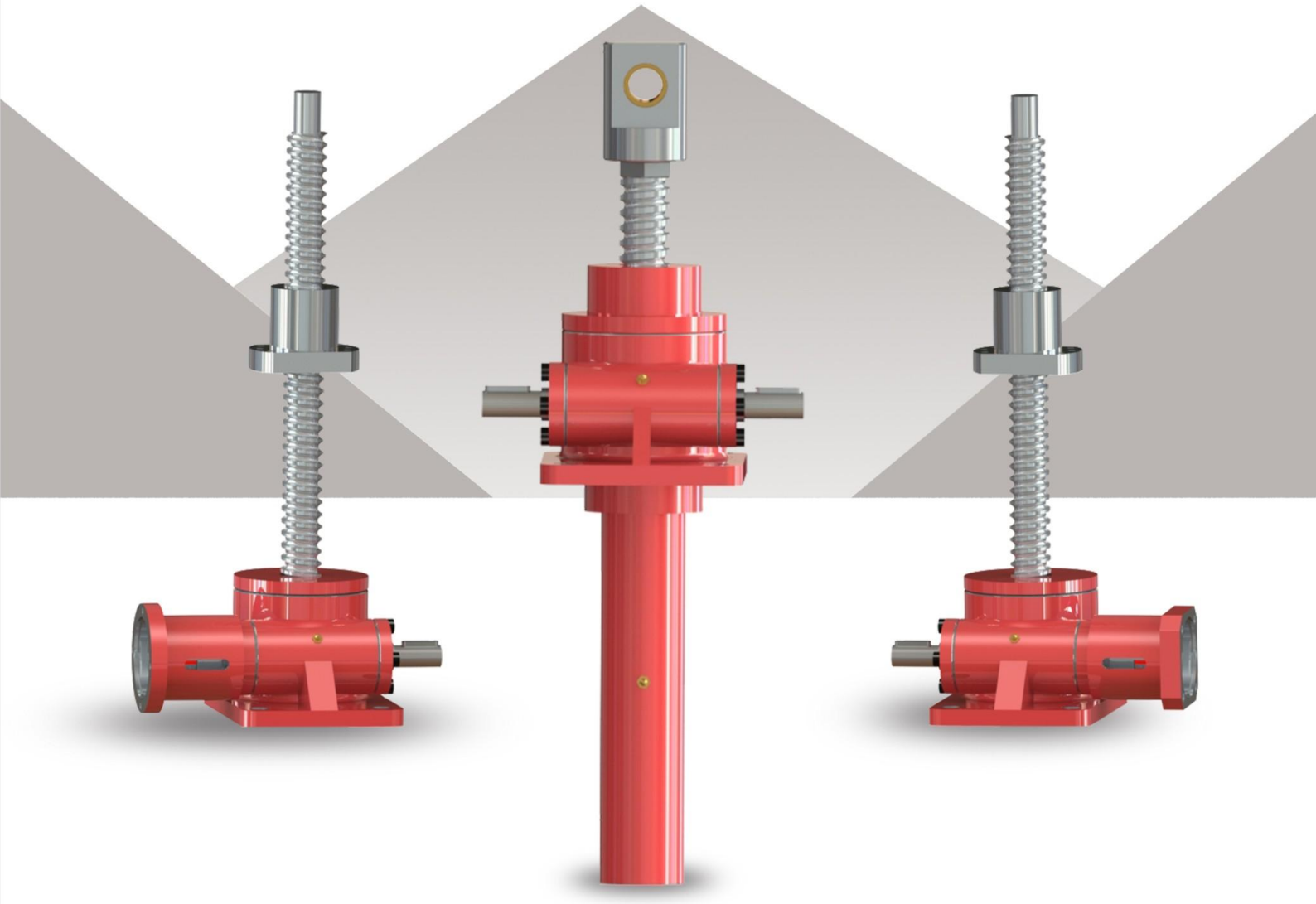
LINEAR MOTION



LUDE TRANSMISSION

JWB Series Ball Screw Jack

JWB(General ball screw)

HIGH SPEED HIGH FREQUENCY

JWB(General ball screw) is suitable for high speed, high frequency and excellent performance.
Main components: Precision ball screw pair and high precision worm-gears pair.

1) High efficiency
   Rolling friction improve efficiency greatly, only a little drive power can generate great thrust force.
2) High speed
   Rolling friction speed up travel of screw easily.
3) Lifetime longer
   High precision ball screw can make JWB's lifetime longer by 3 times comparing with JWB.

Note: Braking devices or motor with braking devices are necessary when choosing JWB.




JWB(General ball screw) basic parameter table:

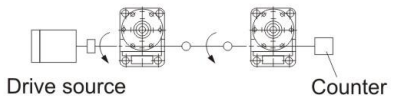
Type			JWB010	JWB025	JWB050	JWB100	JWB150	JWB200	JWB300	JWB500
Maximal load		(kN)	9.8	24.5	49.0	98.0	147	196	294	490
Outer diameter of screw		(mm)	20	25	40	50	50	63	80	100
Small diameter of screw	d	(mm)	17.5	21.4	31.3	39.1	43.1	55.7	74.8	87
Pitch of screw	L1	(mm)	5	10	10	10	20	10	20	24
Ratio	i	H Speed	5	6	6	8	8	8	$10^{2/3}$	$10^{2/3}$
		L Speed	20	24	24	24	24	24	32	32
Integrated efficiency %	η	H Speed	61	62	64	63	63	62	56	60
		L Speed	34	35	39	43	43	41	34	38
Permissible output maximal power	(kw)	H Speed	0.54	1.3	2.2	3.6	4.0	5.5	8.9	13.3
		L Speed	0.27	0.63	1.0	1.9	2.1	2.8	4.1	6.5
No-load torque	To	(N · m)	0.29	0.62	1.37	1.96	2.65	3.92	9.81	19.6
Keeping torque	(N · m)	H Speed	1.27	4.31	10.78	19.6	39.2	51.0	68.6	140.1
		L Speed	0.26	0.91	2.4	5.8	11.8	15.0	19.5	41.2
Permissible torque of input shaft		(N · m)	19.6	49.0	153.9	292.0	292.0	292.0	735.0	1372.0
Required torque of input shaft at maximal load	(N · m)	H Speed	2.8	9.0	21.5	39.1	77.0	104.5	169.6	317.5
		L Speed	1.4	4.3	9.6	20.4	39.6	54.2	98.5	177.9
Axial displacement of screw, when input shaft rotate a circle.	(mm)	H Speed	1	1.66	1.67	1.25	2.5	1.25	1.88	2.25
		L Speed	0.25	0.42	0.42	0.42	0.83	0.42	0.63	0.75
Permissible rotational speed of screw shaft at maximal loading	(rpm)	H Speed	1500	1400	1000	890	500	500	500	400
		L Speed	1500	1400	1000	890	500	500	400	350
Rotational torque of screw at maximal load		(N · m)	8.7	34.7	86.7	208.2	416.3	555.1	1040.9	2081.7

* Permissible torque of shaft of reducer.
** Include torque under the condition of no-load operating.

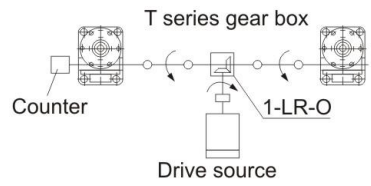
Application example:

Two-set screw jack system:

Linear arrangement

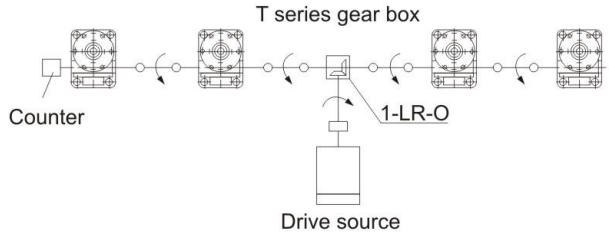


T arrangement

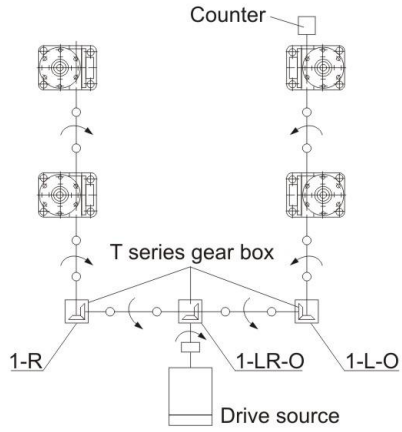


Four-set screw jack system:

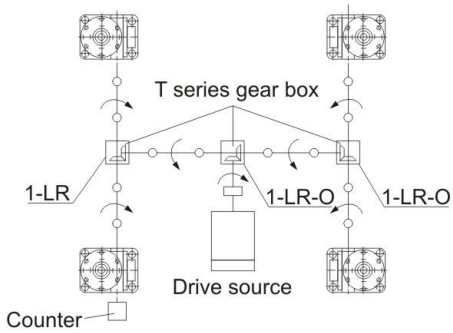
T arrangement



U arrangement

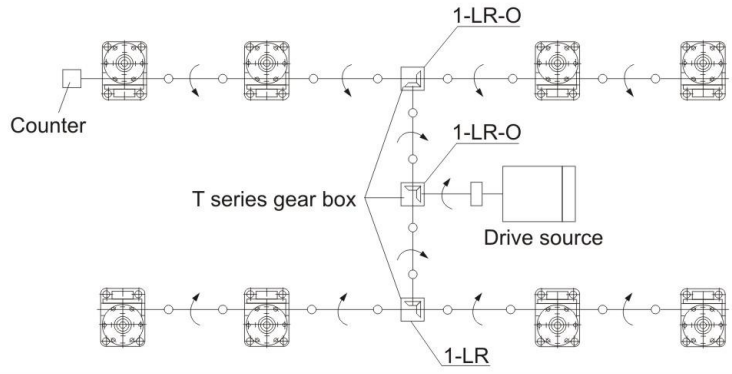


H arrangement

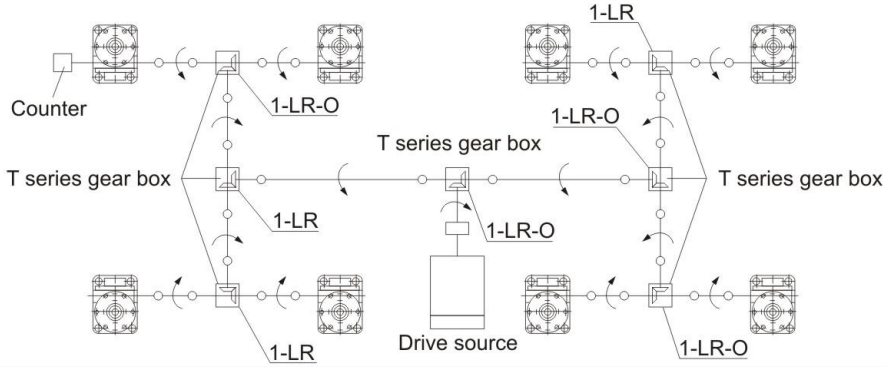


Eight-set screw jack system:

H developed arrangement



2H arrangement



Note:

1) Select a Jack with sufficient capacity according to safety factor, service journey and stability. And static load, dynamic load and shock load must be lower than permissible maximum load.
2) Please note that rotation speed of screw must match load, permissible maximum load, permissible maximum outer load, and permissible rotation speed of screw must be verified. If these figures exceed that of products, jacks will be damaged greatly.
3) The surface temperature will be limited in -15° ~80° when jack working to ensure the temperature of traveling nuts in -15° ~80° .
4) Maximum input speed is 1500r/min.
5) JWM and JWB aren't suitable for continous operation,
   Jack Duty(%ED)
   JWM duty(%ED) cannot exceed 20%ED,
   JWB duty(%ED) cannot exceed 30%ED,

   Duty %ED=

$$\frac{\text{jack operating time(lift \&lower cycle)}}{\text{Elapsed cycle time}} \times 100\%$$

6) When several Jacks are connected on the same axial line, the loaded torque with each Jack must be verified and limited within permissible input torque.
7) Starting torque must be 200% of service torque.
8) At below 0° ambient temperature, changed, adhesion of lubrication will lower Jack's efficiency so that sufficient drive is necessary.
9) JWM has self-lock function, but an Extra braking device or drive source with braking device is necessary to be equipped because self-lock will be of mal-function When Jack is loaded a heavy shock.
   JWB has no self-lock function, to avoid backspin of screw under axial load and its weight, a braking device or drive source with braking device is necessary to be equipped and braking torque must be larger than operating torque of jack.

10) Jack's operating conditions

Working Location	Indoor location without rainwater
Ambient Air	Normal
Ambient Temperature	-15℃~40℃
Relative Humidity	Less than 85%

11) When working in dusty space, Jack must be equipped with elastic dust-hood on screw; in open air, shield must be equipped to prevent exposure to wind and rain.
12) When working, Jack cannot be forced to stop, or it will be damaged seriously.
13) Under load, don't change motor drive mode into manual drive, or which will cause backspin of screw and cause great danger.

How to select type:

Determine Jack's type:

calculate total equivalent load Ws (N):

$$Ws = Wmax \times f1$$

Service factor for driven machine (f1):

Load character	Example	Factor for driven machine (f1)
shockless load & small inertia load	Switch, valve transmission belt swithing device	1.0~1.3
moderate shock & moderate inertia	All kinds of moving devices, all kinds of elevators	1.3~1.5
heavy shock & large inertia	Carrying something by trolley; to keep the position of idling gear	1.5~3.0

Calculate equivalent load of single Jack,

$$W = \frac{WS}{\text{Number} \times \text{Linkage factor (fd)}}$$

Linkage factor(fd):

Number of linkage jack	1	2	3	4	5~8
Linkage factor	1	0.95	0.9	0.85	0.8

Temporarily determine Jack type:

Temporarily determine Jack type after taking full consideration of load, speed, journey, efficiency and drive source.
Determine JW type according to service journey, ambient conditions, connection mode of end-fittings.

Verify input power

If required input power under load exceeds permissible maximum input power, please select larger type or lower the speed of screw rotation.

Calculation of required input power under load:

Required rotation speed of input shaft	n1 (r/min)	$n1=\frac{V}{L1}\times i$
Required torque of input shaft	T1 (N • m)	$T1=\frac{W\times L1}{2\pi\times i\times \eta}+T0$
Required input power	P_1 (kW)	$P1=\frac{T1\times n1}{9550}$

V: linear speed of screw mm/min L: Pitch of screw (m)
i: ratio W: equivalent load of single jack π :pi
η :Integrated efficiency TO: No-load torque (Nm)
(L1、i、η、TO refer to basic parameter table)

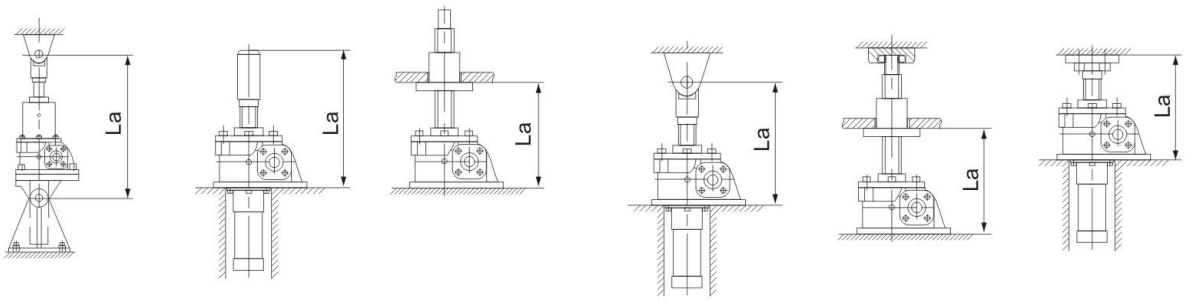
Verify the stability of screw:

Please verify the stability of screw under axial load, larger type should be used when load exceed the critical load.
The formula to calculate the critical load as follows:

$P_{CR}=fm\times(\frac{d^2}{L_a})^2$	ensure	$P_{CR}>W\times SF$ (SF=4)

Pcr: Critical load (N)
d: small diameter of screw end (mm)(refer to basic parameter table)
fm: support factor
La: distance between load-supporting point and mounting point as drawing.
W: equivalent load of single jack (N)
SF: safety factor (SF=4 as usual)

Verifying the stability of screw, the values of La and fm as follows,



support at both ends fm=10×10^4 Foot-mounted & movable shaft end fm=2.5×10^4 Foot-mounted & shaft end supporting or fixed fm=20×10^4

Verifying critical rotation speed:

Using traveling nut, the rotation speed of screw must be lower than critical speed, if no,
please select larger type and calculate again.

$$n_c = \frac{96 \times fn \times d \times 10^6}{L_b^2} \qquad n_s = \frac{n1}{i}$$

n_c: Permissible rotation speed of screw

n_s: Rotational speed of screw

d: Small diameter of screw (refer to basic parameter table)

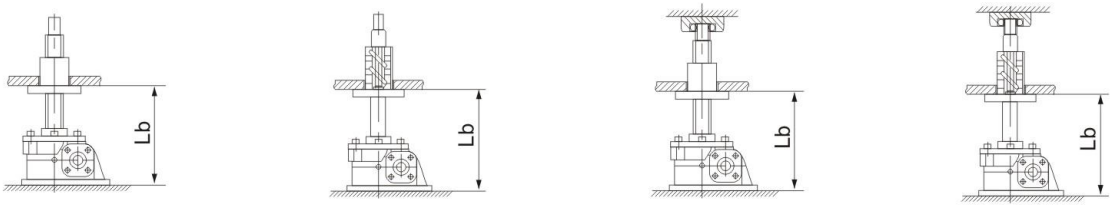
n1: Rotational speed of input shaft

fn: Length factor

i: ratio

Lb: Distance between both supporting face

Verifying the rotation speed of screw, the values of Lb and fn as follows,



Movable shaft end fn=0.36 Shaft end supporting fn=1.56

Ensure: $n_c > n_s$

Example for calculation:

Take JWM200UR-H1200PI as example, n1=1200r/min, connecting mode of top-end : I, we can know d=49.3, Lb=1437 referring to dimension and transmission capacity table.

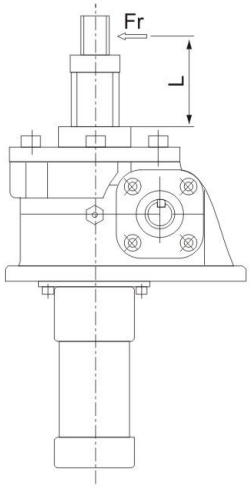
$$n_s = \frac{n1}{i} = \frac{1200}{8} = 150\text{r/min}$$

$$n_c = \frac{96 \times fn \times d \times 10^6}{L_b^2} = \frac{96 \times 1.56 \times 49.3 \times 10^6}{(1437)^2} = 3575\text{r/min}$$

n_c=3575r/min>n_s=150r/min……ok.

When there is radial load, please add guiding device.

JWM Permitted radial load Fr(N):



Fr(N) Type / L(mm)	010	025	050	100	150	200	300	500	750	1000
100	318	57	2500	4010	4610	8210	38200	85300	73500	186200
200	159	290	1250	2010	2300	4110	23000	50400	56800	145000
300	106	190	830	1340	1540	2740	15300	33600	46100	104700
400	79	140	620	1000	1150	2050	11400	25200	39300	78500
500	64	110	500	800	920	1640	9100	20200	33900	62800
600	53	100	420	670	770	1370	7600	16800	29900	52300
700	51	90	360	570	660	1170	6500	14400	26700	44800
800	48	90	310	500	580	1030	5700	12600	24100	39200
900	45	90	280	450	510	910	5000	11200	22000	34800
1000	42	90	250	400	460	820	4500	10100	20200	31300

(2) Refer to basic parameter table, Pmax=2.2kW>P1 ... ...OK

6. Verify the stability of screw

For under axial load, refer to transmission table and dimension for the following figures,

d=31.3 La=604+33=637 $fm=20\times10^4$ SF=4

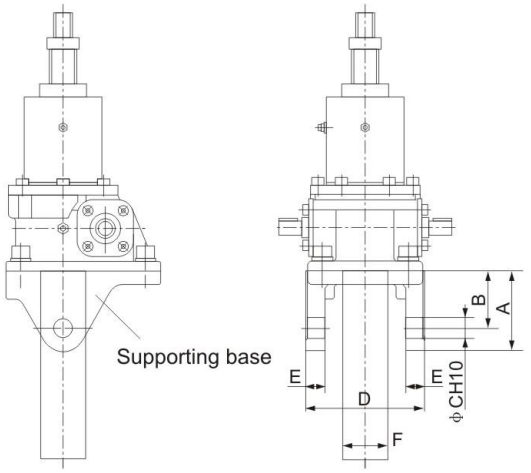
$$P_{CR}=fm\times(\frac{d^2}{L_a})^2=20\times10^4\times(\frac{31.3^2}{637})^2=473073N$$

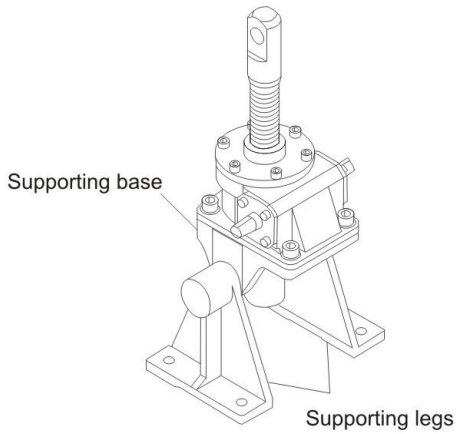
$$P_F=\frac{P_{CR}}{SF}=\frac{473073}{4}=118268>W=33724$$ ... ...OK

Accessory confirmation:

Support (Mode C mounting):

support-mounted mode widely apply to tilting equipment.

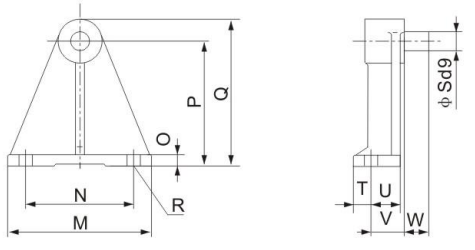




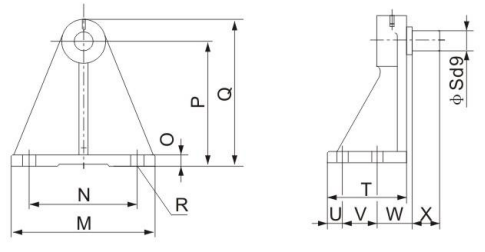
Type	A	B	C	D	E	F
010	75	60	15	86	15	35
025	100	75	20	115	20	45
050	105	75	25	158	25	58
100	145	100	40	201	30	76.3
150	155	105	50	224	44	76.3
200	173	110	63	244	50	89.1

Supporting legs:

Matching supporting base and legs realizes multi-angles lifting and lowering.



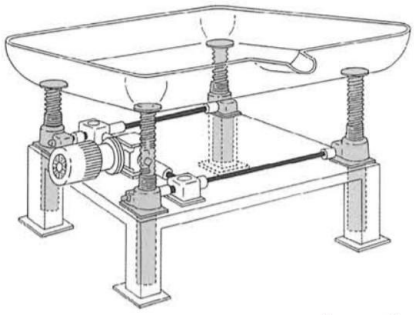
JW010-JW050

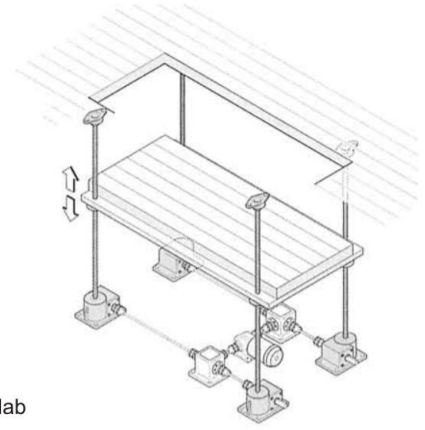


JW100-JW200

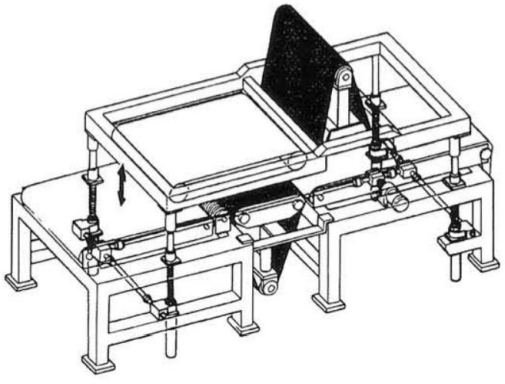
Type	M	N	O	P	Q	R	S	T	U	V	W	X
010	180	130	15	150	178	2-φ18	15	25	40	45	17	-
025	180	130	15	150	178	2-φ18	20	25	40	45	30	-
050	200	150	15	170	200	2-φ18	25	25	40	45	35	-
100	280	220	22	240	290	4-φ22	40	159	30	70	70	55
150	360	280	27	300	360	4-φ33	50	195	40	85	85	70
200	400	320	30	380	450	4-φ33	63	210	40	90	90	75

Application example:

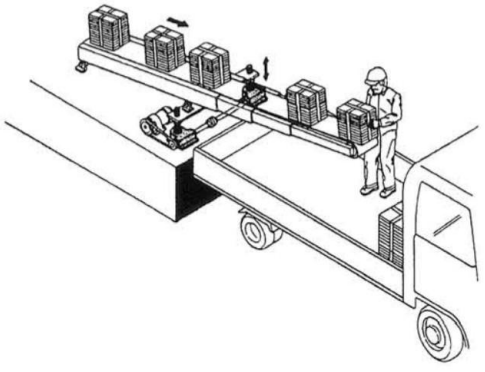




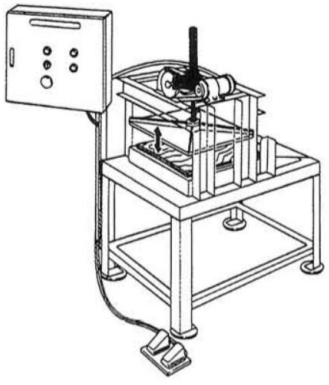
Ascending and descending of flat slab



Adjust operation height of surface machining tool



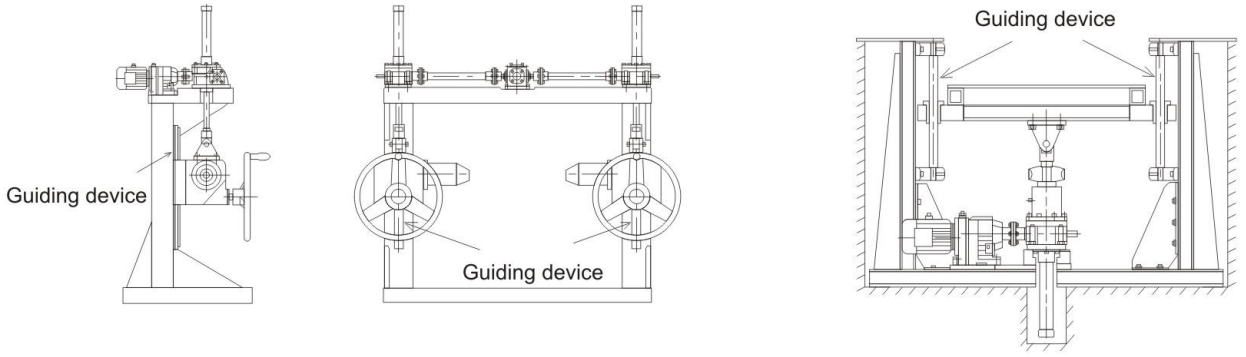
Adjust inclination pitch of conveyer apron



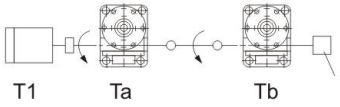
Operation height of straightening machine

Automatic switch on large windows (doors)

When operating radial load exceeds critical radial load, please add guiding device, for example,



Please verify input torque of each Jack when several Jack are connected on the same input axial line as the following,



Ta: Required torque of input shaft of jack a.

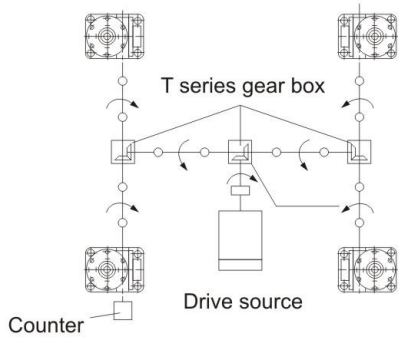
Tb: Required torque of input shaft of jack b.

Required torque of motor T1=Ta+Tb<Promitted input torque of jack a.

Jack selection example:

Example: Four Jacks, linked as the following drawing, normal temperature, thin dust, radial load, with guiding devices on one side, foot-mounted, fixed the screw top-end, 380v/50Hz, service frequency: 2 times/hour,service time: 8 hours.

1. Maximum axial load; 88.2KN/4 Jacks
2. Linear speed: 10mm/s (600mm/min)
3. Service journey: 260mm



Determine Jack type,

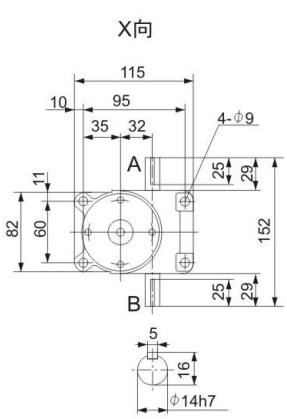
1) Calculate total equivalent load Ws (Factor for driven machine is 1.3)
   Ws=Wmax • f1=88200×1.3=114660N
2) Calculate equivalent load of single jack:

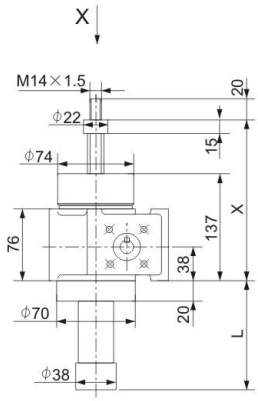
$$w=\frac{114660}{4\times 0.85}=33724N$$

3) Temporarily determine type,
   Temporarily determine JWB050USH according to speed, efficiency, drive and Load (refer to basic parameter table)
4) Verify journey:
   Service journey is 260mm, determine journey should be 300 after considering surplus. (Please refer to dimension sheet of JWB050US).
5) Check input power:
   (1) Calculatc required input power:

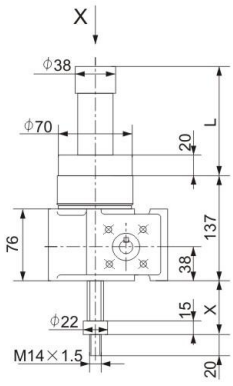
$$①n1=\frac{V}{L1}\times i=\frac{0.60}{0.010}\times 6=360r/min \qquad ②T1=\frac{W\times L1}{2\pi\times i\times \eta}+T0=\frac{33724\times 0.010}{2\times 3.14\times 6\times 0.64}+1.37=15.4Nm \qquad ③P1=\frac{T1\times n1}{9550}=\frac{15.4\times 360}{9550}=0.58kW$$

JWB010





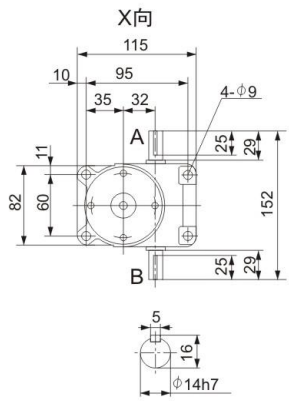
JWB010US

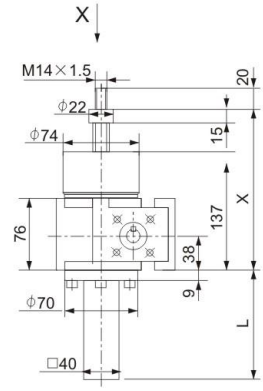


JWB010DS

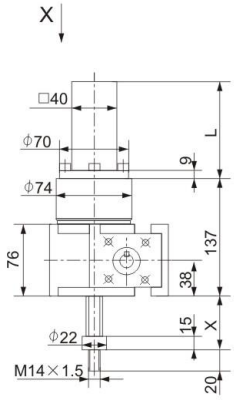
Journey (mm)	U S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	162	262	212	312	194	6.7
200	162	362	212	412	294	7.0
300	162	462	252	552	434	7.4
400	162	562	252	652	534	7.6
500	162	662	287	787	669	8.0
600	162	762	287	887	769	8.2

Journey (mm)	D S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	25	125	75	175	194	6.7
200	25	225	75	275	294	7.0
300	25	325	115	415	434	7.4
400	25	425	115	515	534	7.6
500	25	525	150	650	669	8.0
600	25	625	150	750	769	8.2





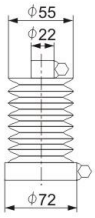
JWB010UM



JWB010DM

Journey (mm)	U M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	162	262	212	312	194	7.5
200	162	362	212	412	294	8.2
300	162	462	252	552	434	9.1
400	162	562	252	652	534	9.8
500	162	662	287	787	669	11
600	162	762	287	887	769	12

Journey (mm)	D M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	25	125	75	175	194	7.5
200	25	225	75	275	294	8.2
300	25	325	115	415	434	9.1
400	25	425	115	515	534	9.8
500	25	525	150	650	669	11
600	25	625	150	750	769	12



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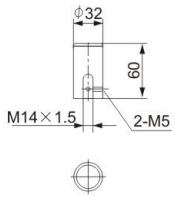

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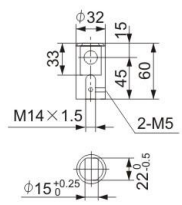

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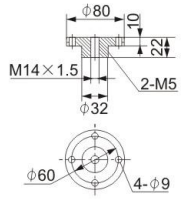
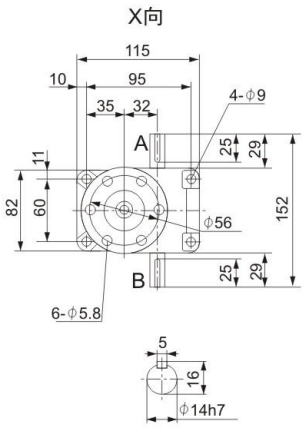
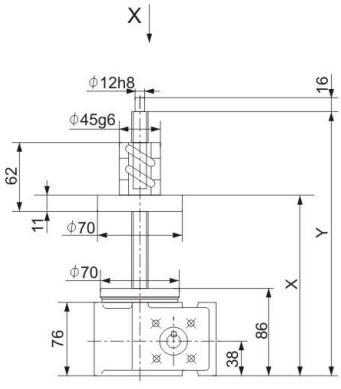
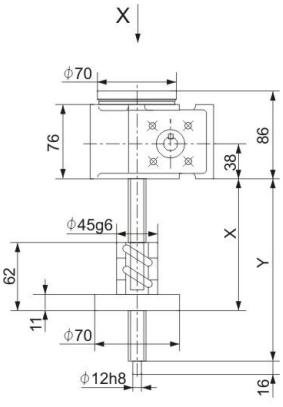


M





JWB010UR



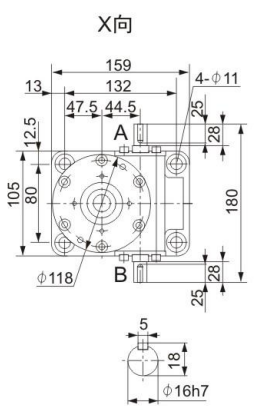
JWB010DR

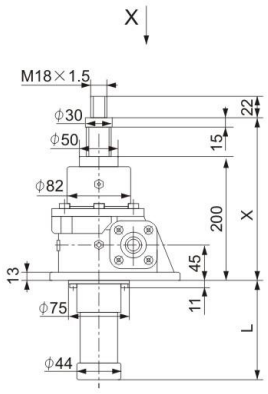
Journey (mm)	U R				
	X		L	m (kg)	
	MIN	MAX			
100	108	208	265	5.9	
200	108	308	365	6.1	
300	108	408	465	6.4	
400	108	508	565	6.6	
500	108	608	665	6.8	
600	108	708	765	7.0	

Journey (mm)	D R				
	X		L	m (kg)	
	MIN	MAX			
100	69	169	179	5.9	
200	69	269	279	6.1	
300	69	369	379	6.4	
400	69	469	479	6.6	
500	69	569	579	6.8	
600	69	669	679	7.0	

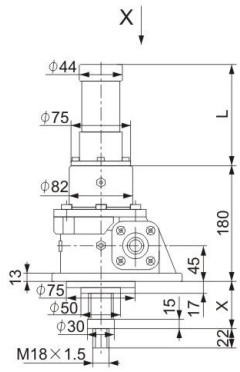
Note: "$X^{(1)}$" is the dimension of jack with dust hood.

JWB025





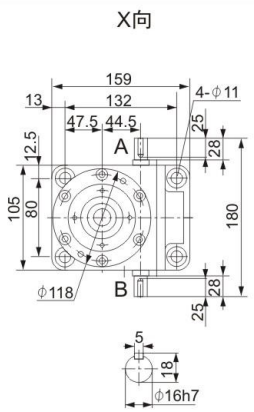
JWB025US

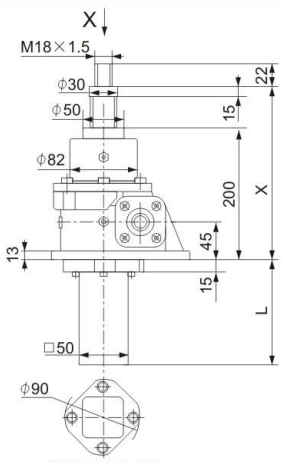


JWB025DS

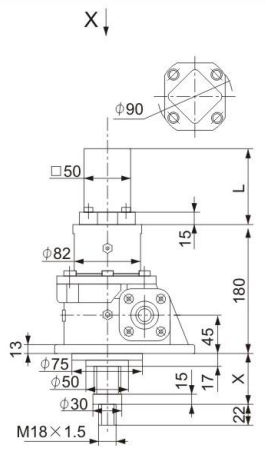
Journey (mm)	U S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	225	325	240	340	149	11
200	225	425	240	440	249	11
300	225	525	260	560	369	11
400	225	625	260	660	469	12
500	225	725	280	780	589	12
600	225	825	280	880	689	13
800	225	1025	300	1100	909	14

Journey (mm)	D S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	57	157	156	11
200	42	242	57	257	256	11
300	42	342	77	377	376	11
400	42	442	77	477	476	12
500	42	542	97	597	596	12
600	42	642	97	697	696	13
800	42	842	117	917	916	14





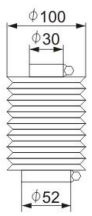
JWB025UM



JWB025DM

Journey (mm)	U M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	225	325	240	340	175	12
200	225	425	240	440	275	13
300	225	525	260	560	395	15
400	225	625	260	660	495	16
500	225	725	280	780	615	17
600	225	825	280	880	715	18
800	225	1025	300	1100	935	21

Journey (mm)	D M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	57	157	182	12
200	42	242	57	257	282	13
300	42	342	77	377	402	15
400	42	442	77	477	502	16
500	42	542	97	597	622	17
600	42	642	97	697	722	18
800	42	842	117	917	942	21



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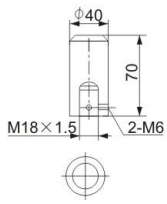

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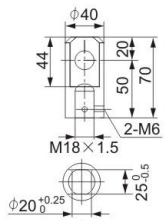

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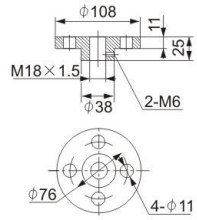

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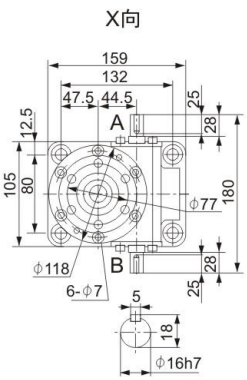
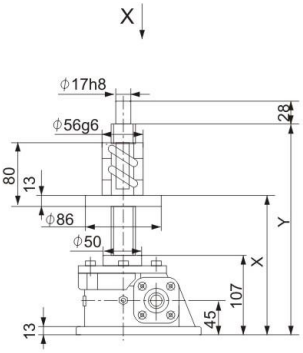
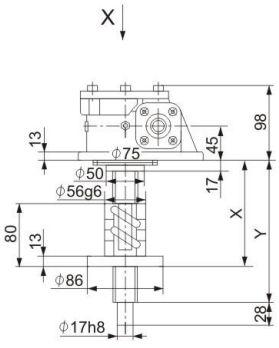




JWB025UR



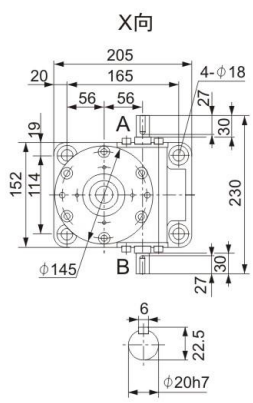
JWB025DR

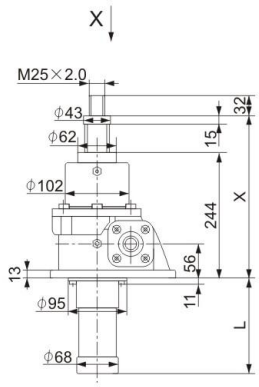
Journey (mm)	U R			
	X		L	m (kg)
	MIN	MAX		
100	133	233	309	9.2
200	133	333	409	9.5
300	133	433	509	9.9
400	133	533	609	11
500	133	633	709	11
600	133	733	809	11
800	133	933	1009	12

Journey (mm)	D R			
	X		L	m (kg)
	MIN	MAX		
100	108	208	219	9.2
200	108	308	319	9.5
300	108	408	419	9.9
400	108	508	519	11
500	108	608	619	11
600	108	708	719	11
800	108	908	919	12

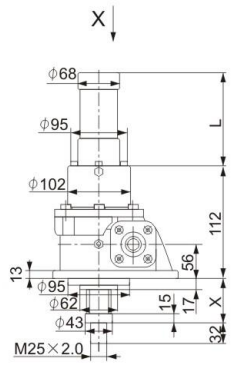
Note: "$X^{(1)}$" is the dimension of jack with dust hood.

JWB050





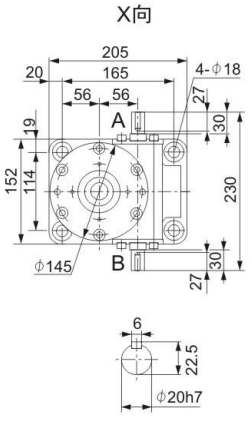
JWB050US

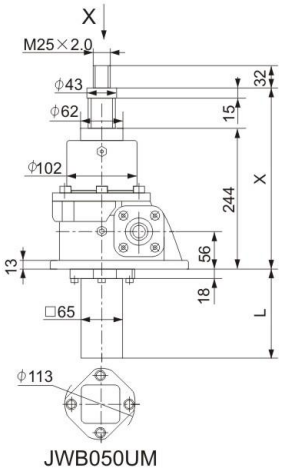


JWB050DS

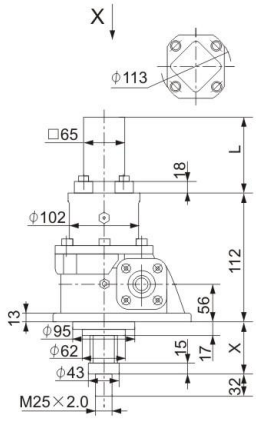
Journey (mm)	U S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	269	369	284	384	147	23
200	269	469	284	484	247	23
300	269	569	304	604	367	24
400	269	669	304	704	467	25
500	269	769	324	824	587	26
600	269	869	324	924	687	27
800	269	1069	344	1144	907	29
1000	269	1269	364	1364	1127	30

Journey (mm)	D S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	57	157	147	23
200	42	242	57	257	247	23
300	42	342	77	377	367	24
400	42	442	77	477	467	25
500	42	542	97	597	587	26
600	42	642	97	697	687	27
800	42	842	117	917	907	29
1000	42	1042	137	1137	1127	30





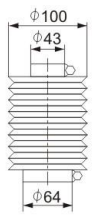
JWB050UM



JWB050DM

Journey (mm)	U M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	269	369	284	384	175	25
200	269	469	284	484	275	27
300	269	569	304	604	395	29
400	269	669	304	704	495	31
500	269	769	324	824	615	33
600	269	869	324	924	715	35
800	269	1069	344	1144	935	39
1000	269	1269	364	1364	1155	43

Journey (mm)	D M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	57	157	175	25
200	42	242	57	257	275	27
300	42	342	77	377	395	29
400	42	442	77	477	495	31
500	42	542	97	597	615	33
600	42	642	97	697	715	35
800	42	842	117	917	935	39
1000	42	1042	137	1137	1155	43



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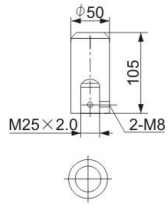

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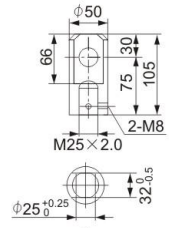

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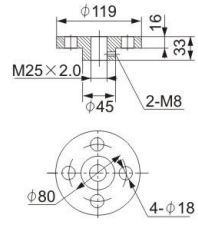
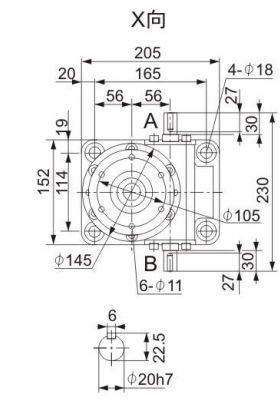
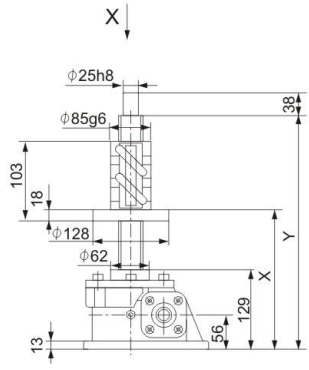
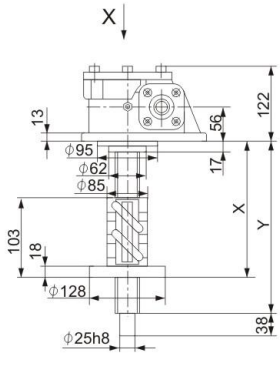


M





JWB050UR



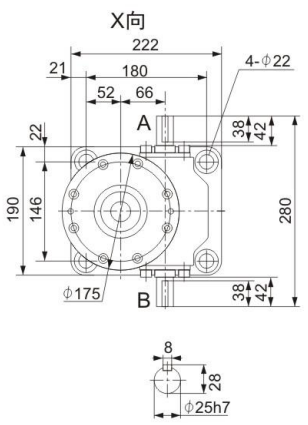
JWB050DR

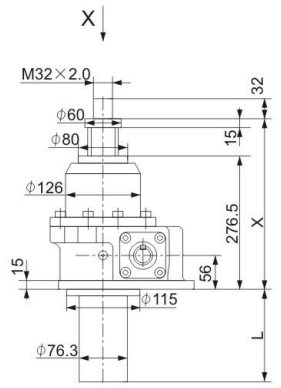
Journey (mm)	U R				
	X		L	m (kg)	
	MIN	MAX			
100	157	257	354	21	
200	157	357	454	22	
300	157	457	554	22	
400	157	557	654	23	
500	157	657	754	24	
600	157	757	854	24	
800	157	957	1054	26	
1000	157	1157	1254	27	

Journey (mm)	D R			
	X		L	m (kg)
	MIN	MAX		
100	130	230	242	21
200	130	330	342	22
300	130	430	442	22
400	130	530	542	23
500	130	630	642	24
600	130	730	742	24
800	130	930	942	26
1000	130	1130	1142	27

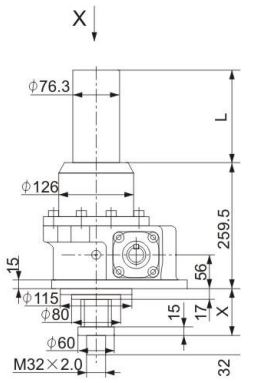
Note: "$X^{(1)}$" is the dimension of jack with dust hood.

JWB100





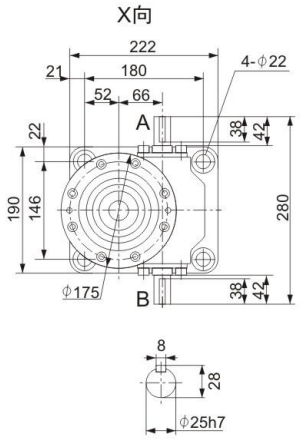
JWB100US

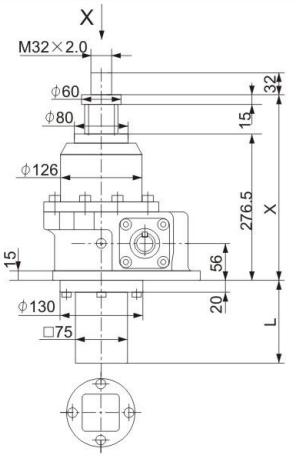


JWB100DS

Journey (mm)	U S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	302	402	312	412	151	36
200	302	502	312	512	252	38
300	302	602	327	627	366	41
400	302	702	327	727	466	43
500	302	802	352	852	591	46
600	302	902	352	952	691	48
800	302	1102	367	1167	906	53
1000	302	1302	377	1377	1116	58
1200	302	1502	402	1602	1341	63

Journey (mm)	D S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	52	152	151	36
200	42	242	52	252	252	38
300	42	342	67	367	366	41
400	42	442	67	467	466	43
500	42	542	92	592	591	46
600	42	642	92	692	691	48
800	42	842	107	907	906	53
1000	42	1042	117	1117	1116	58
1200	42	1242	142	1342	1341	63





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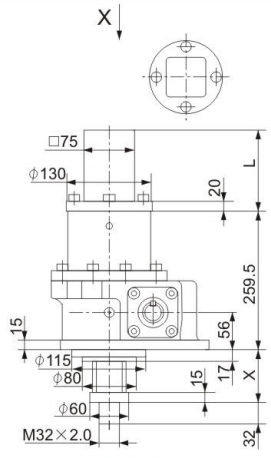
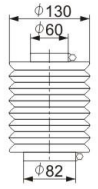


JWB100DM

Journey (mm)	U M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	302	402	312	412	192	39
200	302	502	312	512	292	42
300	302	602	327	627	407	45
400	302	702	327	727	507	48
500	302	802	352	852	632	52
600	302	902	352	952	732	55
800	302	1102	367	1167	947	61
1000	302	1302	377	1377	1157	67
1200	302	1502	402	1602	1382	74

Journey (mm)	D M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	52	152	192	39
200	42	242	52	252	292	42
300	42	342	67	367	407	45
400	42	442	67	467	507	48
500	42	542	92	592	632	52
600	42	642	92	692	732	55
800	42	842	107	907	947	61
1000	42	1042	117	1117	1157	67
1200	42	1242	142	1342	1382	74



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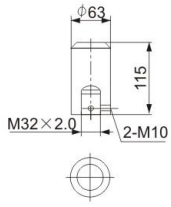

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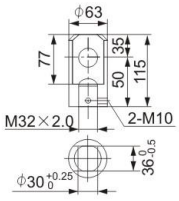

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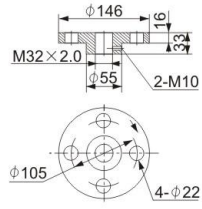
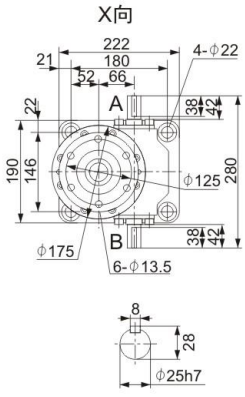
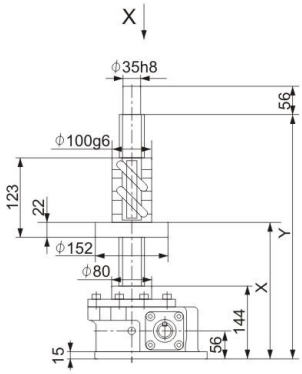
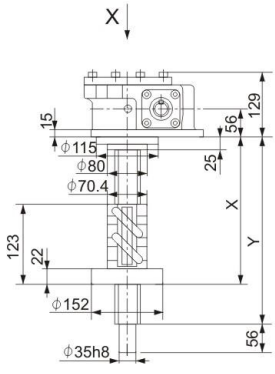


M





JWB100UR



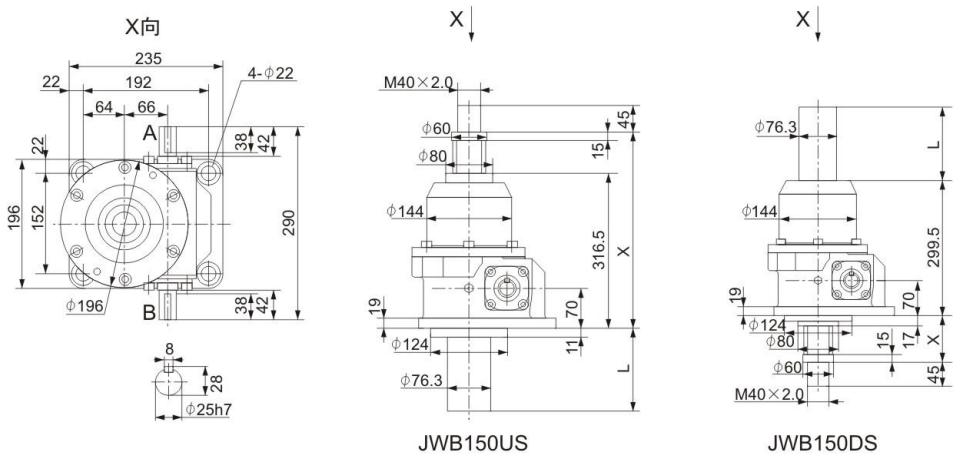
JWB100DR

Journey (mm)	U R				
	X		L	m (kg)	
	MIN	MAX			
100	176	276	387	31	
200	176	376	487	32	
300	176	476	587	33	
400	176	576	687	34	
500	176	676	787	35	
600	176	776	887	36	
800	176	976	1087	39	
1000	176	1176	1287	41	
1200	176	1376	1487	43	

Journey (mm)	D R			
	X		L	m (kg)
	MIN	MAX		
100	158	258	268	31
200	158	358	368	32
300	158	458	468	33
400	158	558	568	34
500	158	658	668	35
600	158	758	768	36
800	158	958	968	39
1000	158	1158	1168	41
1200	158	1358	1368	43

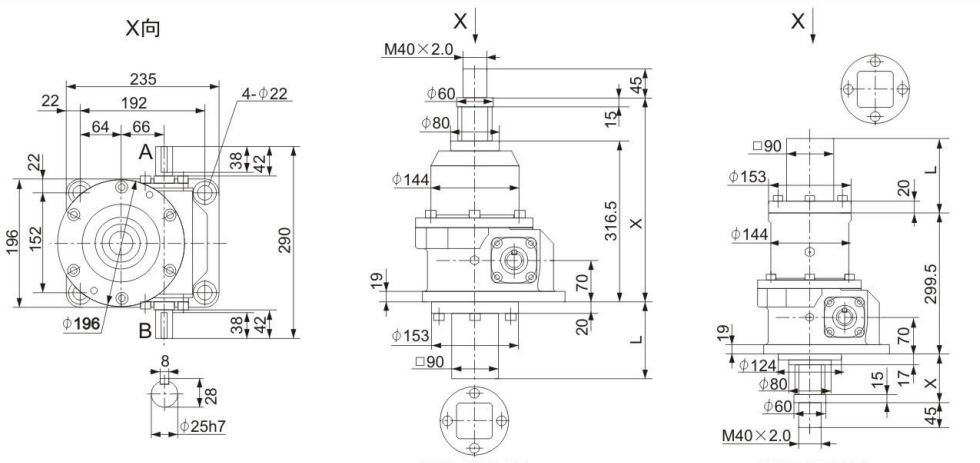
Note: "$X^{(1)}$" is the dimension of jack with dust hood.

JWB150



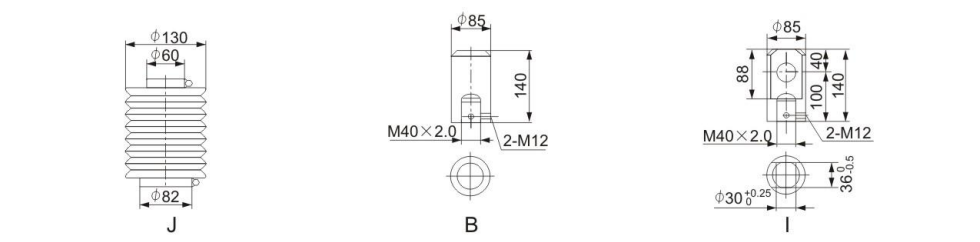
Journey (mm)	U S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	342	442	352	452	151	46
200	342	542	352	552	252	48
300	342	642	367	667	366	51
400	342	742	367	767	466	54
500	342	842	392	892	591	57
600	342	942	392	992	691	60
800	342	1142	407	1207	906	65
1000	342	1342	417	1417	1116	70
1200	342	1542	442	1642	1341	76

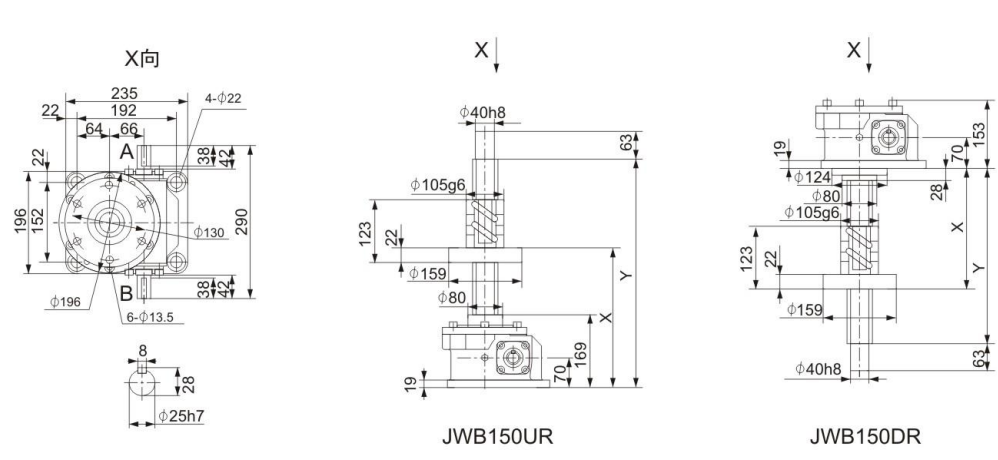
Journey (mm)	D S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	52	152	151	46
200	42	242	52	252	252	48
300	42	342	67	367	366	51
400	42	442	67	467	466	54
500	42	542	92	592	591	57
600	42	642	92	692	691	60
800	42	842	107	907	906	65
1000	42	1042	117	1117	1116	70
1200	42	1242	142	1342	1341	76



Journey (mm)	U M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	342	442	352	452	221	52
200	342	542	352	552	321	55
300	342	642	367	667	436	59
400	342	742	367	767	536	62
500	342	842	392	892	661	66
600	342	942	392	992	761	69
800	342	1142	407	1207	976	75
1000	342	1342	417	1417	1186	82
1200	342	1542	442	1642	1411	89

Journey (mm)	D M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	52	152	221	52
200	42	242	52	252	321	55
300	42	342	67	367	436	59
400	42	442	67	467	536	62
500	42	542	92	592	661	66
600	42	642	92	692	761	69
800	42	842	107	907	976	75
1000	42	1042	117	1117	1186	82
1200	42	1242	142	1342	1411	89



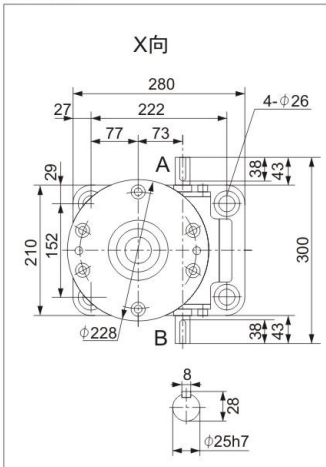


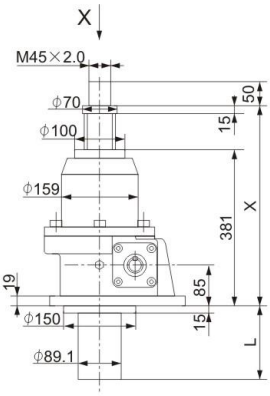
Journey (mm)	U R				
	X		L	m (kg)	
	MIN	MAX			
100	201	301	412	41	
200	201	401	512	42	
300	201	501	612	43	
400	201	601	712	45	
500	201	701	812	46	
600	201	801	912	47	
800	201	1001	1112	50	
1000	201	1201	1312	53	
1200	201	1401	1512	55	

Journey (mm)	D R			
	X		L	m (kg)
	MIN	MAX		
100	161	261	272	41
200	161	361	372	42
300	161	461	472	43
400	161	561	572	45
500	161	661	672	46
600	161	761	772	47
800	161	961	972	50
1000	161	1161	1172	53
1200	161	1361	1372	55

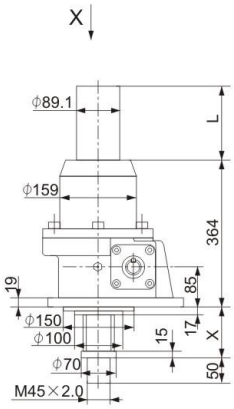
Note: "$X^{(1)}$" is the dimension of jack with dust hood.

JWB200





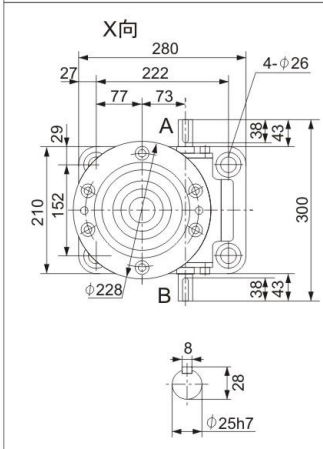
JWB200US

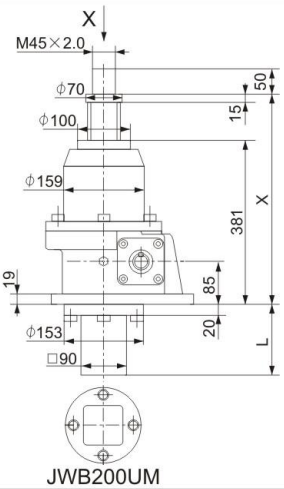


JWB200DS

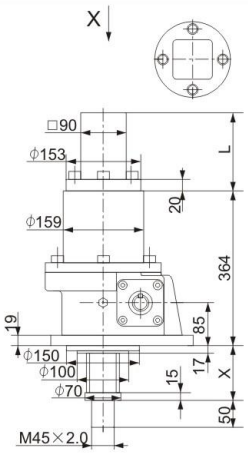
Journey (mm)	U S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	406	506	416	516	151	65
200	406	606	416	616	252	68
300	406	706	431	731	366	72
400	406	806	431	831	466	76
500	406	906	456	956	591	80
600	406	1006	456	1056	691	83
800	406	1206	471	1271	906	90
1000	406	1406	481	1481	1116	97
1200	406	1606	506	1706	1357	105

Journey (mm)	D S					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	52	152	151	65
200	42	242	52	252	252	68
300	42	342	67	367	366	72
400	42	442	67	467	466	76
500	42	542	92	592	591	80
600	42	642	92	692	691	83
800	42	842	107	907	906	90
1000	42	1042	117	1117	1116	97
1200	42	1242	142	1342	1357	105





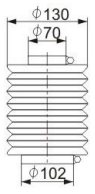
JWB200UM



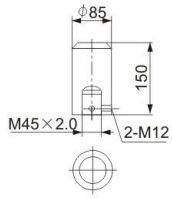
JWB200DM

Journey (mm)	U M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	406	506	416	516	230	72
200	406	606	416	616	330	76
300	406	706	431	731	445	80
400	406	806	431	831	545	84
500	406	906	456	956	670	89
600	406	1006	456	1056	770	93
800	406	1206	471	1271	985	102
1000	406	1406	481	1481	1195	110
1200	406	1606	506	1706	1420	119

Journey (mm)	D M					
	X		X(1)		L	m (kg)
	MIN	MAX	MIN	MAX		
100	42	142	52	152	230	72
200	42	242	52	252	330	76
300	42	342	67	367	445	80
400	42	442	67	467	545	84
500	42	542	92	592	670	89
600	42	642	92	692	770	93
800	42	842	107	907	985	102
1000	42	1042	117	1117	1195	110
1200	42	1242	142	1342	1420	119



J



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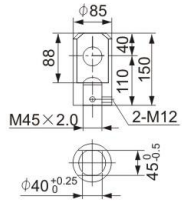

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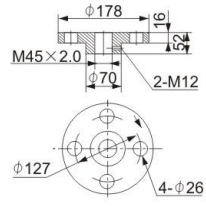
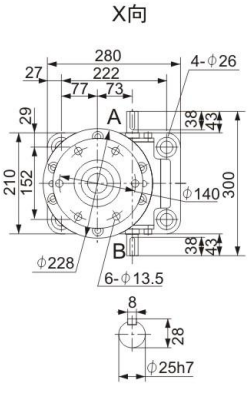
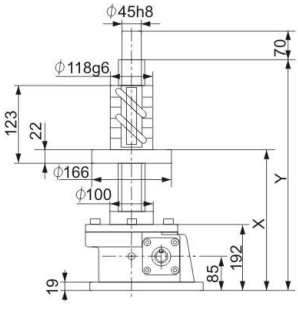
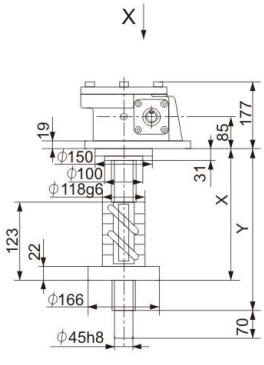


M





JWB200UR



JWB200DR

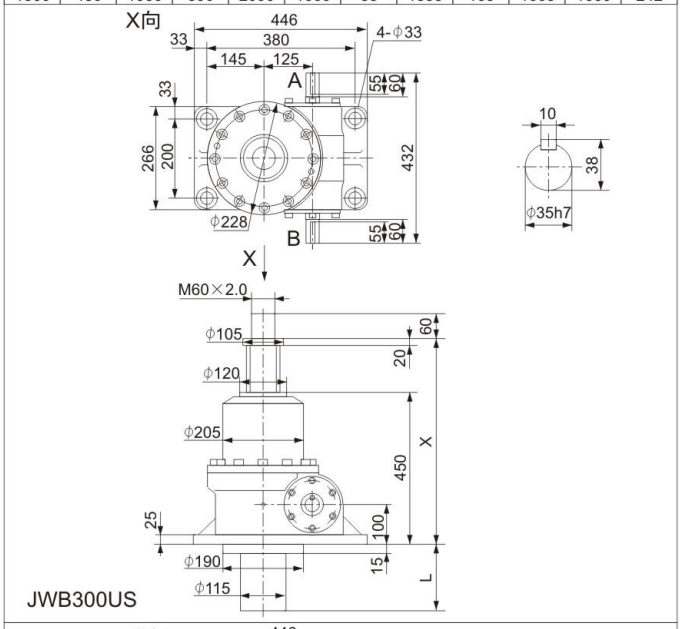
Journey (mm)	U R				
	X		L	m (kg)	
	MIN	MAX			
100	224	324	435	56	
200	224	424	535	58	
300	224	524	635	60	
400	224	624	735	62	
500	224	724	835	65	
600	224	824	935	67	
800	224	1024	1135	71	
1000	224	1224	1335	76	
1200	224	1424	1535	80	

Journey (mm)	D R			
	X		L	m (kg)
	MIN	MAX		
100	164	264	274	56
200	164	364	374	58
300	164	464	474	60
400	164	564	574	62
500	164	664	674	65
600	164	764	774	67
800	164	964	974	71
1000	164	1164	1174	76
1200	164	1364	1374	80

Note: "$X^{(1)}$" is the dimension of jack with dust hood.

JWB300

Journey (mm)	U S					D S					m (kg)
	X		X(1)		L	X		X(1)		L	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX		
100	480	580	490	590	160	55	155	65	165	160	153
200	480	680	490	690	260	55	255	65	265	260	159
300	480	780	505	805	375	55	355	80	380	375	166
400	480	880	505	905	475	55	455	80	480	475	172
500	480	980	520	1020	590	55	555	95	595	590	178
600	480	1080	520	1120	690	55	655	95	695	690	184
800	480	1280	535	1335	905	55	855	110	910	905	197
1000	480	1480	555	1555	1125	55	1055	130	1130	1125	210
1200	480	1680	565	1765	1335	55	1255	140	1340	1335	223
1500	480	1980	590	2090	1660	55	1555	165	1665	1660	242

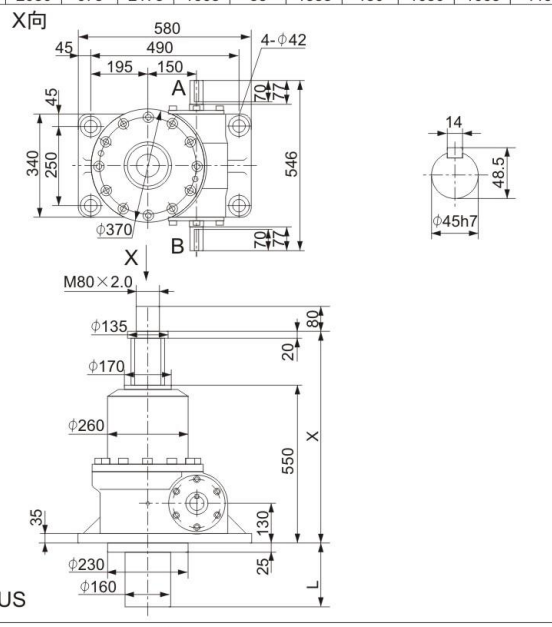


JWB300US

JWB300DS

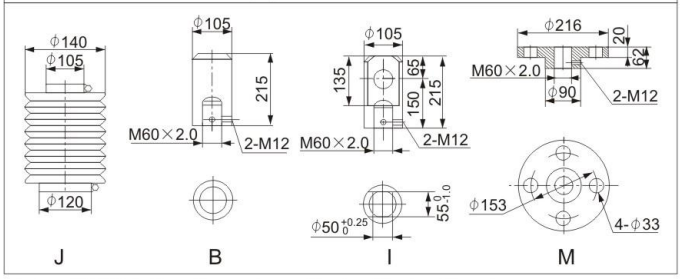
JWB500

Journey (mm)	U S					D S					m (kg)
	X		X(1)		L	X		X(1)		L	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX		
100	580	680	585	685	165	55	155	60	160	165	310
200	580	780	585	785	265	55	255	60	260	265	320
300	580	880	605	905	385	55	355	80	380	385	330
400	580	980	605	1005	485	55	455	80	480	485	340
500	580	1080	615	1115	595	55	555	90	590	595	350
600	580	1180	615	1215	695	55	655	90	690	695	359
800	580	1380	630	1430	910	55	855	105	905	910	378
1000	580	1580	645	1645	1125	55	1055	120	1120	1125	398
1200	580	1780	655	1855	1335	55	1255	130	1330	1335	417
1500	580	2080	675	2175	1665	55	1555	150	1650	1665	446



JWB500US

JWB500DS



Note: "X(1)" is the dimension of jack with dust hood.

LINEAR MOTION

Dezhou Lude Transmission Equipments CO.,LTD
NO.2758 Mengyin Road, Ecomomic&Technical Development Zone, Dezhou, Shandong, China
TEL: 0086-534-2765998 2761998
E-mail: ludetransmission@gmail.com china@ludetransmission.com
Web: www.ludetransmission.com