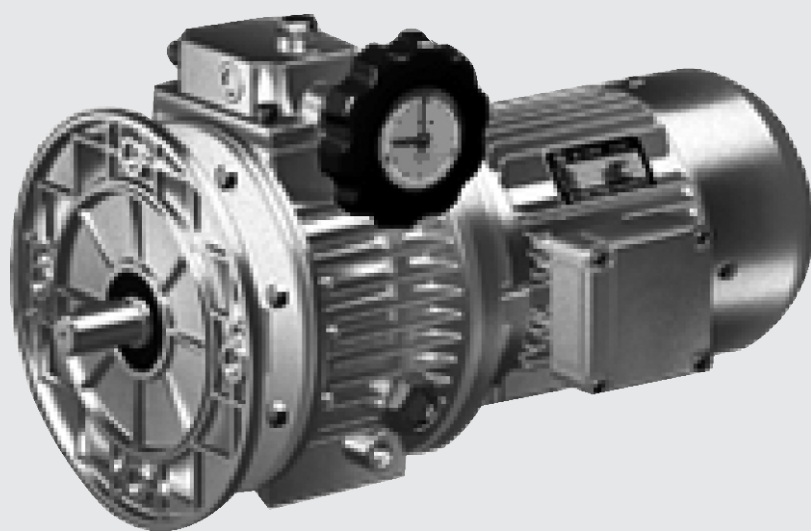


MB、MBN 系列行星锥盘无级变速器

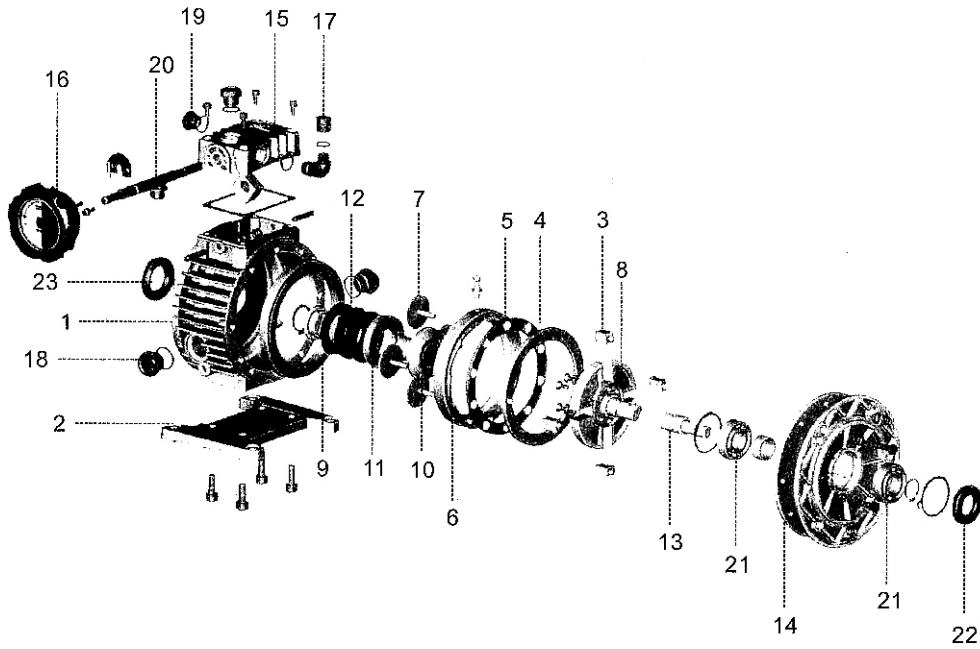
MB、MBN SERIES PLANETARY CONE-DISK VARITOR





MB、MBN系列行星锥盘无级变速器
MB、MBN SERIES Planetary cone-disk variator

.....结构示意图 Structural Demonstration



序号	名称
1	箱体 <small>铝合金02-07 铸铁02-75</small>
2	底座
3	滑块轴承
4	固定凸轮
5	弹子夹
6	调速凸轮
7	行星轮
8	转臂

序号	名称
9	固定环
10	恒轮
11	压轮
12	蝶形弹簧
13	输出轴
14	输出法兰
15	调速合盖
16	调速手轮

序号	名称
17	通气帽
18	油镜
19	螺塞
20	调速丝杆
21	轴承
22	油封
23	油封

No.	Name
1	Tank
2	Base
3	Slide-block bearing
4	Fixed cam
5	Surface bearing
6	Speed-regulating cam
7	Planetary wheel
8	Torque

No.	Name
9	Fixed ring
10	Constant wheel
11	Press wheel
12	Butterfly spring
13	Output shaft
14	Output flange
15	Speed control cover
16	Speed control handwheel

No.	Name
17	Breather vent
18	Oil mirror
19	Plug screw
20	Speed control lead screw
21	Bearing
22	Oil seal
23	Oil seal



MB、MBN 系列行星锥盘无级变速机

MB、MBN series planetary cone-disk variator

概述

行星锥盘无级变速机系采用了国内外先进的技术而设计的。它不仅可广泛地用于食品、制药、塑料、造纸、陶瓷、烟草、印刷等轻工业部门，而且广泛用于机床、石化、冶金等重工部门及交通运输业。它的优点是：

- 1、高强度：在加冲击负载逆转时，本机性能可靠、能精确地传动，无后座力，并有足够的强度。
- 2、变速范围大：变速范围为5，即输出速比可在1: 1.45至1: 7.25之间任意变化。
- 3、调速精度高：调速精度为0.5~1转。
- 4、性能稳定：本机的传动部件都经过特殊热处理、并经精密加工。接触和润滑良好、运行平稳、噪声低、寿命长。
- 5、结构紧凑，体积小，重量轻。
- 6、组合能力强：本机能与各种减速机组合，实现低速无级变速，因此它具有良好的适应性。

Overview

Planetary cone-disk variator is designed with the advanced know-how of both at home and abroad and can be used for both light-industrial trades, such as food, pharmaceutical, plastic, paper-making, ceramic, tobacco, printing etc., and heavy-industrial trades, such as tool machine, petrochemistry, metallurgy, metallurgy etc., as well as for the trades of communication and transportation. It features as below:

- 1、High strength: when reversedly running with an impact load, it is of a reliable performance, able to precisely drive, without a recoil and with a sufficient strength.
- 2、Large range of speed variation: its range of speed variation is 5, i.e. its output speed ratio can be varied between 1:1.45 to 1:25.
- 3、High precision of speed regulation: the precision of speed regulation is 0.5-1 turn.
- 4、Stable performance: its driving parts are meticulously processed with specially heat treatment, resulting in good contact and lubrication, stable running, low noise and long durability.
- 5、Compact structure, small volume and light weight.
- 6、Strong capability to be combined: it is of a good capability to be combined with various reducers to realize low-speed stepless variation.

结构与工作原理、润滑油品种

1、行星锥盘无级变速机（见图）

带锥度的太阳轮（10）和压盘（11）被一组碟形弹簧（12）压紧，输入轴（24）与太阳轮用键连接，组成压紧的输入装置。一组带锥度的行星轮（7）内侧夹在压紧的太阳轮与压盘之间，外侧夹在带锥度的定环（9）和调速凸轮（6）之间，当输入装置转动时，由于定环和调速凸轮固定不动，行星轮就沿定环作纯滚动，且绕输入轴作公转，通过行星轮轴及滑动轴承（3）而带动行星架（8）及输出轴（13）转动。

高速时转动手轮，由手轮带动调速螺杆，使平面凸轮相对转动，产生轴向移动，从而均匀改变调速凸轮和固定环之间的间隔，最后改变了行星轮与太阳轮、压盘及固定环、调速凸轮摩擦处的工作半径，实现无级调速。

Structure and working principle

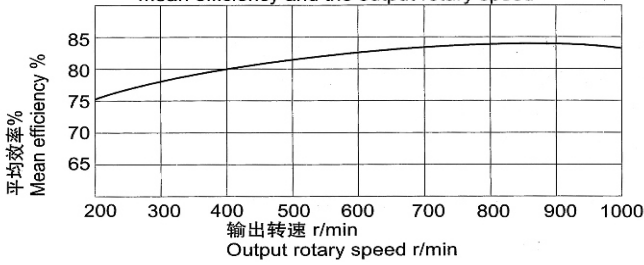
1、Planetary cone-disk variator (see the drawing)

Both solar-wheel with a conicity (10) and press-plate (11) are jammed by a group of butterfly springs (12) and the input shaft (24) is linked with the solar-wheel by a key to form a jammed input device. A group of planetary wheels with a conicity (7), with their inner side clamped in between the jammed solar-wheel and the press-plate and outer side between the fixed ring with a conicity (9) and the speed-regulating cam (6), when the input device turns, roll purely along with the fixed ring due to both fixed ring and speed regulating cam fixed without motion and make revolution round the input shaft to drive both planetary rack (2) and output shaft (1) to run via the planetary-wheel shaft and the slide-block bearing (5). To regulate the speed, turn the handwheel, which drives the speed regulating screw to have the surface cam relatively run to produce axial displacement and thus to evenly change the space between the speed regulating cam and the fixed ring and, finally, change the working radius at the frictional place of the cam between the planetary-wheel and the solar-wheel and between the press-rack and the fixed ring to realize the stepless speed variation.

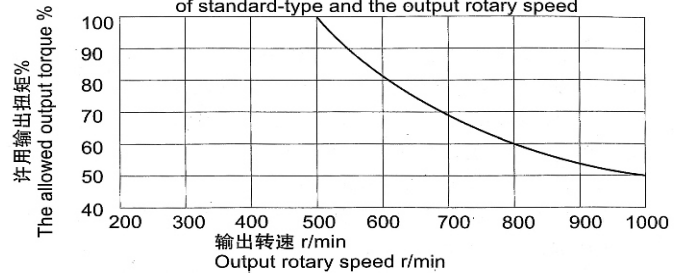


性能曲线 Performance curve:

标准型平均效率与输出转速的关系
Relation between the standard-type's mean efficiency and the output rotary speed



标准型允许输出扭矩与输出转速的关系
Relation between the allowed output torque of standard-type and the output rotary speed



MB系列无级变速器调速示意
Speed adjustment demonstration of MB series of variable drives

<p>手动手轮调速 Speed adjustment to manual handwheel</p>	<p>手动配直角器调速 Speed adjustment to manual cross staff head</p>

敬告：停车时严禁调速
Warning: inhibit from adjusting speed when stopping machine

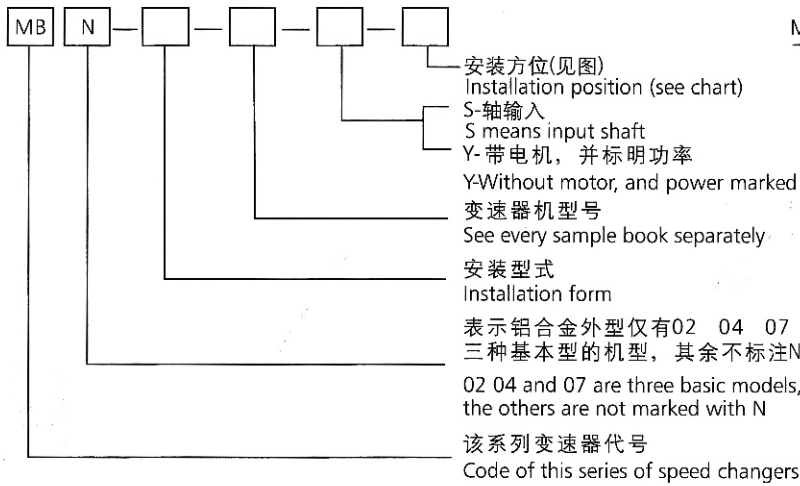
<p>电动调速 Electric speed adjustment</p>	
<p>限位开关 Limit switch</p>	<p>电动调速 Electric speed adjustment</p>

<p>手动箭头指示手轮 Manual arrow-indicating handwheel</p>	<p>手动指针指示手轮 Manual pointer-indicating handwheel</p>

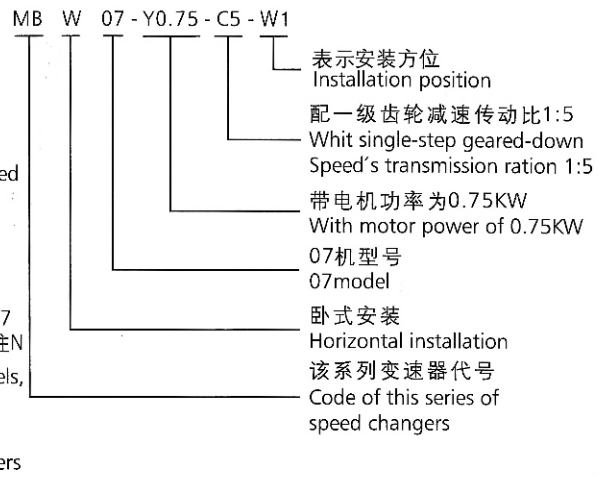


机型表示方式:
Model expression

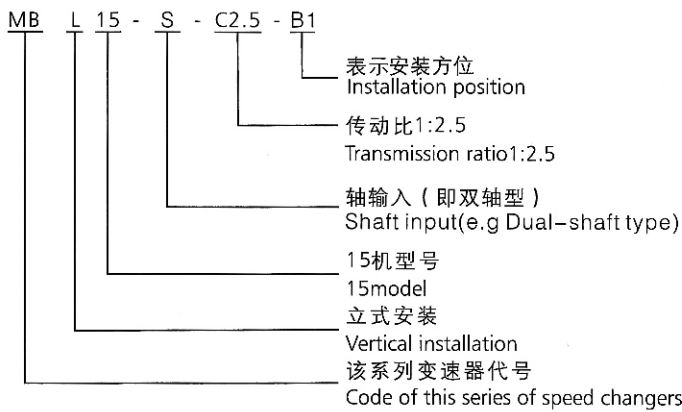
基本型示例
Examples for basic models



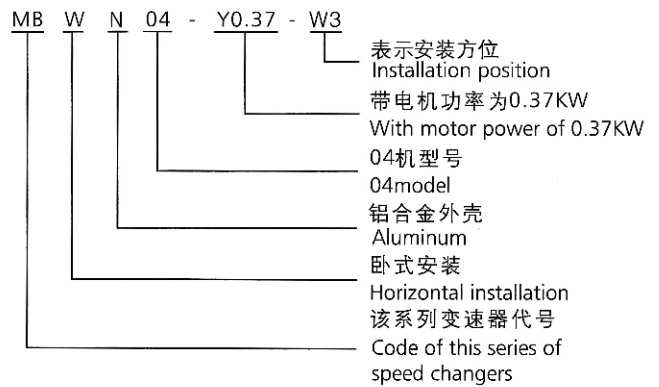
基本型配电机配一级齿轮减速示例
Demonstration for basic model with motor
and single-step geared-down speed



基本型配一级齿轮不配电机示例
Demonstration for basic model with
single-step and not with motor



基本型配电机示例
Demonstration for basic model with motor



代号说明
Code number elucidation

表一 Table I

代号 Code number	说明 Elucidation	代号 Code number	说明 Elucidation	代号 Code number	说明 Elucidation
MB	行星摩擦无级变速器 Planetary friction variable speed	W	表示卧式安装 Means horizontal installation	C	表示带一级齿轮减速 With single-step geared-down
Y	表示电机直联 Means the motor is directly	L	表示立式安装 Means vertical installation	S	表示轴输入不带电机 Means input shaft with



MBN,MB系列选型举例: Examples for the model selection of MBN,MB series:

举例一:

被驱动设备的电机功率要求 $P=1.5KW, n_1=1450r/min, T_2=24-12N.M$,卧式底脚安装,一般冲击负载,每天工作8小时,调速范围要求200-1000r/min.查MB系列传动能力表,选MBW15-Y1.5/4P.

1. An actuated equipment, horizontally foot mounted, requires the motor is $P=1.5KW, n_1=1450rpm, T_2=24-12N.M$ and the speed adjustable range 200-1000rpm and works 8h every day with general shocking load
Looking into the drive capacity table of MB series, select MBW15-Y1.5/4P.

举例二:

被驱动设备需要的转矩 $T_1=160-80N.M$,立式法兰安装,均匀负载,每天工作8小时,调速范围要求40-200r/min.查MB系列传动能力表,选MBL22-Y2.2/4P-C5

2. An actuated equipment, vertically flange mounted, requires the $T_1=160-80N.M$ and the speed adjustable range 40-200rpm and works 8h every day with an even load. Looking into the drive capacity table of MB series select MB22-Y2.2/4P-C5.

MBN、MB系列无级减速器润滑 Lubrication of MBN, MB series decelerators

1. 出厂前,已加入牵引液,采用飞溅润滑。
 2. 牵引液牌号:(Ub-3),油量不能低于油标中心线。
 3. 更换周期:第一次在使用500小时更换,以后每1000-2000小时更换一次,在恶劣的环境下缩短更换周期。
- 带齿轮减速的齿轮箱在出厂时已加入了锂基润滑油。

1. Already filled with pulling liquid and done with spraying lubrication before ex-wors.
2. Brand of the lubricating oil:(Ub-3),the oil amount should not be below the central line of the oil leveler.
3. Period of replacement: first at the use of 500h,then once every 1000-2000h,which has to be short in a severe surroundings. Li-base lubricating oil has already been filled into the gearbox with gear deceleration.

公差值 (应用到给出尺寸) Tolerance values(applied onto the given sizes)

名称 Item	公称尺寸 Nominal size	公差值 Tolerance value
中心高 Central height	≤250mm	-0.5mm
输出法兰 Output flange	外台肩 Outer table shoulder	H7
轴伸直径 Shaft stretch diameter	Φ≤50mm	K6

名称 Item	公称尺寸 Nominal size	GB145-85
轴伸中心孔 C型 Type C of shaft stretch central hole	> 10-13mm	M4
	> 13-16mm	M5
	> 16-21mm	M6
	> 21-24mm	M8
	> 24-30mm	M10
	> 30-38mm	M12
> 38-50mm	M16	

机型号 Model	重量 (kg) Weight(kg)	
	带C With C	不带C Without C
MB02	14	10
MB04	19	14
MB07	25	19
MB15	42	35
MB55	75	60
MB75	120	100

MB/MBN系列基本的传动能力参数表

Basic model,specification and model choice reference for MB/MBN series

表七 Table 7

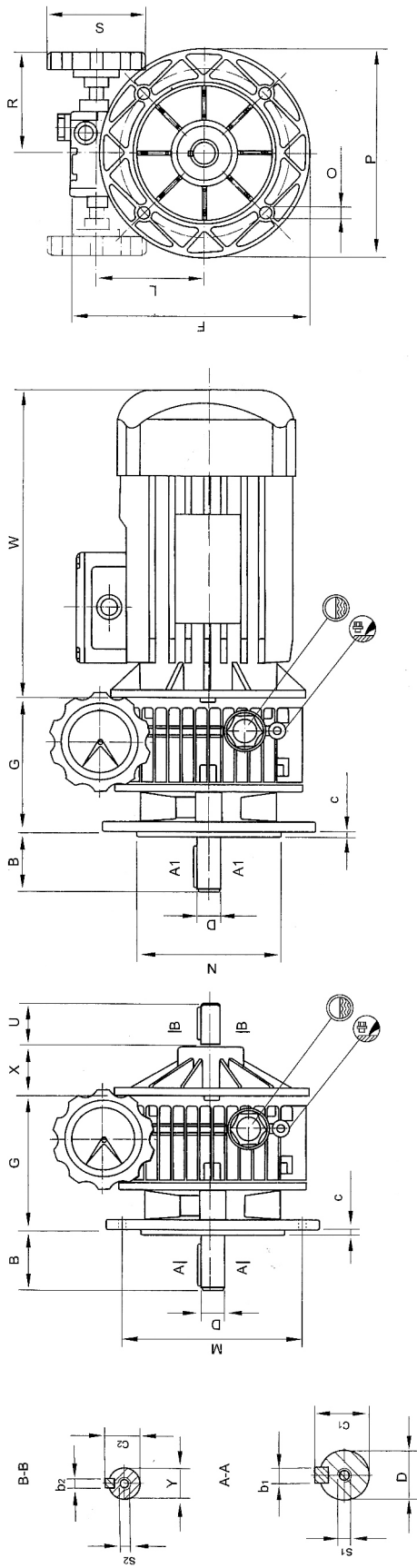
型号 Model	MB 02 MBN		MB 04 MBN		MB 07 MBN		MB15		MB22	MB40		MB55	MB75	
4极输入功率(KW) 4 poles input the power	0.12	0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	4	5.5	7.5	
6极输入功率(KW) 6 poles input the power			0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	4	5.5	
输出许用转矩N.M Output allowable torque's N.M	1-2	1.5-3	2-4	3-6	5-10	6-12	9-18	12-24	18-36	24-48	32-64	45-90	59-118	
输出转速r/min Output revolution	当电机输入转速为(4极)1400r/min								其输出转速=1000-200r/min					
	当电机输入转速为(6极)960r/min								其输出转速=650-130r/min					

MB系列配一级齿轮的传动能力参数表

References for model,specification and model choice of MB series with grade one gear

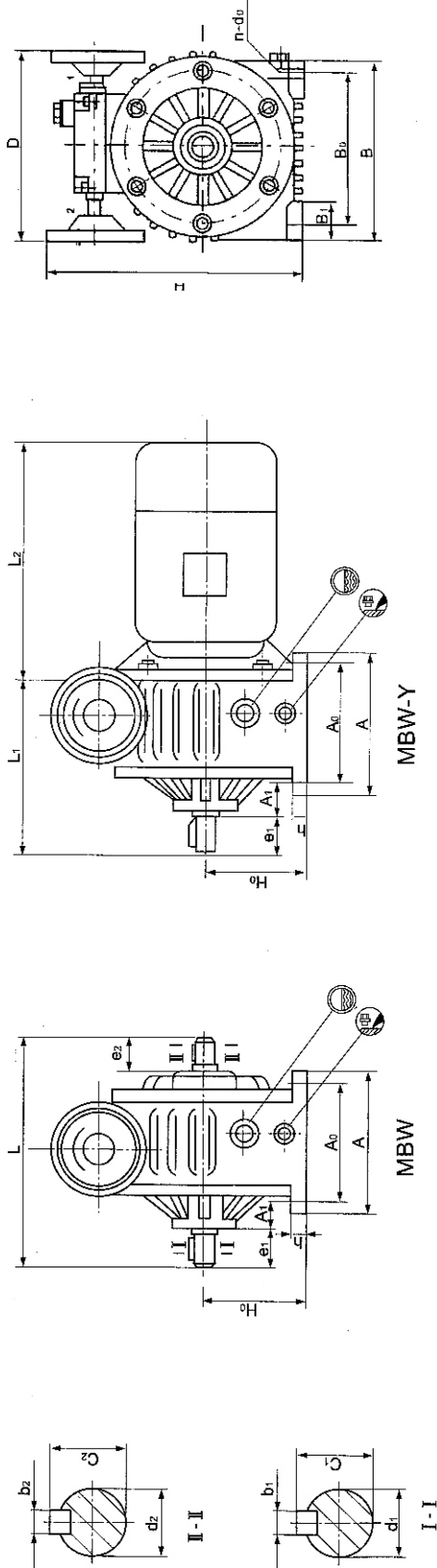
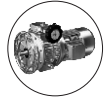
表八 Table 8

型号 Model			MB02-C		MB04-C		MB07-C		MB15-C		MB22-C		MB40-C		MB55-C		MB75-C	
4极输入功率(KW)			0.12	0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	4	5.5	7.5			
6极输入功率(KW)					0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	4	5.5			
传动比 Transmission Ratio	输入转速 Input revolution	输出转速r/min Output revolution	输出许用转矩 (N.M) Output allowable torque's N.M															
			2	4极	500-100	1.4	2.1	2.8	4.2	7.0	8.5	12.5	17	25.5	34	45.5	64	84
	6极	430-86	2.8	4.2	5.6	8.4	14	17	25	34	51	68	91	128	168			
2.5	4极	400-80	2.35	3.55	4.75	7.1	11.8	14.2	21.3	28.5	42.5	57	76	106	140			
	6极	260-52	4.7	7.1	9.5	14.2	23.6	28.4	42.6	57	85	114	152	212	280			
3.3	4极	300-60	3.3	4.75	6.2	9.5	15.5	19	28	37.5	56.5	75	99.5	140	184			
	6极	200-40	6.6	9.5	12.4	19	31	38	56	75	113	150	199	280	368			
5	4极	200-40	4.75	7.1	9.5	14.2	23.5	28.5	42.5	57	85.5	114	152	213	280			
	6极	130-26	9.5	14.2	19	24.8	47	57	85	114	171	228	304	426	560			



MB系列基本型法兰立式安装尺寸 (铝合金)
Overall and installation dimensions of vertical installation in MB basic series

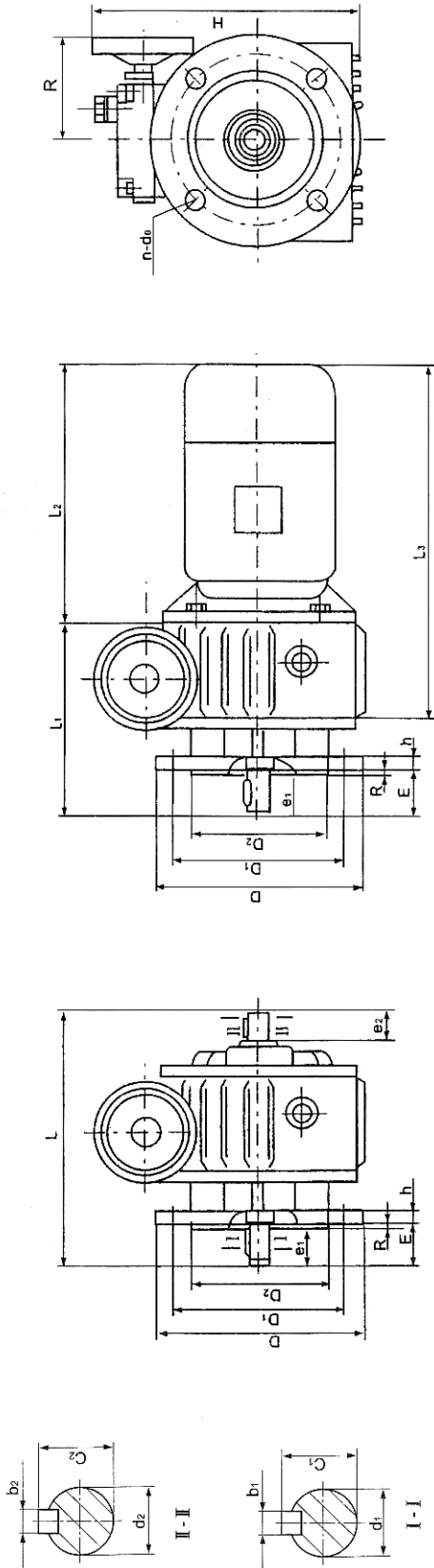
机座号 Frame size	外形及安装尺寸 Overall and installation dimensions																					
	B	C	D (js6)	F	G	Y (js6)	L	M	N	O	P	R	S	U	X	W	b1	C1	S1	b2	C2	S2
02	23		14	181	112.5	11	77	115	95	9	140	110	85	23	51	见第19页 see page 19	4	12.5	M6	4	12.5	M6
04	30	3.5	14	203	110	14	89	130	110	9	160	110	85	30	49		5	16	M6	5	16	M6
07	40		20	240	139	19	107	165	130	11	200	115	110	40	70		6	21.5	M6	6	21.5	M6



MBW系列基本法兰立式安装尺寸
Overall and installation dimensions of vertical installation in MBW basic series

机型	安装尺寸 Installation dimensions											输入轴 Input shaft					外形尺寸 Overall dimensions						
	H0	A0	A1	B0	B1	h	N	d0	d1	b1	c1	e1	d2	b2	c2	e2	D	B	H	A	L		
	Central height																				双轴型 L	直联型 L1	L2
02	75	105	18	110	13	12	4	10	14js6	5	16	30	14js6	5	16	30	165	146	205	125	195	128	
04	90	105	30	120	15	12	4	10	14js6	5	16	30	14js6	5	16	30	170	160	231	135	222	150	
07	106	125	35	160	15	15	4	12	20js6	6	22.5	40	19js6	6	21.5	30	200	190	260	150	245	182	
15	124	140	50	180	18	18	4	12	25js6	8	28	50	24js6	8	27	40	240	230	291	165	318	223	
22	150	230	25	245	20	25	4	14	30js6	8	33	60	24js6	8	27	50	290	300	348	270	391	268	
40	200	250	33	315	30	30	4	19	35js6	10	38	70	32js6	10	35	60	430	365	476	290	467	319	

见第19页
see page 19



机型	安装尺寸 Installation dimensions										输出轴 Output shaft					输入轴 Input shaft					外形尺寸 Overall dimensions							
	D1	D2	D3	E	h	R	n	d0	d1	b1	c1	e1	d2	b2	c2	e2	D	H	R	L	L1	L2	L	L1	L2	L	L1	L2
02	130	110h9	30	12	3.5	4	4	10	14js6	5	16	30	14js6	5	16	30	160	202	110	195	128	200*	195	128	200*	195	128	200*
04	136	110h9	30	12	3.5	4	4	10	14js6	5	16	30	14js6	5	16	30	160	228	110	222	150	235	222	150	235	222	150	235
07	165	130h9	40	12	3.5	4	4	12	20js6	6	22.5	40	19js6	6	21.5	30	200	257	115	245	182	245	245	182	245	245	182	245
15	215	180h9	50	16	4	4	4	15	25js6	8	28	50	24js6	8	27	40	250	287	135	318	223	285	318	223	285	318	223	285
22	265	230h9	60	16	4	4	4	15	30js6	8	33	60	24js6	8	27	50	300	343	166	391	268	320	391	268	320	391	268	320
40	300	250h9	70	20	5	4	4	19	35js6	10	38	70	32js6	10	35	60	350	466	194	467	319	435	467	319	435	467	319	435
55																												
75																												

见第19页
see page 19