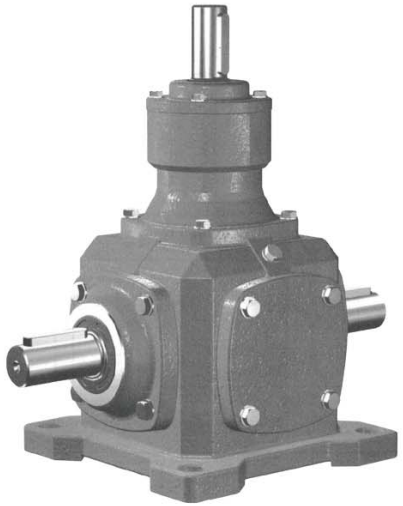
Z
SERIES

BEVEL GEAR REDUCTOR

Z系列 弧齿锥齿轮减速机



7.1 Z系列减速机介绍 Z Series Reducer Introduction

1) 概述

1. Z系列弧齿锥齿轮减速机是一级弧齿锥齿轮传动箱，传动比有1、1.5、2、2.5、3。
2. 传动效率高，单机型减速机效率高达96%。
3. 有单横轴、单纵轴、双纵轴可选。

2) 场所条件

1. 环境温度-40℃~50℃（0℃:以下启动时润滑油要加热到0℃以上）。
2. 海拔不超过1000米。
3. 输入转速不大于1800rpm,齿轮最高圆周速度不超过22m/s。
4. 可用于正反运转。
5. 无行业限制。
6. 其他条件下使用请与我公司技术部联系。

1) Summarize

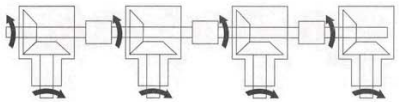
1. Z series bevel helical gear reductor is the first stage gear case with transmission ratio of 1,1.5,2,2.5 and 3.
2. High transmission efficiency. A single machine can reach a transmission efficiency as much as 96%.
3. There are single transverse shaft, single longitude shaft and double longitude shafts for select.

2) Working Environment

1. Working temperature: -40°C～50°C (The lubrication should be heated until above 0°C if the machine works Below 0°C.)
2. The working place should be lower than 1,000 meters above sea level.
3. The imput rotational speed should not exceed 1，800rpm.The circumferential speed of the gear should not exceed 22m/s.
4. Suitable for normal-reverse rotation.
5. Without industry limitation.
6. Please consult our technical supporting department for other circumstances.

3) 应用实例

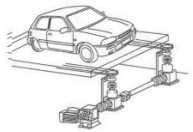
并排转途 Transmission in line



立体车库 Tridimensional carbarn

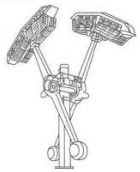
1台减速机左右输出，通过转向后，同时升降
One reducer output left and right,after rotation, ascend and descend simultaneously

给纵轴连结送力，使横轴同步运转



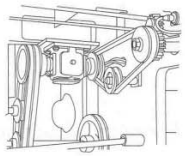
1台减速机驱动左右链轮同步运转
One reducer drive rightand left chain wheel and rotate at the same speed

游戏机 Play machine



纵横输入，2横轴相反运转
Vertical and horizontal input,2 horizontal axes reverse operation

包装机 Packing machine



4) 选型指南

1. 选型时先根据需要的输出扭矩，即要传递的扭矩M_2(Nm),计算出输入功率P_1 (kW)：

$$P_1 = \frac{M_2 \times N_1}{9550 \times i \times \eta}$$

N_1 — 输入转速（r/min）

η — 传动效率（一般为0.98）

2. 确定合适服务系数fa

fa=f1 x f2 x f3

f1:工作机最低工况使用系数（P005页，表1)

f2:启动系数 (根据每小时启动次数参照P005页，表2)

f3:环境温度系数（P005页，表3)

$P_N > fa \times P_1$

按实际输入功率P_N根据"性能参数表"选择合适 的规格

3) Application example

1台减速机左右输出，通过转向后，同时升降
One reducer output left and right,after rotation, ascend and descend simultaneously

给纵轴连结送力，使横轴同步运转

1台减速机驱动左右链轮同步运转
One reducer drive rightand left chain wheel and rotate at the same speed

游戏机 Play machine

纵横输入，2横轴相反运转
Vertical and horizontal input,2 horizontal axes reverse operation

包装机 Packing machine

4) Instructions for Selection

1. Accrding the required output torque, namely the torque M2(Nm), to check out the output power rating Pi(kW):

$$P1 = \frac{M2 \times N1}{9550 \times i \times \eta}$$

N1— Input speed(r/min)（r/min)

η — Transmission efficiency(0.98 as usual)

2. Determine the proper driven machine factor fa

fa=f1 x f2 x f 3

f1: minimum working condition coefficient of working machine (Table 1 on Page P006)

f2: starting coefficient (refer to Table 2 on Page P006 according to starting times per hour)

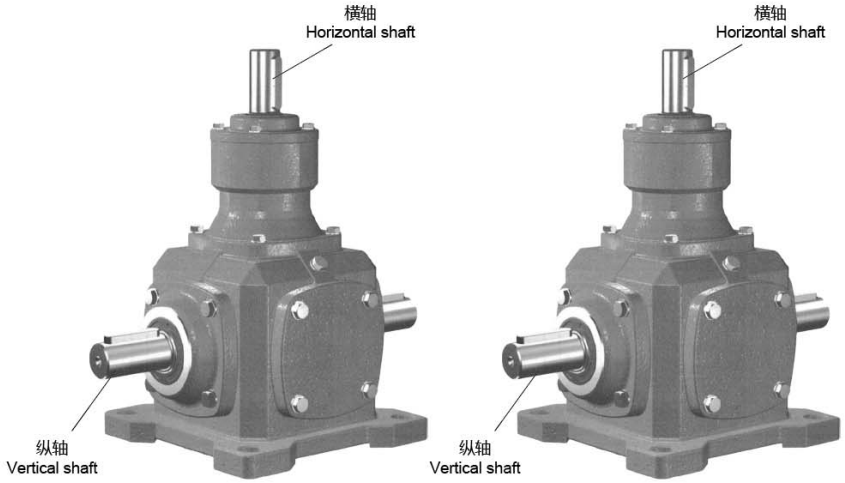
f3: Ambient temperature coefficient (Table 3 on Page P006) $P_N > fa \times P_1$

According the actual input input power rating P_N to select the proper size from the “performance value table”.

7.2 Z系列型号表示法 Model expression way of Z series

示例 1 Z 9-1.5 - 1-UD -B3

- 安装形式（见P434-P435页)未注明按B3供货 Mounting position
- 轴配置（见P434-P435页)未注明按1-LR供货 Design of shaft
- 传动比（见P436页） Ratio
- 机型号（见P436页） Model
- Z系列弧齿锥齿轮减速机 Z series helical bevel gear reductor



注： 当横轴输入时，Z系列螺旋锥齿轮减速机为减速。
当纵轴输入时，Z系列螺旋锥齿轮减速机为增速。

Note: Z series bevel helical gear reductor is deceleration when inputting horizontal shaft.
Z series bevel helical gear reductor is acceleration,when inputting vetical shaft.

7.3 Z系列输入功率及许用扭矩 Input power and permissible torque of Z series

规格 Size	Z2	Z4	Z6	Z7	Z8	Z10	Z12	Z16	Z20	Z25
结构形式 Structure	1-LR(O)、1-UD(O)、U-LR(O)、D-LR(O)、1-1-LR(O)、1-1-UD(O)、U-D-LR(O)									
输入功率(kw) Input power rating	0.015 ~1.79	0.026 ~4.94	0.037 ~14.9	0.042 ~22	0.064 ~45.6	0.11 ~65.3	0.188 ~96	0.40 ~163	0.69 ~234	1.4 ~335
传动比 Rate	1~2	1~2	1~3	1~3	1~3	1~3	1~3	1~3	1~3	1~3
许用扭矩*(N·m) Allowable Torque	11	31	94	139	199	288	607	1073	1943	3677

7.4 Z系列减速机重量表 Weight form of Z series speed reducer

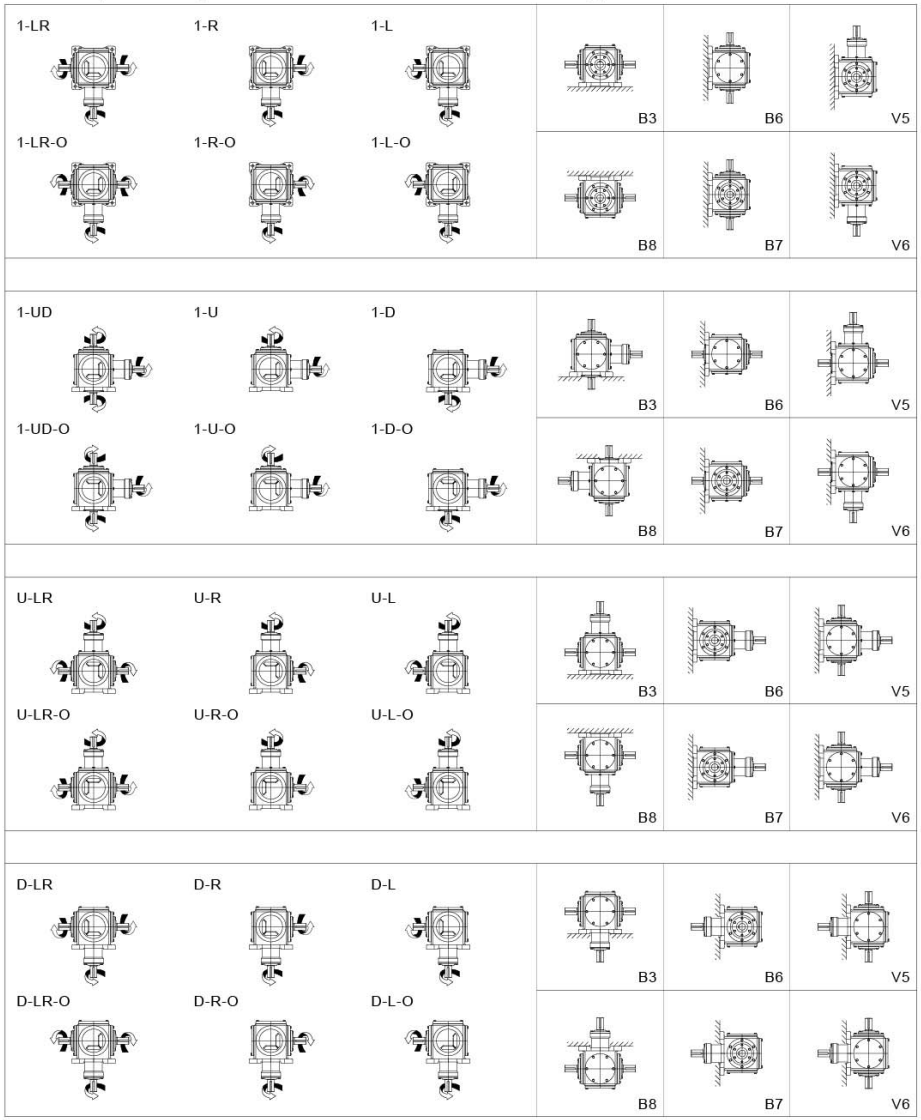
规格 Size	Z2	Z4	Z6	Z7	Z8	Z10	Z12	Z16	Z20	Z25
重量 (Kg)Weight	2	10	21	32	49	78	124	188	297	488

所注重量为平均值，仅供参考 The weights are mean values,only for reference.

7.5 Z系列轴配置及安装形式图 Shaft allocation and installation form of Z series

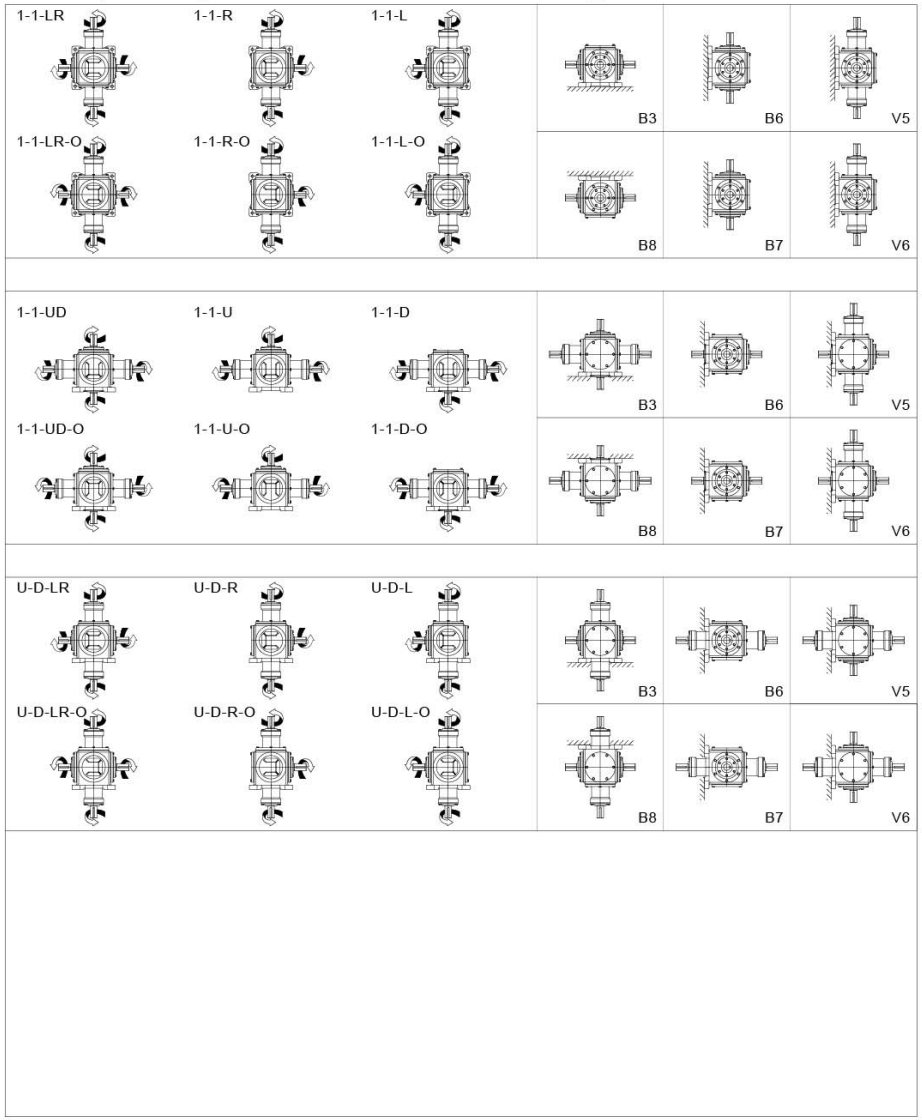
轴配置及旋转方向的关系
The relationship between configuration of shaft and direction of shaft

安装形式图
Mounting position



轴配置及旋转方向的关系
The relationship between configuration of shaft and direction of shaft

安装形式图
Mounting position



7.6 Z系列选型参数表 Model selection parameter of Z series

速比 Ratio	输入转速 Input speed r/min	输出转速 Output speed r/min	许用功率/Permissible power (kW)									
			Z2	Z4	Z6	Z7	Z8	Z10	Z12	Z16	Z20	Z25
1:1	1450	1450	1.79	4.94	14.9	22	45.6	65.3	96	163		
	1150	1150	1.43	4.19	12.7	18.4	37.5	55.7	81.1	139	234	
	870	870	1.12	3.46	10.5	15.2	29	44.6	67.5	114	193	335
	580	580	0.747	2.45	7.35	11.4	19.8	30.6	49.7	85.9	145	252
	400	400	0.524	1.72	5.2	8.34	14	21.5	35.1	66.1	112	195
	300	300	0.396	1.3	3.93	6.35	10.6	16.4	26.8	54.1	90.8	159
	200	200	0.266	0.88	2.66	4.3	7.23	11.1	18.2	39.3	69	119
	100	100	0.136	0.448	1.36	2.2	3.7	5.72	9.36	20.3	35.3	60
	10	10	0.014	0.046	0.141	0.228	0.386	0.599	0.983	2.14	3.53	6.3
1.5:1	1450	967			12.1	15	19.1	38.7	58.3			
	1150	767			9.96	12	15.4	31.2	49.2			
	870	580			7.66	9.3	11.8	24.1	40.7			
	580	387			5.23	6.32	8.14	16.4	28.9			
	400	267			3.66	4.41	5.7	11.6	20.3			
	300	200			2.77	3.35	4.34	8.78	15.5			
	200	133			1.87	2.28	2.91	5.95	10.5			
	100	67			0.957	1.16	1.49	3.04	5.37			
	10	7			0.099	0.12	0.155	0.316	0.56			
2:1	1450	725	0.94	3.32	7.9	10.6	14	23.6	40	73.7	126	
	1150	575	1.74	2.67	6.39	8.55	11.3	19	31.7	59.5	102	119
	870	435	0.56	2.04	4.88	6.56	8.7	14.6	24	46	79	155
	580	290	0.37	1.38	3.34	4.47	5.92	10	16.3	31.3	54.2	107
	400	200	0.26	0.96	2.33	3.12	4.15	7.02	11.5	22	38	75.4
	300	150	0.19	0.73	1.76	2.37	3.14	5.33	8.71	16.7	29	57.5
	200	100	0.13	0.49	1.18	1.59	2.12	3.61	5.89	11.3	19.7	39.2
	100	50	0.06	0.3	0.608	0.812	1.08	1.84	3.01	5.84	10.1	20.1
	10	5	0.015	0.026	0.062	0.084	0.112	0.191	0.313	0.605	1.06	2.11
2.5:1	1450	580			5.97	6.99	11.4	18.2	31.4			
	1150	460			4.78	5.64	9.11	14.7	25.3			
	870	348			3.68	4.3	7	11.2	19.5			
	580	232			2.48	2.92	4.76	7.68	13.3			
	400	160			1.73	2.05	3.34	5.38	9.32			
	300	120			1.32	1.55	2.53	4.06	7.08			
	200	80			0.888	1.05	1.71	2.75	4.79			
	100	40			0.448	0.528	0.867	1.4	2.43			
	10	4			0.046	0.054	0.089	0.144	0.251			
3:1	1450	483			4.84	5.42	8.2	14	23.6	48.2	82.3	158
	1150	383			3.88	4.34	6.55	11.3	19	38.9	66.6	130
	870	290			2.97	3.34	5.04	8.66	14.6	30.1	51.6	101
	580	193			2.02	2.25	3.42	5.89	9.92	20.4	35.4	69.9
	400	133			1.41	1.58	2.39	4.11	6.98	14.4	24.8	49.3
	300	100			1.07	1.18	1.8	3.11	5.29	10.9	18.9	37.3
	200	67			0.712	0.803	1.22	2.1	3.57	7.38	12.9	25.6
	100	33			0.363	0.409	0.618	1.07	1.82	3.82	6.6	13.1
	10	3			0.037	0.042	0.064	0.11	0.188	0.40	0.69	1.4

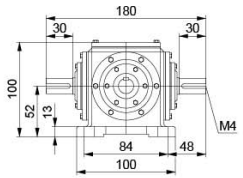
注：1.表中没有转速数值的按插入法.
2.横轴转速超过1450r/min时,向我公司咨询.
3.横轴转速未达到10r/min时,请使用10r/min的数据.
4.本表使用系数一律为1.0.

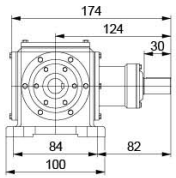
Note：1.Use insert if without speed.
2.Please consult us,when the speed of horizontal shaft is more than 1450r/min.
3.Please refer to the parameter of 10r/min in the table when the speed of horizontal shaft is less than 10r/min.
4.All of the service factor is 1.0 in this table.

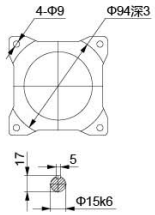
7.7 Z系列安装尺寸图 Installation size figure of Z series

Z2安装尺寸图
Installation dimensions example

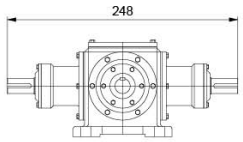
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



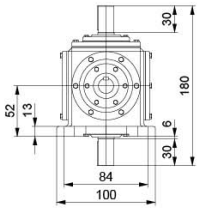


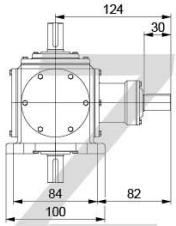


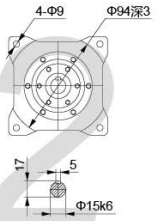
1-1-LR、1-1-R、1-1-L、1-1-LR-O、
1-1-R-O、1-1-L-O



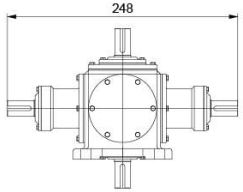
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



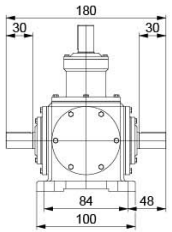


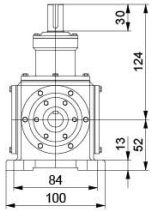


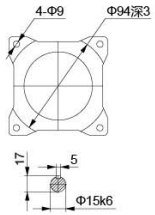
1-1-UD、1-1-U、1-1-D、1-1-UD-O、
1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

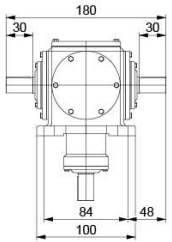


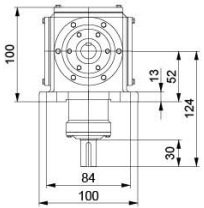


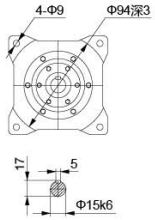


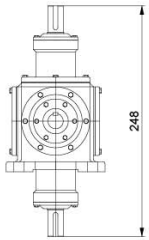
U-D-LR、U-D-R、U-D-L、
U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







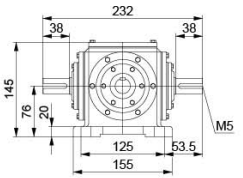


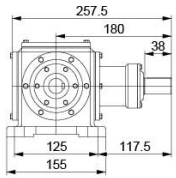
注：1.以上壳体为通用件,安装尺寸均可相互参照.

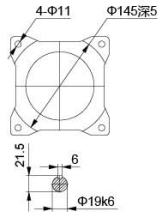
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z4安装尺寸图
Installation dimensions example

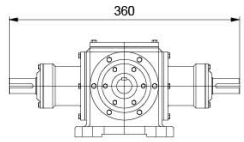
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



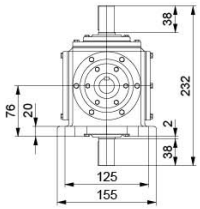


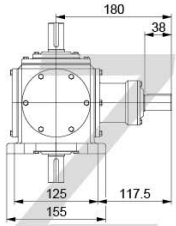


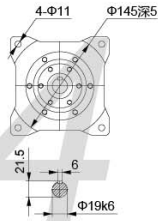
1-1-LR、1-1-R、1-1-L、1-1-LR-O、
1-1-R-O、1-1-L-O



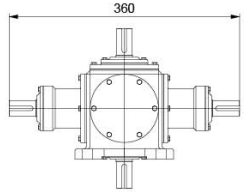
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



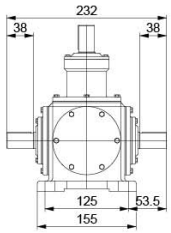


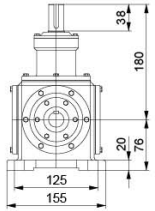


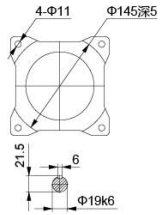
1-1-UD、1-1-U、1-1-D、1-1-UD-O、
1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

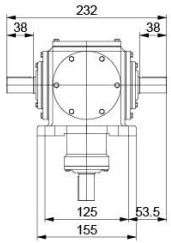


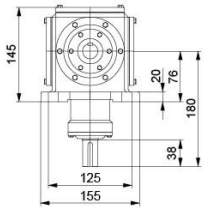


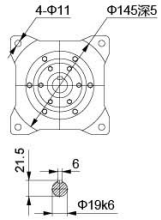


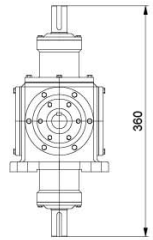
U-D-LR、U-D-R、U-D-L、
U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







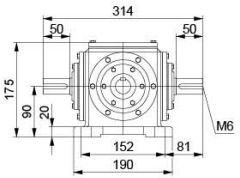


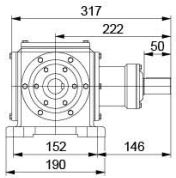
注：1.以上壳体为通用件,安装尺寸均可相互参照.

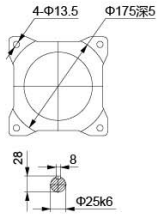
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z6安装尺寸图
Installation dimensions example

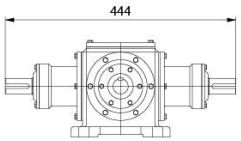
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



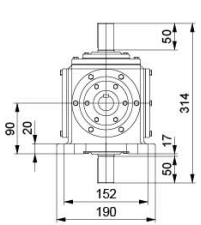


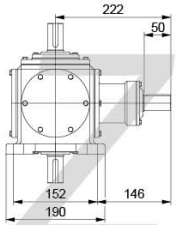


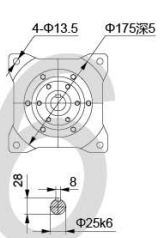
1-1-LR、1-1-R、1-1-L、1-1-LR-O、
1-1-R-O、1-1-L-O



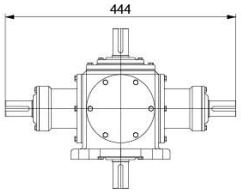
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



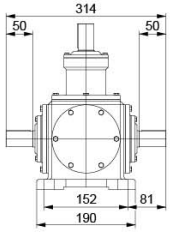


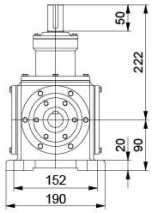


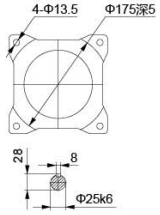
1-1-UD、1-1-U、1-1-D、1-1-UD-O、
1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

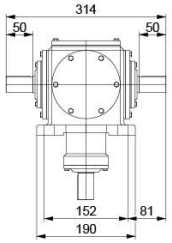


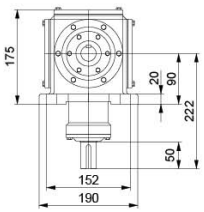


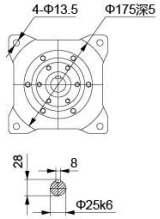


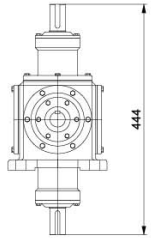
U-D-LR、U-D-R、U-D-L、
U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







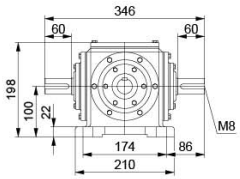


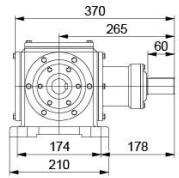
注：1.以上壳体为通用件,安装尺寸均可相互参照.

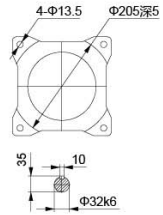
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z7安装尺寸图
Installation dimensions example

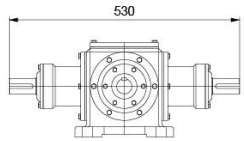
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



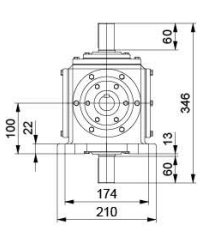


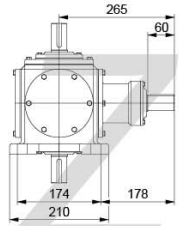


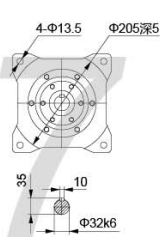
1-1-LR、1-1-R、1-1-L、1-1-LR-O、
1-1-R-O、1-1-L-O



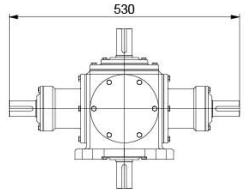
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



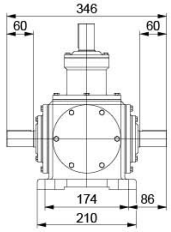


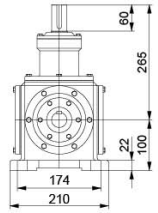


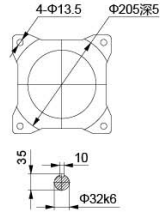
1-1-UD、1-1-U、1-1-D、1-1-UD-O、
1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

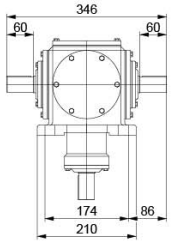


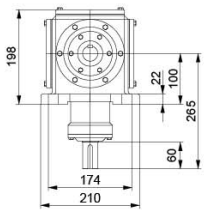


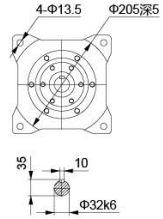


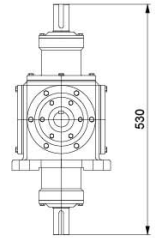
U-D-LR、U-D-R、U-D-L、
U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







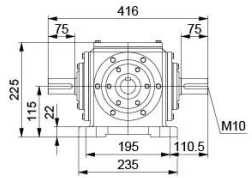


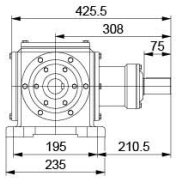
注：1.以上壳体为通用件,安装尺寸均可相互参照.

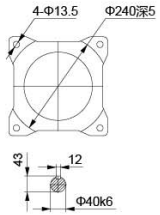
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z8安装尺寸图
Installation dimensions example

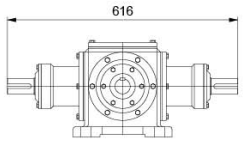
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



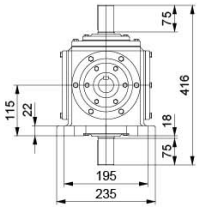


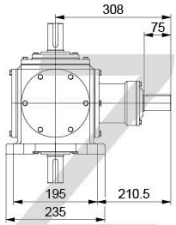


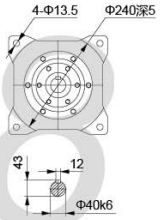
1-1-LR、1-1-R、1-1-L、1-1-LR-O、
1-1-R-O、1-1-L-O



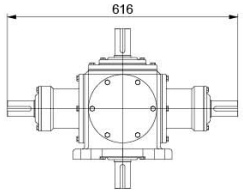
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



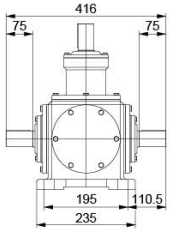


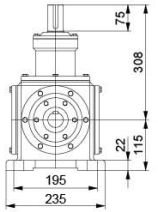


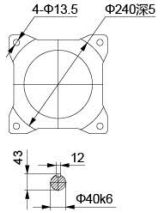
1-1-UD、1-1-U、1-1-D、1-1-UD-O、
1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

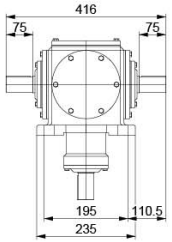


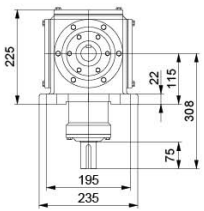


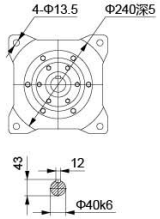


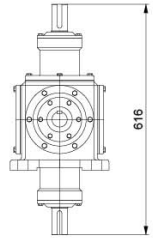
U-D-LR、U-D-R、U-D-L、
U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







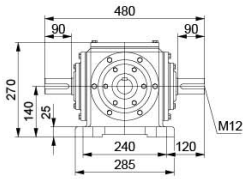


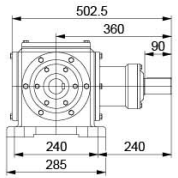
注：1.以上壳体为通用件,安装尺寸均可相互参照.

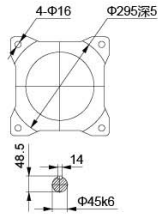
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z10安装尺寸图
Installation dimensions example

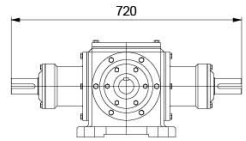
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



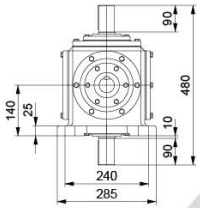


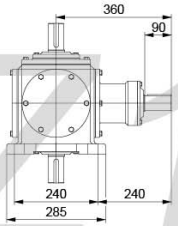


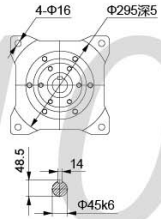
1-1-LR、1-1-R、1-1-L、1-1-LR-O、
1-1-R-O、1-1-L-O



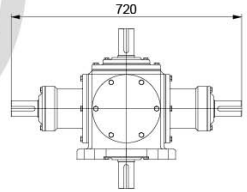
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



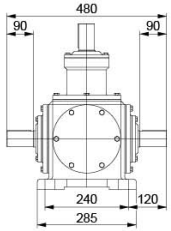


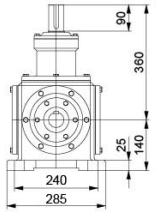


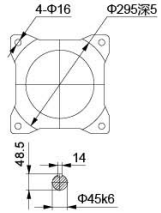
1-1-UD、1-1-U、1-1-D、1-1-UD-O、
1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

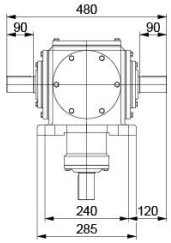


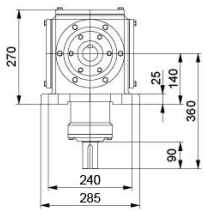


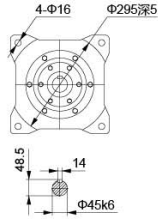


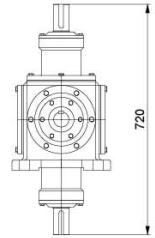
U-D-LR、U-D-R、U-D-L、
U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







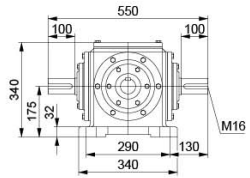


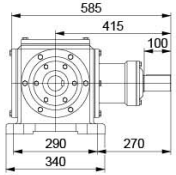
注：1.以上壳体为通用件,安装尺寸均可相互参照.

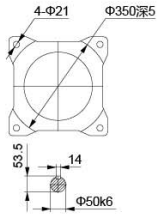
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z12安装尺寸图
Installation dimensions example

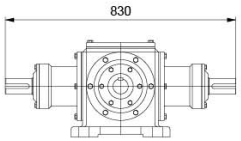
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



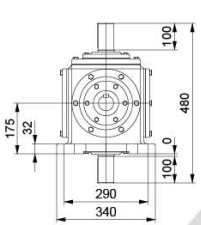


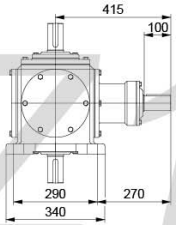


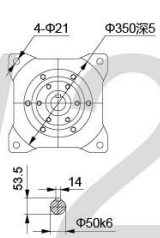
1-1-LR、1-1-R、1-1-L、1-1-LR-O、
1-1-R-O、1-1-L-O



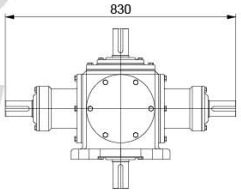
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



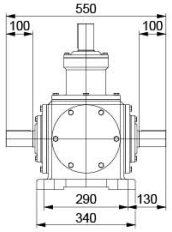


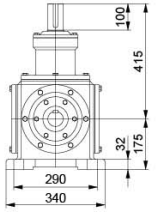


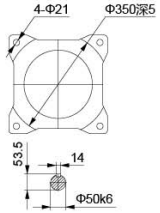
1-1-UD、1-1-U、1-1-D、1-1-UD-O、
1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

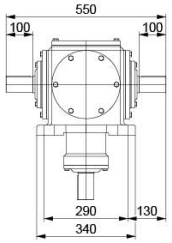


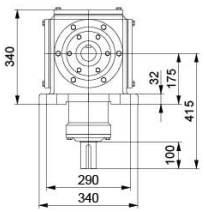


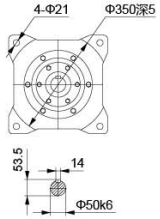


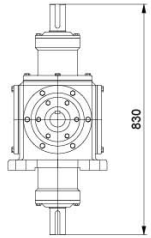
U-D-LR、U-D-R、U-D-L、
U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







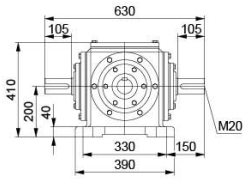


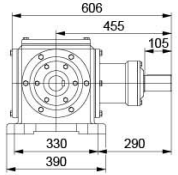
注：1.以上壳体为通用件,安装尺寸均可相互参照.

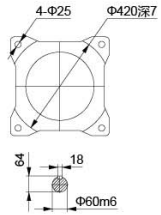
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z16安装尺寸图
Installation dimensions example

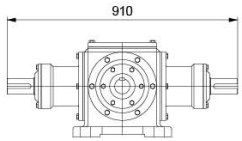
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



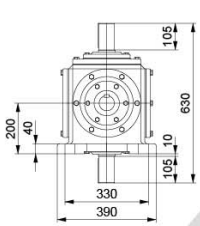


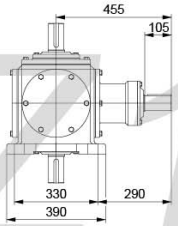


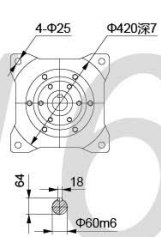
1-1-LR、1-1-R、1-1-L、1-1-LR-O、
1-1-R-O、1-1-L-O



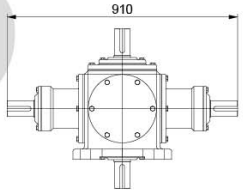
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



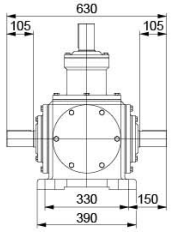


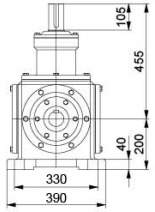


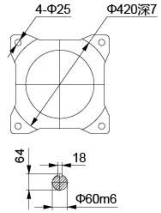
1-1-UD、1-1-U、1-1-D、1-1-UD-O、
1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

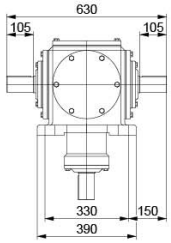


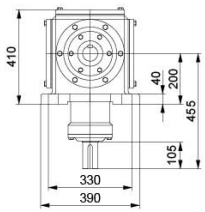


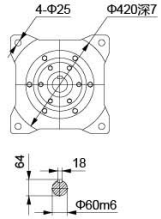


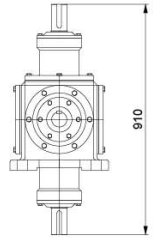
U-D-LR、U-D-R、U-D-L、
U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







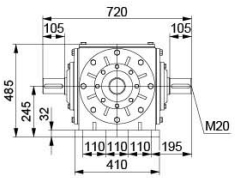


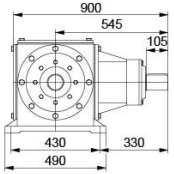
注：1.以上壳体为通用件,安装尺寸均可相互参照.

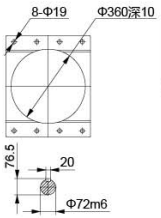
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z20安装尺寸图
Installation dimensions example

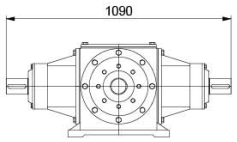
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



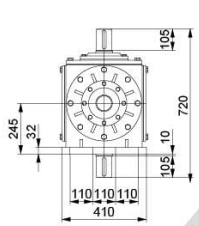


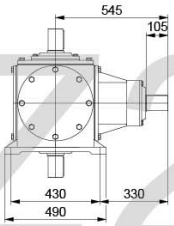


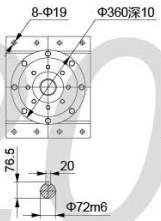
1-1-LR、1-1-R、1-1-L、1-1-LR-O、1-1-R-O、1-1-L-O



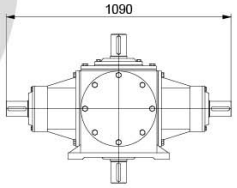
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



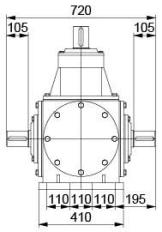


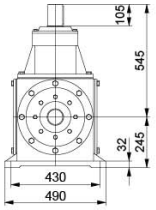


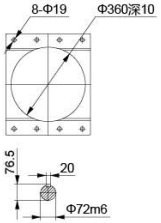
1-1-UD、1-1-U、1-1-D、1-1-UD-O、1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

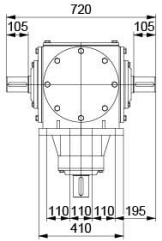


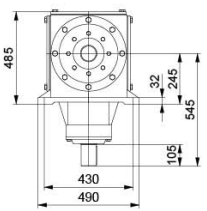


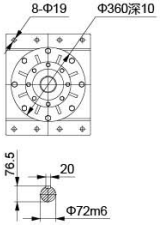


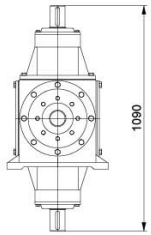
U-D-LR、U-D-R、U-D-L、U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O







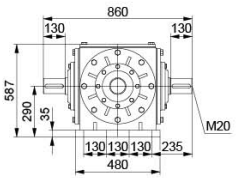


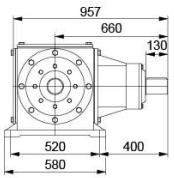
注：1.以上壳体为通用件,安装尺寸均可相互参照.

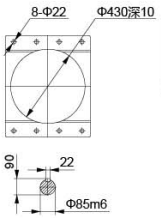
Note：1.The above housings are common parts,the mounting dimensions may consult each other.

Z25安装尺寸图
Installation dimensions example

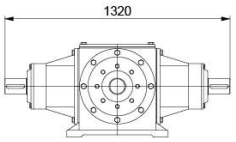
1-LR、1-R、1-L、1-LR-O、1-R-O、1-L-O



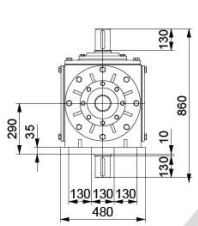


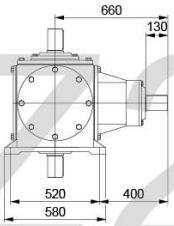


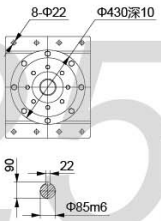
1-1-LR、1-1-R、1-1-L、1-1-LR-O、1-1-R-O、1-1-L-O



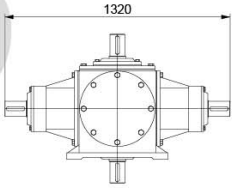
1-UD、1-U、1-D、1-UD-O、1-U-O、1-D-O



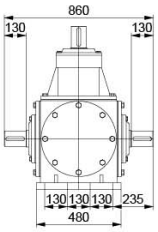


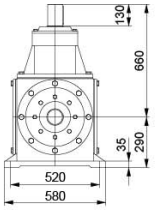


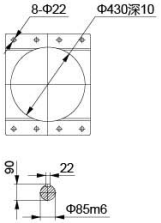
1-1-UD、1-1-U、1-1-D、1-1-UD-O、1-1-U-O、1-1-D-O



U-LR、U-R、U-L、U-LR-O、U-R-O、U-L-O

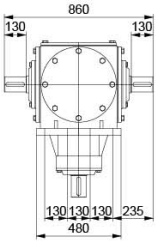


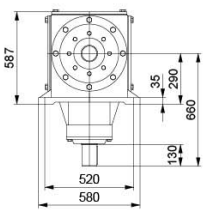


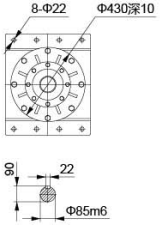


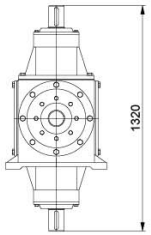
U-D-LR、U-D-R、U-D-L、U-D-LR-O、U-D-R-O、U-D-L-O

D-LR、D-R、D-L、D-LR-O、D-R-O、D-L-O









注：1.以上壳体为通用件,安装尺寸均可相互参照.

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