WANSHSIN®
萬鑫精工

致力于打造世界一流的中国传动品牌

Planetary Gearbox

CONTENTS

行星减速机产品目录

Committed to building a world-class transmission brand

COMPANY **PROFILE**

万鑫精工(湖南)有限公司（简称万鑫精工）是集研发、生产、销售、服务于一体的专业化减速电机企业，主要生产高精密减速电机，产品广泛应用于机器人、机床、立体停车库等轻工自动化设备。作为一家专注于减速电机的制造商及智能自动化全套方案提供商，万鑫精工引入国外先进加工设备，致力于为全球客户提供技术前沿、品质卓越的各类减速电机产品，是国内减速电机行业的优质品牌。

为满足国内外客户的需求，全面开启国际化战略布局，万鑫精工立志走“精鑫”强企强国之路，先后引入国内外多名高新技术人才加盟，更加重视现有产品的质量提升以及新产品的研发。在未来的发展中，万鑫精工将继续秉持着“致力于铸就世界一流的中国传动品牌”的信念与愿景，为助推世界工业智能化发展而奋斗!

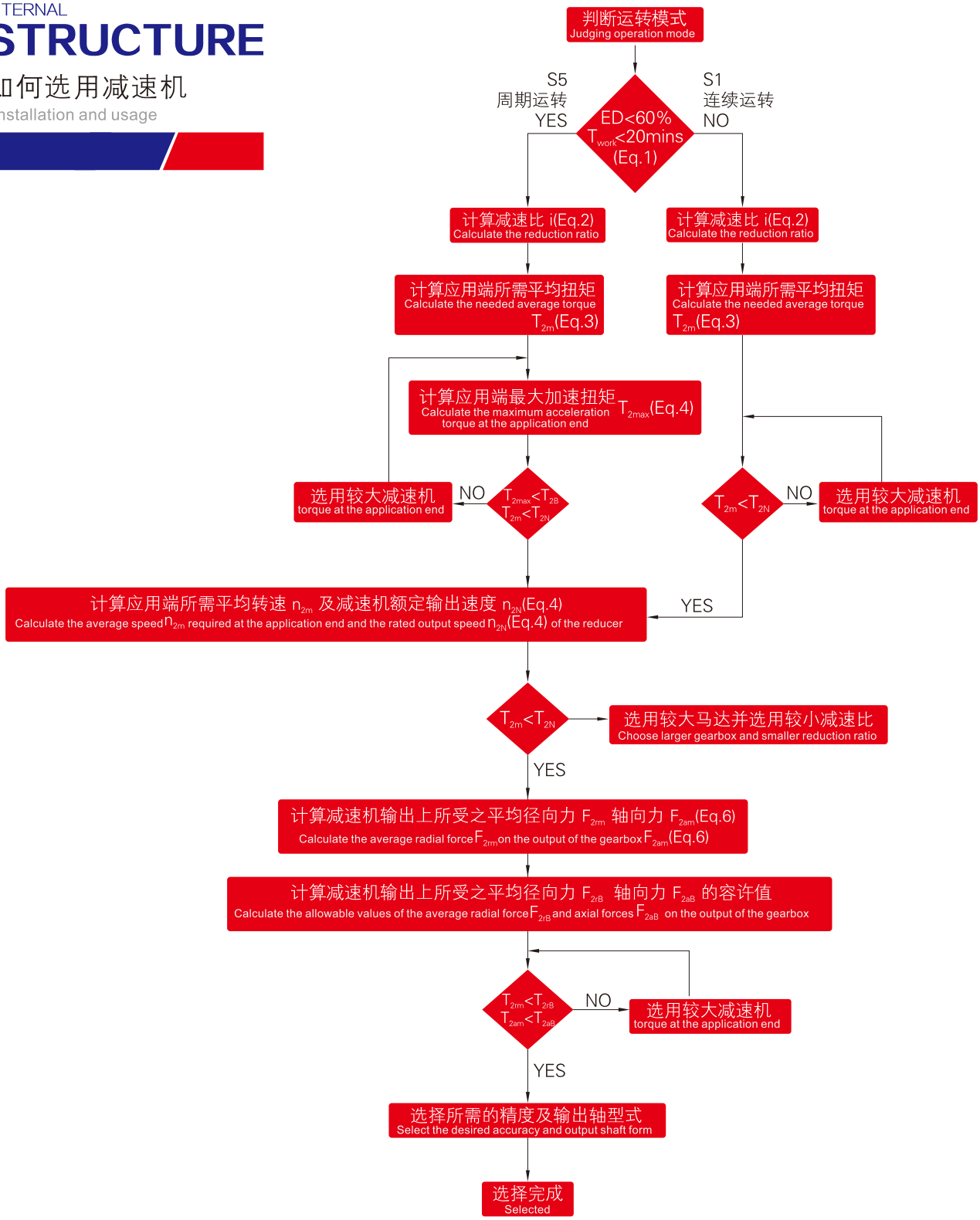
WANSHSIN SEIKOU (HUNAN) CO., LTD. (hereafter referred to as “WANSHSIN”) is professional gear motor manufacturer integrates R&D, production ,sales and service. WANSHSIN mainly manufactures high-precision gear motors which are widely used in robots, machine tools, solid garages and other industrial automation. As a gear motor manufacturer and complete intelligent automation solutions provider, WANSHSIN introduced advanced import processing equipment, adopted advanced technology, to meet the strict high quality requirement for worldwide customers. All efforts made WANSHSIN a reputable and high quality brand in domestic gear motor industry.

To satisfy domestic and foreign customers' requirements, WANSHSIN fully opened the international strategic layout, determined to follow the path of building a strong enterprise for a stronger country, WANSHSIN pays more attention to the quality improvement of current products and development of new products, and successively introduced high-tech talents, both domestic and international. In the future, WANSHSIN will continuously keep the faith that “Committed to building a world-class transmission brand” and strive to the development of the industrial intelligent system of the world.

INTERNAL
STRUCTURE

INTERNAL
STRUCTURE

- 如何选用减速机
  Installation and usage



S5 周期运转之建议事项 一般的应用惯量须符合以下公式：	最适当的应用惯量须符合以下公式：
$\frac{J_L}{i^2} \leqslant 4xJ_m$	$\frac{J_L}{i^2} \cong J_m$

J_L: 负载惯量　　J_m: 马达惯量

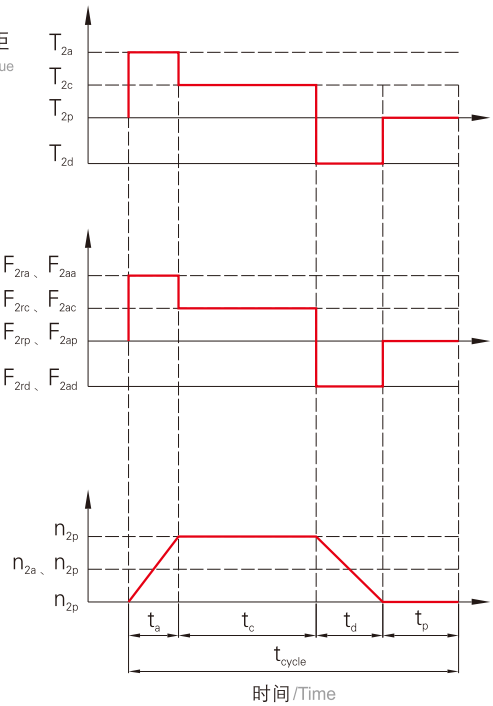
S5 suggestions for cycle operation General application inertia must conform to the following formula	The most appropriate application inertia must conform to the following formula
$\frac{J_L}{i^2} \leqslant 4xJ_m$	$\frac{J_L}{i^2} \cong J_m$

J_L: Load inertia　　J_m: Motor inertia

● 输出轴扭矩
Output shaft torque

● 输出轴承受作用力
Output shaft load

● 输出转速
output speed



1 $ED=\frac{t_a+t_c+t_d}{t_{cycle}} x100\%$ ， $t_{work}=t_a+t_c+t_d$

下标说明 Subscript description:
a. 加速， c. 等速， d. 减速， p. 停止 （Eq.1）
a.accelerate, c.constant, d.decelerate, p.stop

2 $i \cong \frac{n_m}{n_{work}}$

n_m：马达输出速度　n_{work}：实际应用速度 （Eq.2）
n_m： Motor output speed　n_{work}： Actual application speed

3 $T_{2m}=\sqrt[3]{\frac{n_{2a}xt_axT_{2a}^{\ 3}+n_{2c}xt_cxT_{2c}^{\ 3}+n_{2d}xt_dxT_{2d}^{\ 3}}{n_{2a}xt_a+n_{2c}xt_c+n_{2d}xt_d}}$ （Eq.3）

4 $T_{2max}=T_{mB}xixk_sx\ \eta$

Ks 负载系数	Ks	周期次数 / 小时
	1.0	0~1000
	1.1	1000~1500
	1.3	1500~2000
	1.6	2000~3000
	1.8	3000~5000

TmB 马达最大输出扭矩 Motor maxiumum output torque
η 减速机运转效率 Gearbox operating efficiency （Eq.4）

5 $n_{2a}=n_{2d}=\frac{1}{2}xn_{2c}$
$n_{2m}=\frac{n_{2a}xt_a+n_{2c}xt_c+n_{2d}xt_d}{T_a+t_c+t_d}$
$n_{2N}=\frac{n_{1N}}{i}$ （Eq.5）

6 $F_{2rm}=\sqrt[3]{\frac{n_{2a}xt_axF_{2ra}^{\ 3}+n_{2c}xt_cxF_{2rc}^{\ 3}+n_{2d}xt_dxF_{2rd}^{\ 3}}{N_{2a}xt_a+n_{2c}xt_c+n_{2d}xt_d}}$
$F_{2am}=\sqrt[3]{\frac{n_{2a}xt_axF_{2aa}^{\ 3}+n_{2c}xt_cxF_{2rc}^{\ 3}+n_{2d}xt_dxT_{2ad}^{\ 3}}{n_{2a}xt_a+n_{2c}xt_c+n_{2d}xt_d}}$ （Eq.6）

WAB

系列行星减速机/series planetary gearbox

WABR

系列行星减速机 /series planetary gearbox

WAD

系列行星减速机 /series planetary gearbox

WADR

系列行星减速机 /series planetary gearbox

WVRB

系列行星减速机 /series planetary gearbox

WVRBR

系列行星减速机 /series planetary gearbox

WAE

系列行星减速机 /series planetary gearbox

WAER

系列行星减速机/series planetary gearbox

WPF

系列行星减速机/series planetary gearbox

WPFR

系列行星减速机/series planetary gearbox

WPL

系列行星减速机 /series planetary gearbox

WPLR

系列行星减速机/series right-angle gearbox

WR

系列行星减速机/series planetary gearbox

WT

系列中空旋转平台/series hollow rotating platform

WAB Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计，确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W	AB	090	010	K	P2	马达型号 Motor reference
品牌 Brand	系列 Model AB AD AE	规格 Size 042 060 090 115 142 180 220	减速比 Ratio 3 4 5 6 7 8 10 15 20 25 35 40 50 60 70 80 100	K-键 K-Key S-光轴 S-Smooth	精度 Precision P1 精密背隙 Precision backlash P2 标准背隙 Standard backlash P3 经济背隙 Economic backlash	

GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

● 减速机性能资料 /Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WAB042	WAB060	WAB090	WAB115	WAB142	WAB180	WAB220
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	20	55	130	208	342	588	1140
			4	19	50	140	290	542	1050	1700
			5	22	60	160	330	650	1200	2000
			6	20	55	150	310	600	1100	1900
			7	19	50	140	300	550	1100	1800
			8	17	45	120	260	500	1000	1600
			10	14	40	100	230	450	900	1500
		2	15	20	55	130	208	342	588	1140
			20	19	50	140	290	542	1050	1700
			25	22	60	160	330	650	1200	2000
			30	20	55	150	310	600	1100	1900
			35	19	50	140	300	550	1100	1800
			40	17	45	120	260	500	1000	1600
			50	22	60	160	330	650	1200	2000
			60	20	55	150	310	600	1100	1900
			70	19	50	140	300	550	1100	1800
			80	17	45	120	260	500	1000	1600
			100	14	40	100	230	450	900	1500
急停扭矩 /Emergency stop torque T_{2NOT}	Nm	1,2	3 ~ 100	三倍额定输出力矩 /Triple rated output torque						
额定输入转速/Rated input speed n_{1N}	rpm	1,2	3 ~ 100	5000	5000	4000	4000	3000	3000	2000
最大输入转速/Maximum iutput speed n_{1B}		1,2	3 ~ 100	10000	10000	8000	8000	6000	6000	4000
精密背隙 /Precision backlash P1	arcmin	1	3 ~ 10	-	≤3	≤3	≤3	≤3	≤3	≤3
		2	15 ~ 100	-	≤5	≤5	≤5	≤5	≤5	≤5
标准背隙 /Standard backlash P2	arcmin	1	3 ~ 10	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		2	15 ~ 100	≤8	≤8	≤8	≤8	≤8	≤8	≤8
经济背隙/Economic backlash P3	arcmin	1	3 ~ 10	≤8	≤8	≤8	≤8	≤8	≤8	≤8
		2	15 ~ 100	≤12	≤12	≤12	≤12	≤12	≤12	≤12
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	3 ~ 100	3	7	14	25	50	145	225
容许径向力/Allowable radial force F_{2aB}	N	1,2	3 ~ 100	780	1530	3250	6700	9400	14500	50000
容许轴向力/Allowable axial force F_{2aB}	N	1,2	3 ~ 100	390	765	1625	3350	4700	7250	25000
使用寿命 /Lifespan	hr	1,2	3 ~ 100	20000						
效率 /Efficiency	%	1	3 ~ 10	≥97%						
		2	15 ~ 100	≥94%						
重量 /Weight	kg	1	3 ~ 10	0.6	1.3	3.7	7.8	14.5	29	48
		2	15 ~ 100	0.8	1.5	4.1	9	17.5	33	60
使用温度 /Working temperature	℃	1,2	3 ~ 100	-10℃ ~ 90℃						
润滑 /Lubricating		1,2		合成润滑油脂 /Synthetic lubricating grease						
防护等级 /IP Grade		1,2	3 ~ 100	IP65						
安装方向 /Installation direction		1,2	3 ~ 100	任意方向 /In any direction						
噪音值(n1=3000rpm,无负载) Noise level (n1=3000rpm,off load)	dB(A)	1,2	3 ~ 100	≤56	≤58	≤60	≤63	≤65	≤67	≤70

ROTATIONAL INERTIA OF REDUCER

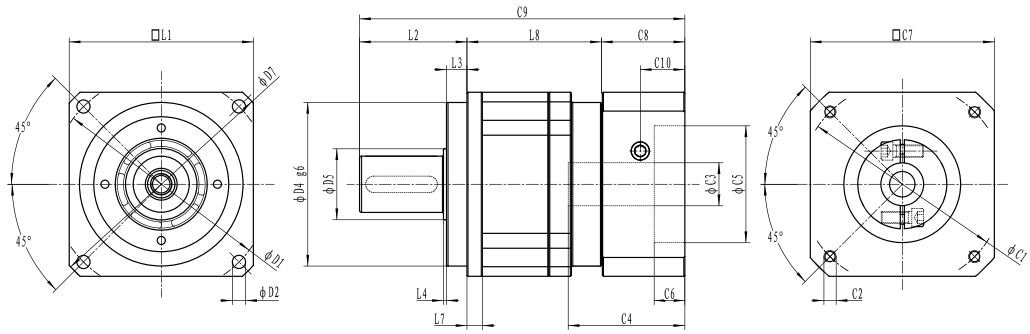
- 减速机转动惯量

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WAB042	WAB060	WAB090	WAB115	WAB142	WAB180	WAB220
转动惯量J1 Rotational inertia J1	kg·cm²	1	3	0.03	0.16	0.61	3.25	9.21	28.98	69.61
			4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
			5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
			6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
			7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
			8	0.03	0.13	0.44	2.58	7.07	22.59	50.84
			10	0.03	0.13	0.44	2.57	7.03	22.51	50.56
		2	15	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			20	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			25	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			30	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			35	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			40	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			50	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			60	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			70	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			80	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			100	0.03	0.03	0.13	0.44	2.57	7.03	22.51

1.减速比（$i=N_{in}/N_{out}$）
1. Ratio（$i=N_{in}/N_{out}$）

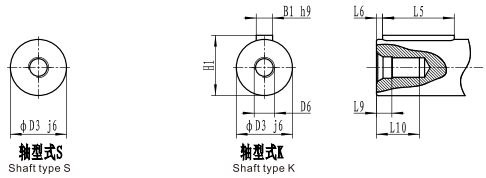
2.最大加速力矩 T_{2B} =60% of T_{2NOT}
2. Maximum acceleration torque T_{2B} =60% of T_{2NOT}

3. 输出转数 100rpm ,作用于输出轴中心位置
3. Output speed100rpm,acting on the center of the output shaft



DIMENSION

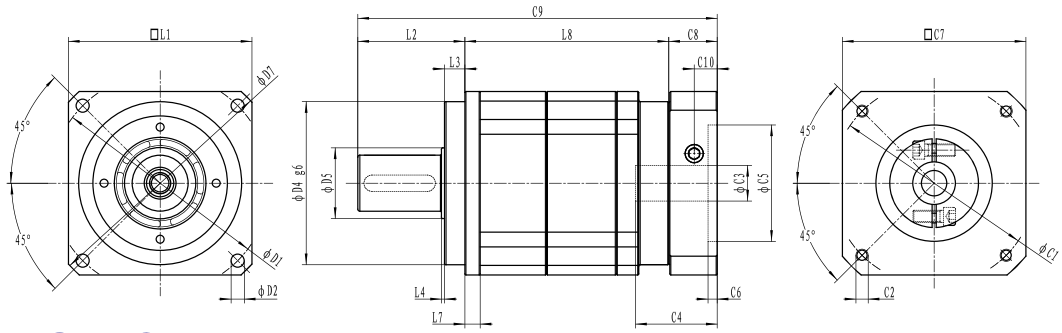
SINGLE SECTION



- 尺寸（单节，减速比 i=3～10）

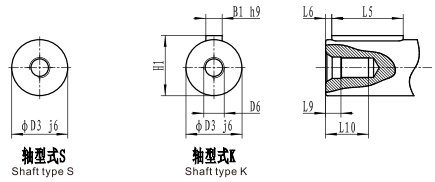
  Dimension(single stage,Ratio i=3~10)

尺寸/Dimension	WAB042	WAB060	WAB090	WAB115	WAB142	WAB180	WAB220
D1	50	70	100	130	165	215	250
D2	3.5	5.5	6.6	9	11	13	17
D3 j6	13	16	22	32	40	55	75
D4 g6	35	50	80	110	130	160	180
D5	15	18	30	40	50	70	85
D6	M4*0.7P	M5*0.8P	M8*1.25P	M12*1.75P	M16*2.0P	M20*2.5P	M20*2.5P
D7	56	80	116	152	185	240	292
L1	42	60	90	115	142	180	220
L2	26	37	48	65	97	105	138
L3	5.5	7	10	12	15	20	30
L4	1	1.5	1.5	2	3	3	3
L5	16	25	32	40	63	70	90
L6	2	2	3	5	5	6	7
L7	4	6	8	10	12	15	20
L8	39.5	39.5	78.5	102	124.5	131.5	151.5
L9	4.5	4.8	7.2	10	12	15	15
L10	10	12.5	19	28	36	42	42
C1	46	70	90	145	200	200	235
C2	M4*0.7P	M4*0.7P	M5*0.8P	M8*1.25P	M12*1.75P	M12*1.75P	M12*1.75P
C3	8	≤14/≤16	≤19/≤24	≤28	≤35/≤42	≤42	≤42/≤55
C4	26	35	46.5	67	81	114	117
C5	30	50	70	110	114.3	114.3	200
C6	3.5	3.5	6	14	19	24	20
C7	42	60	80	130	180	180	220
C8	19.5	46	30	45.5	57.5	81.5	87.5
C9	86	122.5	156.5	212.5	279	318	377
C10	10.5	10.5	14.5	27	32	43.5	49.5
B1 h9	5	5	6	10	12	16	20
H1	15	18	24.5	35	43	59	79.5



DIMENSION

DOUBLE SECTION



- 尺寸（双节，减速比 i=15～100）
  Dimension(double stage,Ratio i=15~100)

尺寸/Dimension	WAB042	WAB060	WAB090	WAB115	WAB142	WAB180	WAB220
D1	-	70	100	130	165	215	250
D2	-	5.5	6.6	9	11	13	17
D3 j6	-	16	22	32	40	55	75
D4 g6	-	50	80	110	130	160	180
D5	-	18	30	40	50	70	85
D6	-	M5*0.8P	M8*1.25P	M12*1.75P	M16*2.0P	M20*2.5P	M20*2.5P
D7	-	80	116	152	185	240	292
L1	-	60	90	115	142	180	220
L2	-	37	48	65	97	105	138
L3	-	6	10	12	15	20	30
L4	-	1.5	1.5	2	3	3	3
L5	-	25	32	40	63	70	90
L6	-	2	3	5	5	6	7
L7	-	7	8	10	12	15	20
L8	-	71.5	116	147	185.5	200	220
L9	-	4.8	7.2	10	12	15	15
L10	-	12.5	19	28	36	42	42
C1	-	70	90	145	145	200	200
C2	-	M4*0.7P	M5*0.8P	M8*1.25P	M8*1.25P	M12*1.75P	M12*1.75P
C3	-	≤14/≤16	≤16/≤19	≤19/≤24	≤24/≤28	≤35	≤42
C4	-	35	46.5	67	66	80	114
C5	-	50	70	110	110	114.3	114.3
C6	-	3.5	6	14	10	9	24
C7	-	60	80	130	130	180	180
C8	-	48	30	45.5	42.5	47.5	81.5
C9	-	154.5	194	257.5	340	352.5	441.5
C10	-	10.5	14.5	27	27	22.5	43.5
B1 h9	-	5	6	10	12	16	20
H1	-	18	24.5	35	43	59	79.5

WAD Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计，
  确保最大的扭转刚性。
- 行星轮采用满滚针设计，
  增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，
  以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，
  以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，
  以获取最大的夹紧力和零背隙的动力传递。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W – AD – 010 – 010 – P1 – 马达型号 Motor reference

品牌 Brand	系列 Model	规格 Size	减速比 Ratio	精度 Precision
			4	
			5	
			6	
			7	
			8	
			10	
			15	
			20	
			25	
			35	
			40	
			50	PO 超精密背隙 Super precision backlash
			60	
			70	P1 精密背隙 Precision backlash
			80	
			100	P2 标准背隙 Standard backlash
Brand	AB	047		
	AD	064		
	AE	090		
		110		
		140		
		200		
		255		

GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

减速机性能资料 /Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WAD047	WAD064	WAD090	WAD110	WAD140	WAD200	WAD255
额定输出力矩 Rated output torque T_{2N}	Nm	1	4	19	48	130	270	560	1100	1700
			5	22	60	160	330	650	1200	2000
			6	19	50	140	300	550	1100	1800
			7	19	50	140	300	550	1100	1800
			8	14	40	100	230	450	900	1500
			10	14	40	100	230	450	900	1500
		2	20	19	48	130	270	560	1100	1700
			25	22	60	160	330	650	1200	2000
			35	19	50	140	300	550	1100	1800
			40	19	48	130	270	560	1000	1700
			50	22	60	160	330	650	1200	2000
			60	19	50	140	300	550	1100	1800
			70	19	50	140	300	550	1100	1800
			80	14	40	100	230	450	900	1500
			100	14	40	100	230	450	900	1500
急停扭矩 /Emergency stop torque T_{2NOT}	Nm	1,2	4～100	三倍额定输出力矩 /Triple rated output torque						
额定输入转速/Rated input speed n_{1N}	rpm	1,2	4～100	5000	5000	4000	4000	3000	3000	2000
最大输入转速/Maximum iutput speed n_{1B}		1,2	4～100	10000	10000	8000	8000	6000	6000	4000
超精密背隙/Super precision backlash P0	arcmin	1	4～10	-	-	≤1	≤1	≤1	≤1	≤1
		2	20～100	-	-	≤3	≤3	≤3	≤3	≤3
精密背隙/Precision backlash P1	arcmin	1	4～10	-	≤3	≤3	≤3	≤3	≤3	≤3
		2	20～100	-	≤5	≤5	≤5	≤5	≤5	≤5
标准背隙/Standard backlash P2	arcmin	1	4～10	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		2	20～100	≤8	≤8	≤8	≤8	≤8	≤8	≤8
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	4～100	7	13	31	82	151	440	1006
最大弯曲力矩 Maximum bending torque M_{2KB}	Nm	1,2	4～100	42.5	125	235	430	1300	3064	5900
容许轴向力/Allowable axial force F_{2aB}	N	1,2	4～100	990	1050	2850	2990	10590	16660	29430
使用寿命 /Lifespan	hr	1,2	4～100	20000						
效率 /Efficiency	%	1	4～10	≥97%						
		2	20～100	≥94%						
重量 /Weight	kg	1	4～10	0.7	1.2	3	5.6	11.9	31.6	56.1
		2	20～100	1	1.6	3.7	7.3	15.9	36.9	70.4
使用温度 /Working temperature	℃	1,2	4～100	-10℃～90℃						
润滑 /Lubricating		1,2		合成润滑油脂 /Synthetic lubricating grease						
防护等级 /IP Grade		1,2	4～100	IP65						
安装方向 /Installation direction		1,2	4～100	任意方向 /In any direction						
噪音值(n1=3000rpm,无负载) Noise level (n1=3000rpm,off load)	dB(A)	1,2	4～100	≤56	≤58	≤60	≤63	≤65	≤67	≤70

ROTATIONAL INERTIA OF REDUCER

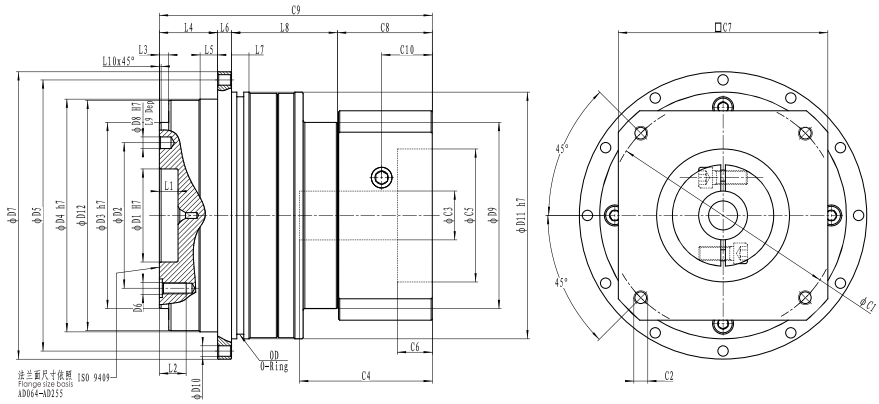
- 减速机转动惯量

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WAD047	WAD064	WAD090	WAD110	WAD140	WAD200	WAD255
转动惯量J1 Rotational inertia J1	kg·cm²	1	4	0.03	0.14	0.51	2.87	7.54	25.03	58.31
			5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
			6	0.03	0.13	0.45	2.61	7.14	22.48	50.97
			7	0.03	0.13	0.45	2.67	7.14	22.48	50.97
			8	0.03	0.13	0.44	2.57	7.03	22.51	50.56
			10	0.03	0.13	0.44	2.57	7.03	22.51	50.56
		2	20	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			25	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			35	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			40	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			50	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			60	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			70	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			80	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			100	0.03	0.03	0.13	0.44	2.57	7.03	22.51

1.减速比（$i=N_{in}/N_{out}$）
1. Ratio（$i=N_{in}/N_{out}$）

2.最大加速力矩 T_{2B} =60% of T_{2NOT}
2. Maximum acceleration torque T_{2B} =60% of T_{2NOT}

3. 输出转数 100rpm ,作用于输出轴中心位置
3. Output speed100rpm,acting on the center of the output shaft



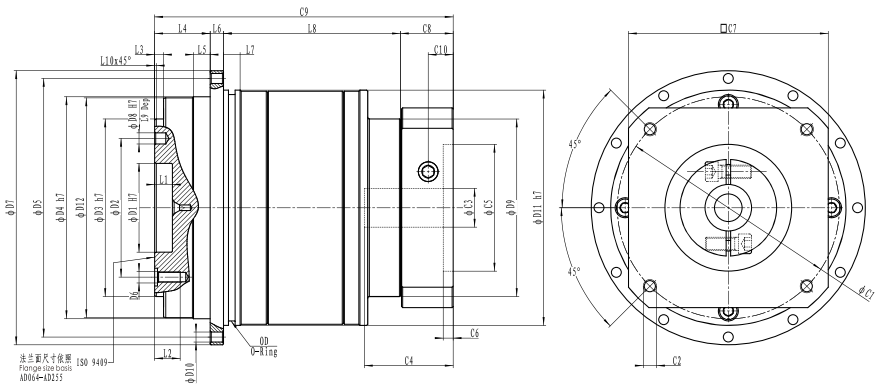
DIMENSION
SINGLE SECTION

- 尺寸（单节，减速比 i=4～10）
  Dimension(single stage,Ratio i=4~10)

尺寸/Dimension	WAD047	WAD064	WAD090	WAD110	WAD140	WAD200	WAD255
D1 H7	-	20	31.5	40	50	80	100
D2	-	31.5	50	63	80	125	140
D3 h7	-	40	63	80	100	160	180
D4 h7	-	64	90	110	140	200	255
D5	-	79	109	135	168	233	280
D6	-	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P	12×M16×2.0P
D7	-	86	118	145	179	247	300
D8 H7	-	5	6	6	8	10	12
D9	-	51	77	98	125	160	190
D10	-	8×4.5	8×5.5	8×5.5	12×6.6	12×9	16×13.5
D11 h7	-	70	95	120	152	212	255
D12	-	63.2	89.2	109.2	139.2	199.2	254.2
L1	-	8	12	12	12	16	20
L2	-	8	13.5	13.5	17	22.5	30.5
L3	-	3	6	6	6	8	12
L4	-	19.5	30	29	38	50	66
L5	-	7	10	10	14.6	15	20
L6	-	4	7	8	10	12	18
L7	-	7.7	7.5	10	12	15	20
L8	-	41	44.5	59	68	82	98
L9	-	6	7	7	7	10	10
L10	-	0.5	1	1	1	1.5	1
C1	-	70	90	145	200	200	235
C2	-	M4*0.7P	M5*0.8P	M8*1.25P	M12*1.75P	M12*1.75P	M12*1.75P
C3	-	≤14/≤16	≤19/≤24	≤28	≤35/≤42	≤42	≤42/≤55
C4	-	35	46.5	67	81	114	117
C5	-	50	70	110	114.3	114.3	200
C6	-	3.5	6	14	19	24	20
C7	-	60	80	130	180	180	220
C8	-	23	30	45.5	57.5	81.5	87.5
C9	-	88	111.5	141.5	173.5	225.5	268.5
C10	-	11.5	14.5	27	32	43.5	49.5
OD	-	67×2.0	90×2.5	115×2.5	146×3	204×4	245×5

DIMENSION

DOUBLE SECTION



- 尺寸（双节，减速比 i=20～100））

Dimension(double stage,Ratio i=20~100)

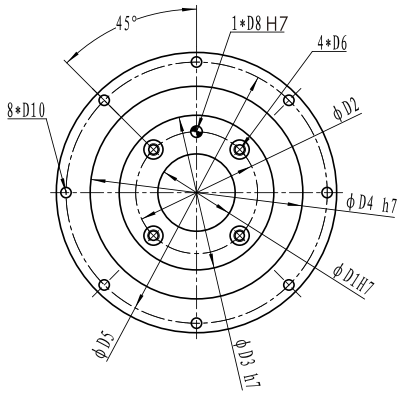
尺寸/Dimension	WAD047	WAD064	WAD090	WAD110	WAD140	WAD200	WAD255
D1 H7	-	20	31.5	40	50	80	100
D2	-	31.5	50	63	80	125	140
D3 h7	-	40	63	80	100	160	180
D4 h7	-	64	90	110	140	200	255
D5	-	79	109	135	168	233	280
D6	-	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P	12×M16×2.0P
D7	-	86	118	145	179	247	300
D8 H7	-	5	6	6	8	10	12
D9	-	51	77	98	125	160	190
D10	-	8×4.5	8×5.5	8×5.5	12×6.6	12×9	16×13.5
D11 h7	-	70	95	120	152	212	255
D12	-	63.2	89.2	109.2	139.2	199.2	254.5
L1	-	8	12	12	12	16	20
L2	-	8	13.5	13.5	17	22.5	20
L3	-	3	6	6	6	8	12
L4	-	19.5	30	29	38	50	66
L5	-	7	10	10	14.6	15	20
L6	-	4	7	8	10	12	18
L7	-	7.7	7.5	10	12	15	20
L8	-	73	82	105	129	150.5	167
L9	-	6	7	7	7	10	10
L10	-	0.5	1	1	1	1.5	1
C1	-	70	90	145	145	200	200
C2	-	M4*0.7P	M5*0.8P	M8*1.25P	M8*1.25P	M12*1.75P	M12*1.75P
C3	-	≤14/≤16	≤16/≤19	≤19/≤24	≤24/≤28	≤35	≤42
C4	-	35	46.5	67	66	80	114
C5	-	50	70	110	110	114.3	114.3
C6	-	3.5	6	14	19	9	30
C7	-	60	80	130	180	180	180
C8	-	23	30	45.5	57.5	47.5	84.5
C9	-	120	149	187.5	234.5	260	332.5
C10	-	11.5	14.5	27	32	22.5	43.5
OD	-	67×2.0	90×2.5	115×2.5	146×3	204×4	245×5

DIMENSION

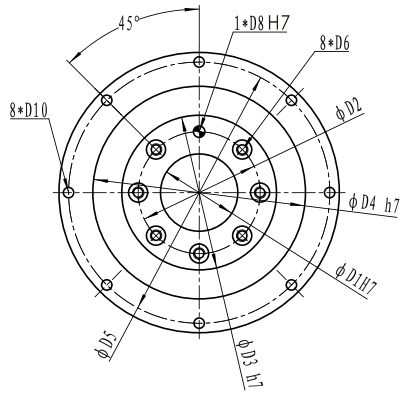
OUTPUT SHAFT DISK SURFACE

- 出力軸盘面尺寸 /Output Shaft Disk Dimension

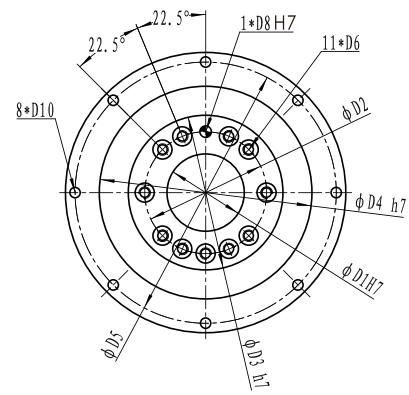
WAD047



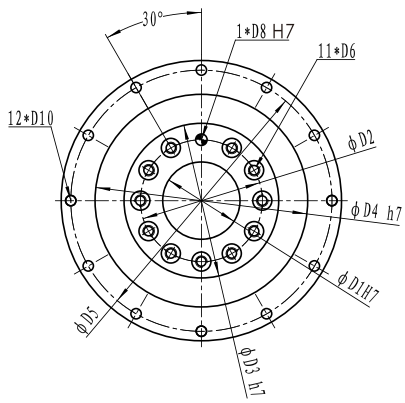
WAD064/090



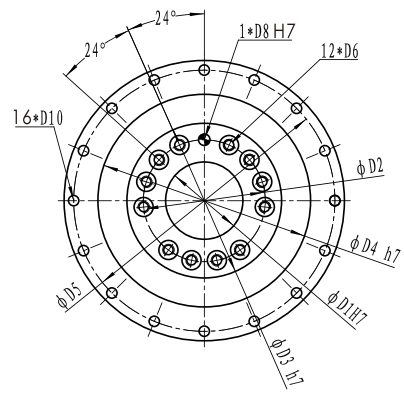
WAD110



WAD140/200



WAD255



尺寸/Dimension	WAD047	WAD064	WAD090	WAD110	WAD140	WAD200	WAD255
D1 H7	12	20	31.5	40	50	80	100
D2	20	31.5	50	63	80	125	140
D3 h7	28	40	63	80	100	160	180
D4 h7	47	64	90	110	140	200	255
D5	67	79	109	135	168	233	280
D6	M3*0.5P	M5*0.8P	M6*1.0P	M6*1.0P	M8*1.25P	M10*1.5P	M16*2.0P
D8 H7	3	5	6	6	8	10	12
D10	3.4	4.5	5.5	5.5	6.8	9	13.5

WVRB Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计，确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W — VRB — 010 — 010 — K — P2 — 马达型号 Motor reference

品牌 Brand

系列 Model VRB

规格 Size
042
060
090
115
140
180
220

减速比 Ratio
3
4
5
6
7
8
10
15
20
25
35
40
50
60
70
80
100

K-键
S-光轴

精度 Precision
P1 精密背隙 Precision backlash
P2 标准背隙 Standard backlash
P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

● 减速机性能资料 /Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WVRB042	WVRB060	WVRB090	WVRB115	WVRB140	WVRB180	WVRB220
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	20	55	130	208	342	588	1140
			4	19	50	140	290	542	1050	1700
			5	22	60	160	330	650	1200	2000
			6	20	55	150	310	600	1100	1900
			7	19	50	140	300	550	1100	1800
			8	17	45	120	260	500	1000	1600
			10	14	40	100	230	450	900	1500
		2	15	20	55	130	208	342	588	1140
			20	19	50	140	290	542	1050	1700
			25	22	60	160	330	650	1200	2000
			30	20	55	150	310	600	1100	1900
			35	19	50	140	300	550	1100	1800
			40	17	45	120	260	500	1000	1600
			50	22	60	160	330	650	1200	2000
			60	20	55	150	310	600	1100	1900
			70	19	50	140	300	550	1100	1800
			80	17	45	120	260	500	1000	1600
			100	14	40	100	230	450	900	1500
急停扭矩 /Emergency stop torque T_{2NOT}	Nm	1,2	3～100	三倍额定输出力矩 /Triple rated output torque						
额定输入转速 /Rated input speed n_{1N}	rpm	1,2	3～100	5000	5000	4000	4000	3000	3000	2000
最大输入转速 /Maximum iutput speed n_{1B}		1,2	3～100	10000	10000	8000	8000	6000	6000	4000
精密背隙 /Precision backlash P1	arcmin	1	3～10	–	≤3	≤3	≤3	≤3	≤3	≤3
		2	15～100	–	≤5	≤5	≤5	≤5	≤5	≤5
标准背隙 /Standard backlash P2	arcmin	1	3～10	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		2	15～100	≤8	≤8	≤8	≤8	≤8	≤8	≤8
经济背隙 /Economic backlash P3	arcmin	1	3～10	≤8	≤8	≤8	≤8	≤8	≤8	≤8
		2	15～100	≤12	≤12	≤12	≤12	≤12	≤12	≤12
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	3～100	3	7	14	25	50	145	225
容许径向力 /Allowable radial force F_{2aB}	N	1,2	3～100	780	1530	3250	6700	9400	14500	50000
容许轴向力 /Allowable axial force F_{2aB}	N	1,2	3～100	390	765	1625	3350	4700	7250	25000
使用寿命 /Lifespan	hr	1,2	3～100	20000						
效率 /Efficiency	%	1	3～10	≥97%						
		2	15～100	≥94%						
重量 /Weight	kg	1	3～10	0.6	1.4	3.7	8	16	36	53
		2	15～100	0.7	1.6	4.2	8.9	17	37	54
使用温度 /Working temperature	℃	1,2	3～100	–10℃～90℃						
润滑 /Lubricating		1,2		合成润滑油脂 /Synthetic lubricating grease						
防护等级 /IP Grade		1,2	3～100	IP65						
安装方向 /Installation direction		1,2	3～100	任意方向 /In any direction						
噪音值(n1=3000rpm,无负载) Noise level (n1=3000rpm,off load)	dB(A)	1,2	3～100	≤56	≤58	≤60	≤63	≤65	≤67	≤70

ROTATIONAL INERTIA OF REDUCER

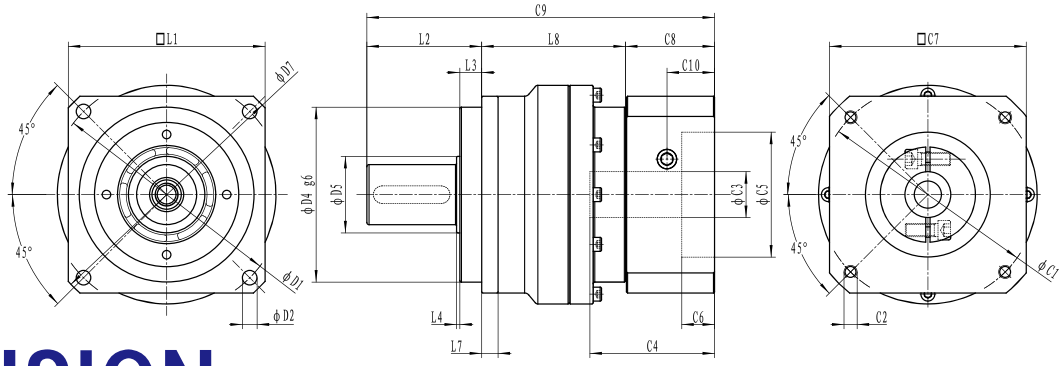
- 减速机转动惯量

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WVRB042	WVRB060	WVRB090	WVRB115	WVRB140	WVRB180	WVRB220
转动惯量J1 Rotational inertia J1	kg·cm²	1	3	0.053	0.22	1.2	5.3	20	44	90
			4	0.041	0.17	0.95	4.1	15	28	62
			5	0.036	0.16	0.86	3.6	14	22	52
			6	0.034	0.15	0.82	3.3	13	18	47
			7	0.032	0.14	0.79	3.2	12	16	42
			8	0.031	0.14	0.77	3.1	12	15	40
			10	0.03	0.14	0.75	3	11	14	38
		2	15	0.035	0.14	0.72	2.8	11	12	36
			20	0.034	0.13	0.72	2.8	11	12	35
			25	0.034	0.13	0.71	2.8	11	12	35
			30	0.03	0.13	0.7	2.7	10	11	34
			35	0.034	0.13	0.71	2.7	11	12	35
			40	0.03	0.13	0.7	2.7	10	11	33
			50	0.03	0.13	0.69	2.7	10	11	33
			60	0.03	0.13	0.69	2.7	10	11	33
			70	0.03	0.13	0.69	2.7	10	11	33
			80	0.03	0.13	0.69	2.7	10	11	33
			100	0.03	0.13	0.69	2.7	10	11	33

1. 减速比（$i=N_{in}/N_{out}$）
1. Ratio（$i=N_{in}/N_{out}$）

2. 最大加速力矩 T_{2B} =60% of T_{2NOT}
2. Maximum acceleration torque T_{2B} =60% of T_{2NOT}

3. 输出转数 100rpm，作用于输出轴中心位置
3. Output speed100rpm,acting on the center of the output shaft

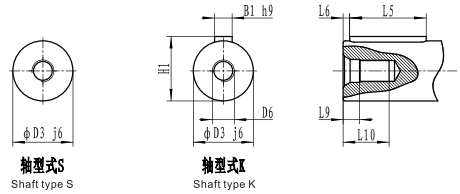


DIMENSION

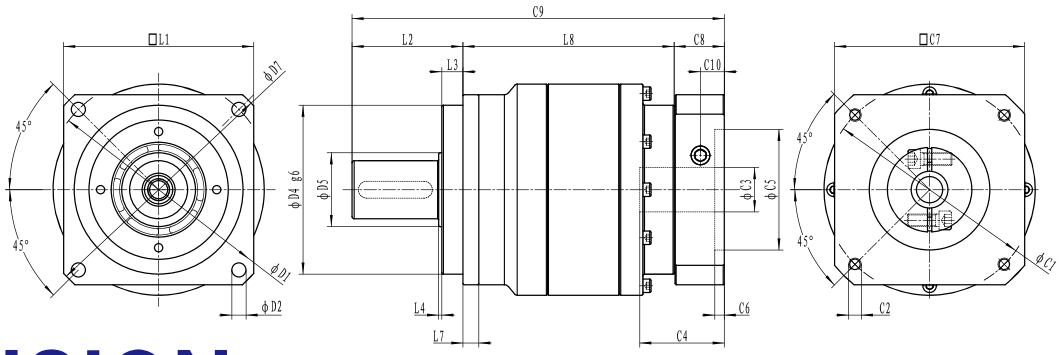
SINGLE SECTION

- 尺寸（单节，减速比 i=3～10）

Dimension(single stage,Ratio i=3~10)



尺寸/Dimension	WVRB042	WVRB060	WVRB090	WVRB115	WVRB140	WVRB180	WVRB220
D1	-	70	100	130	165	215	250
D2	-	5.5	6.6	9	11	13.5	17
D3 j6	-	16	22	32	40	55	75
D4 g6	-	50	80	110	130	160	180
D5	-	18	30	40	50	70	85
D6	-	M5*0.8P	M8*1.25P	M12*1.75P	M16*2.0P	M20*2.5P	M20*2.5P
D7	-	80	116	152	185	240	290
L1	-	60	90	115	140	180	220
L2	-	37	48	60	95	105	138
L3	-	7	10	7	13	20	30
L4	-	1.5	1.5	2	3	3	3
L5	-	25	32	40	63	70	90
L6	-	2	3	5	5	6	7
L7	-	6	8	10	12	15	20
L8	-	39.5	78.5	102	124.5	131.5	151.5
L9	-	4.8	7.2	10	12	15	15
L10	-	12.5	19	28	36	42	42
C1	-	70	90	145	200	200	235
C2	-	M4*0.7P	M5*0.8P	M8*1.25P	M12*1.75P	M12*1.75P	M12*1.75P
C3	-	≤14/≤16	≤19/≤24	≤28	≤35/≤42	≤42	≤42/≤55
C4	-	35	46.5	67	81	114	117
C5	-	50	70	110	114.3	114.3	200
C6	-	3.5	6	14	19	24	20
C7	-	60	80	130	180	180	220
C8	-	46	30	45.5	57.5	81.5	87.5
C9	-	122.5	156.5	212.5	279	318	378
C10	-	10.5	14.5	25.5	32	43.5	49.5
B1 h9	-	5	6	10	12	16	20
H1	-	18	24.5	35	43	59	79.5

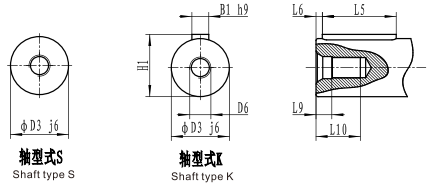


DIMENSION

DOUBLE SECTION

- 尺寸（双节，减速比 i=15～100）

Dimension(double stage,Ratio i=15~100)



尺寸/Dimension	WVRB042	WVRB060	WVRB090	WVRB115	WVRB140	WVRB180	WVRB220
D1	-	70	100	130	165	215	250
D2	-	5.5	6.6	9	11	13.5	17
D3 j6	-	16	22	32	40	55	75
D4 g6	-	50	80	110	130	160	180
D5	-	18	30	40	50	70	85
D6	-	M5*0.8P	M8*1.25P	M12*1.75P	M16*2.0P	M20*2.5P	M20*2.5P
D7	-	80	116	152	185	240	290
L1	-	60	90	115	140	180	220
L2	-	37	48	60	95	105	138
L3	-	6	10	7	13	20	30
L4	-	1.5	1.5	2	3	3	3
L5	-	25	32	40	63	70	90
L6	-	2	3	5	5	6	7
L7	-	7	8	10	12	15	20
L8	-	71.5	116	147	185.5	200	220
L9	-	4.8	7.2	10	12	15	15
L10	-	12.5	19	28	36	42	42
C1	-	70	90	145	145	200	200
C2	-	M4*0.7P	M5*0.8P	M8*1.25P	M8*1.25P	M12*1.75P	M12*1.75P
C3	-	≤14/≤16	≤16/≤19	≤19/≤24	≤24/≤28	≤35	≤42
C4	-	35	46.5	67	66	80	114
C5	-	50	70	110	110	114.3	114.3
C6	-	3.5	6	14	10	9	30
C7	-	60	80	130	130	180	180
C8	-	48	30	45.5	42.5	47.5	84.5
C9	-	154.5	194	257.5	325	352.5	441.5
C10	-	10.5	14.5	25.5	27	22.5	43.5
B1 h9	-	5	6	10	12	16	20
H1	-	18	24.5	35	43	59	79.5

WAE Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计，确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W – AE – 010 – 010 – K – P2 – 马达型号 Motor reference

品牌 Brand

系列 Model
AB
AD
AE

规格 Size
050
070
090
120
155
205
235

减速比 Ratio
3
4
5
6
7
8
10
15
20
25
35
40
50
60
70
80
100

K-键
S-光轴

精度 Precision
P1 精密背隙 Precision backlash
P2 标准背隙 Standard backlash
P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

减速机性能资料/Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WAE050	WAE070	WAE090	WAE120	WAE155	WAE205	WAE235
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	20	55	130	208	342	588	1140
			4	19	50	140	290	542	1050	1700
			5	22	60	160	330	650	1200	2000
			6	20	55	150	310	600	1100	1900
			7	19	50	140	300	550	1100	1800
			8	17	45	120	260	500	1000	1600
			10	14	40	100	230	450	900	1500
		2	15	20	55	130	208	342	588	1140
			20	19	50	140	290	542	1050	1700
			25	22	60	160	330	650	1200	2000
			30	20	55	150	310	600	1100	1900
			35	19	50	140	300	550	1100	1800
			40	17	45	120	260	500	1000	1600
			50	22	60	160	330	650	1200	2000
			60	20	55	150	310	600	1100	1900
			70	19	50	140	300	550	1100	1800
			80	17	45	120	260	500	1000	1600
			100	14	40	100	230	450	900	1500
急停扭矩/Emergency stop torque T_{2NOT}	Nm	1,2	3～100	三倍额定输出力矩/Triple rated output torque						
额定输入转速/Rated input speed n_{1N}	rpm	1,2	3～100	5000	5000	4000	4000	3000	3000	2000
最大输入转速/Maximum iutput speed n_{1B}		1,2	3～100	10000	10000	8000	8000	6000	6000	4000
精密背隙/Precision backlash P1	arcmin	1	3～10	-	≤3	≤3	≤3	≤3	≤3	≤3
		2	15～100	-	≤5	≤5	≤5	≤5	≤5	≤5
标准背隙/Standard backlash P2	arcmin	1	3～10	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		2	15～100	≤8	≤8	≤8	≤8	≤8	≤8	≤8
经济背隙/Economic backlash P3	arcmin	1	3～10	≤8	≤8	≤8	≤8	≤8	≤8	≤8
		1,2	15～100	≤12	≤12	≤12	≤12	≤12	≤12	≤12
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	3～100	3	7	14	25	50	145	225
容许径向力/Allowable radial force F_{2aB}	N	1,2	3～100	780	1530	3250	6700	9400	14500	50000
容许轴向力/Allowable axial force F_{2aB}	N	1,2	3～100	390	765	1625	3350	4700	7250	25000
使用寿命 /Lifespan	hr	1,2	3～100	20000						
效率 /Efficiency	%	1	3～10	≥97%						
		2	15～100	≥94%						
重量 /Weight	kg	1	3～10	0.6	1.4	3.7	8	16	36	53
		2	15～100	0.7	1.6	4.2	8.9	17	37	54
使用温度 /Working temperature	℃	1,2	3～100	-10℃～90℃						
润滑 /Lubricating		1,2		合成润滑油脂 /Synthetic lubricating grease						
防护等级 /IP Grade		1,2	3～100	IP65						
安装方向 /Installation direction		1,2	3～100	任意方向 /In any direction						
噪音值(n1=3000rpm,无负载) Noise level (n1=3000rpm,off load)	dB(A)	1,2	3～100	≤56	≤58	≤60	≤63	≤65	≤67	≤70

ROTATIONAL INERTIA OF REDUCER

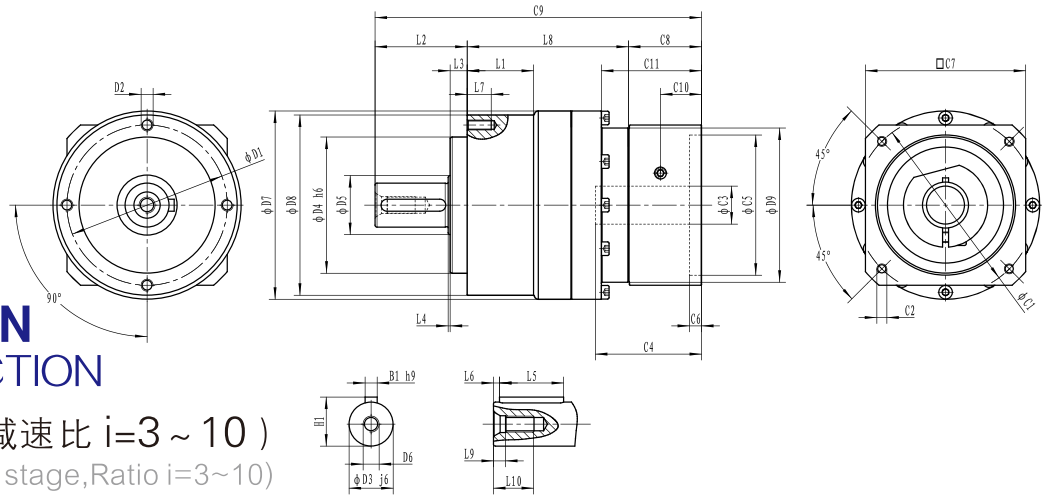
- 减速机转动惯量

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WAE050	WAE070	WAE090	WAE120	WAE155	WAE205	WAE235
转动惯量J1 Rotational inertia J1	kg·cm²	1	3	0.03	0.16	0.61	3.25	9.21	28.98	69.61
			4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
			5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
			6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
			7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
			8	0.03	0.13	0.44	2.58	7.07	22.59	50.84
			10	0.03	0.13	0.44	2.57	7.03	22.51	50.56
		2	15	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			20	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			25	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			30	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			35	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			40	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			50	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			60	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			70	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			80	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			100	0.03	0.03	0.13	0.44	2.57	7.03	22.51

1. 减速比（$i=N_{in}/N_{out}$）
1. Ratio（$i=N_{in}/N_{out}$）

2. 最大加速力矩 T_{2B} =60% of T_{2NOT}
2. Maximum acceleration torque T_{2B} =60% of T_{2NOT}

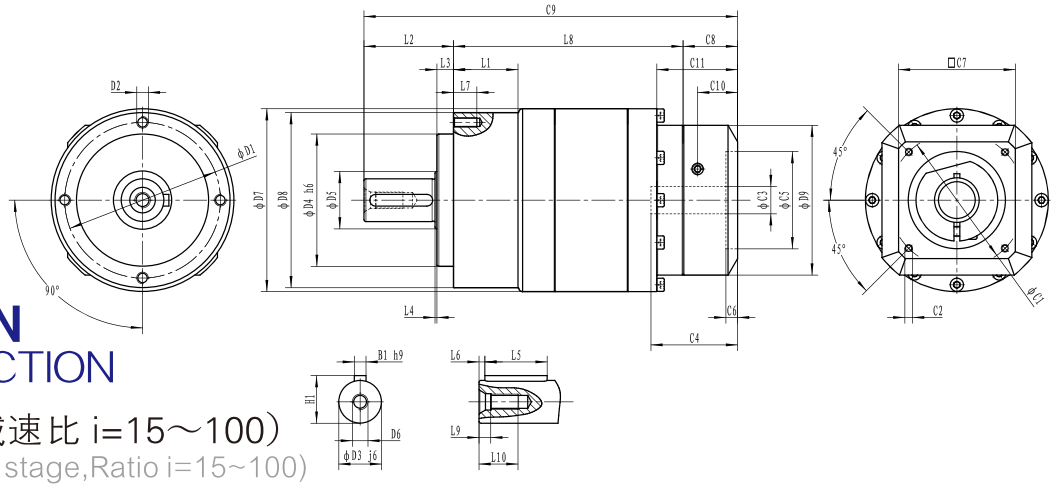
3. 输出转数 100rpm，作用于输出轴中心位置
3. Output speed100rpm,acting on the center of the output shaft



DIMENSION
SINGLE SECTION

- 尺寸（单节，减速比 i=3～10）
  Dimension(single stage,Ratio i=3~10)

尺寸/Dimension	WAE050	WAE070	WAE090	WAE120	WAE155	WAE205	WAE235
D1	-	62	80	108	140	184	210
D2	-	M5*0.8P	M6*1.0P	M8*1.25P	M10*1.5P	M12*1.75P	M16*2.0P
D3 j6	-	16	22	32	40	55	75
D4 g6	-	52	68	90	120	160	180
D5	-	18	30	40	50	70	85
D6	-	M5*0.8P	M8*1.25P	M12*1.75P	M16*2.0P	M20*2.5P	M20*2.5P
D7	-	64	94	125	150	200	225
D8	-	70	90	120	155	205	235
D9	-	51	77	98	125	160	190
L1	-	20.5	33.5	38	50	52	63
L2	-	36	46	70	97	100	126
L3	-	6.5	8	17	15	15	18
L4	-	1	1	1.5	3	3	3
L5	-	25	32	40	63	70	90
L6	-	2	3	5	5	6	7
L7	-	10	12	16	20	22	28
L8	-	63.5	80.5	97	124.5	136.5	164.5
L9	-	4.8	7.2	10	12	15	15
L10	-	12.5	19	28	36	42	42
C1	-	70	90	145	200	200	235
C2	-	M4*0.7P	M5*0.8P	M8*1.25P	M12*1.75P	M12*1.75P	M12*1.75P
C3	-	≤14/≤16	≤19/≤24	≤28	≤35/≤42	≤42	≤42/≤55
C4	-	35	46.5	67	81	114	117
C5	-	50	70	110	114.3	114.3	200
C6	-	3.5	6	14	19	24	20
C7	-	60	80	130	180	180	220
C8	-	46	30	45.5	57.5	81.5	87.5
C9	-	122.5	156.5	212.5	279	318	377
C10	-	10.5	14.5	25.5	32	43.5	49.5
C11		36.5	43.5	65.5	83	111	116.5
B1 h9	-	5	6	10	12	16	20
H1	-	18	24.5	35	43	59	79.5



DIMENSION
DOUBLE SECTION

- 尺寸（双节，减速比 i=15～100）
  Dimension(double stage,Ratio i=15~100)

尺寸/Dimension	WAE050	WAE070	WAE090	WAE120	WAE155	WAE205	WAE235
D1	-	62	80	108	140	184	210
D2	-	M5*0.8P	M6*1.0P	M8*1.25P	M10*1.5P	M12*1.75P	M16*2.0P
D3 j6	-	16	22	32	40	55	75
D4 g6	-	52	68	90	120	160	180
D5	-	18	30	40	50	70	85
D6	-	M5*0.8P	M8*1.25P	M12*1.75P	M16*2.0P	M20*2.5P	M20*2.5P
D7	-	64	94	125	150	200	225
D8	-	70	90	120	155	205	235
D9	-	51	77	98	125	160	190
L1	-	20.5	33.5	38	50	52	63
L2	-	36	46	70	97	100	126
L3	-	6.5	8	17	15	15	18
L4	-	1	1	1.5	3	3	3
L5	-	25	32	40	63	70	90
L6	-	2	3	5	5	6	7
L7	-	10	12	16	20	22	28
L8	-	95.5	118	142	185.5	205	240.5
L9	-	4.8	7.2	10	12	15	15
L10	-	12.5	19	28	36	42	42
C1	-	70	90	145	145	200	200
C2	-	M4*0.7P	M5*0.8P	M8*1.25P	M8*1.25P	M12*1.75P	M12*1.75P
C3	-	≤14/≤16	≤16/≤19	≤19/≤24	≤24/≤28	≤35	≤42
C4	-	35	46.5	67	66	80	114
C5	-	50	70	110	110	114.3	114.3
C6	-	3.5	6	14	10	9	24
C7	-	60	80	130	130	180	180
C8	-	48	30	45.5	42.5	47.5	81.5
C9	-	154.5	194	257.5	325	352.5	441.5
C10	-	10.5	14.5	25.5	27	22.5	43.5
C11		36.5	41.5	65.5	68	77	111
B1 h9	-	5	6	10	12	16	20
H1	-	18	24.5	35	43	59	79.5

WPF Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计，确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W – PF – 090 – 010 – K – P2 – 马达型号 Motor reference

- W: 品牌 Brand
- PF: 系列 Model — PF, PL
- 090: 规格 Size — 060, 080, 090, 115, 142
- 010: 减速比 Ratio — 3, 4, 5, 6, 7, 8, 10, 15, 20, 25, 35, 40, 50, 70, 100
- K: K-键 K-Key; S-光轴 S-Smooth
- P2: 精度 Precision — P1 精密背隙 Precision backlash; P2 标准背隙 Standard backlash; P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

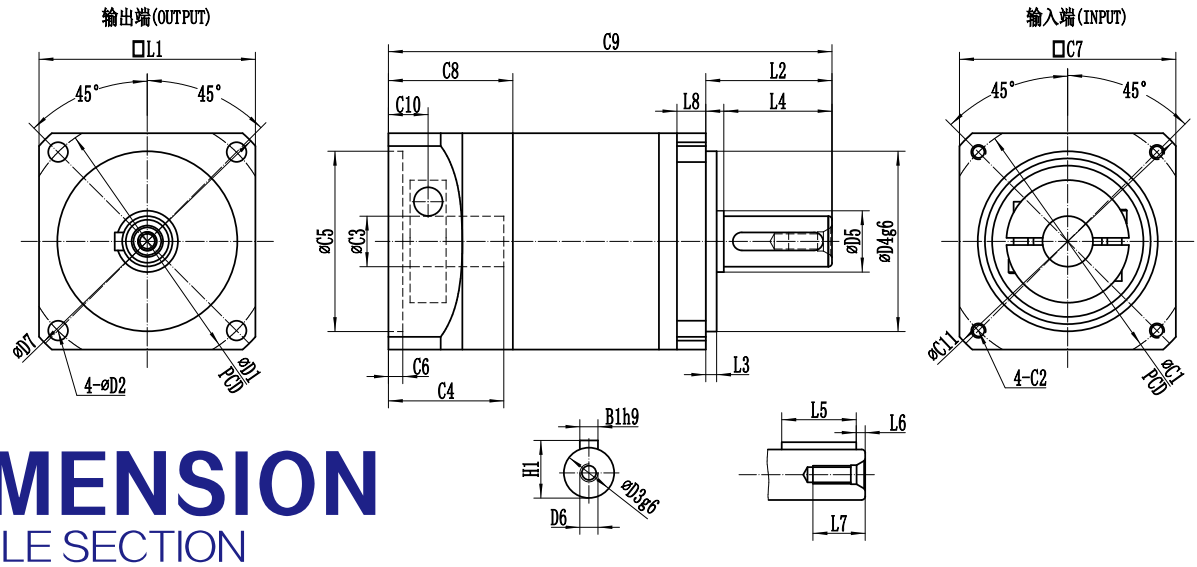
- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

● 减速机性能资料/Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WPF060	WPF080	WPF090	WPF115	WPF142
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	18	40	50	125	290
			4	36	90	110	230	460
			5	40	110	125	260	550
			6	20	40	50	90	340
			7	20	40	50	90	340
			8	12	22	32	70	210
			10	12	22	32	70	210
		2	12	36	90	110	230	460
			15	40	110	125	260	550
			16	36	90	110	230	460
			20	40	110	125	260	550
			25	40	110	125	260	550
			28	36	90	110	230	460
			30	18	40	50	125	290
			35	40	110	125	260	550
			40	36	90	110	230	460
			50	40	110	125	260	550
			60	20	40	50	90	340
			70	20	40	50	90	340
			80	12	22	32	70	210
			100	12	22	32	70	210
装置马达轴孔径/Motor shaft size	mm	1,2	3–100	6–14	14–19	14–19	16–24	19–35
最大输出扭矩/Maximum output torque	Nm	1,2	3–100	二倍额定输出力矩/Double rated output torque				
额定输入转速/Rated input speed n_{1N}	rpm	1,2	3–100	4000	3500	3500	3500	2500
背隙/Backlash	arcmin	1	3–10	≤10	≤10	≤10	≤10	≤10
		2	12–100	≤12	≤12	≤12	≤12	≤12
扭转刚性/Torsional rigidity	Nm/arcmin	1,2	3–100	1.8	4.7	4.85	11	55
容许径向力/Allowable radial force F_{2aB}	N	1,2	3–100	220	400	430	1000	4500
容许轴向力/Allowable axial force F_{2aB}	N	1,2	3–100	240	420	450	1240	4800
使用寿命/Lifespan	hr	1,2	3–100	10000				
效率/Efficiency	%	1	3–10	≥96				
		2	12–100	≥93				
重量/Weight	kg	1	3–10	1.7	4.4	4.4	12	26.5
		2	12–100	1.9	5	5	14	29.6
使用温度/Working temperature	℃	1,2	3–100	−10℃~80℃				
防护等级/IP Grade		1,2	3–100	IP65				
润滑/Lubricating				合成润滑油脂/Synthetic lubricating grease				
安装方向/Installation direction		1,2	3–100	任意方向/In any direction				
噪音值(n1=3000rpm, 无负载) Noise level (n1=3000rpm,off load)	dB(A)	1,2	3–100	≤61	≤63	≤63	≤68	≤75



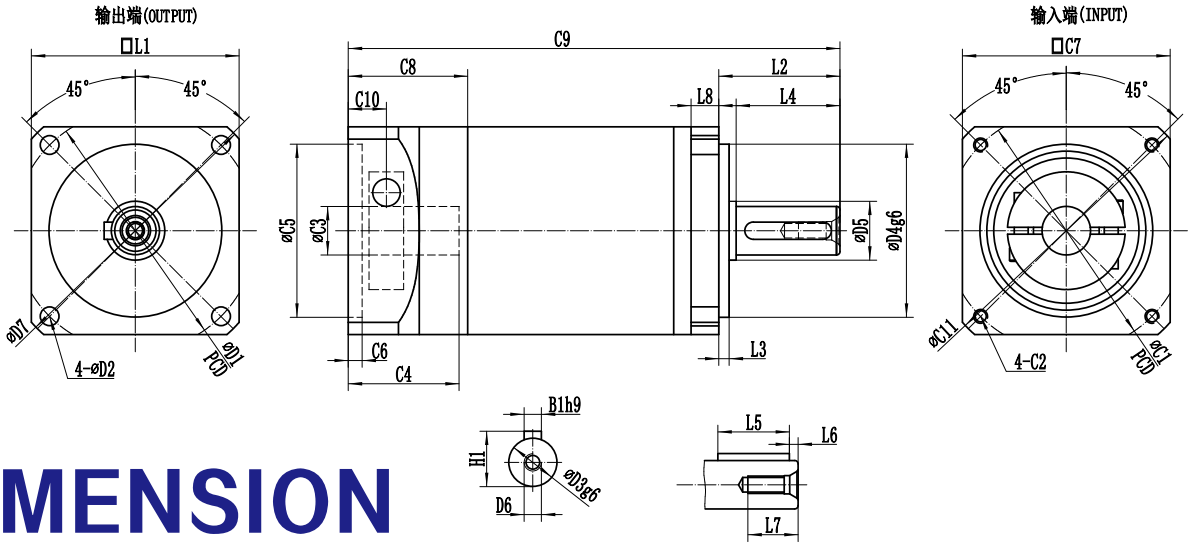
DIMENSION

SINGLE SECTION

- 尺寸（单节，减速比 i=3～10）

  Dimension(single stage,Ratio i=3~10)

尺寸/Dimension	WPF060-L1	WPF080-L1	WPF090-L1	WPF115-L1	WPF142-L1
※D1	70	100	110	130	185
※D2	5.5	6.5	6.5	8.5	11
※D3	14	20	22	25	40
※D4	50	80	85	110	130
D5	17	25	30	35	55
D6	M5	M6	M6	M10	M12
D7	80	120	125	160	230
L1	60	90	92	120	176
※L2	35	40	46	55	87
※L3	3	3	5	4	5
L4	30	36	36	50	80
※L5	25	25	32	40	70
L6	2.5	5	2	5	5
L7	12.5	18	18	23	25
L8	8	10	10	14	15
*C1	70	90	90	145	200
*C2	M4	M5	M5	M8	M12
*C3	6-14	14-19	14-19	19-24	24-35
*C4	32	41	41	60	83
*C5	50	70	70	110	114.3
*C6	4	5	5	8	10
C7	60	80	80	130	180
C8	34.5	46.5	46.5	81.2	107
C9	123	160	166	210.2	268.5
C10	11	16.5	16.5	20	26
C11	80	105	105	165	235
※B1	5	6	6	8	12
※H1	16	22.5	24.5	28	43



DIMENSION

DOUBLE SECTION

- 尺寸（双节，减速比 i=15～100）
  Dimension(double stage,Ratio i=15~100)

尺寸/Dimension	WPF060-L2	WPF080-L2	WPF090-L2	WPF115-L2	WPF142-L2
※D1	70	100	110	130	185
※D2	5.5	6.5	6.5	8.5	11
※D3	14	20	22	25	40
※D4	50	80	85	110	130
D5	17	25	30	35	55
D6	M5	M6	M6	M10	M12
D7	80	120	125	160	230
L1	60	90	92	120	176
※L2	35	40	46	55	87
※L3	3	3	5	4	5
L4	30	36	36	50	80
※L5	25	25	32	40	70
L6	2.5	5	2	5	5
L7	12.5	18	18	23	25
L8	8	10	10	14	15
*C1	70	90	90	145	200
*C2	M4	M5	M5	M8	M12
*C3	6-14	14-19	14-19	19-24	24-35
*C4	32	41	41	60	83
*C5	50	70	70	110	114.3
*C6	4	5	5	8	10
C7	60	80	80	130	180
C8	34.5	46.5	46.5	81.2	107
C9	142	184.5	190.5	243.7	313.5
C10	11	16.5	16.5	20	26
C11	80	105	105	165	235
※B1	5	6	6	8	12
※H1	16	22.5	24.5	28	43

WPL Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计，
  确保最大的扭转刚性。
- 行星轮采用满滚针设计，
  增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，
  以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，
  以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，
  以获取最大的夹紧力和零背隙的动力传递。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W – PL – 090 – 010 – K – P2 – 马达型号 Motor reference

品牌 Brand

系列 Model
PF
PL

规格 Size
060
080
090
120
160

减速比 Ratio
3
4
5
6
7
8
10
15
20
25
35
40
50
70
100

K-键 K-Key
S-光轴 S-Smooth

精度 Precision
P1 精密背隙 Precision backlash
P2 标准背隙 Standard backlash
P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

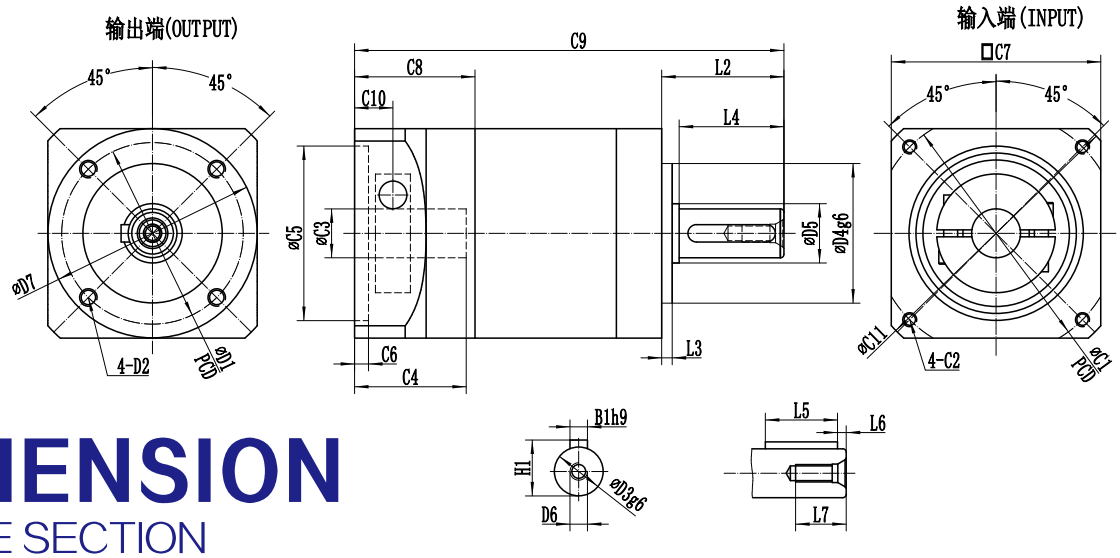
- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

减速机性能资料 /Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WPL060	WPL080	WPL090	WPL120	WPL160
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	18	40	50	125	290
			4	36	90	110	230	460
			5	40	110	125	260	550
			6	20	40	50	90	340
			7	20	40	50	90	340
			8	12	22	32	70	210
			10	12	22	32	70	210
		2	12	36	90	110	230	460
			15	40	110	125	260	550
			16	36	90	110	230	460
			20	40	110	125	260	550
			25	40	110	125	260	550
			28	36	90	110	230	460
			30	18	40	50	125	290
			35	40	110	125	260	550
			40	36	90	110	230	460
			50	40	110	125	260	550
			60	20	40	50	90	340
			70	20	40	50	90	340
			80	12	22	32	70	210
			100	12	22	32	70	210
装置马达轴孔径 /Motor shaft size	mm	1,2	3–100	6–14	14–19	14–19	16–24	19–35
最大输出扭矩 /Maximum output torque	Nm	1,2	3–100	二倍额定输出力矩 /Double rated output torque				
额定输入转速/Rated input speed n_{1N}	rpm	1,2	3–100	4000	3500	3500	3500	2500
背隙 /Backlash	arcmin	1	3–10	≤10	≤10	≤10	≤10	≤10
		2	12–100	≤12	≤12	≤12	≤12	≤12
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	3–100	1.8	4.7	4.85	11	55
容许径向力 /Allowable radial force F_{2aB}	N	1,2	3–100	220	400	430	1000	4500
容许轴向力/Allowable axial force F_{2aB}	N	1,2	3–100	240	420	450	1240	4800
使用寿命 /Lifespan	hr	1,2	3–100	10000				
效率 /Efficiency	%	1	3–10	≥96				
		2	12–100	≥93				
重量 /Weight	kg	1	3–10	1.7	4.4	4.4	12	26.5
		2	12–100	1.9	5	5	14	29.6
使用温度 /Working temperature	℃	1,2	3–100	-10℃~80℃				
防护等级 /IP Grade		1,2	3–100	IP65				
润滑 /Lubricating				合成润滑油脂 /Synthetic lubricating grease				
安装方向 /Installation direction		1,2	3–100	任意方向 /In any direction				
噪音值(n1=3000rpm,无负载) Noise level (n1=3000rpm,off load)	dB(A)	1,2	3–100	≤61	≤63	≤63	≤68	≤75



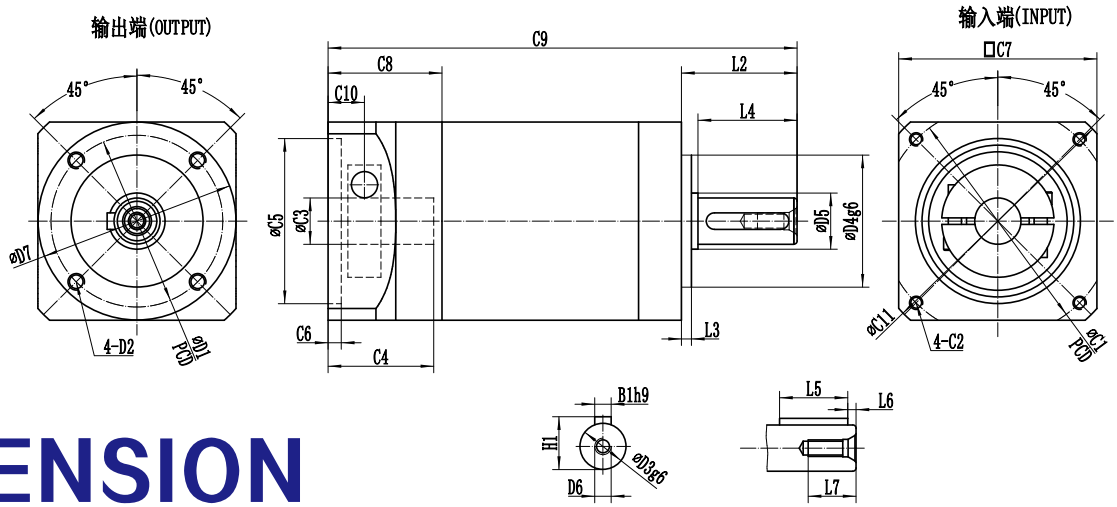
DIMENSION

SINGLE SECTION

- 尺寸（单节，减速比 i=3～10）

  Dimension(single stage,Ratio i=3~10)

尺寸/Dimension	WPL060-L1	WPL080-L1	WPL090-L1	WPL120-L1	WPL160-L1
※D1	52	70	80	100	145
※D2	M5	M6	M6	M10	M12
※D3	14	20	22	25	40
※D4	40	60	68	80	130
D5	17	25	30	35	55
D6	M5	M6	M6	M10	M12
D7	60	80	90	115	162
L1	-	-	-	-	-
※L2	35	40	46	55	87
※L3	3	3	5	4	5
L4	30	36	36	50	80
※L5	25	25	32	40	70
L6	2.5	5	2	5	5
L7	12.5	18	18	23	25
L8	-	-	-	-	-
*C1	70	90	90	145	200
*C2	M4	M5	M5	M8	M12
*C3	6-14	14-19	14-19	19-24	24-35
*C4	32	41	41	60	83
*C5	50	70	70	110	114.3
*C6	4	5	5	8	10
C7	60	80	80	130	180
C8	34.5	46.5	46.5	81.2	107
C9	123	160	166	210.2	268.5
C10	11	16.5	16.5	20	26
C11	80	105	105	165	235
※B1	5	6	6	8	12
※H1	16	22.5	24.5	28	43



DIMENSION

DOUBLE SECTION

- 尺寸（双节，减速比 i=15～100））

Dimension(double stage,Ratio i=15~100)

尺寸/Dimension	WPL060-L2	WPL080-L2	WPL090-L2	WPL120-L2	WPL160-L2
※D1	52	70	80	100	145
※D2	M5	M6	M6	M10	M12
※D3	14	20	22	25	40
※D4	40	60	68	80	130
D5	17	25	30	35	55
D6	M5	M6	M6	M10	M12
D7	60	80	90	115	162
L1	-	-	-	-	-
※L2	35	40	46	55	87
※L3	3	3	5	4	5
L4	30	36	36	50	80
※L5	25	25	32	40	70
L6	2.5	5	2	5	5
L7	12.5	18	18	23	25
L8	-	-	-	-	-
*C1	70	90	90	145	200
*C2	M4	M5	M5	M8	M12
*C3	6-14	14-19	14-19	19-24	24-35
*C4	32	41	41	60	83
*C5	50	70	70	110	114.3
*C6	4	5	5	8	10
C7	60	80	80	130	180
C8	34.5	46.5	46.5	81.2	107
C9	142	184.5	190.5	243.7	313.5
C10	11	16.5	16.5	20	26
C11	80	105	105	165	235
※B1	5	6	6	8	12
※H1	16	22.5	24.5	28	43

WABR Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计， 确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。
- 采用蜗线伞齿轮设计，容许输出扭矩高、比直 伞齿轮高30%以上。
- 高容许输入转速，比直伞齿轮输入高8倍以上。
- 蜗线伞齿轮的啮合齿印，经最佳优化设计，接触齿面负载均一，运转寿命长。
- 蜗线伞齿轮啮合，经最佳运动误差分析与严格的制程控制，以确保高精度的运转背隙。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.
- Adopt spiral bevel gear design, allow high output torque, more than 30% higher than straight bevel gear.
- High tolerance input speed, more than 8 times higher than straight bevel gear input.
- The meshing tooth imprint of spiral bevel gear has been optimized by optimum design, and the contact tooth surface load is uniform, and long running life.
- Cochlear bevel gears are meshed by optimum motion error analysis and strict process control to ensure high precision running back clearance.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W – ABR – 090 – 010 – K – P2 – 马达型号 Motor reference

品牌 Brand: W

系列 Model: ABR

规格 Size: 042, 060, 090, 115, 142, 180

减速比 Ratio: 3, 4, 5, 6, 7, 8, 10, 15, 20, 25, 35, 40, 50, 60, 70, 80, 100, ..., 200

K-键 K-Key
S-光轴 S-Smooth

精度 Precision:
P1 精密背隙 Precision backlash
P2 标准背隙 Standard backlash
P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

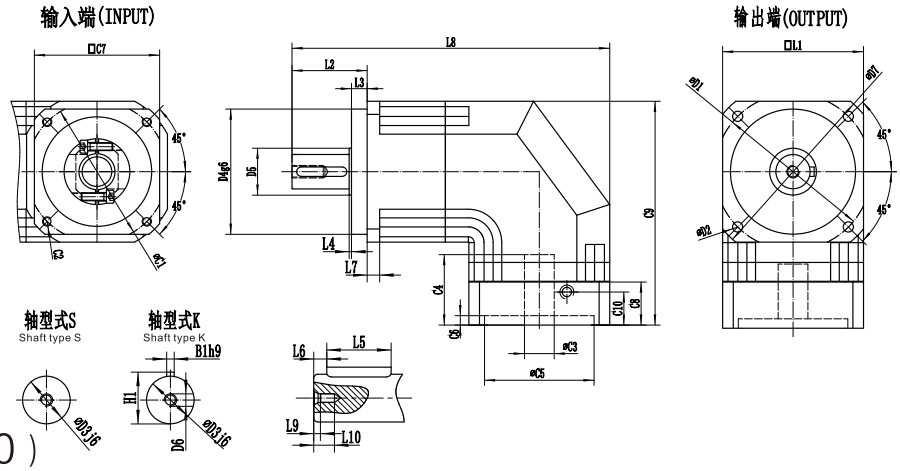
减速机性能资料 /Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WABR042	WABR060	WABR090	WABR115	WABR142	WABR180
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	9	36	90	195	342	588
			4	12	48	120	260	520	1040
			5	15	60	150	325	650	1200
			6	18	55	150	310	600	1100
			7	19	50	140	300	550	1100
			8	17	45	120	260	500	1000
			10	14	40	100	230	450	900
			12	18	55	150	310	600	1100
			14	19	50	140	300	550	1100
			20	14	40	100	230	450	900
		2	15	15	60	150	325	650	1200
			25	15	60	150	325	650	1200
			30	20	55	150	310	600	1100
			35	19	50	140	300	550	1100
			40	17	45	120	260	500	1000
			45	14	40	100	230	450	900
			50	14	60	100	230	650	1200
			60	20	55	150	310	600	1100
			70	19	50	140	300	550	1100
			80	17	45	120	260	500	1000
			90	14	40	100	230	450	900
			100	14	40	100	230	450	900
			120	18	55	150	310	600	1100
			140	19	50	140	300	550	1100
			160	17	45	120	260	500	1000
			200	14	40	100	230	450	900
急停扭矩 /Emergency stop torque T_{2NOT}	Nm	1,2	3~200	三倍额定输出力矩 /Triple rated output torque					
额定输入转速 /Rated input speed n_{1N}	rpm	1,2	3~200	5000	5000	4000	4000	3000	3000
最大输入转速 /Maximum iutput speed n_{1B}	rpm	1,2	3~200	10000	10000	8000	8000	6000	6000
精密背隙 /Precision backlash P1*	arcmin	1	3~20	≤4	≤4	≤4	≤4	≤4	≤4
		2	15~200	≤7	≤7	≤7	≤7	≤7	≤7
标准背隙 /Standard backlash P2*	arcmin	1	3~20	≤6	≤6	≤6	≤6	≤6	≤6
		2	15~200	≤9	≤9	≤9	≤9	≤9	≤9
经济背隙 /Economic backlash P3	arcmin	1	3~20	≤8	≤8	≤8	≤8	≤8	≤8
		2	15~200	≤12	≤12	≤12	≤12	≤12	≤12
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	3~200	3	7	14	25	50	145
容许径向力 /Allowable radial force F_{2aB}	N	1,2	3~200	780	1530	3250	6700	9400	14500
容许轴向力 /Allowable axial force F_{2aB}	N	1,2	3~200	390	765	1625	3350	4700	7250
使用寿命 /Lifespan	hr	1,2	3~200	20000 *					
效率 /Efficiency	%	1	3~20	95%					
		2	25~200	92%					
重量 /Weight	kg	1	3~20	0.9	2.1	6.4	13	24.5	51
		2	25~200	1.2	1.5	7.8	14.2	27.5	54
使用温度 /Working temperature	℃	1,2	3~200	（-10° C +90° C）					
润滑 /Lubricating				合成润滑脂 /Synthetic lubricating grease					
防护等级 /IP Grade		1,2	3~200	IP65					
安装方向 /Installation direction		1,2	3~200	任意方向 /In any direction					
噪音值（n1=3000rpm, 无负载） Noise level（n1=3000rpm,off load）	dB(A)	1,2	3~200	≤61	≤63	≤65	≤68	≤70	≤72

（带 "*" 的精度需与工程师确认/Need confirm with our engineer for those precision data with *）

- 减速机转动惯量/Rotational inertia

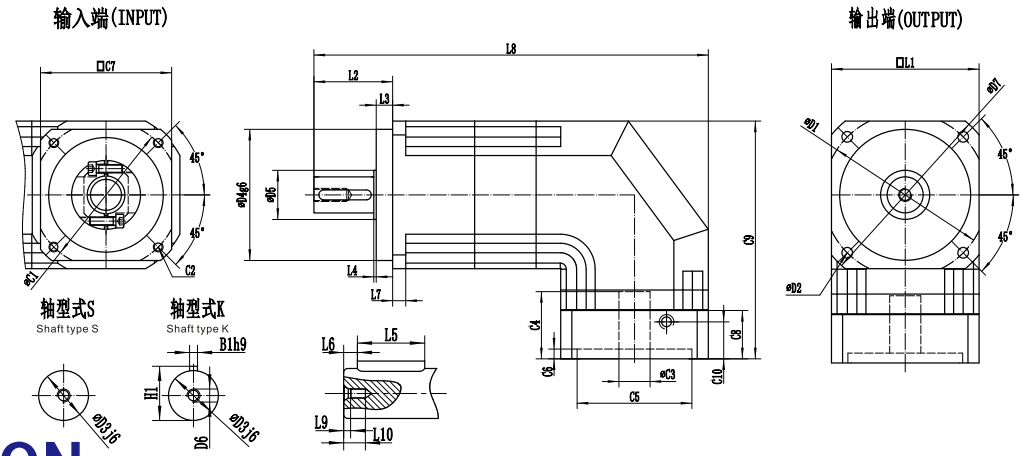
规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WABR042	WABR060	WABR090	WABR115	WABR142	WABR180
转动惯量J1 Rotational inertia J1	kg.cm²	1	3~10	0.09	0.35	2.25	6.84	23.4	68.9
			12、14	0.035	0.07	1.87	6.25	21.8	65.6
			20	0.03	0.07	1.87	6.25	21.8	65.6
		2	15	0.09	0.35	2.25	6.84	23.4	68.9
			25~100	0.09	0.09	0.35	2.25	6.84	23.4
			120~200	0.007	0.01	0.31	1.87	6.25	21.8



DIMENSION
SINGLE SECTION

- 尺寸（单节，减速比i=3～20）
Dimension(single stage,Ratio i=3~20)

尺寸/Dimension	WABR042	WABR060	WABR090	WABR115	WABR142	WABR180
D1	-	70	100	130	165	-
D2	-	5.5	6.6	9	11	-
D3j6	-	16	22	32	40	-
D4g6	-	50	80	110	130	-
D5	-	17.5	30	40	49.5	-
D6	-	M5	M8	M12	M16	-
D7	-	80	116	152	185	-
L1	-	60	90	115	142	-
L2	-	37	48	65	97	-
L3	-	7	10	12	15	-
L4	-	1.5	1.5	2	3	-
L5	-	25	32	40	63	-
L6	-	2	3	5	5	-
L7	-	6	8	10	12	-
L8	-	149.5	203	266.5	359	-
L9	-	4	6	10	16	-
L10	-	13	20	28	36	-
C1	-	70	90	145	200	-
C2	-	M4	M5	M8	M12	-
C3G6	-	14	19	24	35	-
C4	-	32.5	54	81	81	-
C5G6	-	50	70	110	114.3	-
C6	-	3.5	6	14	19	-
C7	-	60	80	130	180	-
C8	-	24.2	29.5	45.2	57	-
C9	-	100	145	189.5	246.5	-
C10	-	9.5	14.5	27	32	-
B1	-	5	6	10	12	-
H1	-	18	24.5	35	43	-

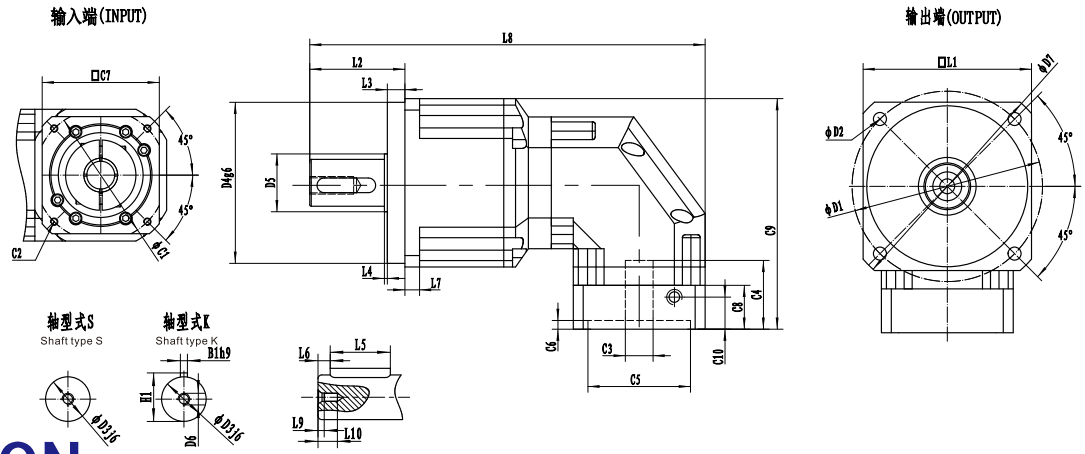


DIMENSION
DOUBLE SECTION

- 尺寸（双节，减速比 i=15～200）型式 I

Dimension(double stage,Ratio i=15~200) TYPE I

尺寸/Dimension	WABR042	WABR060	WABR090	WABR115	WABR142	WABR180
D1	-	70	100	130	165	-
D2	-	4× ϕ5.5	4× ϕ6.6	4× ϕ9	4× ϕ11	-
D3j6	-	16	22	32	40	-
D4g6	-	50	80	110	130	-
D5	-	17.5	30	40	49.5	-
D6	-	M5	M8	M12	M16	-
D7	-	80	116	152	185	-
L1	-	60	90	115	142	-
L2	-	37	48	65	97	-
L3	-	7	10	12	15	-
L4	-	1.5	1.5	2	3	-
L5	-	25	32	40	63	-
L6	-	2	3	5	5	-
L7	-	6	8	10	12	-
L8	-	181.5	240.5	290	420	-
L9	-	4	6	10	16	-
L10	-	13	20	28	36	-
C1	-	70	90	145	200	-
C2	-	4×M4	4×M5	4×M8	4×M12	-
C3G6	-	14	19	24	35	-
C4	-	32.5	54	54	81	-
C5G6	-	50	70	110	114.3	-
C6	-	3.5	6	11.5	19	-
C7	-	60	80	130	180	-
C8	-	24.2	29.5	43	57	-
C9	-	100	145	170.5	246.5	-
C10	-	9.5	14.5	27	32	-
B1	-	5	6	10	12	-
H1	-	18	24.5	35	43	-



DIMENSION
DOUBLE SECTION

- 尺寸（双节，减速比 i=15～200）型式 II

Dimension(double stage,Ratio i=15~200) TYPE II

尺寸/Dimension	WABR042	WABR060	WABR090	WABR115	WABR142	WABR180
D1	-	70	100	130	165	-
D2	-	4× ϕ5.5	4× ϕ6.6	4× ϕ9	4× ϕ11	-
D3j6	-	16	22	32	40	-
D4g6	-	50	80	110	130	-
D5	-	17.5	30	40	49.5	-
D6	-	M5	M8	M12	M16	-
D7	-	80	116	152	185	-
L1	-	60	90	115	142	-
L2	-	37	48	65	97	-
L3	-	7	10	12	15	-
L4	-	1.5	1.5	2	3	-
L5	-	25	32	40	63	-
L6	-	2	3	5	5	-
L7	-	6	8	10	12	-
L8	-	181.5	240.5	290	420	-
L9	-	4	6	10	16	-
L10	-	13	20	28	36	-
C1	-	70	90	145	200	-
C2	-	4×M4	4×M5	4×M8	4×M12	-
C3G6	-	14	19	24	35	-
C4	-	32.5	54	54	81	-
C5G6	-	50	70	110	114.3	-
C6	-	11	7	11.5	19	-
C7	-	60	80	130	180	-
C8	-	24.2	29.5	43	57	-
C9	-	100	145	170.5	246.5	-
C10	-	9.5	14.5	27	32	-
B1	-	5	6	10	12	-
H1	-	18	24.5	35	43	-

WADR Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

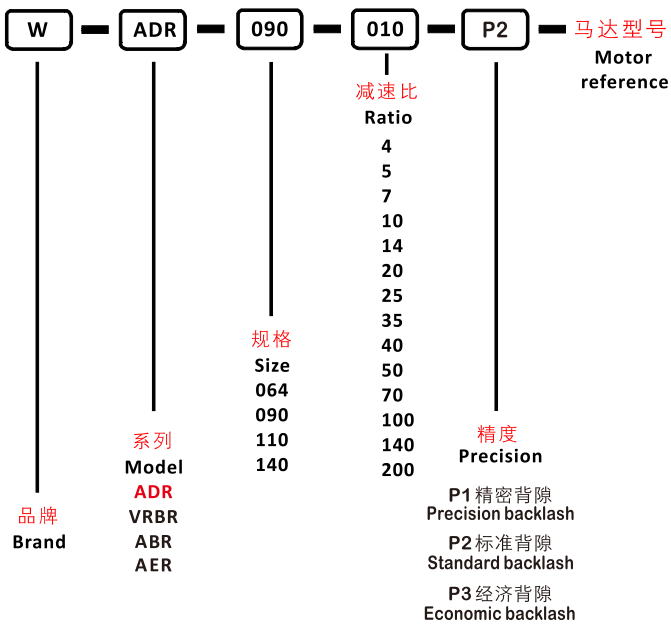
- 行星臂架与输出轴采用一体式结构设计， 确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。
- 采用蜗线伞齿轮设计，容许输出扭矩高、比直 伞齿轮高30%以上。
- 高容许输入转速，比直伞齿轮输入高8倍以上。
- 蜗线伞齿轮的啮合齿印，经最佳优化设计，接触齿面负载均一，运转寿命长。
- 蜗线伞齿轮啮合，经最佳运动误差分析与严格的制程控制，以确保高精度的运转背隙。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.
- Adopt spiral bevel gear design, allow high output torque, more than 30% higher than straight bevel gear.
- High tolerance input speed, more than 8 times higher than straight bevel gear input.
- The meshing tooth imprint of spiral bevel gear has been optimized by optimum design, and the contact tooth surface load is uniform, and long running life.
- Cochlear bevel gears are meshed by optimum motion error analysis and strict process control to ensure high precision running back clearance.

INDICATION FOR MODEL

SELECTION

- 机种型号表示



GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

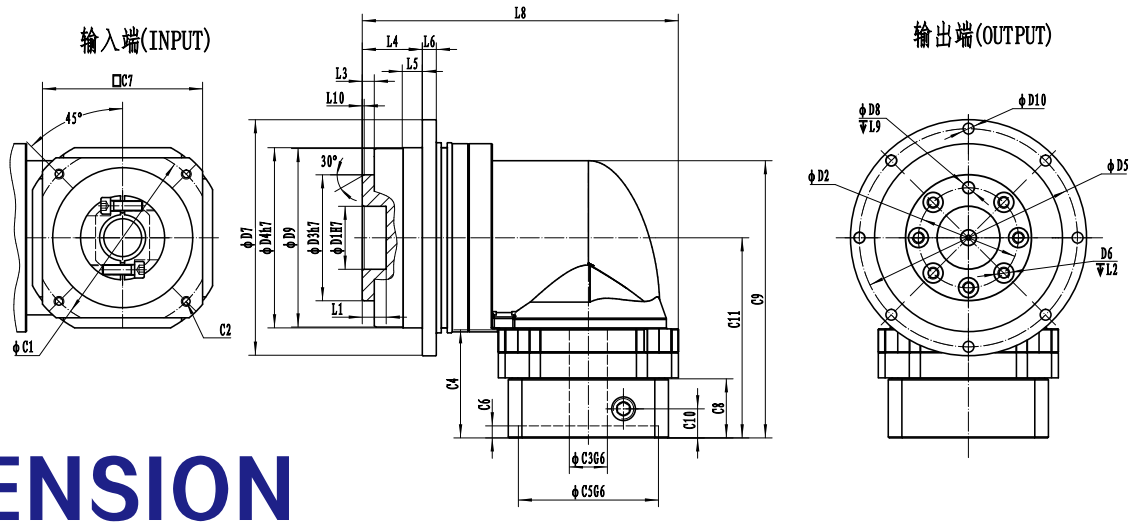
● 减速机性能资料/Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WADR064	WADR090	WADR110	WADR140
额定输出力矩 Rated output torque T_{2N}	Nm	1	4	48	130	270	560
			5	60	160	330	650
			7	50	140	300	550
			10	40	100	230	450
			14	42	140	300	550
			20	40	100	230	450
		2	25	60	160	330	650
			35	50	140	300	550
			40	48	130	270	560
			50	60	160	330	650
			70	50	140	300	550
			100	40	100	230	450
			140	50	140	300	550
			200	40	100	230	450
急停扭矩 /Emergency stop torque T_{2NOT}	Nm	1,2	4~200	三倍额定输出力矩 /Triple rated output torque			
额定输入转速/Rated input speed n_{1N}	rpm	1,2	4~200	5000	4000	4000	3000
最大输入转速 /Maximum iutput speed n_{1B}	rpm	1,2	4~200	10000	8000	8000	6000
精密背隙 /Precision backlash P1*	arcmin	1	4~20	≤4	≤4	≤4	≤4
		2	25~200	≤7	≤7	≤7	≤7
标准背隙 /Standard backlash P2*	arcmin	1	4~20	≤6	≤6	≤6	≤6
		2	25~200	≤9	≤9	≤9	≤9
经济背隙/Economic backlash P3	arcmin	1	4~20	≤8	≤8	≤8	≤8
		2	25~200	≤12	≤12	≤12	≤12
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	4~200	13	31	82	151
最大弯曲力矩 Maximum bending torque M2KB	Nm	1,2	4~200	125	235	430	1300
容许轴向力/Allowable axial force F_{2aB}	N	1,2	4~200	1050	2850	2990	10590
使用寿命 /Lifespan	hr	1,2	4~200	20000*			
效率 /Efficiency	%	1	4~20	≥95%			
		2	25~200	≥92%			
重量 /Weight	kg	1	4~20	2.1	5.9	10.5	21.9
		2	25~200	1.9	4.5	9.8	20.1
使用温度 /Working temperature	℃	1,2	4~200	（-10° C +90° C）			
润滑 /Lubricating				合成润滑脂/Synthetic lubricating grease			
防护等级 /IP Grade		1,2	4~200	IP65			
安装方向 /Installation direction		1,2	4~200	任意方向 /In any direction			
噪音值（n1=3000rpm,无负载） Noise level（n1=3000rpm,off load）	dB(A)	1,2	4~200	≤63	≤65	≤68	≤70

（带“*”的精度需与工程师确认/ Need confirm with our engineer for those precision data with *）

● 减速机转动惯量 /Rotational inertia

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WADR064	WADR090	WADR110	WADR140
转动惯量J1 Rotational inertia J1	$kg.cm^2$	1	4~10	0.35	2.25	6.84	23.4
			14	0.07	1.87	6.25	21.8
			20	0.07	1.87	6.25	21.8
		2	25~100	0.09	0.35	2.25	6.84
			140~200	–	0.31	1.87	6.25

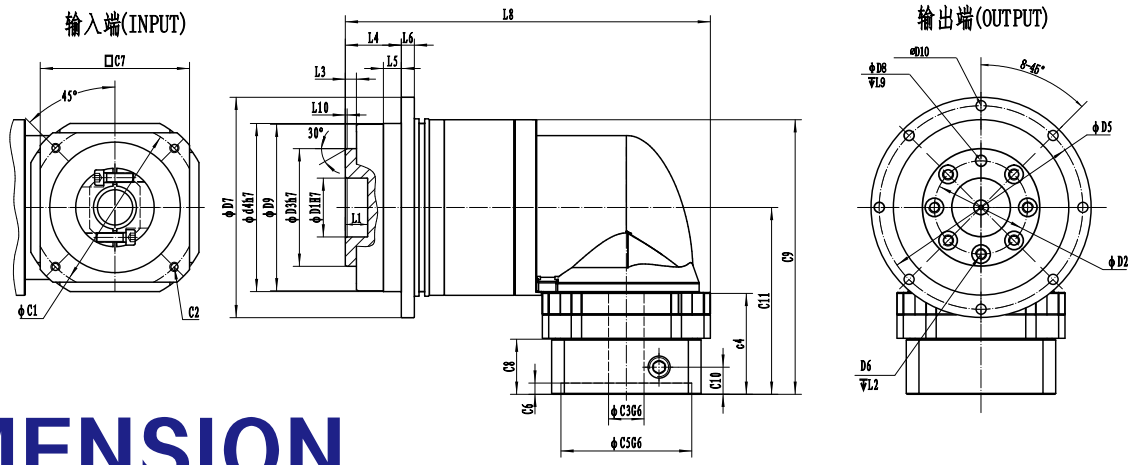


DIMENSION

SINGLE SECTION

- 尺寸（单节，减速比 i=4～20）/Dimension(single stage,Ratio i=4~20)

尺寸/Dimension	WADR064	WADR090	WADR110	WADR140
$D1_{H7}$	20	31.5	40	50
D2	31.5	50	63	80
$D3_{h7}$	40	63	80	100
$D4_{h7}$	64	90	110	140
D5	79	109	135	168
D6	7×M5	7×M6	11×M6	11×M8
D7	86	118	145	179
D8H7	5	6	6	8
D9	63.2	89.2	109.2	139.2
D10	8×4.5	8×5.5	8×5.5	12×6.6
L1	8	12	12	12
L2	9	12	15	17
L3	3	6	6	6
L4	19.5	30	29	38
L5	7	10	10	14.6
L6	4	7	8	10
L8	114.5	158	190	248
L9	6	7	7	7
L10	0.5	1	1	1
C1	70	90	145	200
C2	4×M4	4×M5	4×M8	4×M12
$C3_{G6}$	≦14	≦19/≦24	≦24	≦35/≦42
C4	35	54	81	81
$C5_{G6}$	50	70	110	114.3
C6	3.5	6	14	19
C7	60	80	130	180
C8	24.2	29.5	45	57
C9	104.5	147	194.5	250.5
C10	9.5	14.5	27	32
C11	70	100	132	175.5



DIMENSION

DOUBLE SECTION

- 尺寸（双节，减速比 i=25～200）/Dimension(double stage,Ratio i=25~200)

尺寸/Dimension	WADR064	WADR090	WADR110	WADR140
$D1_{H7}$	20	31.5	40	50
D2	31.5	50	63	80
$D3_{h7}$	40	63	80	100
$D4_{h7}$	64	90	110	140
D5	79	109	135	168
D6	7×M5	7×M6	11×M6	11×M8
D7	86	118	145	179
$D8_{H7}$	5	6	6	8
D9	63.2	89.2	109.2	139.2
D10	8×4.5	8×5.5	8×5.5	12×6.6
L1	8	12	12	12
L2	9	12	15	17
L3	3	6	6	6
L4	19.5	30	29	38
L5	7	10	10	14.6
L6	4	7	8	10
L8	146.5	195.5	219.5	325.5
L9	6	7	7	7
L10	0.5	1	1	1
C1	70	90	145	200
C2	4×M4	4×M5	4×M8	4×M12
C3G6	≦14	≦19/≦24	≦24	≦35/≦42
C4	35	54	67	81
C5G6	50	70	110	114.3
C6	3.5	6	11.5	19
C7	60	80	130	180
C8	24.2	29.5	42.5	57
C9	104.5	147	160	250.5
C10	9.5	14.5	27	32
C11	70	100	113	175.5

WVRBR Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计， 确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。
- 采用蜗线伞齿轮设计，容许输出扭矩高、比直伞齿轮高30%以上。
- 高容许输入转速，比直伞齿轮输入高8倍以上。
- 蜗线伞齿轮的啮合齿印，经最佳优化设计，接触齿面负载均一，运转寿命长。
- 蜗线伞齿轮啮合，经最佳运动误差分析与严格的制程控制，以确保高精度的运转背隙。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.
- Adopt spiral bevel gear design, allow high output torque, more than 30% higher than straight bevel gear.
- High tolerance input speed, more than 8 times higher than straight bevel gear input.
- The meshing tooth imprint of spiral bevel gear has been optimized by optimum design, and the contact tooth surface load is uniform, and long running life.
- Cochlear bevel gears are meshed by optimum motion error analysis and strict process control to ensure high precision running back clearance.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W — VRBR — 090 — 010 — K — P2 — 马达型号 Motor reference

品牌 Brand

系列 Model
ADR
VRBR
ABR
AER

规格 Size
042
060
090
115
142
180

减速比 Ratio
3
4
5
6
7
8
10
12
14
15
20
25
……
200

K-键 K-Key
S-光轴 S-Smooth

精度 Precision
P1 精密背隙 Precision backlash
P2 标准背隙 Standard backlash
P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

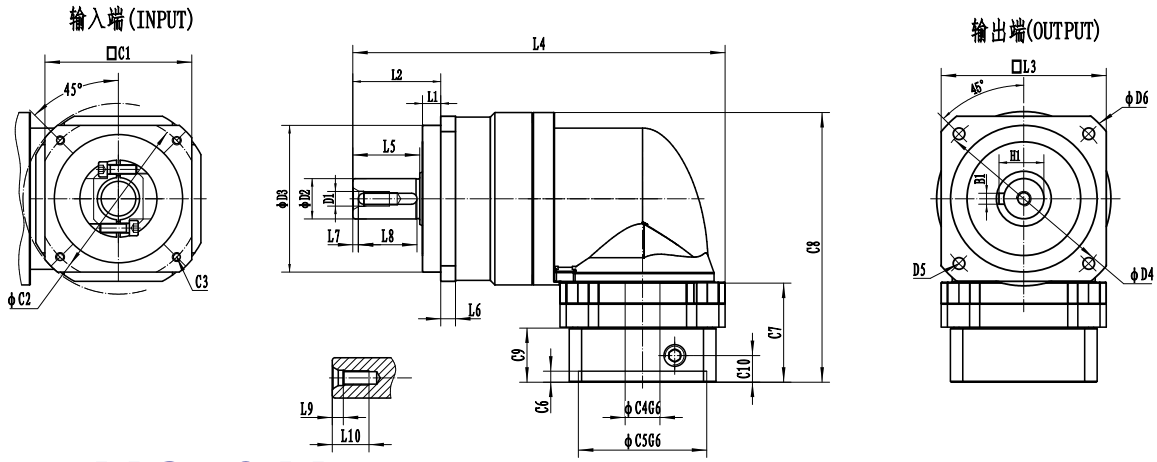
减速机性能资料/Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WVRBR042	WVRBR060	WVRBR090	WVRBR115	WVRBR140	WVRBR180
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	9	36	90	195	342	588
			4	12	48	120	260	520	1040
			5	15	60	150	325	650	1200
			6	18	55	150	310	600	1100
			7	19	50	140	300	550	1100
			8	17	45	120	260	500	1000
			10	14	40	100	230	450	900
			12	18	55	150	310	600	1100
			14	19	50	140	300	550	1100
			20	14	40	100	230	450	900
		2	15	15	60	150	325	650	1200
			25	15	60	150	325	650	1200
			30	20	55	150	310	600	1100
			35	19	50	140	300	550	1100
			40	17	45	120	260	500	1000
			45	14	40	100	230	450	900
			50	14	60	100	230	650	1200
			60	20	55	150	310	600	1100
			70	19	50	140	300	550	1100
			80	17	45	120	260	500	1000
			90	14	40	100	230	450	900
			100	14	40	100	230	450	900
			120	18	55	150	310	600	1100
			140	19	50	140	300	550	1100
			160	17	45	120	260	500	1000
			200	14	40	100	230	450	900
急停扭矩/Emergency stop torque T_{2NOT}	Nm	1,2	3~200	三倍额定输出力矩/Triple rated output torque					
额定输入转速/Rated input speed n_{1N}	rpm	1,2	3~200	5000	5000	4000	4000	3000	3000
最大输入转速/Maximum iutput speed n_{1B}	rpm	1,2	3~200	10000	10000	8000	8000	6000	6000
精密背隙/Precision backlash P1*	arcmin	1	3~20	≤4	≤4	≤4	≤4	≤4	≤4
		2	15~200	≤7	≤7	≤7	≤7	≤7	≤7
标准背隙/Standard backlash P2*	arcmin	1	3~20	≤6	≤6	≤6	≤6	≤6	≤6
		2	15~200	≤9	≤9	≤9	≤9	≤9	≤9
经济背隙/Economic backlash P3	arcmin	1	3~20	≤8	≤8	≤8	≤8	≤8	≤8
		2	15~200	≤12	≤12	≤12	≤12	≤12	≤12
扭转刚性/Torsional rigidity	Nm/arcmin	1,2	3~200	3	7	14	25	50	145
容许径向力/Allowable radial force F_{2aB}	N	1,2	3~200	780	1530	3250	6700	9400	14500
容许轴向力/Allowable axial force F_{2aB}	N	1,2	3~200	390	765	1625	3350	4700	7250
使用寿命/Lifespan	hr	1,2	3~200	20000 *					
效率/Efficiency	%	1	3~20	95%					
		2	25~200	92%					
重量/Weight	kg	1	3~20	0.9	2.1	6.4	13	24.5	51
		2	25~200	1.2	1.5	7.8	14.2	27.5	54
使用温度/Working temperature	℃	1,2	3~200	(-10° C +90° C)					
润滑/Lubricating				合成润滑脂/Synthetic lubricating grease					
防护等级/IP Grade		1,2	3~200	IP65					
安装方向/Installation direction		1,2	3~200	任意方向/In any direction					
噪音值(n1=3000rpm,无负载) Noise level (n1=3000rpm,off load)	dB(A)	1,2	3~200	≤61	≤63	≤65	≤68	≤70	≤72

(带"*"的精度需与工程师确认/ Need confirm with our engineer for those precision data with *)

减速机转动惯量/Rotational inertia

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WVRBR042	WVRBR060	WVRBR090	WVRBR115	WVRBR140	WVRBR180
转动惯量J1 Rotational inertia J1	$kg.cm^2$	1	3~10	0.09	0.35	2.25	6.84	23.4	68.9
			12、14	0.035	0.07	1.87	6.25	21.8	65.6
			20	0.03	0.07	1.87	6.25	21.8	65.6
		2	15	0.09	0.35	2.25	6.84	23.4	68.9
			25~100	0.09	0.09	0.35	2.25	6.84	23.4
			120~200	0.007	0.01	0.31	1.87	6.25	21.8



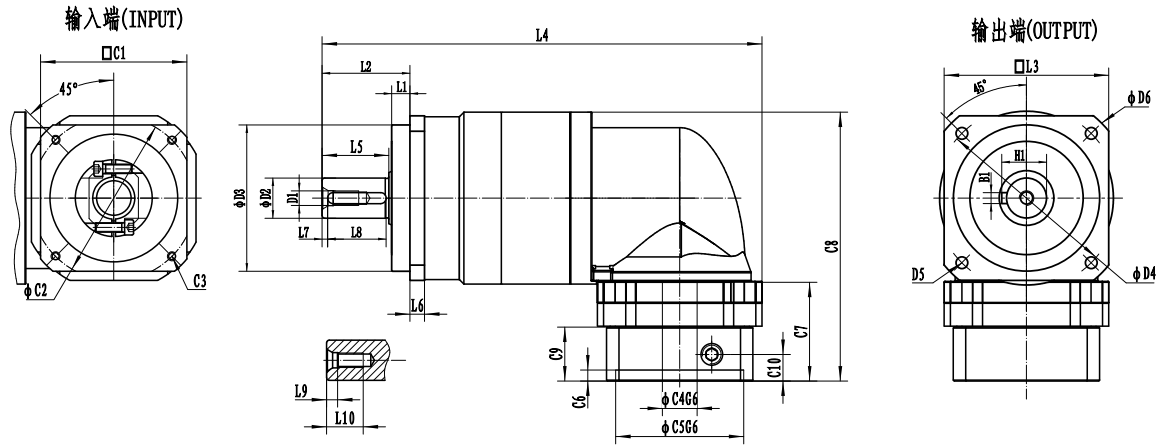
DIMENSION

DOUBLE SECTION

- 尺寸（单节，减速比 i=3～20）

  Dimension(single stage,Ratio i=3~20)

尺寸/Dimension	WVRBR042	WVRBR060	WVRBR090	WVRBR115	WVRBR140	WVRBR180
D1	-	M5	M8	M12	M16	-
$D2_{j6}$	-	16	22	32	40	-
$D3_{g6}$	-	50	80	110	130	-
D4	-	70	100	130	165	-
D5	-	4× ϕ5.5	4× ϕ6.6	4× ϕ9	4× ϕ11	-
D6	-	80	116	152	185	-
L1	-	7	10	7	13	-
L2	-	37	48	60	95	-
L3	-	60	90	115	140	-
L4	-	149.5	203	266.5	359	-
L5	-	28.5	36.5	51	79	-
L6	-	6	8	10	12	-
L7	-	3	3	5	5	-
L8	-	25.3	32	40	63	-
L9	-	4	6	10	16	-
L10	-	13	20	28	36	-
C1	-	60	80	130	180	-
C2	-	70	90	145	200	-
C3	-	4×M4	4×M5	4×M8	4×M12	-
$C4_{G6}$	-	14	19	24	35	-
$C5_{G6}$	-	50	70	110	114.3	-
C6	-	3.5	6	14	19	-
C7	-	35	54	81	81	-
C8	-	104.5	147	194.5	250.5	-
C9	-	24.2	29.5	45	57	-
C10	-	9.5	14.5	27	32	-
B1	-	5	6	10	12	-
H1	-	18	24.5	35	43	-



DIMENSION

DOUBLE SECTION

- 尺寸（双节，减速比 i=15～200）

  Dimension(double stage,Ratio i=15~200)

尺寸/Dimension	WVRBR042	WVRBR060	WVRBR090	WVRBR115	WVRBR140	WVRBR180
D1	-	M5	M8	M12	M16	-
D2	-	16	22	32	40	-
D3	-	50	80	110	130	-
D4	-	70	100	130	165	-
D5	-	4× φ5.5	4× φ6.6	4× φ9	4× φ11	-
D6	-	80	116	152	185	-
L1	-	7	10	7	13	-
L2	-	37	48	60	95	-
L3	-	60	90	115	140	-
L4	-	181.5	240.5	290	431	-
L5	-	28.5	36.5	51	79	-
L6	-	6	8	10	12	-
L7	-	3	3	5	5	-
L8	-	25.3	32	40	63	-
L9	-	4	6	10	16	-
L10	-	13	20	28	36	-
C1	-	60	80	130	180	-
C2	-	70	90	145	200	-
C3	-	4×M4	4×M5	4×M8	4×M12	-
$C4_{G6}$	-	14	19	24	35	-
$C5_{G6}$	-	50	70	110	114.3	-
C6	-	3.5	6	11.5	19	-
C7	-	35	54	67	81	-
C8	-	104.5	147	175.5	250.5	-
C9	-	24.2	29.5	42.5	57	-
C10	-	9.5	14.5	27	32	-
B1	-	5	6	10	12	-
H1	-	18	24.5	35	43	-

WAER Series planetary gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计， 确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计， 以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。
- 采用蜗线伞齿轮设计，容许输出扭矩高、比直 伞齿轮高30%以上。
- 高容许输入转速，比直伞齿轮输入高8倍以上。
- 蜗线伞齿轮的啮合齿印，经最佳优化设计，接触齿面负载均一，运转寿命长。
- 蜗线伞齿轮啮合，经最佳运动误差分析与严格的制程控制，以确保高精度的运转背隙。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.
- Adopt spiral bevel gear design, allow high output torque, more than 30% higher than straight bevel gear.
- High tolerance input speed, more than 8 times higher than straight bevel gear input.
- The meshing tooth imprint of spiral bevel gear has been optimized by optimum design, and the contact tooth surface load is uniform, and long running life.
- Cochlear bevel gears are meshed by optimum motion error analysis and strict process control to ensure high precision running back clearance.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W – AER – 090 – 010 – K – P2 – 马达型号 Motor reference

品牌 Brand: W

系列 Model: AER
ADR
VRBR
ABR
AER

规格 Size: 090
050
070
090
120
155
205

减速比 Ratio: 010
3
4
5
6
7
8
10
12
14
15
20
25
……
200

K-键 K-Key: K
S-光轴 S-Smooth

精度 Precision: P2
P1 精密背隙 Precision backlash
P2 标准背隙 Standard backlash
P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

– 机种、型号、扭矩
– 减速比或出力轴转速
– 工况及连接方式
– 数量及安装的机械名称
– 入力方式和入力转速
– 马达厂牌型号或法兰及马达轴尺寸

– Type, model and torque
– Ratio or output speed
– Working conditions and connection methods
– Quantity and installed machine name
– Input mode and input speed
– Motor brand model or flange and motor shaft size

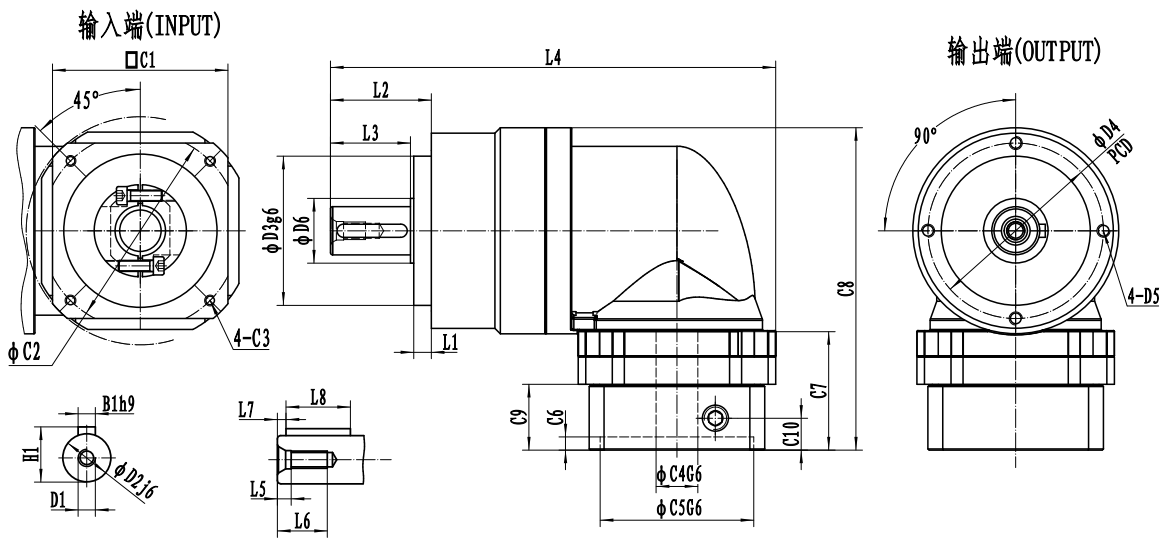
● 减速机性能资料/Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WAER050	WAER070	WAER090	WAER120	WAER155	WAER205
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	9	36	90	195	342	588
			4	12	48	120	260	520	1040
			5	15	60	150	325	650	1200
			6	18	55	150	310	600	1100
			7	19	50	140	300	550	1100
			8	17	45	120	260	500	1000
			10	14	40	100	230	450	900
			12	18	55	150	310	600	1100
			14	19	50	140	300	550	1100
			20	14	40	100	230	450	900
		2	15	15	60	150	325	650	1200
			25	15	60	150	325	650	1200
			30	20	55	150	310	600	1100
			35	19	50	140	300	550	1100
			40	17	45	120	260	500	1000
			45	14	40	100	230	450	900
			50	14	60	100	230	650	1200
			60	20	55	150	310	600	1100
			70	19	50	140	300	550	1100
			80	17	45	120	260	500	1000
			90	14	40	100	230	450	900
			100	14	40	100	230	450	900
			120	18	55	150	310	600	1100
			140	19	50	140	300	550	1100
			160	17	45	120	260	500	1000
			200	14	40	100	230	450	900
急停扭矩/Emergency stop torque T_{2NOT}	Nm	1,2	3~200	三倍额定输出力矩/Triple rated output torque					
额定输入转速/Rated input speed n_{1N}	rpm	1,2	3~200	5000	5000	4000	4000	3000	3000
最大输入转速/Maximum iutput speed n_{1B}	rpm	1,2	3~200	10000	10000	8000	8000	6000	6000
精密背隙/Precision backlash P1*	arcmin	1	3~20	≤4	≤4	≤4	≤4	≤4	≤4
		2	15~200	≤7	≤7	≤7	≤7	≤7	≤7
标准背隙/Standard backlash P2*	arcmin	1	3~20	≤6	≤6	≤6	≤6	≤6	≤6
		2	15~200	≤9	≤9	≤9	≤9	≤9	≤9
经济背隙/Economic backlash P3	arcmin	1	3~20	≤8	≤8	≤8	≤8	≤8	≤8
		2	15~200	≤12	≤12	≤12	≤12	≤12	≤12
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	3~200	3	7	14	25	50	145
容许径向力/Allowable radial force F_{2aB}	N	1,2	3~200	780	1530	3250	6700	9400	14500
容许轴向力/Allowable axial force F_{2aB}	N	1,2	3~200	390	765	1625	3350	4700	7250
使用寿命 /Lifespan	hr	1,2	3~200	20000 *					
效率 /Efficiency	%	1	3~20	95%					
		2	25~200	92%					
重量 /Weight	kg	1	3~20	0.9	2.1	6.4	13	24.5	51
		2	25~200	1.2	1.5	7.8	14.2	27.5	54
使用温度 /Working temperature	°C	1,2	3~200	(-10° C +90° C)					
润滑 /Lubricating				合成润滑脂/Synthetic lubricating grease					
防护等级 /IP Grade		1,2	3~200	IP65					
安装方向 /Installation direction		1,2	3~200	任意方向 /In any direction					
噪音值(n1=3000, 无负载) Noise level (n1=3000, off load)	dB(A)	1,2	3~200	≤61	≤63	≤65	≤68	≤70	≤72

(带"*"的精度需与工程师确认/ Need confirm with our engineer for those precision data with *)

● 减速机转动惯量 /Rotational inertia

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WAER050	WAER070	WAER090	WAER120	WAER155	WAER205
转动惯量J1 Rotational inertia J1	$kg.cm^2$	1	3~10	0.09	0.35	2.25	6.84	23.4	68.9
			12、14	0.035	0.07	1.87	6.25	21.8	65.6
			20	0.03	0.07	1.87	6.25	21.8	65.6
		2	15	0.09	0.35	2.25	6.84	23.4	68.9
			25~100	0.09	0.09	0.35	2.25	6.84	23.4
			120~200	0.007	0.01	0.31	1.87	6.25	21.8



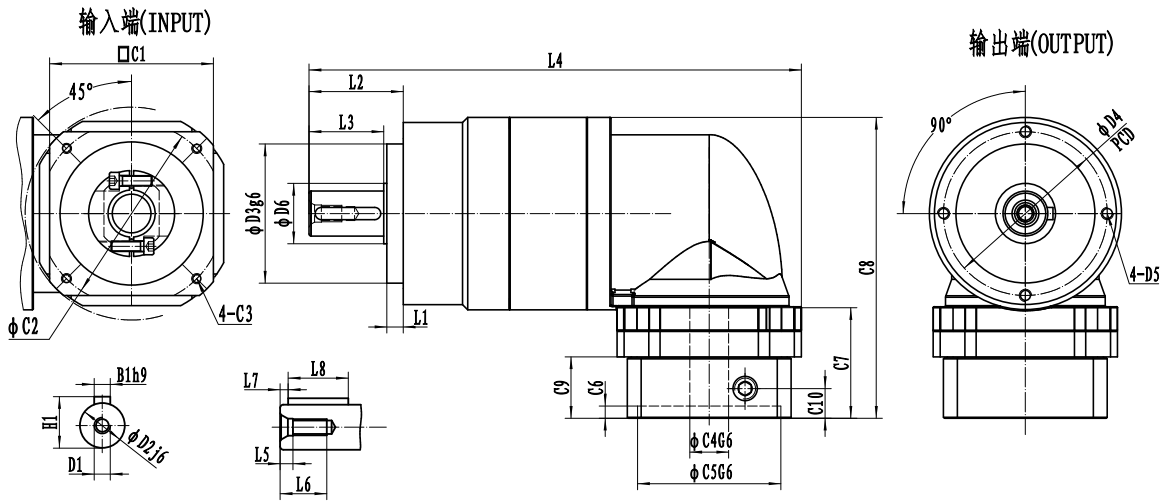
DIMENSION

SINGLE SECTION

- 尺寸（单节，减速比 i=3～20）

  Dimension(single stage,Ratio i=3~200)

尺寸/Dimension	WAER050	WAER070	WAER090	WAER120	WAER155	WAER205
D1	-	M5	M8	M12	M16	-
$D2_{j6}$	-	16	22	32	40	-
$D3_{g6}$	-	52	68	90	120	-
D4	-	62	80	108	140	-
D5	-	M5	M6	M8	M10	-
D6	-	17.5	29.5	39.5	49.5	-
L1	-	6.5	8	17	15	-
L2	-	36	46	70	97	-
L3	-	28.5	36.5	51	79	-
L4	-	149.5	203	266.5	359	-
L5	-	4	6	10	16	-
L6	-	13	20	28	36	-
L7	-	3	3	5	5	-
L8	-	25.3	32	40	63	-
C1	-	60	80	130	180	-
C2	-	70	90	145	200	-
C3	-	M4	M5	M8	M12	-
$C4_{G6}$	-	14	19	24	35	-
$C5_{G6}$	-	50	70	110	114.3	-
C6	-	3.5	6	14	19	-
C7	-	35	54	81	81	-
C8	-	105	147	194.5	253	-
C9	-	24.2	29.5	45	57	-
C10	-	9.5	14.5	27	32	-
B1	-	5	6	10	12	-
H1	-	18	24.5	35	43	-



DIMENSION

DOUBLE SECTION

- 尺寸（双节，减速比 i=15～200）

  Dimension(double stage,Ratio i=15~200)

尺寸/Dimension	WAER050	WAER070	WAER090	WAER120	WAER155	WAER205
D1	-	M5	M8	M12	M16	-
D2	-	16	22	32	40	-
D3	-	52	68	90	120	-
D4	-	62	80	108	140	-
D5	-	M5	M6	M8	M10	-
D6	-	17.5	29.5	39.5	49.5	-
L1	-	6.5	8	17	15	-
L2	-	36	46	70	97	-
L3	-	28.5	36.5	51	79	-
L4	-	181.5	240.5	290	431	-
L5	-	4	6	10	16	-
L6	-	13	20	18	36	-
L7	-	3	3	5	5	-
L8	-	25.3	32	40	63	-
C1	-	60	80	130	180	-
C2	-	70	90	145	200	-
C3	-	M4	M5	M8	M12	-
$C4_{G6}$	-	14	19	24	35	-
$C5_{G6}$	-	50	70	110	114.3	-
C6	-	3.5	6	11.5	19	-
C7	-	35	54	67	81	-
C8	-	105	147	178	253	-
C9	-	24.2	29.5	42.5	57	-
C10	-	9.5	14.5	27	32	-
B1	-	5	6	10	12	-
H1	-	18	24.5	35	43	-

WPFR Series Planetary Gearbox
系列行星减速机

PRODUCT FEATURESS
产品特点

- 行星臂架与输出轴采用一体式结构设计， 确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。
- 采用蜗线伞齿轮设计，容许输出扭矩高、比直伞齿轮高30%以上。
- 高容许输入转速，比直伞齿轮输入高8倍以上。
- 蜗线伞齿轮的啮合齿印，经最佳优化设计，接触齿面负载均一，运转寿命长。
- 蜗线伞齿轮啮合，经最佳运动误差分析与严格的制程控制，以确保高精度的运转背隙。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.
- Adopt spiral bevel gear design, allow high output torque, more than 30% higher than straight bevel gear.
- High tolerance input speed, more than 8 times higher than straight bevel gear input.
- The meshing tooth imprint of spiral bevel gear has been optimized by optimum design, and the contact tooth surface load is uniform, and long running life.
- Cochlear bevel gears are meshed by optimum motion error analysis and strict process control to ensure high precision running back clearance.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W – PFR – 090 – 010 – K – P2 – 马达型号 Motor reference

- W: 品牌 Brand
- PFR: 系列 Model — PFR / PLR
- 090: 规格 Size — 042, 060, 080, 115, 142
- 010: 减速比 Ratio — 3, 4, 5, 6, 7, 8, 10, 15, 20, 25, 35, 40, 50, 60, 70, 80, 100, ..., 200
- K: K-键 K-Key; S-光轴 S-Smooth
- P2: 精度 Precision — P1 精密背隙 Precision backlash; P2 标准背隙 Standard backlash; P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

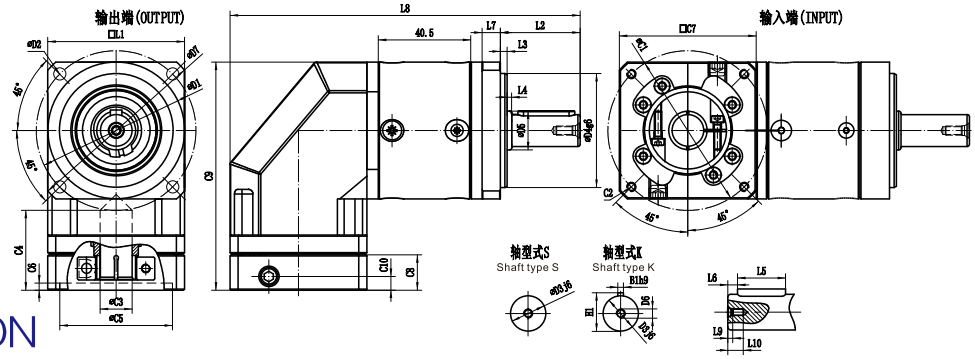
PLANETARY GEARBOX

● 减速机性能资料/Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WPFR042	WPFR060	WPFR080	WPFR115	WPFR142
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	8	18	40	125	290
			4	18	36	90	230	460
			5	16	40	110	260	550
			6	8	20	40	90	340
			7	8	20	40	90	340
			8	5	12	22	70	210
			10	5	12	22	70	210
			12	8	20	40	90	340
			14	8	20	40	90	340
			20	5	12	22	70	210
		2	15	16	36	90	125	550
			25	16	36	90	260	550
			30	16	36	90	125	290
			35	16	36	90	260	550
			40	16	36	90	230	460
			48	18	40	110	230	460
			50	16	36	90	260	550
			60	16	36	90	230	340
			70	16	36	90	230	340
			80	16	36	90	230	460
			90	16	–	90	230	290
			100	16	36	90	230	550
			120	8	22	55	125	340
			140	8	22	55	125	340
			160	5	15	50	120	210
			200	5	12	22	70	210
急停扭矩/Emergency stop torque T_{2NOT}	Nm	1,2	3~200	二倍额定输出力矩/Double rated output torque				
额定输入转速/Rated input speed n_{1N}	rpm	1,2	3~200	4500	4000	3500	3500	3000
最大输入转速/Maximum iutput speed n_{1B}	rpm	1,2	3~200	10000	8000	6000	6000	4500
标准背隙/Standard backlash P2	arcmin	1	3~20	≤22	≤16	≤10	≤10	≤10
		2	15~200	≤26	≤18	≤12	≤12	≤12
扭转刚性/Torsional rigidity	Nm/arcmin	1,2	3~200	0.65	1.8	4.7	11	35
容许径向力/Allowable radial force F_{2aB}	N	1,2	3~200	165	240	400	1240	3700
容许轴向力/Allowable axial force F_{2aB}	N	1,2	3~200	135	220	420	1000	3500
使用寿命/Lifespan	hr	1,2	3~200	20000*				
效率/Efficiency	%	1	3~20	96%				
		2	25~200	94%				
重量/Weight	kg	1	3~20	0.3	0.85	2	6	11
		2	25~200	0.4	0.9	2.3	7.5	13
使用温度/Working temperature	℃	1,2	3~200	(–10° C +90° C)				
润滑/Lubricating				合成润滑脂/Synthetic lubricating grease				
防护等级/IP Grade		1,2	3~200	IP65				
安装方向/Installation direction		1,2	3~200	任意方向/In any direction				
噪音值(n1=3000, 无负载) Noise level (n1=3000, off load)	dB(A)	1,2	3~200	≤60	≤60	≤63	≤68	≤75

- 减速机转动惯量/Rotational inertia

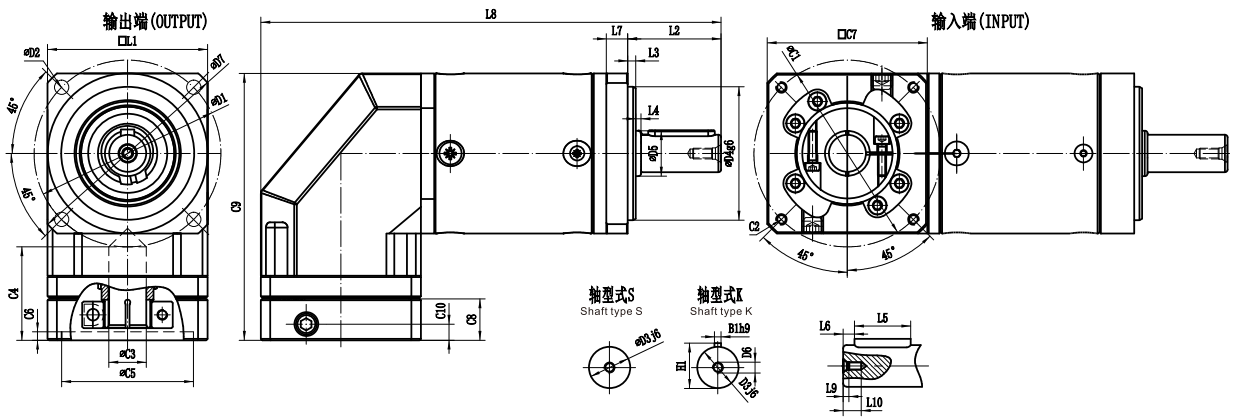
规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WPFR042	WPFR060	WPFR080	WPFR115	WPFR142
转动惯量J1 Rotational inertia J1	kg.cm²	1	3~10	0.03	0.135	0.75	2.5	5.8
			12、14	0.03	0.09	0.45	1.3	1.9
			20	0.03	0.09	0.39	1.2	2.73
		2	15	0.015	0.09	0.45	2.4	3.3
			25~100	0.01	0.035	0.2	1.4	2.3
			120~200	0.005	0.035	0.18	1.3	2.1



DIMENSION
SINGLE SECTION

- 尺寸（单节，减速比i=3～20）Dimension(single stage,Ratio i=3~20)

尺寸/Dimension	WPFR042	WPFR060	WPFR080	WPFR115	WPFR142
D1	–	70	100	130	185
D2	–	5.5	6.5	8.8	11
D3	–	14	20	25	40
D4	–	50	80	110	130
D5	–	17	25	35	55
D6	–	M5	M6	M10	M12
D7	–	80	120	160	230
L1	–	60	90	120	176
L2	–	35	40	55	87
L3	–	3	3	4	5
L4	–	2	1	1	2
L5	–	25	25	40	65
L6	–	2.5	5	5	5
L7	–	8	10	14	15
L8	–	153.5	204	288	340.5
L9	–	4.8	5	7.5	9.5
L10	–	12	18	23	25
C1	–	70	90	145	200
C2	–	M4	M5	M8	M12
C3	–	6–14	14–19	16–24	22–35
C4	–	35	54	81	81
C5	–	50	70	110	114.3
C6	–	3.5	6	14	19
C7	–	60	80	130	180
C8	–	16	30	45.5	57.5
C9	–	100	137	192	246.5
C10	–	9.5	14.5	27	32
B1h9	–	5	6	8	12
H1	–	16	22.5	28	43



DIMENSION

DOUBLE SECTION

- 尺寸（双节，减速比 i=15～200）
  Dimension(double stage,Ratio i=15~200)

尺寸/Dimension	WPFR042	WPFR060	WPFR080	WPFR115	WPFR142
D1	–	70	100	130	185
D2	–	5.5	6.5	8.8	11
D3	–	14	20	25	32
D4	–	50	80	110	130
D5	–	17	25	35	40
D6	–	M5	M6	M10	M12
D7	–	80	120	160	230
L1	–	60	90	120	176
L2	–	35	40	55	87
L3	–	3	3	4	5
L4	–	2	1	1	2
L5	–	25	25	40	65
L6	–	2.5	4	5	5
L7	–	8	10	14	15
L8	–	172.5	228.5	288	388.5
L9	–	4.8	5	7.5	9.5
L10	–	12	18	23	25
C1	–	70	90	145	200
C2	–	M4	M5	M8	M12
C3	–	6–14	14–19	16–24	22–35
C4	–	35	54	81	81
C5	–	50	70	110	114.3
C6	–	3.5	6	14	19
C7	–	60	80	130	180
C8	–	16	30	45.5	57.5
C9	–	100	137	192	246.5
C10	–	9.5	14.5	27	32
B1h9	–	5	6	8	12
H1	–	16	22.5	28	43

WPLR Series Planetary Gearbox 系列行星减速机

PRODUCT FEATURESS 产品特点

- 行星臂架与输出轴采用一体式结构设计， 确保最大的扭转刚性。
- 行星轮采用满滚针设计，增加接触面积以提高结构刚性与输出扭矩。
- 齿轮采用低碳钢表面渗碳淬火到HRC62，以获得最佳的耐磨及冲击韧性。
- 齿形引用国外进口软件辅助设计，以获得最佳的齿形降低噪音。
- 输入端与马达轴连接采用双边抱紧方式，以获取最大的夹紧力和零背隙的动力传递。
- 采用蜗线伞齿轮设计，容许输出扭矩高、比直伞齿轮高30%以上。
- 高容许输入转速，比直伞齿轮输入高8倍以上。
- 蜗线伞齿轮的啮合齿印，经最佳优化设计，接触齿面负载均一，运转寿命长。
- 蜗线伞齿轮啮合，经最佳运动误差分析与严格的制程控制，以确保高精度的运转背隙。

- Planetary boom and output shaft are intergrated structure designed to ensure maximum torsional rigidity.
- Planetary wheel with full needle design,increase the contact area to improve the rigidity and output torque.
- The gears are carburized and quenched to the HRC62 with low carbon steel surface for optimum wear and impact toughness.
- Gears refer to foreign imported software-assisted design to obtain the best tooth shape to reduce noise.
- The input terminal is connected to the motor shaft in a double-tight manner to obtain the maximum clamping force and zero backlash power transmission.
- Adopt spiral bevel gear design, allow high output torque, more than 30% higher than straight bevel gear.
- High tolerance input speed, more than 8 times higher than straight bevel gear input.
- The meshing tooth imprint of spiral bevel gear has been optimized by optimum design, and the contact tooth surface load is uniform, and long running life.
- Cochlear bevel gears are meshed by optimum motion error analysis and strict process control to ensure high precision running back clearance.

INDICATION FOR MODEL

SELECTION

- 机种型号表示

W – PLR – 090 – 010 – K – P2 – 马达型号 Motor reference

品牌 Brand: W

系列 Model: PLR
PFR
PLR

规格 Size: 090
042
060
080
120
160

减速比 Ratio: 010
3
4
5
6
7
8
10
15
20
25
35
40
50
60
70
80
100
.....
200

K-键 K-Key: K
S-光轴 S-Smooth

精度 Precision: P2
P1 精密背隙 Precision backlash
P2 标准背隙 Standard backlash
P3 经济背隙 Economic backlash

GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

PLANETARY GEARBOX

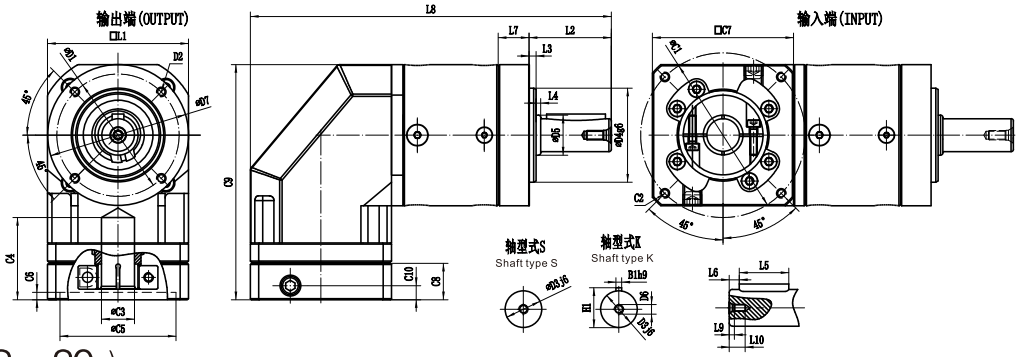
减速机性能资料/Performance

规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WPLR042	WPLR060	WPLR080	WPLR120	WPLR160
额定输出力矩 Rated output torque T_{2N}	Nm	1	3	8	18	40	125	290
			4	18	36	90	230	460
			5	16	40	110	260	550
			6	8	20	40	90	340
			7	8	20	40	90	340
			8	5	12	22	70	210
			10	5	12	22	70	210
			12	8	20	40	90	340
			14	8	20	40	90	340
			20	5	12	22	70	210
		2	15	16	36	90	125	550
			25	16	36	90	260	550
			30	16	36	90	125	290
			35	16	36	90	260	550
			40	16	36	90	230	460
			48	18	40	110	230	460
			50	16	36	90	260	550
			60	16	36	90	230	340
			70	16	36	90	230	340
			80	16	36	90	230	460
			90	16	-	90	230	290
			100	16	36	90	230	550
			120	8	22	55	125	340
			140	8	22	55	125	340
			160	5	15	50	120	210
			200	5	12	22	70	210
急停扭矩 /Emergency stop torque T_{2NOT}	Nm	1,2	3~200	二倍额定输出力矩 /Double rated output torque				
额定输入转速/Rated input speed n_{1N}	rpm	1,2	3~200	4500	4000	3500	3500	3000
最大输入转速 /Maximum iutput speed n_{1B}	rpm	1,2	3~200	10000	8000	6000	6000	4500
标准背隙 /Standard backlash P2	arcmin	1	3~20	≤22	≤16	≤10	≤10	≤10
		2	15~200	≤26	≤18	≤12	≤12	≤12
扭转刚性 /Torsional rigidity	Nm/arcmin	1,2	3~200	0.65	1.8	4.7	11	35
容许径向力/Allowable radial force F_{2aB}	N	1,2	3~200	165	240	400	1240	3700
容许轴向力/Allowable axial force F_{2aB}	N	1,2	3~200	135	220	420	1000	3500
使用寿命 /Lifespan	hr	1,2	3~200	20000 *				
效率 /Efficiency	%	1	3~20	96%				
		2	25~200	94%				
重量 /Weight	kg	1	3~20	0.3	0.85	2	6	11
		2	25~200	0.4	0.9	2.3	7.5	13
使用温度 /Working temperature	℃	1,2	3~200	（-10° C +90° C）				
润滑 /Lubricating				合成润滑脂/Synthetic lubricating grease				
防护等级 /IP Grade		1,2	3~200	IP65				
安装方向 /Installation direction		1,2	3~200	任意方向 /In any direction				
噪音值(n1=3000, 无负载) Noise level (n1=3000, off load)	dB(A)	1,2	3~200	≤60	≤60	≤63	≤68	≤75

- 减速机转动惯量 /Rotational inertia

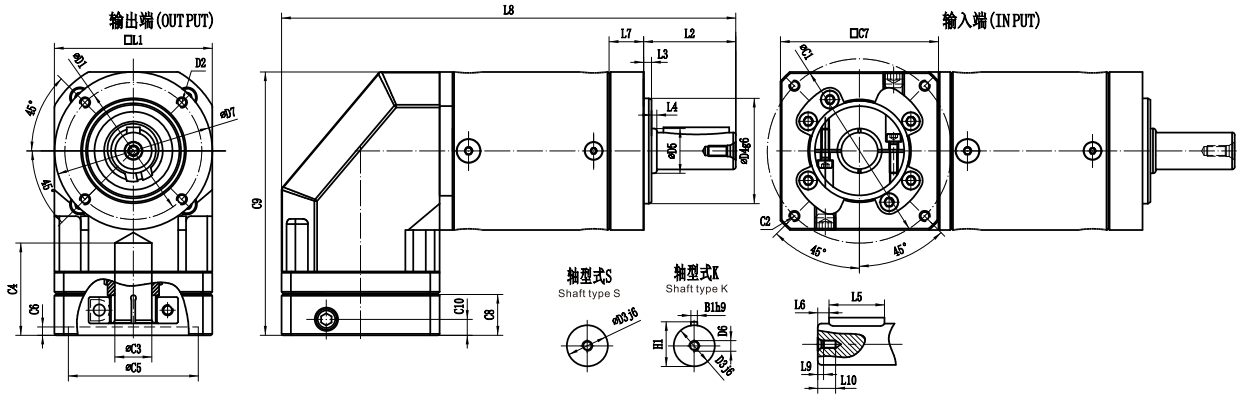
规格 Specification	单位 Unit	节数 Stage	减速比 Ratio	WPLR042	WPLR060	WPLR080	WPLR120	WPLR160
转动惯量J1 Rotational inertia J1	kg.cm²	1	3~10	0.03	0.135	0.75	2.5	5.8
			12、14	0.03	0.09	0.45	1.3	1.9
			20	0.03	0.09	0.39	1.2	2.73
		2	15	0.015	0.09	0.45	2.4	3.3
			25~100	0.01	0.035	0.2	1.4	2.3
			120~200	0.005	0.035	0.18	1.3	2.1

DIMENSION
SINGLE SECTION



- 尺寸（单节，减速比i=3～20）Dimension(single stage,Ratio i=3~20)

尺寸/Dimension	WPLR042	WPLR060	WPLR080	WPLR120	WPLR160
D1	–	52	70	100	145
D2	–	M5	M6	M10	M12
D3	–	14	20	25	40
D4	–	40	60	80	130
D5	–	17	25	35	55
D6	–	M5	M6	M10	M12
D7	–	60	80	115	162
L1	–	60	80	115	142
L2	–	35	40	55	87
L3	–	3	3	4	5
L4	–	2	1	1	2
L5	–	25	25	40	65
L6	–	2.5	5	5	5
L7	–	13	21.5	40.5	32.5
L8	–	153.5	204	288	340.5
L9	–	4.8	5	7.5	9.5
L10	–	12	18	23	25
C1	–	70	90	145	200
C2	–	M4	M5	M8	M12
C3	–	6–14	14–19	16–24	22–35
C4	–	35	54	81	81
C5	–	50	70	110	114.3
C6	–	3.5	6	14	19
C7	–	60	80	130	180
C8	–	16	30	45.5	57.5
C9	–	100	137	192	246.5
C10	–	9.5	14.5	27	32
B1h9	–	5	6	8	12
H1	–	16	22.5	28	43



DIMENSION

DOUBLE SECTION

- 尺寸（双节，减速比 i=15～200）Dimension(double stage,Ratio i=15~200)

尺寸/Dimension	WPLR042	WPLR060	WPLR080	WPLR120	WPLR160
D1	–	52	70	100	145
D2	–	M5	M6	M10	M12
D3	–	14	20	25	40
D4	–	40	60	80	130
D5	–	17	25	35	55
D6	–	M5	M6	M10	M12
D7	–	60	80	115	162
L1	–	60	80	115	142
L2	–	35	40	55	87
L3	–	3	3	4	5
L4	–	2	1	1	2
L5	–	25	25	40	65
L6	–	2.5	5	5	5
L7	–	13	21.5	40.5	32.5
L8	–	172.5	228.5	288	388.5
L9	–	4.8	5	7.5	9.5
L10	–	12	18	23	25
C1	–	70	90	145	200
C2	–	M4	M5	M8	M12
C3	–	6–14	14–19	16–24	22–35
C4	–	35	54	81	81
C5	–	50	70	110	114.3
C6	–	3.5	6	14	19
C7	–	60	80	130	180
C8	–	16	30	45.5	57.5
C9	–	100	137	192	246.5
C10	–	9.5	14.5	27	32
B1h9	–	5	6	8	12
H1	–	16	22.5	28	43

WR Series Right-angle Gearbox
系列转角减速机

PRODUCT FEATURESS
产品特点

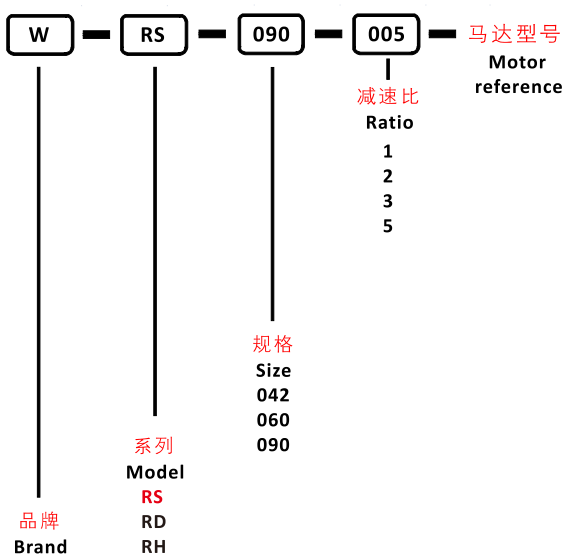
- WR系列采用蜗线伞型齿轮设计。
- 背隙可根据客户要求调整 。
- 低噪音等特性 。
- 精巧的外壳设计可搭配任何方向定位 。
- 安装容易，能配合多种马达或加装减速机 。
- 多样式输出（空心输出、实心输出、双向输出）。
- 全密封结构、免维护 。

- WR series adopts worm bevel gear design.
- The backlash can adjust according customers' requirements.
- Lower noise.
- The delicate shell design can be matched with any direction.
- Easy installation,can multi-match each motor or gearbox.
- Multiple output(hollow output,solid output or dial output).
- Multiple output,maintance-free.

INDICATION FOR MODEL

SELECTION

- 机种型号表示



GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

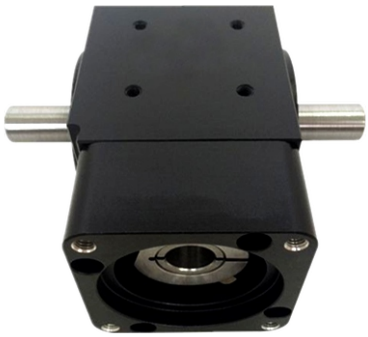
- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

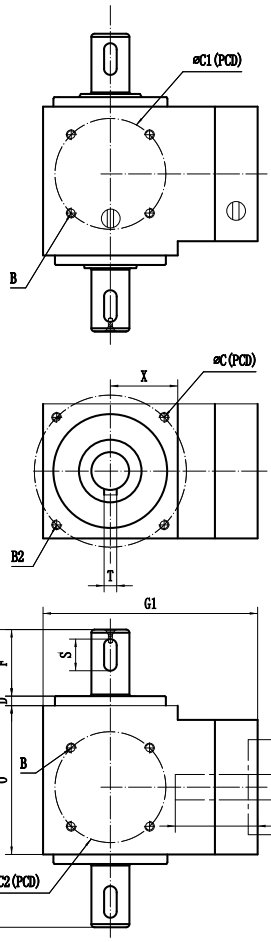
PERFORMANCE DATA OF SPEED REDUCER

● 减速机性能资料 /Performance

减速机型号/Model	WRS/WRH/WRD042	WRS/WRH/WRD060	WRS/WRH/WRD090
外框尺寸/Frame size	□42	□60	□90
额定输出扭矩/Rated output torque	15N.m	30N.m	60N.m
最大输出扭矩/Maximum output torque	2倍额定输出扭矩 /2 times rated output torque		
额定输入转速/ Rated input speed	1500rpm	1000rpm	
最大输入转速/Maximum input speed	2000rpm		
减速比/Reduction ratio	2、3	1、2、3、5	
背隙/Backlash	背隙可调 /Adjustable backlash		
容许径向负载/Allowable radial load	300N	500N	1200N
容许轴向负载/Allowable axial load	150N	200N	500N.
输入轴径/Input shaft size	≤11 / ≤12 (mm)	14 / ≤16 (mm)	≤19 / ≤24 (mm)
转动惯量/Rotational Inertia	0.02kg • $[cm]^2$	0.06kg • $[cm]^2$	0.4kg • $[cm]^2$
扭转刚性/Torsional rigidity	1.2Nm/arc min	1.5Nm/arc min	5Nm/arc min
额定寿命/Rated lifespan	10000h（额定负载及额定输入转速条件下/Condition under rated load and rated input speed）		
效率/ Efficiency	95%		
工作温度/Working Temperature	-10℃～80℃		
旋转方向/Rotation direction	与输入轴相反 /Opposite with the input shaft		
防护等级/Protection Level	IP65		
润滑方式/Lubricating method	脂润滑 /Grease Lubrication		
安装方向/Installation direction	任意方向 /In any direction		
噪音/Noise Level	≤62dB(A)	≤65dB(A)	≤65dB(A)
重量/Weight	0.7Kg	1.3Kg	4.1Kg

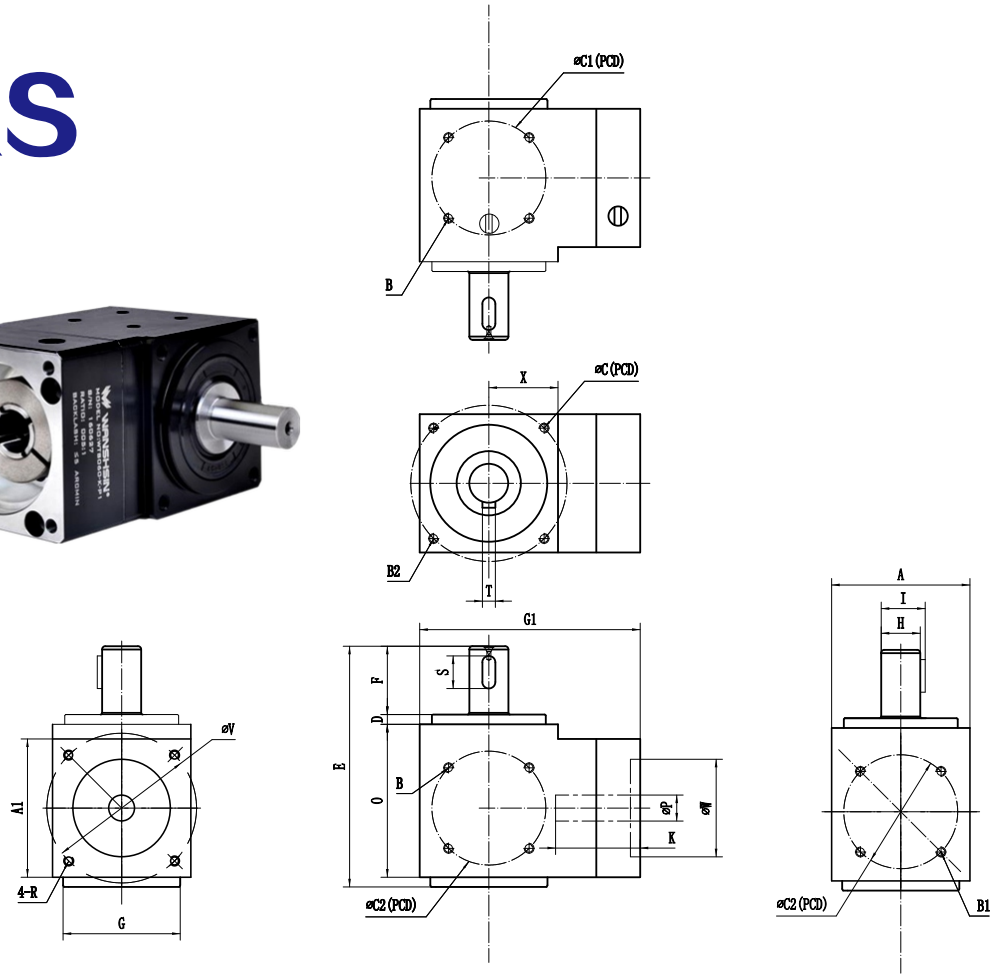
WRD





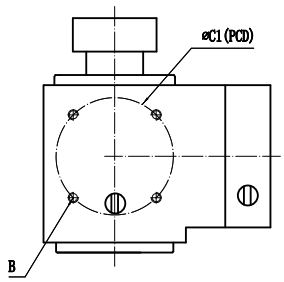
尺寸/Size	WRD04202/03	WRD06001/02/03/05	WRD09001/02/03/05
A	42.5	60	90
A1	42.5	60	90
B	4-M3深/Depth4	4-M4深/Depth5	4-M5深/Depth8
B1	4-M3深/Depth4	4-M4深/Depth5	4-M5深/Depth8
B2	4-M3深/Depth6	4-M5深/Depth10	4-M6深/Depth12
C	48	70	100
C1	42	46	70
C2	35	36	60
D	3	3	3
E	94	125	170
F	21	27	35
G	36	52	80
G1	68	98	129
H	12	14	19
I	13.5	16	21.8
K	26	34	41
O	47	64	93.5
S	10	16	25
T	4	5	6
X	21.25	30	45

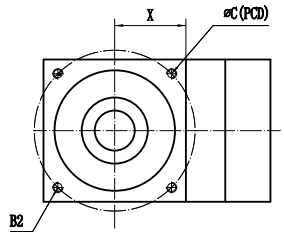
WRS

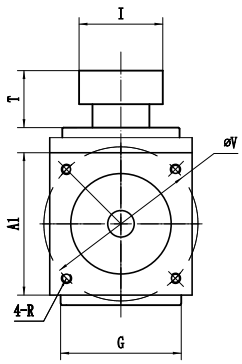


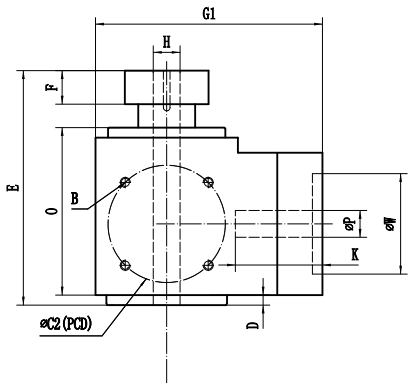
尺寸/Size	WRS04202/03	WRS06001/02/03/05	WRS09001/02/03/05
A	42.5	60	90
A1	42.5	60	90
B	4-M3深/Depth4	4-M4深/Depth5	4-M5深/Depth8
B1	4-M3深/Depth4	4-M4深/Depth5	4-M5深/Depth8
B2	4-M3深/Depth6	4-M5深/Depth10	4-M6深/Depth12
C	48	70	100
C1	42	46	70
C2	35	36	60
D	3	3	3
E	74	97	136.5
F	21	27	35
G	36	52	80
G1	68	98	129
H	12	14	19
I	13.5	16	21.8
K	26	34	41
O	47	64	93.5
S	10	16	25
T	4	5	6
X	21.25	30	45

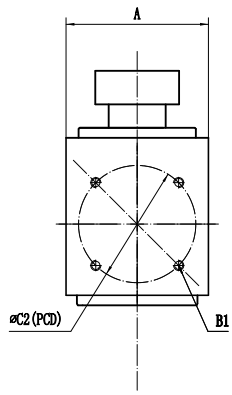
WRH











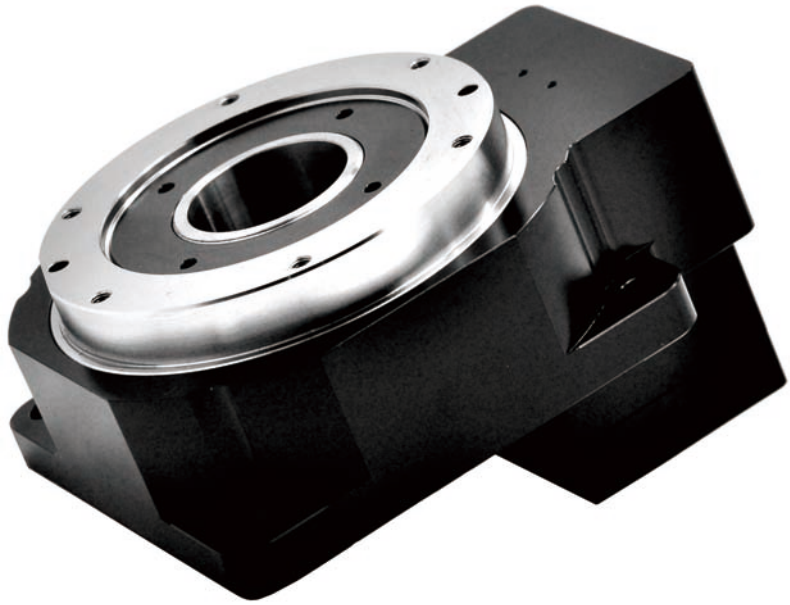
尺寸/Size	WRH04202/03	WRH06001/02/03/05	WRH09001/02/03/05
A	42.5	60	90
A1	42.5	60	90
B	4-M3深/Depth4	4-M4深/Depth5	4-M5深/Depth8
B1	4-M3深/Depth4	4-M4深/Depth5	4-M5深/Depth8
B2	4-M3深/Depth6	4-M5深/Depth10	4-M6深/Depth12
C	48	70	100
C1	42	46	70
C2	35	36	60
D	3	3	3
E	65.5	88	125
F	8	10	16
G	36	52	80
G1	68	98	129
H	8	14	20
I	25	34	54
K	26	34	50
O	47	64	93.5
T	12.5	18	25
X	21.25	30	45

WT Series Hollow Rotating Platform
系列中空旋转平台

PRODUCT FEATURESS
产品特点

- 旋转面可直接连接工作零件，提升安装的方便性。
- 高精度，重复定位精度可达 ± 15arcsec。
- 中空式的设计，配线配管都方便使用。
- 可搭载各种厂家的伺服和步进电机。

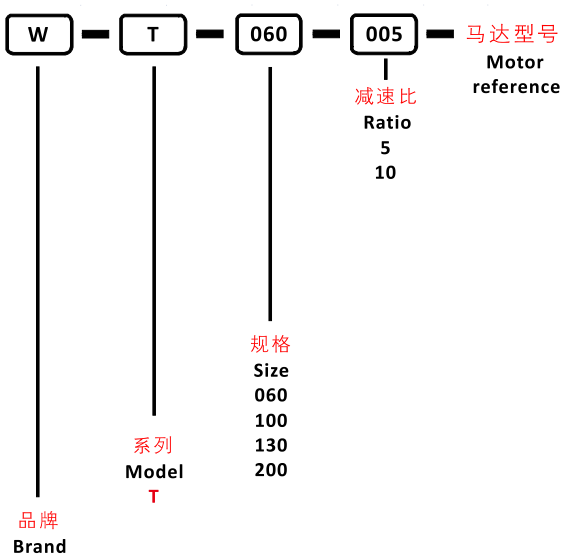
- The rotating table allows for mounting the workpiece directly for improve the convenience of installation.
- High precision,repeated positioning accuracy can up to ± 15arcsec .
- Hollow design, convenient for connection both for cable and pipe.
- Match all servo & step motor for different brands.



INDICATION FOR MODEL

SELECTION

- 机种型号表示



GENERAL NOTICES

- 订货须知

- 机种、型号、扭矩
- 减速比或出力轴转速
- 工况及连接方式
- 数量及安装的机械名称
- 入力方式和入力转速
- 马达厂牌型号或法兰及马达轴尺寸

- Type, model and torque
- Ratio or output speed
- Working conditions and connection methods
- Quantity and installed machine name
- Input mode and input speed
- Motor brand model or flange and motor shaft size

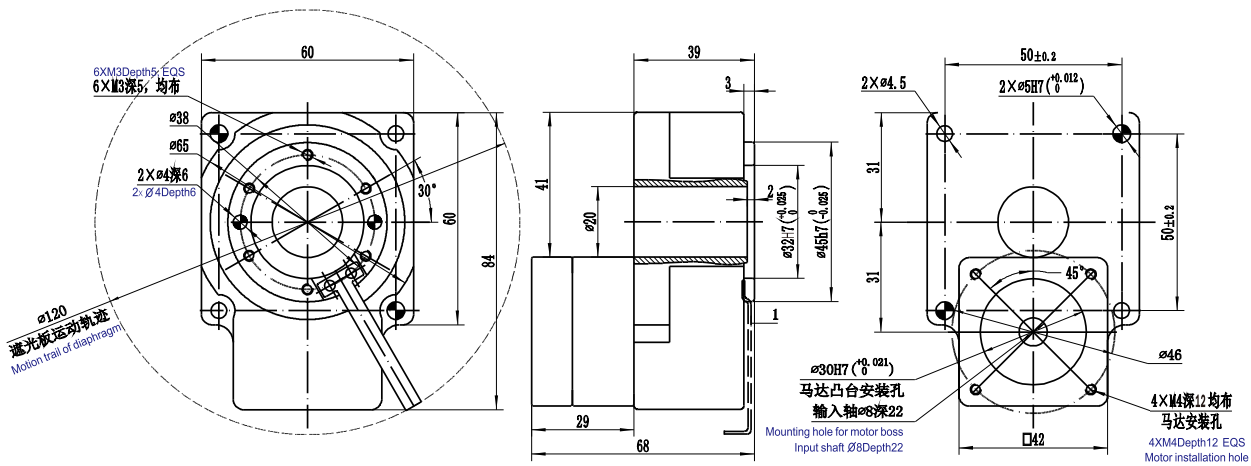
PERFORMANCE DATA OF

TABLE

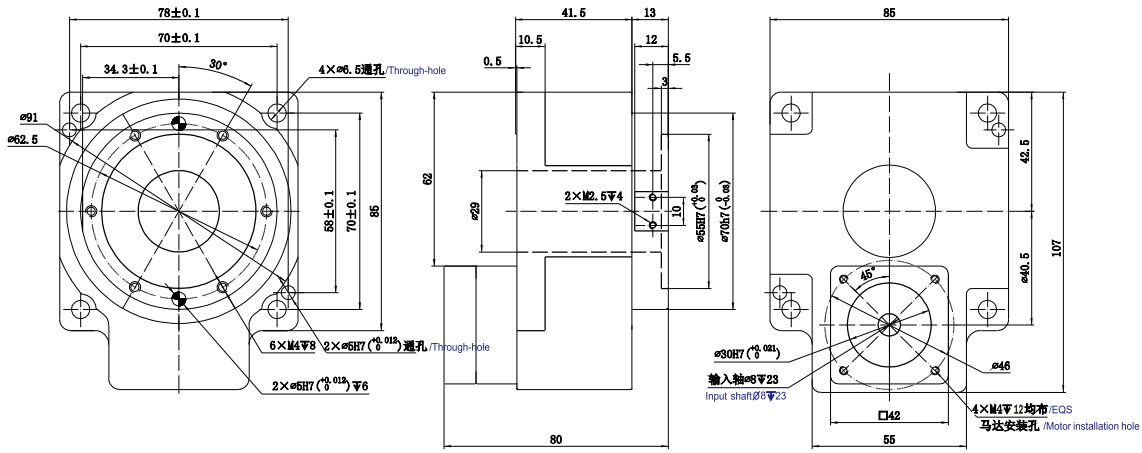
● 中空旋转平台性能表 /Rotating platform performance

品名 Item No.	WT060	WT100	WT130	WT200
搭载马达型号 Servo motor type	42型步进马达 50w~100w伺服电机 42 step motor 50W-100W servo motor		57型步进马达 200W~400W伺服电机 57 step motor 200W-400W servo motor	86型步进马达 750W伺服电机 86 step motor 750W servo motor
支撑旋转平台轴承 Supporting rotary platform bearing	深沟滚珠轴承 Deep groove ball bearing	深沟滚珠轴承+圆锥滚子轴承 Deep groove ball bearing + Tapered roller bearing		
减速比 Ratio	5:1	10:1	10:1	10:1
转动惯量 Inertia moment	$2330*10^{-7}$ kg·m^2	$3898*10^{-6}$ kg·m^2	$9216*10^{-6}$ kg·m^2	$85792*10^{-6}$ kg·m^2
允许输出转矩 Allowable output torque	5N.m	25N.m	45N.m	80N.m
额定输出转速 Rated output speed	200r/min			
角度传动精度 Angle transmission precision	3arcmin			
反复定位精度 Reset positioning precision	±15arcsec			
齿隙 Backlash	无齿隙（可调节结构） No backlash (Adjustable structure)			
允许轴向负载 Allowable axial load	100N	300N	400N	800N
允许惯性力矩 Allowable moment of inertia	10N.m	20N.m	50N.m	100N.m
旋转平台平行度 Parallelism of rotating platform	<0.015	<0.02		<0.04
旋转平台同心度 Concentricity of rotating platform		<0.015		<0.02
噪音 Noise		65dB		67dB
防护等级 Protection level	IP40			
重量 Weight	0.6kg	1.2kg	2.8kg	9.6kg

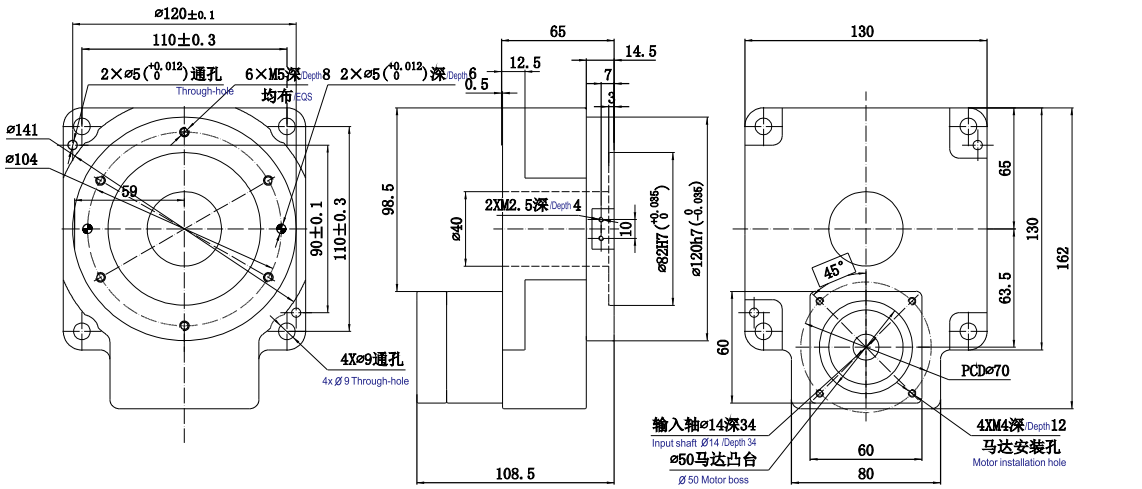
WT60



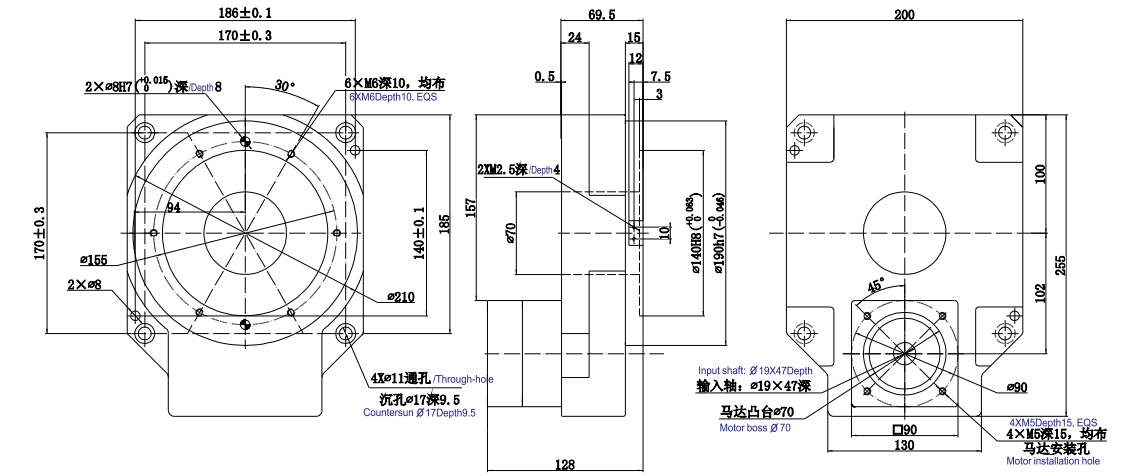
WT100



WT130



WT200



INSTALLATION OF
PLANETARY REDUCERS

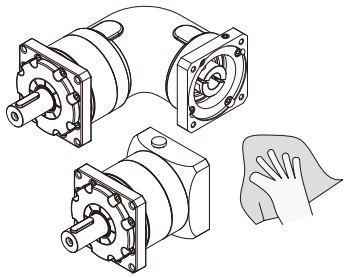
● 减速机安装方法 /Gear motor installation method

减速机如由贵司安装，请遵守以下要求。

行星减速机马达安装法兰部的尺寸因伺服马达而异，有可能无法安装指定的伺服马达。（请务必安装订购时所指定的伺服马达。）
伺服马达的输出轴可能涂有防锈剂等。

If the Planetary Reducers is installed by your company, please comply with the following requirement.
The size of the motor mounting flange of the planetary reducer differs according to the servo motor, the designated servo motor may not be able to be installed. (Please be sure to install the designated servo motor when purchased.)
There may be rust inhibitor on the output shaft of the servo motor.

1 将马达轴安装面的防锈剂、油等擦拭干净。
Clean up the rust inhibitor and grease on the installing side of the motor shaft.



2 取下塞子。
Take off the plug.

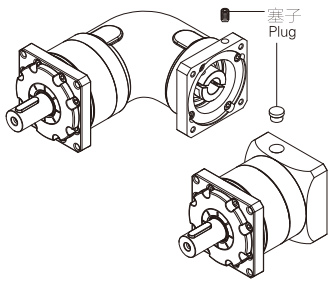
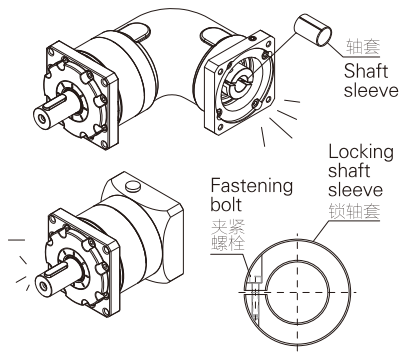


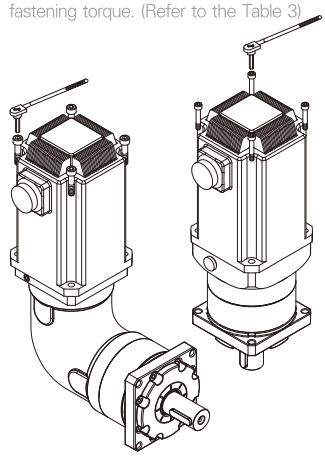
表3 螺栓紧固扭矩
Diagram 3 Bolt fastening torque

螺栓大小 Bolt size		M3	M4	M5	M6	M8	M10	M12	M16
马达安装螺栓 Motor mounting bolt	N・m	1.0	2.5	5.1	8.7	21	42	72	134
	kgf・m	0.11	0.26	0.52	0.89	2.1	4.3	7.3	14
夹紧螺栓 Fastening bolt	N・m	1.9	4.3	8.7	15	36	71	125	–
	kgf・m	0.18	0.44	0.89	1.5	3.7	7.2	13	–

3 转动输入轴，使加紧螺栓等头部对准塞孔。此时请确认加紧螺栓处于松弛状态。将减速机垂直放置在平整场所，使减速机的马达安装面朝上。（如有轴套，请按图示进行安装。）
Rotate the input shaft, and align the top of the fastening bolt at the plug hole. Make sure that the fastening bolt is loose at the time. Lay the reducer vertically on the flat place, and face up the installing side of the motor. (If there is a shaft sleeve, please install it as the picture shows.)

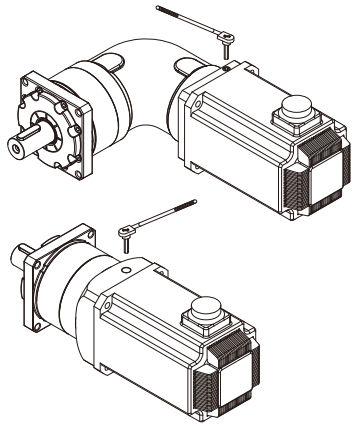


4 请将马达轴缓缓地插入输入轴中以免造成撞击，确认马达法兰面与减速机法兰面紧贴。按规定的紧固扭矩紧固马达安装螺栓。（参见表3）
Please insert the motor shaft slowly into the input shaft to avoid impact, and make sure the surfaces of the motor flange and the reducer flange are stick together. Fasten the motor mounting bolt according to the specified fastening torque. (Refer to the Table 3)



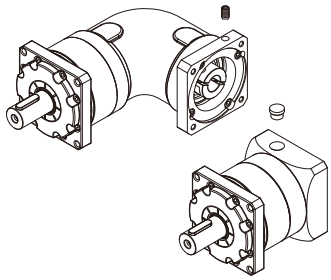
5 使用扭矩扳手等工具，按规定的紧固扭矩紧固输入轴的夹紧螺栓。（参见表3）

Follow the specified fastening torque, and fasten the fastening bolt of the input shaft with the tools such as torque spanner. (Refer to the Table 3)



6 安装塞子，至此作业完成。

Install the plug, and the work is done.



安装与设置

Installation and setting up

- 避免在直接接触雨水的场所使用。（如需在户外或接触粉尘、水滴的场所使用，请事先向我公司咨询。）
- 请设置在0～40℃的环境中。
- 请安装在牢固无振动的台面，用螺栓等切实固定。
  安装时，应保证便于保养和检查。
- Avoid using it in places that are exposed to rain directly. (Please consult to our company first when using it outside or in places exposed to dust and water.)
- Please fit it in the temperature between zero and forty.
- Please install it on the stable and firm surface, and fasten it tightly with bolt.
  During installation, it is necessary to ensure easy maintenance and inspection.

输出轴侧连接

Output shaft connecting

- 在输出法兰型上安装齿轮、皮带轮、链轮等时，请采用带凸缘的安装设计，嵌入输出法兰凸缘部。安装时请注意避免施加过大推力载荷。
- 在输出轴型上安装联轴器、链轮等时，请注意避免向输出轴施加过大推力载荷。嵌入时不得大力敲击输出轴，否则会导致轴承与减速机内部受损。
- 联轴器等部位的轴与键间隙过大会导致烧结，因此安装时请注意。
- 连接时请准确定心。
- When installing gear wheels, belt pulley and chain wheels on the output flange model, please use the installing design with bulged edges, and implant them into it. Avoid applying too much strength when installing.
- When installing couplings, chain wheels on the output shaft, please do not apply too much strength onto it. Do not knock too hard on the output shaft when implanting, or it may cause damages to the axletree and the interior part of the reducer.
- Too much gap between shaft and key in the coupling may cause firing, so please be careful when installing.
- Please be careful when you connect.

安装到输出法兰部（限法兰型）

Install it to the output flange (limited to the flange model)

- 将装置部件等安装到输出法兰部时，请使用扭矩扳手等工具按规定的紧固扭矩进行紧固。
- When installing the device component to the output flange, please follow the specified fastening torque, and use the tools such as torque

螺栓大小 Bolt size		M3	M4	M5	M6	M8	M10	M12	M16	M20
夹紧螺栓 Fastening bolt	N・m	1.9	4.3	8.7	15	36	71	125	310	603
	kgf・m	0.18	0.44	0.89	1.5	3.7	7.2	13	32	62

※ 推荐螺栓强度分类12.9级以上 Recommended Strength level of the bolt is above 12.9

开机前的注意事项

Matters that need attention before shutting down

- 出厂时已按规定量加入润滑油，因此到货后可直接使用。
- 首次运转时，请先确认输出轴的转向，然后逐渐增加负荷。
- The specified amount of lubricant has been added before delivery, so the machine can be used directly when arrived.
- Confirm the rolling direction of the output shaft and increase the load gradually the first time operating.

运转中的注意事项

Matters that need attention during operating

- 请注意不得过载。
- 输出轴的转速不得大于规定转速。
- 出现以下情况时，请停机检查。
  1、温度突然开始升高。
  2、突然发出很大异响。
  3、转速突然开始不稳定。
- 可能的原因如下，请及时处理。
  1、是否处于过载状态?
  2、轴承、齿轮、传动面有无损伤?
  3、机器连接条件有无异常?
- Do not overloaded.
- The rolling speed of the output shaft should not be faster than the specified one.
- Please shut the machine down when following situation shows.
  1、The temperature rise suddenly.
  2、Strange noise are emerged.
  3、The rolling speed becomes unstable.
- The possible reasons are as follows, and please make sure to deal with it in time.
  1、Whether it is overloaded or not?
  2、Are the axletrees, gear wheels and the rolling side damaged?
  3、Is the connecting condition abnormal?

润滑油管理

The lubricant managing

- 油脂不能更换。
- The grease can not be replaced.

每日检查

Daily check

- 运转中减速机外壳温度有无异常上升?（最高不大于90℃）
- 轴承、齿轮等部位有无异响?
- 减速机有无异常振动?（出现此类异常时，请立即停机并联系我公司。）
- 有无润滑油漏油?（出现油脂泄漏时，请联系我公司。）
- Whether the temperature of the reducer shell eises abnormally?(Maximum 90 degree)
- Are there any abnormal conditions on axletrees or chain wheels?
- Is the reducer vibrating abnormally? (If it happens, please shut down the machine and contact our company.)
- Is the lubricant leaking? (If it happens, please contact our company.)

定期检查

Regular check

- 有无过载状态，有无异常旋转?
- 皮带轮、链轮、减速机安装螺栓等有无松动?
- 主要部件的检查与维护。（出现异常现象时，请立即停机并联系我公司。）
- Whether it is overloaded or rolling abnormally?
- Is the belt pulley、chain wheel、the installation bolt of the reducer loose?
- The check and maintenance of main components. (When there is an abnormal phenomenon, please shut down the machine and contact our company.)

2019年3月版

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