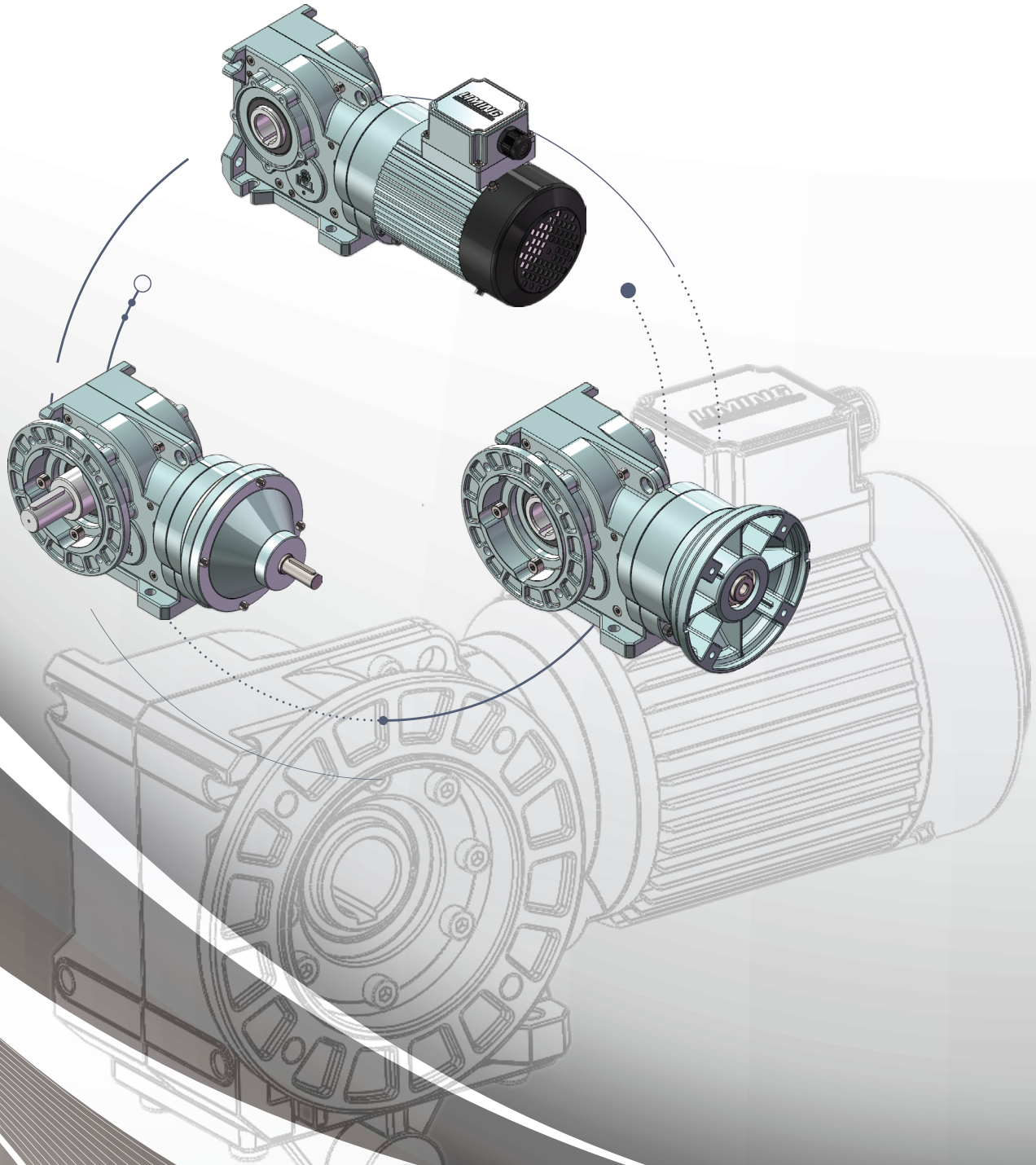
LIMING

AK 系列斜齿轮－螺旋锥齿轮减速机
Series Helical-Bevel Gear Reducer



传动装置的解决方案，
减速机的领导品牌

LIMING

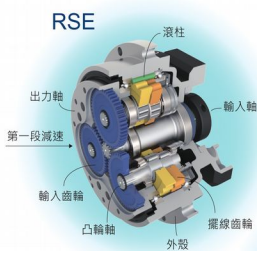
傳動裝置的解決方案、減速機的領導品牌

利茗機械股份有限公司創立於 1969 年，專業從事高精密各減速機的設計、研發、生產。公司始終秉持創新、突破的理念，配合技術的革新、設備的更新、優秀的技術人員，設計開發生產廣泛適用於相關機械產業的各式減速機、變速機。利茗機械公司累積經年專業經驗，優越加工技術與工程師的開發能力，致力研發出各式特殊傳動系統的減速機以因應市場對傳動機械的嚴格要求。

為提升企業競爭力，在關鍵製程利茗進行上下游垂直整合，已逐漸轉化為集團經營模式，如今已經成長為擁有約 1000 名員工，旗下企業在台灣包括：利茗（減速機廠)、睦茗 ABOVEGEAR（齒輪加工）、利欣 ABOVEHEAT（熱處理），利林 FABMOTOR（電機生產），計 4 個廠區。在中國大陸：上海，東莞，廈門，設有三個組裝廠、一個加工廠，及２９個直營行銷據點。台灣仍是主要核心基地，包括重要齒輪核心技術、齒輪高階製程及設備。

秉持對減速機各部份零件的獨特加工特性的認知。我們自行開發設計一系列高效率自動化的加工設備，以配合系列高性能加工機械。本公司經驗豐富的技術員，掌握零件加工特性精度控制，嚴格品質管制以確保所有零組件的精度及性能。一系列自動化加工設備為零件加工精度穩定性提供最穩固的基礎。
近年來更積極導入歐，美，日等國最先進的設備，一貫自主生產、完全掌握齒輪品質 ，利茗減速機從設計、製圖、車床加工、滾齒、熱處理及齒輪二次加工等一條龍製程，配合全面品管以確保品質完美，充份掌握「自主生產、一致性品質」，成功的將齒輪製程版圖併合完成，不僅降低成本、大幅提升效率與市場競爭力。

經過長期的累積，利茗擁有業界最豐富及最齊全的產品線，從傳統的動力傳動用減速機，到精密伺服用減速機。依齒輪傳動類型區分，有螺旋齒輪減速機、蝸輪式減速機、螺旋傘齒輪減速機、精密行星式減速機；精密擺線減速機，諧波減速機。依功率大小區分，範圍從功率 6 瓦特的微型齒輪減速機、到功率 150 千瓦的大型齒輪箱；除自有品牌 LIMING 外，也接受客戶委託設計及製造。



精密減速機是推動工業 4.0 及自動化的關鍵組件，也是工業機器人核心零部件,精密減速機的存在使伺服電機在一個合適的速度下運轉，並精確地將轉速降到工業機器人各部位需要的速度，提高機械體剛性的同時輸出更大的力矩。與通用減速器相比，機器人關節減速器要求具有傳動鏈短、體積小、功率大、質量輕和易於控制等特點。利茗機械因應市場高速化、自動化、精密化及小型化的需求趨勢，不斷研發精進，精密減速機在研發以及製造方面，必須掌握達成低背隙、低噪音、高精度等關鍵的技術。因此我們除了導入新設備及新製程之外，在創新與專利研發方面更是不遺餘力。目前利茗積極開發機器人用精密擺線減速機及諧波減速機已取得成功。

利茗公司率先同業通過於１９９７年通過 ISO 9000 國際品保認證，對每項產品皆訂有嚴格的品質標準書，至今已建立起一套完善的品質檢驗制度，從最初的進料製程，裝配完成品的運轉等檢驗測試，堅持經過層層嚴格的控管與檢驗保障顧客的權益，品管部門有先進的檢驗設備，每一零件從進料開始，即做進料檢驗，含金相分析，強度，硬度測試等。以最嚴謹的態度、最先進的儀器、最精確的數據給顧客最具信心的產品。

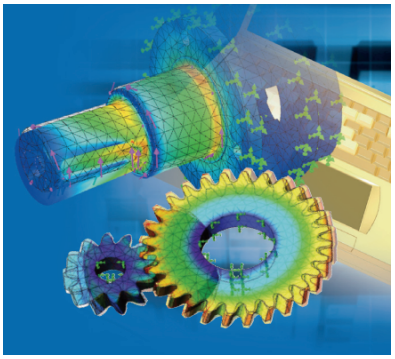
除了有經驗豐富的研發團隊外，並透過有效率的研發管理來降低研發的成本，提升研發效率並縮短產品開發上市的時程。經持續不斷地創新、開發，驗證，目前已取得美國、台灣、中國大陸、歐盟等國的多項專利，利茗機械累積國內外專利超過５０件，使利茗的產品能永遠領先於業界。

利茗機械股份有限公司肩負著顧客們對產品質量，與價格的追求，不斷地在提高減速機的高性能、實現效率的最大化和提供廣泛的技術資源等方面做著不懈的努力。公司奉行『品質第一、顧客滿意』及『勤、誠、信』的經營理念，不斷吸納專業人才，使得公司始終擁有一批掌握業界高端技術的科技人才。公司以積極務實的作風，借鑒各種先進的管理經驗，不斷實現自我完善，建立起良好的企業文化。

（減速、調速馬達）

（精密行星減速機）

Quality First&
Customer's Satisfaction



CAE设计分析技术

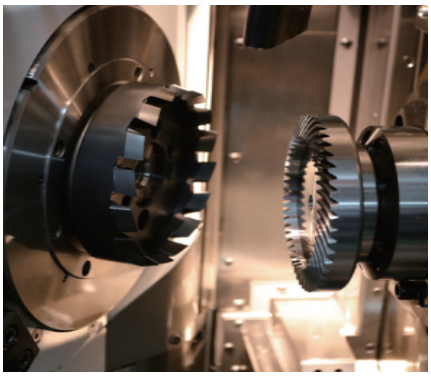
利用3D-CAE软件的设计分析技术，对减速机整体强度进行分析及螺旋齿面作齿形及导程修整，以降低齿轮对啮入和啮出的冲击和噪音，增加齿轮系及减速机的使用寿命。

自动化加工设备

秉持对减速机各部分零件的独特加工特性和认知，我们自行开发设计一系列高效率自动化的加工设备，以配合各系列高性能加工机械。为零件加工精度稳定性提供最稳固的基础。

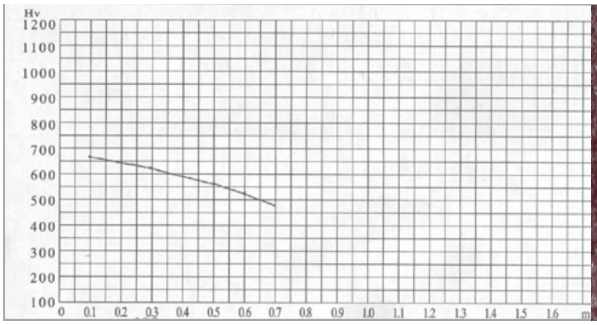
高精密的加工设备

利茗机械公司为增进技术精良，斥资购置整套最新CNC电脑加工机械设备，以精密零件加工，配合优秀工程人员，提升零件精度，确保稳定的品质。

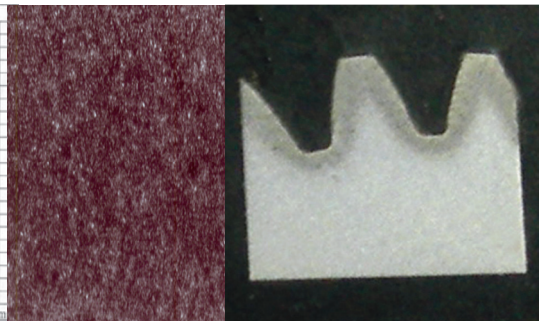


先进的制造技术

使用高端的设计软件及世界级的高精密的加工设备，并配合全面品管确保设计输入到输出的品质一致的闭循环(Close Loop) 生产流程。



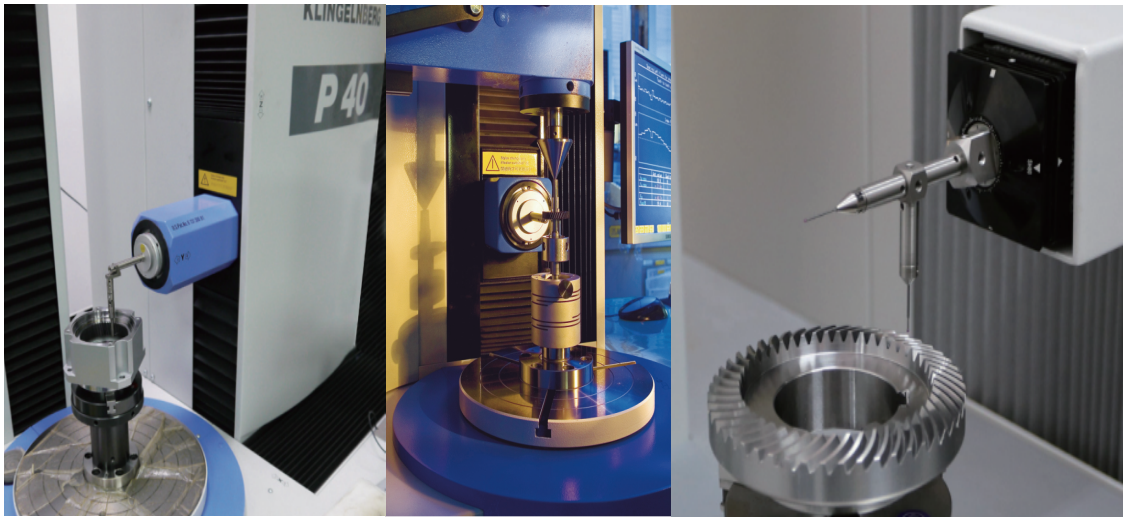
硬度分布图



金相组织相片

热处理

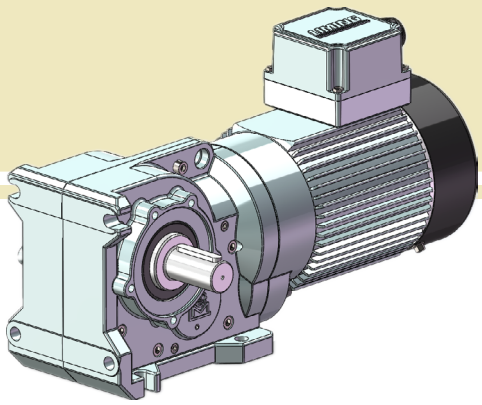
独特真空渗碳齿轮兼具表面硬度与心部韧性，不但耐磨耗，且能在承受负载的情况下，保持高啮合度。



全面品保

『全面品保』在利茗绝不是一句口号。我们对品质政策的执着，对每一个品质要求都订有严格的品质标准书，迅速而确实的品质管制。每一个零件从最初的进料检验制程，装配完成品的运转等检验测试，巨细靡遗，以完全符合您的要求及利茗的品质标准。品管部门有先进的检验设备，作精密的测量。『工欲善其事，必先利器』我们精密的检验仪器，是品质信赖的保证。

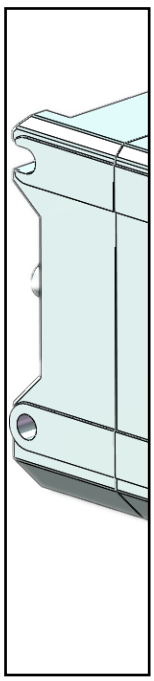
AK Helical-Bevel Gear Reducers

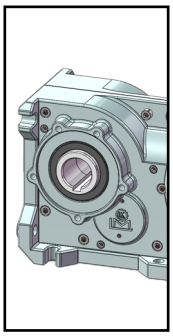


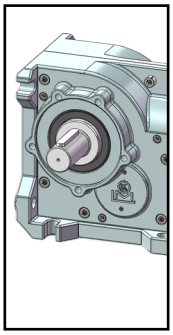
Indication of Model Numbers
机种型号标示

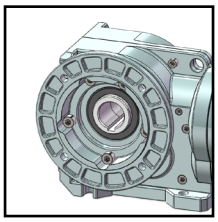
产品样式选择

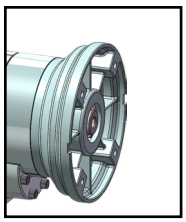
AK	O	F	B	37	– 60	– 0.18	– L
减速机型 Type	出力轴表示 Output	出力法兰表示 Output Flange	入力表示 Input	机型号 Model	减速比 Ratio	入力 kW Input kW	出力轴方向 Output direction
AK	O 中空轴 Hollow shaft □实心轴 Solid shaft	F 大法兰 Big Flange Z 小法兰 Small Flange T 扭力臂 Torque arm □无 Nothing	B 入力法兰 Input Flange D 入力轴 Input shaft □马达直连 Motor	37 47 57 67 77 87	6,8 10,15 20,25 30,40 50,60 70,80 90,100 110,120 140,150 160,180	0.18kW : 0.18 0.25kW : 0.25 0.37kW : 0.37 0.55kW : 0.55 0.75kW : 0.75 1.1kW : 1.1 1.5kW : 1.5 2.2kW : 2.2 3.0kW : 3.0 3.7kW : 3.7 4.0kW : 4.0 5.5kW : 5.5	L: 左 Left R: 右 Right V: 双出轴 Double

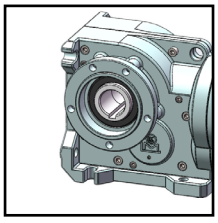


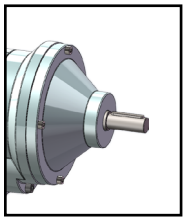


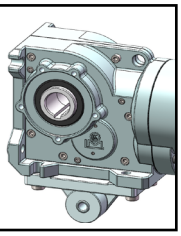


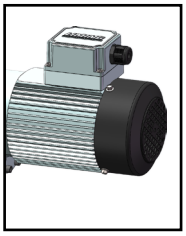


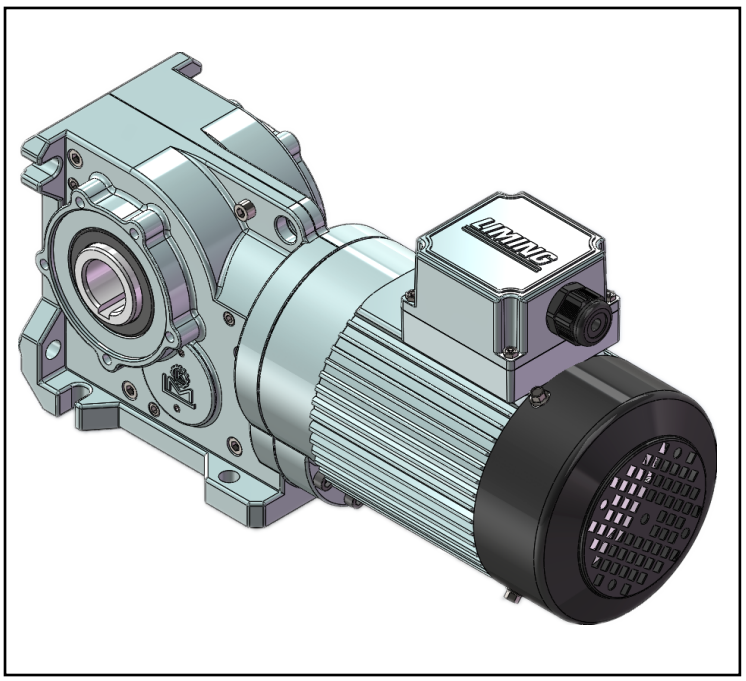




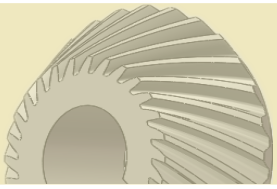


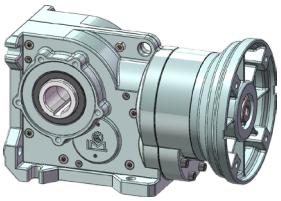
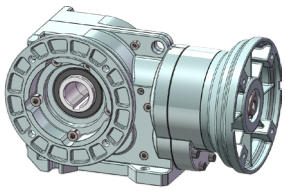
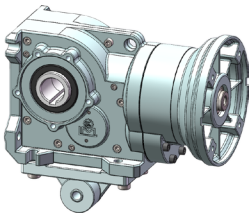
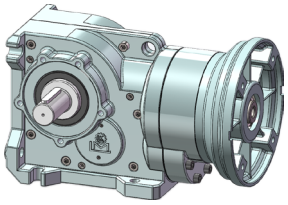
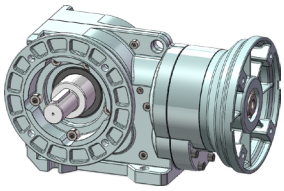
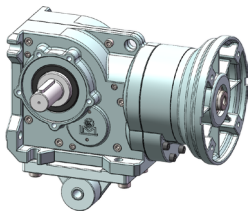
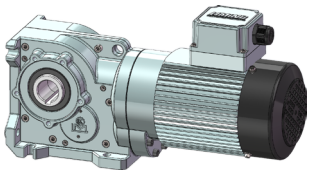
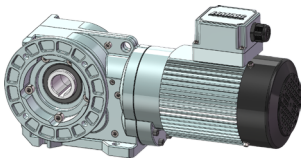
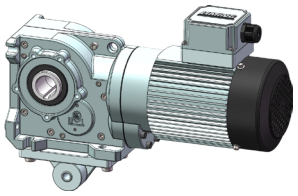
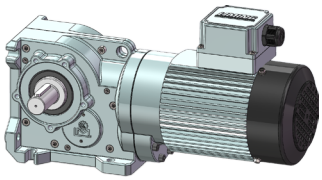
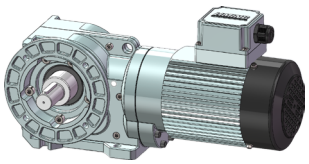
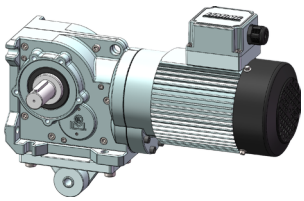
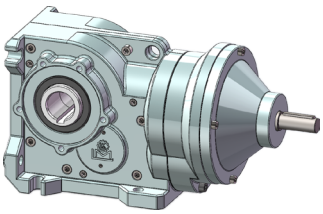
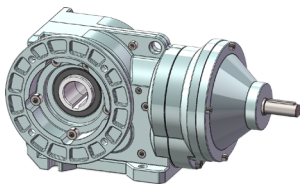
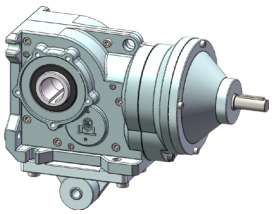
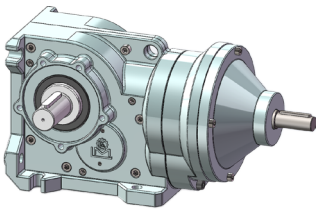
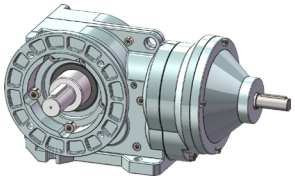
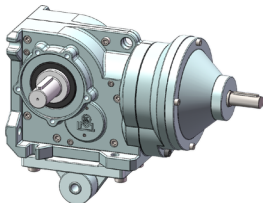






Selection of type
产品样式选择



	标准型 Standard	F/Z 法兰型 Flange 出力附件 Accessories	T 扭力臂 Torque arm 底脚附件 Accessories
B 入力法兰 Input Flange + O 中空出力轴 Hollow shaft	 AKOB	 AKOFB/AKOZB	 AKOTB
B 入力法兰 Input Flange + □实心出力轴 Solid shaft	 AKB	 AKFB/AKZB	 AKTB
□马达直连 Motor + O 中空出力轴 Hollow shaft	 AKO	 AKOF/AKOZ	 AKOT
□马达直连 Motor + □实心出力轴 Solid shaft	 AK	 AKF/AKZ	 AKT
D 实心入力轴 Input shaft + O 中空出力轴 Hollow shaft	 AKOD	 AKOFD/AKOZD	 AKOTD
D 实心入力轴 Input shaft + □实心出力轴 Solid shaft	 AKD	 AKFD/AKZD	 AKTD

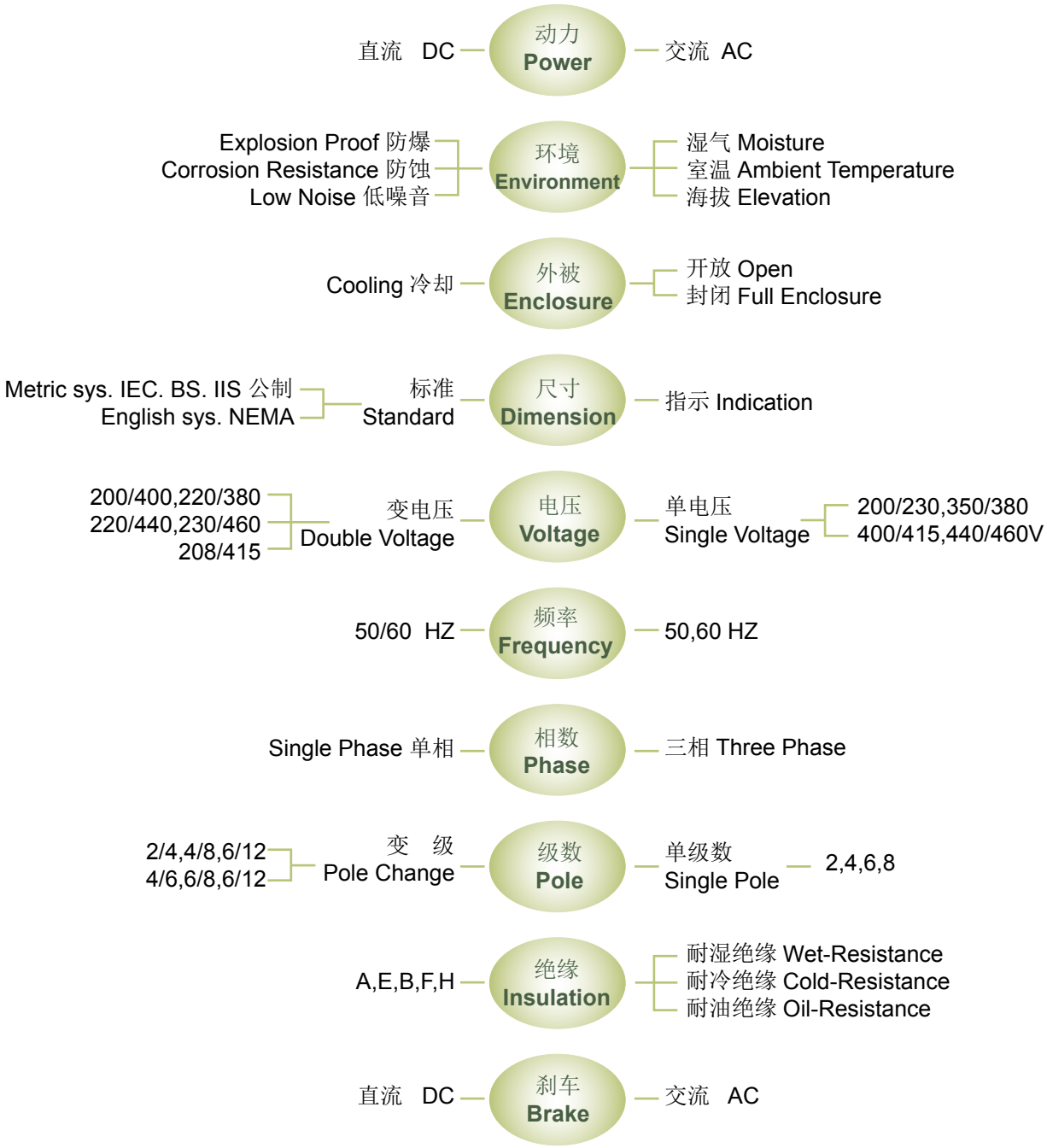
Selection of Motor
马达选择

一般注意事项

◆电源：单相、三相、电压周率、变压器容量等。
◆负载机械：所需马力数，负载转矩特性。
◆特殊使用条件：
1. 急速运转或停止。
2. 启动停止频繁。
3. 需特别大之启动转矩。
4. 与往复运动机械连结时。

General Notices

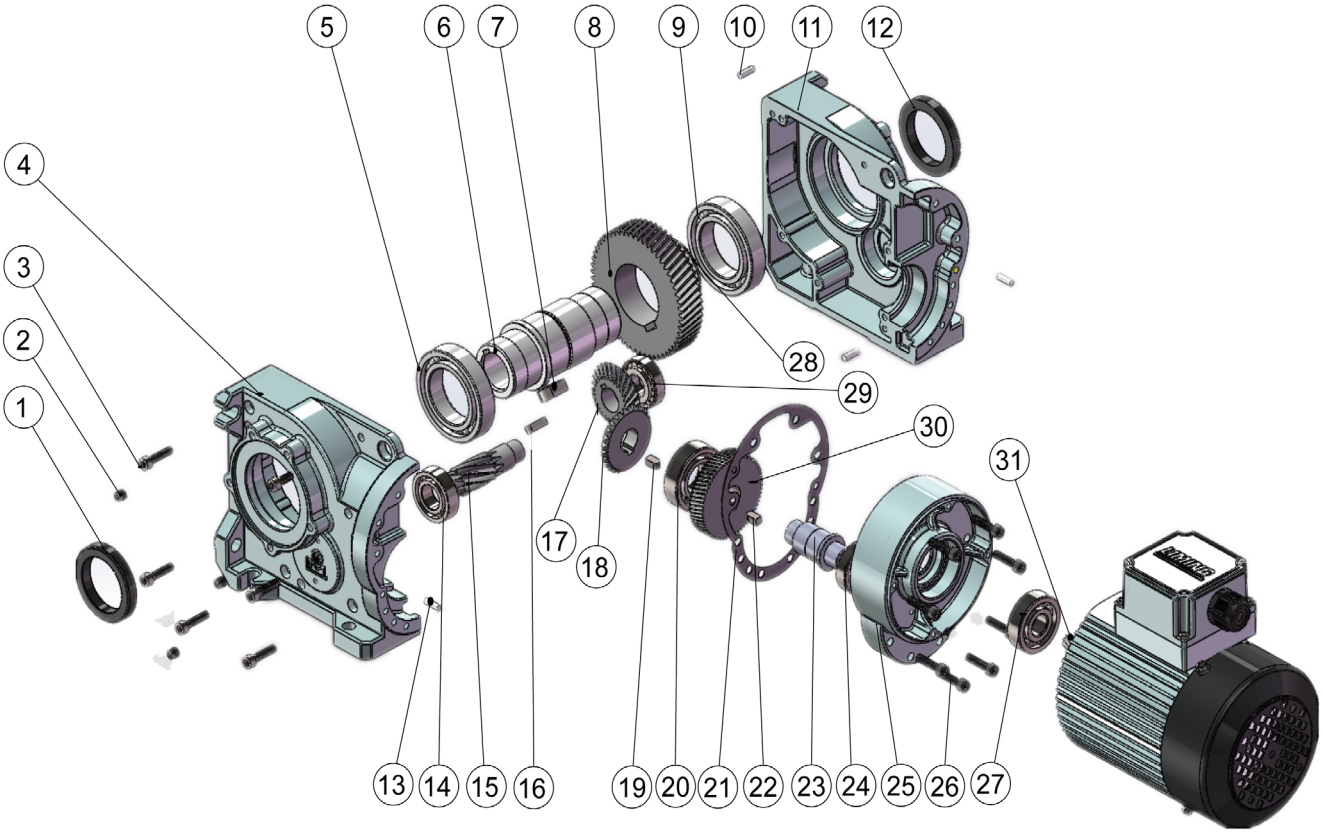
◆ Electricity: Single phase, 3 phase, voltage frequency, capacity of transformer, etc.
◆ Loading machine: Required horsepower, load torque characteristics.
◆ Special Conditions of Use:
1.Rush reverse or stop.
2.Frequent start-up or stop.
3.Specially large Start-up torque required.
4.Where linking with backward traveling machinery.



◆利明牌齿轮减速机之标准品使用低压、三相感应马达、全封闭外扇鼠笼型转子。
◆ LIMING standard gear reducers use low voltage, 3 phase induction motor, full-enclosed outer fan cage rotor.

AK Explosion Drawing

AK 系列系统分解图



编号 NO.	零件名称 Name of Parts	编号 NO.	零件名称 Name of Parts	编号 NO.	零件名称 Name of Parts
1	油封 Oil Seal	12	油封 Oil Seal	23	轴心 Axis
2	油栓 Oil Plug	13	平行销 Pin	24	角接触球轴承 Angular contact ball bearings
3	内六角螺丝 Hex Screw	14	滚珠轴承 Ball Bearing	25	马达盘 Moter Flange
4	左盖 Cover	15	齿轮 Gear	26	内六角螺丝 Hex Screw
5	滚珠轴承 Ball Bearing	16	键 Key	27	滚珠轴承 Ball Bearing
6	出力轴 Output Shaft	17	锥齿轮 Bevel Gear	28	R 扣环 R Snap Ring
7	键 Key	18	锥齿轮 Bevel Gear	29	角接触球轴承 Angular contact ball bearings
8	齿轮 Gear	19	键 Key	30	齿轮 Gear
9	滚珠轴承 Ball Bearing	20	滚珠轴承 Ball Bearing	31	马达 Moter
10	平行销 Pin	21	垫片 Packing		
11	右盖 Cover	22	键 Key		

Usage and Installation

减速机安装

使用前请检查

◆检查机种、型号、马力、轴方向、减速比回转方向及 入力轴出力轴回转数是否符合。

Check Before Operating

◆ Check if the type, model No., horsepower, shaft direction, reduction ratio, revolution direction and input/output shaft revolutions are inaccordance with the standard.

场所

◆须装置于平且坚固的底部。

◆安装之环境须干燥且通风良好，周围温度 0℃ ~40℃异常高温或低温时请注明。

Place

◆ A flat and solid base is one of the requirements for installation.

◆The environment for installation shall be dry and well ventilated, with ambient temperature at 0℃ to 40℃ . Abnormal high or low temperature shall be dedicated.

连接方式

◆当连接器用已连接入力或出力轴时，须确实固定并务使两轴平行，底座须以适当螺栓，确保固锁紧密。

◆所有配备均应轻装于轴上，勿使用铁锤，并避免装配过紧而引起轴承损坏。

◆滑轮、链轮或齿轮在装配时应尽量靠近轴承以减少弯曲应力。使用适当大小 (在出力轴经的 6 倍以内) 与出力轴连接之链轮，皮带轮等配合 H7 公差使用，可避免发出异声与轴面受损。

◆ B 型入力孔可添加适当黄油，避免孔径过度磨损及发出异声。

◆轴面可涂上防锈涂料避免生锈。

Connecting Method

◆ If coupler is used to connect input or output shaft, make sure they are firmly fixed and paralleled. The base seat shall be anchored with proper bolts.

◆All of the components shall be properly assembled to the shaft. Avoid hammering and over-tight assembly which could damage the bearing.

◆The pulley, chain pulley and gear shall be assembled as close to the bearing as possible to minimize the curving stress. The chain pulley and belt pulley used to connect the output shaft shall be properly chosen (within 6 times as large as the diameter of output shaft) and used in accordance with H7 tolerance so as to keep out of abnormal noise and harm to the shaft surface.

◆ Proper amount of grease can be applied to B input hole to ensure the hole against over-wearing and making abnormal noise.

◆ The application of anti-rust paint can keep the shaft from rusting.

马达

◆电源电压变动大于 10% 时，马达会有烧毁之患，并使出力轴扭力降低或异常。

◆马达超负荷使用有烧毁之患。

◆马达接线错误会导致马达烧毁。

◆湿气过重的环境会使刹车马达的刹车器产生锈蚀失去刹车功能。

◆搭配变频器使用时，如常使用于低频，请使用变频专用马达。

Motor

◆The voltage variation over 10% could cause motor to burn out and reduce the torque of output shaft.

◆Motor is subject to damage due to overload.

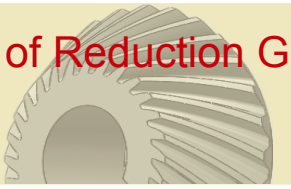
◆Improper connection could cause motor to burn out.

◆ High-moisture environment could cause the brake of motor rusted and disabled.

◆ An appropriate motor shall be applied with the frequency converter while the low frequency is required in usual condition.

Solutions and Reasons for The General Faults of Reduction Gears

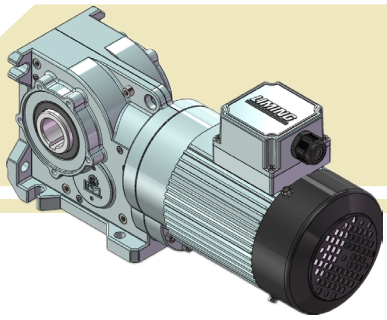
齿轮减速机一般故障原因及改善方法



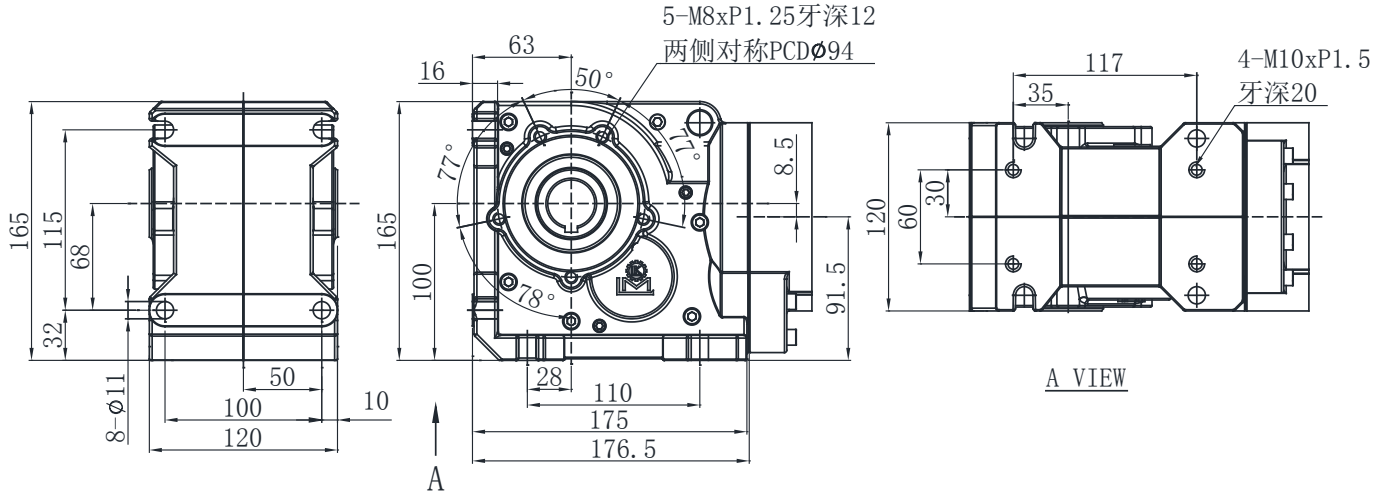
故障情形 **Fault Description**	故障原因 **Reasons**	解决办法 **Solutions**
减速机过热 Over-Heating	◆超负荷运转 ◆油封过度磨擦 ◆出力轴与传动装置连接不当 ◆冲击荷重大 ◆ Overload. ◆ Over friction of oil seal. ◆ Improper connection between driving shaft and the transmission device. ◆ Large impact loading.	◆调整至适当负荷 ◆在油封处滴润滑油 ◆调整至适当位置 ◆更换大型号减速机 ◆ Adjust to proper loading. ◆ Drop lubricat at oil seal. ◆ Adjust to proper position. ◆ Use larger reduction gears.
减速机杂音 Noise	◆超负荷运转 ◆轴承损伤或间隙过大 ◆润滑油不足或劣化 ◆出力轴与传动装置连接不当 ◆螺栓松脱 ◆传动装置固定不良 ◆ Overload. ◆Bearing damaged or too large clearance. ◆ Lubricant oil shortage or deterioration. ◆ Shaft and the transmission device improper connection between driving. ◆ Bolt loose. ◆ Improper installation of transmission device.	◆调整至适当负荷 ◆更换轴承 ◆依指示加入适量润滑油 ◆调整至适当位置 ◆旋紧螺栓 ◆传动装置固定 ◆ Adjust to proper loading. ◆ Replace bearing. ◆ Fill in adequate lubricant oil as indication. ◆ Adjust to proper position. ◆ Tighten bolt. ◆ Fix transmission device properly.
漏油 Oil Leakage	◆油封损伤 ◆油量过多 ◆螺栓松脱 ◆外壳破裂 ◆ Oil seal damaged. ◆ Too much oil. ◆ Screw loose. ◆ Outer shell fractured.	◆更换油封 ◆依指示加入适量润滑油 ◆旋紧螺栓 ◆更换外壳 ◆ Replace oil seal. ◆ Fill in adequate lubricant oil as dication. ◆ Tighten screw. ◆ Replace outer shell.
出力轴不转 Output Shaft Cannot Rotate	◆超负荷运转 ◆轴承损伤 ◆异物嵌入 ◆齿轮磨损 ◆马达损坏 ◆配线错误 ◆冲击荷重大 ◆ Overload. ◆ Bearing damaged. ◆ Invasion by foreign objects. ◆ Gear worn-out. ◆ Motor out of order. ◆ Incorrect wiring. ◆ Large impact loading.	◆调整至适当负荷 ◆更换轴承 ◆取出异物 ◆更换齿轮 ◆修复马达 ◆依指示配线 ◆更换较大型号减速机 ◆ Adjust to proper loading. ◆ Replace bearing ◆ Take out foreign objects. ◆ Replace gear. ◆ Repair motor ◆ Wiring as indication. ◆ Use larger sized gear reducer.

以上所列为一般故障原因，如有其他故障情形时，请与本公司联络，我们将会提供最正确之服务。
The above items are general fault descriptions. In case of other kinds of faults, please contact with us to obtain most correct services.

MODEL : AK37

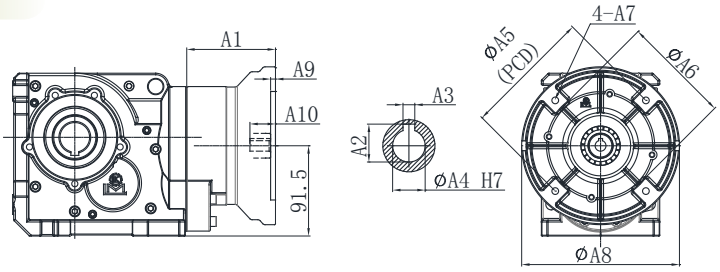


基本尺寸 Basic

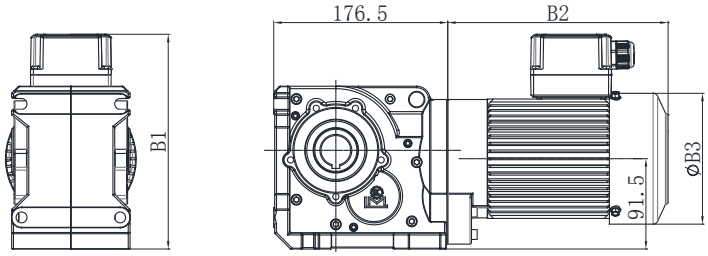


入力尺寸 Input

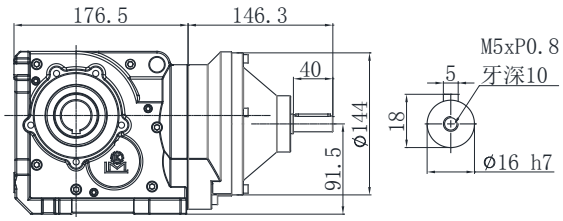
入力法兰
Input Flange



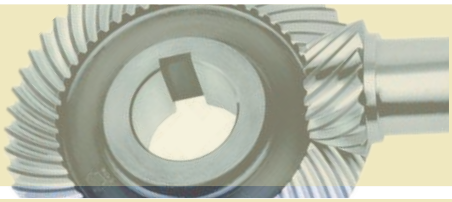
马达直连
Motor



入力轴
Input Shaft

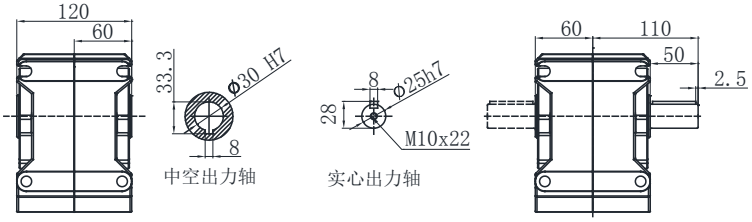


Power	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3
0.18kW	89.5	12.8	4	11	130	110	M8x1.25	160	5	25	218	223.5	133
0.25kW													
0.37kW		16.3	5	14						31			
0.55kW	122	21.8	6	19	165	130	M10x1.5	200	4.8	26	230	249.5	161
0.75kW													
1.1kW													
1.5kW	132	27.3	8	24	165	130	M10x1.5	200	4.8	51	241	315	181
2.2kW	133	31.3	8	28	215	180	M12x1.75	250	5.8	64			
3.0kW													

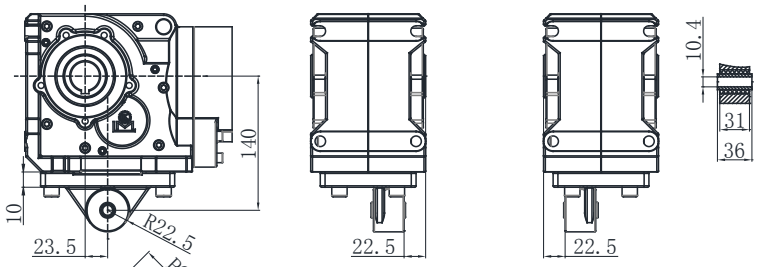


出力尺寸 Output

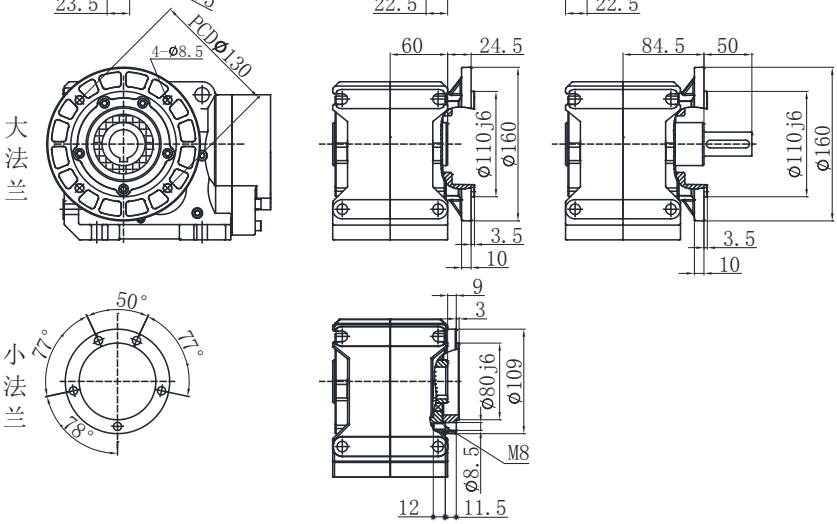
出力轴
Shaft



扭力臂
Torque arm

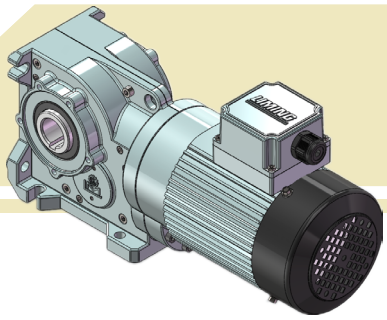


法兰型
Flange

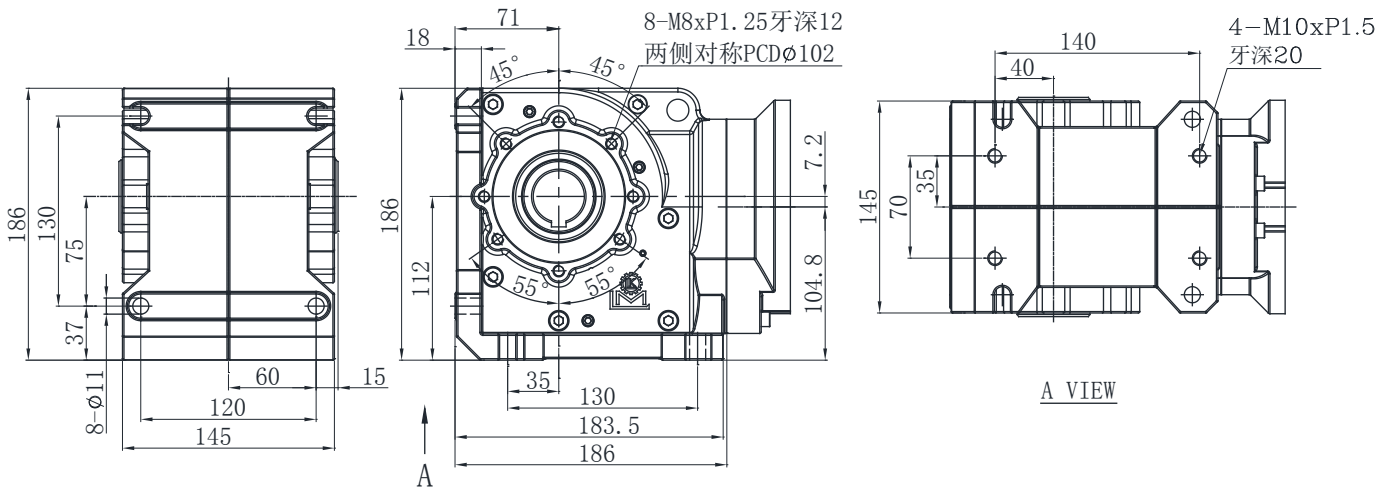


Power	0.18kW		0.25kW		0.37kW		0.55kW		0.75kW		1.1kW		1.5kW		2.2kW		3.0kW	
减速比	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.
6							21.8	9.4	29.8	6.9	43.75	4.7	59.6	3.45	87.5	2.35	119.3	1.72
8	9.35	26	13.9	19	19.2	12	28.5	9	38.8	6.6	57.0	4.5	77.8	3.3	114.1	2.25	155.7	1.65
10	12.2	21	18.1	15	25.1	10.3	35.0	7.5	47.7	5.5	70.0	3.75	95.5	2.75	140.0	1.87	191.0	1.37
15	16.7	15.5	24.9	11.2	34.5	7.6	51.9	4.5	70.8	3.3	103.8	2.25	141.7	1.65	207.7	1.12		
20	22.2	10.5	33.1	7.5	45.7	5.1	65.6	3.7	89.4	2.75	131.2	1.85	179.0	1.38				
25	28.0	8.5	41.8	6.2	57.8	4.2	87.5	2.8	119.2	2.08	175.0	1.4	234.0	1.03				
30	37.4	6.4	55.7	4.8	77.1	3.2	114.1	2.25	155.5	1.65	228.3	1.13						
40	44.8	5.7	66.9	4.1	92.5	2.8	140.0	1.87	190.8	1.38								
50	59.8	4.4	89.2	3.1	123.3	2.1	174.2	1.25	234.0	0.92								
60	67.0	4	99.9	2.8	138.1	1.9	214.0	1.2										
70	85.4	3	127.3	2.1	176.0	1.4	231.8	0.96										
80	92.5	2.4	137.9	1.7	190.7	1.18												
90	104.7	2.5	156.1	1.8	215.9	1.2												
100	113.8	2.2	169.8	1.6	234.0	1.1												
110	123.3	1.8	183.9	1.25														
120	139.6	1.9	208.2	1.35														
140	156.4	1.65	233.2	1.2														
150	173.7	1.22																
160	182.4	1.4																
180	204.2	1.3																
200	226.9	0.95																

MODEL : AK47

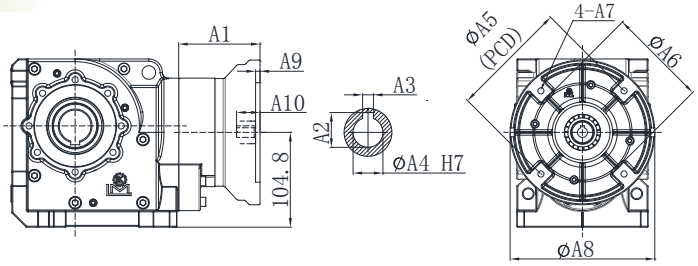


基本尺寸 Basic

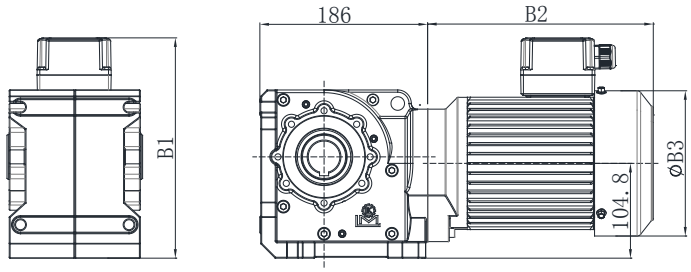


入力尺寸 Input

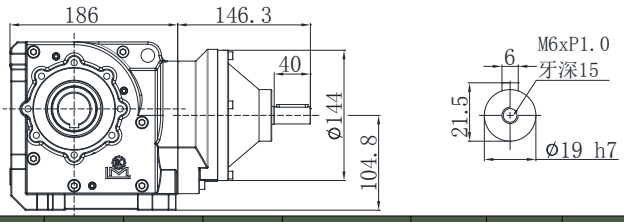
入力法兰
Input Flange



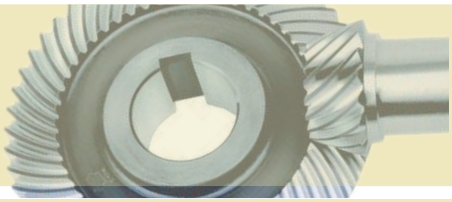
马达直连
Motor



入力轴
Input Shaft

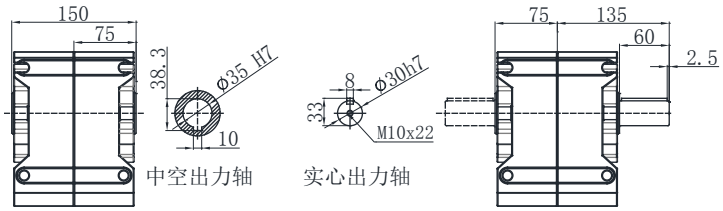


Power	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3
0.18kW	89.5	12.8	4	11	130	110	M8x1.25	160	5	25	231.5	223.5	133
0.25kW													
0.37kW		16.3	5	14						31			
0.55kW	122	21.8	6	19	165	130	M10x1.5	200	4.8	26	244	249.5	161
0.75kW													
1.1kW													
1.5kW	132	27.3	8	24	165	130	M10x1.5	200	4.8	51	254.5	315	181
2.2kW	133	31.3	8	28	215	180	M12x1.75	250	5.8	64			
3.0kW													

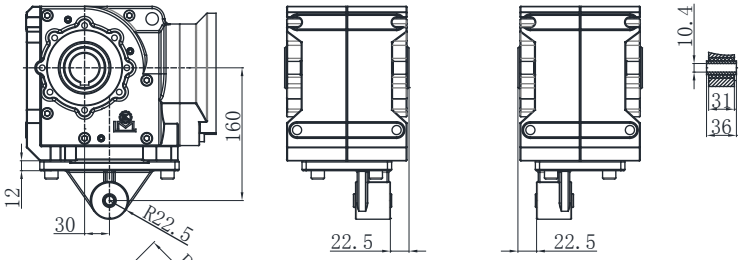


出力尺寸 Output

出力轴
Shaft

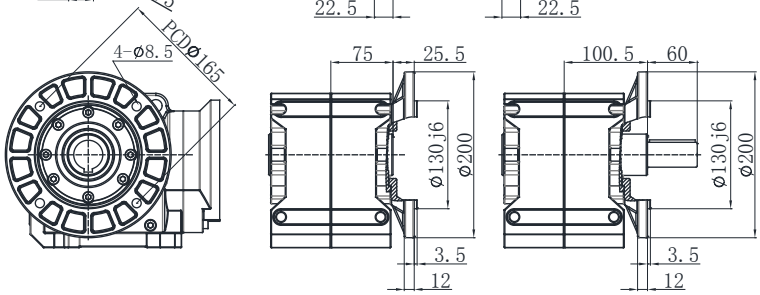


扭力臂
Torque arm

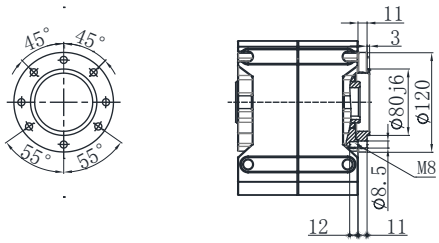


法兰型
Flange

大法兰

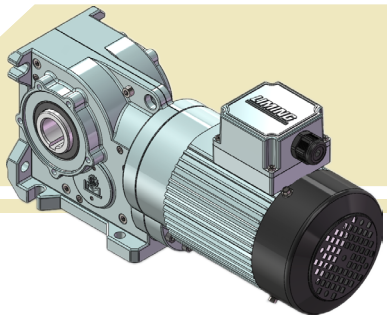


小法兰

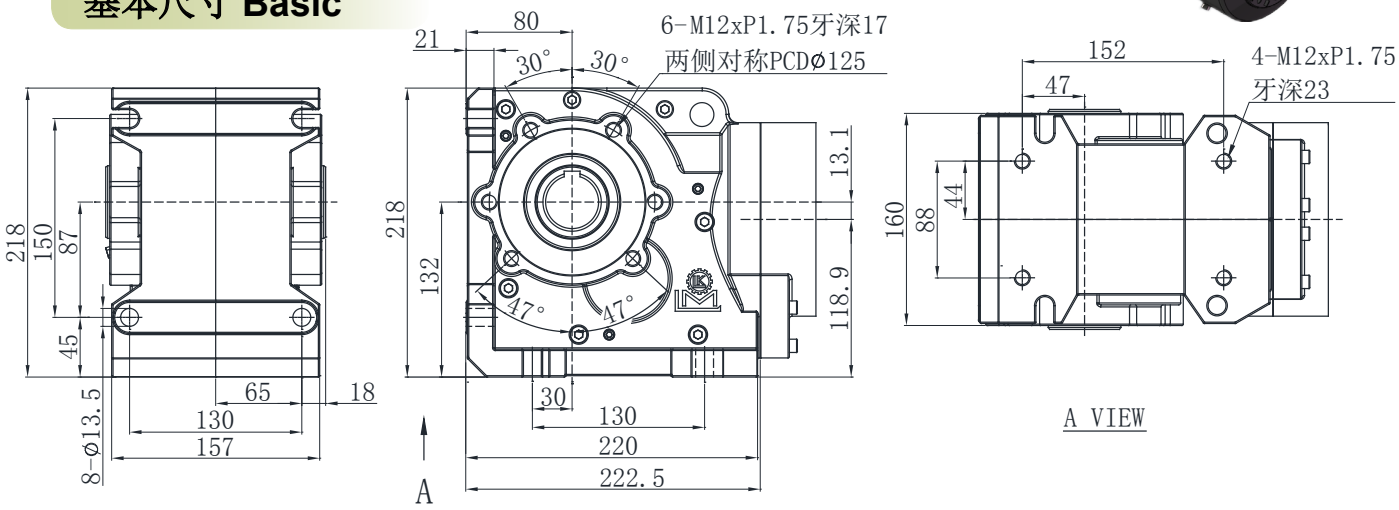


Power	0.18kW		0.25kW		0.37kW		0.55kW		0.75kW		1.1kW		1.5kW		2.2kW		3.0kW	
减速比	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.
6							21.8	11	29.8	8.09	43.75	5.5	59.6	4.05	87.5	2.76	119.3	2.03
8	9.84	30	13.9	21.6	20.5	14.5	28.5	10	38.9	7.35	57.08	5.0	77.8	3.87	114.1	2.64	155.7	1.94
10	12.8	25	18.1	18.0	26.7	12.1	35.0	8.6	47.7	6.32	70.0	4.3	95.5	3.2	140.0	2.18	191.0	1.60
15	17.6	18	24.9	12.96	36.7	8.76	51.9	5.3	70.8	3.9	103.8	2.65	141.7	1.93	207.7	1.32	283.4	0.97
20	22.2	12	3.9	8.64	45.7	5.84	65.6	4.4	89.4	3.24	131.2	2.2	179.0	1.61	262.5	1.10	358.1	0.81
25	28.0	10	39.1	7.2	57.8	4.86	87.5	3	119.2	2.21	175.0	1.5	238.7	1.2	350.0	0.82		
30	37.4	7.8	52.1	5.62	77.1	3.79	114.1	2.65	155.5	1.95	228.3	1.33	283.4	0.97				
40	44.8	7	62.6	5.04	92.5	3.41	140	1.92	19.8	1.41	280.0	0.96	358.1	0.81				
50	59.8	4.9	83.4	3.53	123.3	2.38	164.0	1.75	223.5	1.29	328.1	0.88						
60	67.0	4.5	93.4	3.24	138.1	2.19	214.0	1.4	291.7	1.03								
70	85.4	3.6	119.1	2.59	176.0	1.75	262.5	1.1	357.7	0.81								
80	92.5	2.9	129.0	2.09	19.07	1.41	285.3	1.06										
90	104.7	2.8	146.0	2.02	215.9	1.36	309.1	0.85										
100	113.8	2.6	158.8	1.87	234.7	1.26	350.0	0.82										
110	123.3	2.1	172.0	1.51	254.2	1.02												
120	139.6	2.2	194.7	1.58	287.8	1.07												
140	156.4	2	218.1	1.77	322.4	0.97												
150	173.7	1.5	242.3	1.08														
160	182.4	1.7	254.4	1.22														
180	204.2	1.4	284.9	1.01														
200	226.9	1.1																

MODEL : AK57

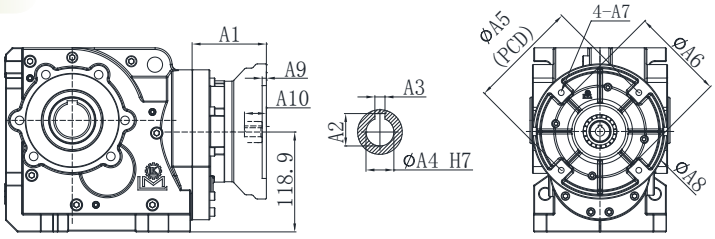


基本尺寸 Basic

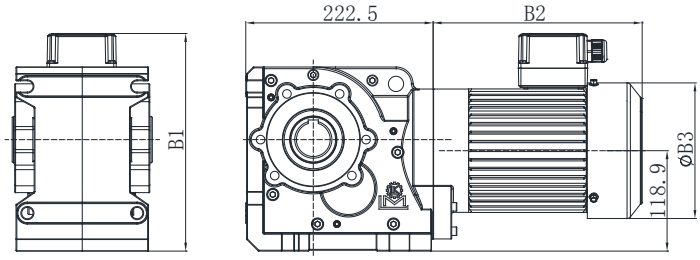


入力尺寸 Input

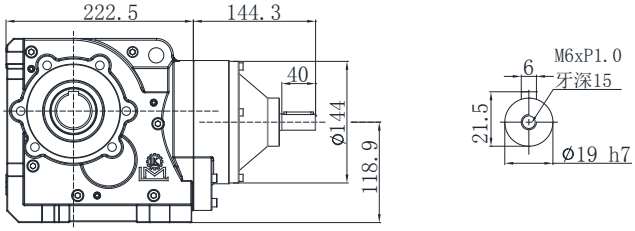
入力法兰
Input Flange



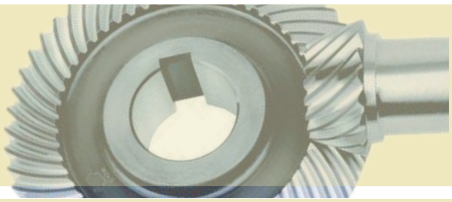
马达直连
Motor



入力轴
Input Shaft

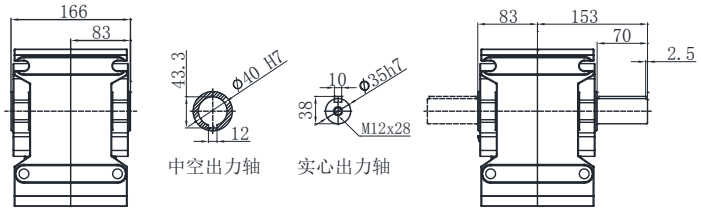


Power	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3
0.18kW	87.5	12.8	4	11	130	110	M8x1.25	160	5	25	245.5	221.5	133
0.25kW													
0.37kW		16.3	5	14						31			
0.55kW	120	21.8	6	19	165	130	M10x1.5	200	4.8	26	258	247.5	161
0.75kW													
1.1kW													
1.5kW	130	27.3	8	24	165	130	M10x1.5	200	4.8	51	268.5	313	181
2.2kW	131	31.3	8	28	215	180	M12x1.75	250	5.8	64			
3.0kW													
3.7kw	131	31.3	8	28	215	180	M12x1.75	250	5.8	64	279	361.5	212
4.0kw	148.2	41.3	10	38	265	230	M12x1.75	300	6	85			
5.5kw													

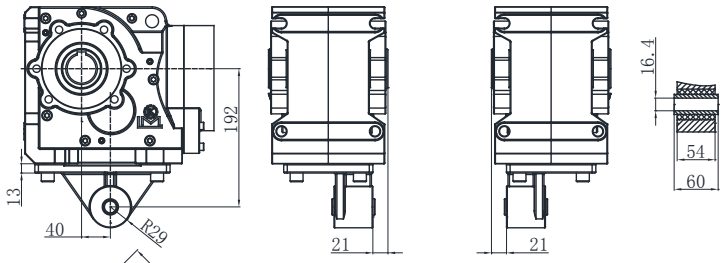


出力尺寸 Output

出力轴
Shaft

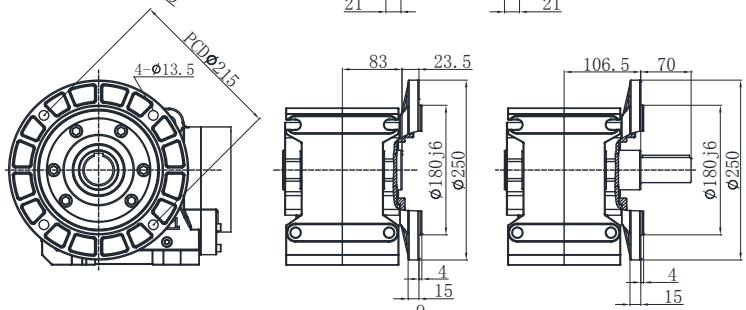


扭力臂
Torque arm

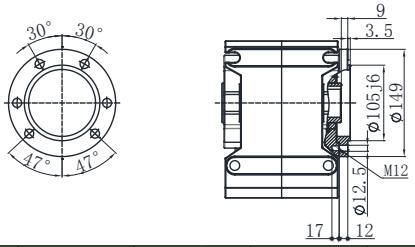


法兰型
Flange

大法兰

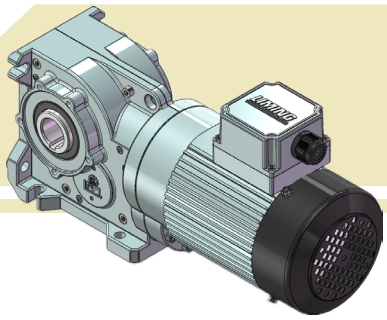


小法兰

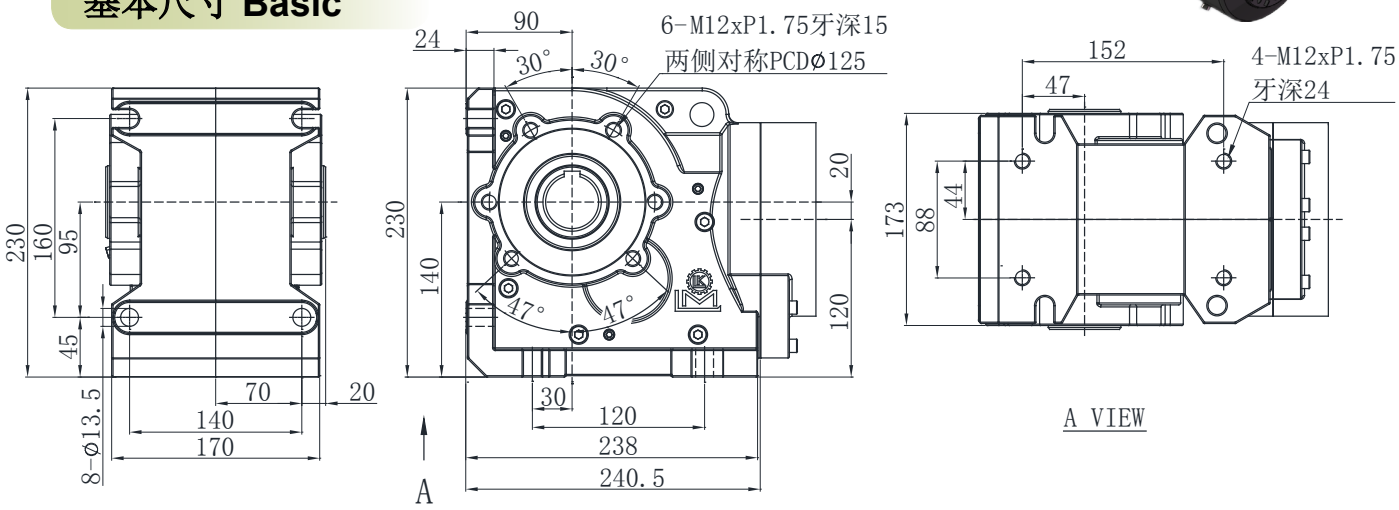


Power	0.18kW		0.25kW		0.37kW		0.55kW		0.75kW		1.1kW		1.5kW		2.2kW		3.0kW		3.7kW		4.0kW		5.5kW	
减速比	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.
6							22.6	19	30.9	13.8	45.3	9.4	60.3	7.1	88.5	4.8	120.7	3.5	148.6	2.84	160.6	2.66	221.3	1.93
8	9.37	55	13.9	40	19.3	26.5													176.2	2.5	190.5	2.3	262.5	1.86
10	13.4	40	19.9	29	27.6	20	32.4	17	44.1	12.5	64.8	8.5	108.5	4.8	159.0	3.3	217.0	2.4	267.0	1.95	288.6	1.81	397.7	1.31
15	16.8	31	25.1	22	34.7	15	53.1	9.6	72.3	7.1	106.2	4.8							293.7	1.44	317.5	1.33	437.5	0.97
20	21.6	24	32.2	17	44.5	11.5	68.0	7.5	92.7	5.5	136.1	3.7	181.1	2.8	265.5	1.93	362.3	1.41	445.8	1.14	481.8	1.06	637.0	0.8
25	28.1	18	41.9	13	57.9	8.9	90.7	5.7	123.6	4.1	181.4	2.8	238.7	1.78	350	1.21	477.5	0.89	594.4	0.86	637.0	0.8		
30	33.3	16	49.7	11	68.7	7.8	105.0	4	143.1	2.95	210.0	2.03	286.5	1.86	420	1.27	573.0	0.93	637.0	0.8				
35	40.1	13.5	59.9	9.8	82.8	6.6	122.3	4.3	166.6	3.1	244.6	2.1	345.2	1.59	506.1	1.08								
40	44.4	12	66.3	8.5	91.6	5.6	134.5	3.1	183.3	2.3	269.0	1.58	362.3	1.41	531.1	0.96								
50	55.5	7.5	82.8	5.6	114.5	3.7	179.3	2.35	244.4	1.75	358.7	1.19	477.5	0.89										
55	64.8	8	96.7	5.6	133.7	3.8	189.0	2.8	257.5	2.05	378.0	1.4	517.9	1.06										
60	74.1	5.8	110.5	4.1	152.7	2.8	212.4	2.4	289.5	1.76	424.9	1.2	573	0.93										
70	86.5	6.05	129.0	4.35	178.3	2.91	252.0	2.1	343.4	1.55	504.0	1.05												
80	92.7	6	138.2	4.3	191.1	2.9	286.3	1.8	390.2	1.32	572.7	0.91												
90	102.6	5.3	153.0	3.7	211.5	2.5	315.0	1.34	429.3	0.98	630.0	0.8												
100	116.5	4.4	173.8	3.6	240.3	2.1	381.8	1.36	520.3	1														
110	128.2	3.3	191.2	2.4	264.3	1.62	420.0	1	572.4	0.8														
130	155.4	3.4	231.8	2.4	320.4	1.64																		
150	171.0	2.5	225.0	1.8	352.5	1.2																		

MODEL : AK67

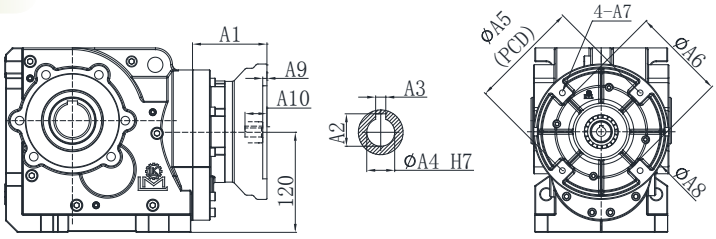


基本尺寸 Basic

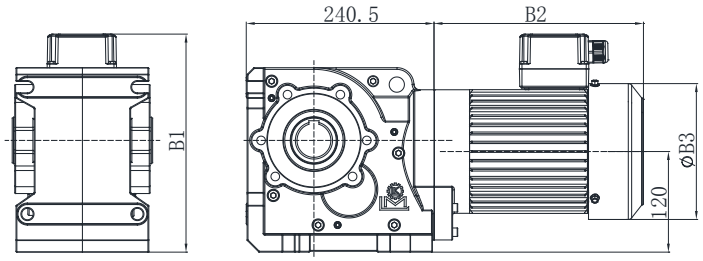


入力尺寸 Input

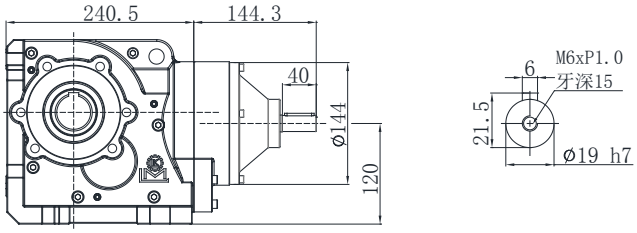
入力法兰
Input Flange



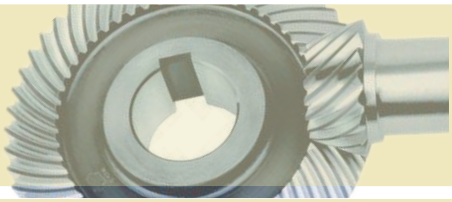
马达直连
Motor



入力轴
Input Shaft

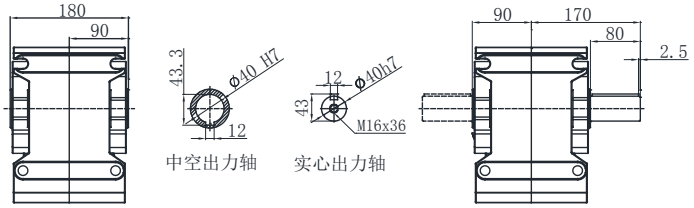


Power	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3
0.18kW	89.5	12.8	4	11	130	110	M8x1.25	160	5	25	246.5	223.5	133
0.25kW													
0.37kW		16.3	5	14						31			
0.55kW	120	21.8	6	19	165	130	M10x1.5	200	4.8	26	259	250	161
0.75kW													
1.1kW													
1.5kW	130	27.3	8	24	165	130	M10x1.5	200	4.8	51	269.5	313	181
2.2kW	131	31.3	8	28	215	180	M12x1.75	250	5.8	64			
3.0kW													
3.7kw	131	31.3	8	28	215	180	M12x1.75	250	5.8	64	280	361.5	212
4.0kw	148.2	41.3	10	38	265	230	M12x1.75	300	6	85			
5.5kw													

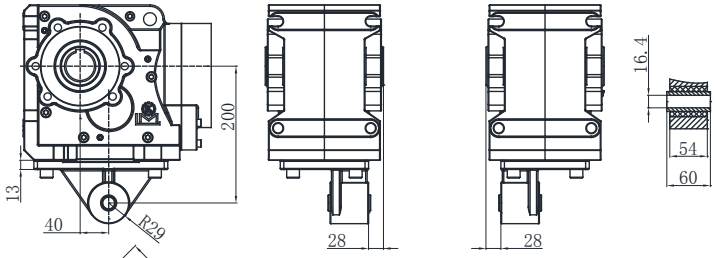


出力尺寸 Output

出力轴
Shaft

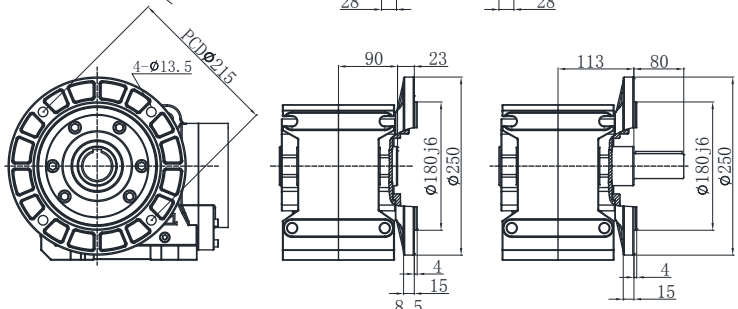


扭力臂
Torque arm

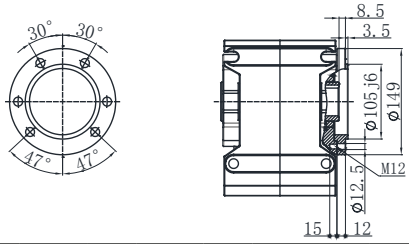


法兰型
Flange

大法兰

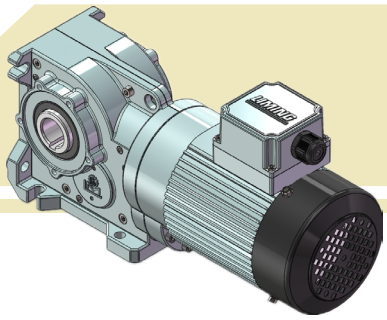


小法兰

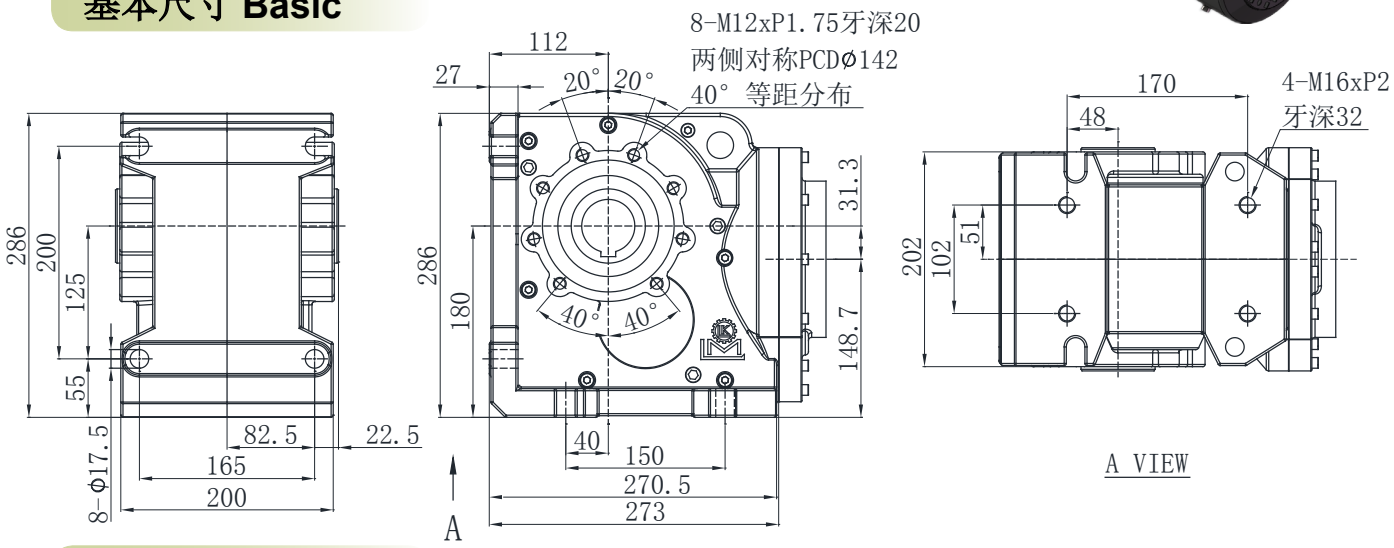


Power	0.18kW		0.25kW		0.37kW		0.55kW		0.75kW		1.1kW		1.5kW		2.2kW		3.0kW		3.7kW		4.0kW		5.5kW	
減速比	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.
6							22.05	31	30.05	23	44.1	15.8	57.3	12	84	8.3	114.6	6	141	4.9	152.4	4.5	210	3.3
8	8.98	78	13.39	55	18.51	38	27.79	26	37.88	19.5	55.59	13.3	72.23	10.3	105.8	7	144.4	5.1	177.7	4.1	192.1	3.8	264.7	2.8
10	11.32	77	16.88	55	23.33	38	42.88	19	58.43	14.2	85.75	9.7	111.4	7.5	163.3	5.1	222.8	3.7	274.1	3	296.3	2.8	408.3	2.04
15	17.46	48	26.03	34	35.98	23	53.55	14.7	72.98	10.9	107.1	7.4	139.1	5.7	204	3.8	278.3	2.85	342.4	2.3	370.1	2.14	510	1.55
20	21.80	36	32.51	26	44.94	17	66.15	12.6	90.15	9.3	132.3	6.3	171.9	4.8	252	3.3	343.8	2.4	423	1.97	457.2	1.82	630	1.32
25	26.93	30	40.16	22	55.52	15	88.2	9.5	120.2	6.9	176.4	4.7	229.2	3.7	336	2.5	458.4	1.86	564	1.48	609.6	1.37	840	0.99
30	33.95	26	50.63	19	69.98	12.5	111.1	8	151.5	5.9	222.3	4	288.9	3.1	423.5	2.1	577.8	1.54	710.9	1.25	768.4	1.15		
35							128.6	6.5	175.3	4.7	257.2	3.2	334.2	2.5	490	1.7	668.5	1.25	822.5	1.01				
40	45.26	19	67.5	14	93.31	9.5	146	6.4	199	4.7	292	3.2	379.5	2.47	556.3	1.69	759	1.24						
50	59.46	15.5	88.67	11.4	122.5	7.7	171.5	4.9	233.7	3.5	343	2.4	461.2	1.81	676.2	1.23								
60	69.83	12	104.1	8.5	143.9	5.8	214.2	3.7	291.9	2.7	428.4	1.85	581.4	1.53	852.3	1.04								
70	77.73	11.5	115.9	8.4	160.2	5.7	254.7	3.5	347.2	2.5	509.5	1.75	672.6	1.24										
80	87.21	9	130	6.6	179.7	4.4	294.7	2.8	401.7	2.08	589.5	1.4	763.7	1.23										
90	102.6	8.5	153	6.3	211.5	4.2	334.6	2.8	456.1	2.07	669.3	1.4	840.1	0.94										
100	118.7	6.9	177	5.1	244.6	3.4	368.1	2.15	501.7	1.58	736.3	1.08												
110	134.7	6.8	200.9	5	277.8	3.3	393	2.1	535.6	1.55	786	1.06												
130	148.2	5.4	221	3.9	305.6	2.6	446.2	2.09	608.1	1.54														
140	158.2	5.3	236	3.8	326.2	2.5	490.8	1.62	668.9	1.18														
150	179.7	5.2	267.9	3.7	370.4	2.5																		
170	197.6	4	294.7	2.9	407.4	1.95																		

MODEL : AK77

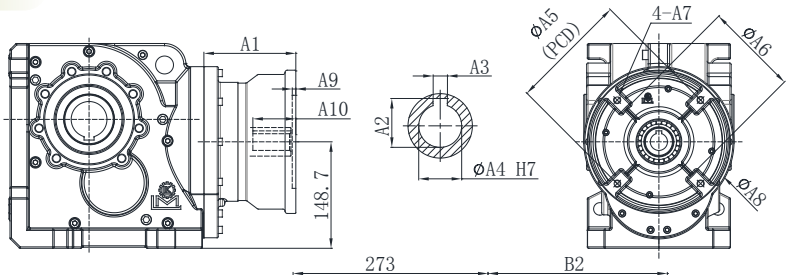


基本尺寸 Basic

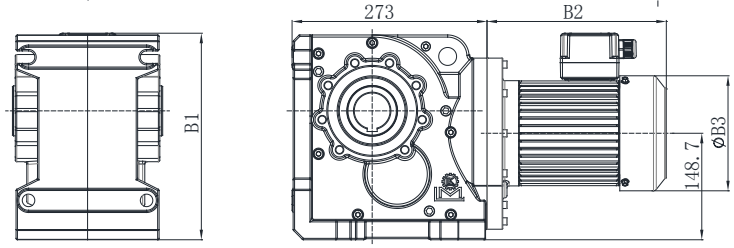


入力尺寸 Input

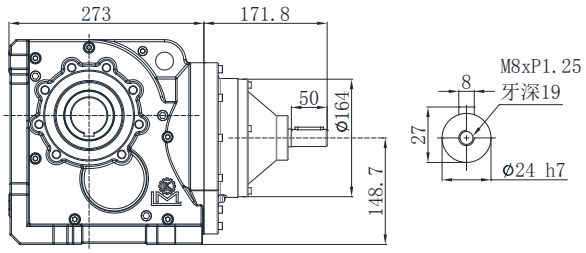
入力法兰
Input Flange



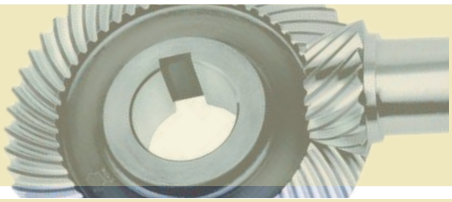
马达直连
Motor



入力轴
Input Shaft

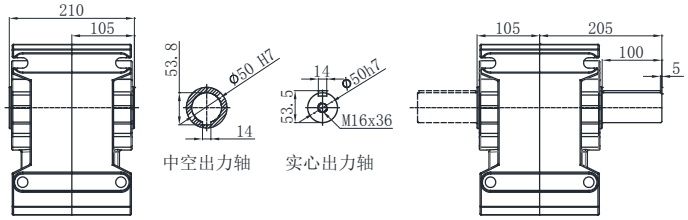


Power	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3
0.55kW	118	21.8	6	19	165	130	M10x1.5	200	4.8	26	288	250	161
0.75kW													
1.1kW													
1.5kW	128	27.3	8	24	165	130	M10x1.5	200	4.8	51	298.5	311	181
2.2kW	129	31.3	8	28	215	180	M12x1.75	250	5.8	64			
3.0kW													
3.7kw	129	31.3	8	28	215	180	M12x1.75	250	5.8	64	309	359.5	212
4.0kw	146.2	41.3	10	38	265	230	M12x1.75	300	6	85			
5.5kw													

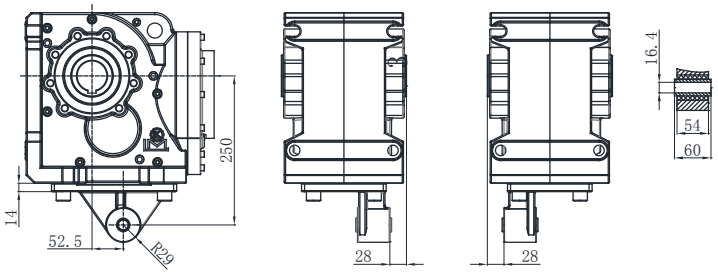


出力尺寸 Output

出力轴
Shaft

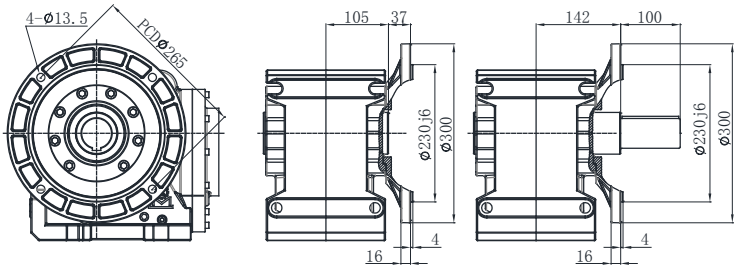


扭力臂
Torque arm

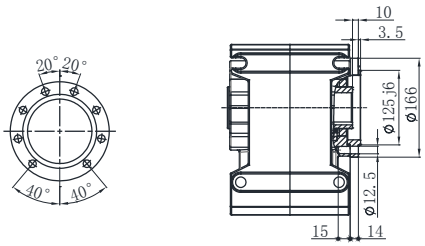


法兰型
Flange

大法兰

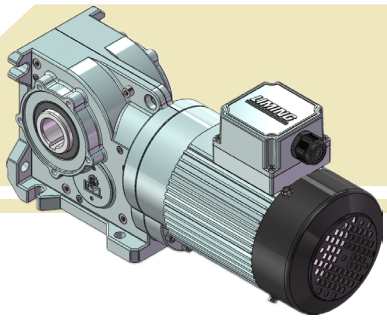


小法兰

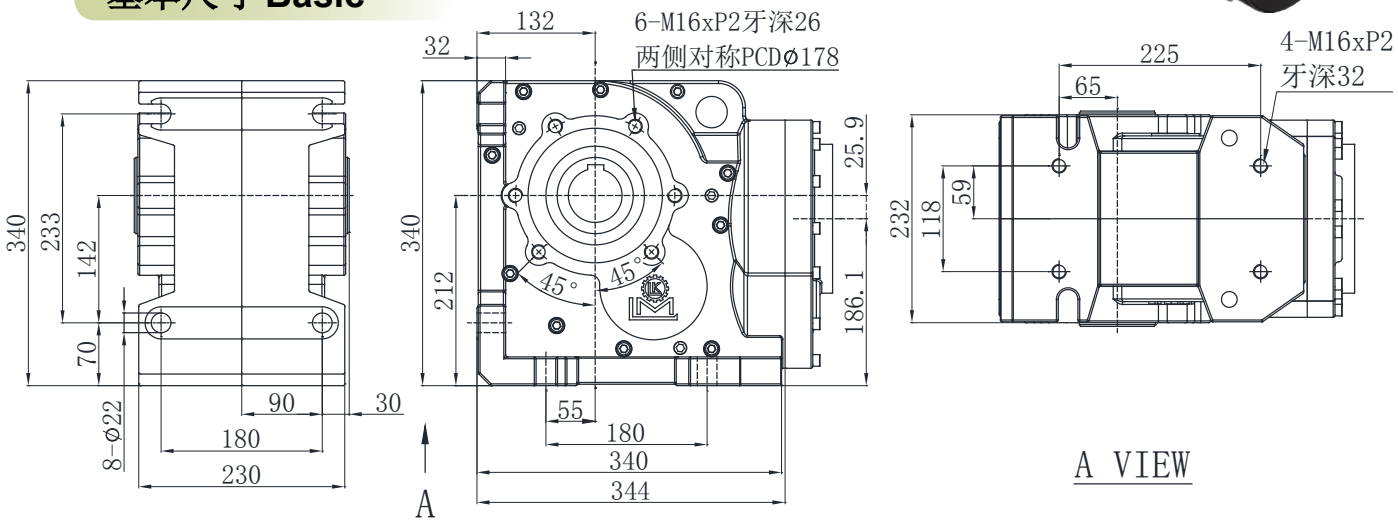


Power	0.55kW		0.75kW		1.1kW		1.5kW		2.2kW		3.0kW		3.7kW		4.0kW		5.5kW	
减速比	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.
7	25.5	44	34.8	32	51.1	22	68.5	16	100.4	11	137	8	168.6	6.6	182.2	6.1	251.1	4.45
10	32.2	36	43.9	26	64.5	17.6	86.5	13.3	126.8	9	173	6.66	212.8	5.4	230	5	317	3.63
15	49.8	27.5	67.9	19.8	99.7	13.8	133.7	10.3	196	7	267.4	5.15	329	4.18	355.6	3.87	490	2.81
20	72.4	19	98.7	14	144.9	9.5	205.5	6.5	301.3	4.4	411.1	3.25	505.8	2.65	546.7	2.45	753.3	1.78
25	96.8	14	131.9	10.5	193.6	7.1	259.5	5.3	380.4	3.62	519	2.65	616.4	2.15	666.3	2	918.1	1.45
30	102.2	13.2	139.3	9.6	204.4	6.5	274	4.9	401.8	3.35	548.1	2.45	691.9	1.63	747.8	1.5	1030.5	1.1
35	124.7	11	169.9	7.9	249.4	5.4	346	4	507.2	2.72	692	2	851	1.57	919.9	1.45	1267.5	1.05
40	140	8	190.8	5.9	280	4	396.4	3.4	581.1	2.3	792.8	1.7	987	1.39	1066.8	1.28	1470	0.93
45	166.6	8.1	227	5.9	333.2	4.1	446.6	3.0	654.8	2.0	893.3	1.5	1074.5	1.28	1161.4	1.18	1600.3	0.86
50	172.2	7.7	234.6	5.7	344.4	3.9	500.5	2.76	733.7	1.88	1001	1.38	1233.7	0.91	1333.5	0.85		
55	199.5	6.9	271.8	4.9	399	3.45	528.5	2.55	774.9	1.74	1057.1	1.27	1316	1.04	1422.4	0.96		
60	217.4	6.3	296.3	4.65	434.8	3.15	595.5	2.26	873	1.5	1191.1	1.13	1432.7	0.95	1548.5	0.88		
70	249.3	4.5	339.3	3.3	498.7	2.2	667.3	2.08	978.3	1.41	1334.7	1.04	1660.6	0.82				
80	289.8	4.7	395	3.5	579.7	2.4	773.5	1.78	1134	1.21	1547.1	0.89						
90	336	4.1	457.9	2.9	672	2.04	861.4	1.55	1262.8	1.06	1687	0.8						
100	374.1	3.6	509.9	2.62	748.3	1.8	966.9	1.16	1417.5	0.8								
110							1031.4	1.34	1512	0.91								
120	420	3.3	572.4	2.45	840	1.66	1148.6	1.18	1683.8	0.8								
130	448	3.1	610.5	2.26	896	1.55	1289.2	0.88										
140	498.9	2.7	679.9	2	997.8	1.35												
160	560	2	763.2	1.5	1120	1.02												

MODEL : AK87

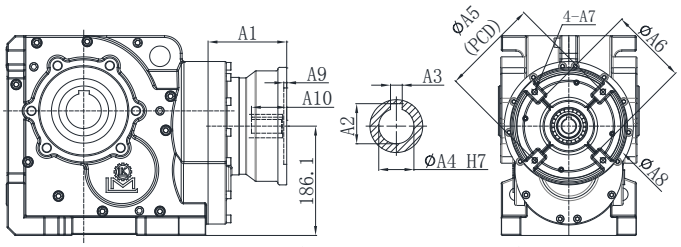


基本尺寸 Basic

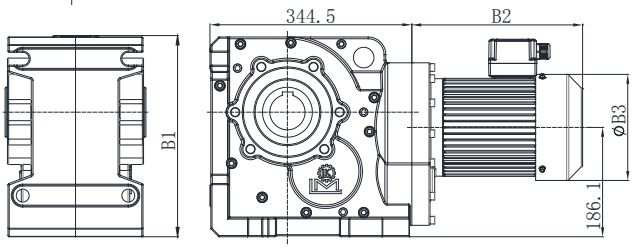


入力尺寸 Input

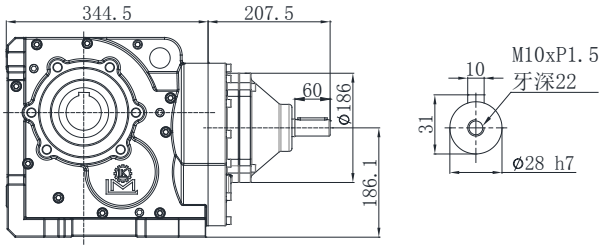
入力法兰
Input Flange



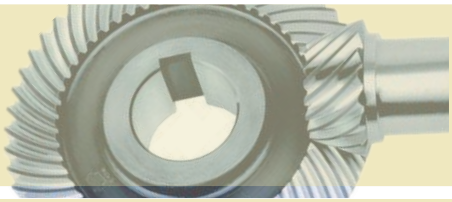
马达直连
Motor



入力轴
Input Shaft

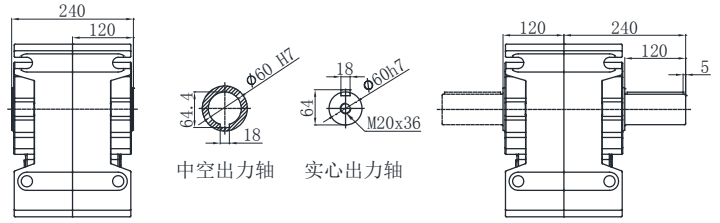


Power	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3
1.5kW	133.5	27.3	8	24	165	130	M10x1.5	200	4.8	51	336	316	181
2.2kW	134.5	31.3	8	28	215	180	M12x1.75	250	5.8	64			
3.0kW													
3.7kw	134.5	31.3	8	28	215	180	M12x1.75	250	5.8	64	346.5	362.5	212
4.0kw	149.7	41.3	10	38	265	230	M12x1.75	300	6	85			
5.5kw													

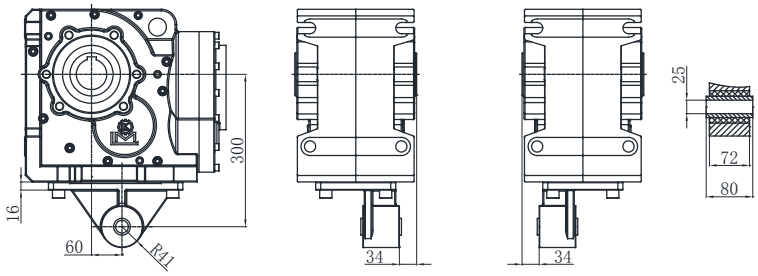


出力尺寸 Output

出力轴
Shaft

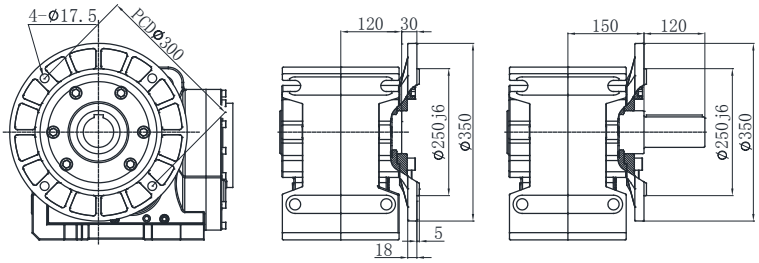


扭力臂
Torque arm

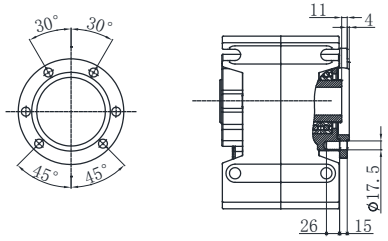


法兰型
Flange

大法兰



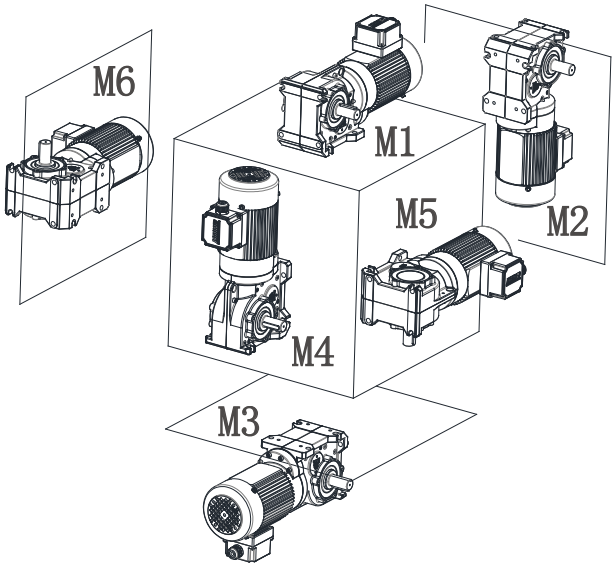
小法兰

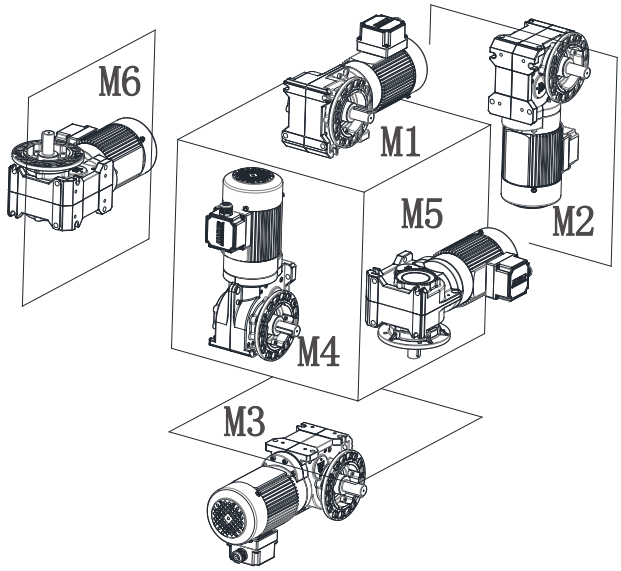


Power	1.5kW		2.2kW		3.0kW		3.7kW		4.0kW		5.5kW	
减速比	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.	OT(Nm)	S.F.
15	144.9	18	212.5	12	289.9	9	357.4	7.3	386.4	6.8	531.4	4.9
20	185.5	13	272	9	371	6.5	457.5	5.4	494.6	5	680.1	3.6
25	255.1	11	374	7.5	510.2	5.6	629.1	4.5	680.1	4.2	935.2	3
30	283.4	8.5	415.5	5.8	566.9	4.3	699	3.5	755.7	3.2	1039.1	2.34
40	401.1	6.5	588	4.5	802.2	3.2	989.1	2.65	1069.3	2.45	1470.4	1.78
45	434.8	6	637.5	4	869.7	3	1072.3	2.45	1159.3	2.26	1594.2	1.65
50	485.8	5.9	712.2	3.9	971.7	2.9	1167.3	2.08	1262	1.93	1735.3	1.4
55	534.8	4.9	784	3.3	1069.6	2.45						
60	579.3	4.5	850	3.1	1159.6	2.26	1429.8	1.83	1545.7	1.7	2125.6	1.23
70	742.1	3.3	1088	2.25	1484.3	1.67	1651.7	1.59	1785.6	1.47	2455.5	1.07
80	765.3	3.7	1122	2.5	1530.7	1.85	1887.3	1.51	2040.4	1.4	2805.8	1.01
90	850.4	2.86	1246.6	1.95	1700.8	1.43	2097	1.16	2267.1	1.07		
100	1020.4	2.8	1496	1.9	2040.9	1.4	2387.7	1.1	2581.3	1.02		
110	1060	2.33	1554	1.59	2120.1	1.16	2516.4	1.13	2720.5	1.05		
120	1133.8	2.15	1662.2	1.46	2267.7	1.07	2796.1	0.87				
130												
150	1413.4	1.75	2072	1.19	2826.8	0.87						
170	1619.5	1.5	2374.1	1.02								
200	1943.4	1.47	2849	1.0								
230	2159.3	1.12										

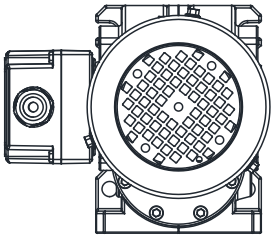
Mounting positiong
安装形式

安装方式示意图
Mounting position designation

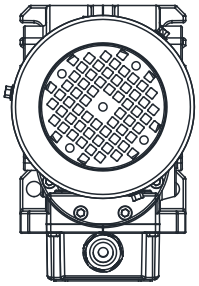




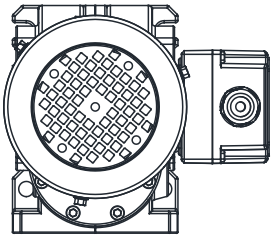
电机接线盒位置
Positiong of the motor thermal box



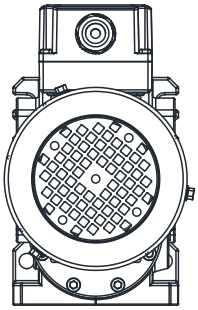
0°



90°

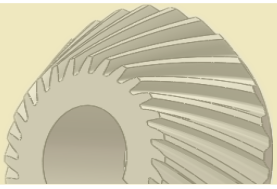


180°



270°

Relevant Parameter
选型相关参数



1. 功率 P

$$P_1 = \frac{P_2}{\eta}\ [kW]$$

$$P_{1n} \geqslant P_1 . SF$$

P_1 输入功率
P_2 输出功率
P_{1n} 电机额定功率
SF 安全系数
η 传动效率

LMK 系列齿轮减速机的传动效率 η 为 94%

1.Power P

$$P_1 = \frac{P_2}{\eta}\ [kW]$$

$$P_{1n} \geqslant P_1 . SF$$

P_1 Input power
P_2 Output power
P_{1n} Rated power driving motor
SF Safetyfactor
η Transmission efficiency

LMK Series gear units transmission efficiency η=94%

2. 转速 n

n_1 减速机输入转速
n_2 减速机输出转速

若是减速箱外部传动装置驱动，为了优化工作条件和提高使用寿命，建议使用 1400r/min 或更低转速。允许输入较高的输入转速，但在这种情况下，额定扭矩 OT 会下降。

2.Rotation speed

n_1 Gear units input speed
n_2 Gear units output speed

If driven by the external gearing,1400r/min or lower rotation speed is suggested so as to optimize the working conditions and prolong the service life.Higher input rotation speed is permitted,but in this situation,the rated torque OT will be reduced.

3. 传动比 i

$$i = \frac{n_1}{n_2}$$

传动比通常为小数，在选型表中为四舍五入的值（准确传动比请联系我司）

3.Transmission ratio i

$$i = \frac{n_1}{n_2}$$

Usually transmission ratio is decimal, in the selection table for rounding value (accurate transmission ratio, please contact us)

4. 扭矩 OT

$$OT = \frac{9550 \cdot P \cdot \eta}{n_2}[Nm]$$

$$OT_n \geq OT \cdot SF[Nm]$$

OT 输出扭矩（Nm ）
OT_n 选用输出扭矩（Nm ）
P_1 输入功率（kW ）
SF 安全系数
η 传动效率

4.Torque OT

$$OT = \frac{9550 \cdot P \cdot \eta}{n_2}[Nm]$$

$$OT_n \geq OT \cdot SF[Nm]$$

OT Output torque（Nm ）
OT_n Selected output torque（Nm ）
P_1 Input power（kW ）
SF Safety factor
η Transmission efficiency

Relevant Parameter
选型相关参数

5. 安全系数 SF

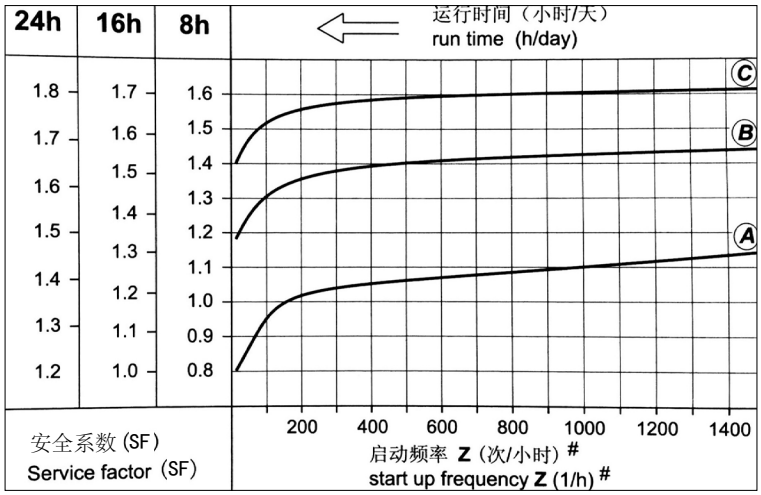
减速机从动机构的受驱动效果是由 SF 安全系数来衡量的。该使用系数根据每天的运转时间和启动频率 Z 确定的。

三种负载分类取决于惯性加速系数，在下图中可以读取实际应用的安全系数，按下图选取的安全系数必须小于或者等于性能参数表中提供的安全系数。

5.Service factor SF

The effect of the driven machine on the gear unit is taken into account to a sufficient level of accuracy using the service factor **SF** .The service factor is determined according to the daily operating time and the staring frequency **Z** .

Three load classifications are considered depending on the mass acceleration factor . You can read off the service factor applicable to your application in following Figure. The service factor selected using this diagram must be less than or equal to the service factor as given in the performance parameter table .



启动频率 Z: 周期包括所有启动、制动的次数以及变速电机高低速变化的次数。

Starting frequency **Z:**The cycles include all starting and braking procedures as well as change overs from low to high speed.

5. 1 负载类型

A 均匀冲击负载，允许惯性加速系数 fa ≤ 0. 2

B 中等冲击负载，允许惯性加速系数 fa ≤ 3

C 重冲击负载，允许惯性加速系数 fa ≤ 10

负载类型见附录

5.1 Load classifications

A Uniform shock load,permitted mass acceleration factor **fa**≤0.2

B Moderate shock load,permitted mass acceleration factor **fa**≤3

C Heavy shock load,permitted mass acceleration factor **fa**≤10

Load classifications see the addendum

5. 2 惯性加速系数

惯性加速系数计算如下：

$$fa = \frac{Jc}{Jm}$$

fa 惯性加速系数

Jc 所有外部传动惯量（kgm^2）

Jm 驱动电机的传动惯量（kgm^2）

如果惯性加速系数 fa ＞ 10，请联系我司

为了保持减速机的使用寿命，从产品样本中所选择的安全系数 ST 应等于或略高于计算出的使用系数 ST.

5.2 Mass acceleration factor

The mass acceleration factor is calculated as follow：

$$fa = \frac{Jc}{Jm}$$

fa Mass acceleration factor

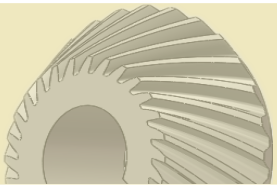
Jc All external mass moments of inertia（kgm^2）

Jm Mass moment of inertia on the motor end（kgm^2）

If mass acceleration factors **fa** ＞ 10,please call our Technical Service

To keep the service-life of gear units,the use factor **ST** selected from the catalogue must be equal or slightly higher than the calculated use factor **ST** .

Relevant Parameter
选型相关参数



6. 径向载荷 Fr

在决定影响径向载荷时，安装在轴端上的传动件类型必须考虑在内，不同的类型的传动件对应不同传动附加系数 fz，列表如下：

6.Radial loads Fr

When deter mining the resulting radial loads,the type of transmission elements,mounted on the shaft end must be considered. Various transmission elements are corresponding with following transmission element factors **fz.**

传动件 Transmission element	传动附加系数 Fz Transmission element factor **Fz**	注释 Comments
齿轮 Gears	1.00	≥ 17 齿 teeth
	1.15	< 17 齿 teeth
链轮 Chain sprockets	1.00	≥ 20 齿 teeth
	1.25	< 20 齿 teeth
	1.40	< 13 齿 teeth
V 带轮 Narrow V-belt pulleys	1.75	有预紧力作用 influence of the tensile force
平带轮 Flat belt pulleys	2.50	有预紧力作用 influence of the tensile force
齿带轮 Toothed belt pulleys	2.50	有预紧力作用 influence of the tensile force

作用在电机和齿轮轴上的径向载荷按如下公式计算：

$$F_r = \frac{M \cdot 2000 \cdot f_z}{d_0} [N]$$

Fr 作用在轴上的载荷 [N]
M 作用在轴上的扭矩 [Nm]
d_0 安装在轴上的传动件的平均直径 [mm]

f_z 附加的传动系数

The overhung loads exerted on the motor or gear shaft is then calculated as follows：

$$F_r = \frac{M \cdot 2000 \cdot f_z}{d_0} [N]$$

Fr Resulting radial load [N]
M Torque on the shaft [Nm]
d_0 Mean diameter of the mounted transmission element in [mm]
f_z Transmission element factor

决定许可径向载荷的依据是轴承额定使用寿命 LH10 的估算值（根据 ISO 281）. 对于特殊的使用条件，许可的径向载荷认为是修正后的使用寿命。齿轮减速机的输出轴上的许可负荷 Fr_2 列在选型表中，其他形式，请联系我司。

The basis for determining the permitted radial loads is the computation of the rated service life **LH10** of the bearings(according to **ISO 281**).For special operating conditions,the permitted radial loads can be determined with regard to the modified service life. The permitted radial loads **Fr_2** for the output shafts of gear units are listed in the selection tables. Contact our company in case of other versions.

Relevant Parameter

选型相关参数

当出现实际作用力不在轴端中心时，选择表中给出的许可径向负荷必须按以下公式来计算，对径向负荷来说，稍小的两个数值：F_{XL}（基于轴承使用寿命）和 F_{XW}（基于轴的强度）是在 X 点的许可数值。记住该计算应用在 $M_{2\ max}$ 。

$$F_{xL} = F_{r2}\frac{a}{b+x}[N]$$

$$F_{xW} = \frac{c}{f+x}[N]$$

Fr_2 依据选择表中减速机的许可径向载荷（x=L/2）[N]

x 轴肩到实际作用点的距离 [mm]

a,b,f 齿轮减速机径向转换常量 [mm]

c 齿轮减速机径向合租在那换常量 [Nmm]

The permitted radial loads given in the selection tables must be calculated using the following formula in the event of force application not in the center of the shaft end. The samller of the two values $\mathbf{F_{XL}}$（according to bearing service life) and $\mathbf{F_{XW}}$ (according to shaft strength) is the permitted value for the radial load at point **x**. Note that the calculations apply to $\mathbf{M_{2\ max}}$ 。

$$F_{xL} = F_{r2}\frac{a}{b+x}[N]$$

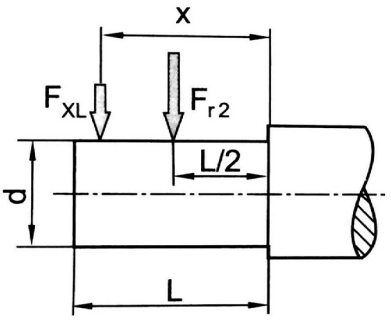
$$F_{xW} = \frac{c}{f+x}[N]$$

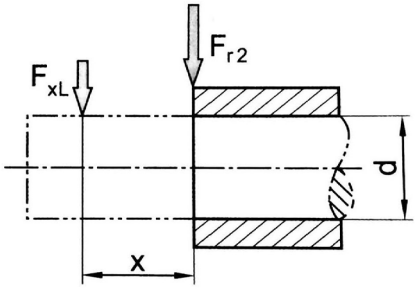
Fr_2 Permitted overhung load（x=L/2) for gear units according to the selection tables in [N]

x Distance form the shaft shoulder to the force application point in [mm]

a,b,f Gear unit constant for overhung load conversion [mm]

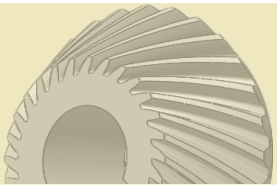
c Gear unit constant for overhung load conversion[Nmm]





减速机型号 Gear unit type	a [mm]	b [mm]	c [mm]	f [mm]	d [mm]	L [mm]
LMK37	123.5	98.5	$1.41x10^5$	0	25	50
LMK47	153.5	123.5	$1.78x10^5$	0	30	60
LMK57	169.7	134.7	$6.8x10^5$	31	35	70
LMK67	181.3	141.3	$4.12x10^5$	0	40	80
LMK77	215.8	165.8	$7.69x10^5$	0	50	100

Addendum
附录



减速机负载特征表（参考）Charge Characteristic Char(for reference)

风机类 AIR BLOWERS		卷扬机齿轮传动装置 Hoist gear assembly	A
风机（轴向和径向） Air blower(axial or radial)	A	吊杆起落齿轮传动装置 Derrick gear assembly	B
冷却塔风扇 Fan of cooling tower	B	转向齿轮传动装置 Steering gear assembly	B
引风机 Induced draught fan	B	行走齿轮传送装置 Moving gear assembly	C
螺旋活塞式风机 Rotary piston type fan	B	挖泥机类 LAND DREDGER	
蜗轮式风机 Turbo-fan	A	筒式传送机 Drum-type coveyer	C
建筑机械类 CONSTRUCTION MACHINERY		筒式传动机 Drum-type rotation wheel	C
混凝土搅拌机 Concrete mixer	B	挖泥头 Dredger head	C
卷扬机 Hoist	B	机动绞车 Powered crab	B
路面建筑机械 Road building machinery	B	泵 Pump	B
钻孔机 Boring mill	B	泵转向齿轮传动装置 Pump turning gear assembly	B
化工机械类 CHEMICAL MACHINERY		行走齿轮传送装置（履带） Moving gear assembly(apron wheel)	C
搅拌机（液体） Mixer (liquid)	A	行走齿轮传动装置（铁轨）Moving gear assembly（track）	B
搅拌机（半液体） Mixer (half liquid)	B	食品工业机械类 FOODSTUFF PROCESSING MACHINERY	
离心机（重型） Centrifuge(heavy)	B	灌注及装箱机器 Placer or box filler	A
离心机（轻型） Centrifuge(light)	A	甘蔗压榨机 Cane crusher	A
冷却滚筒 ** Cooling rolling drum	B	甘蔗切断机 **Cane cutter	B
干燥滚筒 ** Dry rolling drum	B	甘蔗粉碎机 **Cane crasher	C
搅拌机 Mixer	B	搅拌机 Mixer	B
压缩机类 COMPRESSOR		酱状物吊筒 Paste bucket	B
活塞式压缩机 Piston type compressor	C	包装机 Packager	A
涡轮式压缩机 Turbo-compressor	B	糖甜菜切断机 Beet slicer	B
传送运输机类 TRANSMIDDION FREIGHTER		糖甜菜清洗机 Beet washing machine	B
平板传送机 Pan conveyer	B	发动机及转换器类 MOTOR AND CONVERSION EQUIPMENNTS	
平衡块升降机 Balance lifter	B	频率转换器 Frequency converter	C
槽式传送机 Trough conveyer	B	发动机 Motor	C
带式传送机（大件）Ribbon conveyer(large piece)	C	焊接发动机 Welding motor	C
带式传送机（碎料）Ribbon conveyer(small piece)	B	洗衣机类 WASHING MACHINE	
筒式面粉传送机 Drum-type flour conveyer	A	滚筒 Rolling drum	B
链式传送机 Chain conveyer	B	洗衣机 Washing machine	B
环式传送机 Ring type conveyer	B	金属滚轧机类 METEL ROLLER MACHINE	
货物升降机 Lifter	B	钢坯剪断机 **Steel cutter	C
卷扬机 Hoist	B	链式输送机 **Chain conveyer	B
连杆式传送机 Crank-connecting conveyer	B	冷轧机 **Cold mill	C
载物升降机 Lifter	B	连铸成套设备 Continuous casting equipments	B
螺旋式传送机 Worm conveyer	B	冷床 **Cold bed	B
钢带式传送机 Steel-band conveyer	B	剪料机头 **Cropper	C
链式槽型传送机 Chain reed-type conveyer	B	交叉转弯输送机 **Cross steering stransmitter	B
绞车运输机 Crab freighter	B	除锈机 **Deruster	C
起重机类 HOIST		重型和中型板轧机 **Heavy and medium steel mill	C
转臂式起重传动齿轮装置 Bracket swing gear assembiy	B	捧坯切轧机 **Bar mill	C

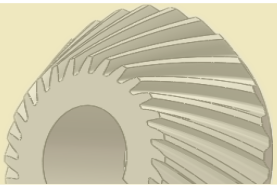
Addendum
附录

减速机负载特征表（参考）Charge Characteristic Char(for reference)

捧坯转运机类 BAR TRANSMISSION EQUIPMENTS		泵类 PUMPS	
捧坯推料机 Bar pusher	B	离心泵（稀液体）Centrifugal pump (thin liquid)	A
推床 Push bed	B	离心泵（半液体）Centrifugal pump (half liquid)	B
剪板机 **Shears	C	活塞泵 Displacement pump	C
板材摆升降台 **Lunber elevator platform	B	柱塞泵 Plunger pump	C
轧辊调整装置 Roll adjusting equipments	B	压力泵 Force pump	C
辊式矫直机 Roller levvling machine	B	塑料机械类 PLASTIC EQUIPMENTS	
轧钢机辊道（重型） Mill rolling way(heavy)	C	压光机 ** Glazing press	B
轧钢机辊道（轻型） Mill rolling way(light)	B	挤压机 ** Ejecting press	B
薄板轧机 ** Sheet rolling mill	C	螺旋压出机 **Spiral extruding machine	B
修整剪切机 ** Trimming shears	B	混合机 ** Mixing machine	B
焊管机 Pipe welder	C	橡胶机械类 PUBBER EQUIPMENT	
焊管机（带材和线材）Solder machine(belt material and wire rod)	B	压光机 ** Glazing press	B
线材拉拔机 Wire drawbench	B	挤压机 ** Ejecting press	C
金属加工机床类 METAL PROCESSING MACHINE TOOLS		混合搅拌机 ** Mixing stir machine	B
动力轴 Power shaft	A	捏合机 Kneading machine	B
锻造机 ** Forging machine	C	滚压机 ** Roller machine	C
锻锤 Drop hammer	C	石料、瓷土料加工机械类 STONE PORCELAIN CLAY PROCESSING EQUIPMENTS	
机床及辅助装置 Machine tool and necessary	A	球磨机 Ball crusher	B
机床及主要传动装置 Machine tool and main driving equipment	B	挤压料碎机 ** Ejecting press and breaker	C
金属刨床 Metal facing machine	C	破碎机 Breaker	C
板床矫直机床 Plate-leveing machine tool	C	压砖机 Brick press	C
冲床 Backing-out punch	C	锤料碎机 ** Beating crusher	C
冲压机床 Press machine tool	C	转炉 ** Converter	C
剪床 Cutting machine	B	筒型磨机 ** Cylinder mill	C
薄板弯曲机床 Sheet bending machine tool	B	纺织机械类 TEXTILE MACHINERY	
石油工业机械类 PETROLEUM PROCESSING MACHINERY		送料机 Feeding machine	B
输油管油泵 ** Pump pf oil pipe line	B	织布机 Loom machine	B
转子钻井设备 Rotar drilling equipment	C	印染机 Dyeing machine	B
制纸机类 PAPERING MACHINE		精制筒 Purified drum	B
压光机 ** Glazing press	C	威罗机 Welon machine	B
多层纸板机 ** Multilayer paper board machine	C	水处理设备类 WASTER TREATMENT EQUIPMENTS	
干燥滚筒 ** Drying cylinder	C	鼓风机 ** Air blast	B
上光滚筒 ** Glazing cylinder	C	螺杆泵 Screw pump	B
搅拌机 ** Masher	C	木料加工机床 WOOD PROCESSING MACHINE TOOL	
搅浆擦碎机 ** Mashing and breaking machine	C	剥皮机 Barker	C
吸水滚 **Suction roll	C	刨床 Facing machine	B
潮纸滚压机 ** Wetpaper roller machine	C	锯床 Saw bench	C
吸水滚压机木 ** Water absorbing roller machine	C	木材加工机床 Wood processing machine tool	A
威罗机 Welon machine	C		

注：A- 均匀冲击负载；B- 中等冲击负载；C- 重冲击负载； **- 用于 24 小时工作制。

Nonte:A-Uniform load;B-Moderate shock load;C-Heavy shock load;**-For 24 hours system.



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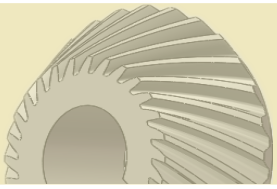

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