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**广东星光传动股份有限公司**  
GUANGDONG STARSHINE DRIVE CO., LTD.  
广东省佛山市三水区白坭镇汇金工业城 10 号  
ADD: NO.10,Huijin Industrial park, Baini Town,Sanshui district,Foshan,Guangdong,China  
HTTP://www.xgcd.cn 中文域名: 星光传动 . 网址  
TEL: 400 850 5665 FAX:0757-66639837/838  
E-MAIL:xg-sales@xgcd.cn

# SP系列精密行星

## SP SERIES PRECISION PLANETARY

动静之间 · 唯简不凡



广东星光传动股份有限公司前身是一家创建于1965年的国有军工企业——国营星光工模具厂，公司在追求全体员工物质和精神双重幸福的同时，以行业领先的减变速机应用技术，驱动全球工业革新为使命，建设觉悟型组织，成为服务全球的幸福企业为愿景。

公司技术力量雄厚，现有员工420余人，其中工程技术人员40多名，和各种先进的加工制造和检测设备，依托省级工程技术研究中心、减速机产品试验室和现代化研发和生产基地，为高端减变速机产品的行业应用开发和服务提供了良好的发展基础。

公司主导产品有：RSKF系列高精度齿轮减速机，SPE系列精密行星齿轮减速机，NCJ系列齿轮减速机，RV系列蜗杆减速机，SPC系列工业行星齿轮减速机，SI系列工业齿轮箱，SNKG系列齿轮减速机，JWB-X系列机械无级变速器，B/JXJ系列摆线针轮减速机，SCK系列准双曲面齿轮减速机等十大系列标准化产品，以及与客户联合开发的STPC系列抛光机主传动减速机，STCS系列原料搅拌专机，SFZJS550系列纺织浆纱专机等十个系列行业产品可供选用，广泛服务于陶瓷、纺织、玻璃、木工、高压开关、食品饮料、包装印刷、仓储物流、起重运输等装备制造和应用行业，专为中高端用户提供专业的产品和服务。产品畅销国内，远销欧美、中东、东南亚等20多个国家和地区。

在未来的发展中，星光传动聚焦客户需求，提供有竞争力的传动解决方案，持续为客户创造价值，打造高端制造业和终端用户“替代进口、升级换代”的首选品牌！

动静之间，唯简不凡；携手同行，星光灿烂！

Guangdong Starshine Drive Co.,Ltd, the predecessor was a state-owned military mould enterprise which established in 1965. While pursuing the spiritual and material happiness of all employees, With the Mission" with industry-leading reduction and transmission technology to drive industrial renewal" and Vision" Build a conscious organization, become a happy enterprise serving the world".

Starshine has a strong technical force with over 400 employees at present, including over 40 engineering technicians, and kinds of advanced processing machines and testing equipment. Thanks to the Provincial Engineering Technology Research Center, the speed reducer product laboratory, the modern R&D and production base, that make Starshine has a good foundation to develop and service for high-end speed reducers.

Our main products include: helical geared motor, worm gearboxes, planetary gearboxes, speed variators, cycloidal gearboxes, helical-hypoid gearboxes, which widely used in ceramic industry, glass industry, woodworking machinery, high voltage switch, food & beverage, packaging & printing, Storage & logistics, hoisting & transportation facilities...etc, Starshine technically provide the professional product & service for the medium and high-end customers, and our gearboxes are best-selling in both domestic and abroad market, such as Europe, North America, South America, Middle East, South Asia, Southeast Asia, Africa...etc more than 20 countries and regions.

In future, Starshine will hold the business creed of "serving customer, diligence & simplicity, self-criticism, innovation, honesty, teamwork", and take "authenticity, altruism, openness, innovation, responsibility, collaboration" as core values. Focus on customers' requirements and provide them the competitive transmission solution and create value for them constantly, and create a preferred brand of replacing import products and upgrading continuously for the end users.

Between Dynamic and Static, Simple is Extraordinary, let's go forward hand in hand and make a brilliant future!

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## 高精度系列行星减速机

High-precision Series Planetary Gearbox

### SPAB系列 Series



- 大模数,高刚性,一体化设计,适合高频正反转。
- 齿轮轴内嵌式行星转架结构,回转精度更高。
- 带轴向间隙调节功能。
- 入力轴筒夹式可开键

架构科学,可以承载更大的轴南力和径向力。

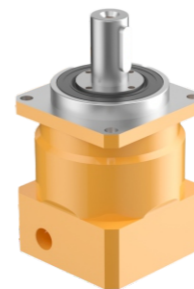
- 斜齿传动,磨齿齿轮,传动更流畅
- 低回程间隙,定位更精确

规格范围60-115                      速比范围:3-100  
精度范围:0-1 arcmin(P0级)      1-3 arcmin(P1级)

- Large module, high rigidity, and integrated design, suitable for high-frequency forward and reverse rotation.
- Planetary carrier structure embedded in the gear shaft for higher rotational accuracy.
- Axial clearance adjustment function.
- Keyless input shaft collet-type
- Scientific structure can withstand greater axial and radial forces.
- Helical gear transmission and ground gears for smoother transmission.
- Low backlash for more precise positioning.

Specifications range: 60-115,      Speed ratio range: 3-100  
Accuracy range: 0-1 arcmin (P0 Class),      1-3 arcmin (P1 Class)

### SPB系列 Series



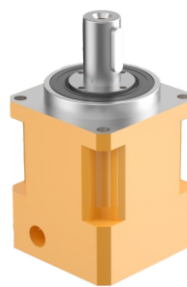
- 圆机身,一体式设计,高精度,高刚性
- 与对应的方机身系列相比,性能相同,性价比更高
- 双支撑笼式行星架,可靠度高,适合高速频繁正反转
- 带轴向间隙调节功能
- 入力轴可开键槽
- 斜齿传动,传动更平稳,承载能力大
- 低回程间隙,定位精准

规格范围:60-220                      速比范围:3-100  
精度范围:1-3 arcmin(P1级)      3-5 arcmin(P2级)

- Round body, one-piece design, high precision, and high rigidity
- Compare to the corresponding square body series, offering the same performance but better cost-performance
- Double-support cage planetary carrier, highly reliable, suitable for high-speed, frequent forward and reverse rotation
- Equipped with axial clearance adjustment
- Keyway-operated input shaft
- Helical gear transmission for smoother transmission and greater load capacity
- Low backlash for precise positioning

Specification range: 60-220                      Speed ratio range: 3-100  
Accuracy range: 1-3 arcmin (P1 Class), 3-5 arcmin (P2 Class)

### SPX系列 Series



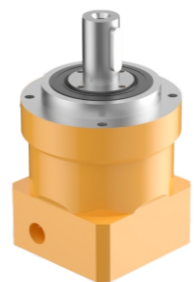
- 一体化设计,高精度,高刚性
- 双支撑笼式行星架结构,可靠度高,适合高速频繁正反转
- 带轴向间隙调节功能
- 入力轴可开键槽
- 架构科学,可以承载更大的轴向力和径向力
- 斜齿传动,传动更平稳,承载能力更大
- 低回程间隙,定位更精准

规格范围:28-180                      速比范围:3-100  
精度范围:1-3 arcmin(P1级)      3-5 arcmin(P2级)

- Integrated design, high precision, and high rigidity
- Double-support cage planetary carrier structure, highly reliable, suitable for high-speed, frequent forward and reverse rotation
- Axial clearance adjustment function
- Keyway-operated input shaft
- Scientific structure, capable of carrying greater axial and radial forces
- Helical gear transmission, smoother transmission and greater load capacity
- Low backlash, more precise positioning

Specifications: 28-180,                      Speed ratio range: 3-100  
Accuracy range: 1-3 arcmin (P1 Class), 3-5 arcmin (P2 Class)

### SPE系列 Series



- 圆法兰输出,螺纹连接,标准化尺寸
- 与直齿圆法兰输出相比精度更高
- 双支撑笼式行星架结构,可靠度高,适合高速频繁正反转
- 带轴向间隙调节功能
- 入力轴可开键槽
- 架构科学,可以承载更大的轴向力和径向力
- 斜齿传动,传动更平稳,承载能力大
- 低回程间隙,定位更精准

规格范围:70-155                      速比范围:3-100  
精度范围:1-3 arcmin(P1级)      3-5 arcmin(P2级)

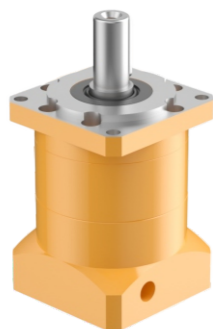
- Round flange output, threaded connection, standardized dimensions
- Higher precision compared to spur gear round flange outputs
- Double-support cage planetary carrier structure offers high reliability and is suitable for high-speed, frequent forward and reverse rotation
- Axial clearance adjustment function
- Keyway-operated input shaft
- Scientific construction allows for greater axial and radial load capacity
- Helical gear transmission for smoother transmission and greater load capacity
- Low backlash for more precise positioning

Specifications: 70-155                      Speed ratio: 3-100  
Accuracy: 1-3 arcmin (P1 Class) 3-5 arcmin (P2 Class)

## 高精度系列行星减速机

High-precision Series Planetary Gearbox

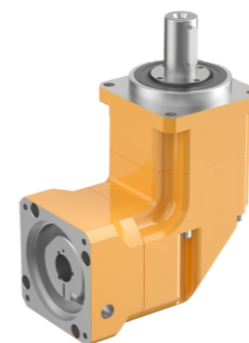
### SPW系列 Series



- 分体式设计,更多输出选择
  - 输入和输出尺寸可与直齿系列无缝切换
  - 双支撑笼式行星架,可靠度高,适合高速频繁正反转
  - 双级单支撑支架设计,性价比高
  - 入力轴可开键槽
  - 斜齿传动,传动更平稳,承载能力大
  - 低回程间隙,定位精准
- 规格范围:60-160      速比范围:3-100  
精度范围:1-3arcmin(P1级)    3-5arcmin(P2级)

- Split-body design, more output options
  - Seamlessly switch input and output sizes with spur gear series
  - Double-support cage planetary carrier, high reliability, suitable for high-speed, frequent forward and reverse rotation
  - Two-stage, single-support bracket design, high cost-effectiveness
  - Keyway-accessible input shaft
  - Helical gear transmission, smoother transmission, high load capacity
  - Low backlash, precise positioning
- Specifications: 60-160      Ratio range: 3-100  
Accuracy range: 1-3 arcmin (P1 Class)    3-5 arcmin (P2 Class)

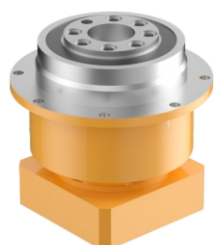
### SPXR系列 Series



- 螺旋锥齿轮换向机构,实现直角转向输出
  - 螺旋锥齿副安装距可调节,工作声音低
  - 有磨齿锥齿副可选择,工作声音更平稳,安静
  - 一体化设计,高精度,高刚性
  - 双支撑笼式行星架结构,可靠度高,适合高速频繁正反转
  - 带轴向间隙调节功能
  - 筒夹式锁紧设计,电机安装同轴度更高
  - 斜齿传动,低回程间隙,定位更精准
- 规格范围:42-120      速比范围:3-100  
精度范围: 3-5arcmin(P1级)(仅部分机型)    5-8arcmin(P2级)

- Spiral bevel gear reversing mechanism enables right-angle steering output.
  - Adjustable mounting distance for the spiral bevel gear pair, reducing operating noise.
  - Optional ground bevel gear pair for smoother, quieter operation.
  - Integrated design, high precision, and high rigidity.
  - Double-supported cage planetary carrier structure, high reliability, suitable for high-speed, frequent forward and reverse rotation.
  - Equipped with axial clearance adjustment function.
  - Collet-type locking design ensures higher motor coaxiality.
  - Helical gear transmission, low backlash, and more precise positioning
- Specification range: 42-120    Speed ratio range: 3-100  
Accuracy range: 3-5 arcmin (P1 Class) (select models only)  
Zaoguang transmission 5-8 arcmin (P2 Class)

### SPAD系列 Series



- 独特的法兰盘输出方式,可获得更大的安装自由度
  - 机身尺寸更短,安装空间要求低
  - 无轴双支撑笼式行星架结构,可靠度高,适合高速频繁正反转
  - 带轴向间隙调节功能
  - 转架轴承可切换,改成角接触轴承后,轴向力和径向力承载能力大幅提升
  - 耐冲击,可适应高加减速工况
  - 斜齿传动,低回程间隙,定位更精准
- 规格范围:64-140      速比范围:4-100  
精度范围:1-3arcmin(P1级)    3-5arcmin(P2级)

- Unique flange output design provides greater installation flexibility
  - Shorter body, reduced installation space requirements
  - Shaftless, double-support cage planetary carrier structure, high reliability, suitable for high-speed, frequent forward and reverse rotation
  - Equipped with axial clearance adjustment
  - Switchable slewing bearing: Angular contact bearings significantly increase axial and radial load capacity
  - Impact-resistant, adaptable High acceleration and deceleration conditions
  - Helical gear transmission, low backlash, and more precise positioning
- Specification range: 64-140      Speed ratio range: 4-100  
Accuracy range: 1-3 arcmin (P1 Class)    3-5 arcmin (P2 Class)

### SPBR系列 Series



- 螺旋锥齿轮换向机构,实现直角转向输出
  - 螺旋锥齿副安装距可调节,工作声音低
  - 有磨齿锥齿副可选择,工作声音更平稳,安静
  - 一体化设计,高精度,高刚性
  - 双支撑笼式行星架结构,可靠度高,适合高速频繁正反转
  - 对应的方机身系列相比,性能相同,性价比更高
  - 联轴器设计,更多连接选择,可开键槽
  - 斜齿传动,低回程间隙,定位更精准
- 规格范围:60-180      速比范围:3-100  
精度范围: 3-5arcmin(P1级)    5-8arcmin(P2级)

- Spiral bevel gear reversing mechanism enables right-angle steering output
  - Adjustable mounting distance for spiral bevel gear pairs, resulting in quieter operation
  - Optional ground bevel gear pairs offer smoother, quieter operation
  - Integrated design, high precision, and high rigidity
  - Double-supported cage planetary carrier structure offers high reliability and is suitable for high-speed, frequent forward and reverse rotation
  - Compared to the corresponding square-body series, it offers comparable performance with a higher cost-performance ratio
  - Coupling design provides more connection options and keyway capability
  - Helical gear transmission, low backlash, and more precise positioning
- Specifications: 60-180      Speed ratio range: 3-100  
Accuracy range: 3-5 arcmin (P1 Class)    5-8 arcmin (P2 Class)

## 高精度系列行星减速机

High-precision Series Planetary Gearbox

### SPER系列 Series



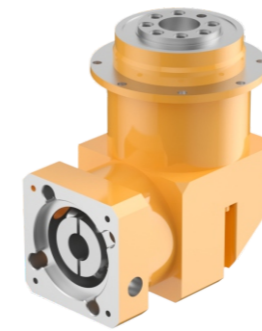
- 带锥齿换向机构,实现直角转向输出
- 圆法兰轴输出,螺纹连接,标准化尺寸
- 与直齿圆法兰输出相比精度更高
- 双支撑笼式行星架结构,可靠度高,适合高速频繁正反转
- 带轴向间隙调节功能
- 联轴器双边锁,可开键槽,高稳定性
- 架构科学,可以承载更大的轴向力和径向力
- 斜齿传动,传动更平稳,承载能力大
- 低回程间隙,定位更精准

规格范围:70-155                      速比范围:3-100  
精度范围:3-5arcmin(P1级)        5-8arcmin(P2级)

- Bevel gear reversing mechanism enables right-angle steering output
- Round flange shaft output, threaded connection, standardized dimensions
- Higher precision than spur gear round flange output
- Double-supported cage planetary carrier structure offers high reliability and is suitable for high-speed, frequent forward and reverse rotation
- Equipped with axial clearance adjustment function
- Double-side coupling lock, keyable Grooved for high stability
- Scientifically designed structure capable of carrying greater axial and radial forces
- Helical gear transmission for smoother transmission and greater load capacity
- Low backlash for more precise positioning

Specification range: 70-155                      Speed ratio range: 3-100  
Accuracy range: 3-5 arcmin (P1 Class)        5-8 arcmin (P2 Class)

### SPADR系列 Series



- 带锥齿换向机构,实现直角转向输出
- 独特的法兰盘输出方式,可获得更大的安装自由度
- 无轴双支撑笼式行星架结构,可靠度高,适合高速频繁正反转
- 带轴向间隙调节功能
- 转架轴承可切换,改成角接触轴承后,轴向力和径向力承载能力大幅提升
- 耐冲击,可适应高加速度工况
- 斜齿传动,低回程间隙,定位更精准


规格范围:64-140                      速比范围:4-100  
精度范围:5-7arcmin(P1级)        8-10arcmin(P2级)

- Bevel gear reversing mechanism enables right-angle steering output
- Unique flange output design for greater installation flexibility
- Shaftless, double-supported cage-type planetary carrier structure for high reliability, suitable for high-speed, frequent forward and reverse rotation
- Axial clearance adjustment function
- Switchable slewing bearings: angular contact bearings significantly increase axial and radial load capacity
- Impact-resistant, suitable for high acceleration and deceleration conditions
- Helical gear transmission with low backlash for more precise positioning

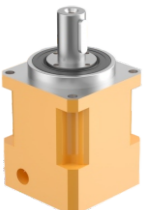
Specification range: 64-140                      Speed ratio range: 4-100  
Accuracy range: 5-7 arcmin (P1 Class)        8-10 arcmin (P2 Class)

## 斜齿系列型号标记 Helical gear series model marking


示例 e.g.: SPAB90-L1-5-P1

SPAB系列						
SPAB	90	L1	5	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	60、90、115	L1=1级 L2=2级	L1: 3、4、5 7、10 L2: 12、15、20 25、28、30 35、40、50 70、100	P0=超精密背隙 P1=精密背隙  P0 = Ultra-precision backlash; P1 = Precision backlash.	S1=光轴输出 无=带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided


示例 e.g.: SPX90-L1-5-P1

SPX系列						
SPX	90	L1	5	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	28、42、60 90、120	L1=1级 L2=2级	L1: 3、4、5 7、8、10 L2: 12、15、20 25、28、30 35、40、50 70、100	P1=精密背隙 P2=标准背隙  P1 = Precision backlash P2 = Standard backlash	S1=光轴输出 无=带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided


示例 e.g.: SPB90-L1-5-P1

SPB系列						
SPB	90	L1	5	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	60、90 120、140 180、220	L1=1级 L2=2级	L1: 3、4、5 7、8、10 L2: 12、15、20 25、28、30 35、40、50 70、100	P1=精密背隙 P2=标准背隙  P1 = Precision backlash P2 = Standard backlash	S1=光轴输出 无=带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided


示例 e.g.: SPE90-L1-5-P1

SPE系列						
SPE	90	L1	5	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	70、90、120 155	L1=1级 L2=2级	L1: 3、4、5 7、10 L2: 12、15、20 25、28、30 35、40、50 70、100	P1=精密背隙 P2=标准背隙  P1 = Precision backlash P2 = Standard backlash	S1=光轴输出 无=带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

示例 e.g.: SPW90-L1-5-P1

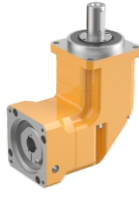
SPW系列						
SPW	90	L1	5	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	60、90、120 160	L1=1级 L2=2级	L1: 3、4、5 7、8、10 L2: 12、15、20 25、28、30 35、40、50 70、100	P1=精密背隙 P2=标准背隙  P1 = Precision backlash P2 = Standard backlash	S1=光轴输出 无=带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

示例 e.g.: SPAD90-L1-5-P1


SPAD系列						
SPAD	90	L1	5	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	64、90、110 140	L1=1级 L2=2级	L1: 4、5、7 10 L2: 16、20、25 28、35、40 50、70、100	P1=精密背隙 P2=标准背隙  P1 = Precision backlash P2 = Standard backlash	无=盘式输出  None= flange output	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

**斜齿系列型号标记 Helical gear series model marking**


示例 e.g.: SPXR90-L1-5-P1

SPXR系列						
SPXR	90	L1	10	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	42、60 90、120	L1=1级 L2=2级	L1: 3、4、5 7、8、10 14、20 L2: 25、30、35 40、50、70 100	P1=精密背隙 P2=标准背隙 P1 = Precision backlash P2 = Standard backlash	S1=光轴输出 无 =带键输出 S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided


示例 e.g.: SPBR90-L1-5-P1

SPBR系列						
SPBR	140	L1	10	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	60、90、120 140、180	L1=1级 L2=2级	L1: 3、4、5 7、10、14 20 L2: 25、30、35 40、50、70 100	P1=精密背隙 P2=标准背隙 P1 = Precision backlash P2 = Standard backlash	S1=光轴输出 无 =带键输出 S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

示例 e.g.: SPER90-L1-5-P1

SPER系列						
SPER	90	L1	10	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	70、90 120、155	L1=1级 L2=2级	L1: 3、4、5 7、10、14 20 L2: 25、28、30 35、40、50 70、100	P1=精密背隙 P2=标准背隙 P1 = Precision backlash P2 = Standard backlash	S1=光轴输出 无 =带键输出 S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

示例 e.g.: SPADR90-L1-5-P1

SPADR系列						
SPADR	90	L1	5	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	64、90 110、140	L1=1级 L2=2级	L1: 4、5、7 10、14、20 L2: 25、35、40 50、70、100	P1=精密背隙 P2=标准背隙 P1 = Precision backlash P2 = Standard backlash	S1=光轴输出 无 =带键输出 S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

**SPAB系列行星减速机技术参数**

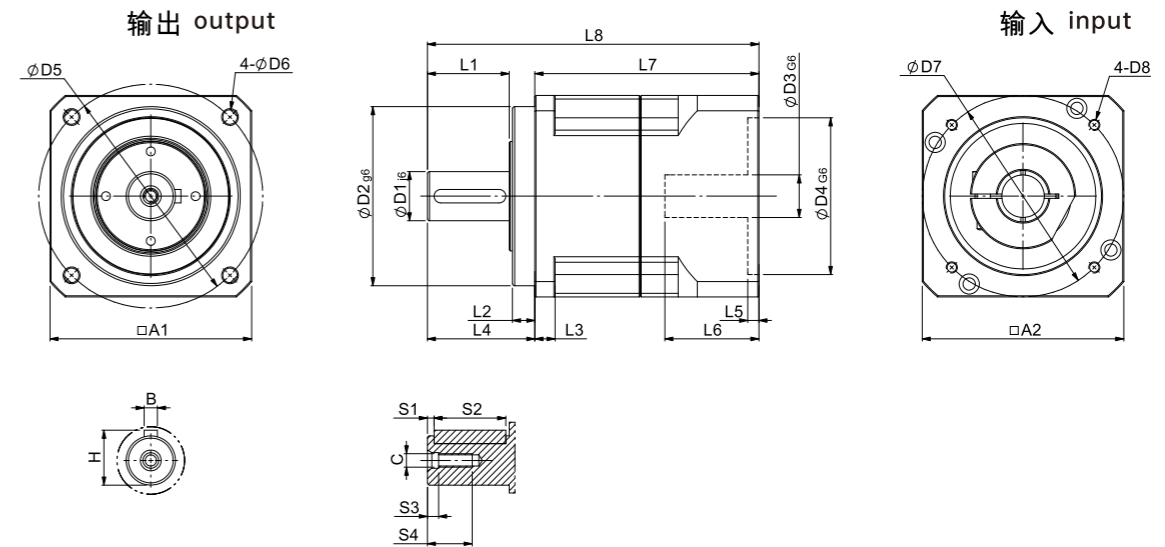
SPAB Series Planetary Gearbox Technical Parameters



技术参数 Technical Parameters		规格 Specification		SPAB60	SPAB90	SPAB115
最大转矩 Maximum Torque		Nm	1.5倍额定扭矩 1.5 times rated torque			
紧急制动扭矩 Emergency Braking Torque		Nm	3倍额定扭矩 3 times rated torque			
最大容许径向力 Maximum Allowable Radial Force		N	1530	3250	6700	
最大容许轴向力 Maximum Allowable Axial Force		N	765	1625	3350	
抗扭刚性 Torsional Stiffness		Nm/arcmin	7	14	25	
最大输入转速 Maximum Input Speed		rpm	10000	8000	8000	
额定输入转速 Rated Input Speed		rpm	50000	4000	4000	
噪音 Noise Level		dB	≤56	≤60	≤63	
平均寿命 Average Service Life		h	20000			
满载效率 Full-load Efficiency		%	L1≥97% L2≥94%			
回程间隙 Backlash	P0	L1	arcmin	/	≤1	≤1
		L2	arcmin	/	/	≤3
	P1	L1	arcmin	≤3	≤3	≤3
		L2	arcmin	≤5	≤5	≤5
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.16	0.61	3.25
		4	Kg.cm <sup>2</sup>	0.14	0.48	2.74
		5	Kg.cm <sup>2</sup>	0.13	0.47	2.71
		7	Kg.cm <sup>2</sup>	0.13	0.45	2.62
		10	Kg.cm <sup>2</sup>	0.13	0.44	2.57
		12	Kg.cm <sup>2</sup>	0.03	0.13	0.47
	L2	15	Kg.cm <sup>2</sup>	0.03	0.13	0.47
		16	Kg.cm <sup>2</sup>	0.03	0.13	0.47
		20	Kg.cm <sup>2</sup>	0.03	0.13	0.47
		25	Kg.cm <sup>2</sup>	0.03	0.13	0.47
		28	Kg.cm <sup>2</sup>	0.03	0.13	0.47
		30	Kg.cm <sup>2</sup>	0.03	0.13	0.47
		35	Kg.cm <sup>2</sup>	0.03	0.13	0.47
		40	Kg.cm <sup>2</sup>	0.03	0.13	0.47
		50	Kg.cm <sup>2</sup>	0.03	0.13	0.44
		70	Kg.cm <sup>2</sup>	0.03	0.13	0.44
100	Kg.cm <sup>2</sup>	0.03	0.13	0.44		

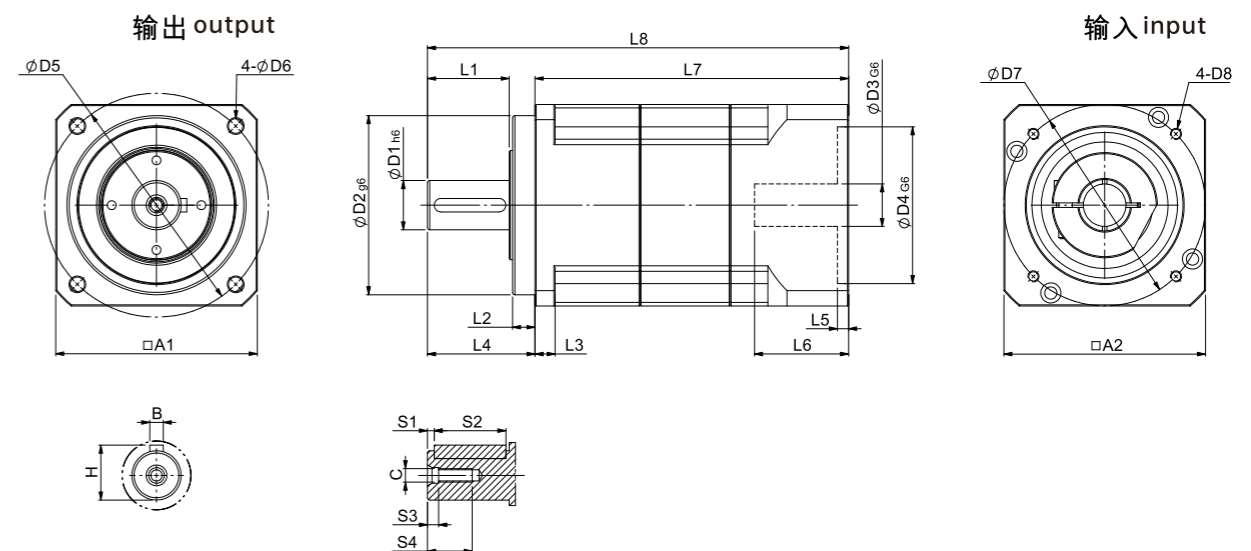
**SPAB系列行星减速机技术参数**
**SPAB Series Planetary Gearbox Technical Parameters**

技术参数 Technical Parameters		规格 Specification		SPAB60	SPAB90	SPAB115
	级数 Stages	速比 Ratio				
额定扭矩 Rated torque (Nm) $T_N$	L1	3	55	130	208	
		4	50	140	290	
		5	60	160	330	
		7	50	140	300	
		10	40	100	230	
	L2	12	55	130	208	
		15	55	130	208	
		16	50	140	290	
		20	50	140	290	
		25	60	160	330	
		28	50	140	290	
		30	55	130	208	
		35	60	160	330	
	40	50	140	290		
	50	60	160	330		
	70	50	140	300		
	100	40	100	230		
	防护等级 Protection level		IP65			
工作温度 Operating temperature		-10°C至90°C				
重量 (kg)	L1	1.2	3.56	7.8		
	L2	1.74	5.26	9		



代号 Code 机型 model	SPAB-L1																								
	D1	D2	D3	D4	D5	D6	D7	D8	L1	L2	L3	L4	L5	L6	L7	L8	A1	A2	S1	S2	S3	S4	B	H	C
SPAB60-L1	16	50	14	50	70	5.5	70	M4	29	7	8	37	4	34	78	115	60	60	3	20	5	15	5	18	M5
SPAB90-L1	22	80	19	70	100	6.5	90	M5	36.5	10	9	48	5	42	100	148	90	90	3	32	5	20	6	24.5	M6
SPAB115-L1	32	110	22	110	130	9	145	M8	51	12	12	65	7	58	130	195	115	130	5	40	6	25	10	35	M12

客户定制 Customization



代号 Code 机型 model	SPAB-L2																								
	D1	D2	D3	D4	D5	D6	D7	D8	L1	L2	L3	L4	L5	L6	L7	L8	A1	A2	S1	S2	S3	S4	B	H	C
SPAB60-L2	16	50	14	50	70	5.5	70	M4	29	7	8	37	4	34	107	114	60	60	3	20	5	15	5	18	M5
SPAB90-L2	22	80	19	70	100	6.5	90	M5	36.5	10	9	48	5	42.0	140	188	90	90	3	32	5	20	6	24.5	M6
SPAB115-L2	32	110	22	110	130	9	145	M8	51	12	12	65	7	58	181	246	115	130	5	40	6	25	10	35	M12

客户定制 Customization

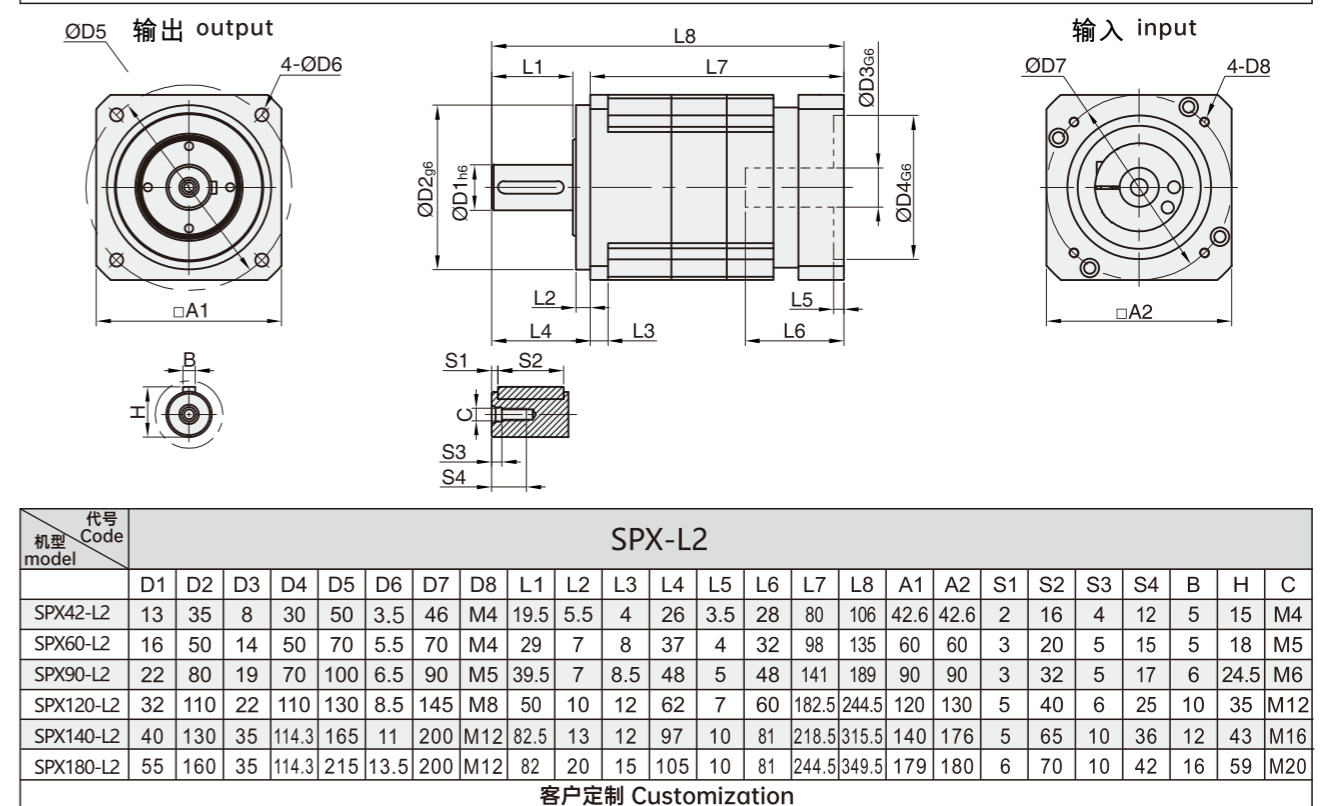
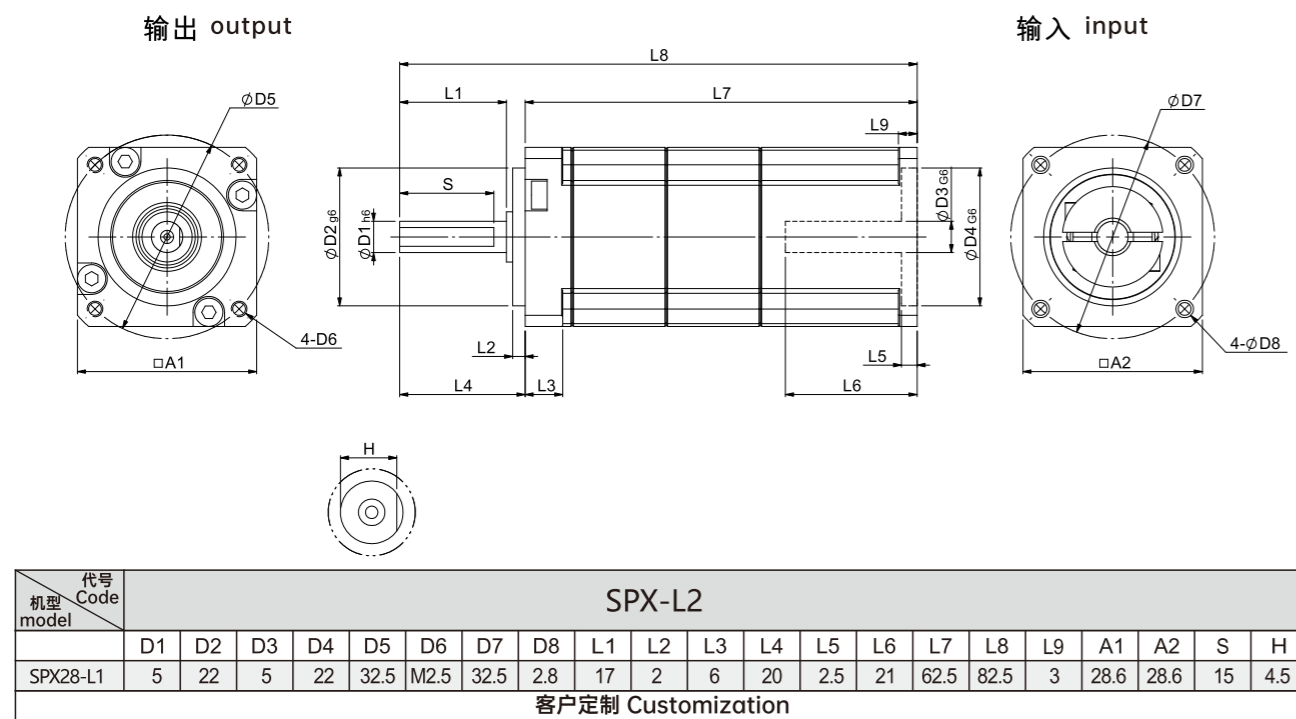
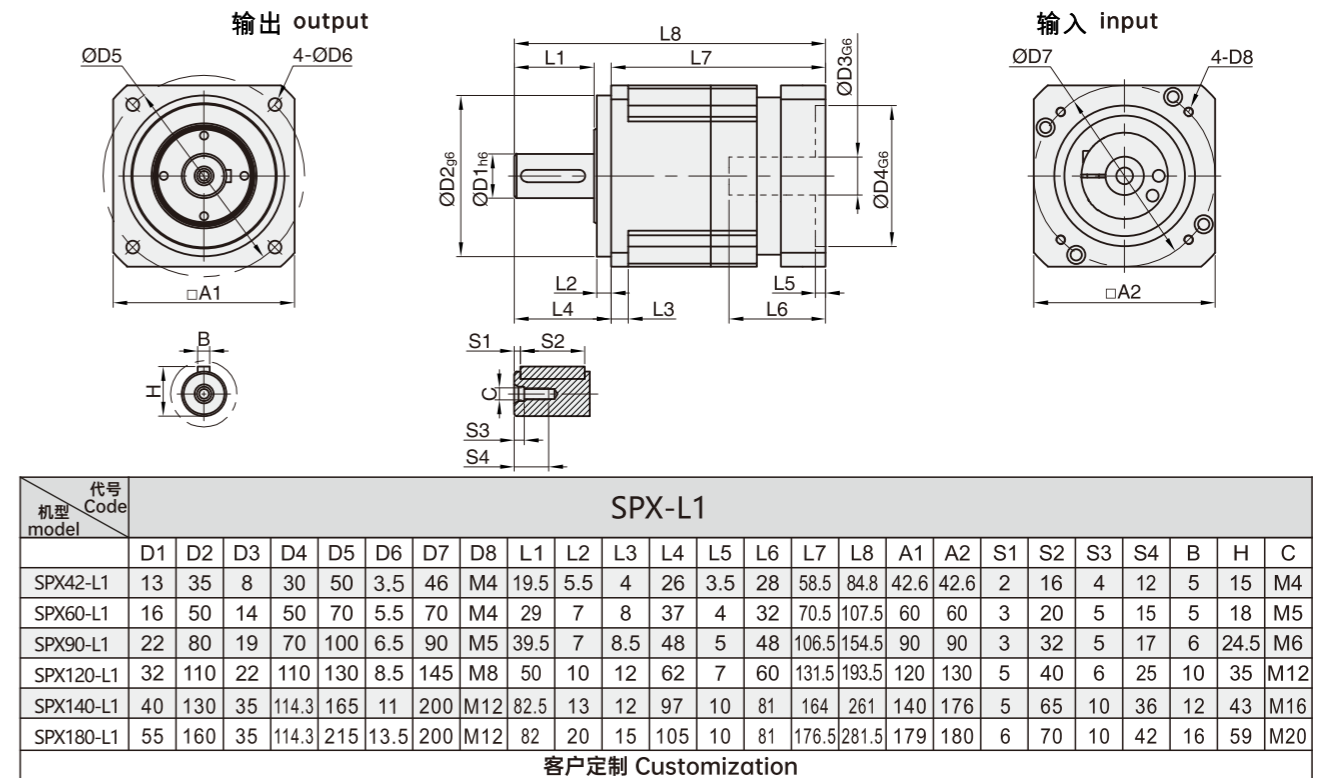
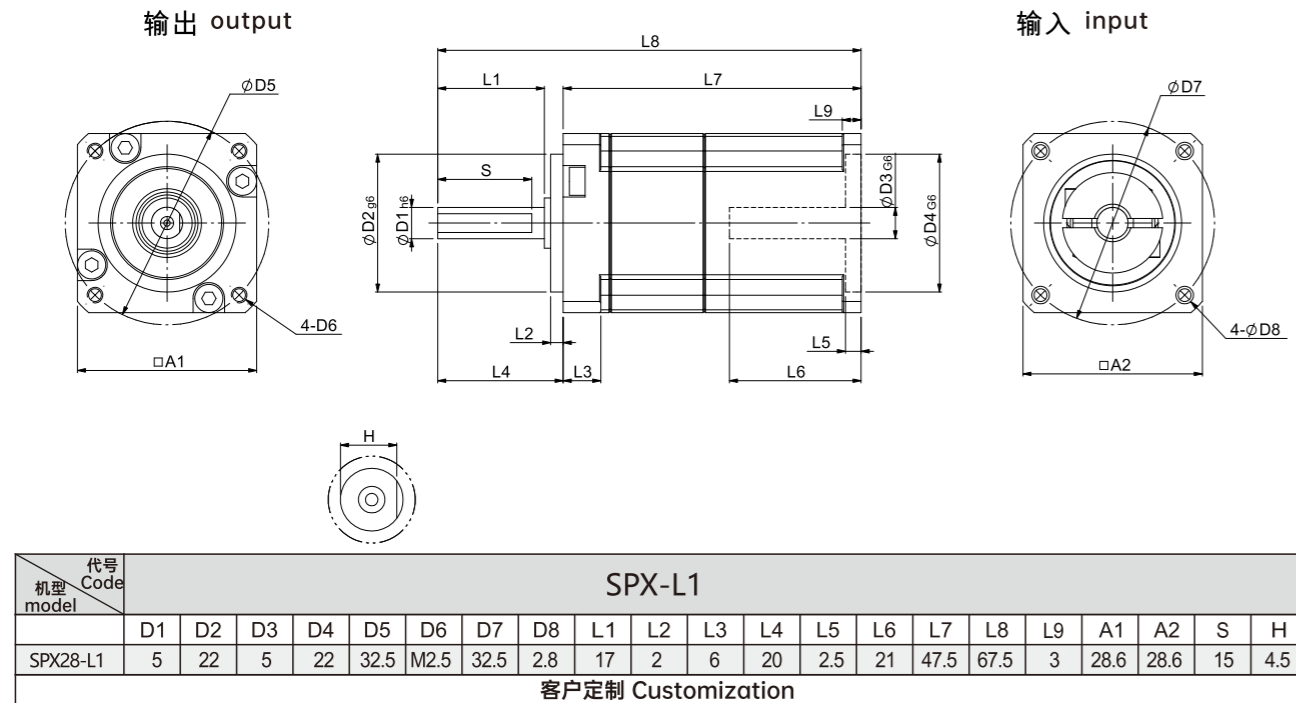
**SPX系列行星减速机技术参数**
**SPX Series Planetary Gearbox Technical Parameters**


技术参数 Technical Parameters			规格 Specification							
			SPX28	SPX42	SPX60	SPX90	SPX120	SPX140	SPX180	
最大扭矩 Maximum Torque		Nm	1.5倍额定扭矩 1.5 times rated torque							
紧急制动扭矩 Emergency Braking Torque		Nm	3倍额定扭矩 3 times rated torque							
最大容许径向力 Maximum Allowable Radial Force		N	150	780	1530	3250	6700	9400	14500	
最大容许轴向力 Maximum Allowable Axial Force		N	80	390	630	1300	3000	4700	7250	
抗扭刚性 Torsional Stiffness		Nm/arcmin	1.2	2.5	6	12	23	47	130	
最大输入转速 Maximum Input Speed		rpm	6000	8000	8000	8000	8000	6000	6000	
额定输入转速 Rated Input Speed		rpm	3000	4000	4000	3000	3000	3000	3000	
噪音 Noise Level		dB	≤55	≤56	≤58	≤60	≤65	≤68	≤68	
平均寿命 Average Service Life		h	20000							
满载效率 Full-load Efficiency		%	L1≥95% L2≥90%							
回程间隙 Backlash	P1	L1	arcmin	/	≤3	≤3	≤3	≤3	≤3	≤3
		L2	arcmin	/	≤5	≤5	≤5	≤5	≤5	≤5
	P2	L1	arcmin	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		L2	arcmin	≤7	≤7	≤7	≤7	≤7	≤7	≤7
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.020	/	0.16	0.61	3.25	9.21	28.98
		4	Kg.cm <sup>2</sup>	0.018	0.03	0.14	0.48	2.74	7.54	23.67
		5	Kg.cm <sup>2</sup>	0.014	0.03	0.13	0.47	2.71	7.42	23.29
		7	Kg.cm <sup>2</sup>	0.012	0.03	0.13	0.45	2.62	7.14	22.48
		8	Kg.cm <sup>2</sup>	/	/	0.13	0.45	2.60	7.14	22.5
		10	Kg.cm <sup>2</sup>	0.010	0.03	0.13	0.40	2.57	7.03	22.51
	L2	12	Kg.cm <sup>2</sup>	0.018	/	0.13	0.45	0.45	2.63	7.30
		15	Kg.cm <sup>2</sup>	0.014	/	0.13	0.45	0.45	2.63	7.30
		16	Kg.cm <sup>2</sup>	0.018	0.03	0.13	0.45	0.45	2.63	7.30
		20	Kg.cm <sup>2</sup>	0.014	0.03	0.13	0.45	0.45	2.43	6.92
		25	Kg.cm <sup>2</sup>	0.014	0.03	0.13	0.45	0.40	2.39	6.92
		28	Kg.cm <sup>2</sup>	0.012	0.03	0.13	0.45	0.45	2.43	6.92
		30	Kg.cm <sup>2</sup>	0.010	/	0.13	0.45	0.45	2.63	7.30
		35	Kg.cm <sup>2</sup>	0.012	0.03	0.13	0.40	0.40	2.39	6.92
		40	Kg.cm <sup>2</sup>	0.010	0.03	0.13	0.45	0.45	2.43	6.92
		50	Kg.cm <sup>2</sup>	0.010	0.03	0.13	0.40	0.40	2.39	6.92
70	Kg.cm <sup>2</sup>	0.010	0.03	0.13	0.40	0.40	2.39	6.72		
100	Kg.cm <sup>2</sup>	0.010	0.03	0.13	0.40	0.40	2.39	6.72		

技术参数 Technical Parameters			规格 Specification							
			SPX28	SPX42	SPX60	SPX90	SPX120	SPX140	SPX180	
额定扭矩 Rated torque (Nm) <sub>T<sub>N</sub></sub>	级数 Stages	速比 Ratio								
		3	5	/	40	105	165	360	880	
		4	9	17	45	130	230	480	880	
		5	8.5	15	45	130	230	480	1100	
		7	5	12	45	100	220	480	1100	
		8	/	/	40	90	200	440	950	
		10	3	10	30	75	175	360	770	
		12	5	/	40	105	165	360	880	
		15	5	/	40	105	165	360	880	
		16	9	17	45	130	230	360	880	
	20	9	17	45	130	230	480	1100		
	25	8.5	15	45	130	230	480	1100		
	28	9	17	45	130	230	480	1100		
	30	5	/	40	105	165	360	880		
	35	8.5	15	45	130	230	480	1100		
	40	9	17	45	130	230	480	1100		
	50	8.5	15	45	130	230	480	1100		
	70	5	12	45	100	220	480	1100		
	100	3	10	30	75	175	360	770		
	防护等级 Protection level		IP65							
工作温度 Operating temperature		-10°C至 90°C								
重量 (kg)	L1	0.15	0.5	1.25	3.75	8.5	14.3	30		
	L2	0.21	0.8	1.75	5.1	12	21.5	42		

### SPX系列行星减速机标准尺寸

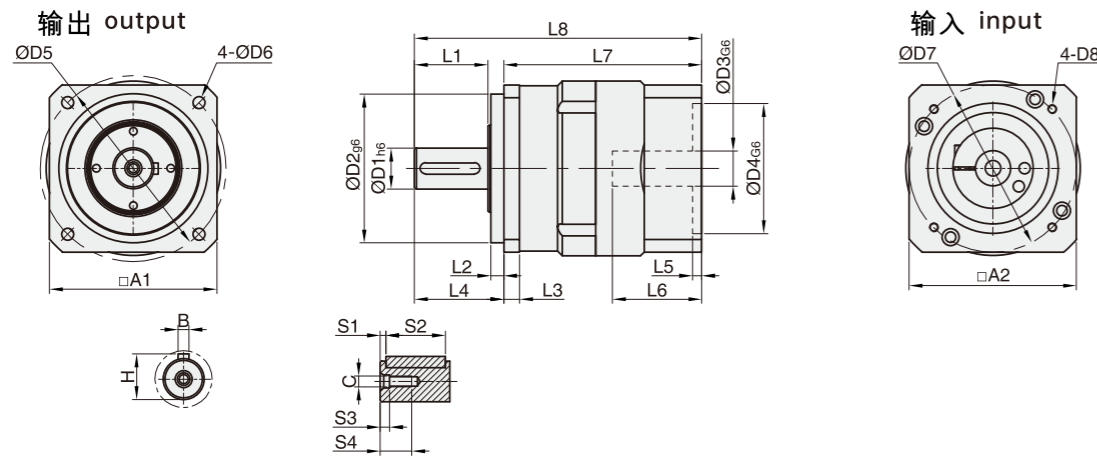
#### SPX Series Planetary Gearbox Standard Dimensions



**SPB系列行星减速机技术参数**
**SPB Series Planetary Gearbox Technical Parameters**

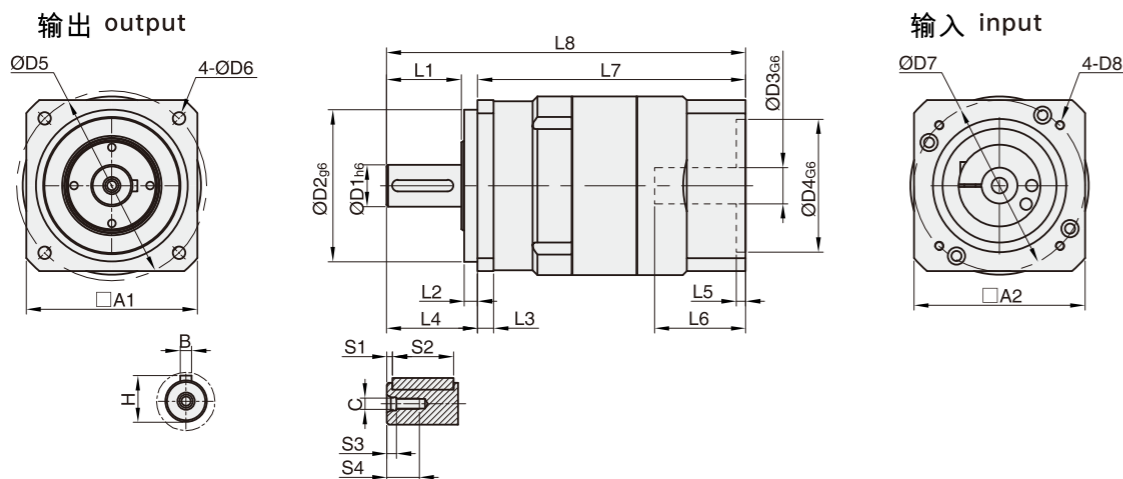

技术参数 Technical Parameters		规格 Specification		SPB60	SPB90	SPB120	SPB140	SPB180	SPB220
		级数	速比						
最大扭矩 Maximum Torque		Nm	1.5倍额定扭矩 1.5 times rated torque						
紧急制动扭矩 Emergency Braking Torque		Nm	3倍额定扭矩 3 times rated torque						
最大容许径向力 Maximum Allowable Radial Force		N	1530	3250	6700	9400	14500	16500	
最大容许轴向力 Maximum Allowable Axial Force		N	630	1300	3000	4700	7250	8250	
抗扭刚性 Torsional Stiffness		Nm/arcmin	6	12	23	47	130	205	
最大输入转速 Maximum Input Speed		rpm	8000	6000	6000	6000	6000	3000	
额定输入转速 Rated Input Speed		rpm	4000	3000	3000	3000	3000	1500	
噪音 Noise Level		dB	≤58	≤60	≤65	≤68	≤68	≤72	
平均寿命 Average Service Life		h	20000						
满载效率 Full-load Efficiency		%	L1≥95% L2≥90%						
回程间隙 Backlash	P1	L1	arcmin	≤3	≤3	≤3	≤3	≤3	≤3
		L2	arcmin	≤5	≤5	≤5	≤5	≤5	≤5
	P2	L1	arcmin	≤5	≤5	≤5	≤5	≤5	≤5
		L2	arcmin	≤7	≤7	≤7	≤7	≤7	≤7
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.16	0.61	3.25	9.21	28.98	69.70
		4	Kg.cm <sup>2</sup>	0.14	0.48	2.74	7.54	23.67	54.61
		5	Kg.cm <sup>2</sup>	0.13	0.47	2.71	7.42	23.29	53.51
		7	Kg.cm <sup>2</sup>	0.13	0.45	2.62	7.14	22.48	50.92
		8	Kg.cm <sup>2</sup>	0.13	0.45	2.60	7.14	22.50	/
		10	Kg.cm <sup>2</sup>	0.13	0.40	2.57	7.03	22.51	50.18
	L2	12	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.63	7.30	23.59
		15	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.63	7.30	23.59
		20	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43	6.92	23.33
		25	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.39	6.92	22.68
		28	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43	6.92	23.33
		30	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.63	7.30	25.59
		35	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.39	6.92	22.68
		40	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43	6.92	23.33
50	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39	6.92	22.68		
70	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39	6.72	22.68		
100	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39	6.72	22.68		

技术参数 Technical Parameters		规格 Specification		SPB60	SPB90	SPB120	SPB140	SPB180	SPB220
		级数 Stages	速比 Ratio						
额定扭矩 Rated torque (Nm) <sub>T<sub>N</sub></sub>	L1	3		40	105	165	360	880	1100
		4		45	130	230	480	880	1800
		5		45	130	230	480	1100	1800
		7		45	100	220	480	1100	1600
		8		40	90	200	440	950	/
		10		30	75	175	360	770	1200
	L2	12		40	105	165	360	880	1100
		15		40	105	165	360	880	1100
		20		45	130	230	480	1100	1800
		25		45	130	230	480	1100	1800
		28		45	130	230	480	1100	1800
		30		40	105	165	360	880	1100
		35		45	130	230	480	1100	1800
		40		45	130	230	480	1100	1800
50		45	130	230	480	1100	1800		
70		45	100	220	480	1100	1600		
100		30	75	175	360	770	1200		
防护等级 Protection level		IP65							
工作温度 Operating temperature		-10℃至 90℃							
重量 (kg)	L1		1.25	3.75	8.5	14.3	30	50	
	L2		1.75	5.1	12	21.5	42	65	

**SPB系列行星减速机标准尺寸**
**SPB Series Planetary Gearbox Standard Dimensions**


代号 Code		SPB-L1																								
机型 model		D1	D2	D3	D4	D5	D6	D7	D8	L1	L2	L3	L4	L5	L6	L7	L8	A1	A2	S1	S2	S3	S4	B	H	C
SPB60-L1		16	50	14	50	70	5.5	70	M4	29	7	6	37	4	32	70.5	107.5	60	60	3	20	5	15	5	18	M5
SPB90-L1		22	80	19	70	100	6.5	90	M5	39.5	7	8.5	48	5	48	106.5	154.5	90	90	3	32	5	17	6	24.5	M6
SPB120-L1		32	110	22	110	130	8.5	145	M8	50	10	12	62	7	60	131.5	193.5	120	130	5	40	6	25	10	35	M12
SPB140-L1		40	130	35	114.3	165	11	200	M12	82.5	13	12	97	10	81	164	261	140	176	5	65	10	36	12	43	M16
SPB180-L1		55	160	35	114.3	215	13.5	200	M12	82	20	15	105	10	81	176.5	281.5	179	180	6	70	10	42	16	59	M20
SPB220-L1		75	180	55	200	250	17	235	M12	104.5	30	20	138	10	117.5	233.5	371.5	220	220	6	90	10	40	20	81	M20

客户定制 Customization



代号 Code		SPB-L2																								
机型 model		D1	D2	D3	D4	D5	D6	D7	D8	L1	L2	L3	L4	L5	L6	L7	L8	A1	A2	S1	S2	S3	S4	B	H	C
SPB60-L2		16	50	14	50	70	5.5	70	M4	29	7	6	37	4	32	98	135	60	60	3	20	5	15	5	18	M5
SPB90-L2		22	80	19	70	100	6.5	90	M5	39.5	7	8.5	48	5	48	141	189	90	90	3	32	5	17	6	24.5	M6
SPB120-L2		32	110	22	110	130	8.5	145	M8	50	10	12	62	7	60	182.5	244.5	120	130	5	40	6	25	10	35	M12
SPB140-L2		40	130	35	114.3	165	11	200	M12	82.5	13	12	97	10	81	218.5	315.5	140	176	5	65	10	36	12	43	M16
SPB180-L2		55	160	35	114.3	215	13.5	200	M12	82	20	15	105	10	81	244.5	349.5	179	180	6	70	10	42	16	59	M20
SPB220-L2		75	180	55	200	250	17	235	M12	104.5	30	20	138	10	117.5	299	437	220	220	6	90	10	40	20	81	M20

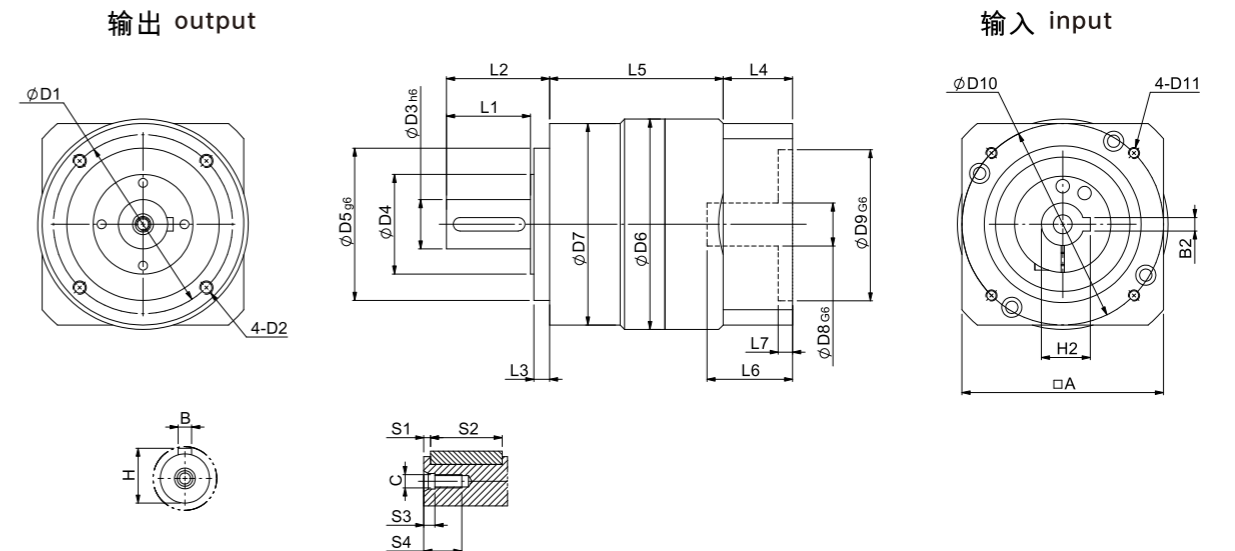
客户定制 Customization

**SPE系列行星减速机技术参数**
**SPE Series Planetary Gearbox Technical Parameters**


技术参数 Technical Parameters		规格 Specification	SPE70	SPE90	SPE120	SPE155	
最大扭矩 Maximum Torque	Nm	1.5倍额定扭矩 1.5 times rated torque					
紧急制动扭矩 Emergency Braking Torque	Nm	3倍额定扭矩 3 times rated torque					
最大容许径向力 Maximum Allowable Radial Force	N	1530	3250	6700	9400		
最大容许轴向力 Maximum Allowable Axial Force	N	630	1300	3000	4700		
抗扭刚性 Torsional Stiffness	Nm/arcmin	6	12	23	47		
最大输入转速 Maximum Input Speed	rpm	8000	6000	6000	6000		
额定输入转速 Rated Input Speed	rpm	4000	3000	3000	3000		
噪音 Noise Level	dB	≤58	≤60	≤65	≤68		
平均寿命 Average Service Life	h	20000					
满载效率 Full-load Efficiency	%	L1≥95% L2≥90%					
回程间隙 Backlash	P1	L1	arcmin	≤3	≤3	≤3	≤3
		L2	arcmin	≤5	≤5	≤5	≤5
	P2	L1	arcmin	≤5	≤5	≤5	≤5
		L2	arcmin	≤7	≤7	≤7	≤7
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.16	0.61	3.25	9.21
		4	Kg.cm <sup>2</sup>	0.14	0.48	2.74	7.54
		5	Kg.cm <sup>2</sup>	0.13	0.47	2.71	7.42
		7	Kg.cm <sup>2</sup>	0.13	0.45	2.62	7.14
		10	Kg.cm <sup>2</sup>	0.13	0.40	2.57	7.03
	L2	12	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.63
		15	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.63
		20	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43
		25	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.39
		28	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43
		30	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.63
		35	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.39
		40	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43
		50	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39
70	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39		
100	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39		

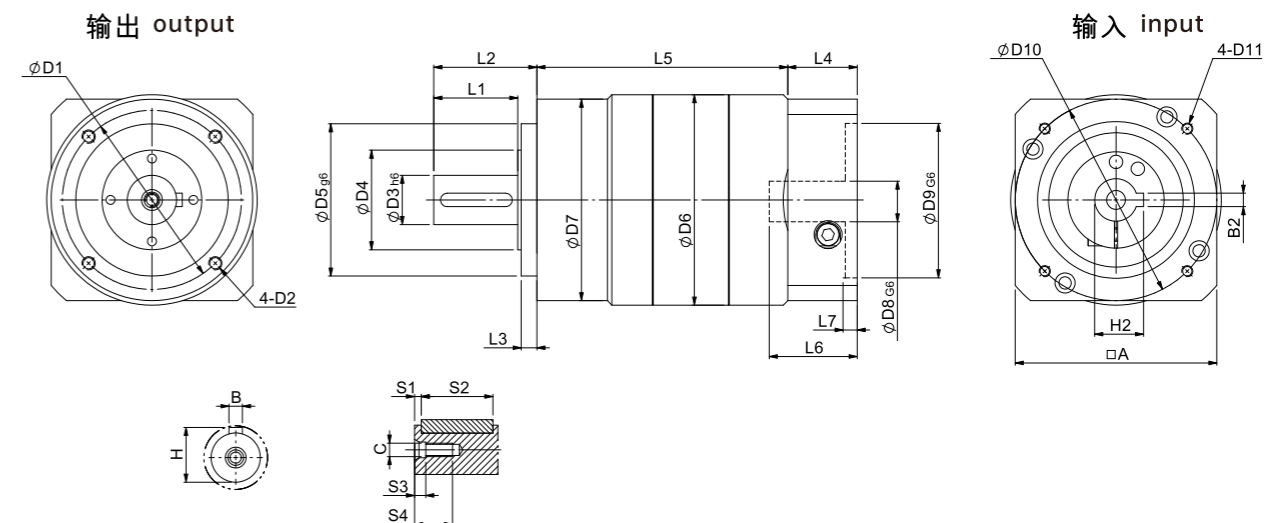
**SPE系列行星减速机技术参数**
**SPE Series Planetary Gearbox Technical Parameters**

技术参数 Technical Parameters		规格 Specification		SPE70	SPE90	SPE120	SPE155
级数 Stages	速比 Ratio						
额定扭矩 Rated torque (Nm) $T_N$	L1	3		40	105	165	360
		4		45	130	230	480
		5		45	130	230	480
		7		45	100	220	480
		10		30	75	175	360
	L2	12		40	105	165	360
		15		40	105	165	360
		20		45	130	230	480
		25		45	130	230	480
		28		45	130	230	480
		30		40	105	165	360
		35		45	130	230	480
		40		45	130	230	480
		50		45	130	230	480
70		45	100	220	480		
100		30	75	175	360		
防护等级 Protection level		IP65					
工作温度 Operating temperature		-10°C至90°C					
重量 (kg)	L1		1.36	3.8	8.8	15.2	
	L2		1.86	5.15	12.3	22.4	



代号 Code 机型 model	SPE-L1																											
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	L1	L2	L3	L4	L5	L6	L7	A	S1	S2	S3	S4	B	H	B2	H2	C
SPE70-L1	62	M5	16	29	52	64	70	14	50	70	M4	29	37	7	28	42.5	32	4	60	3	20	5	15	5	18	/	/	M5
SPE90-L1	80	M6	22	44.5	68	64	90	19	70	90	M5	37.5	46	7	31	77.5	48	5	90	3	32	5	17	6	24.5	/	/	M6
SPE120-L1	108	M8	32	60	90	126	120	22	110	145	M8	48	60	10	40.5	93	60	7	130	5	40	6	25	10	35	/	/	M12
SPE155-L1	140	M10	40	72	120	150	155	35	114.3	200	M12	82.5	97	13	47	117	81	10	176	5	65	10	36	12	43	10	38.3	M16

客户定制 Customization



代号 Code 机型 model	SPE-L2																											
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	L1	L2	L3	L4	L5	L6	L7	A	S1	S2	S3	S4	B	H	B2	H2	C
SPE70-L2	62	M5	16	29	52	64	70	14	50	70	M4	29	37	7	28	70	32	4	60	3	20	5	15	5	18	/	/	M5
SPE90-L2	80	M6	22	44.5	68	64	90	19	70	90	M5	37.5	46	7	31	112	48	5	90	3	32	5	17	6	24.5	/	/	M6
SPE120-L2	108	M8	32	60	90	126	120	22	110	145	M8	48	60	10	40.5	144	60	7	130	5	40	6	25	10	35	/	/	M12
SPE155-L2	140	M10	40	75	120	150	155	35	114.3	200	M12	82.5	97	13	47	171.5	81	10	176	5	65	10	36	12	43	10	38.3	M16

客户定制 Customization

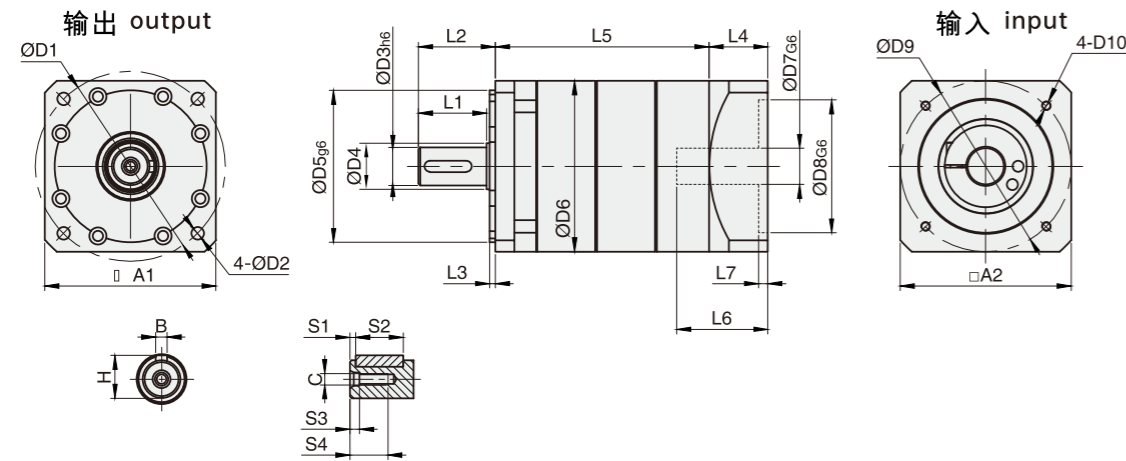
**SPW系列行星减速机技术参数**
**SPW Series Planetary Gearbox Technical Parameters**


技术参数 Technical Parameters		规格 Specification		SPW60	SPW90	SPW120	SPW160
最大扭矩 Maximum Torque		Nm	1.5倍额定扭矩 1.5 times rated torque				
紧急制动扭矩 Emergency Braking Torque		Nm	3倍额定扭矩 3 times rated torque				
最大容许径向力 Maximum Allowable Radial Force		N	1350	3100	6100	9400	
最大容许轴向力 Maximum Allowable Axial Force		N	630	1300	2800	4700	
抗扭刚性 Torsional Stiffness		Nm/arcmin	5	10	20	47	
最大输入转速 Maximum Input Speed		rpm	8000	6000	6000	6000	
额定输入转速 Rated Input Speed		rpm	4000	3000	3000	3000	
噪音 Noise Level		dB	≤58	≤60	≤65	≤68	
平均寿命 Average Service Life		h	20000				
满载效率 Full-load Efficiency		%	L1≥95% L2≥92%				
回程间隙 Backlash	P1	L1	arcmin	≤3	≤3	≤3	≤3
		L2	arcmin	≤5	≤5	≤5	≤5
	P2	L1	arcmin	≤5	≤5	≤5	≤5
		L2	arcmin	≤7	≤7	≤7	≤7
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.16	0.61	3.25	9.21
		4	Kg.cm <sup>2</sup>	0.14	0.48	2.74	7.54
		5	Kg.cm <sup>2</sup>	0.13	0.47	2.71	7.42
		7	Kg.cm <sup>2</sup>	0.13	0.45	2.62	7.14
		8	Kg.cm <sup>2</sup>	0.13	0.45	2.62	/
		10	Kg.cm <sup>2</sup>	0.13	0.40	2.57	7.03
	L2	12	Kg.cm <sup>2</sup>	0.13	0.61	0.45	2.63
		15	Kg.cm <sup>2</sup>	0.13	0.61	0.45	2.63
		20	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43
		25	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39
		28	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43
		30	Kg.cm <sup>2</sup>	0.13	0.61	0.45	2.63
		35	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.39
		40	Kg.cm <sup>2</sup>	0.13	0.45	0.45	2.43
	50	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39	
	70	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39	
	100	Kg.cm <sup>2</sup>	0.13	0.40	0.40	2.39	

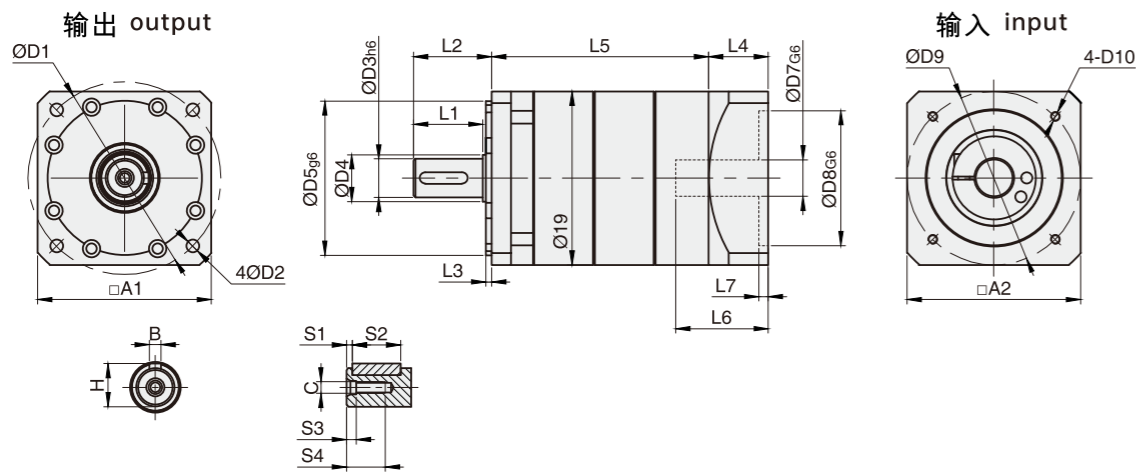
技术参数 Technical Parameters		规格 Specification		SPW60	SPW90	SPW120	SPW160
		级数 Stages	速比 Ratio				
额定扭矩 Rated torque (Nm) $T_N$	L1	3		35	100	165	360
		4		43	125	220	480
		5		43	125	220	480
		7		40	98	200	480
		8		40	90	200	/
		10		25	70	150	360
	L2	12		35	100	165	360
		15		35	100	165	360
		20		43	125	220	480
		25		43	125	220	480
		28		43	125	220	480
		30		35	100	165	360
		35		43	125	220	480
		40		43	125	220	480
	50		43	125	220	480	
	70		40	98	200	480	
	100		25	70	150	360	
防护等级 Protection level		IP65					
工作温度 Operating temperature		-10°C至 90°C					
重量 (kg)	L1		1.2	2.8	8	17	
	L2		1.55	3.95	10	22	

**SPW系列行星减速机标准尺寸**

SPW Series Planetary Gearbox Standard Dimensions



代号 机型 Code model	SPW-L1																				B	H	C				
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A1	A2	S1	S2	S3	S4	B	H	C	
SPW60-L1	70	5.5	14	17.1	50	60	14	50	70	M4	28.5	34	3	22	59	32	5	60	60	2.5	25	5	18	5	16	M5	
SPW90-L1	100	6.5	20	24.3	80	90	19	70	90	M5	36	40.5	3	31	81	48	6	90	90	3	25	5	20	6	22.5	M6	
SPW120-L1	130	9	25	34.8	110	120	22	110	145	M8	47	55	4	42	96	61	7	120	120	5	40	5	15	8	28	M12	
SPW160-L1	185	11	40	45	130	155	35	114.3	200	M12	80	87	5	64.5	121	86	10	165	176	5	65	8	36	12	43	M16	
客户定制 Customization																											



代号 机型 Code model	SPW-L2																				B	H	C				
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A1	A2	S1	S2	S3	S4	B	H	C	
SPW60-L2	70	5.5	14	17.1	50	60	14	50	70	M4	28.5	34	3	22	83.5	32	5	60	60	2.5	25	5	18	5	16	M5	
SPW90-L2	100	6.5	20	24.3	80	90	19	70	90	M5	36	40.5	3	31	112.5	48	6	90	90	3	25	5	20	6	22.5	M6	
SPW120-L2	130	9	25	34.8	110	120	22	110	145	M8	47	55	4	42	137.5	61	7	120	120	5	40	5	15	8	28	M12	
SPW160-L2	185	11	40	45	130	155	35	114.3	200	M12	80	87	5	64.5	172.5	86	10	165	176	5	65	8	36	12	43	M16	
客户定制 Customization																											

**SPAD系列行星减速机技术参数**

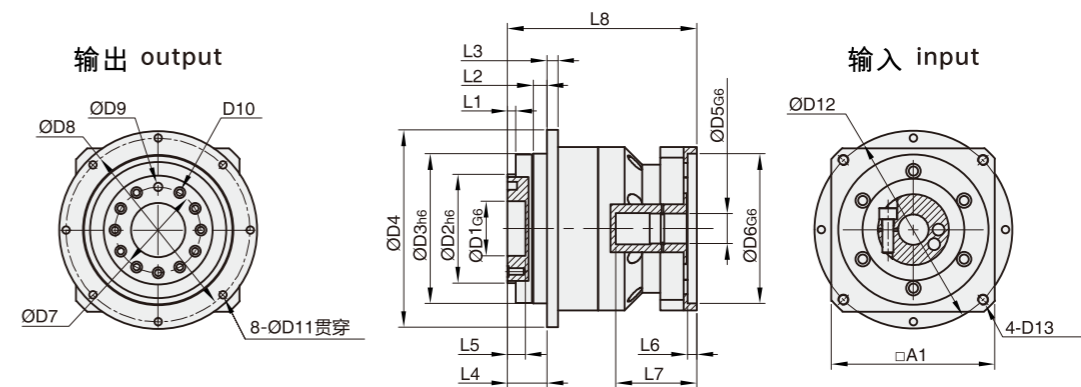
SPAD Series Planetary Gearbox Technical Parameters



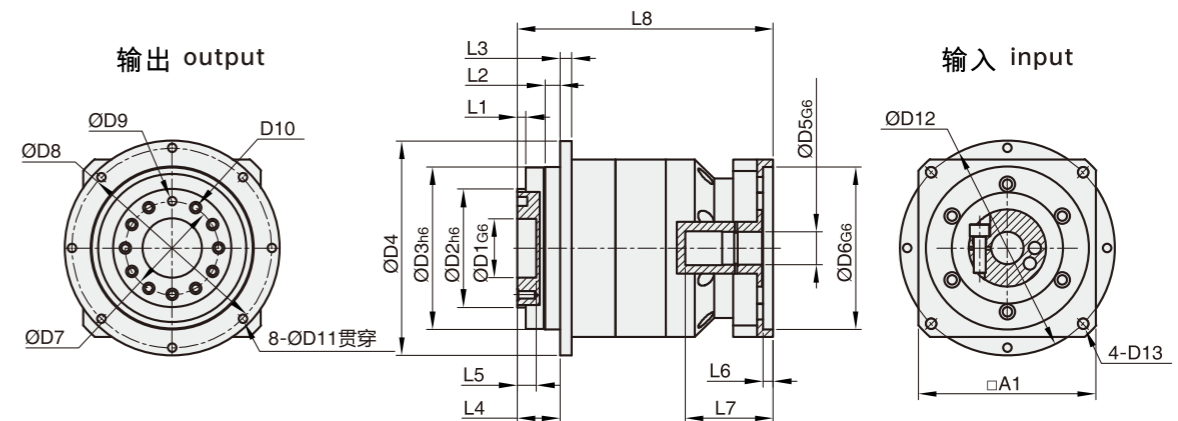
技术参数 Technical Parameters		规格 Specification	SPAD64	SPAD90	SPAD110	SPAD140
最大扭矩 Maximum Torque	Nm	1.5倍额定扭矩 1.5 times rated torque				
紧急制动扭矩 Emergency Braking Torque	Nm	3倍额定扭矩 3 times rated torque				
最大容许径向力 Maximum Allowable Radial Force	N	2050	4100	8200	1300	
最大容许轴向力 Maximum Allowable Axial Force	N	513	1025	2050	10590	
抗扭刚性 Torsional Stiffness	Nm/arcmin	13	31	82	151	
最大输入转速 Maximum Input Speed	rpm	6000	6000	4500-6000	4500-6000	
额定输入转速 Rated Input Speed	rpm	4000	3000	3000	3000	
噪音 Noise Level	dB	≤58	≤60	≤65	≤67	
平均寿命 Average Service Life	h	20000				
满载效率 Full-load Efficiency	%	L1≥95% L2≥90%				
回程间隙 Backlash	P1	L1	arcmin	≤3	≤3	≤3
		L2	arcmin	≤5	≤5	≤5
	P2	L1	arcmin	≤5	≤5	≤5
		L2	arcmin	≤8	≤8	≤8
转动惯量 moment of inertia	L1	4	Kg.cm <sup>2</sup>	0.13	0.51	2.87
		5	Kg.cm <sup>2</sup>	0.13	0.47	2.71
		7	Kg.cm <sup>2</sup>	0.13	0.45	2.62
		10	Kg.cm <sup>2</sup>	0.03	0.44	2.57
	L2	16	Kg.cm <sup>2</sup>	0.03	0.23	0.47
		20	Kg.cm <sup>2</sup>	0.03	0.23	0.47
		25	Kg.cm <sup>2</sup>	0.03	0.23	0.47
		28	Kg.cm <sup>2</sup>	0.03	0.23	0.47
		35	Kg.cm <sup>2</sup>	0.03	0.23	0.47
		40	Kg.cm <sup>2</sup>	0.03	0.23	0.47
	50	Kg.cm <sup>2</sup>	0.03	0.20	0.44	
	70	Kg.cm <sup>2</sup>	0.03	0.20	0.44	
	100	Kg.cm <sup>2</sup>	0.03	0.20	0.44	

**SPAD系列行星减速机技术参数**
**SPAD Series Planetary Gearbox Technical Parameters**

技术参数 Technical Parameters		规格 Specification				
级数 Stages	速比 Ratio	SPAD64	SPAD90	SPAD110	SPAD140	
额定扭矩 Rated torque (Nm) $T_N$	L1	4	40	120	300	650
		5	40	125	350	650
		7	40	125	260	500
		10	35	80	160	320
	L2	16	50	120	300	650
		20	50	120	300	650
		25	50	125	350	650
		28	50	120	300	650
		35	50	125	350	650
		40	50	125	300	650
		50	50	125	350	650
		70	50	125	260	500
	100	35	80	160	320	
	防护等级 Protection level		IP65			
工作温度 Operating temperature		-10°C至 90°C				
重量 (kg)	L1	1.3	3.4	7.1	13.8	
	L2	1.9	4.7	9.5	18.7	

**SPAD系列行星减速机标准尺寸**
**SPAD Series Planetary Gearbox Standard Dimensions**


代号 机型 Code model	SPAD-L1																						
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	L1	L2	L3	L4	L5	L6	L7	L8	A1	
SPAD64-L1	20	40	64	86	14	50	31.5	79	七孔一销 5 7-M5		4.5	70	M4	3	7	4	19.5	8	4	32.5	81	60	
SPAD90-L1	31.5	63	90	118	19	70	50	109	七孔一销 6 7-M6		5.5	90	M5	6	10	7	30	12	6	43	105.5	90	
SPAD110-L1	40	80	110	145	22	110	63	135	十一孔一销 6 11-M6		5.5	145	M8	6	10	8	29	13	7	59.5	139	120	
SPAD140-L1	50	100	140	179	35	114.3	80	168	十一孔一销 8 11-M8		6.6	200	M12	6	14.5	10	38	12	10	85	171	176	
客户定制 Customization																							

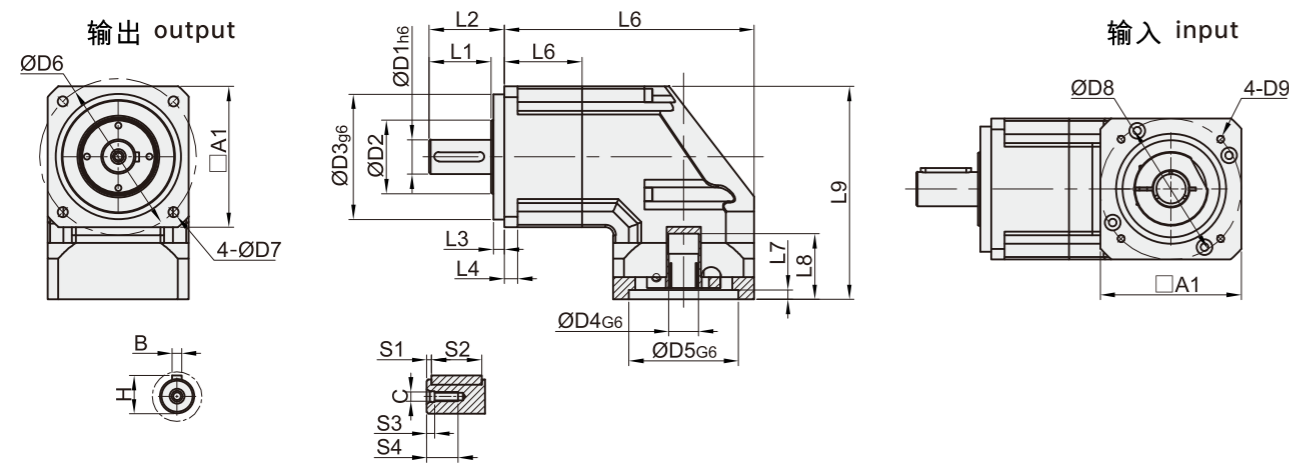


代号 机型 Code model	SPAD-L2																						
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	L1	L2	L3	L4	L5	L6	L7	L8	A1	
SPAD64-L2	20	40	64	86	14	50	31.5	79	七孔一销 5 7-M5		4.5	70	M4	3	7	4	19.5	8	4	32.5	104.5	60	
SPAD90-L2	31.5	63	90	118	19	70	50	109	七孔一销 6 7-M6		5.5	90	M5	6	10	7	30	12	6	43	135	90	
SPAD110-L2	40	80	110	145	22	110	63	135	十一孔一销 6 11-M6		5.5	145	M8	6	10	8	29	13	7	59.5	173	120	
SPAD140-L2	50	100	140	179	35	114.3	80	168	十一孔一销 8 11-M8		6.6	200	M12	6	14.5	10	38	12	10	85	218.5	176	
客户定制 Customization																							

**SPXR系列行星减速机技术参数**
**SPXR Series Planetary Gearbox Technical Parameters**

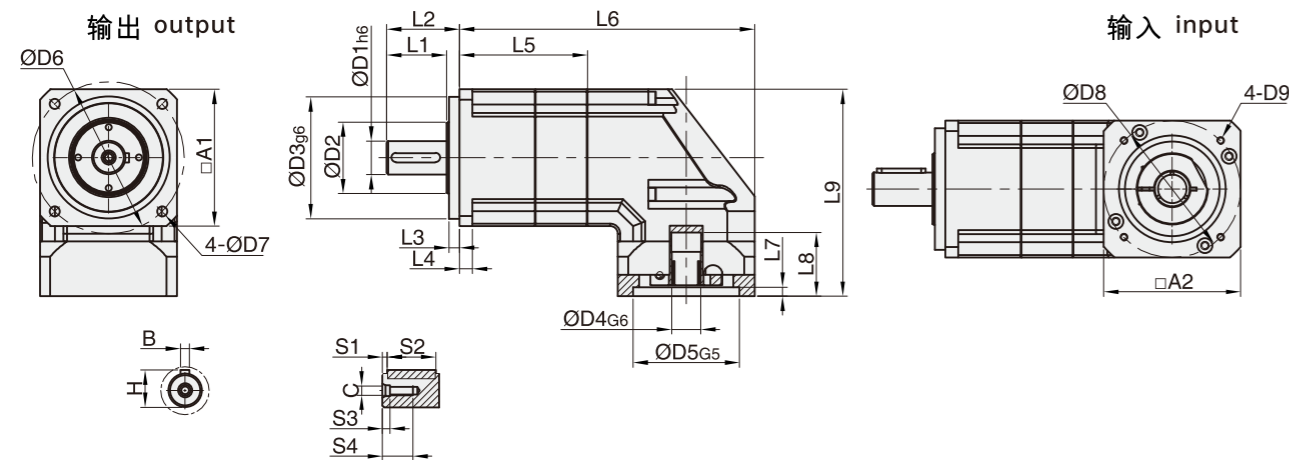

技术参数 Technical Parameters		规格 Specification		SPXR42	SPXR60	SPXR90	SPXR120
最大扭矩 Maximum Torque		Nm	1.5倍额定扭矩 1.5 times rated torque				
紧急制动扭矩 Emergency Braking Torque		Nm	3倍额定扭矩 3 times rated torque				
最大容许径向力 Maximum Allowable Radial Force		N	780	1530	3300	6700	
最大容许轴向力 Maximum Allowable Axial Force		N	390	600	1500	3000	
抗扭刚性 Torsional Stiffness		Nm/arcmin	2.5	6	12	23	
最大输入转速 Maximum Input Speed		rpm	8000	8000	6000	6000	
额定输入转速 Rated Input Speed		rpm	4000	4000	3000	3000	
噪音 Noise Level		dB	≤56	≤64	≤66	≤66	
平均寿命 Average Service Life		h	20000				
满载效率 Full-load Efficiency		%	L1≥95% L2≥92%				
回程间隙 Backlash	P1	L1	arcmin	≤3	≤5	≤5	≤5
		L2	arcmin	≤5	≤7	≤7	≤7
	P2	L1	arcmin	≤5	≤8	≤8	≤8
		L2	arcmin	≤7	≤10	≤10	≤10
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	/	0.40	2.28	6.87
		4	Kg.cm <sup>2</sup>	0.12	0.40	2.28	6.87
		5	Kg.cm <sup>2</sup>	0.09	0.40	2.28	6.87
		7	Kg.cm <sup>2</sup>	0.09	0.40	2.28	6.87
		8	Kg.cm <sup>2</sup>	/	0.40	1.45	4.76
		10	Kg.cm <sup>2</sup>	0.09	0.40	1.45	4.76
		14	Kg.cm <sup>2</sup>	/	0.40	2.28	6.87
		20	Kg.cm <sup>2</sup>	/	0.40	2.28	6.87
	L2	25	Kg.cm <sup>2</sup>	0.09	0.40	2.28	6.87
		30	Kg.cm <sup>2</sup>	/	0.40	2.28	6.87
		35	Kg.cm <sup>2</sup>	0.09	0.40	2.28	6.87
		40	Kg.cm <sup>2</sup>	0.09	0.40	2.28	6.87
		50	Kg.cm <sup>2</sup>	0.09	0.30	1.45	4.76
		70	Kg.cm <sup>2</sup>	0.09	0.30	1.45	4.76
		100	Kg.cm <sup>2</sup>	0.07	0.30	1.45	4.76

技术参数 Technical Parameters		规格 Specification		SPXR42	SPXR60	SPXR90	SPXR120	
		级数 Stages	速比 Ratio					
额定扭矩 Rated torque (Nm)T <sub>N</sub>	L1	3	/	40	105	165		
		4	17	45	130	230		
		5	15	45	130	230		
		7	12	45	100	220		
		8	/	45	130	230		
		10	10	45	130	230		
		14	/	45	100	220		
		20	/	30	75	175		
		L2	25	15	45	130	230	
			30	/	40	105	165	
	35		15	45	130	230		
	40		17	45	130	230		
	50		15	45	130	230		
	70		12	45	100	220		
	100		10	45	130	230		
	防护等级 Protection level		IP65					
	工作温度 Operating temperature		-10°C至 90°C					
	重量(kg)	L1	0.7	2.05	6.45	13.7		
L2		0.9	3.15	8.8	17.5			

**SPXR系列行星减速机标准尺寸**
**SPXR Series Planetary Gearbox Standard Dimensions**


代号 机型 Code model	SPXR-L1																											
	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1	A2	S1	S2	S3	S4	B	H	C	
SPXR42-L1	13	19.5	35	8	30	50	3.5	46	M4	19.5	26	5.5	4	23.8	78.8	3.5	28	71.1	42.6	42.6	2	16	4	12	5	15	M4	
SPXR60-L1	16	28.9	50	14	50	70	5.5	70	M4	29	37	7	8	30.5	106.9	4	34	105	60	60	3	20	5	15	5	18	M5	
SPXR90-L1	22	48.5	80	19	70	100	6.5	90	M5	39.5	48	7	8.5	49.5	159.5	6	42	136	90	90	3	32	5	20	6	24.5	M6	
SPXR120-L1	32	58.6	110	22	110	130	8.5	145	M8	50	62	10	12	65	210	7	58	189.5	120	120	5	40	6	25	10	35	M12	

客户定制 Customization



代号 机型 Code model	SPXR-L2																											
	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1	A2	S1	S2	S3	S4	B	H	C	
SPXR42-L2	13	19.5	35	8	30	50	3.5	46	M4	19.5	26	5.5	4	45	100	3.5	28	71.1	42.6	42.6	2	16	4	12	5	15	M4	
SPXR60-L2	16	28.9	50	14	50	70	5.5	70	M4	29	37	7	8	58	134.4	4	34	105	60	60	3	20	5	15	5	18	M5	
SPXR90-L2	22	48.5	80	19	70	100	6.5	90	M5	39.5	48	7	8.5	84	194	6	42	136	90	90	3	32	5	20	6	24.5	M6	
SPXR120-L2	32	58.6	110	22	110	130	8.5	145	M8	50	62	10	12	116	261	7	58	189.5	120	120	5	40	6	25	10	35	M12	

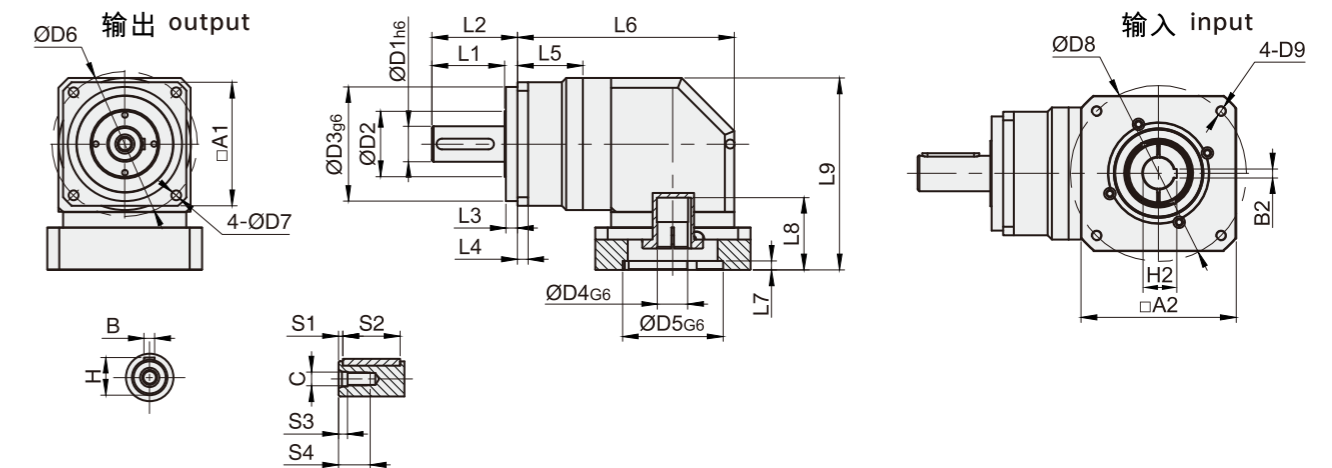
客户定制 Customization

**SPBR系列行星减速机技术参数**
**SPBR Series Planetary Gearbox Technical Parameters**


技术参数 Technical Parameters		规格 Specification	SPBR60	SPBR90	SPBR120	SPBR140	SPBR180	
最大扭矩 Maximum Torque	Nm	1.5倍额定扭矩 1.5 times rated torque						
紧急制动扭矩 Emergency Braking Torque	Nm	2.5倍额定扭矩 2.5 times rated torque						
最大容许径向力 Maximum Allowable Radial Force	N	1530	3300	6700	9400	14500		
最大容许轴向力 Maximum Allowable Axial Force	N	600	1500	3000	4700	7250		
抗扭刚性 Torsional Stiffness	Nm/arcmin	6	12	23	47	130		
最大输入转速 Maximum Input Speed	rpm	8000	6000	6000	6000	6000		
额定输入转速 Rated Input Speed	rpm	4000	3000	3000	3000	3000		
噪音 Noise Level	dB	≤64	≤66	≤66	≤68	≤68		
平均寿命 Average Service Life	h	20000						
满载效率 Full-load Efficiency	%	L1≥95% L2≥92%						
回程间隙 Backlash	P1	L1	arcmin	≤5	≤5	≤5	≤5	≤5
		L2	arcmin	≤7	≤7	≤7	≤7	≤7
	P2	L1	arcmin	≤8	≤8	≤8	≤8	≤8
		L2	arcmin	≤10	≤10	≤10	≤10	≤10
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.40	2.28	6.87	23.5	69.2
		4	Kg.cm <sup>2</sup>	0.40	2.28	6.87	21.5	68.6
		5	Kg.cm <sup>2</sup>	0.40	2.28	6.87	21.5	68.6
		7	Kg.cm <sup>2</sup>	0.40	2.28	6.87	21.5	68.6
		8	Kg.cm <sup>2</sup>	/	1.45	4.76	20.5	/
		10	Kg.cm <sup>2</sup>	0.40	1.45	4.76	20.1	66.2
		14	Kg.cm <sup>2</sup>	/	2.28	6.87	/	68.6
		20	Kg.cm <sup>2</sup>	/	2.28	6.87	/	68.6
	L2	25	Kg.cm <sup>2</sup>	0.40	2.28	6.87	6.88	23.8
		30	Kg.cm <sup>2</sup>	0.40	2.28	6.87	7.10	22.2
		35	Kg.cm <sup>2</sup>	0.40	2.28	6.87	6.88	22.2
		40	Kg.cm <sup>2</sup>	0.40	2.28	6.87	6.88	22.2
		50	Kg.cm <sup>2</sup>	0.30	1.45	4.76	6.88	22.2
		70	Kg.cm <sup>2</sup>	0.30	1.45	4.76	6.88	22.2
100	Kg.cm <sup>2</sup>	0.30	1.45	4.76	6.34	21.6		

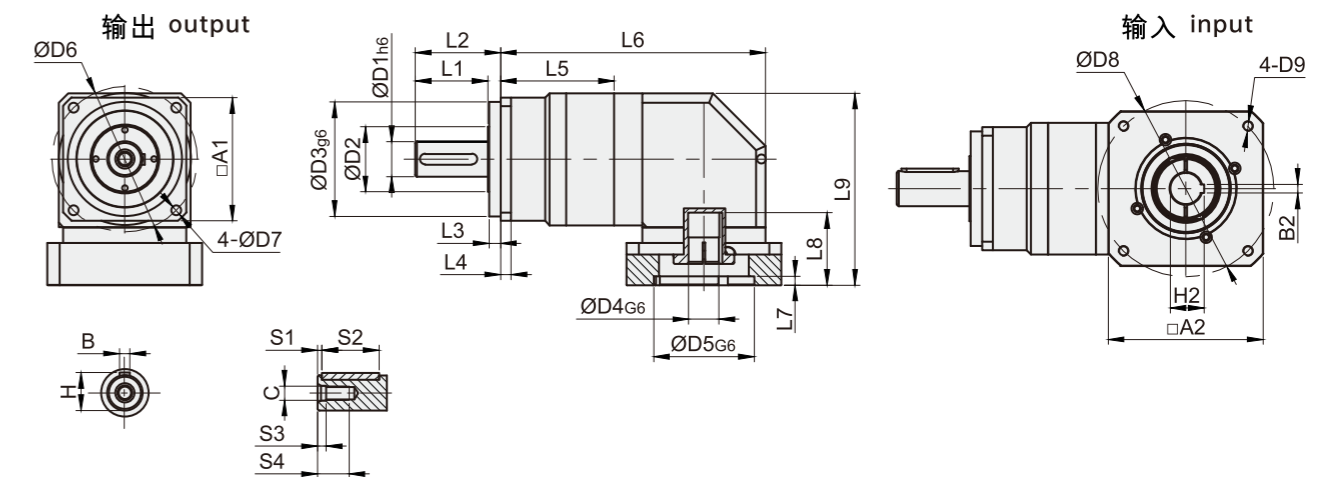
**SPBR系列行星减速机技术参数**
**SPBR Series Planetary Gearbox Technical Parameters**

技术参数 Technical Parameters		规格 Specification		SPBR60	SPBR90	SPBR120	SPBR140	SPBR180
级数 Stages	速比 Ratio							
额定扭矩 Rated torque (Nm) $T_N$	L1	3	40	105	165	360	880	
		4	45	130	230	480	1100	
		5	45	130	230	480	1100	
		7	45	100	220	480	1100	
		8	/	130	230	440	/	
		10	30	75	175	360	1100	
		14	/	100	220	/	1100	
	L2	20	/	75	175	/	1100	
		25	45	130	230	480	1100	
		30	40	105	165	360	880	
		35	45	130	230	480	1100	
		40	45	130	230	480	1100	
		50	45	130	230	480	1100	
		70	45	100	220	480	1100	
100	30	130	230	360	1100			
防护等级 Protection level		IP65						
工作温度 Operating temperature		-10°C至 90°C						
重量 (kg)	L1	2.2	6.6	13.4	27	52		
	L2	3.2	9	17.5	33.5	65		

**SPBR系列行星减速机标准尺寸**
**SPBR Series Planetary Gearbox Standard Dimensions**


代号 Code 机型 model	SPBR-L1																												
	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1	A2	S1	S2	S3	S4	B	H	B2	H2	C
SPBR60-L1	16	29	50	14	50	70	5.5	70	M4	29	37	7	8	30.5	116.5	5	40	107	60	64	3	20	5	15	5	18	/	/	M5
SPBR90-L1	22	49	80	19	70	110	6.5	90	M5	39.5	48	7	8.5	49.5	162.5	7	61	145	90	90	3	32	5	17	8	24.5	/	/	M6
SPBR120-L1	32	58.6	110	22	110	130	8.5	145	M8	50	62	10	12	65	208	10	71.5	177	120	130	5	40	6	25	10	18	/	/	M12
SPBR140-L1	40	74	130	35	114.3	165	11	200	M12	82.5	97	13	12	74.5	246.5	10	82.3	218	140	176	5	65	10	36	12	43	10	38.3	M16
SPBR180-L1	55	59	160	35	114.3	215	13.5	200	M12	82	105	21.5	15	85.5	301.5	10	82.5	267	179	180	6	70	10	50	16	59	10	38.3	M20

客户定制 Customization



代号 Code 机型 model	SPBR-L2																												
	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1	A2	S1	S2	S3	S4	B	H	B2	H2	C
SPBR60-L2	16	29	50	14	50	70	5.5	70	M4	29	37	7	8	58	114	5	40	107	60	64	3	20	5	15	5	18	/	/	M5
SPBR90-L2	22	49	80	19	70	110	6.5	90	M5	39.5	48	7	8.5	84	197	7	61	145	90	90	3	32	5	17	8	24.5	/	/	M6
SPBR120-L2	32	58.6	110	22	110	130	8.5	145	M8	50	62	10	12	116	259	10	71.5	177	120	130	5	40	6	25	10	18	/	/	M12
SPBR140-L2	40	74	130	35	114.3	165	11	200	M12	82.5	97	13	12	129	301	10	82.3	218	140	176	5	65	10	36	12	43	10	38.3	M16
SPBR180-L2	55	59	160	35	114.3	215	13.5	200	M12	82	105	21.5	15	153.5	369.5	10	82.5	267	179	180	6	70	10	50	16	59	10	38.3	M20

客户定制 Customization

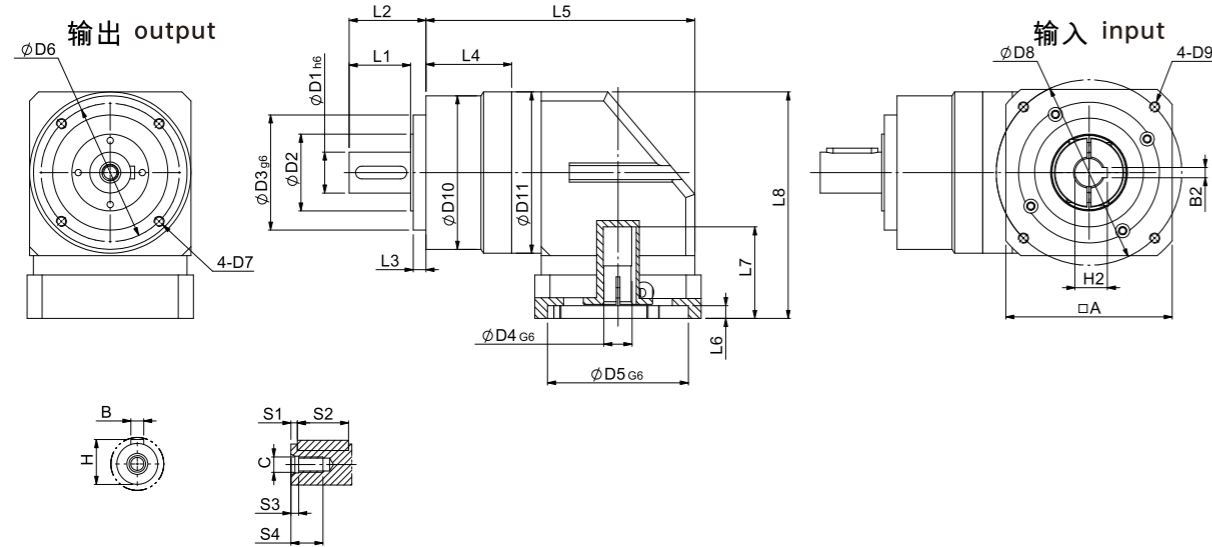

**SPER系列行星减速机技术参数**
**SPER Series Planetary Gearbox Technical Parameters**

技术参数 Technical Parameters		规格 Specification		SPER70	SPER90	SPER120	SPER155
最大扭矩 Maximum Torque		Nm	1.5倍额定扭矩 1.5 times rated torque				
紧急制动扭矩 Emergency Braking Torque		Nm	2.5倍额定扭矩 2.5 times rated torque				
最大容许径向力 Maximum Allowable Radial Force		N	1530	3250	6700	9400	
最大容许轴向力 Maximum Allowable Axial Force		N	630	1300	3000	4700	
抗扭刚性 Torsional Stiffness		Nm/arcmin	6	12	23	47	
最大输入转速 Maximum Input Speed		rpm	8000	6000	6000	6000	
额定输入转速 Rated Input Speed		rpm	4000	3000	3000	3000	
噪音 Noise Level		dB	≤58	≤60	≤65	≤68	
平均寿命 Average Service Life		h	20000				
满载效率 Full-load Efficiency		%	L1≥95% L2≥92%				
回程间隙 Backlash	P1	L1	arcmin	≤5	≤5	≤5	≤5
		L2	arcmin	≤7	≤7	≤7	≤7
	P2	L1	arcmin	≤8	≤8	≤8	≤8
		L2	arcmin	≤10	≤10	≤10	≤10
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.40	2.28	6.87	23.5
		4	Kg.cm <sup>2</sup>	0.40	2.28	6.87	21.5
		5	Kg.cm <sup>2</sup>	0.40	2.28	6.87	21.5
		7	Kg.cm <sup>2</sup>	0.40	2.28	6.87	21.5
		10	Kg.cm <sup>2</sup>	0.40	1.45	4.76	20.1
		14	Kg.cm <sup>2</sup>	/	2.28	6.87	/
		20	Kg.cm <sup>2</sup>	/	2.28	6.87	/
	L2	25	Kg.cm <sup>2</sup>	0.40	2.28	6.87	6.88
		30	Kg.cm <sup>2</sup>	0.40	2.28	6.87	7.10
		35	Kg.cm <sup>2</sup>	0.40	2.28	6.87	6.88
		40	Kg.cm <sup>2</sup>	0.40	2.28	6.87	6.88
		50	Kg.cm <sup>2</sup>	0.30	1.45	4.76	6.88
		70	Kg.cm <sup>2</sup>	0.30	1.45	4.76	6.88
		100	Kg.cm <sup>2</sup>	0.30	1.45	4.76	6.34

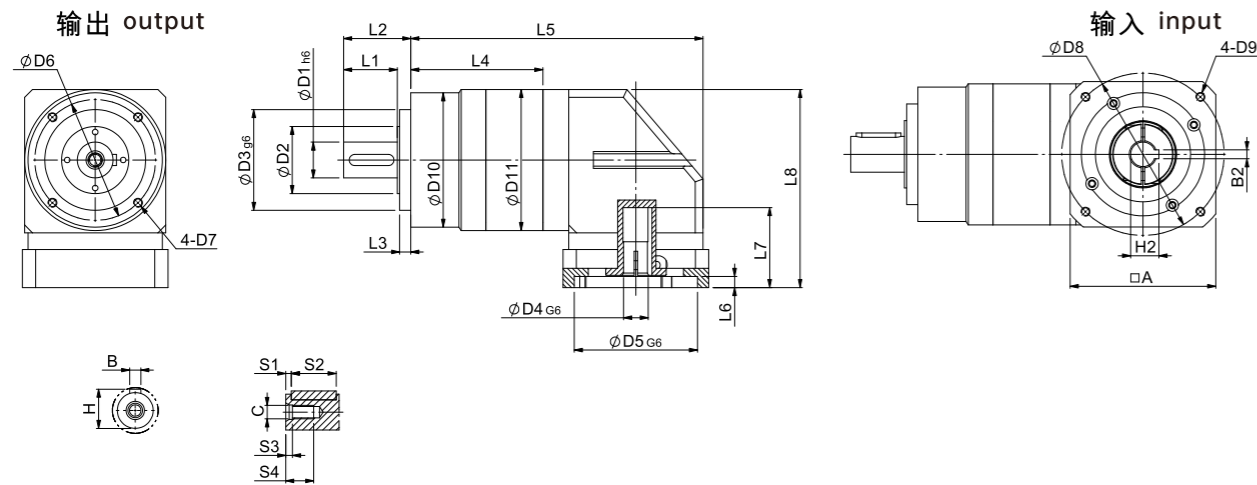
技术参数 Technical Parameters		规格 Specification		SPER70	SPER90	SPER120	SPER155		
		级数 Stages	速比 Ratio						
额定扭矩 Rated torque (Nm) <sub>T<sub>N</sub></sub>	L1	3		40	105	165	360		
		4		45	130	230	480		
		5		45	130	230	480		
		7		45	100	220	480		
		8	/		130	230	440		
		10		30	75	175	360		
		14	/		100	220	/		
		20	/		75	175	/		
		25		45	130	230	480		
	L2	30		40	105	165	360		
		35		45	130	230	480		
		40		45	130	230	480		
		50		45	130	230	480		
		70		45	100	220	480		
		100		30	130	230	360		
		防护等级 Protection level		IP65					
		工作温度 Operating temperature		-10°C至 90°C					
		重量 (kg)	L1		2.32	6.65	13.7	27.9	
L2			3.32	9.05	17.8	34.4			

**SPER系列行星减速机标准尺寸**

SPER Series Planetary Gearbox Standard Dimensions



代号 Code 机型 model	SPER-L1																											
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	L1	L2	L3	L4	L5	L6	L7	A	S1	S2	S3	S4	B	H	B2	H2	C
SPER70-L1	16	29	52	14	50	62	M5	70	M4	70	64	29	37	7	30.5	116.5	4	40.4	64	3	20	5	15	5	18	/	/	M5
SPER90-L1	22	44.5	68	19	70	80	M6	90	M5	90	94	37.5	46	7	51.5	164.5	5	61	90	3	32	5	17	6	24.5	/	/	M6
SPER120-L1	32	60	90	22	110	108	M8	145	M8	120	126	48	60	10	67	210	7	71.5	130	5	40	6	25	10	35	/	/	M12
SPER155-L1	40	75	120	35	143	140	M10	200	M12	155	150	82.5	97	13	74.5	246.5	10	82.3	176	5	65	10	36	12	43	10	38.3	M16
客户定制 Customization																												



代号 Code 机型 model	SPER-L2																											
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	L1	L2	L3	L4	L5	L6	L7	A	S1	S2	S3	S4	B	H	B2	H2	C
SPER70-L2	16	29	52	14	50	62	M5	70	M4	70	64	29	37	7	58	114	4	40.4	64	3	20	5	15	5	18	/	/	M5
SPER90-L2	22	44.5	68	19	70	80	M6	90	M5	90	94	37.5	46	7	94	199	5	61	90	3	32	5	17	6	24.5	/	/	M6
SPER120-L2	32	60	90	22	110	108	M8	145	M8	120	126	48	60	10	118	261	7	71.5	130	5	40	6	25	10	35	/	/	M12
SPER155-L2	40	75	120	35	143	140	M10	200	M12	155	150	82.5	97	13	150	301	10	82.3	176	5	65	10	36	12	43	10	38.3	M16
客户定制 Customization																												

**SPADR系列行星减速机技术参数**

SPADR Series Planetary Gearbox Technical Parameters



技术参数 Technical Parameters		规格 Specification	SPADR64	SPADR90	SPADR110	SPADR140	
最大扭矩 Maximum Torque	Nm	1.5倍额定扭矩 1.5 times rated torque					
紧急制动扭矩 Emergency Braking Torque	Nm	3倍额定扭矩 3 times rated torque					
最大容许径向力 Maximum Allowable Radial Force	N	72	183	430	1300		
最大容许轴向力 Maximum Allowable Axial Force	N	513	1025	2050	10590		
抗扭刚性 Torsional Stiffness	Nm/arcmin	13	31	82	151		
最大输入转速 Maximum Input Speed	rpm	8000	6000	6000	6000		
额定输入转速 Rated Input Speed	rpm	4000	3000	3000	3000		
噪音 Noise Level	dB	≤63	≤65	≤68	≤70		
平均寿命 Average Service Life	h	20000					
满载效率 Full-load Efficiency	%	L1≥95% L2≥92%					
回程间隙 Backlash	P1	L1	arcmin	≤5	≤5	≤5	≤5
		L2	arcmin	≤7	≤7	≤7	≤7
	P2	L1	arcmin	≤8	≤8	≤8	≤8
		L2	arcmin	≤10	≤10	≤10	≤10
转动惯量 moment of inertia	L1	4	Kg.cm <sup>2</sup>	0.35	2.25	6.84	23.4
		5	Kg.cm <sup>2</sup>	0.35	2.25	6.84	23.4
		7	Kg.cm <sup>2</sup>	0.35	2.25	6.84	23.4
		10	Kg.cm <sup>2</sup>	0.35	2.25	6.84	23.4
		14	Kg.cm <sup>2</sup>	/	1.87	6.25	21.8
		20	Kg.cm <sup>2</sup>	/	1.87	6.25	21.8
	L2	25	Kg.cm <sup>2</sup>	0.09	0.35	2.25	6.84
		35	Kg.cm <sup>2</sup>	0.09	0.35	2.25	6.84
		40	Kg.cm <sup>2</sup>	0.09	0.35	2.25	6.84
		50	Kg.cm <sup>2</sup>	0.09	0.35	2.25	6.84
70	Kg.cm <sup>2</sup>	0.09	0.35	2.25	6.84		
100	Kg.cm <sup>2</sup>	0.09	0.35	2.25	6.84		

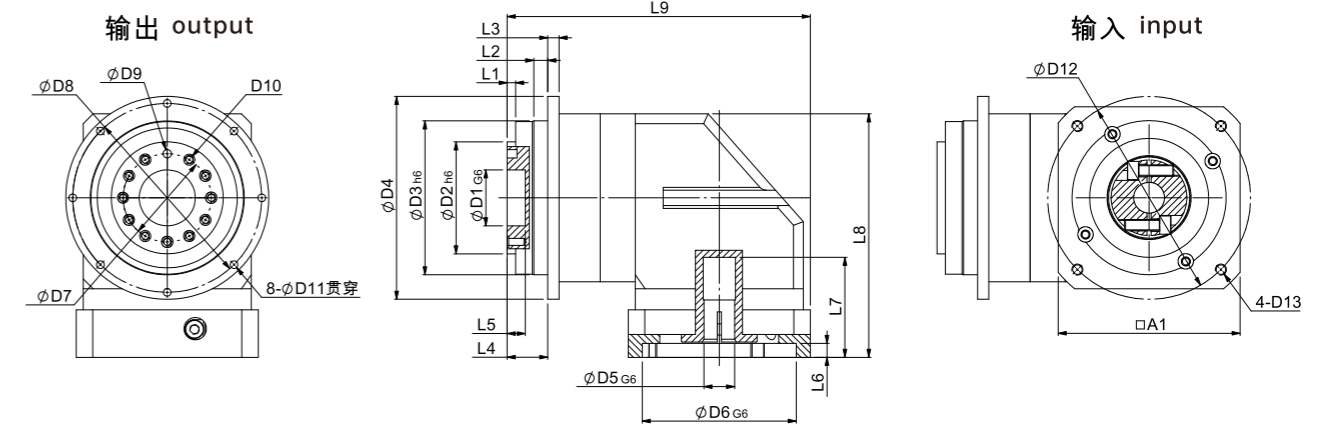
**SPADR系列行星减速机技术参数**

## SPADR Series Planetary Gearbox Technical Parameters

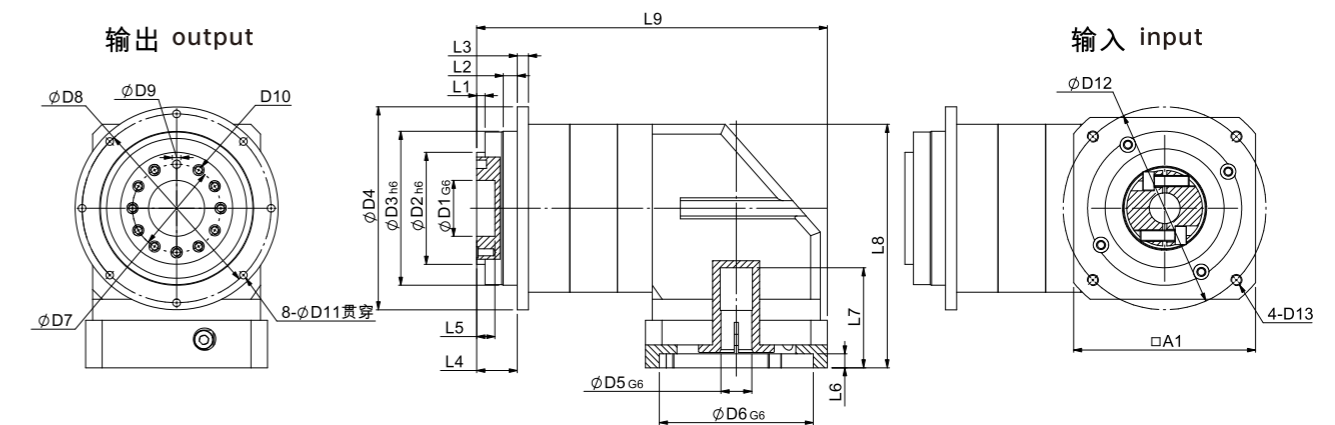
技术参数 Technical Parameters		规格 Specification				
级数 Stages	速比 Ratio	SPADR64	SPADR90	SPADR110	SPADR140	
额定扭矩 Rated torque (Nm) $T_N$	L1	4	40	120	300	650
		5	40	125	350	650
		7	40	125	260	500
		10	40	125	350	650
		14	/	125	260	500
	L2	20	/	80	160	320
		25	40	125	350	650
		35	40	125	350	650
		40	40	125	300	650
		50	40	125	350	650
重量 (kg)	L1	2.3	6.2	12.5	19.7	
	L2	2.4	7.6	14.2	23.3	
	防护等级 Protection level	IP65				
工作温度 Operating temperature	-10°C至90°C					

**SPADR系列行星减速机标准尺寸**

## SPADR Series Planetary Gearbox Standard Dimensions



代号 机型 Code model	SPBR-L1																						
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1
SPADR64-L1	20	40	64	86	14	50	31.5	79	七孔一销		4.5	70	M4	3	7	4	19.5	8	5	40.4	110	150	60
SPADR90-L1	31.5	63	90	118	19	70	50	109	七孔一销 6 7-M6		5.5	90	M5	6	10	7	30	12	7	61	145.5	169	90
SPADR110-L1	40	80	110	145	22	110	63	135	十一孔一销		5.5	145	M8	6	10	8	29	13	10	71.5	174	216.5	130
SPADR140-L1	50	100	140	179	35	114.3	80	168	十一孔一销 8 11-M8		6.6	200	M12	6	14.5	10	38	12	10	82.3	218	265	176
客户定制 Customization																							



代号 机型 Code model	SPBR-L2																						
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1
SPADR64-L2	20	40	64	86	14	50	31.5	79	七孔一销		4.5	70	M4	3	7	4	19.5	8	5	40.4	110	126.5	60
SPADR90-L2	31.5	63	90	118	19	70	50	109	七孔一销 6 7-M6		5.5	90	M5	6	10	7	30	12	7	61	145.5	200.5	90
SPADR110-L2	40	80	110	145	22	110	63	135	十一孔一销		5.5	145	M8	6	10	8	29	13	10	71.5	174	250.5	130
SPADR140-L2	50	100	140	179	35	114.3	80	168	十一孔一销 8 11-M8		6.6	200	M12	6	14.5	10	38	12	10	82.3	218	314.5	176
客户定制 Customization																							

## 标准系列行星减速机

Standard Series Planetary Gearbox

### SPF系列 Series



- 方法兰轴输出,标准化尺寸
- 输入连接规格齐备,选择非常多
- 直齿传动,单悬臂结构,设计简洁,极具性价比
- 运行平稳,噪音低
- 入力轴可开键槽
- 回程间隙8-16弧分

规格范围:40-160

速比范围:3-100

精度范围: 8-16arcmin

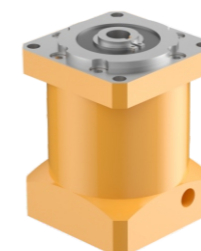
- Square flange output, standardized dimensions
- Comprehensive input connection specifications, offering a wide range of options
- Spur gear transmission, single cantilever structure, simple design, and excellent value for money
- Smooth operation, low noise
- Keyway input shaft
- Backlash: 8-16 arc minutes

Specifications: 40-160

Ratio range: 3-100

Accuracy range: 8-16 arc minutes

### SPFA系列 Series



- 孔输出结构,安装方便
- 方法兰输出,标准化尺寸
- 输入连接规格齐备,选择非常多
- 直齿传动,单悬臂结构,设计简洁,极具性价比
- 入力轴可开键槽
- 回程间隙8-16弧分

规格范围:60-160

速比范围:3-100

精度范围: 8-16arcmin

- Square flange output, standardized dimensions
- Comprehensive input connection specifications, offering a wide range of options
- Spur gear transmission, single cantilever structure, simple design, and excellent value for money
- Keyway input shaft
- Backlash: 8-16 arc minutes.

Specification range: 60-160. Speed ratio range: 3-100.

Accuracy range: 8-16 arc minutes.

### SPG系列 Series



- 圆法兰轴输出,螺纹连接,标准化尺寸
- 输入连接规格齐备,选择非常多
- 直齿传动,单悬臂结构,设计简洁,极具性价比
- 运行平稳,噪音低
- 入力轴可开键槽
- 回程间隙8-16弧分

规格范围:40-160

速比范围:3-100

精度范围: 8-16arcmin

- Round flange output, threaded connection, standardized dimensions
- Comprehensive input connection specifications, offering a wide range of options
- Spur gear transmission, single cantilever structure, simple design, and excellent value for money
- Smooth operation, low noise
- Keyway input shaft
- Backlash: 8-16 arc minutes

Specifications: 40-160

Ratio range: 3-100

Accuracy range: 8-16 arc minutes

### SPGA系列 Series



- 孔输出结构,安装方便
- 圆法兰输出,螺纹反向连接,标准化尺寸
- 输入连接规格齐备,选择非常多
- 直齿传动,单悬臂结构,设计简洁,极具性价比
- 入力轴可开键槽
- 回程间隙8-16弧分

规格范围:60-160

速比范围:3-100

精度范围: 8-16arcmin

- Hole output structure for easy installation
- Round flange output, threaded reverse connection, standardized dimensions
- Comprehensive input connection specifications, offering a wide range of options
- Spur gear transmission, single cantilever structure, simple design, and excellent cost-effectiveness
- Input shaft can be keyed
- Backlash:8-16 arc minutes

Specification range: 60-160

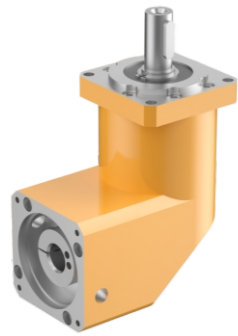
Speed ratio range: 3-100

Accuracy range: 8-16 arc minutes

## 标准系列行星减速机

Standard Series Planetary Gearbox

### SPFR系列 Series



- 带锥齿换向机构,实现直角转向输出
  - 方法兰输出,标准化尺寸
  - 输入连接规格齐备,选择非常多
  - 直齿传动,单悬臂结构,设计简洁,极具性价比
  - 入力轴可开键槽
  - 回程间隙8-16弧分
- 规格范围:60-120  
速比范围:3-100  
精度范围: 8-16arcmin

- Bevel gear reversing mechanism enables right-angle output
  - Square flange output, standardized dimensions
  - Comprehensive input connection specifications, offering a wide range of options
  - Spur gear transmission, single cantilever structure, simple design, and excellent cost-effectiveness
  - Input shaft can be keyed
  - Backlash:8-16 arc minutes
- Specification range: 60-120  
Speed ratio range: 3-100  
Accuracy range: 8-16 arc minutes

### SPGR系列 Series




- 带锥齿换向机构,实现直角转向输出
  - 圆法兰输出,螺纹连接,标准化尺寸
  - 输入连接规格齐备,选择非常多
  - 直齿传动,单悬臂结构,设计简洁,极具性价比
  - 入力轴可开键槽
  - 回程间隙8-16弧分
- 规格范围:60-120  
速比范围:3-100  
精度范围: 8-16arcmin


- Bevel gear reversing mechanism enables right-angle output
  - Round flange output, threaded connection, standardized dimensions
  - Complete range of input connection specifications, offering a wide range of options
  - Spur gear transmission, single cantilever structure, simple design, and excellent value
  - Keyway available on input shaft
  - Backlash: 8-16 arc minutes
- Specification range: 60-120  
Ratio range: 3-100  
Accuracy range: 8-16 arc minutes

## 直齿系列型号标记 Spur Gear Model Markings

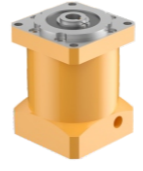
示例 e.g. : SPF90-L1-5-P1

SPF系列						
SPF	90	L1	7	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	40、60、80 90、120、160	L1=1级  L2=2级	L1: 3、4、5 7、10  L2: 12、15、16 20、25、28 30、35、40 50、70、100	P1=精密背隙  P2=标准背隙  P1 = Precision backlash P2 = Standard backlash	S1=光轴输出  无=带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

示例 e.g. : SPG90-L1-5-P1


SPG系列						
SPG	90	L1	10	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	40、60、80 90、120、160	L1=1级  L2=2级	L1: 3、4、5 7、10  L2: 12、15、16 20、25、28 30、35、40 50、70、100	P1=精密背隙  P2=标准背隙  P1 = Precision backlash P2 = Standard backlash	S1=光轴输出  无=带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

示例 e.g. : SPFA90-L1-5-P1

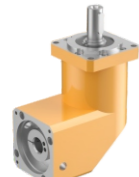
SPFA系列						
SPFA	90	L1	7	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	40、60、80 90、120、160	L1=1级  L2=2级	L1: 3、4、5 7、10  L2: 12、15、16 20、25、28 30、35、40 50、70、100	P1=精密背隙  P2=标准背隙  P1 = Precision backlash P2 = Standard backlash	无=带键输出  None= flange output	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

**直齿系列型号标记 Spur Gear Model Markings**

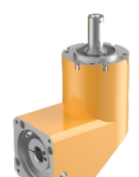
示例 e.g. : SPGA90-L1-5-P1

SPGA系列						
SPGA	90	L1	7	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	60、80、90 120、160	L1=1级  L2=2级	L1: 3、4、5 7、10  L2: 12、15、16 20、25、28 30、35、40 50、70、100	P1=精密背隙  P2=标准背隙  P0 = Ultra-precision backlash; P1 = Precision backlash.	无 =带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

示例 e.g. : SPFR90-L1-5-P1

SPFR系列						
SPFR	90	L1	10	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	60、90、120	L1=1级  L2=2级	L1: 3、4、5 7、10  L2: 12、15、16 20、25、28 30、35、40 50、70、100	P1=精密背隙  P2=标准背隙  P0 = Ultra-precision backlash; P1 = Precision backlash.	S1=光轴输出  无 =带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

示例 e.g. : SPGP90-L1-5-P1

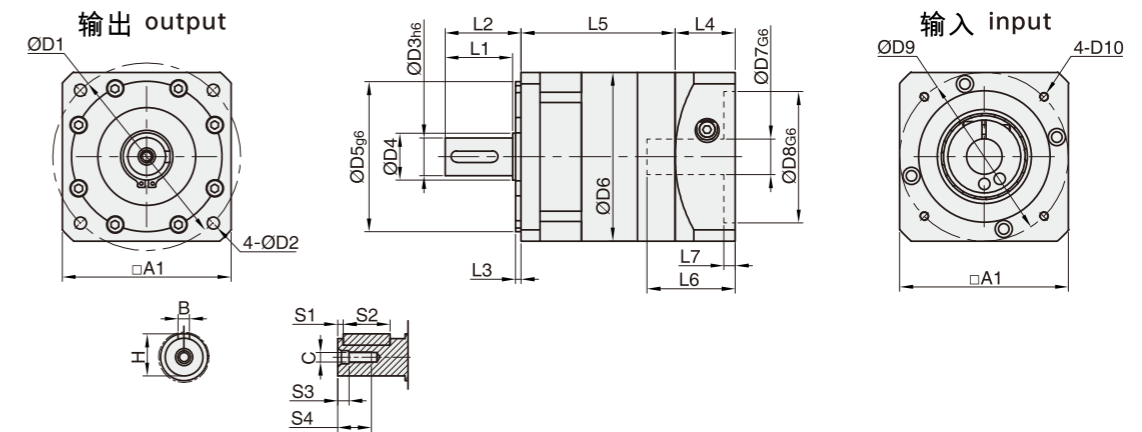
SPGR系列						
SPGR	140	L1	10	P1		
产品系列 Series	产品规格 Size	级数 Stages	传动比 Ratio	背隙 Backlash	输出形式 O/P type	输入形式 Input form
	60、90、120	L1=1级  L2=2级	L1: 3、4、5 7、10  L2: 12、15、16 20、25、28 30、35、40 50、70、100	P1=精密背隙  P2=标准背隙  P0 = Ultra-precision backlash; P1 = Precision backlash.	S1=光轴输出  无 =带键输出  S1 = Smooth shaft output; None = Keyed output.	电机制造商及规格型号。也可以直接提供输出连接尺寸 Motor manufacturer and model. Or output connection dimensions be provided

**SPF系列行星减速机技术参数**
**SPF Series Planetary Gearbox Technical Specifications**


技术参数 Technical Parameters		规格 Specification	SPF40	SPF60	SPF80	SPF85	SPF90	SPF120	SPF160	
最大扭矩 Maximum Torque	Nm	1.5倍额定扭矩 1.5 times rated torque								
紧急制动扭矩 Emergency Braking Torque	Nm	2倍额定扭矩 2 times rated torque								
最大容许径向力 Maximum Allowable Radial Force	N	185	240	400	400	450	1240	2250		
最大容许轴向力 Maximum Allowable Axial Force	N	150	220	420	420	430	1000	1500		
抗扭刚性 Torsional Stiffness	Nm/arcmin	0.7	1.8	4.7	4.7	4.85	11	35		
最大输入转速 Maximum Input Speed	rpm	8000	8000	6000	6000	6000	6000	6000	4000	
额定输入转速 Rated Input Speed	rpm	4500	4000	3500	3500	3500	3500	3500	3000	
噪音 Noise Level	dB	≤55	≤58	≤60	≤60	≤60	≤65	≤70		
平均寿命 Average Service Life	h	20000								
满载效率 Full-load Efficiency	%	L1≥96% L2≥94%								
回程间隙 Backlash	P1	L1	arcmin	≤8	≤8	≤8	≤8	≤8	≤8	≤8
		L2	arcmin	≤12	≤12	≤12	≤12	≤12	≤12	≤12
	P2	L1	arcmin	≤16	≤16	≤16	≤16	≤16	≤16	≤16
		L2	arcmin	≤20	≤20	≤20	≤20	≤20	≤20	≤20
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.10	0.46	0.77	0.77	1.73	12.78	36.72
		4	Kg.cm <sup>2</sup>	0.10	0.46	0.77	0.77	1.73	12.78	36.72
		5	Kg.cm <sup>2</sup>	0.10	0.46	0.77	0.77	1.73	12.78	36.72
		7	Kg.cm <sup>2</sup>	0.06	0.41	0.65	0.65	1.42	11.38	34.02
		8	Kg.cm <sup>2</sup>	/	/	0.65	/	1.42	11.38	34.02
		10	Kg.cm <sup>2</sup>	0.06	0.41	0.65	0.65	1.42	11.38	34.02
		12	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		15	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
	L2	16	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		20	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		25	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		28	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		30	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		35	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		40	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		50	Kg.cm <sup>2</sup>	0.05	0.34	0.58	0.58	1.25	11.48	34.02
70	Kg.cm <sup>2</sup>	0.05	0.34	0.58	0.58	1.25	11.48	34.02		
100	Kg.cm <sup>2</sup>	0.05	0.34	0.58	0.58	1.25	11.48	34.02		

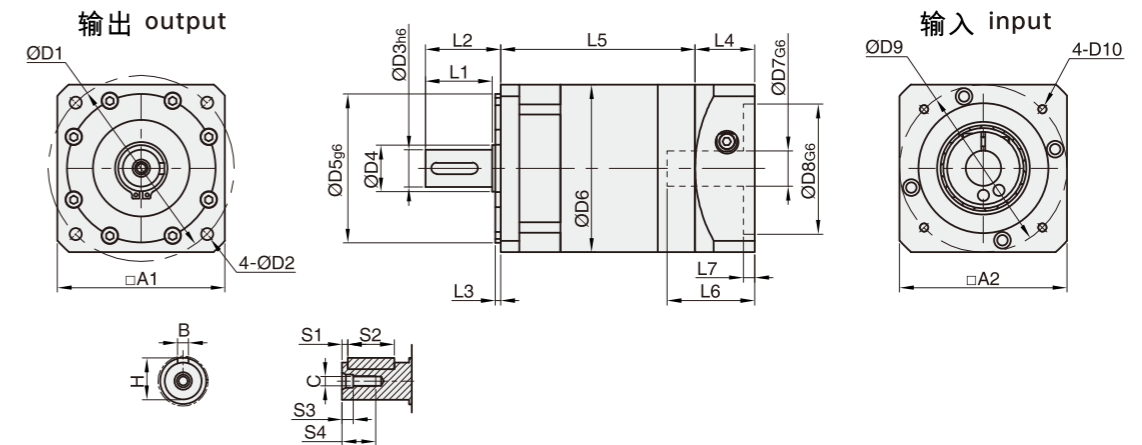
**SPF系列行星减速机技术参数**
**SPF Series Planetary Gearbox Technical Specifications**

技术参数 Technical Parameters		规格 Specification								
级数 Stages	速比 Ratio	SPF40	SPF60	SPF80	SPF85	SPF90	SPF120	SPF160		
额定扭矩 Rated torque (Nm) $T_N$	L1	3	16	27	50	50	96	161	364	
		4	16	40	90	90	122	210	423	
		5	15	40	90	90	122	210	423	
		7	12	34	48	48	95	170	358	
		8	/	/	35	22	77	120	300	
	10	10	16	22	22	56	86	210		
	L2	12	16	27	50	50	96	161	364	
		15	16	27	50	50	96	161	364	
		16	16	40	90	90	122	210	423	
		20	16	40	90	90	122	210	423	
25		15	40	90	90	122	210	423		
28		16	40	90	90	122	210	423		
30		16	27	50	50	96	161	364		
防护等级 Protection level	IP65									
	工作温度 Operating temperature	-10°C至90°C								
		重量 (kg)	L1	0.43	0.98	2.3	2.3	3.12	6.75	15
			L2	0.65	1.26	2.97	2.97	3.82	9.2	20

**SPF系列行星减速机技术参数**
**SPF Series Planetary Gearbox Standard Dimensions**


代号 Code	SPF-L1																									
机型 model	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A1	A2	S1	S2	S3	S4	B	H	C
SPF40-L1	50	3.5	10	15	35	42	8	30	46	M4	23	26	2	20	42	27	3.5	42	42	2	16	3	9	3	11.2	M3
SPF60-L1	70	5.5	14	17	50	60	14	50	70	M4	30	35	3	21	56	32	4	60	60	3	20	5	18	5	16	M5
SPF80-L1	90	6.5	20	25	60	80	19	70	90	M5	36	40.5	3	38	60.5	42	5	80	80	4	25	6	18	6	22.5	M6
SPF85-L1	90	6.5	20	25	60	80	19	70	90	M5	36	40.5	3	33	77	42	6	80	80	4	25	6	18	6	22.5	M6
SPF90-L1	100	6.5	20	25	80	90	19	70	90	M5	36	40.5	3	32	77.5	47	6	90	90	3	25	6	18	6	22.5	M6
SPF120-L1	130	8.5	25	35	110	120	22	110	145	M8	50	55.5	4	50	96.5	57.5	10	120	120	5	40	8	25	8	28	M10
SPF160-L1	185	11	40	55	130	165	35	114.3	200	M12	80	87	5	62	132	86	10	165	176	5	65	8	36	12	43	M16

客户定制 Customization



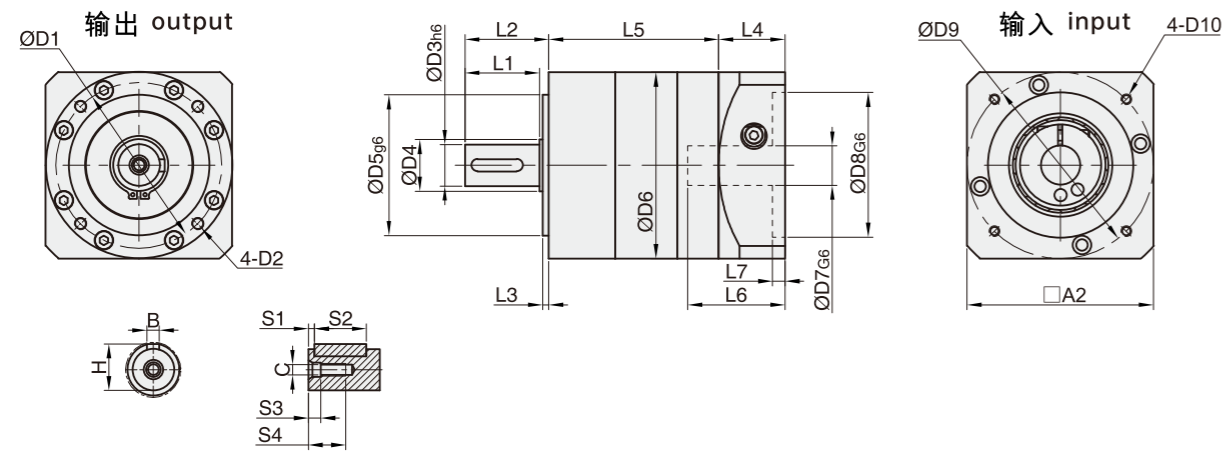
代号 Code	SPF-L2																									
机型 model	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A1	A2	S1	S2	S3	S4	B	H	C
SPF40-L2	50	3.5	10	15	35	42	8	30	46	M4	23	26	2	20	57	27	3.5	42	42	2	16	3	9	3	11.2	M3
SPF60-L2	70	5.5	14	17	50	60	14	50	70	M4	30	35	3	21	73.5	32	4	60	60	3	20	5	18	5	16	M5
SPF80-L2	90	6.5	20	25	60	80	19	70	90	M5	36	40.5	3	38	80.5	42	5	80	80	4	25	6	18	6	22.5	M6
SPF85-L2	90	6.5	20	25	60	80	19	70	90	M5	36	40.5	3	33	103.5	42	6	80	80	4	25	6	18	6	22.5	M6
SPF90-L2	100	6.5	20	25	80	90	19	70	90	M5	36	40.5	3	32	97.5	47	6	90	90	3	25	6	18	6	22.5	M6
SPF120-L2	130	8.5	25	35	110	120	22	110	145	M8	50	55.5	4	50	129	57.5	10	120	120	5	40	8	25	8	28	M10
SPF160-L2	185	11	40	55	130	165	35	114.3	200	M12	80	87	5	62	173	86	10	165	176	5	65	8	36	12	43	M16

客户定制 Customization

**SPG系列行星减速机技术参数**
**SPG Series Planetary Gearbox Technical Parameters**

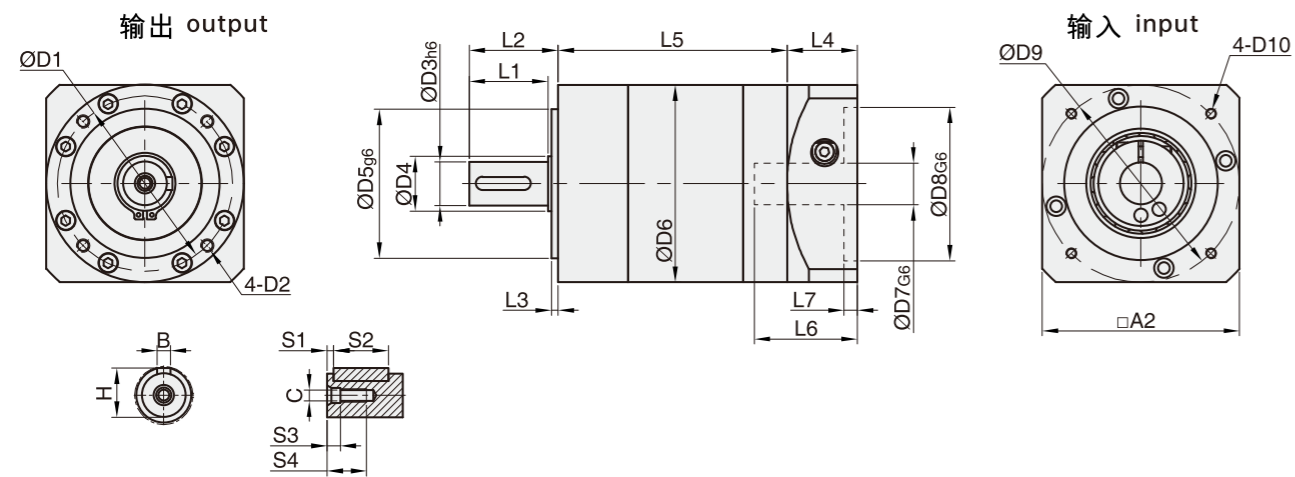

技术参数 Technical Parameters		规格 Specification		SPG40	SPG60	SPG80	SPG85	SPG90	SPG120	SPG160
		最大转矩 Maximum Torque	Nm	1.5倍额定转矩		1.5 times rated torque				
紧急制动转矩 Emergency Braking Torque	Nm	2倍额定转矩		2 times rated torque						
最大容许径向力 Maximum Allowable Radial Force	N	185	240	400	400	450	1240	2250		
最大容许轴向力 Maximum Allowable Axial Force	N	150	220	420	420	430	1000	1500		
抗扭刚性 Torsional Stiffness	Nm/arcmin	0.7	1.8	4.7	4.7	4.85	11	35		
最大输入转速 Maximum Input Speed	rpm	8000	8000	6000	6000	6000	6000	4000		
额定输入转速 Rated Input Speed	rpm	4500	4000	3500	3500	3500	3500	3000		
噪音 Noise Level	dB	≤55	≤58	≤60	≤60	≤60	≤65	≤70		
平均寿命 Average Service Life	h	20000								
满载效率 Full-load Efficiency	%	L1≥96% L2≥94%								
回程间隙 Backlash	P1	L1	arcmin	≤8	≤8	≤8	≤8	≤8	≤8	≤8
		L2	arcmin	≤12	≤12	≤12	≤12	≤12	≤12	≤12
	P2	L1	arcmin	≤16	≤16	≤16	≤16	≤16	≤16	≤16
		L2	arcmin	≤20	≤20	≤20	≤20	≤20	≤20	≤20
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.10	0.46	0.77	0.77	1.73	12.78	36.72
		4	Kg.cm <sup>2</sup>	0.10	0.46	0.77	0.77	1.73	12.78	36.72
		5	Kg.cm <sup>2</sup>	0.10	0.46	0.77	0.77	1.73	12.78	36.72
		7	Kg.cm <sup>2</sup>	0.06	0.41	0.65	0.65	1.42	11.38	34.02
		8	Kg.cm <sup>2</sup>	/	/	0.65	/	1.42	11.38	34.02
		10	Kg.cm <sup>2</sup>	0.06	0.41	0.65	0.65	1.42	11.38	34.02
	L2	12	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		15	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		16	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		20	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		25	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		28	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		30	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		35	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		40	Kg.cm <sup>2</sup>	0.08	0.44	0.72	0.72	1.49	12.18	34.24
		50	Kg.cm <sup>2</sup>	0.05	0.34	0.58	0.58	1.25	11.48	34.02
70	Kg.cm <sup>2</sup>	0.05	0.34	0.58	0.58	1.25	11.48	34.02		
100	Kg.cm <sup>2</sup>	0.05	0.34	0.58	0.58	1.25	11.48	34.02		

技术参数 Technical Parameters		规格 Specification		SPG40	SPG60	SPG80	SPG85	SPG90	SPG120	SPG160
		级数 Stages	速比 Ratio							
额定扭矩 Rated torque (Nm)T <sub>N</sub>	L1	3	16	27	50	50	96	161	364	
		4	16	40	90	90	122	210	423	
		5	15	40	90	90	122	210	423	
		7	12	34	48	48	95	170	358	
		8	/	/	35	22	77	120	300	
		10	10	16	22	22	56	86	210	
	L2	12	16	27	50	50	96	161	364	
		15	16	27	50	50	96	161	364	
		16	16	40	90	90	122	210	423	
		20	16	40	90	90	122	210	423	
		25	16	40	90	90	122	210	423	
		28	15	40	90	90	122	210	423	
		30	16	27	50	50	96	161	364	
		35	12	40	90	90	122	210	423	
		40	16	40	90	90	122	210	423	
		50	15	40	90	90	122	210	423	
70	12	34	48	48	95	170	358			
100	10	16	22	22	56	86	210			
防护等级 Protection level	IP65									
工作温度 Operating temperature	-10°C至 90°C									
重量 (kg)	L1	0.43	0.95	2.27	2.27	3.06	6.93	15.5		
	L2	0.65	1.2	2.8	2.8	3.86	8.98	17		

**SPG系列行星减速机标准尺寸**
**SPG Series Planetary Gearbox Standard Dimensions**


代号 Code 机型 model	SPG-L1																								
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A2	S1	S2	S3	S4	B	H	C
SPG40-L1	34	M4	10	15	26	42	8	30	46	M4	23	26	2	20	42	27	3.5	42	2	16	3	9	3	11.2	M3
SPG60-L1	52	M5	14	17	40	60	14	50	70	M4	30	35	3	21	56	32	4	60	3	20	5	18	5	16	M5
SPG80-L1	70	M6	20	25	60	80	19	70	90	M5	36	40.5	3	38	60.5	42	5	80	4	25	6	18	6	22.5	M6
SPG85-L1	70	M6	20	25	60	80	19	70	90	M5	36	40.5	3	33	77	42	6	80	4	25	6	18	6	22.5	M6
SPG90-L1	80	M6	20	25	68	90	19	70	90	M5	36	40.5	3	32	77.5	47	6	90	3	25	6	18	6	22.5	M6
SPG120-L1	100	M10	25	35	80	120	22	110	145	M8	50	55.5	4	50	96.5	57.5	10	120	5	40	8	25	8	28	M10
SPG160-L1	145	M12	40	55	130	165	35	114.3	200	M12	80	87	5	62	132	86	10	176	5	65	8	36	12	43	M16

客户定制 Customization



代号 Code 机型 model	SPG-L2																								
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A2	S1	S2	S3	S4	B	H	C
SPG40-L2	34	M4	10	15	26	42	8	30	46	M4	23	26	2	20	57	27	3.5	42	2	16	3	9	3	11.2	M3
SPG60-L2	52	M5	14	17	40	60	14	50	70	M4	30	35	3	21	73.5	31	4	60	3	20	5	18	5	16	M5
SPG80-L2	70	M6	20	25	60	80	19	70	90	M5	36	40.5	3	38	80.5	42	5	80	4	25	6	18	6	22.5	M6
SPG85-L2	70	M6	20	25	60	80	19	70	90	M5	36	40.5	3	33	103.5	42	6	80	4	25	6	18	6	22.5	M6
SPG90-L2	80	M6	20	25	68	90	19	70	90	M5	36	40.5	3	32	97.5	47	6	90	3	25	6	18	6	22.5	M6
SPG120-L2	100	M10	25	35	80	120	22	110	145	M8	50	55.5	4	50	129	57.5	10	120	5	40	8	25	8	28	M10
SPG160-L2	145	M12	40	55	130	165	35	114.3	200	M12	80	87	5	62	173	86	10	176	5	65	8	36	12	43	M16

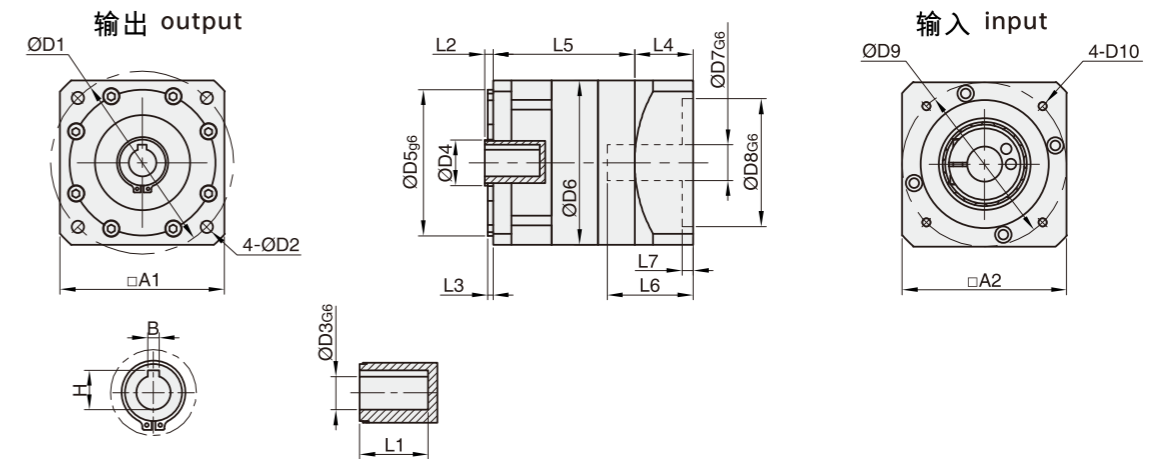
客户定制 Customization

**SPFA系列行星减速机技术参数**
**SPFA Series Planetary Gearbox Standard Dimensions**


技术参数 Technical Parameters		规格 Specification	SPFA60	SPFA80	SPFA90	SPFA120	SPFA160
最大扭矩 Maximum Torque	Nm	1.5倍额定扭矩 1.5 times rated torque					
紧急制动扭矩 Emergency Braking Torque	Nm	2倍额定扭矩 2 times rated torque					
最大容许径向力 Maximum Allowable Radial Force	N	240	400	450	1240	2250	
最大容许轴向力 Maximum Allowable Axial Force	N	220	420	430	1000	1500	
抗扭刚性 Torsional Stiffness	Nm/arcmin	1.8	4.7	4.85	11	35	
最大输入转速 Maximum Input Speed	rpm	8000	6000	6000	6000	4000	
额定输入转速 Rated Input Speed	rpm	4000	3500	3500	3500	3000	
噪音 Noise Level	dB	≤58	≤60	≤60	≤65	≤70	
平均寿命 Average Service Life	h	20000					
满载效率 Full-load Efficiency	%	L1≥96% L2≥94%					
回程间隙 Backlash	P1	L1	arcmin	≤8	≤8	≤8	≤8
		L2	arcmin	≤12	≤12	≤12	≤12
	P2	L1	arcmin	≤16	≤16	≤16	≤16
		L2	arcmin	≤20	≤20	≤20	≤20
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.46	0.77	1.73	12.78
		4	Kg.cm <sup>2</sup>	0.46	0.77	1.73	12.78
		5	Kg.cm <sup>2</sup>	0.46	0.77	1.73	12.78
		7	Kg.cm <sup>2</sup>	0.41	0.65	1.42	11.38
		8	Kg.cm <sup>2</sup>	/	0.65	1.42	11.38
		10	Kg.cm <sup>2</sup>	0.41	0.65	1.42	11.38
	L2	12	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18
		15	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18
		16	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18
		20	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18
		25	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18
		28	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18
		30	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18
		35	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18
L2	40	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	
	50	Kg.cm <sup>2</sup>	0.34	0.58	1.25	11.48	
L2	70	Kg.cm <sup>2</sup>	0.34	0.58	1.25	11.48	
	100	Kg.cm <sup>2</sup>	0.34	0.58	1.25	11.48	

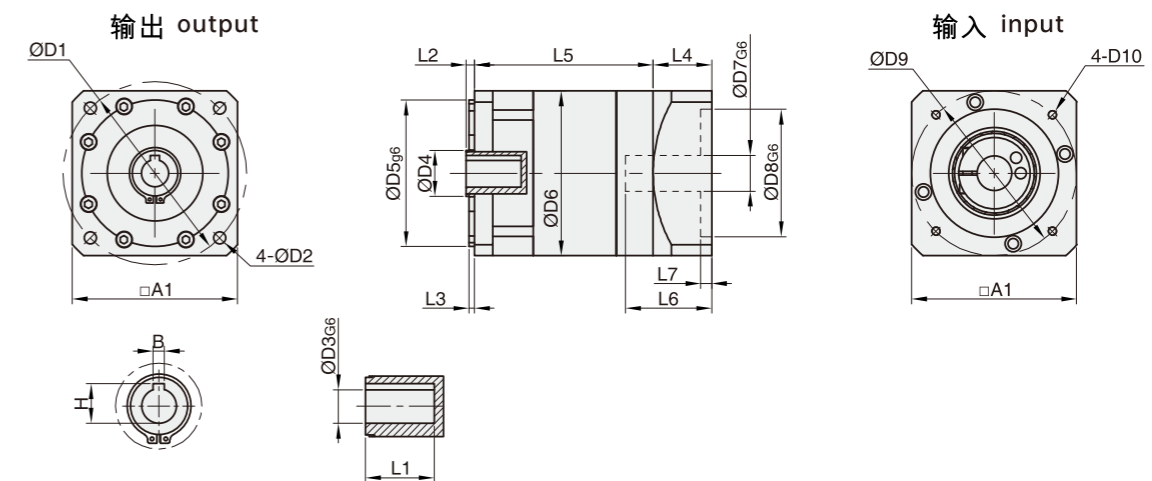
**SPFA系列行星减速机技术参数**
**SPFA Series Planetary Gearbox Standard Dimensions**

技术参数 Technical Parameters		规格 Specification		SPFA60	SPFA80	SPFA90	SPFA120	SPFA160
级数 Stages	速比 Ratio							
额定扭矩 Rated torque (Nm) $T_N$	L1	3	27	50	96	161	364	
		4	40	90	122	210	423	
		5	40	90	122	210	423	
		7	34	48	95	170	358	
		8	/	35	77	120	300	
		10	16	22	56	86	210	
	L2	12	27	50	96	161	364	
		15	27	50	96	161	364	
		16	40	90	122	210	423	
		20	40	90	122	210	423	
		25	40	90	122	210	423	
		28	40	90	122	210	423	
		30	27	50	96	161	364	
		35	40	90	122	210	423	
40	40	90	122	210	423			
50	40	90	122	210	423			
70	34	48	95	170	358			
100	16	22	56	86	210			
防护等级 Protection level	IP65							
工作温度 Operating temperature	-10°C至90°C							
重量 (kg)	L1	0.95	2.27	3.06	6.93	15.5		
	L2	1.2	2.8	3.86	8.98	17		

**SPFA系列行星减速机标准尺寸**
**SPFA Series Planetary Gearbox Standard Dimensions**


代号 Code 机型 model	SPFA-L1																				
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A1	A2	B	H
SPFA60-L1	70	5.5	10	17	50	60	14	50	70	M4	20	5	3	21	56	32	4	60	60	3	11.4
SPFA80-L1	90	6.5	15	25	60	80	19	70	90	M5	30	4.5	3	38	60.5	42	5	80	80	5	17.3
SPFA90-L1	100	6.5	15	25	80	90	19	70	90	M5	30	4.5	3	32	77.5	47	6	90	90	5	17.3
SPFA120-L1	130	8.5	20	35	110	120	22	110	145	M8	38	5.5	4	50	96.5	57.5	10	120	120	6	22.8
SPFA160-L1	185	11	35	55	130	165	35	114.3	200	M12	61	7	5	62	132	86	10	165	176	10	38.3

客户定制 Customization



代号 Code 机型 model	SPFA-L2																				
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A1	A2	B	H
SPFA60-L2	70	5.5	10	17	50	60	14	50	70	M4	20	5	3	21	73.5	32	4	60	60	3	11.4
SPFA80-L2	90	6.5	15	25	60	80	19	70	90	M5	30	4.5	3	38	80.5	42	5	80	80	5	17.3
SPFA90-L2	100	6.5	15	25	80	90	19	70	90	M5	30	4.5	3	32	97.5	47	6	90	90	5	17.3
SPFA120-L2	130	8.5	20	35	110	120	22	110	145	M8	38	5.5	4	50	129	57.5	10	120	120	6	22.8
SPFA160-L2	185	11	35	55	130	165	35	114.3	200	M12	61	7	5	62	173	86	10	165	176	10	38.3

客户定制 Customization

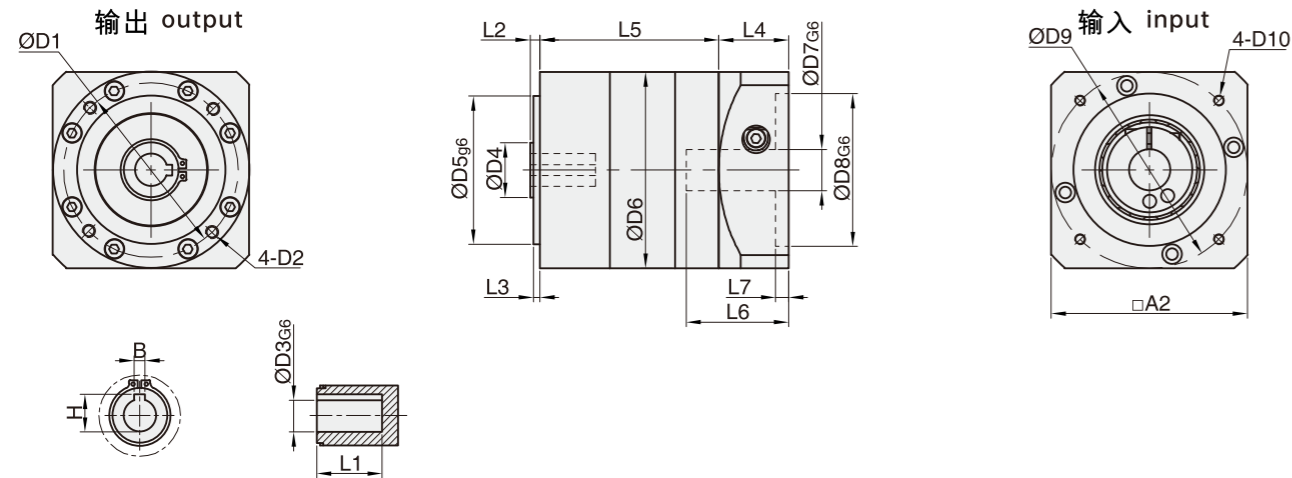
**SPGA系列行星减速机技术参数**
**SPGA Series Planetary Gearbox Technical Parameters**


技术参数 Technical Parameters		规格 Specification		SPGA60	SPGA80	SPGA90	SPGA120	SPGA160
		级数	速比					
最大转矩 Maximum Torque		Nm	1.5倍额定转矩 1.5 times rated torque					
紧急制动转矩 Emergency Braking Torque		Nm	2倍额定转矩 2 times rated torque					
最大容许径向力 Maximum Allowable Radial Force		N	240	400	450	1240	2250	
最大容许轴向力 Maximum Allowable Axial Force		N	220	420	430	1000	1500	
抗扭刚性 Torsional Stiffness		Nm/arcmin	1.8	4.7	4.85	11	35	
最大输入转速 Maximum Input Speed		rpm	8000	6000	6000	6000	4000	
额定输入转速 Rated Input Speed		rpm	4000	3500	3500	3500	3000	
噪音 Noise Level		dB	≤58	≤60	≤60	≤65	≤70	
平均寿命 Average Service Life		h	20000					
满载效率 Full-load Efficiency		%	L1≥96% L2≥94%					
回程间隙 Backlash	P1	L1	arcmin	≤8	≤8	≤8	≤8	≤8
		L2	arcmin	≤12	≤12	≤12	≤12	≤12
	P2	L1	arcmin	≤16	≤16	≤16	≤16	≤16
		L2	arcmin	≤20	≤20	≤20	≤20	≤20
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.46	0.77	1.73	12.78	36.72
		4	Kg.cm <sup>2</sup>	0.46	0.77	1.73	12.78	36.72
		5	Kg.cm <sup>2</sup>	0.46	0.77	1.73	12.78	36.72
		7	Kg.cm <sup>2</sup>	0.41	0.65	1.42	11.38	34.02
		8	Kg.cm <sup>2</sup>	/	0.65	1.42	11.38	34.02
		10	Kg.cm <sup>2</sup>	0.41	0.65	1.42	11.38	34.02
	L2	12	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		15	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		16	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		20	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		25	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		28	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		30	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		35	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		40	Kg.cm <sup>2</sup>	0.44	0.72	1.49	12.18	34.24
		50	Kg.cm <sup>2</sup>	0.34	0.58	1.25	11.48	34.02
70	Kg.cm <sup>2</sup>	0.34	0.58	1.25	11.48	34.02		
100	Kg.cm <sup>2</sup>	0.34	0.58	1.25	11.48	34.02		

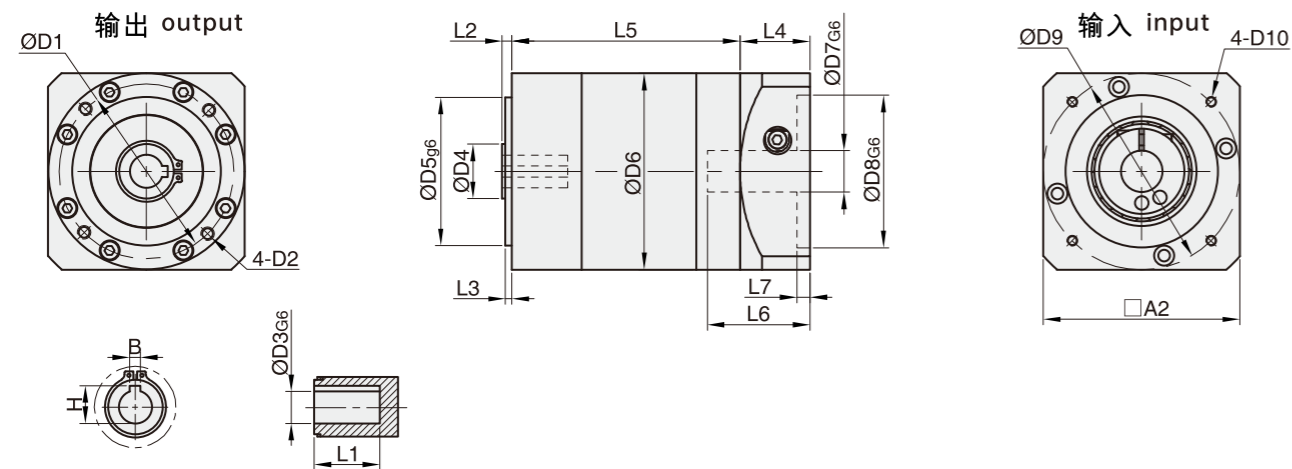
技术参数 Technical Parameters		规格 Specification		SPGA60	SPGA80	SPGA90	SPGA120	SPGA160
		级数 Stages	速比 Ratio					
额定扭矩 Rated torque (Nm) <sub>T<sub>N</sub></sub>	L1	3		27	50	96	161	364
		4		40	90	122	210	423
		5		40	90	122	210	423
		7		34	48	95	170	358
		8	/	35	77	120	300	
		10		16	22	56	86	210
	L2	12		27	50	96	161	364
		15		27	50	96	161	364
		16		40	90	122	210	423
		20		40	90	122	210	423
		25		40	90	122	210	423
		28		40	90	122	210	423
		30		27	50	96	161	364
		35		40	90	122	210	423
		40		40	90	122	210	423
		50		40	90	122	210	423
70		34	48	95	170	358		
100		16	22	56	86	210		
防护等级 Protection level		IP65						
工作温度 Operating temperature		-10°C至 90°C						
重量 (kg)	L1		0.95	2.27	3.06	6.93	15.5	
	L2		1.2	2.8	3.86	8.98	17	

### SPGA系列行星减速机标准尺寸

#### SPGA Series Planetary Gearbox Standard Dimensions



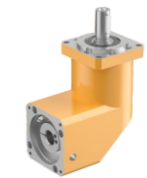
代号 机型 Code model	SPGA-L1																			
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A2	B	H
SPGA60-L1	52	M5	10	17	40	60	14	50	70	M4	20	5	3	21	56	31	4	60	3	11.4
SPGA80-L1	70	M6	15	25	60	80	19	70	90	M5	30	4.5	3	38	60.5	42	5	80	5	17.3
SPGA90-L1	80	M6	15	25	68	90	19	70	90	M5	30	4.5	3	32	77.5	47	6	90	5	17.3
SPGA120-L1	100	M10	20	35	80	120	22	110	145	M8	38	5.5	4	50	96.5	57.5	10	120	6	22.8
SPGA160-L1	145	M12	35	55	130	165	35	114.3	200	M12	61	7	5	62	132	86	10	176	10	38.3
客户定制 Customization																				



代号 机型 Code model	SPGA-L2																			
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	L1	L2	L3	L4	L5	L6	L7	A2	B	H
SPGA60-L2	52	M5	10	17	40	60	14	50	70	M4	20	5	3	21	73.5	31	4	60	3	11.4
SPGA80-L2	70	M6	15	25	60	80	19	70	90	M5	30	4.5	3	38	80.5	42	5	80	5	17.3
SPGA90-L2	80	M6	15	25	68	90	19	70	90	M5	30	4.5	3	32	97.5	47	6	90	5	17.3
SPGA120-L2	100	M10	20	35	80	120	22	110	145	M8	38	5.5	4	50	129	57.5	10	120	6	22.8
SPGA160-L2	145	M12	35	55	130	165	35	114.3	200	M12	61	7	5	62	173	86	10	176	10	38.3
客户定制 Customization																				

### SPFR系列行星减速机技术参数

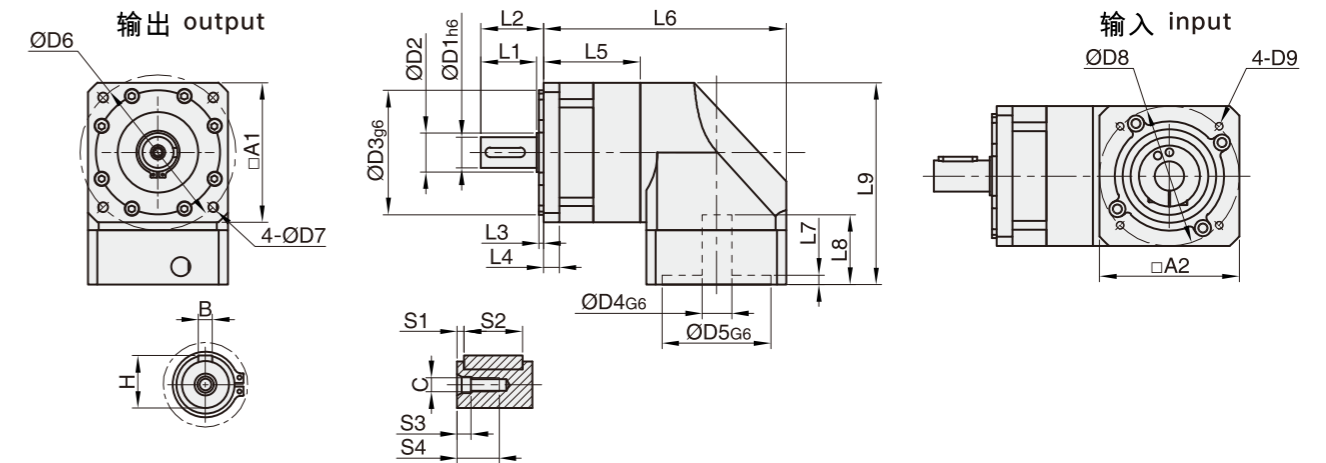
#### SPFR Series Planetary Gearbox Standard Dimensions



技术参数 Technical Parameters		规格 Specification		SPFR60	SPFR80	SPFR90
最大扭矩 Maximum Torque	Nm	1.5倍额定扭矩 1.5 times rated torque				
紧急制动扭矩 Emergency Braking Torque	Nm	2倍额定扭矩 2 times rated torque				
最大容许径向力 Maximum Allowable Radial Force	N	240	450	1240		
最大容许轴向力 Maximum Allowable Axial Force	N	220	430	1000		
抗扭刚性 Torsional Stiffness	Nm/arcmin	1.8	4.85	11		
最大输入转速 Maximum Input Speed	rpm	8000	6000	6000		
额定输入转速 Rated Input Speed	rpm	4000	3500	3500		
噪音 Noise Level	dB	≤58	≤60	≤65		
平均寿命 Average Service Life	h	20000				
满载效率 Full-load Efficiency	%	L1≥95% L2≥92%				
回程间隙 Backlash	P1	L1	arcmin	≤8	≤8	≤8
		L2	arcmin	≤12	≤12	≤12
	P2	L1	arcmin	≤16	≤16	≤16
		L2	arcmin	≤20	≤20	≤20
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.46	1.73	12.78
		4	Kg.cm <sup>2</sup>	0.46	1.73	12.78
		5	Kg.cm <sup>2</sup>	0.46	1.73	12.78
		7	Kg.cm <sup>2</sup>	0.41	1.42	11.38
		10	Kg.cm <sup>2</sup>	0.41	1.42	11.38
		12	Kg.cm <sup>2</sup>	0.44	1.49	12.18
	L2	15	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		16	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		20	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		25	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		28	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		30	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		35	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		40	Kg.cm <sup>2</sup>	0.44	1.49	12.18
	50	Kg.cm <sup>2</sup>	0.34	1.25	11.48	
	70	Kg.cm <sup>2</sup>	0.34	1.25	11.48	
	100	Kg.cm <sup>2</sup>	0.34	1.25	11.48	

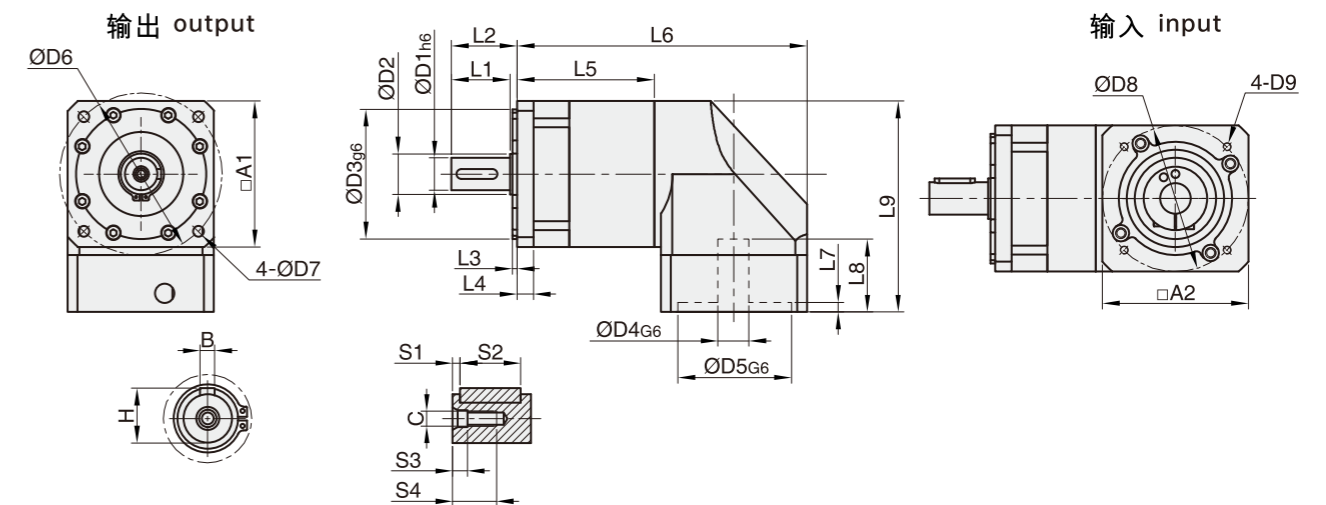
**SPFR系列行星减速机技术参数**
**SPFR Series Planetary Gearbox Standard Dimensions**

技术参数 Technical Parameters		规格 Specification		SPFR60	SPFR80	SPFR90
级数 Stages	速比 Ratio					
额定扭矩 Rated torque (Nm) $T_N$	L1	3	27	96	161	
		4	40	122	210	
		5	40	122	210	
		7	34	95	170	
		10	16	56	86	
	L2	12	27	96	161	
		15	27	96	161	
		16	40	122	210	
		20	40	122	210	
		25	40	122	210	
		28	40	122	210	
		30	27	96	161	
		35	40	122	210	
		40	40	122	210	
50	40	122	210			
70	34	95	170			
100	16	56	86			
防护等级 Protection level		IP65				
工作温度 Operating temperature		-10°C至90°C				
重量 (kg)	L1	1.7	4.4	10		
	L2	1.9	5.0	13		

**SPFR系列行星减速机标准尺寸**
**SPFR Series Planetary Gearbox Standard Dimensions**


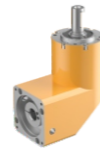
代号 Code 机型 model	SPFR-L1																										
	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1	A2	S1	S2	S3	S4	B	H	C
SPFR60-L1	14	17	50	14	50	70	5.5	70	M4	30	35	7	11	40	111.5	5	31	100.5	60	60	3	20	5	18	5	16	M5
SPFR90-L1	20	25	80	19	70	100	6.5	90	M5	36	40.5	7	10	57.5	151.5	5	45	130	90	90	3	25	6	18	6	22.5	M6
SPFR120-L1	25	35	110	22	110	130	8.5	145	M8	50	55.5	10	18	72.5	196.5	7	64	169	120	120	5	40	8	25	8	28	M10

客户定制 Customization



代号 Code 机型 model	SPFR-L2																										
	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1	A2	S1	S2	S3	S4	B	H	C
SPFR60-L2	14	17	50	14	50	70	5.5	70	M4	30	35	7	11	57.5	129	5	31	100.5	60	60	3	20	5	18	5	16	M5
SPFR90-L2	20	25	80	19	70	100	6.5	90	M5	36	40.5	7	10	72.5	171.5	5	45	130	90	90	3	25	6	18	6	22.5	M6
SPFR120-L2	25	35	110	22	110	130	8.5	145	M8	50	55.5	10	18	105	229	7	64	169	120	120	5	40	8	25	8	28	M10

客户定制 Customization

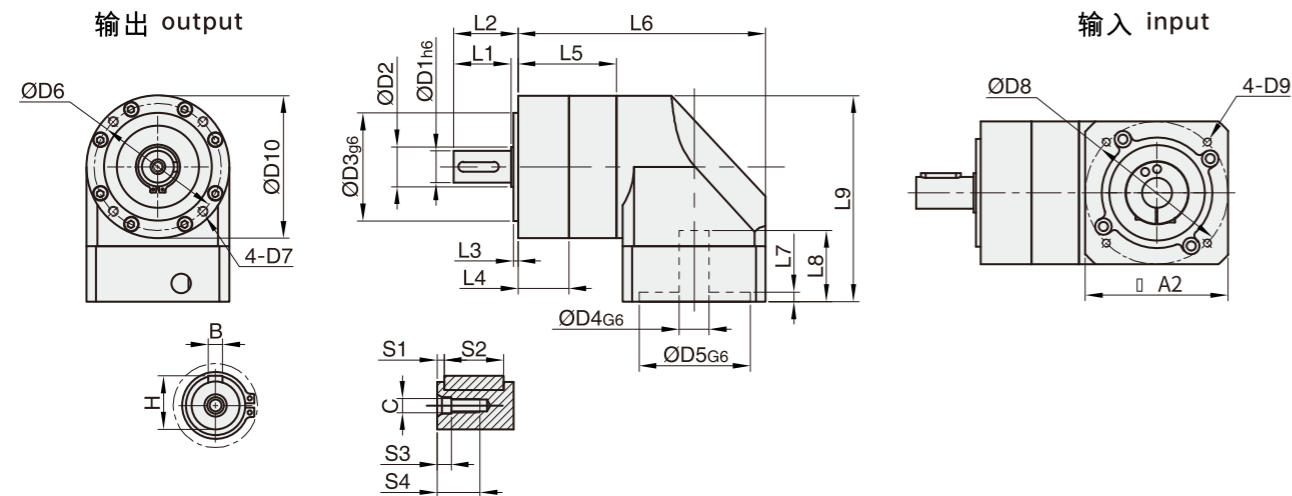
**SPGR系列行星减速机技术参数**
**SPGR Series Planetary Gearbox Standard Dimensions**


技术参数 Technical Parameters		规格 Specification		SPGR60	SPGRR80	SPGR90
最大扭矩 Maximum Torque			Nm			
紧急制动扭矩 Emergency Braking Torque			Nm			
最大容许径向力 Maximum Allowable Radial Force			N	240	450	1240
最大容许轴向力 Maximum Allowable Axial Force			N	220	430	1000
抗扭刚性 Torsional Stiffness			Nm/arcmin	1.8	4.85	11
最大输入转速 Maximum Input Speed			rpm	8000	6000	6000
额定输入转速 Rated Input Speed			rpm	4000	3500	3500
噪音 Noise Level			dB	≤58	≤60	≤65
平均寿命 Average Service Life			h	20000		
满载效率 Full-load Efficiency			%	L1≥95% L2≥92%		
回程间隙 Backlash	P1	L1	arcmin	≤8	≤8	≤8
		L2	arcmin	≤12	≤12	≤12
	P2	L1	arcmin	≤16	≤16	≤16
		L2	arcmin	≤20	≤20	≤20
转动惯量 moment of inertia	L1	3	Kg.cm <sup>2</sup>	0.46	1.73	12.78
		4	Kg.cm <sup>2</sup>	0.46	1.73	12.78
		5	Kg.cm <sup>2</sup>	0.46	1.73	12.78
		7	Kg.cm <sup>2</sup>	0.41	1.42	11.38
		10	Kg.cm <sup>2</sup>	0.41	1.42	11.38
	L2	12	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		15	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		16	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		20	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		25	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		28	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		30	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		35	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		40	Kg.cm <sup>2</sup>	0.44	1.49	12.18
		50	Kg.cm <sup>2</sup>	0.34	1.25	11.48
		70	Kg.cm <sup>2</sup>	0.34	1.25	11.48
100	Kg.cm <sup>2</sup>	0.34	1.25	11.48		

技术参数 Technical Parameters		规格 Specification		SPGR60	SPGRR80	SPGR90
		级数 Stages	速比 Ratio			
额定扭矩 Rated torque (Nm) <sub>T<sub>N</sub></sub>	L1	3		27	96	161
		4		40	122	210
		5		40	122	210
		7		34	95	170
		10		16	56	86
	L2	12		27	96	161
		15		27	96	161
		16		40	122	210
		20		40	122	210
		25		40	122	210
		28		40	122	210
		30		27	96	161
		35		40	122	210
		40		40	122	210
		50		40	122	210
		70		34	95	170
100		16	56	86		
防护等级 Protection level		IP65				
工作温度 Operating temperature		-10°C至 90°C				
重量 (kg)	L1		1.7	4.4	12.0	
	L2		1.9	5.0	14.0	

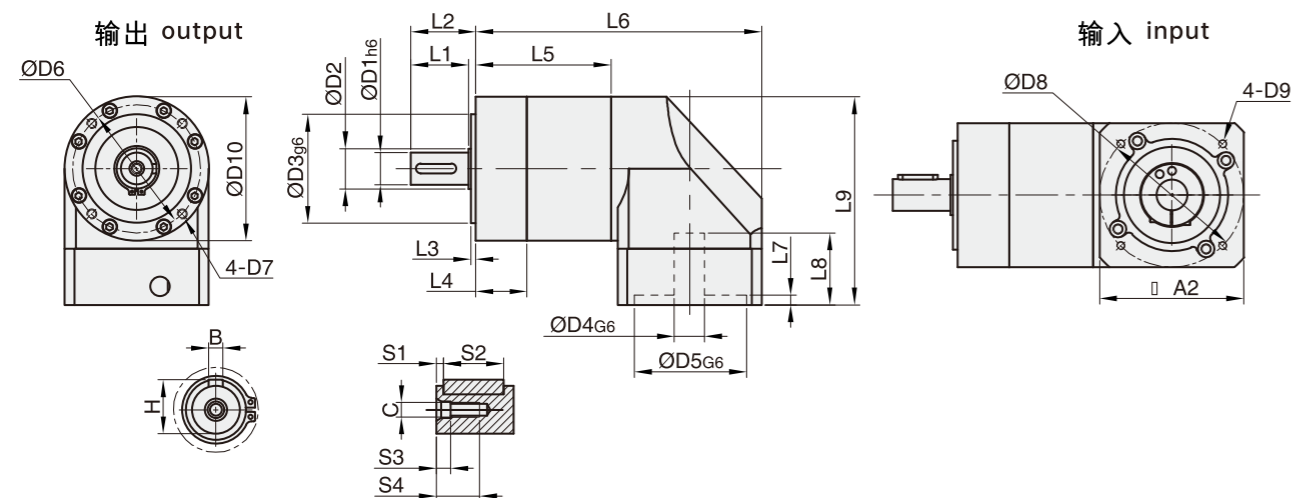
## SPGR系列行星减速机标准尺寸

### SPGR Series Planetary Gearbox Standard Dimensions



代号 Code 机型 model	SPGR-L1																										
	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1	A2	S1	S2	S3	S4	B	H	C
SPGR60-L1	14	17	40	14	50	52	M5	70	M4	30	35	3	20	40	111.5	5	31	100.5	60	60	3	20	5	18	5	16	M5
SPGR90-L1	20	25	68	19	70	80	M6	90	M5	36	40.5	3	32	57.5	151.5	5	45	130	90	90	3	25	6	18	6	22.5	M6
SPGR120-L1	25	35	80	22	110	100	M10	145	M8	50	55.5	4	42	72.5	196.5	7	64	169	120	120	5	40	8	25	8	28	M10

客户定制 Customization



代号 Code 机型 model	SPGR-L2																										
	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	L7	L8	L9	A1	A2	S1	S2	S3	S4	B	H	C
SPGR60-L2	14	17	40	14	50	52	M5	70	M4	30	35	3	20	57.5	129	5	31	100.5	60	60	3	20	5	18	5	16	M5
SPGR90-L2	20	25	68	19	70	80	M6	90	M5	36	40.5	3	32	72.5	171.5	5	45	130	90	90	3	25	6	18	6	22.5	M6
SPGR120-L2	25	35	80	22	110	100	M10	145	M8	50	55.5	4	42	105	229	7	64	169	120	120	5	40	8	25	8	28	M10

客户定制 Customization

## 减速机选型 Gearbox Selection

选用减速机应考虑其结构类型、安装形式、承载能力、输出转速、工作条件等因素。本书中所列出的减速机的承载能力，是在额定转速下，每天工作10小时，每小时启动数少于10次，平稳无冲击的条件下得出的。当实际的工况与上述条件不相符时，需要计算实际需要的承载能力，以准确地选出适合自身需求的减速机。选型的步骤如下：

When selecting a gearbox, consider factors such as its structural type, mounting configuration, load capacity, output speed, and operating conditions. The load capacities listed in this book are based on stable, impact-free operation at rated speed, 10 hours per day, fewer than 10 starts per hour, and a 10-hour operation schedule. If actual operating conditions do not meet these requirements, calculate the required load capacity to accurately select a gearbox that meets your needs. The selection process is as follows:

### (一) 常规选型

#### 1) 确定使用系数 (f<sub>s</sub>)

请根据负载类型、每小时启停次数和预期工作寿命从下表中选择出正确的使用系数 (f<sub>s</sub>)

#### (I) General Selection

##### 1) Determine the Service Factor (f<sub>s</sub>)

Select the appropriate service factor (f<sub>s</sub>) from the table below based on the load type, frequency of starts and stops per hour, and expected service life.

		使用系数(f <sub>s</sub> ) Service Factor				
负载类型 Load Type	每小时启动 次数Z	每日运行时间(h) Daily operating hours				
		h<4	4<h<8	8<h<12	12<h<16	16<h<24
均匀负载 Uniform load	Z<10	0.85	0.95	1.00	1.20	1.60
	10<Z<30	0.90	1.10	1.15	1.40	1.80
	30<Z<100	1.00	1.20	1.30	1.60	2.00
中等负载 Medium load	Z<10	1.00	1.20	1.30	1.60	2.00
	10<Z<30	1.10	1.35	1.45	1.80	2.20
	30<Z<100	1.20	1.45	1.60	2.00	2.40
重负载 Heavy load	Z<10	1.20	1.45	1.60	2.00	2.40
	10<Z<30	1.30	1.55	1.75	2.20	2.60
	30<Z<100	1.40	1.65	1.90	2.40	2.80

## 减速机选型 Gearbox Selection

### 2) 求计算用扭矩 ( $T_{c2}$ )

请根据所需扭矩  $T_{r2}$  求出计算用扭矩  $T_{c2}$ ，计算公式为  $T_{c2} = T_{r2} \times f_s$

### 3) 求传动比 (i)

由所要求的输出转速  $n_2$  和输入转速  $n_1$  求得，公式为  $i = \frac{n_1}{n_2}$

### 4) 确定减速机型号

在确定了计算用扭矩  $T_{c2}$  和传动比  $i$  后，就可以通过这两个参数，从减速机样板目录中的额定参数表中，选择传动比  $i$  和额定扭矩  $T_n$  最接近计算值的减速机型号。但所选减速机额定扭矩  $T_n$  必须要大于计算用扭矩  $T_{c2}$ ，即  $T_n \geq T_{c2}$

### 5) 检查减速机接口

减速机的型号选定后，还需要检查它的输入、输出与安装部位的连结尺寸是否符合实际要求。如果样本中减速机的接口与要安装 IEC 电机接口不适用，请把电机的型号和制造商名称提供给我们，交由我司技术人员代为处理。

### 2) Calculate the rated torque ( $T_{c2}$ )

Calculate the rated torque  $T$  based on the required torque  $T_{r2}$ . The calculation formula is  $T_{c2} = T_{r2} \times f_s$

### 3) Calculate the transmission ratio (i). This is determined from the required output speed $n_2$ and input speed $n_1$ the formula $i = \frac{n_1}{n_2}$

### 4) Determine the gearbox selection

After determining the rated torque  $T_{c2}$  and transmission ratio  $i$ , use these two parameters to select the reducer model with the transmission ratio  $i$  and rated torque  $T_n$  closest to the calculated values from the rated parameter table in the reducer catalog. However, the selected reducer's rated torque  $T_n$  must be greater than the calculated torque  $T_{c2}$ , meaning  $T_n \geq T_{c2}$

### 5) Check the reducer interface. After selecting the reducer model, check that the input, output, and mounting dimensions meet your actual requirements. If the reducer interface in the catalog does not match the IEC motor interface you want to install, please provide us with the motor model and manufacturer, and our technicians will assist you.

## (二) 高要求选型

如果对减速机的使用有很高可靠度要求，可以按照以下方式对减速机进行选型：

### 1) 确定使用系数 ( $f_s$ )

请根据负载类型、每小时启停次数和预期工作寿命从下表中选择出正确的使用系数 ( $f_s$ )

### (II) High-Reliability Selection

If you require a high-reliability reducer, you can select the reducer as follows:

#### 1) Determine the service factor ( $f_s$ )

Select the correct service factor ( $f_s$ ) from the table below based on the load type, number of starts and stops per hour, and expected service life.

		使用系数( $f_s$ ) Service Factor				
负载类型 Load Type	每小时启动 次数Z	每日运行时间(h) Daily operating hours				
		h<4	4<h<8	8<h<12	12<h<16	16<h<24
均匀负载 Uniform load	Z<10	0.85	0.95	1.00	1.20	1.60
	10<Z<30	0.90	1.10	1.15	1.40	1.80
	30<Z<100	1.00	1.20	1.30	1.60	2.00
中等负载 Medium load	Z<10	1.00	1.20	1.30	1.60	2.00
	10<Z<30	1.10	1.35	1.45	1.80	2.20
	30<Z<100	1.20	1.45	1.60	2.00	2.40
重负载 Heavy load	Z<10	1.20	1.45	1.60	2.00	2.40
	10<Z<30	1.30	1.55	1.75	2.20	2.60
	30<Z<100	1.40	1.65	1.90	2.40	2.80

## 减速机选型 Gearbox Selection

### 2) 安全系数 [S<sub>A</sub>]

对于大功率，大转矩的减速机，我们选型时还应该加入安全系数（S<sub>A</sub>）的考量，以增加设备的可靠性

#### 2) Safety Factor

For big-power, high-torque reducers, the safety factor (S<sub>A</sub>) should be considered when selecting the reducer to increase equipment reliability.

使用要求 Usage Requirements	最小安全系数S <sub>min</sub> Minimum Safety Factor S <sub>min</sub>	说明 Explanation
高可靠度 High Reliability	1.5-1.7	高安全度要求，减速机失效会仅引起设备、人身事故。 High safety requirements: Reducer failure will only cause equipment or personal injury.
较高可靠度 Relatively High Reliability	1.3-1.5	重要设备，减速机失效会仅引起机组、产线或全厂停产。 For critical equipment: Reducer failure will only cause a unit, production line, or entire plant shutdown.
一般可靠度 Medium Reliability	1.1-1.3	一般设备，减速机失效仅引起单机停产，且易更换备件。 For general equipment: Reducer failure will only cause a single unit shutdown, and spare parts are easily replaceable.

### 3) 求计算用扭矩 (T<sub>c2</sub>)

请根据所需扭矩 T<sub>r2</sub> 求出计算用扭矩 T<sub>c2</sub>，计算公式为 T<sub>c2</sub> = T<sub>r2</sub> × f<sub>s</sub> × S<sub>A</sub>

3) Calculate the rated torque (Tc2). Calculate the rated torque Tc2 based on the required torque Tr2 the formula: T<sub>c2</sub> = T<sub>r2</sub> × f<sub>s</sub> × S<sub>A</sub>.

### 4) 求传动比 (i)

由所要求的输出转速 n<sub>2</sub> 和输入转速 n<sub>1</sub> 求得，公式为 i =  $\frac{n_1}{n_2}$

4) Calculate the transmission ratio (i). Calculate the transmission ratio (i) equal to input speed n<sub>1</sub> divided by the required output speed n<sub>2</sub>, formula: i =  $\frac{n_1}{n_2}$

### 5) 确定减速机型号

在确定了计算用扭矩 T<sub>c2</sub> 和传动比 i 后，就可以通过这两个参数，从减速机样板目录中的额定参数表中，选择传动比 i 和额定扭矩 T<sub>n</sub> 最接近计算值的减速机型号。但所选减速机额定扭矩 T<sub>n</sub> 必须要大于计算用扭矩 T<sub>c2</sub>，即 T<sub>n</sub> ≥ T<sub>c2</sub>

#### 5) Determine the gearbox model.

Once the calculated torque T<sub>c2</sub> and the transmission ratio \*i\* have been determined, the model can be selected. This is done by using these two parameters to find the model in the reducer catalog's parameter table whose transmission ratio \*i\* and rated torque T<sub>n</sub> are closest to the calculated values. However, the selected gearbox's rated torque T<sub>n</sub> must be greater than the calculated torque T<sub>c2</sub>, i.e., T<sub>n</sub> ≥ T<sub>c2</sub>.

### 6) 检查减速机接口

减速机的型号选定后，还需要检查它的输入、输出与安装部位的连结尺寸是否符合实际要求。如果样本中减速机的接口与要安装 IEC 电机接口不适用，请把电机的型号和制造商名称提供给我们，交由我司技术人员代为处理。

#### 6) Check the gearbox interface.

After the model has been selected, it is necessary to check whether its input, output, and mounting dimensions meet the practical requirements. If the interface of the gearbox in the catalog is not compatible with the IEC motor to be installed, please provide the motor model and manufacturer name to us. Our technical staff will then handle the matter accordingly.

## (三) 校核

在完成减速机的选型之后，必须进行径向力和轴向力的校核：

### 1) 校核径向力 Fr [N]

对于作用在轴中点的负载，可以通过下列公式求得：

#### (3) Verification

After selecting the reducer, the radial and axial forces must be verified:

#### 1) Verifying the radial force Fr [N]

For the load acting at the shaft midpoint, the following formula can be used to calculate it:

$$Fr = \frac{2000 \times T_{r2} \times K_r}{d \times f_{n2}} \times f_s \times f_L$$

T<sub>r2</sub> 输出轴上实际需要的扭矩 (Nm)

f<sub>s</sub> 减速机的使用系数

d 输出轴上传动部件(链轮, 齿轮, 带轮等)的分度圆直径 (mm)

K<sub>r</sub> 传动系数。具体选择参见下表：

T<sub>r2</sub>: Actual torque required on the output shaft (Nm)

f<sub>s</sub>: Reducer utilization factor

d: Pitch diameter of the transmission components (sprocket, gear, pulley, etc.) on the output shaft (mm)

K<sub>r</sub>: Transmission factor. See the table below for specific selections:

传动类型 Transmission Type	传动系数 (K <sub>r</sub> ) Transmission Type
链条传动 Chain Drive	1.0
齿轮传动 Gear Drive	1.3
V形带传动 V-Belt Drive	1.5-2.0

## 减速机选型 Gearbox Selection

$f_L$  寿命系数。具体参数见下表：

$f_L$  Life coefficient, specific parameters are shown in the table below:

工作寿命 Working life	5000h	10000h	20000h	25000h	50000h	100000h
$f_L$	0.66	0.81	1.00	1.32	1.62	2.00

$f_{2n}$  速度系数。具体参数见下表：

$f_{2n}$  Speed coefficient, specific parameters are shown in the table below:

减速机输出转速 $n_2$ Output speed	10	25	50	100	150	250	500	1000
速度系数 $f_{n2}$ Speed coefficient	2.00	1.51	1.23	1.00	0.88	0.76	0.62	0.50

计算出减速机的理论径向力之后，对于作用在轴中点的负载，需要确保所选择的减速机的额定径向力不能小于计算所需的理论径向力。即  $F_{rN} \geq F_r$

After calculating the theoretical radial force of the reducer, for loads acting at the shaft midpoint, ensure that the rated radial force of the selected reducer is not less than the theoretical radial force required for the calculation. That is,  $F_{rN} \geq F_r$ .

额定径向力  $F_{rN}$  [N]

补充说明：

以上校核仅适用于作用在输出轴中点的负载，若悬臂载荷不在轴中点上，需要确定偏移距离  $X$ ，在相关图表中查找径向载荷位置系数  $f_{x2}$ ，并按下列公式校核：

$$F_{rx2} = F_{rN} \times f_{x2} \geq F_r$$

这里  $F_{rx2}$  是指在输出轴中心点的容许径向力

Rated radial force  $F$  [N]

Additional note:

The above verification only applies to loads acting at the output shaft midpoint. If the cantilever load is not at the shaft midpoint, it is necessary to determine the offset distance  $X$ , find the radial load position factor  $f_{x2}$  in the relevant chart, and using the following formula to verify :

$$F_{rx2} = F_{rN} \times f_{x2} \geq F_r$$

Here,  $F_{rx2}$  refers to the allowable radial force at the output shaft centerpoint.

2) 校核轴向力  $F_a$  [N]

在完成减速机的选型之后，还需要计算轴上所承受的轴向力  $F_{ac}$  的大小和方向。对于拟选的减速机，根据输出类型和轴向载荷的方向确定调整系数  $F_{2a}$ 。轴向力的方向以 (+) 和 (-) 表示，专业术语中有图示说明。由  $F_{rN}$  和  $F_{2a}$  确定许用轴向载荷  $F_{ac}$ ：

$$F_{ac} = F_{rN} \times F_{2a}$$

2) Verify the axial force  $F_a$  [N]

After selecting the reducer, calculate the magnitude and direction of the axial force  $F_{ac}$  acting on the shaft. For the selected reducer, determine the adjustment factor  $F_{2a}$  based on the output type and the direction of the axial load. The direction of the axial force is indicated by (+) and (-), and is illustrated in the technical terminology. Determine the allowable axial load  $F_{rN}$  from  $F_{2a}$  and  $F_{ac}$ :  $F_{ac} = F_{rN} \times F_{2a}$

从寿命系数表中选择与轴承的预期寿命相对应的调整系数  $f_L$ 。在下表中查出由应用的负载特性确定的轴向负载系数  $K_a$ ：

Select the adjustment factor  $f_L$  corresponding to the expected bearing life from the life factor table. Find the axial load factor  $K_a$  determined by the load characteristics of the application in the following table:

$K_a$	负载特性 Load characteristics		
	均匀负载 Uniform load	中等负载 Medium load	重负载 Heavy load
	1.0	1.25	1.5

确定了所有的系数后，要校核满足以下条件： $F_{ac} \times f_L \times K_a \leq F_{an}$

$F_{an}$  减速机的额定径向力

如果同时有轴向力和径向力，请与技术部联系。

After all coefficients are determined, the following conditions must be checked to ensure that they are met:

$$F_{ac} \times f_L \times K_a \leq F_{an}$$

If there are both axial and radial forces at the same time, please contact the technical department.

## 电机选型 Motor Selection

确定减速机实际所需扭矩 $T_{r2}$ ,输入转速 $n_1$ ,效率 $\eta$ (效率 $\eta$ 的值在减速机技术数表中有说明),根据公式计算减速机所需的输入功率 $P_{r1}$ :

Determine the actual torque  $T_{r2}$  required by the reducer, the input speed  $n_1$ , and the efficiency  $\eta$  (the efficiency  $\eta$  value is specified in the reducer technical data sheet). Calculate the required input power of the reducer using the formula

$$P_{r1} = \frac{T_{r2} \times n_1}{9549 \times \eta \times i}$$

按照电机额定功率大于减速机所需的输入功率的原则,在电机选型表中选择合适的电机,即: $P_n \geq P_{r1}$

Select an appropriate motor from the motor selection table, ensuring that the motor's rated power exceeds the required reducer input power.

对于非连续工作制S1条件下使用的电机,电机额定值可以运用调节系数调整;四极电机或更低转速电机优先选择。

For motors used in discontinuous duty (S1), the motor rating can be adjusted using an adjustment factor. Four-pole motors or those with lower speeds are preferred.



## 专业术语 Technical terms

### 额定输入转速: $n_1$ [rpm]

减速机的驱动速度,如减速机写电机直接相连,则转速值写电机转速相同。本书中的额定输入转速是在环境温度为 $20^\circ\text{C}$ 的条件下测得的,环境温度较高时请降低转速 $n_1$ 。

Rated Input Speed:

The speed of the reducer. If the reducer is directly connected to the motor, the speed value is the same as the motor speed. The rated input speeds listed in this manual are measured at an ambient temperature of  $20^\circ\text{C}$ . For higher ambient temperatures, reduce the speed  $n_1$ .

### 输出转速: $n_2$ [rpm]

输出转速按照下列公式通过输入转速 $n$ 和传动比 $i$ 计算出来。

Output Speed:

The output speed is calculated using the input speed  $n$  and the transmission ratio  $i$  using the following formula.

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

### 传动效率: $[\eta]$

由于摩擦引起的损失总是使有效率小于1,也就是少于100%。样本上的效率是齿轮箱在满负荷运动情况下,减速机的传输效率。

Transmission Efficiency:  $[\eta]$

Losses due to friction always keep the efficiency less than 1, or less than 100%. The efficiency shown in the sample represents the transmission efficiency of the reducer under full load.

### 额定输出扭矩: $T_n$ [Nm]

指减速机长时间(连续工作制)可以加载的力矩(无磨损),条件应满足负载均匀,安全系数 $S=1$ ,理论寿命为20000小时; $T_n$ 值遵守ISO DP 6336齿轮标准与ISO 281轴承标准。

Rated Output Torque:  $T_n$  [Nm]

This refers to the torque that the reducer can withstand for extended periods (continuous operation) (without wear). The conditions are uniform load, a safety factor of  $S = 1$ , and a theoretical lifespan of 20,000 hours.  $T_n$  values comply with ISO DP6336 gear standards and ISO 281 bearing standards.

## 专业术语 Technical terms

### 加速扭矩: $T_{2B}$ [Nm]

指工作周期每小时少于1000次时允许短时间加载到输出端的最大力矩。工作周期每小时大于1000次时,须考虑冲击因素。 $T_{2B}$ 是周期工作制选型时的一个最大值,实际使用中的加速力矩( $T_{2B}$ )必须小于 $T_{2B}$ 时,使用查则会缩短减速机的寿命:

Acceleration Torque:  $T_{2B}$  [Nm]

This refers to the maximum torque permitted to be applied to the output for short periods of time when the operating cycle is less than 1,000 cycles per hour. For operating cycles greater than 1,000 cycles per hour, impact factors must be considered.  $T_{2B}$  is a maximum value used when selecting a cyclic duty cycle. If the actual acceleration torque ( $T_{2B}$ ) must be less than  $T_{2B}$ , using it will shorten the reducer's lifespan:

### 紧急制动扭矩: $T_{2NOT}$ [Nm]

指减速机输出端所能加载最大力矩。这个力矩可在减速机寿命期内加载1000次。绝对不能超过1000次。

Emergency Braking Torque:  $T_{2NOT}$  [Nm]

This refers to the maximum torque that can be applied to the reducer's output. This torque can be applied 1000 times over the reducer's lifespan. It must never exceed 1000 times.

### 最大扭矩: $T_{2max}$ [Nm]

指减速机在静态条件或频繁启动条件下所能承受的输出扭矩,通常指峰值负载或启负载。

Maximum Torque:  $T_{2max}$  [Nm]

This refers to the output torque that the reducer can withstand under static conditions or frequent starting conditions, typically referring to peak load or starting load.

### 实际所需扭矩: $T_{r2}$ [Nm]

所需扭矩取决于应用场合的实际工况,拟选减速机的额定扭矩 $T_n$ 必须大于这个扭矩。

Actual Required Torque:  $T_{r2}$  [Nm]

The required torque depends on the actual operating conditions of the application. The rated torque  $T$  of the selected reducer must be greater than this torque.

### 计算用扭矩: $T_{c2}$ [Nm]

会在选择减速机时被用到,可以由实际所需扭矩 $T_{r2}$ 和系数 $f$ ,按以下公式得出: $T_{c2} = T_{r2} \times f \leq T_n$ 。

Calculation Torque:  $T_{c2}$  [Nm]

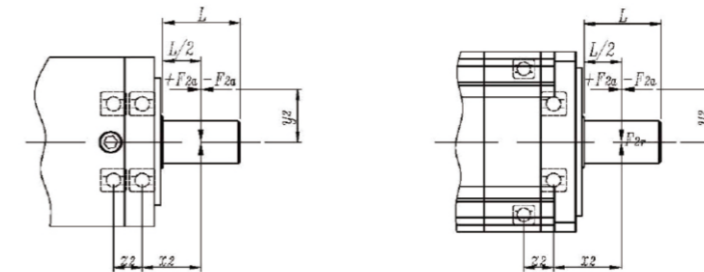
This is used when selecting a reducer and can be calculated from the actual required torque  $T$  and the factor  $f$  using the following formula:  $T_{c2} = T_{r2} \times f \leq T_n$ .

### 轴向力: $F_{2AMax}$ [N]

是指平行于轴心的一个力,它平行于输出轴,它的作用点与输出轴端有一定的轴向偏( $y_2$ )时,会形成一个额外的弯挠力矩。轴向力超过样本所示的额定值时,须用联轴节来抵消这种弯挠力。[如图]

Axial Force:  $F_{2AMax}$  [N]

This refers to a force acting parallel to the axis of the shaft. When its point of application is offset ( $y_2$ ) from the output shaft end, it creates an additional bending moment. If the axial force exceeds the rated value shown in the catalog, a coupling must be used to offset this bending force.



### 径向力: $F_{2RMax}$ [N]

指垂直作用于轴向力的一个力。它的作用点与轴端有一定的轴向距离( $x_2$ ),这个点成一个杠杆点,横向力形成一个弯挠力矩。输出轴的断裂。

Radial force:  $F_{2RMax}$  [N]

This refers to a force acting perpendicularly to the axial force. Its point of application is a certain axial distance ( $x_2$ ) from the shaft end, forming a lever point. The lateral force creates a bending moment. This can cause the output shaft to break.

### 侧倾力矩 [Nm]:

指轴向力和径向力作用于输出端轴承上径向受力点的力矩。其计算公式为:

Tilting moment [Nm]:

This refers to the moment resulting from the axial and radial forces acting on a radial load point on the output bearing. Its calculation formula is:

$$M_{2Kmax} = \frac{F_{2amax} \times y_2 + F_{2rm} \times (x_2 + z_2)}{1000}$$

## 专业术语 Technical terms

### 轴伸径向载荷、轴向载荷:

选择减速机的附加依据是输出轴伸出端上的径向载荷和轴向载荷。轴的强度和轴承的承载能力决定了许用轴伸的径向载荷。产品样本中给出的最大允许值是指在最不利的方向作用在轴伸出端中点(即1/2L处)的力。当作用力不在中点时,越接近轴肩,允许的径向载荷就越大;相反,作用点离轴肩越远,允许的径向载荷:就越小。

Shaft Extension Radial and Axial Loads:

Additional considerations for selecting a reducer are the radial and axial loads on the output shaft extension. The shaft strength and bearing capacity determine the allowable radial load on the shaft extension. The maximum permissible values specified in the product datasheet refer to the force acting at the midpoint of the shaft extension (i.e., 1/2L) in the most unfavorable direction. When the force is not applied at the midpoint, the closer to the shaft shoulder the force is applied; conversely, the further from the shoulder the force is applied, the smaller the permissible radial load.

### 安全系数: S

安全系数等于减速机的额定输入功率与电机功率的比值。

Safety Factor: S

The safety factor is equal to the ratio of the reducer's rated input power to the motor power.

### 使用系数: $f_s$

使用系数表现减速机的应用特性,它考虑到减速机的负载类型和每日工作时间。(选型说明中有详细:数据)

Service Factor: f

The service factor characterizes the reducer's application, taking into account the load type and daily operating hours. (Details are provided in the selection instructions.)

### 安装力矩[Nm]:

减速机的组装及电机与减速机的连接安装(输入轴采用弹性联轴器要求),都是有力矩要求。建议使力矩扳手来完成安装步骤。

Installation Torque [Nm]:

The assembly of the reducer and the connection between the motor and reducer (required for a flexible coupling on the input shaft) both require torque. Using a torque wrench is recommended for installation.

## 安装事项 Installation Considerations

正确的安装,使用和维护,对保证减速机正常运行的至关重要。因此,请您务必认真阅读下面的安装使用相关事项,并严格执行。

Proper installation, operation, and maintenance are crucial to ensuring the proper operation of the reducer. Therefore, please carefully read the following installation and operation instructions and strictly follow them.

### 1.与原动机的连接:

第一步 安装前确认电机和减速机是否完好无损,并且严格检查电机与减速机相连接的各部位尺寸是否匹配,主要指电机的凸台尺寸与减速机凹槽等尺寸及配合公差(图 1)。

第二步 取下减速机法兰外侧工艺孔上的防尘盖,调整减速机输入轴弹性夹紧装置使其紧固螺栓与工艺孔对齐,插入内六角扳手(图 2)。此步骤适合筒夹式锁紧机构联接。

#### 1. Connection to the Prime Motor:

Step 1: Pre-Installation Verification

Before installation, verify that both the motor and gearbox are intact and undamaged. Carefully inspect whether the dimensions of all connecting components between the motor and gearbox match. This primarily refers to the dimensions and fit tolerance of the motor pilot (boss) and the gearbox recess, etc. (See Figure 1).

Step 2: Adjust the Collet Clamping Mechanism

Remove the protective cover from the process hole on the outer side of the gearbox flange. Adjust the gearbox's input shaft collet clamping device until its fastening bolt aligns with the process hole, then insert a hex key (See Figure 2). This step is applicable for connections using a collet-style locking mechanism. (See Figure 2). This step is applicable for connections using a collet-style locking mechanism.

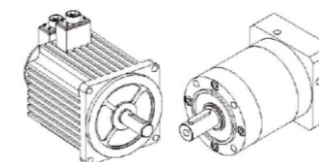


图 1

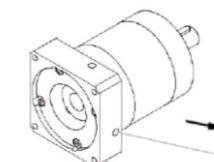


图 2

## 安装事项 Installation Considerations

第三步 取走电机轴键（140框以上减速机为带键联接），将电机输出轴、定位凸台及减速机连接部位的防锈油用汽油或锌钠水擦拭净（图3），其目的是保证连接的紧密性及运转的灵活性，并且防止不必要的磨损，将电机与减速机自然连接。连接时必须保证减速机输出轴与电机输入轴同轴度一致，且二者外侧法兰平行，如果轴度不一致，会导致电机轴折断或减速机齿轮磨损。另外，在安装时，严禁用铁锤等击打，防止轴向力或径向力过大损坏轴承或齿轮（图4）。

Step 3: Remove the motor shaft key (gearboxes with frame sizes larger than 140 have a keyed connection). Wipe off any anti-rust oil from the motor output shaft, locating boss, and gearbox connection area with gasoline or a zinc-sodium solution (Figure 3). This ensures a tight connection, smooth operation, and prevents unnecessary wear, ensuring a natural connection between the motor and reducer. During connection, ensure that the reducer output shaft and motor input shaft are coaxially aligned, with their outer flanges parallel. Misalignment can cause the motor shaft to break or reducer gears to wear. Also, during installation, avoid striking with a hammer or other tools to prevent excessive axial or radial forces that could damage the bearings or gears (Figure 4).

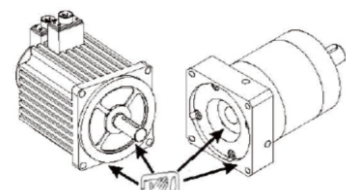


图3

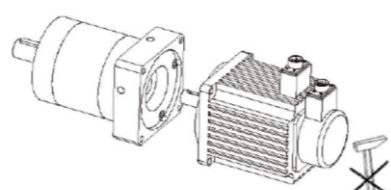


图4

第四步 在电机与减速机连接前，请先将电机轴键槽与紧固螺栓垂直。为保证受力均匀，请先将任意对角位置的安装螺栓旋上，但不要旋紧，再旋上另外两个对角位置的安装螺栓最后逐个旋紧四个安装螺栓（图5）。最后，旋紧紧固螺栓。所有紧固螺栓均需用力矩扳手按标明的固定扭力矩数据（见表1）进行固定和检查（图6）。

Step 4: Before connecting the motor to gearbox, align the motor shaft keyway perpendicular to the fastening bolts. To ensure even force distribution, first tighten the mounting bolts at any diagonal position, but do not tighten them. Then, tighten the other two diagonal mounting bolts, and finally, tighten all four mounting bolts one by one (Figure 5). Finally, tighten the fastening bolts. Use a torque wrench to tighten and check all fastening bolts to the specified torque (see Table 1) (Figure 6).

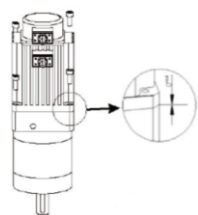


图5

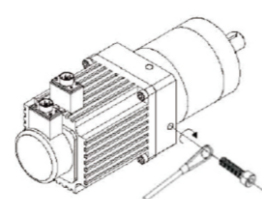


图6

表1

螺丝尺寸 Screw size	六角头尺寸 Hexagon head size	强度10.9及螺丝锁紧扭力 Strength 10.9 and screw tightening torque		强度12.9及螺丝锁紧扭力 Strength 12.9 and screw tightening torque	
	(mm)	(Nm)	(In-lbs)	(Nm)	(In-lbs)
M3*0.5P	2.5	1.8	16	2.1	19
M4*0.7P	3.0	4.1	37	4.9	44
M5*0.8P	4.0	8.2	73	9.8	87
M6*1P	5.0	14	124	17	151
M8*1.25P	6.0	34	302	41	364
M10*1.5P	8.0	67	594	80	709
M12*1.75P	10.0	116	1028	139	1232
M14*2P	12.0	186	1648	223	1976
M16*2P	14.0	286	2534	343	3038

## 2. 与工作机的连接：

与工作机安装时，应重视传动中心轴线对中，其误差不得大于所有联轴器的使用补偿量。对中良好能延长使用寿命，并获得理想的传动效率。在输出轴上安装传动件时，不允许用锤子敲击，通常利用装配夹具和轴端的内螺纹，用螺栓将传动件压入，否则有可能造成减速机内部零件的损坏。最好不采用：刚性固定式联轴器，因该类联轴器安装不当，会引起不必要的外加载荷，以致造成轴承的早期损坏，严重时甚至造成输出轴的断裂。

### 2. Connection to the Working Machine:

When installing the transmission component on the working machine, pay attention to the alignment of the transmission center axis. The error must not exceed the operating compensation of all couplings. Good alignment prolongs service life and achieves optimal transmission efficiency. When installing the transmission component on the output shaft, do not strike it with a hammer. Typically, use an assembly fixture and the internal threads on the shaft end to press the component in with bolts. Failure to do so may damage the reducer's internal components. It is best not to use rigid fixed couplings, as improper installation can cause unnecessary external loads, leading to premature bearing damage and, in severe cases, even output shaft breakage.

## 安装事项 Installation Considerations

### 3. 减速机的固定:

减速机应牢固地安装在稳定的基础或支座上,且冷却空气循环流畅。基础不可靠,运转时会引起振动及噪声,并促使轴承及齿轮受损。当传动联接件有突出物或采用齿轮、链轮传动时,应考虑加装防护装置。安装就位后,应按次序全面检查安装位置的准确性,各紧固件压紧的可靠性,安装后应能灵活,转动。减速机采用脂润滑,方可进行空载试运转,时间不得少于2小时。运转应平稳,无冲击、振动、杂音及渗漏油现象,发现异常应及时排除。如环境温度过高或过低时,需改变润滑脂的牌号。

### 3. Fixing the Gearbox

The gearbox must be securely installed on a stable foundation or support, with unobstructed cooling air circulation. An unreliable foundation will cause vibration and noise during operation, leading to damage to bearings and gears. Where the transmission coupling has protruding parts or when gear/sprocket transmission is used, protective guards should be installed. After installation, comprehensively check the accuracy of the installation position and the reliability of all fasteners in sequence. The installed gearbox must rotate freely and smoothly. The gearbox, which is grease-lubricated, can then undergo a no-load test run for not less than 2 hours. Operation should be smooth, without impact, vibration, unusual noise, or oil leakage. Any abnormalities must be promptly addressed. If the ambient temperature is excessively high or low, the type of grease must be changed accordingly.

### 4. 安装方式:

任意安装。

4. Installation method  
Any installation

## 常见电机与减速机的匹配表 Matching Table of Common Motor and Gearbox

	匹配功率 Matching power	对应减速机规格 Corresponding reducer specifications							
		42	60	80	90	120	150	180	220
伺服电机 servo motor	50W								
	100W	●							
	200W	●	●						
	400W		●						
	750W			●	●				
	1.0KW			●	●	●			
	1.3KW					●			
	1.5KW					●			
	2.0KW					●	●		
	2.2KW						●		
	3.0KW						●	●	
	5.0KW						●	●	●
	7.5KW							●	●
	11.0KW								●
步进电机 stepper motor	42	●							
	57		●						
	60		●						
	85			●	●				
	86			●	●				
	110					●			
	130					●			

