科 技 创 新

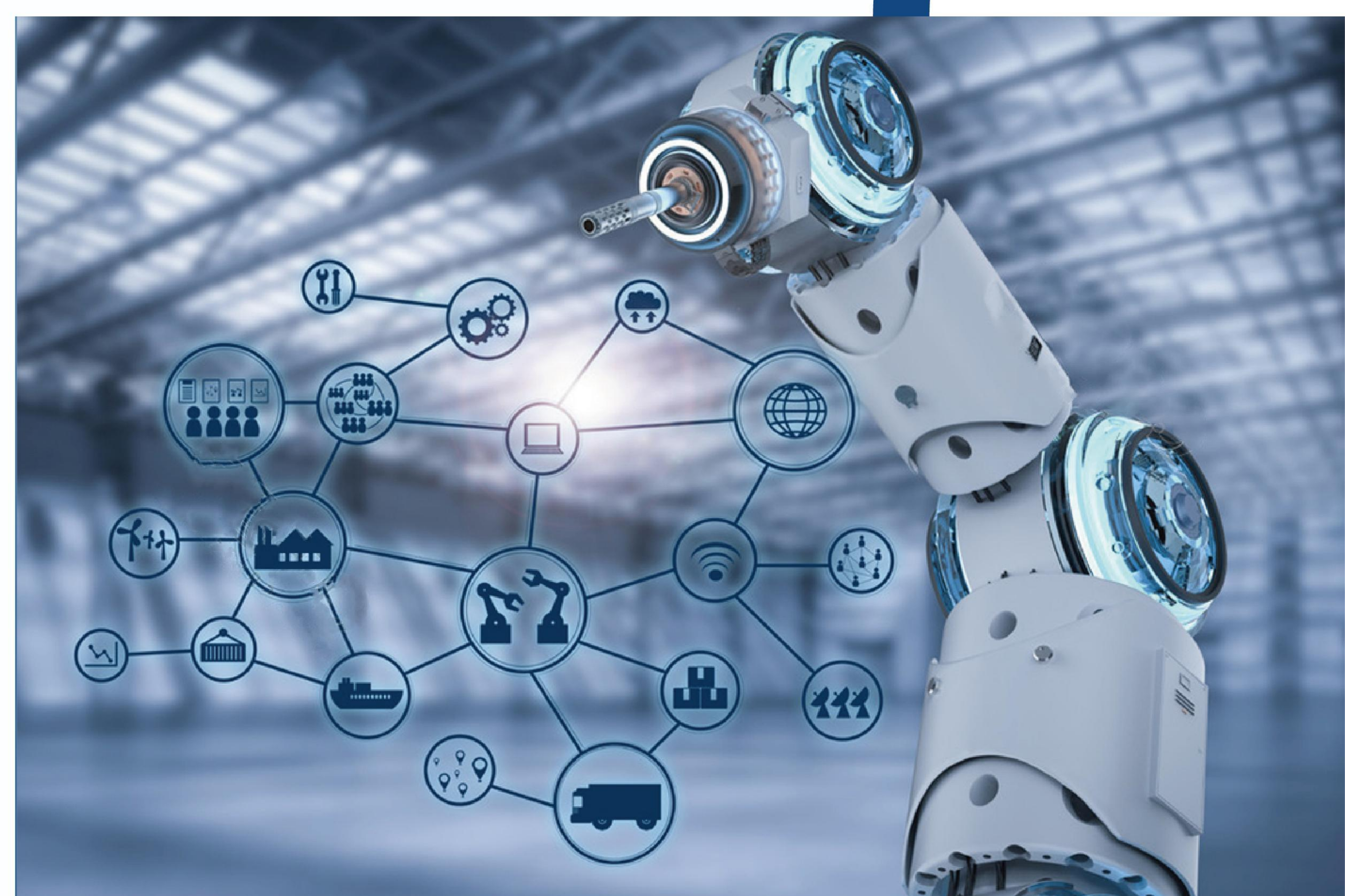
研 发 制 造

品 质 至 上

服 务 社 会

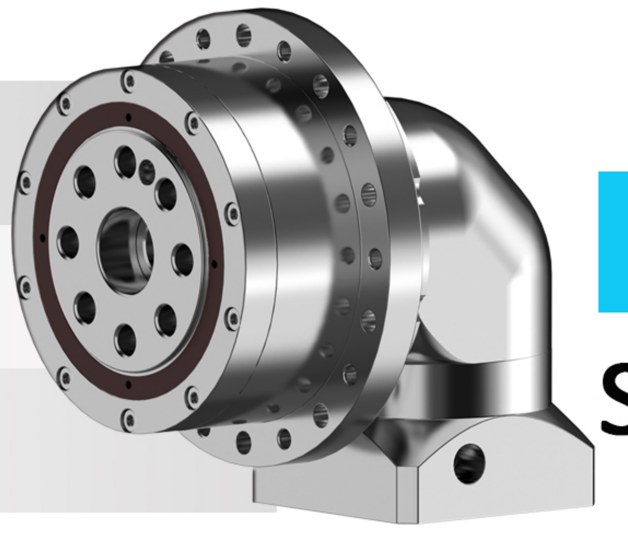
精密微型摆线减速机

PRECISION MICRO CYCLOID REDUCER



WF
Series

WFH
Series



WFR
Series

品牌合作

我们服务的客户

下一个就是你！

我们的使命

致力于世界工业自动化的发展，提供领先的传动技术和服务，
为客户创造最大价值，为人类创造舒适、高效、节能的工作环境。

Our Mission

Dedicated and commitment to the development of the industrial automation world,
aiming to provide leading drive technology and services to create the maximum value for our customers,
and the creation of a comfortable,and efficient working environment for our people.

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企业简介
Company profile

HDB MOTOR

is a high-tech enterprise focusing on research and development and production of miniature precision cycloidal and circular gear reducers.

After years of research and development, HDB with Technicians from Germany and Taiwan have developed a new miniature precision cycloid and circular gear reducer (the smallest external diameter is 30mm. Now it should be the smallest precision cycloid reducer in the world). With professional technology and innovation awareness, through analysis - optimization - implementation, it can be customized for customers. The micro cycloid reducer has the characteristics of small size, ultra-thin, lightweight, high rigidity and overload resistance. It has good deceleration performance, can realize smooth operation and precise positioning, and realize the advantages of high precision, high steel and high durability of mechatronics.

Products are widely used in collaborative robots, semiconductors, liquid crystal manufacturing equipment, exoskeleton rehabilitation medical robots, food and packaging machinery, machine tools, aerospace industry and other precision transmission fields.

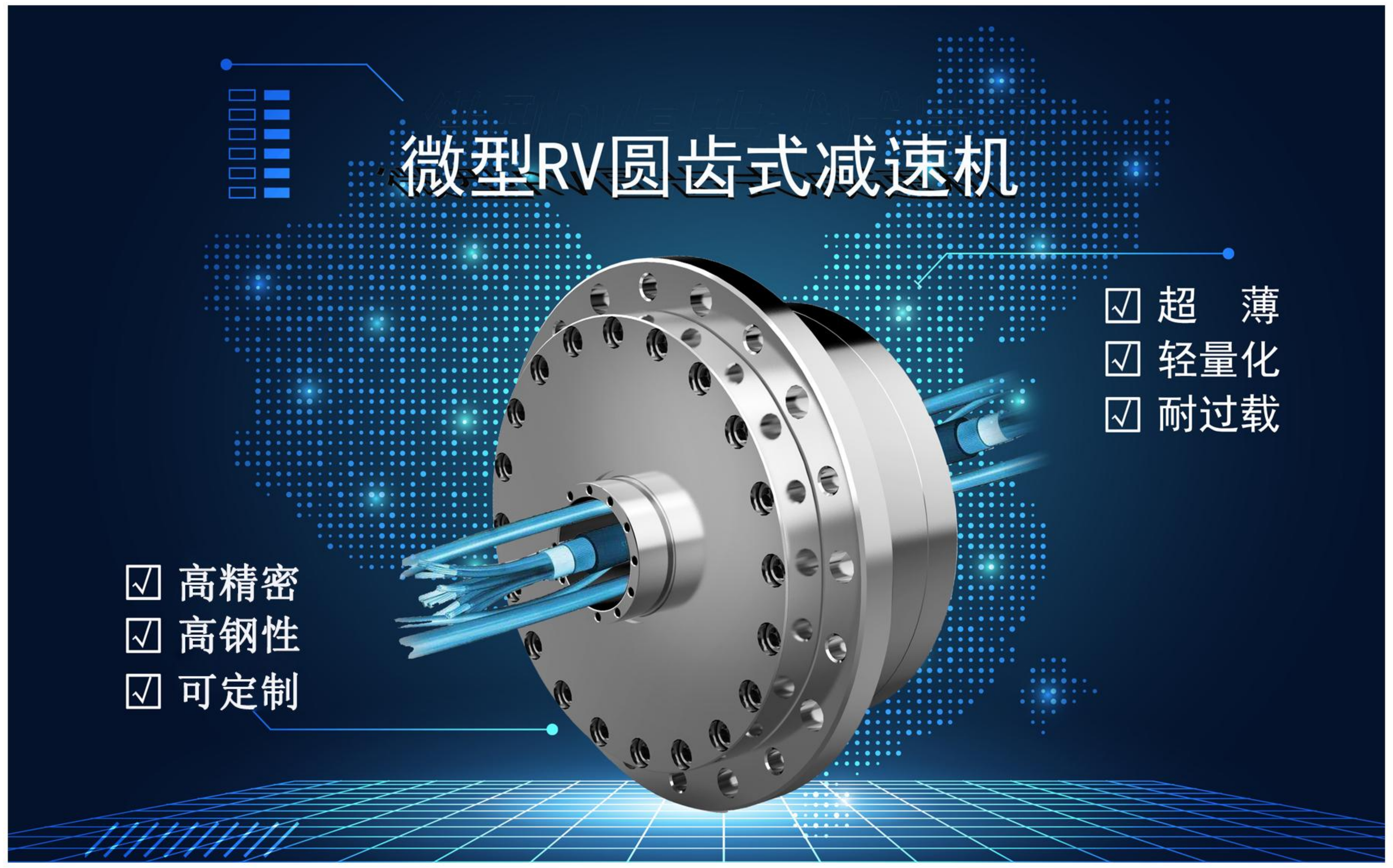
HDB injects new impetus into the world's intelligent manufacturing.

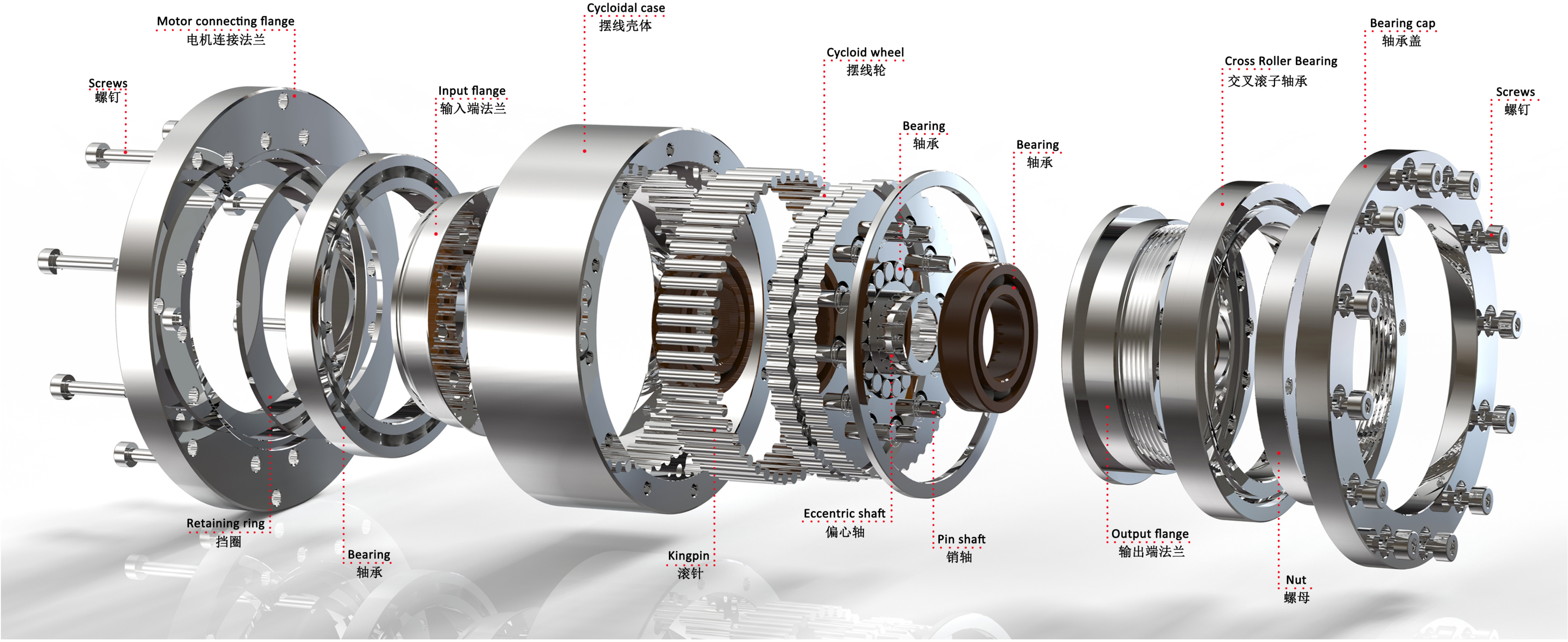
公司专注于研发、生产微小型精密摆线和圆齿式减速机的高科技企业。

微摆线与德国、台湾技术人员经过多年研发出新微型精密摆线和圆齿式减速机（最小的外径是40mm，现在应该是世界最小的精密摆线减速机）。凭着专业的技术和创新意识，通过分析-优化-实施，可为客户量身定制。微型摆线减速机具有小型、超薄、轻量化、高刚性、耐过载等特点。具有良好的减速性能，可实现平稳运转和精密定位，实现了机电一体化的高精度、高钢性、高耐用性等优点。

产品广泛应用于协作机器人、半导体、液晶制造设备、外骨骼康复医疗机器人、食品和包装机械、机床、航空航天工业等精密传动领域。

微摆线为世界智能制造注入新动力！





Components of WF reduction gears | WF减速机的部件

Genera information / 一般信息

Case
At the same time incorporates the high capacity, precision radial, axial output bearing integrated in the reduction gear.

Flanges
Input and out put flanges are fixed together by pin shafts, and rotate at reduced speed in the radial-axial output bearing relative to the case.

Input shaft
High-speed member of the reduction mechanism carried by bearing in the flanges. The shaft ecce-ntrics rotationally support the trochoidal gears via bearings.

Trochoidal gears
Their almost 50% simultaneously meshing trochoidal teeth transmits a very high torque which ensures powerful and ensure the performance and accuracy of the reduction gear.

壳体
同时结合了内置于减速机的高性能，精密的径向、轴向输出轴承。

法兰
输入和输出法兰通过销轴固定在一起，以减速后的速度运转。

输入轴
减速机构的高速原件为法兰的轴承，轴的偏心旋转由轴承来支撑摆线齿轮。

摆线齿轮
将近50%的同步啮合摆线齿轮可以传递非常大的扭矩，并且确保减速机的性能和精度。

Advantages

Micro-structure
By adopting differential deceleration mechanism and thin cross roller bearing, Achieving ultra-flat shape and contributing to compact size of equip-ment. Small size and unparalleled excellent parameters are combined to achieve the best ratio of performance, price and size.

Exceptional precision
Complex meshing through precision hypocycloid gears and high precision hobbing, achieving higher transmission accuracy. At the same time, small size and large speed ratio are maintained.

High rigidity
Increase meshing rate and disperse load, so rigidity is very high.

High overload capacity
Excellent parameters of tilting and torsional stiffness at the same time with keeping of trouble-free operation under exceptionally low noise and low vibrations.Rely on high resistance and overload capacity of reduction gear with integrated radial-axial bearings that is guaranteed to you by us at various temperature ranges of application environment.

Easy installation of motor
It can be installed directly for any brand of motor without adding any device.

Maintenance free
Seal in grease to achieve maintenance-free. No neet to add lubricating grease later, no installation direction restriction.

Technical support
Our professional team of experts is ready to solve any problems for you. The manufacturing process of high wear resistant materials and high precision parts is certified by ISO9000 quality system, which is also the basic premise for reliable operation of products.

优势

微小型精密摆线结构
通过采用差动式减速机构和超薄型交叉滚子轴承，实现超扁平形状，为设备的尺寸紧凑作出贡献。小尺寸和无与伦比的优异参数组合在一起，完成了性能、价格和尺寸的最佳比例。

优异的精度
通过精密摆线齿轮和高精度滚销的复数啮合，实现更高传动精度，同时保持了小尺寸和大速比。

高刚性
提高啮合率分散负载，故刚性极高。

高过载能力
在保证倾覆刚度和扭转刚度的优良参数的同时，在低噪音和低振动的情况下保持无故障运行。集成轴向径向交叉滚子轴承减速机的高承载力和过载能力保证为您提供各种温度范围的应用。

电机安装简单
对任何品牌的电机可以直接安装，无需添加任何装置。

免维护
封入油脂，实现免维护。后期无需再添加润滑油脂加油，没有安装方向限制。

技术支持
我们专业的专家团队随时为您解决任何问题。高耐磨材料和高精度零件的制造过程由ISO9000质量体系认证，也是产品可靠运行的基本前提。

WF SERIES

WF系列

WF series represents a wide range precision reductiongears with flange shaped case. WF series high precision reduction gears consist of an accurate reduction mechanism and high-capacity radial and axial cylindrical bearings. This design of gears allows the mounting of the load directly to the output flange or case without requigears are characterized by a modular design, It can be directly connected to any servo brand motor.

WF系列是带法兰的高精度减速机，范围广泛的形式。WF系列高精度减速机包括精确的减速机构和径向-轴向滚柱轴承。减速机的独特设计可以允许负载直接作用在输出法兰或壳体上，无需额外的轴承。WF系列高精度减速机的特点是模块化设计，可以直连任何伺服品牌电机。

Advantages

- High rigidity
- High precision
- High torque
- Small size
- Efficient
- Long lifetime
- Easy assembly

优点

- 高刚性
- 高精度
- 高扭矩
- 尺寸小
- 效率高
- 寿命长
- 易安装

WF series features / WF系列特点

case 壳体	a)threaded holes in case b)threaded and through holes in case	a)输出面带螺纹孔 b)输出面带螺纹孔和通孔
Input shaft design 输入轴设计	Input shaft offers following versions: a)shaft with key-way b)according to special request	输入轴有以下形式： a)带键轴 b)根据特殊要求
Installation and operation characteristics 安装和运行特点	A wider range of modular configurations	模块化结构

WF series ordering specifications / WF系列订购规格

WF	17	51	A	B
Name 名称	Size 规格	Ratio 速比	Input 输入端	Output 输出端
WF	05 07 12 17 25 32 40	Reference rating table 参考参数表	a)键输入 b)抱紧输入 a)Key input b)Hold on to input	a)轴输出 b)法兰输出 a)Axis output b)Flange output

Rating table WF series/WF系列参数表

Size 型号	Reduction ratio 速比		Rated output torque 额定输出转矩	Max. acceleration / deceleration torque 加速和制动转矩	Permissible torque at emergency stop 容许紧急制动转矩	Rated input speed 额定输入转速	Max. input speed 最大输入转速	Tilting stiffness 倾覆刚度	Torsional stiffness 扭转刚度	Max. radial force 最大径向力	Max. axial force 最大轴向力	Max. no-load starting torque 最大无负载启动转矩	Average angular transmission error 平均角度传递误差	Backlash accuracy 回差精度	Moment of inertia 转动惯量	weight 重量
	轴旋转 Axis rotation	外壳旋转 Shell rotation	Nm	Nm	Nm	rpm	rpm	Nm/arcmin	Nm/arcmin	KN	KN	Nm	arcsec	arcmin	10^{-6} kgm^2	Kg
WF05	11	12	5	20	30	3000	6000	9	1.5	0.6	0.8	0.12	±30	p0≤1 p1≤3 p2≤5	0.3	0.05
	21	22	8									0.11				
	51	52	10									0.1				
WF07	11	12	10	30	45	3000	6000	13	2.1	0.8	1.0	0.1	±30	p0≤1 p1≤3 p2≤5	1	0.08
	21	22	15									0.12				
	51	52	30									0.12				
WF12	11	12	15	160	240	3000	6000	60	8	2.5	3.3	0.2	±20	p0≤1 p1≤3 p2≤5	3.5	0.8
	21	22	20									0.2				
	31	32	30									0.19				
	51	52	50									0.18				
	81	82	60									0.17				
WF17	21	22	30	160	250	3000	6000	65	10	2.5	3.3	0.3	±20	p0≤1 p1≤3 p2≤5	5.2	0.98
	31	32	40									0.29				
	51	52	50									0.28				
	81	82	60									0.27				
	101	102	80									0.27				
WF25	21	22	50	250	380	3000	5500	130	18	5.5	7.1	0.4	±20	p0≤1 p1≤3 p2≤5	6.2	2.18
	31	32	60									0.37				
	51	52	80									0.35				
	81	82	110									0.34				
	101	102	130									0.33				
WF32	25	26	120	500	800	3000	4500	300	50	8.5	11	0.65	±20	p0≤1 p1≤3 p2≤5	16	4.66
	31	32	150									0.63				
	51	52	180									0.6				
	81	82	220									0.6				
	101	102	260									0.6				
	121	122	300									0.6				
WF40	31	32	250	700	1050	3000	4000	450	75	10.9	14.3	0.7	±15	p0≤1 p1≤3 p2≤5	65	7.5
	51	52	300									0.7				
	81	82	450									0.65				
	121	122	600									0.65				

NOtes：Medium speed ratio "italics, thickening" is the commonly used speed ratio, other speed ratios can be booked.

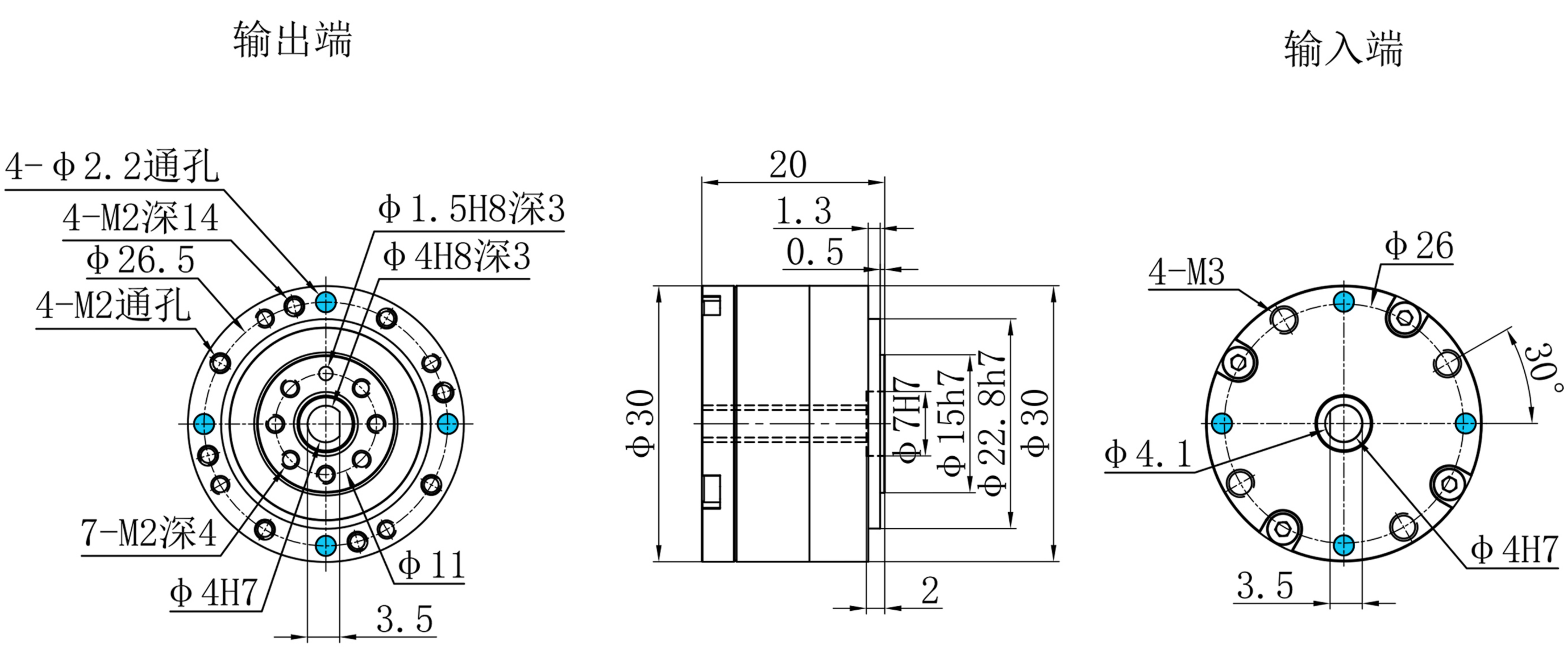
Rightto change without prior notice reserved !

注：表中速比值“斜体、加粗”为常用速比，其它速比值可以预订。

保留更改权 !

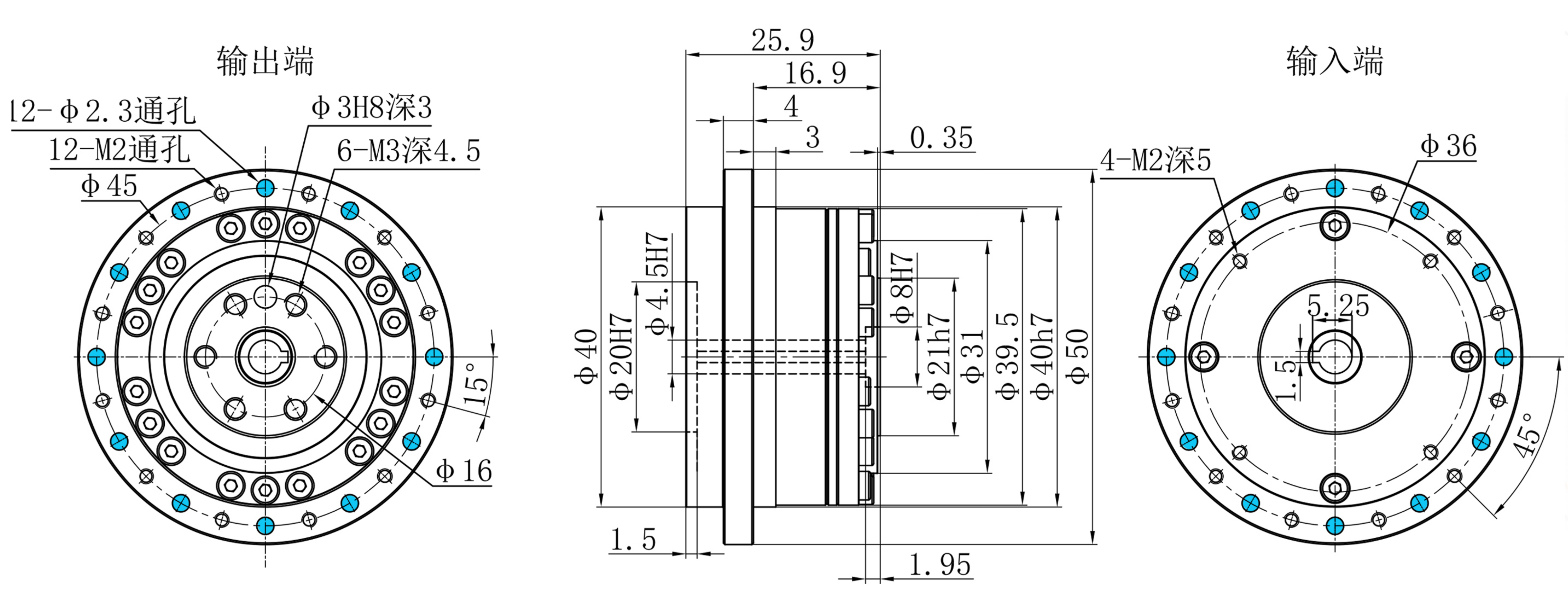
WF05法兰输出型圆齿式减速机

WF05 FLANGE OUTPUT CIRCULAR GEAR REDUCER



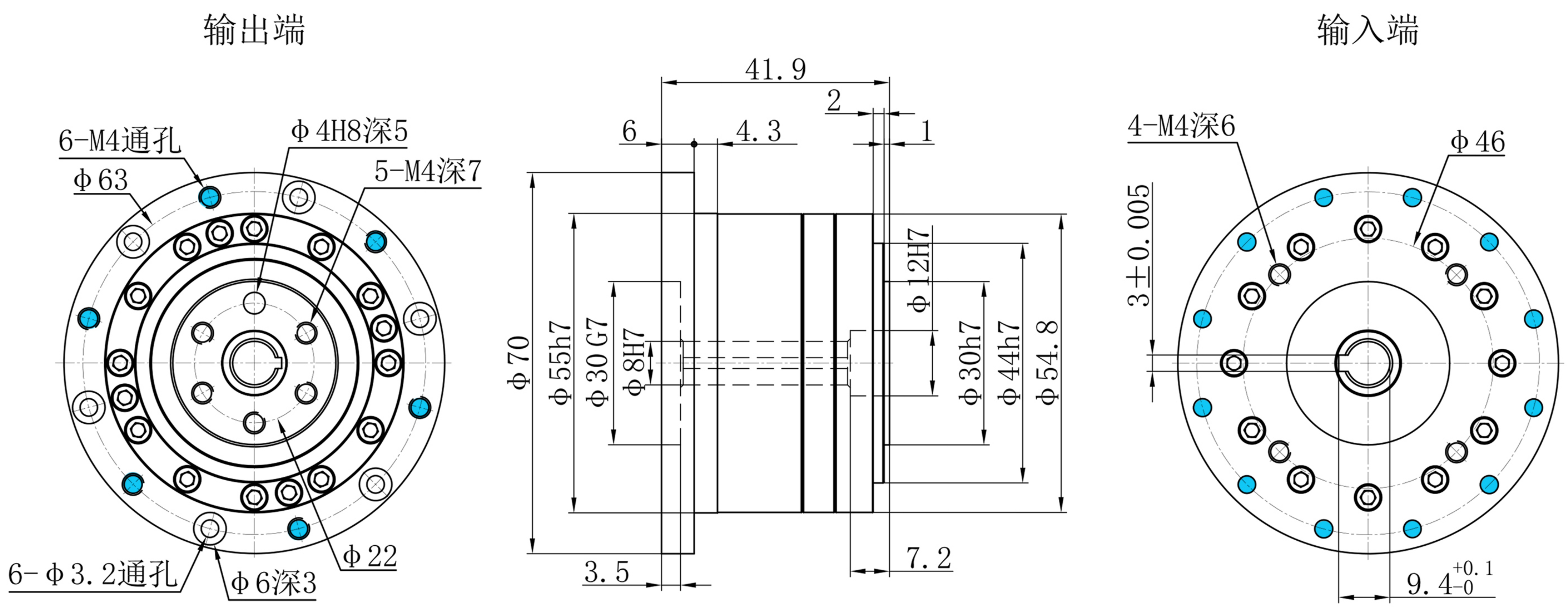
WF07法兰输出型圆齿式减速机

WF07FLANGE OUTPUT CIRCULAR GEAR REDUCER



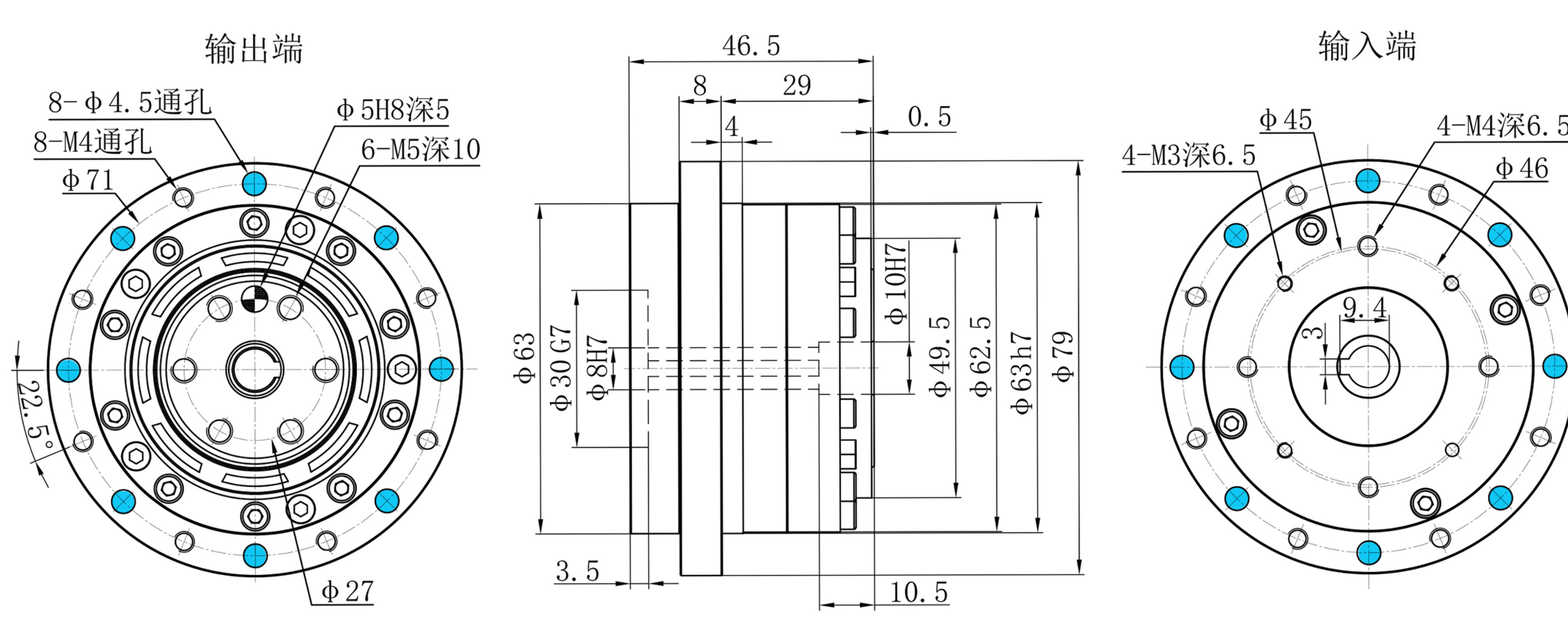
WF12法兰输出型圆齿式减速机

WF12 FLANGE OUTPUT CIRCULAR GEAR REDUCER



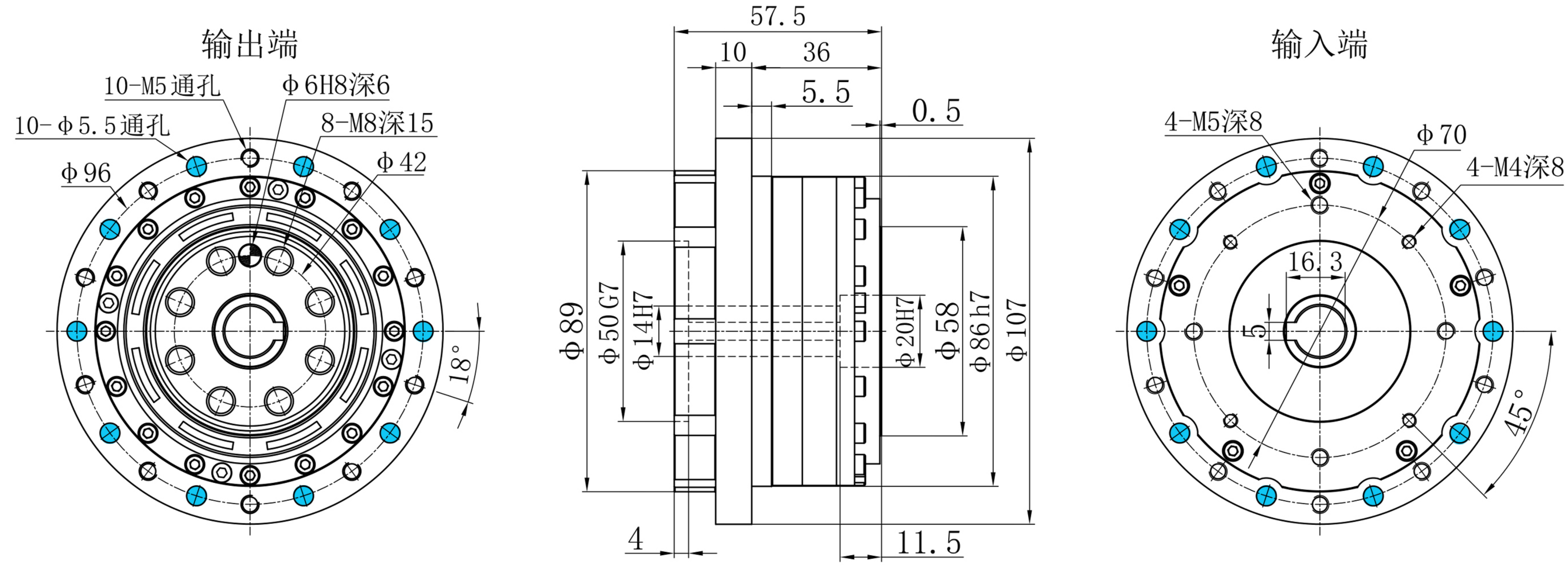
WF17法兰输出型圆齿式减速机

WF17 FLANGE OUTPUT CIRCULAR GEAR REDUCER

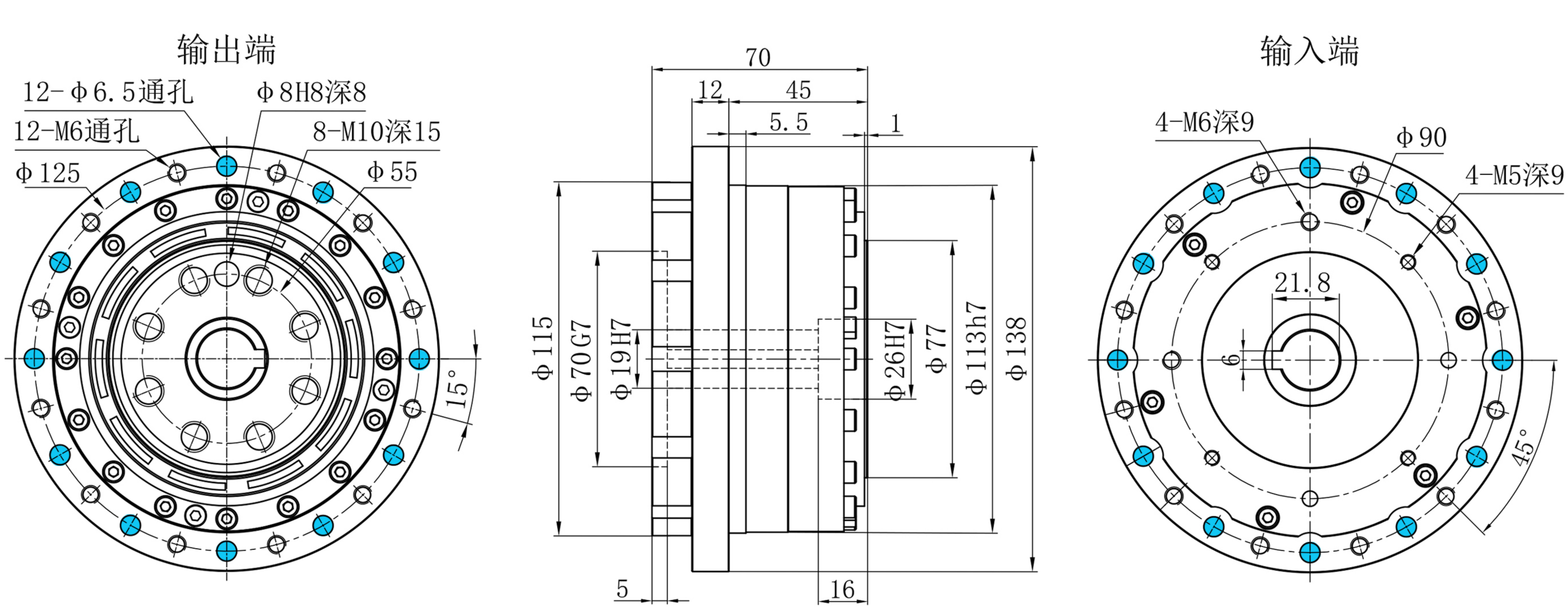


WF SERIES drawings / WF系列图纸

WF25法兰输出型圆齿式减速机
WF25 FLANGE OUTPUT CIRCULAR GEAR REDUCER



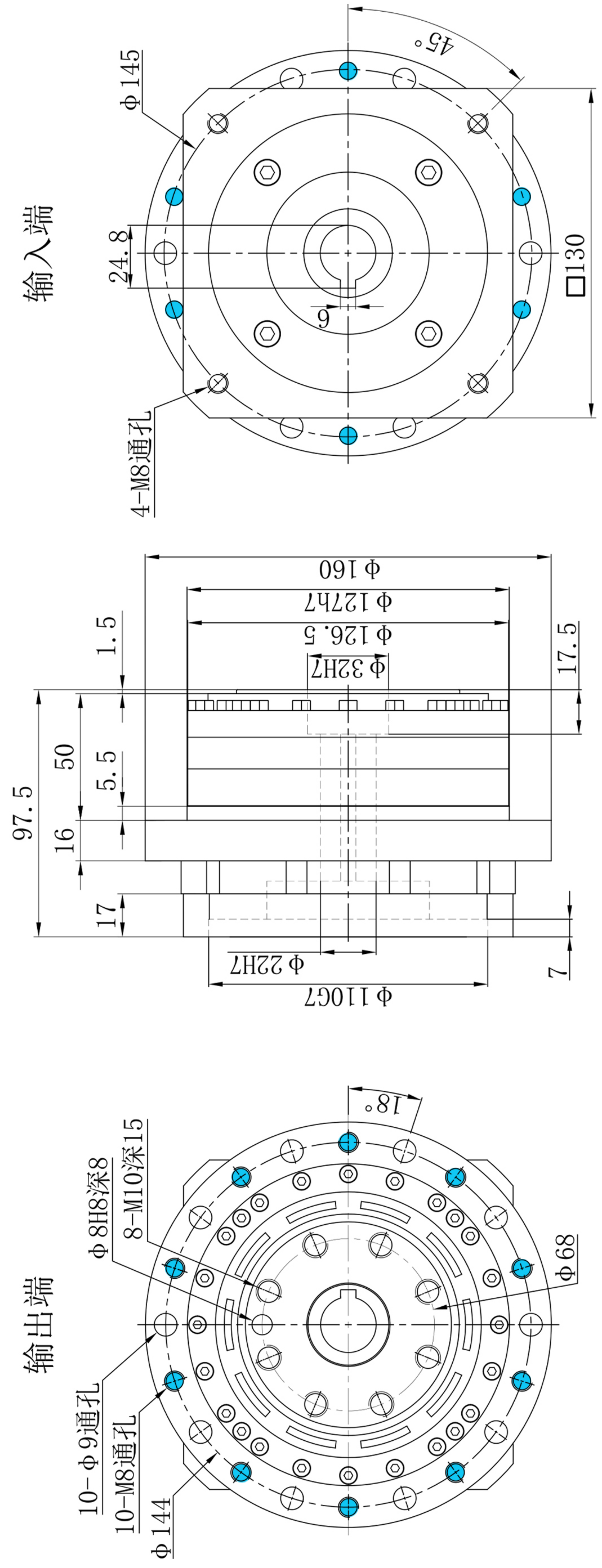
WF32法兰输出型圆齿式减速机
WF32 FLANGE OUTPUT CIRCULAR GEAR REDUCER



WF SERIES drawings / WF系列图纸

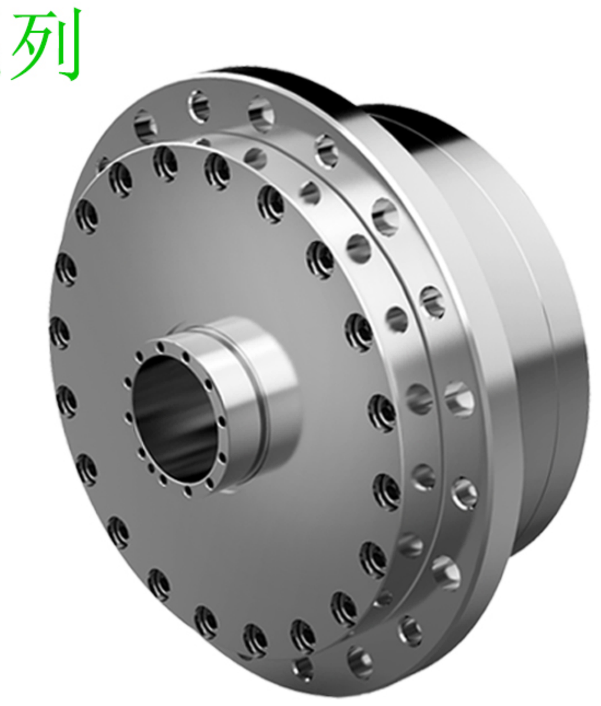
WF40法兰输出型圆齿式减速机

WF40 FLANGE OUTPUT CIRCULAR GEAR REDUCER



WFH SERIES

WFH系列



WFH series high precision reduction gears with through holes in the shafts, also known as hollow-shaft version. Cables, tubes with compressed air, drive shafts etc can be led via the through holes in the shaft of the gear. WFH series is completely sealed and are filled with grease for its lifetime. WFH series high precision reduction gears consist of an accurate reduction mechanism and high-capacity radial and axial cylindrical bearings. This design of reduction gears allows the mounting of the load directly to the output flange or case without requiring additional bearings.

WFH系列是中空轴形式的高精度减速机。电线、压缩空气管道、驱动轴等可通过中空轴。WFH系列全密封，充满润滑脂。WFH系列高精度减速机包括精确的减速机构和径向、轴向滚柱轴承。减速机的独特设计可以允许负载直接作用在输出法兰或壳体上，无需额外的轴承。

Advantages

- High torque
- High rigidity
- High-precision
- Small volume
- High speed ratio
- Big hollow

优点

- 高扭力
- 高刚性
- 高精度
- 体积小
- 大速比
- 大中空

WF series features / WF系列特点

case 壳体	a)threaded holes in case b)threaded and through holes in case	a)输出面带螺纹孔 b)输出面带螺纹孔和通孔
Input shaft design 输入轴设计	Input shaft offers following versions: a)shaft with key-way b)according to special request	输入轴有以下形式： a)带键轴 b)根据特殊要求
Installation and operation characteristics 安装和运行特点	A wider range of modular configurations	模块化结构

WFH series ordering specifications / WFH系列订购规格

WFH	17	51	A	B
Name 名称	Size 规格	Ratio 速比	Input 输入端	Output 输出端
WFH	17	Reference rating table 参考参数表	a)键输入 b)抱紧输入	a)轴输出 b)法兰输出
	25		a)Key input b)Hold on to input	a)Axis output b)Flange output

Rating table WFH series / WFH系列参数表

Size 型号	Reduction ratio 速比		Rated output torque 额定输出转矩	Max. acceleration / deceleration torque 加速和制动转矩	Permissible torque at emergency stop 容许紧急制动转矩	Rated input speed 额定输入转速	Max. input speed 最大输入转速	Tilting stiffness 倾覆刚度	Torsional stiffness 扭转刚度	Max. radial force 最大径向力	Max. axial force 最大轴向力	Max. no-load starting torque 最大无负载启动转矩	Average angular transmission error 平均角度传递误差	Backlash accuracy 回差精度	Moment of inertia 转动惯量	weight 重量
	轴旋转 Axis rotation	外壳旋转 Shell rotation	Nm	Nm	Nm	rpm	rpm	Nm/arcmin	Nm/arcmin	KN	KN	Nm	arcsec	arcmin	$10^{-6}kgm^2$	Kg
WFH17	21	22	30	220	330	3000	6000	110	16	2.8	4	0.5	±20	p0≤1 p1≤3 p2≤5	6.5	1.13
	31	32	40									0.5				
	51	52	50									0.6				
	81	82	60									0.6				
	121	122	80									0.6				
WFH25	25	26	50	220	330	3000	6000	110	16	6.5	8.5	0.6	±20	p0≤1 p1≤3 p2≤5	18	2.65
	31	32	60									0.62				
	51	52	80									0.68				
	81	82	110									0.7				
	101	102	130									0.7				

NOtes：Medium speed ratio "italics, thickening" is the standard value, other speed ratios can be booked.
Rightto change without prior notice reserved !

注：表中速比值“斜体、加粗”为常用速比，其它速比值可以预订。

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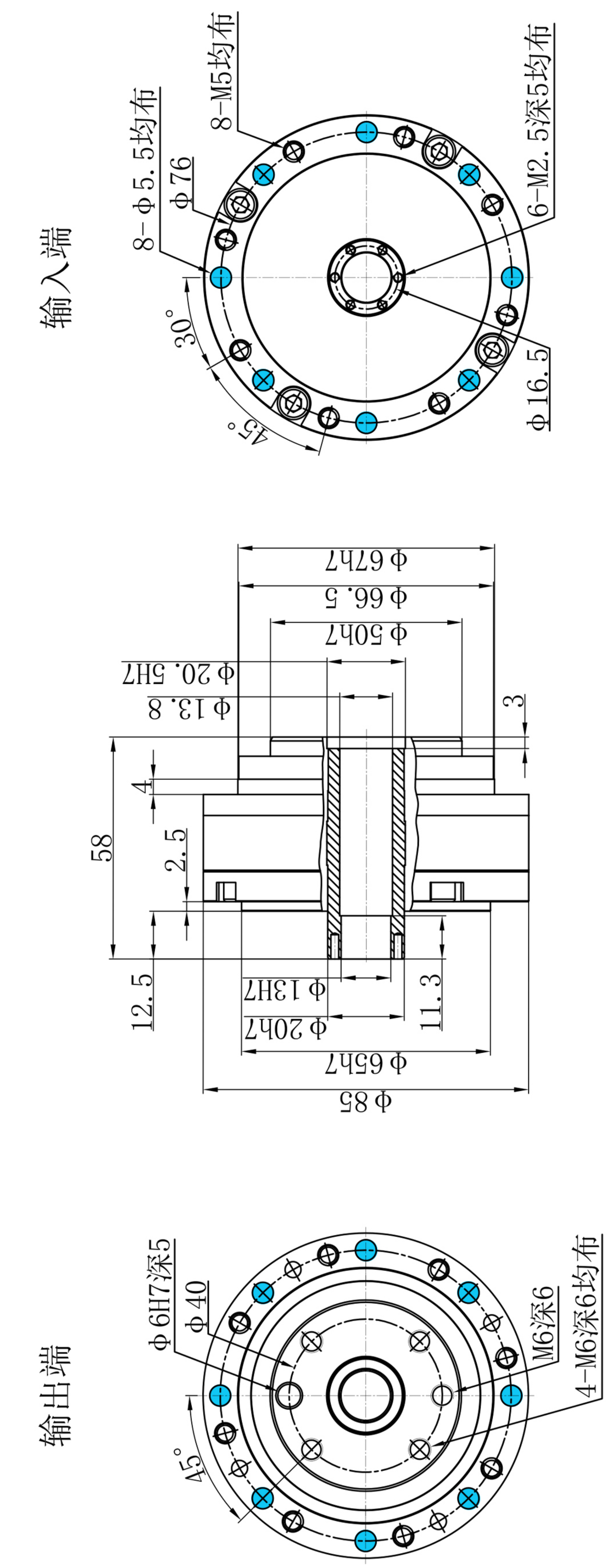
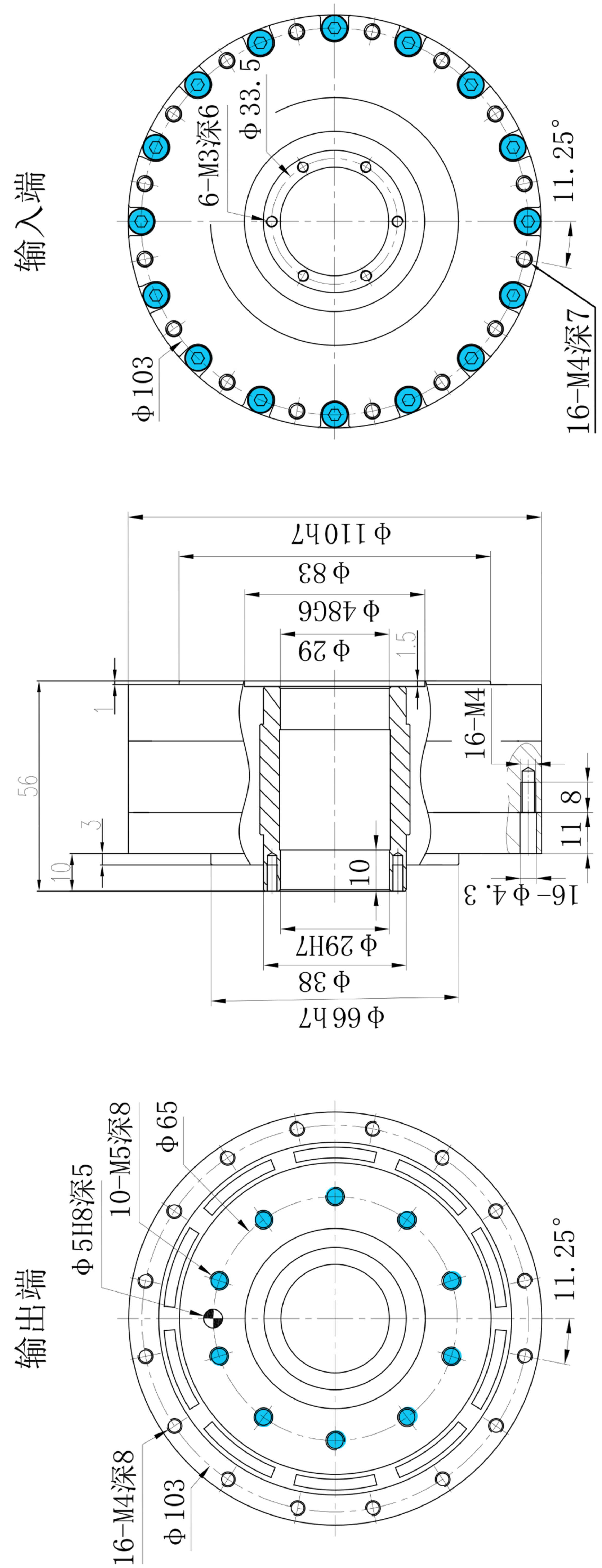
WFH17中空行星圆齿式减速机

WFH17 HOLLOW PLANETARY CIRCULAR GEAR REDUCER



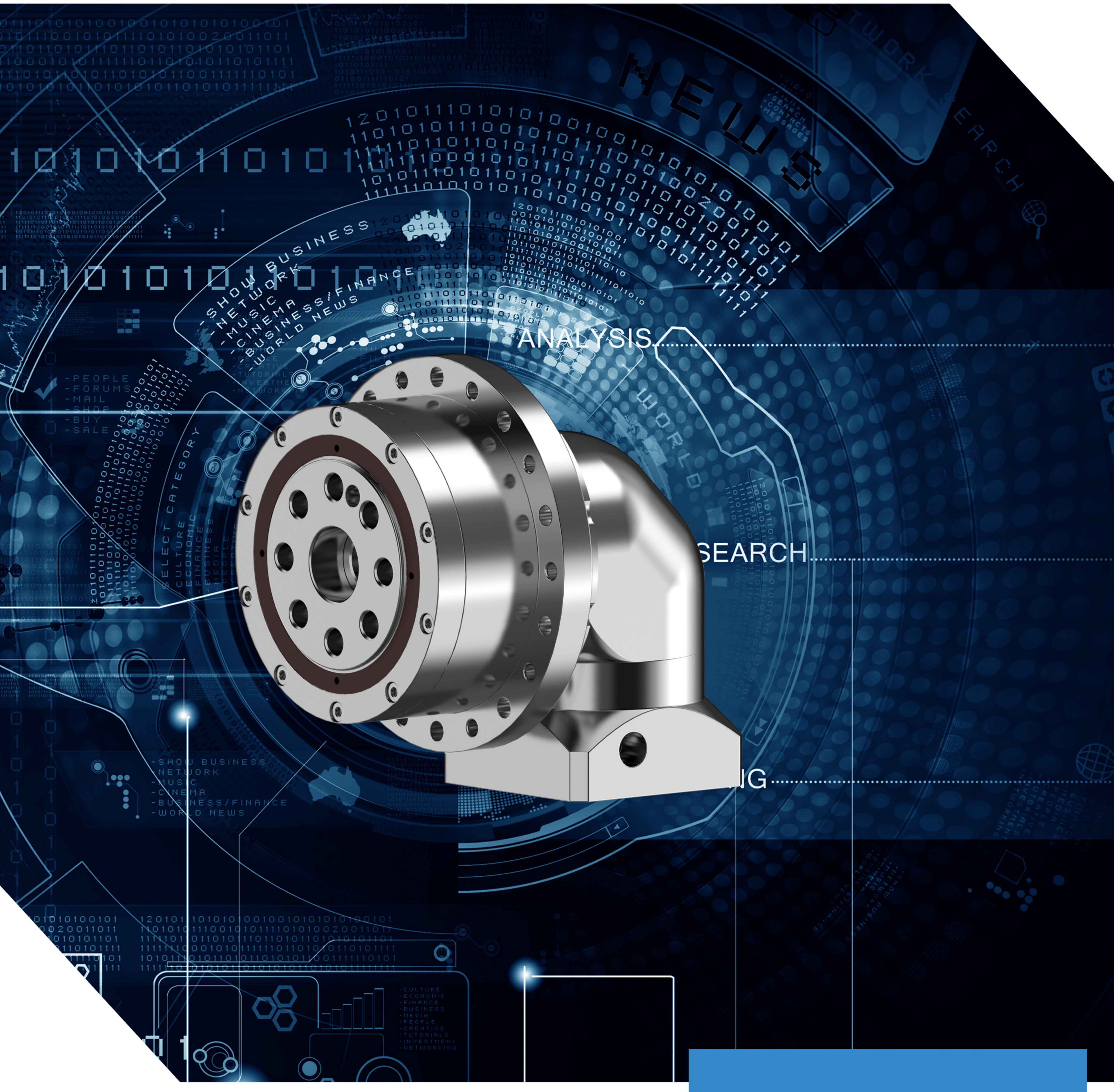
WFH25中空行星圆齿式减速机

WFH25 HOLLOW PLANETARY CIRCULAR GEAR REDUCER



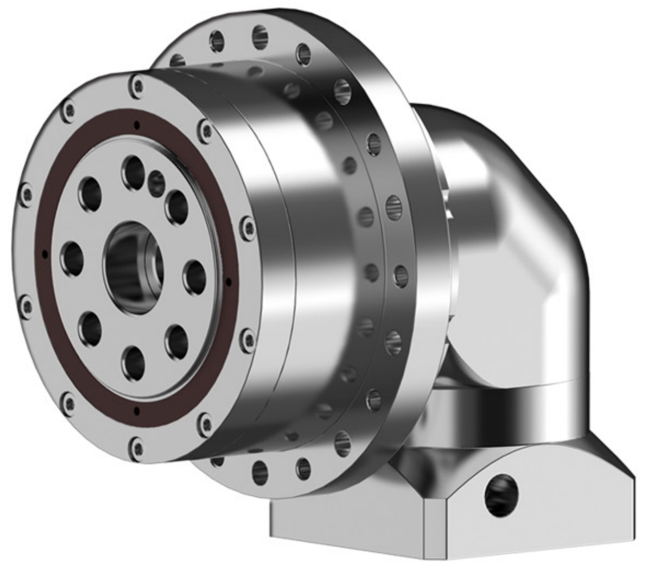
为世界智能制造注入新动力

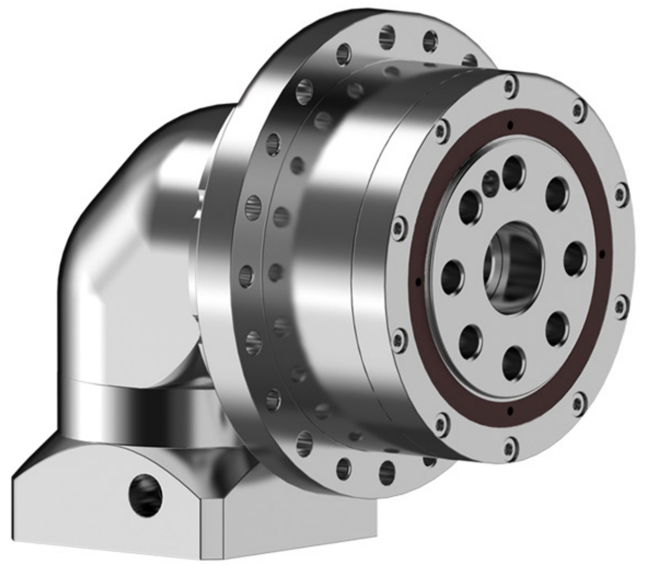
INJECTING NEW POWER INTO WORLD INTELLIGENT MANUFACTURING



WFR SERIES

WFR系列





WFR series is a high-precision reducer with flanges, with a wide range of applications. The WFR series high-precision reducer includes a precise reduction mechanism and radial axial roller bearings. The unique design of the gearbox allows the load to directly act on the output flange or housing without the need for additional bearings. The characteristic of the WFR series high-precision reducer is that the input and output angles are 90 degrees, which can greatly save installation space. The modular design allows for the installation of motors and reducers through flanges.

WFR系列是带法兰的高精度减速机，应用范围广泛的形式。WFR系列高精度减速机包括精确的减速机构和径向–轴向滚柱轴承。减速机的独特设计可以允许负载直接作用在输出法兰或壳体上，无需额外的轴承。WFR系列高精度减速机的特点是输入和输出的角度为90度，可大大节省安装空间、模块化设计可以通过法兰安装电机和减速机。

Advantages

- High rigidity
- High precision
- High torque
- Small size
- Efficient
- Long lifetime
- Easy assembly
- High stability
- Low noise
- Space saving

优点

- 高刚性
- 高精度
- 高扭矩
- 尺寸小
- 效率高
- 寿命长
- 易安装
- 高稳定
- 低噪音
- 节省空间

WFR SERIES

WFR series features / WFR系列特点

case 壳体	a)threaded holes in case b)threaded and through holes in case	a)输出面带螺纹孔 b)输出面带螺纹孔和通孔
Input shaft design 输入轴设计	Input shaft offers following versions: a)tight input	输入轴有以下形式： a)抱紧输入
Installation and operation characteristics 安装和运行特点	A wider range of modular configurations	模块化结构

WFR series ordering specifications / WFR系列订购规格

WFR	17	51	A	B
Name 名称	Size 规格	Ratio 速比	Input 输入端	Output 输出端
WFR	17 25 32 40	Reference rating table 参考参数表	a)抱紧输入 a)Hold on to input	a)轴输出 b)法兰输出 a)Axis output b)Flange output

Rating table WFR series/WFR系列参数表

Size 型号	Reduction ratio 速比		Rated output torque 额定输出转矩	Max. acceleration / deceleration torque 加速和制动转矩	Permissible torque at emergency stop 容许紧急制动转矩	Rated input speed 额定输入转速	Max. input speed 最大输入转速	Tilting stiffness 倾覆刚度	Torsional stiffness 扭转刚度	Max. radial force 最大径向力	Max. axial force 最大轴向力	Max. no-load starting torque 最大无负载启动转矩	Average angular transmission error 平均角度传递误差	Backlash accuracy 回差精度	Moment of inertia 转动惯量	weight 重量
	轴旋转 Axis rotation	外壳旋转 Shell rotation	Nm	Nm	Nm	rpm	rpm	Nm/arcmin	Nm/arcmin	KN	KN	Nm	arcsec	arcmin	$10^{-6}kgm^2$	Kg
WFR17	21	22	30	160	240	3000	5000	65	10	2.5	3.3	0.3	±20	p0≤1.5 p1≤3 p2≤5	5.5	1.5
	31	32	40									0.29				
	41	42	50									0.28				
	51	52	60									0.28				
	81	82	80									0.27				
WFR25	21	22	50	220	330	3000	4000	131	24	4.5	5.8	0.4	±20	p0≤1.5 p1≤3 p2≤5	6.5	3.2
	31	32	60									0.37				
	51	52	80									0.35				
	81	82	110									0.34				
	101	102	130									0.33				
WFR32	25	26	120	500	800	3000	4000	240	35	6.5	8.2	0.65	±20	p0≤1.5 p1≤3 p2≤5	18	6.8
	31	32	150									0.63				
	51	52	180									0.6				
	81	82	220									0.6				
	101	102	260									0.6				
	121	122	300									0.6				
WFR40	31	32	250	700	1050	3000	4000	450	75	8.3	10.7	0.7	±15	p0≤1.5 p1≤3 p2≤5	68	9.3
	51	52	300									0.7				
	81	82	450									0.65				
	121	122	600									0.65				

NOtes：Medium speed ratio "italics, thickening" is the commonly used speed ratio, other speed ratios can be booked.
Rightto change without prior notice reserved！

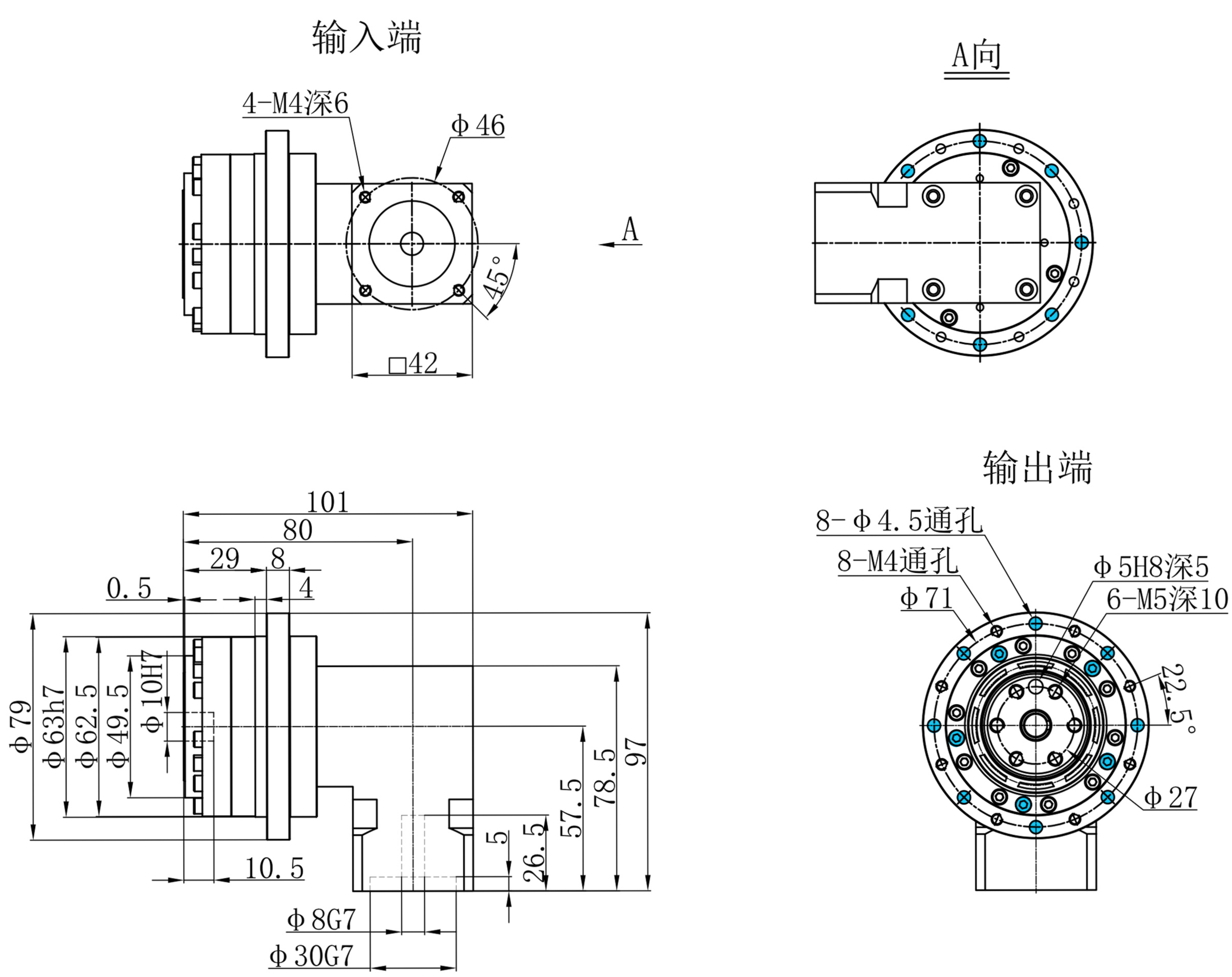
注：表中速比值“斜体、加粗”为常用速比，其它速比值可以预订。

保留更改权！

WFR SERIES

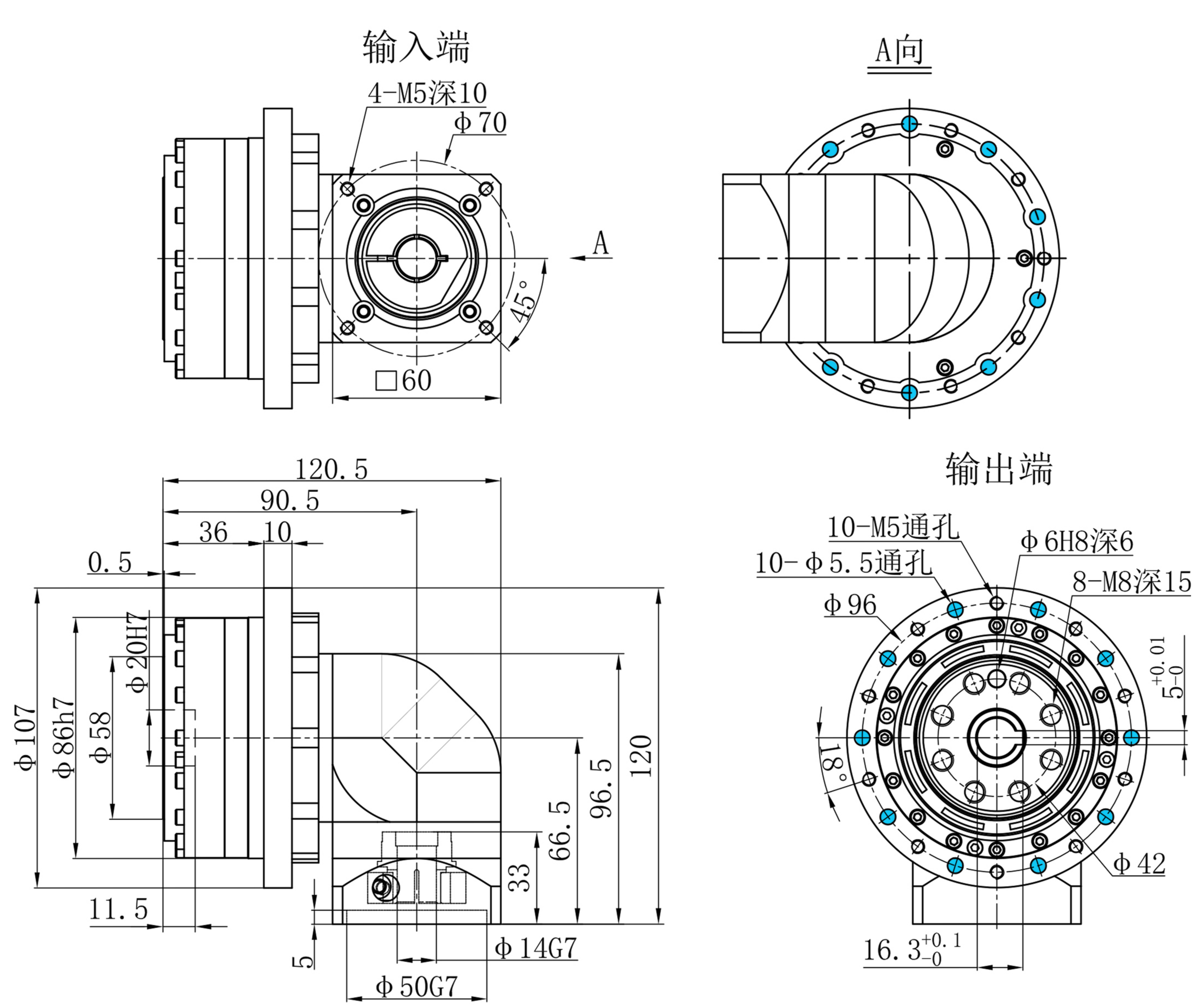
WFR17转角行星圆齿式减速机

WFR17 ANGLE PLANETARY CIRCULAR GEAR REDUCER

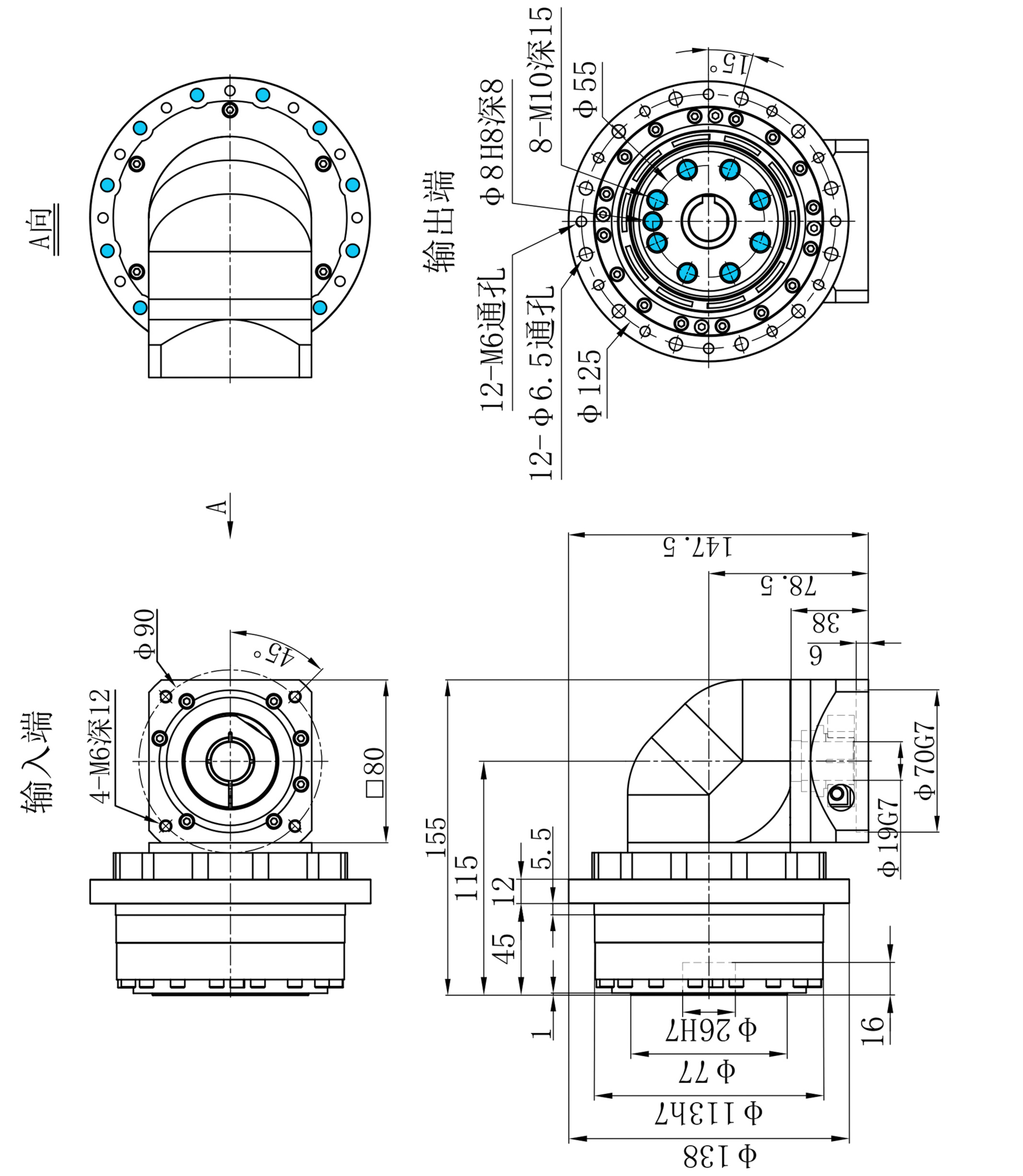


WFR25转角行星圆齿式减速机

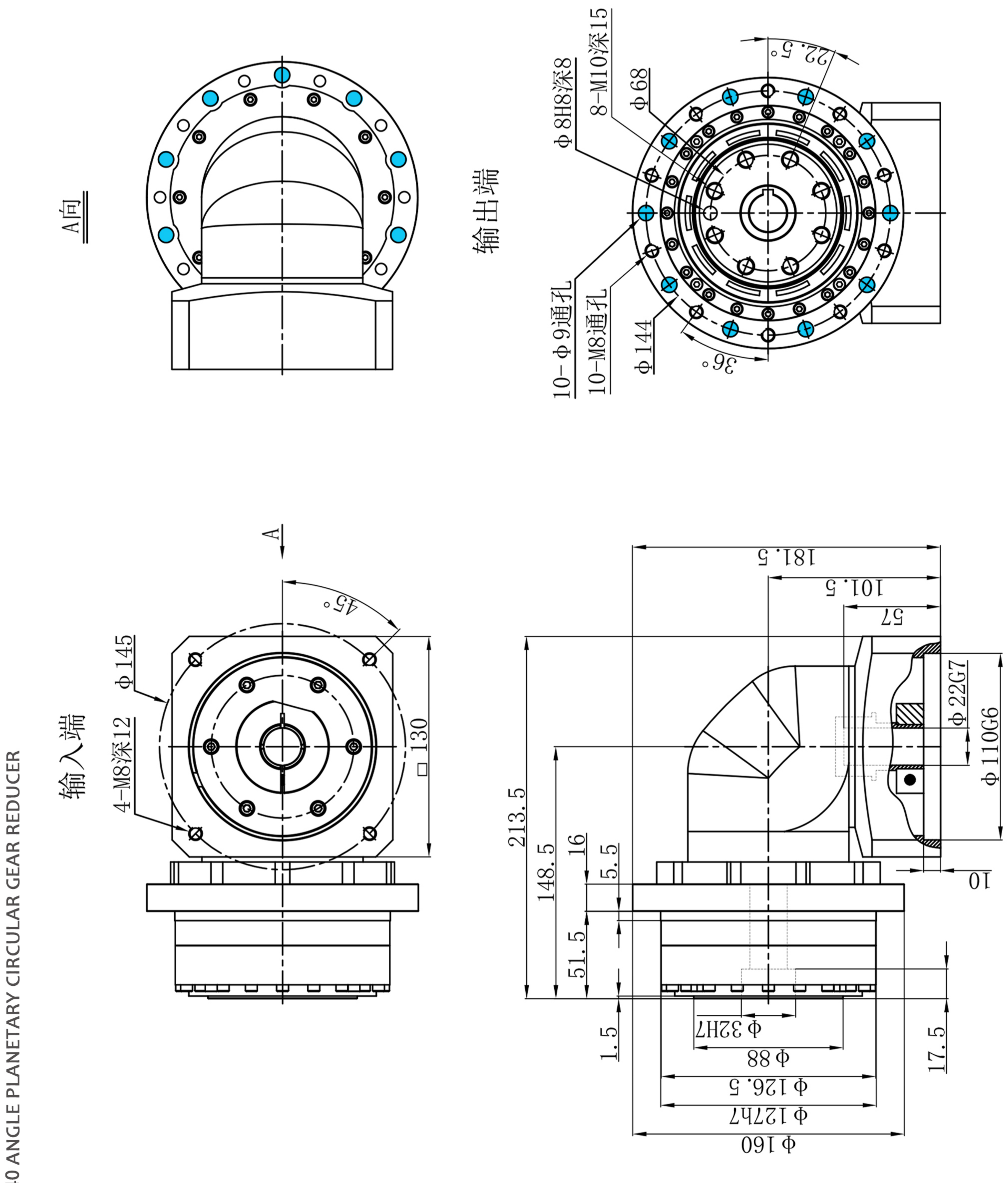
WFR25 ANGLE PLANETARY CIRCULAR GEAR REDUCER



WFR32转角行星圆齿式减速机
WFR32 ANGLE PLANETARY CIRCULAR GEAR REDUCER



WFR40转角行星圆齿式减速机
WFR40 ANGLE PLANETARY CIRCULAR GEAR REDUCER



WFR SERIES drawings / WR系列图纸

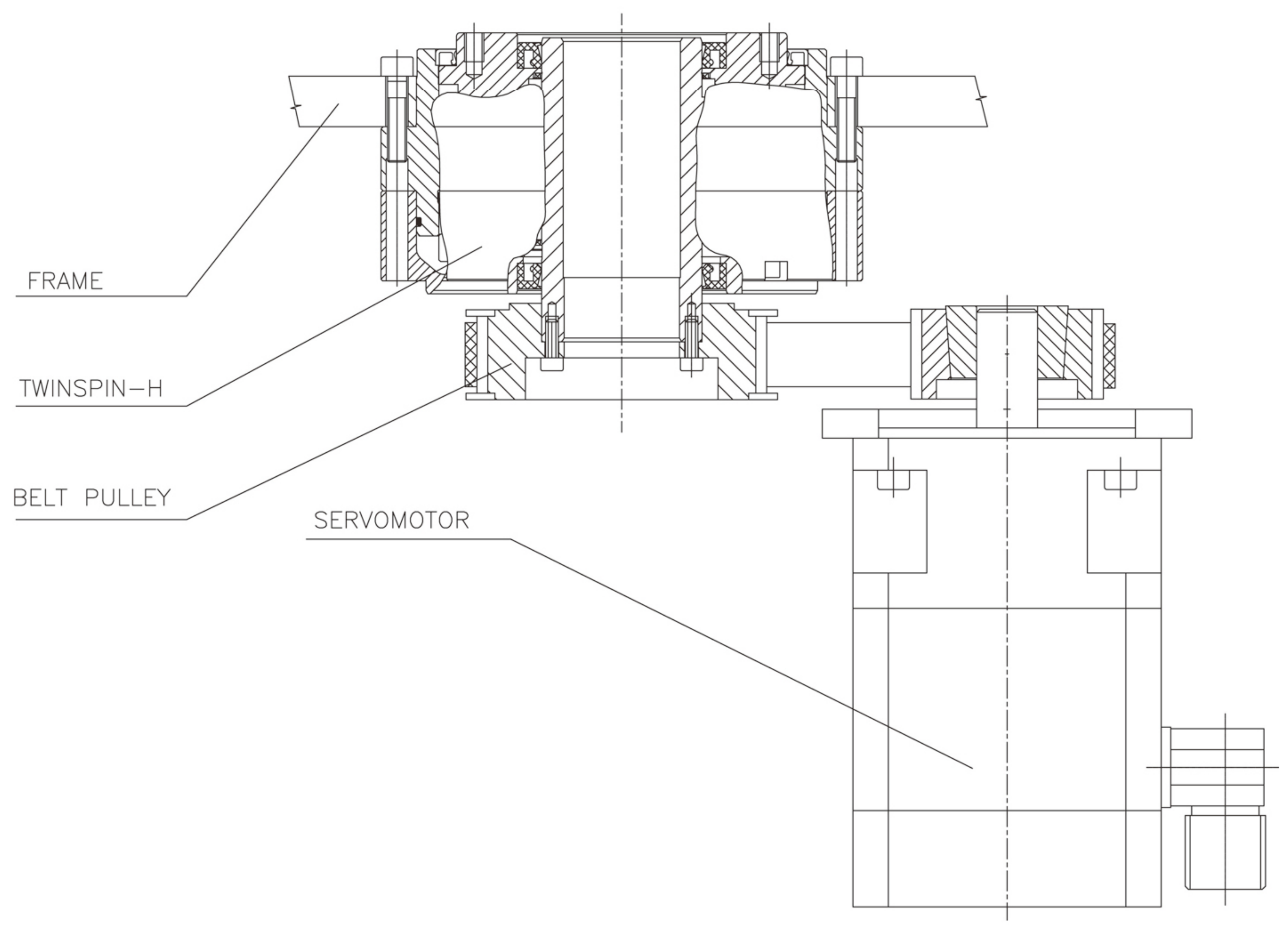
Installation examples

Before the installation, it is desirable to wipe off the protective oil film from the surface of the reduction gear by a clean and dry cloth. Contact surfaces of friction joints must be degreased prior to the installation. When cleaning, make sure that the degreaser does not get into the reduction gear. During the installation, proceed with following steps:first, fasten a coupling to the reduction gear, then the connecting flange, to which mount the motor and then bolt the whole assembly to the frame.
Reduction gear is most foten used in combination with a pre-stage,which may comprise gears or toothed belt drives. The driven pulley is attached to the shaft of the reduction gear with screws, which have to be tightened with a tightening torque according.

安装实例

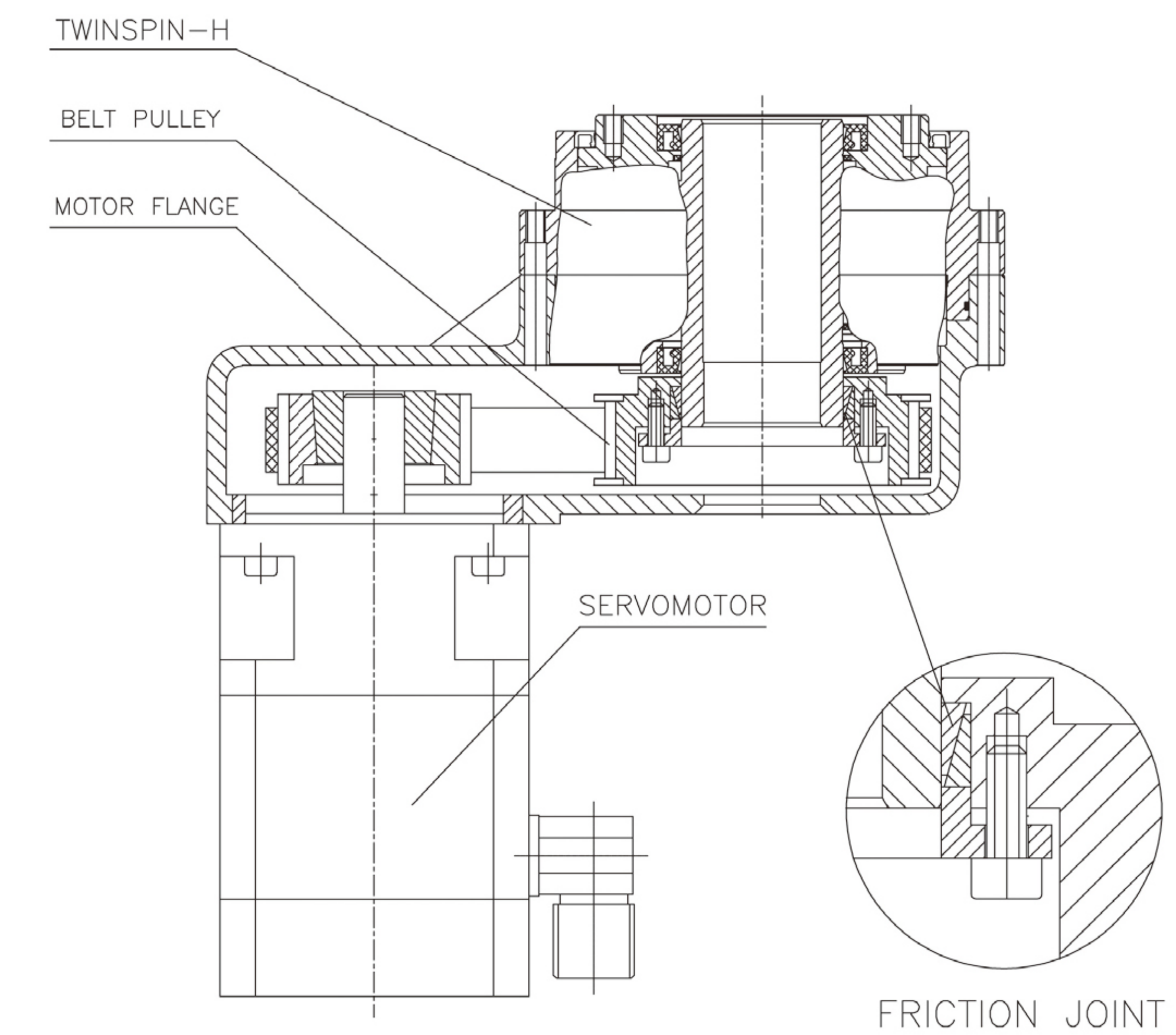
安装之前，用洁净干燥的抹布擦去减速机表面的保护油膜。摩擦型连接的接触表面要去除油污。清洁时请保证清洁剂不要进入减速机内。在安装过程中按如下步骤：首先，将联轴器和减速机锁紧，然后连接电机法兰，最后，将连接好的电机与减速机整体固定在板架上。

高精密减速机通常与预减速机构结构使用，配合齿轮或者同步带，从动轮通过螺栓连接在输入轴上，锁紧扭矩。



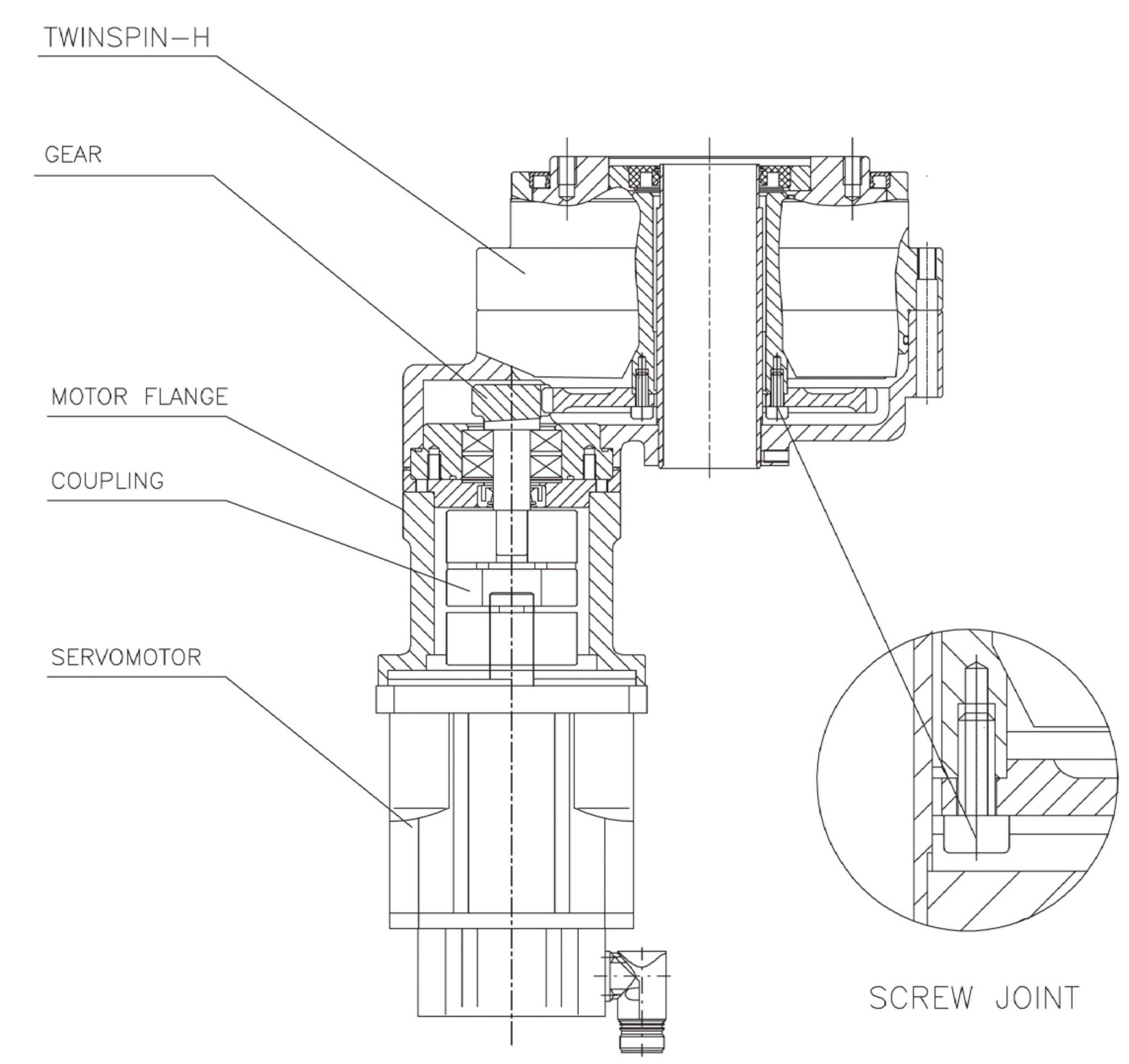
Connection of a toothed pulley with the reduction gear shaft by means of a scraw connection

减速机轴通过螺栓与皮带连接



Connection of a toothed pulley with the reduction gear shaft by means of a friction connection

减速机轴通过摩擦紧固件与皮带轮连接



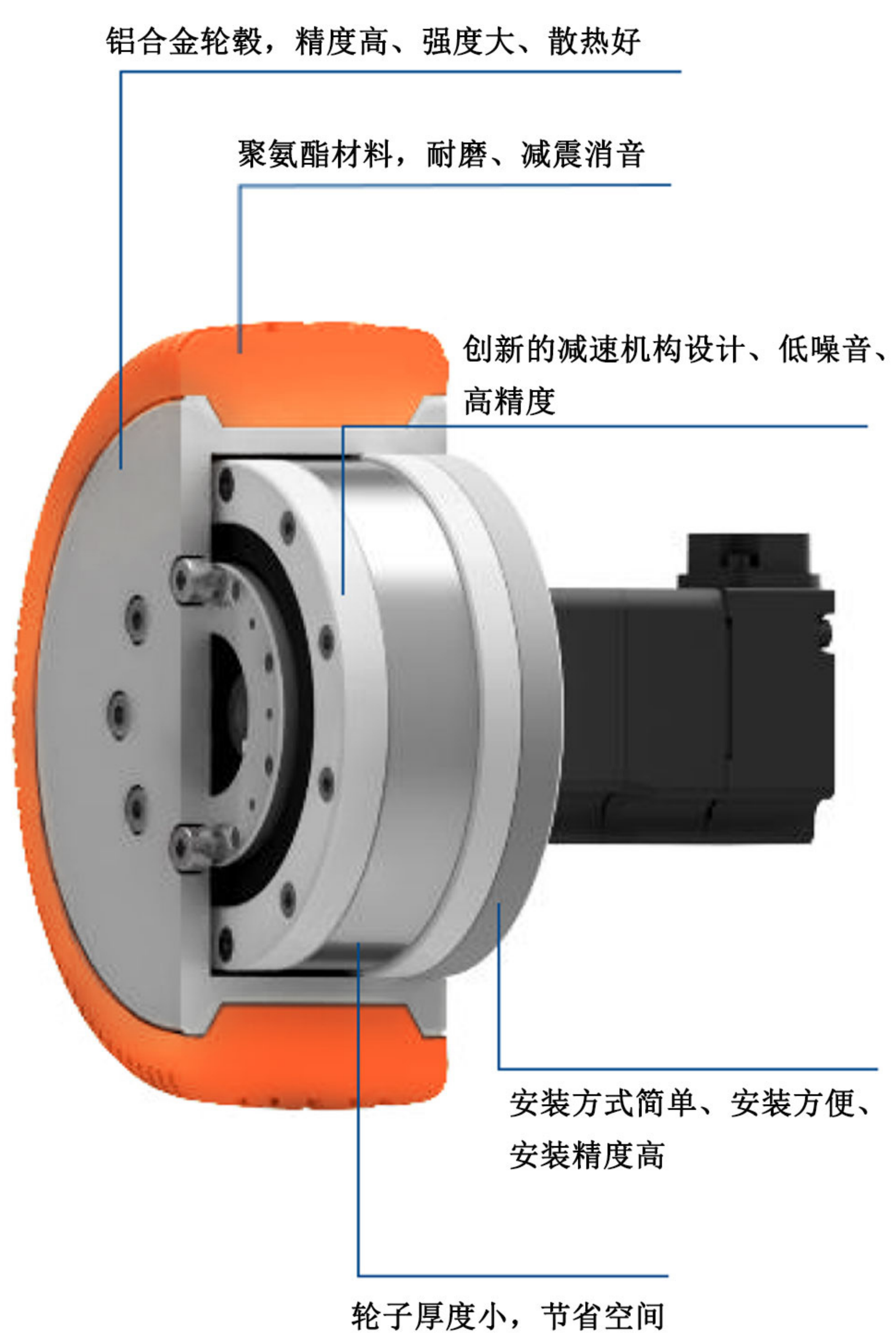
Connection of a gear wheel with the reduction gear shaft by means of a screw connection

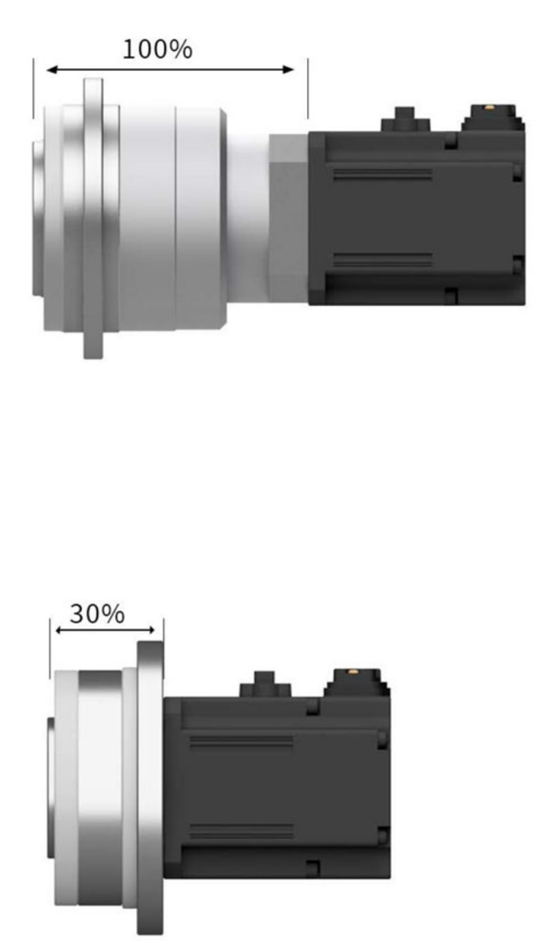
减速机轴通过螺栓与皮带轮连接

Applications / 应用

AGV CAE
Warehouse logistics AGV car,service robotics...

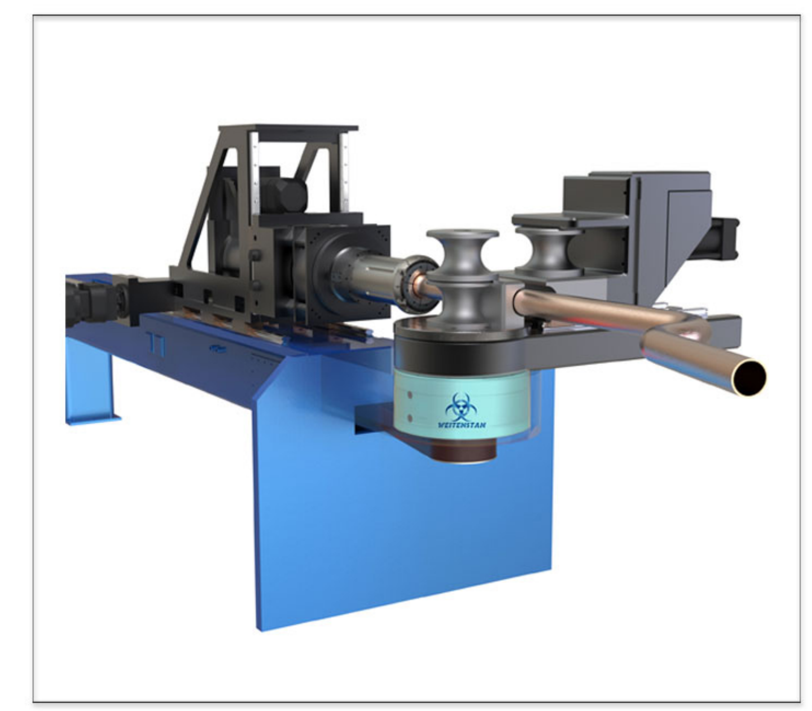
AGV小车
仓库物流AGV小车，服务机器人...





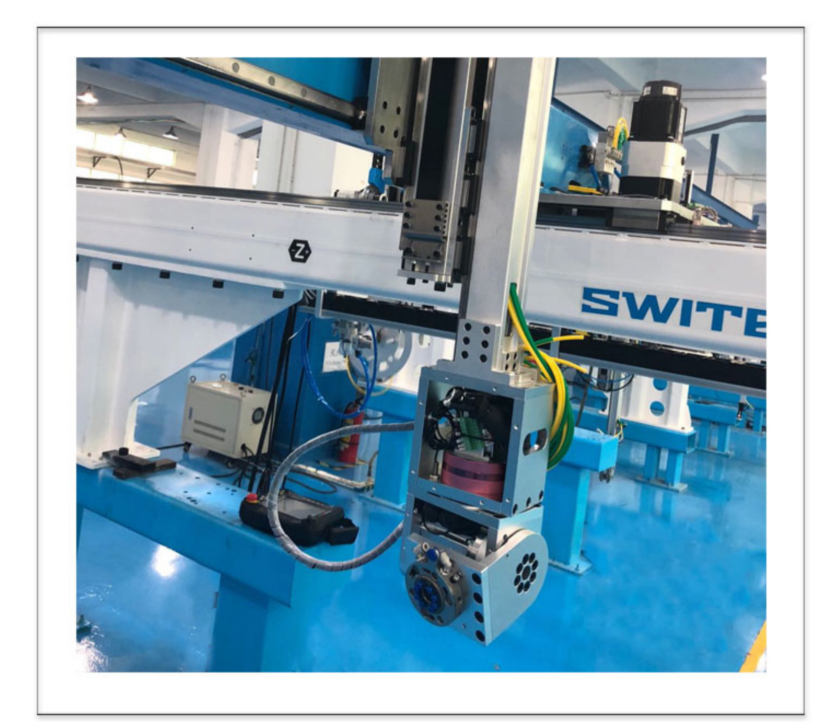
PARALLEL MANIPULATOR
Scara robots, spider hand...
并联机械手
抓取机器人，蜘蛛手...

COOPERATIVE ROBOTS
Multi joint robots, portal robots...
协作机器人
多关节机器人，门式机器人...



MACHINE TOOL
Grinding mach-ines, bending machines, tool changers ...
机床设备
磨床，折弯机，换刀装置...

NAVIGATION AND SECURITY
Radars, surveillance and camera systems, security and defense equipment...
导航和安保
雷达、监视和摄像系统，安全和防卫设备...



INJECTION MOLDING MANIPULATOR
Cartesian coordinate robot, Three-axis manipulator...
注塑机械手
直角坐标机器人，三轴机械手...

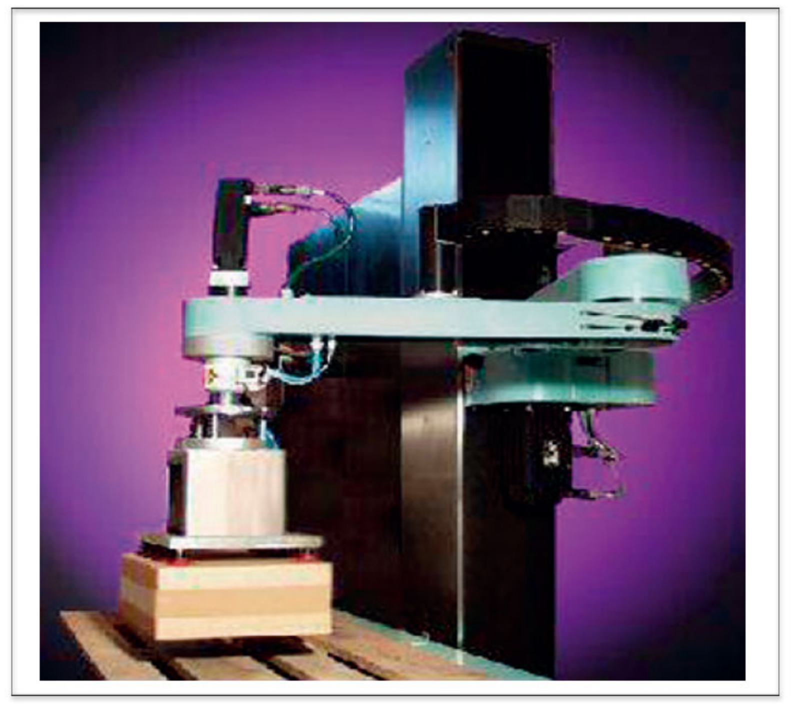
EXTERNAL COLLATERAL ROBOT
Booster suit, rehabilitation bobot，other medical equipment...
外骨络机器人
助力服，康复机器人，其他医疗设备...

Applications / 应用

Applications / 应用

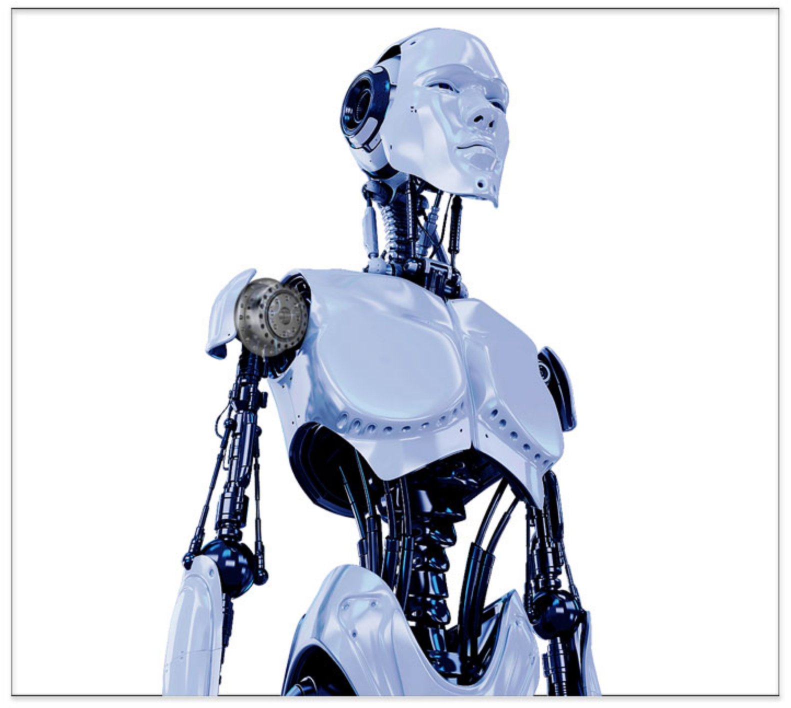
INDUSTRIAL ROBOT
Manipulator, axis robot...
工业机器人
机械手臂，轴机器人. . .

HORIZONTAL MULTI-JOINT ROBOT
General automation, assembly equipment...
水平多关节机器人
一般自动化，组装设备. . .

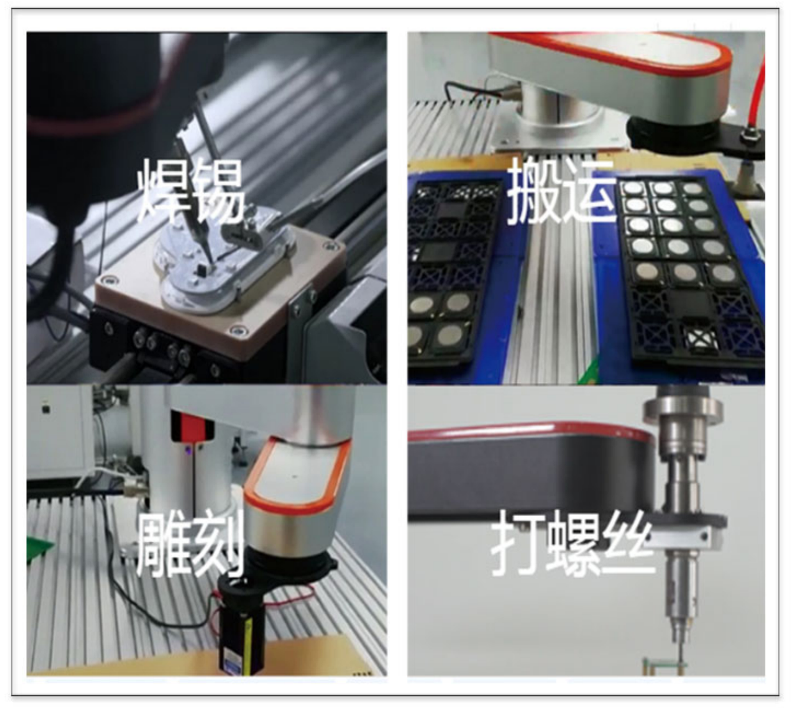


WOODWORKING MACHINES
Measuring equipment, textile machines, packaging machines, semiconductor manufacturing...
木工机械
测量设备，纺织机器，包装机器，半导体制造. . .

LASER CUTTING MACHINE
Machine tool, Grinding mach-ines, bending machines, tool changers ...
激光切割机
机床，磨床，折弯机，换刀装置. . .



HUMANOID ROBOT
Bionic robot,walking robot...
人形机器人
仿生机器人, 步行机器人. . .



OTHER INDUSTRIAL AUTOMATION EQUIPMENT
Soldering machine,handling robot,engraving machine screwing equipment...
其他工业自动化设备
焊锡机，搬运机器人，雕刻机，打螺丝设备. . .

Applications / 应用