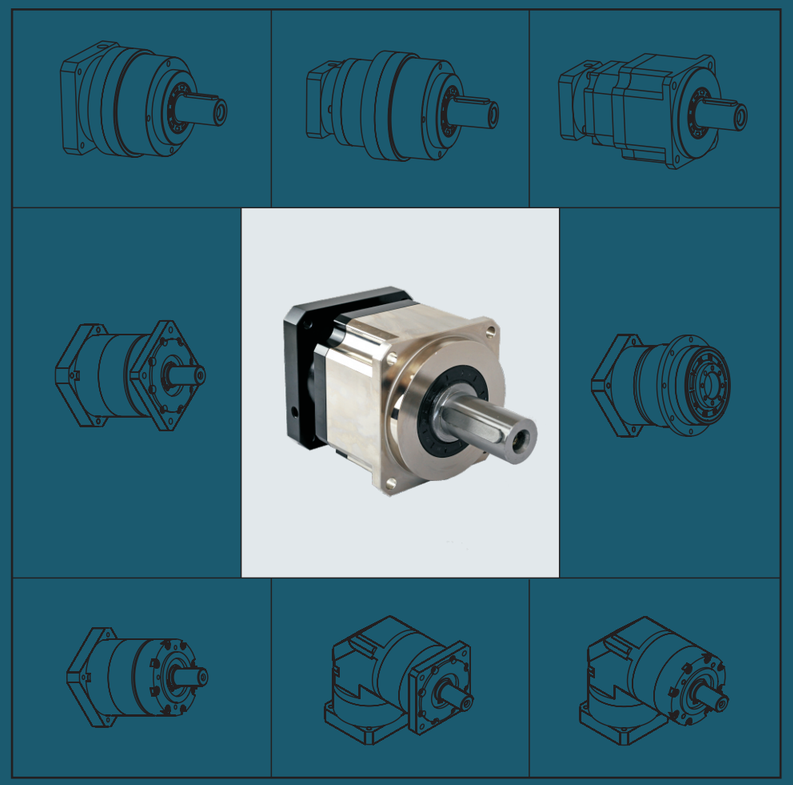
WUMA
午馬減速機REDUCER

國家級火炬計劃企業
National Torch Plan Enterprise
國家高新技術企業
National High-tech Enterprise

+++ 2019/D





浙江午馬減速機有限公司WUMA REDUCER

浙江午馬減速機有限公司
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董事長呂錦弟隨前國家主席胡錦濤赴加拿大/美國參加經濟貿易活動

Mr Lu Jin Di,director General of wuma,accompanying chairman Hu jin tao visiting in USA and Canada

Transmission Miracle Corporation Honour

傳動奇迹之企業榮譽

By looking for quality products, our inspection is appraised as HIGH STRICT, therefore, we received below honors and reputation from market, they are the driving force for us to keep work harder.

唯有對產品質量的不斷追求，我們的質量檢測在業內公認爲“苛刻”，唯其如此，我們才有了如此諸多的殊榮。當然，社會各界的認同不會成爲我們驕傲的原因，因爲他祇能作爲我們前進的動力。



















Transmission Foundation Facilities and Strengh

傳動基礎之企業實力

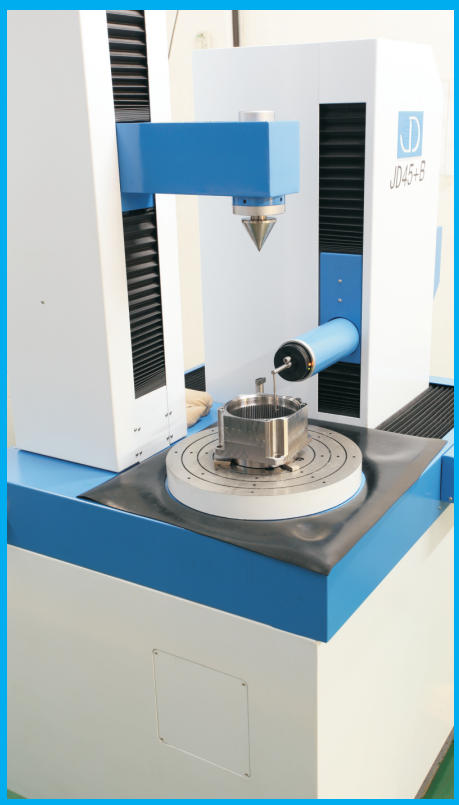
Our company have high precision computerized lathe and machining center, advanced equipment and inspection measurements, well–round and skillful technology as well as restrict quality control management. In gathering of high–educated and advanced technology team which could ensure stable quality products by new technique, new materials, and new machining methods. And at the same time, also they are the source for innovation.

擁有高精度的數控機床和加工中心，先進的設備及檢測儀器，精良的工藝以及嚴格完善的質量管理體系，并聚集具有專業技術精英和領先水平的科技隊伍，充分利用新技術、新工藝、新材料保證產品的穩定性和可靠性。產品質量取源于制造手段的先進、精品意識源于不斷的創新。











Transmission Foundation Research and Development

傳動基礎之企業研發

In the begining of our career,qaulity is our only objective,more investment has been injected with upgrade equipments,we do believe no well–round equipment,no well–round quality guarantee.

艱苦創業，祇能發揚其精神，我們從創業伊始便將產品質量作爲不懈追求的目標，所以我們在硬件配置方面不遺餘力，我們深信没有過硬的硬件配置就不會有過硬的產品質量。









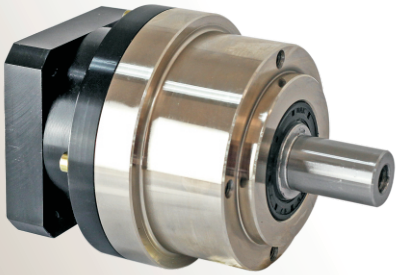




WEP

WEP SERIES PIANETARY GEARBOX

系列精密行星减速機

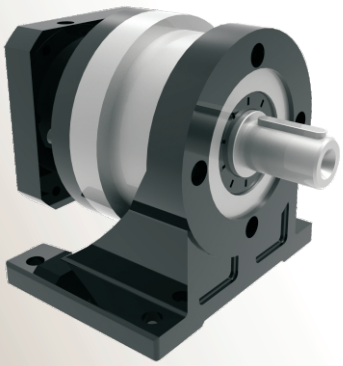


WEP-70～WEP-235

WEPD

WEPD SERIES PIANETARY GEARBOX

系列精密行星减速機

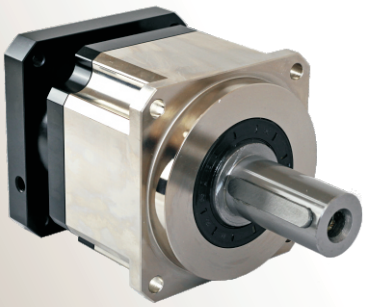


WEP□-70～WEP□-235

WFP

WFP SERIES PIANETARY GEARBOX

系列精密行星减速機

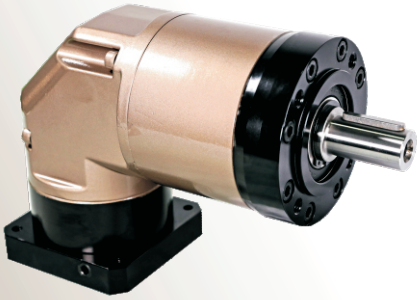


WFP-65～WFP-220

WPLR

WPLR SERIES PIANETARY GEARBOX

系列精密行星减速機

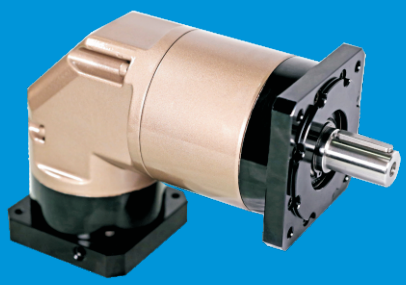


WPLR-60～WPLR-160

WPLFR

WPLFR SERIES PIANETARY GEARBOX

系列精密行星减速機



WPLFR-60～WPLFR-160

WPL

WPL SERIES PIANETARY GEARBOX

系列精密行星减速機



WPL-60～WPL-160

WPLH

WPLH SERIES PIANETARY GEARBOX

系列精密行星减速機



WPLH-70～WPLH-160

WPLF

WPLF SERIES PIANETARY GEARBOX

系列精密行星减速機



WPLF-60～WPLF-160

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午馬減速機

WUMA

REDUCER



Introduction

Zhejiang Wuma Reducer Co., LTD. is a transmission and driving machinery company who specializing in research, development and production of various speed reducers and variators etc. It is a member of China Speed Reducer and Variator Industrial Association.

Since our establishment, we have insisted on science and technology innovation, researching and importing advanced technology, as well as continuously developing new products to meet the market requirement. The main products are RV series worm gearbox, MB、 MBN series planetary cone-disk variator, WR ,WK ,WF series helical gear reducer, WS series helical-worm gear reducer, WH/WB series gear reducer and the multi-function polyhedron hard teethface combination reducer, WAH hypoid helical reducer, precision worm gearbox etc, more than ten series products with thousands of specifications universal products. We can also provide customized products. The products are featured with serialized and modularized advantages, and have been widely used in the transmission and driving fields for all types of industries. Such as food packing, bear, beverage, environmental protection, metallurgy, storage transportation, crane, conveyer, tobacco light industry, solid packing, rubber and plastic industry and so on.

Our company has advanced gear grinders, machining center and inspection center, as well as universal tool microscope etc. testing and machining equipment. We have an annual production capacity of 100,000 sets of reducers.

Aimed at "creative development, innovation, quality priority and creditability," our company always supplies reliable products to customers. We manufacture according to the ISO9001:2000 quality control system, we passed quality system certificate. GB/T28001-2001 occupational healthy and safety management system certificate, ISO14001:2004, GB/T 24001-2004 Environmental management system certificate, good standardizing practice certificate as well as certification for ability confirmation of inspection measurement and test. In 2012, we were honored by "National High-tech enterprise". In 2001, we obtained self-operating import and export qualification certificate. The products have been widely used all over China and exported to Europe, America, HongKong, Taiwan, South America and Southeast Asia etc.In 2007 we were received "Provincial High-tech Enterprise and technology researching and developing center, 2008 we became "National Torch Program Enterprise", and in the year of 2012, we were honored by "National High-Tech Enterprise"

Our company was located coastal economic area Wenzhou, Zhejiang province, we can provide on time delivery and great service to our customer with the support from our sale branch around China, such as Beijing, Tianjian, Shanghai, Foshan, Wuxi, Ningbo, Wuhan, Qingdao, Zibo, Chengdu, Changsha, Chongqin, Hefei, Guangzhou, Quanzhou and so on.



About Transmission

公司簡介

浙江午馬減速機有限公司是研制、生產各類減速機、無級變速機等傳動、驅動機械的專業化公司，是中國減、變速機行業協會會員。

公司自創立至今，堅持科技創新、研究和引進先進技術，不斷開發、研制市場需求的產品。現主要生產RV系列蝸輪蝸杆減速機，MB、MBN系列行星錐盤無級變速機，WS系列齒輪-蝸杆減速機,WR、WF、WK系列硬齒面圓柱齒輪減速機，X、B系列擺綫針輪減速機，WB微型擺綫減速機，WH/WB系列大功率齒輪減速機，多功能多面體硬齒面組合減速機,WAH系列準雙曲面齒輪減速機，精密行星齒輪減速機，精密蝸輪蝸杆減速機等十餘個系列、數千種規格的通用產品。并爲用户提供特殊、專用產品。產品具有系列化、模塊化優點，廣泛應用于印刷機械、機械手、工業機械人、食品包裝、啤酒飲品、環保工程、冶金礦山、倉儲物流、起重輸送、烟草輕工、立體停車、橡膠塑料等各行業的傳動、驅動領域。公司擁有國内外先進的磨齒機、高精度的數控機床和加工中心以及齒輪檢測中心、三坐標測量儀等加工和檢測設備，具有年産10萬臺減速機的生産能力以及强勁的技術實力。

“銳意進取，努力創新，質量第一，信譽爲本”，向用户提供可信性的産品是公司的宗旨。公司通過ISO9001：2000質量管理體系認證，GB/T28001-2001職業健康安全管理體系認證ISO14001:2004,環境管理體系認證，計量檢測確認合格證書，標準化良好行爲證書。2001年公司又獲得了企業自營進出口資格證書。現公司産品遍及全國，出口歐、美、港、臺、東南亞等國家及地區。歷年被農行省分行授予“AAA級資信企業”，被鹿城區人民政府授予“首批百家誠信企業，名牌産品，2007年被評爲“浙江省高新技術企業”及“技術開發研究中心”，2008年被評爲“國家級火炬計劃企業”，2012年被評爲“國家級高新技術企業”。

公司地處沿海經濟帶浙江省温州市，國内在北京、天津、上海、佛山、無錫、寧波、武漢、青島、淄博、成都、長沙、重慶、合肥、廣州、泉州等各地設有經營辦事處爲尊敬的用户朋友提供及時、滿意的服務。

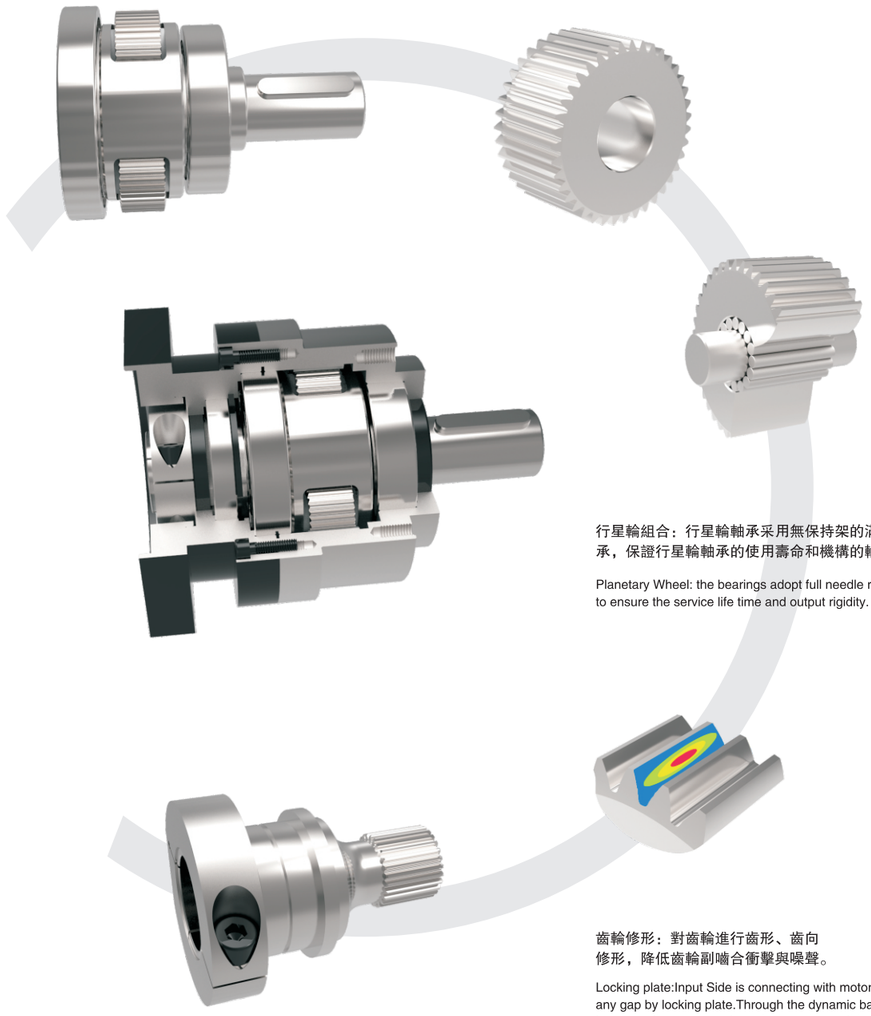
產品特點 / PRODUCT FEATURES

行星架：雙壁整體式行星架與輸出軸一體化設計，兩端軸承大跨距支承，實現輪系的高精度傳動與高剛度輸出。

Planet Carrier : With integration of double-wall integral planet carrier and output shaft, bearings support both ends in large spam. To achieve the high precision transmission and high stillness output.

齒輪：齒輪采用優質合金鋼滲碳淬火處理，齒輪精度控制在ISO標準5級，確保壽命期內的承載能力與傳動精度。

Gear ： the material of gear is alloy steel with carburizing and quenching treatment,the gear precision is ISO level 5,to ensure the load capacity and driving precision during the service life time.



行星輪組合：行星輪軸承采用無保持架的滿滾針軸承，保證行星輪軸承的使用壽命和機構的輸出剛性。

Planetary Wheel: the bearings adopt full needle roller bearing cage, to ensure the service life time and output rigidity.

齒輪修形：對齒輪進行齒形、齒向修形，降低齒輪副嗡合衝擊與噪聲。

Locking plate:Input Side is connecting with motor shaft without any gap by locking plate.Through the dynamic balance design to ensure the movement precisely and smoothly.

鎖緊盤：輸入端與電機軸采用鎖緊盤無間隙連接，經動平衡設計，確保運動精度與平穩性。

Gear Modification : The gear profile and lead modification can reduce the shock and noisy of gear pair meshing.

精密行星減速機的術語和定義
PLANETARY GEARBOX TERMS AND DEFINITIONS

精密行星減速機
Planetary gearbox

用于精密傳動控制、爲伺服電機和步進電機減速增扭的減速機，該類減速機以傳動精度來化分等級。

the gearbox is used for precision drive control, reducing the speed of servo motor and stepper motor. This gearbox divide level by transmission accuracy.

傳動比 i
Transmission ratio

伺服減速機輸入轉速與輸出轉速之比。

The ratio of servo gearbox input speed and the output speed.

額定輸入轉速n1
Nominal input speed n1

在環境温度爲20℃，減速機連續工作的條件下，在高速端允許輸入的轉速(單位爲轉/分 r/min)。當環境温度較高時，請降低輸入轉速。

Under the condition of continuous operation and environmental temperature 20℃. The allowable input speed at the high-speed side(r/min)

輸出轉速n2
Output Speed n2

減速機低速端的轉速，與輸入轉速的關系爲：n2=n1/i。單位爲轉/分(r/min)。

The relationship between the speed of gearbox low-speed side and input speed:n2=n1/i Unit (r/min)

最高輸入轉速n1max
Max. Input Speed

減速機短時間可承受的輸入轉速，在此條件下減速機會過熱且降低使用壽命。單位爲轉/分(r/min)。

It is the permitted maximum input speed of gearbox in a short time. Under this condition, the gearbox will overheat and shorten the service life time. Unit (r/min)

額定輸出扭矩T2N
Nominal Output Torque T2N

減速機在額定輸入轉速條件下連續工作，負載均匀無衝擊，在輸出端能承受的扭矩，單位爲牛米(N・m)。

It is the torque that the output side of gearbox can bear after continuous operation without any impact and the evenly load. Unit (N.M)

實際所需扭矩 T2
Actual required torque

驅動工作機所需要的扭矩，擬選減速機的額定輸出扭矩T2N必須大于這個扭矩，單位爲牛米(N・m)。

Torque is required to drive the machine.And the nominal output torque of selective gearbox must be greater than it.

加速力矩T2B
Acceleration Torque

工作周期每小時少于1000次時，允許短時間加載到減速機輸出端的最大力矩，。工作周期每小時大于1000次時，須考慮衝擊因素。最大加速力矩等于故障停止扭矩的60%，單位爲牛米(N・m)。

It can be allowed to load at the output of reducer when work cycle is less than 1000 times per hour, in consideration of impact,when work cycle is less than 1000 times per hour,the max acceleration torque is equal to 60% of Emergency Stop Torque.

故障停止扭矩TNOT
Emergency Stop Torque （ TNOT ）

減速機輸出軸瞬時能够承受的最大扭矩，是導致減速機報廢的臨界值，這個力矩在減速機的壽命期內最多加載1000次，單位爲牛米(N・m)。

The maximum permitted torque loads at the output shaft of gearbox,it is critical value that result in scrap. And may not exceed 1000 times during the service life time. Unit (N.M)

轉動慣量J
Moment of Inertia

指減速機內參與旋轉的零部件維持旋轉或静止狀態的特性值，單位爲千克平方厘米(kg・cm ^{2})。

It is a value of rotary spare parts in gearbox to maintain rotation or rest.Unit (kg.c□)

精密行星減速機的術語和定義
PLANETARY GEARBOX TERMS AND DEFINITIONS

慣量比 λ

指負載慣量與傳動系統慣量(電機加上減速機)之間的比值。這個比值決定了系統的可控性。λ值大，高動態的動作過程就越難精確控制。建議盡可能將λ值控制在<4。

Inertia Ratio

Refer to the ratio of load inertia and driving system inertia (motor with gearbox), it decides the controllability of system. The λ is more bigger, the precision control of high dynamic is more difficult, it should be less than 4.

$$\lambda = \frac{J_{\text{負載慣量 load inertia}} \cdot \frac{1}{i^2}}{J_{\text{電機+減速機 motor + reducer}}}$$

扭轉剛度 Ct21

Torsional Rigidity

輸出軸在扭矩的作用下，將產生扭轉彈性變形，產生單位角位移所需要加載的扭矩稱之爲扭轉剛度(Ct21=Δt/Δφ)，單位爲牛米/弧分(N・m/arcmin)。

Under the action of torque, the output shaft will be torsional elastic deformation. The torque is needed to result in torsion angle called Torsional Rigidity. Unit (N.M/arcmin)

回程間隙 jt

Backlash

指減速機輸出軸與輸入軸的最大轉角偏差，測量時先將減速機輸入軸固定，然後在輸出軸用力矩儀加載一定力矩(2%T2B)，以克服減速機內的摩擦力，見(圖1)

The backlash is the maximum angular measurement between output shaft and input shaft. The input shaft is locked in testing, then loaded certain torque at the output shaft by instrument (2%T2B),to overcome the friction inside the gearbox. Diagram 1

遲滯曲綫

Hysteresis Curve

遲滯檢測是爲了得出減速機的扭轉剛度，通過檢測得到遲滯曲綫，檢測時，先將減速機輸入端固定，然後在輸出端的兩個旋轉方向分別持續地加載到最大加速力矩(T2B)，繼而逐步卸載。用儀器記錄下力矩和偏差角，得到的是一條閉合的曲綫，從中可以計算出減速機的回程間隙(jt)和扭轉剛度(Ct21)。(圖2)

The input shaft is locked in testing, increase the torque persistently up to T2B in output rotating directions and then release gradually. According to the measured torque and deviation angle, a closed curve will be acquired. The backlash and torsional rigidity can be calculated.

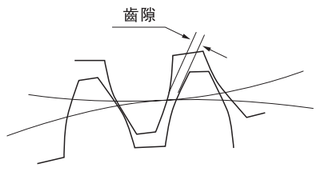


圖1

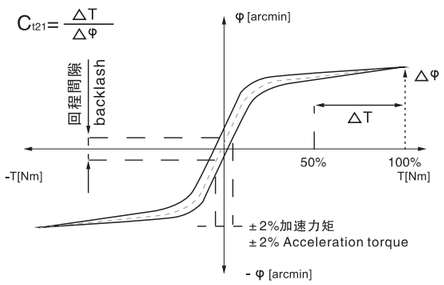
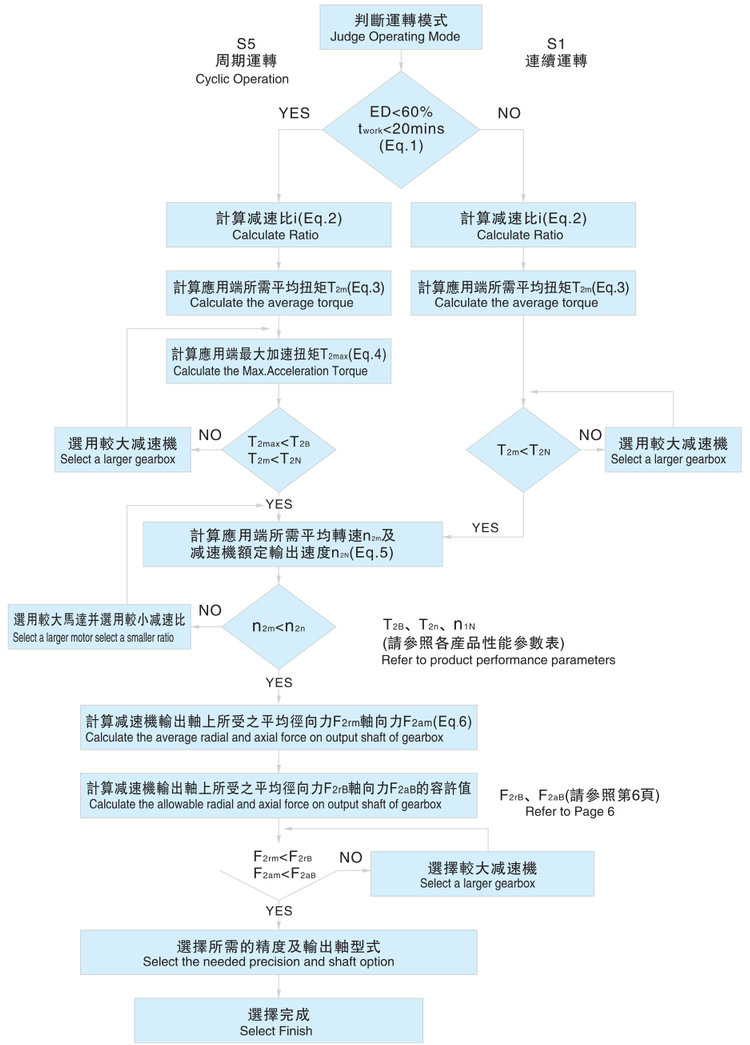


圖2

減速機的選型方法
SELECTION OF GEARBOX



S5周期運轉之建議事項 / RECOMMENDED FOR S5 CYCLE OPERATION

一般的應用慣量須符合以下公式：The general design is as below

$$\frac{J_L}{i^2} \leqslant 4 \times J_m$$

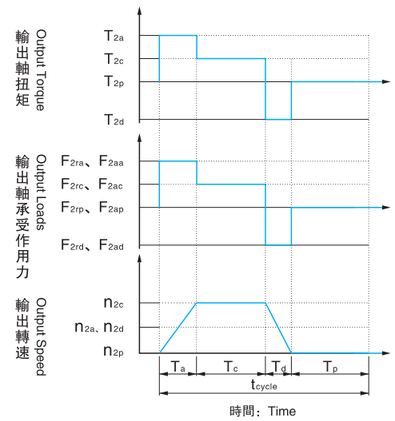
最適當的應用慣量須符合以下公式：The optimal design is as below

$$\frac{J_L}{i^2} \approx J_m$$

J_L 負載慣量：Load inertia

J_m 馬達慣量：Motor inertia

應用端運動模式：Motion Profile



1. $ED=\frac{T_a+T_c+T_d}{t_{cycle}} \times 100\%$，$t_{work}=T_a+T_c+T_d$

下標説明 / Index: a. 加速/Acceleration c. 等速/Constant
d. 減速/Deceleration p. 停止/Pause (Eq.1)

2. $i \simeq \frac{n_m}{n_{work}}$

n_m 馬達輸出速度：Output speed of Motor

n_{work} 實際應用轉速：Actual Working Speed

(Eq.2)

3. $T_{2m}=\sqrt[3]{\frac{n_{2a} \times t_a \times T_{2a}^3+n_{2c} \times t_c \times T_{2c}^3+n_{2d} \times t_d \times T_{2d}^3}{n_{2a} \times t_a+n_{2c} \times t_c+n_{2d} \times t_d}}$

4. $T_{2max}=T_{mB} \times i \times k_s \times \eta$ (Eq.3)

k_s 負載系數：Loading Factor

k_s	周期次數/小時
1.0	0~1,000
1.1	1,000~1,500
1.3	1,500~2,000
1.6	2,000~3,000
1.8	3,000~5,000

TmB 馬達最大輸出扭矩：The Max. Ouput Torque of Motor

η 減速機運轉效率：Efficiency of the gearbox operation

(Eq.3)

5. $n_{2a}=n_{2d}=\frac{1}{2} \times n_{2c}$

$n_{2m}=\frac{n_{2a} \times t_a+n_{2c} \times t_c+n_{2d} \times t_d}{t_a+t_c+t_d}$

$n_{2N}=\frac{n_{1N}}{i}$

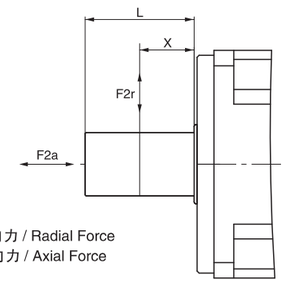
(Eq.5)

6. $F_{2rm}=\sqrt[3]{\frac{n_{2a} \times t_a \times F_{2ra}^3+n_{2c} \times t_c \times F_{2rc}^3+n_{2d} \times t_d \times F_{2rd}^3}{n_{2a} \times t_a+n_{2c} \times t_c+n_{2d} \times t_d}}$

$F_{2rm}=\sqrt[3]{\frac{n_{2a} \times t_a \times F_{2aa}^3+n_{2c} \times t_c \times F_{2ac}^3+n_{2d} \times t_d \times F_{2ad}^3}{n_{2a} \times t_a+n_{2c} \times t_c+n_{2d} \times t_d}}$

(Eq.6)

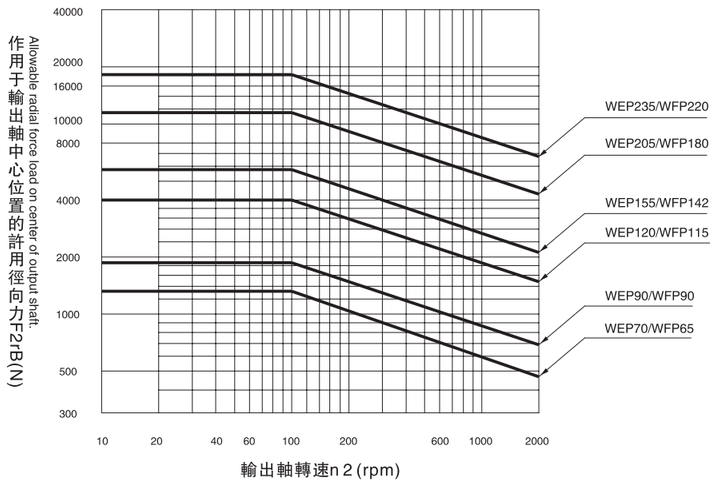
減速機輸出軸許用軸向力與徑向力
Allowable axial force and radial force of output shaft of gearbox



F2r徑向力 / Radial Force
F2a軸向力 / Axial Force

減速機技術參數表中所列出的徑向力與軸向力數據是按如下條件計算得出：
A、輸出軸轉速爲100r/min；
B、計算徑向力作用在軸伸中部(L/2處)，允許同時作用的軸 向力小于或等于徑向力的20%；
C、計算軸向力作用綫通過輸出軸的軸心，無徑向力作用。

The data of axial and radial force in the parameter list are calculated according to the following conditions:
A:The speed of output shaft:100 r/min;
B:Calculate the radial force load on center of shaft, allow the axial force which loads at the same time less or equal the 20% of radial force;
C:Through axis of output shaft without axial force to calculate the active line of radial force.



當徑向力F2r作用于輸出軸伸中部(X=L/2)時，各規格的減速機在不同的輸出轉速條件下運行，使用壽命保證爲20000小時所能承受的徑向力爲F2rB，請參照左圖查取。此時，許用軸向力F2aB=0.2*F2rB。

If the radial force F2r loads on center of output shaft(X=L/2),various gearboxes drive in different speed,the service life time is 20.000 hours, the bearable raxial (radial)force is F2rB,check from left diagram. At the moment,the allowable axial force F2aB=0.2*F2rB.

當徑向力不作用在輸出軸軸伸中部時，越靠近減速機(X＜L/2時)，所能承受的徑向力變大，越遠離減速機(X＞L/2時)，所能承受的徑向力變小。各種規格減速機因徑向力作用位置不同所能承受的徑向力請按下式

If the radial force not loads on center of the output shaft,more closer the gearbox（ X＜L/2 ）,the bearable radial force is more larger; more farther the gearbox,the bearable radial force is more smaller.The bearable radial force of different radial loading position of various gearboxes is calculated as below.

計算：

徑向力： $F2rB' = \frac{a}{X+b} \times F2rB$　　其中系數a、b查徑向力作用位置計算系數表

軸向力： $F2aB' = 0.2 \times F2rB'$

徑向力作用位置計算系數表 The Factor Calculation of Radial Load Position						
型號	WEP70 WFP65	WEP90 WFP90	WEP120 WFP115	WEP155 WFP142	WEP205 WFP180	WEP235 WFP220
a	61.75	78.25	102.5	136.5	151	184
b	47.5	60	75	79	110	131.5

其他系列轉速與徑向力關系與本公司技術部聯系

訂貨説明 / ORDER INSTRUCTIONS

WEP　120 — 100 — S2 — P1 — □

□ 電機連接尺寸 (電機制造商與型號) Motor connecting size

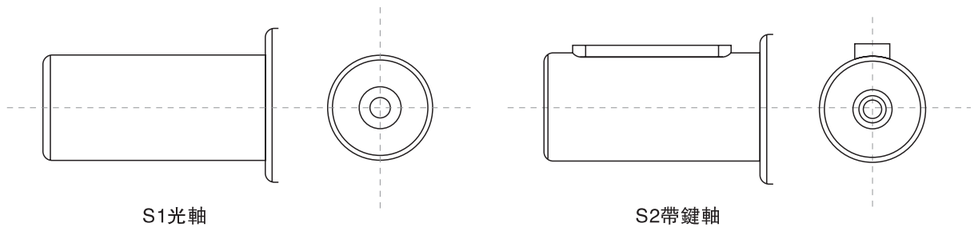
P1 精密型 Precision、P2 普通型 Common

軸輸出形式S1: 光軸,S2爲帶鍵軸
Output shaft form S1: optical axis, S2 for the bond axis

速比：單極 /Single stage　3/4/5/6/7/8/9/10/
Ratio　雙極 /Double stage　15/20/25/30/35/40/45/50/60/70/80/90/100/

規格 /(Mobel)　WEP:70/90/120/155/205/225　WFP:65/90/115/142/180/220

產品系列 /Product series　WEP、WFP 同軸式伺服行星減速機

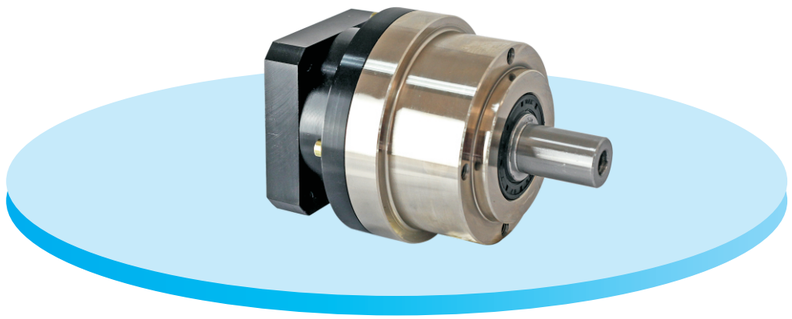


S1光軸
Stooth output shaft

S2帶鍵軸
With koyed shaft

如果有疑問請咨詢客服人員
If in doubt, please consult customer service staff

WEP系列精密行星減速機
WEP SERIES PIANETARY GEARBOX



WEP系列减速機主要性能
THE PERFORMANCE OF WEP SERIES GEARBOX

1、采用漸開綫齒輪傳動，合金鋼滲碳淬火、精加工達ISO標準5級，齒向齒廓修形處理，確保運轉平穩，噪聲低，承載能力高；
2、整體式輸出軸，行星架兩端軸承支撐，實現更高精度、高剛性；
3、回程間隙小，可按客户要求精密單級做到3arcmin以内；
4、高速端回轉零件進行動平衡處理，確保高速運轉的平穩性；
5、適配任何伺服電機，可進行特殊連接設計，安裝簡便可靠；
6、維護簡單，在產品壽命期内無需更換潤滑油(脂)。

1. Using involute gear transmission, alloy steel with carbonize&quencher heat treatment, precision level of gear grinding could reach ISO class 5, the profile and axial modification could enhance the bearing capacity ,stability of mesh and low noise.
2. With integral output shaft and bearing support for both sides of planet wheel, realizing higher precision and higher rigidity.
3. Small backlash, the accurate single stage can reach within 3 arcmin as clients' request.
4. Gyration parts of the input side with dynamic balance treatment can make sure the gearbox running steadily at high speed.
5. It can combined with any servo motor, can be designed for special combination, and easy for mounting. (It can be specially designed to accept any type of servo motor, mounting is convenient)
6. Simple for maintenance, it don't need to change the oil(grease) during the service life time.

WEP產品性能參數表 / WEP PRODUCT PERFORMANCE PARAMETERS

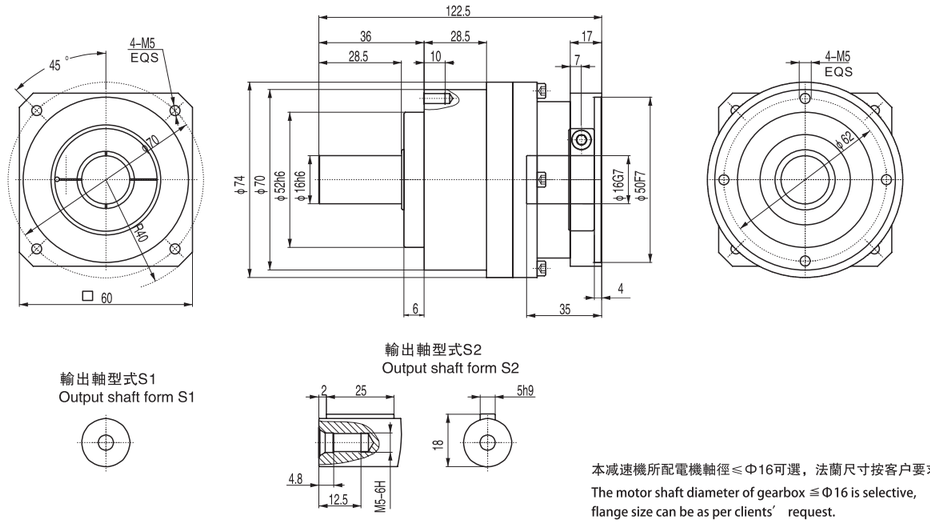
型號規格 TYPE			WEP70	WEP90	WEP120	WEP155	WEP205	WEP235	速比i	級數
額定輸出力矩T2N Nominal output torque		Nm	38	118	205	478	929	1420	3	1
			52	176	310	701	1288	2110	4	
			56	185	330	747	1300	2180	5	
			52	168	310	696	1181	2062	6	
			46	157	278	630	1162	1802	7	
			37	125	222	496	920	1400	8	
			31	104	195	414	774	1138	9	
			29	98	174	390	720	1080	10	
			38	118	205	478	929	1420	15	2
			52	176	310	701	1288	2110	20	
			56	185	330	747	1300	2180	25	
			52	168	310	696	1181	2062	30	
			46	157	278	630	1162	1802	35	
			37	125	222	496	920	1400	40	
			31	104	195	414	774	1138	45	
			56	185	330	747	1300	2180	50	
			52	168	310	696	1181	2062	60	
			46	157	278	630	1162	1802	70	
			37	125	222	496	920	1400	80	
			31	104	195	414	774	1138	90	
			29	98	174	390	720	1080	100	
故障停止扭矩T2NOT[1] Emergency Stop Torque		Nm	3倍額定輸出力矩 3 times Nominal output torque						3–100	1、2
扭轉剛度 Torsional rigidity		Nm/arcmin	7	15	26	50	150	225		
額定輸入轉速n1N Nominal input speed		rpm	3000	3000	3000	3000	2000	2000		
最大輸入轉速n1max Max. input speed		rpm	6000	6000	6000	6000	4000	4000		
最大徑向力F2r[2] Max. Radial forces		N	1320	1870	4020	5730	11600	18300		
最大軸向力F2a Max. Axial forces		N	1450	1900	3130	5110	6800	10790		
精密背隙 Precision Backlash		arcmin	3	3	3	3	3	3	3–10	1
			5	5	5	5	5	5	15–100	2
標準背隙 Standard Backlash		arcmin	8	8	8	8	8	8	3–10	1
			10	10	10	10	10	10	15–100	2
滿載效率 η Full load efficiency		%	97						3–10	1
			94						15–100	2
使用壽命[3] Service life		h	20000						3–100	1、2
重量 Weight		kg	1.7	3.4	7.2	13.2	32	53	3–10	1
			2.3	4.7	9.9	17.6	36.5	66	15–100	2
噪聲值(n1=3000rpm) Running noise		dB(A)	55	60	63	65	67	70	3–100	1、2
轉動慣量J1 Moment of Inertia		kg.cm²	0.407	1.479	7.182	19.30	55.55	146.3	3	1
			0.296	0.803	4.888	11.64	37.27	97.08	4	
			0.265	0.643	4.332	9.308	32.56	83.71	5	
			0.251	0.557	4.036	8.429	29.99	76.00	6	
			0.244	0.520	3.916	7.852	28.85	72.61	7	
			0.236	0.485	3.774	7.395	27.85	70.27	8	
			0.232	0.469	3.717	7.153	27.24	67.97	9	
			0.229	0.469	3.684	7.015	26.96	67.44	10	
			0.342	0.379	1.431	7.113	16.79	53.04	15	2
			0.276	0.292	0.964	5.561	11.45	42.82	20	
			0.265	0.275	0.887	5.244	10.71	40.80	25	
			0.263	0.270	0.853	5.169	10.34	40.00	30	
			0.262	0.267	0.838	5.121	10.12	39.72	35	
			0.259	0.263	0.827	5.054	10.02	39.52	40	
			0.258	0.261	0.825	5.036	9.957	39.39	45	
			0.236	0.238	0.674	4.619	8.566	35.05	50	
			0.235	0.236	0.651	4.571	8.285	34.48	60	
			0.234	3.235	0.640	4.540	8.115	34.32	70	
			0.231	0.232	0.634	4.488	8.042	34.20	80	
			0.230	0.231	0.634	4.478	8.005	34.14	90	
			0.229	0.229	0.640	4.473	7.991	34.12	100	

1 最大加速力矩T2B=60%・T2NOT　2 輸出轉速100rpm,作用于輸出軸中部　3 連續運轉，壽命爲10000小時

1.The Max Acceleration Torque T2B=60%.T2NOT　2.Applied to the output shaft center at 100 rpm.　3. For continuous operation,the service life time is less than 10,000 hours.

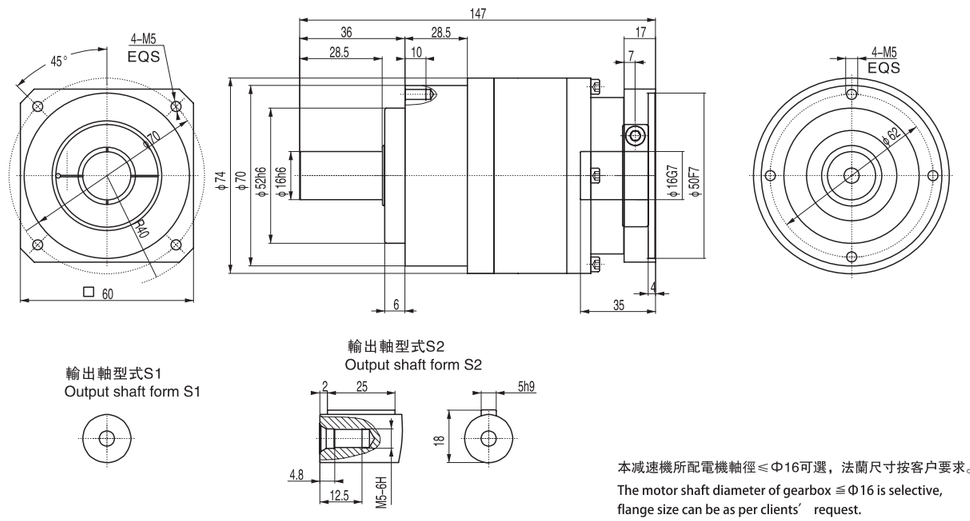
WEP70精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WEP70單級 / Single stage



本減速機所配電機軸徑≤Φ16可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ16 is selective, flange size can be as per clients' request.

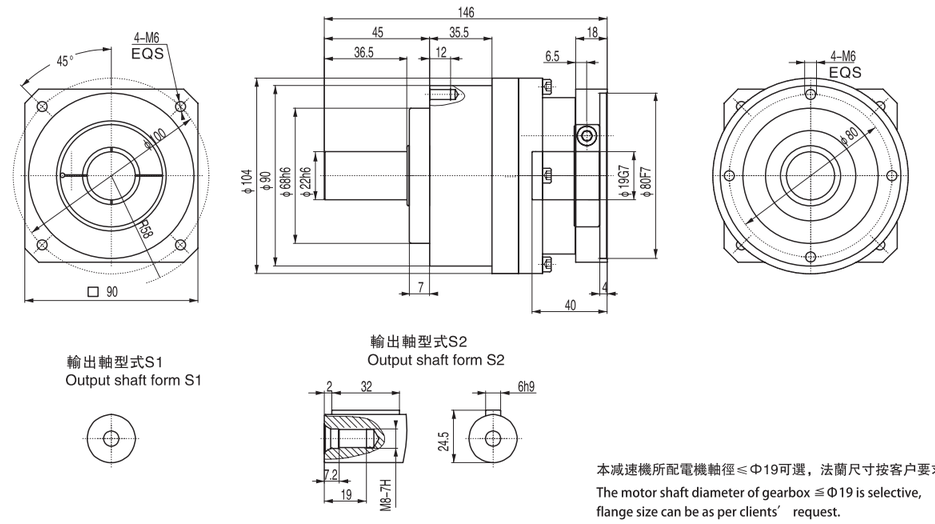
WEP70雙級 / Double stage



本減速機所配電機軸徑≤Φ16可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ16 is selective, flange size can be as per clients' request.

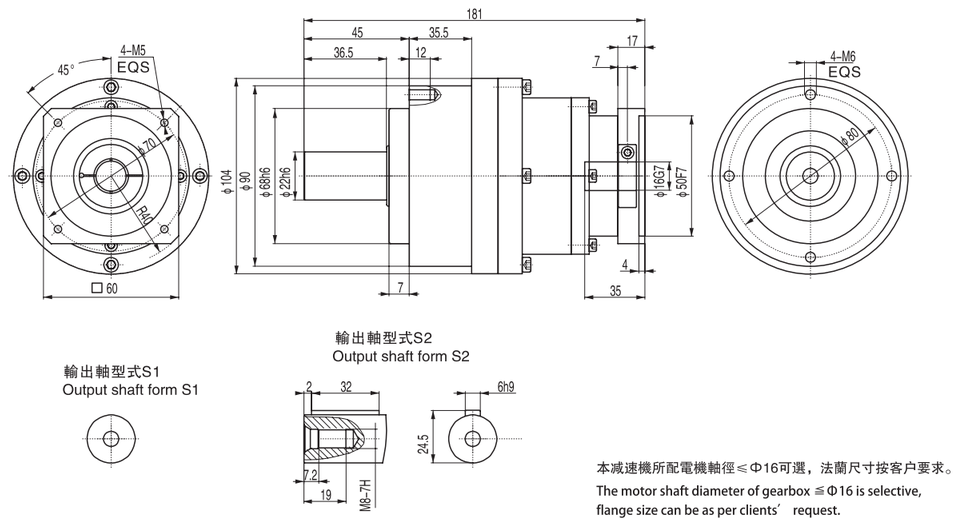
WEP90精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WEP90單級 / Single stage



本減速機所配電機軸徑≤Φ19可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ19 is selective, flange size can be as per clients' request.

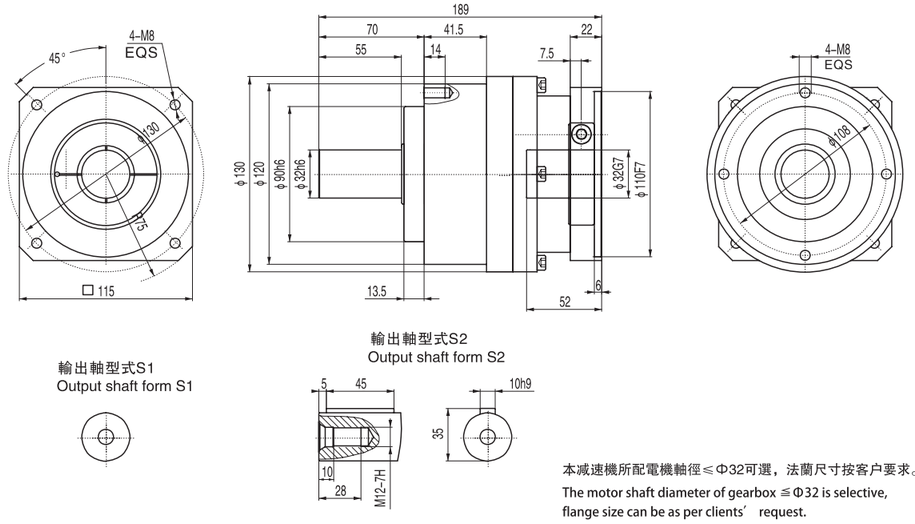
WEP90雙級 / Double stage



本減速機所配電機軸徑≤Φ16可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ16 is selective, flange size can be as per clients' request.

WEP120精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

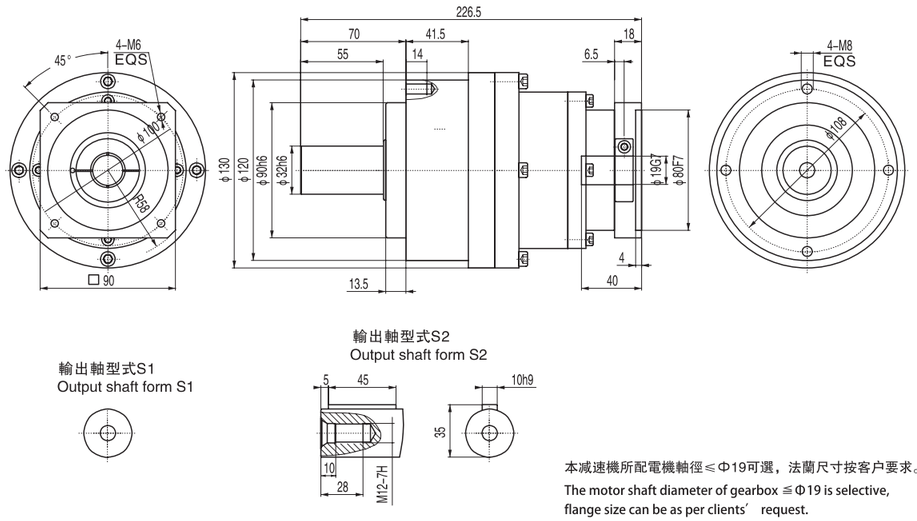
WEP120單級 / Single stage



輸出軸型式S1
Output shaft form S1

本減速機所配電機軸徑≦Φ32可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ32 is selective, flange size can be as per clients' request.

WEP120雙級 / Double stage

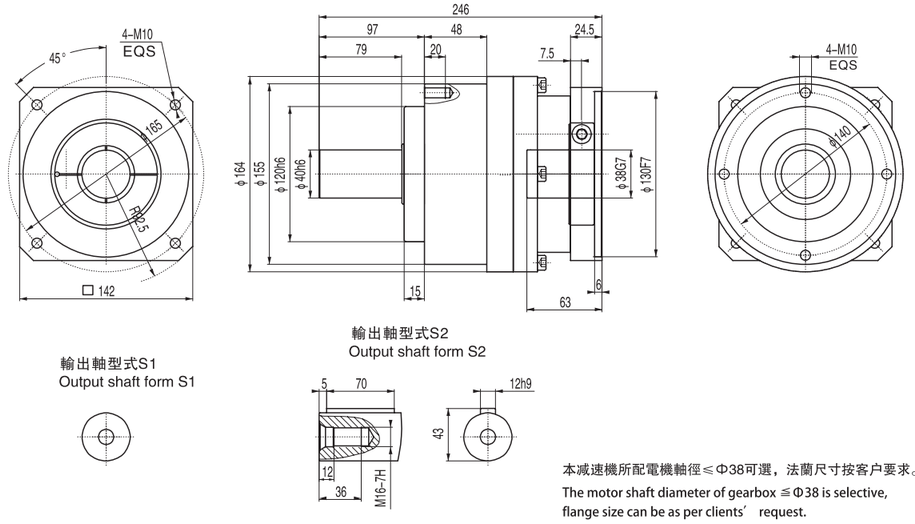


輸出軸型式S1
Output shaft form S1

本減速機所配電機軸徑≦Φ19可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ19 is selective, flange size can be as per clients' request.

WEP155精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

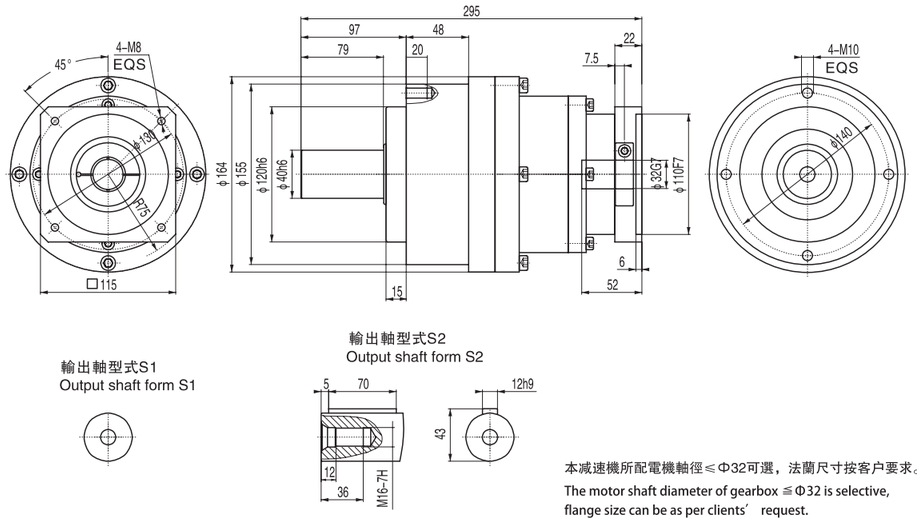
WEP155單級 / Single stage



輸出軸型式S1
Output shaft form S1

本減速機所配電機軸徑≦Φ38可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ38 is selective, flange size can be as per clients' request.

WEP155雙級 / Double stage

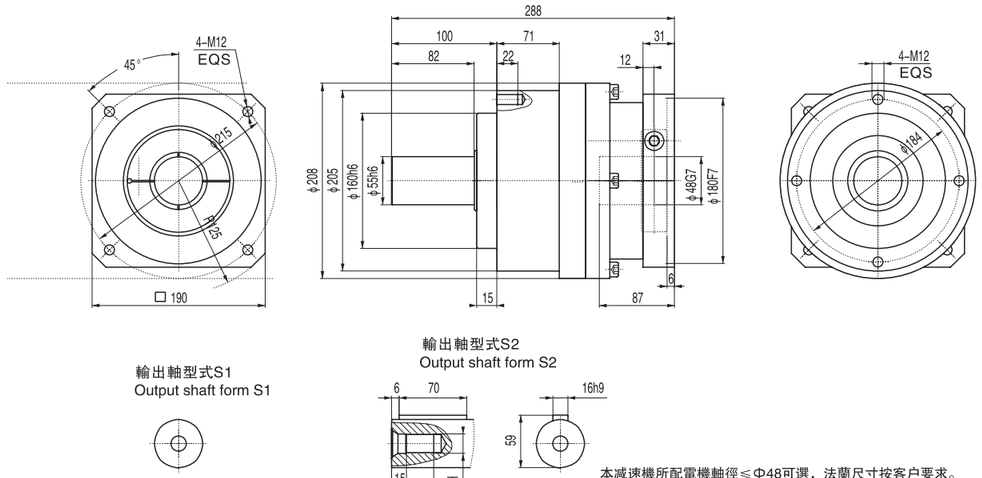


輸出軸型式S1
Output shaft form S1

本減速機所配電機軸徑≦Φ32可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ32 is selective, flange size can be as per clients' request.

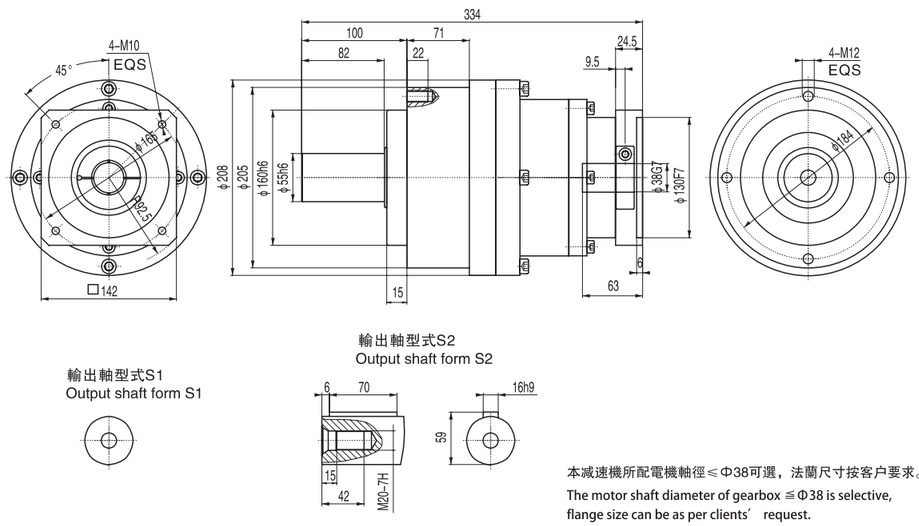
WEP205精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WEP205單級 / Single stage



本減速機所配電機軸徑≦Φ48可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ48 is selective, flange size can be as per clients' request.

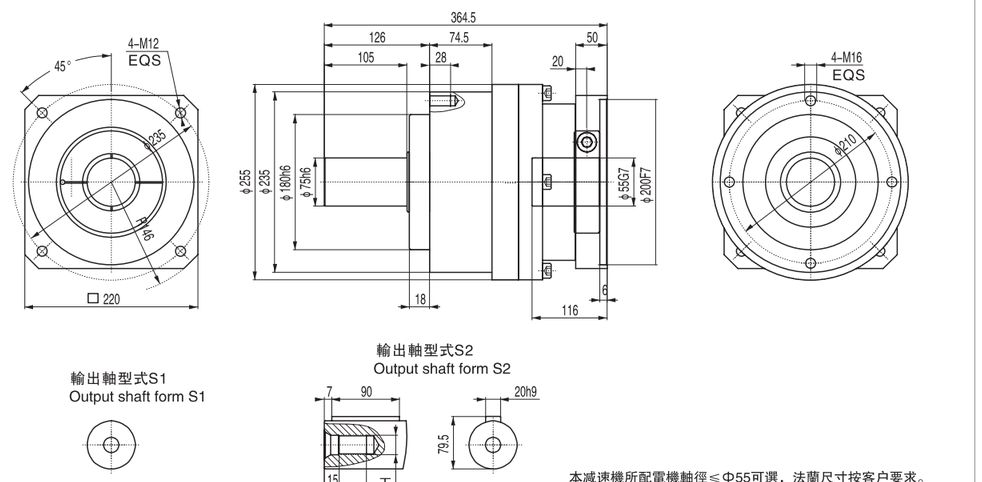
WEP205雙級 / Double stage



本減速機所配電機軸徑≦Φ38可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ38 is selective, flange size can be as per clients' request.

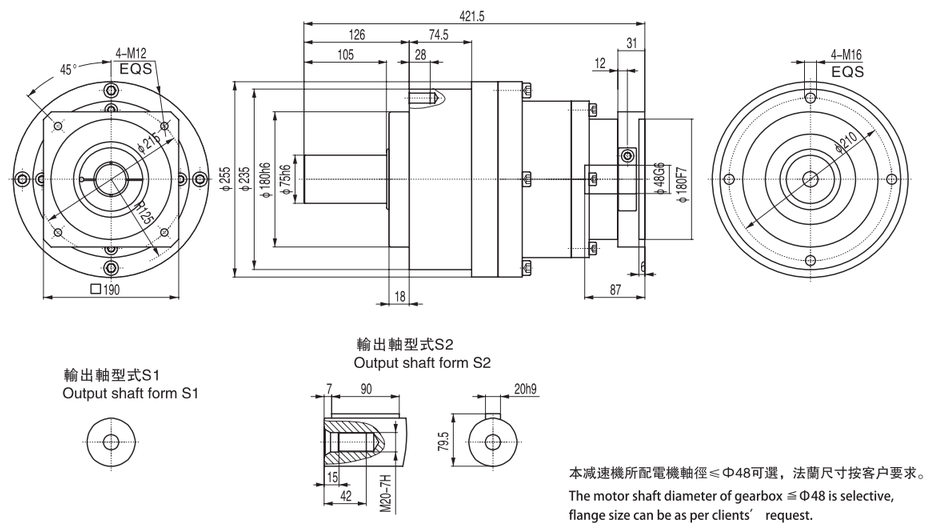
WEP235精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WEP235單級 / Single stage



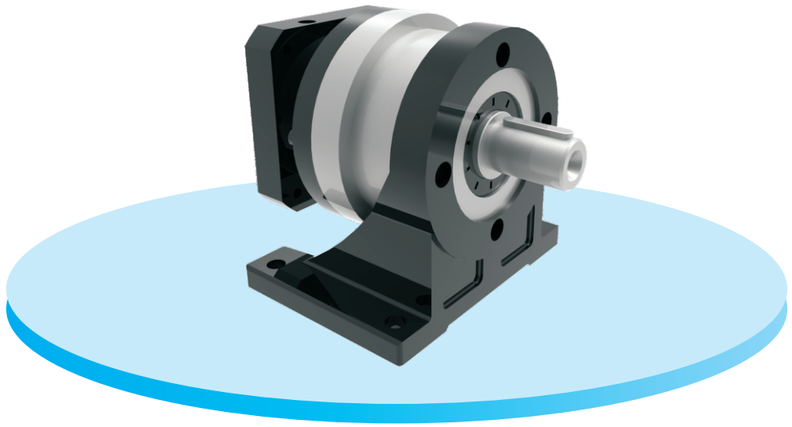
本減速機所配電機軸徑≦Φ55可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ55 is selective, flange size can be as per clients' request.

WEPL235雙級 / Double stage



本減速機所配電機軸徑≦Φ48可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ48 is selective, flange size can be as per clients' request.

WEPD系列精密行星減速機
WEPD SERIES PIANETARY GEARBOX

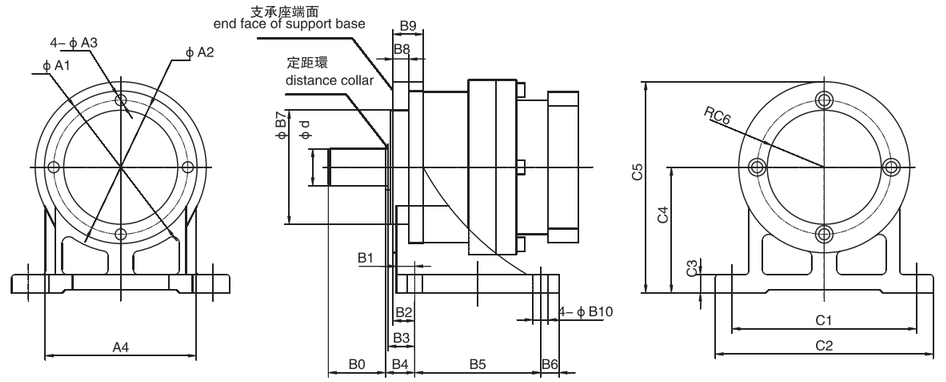


WEP系列减速機主要性能
THE PERFORMANCE OF WEP SERIES GEARBOX

1、本減速機爲WEP系列增加支承座安裝形式，性能參數與WEP系列相同（詳見P9）；
2、本減速機輸出軸軸肩，有部分機型低于支承座端面，若出現安裝幹涉可加定距環解決；
3、支承座具體尺寸見《WEPD行星齒輪減速機外型尺寸圖》。

1. This type is WEP series gearbox which add support base as another installation form.Its specification is as same as WEP series’.
2. Some type’s shaft shlouder is lower than the end face of the support base.If it makes trouble for the mounting,we can use distance collar to fix it.
3. For more size of support base,please refer to<outline dimension of WEPD planetary gearbox>.

WEPD系列精密行星齒輪減速機外形圖
WEPD SERIES PIANETARY GEARBOX OUTLINE DIMENSION

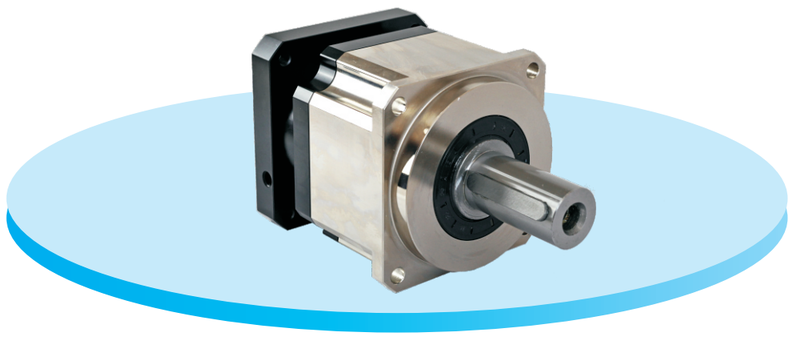


B4=B3--支座無定距環.B3<B2--輸出軸軸肩在支承座端面内,可按客户要求增加定距環。
B4=B3--Support base without distance collar.B3<B2--Output shaft shoulder within the end face of support base,the distance collar can be added as client's request.

Unit:mm

代號 \ 型號		WEPD70	WEPD90	WEPD120	WEPD155	WEPD205	WEPD235
A	A1	71	91	121	156	206	236
	A2	62	80	108	140	184	210
	A3	5.5	6.6	9	11	13.5	17.5
	A4	74	90	125	162	204	232
B	d	16	22	32	40	55	75
	B0	27	34	55	79	78	100
	B1	10	11	14	16	19	26
	B2	12	13	16	18	21	29
	B3	12	12	18	20	20	26
	B4	13.5	14.5	18	20	24	31
	B5	50	75	100	120	160	200
	B6	10	11	14	16	19	26
	B7	52	68	90	120	160	180
	B8	7.5	9.5	13	16	19	24
	B9	14	18	28	32	38	50
	B10	7	9	11	13	17	21
C	C1	90	110	150	190	240	280
	C2	108	130	176	220	276	330
	C3	9	11	16	19	24	30
	C4	55	75	100	120	160	200
	C5	95	126	168	207.5	272.5	332
	C6	40	51	68	87.5	112.5	132

WFP系列精密行星減速機
WFP SERIES PIANETARY GEARBOX



WFP系列減速機主要性能
THE PERFORMANCE OF WFP SERIES GEARBOX

1、采用漸開綫齒輪傳動，合金鋼滲碳淬火、精加工達ISO標準5級，齒向齒廓修形處理，確保運轉平穩，噪聲低，承載能力高；
2、整體式輸出軸，行星架兩端軸承支撐，實現更高精度、高剛性；
3、回程間隙小，可按客户要求精密單級做到3arcmin以内；
4、高速端回轉零件進行動平衡處理，確保高速運轉的平穩性；
5、適配任何伺服電機，可進行特殊連接設計，安裝簡便可靠；
6、維護簡單，在産品壽命期内無需更換潤滑油(脂)。

1.Using involute gear transmission, alloy steel with carbonize&quencher heat treatment, precision level of gear grinding could reach ISO class 5, the profile and axial modification could enhance the bearing capacity ,stability of mesh and low noise.
2.With integral output shaft and bearing support for both sides of planet wheel, realizing higher precision and higher rigidity.
3.Small backlash, the accurate single stage can reach within 3 arcmin as clients' request.
4.Gyration parts of the input side with dynamic balance treatment can make sure the gearbox running steadily at high speed.
5.It can combined with any servo motor, can be designed for special combination, and easy for mounting.
6.Simple for maintenance, it don't need to change the oil(grease) during the service life time.

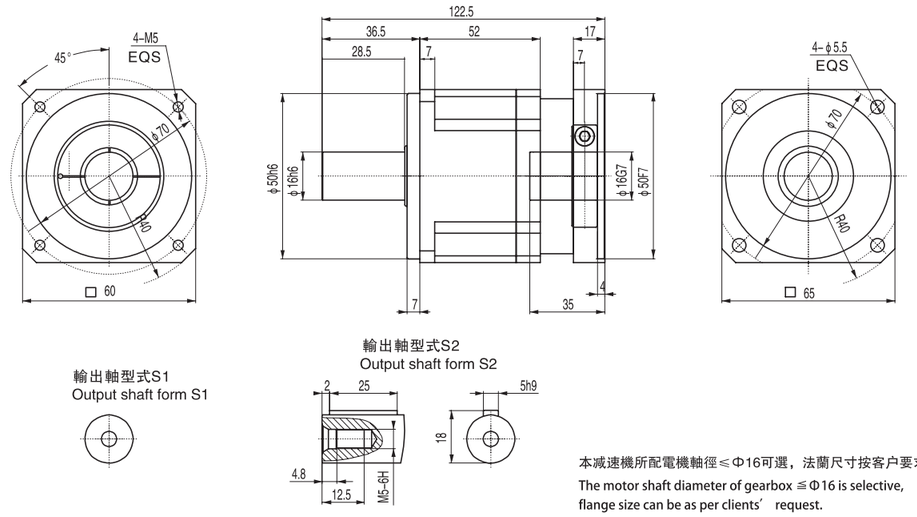
WFP產品性能參數表 / WFP PRODUCT Performance Parameters

型號規格 TYPE			WFP65	WFP90	WFP115	WFP142	WFP180	WFP220	速比i	級數
額定輸出力矩T2N Nominal output torque		Nm	38	118	205	478	929	1420	3	1
			52	176	310	701	1288	2110	4	
			56	185	330	747	1300	2180	5	
			52	168	310	696	1181	2062	6	
			46	157	278	630	1162	1802	7	
			37	125	222	496	920	1400	8	
			31	104	195	414	774	1138	9	
			29	98	174	390	720	1080	10	
			38	118	205	478	929	1420	15	2
			52	176	310	701	1288	2110	20	
			56	185	330	747	1300	2180	25	
			52	168	310	696	1181	2062	30	
			46	157	278	630	1162	1802	35	
			37	125	222	496	920	1400	40	
			31	104	195	414	774	1138	45	
			56	185	330	747	1300	2180	50	
			52	168	310	696	1181	2062	60	
			46	157	278	630	1162	1802	70	
			37	125	222	496	920	1400	80	
			31	104	195	414	774	1138	90	
			29	98	174	390	720	1080	100	
故障停止扭矩T2NOT[1] Emergency Stop Torque		Nm	3倍額定輸出力矩 3 times Nominal output torque						3–100	1、2
扭轉剛度 Torsional rigidity		Nm/arcmin	7	15	26	50	150	225		
額定輸入轉速n1N Nominal input speed		rpm	3000	3000	3000	3000	2000	2000		
最大輸入轉速n1max Max. input speed		rpm	6000	6000	6000	6000	4000	4000		
最大徑向力F2r[2] Max. Radial forces		N	1320	1870	4020	5730	11600	18300		
最大軸向力F2a Max. Axial forces		N	1450	1900	3130	5110	6800	10790		
精密背隙 Precision Backlash		arcmin	3	3	3	3	3	3	3–10	1
			5	5	5	5	5	5	15–100	2
標準背隙 Standard Backlash		arcmin	8	8	8	8	8	8	3–10	1
			10	10	10	10	10	10	15–100	2
滿載效率 η Full load efficiency		%	97						3–10	1
			94						15–100	2
使用壽命[3] Service life		h	20000						3–100	1、2
重量 Weight		kg	1.52	3.8	7.8	14.5	29	48.5	3–10	1
			2.04	4.5	9.6	17.8	32.8	62	15–100	2
噪聲值(n1=3000rpm) Running noise		dB(A)	55	60	63	65	67	70	3–100	1、2
轉動慣量J1 Moment of Inertia		kg.cm²	0.407	1.479	7.182	19.30	55.55	146.3	3	1
			0.296	0.803	4.888	11.64	37.27	97.08	4	
			0.265	0.643	4.332	9.308	32.56	83.71	5	
			0.251	0.557	4.036	8.429	29.99	76.00	6	
			0.244	0.520	3.916	7.852	28.85	72.61	7	
			0.236	0.485	3.774	7.395	27.85	70.27	8	
			0.232	0.469	3.717	7.153	27.24	67.97	9	
			0.229	0.469	3.684	7.015	26.96	67.44	10	
			0.342	0.379	1.431	7.113	16.79	53.04	15	2
			0.276	0.292	0.964	5.561	11.45	42.82	20	
			0.265	0.275	0.887	5.244	10.71	40.80	25	
			0.263	0.270	0.853	5.169	10.34	40.00	30	
			0.262	0.267	0.838	5.121	10.12	39.72	35	
			0.259	0.263	0.827	5.054	10.02	39.52	40	
			0.258	0.261	0.825	5.036	9.957	39.39	45	
			0.236	0.238	0.674	4.619	8.566	35.05	50	
			0.235	0.236	0.651	4.571	8.285	34.48	60	
			0.234	3.235	0.640	4.540	8.115	34.32	70	
			0.231	0.232	0.634	4.488	8.042	34.20	80	
			0.230	0.231	0.634	4.478	8.005	34.14	90	
			0.229	0.229	0.640	4.473	7.991	34.12	100	

1 最大加速力矩T2B=60%・T2NOT　2 輸出轉速100rpm,作用于輸出軸中部　3 連續運轉，壽命爲10000小時
1.The Max Acceleration Torque T2B=60%.T2NOT　2.Applied to the output shaft center at 100 rpm.　3. For continuous operation,the service life time is less than 10,000 hours.

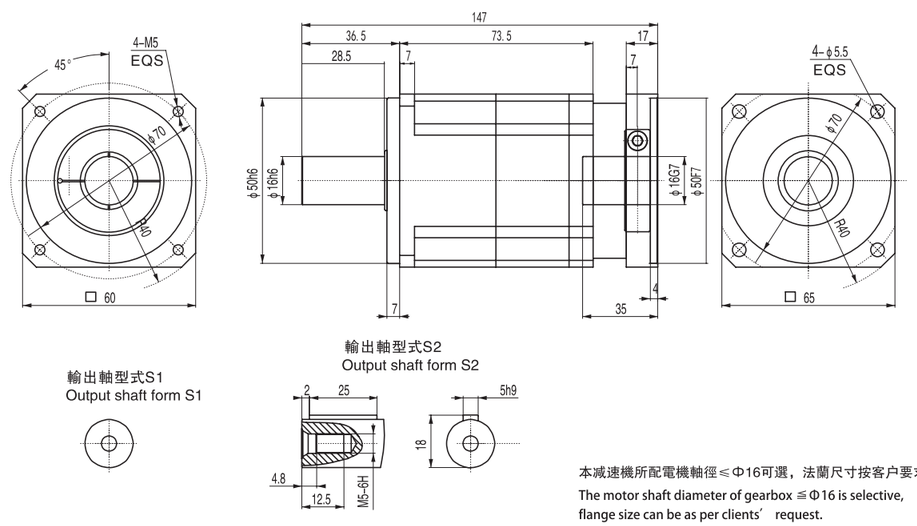
WFP65精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WFP65單級 / Single stage



本減速機所配電機軸徑≦Φ16可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ16 is selective, flange size can be as per clients' request.

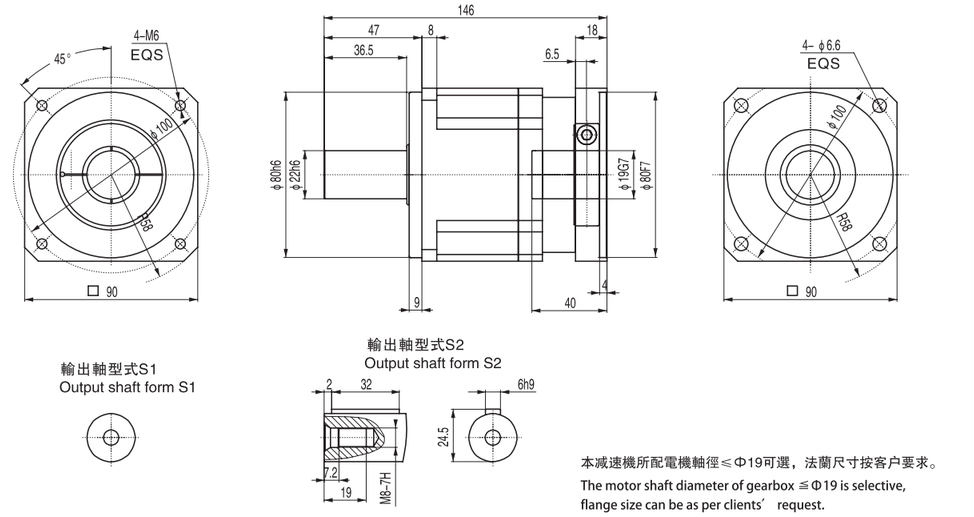
WFP65雙級 / Double stage



本減速機所配電機軸徑≦Φ16可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ16 is selective, flange size can be as per clients' request.

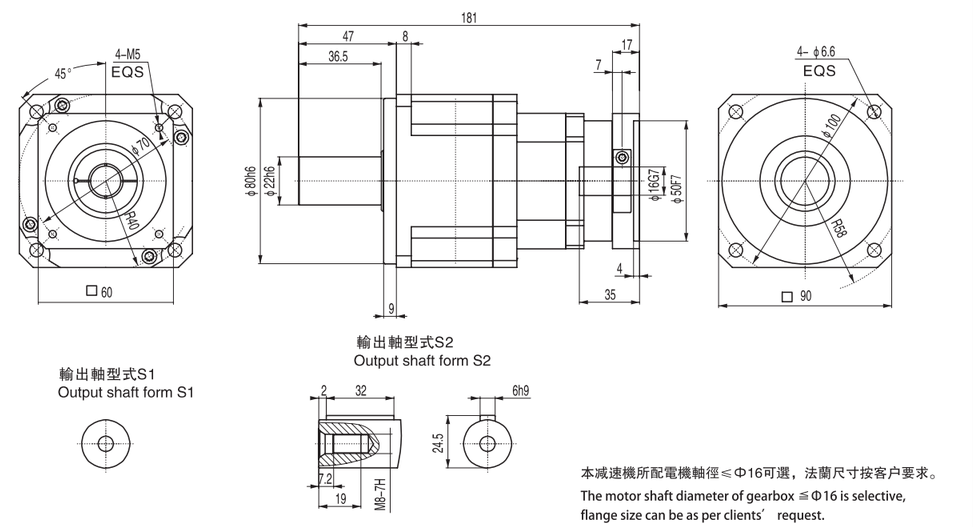
WFP90精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WFP90單級 / Single stage



本減速機所配電機軸徑≦Φ19可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ19 is selective, flange size can be as per clients' request.

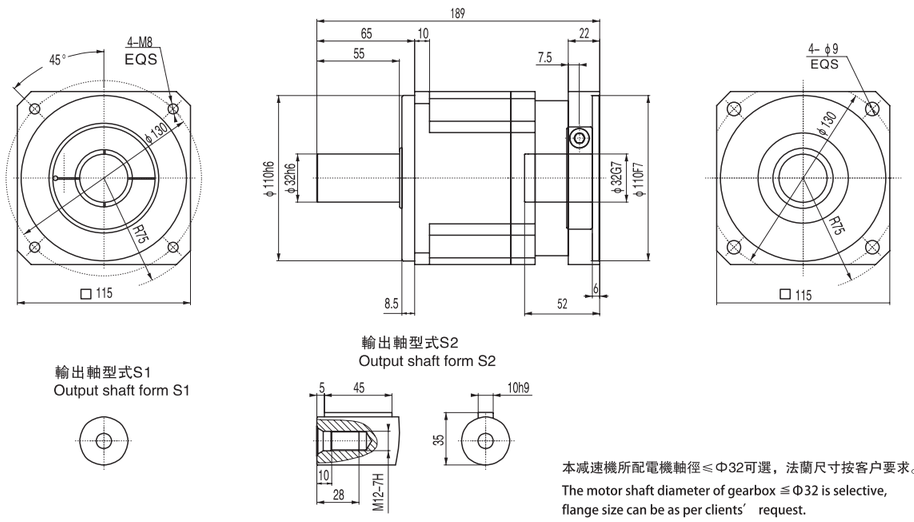
WFP90雙級 / Double stage



本減速機所配電機軸徑≦Φ16可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ16 is selective, flange size can be as per clients' request.

WFP115精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WFP115單級 / Single stage

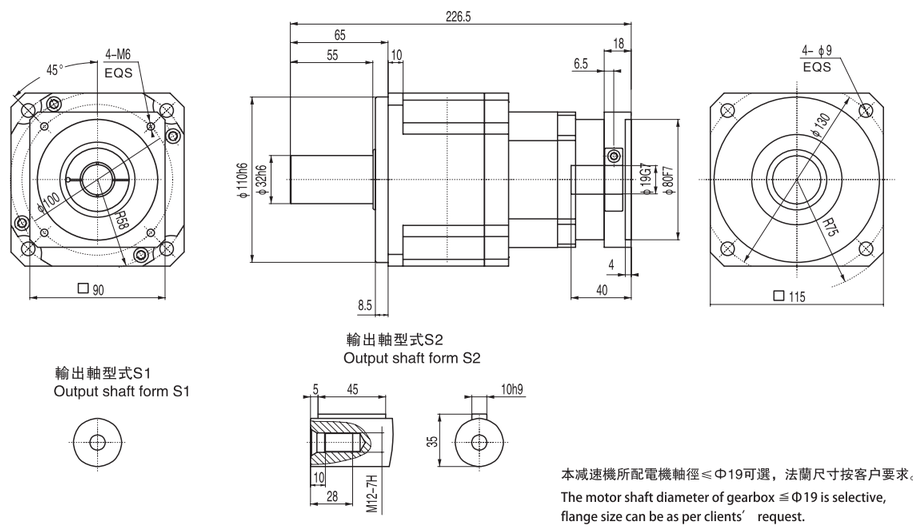


輸出軸型式S1
Output shaft form S1

輸出軸型式S2
Output shaft form S2

本減速機所配電機軸徑≦Φ32可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ32 is selective, flange size can be as per clients´ request.

WFP115雙級 / Double stage



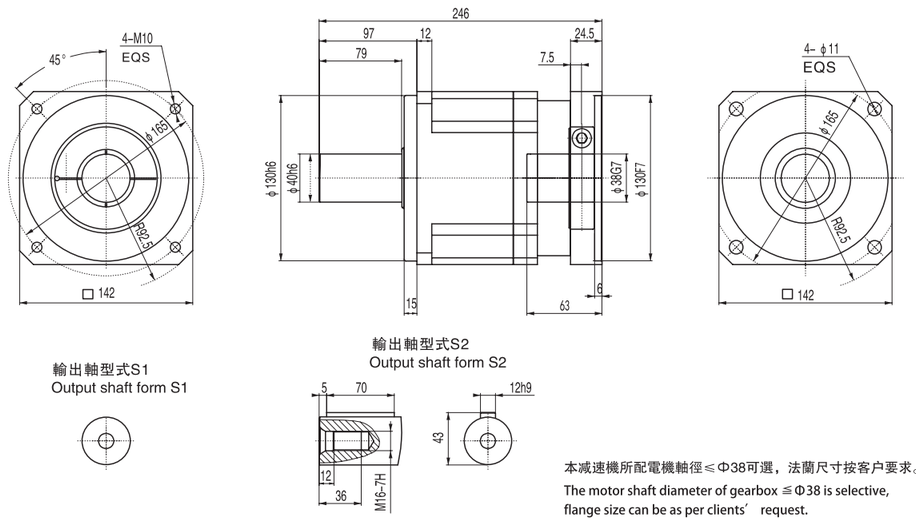
輸出軸型式S1
Output shaft form S1

輸出軸型式S2
Output shaft form S2

本減速機所配電機軸徑≦Φ19可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ19 is selective, flange size can be as per clients´ request.

WFP142精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WFP142單級 / Single stage

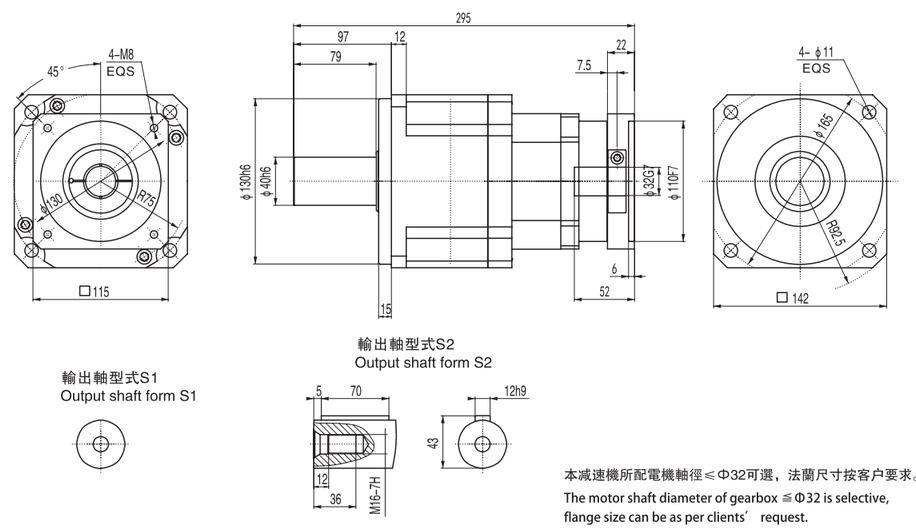


輸出軸型式S1
Output shaft form S1

輸出軸型式S2
Output shaft form S2

本減速機所配電機軸徑≦Φ38可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ38 is selective, flange size can be as per clients´ request.

WFP142雙級 / Double stage



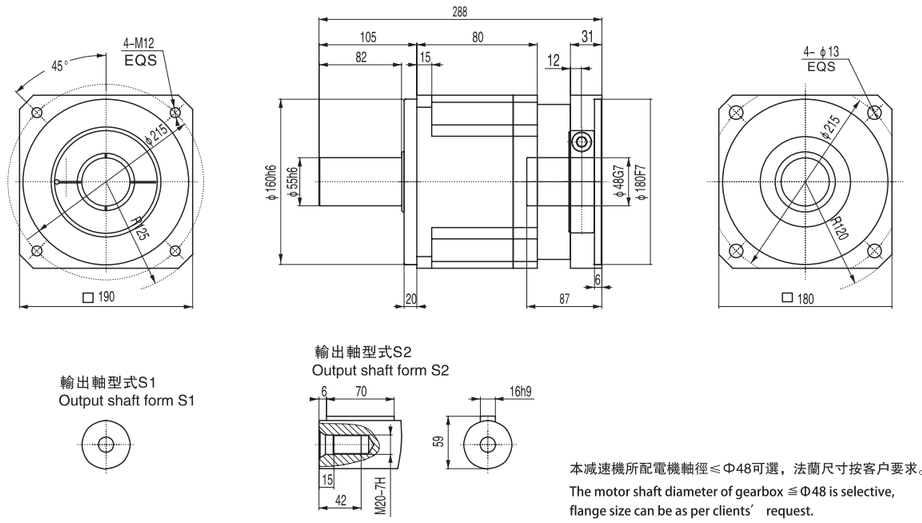
輸出軸型式S1
Output shaft form S1

輸出軸型式S2
Output shaft form S2

本減速機所配電機軸徑≦Φ32可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ32 is selective, flange size can be as per clients´ request.

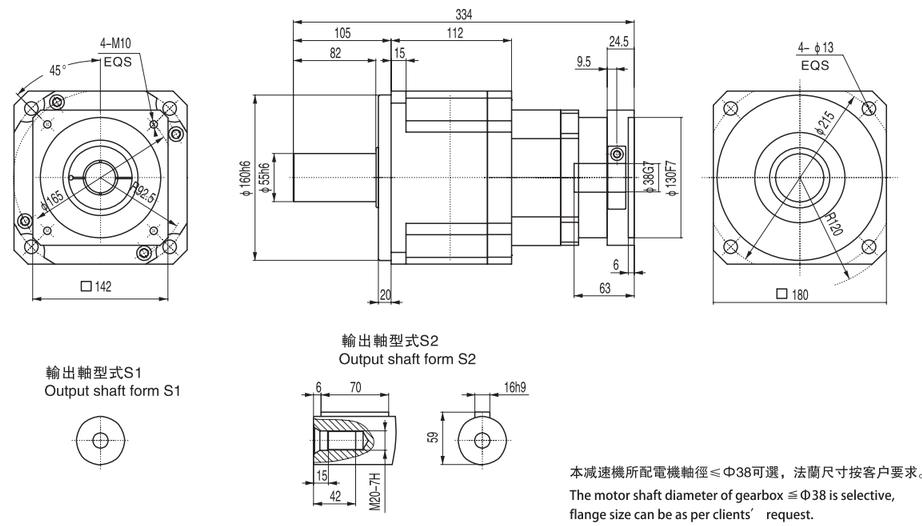
WFP180精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WFP180單級 / Single stage



本減速機所配電機軸徑≦Φ48可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ48 is selective, flange size can be as per clients' request.

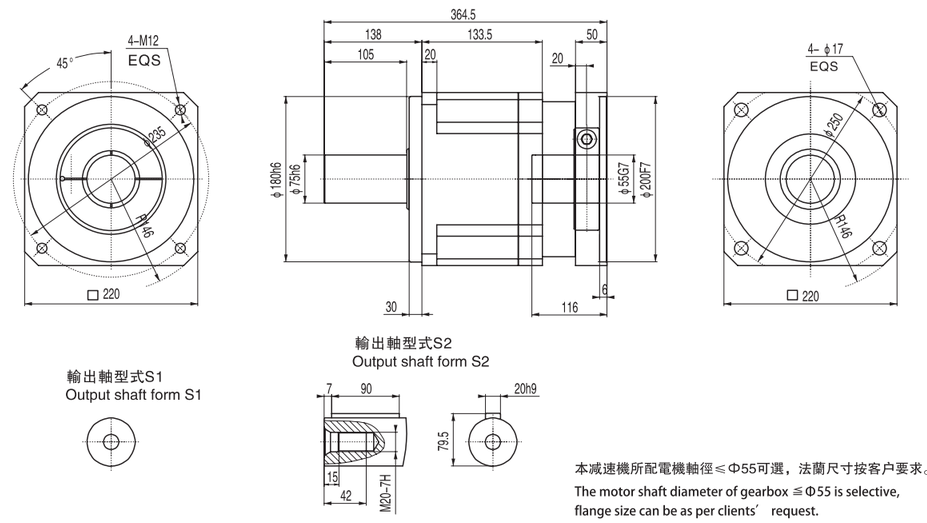
WFP180雙級 / Double stage



本減速機所配電機軸徑≦Φ38可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ38 is selective, flange size can be as per clients' request.

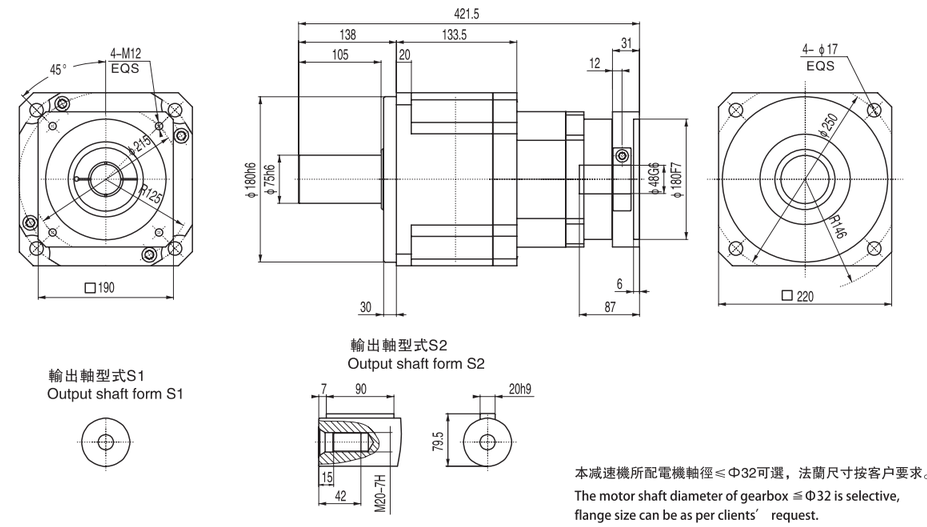
WFP220精密行星齒輪減速機外形尺寸圖
PLANETARY GEARBOX OUTLINE DIMENSION

WFP220單級 / Single stage



本減速機所配電機軸徑≦Φ55可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ55 is selective, flange size can be as per clients' request.

WFP220雙級 / Double stage



本減速機所配電機軸徑≦Φ32可選，法蘭尺寸按客户要求。
The motor shaft diameter of gearbox ≦Φ32 is selective, flange size can be as per clients' request.

WPL系列精密行星减速機
WPL SERIES PIANETARY GEARBOX



WPL系列减速機主要性能
THE PERFORMANCE OF WPL SERIES GEARBOX

1、采用漸開綫齒輪傳動，合金鋼滲碳淬火、精加工達ISO標準5級，齒向齒廓修形處理，確保運轉平穩，噪聲低，承載能力高；
2、整體式輸出軸，行星架兩端軸承支撐，實現更高精度、高剛性；
3、回程間隙小，可按客户要求精密單級做到4arcmin以内；
4、高速端回轉零件進行動平衡處理，確保高速運轉的平穩性；
5、適配任何伺服電機，可進行特殊連接設計，安裝簡便可靠；
6、維護簡單，在產品壽命期内無需更換潤滑油(脂)。

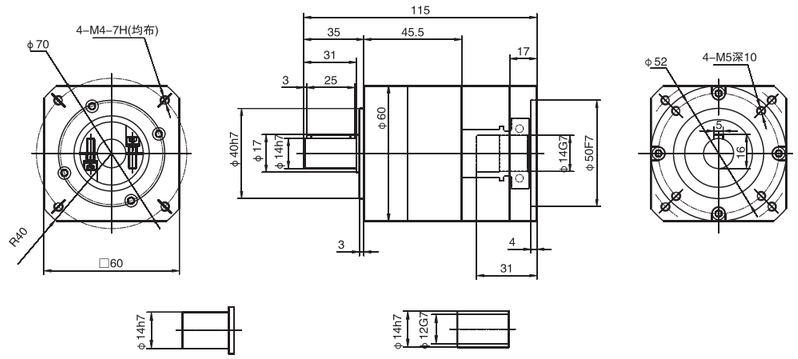
1.Using involute gear transmission, alloy steel with carbonize&quencher heat treatment, precision level of gear grinding could reach ISO class 5, the profile and axial modification could enhance the bearing capacity ,stability of mesh and low noise.
2.With integral output shaft and bearing support for both sides of planet wheel, realizing higher precision and higher rigidity.
3.Small backlash, the accurate single stage can reach within 4 arcmin as clients' request.
4.Gyration parts of the input side with dynamic balance treatment can make sure the gearbox running steadily at high speed.
5.It can combined with any servo motor, can be designed for special combination, and easy for mounting.
6.Simple for maintenance, it don't need to change the oil(grease) during the service life time.

WPL產品性能參數表 / WPL PRODUCT Performance Parameters

型號規格		WPL60	WPL70	WPL90	WPL120	WPL160	速比	級數
額定輸出力矩T2N Nominal output torque	Nm	22	38	94	170	435	3	1
		33	52	136	238	582	4	
		34	56	135	240	585	5	
		28	46	106	192	480	7	
		19	28	67	119	296	10	
		33	52	136	238	582	16	2
		33	52	136	238	582	20	
		34	56	135	240	585	25	
		33	52	136	238	582	28	
		34	56	135	240	585	35	
		33	52	136	238	582	40	
		34	56	135	240	585	50	
		28	46	106	192	480	70	
		19	28	67	119	296	100	
		33	52	136	238	582	64	3
		33	52	136	238	582	80	
		33	52	136	238	582	100	
		34	56	135	240	585	125	
		33	52	136	238	582	140	
		34	56	135	240	585	175	
		33	52	136	238	582	200	
		34	56	135	240	585	250	
		33	52	136	238	582	280	
		34	56	135	240	585	350	
		33	52	136	238	582	400	
		34	56	135	240	585	500	
		28	46	106	192	480	700	
		19	28	67	119	296	1000	
最大輸出扭矩T2max Max.output torque	Nm	2倍額定輸出力矩						1、2、3
扭轉剛度 TORSIONAL RIGIDITY	Nm/arcmin	2.4	4.2	7.5	15	28		
額定輸入轉速n1 Nominal input speed	rpm	4000	3500	3500	3000	3000		
最大輸入轉速nmax Max.input speed	rpm	8000	7000	7000	5000	4500		
最大徑向力F2r Max.Radial forces	N	555	1179	1280	2189	3225		
最大軸向力F2a Max.Axial forces	N	793	1539	1649	2922	4628		
標準背隙 Standard Backlash	<=arcmin	8	8	8	8	8		1
		10	10	10	10	10		2
		12	12	12	12	12		3
精密背隙 Precision Backlash	<=arcmin	4	4	4	4	4		1
		6	6	6	6	6		2
		8	8	8	8	8		3
滿載效率 Full load efficiency	%	96					3—10	1
		94					16—100	2
		92					64—1000	3
使用壽命 Service life	h	20000					3—1000	1 、2、3
重量 Weight	kg	1.03	1.52	2.96	6.94	19.8		1
		1.33	1.97	3.56	9.04	25.8		2
		1.63	2.42	4.16	11.14	31.8		3
噪聲值（n1=3000prm） Running noise	dB(A)	58	60	62	65	68	3—1000	1 、2、3
轉動慣量J1 Moment of inertia	kg.cm2	0.107	0.146	0.400	1.650	6.310	3	1
		0.094	0.113	0.309	1.220	5.150	4	
		0.092	0.107	0.291	1.150	4.930	5	
		0.091	0.105	0.285	1.130	4.840	7	
		0.091	0.104	0.283	1.110	4.760	10	
		0.094	0.113	0.309	1.220	5.150	16	2
		0.092	0.107	0.291	1.150	4.930	20	
		0.092	0.107	0.291	1.150	4.930	25	
		0.091	0.105	0.285	1.130	4.840	28	
		0.091	0.105	0.285	1.130	4.840	35	
		0.091	0.104	0.283	1.110	4.750	40	
		0.091	0.104	0.283	1.110	4.750	50	
		0.091	0.104	0.283	1.110	4.750	70	
		0.091	0.104	0.283	1.110	4.750	100	
		0.092	0.107	0.291	1.150	4.930	64	3
		0.092	0.107	0.291	1.150	4.930	80	
		0.092	0.107	0.291	1.150	4.930	100	
		0.092	0.107	0.291	1.150	4.930	125	
		0.091	0.105	0.285	1.130	4.930	140	
		0.091	0.105	0.285	1.130	4.930	175	
		0.091	0.104	0.283	1.110	4.840	200	
		0.091	0.104	0.283	1.110	4.840	250	
		0.091	0.104	0.283	1.110	4.840	280	
		0.091	0.104	0.283	1.110	4.840	350	
		0.091	0.104	0.283	1.110	4.840	400	
		0.091	0.104	0.283	1.110	4.840	500	
		0.091	0.104	0.283	1.110	4.840	700	
		0.091	0.104	0.283	1.110	4.840	1000	

WPL60精密行星減速機外形圖 /

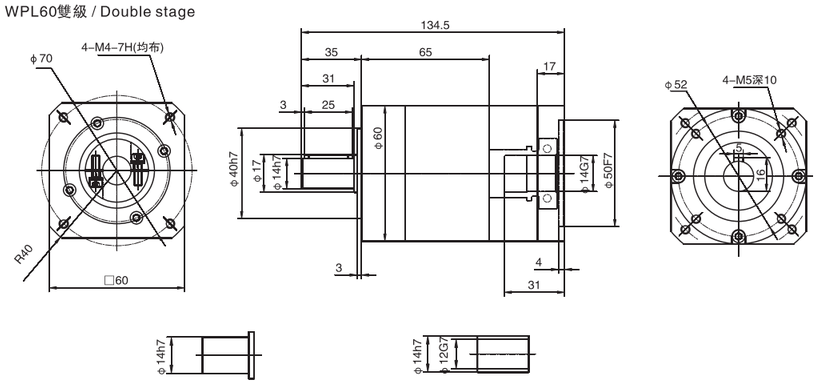
WPL60單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

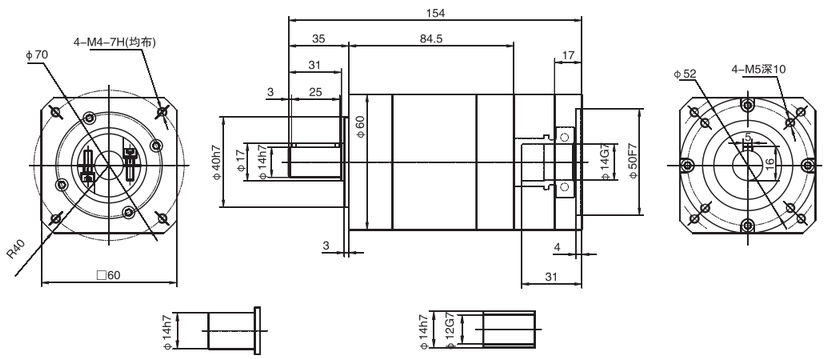
WPL60雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL60三級 /Three stage

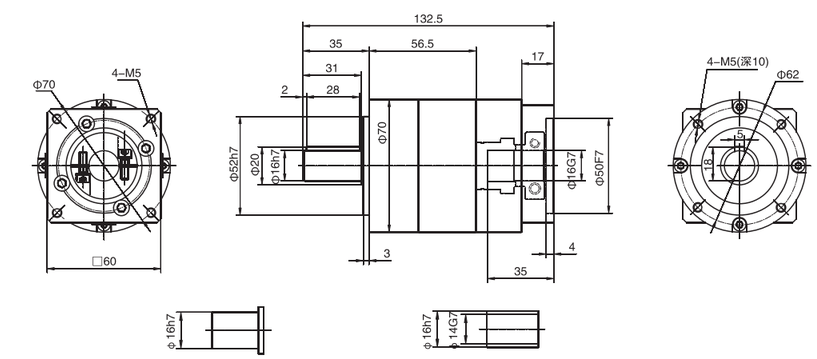


光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL70精密行星減速機外形圖 /

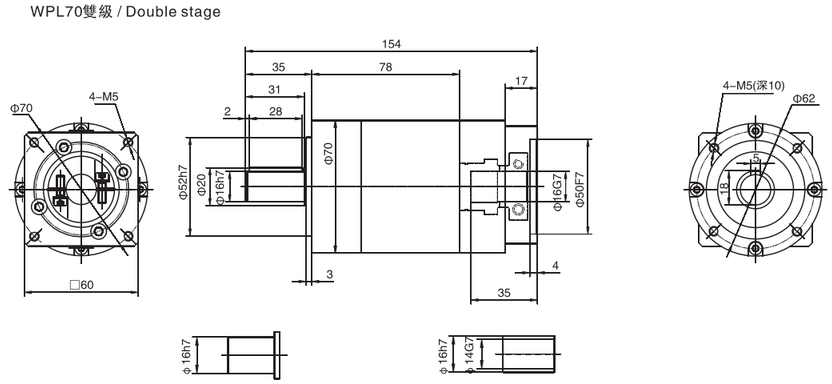
WPL70單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

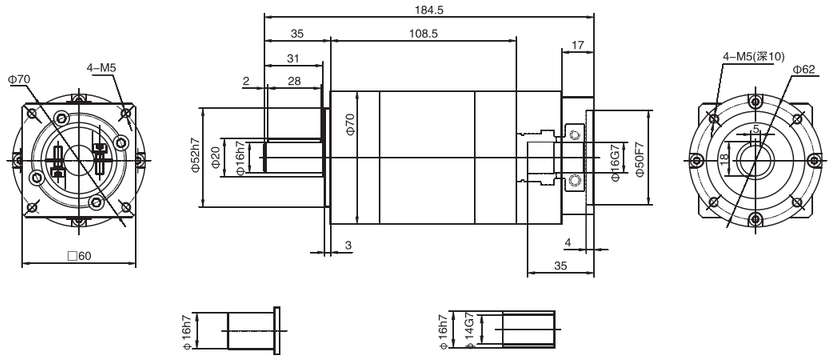
WPL70雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL70三級 /Three stage

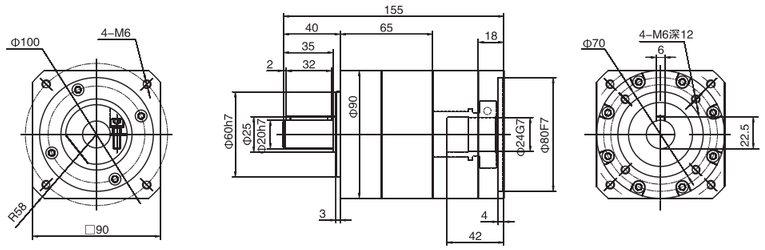


光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL90精密行星減速機外形圖 /

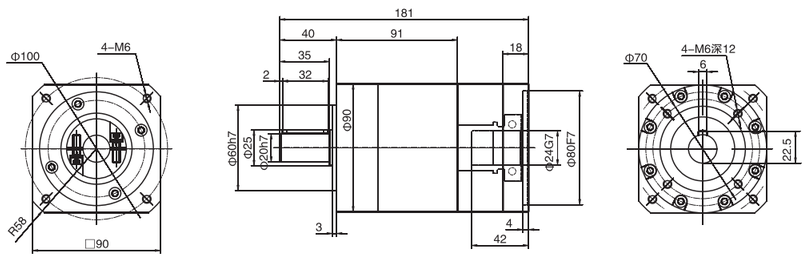
WPL90單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

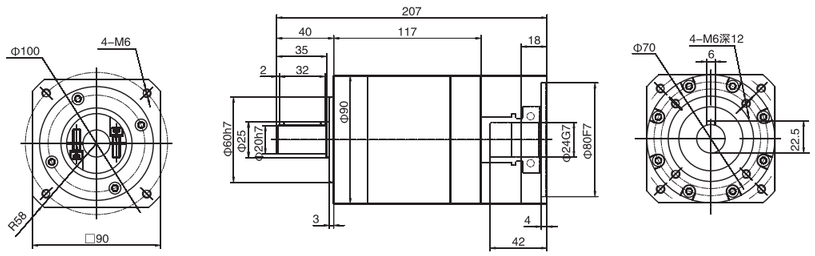
WPL90雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL90三級 /Three stage

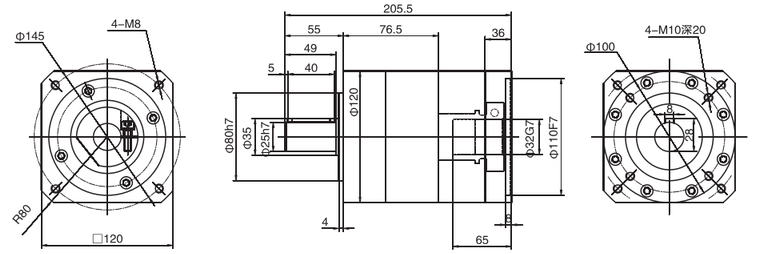


光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL120精密行星減速機外形圖 /

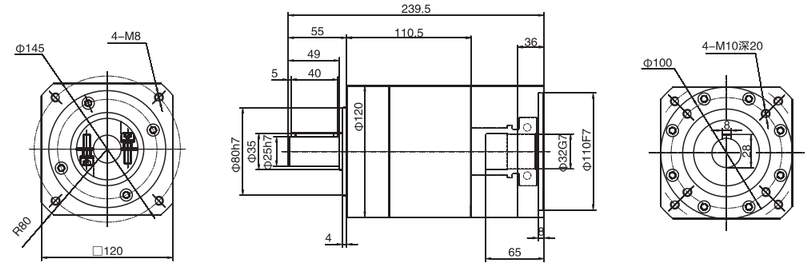
WPL120單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

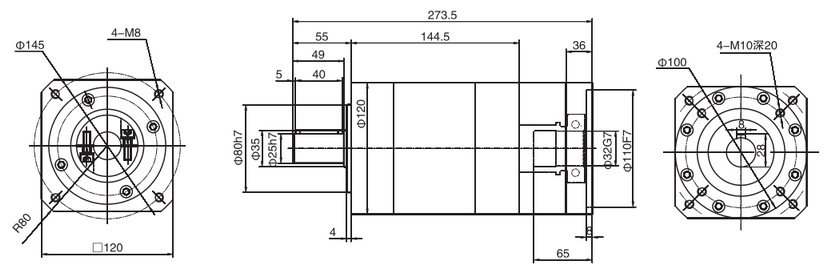
WPL120雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL120三級 /Three stage

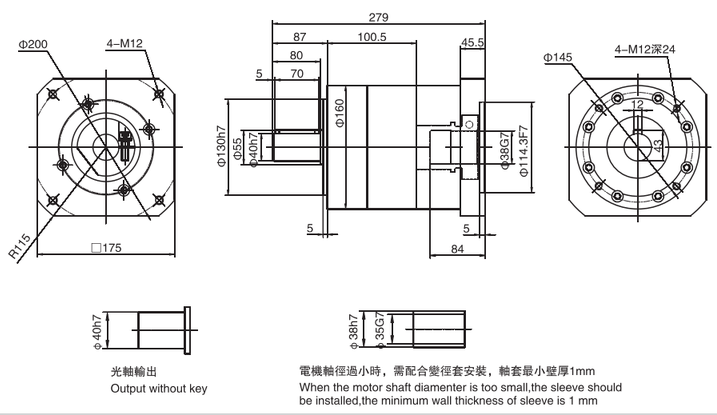


光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL160精密行星減速機外形圖 /

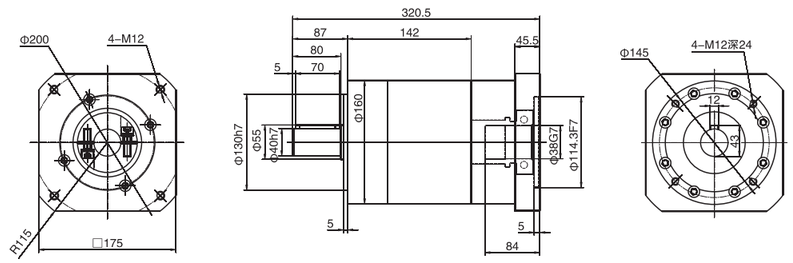
WPL160單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

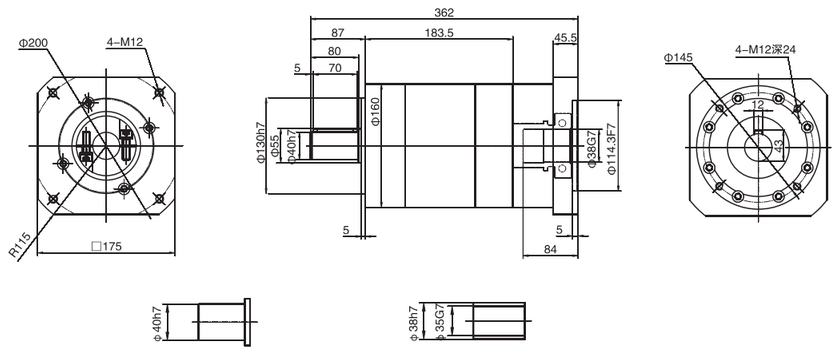
WPL160雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPL160三級 /Three stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF系列精密行星减速機
WPLF SERIES PIANETARY GEARBOX



WPLF系列減速機主要性能
THE PERFORMANCE OF WPLF SERIES GEARBOX

1、采用漸開綫齒輪傳動，合金鋼滲碳淬火、精加工達ISO標準5級，齒向齒廓修形處理，確保運轉平穩，噪聲低，承載能力高；
2、整體式輸出軸，行星架兩端軸承支撐，實現更高精度、高剛性；
3、回程間隙小，可按客户要求精密單級做到4arcmin以内；
4、高速端回轉零件進行動平衡處理，確保高速運轉的平穩性；
5、適配任何伺服電機，可進行特殊連接設計，安裝簡便可靠；
6、維護簡單，在産品壽命期内無需更換潤滑油(脂)。

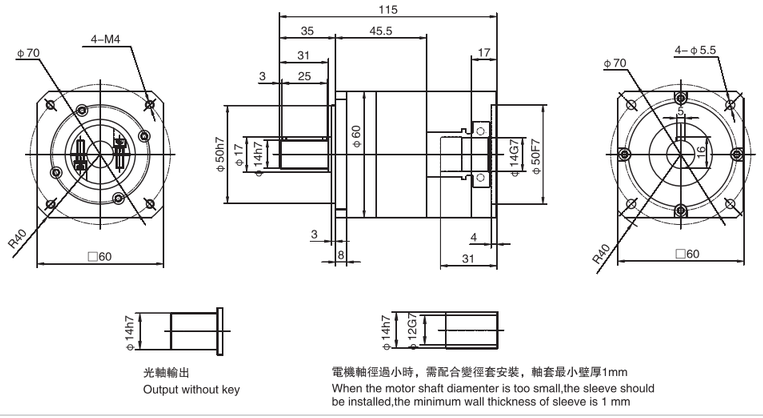
1.Using involute gear transmission, alloy steel with carbonize&quencher heat treatment, precision level of gear grinding could reach ISO class 5, the profile and axial modification could enhance the bearing capacity ,stability of mesh and low noise.
2.With integral output shaft and bearing support for both sides of planet wheel, realizing higher precision and higher rigidity.
3.Small backlash, the accurate single stage can reach within 4 arcmin as clients’ request.
4.Gyration parts of the input side with dynamic balance treatment can make sure the gearbox running steadily at high speed.
5.It can combined with any servo motor, can be designed for special combination, and easy for mounting.
6.Simple for maintenance, it don’t need to change the oil(grease) during the service life time.

WPLF產品性能參數表 / WPLF PRODUCT Performance Parameters

型號規格		WPLF60	WPLF70	WPLF90	WPLF120	WPLF160	速比	級數
額定輸出力矩 T2N Nominal output torque	Nm	22	38	94	170	435	3	1
		33	52	136	238	582	4	
		34	56	135	240	585	5	
		28	46	106	192	480	7	
		19	28	67	119	296	10	
		33	52	136	238	582	16	2
		33	52	136	238	582	20	
		34	56	135	240	585	25	
		33	52	136	238	582	28	
		34	56	135	240	585	35	
		33	52	136	238	582	40	
		34	56	135	240	585	50	
		28	46	106	192	480	70	
		19	28	67	119	296	100	
		33	52	136	238	582	64	3
		33	52	136	238	582	80	
		33	52	136	238	582	100	
		34	56	135	240	585	125	
		33	52	136	238	582	140	
		34	56	135	240	585	175	
		33	52	136	238	582	200	
		34	56	135	240	585	250	
		33	52	136	238	582	280	
		34	56	135	240	585	350	
		33	52	136	238	582	400	
		34	56	135	240	585	500	
		28	46	106	192	480	700	
		19	28	67	119	296	1000	
最大輸出扭矩T2max Max.output torque	Nm	2倍額定輸出力矩						1、2、3
扭轉剛度 TORSIONAL RIGIDITY	Nm/arcmin	2.4	4.2	7.5	15	28		
額定輸入轉速n1 Nominal input speed	rpm	4000	3500	3500	3000	3000		
最大輸入轉速nmax Max.input speed	rpm	8000	7000	7000	5000	4500		
最大徑向力F2r Max.Radial forces	N	555	1179	1280	2189	3225		
最大軸向力F2a Max.Axial forces	N	793	1539	1649	2922	4628		
標準背隙 Standard Backlash	<=arcmin	8	8	8	8	8		1
		10	10	10	10	10		2
		12	12	12	12	12		3
精密背隙 Precision Backlash	<=arcmin	4	4	4	4	4		1
		6	6	6	6	6		2
		8	8	8	8	8		3
滿載效率 Full load efficiency	%	96					3—10	1
		94					16—100	2
		92					64—1000	3
使用壽命 Service life	h	20000					3—1000	1 、2、3
重量 Weight	kg	1.03	1.52	2.96	6.94	19.8		1
		1.33	1.97	3.56	9.04	25.8		2
		1.63	2.42	4.16	11.14	31.8		3
噪聲值（ n1=3000prm） Running noise	dB(A)	58	60	62	65	68	3—1000	1 、2、3
轉動慣量J1 Moment of inertia	kg.cm2	0.107	0.146	0.400	1.650	6.310	3	1
		0.094	0.113	0.309	1.220	5.150	4	
		0.092	0.107	0.291	1.150	4.930	5	
		0.091	0.105	0.285	1.130	4.840	7	
		0.091	0.104	0.283	1.110	4.760	10	
		0.094	0.113	0.309	1.220	5.150	16	2
		0.092	0.107	0.291	1.150	4.930	20	
		0.092	0.107	0.291	1.150	4.930	25	
		0.091	0.105	0.285	1.130	4.840	28	
		0.091	0.105	0.285	1.130	4.840	35	
		0.091	0.104	0.283	1.110	4.750	40	
		0.091	0.104	0.283	1.110	4.750	50	
		0.091	0.104	0.283	1.110	4.750	70	
		0.091	0.104	0.283	1.110	4.750	100	
		0.092	0.107	0.291	1.150	4.930	64	3
		0.092	0.107	0.291	1.150	4.930	80	
		0.092	0.107	0.291	1.150	4.930	100	
		0.092	0.107	0.291	1.150	4.930	125	
		0.091	0.105	0.285	1.130	4.930	140	
		0.091	0.105	0.285	1.130	4.930	175	
		0.091	0.104	0.283	1.110	4.840	200	
		0.091	0.104	0.283	1.110	4.840	250	
		0.091	0.104	0.283	1.110	4.840	280	
		0.091	0.104	0.283	1.110	4.840	350	
		0.091	0.104	0.283	1.110	4.840	400	
		0.091	0.104	0.283	1.110	4.840	500	
		0.091	0.104	0.283	1.110	4.840	700	
		0.091	0.104	0.283	1.110	4.840	1000	

WPLF60精密行星減速機外形圖 /

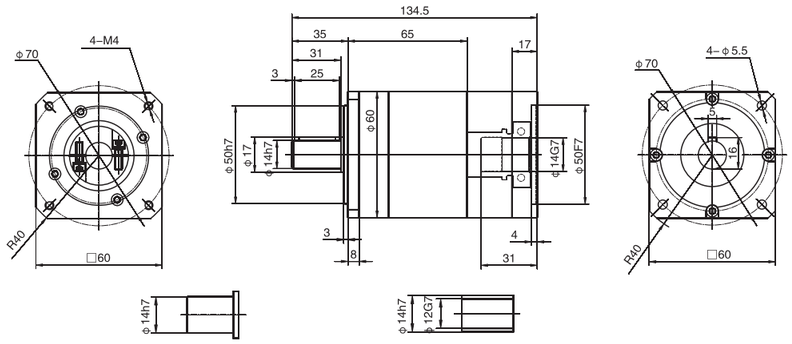
WPLF60單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

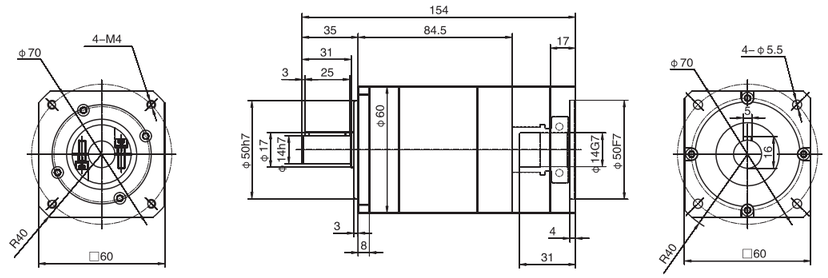
WPLF60雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF60三級 /Three stage

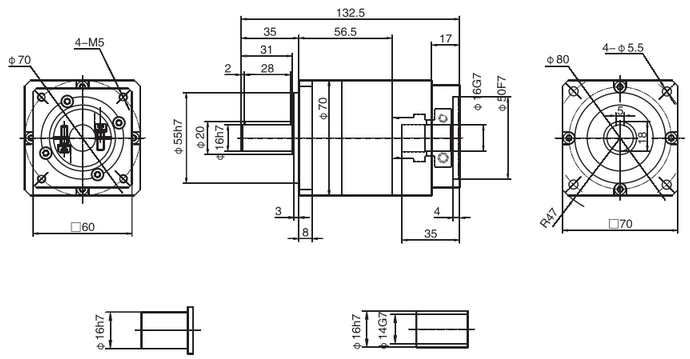


光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF70精密行星減速機外形圖 /

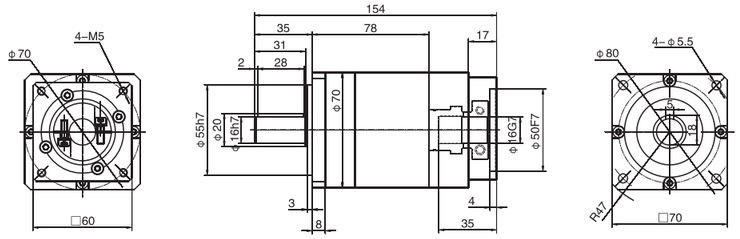
WPLF70單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

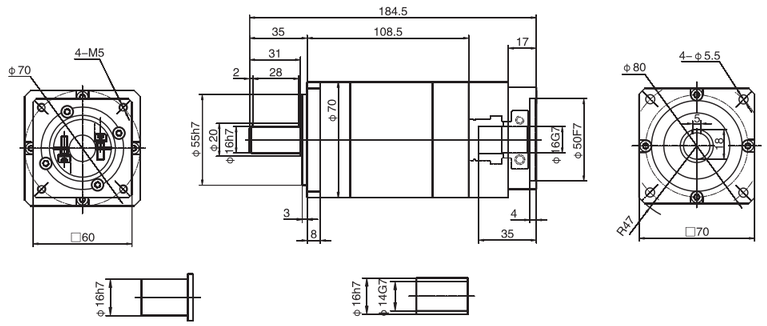
WPLF70雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF70三級 /Three stage

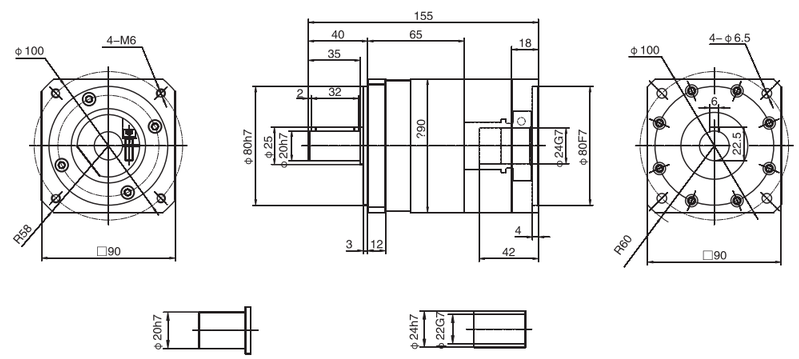


光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF90精密行星減速機外形圖 /

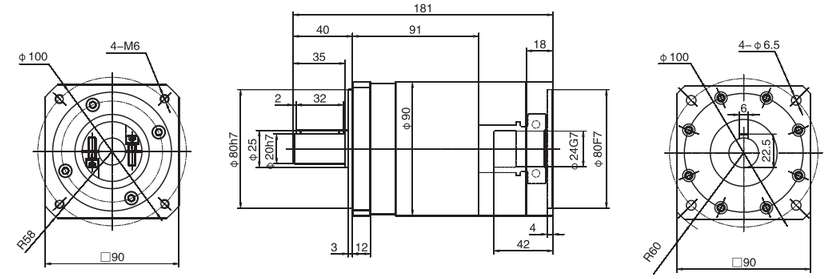
WPLF90單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

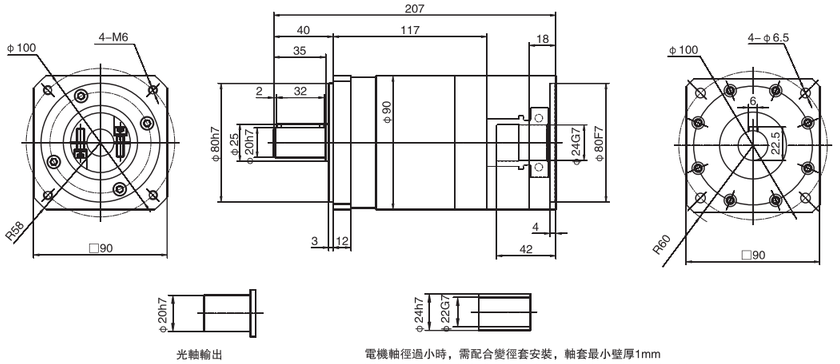
WPLF90雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF90三級 /Three stage

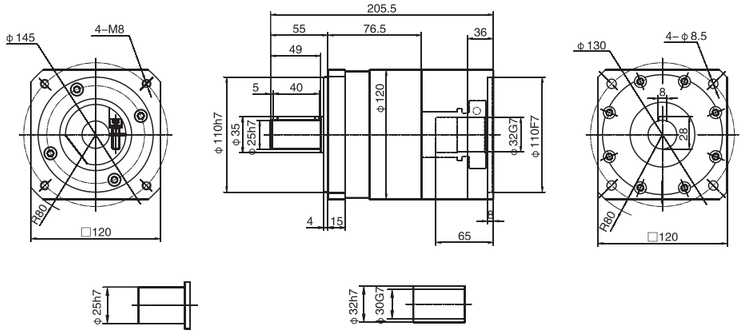


光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF120精密行星減速機外形圖 /

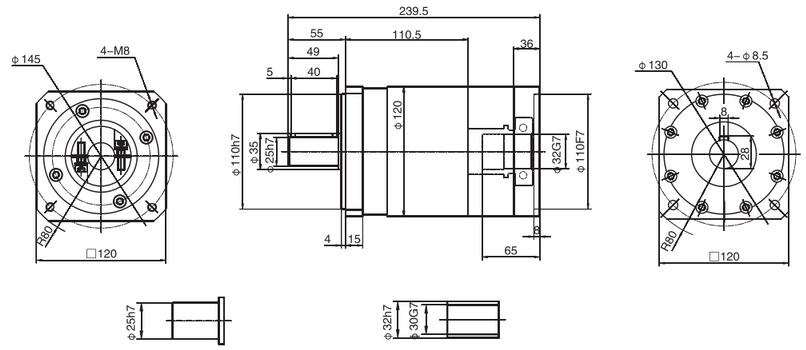
WPLF120單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

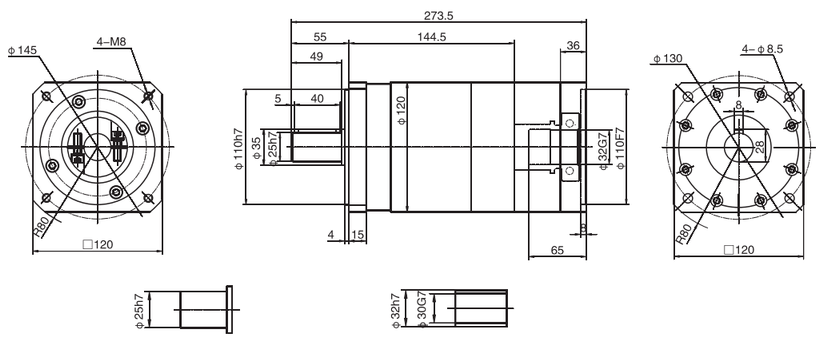
WPLF120雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF120三級 /Three stage

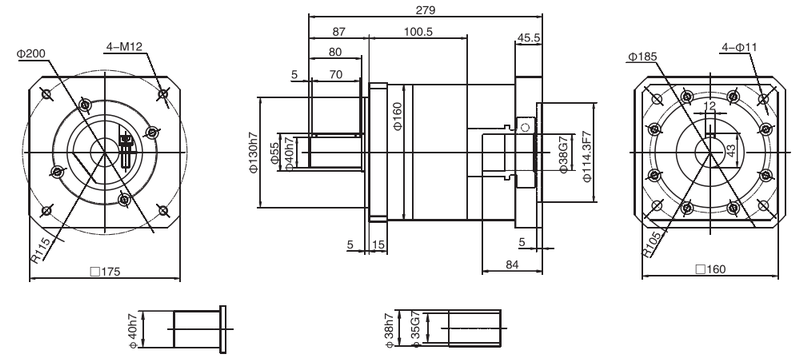


光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF160精密行星減速機外形圖 /

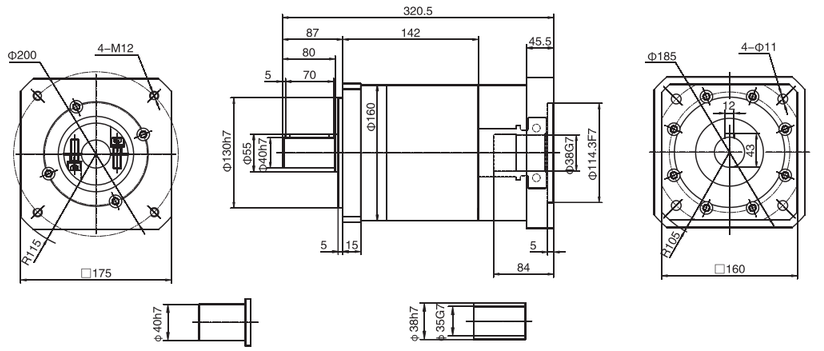
WPLF160單級 / Single stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

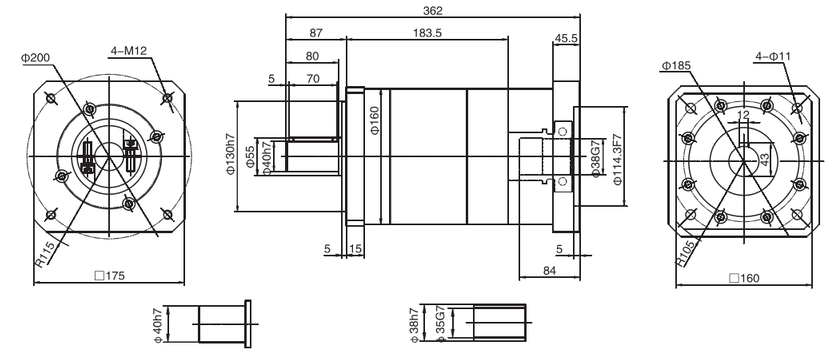
WPLF160雙級 / Double stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLF160三級 /Three stage



光軸輸出
Output without key

電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLH系列精密行星减速機
WPLH SERIES PIANETARY GEARBOX



WPLH系列减速機主要性能
THE PERFORMANCE OF WPLH SERIES GEARBOX

1、采用漸開綫齒輪傳動，合金鋼滲碳淬火、精加工達ISO標準5級，齒向齒廓修形處理，確保運轉平穩，噪聲低，承載能力高；
2、整體式輸出軸，行星架兩端軸承支撐，實現更高精度、高剛性；
3、回程間隙小，可按客户要求精密單級做到4arcmin以内；
4、高速端回轉零件進行動平衡處理，確保高速運轉的平穩性；
5、適配任何伺服電機，可進行特殊連接設計，安裝簡便可靠；
6、維護簡單，在產品壽命期内無需更換潤滑油(脂)。

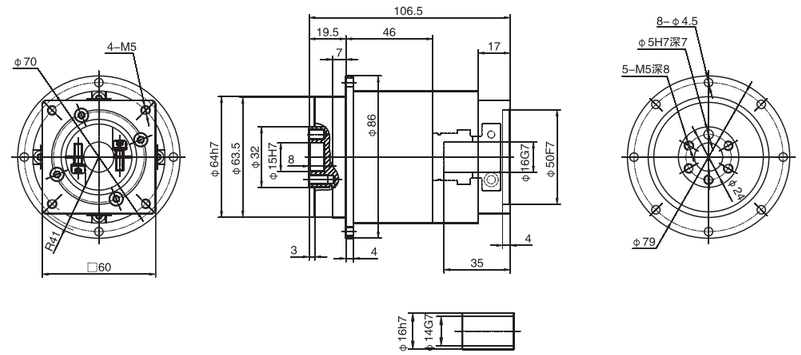
1.Using involute gear transmission, alloy steel with carbonize&quencher heat treatment, precision level of gear grinding could reach ISO class 5, the profile and axial modification could enhance the bearing capacity ,stability of mesh and low noise.
2.With integral output shaft and bearing support for both sides of planet wheel, realizing higher precision and higher rigidity.
3.Small backlash, the accurate single stage can reach within 4 arcmin as clients' request.
4.Gyration parts of the input side with dynamic balance treatment can make sure the gearbox running steadily at high speed.
5.It can combined with any servo motor, can be designed for special combination, and easy for mounting.
6.Simple for maintenance, it don't need to change the oil(grease) during the service life time.

WPLH產品性能參數表 / WPLH PRODUCT Performance Parameters

型號規格		WPLH70	WPLH90	WPLH120	WPLH160	速比	級數
額定輸出力矩 T2N Nominal output torque	Nm	38	94	170	435	3	1
		52	136	238	582	4	
		56	135	240	585	5	
		46	106	192	480	7	
		28	67	119	296	10	
		52	136	238	582	16	2
		52	136	238	582	20	
		56	135	240	585	25	
		52	136	238	582	28	
		56	135	240	585	35	
		52	136	238	582	40	
		56	135	240	585	50	
		46	106	192	480	70	
		28	67	119	296	100	
		52	136	238	582	64	3
		52	136	238	582	80	
		52	136	238	582	100	
		56	135	240	585	125	
		52	136	238	582	140	
		56	135	240	585	175	
		52	136	238	582	200	
		56	135	240	585	250	
		52	136	238	582	280	
		56	135	240	585	350	
		52	136	238	582	400	
		56	135	240	585	500	
		46	106	192	480	700	
		28	67	119	296	1000	
最大輸出扭矩T2max Max.output torque	Nm	2倍額定輸出扭矩					1、2、3
扭轉剛度 TORSIONAL RIGIDITY	Nm/arcmin	4.2	7.5	15	28		
額定輸入轉速n1 Nominal input speed	rpm	3500	3500	3000	3000		
最大輸入轉速nmax Max.input speed	rpm	7000	7000	5000	4500		
最大徑向力F2r Max.Radial forces	N	1179	1280	2189	3225		
最大軸向力F2a Max.Axial forces	N	1539	1649	2922	4628		
標準背隙 Standard Backlash	<=arcmin	8	8	8	8		1
		10	10	10	10		2
		12	12	12	12		3
精密背隙 Precision Backlash	<=arcmin	4	4	4	4		1
		6	6	6	6		2
		8	8	8	8		3
滿載效率 Full load efficiency	%	96				3—10	1
		94				16–100	2
		92				64–1000	3
使用壽命 Service life	h	20000				3–1000	1 、2、3
重量 Weight	kg	1.95	3.6	8.3	24		1
		2.4	4.2	10.4	30		2
		2.85	4.8	12.5	36		3
噪聲值（n1=3000prm) Running noise	dB(A)	60	62	65	68	3–1000	1 、2、3
轉動慣量J1 Moment of inertia	kg.cm2	0.129	0.400	1.650	6.310	3	1
		0.100	0.309	1.220	5.150	4	
		0.094	0.291	1.150	4.930	5	
		0.092	0.285	1.130	4.840	7	
		0.091	0.283	1.110	4.810	10	
		0.100	0.309	1.220	5.150	16	2
		0.094	0.291	1.150	4.930	20	
		0.094	0.291	1.150	4.930	25	
		0.092	0.285	1.130	4.840	28	
		0.092	0.285	1.130	4.840	35	
		0.091	0.283	1.110	4.810	40	
		0.091	0.283	1.110	4.810	50	
		0.091	0.283	1.110	4.810	70	
		0.091	0.283	1.110	4.810	100	
		0.099	0.304	1.201	5.150	64	3
		0.094	0.291	1.150	4.930	80	
		0.094	0.291	1.150	4.930	100	
		0.094	0.291	1.150	4.840	125	
		0.092	0.285	1.130	4.840	140	
		0.092	0.285	1.130	4.840	175	
		0.091	0.283	1.110	4.810	200	
		0.091	0.283	1.110	4.810	250	
		0.091	0.283	1.110	4.810	280	
		0.091	0.283	1.110	4.810	350	
		0.091	0.283	1.110	4.810	400	
		0.091	0.283	1.110	4.810	500	
		0.091	0.283	1.110	4.810	700	
		0.091	0.283	1.110	4.810	1000	

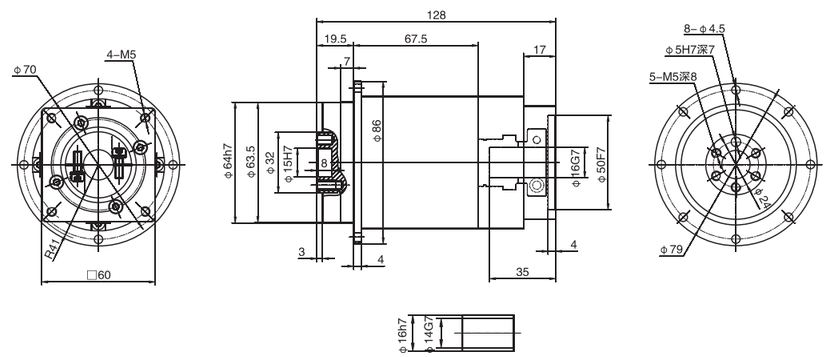
WPLH70精密行星減速機外形圖 /

WPLH70單級 / Single stage



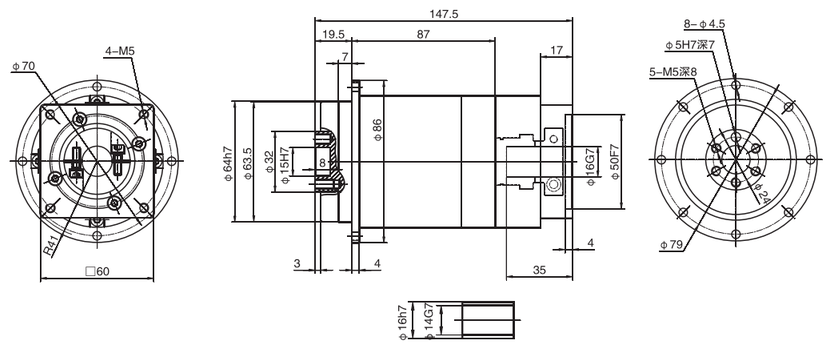
電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLH70雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

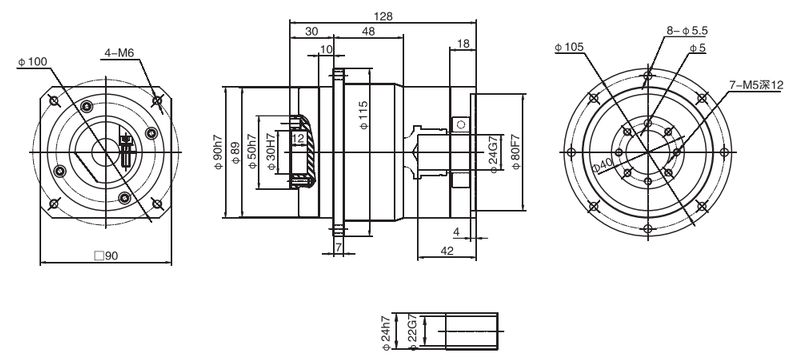
WPLH70三級 /Three stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

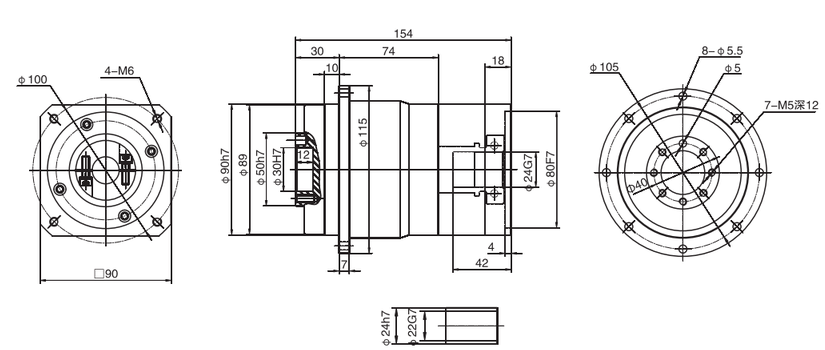
WPLH90精密行星減速機外形圖 /

WPLH90單級 / Single stage



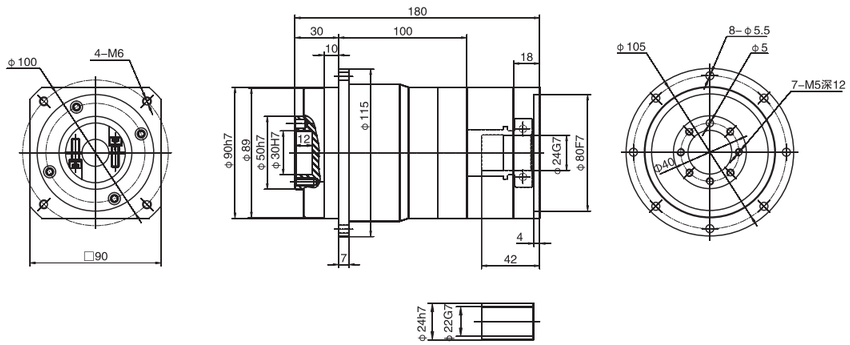
電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLH90雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

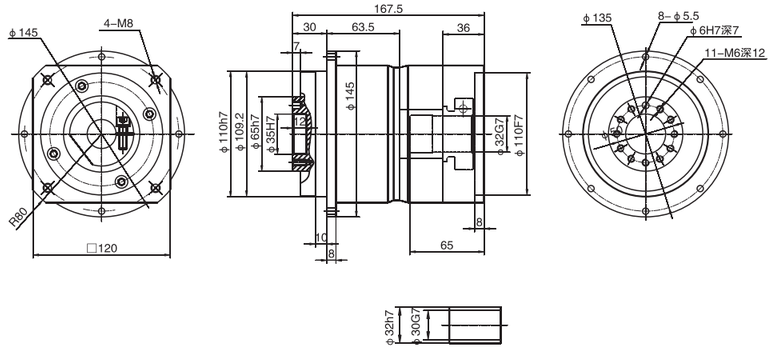
WPLH90三級 /Three stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

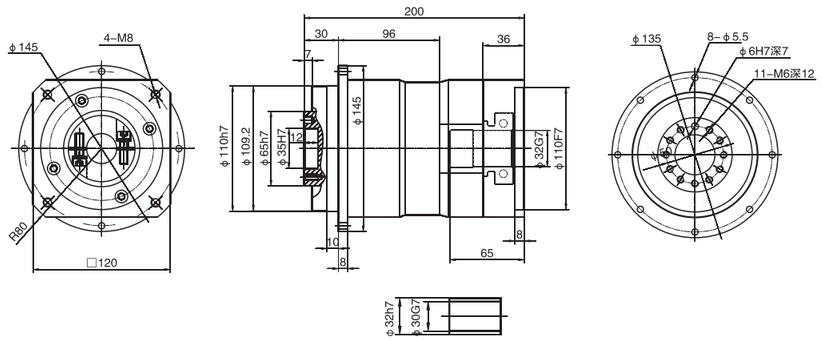
WPLH120精密行星減速機外形圖 /

WPLH120單級 / Single stage



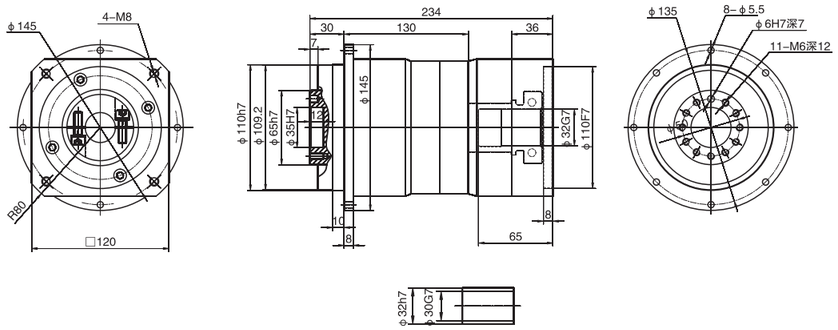
電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLH120雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

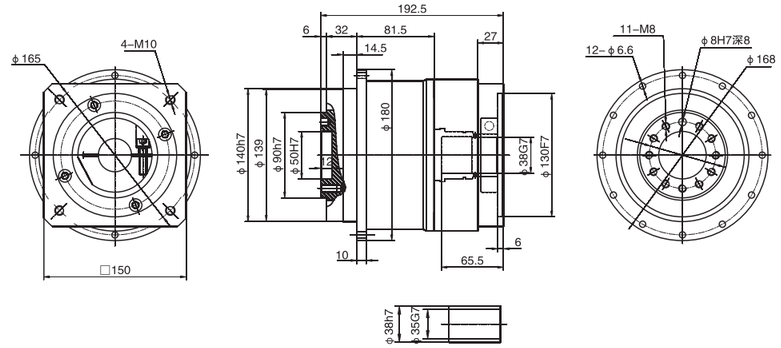
WPLH120三級 /Three stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

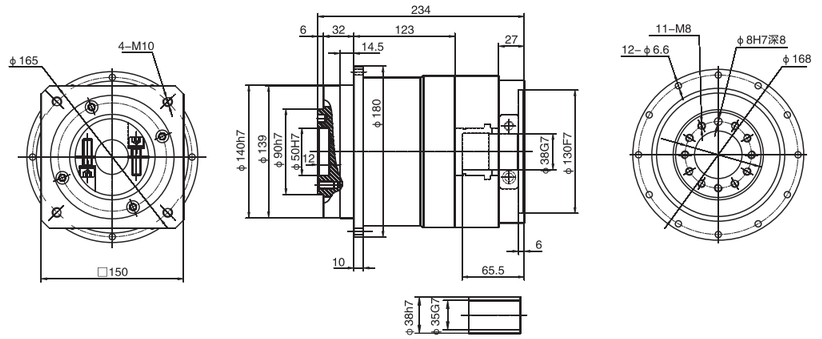
WPLH160精密行星減速機外形圖 /

WPLH160單級 / Single stage



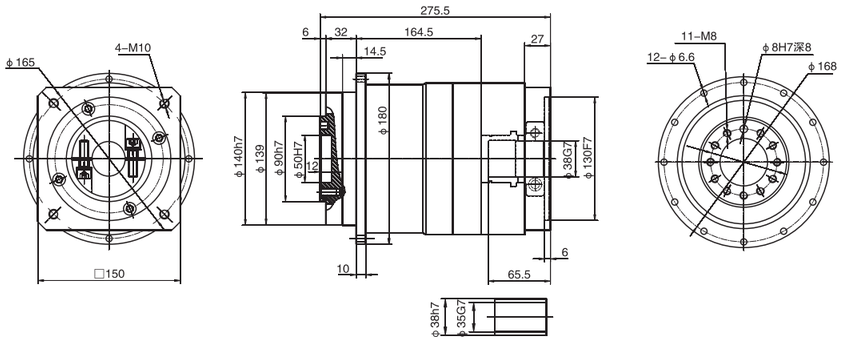
電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLH160雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLH160三級 /Three stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

WPLR系列精密行星减速機
WPLR SERIES PIANETARY GEARBOX



WPLR系列减速機主要性能
THE PERFORMANCE OF WPLR SERIES GEARBOX

1、采用漸開綫齒輪傳動，合金鋼滲碳淬火、精加工達ISO標準5級，齒向齒廓修形處理，確保運轉平穩，噪聲低，承載能力高；
2、整體式輸出軸，行星架兩端軸承支撐，實現更高精度、高剛性；
3、回程間隙小，可按客户要求精密單級做到6arcmin以内；
4、高速端回轉零件進行動平衡處理，確保高速運轉的平穩性；
5、適配任何伺服電機，可進行特殊連接設計，安裝簡便可靠；
6、維護簡單，在產品壽命期内無需更換潤滑油(脂)。

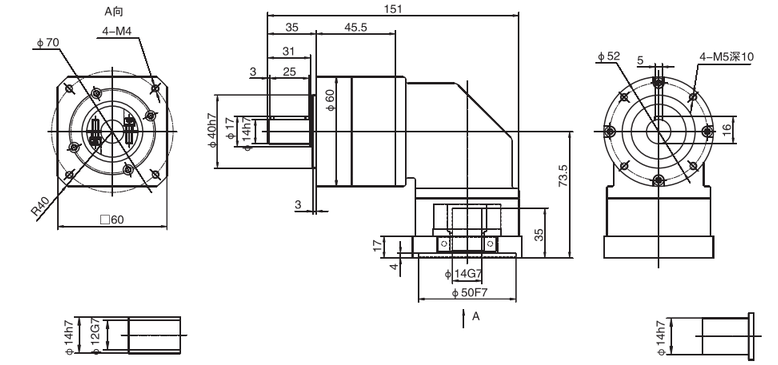
1.Using involute gear transmission, alloy steel with carbonize&quencher heat treatment, precision level of gear grinding could reach ISO class 5, the profile and axial modification could enhance the bearing capacity ,stability of mesh and low noise.
2.With integral output shaft and bearing support for both sides of planet wheel, realizing higher precision and higher rigidity.
3.Small backlash, the accurate single stage can reach within 6 arcmin as clients' request.
4.Gyration parts of the input side with dynamic balance treatment can make sure the gearbox running steadily at high speed.
5.It can combined with any servo motor, can be designed for special combination, and easy for mounting.
6.Simple for maintenance, it don't need to change the oil(grease) during the service life time.

WPLR產品性能參數表 / WPLR PRODUCT Performance Parameters

型號規格		WPLR60	WPLR90	WPLR120	WPLR160	速比	級數
額定輸出力矩 T2N Nominal output torque	Nm	22	94	170	435	3	1
		33	136	238	582	4	
		34	135	240	585	5	
		28	106	192	480	7	
		19	67	119	296	10	
		33	136	238	582	16	2
		33	136	238	582	20	
		34	135	240	585	25	
		33	136	238	582	28	
		34	135	240	585	35	
		33	136	238	582	40	
		34	135	240	585	50	
		28	106	192	480	70	
		19	67	119	296	100	
		33	136	238	582	64	3
		33	136	238	582	80	
		33	136	238	582	100	
		34	135	240	585	125	
		33	136	238	582	140	
		34	135	240	585	175	
		33	136	238	582	200	
		34	135	240	585	250	
		33	136	238	582	280	
		34	135	240	585	350	
		33	136	238	582	400	
		34	135	240	585	500	
		28	106	192	480	700	
		19	67	119	296	1000	
最大輸出扭矩T2max Max.output torque	Nm	2倍額定輸出扭矩					1、2、3
扭轉剛度 TORSIONAL RIGIDITY	Nm/arcmin	2.4	7.5	15	28		
額定輸入轉速n1 Nominal input speed	rpm	4000	3500	3000	3000		
最大輸入轉速nmax Max.input speed	rpm	8000	7000	5000	4500		
最大徑向力F2r Max.Radial forces	N	555	1280	2189	3225		
最大軸向力F2a Max.Axial forces	N	793	1649	2922	4628		
標準背隙 Standard Backlash	<=arcmin	12	12	12	12		1
		15	15	15	15		2
		18	18	18	18		3
精密背隙 Precision Backlash	<=arcmin	6	6	6	6		1
		8	8	8	8		2
		10	10	10	10		3
滿載效率 Full load efficiency	%	94				3—10	1
		92				16—100	2
		90				64—1000	3
使用壽命 Service life	h	20000				3—1000	1 、2、3
重量 Weight	kg	2.1	4.7	11.2	18.8		1
		2.4	5.3	13.2	24.8		2
		2.7	5.9	15.2	30.8		3
噪聲值（n1=3000prm) Running noise	dB(A)	60	62	65	68	3—1000	1 、2、3
轉動慣量J1 Moment of inertia	kg.cm2	0.180	2.240	6.850	25.000	3—10	1
		0.180	2.240	6.850	25.000	16—100	2
		0.180	2.240	6.850	25.000	64—1000	3

WPLR60精密行星減速機外形圖 /

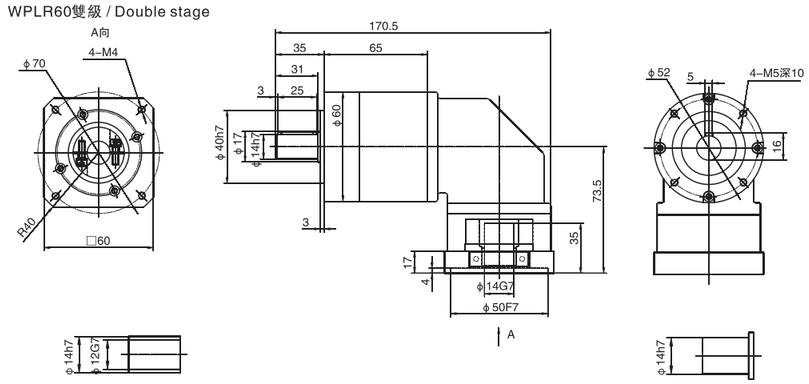
WPLR60單級 / Single stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

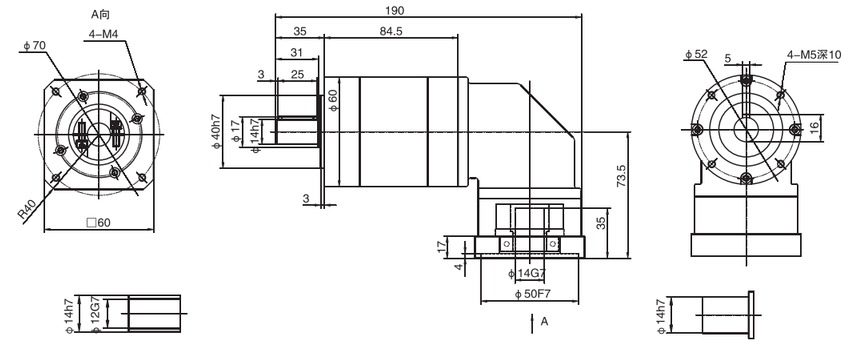
WPLR60雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLR60三級 /Three stage

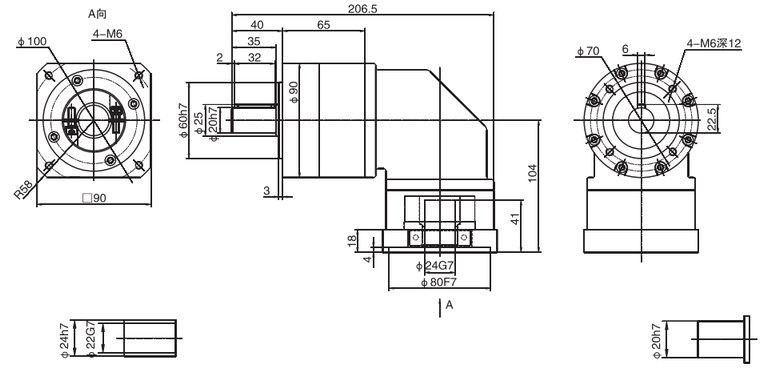


電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLR90精密行星減速機外形圖 /

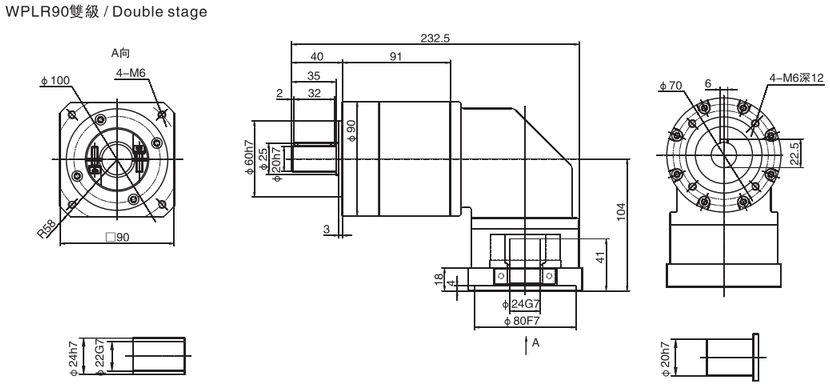
WPLR90單級 / Single stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

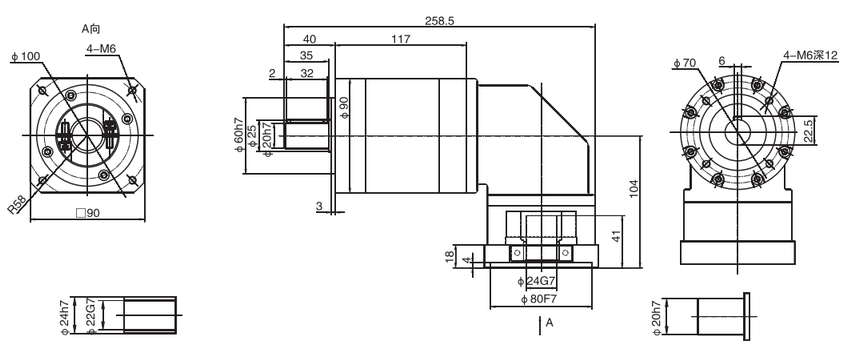
WPLR90雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLR90三級 /Three stage

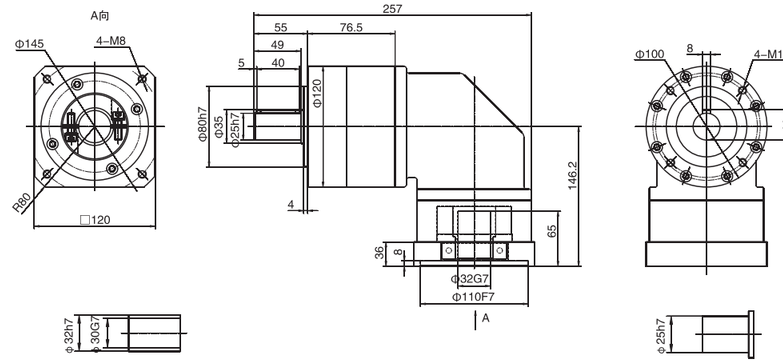


電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLR120精密行星減速機外形圖 /

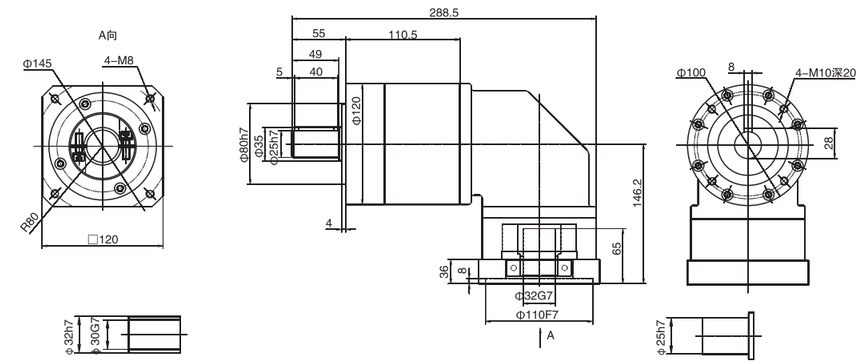
WPLR120單級 / Single stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

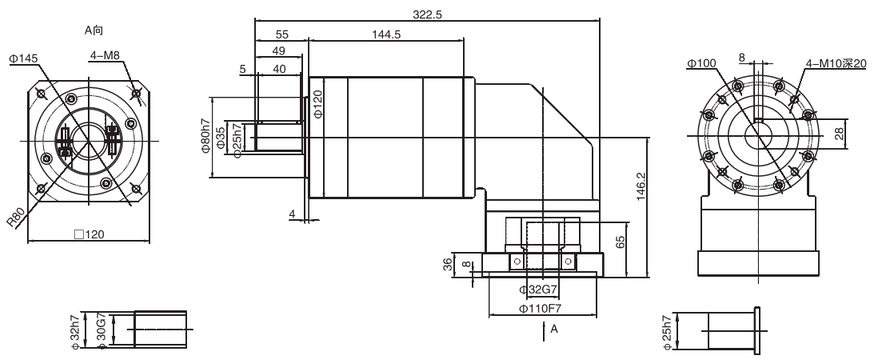
WPLR120雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLR120三級 /Three stage

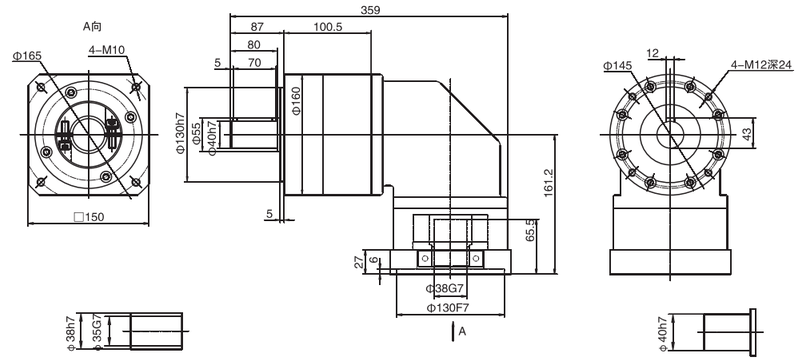


電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLR160精密行星減速機外形圖 /

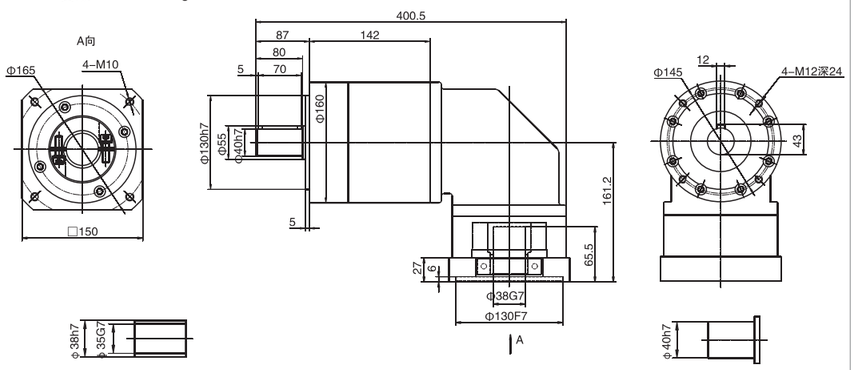
WPLR160單級 / Single stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

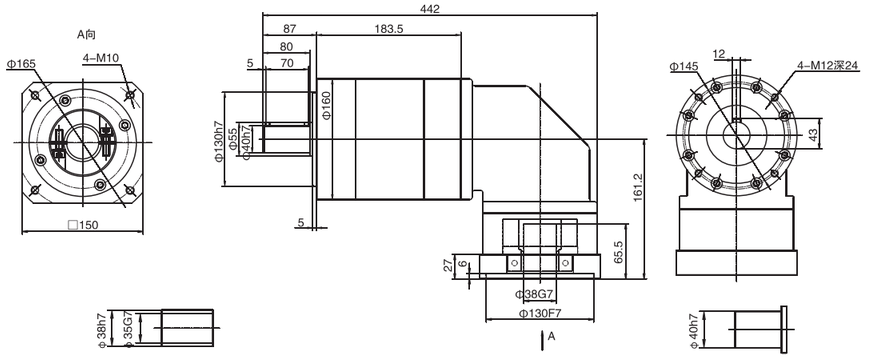
WPLR160雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

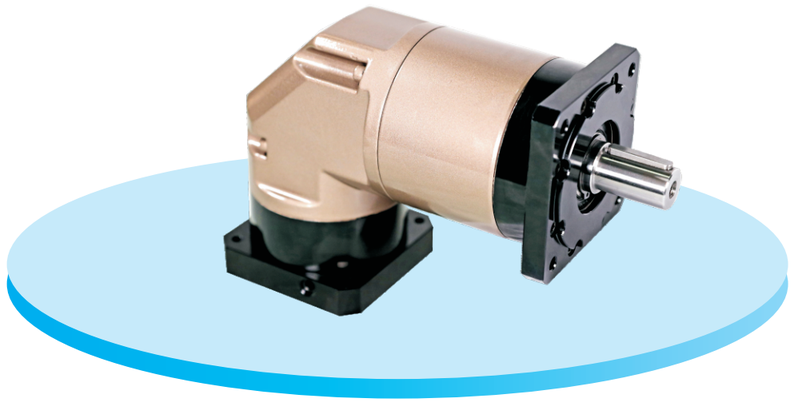
WPLR160三級 /Three stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLFR系列精密行星减速機
WPLFR SERIES PIANETARY GEARBOX



WPLFR系列减速機主要性能
THE PERFORMANCE OF WPLFR SERIES GEARBOX

1、采用漸開綫齒輪傳動，合金鋼滲碳淬火、精加工達ISO標準5級，齒向齒廓修形處理，確保運轉平穩，噪聲低，承載能力高；
2、整體式輸出軸，行星架兩端軸承支撐，實現更高精度、高剛性；
3、回程間隙小，可按客户要求精密單級做到6arcmin以内；
4、高速端回轉零件進行動平衡處理，確保高速運轉的平穩性；
5、適配任何伺服電機，可進行特殊連接設計，安裝簡便可靠；
6、維護簡單，在產品壽命期内無需更換潤滑油(脂)。

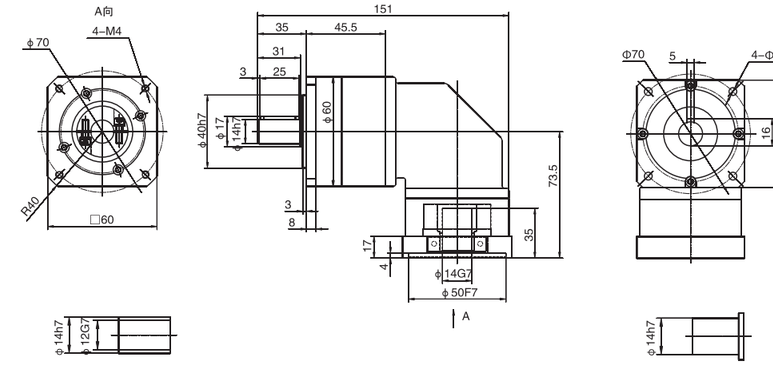
1.Using involute gear transmission, alloy steel with carbonize&quencher heat treatment, precision level of gear grinding could reach ISO class 5, the profile and axial modification could enhance the bearing capacity ,stability of mesh and low noise.
2.With integral output shaft and bearing support for both sides of planet wheel, realizing higher precision and higher rigidity.
3.Small backlash, the accurate single stage can reach within 6 arcmin as clients' request.
4.Gyration parts of the input side with dynamic balance treatment can make sure the gearbox running steadily at high speed.
5.It can combined with any servo motor, can be designed for special combination, and easy for mounting.
6.Simple for maintenance, it don't need to change the oil(grease) during the service life time.

WPLFR產品性能參數表 / WPLFR PRODUCT Performance Parameters

型號規格		WPLR60	WPLR90	WPLR120	WPLR160	速比	級數
額定輸出力矩 T2N Nominal output torque	Nm	22	94	170	435	3	1
		33	136	238	582	4	
		34	135	240	585	5	
		28	106	192	480	7	
		19	67	119	296	10	
		33	136	238	582	16	2
		33	136	238	582	20	
		34	135	240	585	25	
		33	136	238	582	28	
		34	135	240	585	35	
		33	136	238	582	40	
		34	135	240	585	50	
		28	106	192	480	70	
		19	67	119	296	100	
		33	136	238	582	64	3
		33	136	238	582	80	
		33	136	238	582	100	
		34	135	240	585	125	
		33	136	238	582	140	
		34	135	240	585	175	
		33	136	238	582	200	
		34	135	240	585	250	
		33	136	238	582	280	
		34	135	240	585	350	
		33	136	238	582	400	
		34	135	240	585	500	
		28	106	192	480	700	
		19	67	119	296	1000	
最大輸出扭矩T2max Max.output torque	Nm	2倍額定輸出扭矩					1、2、3
扭轉剛度 TORSIONAL RIGIDITY	Nm/arcmin	2.4	7.5	15	28		
額定輸入轉速n1 Nominal input speed	rpm	4000	3500	3000	3000		
最大輸入轉速nmax Max.input speed	rpm	8000	7000	5000	4500		
最大徑向力F2r Max.Radial forces	N	555	1280	2189	3225		
最大軸向力F2a Max.Axial forces	N	793	1649	2922	4628		
標準背隙 Standard Backlash	<=arcmin	12	12	12	12		1
		15	15	15	15		2
		18	18	18	18		3
精密背隙 Precision Backlash	<=arcmin	6	6	6	6		1
		8	8	8	8		2
		10	10	10	10		3
滿載效率 Full load efficiency	%	94				3—10	1
		92				16—100	2
		90				64—1000	3
使用壽命 Service life	h	20000				3—1000	1 、2、3
重量 Weight	kg	2.1	4.7	11.2	18.8		1
		2.4	5.3	13.2	24.8		2
		2.7	5.9	15.2	30.8		3
噪聲值（n1=3000prm) Running noise	dB(A)	60	62	65	68	3—1000	1 、2、3
轉動慣量J1 Moment of inertia	kg.cm2	0.180	2.240	6.850	25.000	3—10	1
		0.180	2.240	6.850	25.000	16—100	2
		0.180	2.240	6.850	25.000	64—1000	3

WPLFR60精密行星減速機外形圖 /

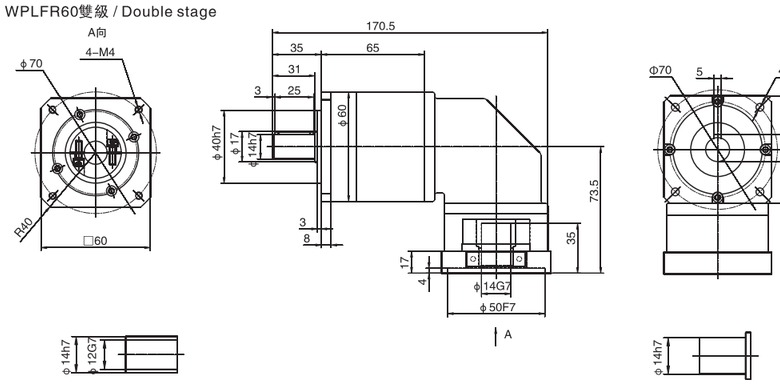
WPLFR60單級 / Single stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

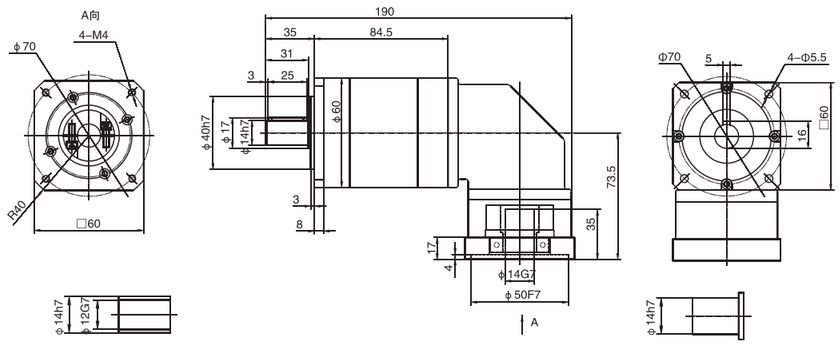
WPLFR60雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLFR60三級 /Three stage

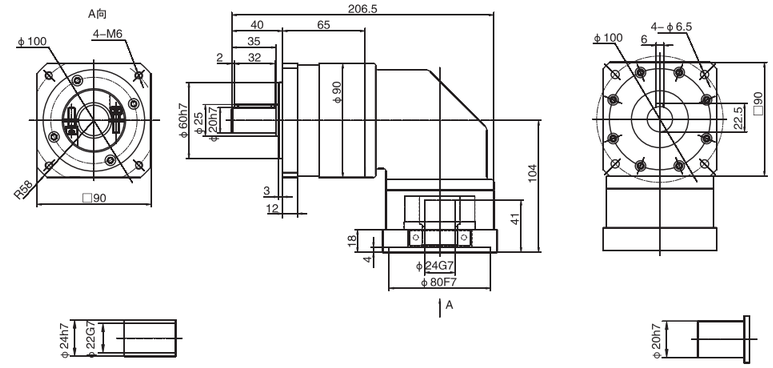


電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLFR90精密行星減速機外形圖 /

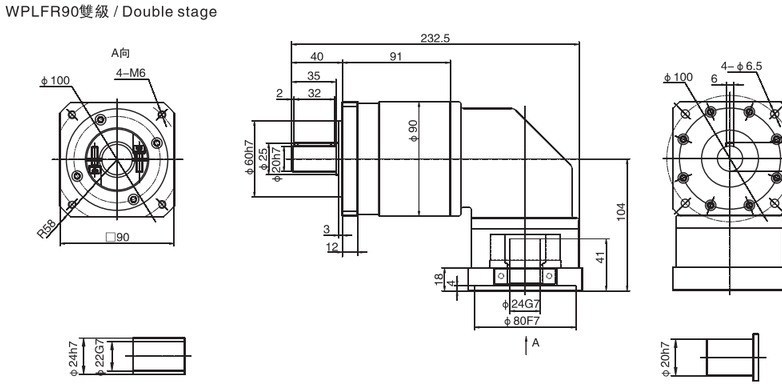
WPLFR90單級 / Single stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

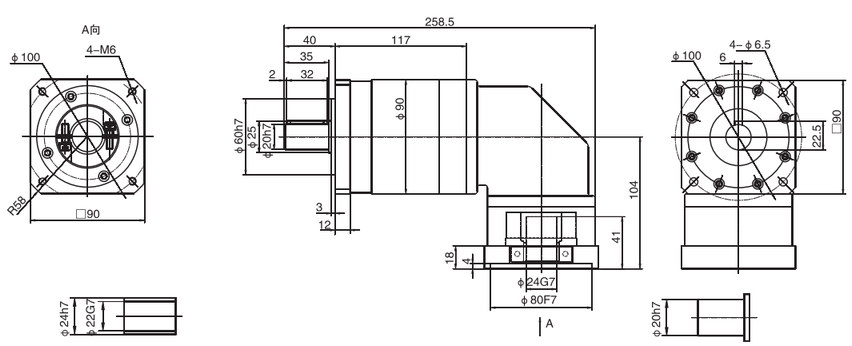
WPLFR90雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLFR90三級 /Three stage

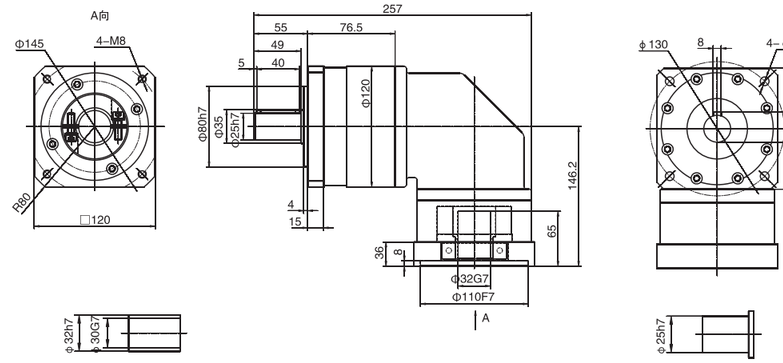


電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLFR120精密行星減速機外形圖 /

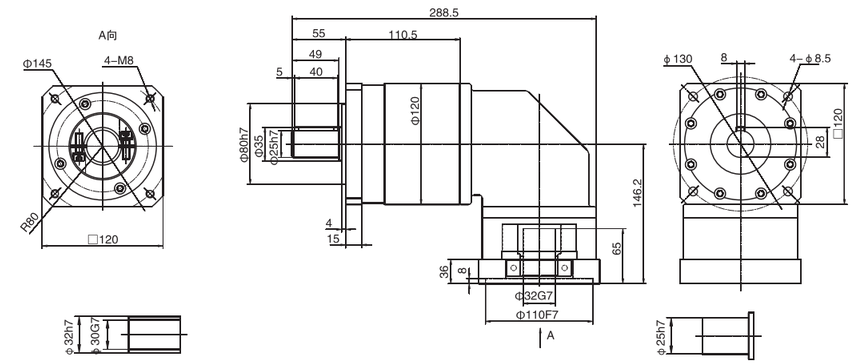
WPLFR120單級 / Single stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

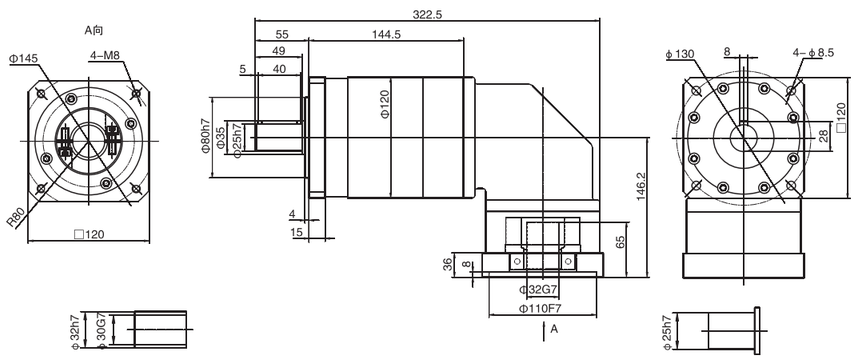
WPLFR120雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLFR120三級 /Three stage

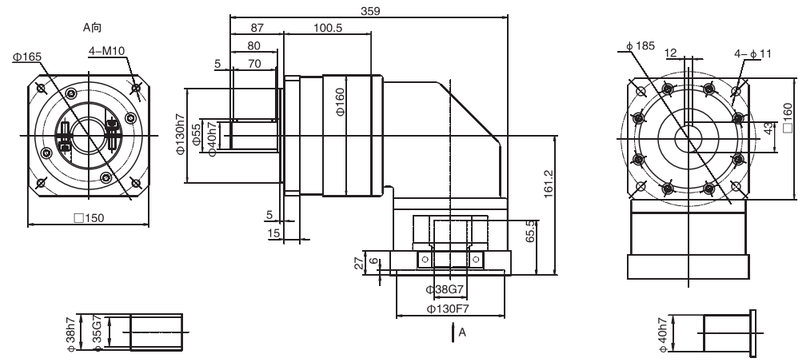


電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLFR160精密行星減速機外形圖 /

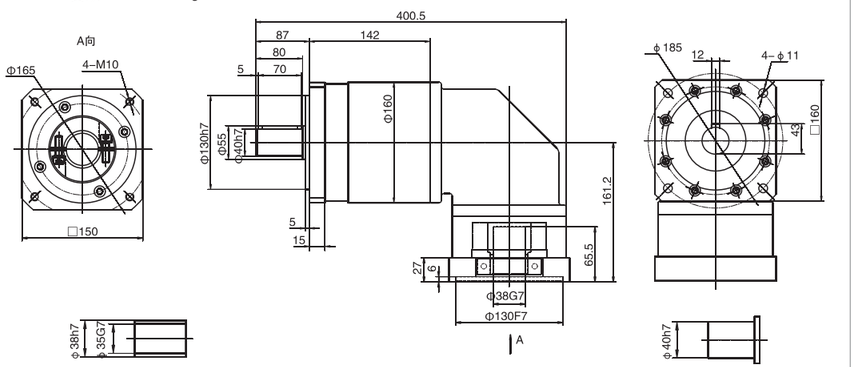
WPLFR160單級 / Single stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

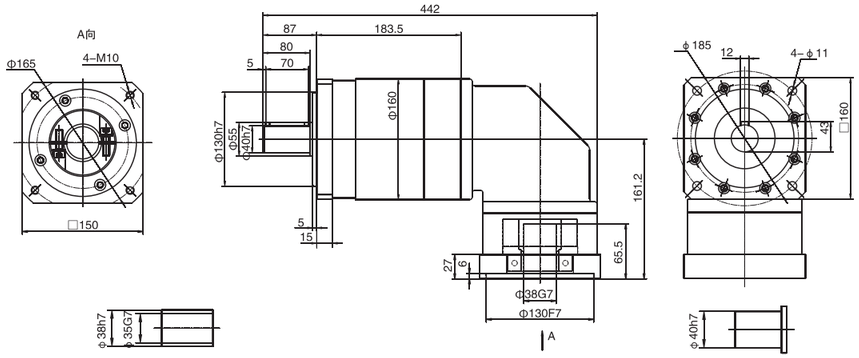
WPLFR160雙級 / Double stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

WPLFR160三級 /Three stage



電機軸徑過小時，需配合變徑套安裝，軸套最小壁厚1mm
When the motor shaft diamenter is too small,the sleeve should be installed,the minimum wall thickness of sleeve is 1 mm

光軸輸出
Output without key

安裝説明
INSTALLATION INSTRUCTIONS

正確的安裝和維護是保證減速機正常運行的重要環節，請客户務必按以下要求進行操作。

Correct installation and maintenance is an important link to keep gearbox at normal operating condition. Customer have to according to below claim to operate the gearbox.

減速機與電機的連接 / REDUCER AND MOTOR CONNECTION

1、安裝前檢查電機和減速機應完好無損，確認減速機和電機型號正確，相連接的尺寸匹配（請注意：減速機軸孔與電機軸的連接有時會有變徑套過渡），取下電機軸上的鍵（如有必要需加裝平衡鍵），并清潔電機，減速機的連接軸，軸孔、變徑套、内外止口及端面。（圖1）

Check the gearbox and motor are intact before installation, make sure the types are correct, they can completely match with each other (please note: sometimes it needs reducing sleeve to help to connect the gearbox’s bore to the motor shaft), remove the key on the motor shaft(if it’s necessary to fix with balance key), then clear the motor, the shaft on the gearbox, bore, reducing sleeve, inside and outside rabbet and the face.(chart 1)

2、取下減速機法蘭外側工藝孔上的防塵蓋，調整減速機輸入軸孔鎖緊盤的緊固螺栓位置與工藝孔對正，插入内六角扳手（圖2），鬆開緊固螺栓。（本步驟用于輸入端爲鎖緊盤連接形式）

Remove the dust cover on the input bore, adjust the fastening bolt’s position of the gearbox input bore’s shrink disk, make it align with input bore, insert socket head wrench.(chart 2) Then release the fastening bolt.(this step for the gearbox’s input side is shrink disk connection form)

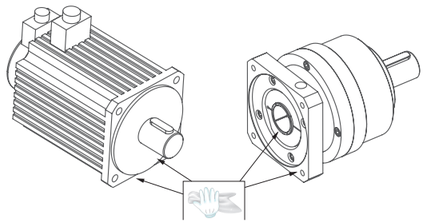


圖1

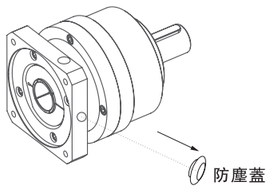


圖2

3、減速機輸入端朝上，將電機軸對正減速機輸入軸孔，平滑套入至電機與減速機的端面貼面（注意：套入時，將電機和減速機的周向方位盡量對齊，若有必要應加放變徑套）。若裝配過程中有卡滯或端面貼不平現象，應拆下檢查排除故障後再進行裝配，不得用鐵錘等敲擊或强行壓入，以免損壞機件。(圖 3）

Upturn the input side of the gearbox, align the shaft of motor with the input bore of gearbox. Then inserting the shaft smoothly still the two faces close together.(Note: make sure the circumferential direction of gearbox and motor be aligned, if necessary, adding reducing sleeve). If the faces are unligned or there is clamping stagnation, during the assembling process, it should to remove the motor and check the fault, then assemble the motor again. Don’t use any like hammer things to press–in with strong force, so as not to damage the machine.(chart 3)

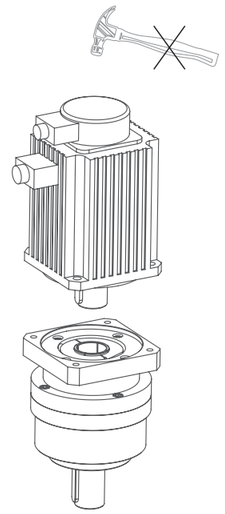


圖3

4、裝上電機緊固螺釘，并對角逐步擰緊達表1中對應螺栓規格所規定的力矩值得4%；（圖4）

Mounting the fastening bolt for the motor, tighten bolts in diagonally opposite sequence with the 4% of torque value per the corresponding bolt size in Table 1. (chart 4)

5、緊固鎖緊盤螺釘，達表1中對應減速機型號所規定的力矩值，（圖5）

Tighten the bolts for the shrink disk, reach the torque value corresponding to the type of the gearbox in Table 1.(chart 5)

6、按表1中對應螺栓規格規定的力矩值的80%，對角逐步擰緊電機緊固螺釘。（圖4）

Using 80% of the corresponding bolt’s torque value, tighten bolts in diagonally opposite sequence.(chart 4)

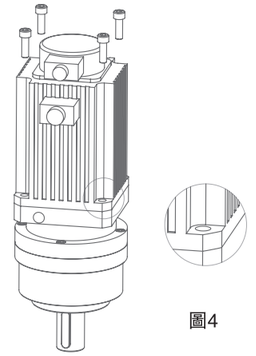


圖4

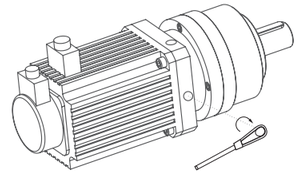


圖5

7、裝上防塵蓋。

Mounting the dust cover.

表1 / Table 1

	減速機型號 Gearbox type	WEP70 WFP65		WEP90 WFP90		WEP120 WFP115		WEP155 WFP142		WEP205 WFP180		WEP235 WFP220	
級數 stage		單 single	雙 double	單 single	雙 double	單 single	雙 double	單 single	雙 double	單 single	雙 double	單 single	雙 double
預緊力矩 pretension torque	(Nm)	4.9	4.9	9.8	4.9	17	9.8	41	17	80	41	130	80
螺栓規格 bolt size	(mm)	M4	M4	M5	M4	M6	M5	M8	M6	M10	M8	M12	M10

	減速機型號 Gearbox type	WPL/WPLF/WPLH/WPLR/WPLFR				
		60	70	90	120	160
預緊力矩 pretension torque	(Nm)	4.9	4.9	9.8	17	41
螺栓規格 bolt size	(mm)	M4	M4	M5	M6	M8

注：緊固鎖緊盤的螺釘力矩值應適當大于表中值，如有必要，可增大表中推薦值的20%,以避免鎖緊不可靠。

The torque value of the tighten screw for the shrink disk should be bigger than the value in the table, if necessary, it can be bigger 20% of the value in the table.

減速機與工作機的連接 / CONNECTION OF THE GEARBOX WITH MACHINE

1、采用聯軸器連接時，應注意減速機軸綫與工作機軸綫對中，其不同軸誤差不得大于所用聯軸器的補償值。

In condition when the connection with shaft coupling, it should to pay attention to the connection of axial of gearbox and axial of machine, the different axial error can’t bigger than the compensating value of the shaft coupling.

2、在減速機輸出軸上安裝聯軸器或其他傳動部件時，應使用合適的工裝或螺栓，利用軸端螺孔將傳動件壓入，不得用鐵錘等敲打。

When mounting the shaft coupling or other transmission parts on the gearbox’s output shaft, you should use the suitable tooling or bolts, using the screw hole of the shaft to pressure the transmission parts, don’t use the hammer or other to strike it.

M 減速機的維護
AINTENANCE OF REDUCER

1>本減速機在廠前已加注了合適的潤滑油（脂），在正常使用條件下，壽命期内免維護。

1 > the reducer in front of the factory have been posited suitable lubricating oil (grease), under the condition of normal use, maintenance free life period.

2>減速機若經長期存放，使用前應檢查油封是否完好，若出現老化或有滲漏油現象，需更換油封。若發現油脂流失，需補充新油（脂）；若油品變質，需更換潤滑油（脂）。

2 > only if the reducer is stored for a long time, before the use should check whether the oil seal is in good condition, if appear aging or have oil leakage phenomenon, should be Replace the oil seal. If discover oil loss, need to supplement new oil (grease); If the deterioration of oil product, need to replace the lubricating oil (grease).

3>減速機在使用過程中若出現异常噪聲或温度超過90℃，需停機進行檢查，排除故障後方可繼續使用。

3 > reducer in use process the abnormal noise or temperature over 90 ℃, if need to stop for inspection, troubleshooting rear can continue to use.

4>對于長期連續工作的減速機建議每年更換一次新潤滑油（脂）。

4 > the speed reducer for long–term continuous work suggested that each year to replace a new lubricatingoil (grease).

備忘録

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