

*EH/EB Series

大功率齿轮减速机
High Power Reducer



EVERGEAR



齿轮箱 目录 Gear Units Contents

基本类型概述 Summary of basic types		页码 Page	208
齿轮箱型号表示方法, 性能特点, 一般说明 Gear units designation of types, characteristic, general information		页码 Page	209~211
齿轮箱选型, 额定功率, 输出扭矩, 实际速比, 允许的附加径向力 Selection of gear units, nominal power ratings, output torque, actual ratios, permissible additional radial forces.		页码 Page	212~260
安装方式 Mounting	卧式安装 Horizontal	平行轴齿轮箱 Helical gear units EH1SH	页码 Page 261~262
		平行轴齿轮箱 Helical gear units EH2SH, EH2HH, EH2DH, EH2KH, EH2HM, EH2DM, EH2KM EH3SH, EH3HH, EH3DH, EH3KH, EH3HM, EH3DM, EH3KM EH4SH, EH4HH, EH4DH, EH4KH, EH4HM, EH4DM, EH4KM	页码 Page 263~280
		直交轴齿轮箱 Bevel-helical gear units EB2SH, EB2HH, EB2DH, EB2KH, EB2HM, EB2DM, EB2KM EB3SH, EB3HH, EB3DH, EB3KH, EB3HM, EB3DM, EB3KM EB4SH, EB4HH, EB4DH, EB4KH, EB4HM, EB4DM, EB4KM	页码 Page 281~296
	立式安装 Vertical	平行轴齿轮箱 Helical gear units EH2SV, EH2HV, EH2DV, EH2KV EH3SV, EH3HV, EH3DV, EH3KV EH4SV, EH4HV, EH4DV, EH4KV	页码 Page 297~308
直交轴齿轮箱 Bevel-helical gear units EB2SV, EB2HV, EB2DV, EB2KV EB3SV, EB3HV, EB3DV, EB3KV EB4SV, EB4HV, EB4DV, EB4KV		页码 Page 309~320	
中心孔平键及键槽的配合精度, 选用标准 ISO Selection of ISO fits, Centre holes, parallel keys and keyways		页码 Page	321~322
带胀紧盘联接的空心轴, 带平键联接的空心轴, 带花键联接的空心轴 Hollow shaft for shrink disk, parallel key connections, hollow shaft with involute splines		页码 Page	323~330
转动惯量 J1 Mass moments of inertia J1		页码 Page	331~334
立式安装齿轮箱润滑油供给方式 (强制润滑和浸油润滑) Oil supply for vertical gear units (forced and dip lubrication)		页码 Page	335~337
特殊安装和附件 Special installation and accessories		页码 Page	338~342
斗式提升机用减速机 Bucket elevator drives		页码 Page	343~363

齿轮箱 基本类型概述 Gear Units Summary of Basic Types

卧式安装 Horizontal mounting

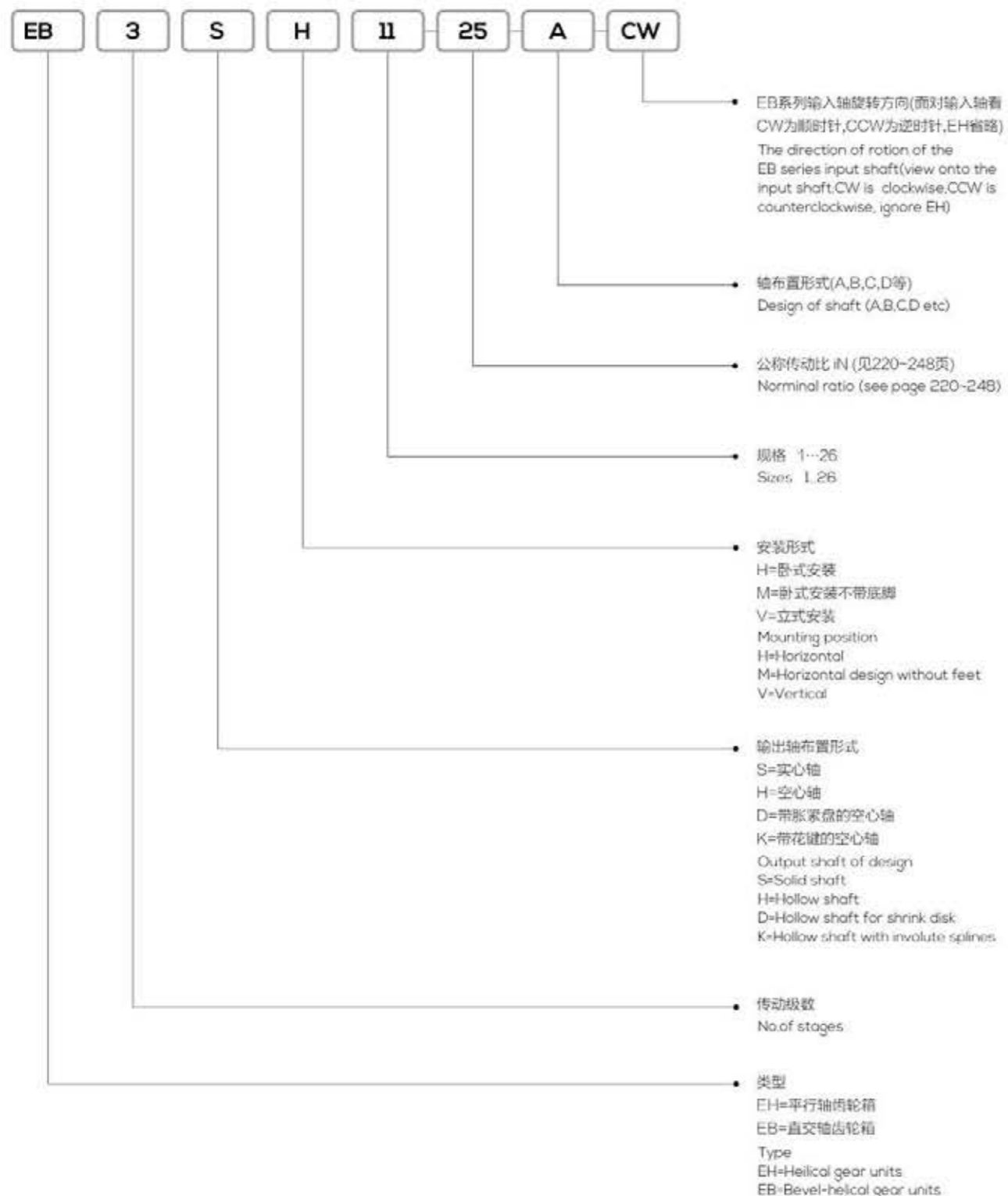
平行轴齿轮箱类型 Helical gear units Types				
EH1...EH2...EH3...EH4...1-4 级 (Stage), iN=1.25-450				
EH.SH	EH.HH	EH.DH	EH.KH	EH.HM, EH.DM, EH.KM
直交轴齿轮箱类型 Bevel-helical gear units Types				
EB2...EB3...EB4...2-4 级 (Stage), iN=5-400				
EB.SH	EB.HH	EB.DH	EB.KH	EB.HM, EB.DM, EB.KM

立式安装 Vertical mounting position

平行轴齿轮箱类型 Helical gear units Types			
EH2.V, EH3.V, EH4.V, 2-4 级 (Stage), iN=6.3-450			
EH.SV	EH.HV	EH.DV	EH.KV
直交轴齿轮箱类型 Bevel-helical gear units Types			
EB2...EB3...EB4...2-4 级 (stage), iN=5-400			
EB.SV	EB.HV	EB.DV	EB.KV



齿轮箱 型号表示方法 Designation of Types



齿轮箱 性能特点 Gear Units Characteristic

设计 Design

恒齿传动齿轮箱采用全新设计,其独特的创新在于:

- 零件种类减少而规格数量增多;
- 传动功率增大,运行可靠性提高;
- 可以提供适于狭小空间安装的法兰轴(敬请垂询)。

EVERGEAR gear units are a completely new design. Advantages are.

- more sizes with a reduced variety of parts;
- higher operational reliability combined with increased power capacity;
- flanged output shafts to facilitate assembly of gear units in confined spaces (on request).

安装方式 Mounting position

可以提供卧式安装和立式安装的恒齿传动齿轮箱, 也可以提供其它安装形式,请垂询。

标准齿轮箱可以通过加带不同附件和电机安装法兰;

齿轮箱浮动底座或逆止器等很好的满足客户需求。

EVERGEAR gear units can be supplied for either horizontal or vertical installation.

The basic gear unit can be optimally adapted to customer requirements by fitting different add-on pieces like motor bell housings, gear unit swingbases or backstops.

噪音特性 Noise behavior

采用最新设计理念并通过以下途径显著的改善了齿轮箱的噪音特性:

- 圆锥齿轮磨削工艺,
- 采用吸收噪音的箱体结构,
- 实现特大的齿面接触比。

New concepts were applied to clearly improve the noise emission of the gear units by:

- grinding the bevel gears;
- designing noise-absorbing housings
- achieving exceptionally large contact ratios.

散热性能 Thermal conduction

恒齿传动齿轮箱不仅具有很高的传动效率,而且具有良好的散热性能因为:

- 增大了箱体的表面积,
- 采用大风扇和新型的导流风扇罩。

在齿轮箱选型方面恒齿传动齿轮箱以较低的最大允许油温为依据。这样,不仅提高了运行的可靠性,而且也因换油周期延长降低了维护费用。

EVERGEAR gear units not only have a high efficiency but also a favorable thermal conduction:

- through enlarged housing surface areas;
- because large fans incorporating a new type of air conduction fan cowl are being used.

The selection of EVERGEAR gear units is based on a lower maximum oil temperature. By that, the operational reliability will be increased and the cost of maintenance reduced due to longer oil change intervals.

库存 Storing

恒齿传动齿轮箱采用新的模块化单元结构,从而显著减少了零部件种类。主要的零部件绝大部分均有库存,从而使恒齿传动的齿轮箱能在短期内向世界各地的用户供货。

EVERGEAR gear units have been designed according to a new unit construction principle. Through this, the variety of parts could be reduced. Most of the parts are on stock, enabling EVERGEAR gear units to be delivered worldwide in a short term.



恒齿传动直交轴齿轮箱EB3DH
带冷却风扇和齿轮箱浮动底座
EVERGEAR bevel-helical gear units type
EB3DH with fan and gear unit swing-base.



齿轮箱 一般说明 Gear Units General Information

注意事项
Attention



应严格遵守以下各项:

- 样本中的附图只属范例,并不要求严格一致,所注尺寸可以有所变动。
- 所注重量仅为平均值,并不要求严格一致。
- 为防止发生事故,所有旋转部件均应根据国家和当地安全规定加防护罩。
- 试车之前,必须认真阅读设备操作说明书。齿轮箱供货时已作好运行准备,只是未加润滑油。
- 此处给出的加油量只作为参考值。实际油量应以油尺上的标记为准。
- 润滑油粘度须以齿轮箱铭牌上的数值为准。
- 齿轮箱供货时带径向轴封。用户如有特别要求,可提供其他形式的密封装置。
- 转动方向是指输出轴d2上的方向。

The following items are absolutely to be observed:

- Illustrations are examples only and are not strictly binding. Dimensions are subject to change.
- The weights are mean values and not strictly binding.
- To prevent accidents, all rotating parts should be guarded according to local and national safety regulations.
- Prior to commissioning, the operating instructions must be observed. The gear units are delivered ready for operation but without oil filling.
- Oil quantities given are guide values only. The exact quantity of oil depends on the marks on the oil dipstick.
- The oil viscosity has to correspond to the data given on the name plate.
- The gear units are supplied with radial shaft seals. Other sealing variants on request.
- Directions of rotation referring to output shaft d2.

在标注尺寸的图纸上使用的符号说明如下:

Explanation of symbols used in the dimensioned drawings:



油尺
Oil dipstick



通气孔
Breather



放油孔
Oil drain



加油孔
Oil filler

基础螺栓的最低性能等级为8.8级。

规格13号以上齿轮箱箱体地脚上有千斤顶螺丝,箱盖上配有调整平面。

From size 13 up jack screws in the housing feet, and leveling pads on the upper housing part.
Foundation bolts of min. property class 8.8.

齿轮箱 选型指南 Gear Units Guidelines for the Selection

1. 确定齿轮箱类型和规格 Determination of gear unit type and size

1.1 确定传动比
Find the transmission ratio

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

1.2 确定齿轮箱额定功率
Determine nominal power rating of the gear unit

$$P_N \geq P_2 \times f_1 \times f_2$$

如果不满足下列条件,请与我们联系:
It is not necessary to consult us, if:

$$3.33 \times P_2 \geq P_N$$

1.3 校核最大扭矩,例如峰值工作扭矩,起动扭矩或制动扭矩:
Check for maximum torque, e.g. peak operating-, starting- or braking torque

$$P_N \geq \frac{T_A \times n_1}{9550} \times f_3$$

根据iN和PN在额定功率表中确定的齿轮箱的规格和传动级数
Gear unit sizes and number of reduction stages are given in rating tables depending on iN and PN

1.4 校核输出轴上允许附加作用力,见第257和258页
Check whether additional forces on the output shaft are permissible; see pages 257 and 258

1.5 校核实际传动比见第253至256页
Check whether the actual ratio i as per tables on pages 253-256 is acceptable

2. 确定供油方式 Determination of oil supply

安装方式 Mounting position

卧式安装 Horizontal

立式安装 Vertical

可供选择润滑油供油方式:

- 飞溅润滑
- 浸油润滑
- 所有需润滑的零部件均浸在润滑油中
- 强制润滑

All parts to be lubricated are lying in the oil or are splash lubricated
Forced lubrication on request

可供选择的润滑油供油方式:

- 浸油润滑
 - 采用法兰泵或电动泵进行强制润滑
- 优选供油方式和选择标准见第335至337页

Possible oil supply variations:

- Dip lubrication
 - Forced lubrication by means of flanged-on pump or motor pump
- For preferred variants and criteria for selection see pages 335 - 337



齿轮箱 选型指南 Gear Units Guidelines for the Selection

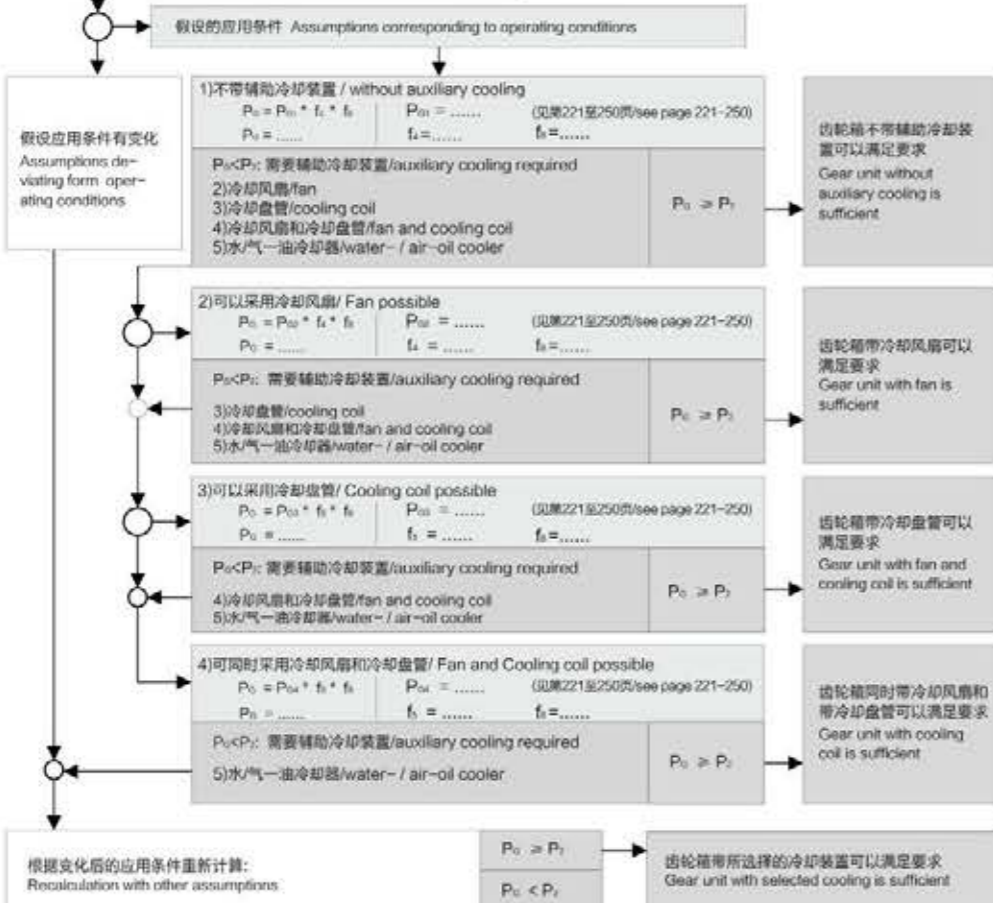
齿轮箱 符号说明 Gear Units Key to Symbols

3. 确定所需的热容量PG需要的数据 Determination of required thermal capacity PG Data required

- 类型 · 规格 · Type · Size
- 公称传动比 · Nominal ratio
- 环境温度 · Ambient temperature
- 输入转速(1000/1200/1500/1800 r/min)** · Input speed(1000/1200/1500/1800 r/min)
- 齿轮箱采用浸油润滑 · Gear unit with dip lubrication

依据如下假设计算:
For the calculation below the following has been assumed:

- 工作周期:100%/h · Operating cycle: 100%/h
- 室内大空间安装(4m/s>风速>1.4 m/s)**海拔高度至1000 m · Installation in a large hall (4 m/s>wind velocity>1.4 m/s)**; altitude up to 1000 m
- 齿轮箱采用矿物油ISO-VG 320润滑 · Gear unit with mineral oil ISO-VG 320



请向我们咨询!
Consult US!
下列选项可能需要调整:
· 润滑油品种/润滑油粘度/注油量
· 基础安装齿轮箱或轴装式齿轮箱
· 采用润滑油站
· Oil grade / viscosity level
· Gear unit on foundation or shaft-mounted gear unit
· Application of an oil supply system

可能需要的辅助冷却装置取决于用户处的工况条件(如粉尘, 冷却水连接等)。
The type of the possibly required additional cooling is dependent on the operating conditions of the customer's (dust, cooling water connection, etc.)

**按冷却水入口温度为20℃
**Values refer to a cooling water inlet temperature of 20℃

**室内小空间(风速<1.4m/s)和室外(风速>4m/s), 请垂询我们!
**consult us when small confined spaces (wind velocity<1.4m/s) or in the open (wind velocity>4m/s)

- ED** 每小时工作周期,以百分比表示,如ED=80% / h
Operating cycle per hour in%, e.g. ED=80% / h
- f1** 工作机最低工况系数(表1),217页
Factor for driven machine(table 1), pages 217
- f2** 原动机系数(表2),218页
Factor for prime mover (tables 2), page 218
- f3** 峰值扭矩系数(表3),218页
Peak torque factor (tables 3), page 218
- f4 f5** 环境温度系数(表4+表5),218页
Factor for ambient temperature (tables 4+tables 5), page 218
- f8** 立式安装齿轮箱供油系数(表8),219页
Oil supply factor for vertical gear units (tables 8), page 219
- i** 实际传动比,253-256页
Actual ratio,page 253-256
- in** 公称传动比
Nominal ratio
- is** 要求传动比
Required ratio
- n1** 输入转速(r/min)
Input speed(r/min)
- n2** 输出转速(r/min)
Output speed(r/min)
- PG** 要求的热容量
Required thermal capacity
- PG1** 齿轮箱的热容量,不带辅助冷却装置
Thermal capacity for gear units without auxiliary cooling
- PG2** 齿轮箱的热容量,带冷却风扇
Thermal capacity for gear units with fan cooling
- PG3** 齿轮箱的热容量,带内置冷却盘管
Thermal capacity for gear units with built-in cooling coil
- PG4** 齿轮箱的热容量,带内置冷却盘管和风扇
Thermal capacity for gear units with built-in cooling coil and fan
- PN** 齿轮箱的额定功率(KW),见选型表
Nominal power rating of gear unit (KW), see tables
- P2** 工作机的额定功率(KW)
Power rating of driven machine (KW)
- t** 环境温度(℃)
Ambient temperature (C)
- TA** 输入轴最大扭矩,如峰值工作扭矩、启动扭矩或制动扭矩(N.m)
Max. torque occurring on input shaft, e.g. peak operating-, starting- or braking torque(N.m)
- T2N** 额定输出扭矩(kN.m),251-252页
Nominal output torque [kN.m], pages 251-252
- SA** 减速机安全系数(表15)
Safety coefficient of speed reducer[table 15]



齿轮箱 选型指南/计算示例 Gear Units Guidelines for the Selection/Calculation Example

齿轮箱 计算示例/热容量计算 Gear Units Calculation Example Thermal Capacity

已知参数 Known parameter	
原动机 电动机: $P_1=75$ kW 电机转速: $n_1=1500$ rpm 最大启动扭矩: $T_A=720$ N.m	PRIME MOVER Electric motor: $P_1=75$ kW Motor speed: $n_1=1500$ rpm Max. starting torque: $T_A=720$ N.m
工作机 Driven machine	
皮带输送机功率: $P_2=63$ kW 转速: $n_2=26$ rpm 工作制: 12 小时/天 每小时启动次数: 5 每小时工作周期: ED=100% 环境温度: 30 °C 室外安装(风速): ($w \geq 4$ m/s) 海拔高度: 海平面	Belt conveyor: $P_2=63$ kW Speed: $n_2=26$ rpm Duty: 12 h/day Starts per hour: 5 Operating cycle per hour: ED=100% Ambient temperature: 30 °C Outdoor installation: ($w \geq 4$ m/s) Altitude: sea level
齿轮箱设计 Gear unit design	
直交轴齿轮箱 安装方式: 卧式安装 输出轴d: 位于齿轮箱右侧(面对输入轴),即布置型式C 输出轴d: 转动方向: ccw	Bevel-helical gear unit Mounting position: horizontal Output shaft d: on right hand side design C Direction of rotation of output shaft d: ccw

选择齿轮箱的类型及规格 Selection of gear unit type and size	
1.1 传动比计算: Calculation of transmission ratio	$i_s = \frac{n_1}{n_2} = \frac{1500}{26} = 57.7 \quad i_N = 56$
1.2 确定额定功率 Determination of the gear unit nominal power rating	$P_N \geq P_2 \times f_1 \times f_2 \times S_A = 63 \times 1.5 \times 1 \times 1.25 = 118.125 \text{ kW}$
从额定功率表中选择: 类型 EB3, 规格 10, 对应的 $P_N = 122$ kW Selected from power rating table: type EB3, gear unit size 10, with $P_N = 122$ kW	$3.33 \times P_2 \geq P_N \quad 3.33 \times 66 = 219.8 \text{ kW} > P_N$
1.3 检查启动扭矩 Checking the starting torque	$P_N \geq \frac{T_A \times n_1}{9550} \times 0.5 = \frac{720 \times 1500}{9550} \times 0.5 = 56.5 \text{ kW} \quad P_N 122 \text{ kW} > 56.5 \text{ kW}$
确定热容量 Determination of thermal capacity	
2.1 根据表中给出的EB3型齿轮参数, 计算不带辅助冷却装置的齿轮箱热容量 Thermal capacity for gear units without auxiliary cooling, acc. to table for type EB3	$P_G = P_{G1} \times f_4 \times f_8 \quad P_G = 72 \text{ kW} \times 0.88 \times 1 = 63.36 \text{ kW} \quad P_2 = 63 \text{ kW} < P_G = 63.36 \text{ kW}$

结论: 可选用不带冷却装置的减速机

确定所需的热容量 P_G 需要的数据 Determination of required thermal capacity P_G Data required

- 类型: EB3SH · 规格: 10
- 额定传动比: $i_N = 56$
- 环境温度: $t = 30^\circ\text{C}$
- 输入转速: $n = 1500$ r/min
- 齿轮箱采用浸油润滑

- Type: EB3SH · Size: 10
- Nominal ratio: $i_N = 56$
- Ambient temperature: $t = 30^\circ\text{C}$
- Input speed: $n = 1500$ r/min
- Gear unit with dip lubrication

依据如下假设计算:
For the calculation below the following has been assumed:

- 工作周期: 100%/h
- 室内大空间安装(风速 ≥ 1.4 m/s)**海拔高度至 1000 m
- 齿轮箱采用矿物油 ISO-VG 320 润滑
- Operating cycle: 100%/h
- Installation in a large hall (4 m/s² wind velocity ≥ 1.4 m/s)** altitude up to 1000 m
- Gear unit with mineral oil ISO-VG320

假设的应用条件 Assumptions corresponding to operating conditions

假设应用条件有变化 Assumptions deviating from operating conditions

1) 不带辅助冷却装置 / without auxiliary cooling $P_G = P_{G1} \times f_4 \times f_8$ $P_G = 64 \text{ kW}$ $f_4 = 0.88 \quad f_8 = 1.0$	$P_{G1} = 73.2 \text{ kW}$ (见第221至250页/see page 221-250)	$P_G \geq P_2$	齿轮箱不带辅助冷却装置可以满足要求 Gear unit without auxiliary cooling is sufficient
2) 可以采用冷却风扇 / Fan possible $P_G = P_{G1} \times f_4 \times f_8$ $P_G = 152.2 \text{ kW}$ $f_4 = 0.88 \quad f_8 = 1.0$	$P_{G1} = 173 \text{ kW}$ (见第221至250页/see page 221-250)	$P_G < P_2$: 需要辅助冷却装置/auxiliary cooling required	齿轮箱带冷却风扇可以满足要求 Gear unit with fan is sufficient
3) 可以采用冷却盘管 / Cooling coil possible $P_G = P_{G1} \times f_4 \times f_8$ $P_G = 211.1 \text{ kW}$ $f_4 = 0.93 \quad f_8 = 1.0$	$P_{G1} = 227 \text{ kW}$ (见第221至250页/see page 221-250)	$P_G < P_2$: 需要辅助冷却装置/auxiliary cooling required	齿轮箱带冷却盘管可以满足要求 Gear unit with fan and cooling coil is sufficient
4) 可以同时采用冷却风扇和冷却盘管 / Fan and Cooling coil possible $P_G = P_{G1} \times f_4 \times f_8$ $P_G = 295.7 \text{ kW}$ $f_4 = 0.93 \quad f_8 = 1.0$	$P_{G1} = 318 \text{ kW}$ (见第221至250页/see page 221-250)	$P_G < P_2$: 需要辅助冷却装置/auxiliary cooling required	齿轮箱同时带冷却风扇和冷却盘管可以满足要求 Gear unit with cooling coil is sufficient
5) 水/气-油冷却器/water- / air-oil cooler		$P_G > P_2$	齿轮箱带所选的冷却装置可以满足要求 Gear unit with selected cooling is sufficient

根据变化后的应用条件重新计算:
Recalculation with other assumptions

请向我们咨询!
下列选项可能需要调整:
· 润滑油品种/润滑油粘度/注油量
· 基础安装齿轮箱或轴装式齿轮箱
· 采用润滑油站

Consult US!
Variation of the following items is possible:
· Oil grade / viscosity level
· Gear unit on foundation or shaft-mounted gear unit
· Application of an oil supply system

*按冷却水入口温度为 20 °C
*Values refer to a cooling water inlet temperature of 20 °C

**室内小空间(风速 < 1.4 m/s)和室外(风速 ≥ 4 m/s), 请咨询我们!
** consult us when small confined spaces (wind velocity < 1.4 m/s) or in the open (wind velocity ≥ 4 m/s)

所选择的 $i_N = 56$ 的齿轮箱 EB3SH10 应配备适当的辅助冷却装置。
根据用户不同的应用条件至少应配备一个冷却风扇或一个冷却盘管。
For the selected gear unit EB3SH10 with $i_N = 56$ suitable auxiliary cooling is to be provided. Depend-ent on the operating conditions at the customer's, at least a fan or a cooling coil is to be provided.



表1 工作机系数^① Table1 Factor for driven machine^①

工作机	Driven machines	日带载运行时间 (小时)		
		≤0.5	>0.5-10	>10
污水处理 Waste water treatment				
浓缩器(中心传动)	Thickeners (central drive)	-	-	1.2
压滤机	Filter presses	1.0	1.3	1.5
絮凝器	Flocculation apparatus	0.8	1.0	1.3
曝气机	Aerators	-	1.8	2.0
捞集设备	Raking equipmen	1.0	1.2	1.3
纵向、回转组合式捞集装置	Combined longitudinal and rotary rakes	1.0	1.3	1.5
预浓缩器	Pre-thickeners	-	1.1	1.3
螺杆泵	Screw pumps	-	1.3	1.5
水轮机	Water turbines	-	-	2.0
泵 Pumps				
离心泵	Centrifugal pumps	1.0	1.2	1.3
容积式泵	Positive-displacement pumps			
1个活塞	1 piston	1.3	1.4	1.8
>1个活塞	>1 piston	1.2	1.4	1.5
挖泥机 Dredgers				
斗式输送机	Bucket conveyors	-	1.6	1.6
倾卸装置	Dumping devices	-	1.3	1.5
履带式行走机构	Caterpillar travel-ing gears	1.2	1.6	1.8
斗轮式挖泥机 Dredgers				
用于料堆捡拾	Bucket wheel excavators	-	1.7	1.7
用于原生岩土	As pick-up	-	2.2	2.2
采掘机机头	For primitive material Cutter heads	-	2.2	2.2
采掘臂回转*	Slewing gears*	-	1.4	1.8
弯板机*	Plate bending machines*	-	1.0	1.0
化学工业 Chemical industry				
挤出机	Extruders	-	-	1.6
碾浆机	Dough mills	-	1.8	1.8
橡胶研光机	Rubber calenders	-	1.5	1.5
冷却圆筒	Cooling drums	-	1.3	1.4
混合机, 用于 Mixers for				
均匀介质	Uniform media	1.0	1.3	1.4
非均匀介质	Non-uniform media	1.4	1.6	1.7
搅拌机, 用于 Agitators for media with				
均匀介质	Uniform density	1.0	1.3	1.5
非均匀介质	Non-uniform density	1.2	1.4	1.6
不均匀气体吸收	Non-uniform gas absorption	1.4	1.6	1.8
烘炉	Toasters	1.4	1.3	1.5
离心机	Centrifuges	1.0	1.2	1.3
金属加工设备 Metal working mills				
翻板机	Plate filter	1.0	1.0	1.2
推钢机	Ingot pushers	1.0	1.2	1.2
绕线机	Winding machines	-	1.6	1.6
冷床横梁架	Cooling bed transfer frames	-	1.5	1.5
辊式矫直机	Roller straighteners	-	1.6	1.6
轨道 Roller tables				
连续式	Continuous	-	1.5	1.5
间歇式	Intermittent	-	2.0	2.0
可逆式轧管机	Reversing tube mills	-	1.8	1.8
剪切机 Shears				
连续式*	Continuous*	-	1.5	1.5
曲柄式*	Crank type*	1.0	1.0	1.0
连续机驱动装置*	Continuous casting drivers*	-	1.4	1.4

工作机	Driven machines	日带载运行时间 (小时)		
		≤0.5	>0.5-10	>10
轧机 Rolls				
可逆式开坯机	Reversing blooming mills	-	2.5	2.5
可逆式板坯轧机	Reversing slabbing mills	-	2.5	2.5
可逆式线材轧机	Reversing wire mills	-	1.8	1.8
可逆式薄板轧机	Reversing sheet mills	-	2.0	2.0
可逆式中厚板轧机	Reversing plate mills	-	1.8	1.8
辊缝调节驱动装置	Roll adjustment drives	0.9	1.0	-
输送机 Conveyors				
斗式输送机	Bucket conveyors	-	1.4	1.5
绞车	Hauling winches	1.4	1.6	1.6
卷扬机	Holsts	-	1.5	1.8
皮带输送机 ≤ 150 kW	Belt conveyors ≤ 150 kW	1.0	1.2	1.3
皮带输送机 ≥ 150 kW	Belt conveyors ≥ 150 kW	1.1	1.3	1.4
货用电梯*	Goods lifts*	-	1.2	1.5
客用电梯*	Passenger lifts*	-	1.5	1.8
刮板式输送机	Apron conveyors	-	1.2	1.5
自动扶梯	Escalators	1.0	1.2	1.4
轨道行走机构	Frequency converters	-	1.5	-
往复式压缩机 Reciprocating compressors				
		-	1.8	1.9
起重机械 Cranes**				
回转机构**	Slewing gears**	1.0	1.4	1.8
俯仰机构**	Luffing gears**	1.0	1.1	1.4
行走机构**	Travelling gears**	1.1	1.6	2.0
起升机构**	Hoisting gears**	1.0	1.1	1.4
转臂式起重机**	Derricking jib cranes**	1.0	1.2	1.6
冷却塔 Cooling towers				
冷却塔风扇	Cooling tower fans	-	-	2.0
风机(轴流和离心式)	Blowers (axial and radial)	-	1.4	1.5
甘蔗生产 Cane sugar production				
甘蔗切碎机	Cane knives	-	-	1.7
甘蔗碾磨机	Cane mills	-	-	1.7
甜菜糖生产 Beet sugar production				
甜菜切碎机	Beet cassettes macerators	-	-	1.2
榨取机	Extraction plants	-	-	1.4
机械制冷机	Mechanical refrigerators	-	-	1.4
蒸发器	Juice boilers	-	-	1.4
甜菜清洗机	Sugar beet washing machines,	-	-	1.4
甜菜切碎机	Sugar beet cutters	-	-	1.5
造纸机械 Paper machines				
各种类型	Of all kind	-	1.8	2.0
碎浆机驱动装置 (敬请垂询)	Pulper drives (on request)	-	2	2.25
离心式压缩机 Centrifugal compressors				
		-	1.4	1.5
索道缆车 Cableways				
运货索道	Material ropeways	-	1.3	1.4
往复式空中索道	To-and-fro system	-	1.6	1.8
拖牵式索道	Aerial ropeways	-	1.3	1.4
循环式索道	T-bar lifts ropeways	-	1.4	1.6
水泥工业 Cement industry				
混凝土搅拌机	Concrete mixers	-	1.5	1.5
破碎机	Breakers	-	1.2	1.4
回转窑	Rotary kilns	-	-	2.0
管式磨粉机	Tube mills	-	-	2.0
选粉机	Separators	-	1.6	1.6
辊压机	Roll crushers	-	-	2.0

工作机额定功率P2的确定:

*) 按最大扭矩确定额定功率

**) 可将载荷准确地分类, 例如根据FEM 1001进行分类

***) 验证热容量是绝对必要的

Design for power rating of driven machine P2

*) Designed power corresponding to max. torque

**) Load can be exactly classified, for instance, according to FEM 1001

***) A check for thermal capacity is absolutely essential

所列各项系数均为经验值。使用这些系数的前提条件是所述机械设备应符合通常的设计规范和载荷条件。如遇特殊情况, 请及时与我们联系。对于那些未列入此表的工作机械, 请与我们联系。
注: 日带载运行时间是以小时计算的。

The listed factors are empirical values. Prerequisite for their application is that the machinery and equipment mentioned correspond to generally accepted design- and load specifications. In case of deviations from standard conditions, please refer to us. For driven machines which are not listed in this table, please refer to us.

1) Effective daily operating period under load in hours

表2 原动机系数^② Table 2 Factor for prime mover^②

电机, 液压马达, 汽轮机	Electric motors, hydraulic motors, turbines	1.0
4-6缸活塞发动机周期变化 1:100 至 1:200	Piston engines 4-6 cylinders, cyclic variation 1:100 to 1:200	1.25
1-3缸, 活塞发动机周期变化最高达 1:100	Piston engines 1-3 cylinders, cyclic variation up to 1:100	1.5

表3 峰值扭矩系数^③ Table 3 Peak torque factor^③

		每小时峰值载荷次数 Load peaks per hour			
		1-5	6-30	31-100	>100
均匀负载	Steady direction of load	0.5	0.65	0.7	0.85
交变负载	Alternating direction of load	0.7	0.95	1.10	1.25

表4 环境温度系数^④ Table 4 Thermal factor^④

(不带辅助冷却装置或仅带冷却风扇进行冷却) (Gear units without auxiliary cooling or with fan)

环境温度/Ambient	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C
f4	1.11	1.06	1.00	0.94	0.88	0.82	0.75	0.69	0.63

表5 环境温度系数^⑤ Table 5 Thermal factor^⑤

(带冷却盘管或同时带冷却盘管和冷却风扇) (For cooling coil, or with fan and cooling coil)

环境温度/Ambient	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C
f4	1.05	1.03	1.00	0.97	0.93	0.90	0.87	0.84	0.81



表8 立式安装齿轮箱供油系数 ^① Table 8 Oil supply factor for vertical gear units ^①

对于卧式安装齿轮箱 $f_s = 1.0$, 当采用强制润滑时 $f_s = 1.05$
Oil supply factor for vertical gear units. For horizontal gear units $f_s = 1.0$, and in case of forced lubrication $f_s = 1.05$

齿轮箱类型 Gear unit type	供油方式 Oil supply	规格 Sizes 4 - 12			
		不带辅助冷却装置 Without Auxiliary cooling	带冷却风扇 With Fan	带冷却盘管 With Cooling coil	带冷却风扇和冷却盘管 With Fan and cooling coil
EH2.V EH3.V EH4.V	浸油润滑 Dip lubrication	0.95	*	0.95	*
	强制润滑 Forced lubrication	1.15	*	1.05	*
EB2.V EB3.V EB4.V	浸油润滑 Dip lubrication	0.95	0.95	0.95	0.95
	强制润滑 Forced lubrication	1.15	1.10	1.10	1.10

齿轮箱类型 Gear unit type	供油方式 Oil supply	规格 Sizes 13 - 18			
		不带辅助冷却装置 Without Auxiliary cooling	带冷却风扇 With Fan	带冷却盘管 With Cooling coil	带冷却风扇和冷却盘管 With Fan and cooling coil
EH2.V EH3.V EH4.V	浸油润滑 Dip lubrication	*	*	*	*
	强制润滑 Forced lubrication	1.15	*	1.05	*
EB2.V EB3.V EB4.V	浸油润滑 Dip lubrication	*	*	*	*
	强制润滑 Forced lubrication	1.10	1.10	1.10	1.10

*) 敬请垂询 *) On request

表15 减速机安全系数 ^② Table 15 Safety coefficient ^②

重要性与安全要求 Importance and safety requirement	S_A
一般设备, 减速机失效仅引起单机停产且易更换配件 The failure of ordinary equipment and speed reducer can only result in production halts of single machine and replacement of spare parts.	1.1-1.3
重要设备, 减速机失效仅引起机组、生产线或全厂停产 The failure of ordinary equipment and speed reducer can only result in production halts of machines, production lines or the whole factory.	1.3-1.5
高度安全要求, 减速机失效引起设备、人身事故 Higher safety requirements, the failure of speed reducer can cause the incident of equipment and human body.	1.5-1.7

平行轴齿轮箱 额定功率
Helical gear units Nominal Power Ratings

类型 TYPES EH1...
规格 SIZES 1..19

i	n_1	n_2	齿轮箱规格 Gear unit sizes																		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			额定功率 P_n (KW) Nominal power ratings P_n (KW)																		
1.25	1800	1440	119	392	1055	2005*	3242*														
	1500	1200	99	327	879	1671	2702														
	1200	960	79	262	703	1337	2161														
	1000	800	66	218	586	1114	1801														
1.4	1800	1286	112	364	968	1870*	3001*														
	1500	1071	93	303	807	1559	2501														
	1200	857	74	242	646	1247	2000														
	1000	714	62	202	538	1039	1667														
1.6	1800	1125	103	342	884	1672*	2781*														
	1500	938	86	285	737	1394	2318	3927													
	1200	750	68	228	589	1115	1854	3142													
	1000	625	57	190	491	929	1545	2618	4123												
1.8	1800	1000	95	252	806	1593*	2558*	4338*													
	1500	833	80	210	672	1328	2132	3615													
	1200	667	64	168	538	1062	1705	2892	4632*												
	1000	556	53	140	448	885	1421	2410	3860												
2	1800	900	88	236	772	1462*	2356*	4025*													
	1500	750	74	197	644	1218	1964	3354													
	1200	600	59	157	515	974	1571	2683	4285*												
	1000	500	49	131	429	812	1309	2236	3571												
2.24	1800	804	81	211	706	1303*	2102*	3699*													
	1500	670	68	176	588	1086	1752	3083													
	1200	536	54	140	470	869	1402	2466	3940*												
	1000	446	45	117	392	724	1168	2055	3283												
2.5	1800	720	76	196	634	1168*	1885*	3317*													
	1500	600	63	164	528	974	1571	2765	4524*												
	1200	480	50	131	422	779	1256	2212	3619*												
	1000	400	42	109	352	649	1047	1843	3016	4607											
2.8	1800	643	67	182	565	1003*	1595*	2961*													
	1500	536	56	152	471	836	1329	2468	4038*												
	1200	429	44	121	377	668	1063	1974	3230*												
	1000	357	37	101	314	557	886	1645	2692	4224											
3.15	1800	571	59	162	502	909	1463	2604*	4086*												
	1500	476	50	135	419	758	1220	2087	3405												
	1200	381	40	108	335	606	976	1669	2724	4620*											
	1000	317	33	90	279	505	813	1391	2270	3850											
3.55	1800	507	54	149	441	824	1323	2322*	3699*												
	1500	423	45	125	368	687	1103	1935	3083												
	1200	338	36	100	294	550	882	1548	2466	4181*											
	1000	282	30	83	245	458	735	1290	2055	3484											
4	1800	450	47	131	396	731	1177	2074*	3335*												
	1500	375	39	110	330	609	981	1728	2780												
	1200	300	31	88	264	487	785	1382	2224	3833*											
	1000	250	26	73	220	406	654	1152	1853	3194	4529										
4.5	1800	400	34	92	281	578	895	1674	2410*	4268*											
	1500	333	29	77	234	482	746	1396	2009	3557											
	1200	267	23	61	187	385	596	1116	1607	2845	4073*										
	1000	222	19	51	156	321	497	930	1339	2371	3394										
5	1800	360	29	79	238	452	772	1271	2054*	3348*	4675*										
	1500	300	24	66	198	377	644	1059	1712	2790	3896*										
	1200	240	19	53	158	301	515	847	1369	2232	3116*	4373*									
	1000	200	16	44	132	251	429	706	1141	1860	2597	3644									
5.6	1800	321	22	67	202	385	590	1073	1748*	2851*	3982*										
	1500	268	18	56	168	321	492	894	1457	2376	3318*	4218*									
	1200	214	14	44	134	257	394	715	1165	1901	2654	3374*									
	1000	179	12	37	112	214	328	596	971	1584	2212	2812									

■ 卧式安装齿轮箱要采用强制润滑

■ Forced lubrication required on horizontal gear units

□ 敬请垂询

□ Gear units only on request



平行轴齿轮箱
Helical gear units

热容量
Thermal Capacities

类型 TYPES EHL...
规格 SIZES 1...19

Table with columns for gear unit sizes (1-19) and rows for different gear types (PG1, PG2, PG3, PG4) across various ratios (1.25, 1.4, 1.6, 1.8, 2, 2.24, 2.5, 2.8, 3.15, 3.55, 4, 4.5, 5, 5.6).

PG1, PG2, PG3, PG4见214页 See page 214 for PG1, PG2, PG3, PG4

平行轴齿轮箱
Helical gear units

热容量
Thermal Capacities

类型 TYPES EHL...
规格 SIZES 1...19

Table with columns for gear unit sizes (1-19) and rows for different gear types (PG1, PG2, PG3, PG4) across various ratios (1.25, 1.4, 1.6, 1.8, 2, 2.24, 2.5, 2.8, 3.15, 3.55, 4, 4.5, 5, 5.6).

PG1, PG2, PG3, PG4见214页 See page 214 for PG1, PG2, PG3, PG4



平行轴齿轮箱
Helical gear units

热容量
Thermal Capacities

类型 TYPES EHL...
规格 SIZES 1...19

Table with columns for gear unit sizes (1-19) and rows for different gear types (PG1, PG2, PG3, PG4) across various ratios (1.25 to 5.6). Includes sub-headers for 'Gear unit sizes' and 'n=1500 r/min 额定热功率'.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4

平行轴齿轮箱
Helical gear units

热容量
Thermal Capacities

类型 TYPES EHL...
规格 SIZES 1...19

Table with columns for gear unit sizes (1-19) and rows for different gear types (PG1, PG2, PG3, PG4) across various ratios (1.25 to 5.6). Includes sub-headers for 'Gear unit sizes' and 'n=1800 r/min 额定热功率'.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4



平行轴齿轮箱 Helical gear units

热容量 Thermal Capacities

类型 TYPES EH2... 规格 SIZES 3...26

Table with columns for gear unit sizes (3-26) and rows for gear ratios (6.3, 7.1, 8, 9, 10, 11.2, 12.5, 14, 16, 18, 20, 22.4, 25, 28) and gear types (PG1-4). Includes a note 'n=1200 r/min 额定热功率'.

PG1, PG2, PG3, PG4见214页 See page 214 for PG1, PG2, PG3, PG4

平行轴齿轮箱 Helical gear units

热容量 Thermal Capacities

类型 TYPES EH2... 规格 SIZES 3...26

Table with columns for gear unit sizes (3-26) and rows for gear ratios (6.3, 7.1, 8, 9, 10, 11.2, 12.5, 14, 16, 18, 20, 22.4, 25, 28) and gear types (PG1-4). Includes a note 'n=1500 r/min 额定热功率'.

PG1, PG2, PG3, PG4见214页 See page 214 for PG1, PG2, PG3, PG4



平行轴齿轮箱
Helical gear units

热容量
Thermal Capacities

类型 TYPES EH2...
规格 SIZES 3...26

Table with columns for gear unit sizes (3-26) and rows for different gear types (PG1-PG4) at various speeds (6.3, 7.1, 8, 9, 10, 11.2, 12.5, 14, 16, 18, 20, 22.4, 25, 28). Includes a sub-table for gear unit sizes and nominal power ratings.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4

平行轴齿轮箱
Helical gear units

额定功率
Nominal Power Ratings

类型 TYPES EH3...
规格 SIZES 5...26

Table with columns for gear unit sizes (5-26) and rows for different gear types (PG1-PG4) at various speeds (22.4, 25, 28, 31.5, 35.5, 40, 45, 50, 56, 63, 71, 80, 90, 100, 112). Includes a sub-table for gear unit sizes and nominal power ratings.

卧式设计齿轮箱要采用强制润滑

Forced lubrication required on horizontal gear units

敬请垂询

Gear units only on request



直交轴齿轮箱
Bevel-helical Gear Units

热容量
Thermal Capacities

类型 TYPES EB2...
规格 SIZES 1...26

Table with 26 columns (gear unit sizes) and 16 rows (types PG1-4 for sizes 5, 5.6, 6.3, 7.1, 8, 9, 10, 11.2, 12.5, 14, 16, 18). Includes sub-headers for 'n=1000 r/min 额定热功率'.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4

直交轴齿轮箱
Bevel-helical Gear Units

热容量
Thermal Capacities

类型 TYPES EB2...
规格 SIZES 1...26

Table with 26 columns (gear unit sizes) and 16 rows (types PG1-4 for sizes 5, 5.6, 6.3, 7.1, 8, 9, 10, 11.2, 12.5, 14, 16, 18). Includes sub-headers for 'n=1200 r/min 额定热功率'.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4



直交轴齿轮箱
Bevel-helical Gear Units

热容量
Thermal Capacities

类型 TYPES EB2...
规格 SIZES 1...26

Table with columns for gear unit sizes (1-26) and rows for types (PG1, PG2, PG3, PG4) across various ratios (5, 5.6, 6.3, 7.1, 8, 9, 10, 11.2, 12.5, 14, 16, 18).

PG1, PG2, PG3, PG4见214页 See page 214 for PG1, PG2, PG3, PG4

直交轴齿轮箱
Bevel-helical Gear Units

热容量
Thermal Capacities

类型 TYPES EB2...
规格 SIZES 1...26

Table with columns for gear unit sizes (1-26) and rows for types (PG1, PG2, PG3, PG4) across various ratios (5, 5.6, 6.3, 7.1, 8, 9, 10, 11.2, 12.5, 14, 16, 18).

PG1, PG2, PG3, PG4见214页 See page 214 for PG1, PG2, PG3, PG4



直交轴齿轮箱
Bevel-helical Gear Units

额定功率
Nominal Power Ratings

类型 TYPES EB3...
规格 SIZES 3...26

i	n ₁	n ₂	齿轮箱规格 Gear unit sizes																							
			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
			额定功率 P _N (KW) Nominal power ratings P _N (KW)																							
12.5	1800	144	83	142	256	423	701	1175	1991*	2941*	3769*															
	1500	120	69	119	213	353	580	980	1689	2451	3141*	4272*														
	1200	96	55	95	170	282	463	784	1327	1961	2513*	3416*														
	1000	80	46	79	142	235	423	653	1106	1634	2094	2848														
	1800	129	81	131	243	394	709	1071	1834*	1980*	2610*	3078*	3506*	3947*	4817*											

■ 卧式安装齿轮箱要采用强制润滑 Forced lubrication required on horizontal gear units
□ 敬请垂询 Gear units only on request

直交轴齿轮箱
Bevel-helical Gear Units

热容量
Thermal Capacities

类型 TYPES EB3...
规格 SIZES 3...26

i	n ₁	n ₂	齿轮箱规格 Gear unit sizes																							
			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
			n=1000 r/min 额定热功率																							
12.5	PG1	38.1	50.8	79.7	109	140	172	221	295	388	500	648	844	1100	1428	1836	2334	2942	3780	4868	6336	8224	10592	13680	17616	22512
	PG2	66.3	93.9	150	204	321	419	583	742	981	1284	1671	2154	2754	3492	4398	5496	6888	8616	10740	13320	16416	20112	24432	29472	35328
	PG3	76.8	124	218	323	456	714	1117	1339	1788	2316	2946	3696	4584	5628	6846	8346	10056	12006	14244	16812	20664	24840	29412	35328	42432
	PG4	100	161	280	413	613	923	1410	1745	2316	2946	3696	4584	5628	6846	8346	10056	12006	14244	16812	20664	24840	29412	35328	42432	50832

PG1, PG2, PG3, PG4见214页 See page 214 for PG1, PG2, PG3, PG4



直交轴齿轮箱 Bevel-helical Gear Units

热容量 Thermal Capacities

类型 TYPES EB3... 规格 SIZES 3...26

Table with columns for gear unit sizes (3-26) and rows for models PG1, PG2, PG3, PG4 at n=1200 r/min. It lists thermal capacity values for various gear unit sizes.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4

直交轴齿轮箱 Bevel-helical Gear Units

热容量 Thermal Capacities

类型 TYPES EB3... 规格 SIZES 3...26

Table with columns for gear unit sizes (3-26) and rows for models PG1, PG2, PG3, PG4 at n=1500 r/min. It lists thermal capacity values for various gear unit sizes.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4



直交轴齿轮箱
Bevel-helical Gear Units

热容量
Thermal Capacities

类型 TYPES EB3...
规格 SIZES 3...26

Table with columns for gear unit sizes (3-26), nominal power ratings (n=1800 r/min), and thermal capacities. Rows include PG1, PG2, PG3, PG4 for various sizes.

PG1, PG2, PG3, PG4见214页 See page 214 for PG1, PG2, PG3, PG4

直交轴齿轮箱
Bevel-helical Gear Units

额定功率
Nominal Power Ratings

类型 TYPES EB4...
规格 SIZES 5...26

Table with columns for gear unit sizes (5-26), nominal power ratings (KW), and thermal capacities. Rows include PG1, PG2, PG3, PG4 for various sizes.

强制润滑尺寸规格采用强制润滑。 Forced lubrication required on horizontal gear units.



平行轴齿轮箱 Helical gear units

额定输出扭矩 Nominal Output Torques

类型 TYPES EH1...EH2...EH3...EH4... 规格 SIZES 1...26

Table with columns for gear unit sizes (1-26) and rows for input speeds (1.25 to 450). Includes a large 'EH1' watermark.

直交轴齿轮箱 Bevel-helical Gear Units

额定输出扭矩 Nominal Output Torques

类型 TYPES EB2...EB3...EB4... 规格 SIZES 1...26

Table with columns for gear unit sizes (1-26) and rows for input speeds (5.0 to 400). Includes a large 'EB2' watermark.

EH/EB

EH/EB



平行轴齿轮箱
Helical gear units

实际速比
Actual Ratios

类型 TYPES EH1...,EH2...,EH3...,EH4...
规格 SIZES 1...13

in	实际速比 i Actual ratios i												
	齿轮箱规格 Gear unit sizes												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1.25	1.250		1.243		1.256		1.263		1.270				
1.4	1.415		1.371		1.378		1.389		1.400				
1.6	1.605		1.594		1.588		1.606		1.625		1.636		1.588
1.8	1.829		1.829		1.839		1.774		1.800		1.806		1.839
2.0	2.000		2.000		2.034		1.966		2.000		2.000		2.034
2.24	2.194		2.194		2.259		2.308		2.231		2.222		2.259
2.5	2.536		2.536		2.520		2.583		2.500		2.480		2.520
2.8	2.808		2.808		2.826		2.800		2.741		2.783		2.826
3.15	3.125		3.125		3.190		3.130		3.208		3.080		3.208
3.55	3.500		3.500		3.591		3.524		3.591		3.478		3.591
4.0	3.950		3.950		4.050		4.000		4.050		3.905		4.050
4.5	4.476		4.435		4.619		4.400		4.381		4.421		4.619
5.0	5.053		4.952		4.900		4.905		4.947		5.150		4.900
5.6	5.571		5.579		5.556		5.526		5.684		5.474		5.556
6.3			6.232	6.319	6.286		6.088		6.260		6.246		6.410
7.1			7.099	6.857	7.213		7.048		7.247		6.900		7.100
8.0			7.765	7.778	7.889	7.792	7.799	7.676	8.018	7.848	7.644	7.941	7.889
9.0			8.516	8.485	8.652	8.940	8.660	8.887	8.904	9.085	8.974	8.772	8.799
10			9.845	9.722	10.002	9.778	9.660	9.833	9.932	10.053	10.046	9.718	9.861
11.2			10.900	10.694	11.075	10.724	10.648	10.920	11.138	11.163	10.889	11.410	10.811
12.5			12.132	12.444	12.326	12.397	11.807	12.180	12.574	12.452	12.174	12.773	12.655
14			13.588	13.865	13.806	13.726	13.939	13.426	14.152	13.964	13.704	13.844	14.164
16			15.335	15.556	15.581	15.278	15.717	14.887	15.962	15.765	15.556	15.478	15.975
18			17.378	17.602	17.493	17.111	17.598	17.576	18.204	17.743	17.111	17.423	17.280
20			19.616	19.444	19.534	19.311	19.742	19.817	19.312	20.012	19.074	19.778	19.515
22.4			21.630	22.037	22.006	21.681	20.982	22.189	21.895	22.824	21.491	21.756	22.020
25					25.011	24.212	25.540	24.892	25.439	24.212	24.706	24.251	25.372
28					28.490	27.275	27.711	26.456	29.187	27.451	28.602	27.325	29.373
31.5					31.161	30.999	31.433	32.202	31.924	31.894	31.648	31.412	32.501
35.5					34.177	35.312	34.291	34.940	35.013	36.593	35.144	36.366	36.092
40					39.508	38.622	39.292	39.633	40.474	40.024	39.200	40.238	40.257
45					43.745	42.360	43.221	43.236	44.816	43.897	43.210	44.683	45.147
50					48.689	48.967	50.293	49.542	49.881	50.744	47.911	49.840	50.968
56					54.532	54.220	56.033	54.496	55.866	56.187	56.566	54.938	57.365
63					61.543	60.347	62.867	63.413	63.049	62.537	63.778	60.916	64.699
71					69.742	67.589	71.139	70.651	70.787	70.041	71.414	71.919	73.789
80					78.723	76.279	78.583	79.267	79.049	79.046	80.111	81.089	78.278
90					86.806	86.440	89.061	89.696	89.050	88.748	85.146	90.798	88.750
100						97.572	101.554	99.083	101.210	99.106	103.639	101.856	103.114
112						107.590	115.256	112.294	115.290	111.645	112.450	108.257	118.306
125							125.733	128.046	126.098	126.890	127.556	131.769	129.398
140							143.985	145.322	138.301	144.542	139.152	142.973	141.920
160							158.251	158.533	159.874	158.093	159.444	162.178	164.058
180							174.630	181.546	177.022	173.392	175.389	176.921	181.654
200							193.629	199.533	197.028	200.439	204.089	202.722	202.184
224							228.606	220.185	220.671	221.938	227.382	222.994	226.446
250							257.753	244.141	249.043	247.020	255.111	259.484	255.560
280							288.615	288.242	282.219	276.663	288.678	289.100	286.925
315							305.352	324.993	318.563	312.234	318.889	324.356	320.413
355							344.112	363.906	351.273	353.827	361.407	367.034	360.951
400								385.010		399.393		405.444	
450								433.881		440.402		459.504	

平行轴齿轮箱
Helical gear units

实际速比
Actual Ratios

类型 TYPES EH1...,EH2...,EH3...,EH4...
规格 SIZES 14...26

in	实际速比 i Actual ratios i													
	齿轮箱规格 Gear unit sizes													
	14	15	16	17	18	19	20	21	22	23	24	25	26	
														1.25
														1.4
														1.6
														1.8
														2.0
														2.24
														2.5
														2.8
														3.15
														3.55
														4.0
														4.5
														5.0
														5.6
														6.3
														7.1
														8.0
														9.0
														10
														11.2
														12.5
														14
														16
														18
														20
														22.4
														25
														28
														31.5
														35.5
														40
														45
														50
														56
														63
														71
														80
														90
														100
														112
														125
														140
														160
														180
														200
														224
														250
														280
														315
														355
														400
														450



直交轴齿轮箱
Bevel-helical gear units

实际速比
Actual Ratios

类型 TYPES EB2...,EB3...,EB4...
规格 SIZES 1...13

in	实际速比 i Actual ratios i												
	齿轮箱规格 Gear unit sizes												
	1	2	3	4	5	6	7	8	9	10	11	12	13
5.0	4.980	5.043	4.895	4.936	5.006		4.865		5.002		4.897		4.967
5.6	5.566	5.636	5.471	5.480	5.488		5.333		5.483		5.534		5.613
6.3	6.455	6.526	6.334	6.296	6.386	6.205	6.206	6.195	6.381	6.271	6.296	6.226	6.386
7.1	7.068	7.158	6.947	6.959	7.058	6.802	6.860	6.725	7.053	6.875	7.037	7.036	7.138
8.0	7.668	7.765	7.536	7.549	7.657	7.915	7.880	7.825	8.101	8.000	7.994	8.005	8.108
9.0	8.829	8.941	8.678	8.693	8.817	8.749	8.569	8.649	8.810	8.842	8.693	8.947	8.817
10	10.027	10.154	9.855	9.872	10.108	9.490	9.823	9.935	10.099	10.157	9.965	10.164	10.108
11.2	10.938	11.077	10.751	10.769	10.923	10.928	10.615	10.804	10.914	11.045	10.769	11.052	10.923
12.5	12.458	12.615	12.244	12.034	12.703	12.528	12.433	12.385	12.554	12.662	12.334	12.670	12.482
14	14.005	14.182	13.765	13.484	13.964	13.538	13.515	13.385	14.137	13.683	13.821	13.692	13.721
16	15.441	15.636	15.176	15.601	15.835	15.826	16.275	15.773	15.952	15.693	15.522	15.888	16.354
18	17.595	17.818	17.294	17.482	17.407	17.307	17.692	17.041	17.963	17.724	17.393	17.572	17.978
20			19.336	19.614	19.645	19.729	19.948	20.648	20.259	19.940	19.744	19.995	20.276
22.4			21.609	21.919	21.954	21.575	22.146	22.308	22.208	22.520	21.643	22.114	22.226
25			25.021	25.380	25.421	24.349	25.446	25.152	25.843	25.400	25.185	25.103	25.864
28			27.442	27.836	27.881	27.211	28.125	27.923	28.563	27.842	27.836	27.517	28.587
31.5			29.769	30.196	30.245	31.508	30.509	32.084	30.985	32.400	31.975	32.021	32.838
35.5			34.279	34.771	34.827	34.557	35.131	35.461	35.679	35.811	34.771	35.392	35.709
40			38.928	39.487	39.551	37.486	39.896	38.468	40.902	38.846	39.861	40.654	40.936
45			42.467	43.077	43.146	43.166	43.523	44.296	44.202	44.732	43.077	44.209	44.238
50			48.365	49.060	49.139	49.021	49.568	50.304	50.341	51.280	49.060	50.681	50.383
56			54.371	55.152	55.240	53.477	55.723	54.877	56.592	55.417	55.152	54.769	56.639
63			59.947	60.808	60.906	60.904	61.438	62.499	62.396	63.114	60.808	62.376	62.448
71			68.312	69.293	69.404	68.467	70.011	70.259	71.102	70.951	69.293	70.121	71.161
80					77.598	75.489	79.267	77.465	79.497	78.228	80.949	77.313	82.118
90					86.720	86.022	88.585	88.274	88.842	89.143	89.869	88.101	90.016
100					100.413	96.178	102.572	99.945	102.869	99.667	103.259	102.921	104.750
112					110.130	107.484	112.498	111.694	112.824	111.384	114.129	114.262	115.777
125					119.466	124.455	122.035	129.330	122.389	128.971	123.804	131.287	125.592
140					137.567	136.499	140.525	141.846	140.933	141.452	142.562	145.106	144.621
160					156.225	148.071	159.585	153.871	160.047	153.443	161.897	157.408	165.791
180					170.427	170.506	174.092	177.184	174.597	176.692	176.615	181.258	179.166
200					194.098	193.631	198.272	201.215	198.847	200.656	201.145	205.841	204.050
224					218.199	211.234	222.891	219.508	223.537	218.898	226.121	224.554	229.386
250					240.578	240.572	245.752	249.995	246.464	249.300	249.313	255.742	252.913
280					274.147	270.443	280.042	281.036	280.855	280.256	284.101	287.497	288.204
315					302.121	298.181	308.618	309.861	309.513	309.000	313.091	316.984	317.612
355						339.788		353.097		352.116		361.214	
400						374.460		389.127		388.046		398.073	
450													

直交轴齿轮箱
Bevel-helical gear units

实际速比
Actual Ratios

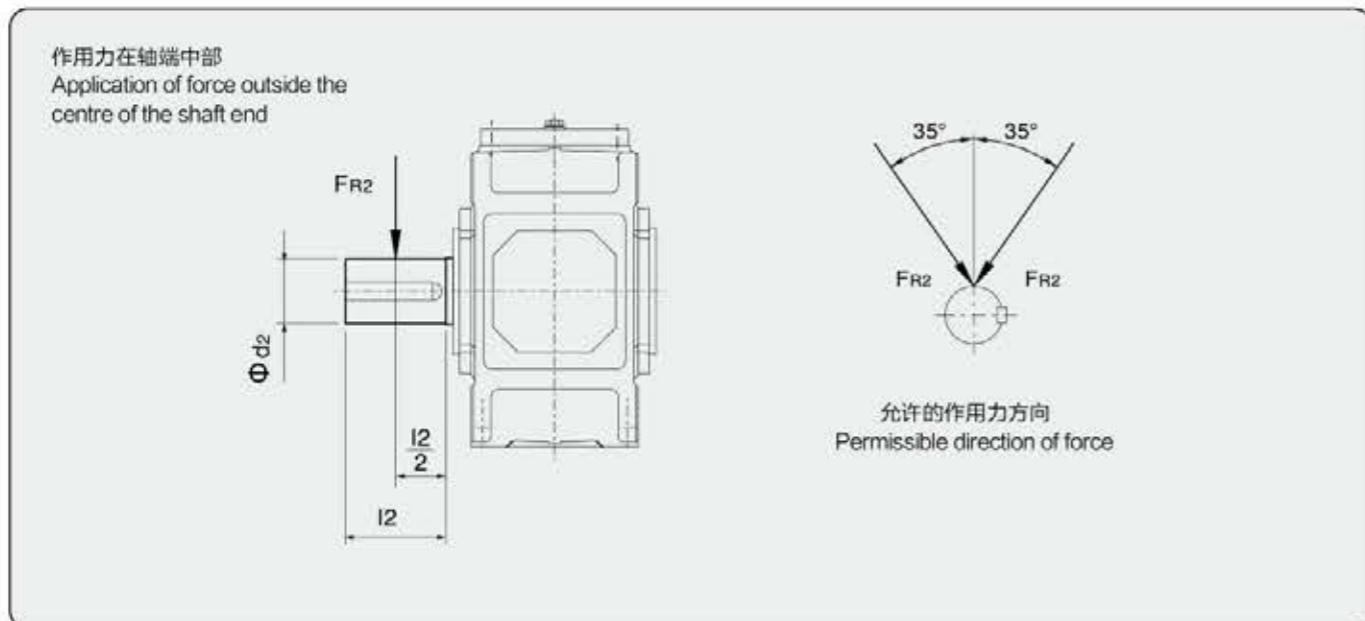
类型 TYPES EB2...,EB3...,EB4...
规格 SIZES 14...26

in	实际速比 i Actual ratios i												
	齿轮箱规格 Gear unit sizes												
	14	15	16	17	18	19	20	21	22	23	24	25	26
5.0		4.963											
5.6		5.609	5.630	5.514									
6.3	6.156	6.340	6.362	6.234									
7.1	6.957	7.132	7.192	7.012	7.239								
8.0	7.915	8.101	8.090	7.965	8.143								
9.0	8.847	8.810	9.190	8.662	9.250								
10	10.049	10.099	9.993	9.930	10.059								
11.2	10.928	10.914	11.456	10.731	11.531								
12.5	12.528	12.172	12.380	12.770	12.462	12.062		12.256					
14	13.538	13.810	13.832	13.790	14.654	13.709	13.698	13.902	13.719				
16	15.552	15.215	15.665	16.226	16.014	15.192	15.640	15.436	15.538				
18	17.007	17.262	17.290	17.522	18.620	17.267	17.252	17.510	17.279				
20	20.376	19.379	19.581	19.762	20.348	19.607	19.698	19.883	19.570	19.591		19.284	
22.4	22.282	21.900	21.982	22.333	22.950	22.158	22.368	22.470	22.222	22.139	21.930	21.793	22.206
25	25.131	24.916	24.842	25.409	25.936	25.048	25.278	25.400	25.113	25.027	24.783	24.635	25.095
28	27.548	27.847	28.263	28.398	29.507	28.175	28.576	28.571	28.389	28.151	28.015	27.711	28.368
31.5	32.057	31.634	31.588	32.259	32.979	32.005	32.143	32.456	31.933	31.979	31.513	31.478	31.909
35.5	35.432	34.400	35.883	35.080	37.463	34.804	36.513	35.294	36.275	34.775	35.797	34.231	36.248
40	40.700	39.435	39.021	40.215	40.738	39.899	39.706	40.461	39.446	39.866	38.927	39.241	39.417
45	44.259	42.617	44.732	43.460	46.702	43.117	45.518	43.725	45.221	43.082	44.626	42.407	45.187
50	50.737	48.536	48.341	49.496	50.469	49.106	49.190	49.798	48.869	49.065	48.226	48.297	48.833
56	54.831	54.562	55.055	55.641	57.479	55.203	56.022	55.981	55.656	55.158	54.924	54.294	55.615
63	62.446	60.158	61.892	61.348	64.616	60.865	62.978	61.722	62.567	60.815	61.744	59.863	62.520
71	70.200	68.553	68.239	69.909	71.243	69.358	69.438	70.335	68.984	69.301	68.076	68.216	68.933
80	77.400	78.131	77.761	76.506	81.184	79.977	79.127	77.639	78.610	76.497	77.575	78.100	78.551
90	88.200	85.645	88.626	83.865	88.846	87.670	91.242	87.739	86.772	86.448	85.631	88.260	89.933
100	101.780	99.664	97.150	97.593	97.391	102.020	100.017	99.821	98.061	98.353	96.770	100.414	101.633
112	111.569	110.155	113.052	107.865	113.333	112.759	116.389	111.565	111.565	109.924	110.097	112.228	115.629
125	129.831	126.535	124.952	123.904	125.263	129.526	128.641	126.733	124.690	124.870	123.049	127.487	129.232
140	143.498	137.599	143.532	134.739	143.889	140.851	147.769	137.815	141.643	135.788	139.780	138.634	146.803
160	155.663	157.741	156.082	154.462	156.471	161.470	160.690	157.989	154.029	155.665	152.002	158.928	159.639
180	179.284	170.467	178.930	166.923	179.375	174.496	184.212	170.735	176.576	168.224	174.252	171.749	183.008
200	205.487	194.143	193.365	190.107	193.846	198.732	199.073	194.448	190.821	191.588	188.310	195.603	197.772
224	222.065	218.249	220.222	213.712	220.769	223.408	226.722	218.592	217.324	215.377	214.464	219.891	225.240
250	252.907	240.634	247.566	235.631	248.182	246.322	254.874	241.012	244.309	237.467	241.094	242.444	253.208
280	284.310	274.210	272.957	268.510	273.636	280.692	281.015	274.641	269.366	270.602	265.822	276.274	279.178
315	313.470	302.191	311.045	295.909	311.818	309.334	320.226	302.666	306.952	298.215	302.913	304.465	318.133
355	357.210		342.784		343.636		352.902		338.273		333.823		350.596
400	393.660												
450													



齿轮箱 Gear Units 输出轴d2上允许的附加径向力¹⁾ Permissible Additional Radial Forces on Output Shaft d2¹⁾

类型 TYPES EH1SH., EH2S., EH3S., EH4S., EB2S., EB3S., EB4S



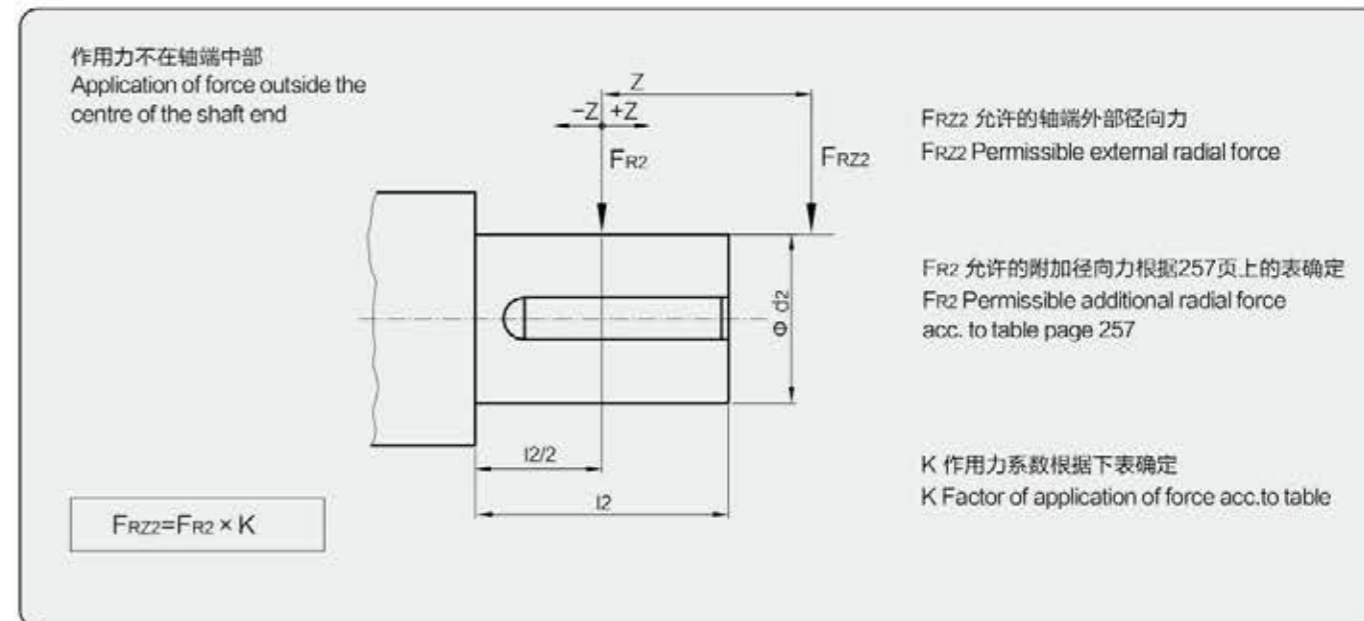
允许的附加径向力 F_{R2} (kN), 作用于输出轴端中部³⁾
Permissible additional radial forces F_{R2} in kN with application of force on center of shaft end

类型 Type	布置形式 Design	齿轮箱规格 1), 4) Gearunitsize1), 4)																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
EH1SH	A/B	2)	-	2)	-	2)	-	2)	-	2)	-	2)	-	2)	-	2)	-	2)	-
EH2S.	A/B/G/H	-	-	8	10	22	22	30	30	30	45	64	64	150	150	140	205	205	205
	C/D	-	-	8	10	13	13	30	18	10	28	35	35	112	112	85	135	135	135
EH3S.	A/B/G/H	-	-	-	-	29	29	40	40	40	60	85	85	190	190	185	265	265	265
	C/D	-	-	-	-	18	18	26	26	18	40	50	50	150	150	120	185	185	190
EH4S.	A/B	-	-	-	-	-	-	26	26	18	40	50	50	150	150	120	185	185	190
	C/D	-	-	-	-	-	-	40	40	40	60	85	85	190	190	185	265	265	265
EB2S.	A/C	7	10	10	13	27	27	37	37	38	55	78	78	160	160	150	210	210	210
	B/D	4	7	9	12	15	15	17	17	10	30	38	38	110	110	75	145	100	100
EB3S.	A/C	-	-	9	14	29	29	40	40	40	60	85	85	190	190	185	265	265	265
	B/D	-	-	7	9	18	18	26	26	18	40	50	50	150	150	120	185	185	190
EB4S.	A/C	-	-	-	-	29	29	40	40	40	60	85	85	190	190	185	265	265	265
	B/D	-	-	-	-	18	18	26	26	18	40	50	50	150	150	120	185	185	190

1)表中数据为最小值。如果给出了力的作用角和旋转方向,通常情况下,可允许承受较大的附加径向力。此时请与我们联系。
2)根据用户要求供货。
3)当作用力不在轴端中部时,请参见第258页。
4)基础螺栓的最低性能等级为8.8级。基础必须干燥,不得有油脂。如用户要求,允许输入轴d1上附加径向力。
1) Values in tables are minimum values.If the angle of application of force and the direction of rotation are given,significantly higher additional forces can mostly be allowed.Please consult us.
2)On request.
3)For application of force outside the center of the shaft end, see page 258.
4)Use foundation bolts of min.Property class8.8.Foundation must be dry and grease-free.Permissible additional radial forces on input shaft d1on request.

齿轮箱 Gear Units 输出轴 d2 上允许的附加径向力 Permissible Additional Radial Forces on Output Shaft d2

类型 TYPES EH1SH.,EH2S.,EH3S.,EH4S., EB2S., EB3S., EB4S



$F_{R22} = F_{R2} \times K$

规格 Size	作用力系数 K Factor of application of force K															
	距离 Z(mm) Distance Z in mm															
	-200	-150	-100	-75	-50	-25	0	25	50	75	100	150	200	250	300	
1						1.11	1.00	0.81	0.68	0.58	0.51					
2						1.11	1.00	0.83	0.71	0.63	0.56					
3					1.21	1.09	1.00	0.85	0.74	0.65	0.58	0.48				
4					1.17	1.08	1.00	0.86	0.76	0.68	0.62	0.52	0.44			
5+6				1.22	1.14	1.06	1.00	0.88	0.79	0.72	0.66	0.56	0.49	0.43		
7+8				1.19	1.12	1.06	1.00	0.89	0.81	0.74	0.68	0.58	0.51	0.46	0.41	
9+10			1.22	1.15	1.10	1.05	1.00	0.90	0.82	0.76	0.70	0.61	0.54	0.48	0.44	
11+12			1.18	1.13	1.08	1.04	1.00	0.91	0.84	0.78	0.73	0.64	0.57	0.51	0.47	
13+14		1.24	1.15	1.11	1.07	1.03	1.00	0.92	0.86	0.80	0.75	0.67	0.60	0.55	0.50	
15+16		1.20	1.12	1.09	1.06	1.03	1.00	0.93	0.87	0.82	0.77	0.69	0.63	0.58	0.53	
17+18	1.25	1.17	1.11	1.08	1.05	1.03	1.00	0.94	0.88	0.84	0.79	0.72	0.66	0.60	0.56	



卧式安装齿轮箱
Horizontal gear units

布置形式
Design

类型 TYPES EH2...EH4, EB2...EB4

规格 SIZES 1...26

立式安装齿轮箱
Vertical gear units

布置形式
Design

类型 TYPES EH2...EH4, EB2...EB4

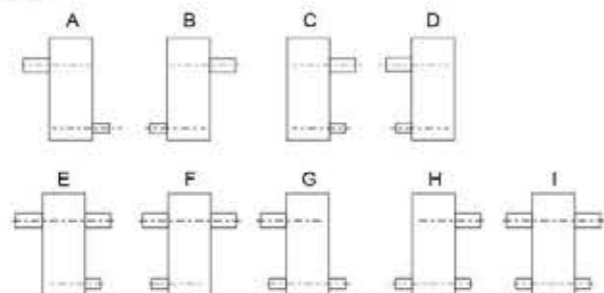
规格 SIZES 1...26

平行轴齿轮箱 Helical gear units

视图方向:水平放置从上向下看
View orientation: placed horizontally from looking down

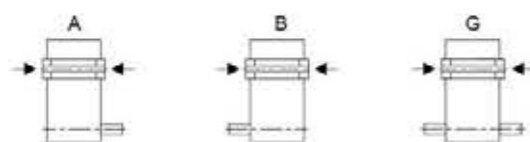
实心轴 Solid shaft

EH.SH



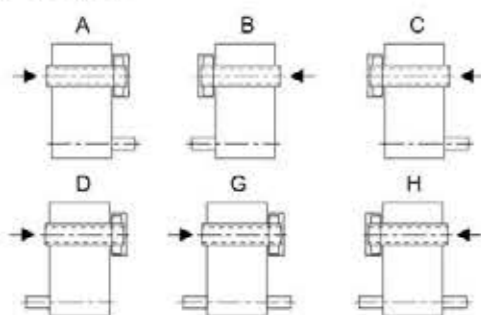
空心轴 Hollow shaft *)

EH.HH、EH.HM



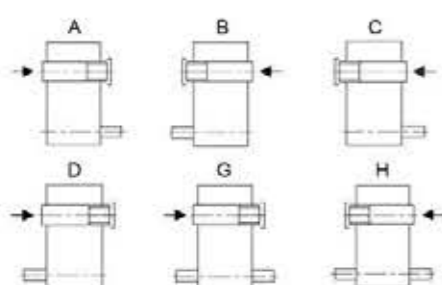
带胀紧盘空心轴 Hollow shaft for shrink disk *)

EH.DH、EH.DM



带花键空心轴 Hollow shaft with involute spline *)

EH.KH、EH.KM



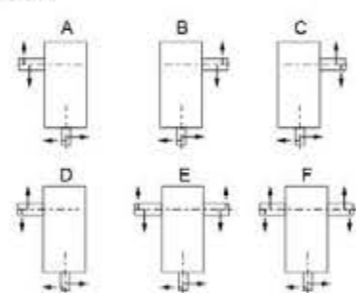
→ 箭头表示工作机驱动轴输入方向 The arrow indicates the direction of the driven machine shaft

直交轴齿轮箱 Bevel-helical gear units

视图方向:水平放置从上向下看
View orientation: placed horizontally from looking down

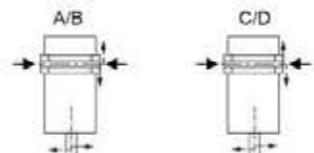
实心轴 Solid shaft

EB.SH



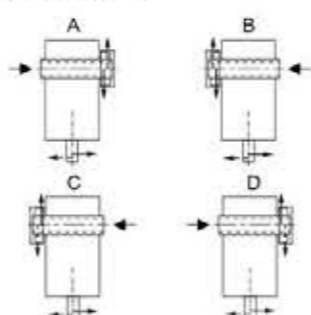
空心轴 Hollow shaft *)

EB.HH、EB.HM



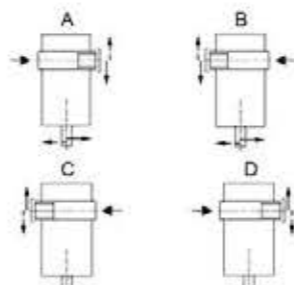
带胀紧盘空心轴 Hollow shaft for shrink disk *)

EB.DH、EB.DM



带花键空心轴 Hollow shaft with involute spline *)

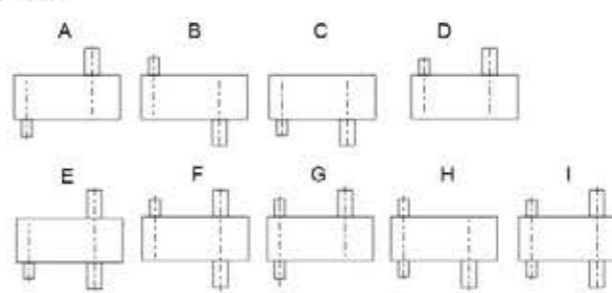
EB.KH、EB.KM



平行轴齿轮箱 Helical gear units

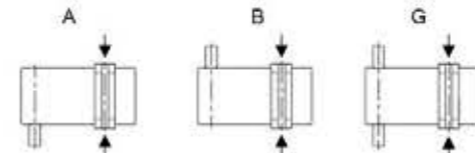
实心轴 Solid shaft

EH.SV



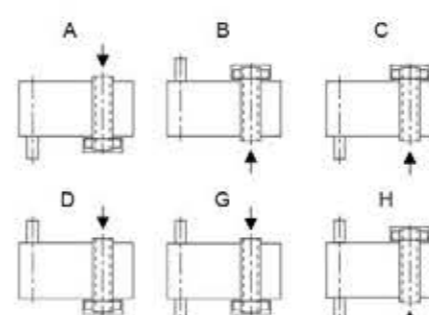
空心轴 Hollow shaft *)

EH.HV



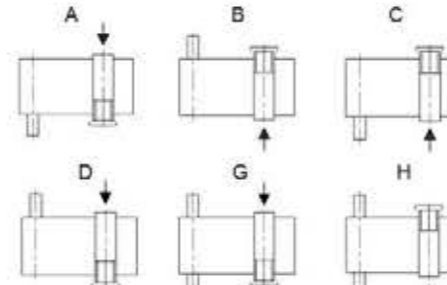
带胀紧盘空心轴 Hollow shaft for shrink disk *)

EH.DV



带花键空心轴 Hollow shaft with involute spline *)

EH.KV

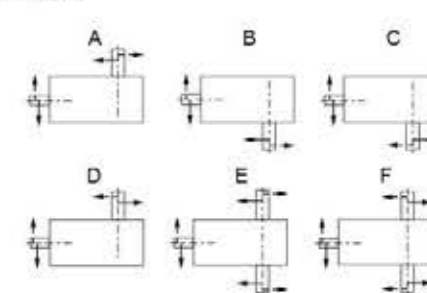


→ 箭头表示工作机驱动轴输入方向 The arrow indicates the direction of the driven machine shaft

直交轴齿轮箱 Bevel-helical gear units

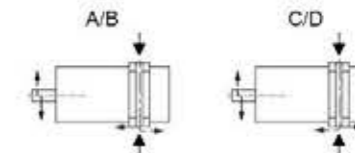
实心轴 Solid shaft

EB.SV



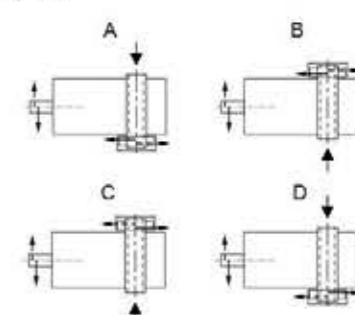
空心轴 Hollow shaft *)

EB.HV



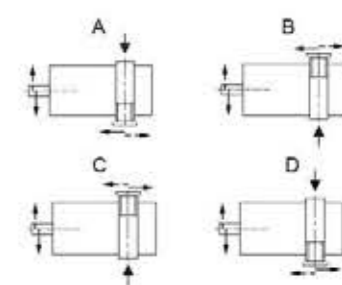
带胀紧盘空心轴 Hollow shaft for shrink disk *)

EB.DV



带花键空心轴 Hollow shaft with involute spline *)

EB.KV





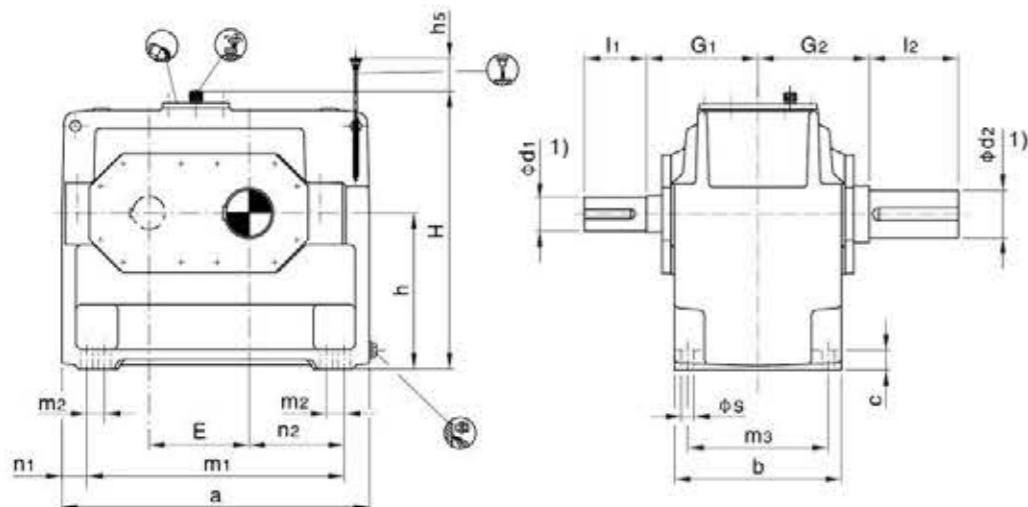
平行轴齿轮箱
Helical gear units

单级传动
Single Stage

卧式安装
Horizontal

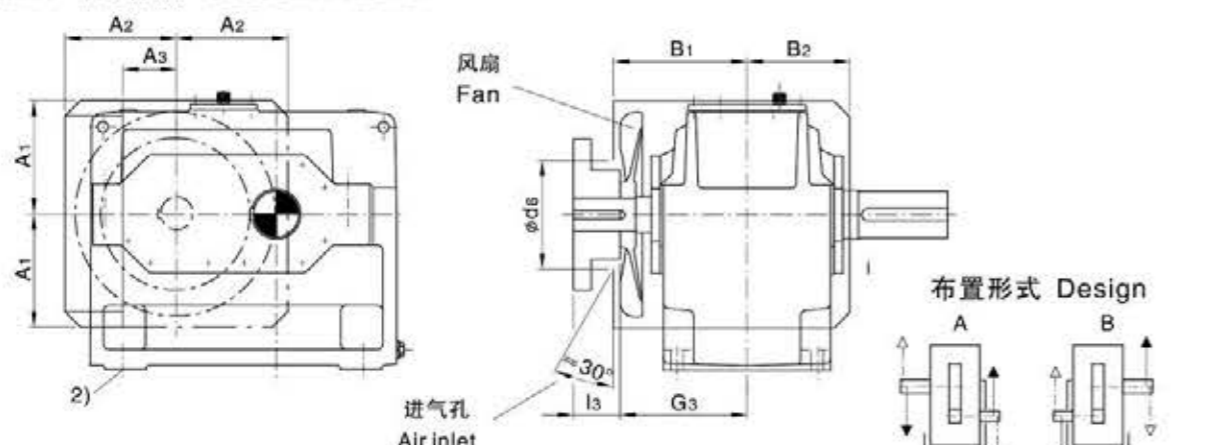
类型 TYPES EH1SH...
规格 SIZES 1...19

EH1SH



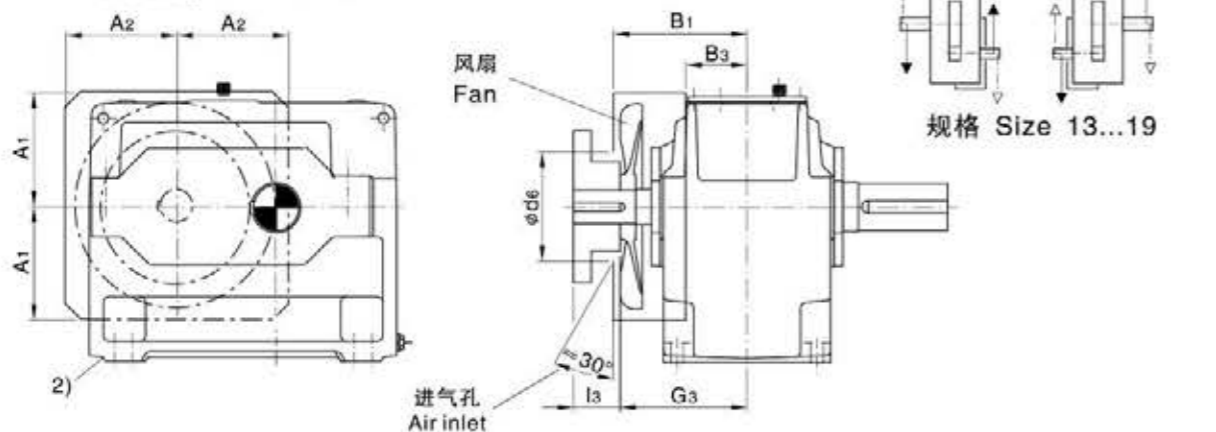
EH1SH

规格 3...11 带冷却风扇 Sizes 3...11 With fan



EH1SH

规格 13...19 带冷却风扇 Sizes 13...19 With fan



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风扇罩。 Remove air guide cover before fitting the foundation bolts.
3) 规格1号不带风扇。 Sizes 1 without fan.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input										冷却风扇 Fan										
	IN=1.25-2.8			IN=1.6-2.8*			IN=2-2.8**			IN=3.15-4			IN=4.5-5.6								
	d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3	G1	G3	A1	A2	A3	B1	B2	B3	d6			
1	40	70	-	30	50	-	24	40	-	110	-	-	-	-	-	-	-	-	-		
3	60	125	105	45	100	80	32	80	60	170	190	150	145	80	205	130	-	130			
5	85	160	130	60	135	105	50	110	80	210	240	225	215	115	255	185	-	190			
7	100	200	165	75	140	105	60	140	105	250	285	255	250	120	300	230	-	245			
9	110	200	165	90	165	130	75	140	105	280	315	300	265	140	330	265	-	280			
11 *	130	240	205	110	205	170	90	170	135	325	360	360	330	190	375	320	-	350			
13 *	150	245	200	130	245	200	100	210	165	365	410	415	350	-	430	-	150	350			
15 **	180	290	240	150	250	200	125	250	200	360	410	500	430	-	430	-	120	450			
17 **	200	330	280	170	290	240	140	250	200	400	450	550	430	-	470	-	150	445			
19 **	220	340	290	190	340	290	160	300	250	440	490	630	475	-	510	-	190	445			

规格 Size	齿轮箱 Gear units													输出轴 Output		
	a	b	c	E	h	h5	H	m1	m2	m3	n1	n2	s	d2 ¹⁾	G2	l2
1	295	150	18	90	140	55	275	220	-	120	37	80	12	45	110	80
3	420	200	28	130	200	85	375	310	-	160	55	110	19	60	170	125
5	580	285	35	185	290	100	525	440	-	240	70	160	24	85	210	160
7	690	375	45	225	350	75	625	540	-	315	75	195	28	105	250	200
9	805	425	50	265	420	50	735	625	-	350	90	225	35	125	270	210
11	960	515	60	320	500	40	875	770	-	440	95	280	35	150	320	240
13	1100	580	70	370	580	40	1020	870	-	490	115	315	42	180	360	310
15	1295	545	80	442	600	10	1115	1025	-	450	135	370	48	220	360	350
17	1410	615	80	490	670	-	1235	1170	130	530	120	425	42	240	400	400
19	1590	690	90	555	760	-	1395	1290	150	590	150	465	48	270	440	450

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
1	2.5	55
3	7	128
5	22	302
7	42	547
9	68	862
11	120	1515
13	175	2395
15	190	3200
17	270	4250
19	390	5800

冷却盘管的冷却液接口
Water connection for cooling coil

输出轴 Output

规格 Size	b _x	e _x	h _x	s _x	x) L/min
1	30	150	45	G1/4	4
3	48	205	74	G1/2	4
5	88	270	90	G1/2	4
7	124	310	135	G1/2	4
9	116	365	110	G1/2	8
11	146	425	130	G1/2	8
13	152	480	150	G1/2	8
15	172	560	130	G1/2	8
17	200	600	145	G1/2	8
19	敬请垂询 On request				

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water
2) x) 所需冷却水量。 Cooling water quantity required.



平行轴齿轮箱
Helical gear units

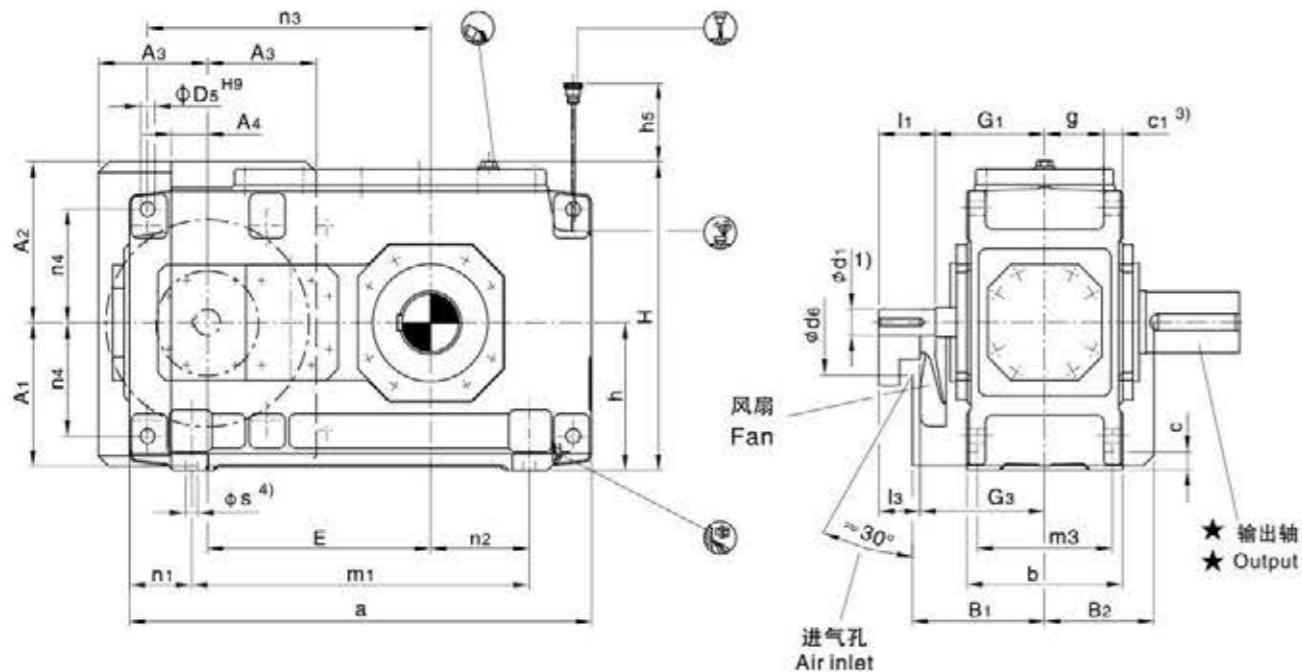
两级传动
Two Stage

卧式安装
Horizontal

类型 TYPES EH2.H...

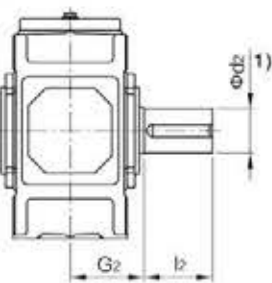
规格 SIZES 3...12

EH2SH
EH2HH
EH2DH
EH2KH

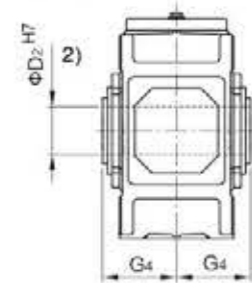


★ 输出轴 Output

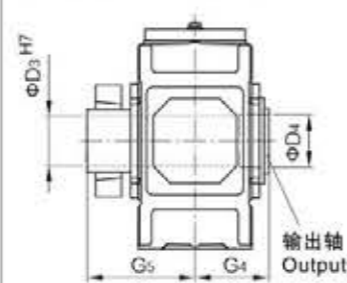
EH2SH
实心轴
Solid shaft



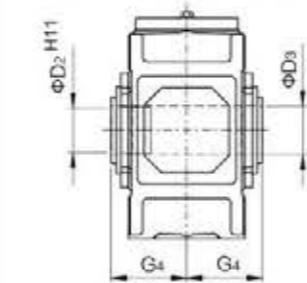
EH2HH
空心轴
Hollow shaft



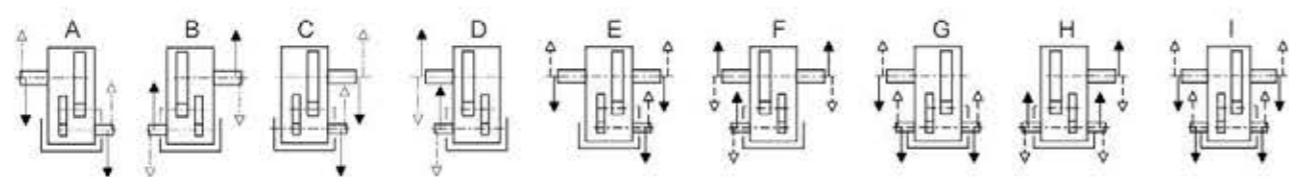
EH2DH
带胀紧盘的
空心轴
Hollow shaft for shrink disk



EH2KH
花键空心轴
Hollow shaft with involute splines



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979 型和中心孔, 参见第 321-322 页。For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风罩盖。Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input								布置形式 Design G, H, I 仅用于 only for in=		冷却风扇 Fan						
	in=6.3-11.2			in=12.5-22.4			G ₁	G ₃			A ₁	A ₂	A ₃	A ₄	B ₁	B ₂	d ₆
	d1 ¹⁾	l ₁	l ₃	d1 ¹⁾	l ₁	l ₃											
3	35	70	-	28	50	-	135	-	-	-	-	-	-	-	-	-	
4	45	100	80	32	80	60	170	190	6.3-18	-	195	225	150	30	205	158	136
5 +6	50	100	80	38	80	60	195	215	6.3-18	8-22.4	225	260	175	55	230	177.5	150
7 +8	60	135	105	50	110	80	210	240	6.3-16	8-20	272	305	210	70	255	210	200
9 +10	75	140	110	60	140	110	240	270	6.3-16	8-20	312	355	240	100	285	245	200
11 +12	90	165	130	70	140	105	275	310	6.3-18	8-22.4	372	420	285	135	325	285	210

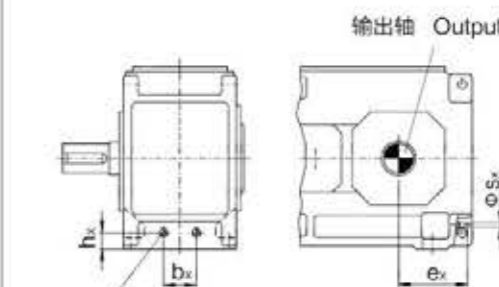
规格 Size	齿轮箱 Gear units									
	b	c	C ₁	D ₅	g	h	m ₃	n ₁	n ₄	s
3	190	22	24 ± 1	18	71	175	160	80	132.5	15
4	215	28	30 ± 1	24	77.5	200	180	105	150	19
5+6	255	28	30 ± 1	24	97.5	230	220	105	180	19
7+8	300	35	36 ± 1	28	114	280	260	120	215	24
9+10	370	40	45 ± 1.5	36	140	320	320	145	245	28
11+12	430	50	54 ± 1.5	40	161	380	370	165	300	35

规格 Size	齿轮箱 Gear units							输出轴 Output								
	a	E	h _s	H	m ₁	n ₂	n ₃	EH2SH		EH2HH		EH2DH		EH2KH		
								d2 ¹⁾	G ₂	l ₂	D2 ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅
3	450	220	110	360	290	65	285	65	125	140	65	125	70	70	125	180
4	565	270	110	415	355	85	345	80	140	170	80	140	85	85	140	205
5	640	315	150	482	430	100	405	100	165	210	95	165	100	100	165	240
6	720	350	150	482	510	145	440	110	165	210	105	165	110	110	165	240
7	785	385	190	572	545	130	500	120	195	210	115	195	120	120	195	280
8	890	430	190	582	650	190	545	130	195	250	125	195	130	130	195	285
9	925	450	205	662	635	155	585	140	235	250	135	235	140	145	235	330
10	1025	500	215	662	735	205	635	160	235	300	150	235	150	155	235	350
11	1105	545	250	782	775	180	710	170	270	300	165	270	165	170	270	400
12	1260	615	250	790	930	265	780	180	270	300	180	270	180	185	270	405

见 327-330 页
See page 327-330

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
3	6	115
4	10	190
5	15	300
6	16	355
7	27	505
8	30	590
9	42	830
10	45	960
11	71	1335
12	76	1615

规格 Size	冷却盘管 Cooling coil				
	b _x	e _x	h _x	s _x	x ¹⁾ L/min
3	34	130	55	G1/2	4
4	34	155	60	G1/2	4
5	68	170	64	G1/2	4
6	70	215	68	G1/2	4
7	100	210	83	G1/2	4
8	100	270	83	G1/2	4
9	140	245	110	G1/2	8
10	100	295	95	G1/2	8
11	110	275	95	G1/2	8
12	200	360	109	G1/2	8



冷却盘管的冷却液接口
Water connection for cooling coil

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water
2) x) 所需冷却水量。 Cooling water quantity required.

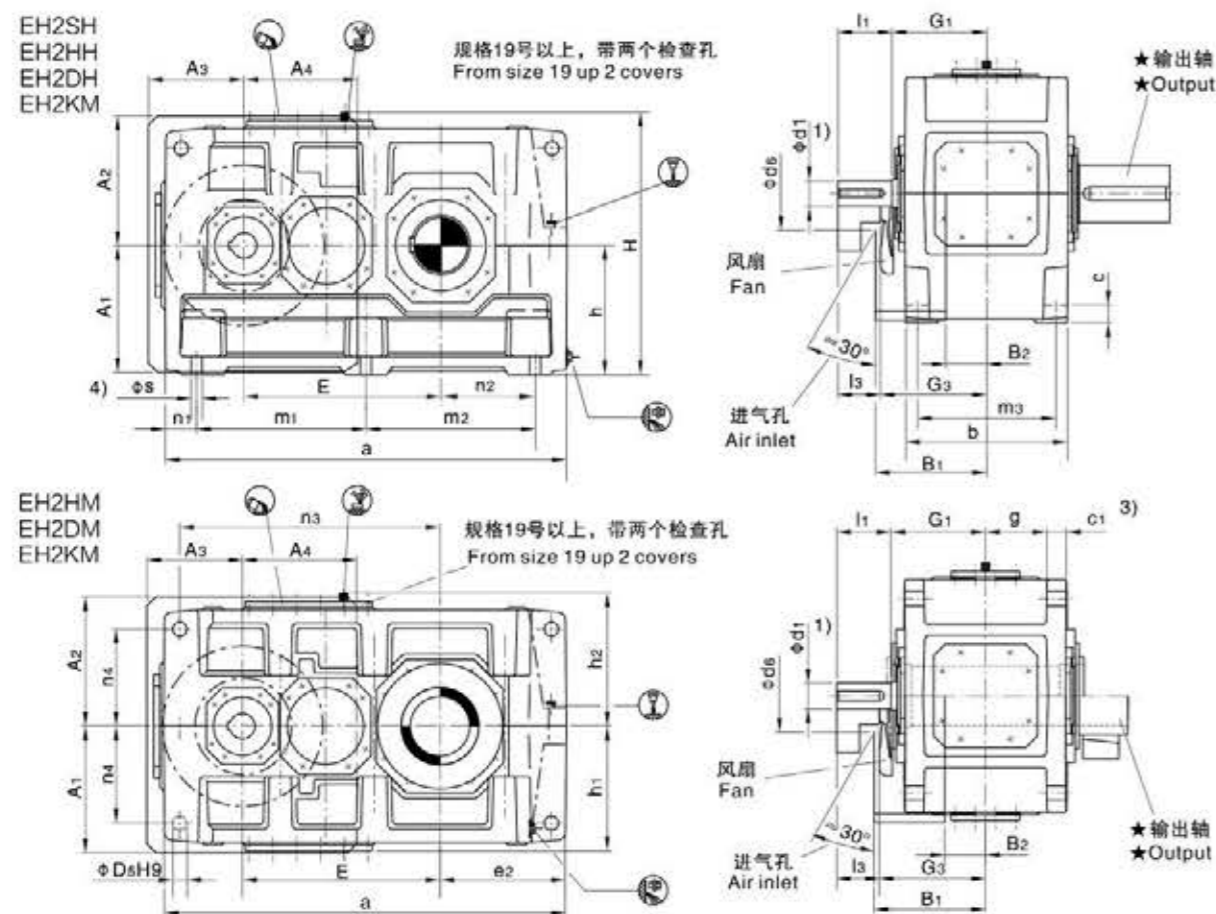


平行轴齿轮箱
Helical gear units

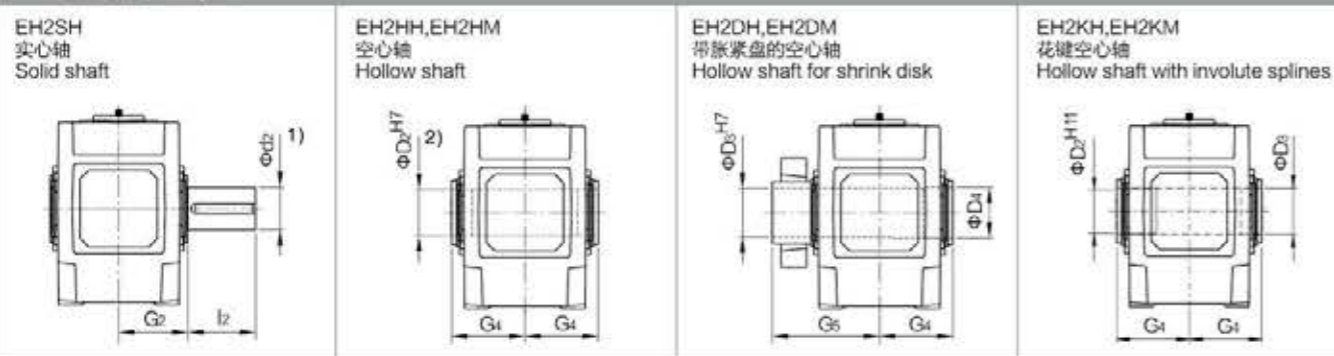
两级传动
Two Stage

卧式安装
Horizontal

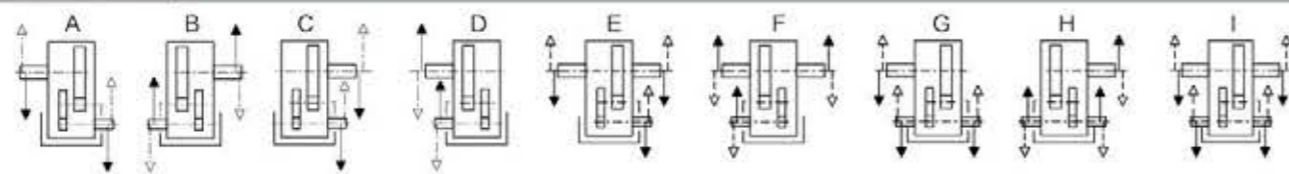
类型 TYPES EH2.H...,EH2.M...
规格 SIZES 13...22



★ 输出轴 Output



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风扇罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

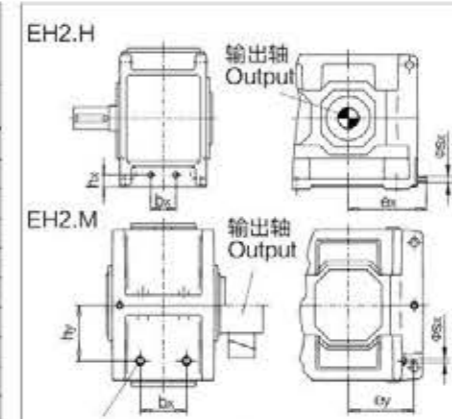
规格 Size	输入轴 Input								布置形式 Design G, H, I 仅用于 only for in=	冷却风扇 Fan							
	in=6.3-11.2				in=12.5-20					A ₁	A ₂	A ₃	A ₄	B ₁	B ₂	d ₅	
	in=7.1-12.5		in=14-22.5		G ₁	G ₂	G ₃	G ₄									
	d ₁ ¹⁾	h ₁	h ₂	d ₁ ¹⁾						h ₁	h ₂						
13+14	100	205	170	85	170	135	330	365	6.3-16	8-20	430	460	330	365	385	135	250
15+16	120	210	165	100	210	165	365	410	6.3-16	7.1-18	490	500	370	440	430	155	280
17+18	125	245	200	110	210	165	420	465	6.3-16	7.1-18	540	565	435	505	485	140	280
19+20	150	245	200	120	210	165	475	520	根据用户要求提供 On request		600	600	500	450	540	190	310
21+22	170	290	240	140	250	200	495	545			680	680	500	610	565	200	450

规格 Size	齿轮箱 Gear units														
	b	c	c ₁	D ₅	g	h	h ₁	h ₂	m ₃	n ₁	n ₄	s	H	m ₁	
13+14	550	60	61±2	48	211.5	440	450	460	475	100	340	35	900	545	
15+16	625	70	72±2	55	238	500	490	500	535	120	375	42	1000	655	
17+18	690	80	81±2	55	259	550	555	560	600	135	425	42	1110	735	
19+20	790	90	91±2	65	299	620	615	620	690	155	475	48	1240	850	
21+22	830	100	100±2	75	310	700	685	690	720	170	520	56	1390	900	

规格 Size	齿轮箱 Gear units							输出轴 Output							
	a	e ₂	E	m ₂	n ₂	n ₃	d ₂ ¹⁾	G ₂	h ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅
13	1290	405	635	545	305	835	200	335	350	190	335	190	195	335	480
14	1430	475	705	685	375	905	210	335	350	210	335	210	215	335	480
15	1550	485	762	655	365	1005	230	380	410	230	380	230	235	380	550
16	1640	530	808	745	410	1050	240	380	410	240	380	240	245	380	550
17	1740	525	860	735	390	1145	250	415	410	250	415	250	260	415	600
18	1860	585	920	855	450	1205	270	415	470	275	415	280	285	415	600
19	2010	590	997	850	435	1345	290	465	470	-	-	285	295	465	670
20	2130	650	1057	970	495	1405	300	465	500	-	-	310	315	465	670
21	2140	655	1067	900	485	1400	320	490	500	-	-	330	335	490	715
22	2250	710	1122	1010	540	1455	340	490	550	-	-	340	345	490	725

见327-330页
See page 327-330

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EH2.H	EH2.M	EH2.H	EH2.M
13	135	110	2000	1880
14	140	115	2570	2430
15	210	160	3430	3240
16	215	165	3655	3465
17	290	230	4650	4420
18	300	240	5125	4870
19	320	300	6600	6300
20	340	320	7500	7200
21	320	350	8900	8400
22	340	370	9600	9200



规格 Size	冷却盘管 Cooling coil							
	b _x	e _x	e _y	h _x	h _y	s _x	x)	L/min
13	252	455	335	116	300	G1/2	8	
14	252	525	405	116	300	G1/2	8	
15	290	535	395	119	335	G1/2	8	
16	290	580	440	119	335	G1/2	8	
17	340	575	425	134	380	G1/2	8	
18	340	635	485	134	380	G1/2	8	
19	敬请垂询 On request							
20								
21								
22								

冷却盘管的冷却液接口
Water connection for cooling coil

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water
2) x) 所需冷却水量。 Cooling water quantity required.

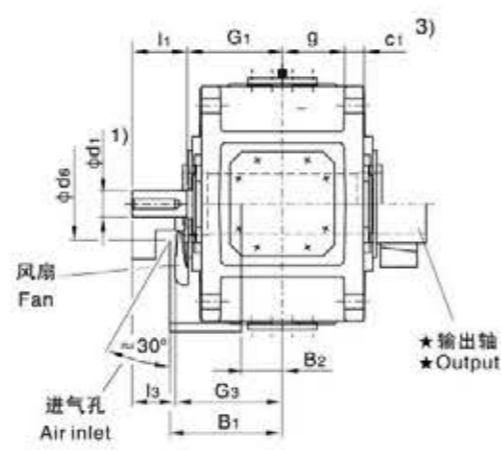
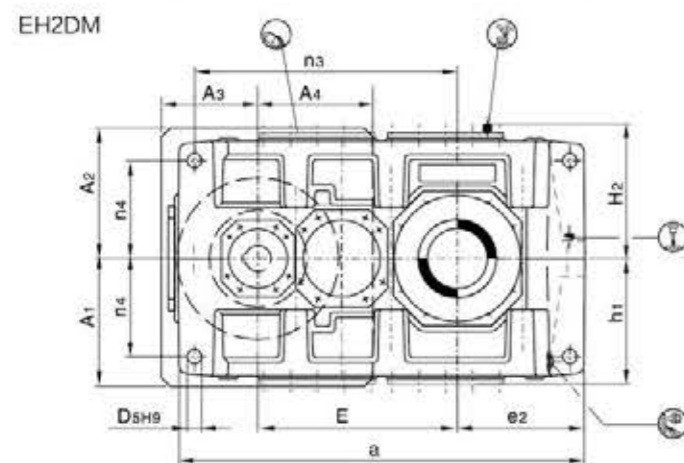
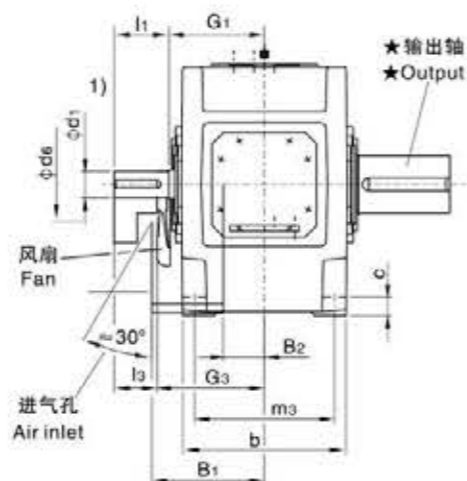
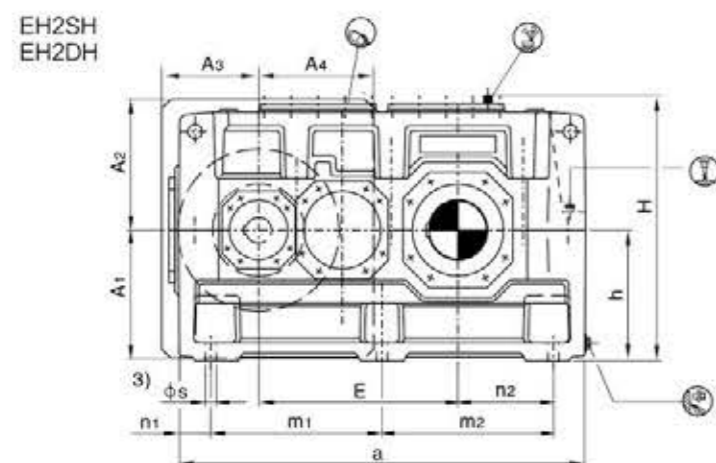


平行轴齿轮箱
Helical gear units

两级传动
Two Stage

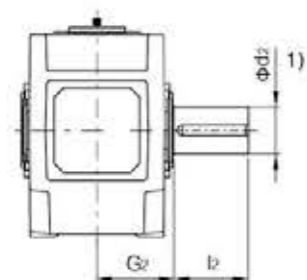
卧式安装
Horizontal

类型 TYPES EH2.H...,EH2.M...
规格 SIZES 23...26

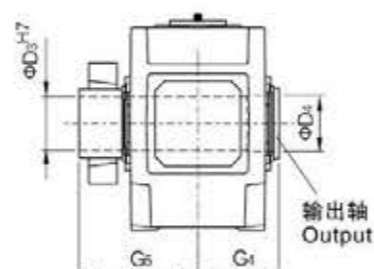


★ 输出轴 Output

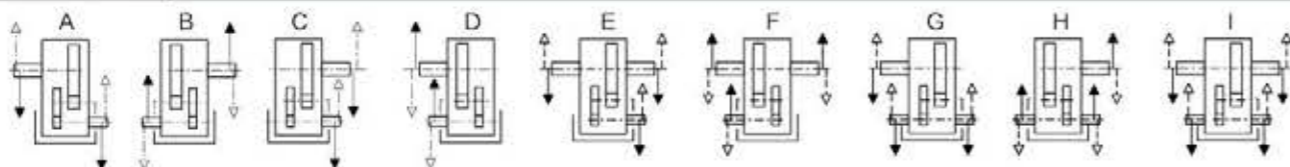
EH2SH
实心轴
Solid shaft



EH2DH, EH2DM
带胀紧套的空心轴
Hollow shaft for shrink disk



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风罩盖。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.

注: 尺寸 mm Note: Dimensions in mm

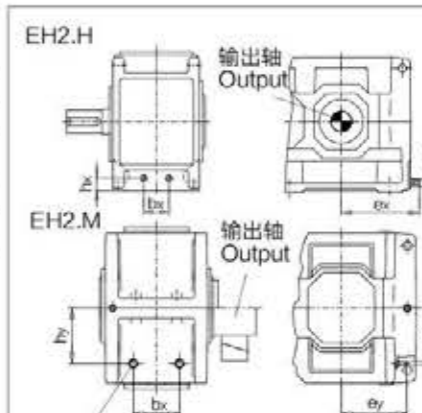


规格 Size	输入轴 Input						布置形式 Design G, H, I 仅用于 only for in=		冷却风扇 Fan						
	in=6.3-11.2		in=12.5-20		in=7.1-12.5		in=14-22.5		A1	A2	A3	A4	B1	B2	d6
	d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3	G1	G3							
23+24	190	330	280	150	250	200	560	610	770	770	550	550	630	220	450
25+26	200	340	290	170	300	250	600	650	845	865	550	550	670	240	450

规格 Size	齿轮箱 Gear units													
	b	c	c1	D5	g	h	h1	h2	m3	n1	n4	s	H	m1
23+24	930	115	120±2	80	342	780	770	770	810	180	580	56	1550	1010
25+26	1045	130	120±2	90	400	860	860	860	910	200	660	66	1720	1090

规格 Size	齿轮箱 Gear units						输出轴 Output							
	EH2SH						EH2DH				EH2DM			
	a	e2	E	m2	n2	n3	d2 ¹⁾	G2	l2	D2	D4	G4	G6	
23	2380	730	1185	1010	550	1560	360	540	590	360	365	540	785	
24	2510	795	1250	1140	615	1625	380	540	590	380	385	540	805	
25	2580	790	1325	1090	590	1685	400	605	650	400	405	605	875	
26	2760	880	1415	1270	680	1775	420	605	650	430	435	605	900	

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EH2.H	EH2.DM	EH2.H	EH2.DM
23	430	470	11600	11000
24	450	500	13000	12300
25	600	660	15500	14700
26	640	700	17200	16200



规格 Size	冷却盘管 Cooling coil					
	b _x	e _x	e _y	h _x	h _y	s _x x) L/min
23	敬请垂询 On request					
24						
25						
26						

冷却盘管的冷却液接口
Water connection for cooling coil

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water
2) x) 所需冷却水量。 Cooling water quantity required.

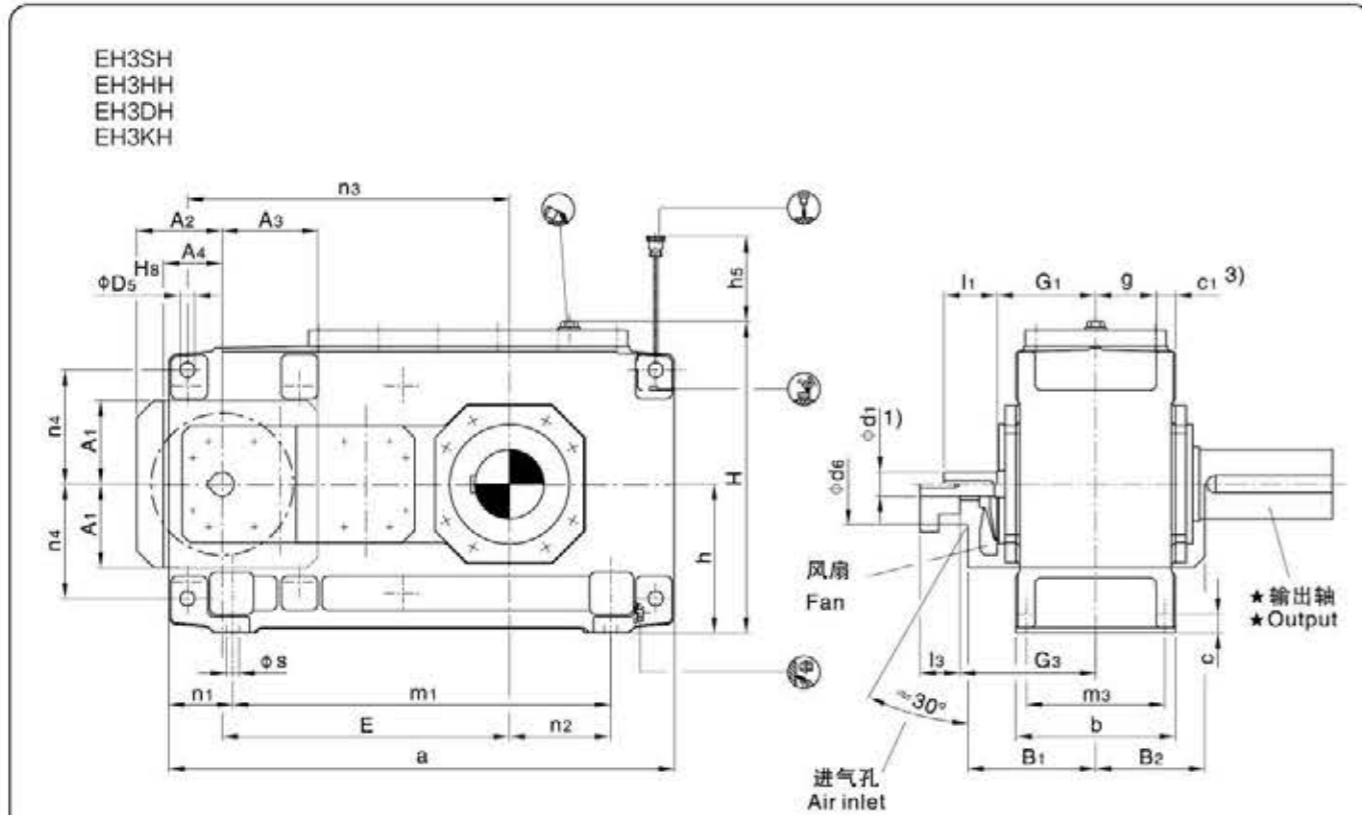


平行轴齿轮箱
Helical gear units

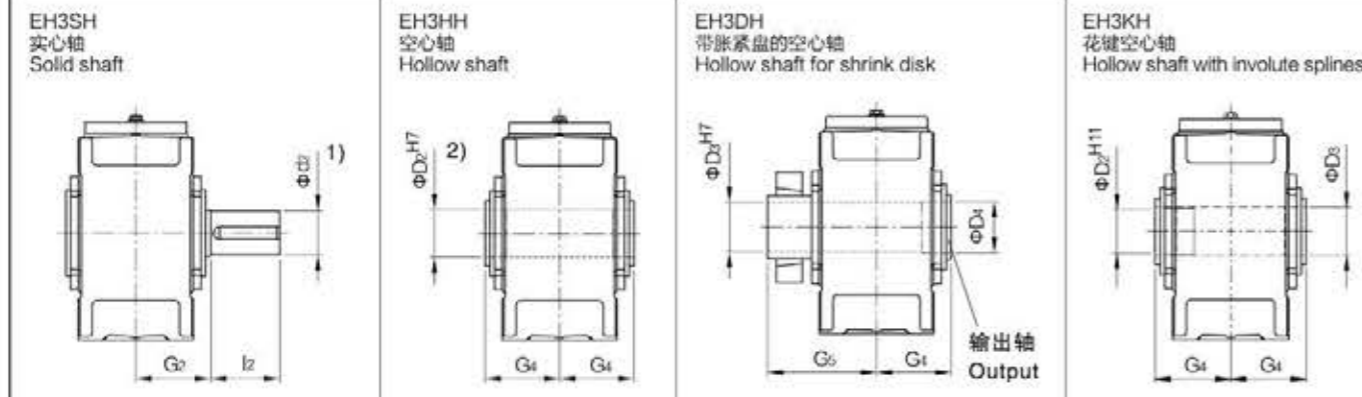
三级传动
Three Stage

卧式安装
Horizontal

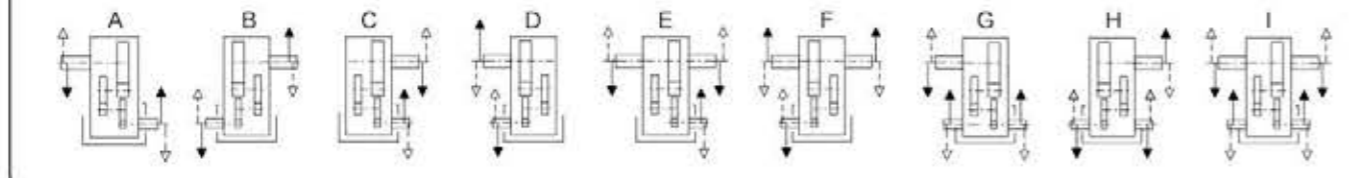
类型 TYPES EH3.H...
规格 SIZES 5...12



★ 输出轴 Output



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风扇罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作侧。 Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input									布置形式 Design G, H, I 仅用于 only for in=		冷却风扇 Fan								
	in=25-45			in=50-63			in=71-90					A ₁	A ₂	A ₃	A ₄	B ₁	B ₂	d ₆		
	d ₁ ¹⁾	l ₁	l ₃	d ₁ ¹⁾	l ₁	l ₃	d ₁ ¹⁾	l ₁	l ₃										G ₁	G ₂
5 +6	40	70	70	30	50	50	24	40	40	160	220	25-90	31.5-112	137	135	140	80	215	175	60
7 +8	45	80	80	35	60	60	28	50	50	185	250	25-90	31.5-112	157	160	180	100	245	205	75
9 +10	60	125	105	45	100	80	32	80	60	230	300	25-90	31.5-112	182	190	205	120	295	240	90
11+12	70	120	120	50	80	80	42	70	70	255	330	25-90	31.5-112	218	220	255	150	325	280	100

规格 Size	齿轮箱 Gear units									
	b	c	c ₁	D ₅	g	h	m ₃	n ₁	n ₂	s
5+6	255	28	30±1	24	97.5	230	220	105	180	19
7+8	300	35	36±1	28	114	280	260	120	215	24
9+10	370	40	45±1.5	36	140	320	320	145	245	28
11+12	430	50	54±1.5	40	161	380	370	165	300	35

规格 Size	齿轮箱 Gear units							输出轴 Output									
	a	E	h ₅	H	m ₁	n ₂	n ₃	EH3SH			EH3HH			EH3DH			EH3KH
	d ₁ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅	D ₃	D ₄	G ₄	G ₅				
5	690	405	130	482	480	100	455	100	165	210	95	165	100	100	165	240	见327-330页 See page 327-330
6	770	440	130	482	560	145	490	110	165	210	105	165	110	110	165	240	
7	845	495	170	572	605	130	560	120	195	210	115	195	120	120	195	280	
8	950	540	160	582	710	190	605	130	195	250	125	195	130	130	195	285	
9	1000	580	185	662	710	155	660	140	235	250	135	235	140	145	235	330	
10	1100	630	185	662	810	205	710	160	235	300	150	235	150	155	235	350	
11	1200	705	180	782	870	180	805	170	270	300	165	270	165	170	270	400	
12	1355	775	170	790	1025	265	875	180	270	300	180	270	180	185	270	405	

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
5	15	320
6	17	365
7	28	540
8	30	625
9	45	875
10	46	1020
11	85	1400
12	90	1675

冷却盘管的冷却液接口
Water connection for cooling coil

输出轴 Output

规格 Size	b _x	e _x	h _x	s _x	x) L/min
5	70	175	60	G1/2	4
6	70	220	69	G1/2	4
7	80	210	83	G1/2	4
8	80	270	83	G1/2	4
9	150	245	107	G1/2	4
10	90	295	95	G1/2	4
11	200	275	115	G1/2	8
12	200	360	115	G1/2	8

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water
2) x) 所需冷却水量。 Cooling water quantity required.

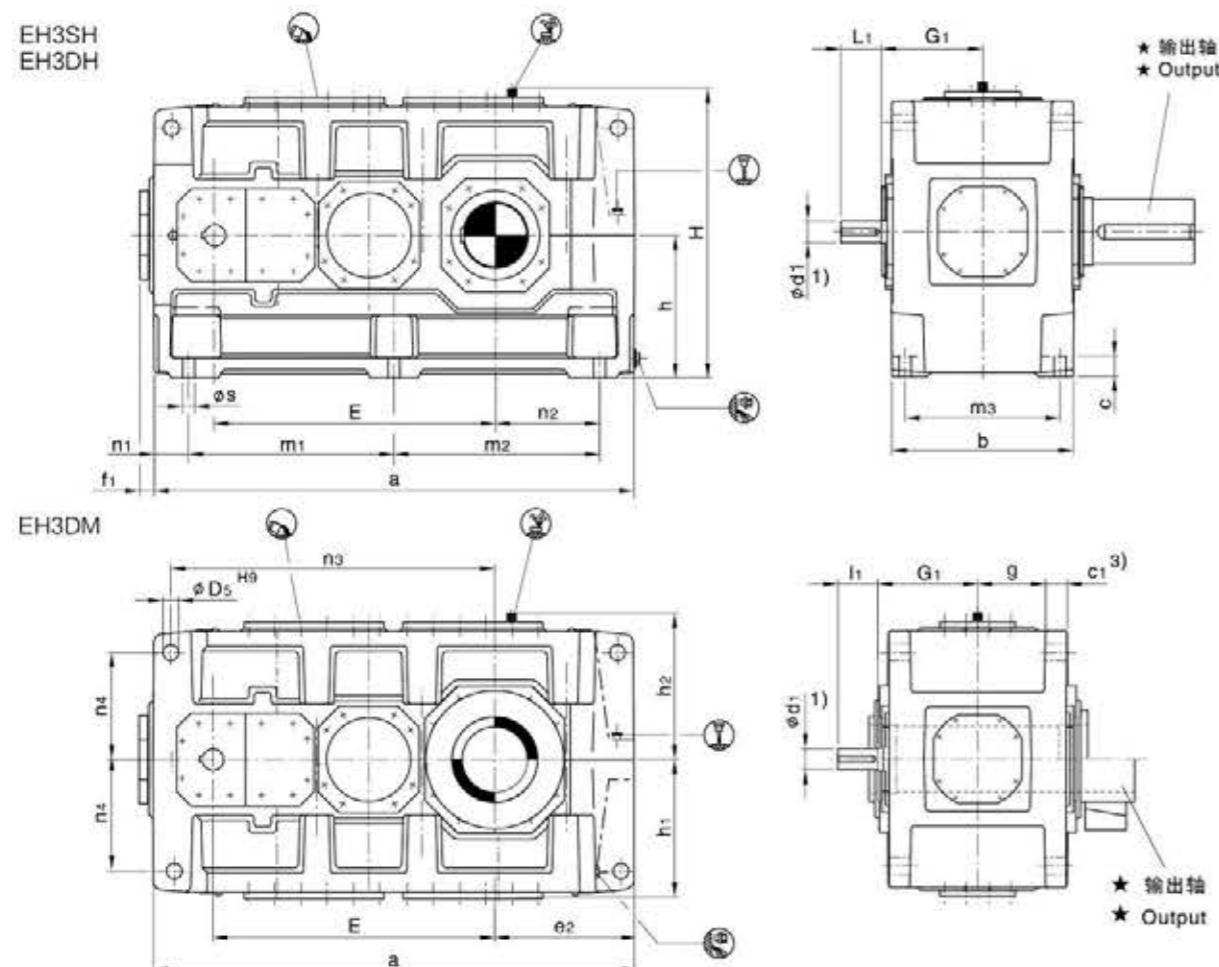


平行轴齿轮箱
Helical gear units

三级传动
Three Stage

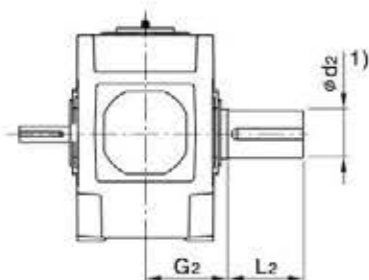
卧式安装
Horizontal

类型 TYPES EH3.H...,EH3.M...
规格 SIZES 23...26

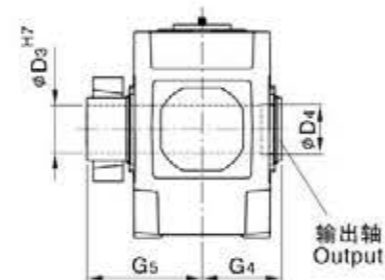


★ 输出轴 Output

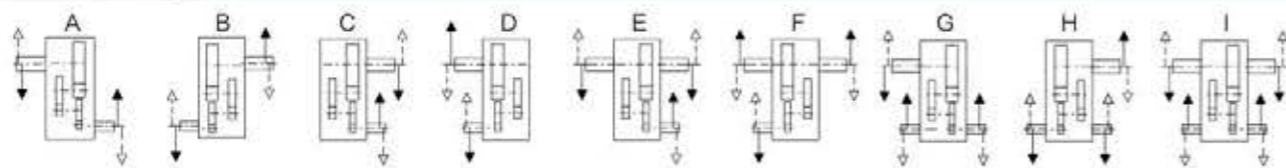
EH3SH
实心轴
Solid shaft



EH3DH, EH3DM
带胀套的空心轴
Hollow shaft for shrink disk



布置形式 Design



1) $k_6 \leq \phi 50$ $m_6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风罩盖。 Remove air guide cover before fitting the foundation bolts.



注: 尺寸 mm Note: Dimensions in mm

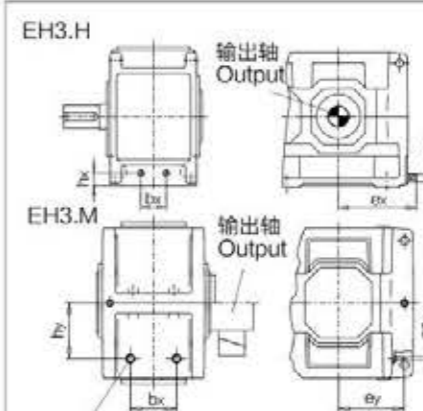
规格 Size	输入轴 Input						布置形式 Design G, H, I 仅用于 only for in=
	in=22.4-45		in=50-63		in=71-90		
	in=25-50		in=56-71		in=80-100		
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁	G ₁
23+24	130	240	110	205	90	170	510
25+26	150	245	130	245	100	210	570

敬请垂询
On request

规格 Size	齿轮箱 Gear units														
	b	c	c ₁	D ₅	g	h	h ₁	h ₂	m ₃	n ₁	n ₄	s	H	m ₁	f ₁
23+24	930	115	120±2	80	342	780	770	790	810	180	580	56	1570	1085	35
25+26	1045	130	120±2	90	400	860	860	860	910	200	660	66	1720	1215	65

规格 Size	齿轮箱 Gear units						输出轴 Output							
							EH3SH				EH3DH EH3DM			
	a	e ₂	E	m ₂	n ₂	n ₃	d ₂ ¹⁾	G ₂	l ₂	D ₂	D ₁	G ₁	G ₅	
23	2530	730	1505	1085	550	1725	360	540	590	360	365	540	785	
24	2660	795	1570	1215	615	1790	380	540	590	380	385	540	805	
25	2830	790	1659	1215	590	1965	400	605	650	400	405	605	875	
26	3010	880	1785	1395	680	2055	420	605	650	430	435	605	900	

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EH3.H	EH3.DM	EH3.H	EH3.DM
23	620	690	11500	10600
24	650	725	13400	12500
25	880	970	16100	15200
26	935	1030	17600	16500



冷却盘管的冷却液接口
Water connection for cooling coil

- 1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water
- 2) x) 所需冷却水量。 Cooling water quantity required.

规格 Size	冷却盘管 Cooling coil					
	b _x	e _x	e _y	h _x	h _y	s _x x) L/min
23	敬请垂询 On request					
24						
25						
26						

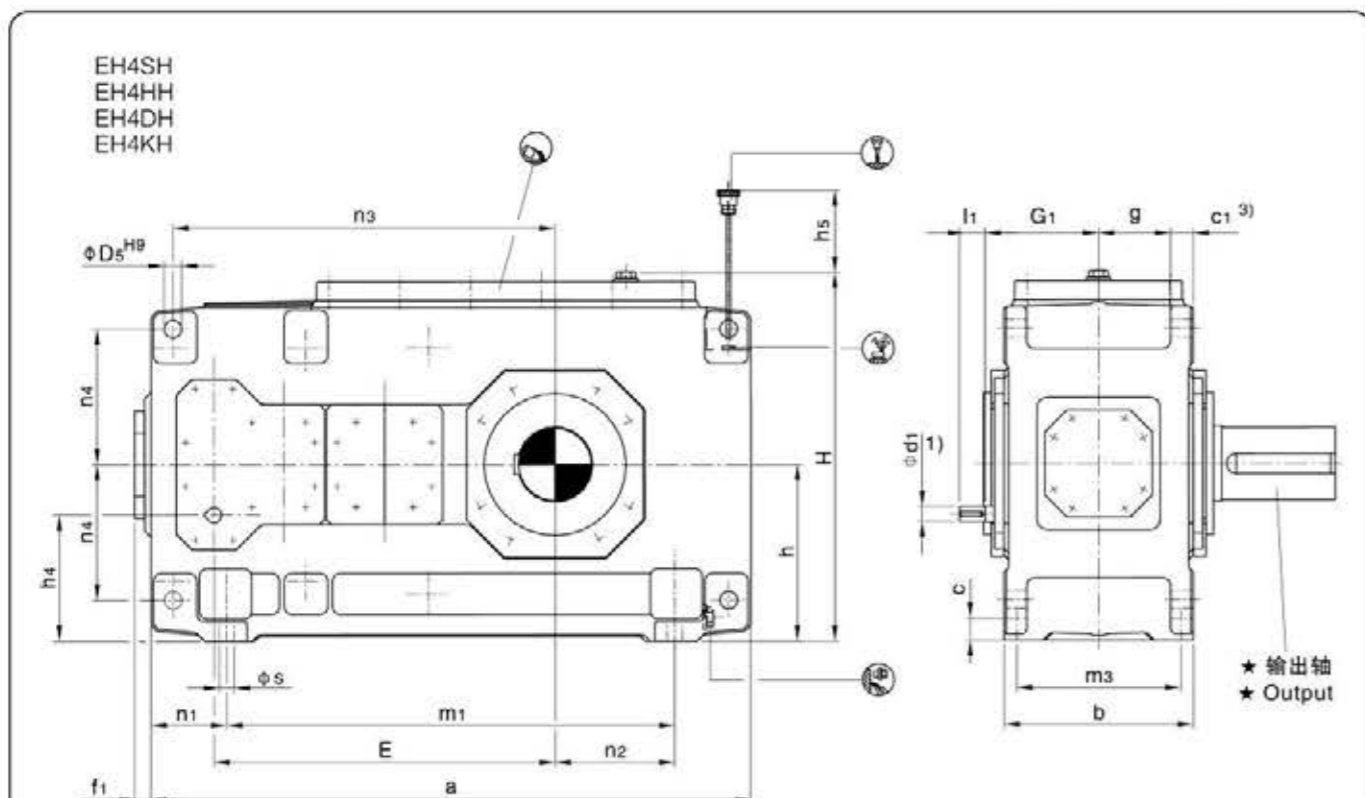


平行轴齿轮箱
Helical gear units

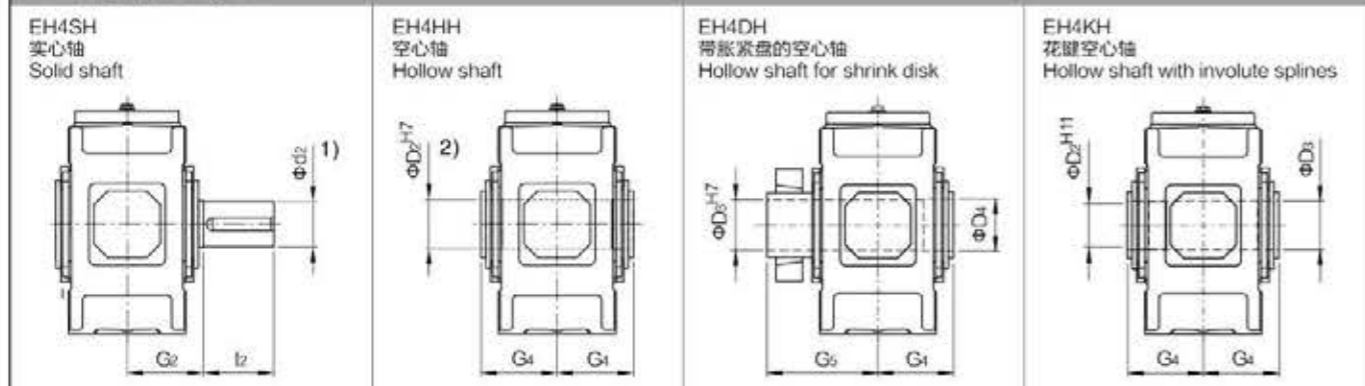
四级传动
Four Stage

卧式安装
Horizontal

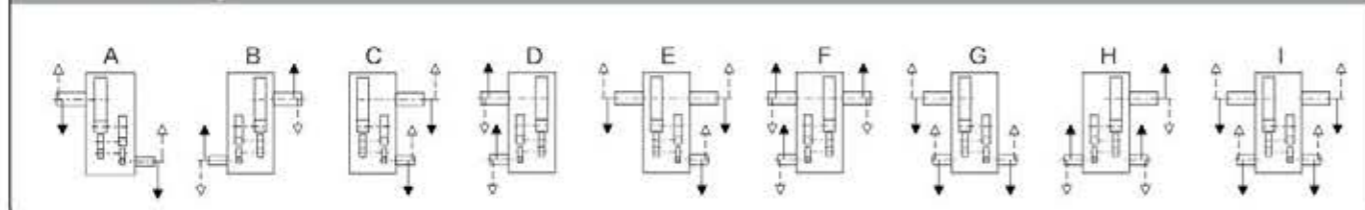
类型 TYPES EH4.H...
规格 SIZES 7...12



★ 输出轴 Output



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input				G ₁	布置形式 Design G, H, I 仅用于 only for iN=	
	iN=100-180		iN=200-355			100-224	125-280
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁			
7 +8	30	50	24	40	180		
9 +10	35	70	28	50	215		
11 +12	45	100	32	80	250		

规格 Size	齿轮箱 Gear units												
	b	c	c ₁	D ₅	g	h	h ₄	m ₃	n ₁	n ₄	s	f ₁	h ₅
7+8	300	35	36 ± 1	28	114	280	200	260	120	215	24	37	140
9+10	370	40	45 ± 1.5	36	140	320	230	320	145	245	28	43	150
11+12	430	50	54 ± 1.5	40	161	380	270	370	165	300	35	47	165

规格 Size	齿轮箱 Gear units						输出轴 Output									
	a	E	H	m ₁	n ₂	n ₃	EH4SH			EH4HH			EH4DH			EH4KH
	d ₂ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅	D ₃	D ₄	G ₄	G ₅			
7	845	495	572	605	130	560	120	195	210	115	195	120	120	195	280	见327-330页 See page 327-330
8	950	540	582	710	190	605	130	195	250	125	195	130	130	195	285	
9	1000	580	662	710	155	660	140	235	250	135	235	140	145	235	330	
10	1100	630	662	810	205	710	160	235	300	150	235	150	155	235	350	
11	1200	705	782	870	180	805	170	270	300	165	270	165	170	270	400	
12	1355	775	790	1025	265	875	180	270	300	180	270	180	185	270	405	

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
7	25	550
8	27	645
9	48	875
10	50	1010
11	80	1460
12	87	1725



平行轴齿轮箱
Helical gear units

四级传动
Four Stage

卧式安装
Horizontal

类型 TYPES EH4.H...,EH4.M...

规格 SIZES 13...22

EH4SH
EH4HH
EH4DH
EH4KH

规格19号以上,带两个检查孔
From size 19 up 2 covers

★ 输出轴
★ Output

EH4HM
EH4DM
EH4KM

规格19号以上,带两个检查孔
From size 19 up 2 covers

★ 输出轴
★ Output

★ 输出轴 Output

	EH4SH 实心轴 Solid shaft	EH4HH EH4HM 空心轴 Hollow shaft	EH4DH EH4DM 带胀紧盘的空心轴 Hollow shaft for shrink disk	EH4KH EH4KM 花键空心轴 Hollow shaft with involute splines

布置形式 Design

1) $k_6 \leq \phi 50$ $m_6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风罩。Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input					布置形式 Design G, H, I 仅用于 only for IN=	
	IN=100-180		IN=200-355		G ₁		
	IN=112-200		IN=224-400				
	IN=125-224		IN=250-450				
d ₁ ⁽¹⁾	l ₁	d ₁ ⁽¹⁾	l ₁				
13+14	50	100	38	80	305	100-250	125-315
15+16	60	135	50	110	345	100-250	112-280
17+18	60	105	50	80	380	-	-
19+20	75	105	60	105	440	-	-
21+22	90	165	70	140	460	-	-

规格 Size	齿轮箱 Gear units																		
	b	c	c ₁	D _s	g	h	h ₁	h ₂	h ₃	m ₃	n ₁	n ₄	s	H	m _i	E ₁	f ₁		
13+14	550	60	61±2	48	211.5	440	450	460	310	475	100	340	35	900	597.5	130	47		
15+16	625	70	72±2	55	238	500	490	500	340	535	120	375	42	1000	720	160	56		
17+18	690	80	81±2	55	259	550	555	560	390	600	135	425	42	1110	750	160	53		
19+20	790	90	91±2	65	299	620	615	620	435	690	155	475	48	1240	860	185	53		
21+22	830	100	100±2	75	310	700	685	690	475	720	170	520	56	1390	1000	225	62		

规格 Size	齿轮箱 Gear units							输出轴 Output							
								EH4SH		EH4HH EH4HM		EH4DH EH4DM		EH4KH EH4KM	
	a	e ₂	E	m ₂	n ₂	n ₃	d ₁ ⁽¹⁾	G ₂	l ₂	D ₂ ⁽²⁾	G ₄	D ₃	D ₄	G ₅	G ₆
13	1395	405	820	597.5	305	940	200	335	350	190	335	190	195	335	480
14	1535	475	890	737.5	375	1010	210	335	350	210	335	210	215	335	480
15	1680	485	987	720	365	1135	230	380	410	230	380	230	235	380	550
16	1770	530	1033	810	410	1180	240	380	410	240	380	240	245	380	550
17	1770	525	1035	750	390	1175	250	415	410	250	415	250	260	415	600
18	1890	585	1095	870	450	1235	270	415	470	275	415	280	285	415	600
19	2030	590	1190	860	435	1365	290	465	470	-	-	285	295	465	670
20	2150	650	1250	980	495	1425	300	465	500	-	-	310	315	465	670
21	2340	655	1387	1000	485	1615	320	490	500	-	-	330	335	490	715
22	2450	710	1442	1110	540	1670	340	490	550	-	-	340	345	490	725

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EH4.H	EH4.M	EH4.H	EH4.M
13	130	120	2390	2270
14	140	125	2730	2600
15	230	170	3635	3440
16	235	175	3965	3740
17	290	225	4680	4445
18	305	230	5185	4915
19	360	310	6800	6300
20	380	330	8200	7700
21	395	430	9200	8600
22	420	450	9900	9400



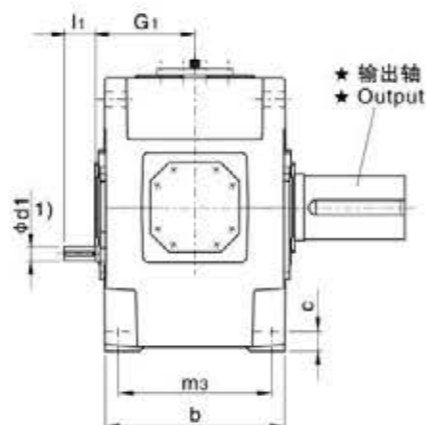
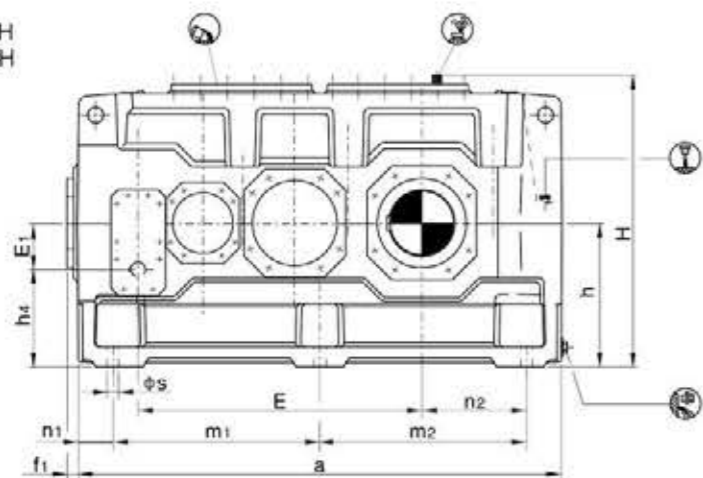
平行轴齿轮箱
Helical gear units

四级传动
Four Stage

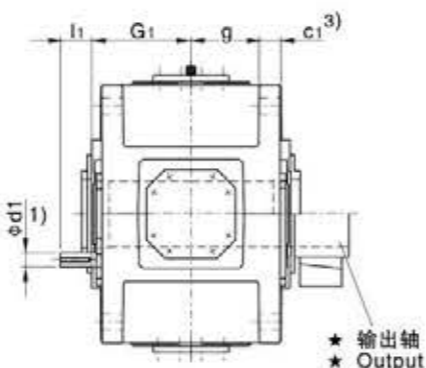
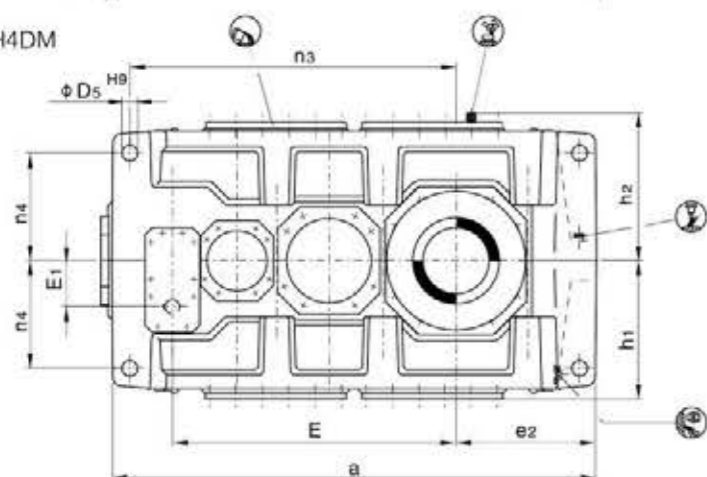
卧式安装
Horizontal

类型 TYPES EH4.H...,EH4.M...
规格 SIZES 23...26

EH4SH
EH4DH

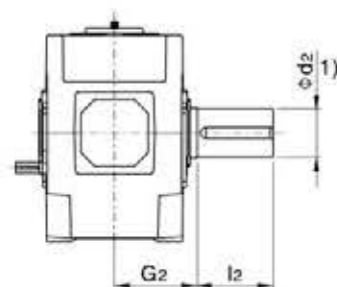


EH4DM

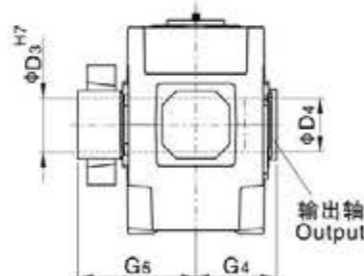


★ 输出轴 Output

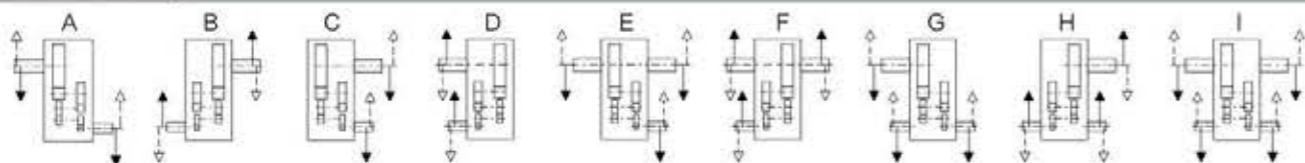
EH4SH
实心轴
Solid shaft



EH4DH EH4DM
带胀套的空心轴
Hollow shaft for shrink disk



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input				G ₁
	i _N =100-180		i _N =200-355		
	i _N =112-200		i _N =224-400		
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁	
23+24	90	130	70	105	505
25+26	100	205	85	170	565

规格 Size	齿轮箱 Gear units																
	b	c	c ₁	D ₅	g	h	h ₁	h ₂	h ₄	m ₃	n ₁	n ₄	s	H	m ₁	f ₁	E ₁
23+24	930	115	120±2	80	342	780	770	790	555	810	180	580	56	1570	1085	35	225
25+26	1045	130	120±2	90	400	860	860	860	595	910	200	660	66	1720	1215	65	265

规格 Size	齿轮箱 Gear units						输出轴 Output						
							EH4SH			EH4DH EH4DM			
	a	e ₂	E	m ₂	n ₂	n ₃	d ₂ ¹⁾	G ₂	l ₂	D ₂	D ₃	G ₃	G ₄
23	2530	730	1505	1085	550	1725	360	540	590	360	365	540	785
24	2660	795	1570	1215	615	1790	380	540	590	380	385	540	805
25	2830	790	1659	1215	590	1965	400	605	650	400	405	605	875
26	3010	880	1785	1395	680	2055	420	605	650	430	435	605	900

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EH4.H	EH4.DM	EH4.H	EH4.DM
23	520	500	11600	10700
24	550	600	13500	12600
25	735	800	16100	15200
26	780	850	17600	16500



直交轴齿轮箱
Bevel-helical gear units

二级传动
Two Stage

卧式安装
Horizontal

类型 TYPES EB2.H..., EB2.M...

规格 SIZES 13...18

★ 输出轴 Output

EB2SH 实心轴 Solid shaft

EB2HH EB2HM 空心轴 Hollow shaft

EB2DH EB2DM 带胀紧盘的空心轴 Hollow shaft for shrink disk

EB2KH EB2KM 花键空心轴 Hollow shaft with involute splines

布置形式 Design

A, B, C, D, E, F

1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。For parallel key GB/T1095-1979 and for center hole, see page 321-322.

2) 在安装基础螺栓前, 应拆下风扇罩。Remove air guide cover before fitting the foundation bolts.

3) 扭力支撑位于工作侧。Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input									冷却风扇 Fan				
	in=5-11.2			in=5.6-11.2			G1	G3	G1	G3	A1	A2	B1	d6
	in=6.3-14			in=5.6-12.5										
	in=7.1-12.5			d1 ¹⁾	h	l3	d1 ¹⁾	h	l3					
13+14	110	205	165				1070	1110	1140	1180				
15	130	245	200				1277	1322	-	-	490	495	435	280
16				130	245	200	-	-	1323	1368	490	495	435	280
17				150	245	200	1435	1480	-	-	540	555	505	380
18	150	245	200				1495	1540	-	-	540	555	505	380

规格 Size	齿轮箱 Gear units															
b	c	c1	D5	g	h	h1	h2	m3	n1	n4	s	H	m1	e3		
13+14	655	60	61±2	48	264	440	450	460	580	100	340	35	900	465	380	
15+16	765	70	72±2	55	308	500	490	500	670	120	375	42	1000	555	450	
17+18	885	80	81±2	65	356	550	555	560	780	135	420	48	1110	610	510	

规格 Size	齿轮箱 Gear units							输出轴 Output							
	a	e2	E	G6	m2	n2	n3	EB2SH		EB2HH EB2HM		EB2DH EB2DM		EB2KH EB2KM	
13	1130	405	370	1130	465	305	675	200	390	350	-	-	-	-	-
14	1270	475	440	1200	605	375	745	210	390	350	210	390	210	215	390 535
15	1350	485	442	1340	555	365	805	230	460	410	-	-	-	-	-
16	1440	530	488	1385	645	410	850	240	460	410	240	450	240	245	450 620
17	1490	525	490	1500	610	390	895	250	540	410	-	-	-	-	-
18	1610	585	550	1560	730	450	955	270	540	470	275	510	280	285	510 700

见327-330页
See page 327-330

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EB2.H	EB2.M	EB2.H	EB2.M
13	140	120	2450	2350
14	155	130	2825	2725
15	220	180	3990	3795
16	230	190	4345	4160
17	320	260	5620	5320
18	335	275	6150	5860

规格 Size	冷却盘管 Cooling coil							
	b _x	b _y	e _x	e _y	h _x	h _y	s _x	x ₁₎ L/min
13	324	324	460	335	116	300	G1/2	8
14	324	324	530	405	116	300	G1/2	8
15	396	396	540	395	119	335	G1/2	8
16	396	396	585	440	119	335	G1/2	8
17	468	324	580	425	134	380	G1/2	8
18	468	324	640	485	134	380	G1/2	8

冷却盘管的冷却液接口
Water connection for cooling coil

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water.

2) x) 所需冷却水量。 Cooling water quantity required.

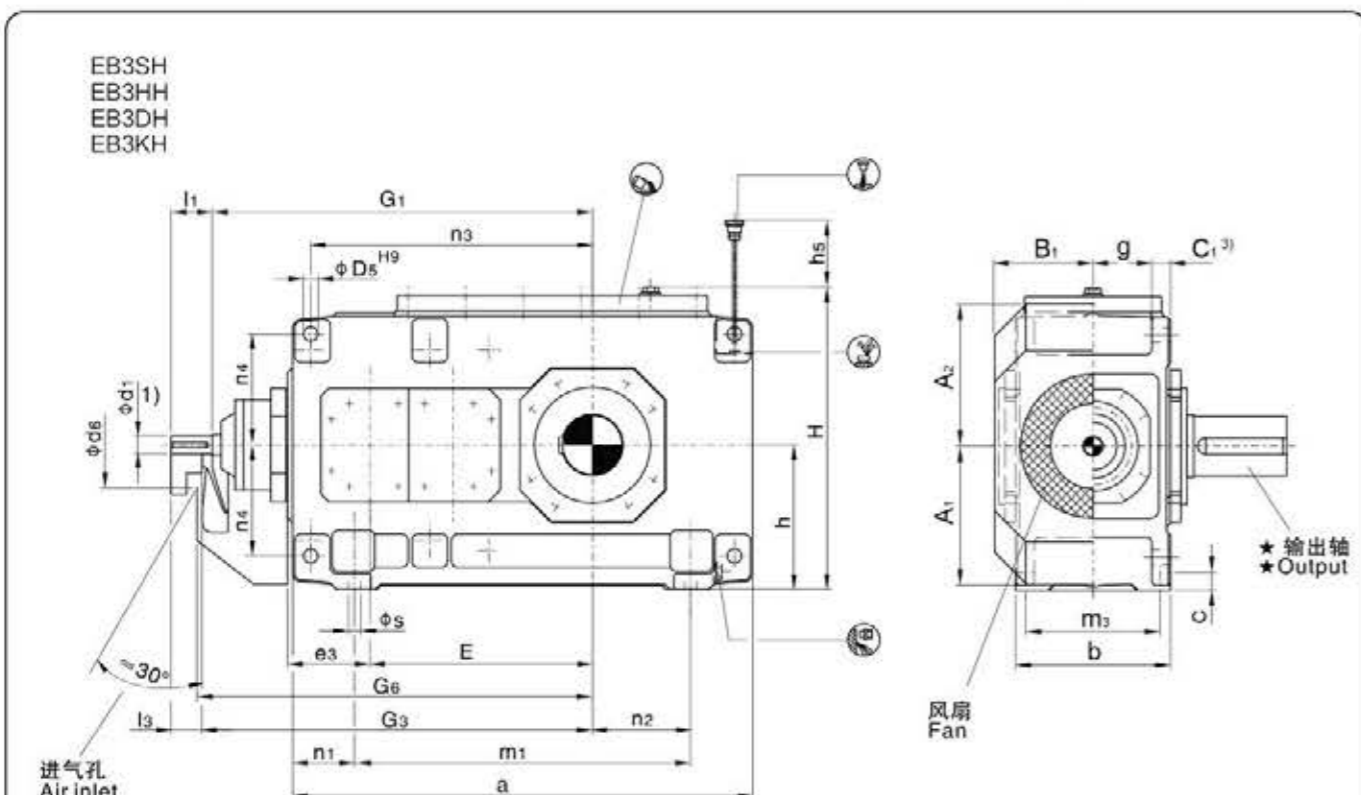


直交轴齿轮箱
Bevel-helical gear units

三级传动
Three Stage

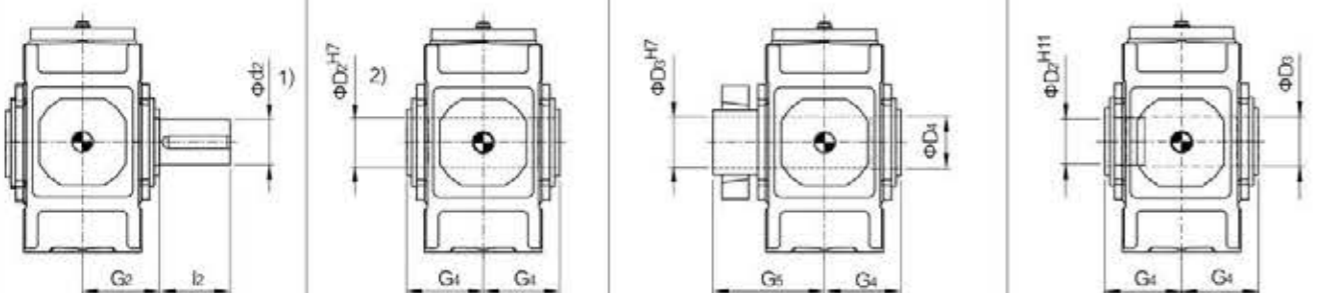
卧式安装
Horizontal

类型 TYPES EB3.H...
规格 SIZES 3...12

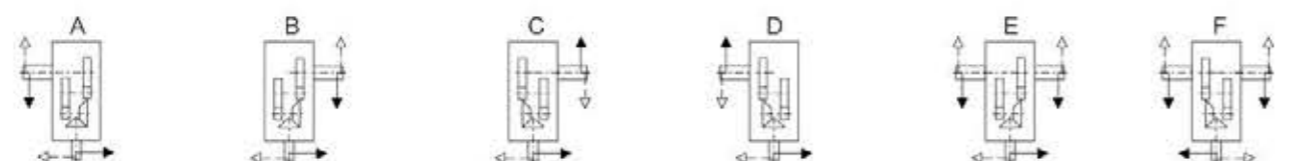


★ 输出轴 Output

- EB3SH 实心轴 Solid shaft
- EB3HH 空心轴 Hollow shaft
- EB3DH 带胀紧盘的空心轴 Hollow shaft for shrink disk
- EB3KH 花键空心轴 Hollow shaft with involute splines



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风扇罩。Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input									冷却风扇 Fan							
	$i_n=12.5-45$			$i_n=20-45$			$i_n=50-71$			G_1	G_2	G_3	G_4	A_1	A_2	B_1	d_6
	$d_1^{(1)}$	l_1	l_2	$d_1^{(1)}$	l_1	l_2	$d_1^{(1)}$	l_1	l_2								
3				28	55	40	20	50	35	430	445			170	170	128	90
4	30	70	50				25	60	40	500	520			195	200	143	110
5 +6	35	80	60				28	60	40	575	595	610	630	220	235	168	130
7 +8	45	100	80				35	80	60	690	710	735	755	275	275	193	165
9 +10	55	110	80				40	100	70	800	830	850	880	315	325	231	175
11 +12	70	135	105				50	110	80	960	990	1030	1060	370	385	263	190

规格 Size	齿轮箱 Gear units										
	b	c	c_1	D_5	g	h	m_3	n_1	n_4	s	e_3
3	190	22	24 ± 1	18	71	175	160	80	132.5	15	90
4	215	28	30 ± 1	24	77.5	200	180	105	150	19	110
5+6	255	28	30 ± 1	24	97.5	230	220	105	180	19	130
7+8	300	35	36 ± 1	28	114	280	260	120	215	24	160
9+10	370	40	45 ± 1.5	36	140	320	320	145	245	28	185
11+12	430	50	54 ± 1.5	40	161	380	370	165	300	35	225

规格 Size	齿轮箱 Gear units								输出轴 Output								
	a	E	G_5	h_5	H	m_1	n_2	n_3	EB3SH		EB3HH		EB3DH		EB3KH		
									$d_1^{(1)}$	G_2	l_2	$D_2^{(2)}$	G_4	D_3	D_4	G_4	G_5
3	450	220	455	100	360	290	65	285	65	125	140	65	125	70	70	125	180
4	565	270	530	100	415	355	85	345	80	140	170	80	140	85	85	140	205
5	640	315	605	130	482	430	100	405	100	165	210	95	165	100	100	165	240
6	720	350	640	130	482	510	145	440	110	165	210	105	165	110	110	165	240
7	785	385	720	170	572	545	130	500	120	195	210	115	195	120	120	195	280
8	890	430	765	160	582	650	190	545	130	195	250	125	195	130	130	195	285
9	925	450	845	175	662	635	155	585	140	235	250	135	235	140	145	235	330
10	1025	500	895	175	662	735	205	635	160	235	300	150	235	150	155	235	350
11	1105	545	1010	220	795	775	180	710	170	270	300	165	270	165	170	270	400
12	1260	615	1080	210	795	930	265	780	180	270	300	180	270	180	185	270	405

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
3	6	130
4	9	210
5	14	325
6	15	380
7	25	550
8	28	635
9	40	890
10	42	1020
11	66	1455
12	72	1730

冷却盘管的冷却液接口
Water connection for cooling coil

规格 Size	b_x	e_x	h_x	s_x	x) L/min
3	34	130	55	G1/2	4
4	34	155	60	G1/2	4
5	68	170	64	G1/2	4
6	70	215	68	G1/2	4
7	100	210	83	G1/2	4
8	100	270	83	G1/2	4
9	140	245	110	G1/2	8
10	100	295	95	G1/2	8
11	110	275	95	G1/2	8
12	200	360	109	G1/2	8

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water.
2) x) 所需冷却水量。 Cooling water quantity required.

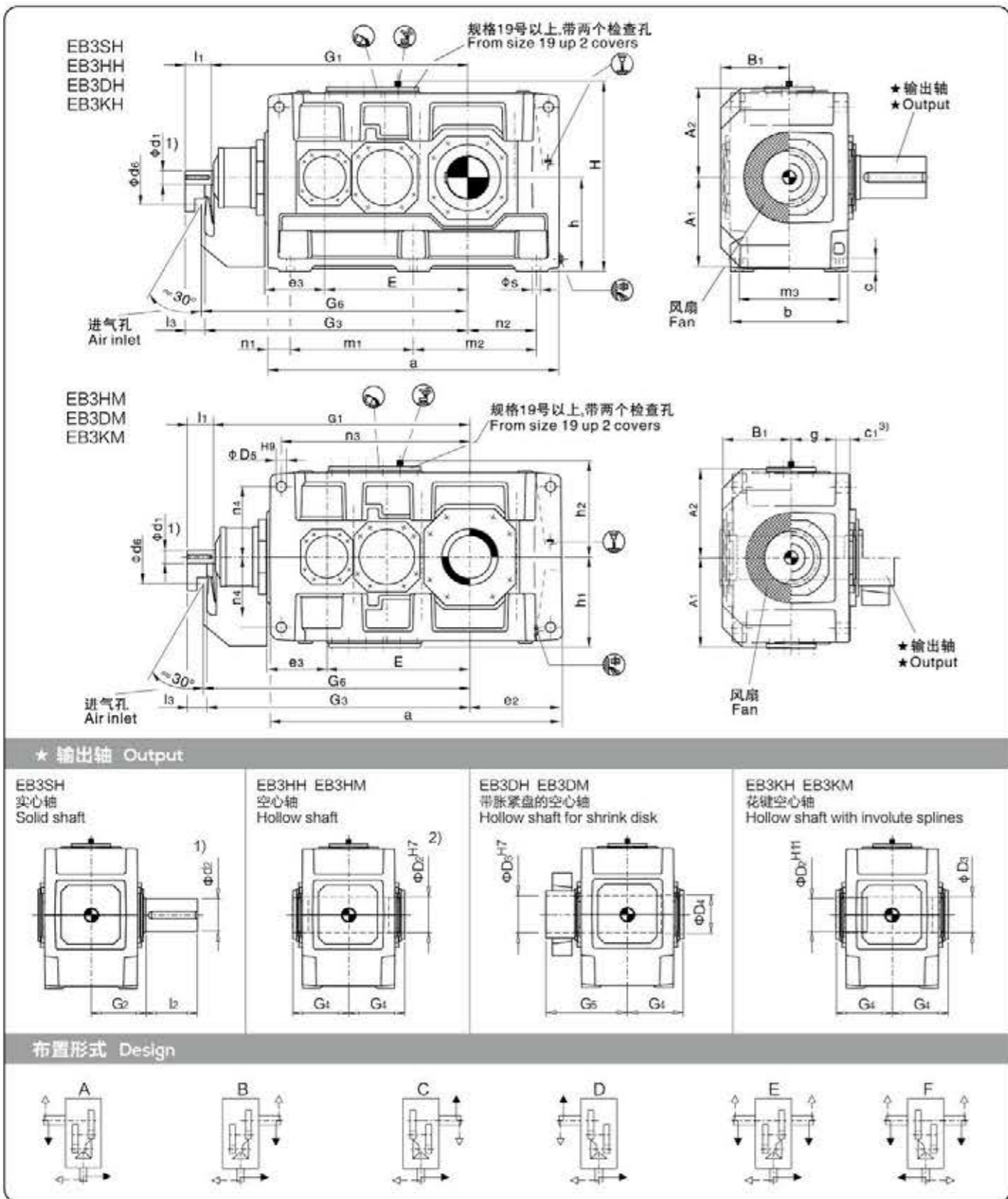


直交轴齿轮箱
Bevel-helical gear units

三级传动
Three Stage

卧式安装
Horizontal

类型 TYPES EB3.H..., EB3.M...
规格 SIZES 13...22



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风扇罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.

注: 尺寸 mm Note: Dimensions in mm

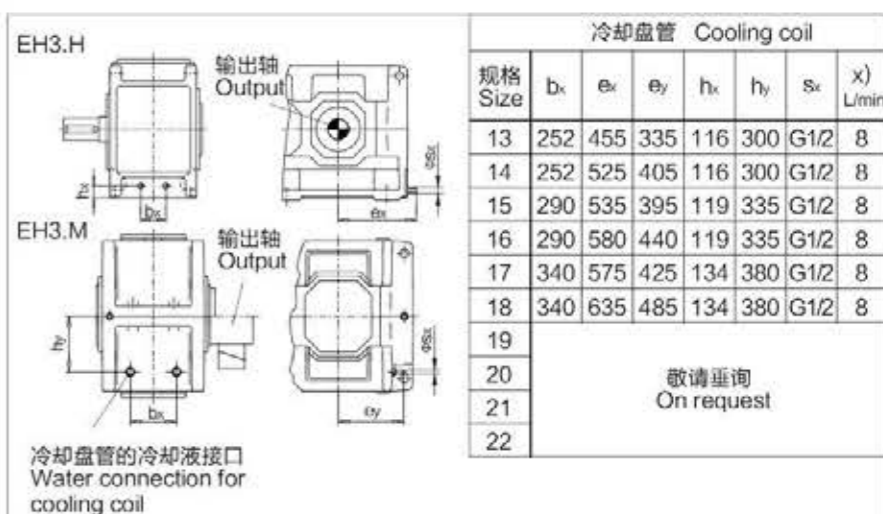


规格 Size	输入轴 Input						冷却风扇 Fan							
	$i_n=12.5-45$			$i_n=50-71$			G_1	G_3	G_1	G_3	A_1	A_2	B_1	d_6
	$i_n=14-50$			$i_n=56-80$										
	$i_n=16-56$			$i_n=63-90$										
$d_1^{(1)}$	h	l_3	$d_1^{(1)}$	h	l_3	G_1	G_3	G_1	G_3	A_1	A_2	B_1	d_6	
13+14	80	165	130	60	140	105	1125	1160	1195	1230	425	435	325	210
15+16	90	165	130	70	140	105	1367	1402	1413	1448	485	520	365	210
17+18	110	205	165	80	170	130	1560	1600	1620	1660	535	570	395	230
19+20	130	245	200	100	210	165	1832	1877	1892	1937	610	630	448	245
21+22	130	245	200	100	210	165	1902	1947	1957	2002	690	690	473	280

规格 Size	齿轮箱 Gear units														
	b	c	c_1	D_5	g	h	h_1	h_2	m_3	n_1	n_4	s	H	m_1	e_3
13+14	550	60	61 ± 2	48	211.5	440	450	460	475	100	340	35	900	545	265
15+16	625	70	72 ± 2	55	238	500	490	500	535	120	375	42	1000	655	320
17+18	690	80	81 ± 2	55	259	550	555	560	600	135	425	42	1110	735	370
19+20	790	90	91 ± 2	65	299	620	615	620	690	155	475	48	1240	850	430
21+22	830	100	100 ± 2	75	310	700	685	690	720	170	520	56	1390	900	450

规格 Size	齿轮箱 Gear units										输出轴 Output							
											EB3SH		EB3HH EB3HM		EB3DH EB3DM		EB3KH EB3KM	
	a	e_2	E	G_5	m_2	r_2	n_3	$d_1^{(1)}$	G_2	l_2	$D_2^{(2)}$	G_4	D_3	D_4	G_4	G_5		
13	1290	405	635	1180	545	305	835	200	335	350	190	335	190	195	335	480	见327-330页 See page 327-330	
14	1430	475	705	1250	685	375	905	210	335	350	210	335	210	215	335	480		
15	1550	485	762	1420	655	365	1005	230	380	410	230	380	230	235	380	550		
16	1640	530	808	1470	745	410	1050	240	380	410	240	380	240	245	380	550		
17	1740	525	860	1620	735	390	1145	250	415	410	250	415	250	260	415	600		
18	1860	585	920	1680	855	450	1205	270	415	470	275	415	280	285	415	600		
19	2010	590	997	1900	850	435	1345	290	465	470	-	-	285	295	465	670		
20	2130	650	1057	1960	970	495	1405	300	465	500	-	-	310	315	465	670		
21	2140	655	1067	1970	900	485	1400	320	490	500	-	-	330	335	490	715		
22	2250	710	1122	2025	1010	540	1455	340	490	550	-	-	340	345	490	725		

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EB3.H	EB3.M	EB3.H	EB3.M
13	130	110	2380	2260
14	140	115	2750	2615
15	210	160	3730	3540
16	220	165	3955	3765
17	290	230	4990	4760
18	300	235	5495	5240
19	380	360	7000	6500
20	440	420	8100	7600
21	370	420	9200	8600
22	430	490	9900	9400





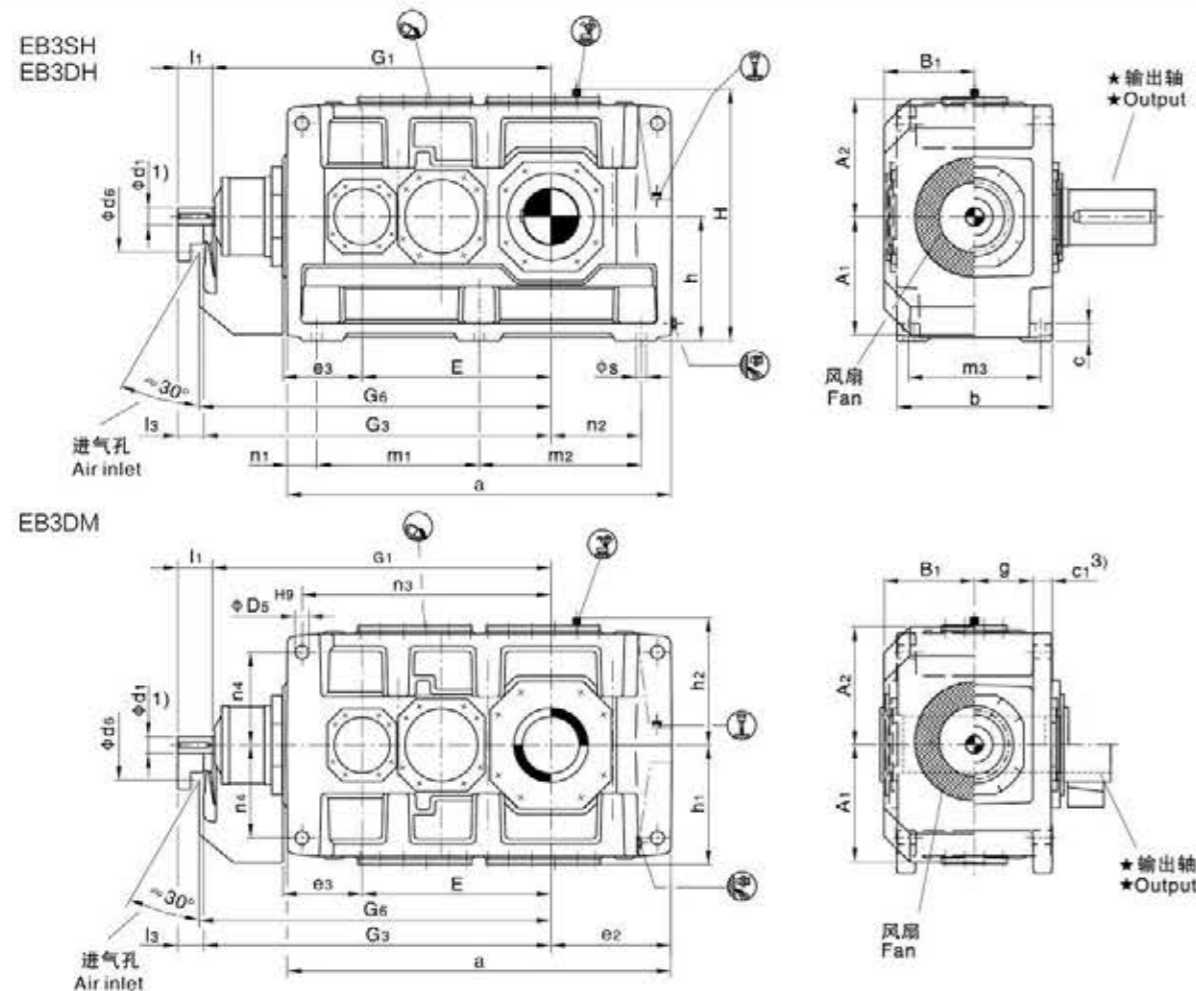
直交轴齿轮箱
Bevel-helical gear units

三级传动
Three Stage

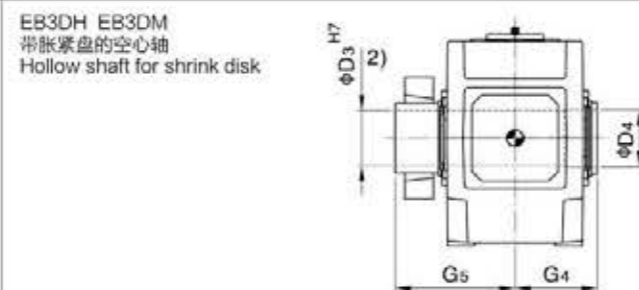
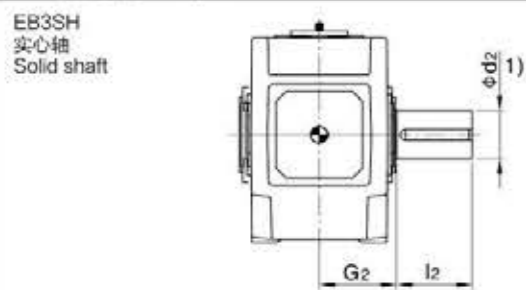
卧式安装
Horizontal

类型 TYPES EB3.H..., EB3.M...

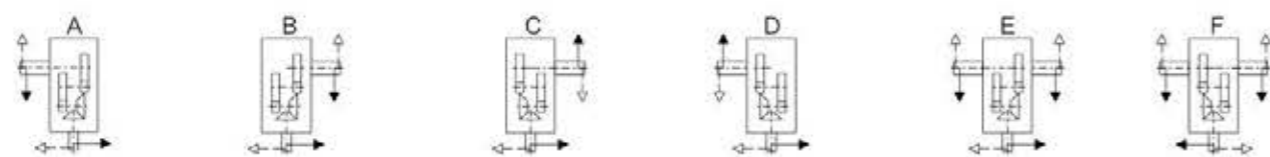
规格 SIZES 23...26



★ 输出轴 Output



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风扇罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.



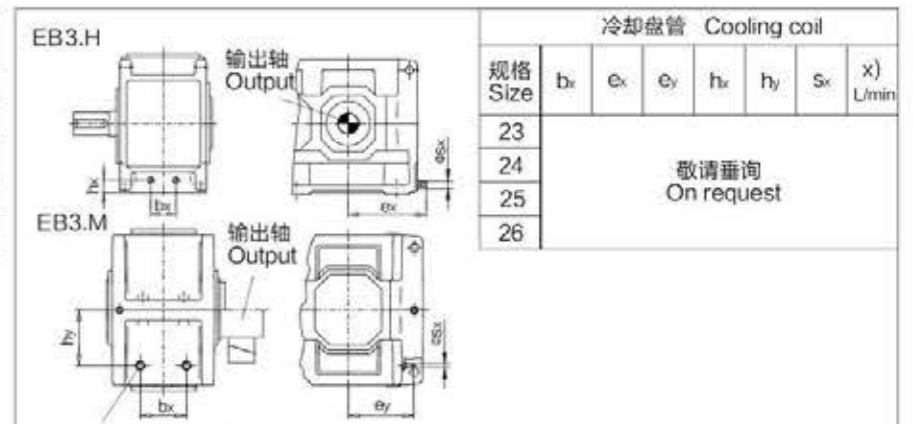
注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input						冷却风扇 Fan							
	$i_N=20-45$			$i_N=50-71$			G_1	G_2	G_3	G_4	A_1	A_2	B_1	d_5
	$d_1^{(1)}$	l_1	l_2	$d_1^{(1)}$	l_1	l_2								
23+24	150	245	200	110	210	165	2130	2175	2195	2240	770	770	528	350
25+26	150	245	200	110	210	165	2270	2315	2360	2405	845	865	585	380

规格 Size	齿轮箱 Gear units														
	b	c	c_1	D_5	g	h	h_1	h_2	m_1	n_1	n_4	s	H	m_1	e_3
23+24	930	115	120±2	80	342	780	770	790	810	180	580	56	1570	1010	490
25+26	1045	130	120±2	90	400	860	865	860	910	200	660	66	1720	1090	490

规格 Size	齿轮箱 Gear units							输出轴 Output						
								EB3SH			EB3DH EB3DM			
	a	e_2	E	G_6	m_2	n_2	n_3	$d_1^{(1)}$	G_6	l_2	D_5	D_1	G_1	G_5
23	2380	730	1185	2200	1010	550	1560	360	540	590	360	365	540	785
24	2510	795	1250	2265	1140	615	1625	380	540	590	380	385	540	805
25	2580	790	1325	2315	1090	590	1685	400	605	650	400	405	605	875
26	2760	880	1415	2430	1270	680	1775	420	605	650	430	435	605	900

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EB3.H	EB3.DH	EB3.H	EB3.DH
23	520	560	11500	10600
24	600	650	13400	12500
25	720	790	16000	15100
26	840	920	17500	16400



冷却盘管的冷却液接口
Water connection for cooling coil

1) 冷却盘管适用于淡水、海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water.
2) x) 所需冷却水量。 Cooling water quantity required.



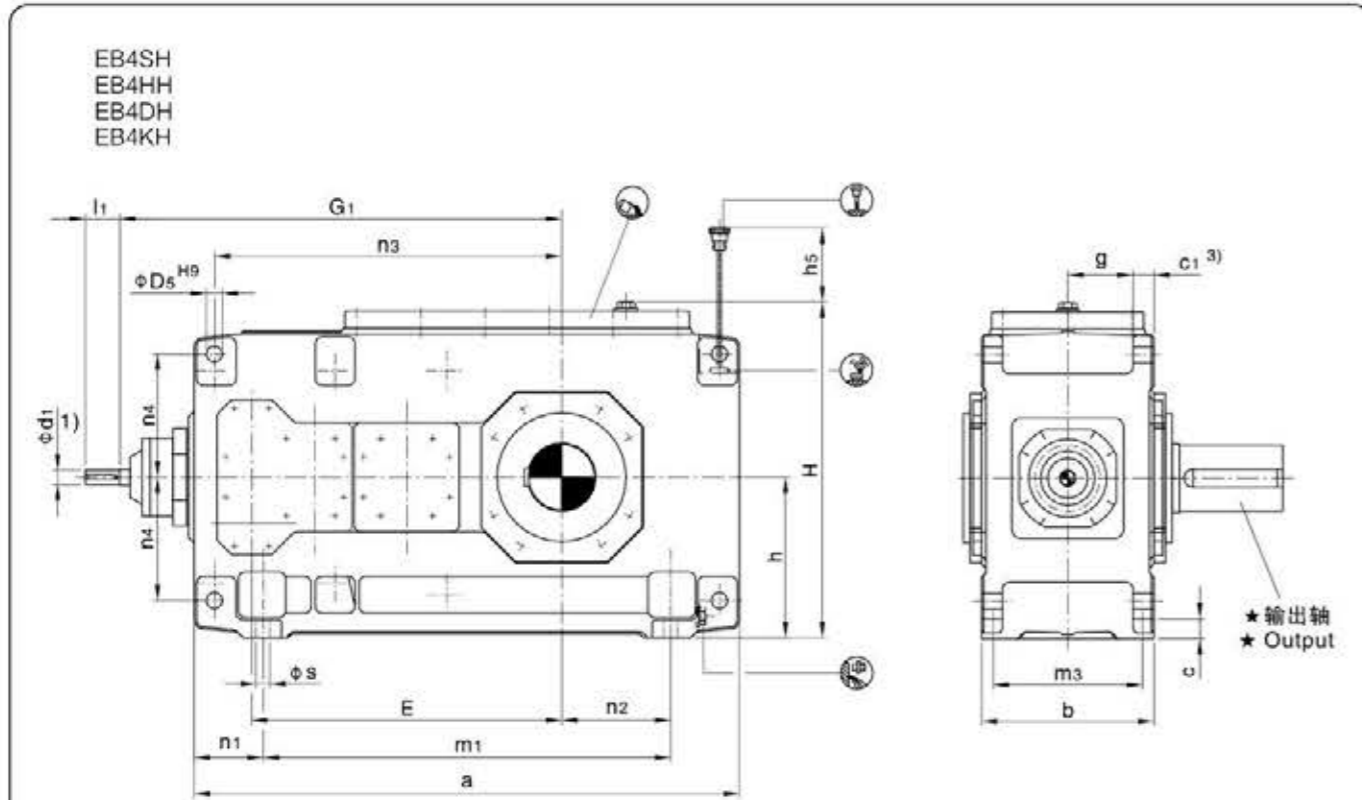
直交轴齿轮箱
Bevel-helical gear units

四级传动
Four Stage

卧式安装
Horizontal

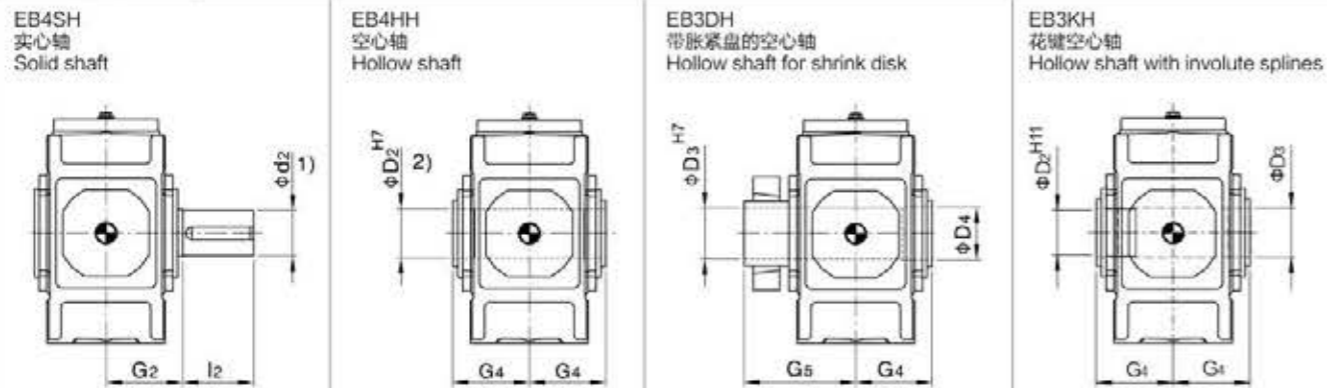
类型 TYPES EB4.H...

规格 SIZES 5...12

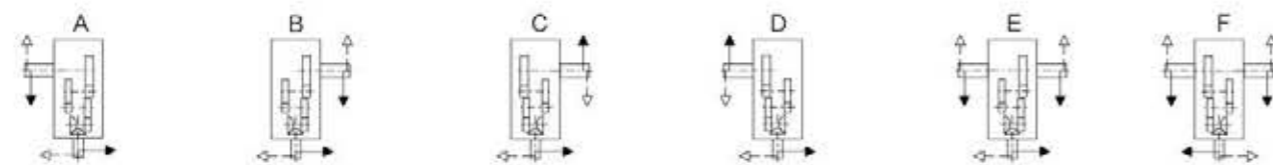


★输出轴
★ Output

★ 输出轴 Output



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风扇罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input				G ₁	G ₁
	i _N =80-180		i _N =200-315			
	i _N =100-224		i _N =250-400			
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁		
5 +6	28	55	20	50	615	650
7 +8	30	70	25	60	725	770
9 +10	35	80	28	60	840	890
11+12	45	100	35	80	1010	1080

规格 Size	齿轮箱 Gear units									
	b	c	c ₁	D ₅	g	h	m ₃	n ₁	n ₄	s
5+6	255	28	30±1	24	97.5	230	220	105	180	19
7+8	300	35	36±1	28	114	280	260	120	215	24
9+10	370	40	45±1.5	36	140	320	320	145	245	28
11+12	430	50	54±1.5	40	161	380	370	165	300	35

规格 Size	齿轮箱 Gear units							输出轴 Output								
								EB4SH		EB4HH		EB4DH				EB4KH
	a	E	H	h _s	m ₁	n ₂	n ₃	d ₁ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅
5	690	405	482	100	480	100	455	100	165	210	95	165	100	100	165	240
6	770	440	482	100	560	145	490	110	165	210	105	165	110	110	165	240
7	845	495	572	140	605	130	560	120	195	210	115	195	120	120	195	280
8	950	540	582	130	710	190	605	130	195	250	125	195	130	130	195	285
9	1000	580	662	135	710	155	660	140	235	250	135	235	140	145	235	330
10	1100	630	662	135	810	205	710	160	235	300	150	235	150	155	235	350
11	1200	705	782	170	870	180	805	170	270	300	165	270	165	170	270	400
12	1355	775	790	160	1025	265	875	180	270	300	180	270	180	185	270	405

见327-330页
See page
327-330

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
5	16	335
6	18	385
7	30	555
8	33	655
9	48	890
10	50	1025
11	80	1485
12	90	1750



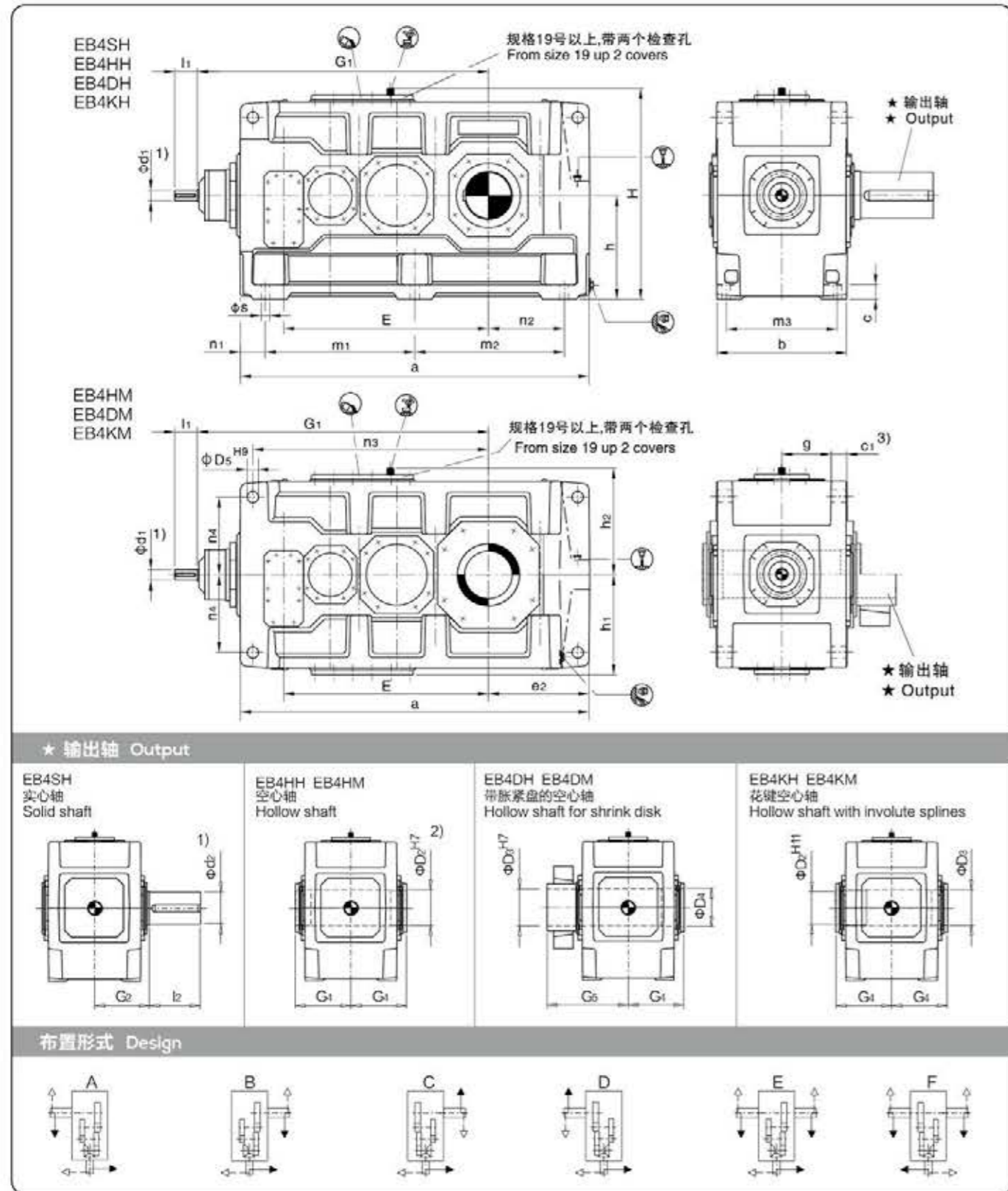
直交轴齿轮箱
Bevel-helical gear units

四级传动
Four Stage

卧式安装
Horizontal

类型 TYPES EB4.H...,EB4.M...

规格 SIZES 13...22



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input					
	in=80-180		in=200-315		G ₁	G ₂
	in=90-200		in=224-355			
in=100-224		in=250-400				
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁	G ₁	G ₂
13+14	55	110	40	100	1170	1240
15+16	70	135	50	110	1402	1448
17+18	70	135	50	110	1450	1510
19+20	80	165	60	140	1680	1740
21+22	90	165	70	140	1992	2047

规格 Size	齿轮箱 Gear units													
	b	c	c ₁	D ₅	g	h	h ₁	h ₂	H	m ₁	m ₃	n ₁	n ₄	s
13+14	550	60	61±2	48	211.5	440	450	460	900	597.5	475	100	340	35
15+16	625	70	72±2	55	238	500	490	500	1000	720	535	120	375	42
17+18	690	80	81±2	55	259	550	555	560	1110	750	600	135	425	42
19+20	790	90	91±2	65	299	620	615	620	1240	860	690	155	475	48
21+22	830	100	100±2	75	310	700	685	690	1390	1000	720	170	520	56

规格 Size	输出轴 Output															
	齿轮箱 Gear units							输出轴 Output								
								EB4SH		EB4HH EB4HM		EB4DH		EB4DM		EB4KH EB4KM
	a	e ₂	E	m ₂	n ₂	n ₃	d ₂ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅	
13	1395	405	820	597.5	305	940	200	335	350	190	335	190	195	335	480	
14	1535	475	890	737.5	375	1010	210	335	350	210	335	210	215	335	480	
15	1680	485	987	720	365	1135	230	380	410	230	380	230	235	380	550	
16	1770	530	1033	810	410	1180	240	380	410	240	380	240	245	380	550	
17	1770	525	1035	750	390	1175	250	415	410	250	415	250	260	415	600	
18	1890	585	1095	870	450	1235	270	415	470	275	415	280	285	415	600	
19	2030	590	1190	860	435	1365	290	465	470	-	-	285	295	465	670	
20	2150	650	1250	980	495	1425	300	465	500	-	-	310	315	465	670	
21	2340	655	1387	1000	485	1615	320	490	500	-	-	330	335	490	715	
22	2450	710	1442	1110	540	1670	340	490	550	-	-	340	345	490	725	

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EB4.H	EB4.M	EB4.H	EB4.M
13	145	120	2395	2280
14	150	125	2735	2605
15	230	170	3630	3435
16	235	175	3985	3765
17	295	230	4695	4460
18	305	235	5200	4930
19	480	440	6800	6300
20	550	510	8200	7700
21	540	590	9200	8600
22	620	680	9900	9400

1) k6 ≤ φ50 m6 > φ50 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风扇罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.



直交轴齿轮箱
Bevel-helical gear units

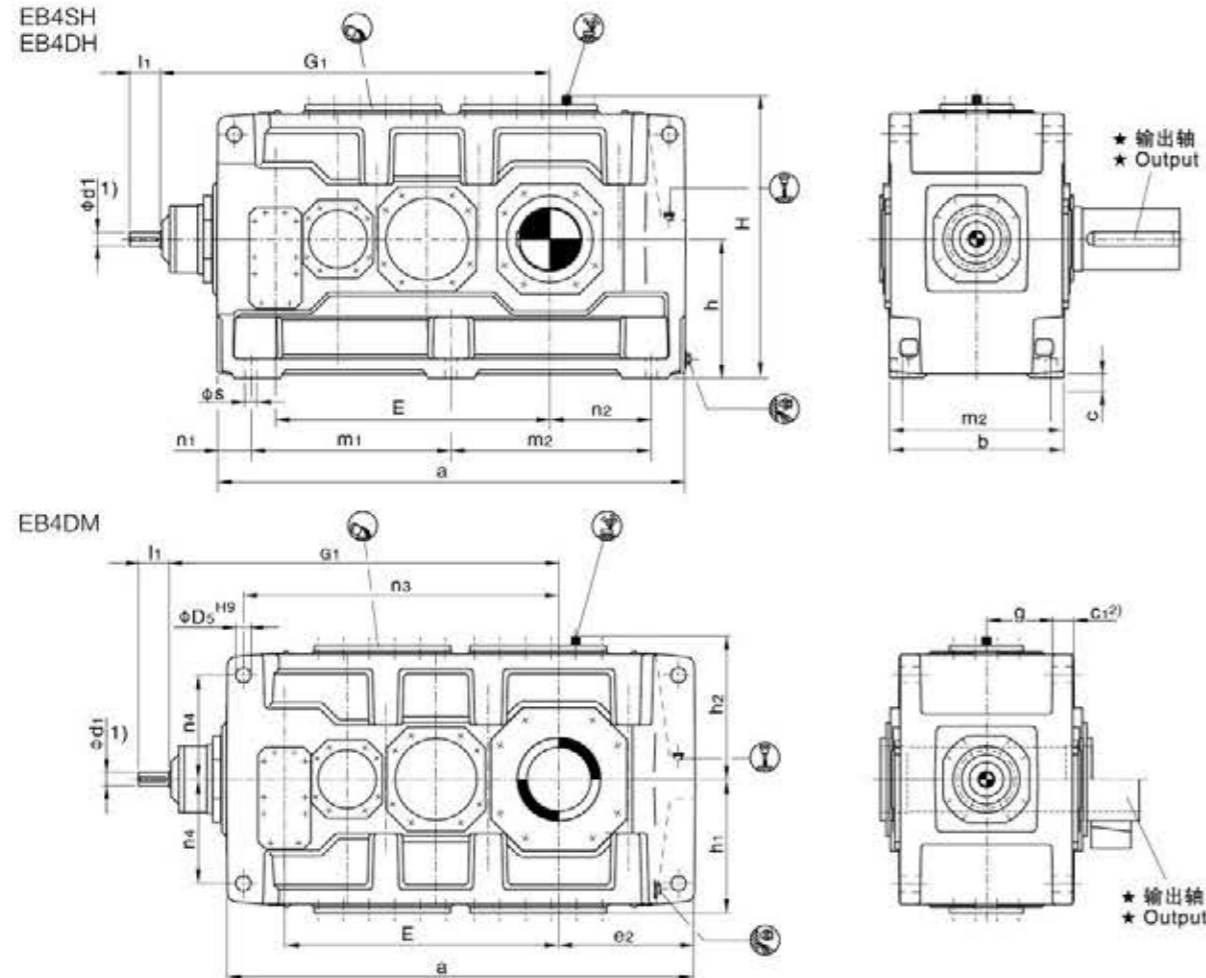
四级传动
Four Stage

卧式安装
Horizontal

类型 TYPES EB4.H...,EB4.M...

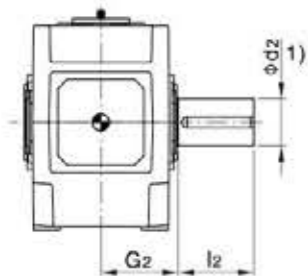
规格 SIZES 23...26

注: 尺寸 mm Note: Dimensions in mm

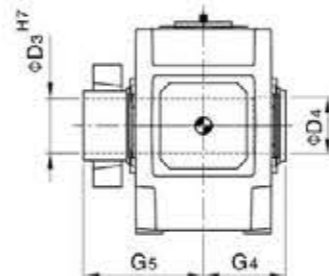


★ 输出轴 Output

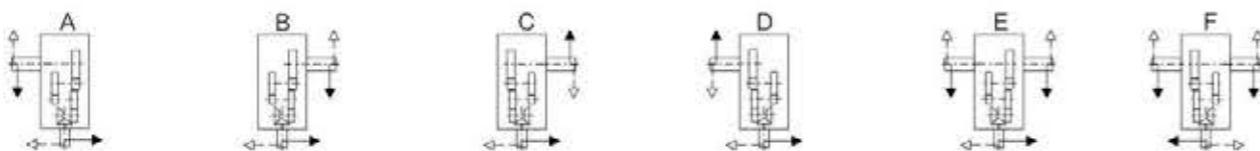
EB4SH
实心轴
Solid shaft



EB4DH EB4DM
带胀紧套的空心轴
Hollow shaft for shrink disk



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 在安装基础螺栓前, 应拆下风罩。 Remove air guide cover before fitting the foundation bolts.
3) 扭力支撑位于工作机侧。 Torque support on driven machine side.



规格 Size	输入轴 Input					
	$i_N=80-180$		$i_N=200-315$		G_1	G_1
	$d_1^{(1)}$	l_1	$d_1^{(1)}$	l_1		
23+24	90	165	70	140	2110	2175
25+26	110	205	80	170	2395	2485

规格 Size	齿轮箱 Gear units													
	b	c	c_1	D_5	g	h	h_1	h_2	m_3	n_1	n_4	s	H	m_1
23+24	930	115	120 ± 2	80	342	780	770	790	810	180	580	56	1570	1085
25+26	1045	130	120 ± 2	80	400	860	860	860	910	200	660	66	1720	1215

规格 Size	齿轮箱 Gear units						输出轴 Output							
	EB4SH						EB4DH				EB4DM			
	a	e_2	E	m_2	n_2	n_3	$d_2^{(1)}$	G_2	l_2	D_2	D_3	G_3	G_4	
23	2530	730	1505	1085	550	1725	360	540	590	360	365	540	785	
24	2660	795	1570	1215	615	1790	380	540	590	360	365	540	805	
25	2830	790	1695	1215	590	1965	400	605	650	400	405	605	875	
26	3010	880	1785	1395	680	2055	420	605	650	430	435	605	900	

规格 Size	润滑油 Oil (L)		重量 Weight (kg)	
	EB4.H	EB4.DM	EB4.H	EB4.DM
23	710	790	11600	10700
24	810	910	13500	12600
25	1000	1110	16100	15200
26	1100	1200	17600	16500



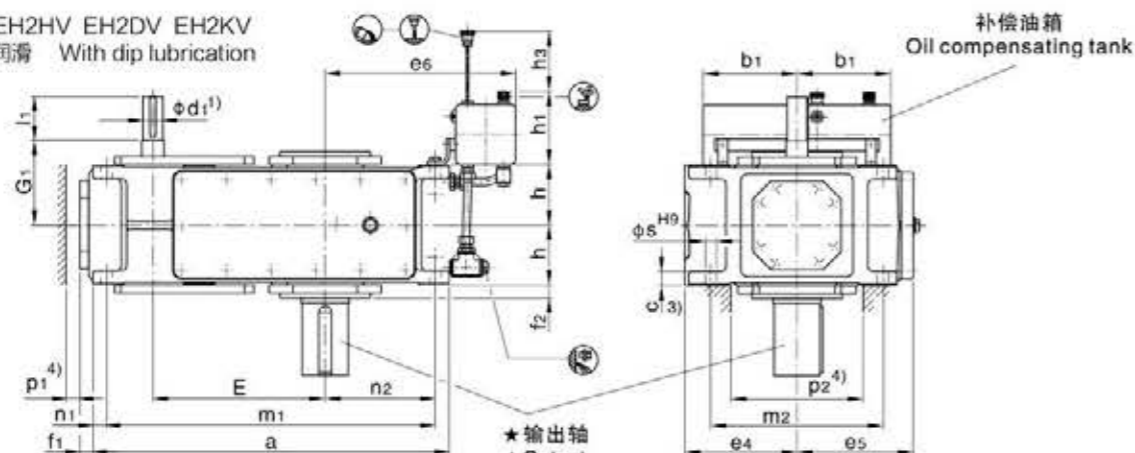
平行轴齿轮箱 Helical gear units

二级传动 Two Stage

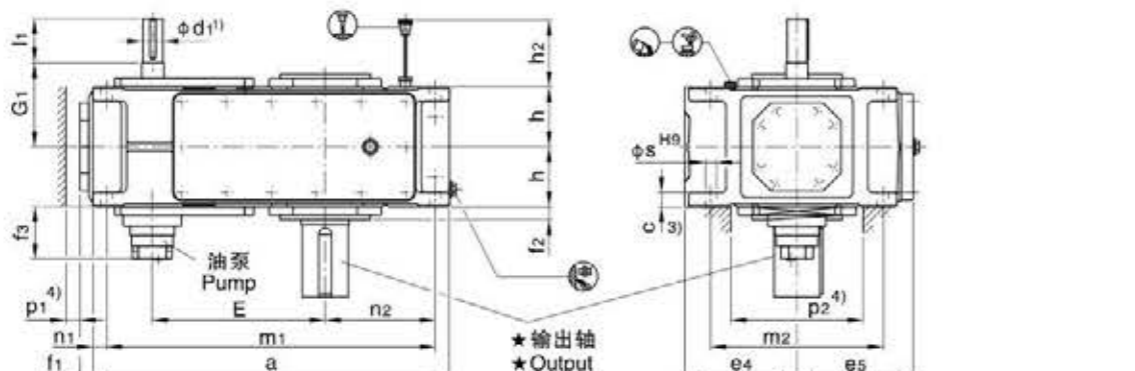
立式安装 Vertical

类型 TYPES EH2.V... 规格 SIZES 3...12

EH2SV EH2HV EH2DV EH2KV 采用浸油润滑 With dip lubrication



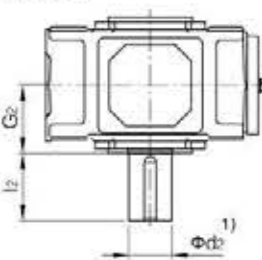
EH2SV EH2HV EH2DV EH2KV 采用强制润滑 With forced lubrication



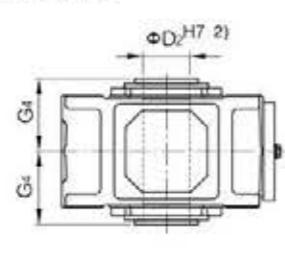
有关供油方式(浸油润滑或强制润滑),参见 335 页 Oil supply(dip or forced lubrication), see page 335

★ 输出轴 Output

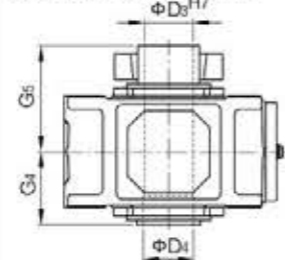
EH2SV 实心轴 Solid shaft



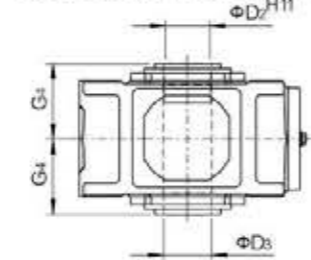
EH2HV 空心轴 Hollow shaft



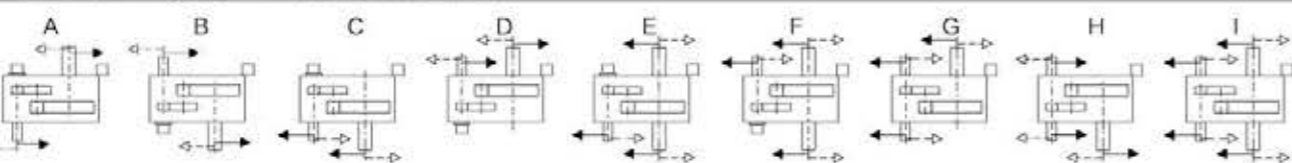
EH2DV 带胀紧套的空心轴 Hollow shaft for shrink disk



EH2KV 花键空心轴 Hollow shaft with involute splines



布置形式 Design (□法兰泵, □润滑补偿油箱)



1) k6 <= phi 50 m6 > phi 50 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322. 2) 扭力支撑位于工作机侧。 Torque support on driven machine side. 3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover, for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

Table with 7 columns: 规格 Size, 输入轴 Input (in=6.3-11.2, in=8-14, in=12.5-22.4, in=16-28), G1, 布置形式 Design G, H, I, 仅用于 only for in=.

Table with 15 columns: 规格 Size, 齿轮箱 Gear units (b1, c, e1, f1, f3, h, h1, h2, h3, m2, n1, p1, p2, s).

Table with 19 columns: 规格 Size, 齿轮箱 Gear units (a, E, e1, e3, m1, n2, f2, phi d1, G2, l2, D2, G4, D3, D4, G5, G6), 输出轴 Output (EH2SV, EH2HV, EH2DV, EH2KV).

Table with 4 columns: 规格 Size, 润滑油 Oil (Dip lubrication, Forced lubrication), 重量 Weight (kg).

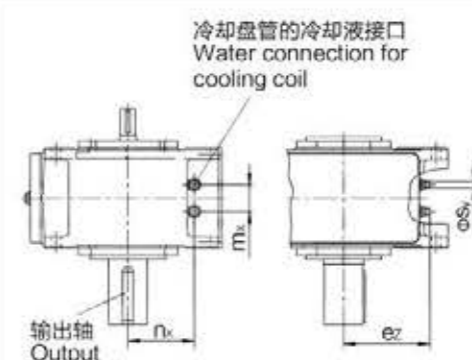


Table with 6 columns: 规格 Size, mx, nx, ez, sy, x) U/min.

1) 冷却盘管适用于淡水, 海水或有咸味的水。 Cooling coil suitable for fresh, sea or brackish water. 2) x) 所需冷却水量。 Cooling water quantity required.



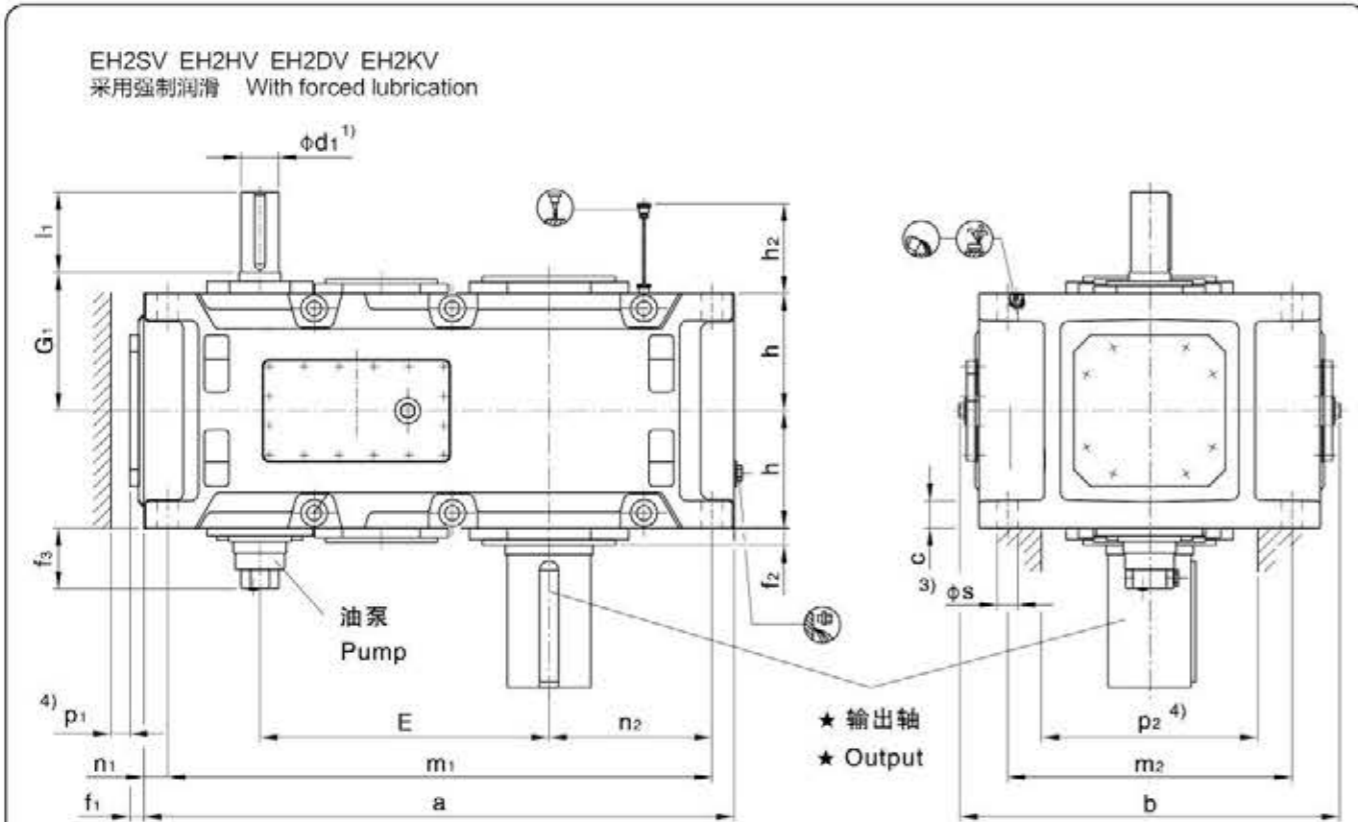
平行轴齿轮箱
Helical gear units

二级传动
Two Stage

立式安装
Vertical

类型 TYPES EH2.V...

规格 SIZES 13...22



EH2SV EH2HV EH2DV EH2KV
采用强制润滑 With forced lubrication

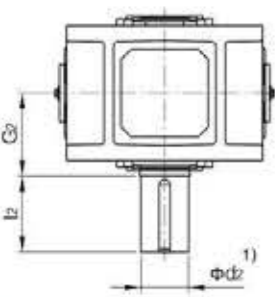
油泵
Pump

★ 输出轴
★ Output

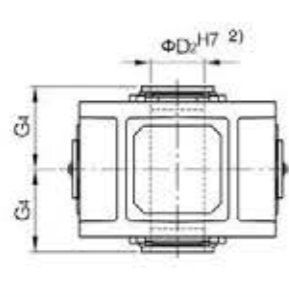
有关供油方式(强制润滑),参见335页 Oil supply(forced lubrication), see pages 335

★ 输出轴 Output

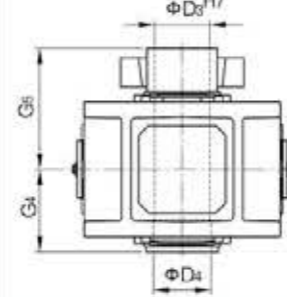
EH2SV
实心轴
Solid shaft



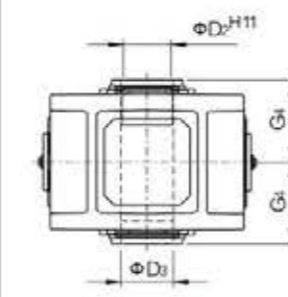
EH2HV
空心轴
Hollow shaft



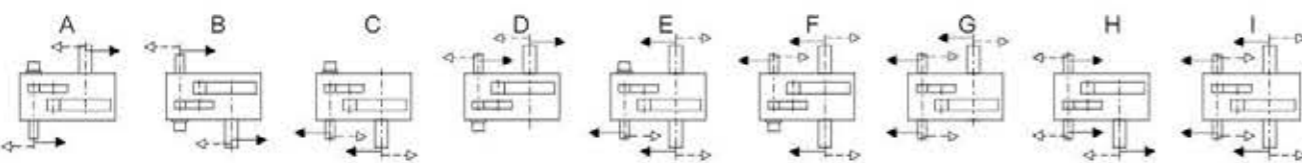
EH2DV
带胀套的空心轴
Hollow shaft for shrink disk



EH2KV
花键空心轴
Hollow shaft with involute splines



布置形式 Design (□法兰泵)



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 扭力支撑位于工作机侧。 Torque support on driven machine side.
3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover, for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input					布置形式 Design G, H, I 仅用于 only for in=	
	in=6.3-11.2		in=12.5-20		G ₁		
	in=7.1-12.5		in=14-22.5				
	in=8-14		in=16-25				
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁			
13+14	100	205	85	170	330	6.3-16	8-20
15+16	120	210	100	210	365	6.3-16	7.1-18
17+18	125	245	110	210	420	6.3-16	7.1-18
19+20	根据用户要求提供 On request						
21+22	根据用户要求提供 On request						

规格 Size	齿轮箱 Gear units										
	b	c	f ₁	f ₂	p ₁ ¹⁾	p ₂ ¹⁾	h	h ₂	m ₂	n ₁	s
13+14	900	61±2	53	38	50	500	272.5	300	680	50	48
15+16	980	72±2	63	38	50	570	310	340	750	60	55
17+18	1110	81±2	60	38	70	630	340	374	850	70	55
19+20	根据用户要求提供 On request										
21+22	根据用户要求提供 On request										

规格 Size	齿轮箱 Gear units					输出轴 Output								
	a	E	f ₃	m ₁	n ₂	EH2SV		EH2HV		EH2DV		EH2KV		
						d ₂ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅
13	1290	635	130	1195	360	200	335	350	190	335	190	195	335	480
14	1430	705	130	1335	430	210	335	350	210	335	210	215	335	480
15	1550	762	130	1435	430	230	380	410	230	380	230	235	380	550
16	1640	808	130	1525	475	240	380	410	240	380	240	245	380	550
17	1740	860	170	1610	465	250	415	410	250	415	250	260	415	600
18	1860	920	170	1730	525	270	415	470	275	415	280	285	415	600
19	根据用户要求提供 On request													
20	根据用户要求提供 On request													
21	根据用户要求提供 On request													
22	根据用户要求提供 On request													

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
13	80	1880
14	90	2430
15	140	3240
16	150	3465
17	175	4420
18	185	4870
19	敬请垂询 On request	
20	敬请垂询 On request	
21	敬请垂询 On request	
22	敬请垂询 On request	

冷却盘管的冷却液接口
Water connection for cooling coil

输出轴
Output

规格 Size	m _x	n _x	e _z	s _v	x)
13	252	300	335	G1/2	8
14	252	300	405	G1/2	8
15	290	335	395	G1/2	8
16	290	335	440	G1/2	8
17	340	380	425	G1/2	8
18	340	380	485	G1/2	8
19	敬请垂询 On request				
20	敬请垂询 On request				
21	敬请垂询 On request				
22	敬请垂询 On request				

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water.
2) x) 所需冷却水量。 Cooling water quantity required.



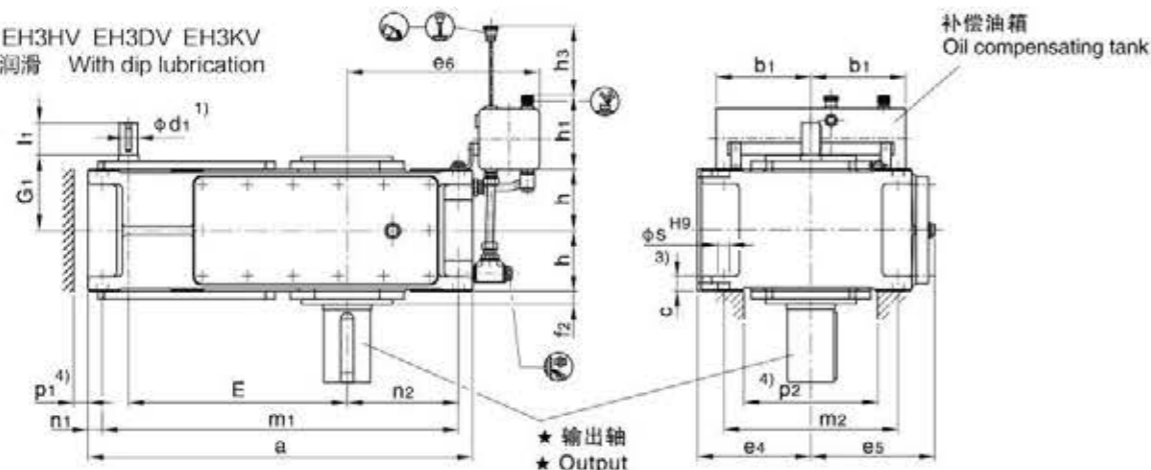
平行轴齿轮箱
Helical gear units

三级传动
Three Stage

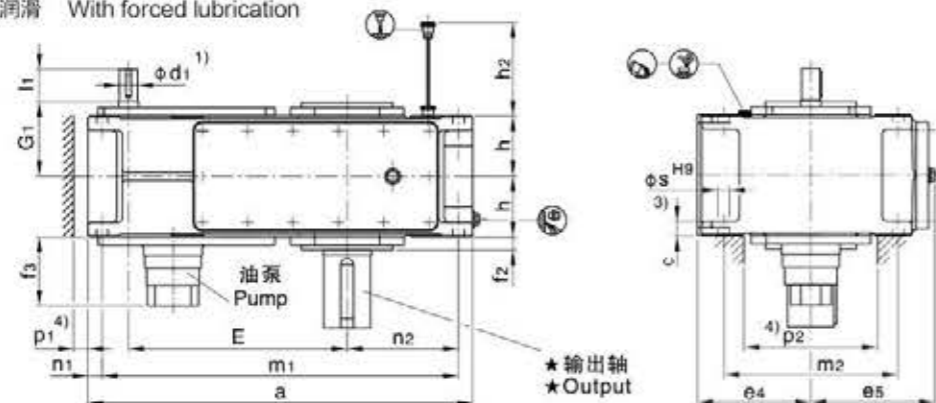
立式安装
Vertical

类型 TYPES EH3.V...
规格 SIZES 5...12

EH3SV EH3HV EH3DV EH3KV
采用浸油润滑 With dip lubrication

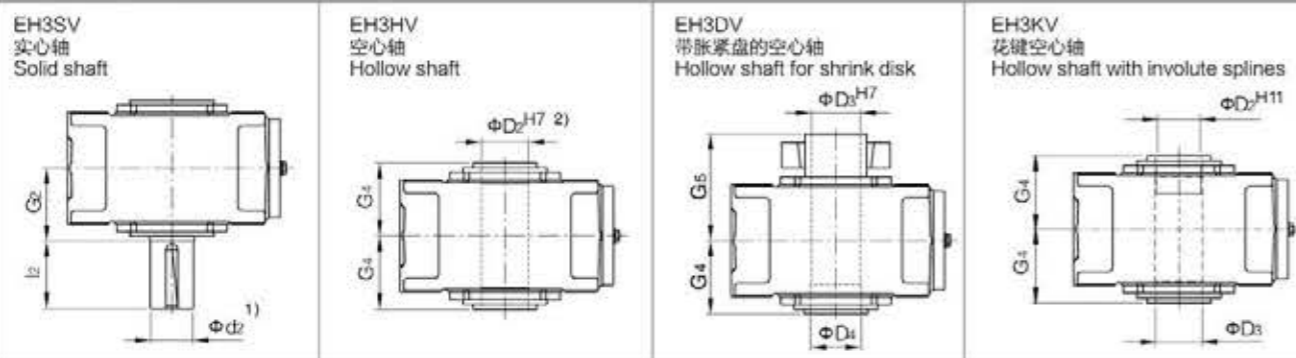


EH3SV EH3HV EH3DV EH3KV
采用强制润滑 With forced lubrication

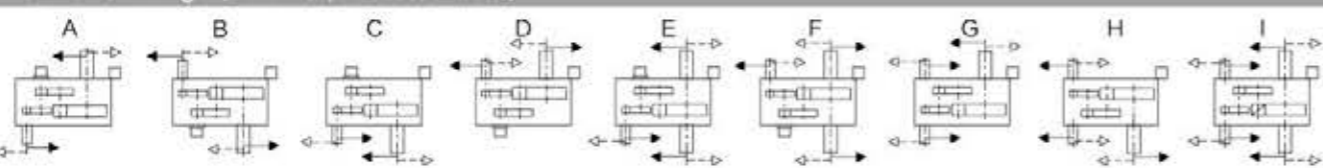


有关供油方式(浸油润滑或强制润滑),参见335页 Oil supply(dip or forced lubrication), see pages 335

★ 输出轴 Output



布置形式 Design (□法兰泵, □润滑补偿油箱)



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 扭力支撑位于工作机侧。 Torque support on driven machine side.
3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover; for exact dimensions, please refer to us.



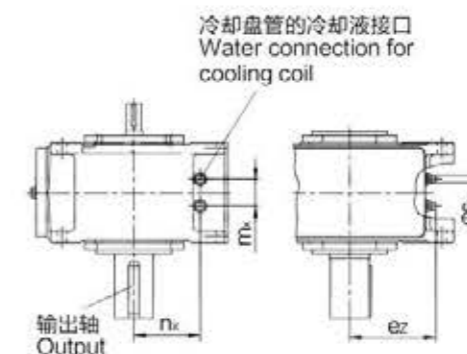
注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input						G ₁	布置形式 Design G, H, I 仅用于 only for iN=		
	iN=25-45		iN=50-63		iN=71-90			G	H	I
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁				
5 +6	40	70	30	50	24	40	160	25-90	31.5-112	
7 +8	45	80	35	60	28	50	185	25-90	31.5-112	
9 +10	60	125	45	100	32	80	230	25-90	31.5-112	
11 +12	70	120	50	80	42	70	255	25-90	31.5-112	

规格 Size	齿轮箱 Gear units												
	b ₁	c	e ₁	f ₃	h	h ₁	h ₂	h ₃	m ₂	n ₁	p ₁ ⁴⁾	p ₂ ⁴⁾	s
5+6	240	30±1	230	190	127.5	205	190	240	360	30	35	270	24
7+8	240	36±1	280	185	150	205	165	250	430	35	35	330	28
9+10	330	45±1.5	320	170	185	275	205	330	490	40	40	370	36
11+12	330	54±1.5	380	170	215	275	240	340	600	50	50	440	40

规格 Size	齿轮箱 Gear units								输出轴 Output									
	a	e ₅	e ₆	E	f ₂	m ₁	n ₂		EH3SV		EH3HV		EH3DV		EH3KV			
5	690	252	385	405	33	630	175		d ₁ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅	
6	770	252	425	440	33	710	220											
7	845	292	425	495	38	775	215											
8	950	312	485	540	41	880	275											
9	1000	342	560	580	41	920	260											
10	1100	342	610	630	35	1020	310											
11	1200	402	595	705	35	1100	295											
12	1355	410	680	775	35	1255	380											

规格 Size	润滑油 Oil		重量 Weight (kg)
	浸油润滑 Dip lubrication (L)	强制润滑 Forced lubrication (L)	
5	35	13	320
6	37	15	365
7	60	25	540
8	72	30	625
9	100	40	875
10	110	45	1020
11	170	66	1400
12	190	75	1675



规格 Size	冷却盘管 Cooling coil				
	m _k	n _k	e _z	s _v	x) L/min
5	70	170	175	G1/2	4
6	70	161	220	G1/2	4
7	80	197	210	G1/2	4
8	80	197	270	G1/2	4
9	150	213	245	G1/2	4
10	90	225	295	G1/2	4
11	200	265	275	G1/2	8
12	200	265	360	G1/2	8

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water.
2) x) 所需冷却水量。 Cooling water quantity required.



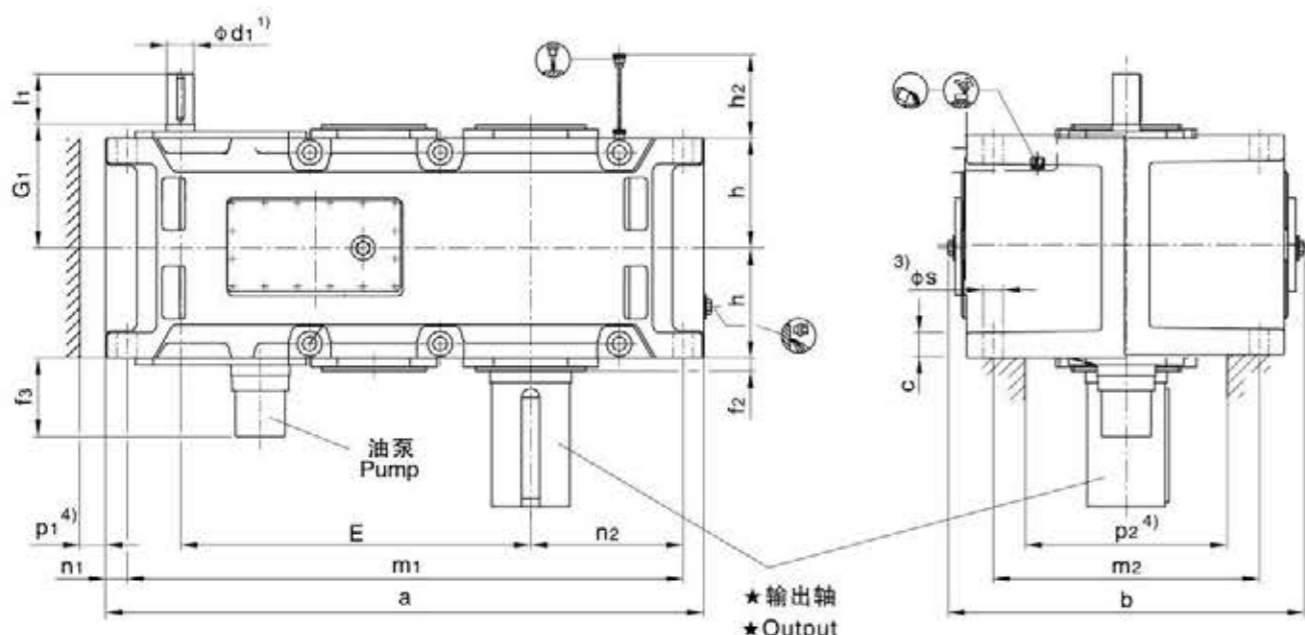
平行轴齿轮箱
Helical gear units

三级传动
Three Stage

立式安装
Vertical

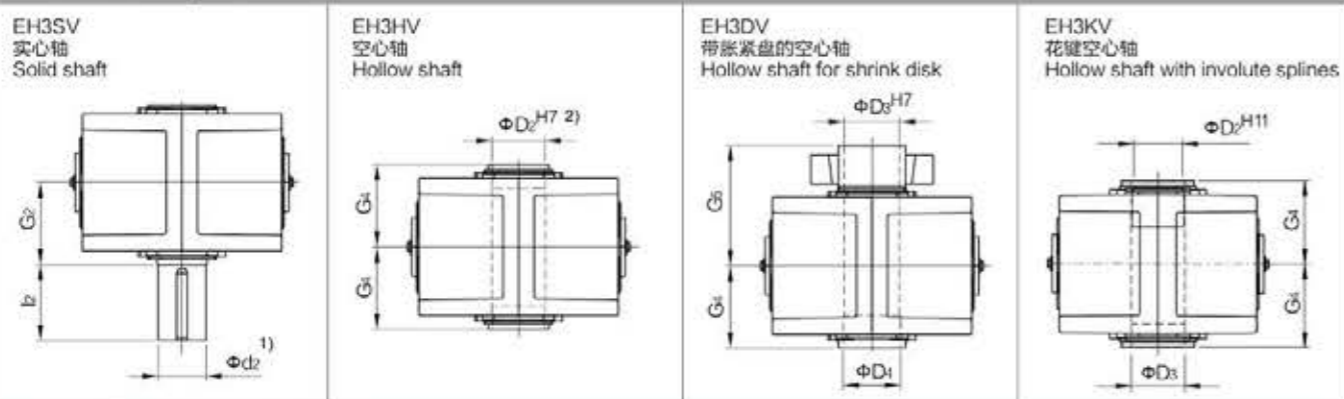
类型 TYPES EH3.V...
规格 SIZES 13...22

EH3SV EH3HV EH3DV EH3KV
采用强制润滑 With forced lubrication

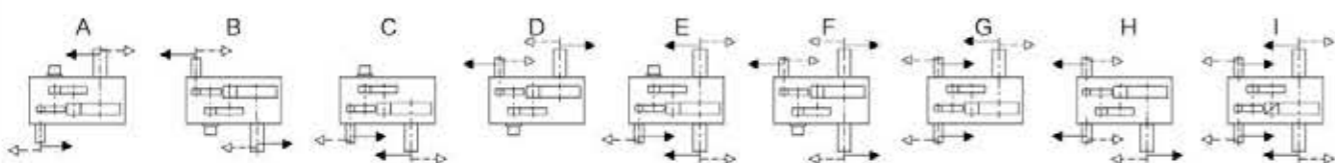


有关供油方式(强制润滑),参见335页 Oil supply(forced lubrication), see pages 335

★ 输出轴 Output



布置形式 Design (法兰泵)



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 扭力支撑位于工作机侧。 Torque support on driven machine side.
3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover; for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input							布置形式 Design G, H, I 仅用于 only for in=		
	in=22.4-45		in=50-63		in=71-90		G _i			
	in=25-50		in=56-71		in=80-100					
	in=28-56		in=63-80		in=90-112					
d _r ¹⁾	l _i	d _r ¹⁾	l _i	d _r ¹⁾	l _i					
13+14	85	160	60	135	50	110	310	22.4-90	28-112	
15+16	100	200	75	140	60	140	350	22.4-90	25-100	
17+18	100	200	75	140	60	140	380	22.4-90	25-100	
19+20	根据用户要求提供 On request									
21+22	根据用户要求提供 On request									

规格 Size	齿轮箱 Gear units										
	b	c	f ₂	f ₃	h	h ₂	m ₂	n ₁	p ₁ ¹⁾	p ₂ ¹⁾	s
13+14	900	61±2	38	170	272.5	300	680	50	50	500	48
15+16	980	72±2	38	170	310	340	750	60	50	570	55
17+18	1110	81±2	38	210	340	374	850	70	70	630	55
19+20	根据用户要求提供 On request										
21+22	根据用户要求提供 On request										

规格 Size	齿轮箱 Gear units				输出轴 Output								
	a	E	m ₁	n ₂	EH3SV		EH3HV		EH3DV		EH3KV		
					d ₂ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₁	D ₃	D ₁	G ₁	G ₅
13	1395	820	1300	360	200	335	350	190	335	190	195	335	480
14	1535	890	1440	430	210	335	350	210	335	210	215	335	480
15	1680	987	1565	430	230	380	410	230	380	230	235	380	550
16	1770	1033	1655	475	240	380	410	240	380	240	245	380	550
17	1770	1035	1640	465	250	415	410	250	415	250	260	415	600
18	1890	1095	1760	525	270	415	470	275	415	280	285	415	600
19	根据用户要求提供 On request												
20	根据用户要求提供 On request												
21	根据用户要求提供 On request												
22	根据用户要求提供 On request												

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
13	115	2155
14	126	2490
15	180	3260
16	190	3625
17	190	4250
18	200	4740
19	敬请垂询 On request	
20	敬请垂询 On request	
21	敬请垂询 On request	
22	敬请垂询 On request	

冷却盘管的冷却液接口
Water connection for cooling coil

输出轴 Output

规格 Size	m _x	n _x	e ₂	s _y	x ¹⁾ L/min
13	252	300	335	G1/2	8
14	252	300	405	G1/2	8
15	290	340	395	G1/2	8
16	290	340	440	G1/2	8
17	300	380	425	G1/2	8
18	300	380	485	G1/2	8
19	敬请垂询 On request				
20	敬请垂询 On request				
21	敬请垂询 On request				
22	敬请垂询 On request				

1) 冷却盘管适用于淡水、海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water.
2) x) 所需冷却水量。 Cooling water quantity required.



平行轴齿轮箱
Helical gear units

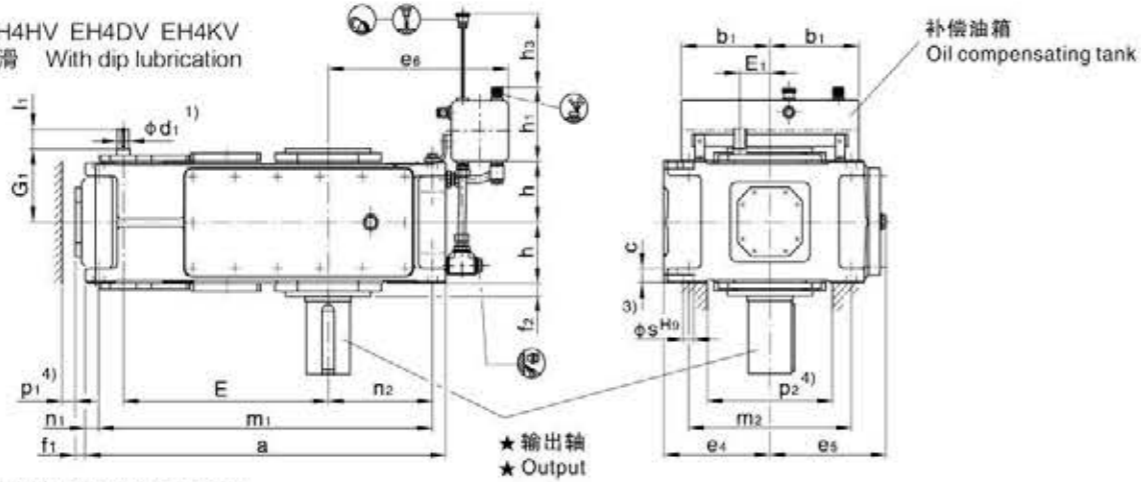
四级传动
Four Stage

立式安装
Vertical

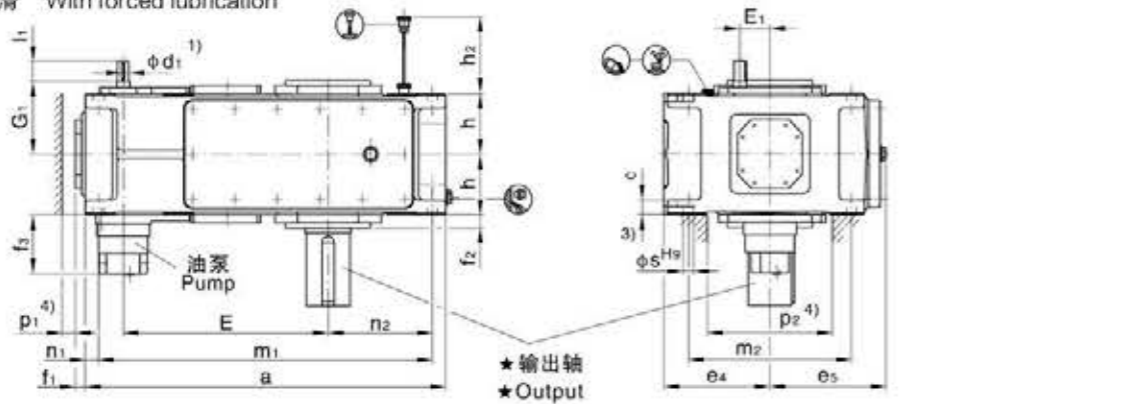
类型 TYPES EH4.V...

规格 SIZES 7...12

EH4SV EH4HV EH4DV EH4KV
采用浸油润滑 With dip lubrication



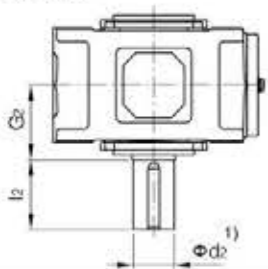
EH4SV EH4HV EH4DV EH4KV
采用强制润滑 With forced lubrication



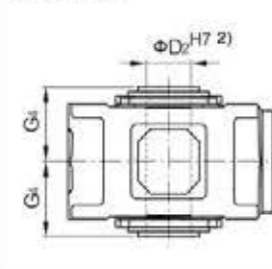
有关供油方式(浸油润滑或强制润滑),参见335页 Oil supply(dip or forced lubrication), see pages 335

★ 输出轴 Output

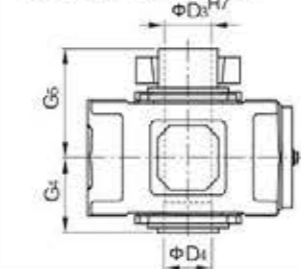
EH4SV
实心轴
Solid shaft



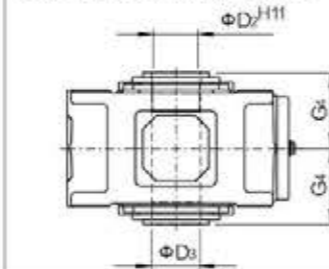
EH4HV
空心轴
Hollow shaft



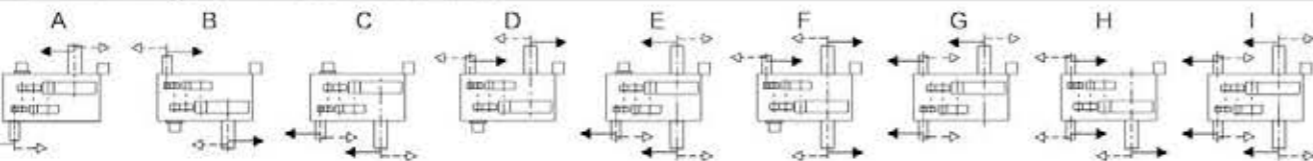
EH4DV
带胀紧盘的空心轴
Hollow shaft for shrink disk



EH4KV
花键空心轴
Hollow shaft with involute splines



布置形式 Design (□法兰泵, □润滑补偿油箱)



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.

2) 扭力支撑位于工作机侧。 Torque support on driven machine side.

3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover; for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input					布置形式 Design G, H, I 仅用于 only for in=	
	in=100-180		in=200-355		G1	100-224	125-280
	d1 ¹⁾	l1	d1 ¹⁾	l1			
7+8	30	50	24	40	180		
9+10	35	70	28	50	215	100-250	125-315
11+12	45	100	32	80	250	100-250	125-315

规格 Size	齿轮箱 Gear units														
	b1	c	e4	E1	f1	f3	h	h1	h2	h3	m2	n1	p1 ⁴⁾	p2 ⁴⁾	s
7+8	240	36±1	280	80	37	160	150	205	165	250	430	35	35	330	28
9+10	330	45±1.5	320	90	43	170	185	275	205	330	490	40	40	370	36
11+12	330	54±1.5	380	110	47	170	215	275	240	340	600	50	50	440	40

规格 Size	齿轮箱 Gear units							输出轴 Output								
	a	e5	e6	E	f2	m1	n2	EH4SV		EH4HV		EH4DV		EH4KV		
								d2 ¹⁾	G2	l2	D2 ²⁾	G4	D3	D4	G4	G5
7	845	292	425	495	38	775	215	120	195	210	115	195	120	120	195	280
8	950	302	485	540	41	880	275	130	195	250	125	195	130	130	195	285
9	1000	342	560	580	41	920	260	140	235	250	135	235	140	145	235	330
10	1100	342	610	630	35	1020	310	160	235	300	150	235	150	155	235	350
11	1200	402	595	705	35	1100	295	170	270	300	165	270	165	170	270	400
12	1355	410	680	775	35	1255	380	180	270	300	180	270	180	185	270	405

见327-330页
See page
327-330

规格 Size	润滑油 Oil		重量 Weight (kg)
	浸油润滑 Dip lubrication (L)	强制润滑 Forced lubrication (L)	
7	50	20	550
8	60	25	645
9	95	38	875
10	110	45	1010
11	165	65	1460
12	180	75	1725



平行轴齿轮箱
Helical gear units

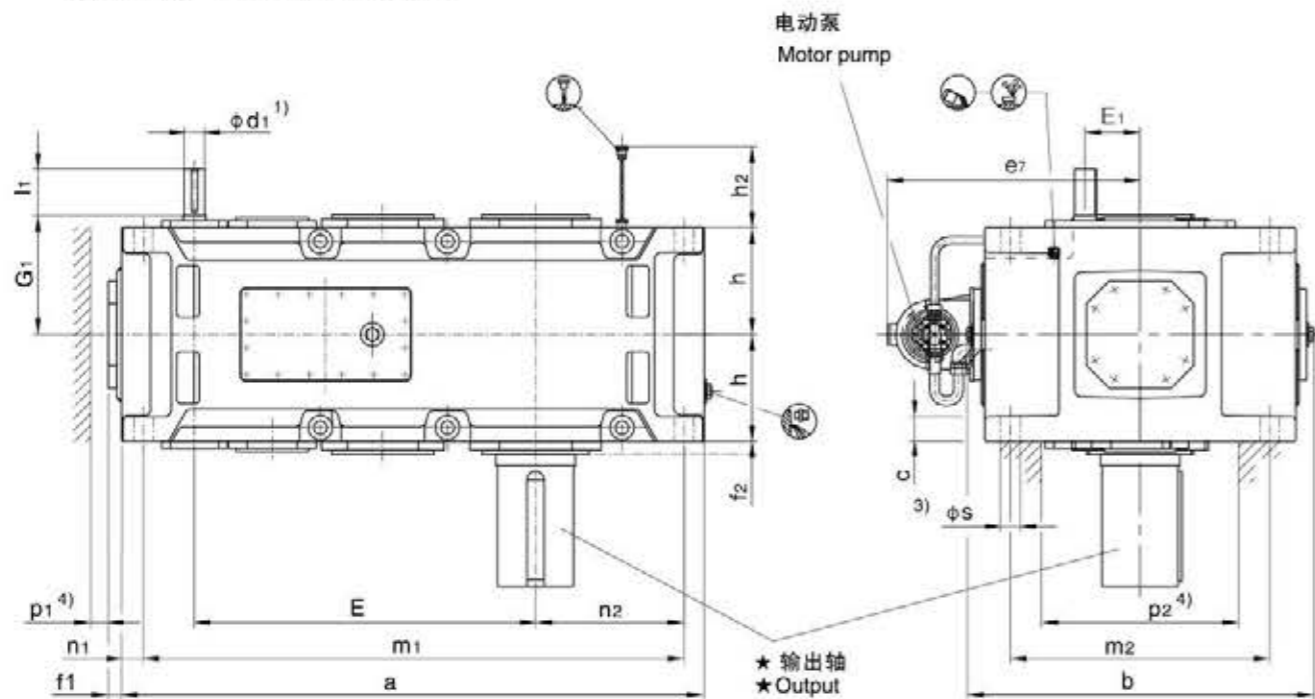
四级传动
Four Stage

立式安装
Vertical

类型 TYPES EH4.V...

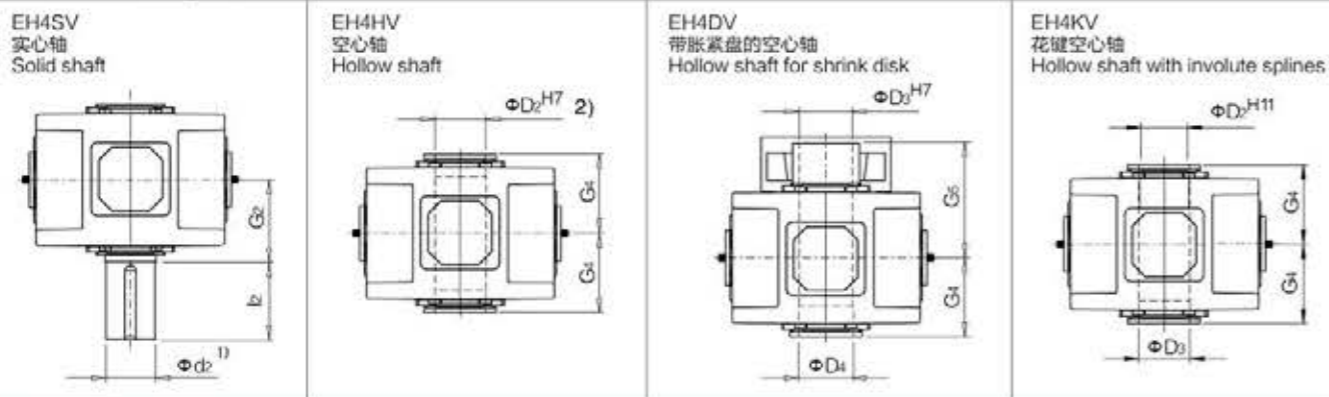
规格 SIZES 13...22

EH4SV EH4HV EH4DV EH4KV
采用强制润滑 With forced lubrication

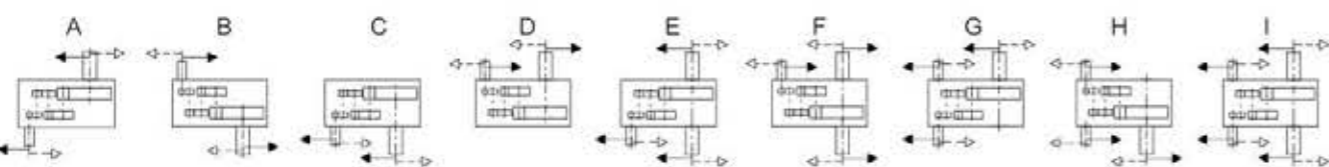


有关供油方式(强制润滑),参见335页 Oil supply(forced lubrication), see pages 335

★ 输出轴 Output



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 扭力支撑位于工作机侧。 Torque support on driven machine side.
3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover; for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input					布置形式 Design G, H, I 仅用于 only for IN=	
	IN=100-180		IN=200-355		G ₁		
	IN=112-200		IN=224-400				
	IN=125-224		IN=250-450				
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁			
13 +14	50	100	38	80	305	100-250	125-315
15 +16	60	135	50	110	345	100-250	112-280
17 +18	60	105	50	80	380	-	-
19 +20	根据用户要求供货 On request						
21 +22	根据用户要求供货 On request						

规格 Size	齿轮箱 Gear units											
	b	c	E ₁	h	h ₂	m ₂	n ₁	p ₁ ⁴⁾	p ₂ ⁴⁾	s	f ₁	f ₂
13+14	900	61±2	130	272.5	300	680	50	50	500	48	47	38
15+16	980	72±2	160	310	340	750	60	50	570	55	56	38
17+18	1110	81±2	160	340	374	850	70	70	630	55	53	38
19+20	根据用户要求供货 On request											
21+22	根据用户要求供货 On request											

规格 Size	齿轮箱 Gear units					输出轴 Output								
						EH4SV		EH4HV		EH4DV		EH4KV		
	a	e ₇	E	m ₁	n ₂	d ₁ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₆
13	1395	695	820	1300	360	200	335	350	190	335	190	195	335	480
14	1535	695	890	1440	430	210	335	350	210	335	210	215	335	480
15	1680	735	987	1565	430	230	380	410	230	380	230	235	380	550
16	1770	735	1033	1655	475	240	380	410	240	380	240	245	380	550
17	1770	795	1035	1640	465	250	415	410	250	415	250	260	415	600
18	1890	795	1095	1760	525	270	415	470	275	415	280	285	415	600
19	根据用户要求供货 On request													
20	根据用户要求供货 On request													
21	根据用户要求供货 On request													
22	根据用户要求供货 On request													

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
13	95	2270
14	105	2600
15	150	3440
16	160	3740
17	190	4445
18	200	4915
19	敬请期待 On request	
20	敬请期待 On request	
21	敬请期待 On request	
22	敬请期待 On request	



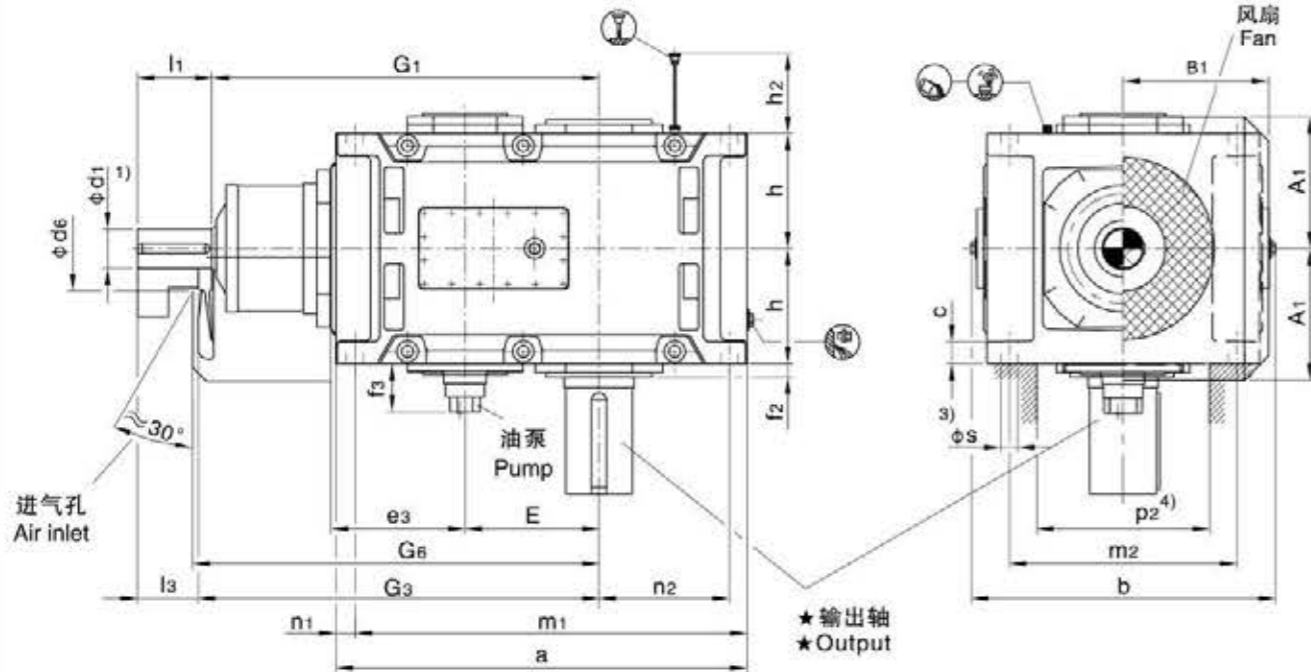
直交轴齿轮箱
Bevel-helical gear units

二级传动
Two Stage

立式安装
Vertical

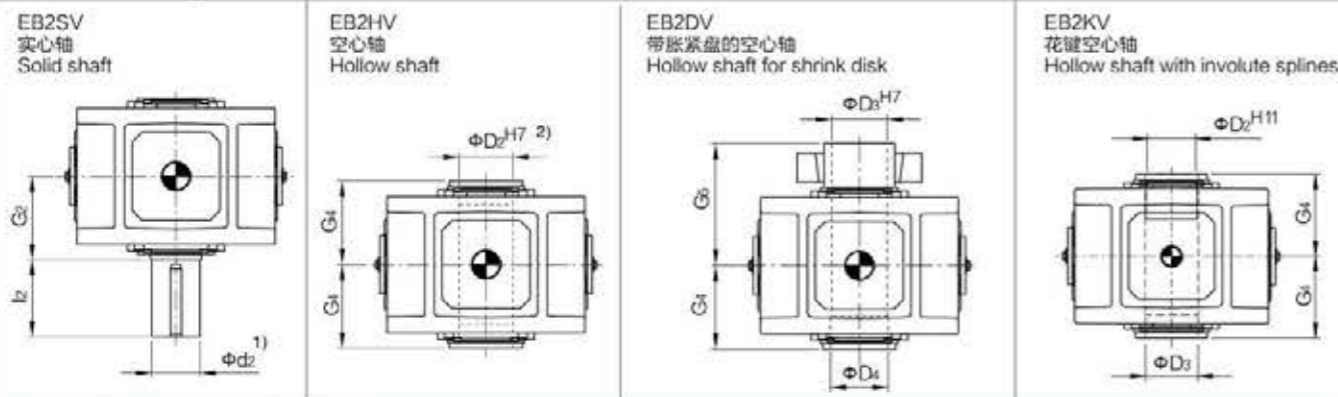
类型 TYPES EB2.V...
规格 SIZES 13...18

EB2SV EB2HV EB2DV EB2KV
采用强制润滑 With forced lubrication

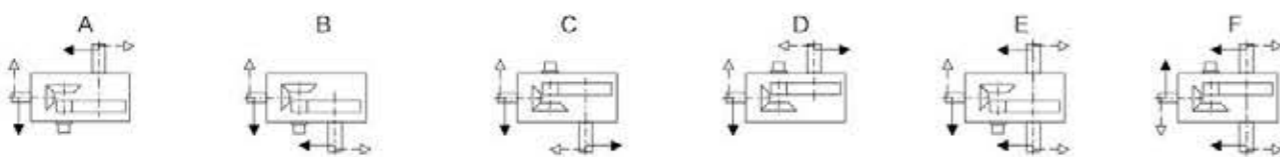


有关供油方式(强制润滑),参见335页 Oil supply(forced lubrication), see pages 335

★ 输出轴 Output



布置形式 Design (法兰泵)



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 扭力支撑位于工作机侧。 Torque support on driven machine side.
3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover; for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input								冷却风扇 Fan				
	$i_n=5-11.2$			$i_n=5.6-11.2$			G_1	G_3	G_1	G_3	A_1	B_1	d_s
	$d_1^{(1)}$	l_1	l_3	$d_1^{(1)}$	l_1	l_3							
							$i_n=6.3-14$			$i_n=5.6-12.5$			
13+14	110	205	165				1070	1110	1140	1180	375	450	245
15	130	245	200				1277	1322	-	-	435	495	280
16				130	245	200	-	-	1323	1368	435	495	280
17				150	245	200	1435	1480	-	-	505	555	380
18	150	245	200				1495	1540	-	-	505	555	380

规格 Size	齿轮箱 Gear units									
	b	c	e_3	h	h_2	m_2	n_1	$p_2^{(4)}$	s	
13+14	900	61 ± 2	380	325	350	680	50	500	48	
15+16	980	72 ± 2	450	380	430	750	60	570	55	
17+18	1110	81 ± 2	510	437.5	480	840	70	630	65	

规格 Size	齿轮箱 Gear units						输出轴 Output							
	a	E	f_2	f_3	m_1	n_2	EB2SV		EB2HV		EB2DV		EB2KV	
	$d_2^{(1)}$	G_2	l_2	$D_2^{(2)}$	G_1	D_3	D_1	G_1	G_6					
13	1130	370	38	200	1035	360	200	390	350	-	-	-	-	-
14	1270	440	45	200	1175	430	210	390	350	210	215	390	535	
15	1350	442	48	200	1235	430	230	460	410	-	-	-	-	见327-330页 See page 327-330
16	1440	488	51	200	1325	475	240	460	410	240	450	240	245	450
17	1490	490	62	200	1360	465	250	540	410	-	-	-	-	-
18	1610	550	62	200	1480	525	270	540	470	275	510	280	285	510

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
13	100	2350
14	110	2725
15	145	3795
16	160	4160
17	210	5320
18	220	5860

冷却盘管的冷却液接口
Water connection for cooling coil

规格 Size	m_x	n_x	e_z	s_y	x) L/min
13	324	300	335	G1/2	8
14	324	300	405	G1/2	8
15	396	345	390	G1/2	8
16	396	345	435	G1/2	8
17	324	395	425	G1/2	8
18	324	395	485	G1/2	8

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water.
2) x) 所需冷却水量。 Cooling water quantity required.



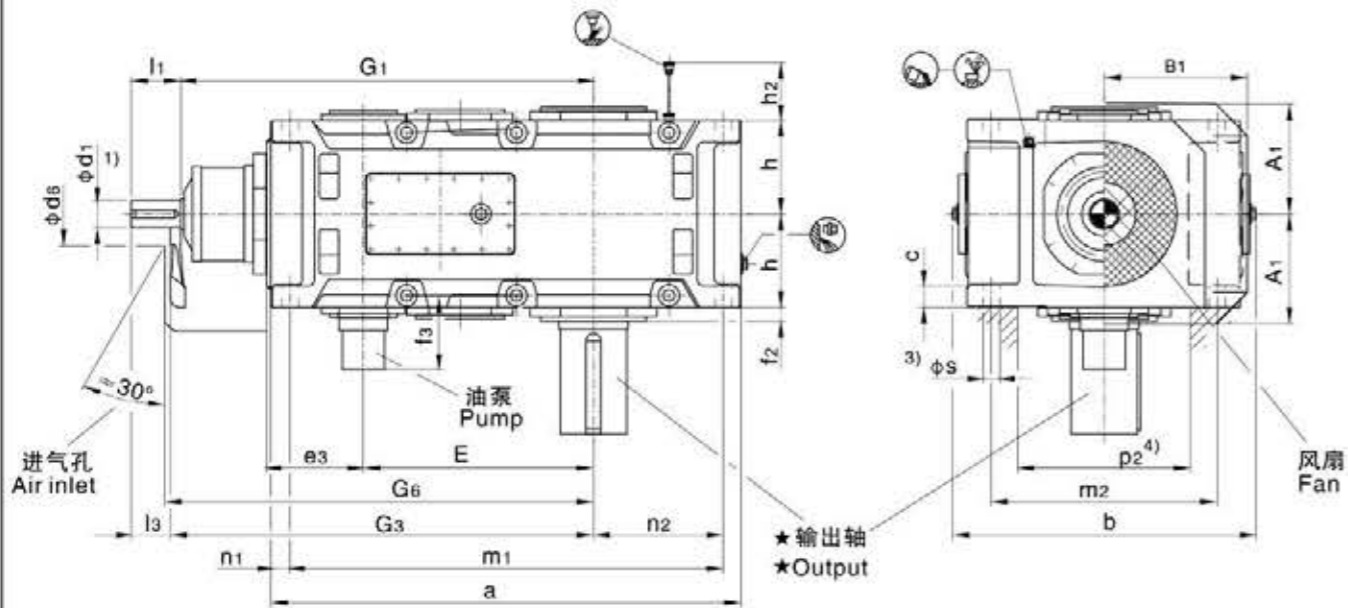
直交轴齿轮箱
Bevel-helical gear units

三级传动
Three Stage

立式安装
Vertical

类型 TYPES EB3.V...
规格 SIZES 13...22

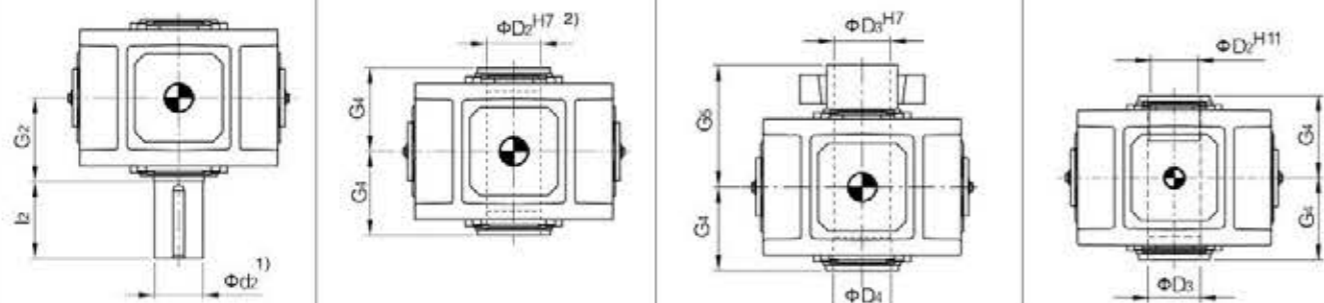
EB3SV EB3HV EB3DV EB3KV
采用强制润滑 With forced lubrication



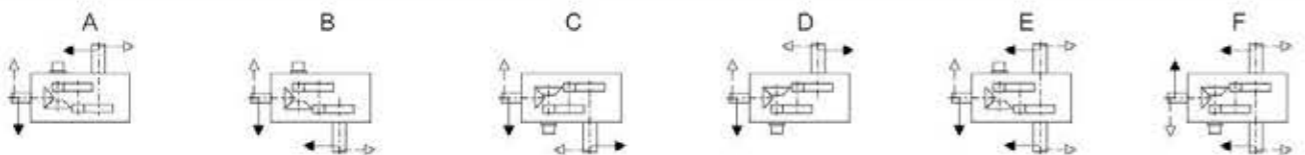
有关供油方式(强制润滑),参见335页 Oil supply(forced lubrication), see pages 335

★ 输出轴 Output

EB3SV 实心轴 Solid shaft
EB3HV 空心轴 Hollow shaft
EB3DV 带胀紧盘的空心轴 Hollow shaft for shrink disk
EB3KV 花键空心轴 Hollow shaft with involute splines



布置形式 Design (法兰型)



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 扭力支撑位于工作机侧。 Torque support on driven machine side.
3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover; for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input										冷却风扇 Fan		
	in=12.5-45			in=50-71			G ₁	G ₃	G ₁	G ₃	A ₁	B ₁	d ₆
	in=14-50			in=56-80									
	d ₁ ¹⁾	l ₁	l ₃	d ₁ ¹⁾	l ₁	l ₃							
13+14	80	165	130	60	140	105	1125	1160	1195	1230	325	475	210
15+16	90	165	130	70	140	105	1367	1402	1413	1448	365	520	210
17+18	110	205	165	80	170	130	1560	1600	1620	1660	395	570	230
19+20	根据用户要求供货 On request												
21+22	根据用户要求供货 On request												

规格 Size	齿轮箱 Gear units										
	b	c	e ₃	f ₂	f ₃	h	h ₂	m ₂	n ₁	p ₂ ⁴⁾	s
13+14	900	61 ± 2	265	38	170	272.5	300	680	50	500	48
15+16	980	72 ± 2	320	38	170	310	340	750	60	570	55
17+18	1110	81 ± 2	370	38	170	340	380	850	70	630	55
19+20	根据用户要求供货 On request										
21+22	根据用户要求供货 On request										

规格 Size	齿轮箱 Gear units					输出轴 Output									
	a	E	G ₆	m ₁	n ₂	EB3SV		EB3HV		EB3DV		EB3KV			
	d ₂ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅						
13	1290	635	1180	1195	360	200	335	350	190	335	190	195	335	480	
14	1430	705	1250	1335	430	210	335	350	210	335	210	215	335	480	
15	1550	762	1420	1435	430	230	380	410	230	380	230	235	380	550	
16	1640	808	1470	1525	475	240	380	410	240	380	240	245	380	550	
17	1740	860	1620	1610	465	250	415	410	250	415	250	260	415	600	
18	1860	920	1680	1730	525	270	415	470	275	415	280	285	415	600	
19	根据用户要求供货 On request														
20	根据用户要求供货 On request														
21	根据用户要求供货 On request														
22	根据用户要求供货 On request														

规格 Size	润滑油 Oil (L)	重量 Weight (kg)
13	95	2260
14	110	2615
15	165	3540
16	190	3765
17	210	4760
18	240	5240
19	敬请垂询 On request	
20	敬请垂询 On request	
21	敬请垂询 On request	
22	敬请垂询 On request	

冷却盘管的冷却液接口
Water connection for cooling coil

输出轴 Output

冷却盘管 Cooling coil					
规格 Size	m _x	n _x	e _z	s _y	x) L/min
13	252	300	335	G1/2	8
14	252	300	405	G1/2	8
15	290	335	395	G1/2	8
16	290	335	440	G1/2	8
17	340	380	425	G1/2	8
18	340	380	485	G1/2	8
19	敬请垂询 On request				
20	敬请垂询 On request				
21	敬请垂询 On request				
22	敬请垂询 On request				

1) 冷却盘管适用于淡水, 海水或有咸味的水。
Cooling coil suitable for fresh, sea or brackish water.
2) x) 所需冷却水量。 Cooling water quantity required.



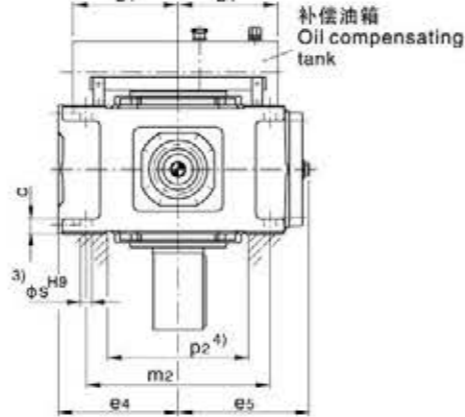
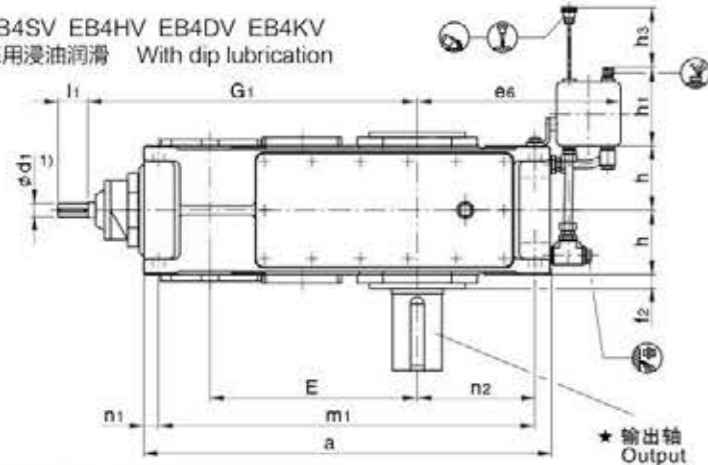
直交轴齿轮箱
Bevel-helical gear units

四级传动
Four Stage

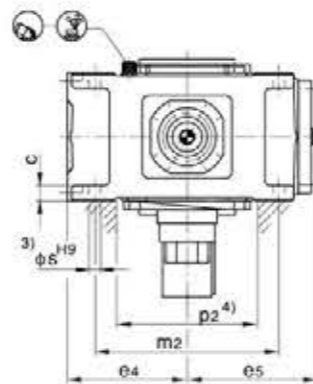
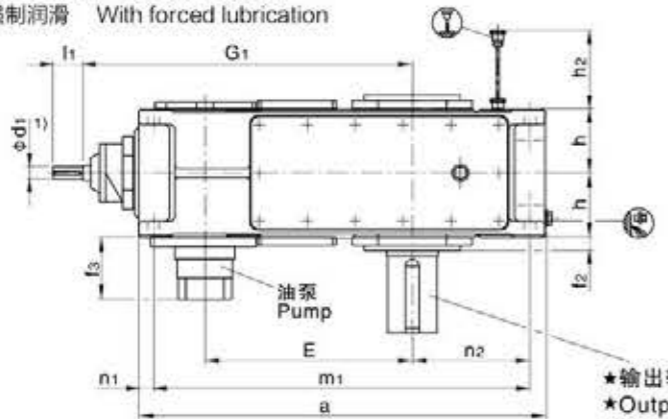
立式安装
Vertical

类型 TYPES EB4.V...
规格 SIZES 5...12

EB4SV EB4HV EB4DV EB4KV
采用浸油润滑 With dip lubrication



EB4SV EB4HV EB4DV EB4KV
采用强制润滑 With forced lubrication

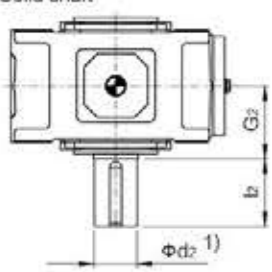


有关供油方式(浸油润滑或强制润滑),参见335页

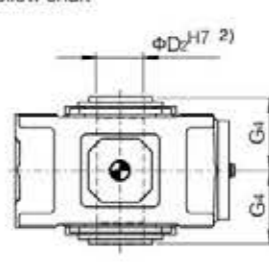
Oil supply(dip or forced lubrication), see pages 335

★ 输出轴 Output

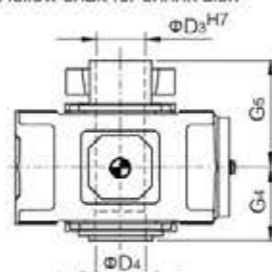
EB4SV
实心轴
Solid shaft



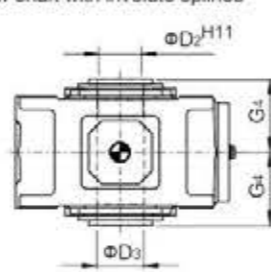
EB4HV
空心轴
Hollow shaft



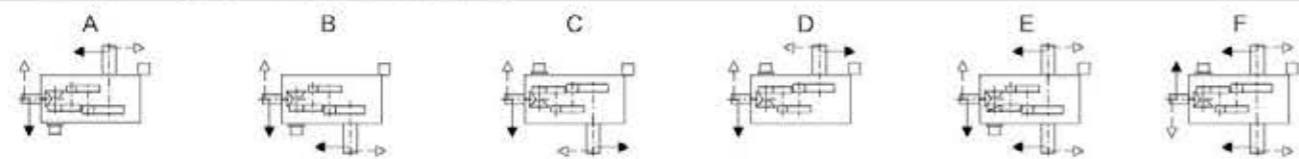
EB4DV
带胀紧盘的空心轴
Hollow shaft for shrink disk



EB4KV
花键空心轴
Hollow shaft with involute splines



布置形式 Design (□法兰泵, □润滑补偿油箱)



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.

2) 扭力支撑位于工作机侧。 Torque support on driven machine side.

3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover; for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input				G ₁	G ₁
	i _N =80-180		i _N =200-315			
	i _N =100-224		i _N =250-400			
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁		
5 +6	28	55	20	50	615	650
7 +8	30	70	25	60	725	770
9 +10	35	80	28	60	840	890
11 +12	45	100	35	80	1010	1080

规格 Size	齿轮箱 Gear units											
	b ₁	c	e ₄	h	h ₁	h ₂	h ₃	m ₂	n ₁	p ₂ ⁴⁾	s	f ₃
5+6	240	30 ± 1	230	127.5	205	190	240	360	30	270	24	200
7+8	240	36 ± 1	280	150	205	165	250	430	35	330	28	120
9+10	330	45 ± 1.5	320	185	275	205	330	490	40	370	36	120
11+12	330	55 ± 1.5	380	215	275	240	340	600	50	440	40	130

规格 Size	齿轮箱 Gear units							输出轴 Output								
								EB4SV		EB4HV		EB4DV			EB4KV	
	a	e ₅	e ₆	E	f ₂	m ₁	n ₂	d ₂ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅
5	690	252	385	405	28	630	175	100	165	210	95	165	100	100	165	240
6	770	252	425	440	28	710	220	110	165	210	105	165	110	110	165	240
7	845	292	425	495	30	775	215	120	195	210	115	195	120	120	195	280
8	950	302	485	540	32	880	275	130	195	250	125	195	130	130	195	285
9	1000	342	560	580	32	920	260	140	235	250	135	235	140	145	235	330
10	1100	342	610	630	32	1020	310	160	235	300	150	235	150	155	235	350
11	1200	402	595	705	35	1100	295	170	270	300	165	270	165	170	270	400
12	1355	410	680	775	35	1255	380	180	270	300	180	270	180	185	270	405

见327-330页
See page
327-330

规格 Size	润滑油 Oil		重量 Weight (kg)
	浸油润滑 Dip lubrication (L)	强制润滑 Forced lubrication (L)	
5	36	15	335
6	40	16	385
7	60	30	555
8	70	35	655
9	110	60	890
10	130	67	1025
11	180	75	1485
12	195	85	1750



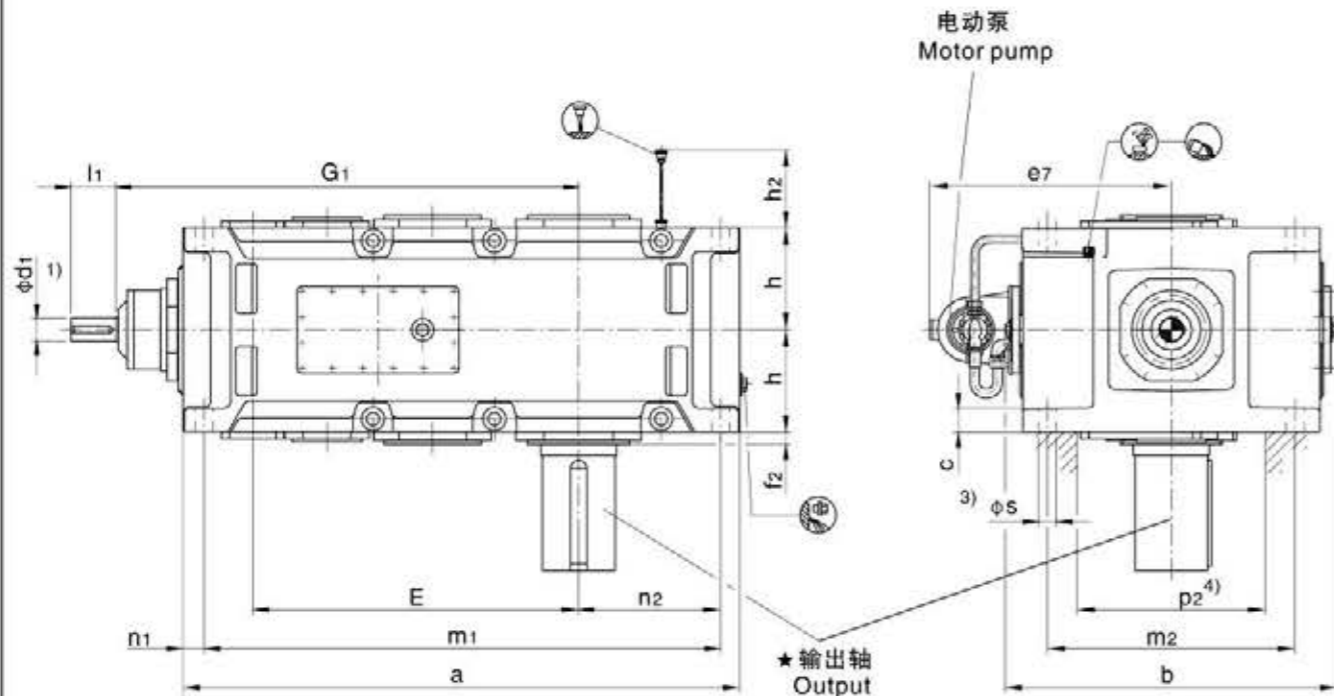
直交轴齿轮箱
Bevel-helical gear units

四级传动
Four Stage

立式安装
Vertical

类型 TYPES EB4.V...
规格 SIZES 13...22

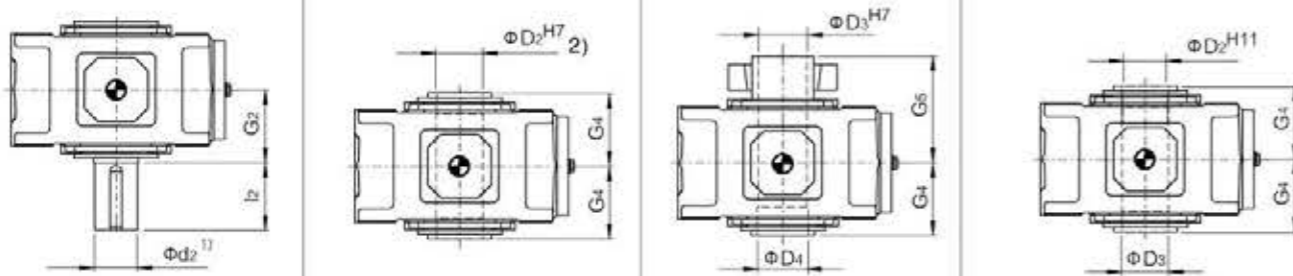
EB4SV EB4HV EB4DV EB4KV
采用强制润滑 With forced lubrication



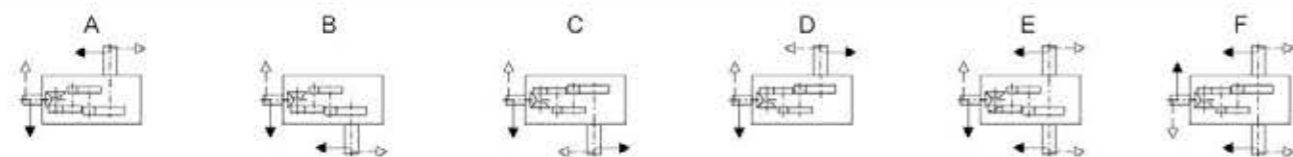
有关供油方式(强制润滑),参见335页 Oil supply(forced lubrication), see pages 335

★ 输出轴 Output

EB4SV 实心轴 Solid shaft
EB4HV 空心轴 Hollow shaft
EB4DV 带胀紧盘的空心轴 Hollow shaft for shrink disk
EB4KV 花键空心轴 Hollow shaft with involute splines



布置形式 Design



1) $k6 \leq \phi 50$ $m6 > \phi 50$ 有关平键 GB/T1095-1979型和中心孔,参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 扭力支撑位于工作机侧。 Torque support on driven machine side.
3) 有关油泵、油管和防护盖的安装空间及确切尺寸,请与我们联系。 Space for pump, pipes and cover; for exact dimensions, please refer to us.



注: 尺寸 mm Note: Dimensions in mm

规格 Size	输入轴 Input					
	in=80-180		in=200-315		G ₁	G ₁
	in=90-200		in=224-355			
	in=100-224		in=250-400			
	d ₁ ¹⁾	l ₁	d ₁ ¹⁾	l ₁	G ₁	G ₁
13+14	55	110	40	100	1170	1240
15+16	70	135	50	110	1402	1448
17+18	70	135	50	110	1450	1510
19+20	敬请垂询 On request					
21+22	敬请垂询 On request					

规格 Size	齿轮箱 Gear units								
	b	c	h	h ₂	m ₂	n ₁	p ₂ ⁴⁾	s	f ₂
13+14	900	61±2	272.5	300	680	50	500	48	38
15+16	980	72±2	310	340	750	60	570	55	38
17+18	1110	81±2	340	374	850	70	630	55	38
19+20	敬请垂询 On request								
21+22	敬请垂询 On request								

规格 Size	齿轮箱 Gear units					输出轴 Output								
	a	e ₇	E	m ₁	n ₂	EB4SV		EB4HV		EB4DV			EB4KV	
						d ₂ ¹⁾	G ₂	l ₂	D ₂ ²⁾	G ₄	D ₃	D ₄	G ₄	G ₅
13	1395	695	820	1300	360	200	335	350	190	335	190	195	335	480
14	1535	695	890	1440	430	210	335	350	210	335	210	215	335	480
15	1680	735	987	1565	430	230	380	410	230	380	230	235	380	550
16	1770	735	1033	1655	475	240	380	410	240	380	240	245	380	550
17	1770	795	1035	1640	465	250	415	410	250	415	250	260	415	600
18	1890	795	1095	1760	525	270	415	470	275	415	280	285	415	600
19	敬请垂询 On request													
20	敬请垂询 On request													
21	敬请垂询 On request													
22	敬请垂询 On request													

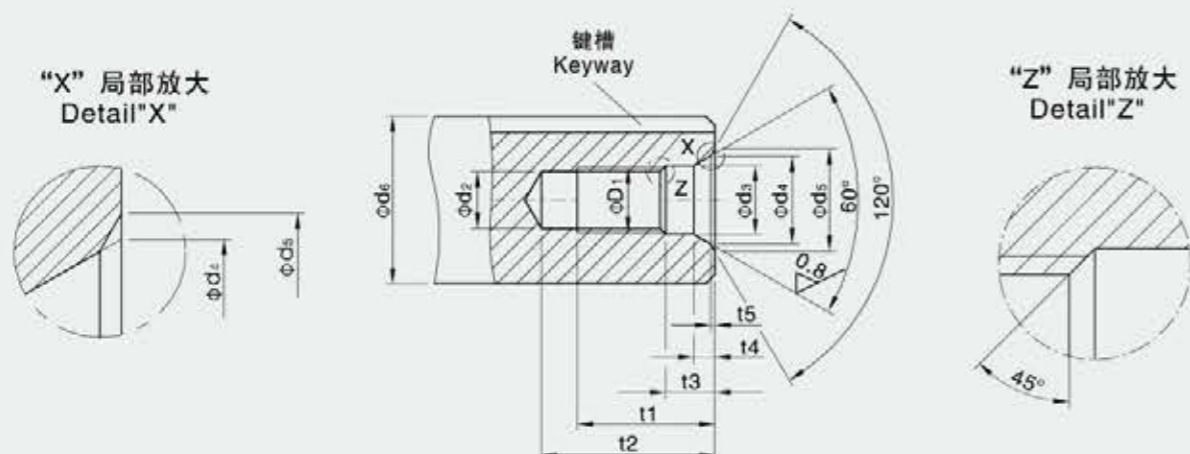
规格 Size	润滑油 Oil (L)	重量 Weight (kg)
13	130	2280
14	150	2605
15	200	3435
16	235	3765
17	215	4460
18	250	4930
19	敬请垂询 On request	
20	敬请垂询 On request	
21	敬请垂询 On request	
22	敬请垂询 On request	



齿轮箱
Gear units

C型轴端中心孔, 符合GB145-1985标准
Centre Holes, Form C in Shaft Ends GB145-1985

C型中心孔 Form C
锥孔, 带一段直孔和护锥沉孔 Tapped hole, with straight running face and counterbore



推荐尺寸 Recommended diameters		C型 Form C												
$d_6^{1)}$		C中心孔 C-Centering	d_1	d_2	d_3	d_4	d_5	t_1 $t_1/2$	t_2		t_3 t_3+1	t_4 t_4-	t_5 t_5-	
大于 above	至 to								min.	max.				
16	21	C 6	M6	5	6.4	9.6	10.5	16	20	22	5	2.8	0.4	
21	24	C 8	M8	6.8	8.4	12.2	13.2	19	25	28	6	3.3	0.4	
24	30	C 10	M10	8.5	10.5	14.9	16.3	22	30	34	7.5	3.8	0.6	
30	38	C 12	M12	10.2	13	18.1	19.8	28	37	42	9.5	4.4	0.7	
38	50	C 16	M16	14	17	23	25.3	36	45	50	12	5.2	1.0	
50	85	C 20	M20	17.5	21	28.4	31.3	42	53	59	15	6.4	1.3	
85	130	C 24	M24	21	25	34.2	38	50	63	68	18	8	1.6	
130*	225*	C 30	M30*	26.5	31	44	48	60	77	83	17	11	1.9	
225*	320*	C 36	M36*	32	37	55	60	74	93	99	22	15	2.3	
320*	500*	C 42	M42*	37.5	43	65	71	84	105	111	26	19	2.7	

1) 工件加工后最终尺寸。 Diameter of the finished work piece.
*) 不是根据GB145-1985确定的尺寸。 Dimensions not acc. to GB145-1985.

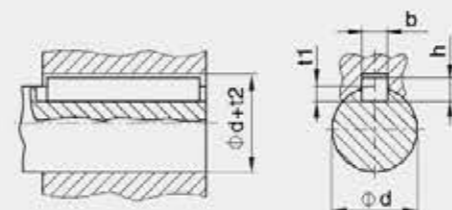
齿轮箱
Gear units

选择 ISO 配合精度
Selection of IOS fits

平键和键槽
Parallel keys and keyways

轴端螺纹孔 Centre holes in shaft end										
轴径 ϕd Diameter	$\geq 16-21$	$> 21-24$	$> 24-30$	$> 30-38$	$> 38-50$	$> 50-85$	$> 85-130$	$> 130-225$	$> 225-320$	$> 320-500$
螺孔尺寸 Screw	M6 \times 12	M8 \times 16	M10 \times 20	M12 \times 25	M16 \times 35	M20 \times 40	M24 \times 50	M30 \times 60	M36 \times 70	M42 \times 80

平键 Parallel keys						
平键紧固方式, 采用无锥度联接。 Drive type fastening without taper action	直径 Diameter ϕd		宽度 1) Width b mm	高度 Height h mm	轴键槽深度 Depth of keyway in shaft t_1 mm	轮毂键槽深度 Depth of keyway in hub $d+t_2$ GB/T1095-1979 mm
	大于 Above mm	至 To mm				
平键和键槽根据 GB/T1095-1979 标准确定。 Parallel key and keyway acc. to GB/T1095-1979	17	22	6	6	3.5	$d+2.8$
	22	30	8	7	4	$d+3.3$
	30	38	10	8	5	$d+3.3$
	38	44	12	8	5	$d+3.3$
	44	50	14	9	5.5	$d+3.8$
	50	58	16	10	6	$d+4.3$
	58	65	18	11	7	$d+4.4$
	65	75	20	12	7.5	$d+4.9$
	75	85	22	14	9	$d+5.4$
	85	95	25	14	9	$d+5.4$
	95	110	28	16	10	$d+6.4$
	110	130	32	18	11	$d+7.4$
	130	150	36	20	12	$d+8.4$
	150	170	40	22	13	$d+9.4$
	170	200	45	25	15	$d+10.4$
	200	230	50	28	17	$d+11.4$
230	260	56	32	20	$d+12.4$	
260	290	63	32	20	$d+12.4$	
290	330	70	36	22	$d+14.4$	
330	380	80	40	25	$d+15.4$	
380	440	90	45	28	$d+17.4$	



1) 重载工作条件下轮毂平键键槽宽度 b 的公差带应按 ISO JS9 或 ISO P9 确定。
1) The tolerance zone for the hub keyway width b for parallel keys is ISO JS9, or ISO P9 for heavy-duty operating conditions.



齿轮箱 Gear units
润滑油供给方式可选方案 Oil Supply for
立式安装 Vertical

类型 TYPES EH2...EH4...,EB2...EB4...
规格 SIZES 4...18

各种润滑油供给方式 Oil supply variants
立式安装齿轮箱所用的各种润滑油供给方式列于表1。
Oil supply variants for vertical gear units can be derived from table 1.

类型1) Types	规格Size	浸油润滑 Dip lubrication	法兰泵强制润滑 Forced lubrication, flanged on pump	电动机强制润滑 Forced lubrication, motor pump
EH2.V	4	X	-	-
	5...12	X	X	-
	13...18	-	X	-
EH3.V	5...12	X	X	X
	13...18	-	X	X
EH4.V	7...12	X	X	X
	13...18	-	-	X
EB2.V	4	X	-	-
	5...12	X	X	X
	13...18	-	X	X
EB3.V	4	X	-	-
	5...12	X	X	X
	13...18	-	X	X
EB4.V	5...12	X	X	X
	13...18	-	-	X

X=可供货 X=Possible variants

推荐供油方式 Preferred order:

规格6号(含)以下各型: 浸油润滑; 规格7号以上各型: 强制润滑
up to size 6: dip lubrication: from size 7 up: forced lubrication

对各种润滑油供给方式的说明
Notes on the individual oil supply variants

浸油润滑 Dip lubrication:

当采用浸油润滑时,所有需要润滑的零件均需浸在润滑油液中。

附带的补偿油箱用于储藏涨溢的油液。

in case of dip lubrication, all parts to be lubricated are lying in the oil.

an oil compensating tank has been fitted for oil expansion.

强制润滑 Forced lubrication:

当采用强制润滑时,所有未浸在润滑油液中的零部件均通过一个法兰联接泵或单独的电动油泵进行飞溅润滑。

选择依据参见336-337页。

in case of forced lubrication, all parts which are not lying in oil are splash lubricated by means of a flanged-on pump or by a separate motor pump. criteria for selection, see page 336-337

齿轮箱 Gear units
法兰泵强制润滑 Forced Lubrication for flanged on pump
立式安装 Vertical

类型 TYPES EH2,EH3,EH4,EB2,EB3,EB4
规格 SIZES 5...14

40℃以下的ISO-VG粘度 mm ² / s (cst) Viscosity ISO-VG at 40℃ in mm ² / s (cst)	强制润滑允许极限温度,℃ Permissible temperature limit in℃ for forced feed lubrication			
	矿物油Mineraloil		合成油Syntheticoil	
	最低min	最高max	最低min	最高max
VG220	10	80	0	90
VG320	15	90	5	100
VG460	20	95	10	105

强制润滑:

当采用强制润滑时,工作粘度不得超过1800cst。最低工作粘度不得小于25cst。当油温低于表4所列的数值时,必须提供浸油润滑方式,或者对润滑油进行加热。

Forced lubrication:

In case of forced lubrication,the operating Viscosity 1800cst must not be exceeded during starting. A minimum operating viscosity of 25cst must be ensured. If the temperatures are below the values as listed in table 4, dip Lubrication has to be provided or the oil must be heated.

立式安装齿轮箱采用法兰泵 Assignment of flanged-on pumps to gear units					
类型 Types	规格 Size	法兰泵规格 Flanged-on pump size	类型 Types	规格 Size	法兰泵规格 Flanged-on pump size
EH2.V	5-8	SNBY5/1.6	EH2.V	5-8	SNBY5/1.6
	9-14	SNBY16/1.6		9-14	SNBY16/1.6
EH3.V	5-8	SNBY5/1.6	EH3.V	5-9	SNBY5/1.6
	9-14	SNBY16/1.6		10-14	SNBY16/1.6
EH4.V	7-8	SNBY5/1.6	EH4.V	5-8	SNBY5/1.6
	9-12	SNBY16/1.6		9-11	SNBY16/1.6

1)布置形式A,B,C,D,E,F
Design A,B,C,D,E,F



齿轮箱
Gear units

电机泵强制润滑
Forced Lubrication for motor pump

立式安装
Vertical

类型 TYPES EH2,EH3,EH4,EB2,EB3,EB4

规格 SIZES 5...14

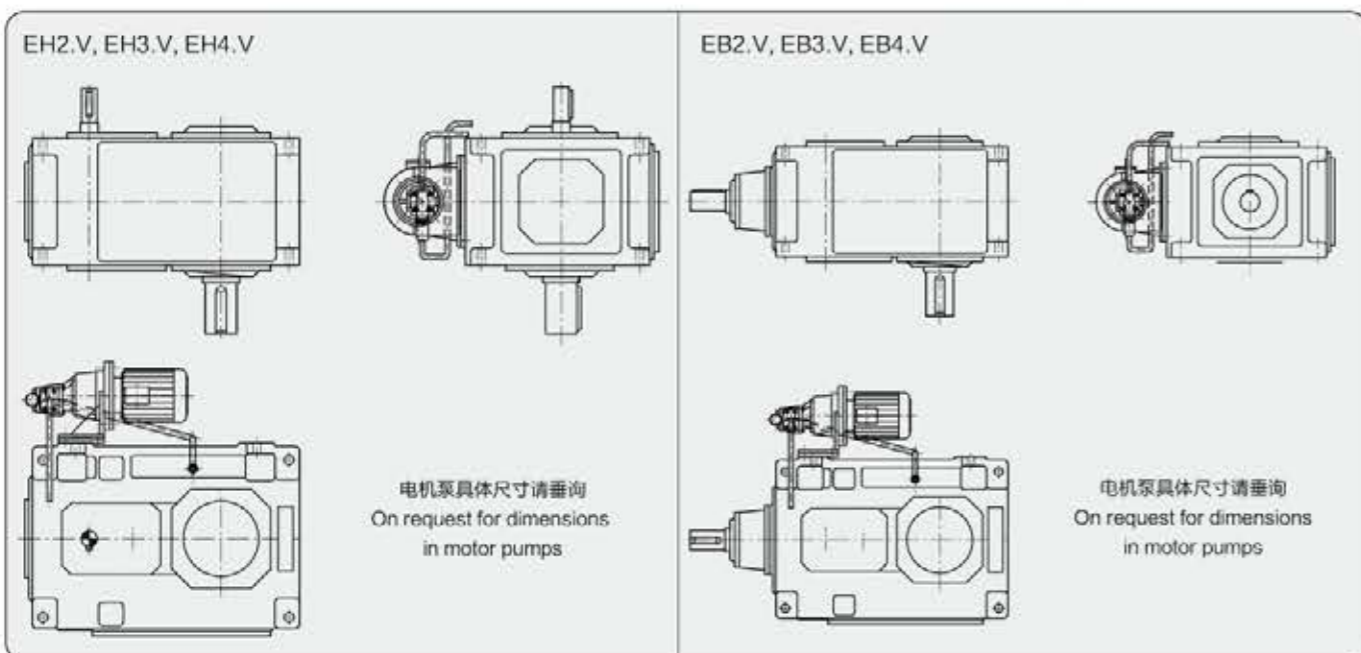


表6 Table 6

立式安装齿轮箱采用电动泵
Assignment of motor pumps to gear units

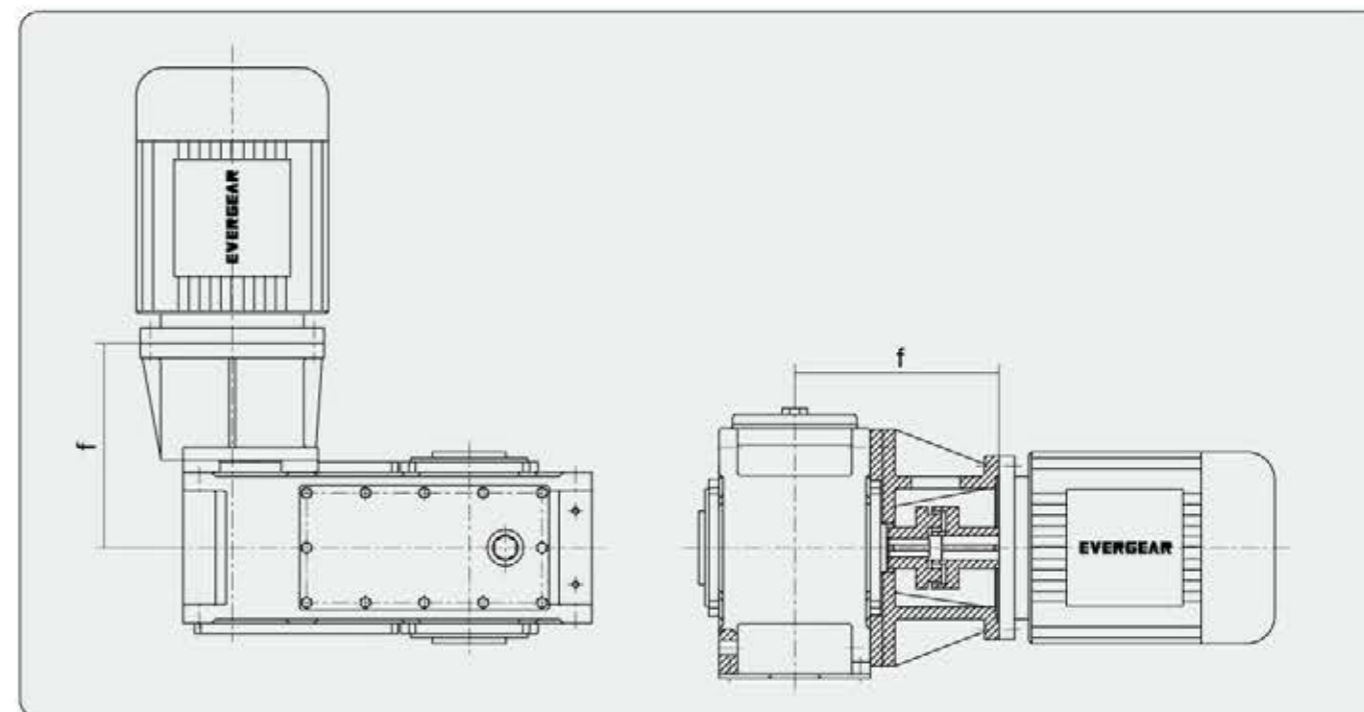
类型 Types	规格 Size	法兰泵规格 Flanged-on pump size	类型 Types	规格 Size	法兰泵规格 Flanged-on pump size
EH2.V	5-8	CB-B6JZ0.37kw	EB2.V	5-8	CB-B6JZ0.37kw
	9-14	CB-B16JZ0.75kw		9-14	CB-B16JZ0.75kw
EH3.V	5-8	CB-B6JZ0.37kw	EB3.V	5-9	CB-B6JZ0.37kw
	9-14	CB-B16JZ0.75kw		10-14	CB-B16JZ0.75kw
EH4.V	7-8	CB-B6JZ0.37kw	EB4.V	5-8	CB-B6JZ0.37kw
	9-12	CB-B16JZ0.75kw		9-11	CB-B16JZ0.75kw

1)布置形式A,B,C,D,E,F
Design A,B,C,D,E,F

齿轮箱
Gear units

电机法兰
Flange to motor

类型 TYPES EH2...,EH3...,EH4...



电机功率 Motor Power	EH2..				
	规格 Size				
	4	5/6	7/8	9	10
	f mm				
11-15kW	403				
18.5-22kW	403	428			
30kW	405	430	490		
37-45kW	442	467	527	567	572
55kW		467	527	567	572
75-90kW			527	567	572

电机功率 Motor Power	EH4..			
	规格 Size			
	7/8	9	10	11/12
	f mm			
	传动比 iv Ratio iv			
	≥ 200	≤ 180	≥ 200	≤ 180
2.2-4kW	318			
5.5-7.5kW	341	379	384	
11-15kW	383	421	430	426
18.5-22kW		421	430	426
30kW			432	437
37-45kW			469	474
55kW				532

电机功率 Motor Power	EH3..										
	规格 Size										
	5/6		7/8		9		10		11/12		
	f mm										
	传动比 iv Ratio iv										
	≥ 50	≤ 45	≥ 50	≤ 45	≥ 50-63 ≥ 71	≤ 45	≥ 63	≤ 56	≥ 71	≥ 50-63	≤ 45
11-15kW	316		388		463	508	468	513			
18.5-22kW	357	376	388	413	463	508	468	513			
30kW	357	376	390	415	465	510	470	515			
37-45kW	359	378	427	452	502	547	507	552	507	532	577
55kW		415	427	452	502	547	507	552	507	532	577
75-90kW		415			502	547	507	552	507	532	577

注:此表数据系电机为4级时,标准电机的安装尺寸参见第437页。

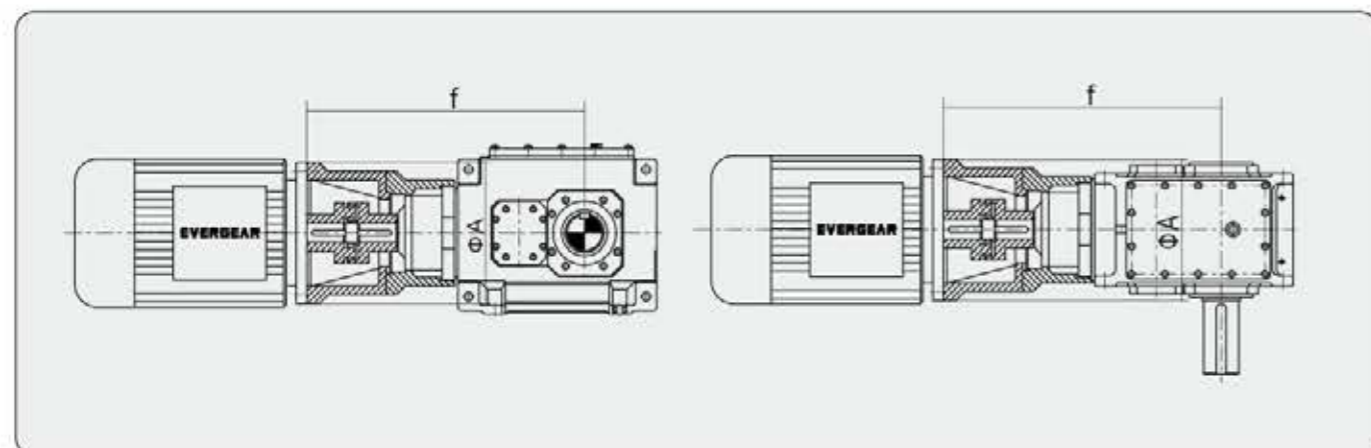
Note: Data in the above table calculated based on 4 pole motor. Fitting dimensions for standard motors see page 437



齿轮箱
Gear units

电机法兰
Flange to motor

类型 TYPES EB2...,EB3...,EB4...



电机功率 Motor Power	EB2..								EB3..											
	规格 Size								规格 Size											
	4	5	6	7	8	4	5	6	7	8	9	10	11	12						
	f	A	f	A	f	f	A	f	f	A	f	A	f	f	A	f	f	A	f	
	mm																			
11-15kW	708	350							648	250										
18.5-22kW	708	350							671	300	756	350	791							
30kW	710	410	790	400	825				713	350	788	350	823	933	400	978				
37-45kW			827	450	862	957	450	1002	713	350	788	350	823	933	400	978	1053	420	1103	
55kW						957	550	1002	715	400	780	400	825	935	400	980	1055	420	1105	
75-90kW						957	550	1002	715	400	780	400	825	935	400	980	1055	420	1105	

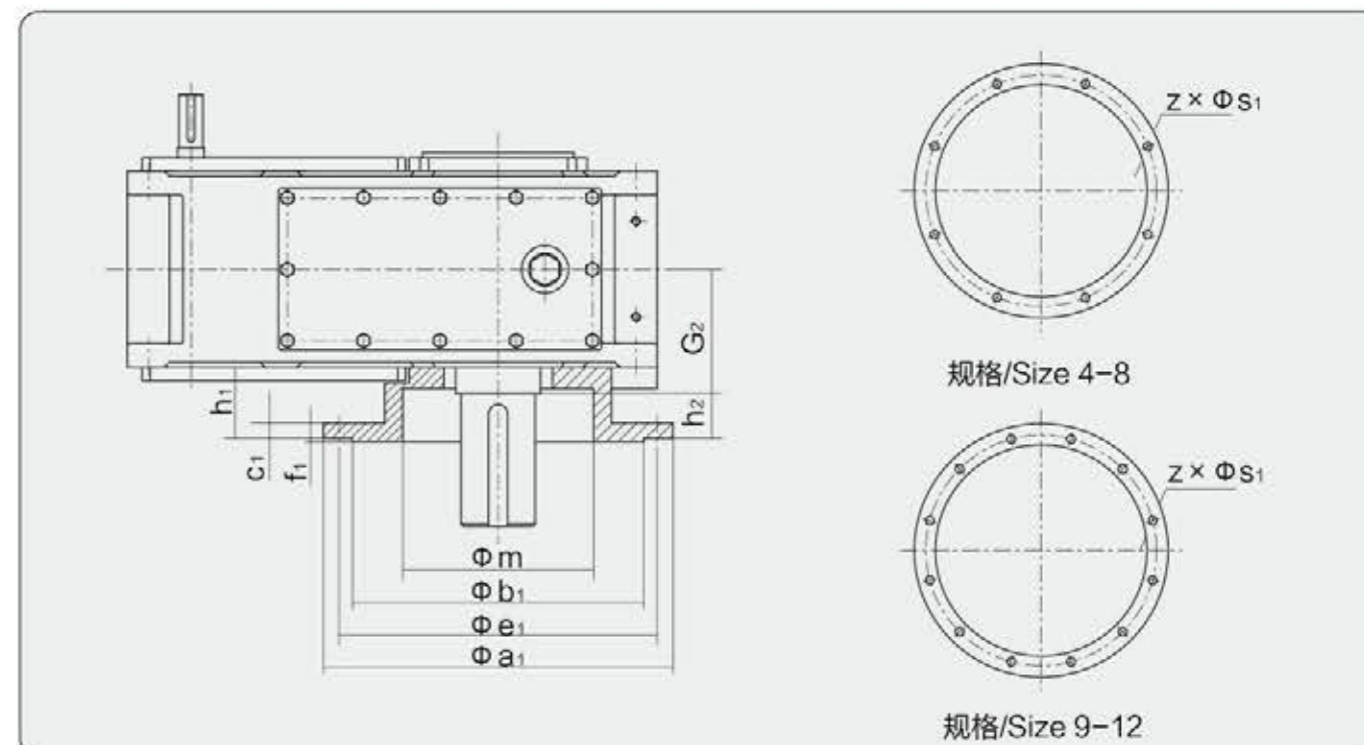
电机功率 Motor Power	EB4..																	
	规格 Size																	
	5	6	7	8	9	10	11	12	13	14	15	16	17	18				
	f	A	f	f	A	f	f	A	f	f	A	f	f	A	f	f	A	f
	mm																	
2.2-4kW	753	250	788	873	250	918		350										
5.5-7.5kW	776	300	811	896	300	941	1021	350	1071									
11-15kW	818	350	853	938	350	983	1053	350	1103	1253	400	1323						
18.5-22kW	818	350	853	938	350	983	1053	400	1103	1253	400	1362	1423	420	1493			
30kW			940	400	985	1055	450	1105	1255	400	1362	1423	420	1493	1682	400	1728	1730
37-45kW						1092		1142	1292	450	1362	1462	450	1532	1719	450	1765	1767
55kW									1292	550	1325	1462	550	1532	1719	550	1765	1767
75-90kW									1292	550	1323	1462	550	1532	1719	550	1765	1767

注:此表数据系电机为4级时,标准电机的安装尺寸参见第437页。
Note: Data in the above table calculated based on 4 pole motor. Fitting dimensions for standard motors see page 437.

齿轮箱
Gear units

安装法兰
Mounting flange

类型 TYPES EH2,EH3,EH4,EB2,EB3,EB4



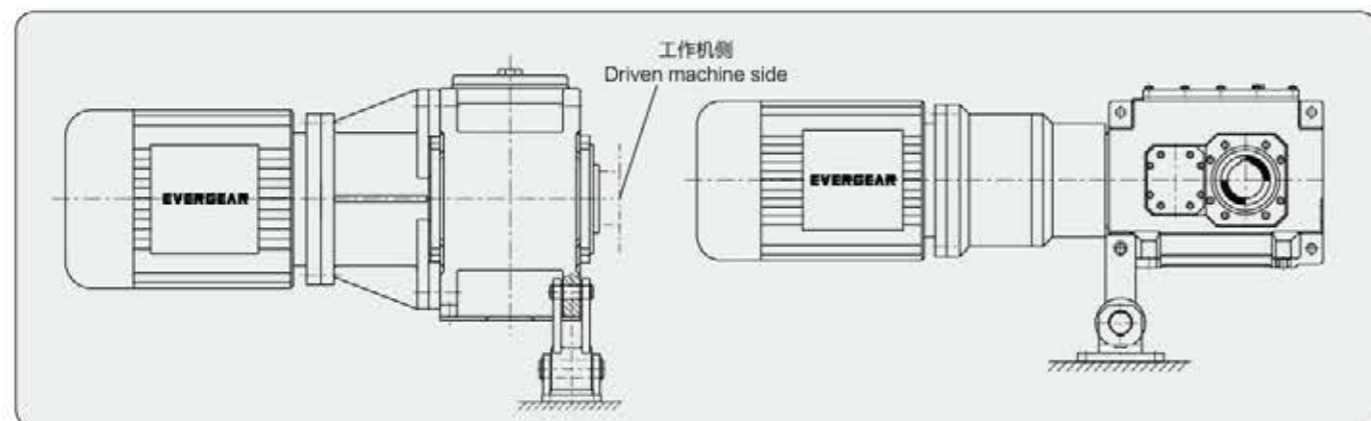
规格 Size	a1	b1	c1	e1	f1	h1	h2	mmax	z x s1	附加重量 Add.weight	G2	
	mm										kg	EH2/3/4,EB2/3/4
4	450	350f7	24.5	400	5	82.5	50	153	8*17.5	40	140	170
5	550	450f7	25	500	5	90	52.5	190	8*17.5	60	165	200
6	550	450f7	25	500	5	90	52.5	245	8*17.5	65	165	200
7	660	550f7	25	600	5	135	90	250	8*22	90	195	235
8	660	550f7	30	600	5	135	90	255	8*22	100	195	235
9	660	550f7	29	600	6	134	84	290	12*22	150	235	270
10	660	550f7	34	600	6	134	89	320	12*26	160	235	270
11	800	680f7	44	740	6	184	129	340	12*26	210	270	320
12	800	680f7	44	740	6	184	129	360	12*26	220	270	320

可采用的类型、规格和布置形式 Possible types, size, designs			
规格 Size	EH2.H	EH2.V	EH3.H,EH4.H EB2.H,EB3.H,EB4.H
4	A+B	B	A+B+C+D
5			
6			
7			
8	A+B+C+D	B+C	B+C
9			
10	A+B+C+D	B+C	
11	A+B	B	
12	A+B+C+D	B+C	



齿轮箱 Gear units
减振扭力臂支撑 Vibration reducing torque supports

类型 TYPES EH2,EH3,EH4,EB2,EB3,EB4



最大传递扭矩受扭力臂支撑的限制: $T_{max}=f_{DMST} \cdot T_{2Nenn}$
The maximum transmissible torque is limited by the torque support: $T_{max}=f_{DMST} \cdot T_{2Nenn}$

表1 Table 1
扭力臂支撑的峰值扭矩系数 f_{DMST}
Peak torque factor f_{DMST} for torque support

类型 Type	齿轮箱规格 Gear unit size															19-26
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
EH2	1.3	1.9	1.6	2.0	1.7	1.5	1.3	2.0	2.0	-	-	-	-	-	-	敬请垂询 On request
EH3	-	2.0	1.7	2.0	2.0	1.6	1.4	2.0	2.0	2.0	1.9	1.5	1.4	1.2	1.2	
EH4	-	-	-	2.0	2.0	1.7	1.4	2.0	2.0	2.0	2.0	1.7	1.5	1.3	1.2	
EB2	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.9	1.8	1.4	1.3	-	-	-	-	
EB3	1.2	1.6	1.4	1.8	1.6	1.2	1.2	2.0	2.0	1.8	1.7	1.4	1.3	1.2	1.2	
EB4	-	2.0	1.7	2.0	2.0	1.7	1.4	1.2	1.2	2.0	2.0	1.6	1.5	1.3	1.2	

注:此表1数据系最小值,旋转方向和电机类型确定后有可能允许更大的峰值扭矩。请垂询!
Note: The values in the table 1 are minimum values. Dependent on direction of rotation and motortype, higher peak torques may possibly be allowed. Please consult us!

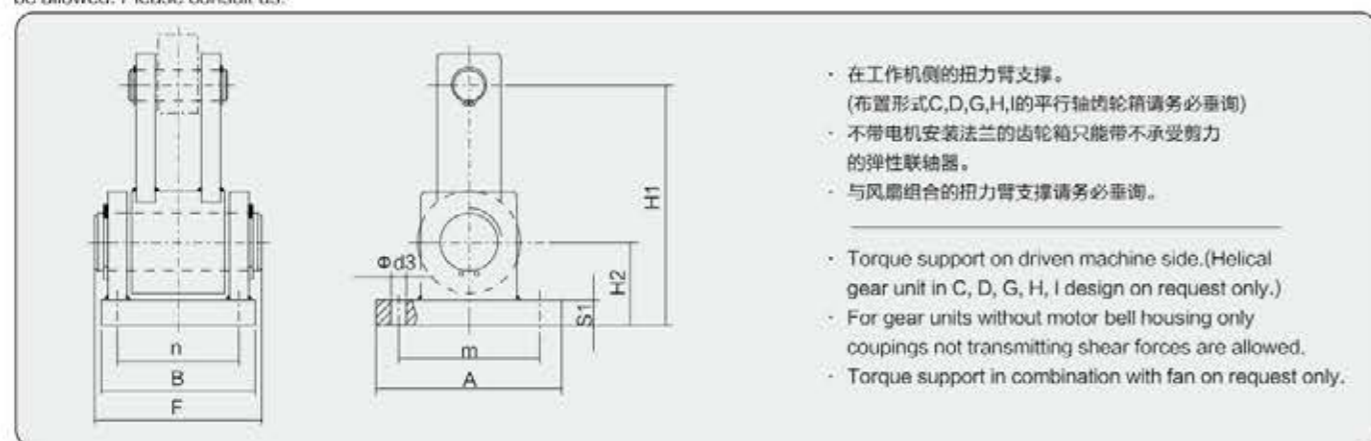
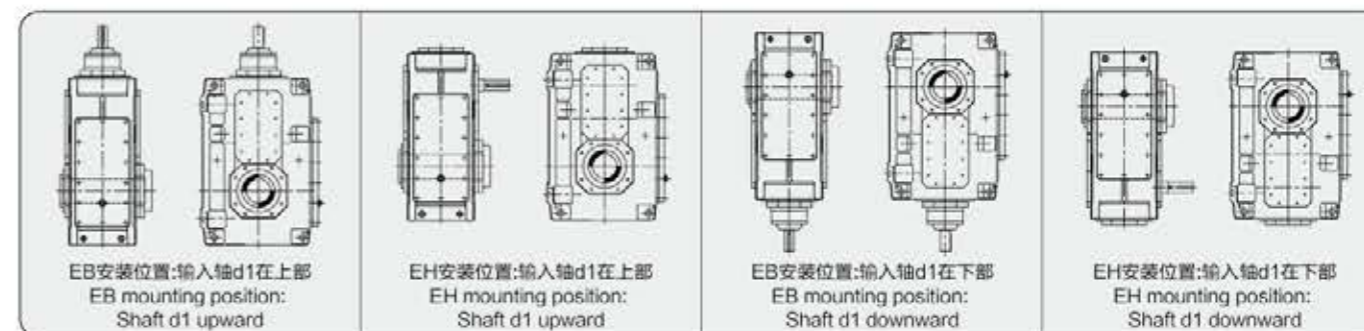


表2 Table 2

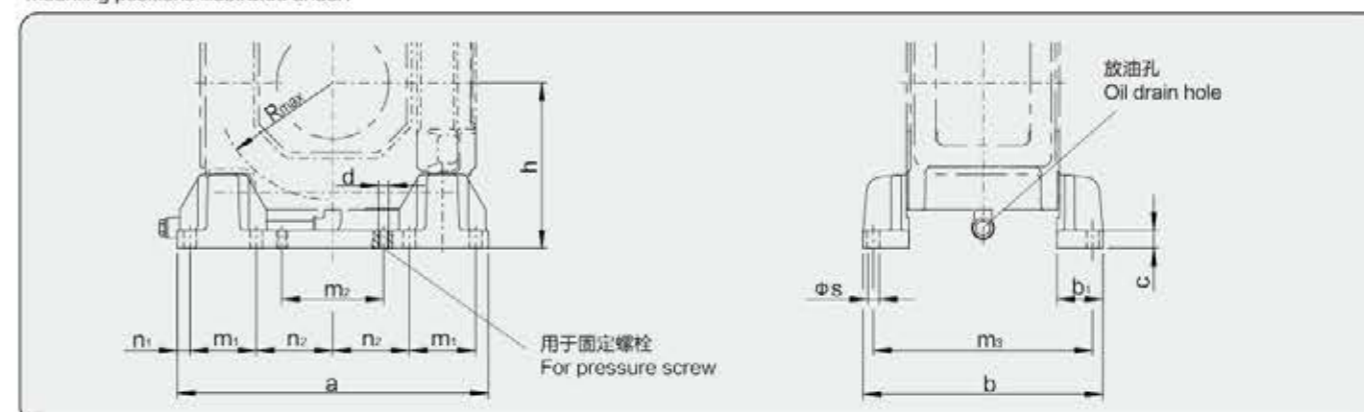
齿轮箱规格 Gear unit size	A	B	Φd3	H1	H2	m	n	S1	F	重量 Weight kg
4	160	110	19	200	65	120	70	15	116	6.8
5+6	200	160	19	250	90	160	120	20	170	16
7+8	320	200	19	400	140	260	130	25	195	37
9+10										42
11+12										155
13+14	400	300	24	500	175	320	240	30	320	159
15+16										163
17+18										167
19-26	敬请垂询 On request									

齿轮箱 Gear units
竖直安装底座 Vertical mounting

类型 TYPES EH2,EH3,EH4,EB2,EB3,EB4



对于上图所示的特殊安装位置可以采用带扭力臂支撑的轴装式或脚支座来安装。
They can be installed, for example, as shaft-mounted gear unit with torque support or by means of base rails are also available for the special mounting positions illustrated under.



规格 Size	EH2,EH3,EH4,EB2,EB3,EB4										EH2,EH3,EH4 EB3,EB4		EB2		
	a	b1	c	4*d	h	m1	m2	n1	n2	8*φs	Rmax	b	m3	b	m3
4	450	70	28	M16	255	110	130	20	95	19	160	355	315	410	370
5					270						190				
6	510	70	28	M16	315	110	170	20	125	19	220	395	355	460	420
7					325						230				
8	610	85	35	M20	385	130	200	25	150	24	270	470	420	550	500
9					380						260				
10	710	105	40	M24	430	160	230	30	165	28	300	590	530	650	590
11					435						340				
12	860	115	50	M30	520	190	270	35	205	35	380	660	590	760	690
13					430						300				
14	965	97.5	60	M30	500	260	230	37.5	185	35	360	745	665	850	770
15					505						350				
16	1060	107.5	70	M36	550	300	190	45	185	42	400	840	750	980	890
17					550						390				
18	1210	120	80	M42	610	340	250	55	210	48	440	930	820	1125	1015

规格Size	EH2	EH3	EH4	EB2	EB3	EB4
4-12	浸油润滑 Dip lubrication	带补偿油箱的浸油润滑 Dip lubrication with oil compensating tank	带补偿油箱的浸油润滑 Dip lubrication with oil compensating tank	带法兰泵的强制润滑 Forced lubrication with flanged-on pump	带法兰泵的强制润滑 Forced lubrication with flanged-on pump	带法兰泵的强制润滑 Forced lubrication with flanged-on pump
13-18	带法兰泵的强制润滑 Forced lubrication with flanged-on pump	带法兰泵的强制润滑 Forced lubrication with flanged-on pump	带电机泵的强制润滑 Forced lubrication with motor pump	带法兰泵的强制润滑 Forced lubrication with flanged-on pump	带法兰泵的强制润滑 Forced lubrication with flanged-on pump	带电机泵的强制润滑 Forced lubrication with motor pump

请注意提供辅助设备(油泵,油管等...)的安装空间。
Take into account space required for oil supply elements (pump, pipes, etc.)

具体尺寸请垂询。
Dimensions on request.

制造商保留修改的权限。Manufacturer reserves modify permissions



1 主齿轮箱型号说明
Explanation of main gear unit type

例 Example: EB3SH18-63-D-CW/EKF127-Y37-24.91

型号说明	上例说明	Explanation of types	Explanation of the above example
系列类型:EB 直交轴系列	直交轴系列	Types:EB Bevel-helical	Bevel-helical
传动级数:3 三级	三级	Number of stages:3 3-stage	3-stage
输出轴结构形式: S 实心轴 H 空心轴 D 带胀紧盘空心轴	实心轴输出	Output shaft design: S Solid shaft H Hollow shaft D Hollow shaft for shrink disk	Solid shaft
安装方式: H 卧式带底脚	卧式带底脚安装	Mouting positions:H Horizontal	Horizontal
规格代号:4-18	18机座号	Size:sizes 4-18	size 18
公称传动比: 公称传动比 i_n (见选型参数表)	公称传动比 $i_n=63$	Nominal ratio: Nominal ratio i_n [see selection table]	Nominal ratio $i_n=63$
轴(轴布置形式): B、D(见362页)	装配布置形式为D	Design of shaft: B、D (see page 362)	Design D
输入轴旋转方向 (面向输入轴方向看): CW 顺时针 CCW 逆时针	输入轴为顺时针方向	Direction of rotation of input shaft: [viewing on input shaft] CW Clockwise CCW Counter clockwise	Direction of rotation of input shaft is clockwise

2 辅传齿轮箱型号说明
Explanation of auxiliary gear motor type

型号说明	上例说明	Explanation of types	Explanation of the above example
系列类型:EK 螺旋锥齿轮箱	螺旋锥齿轮箱	Types:EK Helical-bevel gear motor	Helical-bevel gear motor
结构形式:F 轴伸法兰式	轴伸法兰式	Structure: F Flange mounted solid output shaft	Flange-mounted solid shaft output
机座号:47...127	127机座号	Size: 47...127	Size 127
电机: 电机功率	37kw普通电机	Motor:mortor power	37kw Ordinary motor
传动比:见EK参数表	传动比:24.91	Ratio:see EK	Ratio:24.91

注:
1) 使用国产及国外进口离合器, 超越离合器时, 尺寸略有不同(见362页外形尺寸), 请特别说明。
2) 主齿轮箱规格确定后, 依据辅传驱动为空载和载带不同工作情况, 辅传齿轮箱型号基本确定。
Note:
1) Please specially designate when domestic or imported backstop and overrunning clutch are used, as the dimensions are slightly different(see page 362 gear units mounting dimensions for detail).
2) Auxiliary gear motor type is basically determined depend on the auxiliary drive working under maintenance or under load condition after main gear unit has been selected.

齿轮箱 一般说明 Gear Units General Information

注意事项
Attention



应严格遵守以下各项:

- 样本中的附图只属范例, 并不要求严格一致, 所注尺寸允许变动。
 - 所注重量仅为平均值, 并不要求严格一致。
 - 为防止发生事故, 所有旋转部件应按安全规定加罩防护。
 - 试车前, 必须认真阅读外部操作说明。齿轮箱供货时已经做好运行准备, 只是未加润滑油。
 - 给出的加油量只作为参考值, 实际油量应以油尺上的标注为准。
 - 润滑油粘度须以齿轮箱铭牌上的数值为准。
 - 采用国产逆止器、超越离合器时, 需给逆止器和联接法兰之内的超越离合器加注润滑油(2号锂基润滑油可满足要求); 并定期更换。采用国外逆止器、超越离合器时, 需向联接法兰内加注润滑油(采用与主减速机同样规格润滑油)以润滑超越离合器, 油位以略低于连接法兰视孔即可。
- The following items are absolutely to be observed:
- Illustrations are examples only and are not strictly binding. Dimensions are subject to change
 - The weights are mean values and not strictly binding.
 - To prevent accidents, all rotating parts should be guarded according to local and national safety regulations.
 - Prior to commissioning, the operating instructions must be observed. The gear units are delivered ready for operation but without oil filling.
 - Oil quantities given are guide values only. The exact quantity of oil depends on the marks on the oil dipstick.
 - The oil viscosity has to correspond to the data given on the name plate.
 - If domestic backstop and overrunning clutch are used, please lubricate them with grease (No.2 lithium grease can meet requirement), and change periodically. If imported backstop and overrunning clutch are used, please fill lubrication into the connecting flange to lubricate the overrunning clutch, as the backstop is lubricated with splash oil.

有关外形尺寸图中的符号说明如下:

Explanations of symbols used in the dimensioned drawings:



油尺
Oil dipstick



通气孔
Breather



放油孔
Oil drain



加油孔
Oil filler

基础螺栓的最低性能等级为8.8级。

Foundation bolts of function class 8.8.



齿轮箱 选型指南 Gear Units Guidelines for the Selection

齿轮箱 符号说明 Gear Units Key to Symbols

1. 确定齿轮箱的类型及规格 Determination of gear unit type and size	
1.1 计算传动比 Calculate the transmission ratio	$i_s = \frac{n_1}{n_2}$
1.2 确定齿轮箱的额定功率 Determine nominal power rating of the gear unit	$P_N \geq P_2 \times f_1 \times S_A$
如果不满足下列条件,请向我们咨询 It is not necessary, please consult us, if:	$3.33 \times P_2 \geq P_N$
1.3 校核最大扭矩,如峰值工作扭矩、起动力矩或制动力矩,看其是否满足要求 Check for maximum torque, e. g. peak operating-, starting- or braking torque 齿轮箱的规格和传动级数列在额定功率选型表中,可根据 <i>i_N</i> 和 <i>P_N</i> 确定。 Gear unit sizes and number of reduction stages are given in rating tables depending on <i>i_N</i> and <i>P_N</i>	$P_N \geq \frac{T_A \times n_1}{9550} \times 0.5$
1.4 根据363页上的表检查实际传动比是否满足要求。 Check whether the actual ratio <i>i_s</i> as per tables on page 363 is acceptable	

2. 确定供油方式 Determination of oil supply	
所有需要润滑的零部件均浸在润滑油中; 采用飞溅润滑方式; 也可按用户要求提供强制润滑方式。 All parts to be lubricated are lying in the oil or are splash lubricated or are forced lubrication on request.	
卧式安装 Horizontal	

3. 确定所需要的热容量PG Determination of required thermal capacity PG	
3.1 如满足以下条件,则齿轮箱可不带辅助冷却装置; Adequate for gear units without auxiliary cooling,if:	$P_2 \leq P_G = P_{G1} \times f_4 \times f_7$
3.2 如满足以下条件,则齿轮箱带冷却风扇可满足要求; Adequate for gear units with fan cooling,if:	$P_2 \leq P_G = P_{G2} \times f_4 \times f_7$
3.3 如需较高的热容量,则可按用户要求提供外部润滑油冷却装置进行冷却。 For higher thermal capacities, cooling by external oil cooler on request	
卧式安装 Horizontal	

E_D 每小时工作周期,以百分比表示,如ED=80%/h Operating cycle per hour in%, e.g. ED=80%/h	f₁ 工作机最低工况系数(表1),348页 Factor for driven machine(table 1), page 348
f₄ 环境温度系数(表4),348页 Factor for ambient temperature (tables 4), page 348	f₇ 海拔高度系数(表7),348页 Factors for altitude (tables 7), page 348
S_A 减速机安全系数(表15),348页 Safety factor (tables 15), page 348	i 实际传动比 Actual ratio
i_N 公称传动比 Nominal ratio	i_s 要求传动比 Required ratio
n₁ 输入转速(r/min) Input speed(r/min)	n₂ 输出转速(r/min) Output speed(r/min)
P_G 要求的热容量 Required thermal capacity	P_{G1} 齿轮箱的热容量,不带辅助冷却装置,351-352页 Thermal capacity for gear units without auxiliary cooling, page 351-352
P₂ 工作机的额定功率(KW) Power rating of driven machine (KW)	t 环境温度 (°C) Ambient temperature (°C)
T_A 输入轴最大扭矩,如峰值工作扭矩、起动力矩或制动力矩 (N.m) Max. torque occurring on input shaft, e.g. peak operating-, starting- or braking torque(N.m)	T_{2N} 额定输出扭矩(kN.m),252页 Nominal output torque (kN.m), page 252
T₃ 在通过辅助传动装置传动时(50Hz;n ₁ =1500r/min输入),输出轴的输出扭矩(kN.m),见349页 Output torque (kN.m) on main gear unit output shaft(input 50Hz,n ₁ =1500r/min), in case of input via auxiliary drive, page 349	



齿轮箱 选型指南/计算示例 Gear Units Guidelines for the Selection/Calculation Example

已知参数 Known parameter	
原动机 电动机: P ₁ =75 kW 电机转速: n ₁ =1500 rpm 最大启动扭矩: T _A =720 N.m	PRIME MOVER Electric motor: P ₁ =75 kW Motor speed: n ₁ =1500 rpm Max. starting torque: T _A =720 N.m
工作机 Driven machine	
皮带输送机功率: P ₂ =63 kW 转速: n ₂ =26 rpm 工作制: 12 小时/天 每小时启动次数: 5 每小时工作周期: ED=100% 环境温度: 30 °C 室外安装(风速): (w ≥ 4m/s) 海拔高度: 海平面	Belt conveyor: P ₂ =63 kW Speed: n ₂ =26 rpm Duty: 12 h/day Starts per hour: 5 Operating cycle per hour: ED=100% Ambient temperature: 30 °C Outdoor installation: (w ≥ 4m/s) Altitude: sea level
齿轮箱设计 Gear unit design	
直交轴齿轮箱 安装方式: 卧式安装 输出轴d: 位于齿轮箱右侧(面对输入轴),即布置型C 输出轴d: 转动方向: ccw	Bevel-helical gear unit Mounting position: horizontal Output shaft d: on right hand side design C Direction of rotation of output shaft d: ccw

选择齿轮箱的类型及规格 Selection of gear unit type and size	
1.1 传动比计算: Calculation of transmission ratio	$i_s = \frac{n_1}{n_2} = \frac{1500}{26} = 57.7 \quad i_n = 56$
1.2 确定额定功率 Determination of the gear unit nominal power rating	$P_N \geq P_2 \times f_1 \times f_2 \times S_A = 63 \times 1.5 \times 1 \times 1.25 = 118.125 \text{ kW}$
从额定功率表中选择: 类型 EB3, 规格 10, 对应的 P _N = 122 kW Selected from power rating table: type EB3, gear unit size 10, with P _N = 122 kW	$3.33 \times P_2 \geq P_N \quad 3.33 \times 66 = 219.8 \text{ kW} > P_N$
1.3 检查启动扭矩 Checking the starting torque	$P_N \geq \frac{T_A \times n_1}{9550} \times 0.5 = \frac{720 \times 1500}{9550} \times 0.5 = 56.5 \text{ kW} \quad P_N 122 \text{ kW} > 56.5 \text{ kW}$
确定热容量 Determination of thermal capacity	
2.1 根据表中给出的EB3型齿轮参数, 计算不带辅助冷却装置的齿轮箱热容量 Thermal capacity for gear units without auxiliary cooling, acc. to table for type EB3	$P_G = P_{G1} \times f_4 \times f_r \quad P_G = 72 \text{ kW} \times 0.88 \times 1 = 63.36 \text{ kW} \quad P_2 = 63 \text{ kW} < P_G = 63.36 \text{ kW}$

结论: 可选用不带冷却装置的减速机

表1 工作机系数^① Table 1 Factor for driven machine^①

工作机 Driven machines	日工作小时数 Effective daily operating period under load in hours		
	≤0.5	0.5~10	> 10
斗式输送机 Bucket conveyors	-	1.4	1.5
绞车 Hauling winches	1.4	1.6	1.6
卷扬机 Hoists	-	1.5	1.8
带式输送机 ≤ 150kW Belt conveyors ≤ 150kW	1.0	1.2	1.3
带式输送机 > 150kW Belt conveyors > 150kW	1.1	1.3	1.4

工作机 Driven machines	日工作小时数 Effective daily operating period under load in hours		
	≤0.5	0.5~10	> 10
货用电梯 Goods lifts	-	1.2	1.5
客用电梯 Passenger lifts	-	1.5	1.8
刮板式输送机 Apron conveyors	-	1.2	1.5
自动扶梯 Escalators	1.0	1.2	1.4
轨道车辆 Railway Vehicles	-	1.5	-

表4 环境温度系数^② Table 4 Thermal factor^②

(不带辅助冷却装置或仅带冷却风扇进行冷却)
(Gear units without auxiliary cooling or with fan)

环境温度 Ambient	每小时工作周期(ED)百分比% Operating cycle per hour(ED)in%				
	100	80	60	40	20
10°C	1.14	1.20	1.32	1.54	2.04
20°C	1.00	1.06	1.16	1.35	1.79
30°C	0.87	0.93	1.00	1.18	1.56
40°C	0.71	0.75	0.82	0.96	1.27
50°C	0.55	0.58	0.64	0.74	0.98

表7 海拔高度系数^③ Table 7 Factor for altitude^③

(不带辅助冷却装置或仅带冷却风扇进行冷却)
(Gear units without auxiliary cooling or with fan)

系数 Factor	海拔高度(m,高于海平面) Altitude(metres above MSL)				
	高达 Up to	高达 Up to	高达 Up to	高达 Up to	高达 Up to
	1000	2000	3000	4000	5000
f _r	1.0	0.95	0.90	0.85	0.80

表15 减速机安全系数^④ Table 15 Safety coefficient^④

重要性与安全要求 Importance and safety requirement	S _A
一般设备, 减速机失效仅引起单机停产且易更换配件 The failure of ordinary equipment and speed reducer can only result in production halts of single machine and replacement of spare parts.	1.1~1.3
重要设备, 减速机失效引起机组、生产线或全厂停产 The failure of ordinary equipment and speed reducer can only result in production halts of machines, production lines or the whole factory.	1.3~1.5
高度安全要求, 减速机失效引起设备、人身事故 Higher safety requirements, the failure of speed reducer can cause the incident of equipment and human body.	1.5~1.7

1.工作机额定功率P₂的确定
*) 按最大扭矩确定额定功率
**) 验证热容量是至关重要的
所列各项系数均为经验值。
使用这些系数的前提条件是所述机械应符合通用
的设计规范和载荷条件。
如遇特殊情况请及时与恒齿公司联系。

2.关于热容量的说明
所给出的数值适用于安装地点 ≤ 1000m
风速 ≥ 1.4m/s(安装地点:室内大厅或大车间)

1.Determination for power rating of driven machine P₂.
*) Determine power corresponding to max.torque
**) A check for thermal capacity is absolutely essential
The listed factors are empirical values.Prerequisite for their application is that the machinery and equipment mentioned correspond to generally accepted design and load specifications.
In case of deviations from standard conditions, please refer to us.

2. Notes on the thermal capacities:
The values listed refer to place of installation ≤ 1000m
Wind velocity ≥ 1.4m/s(Place of installation: large halls)



直交轴齿轮箱
Bevel-helical gear units

热功率
Thermal capacities

类型 TYPES EB3...

规格 SIZES 4...18

Table with columns for gear unit sizes (4-18) and rows for thermal capacities (PG1-PG4) at n=1000r/min. Includes sub-headers for gear unit sizes and thermal capacities.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4

直交轴齿轮箱
Bevel-helical gear units

热功率
Thermal capacities

类型 TYPES EB3...

规格 SIZES 4...18

Table with columns for gear unit sizes (4-18) and rows for thermal capacities (PG1-PG4) at n=1500r/min. Includes sub-headers for gear unit sizes and thermal capacities.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4

EB/EK

EB/EK

Table with columns for gear unit sizes (4-18) and rows for thermal capacities (PG1-PG4) at n=1200r/min. Includes sub-headers for gear unit sizes and thermal capacities.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4

Table with columns for gear unit sizes (4-18) and rows for thermal capacities (PG1-PG4) at n=1800r/min. Includes sub-headers for gear unit sizes and thermal capacities.

PG1、PG2、PG3、PG4见214页 See page 214 for PG1、PG2、PG3、PG4



直交轴齿轮箱

Bevel-helical gear units

三级传动

Three Stage

带辅传

with Auxiliary Drive

空载驱动

No-load Drive

类型 TYPES EB3...

规格 SIZES 4...12

直交轴齿轮箱

Bevel-helical gear units

三级传动

Three Stage

带辅传

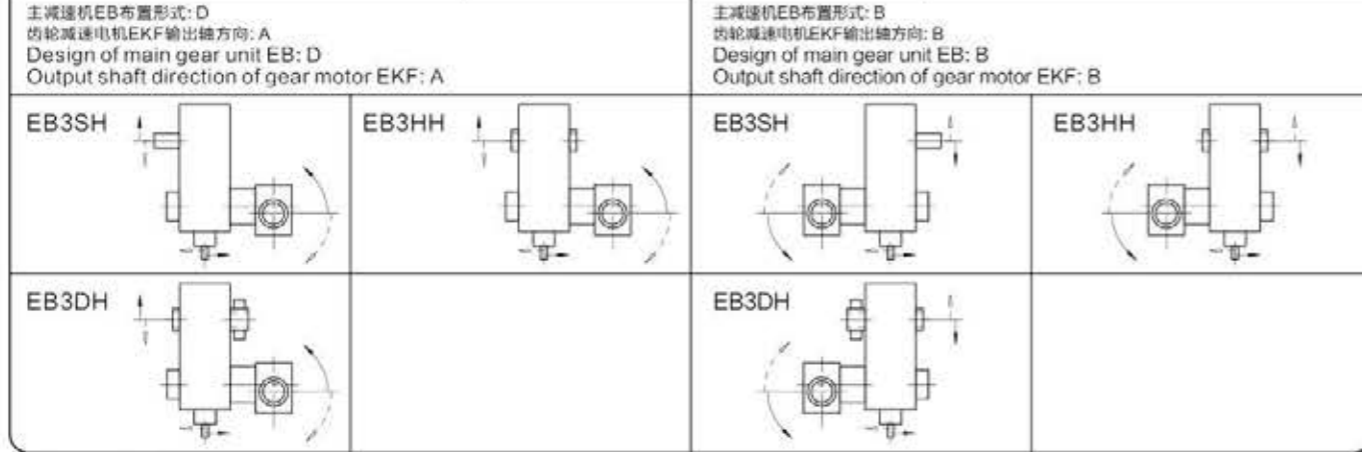
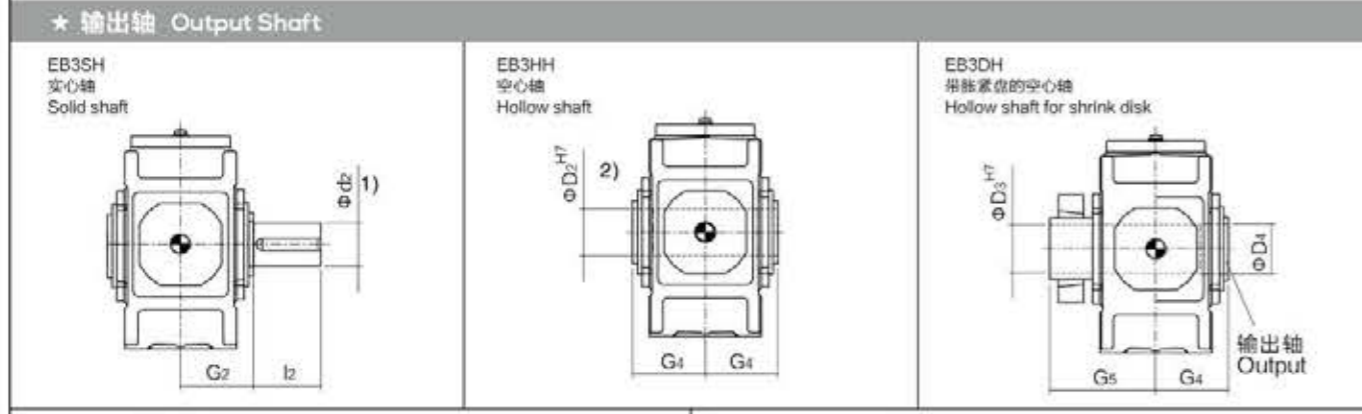
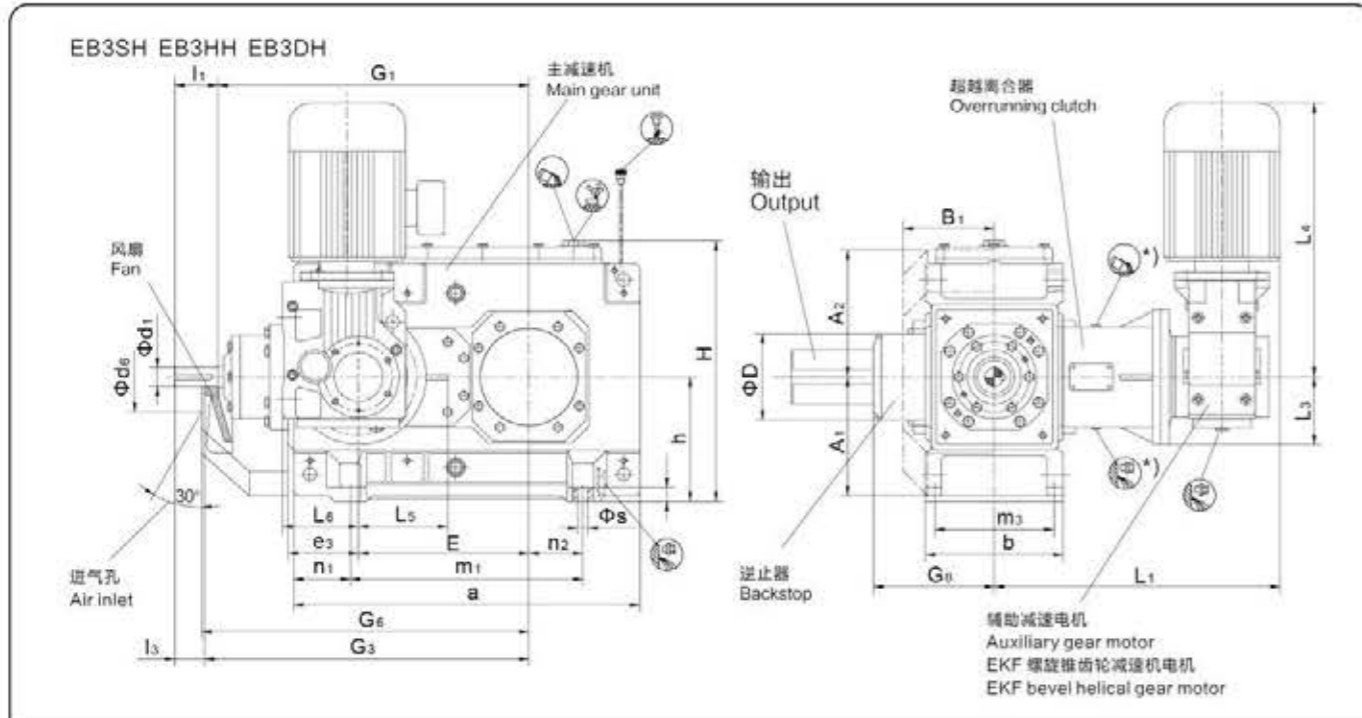
with Auxiliary Drive

空载驱动

No-load Drive

类型 TYPES EB3...

规格 SIZES 4...12



1) $k \leq \Phi 50$ $m 6 > \Phi 50$
 有关平键 GB/T 1095-1979 型和中心孔, 参见图 321-322 页。For parallel key GB/T 1095-1979 and for center hole, see page 321-322.
 2) 键槽 GB/T 1095-1979 Keyway GB/T 1095-1979.
 *) 仅当采用国外超退离合套时加注润滑油, 若采用国产退止器, 超退离合套时则加注润滑油。
 *) Fill lubrication only when selecting imported overrunning clutch, if domestic backstop and overrunning clutch are used please fill grease.

规格 Size	辅传减速机 Auxiliary gear motor	尺寸 mm 输入轴 Dimensions in mm Input shaft												G1	G3
		in=25-45			in=25-56			in=50-71			in=63-71				
		d ₁ ¹⁾	l ₁	l ₃	d ₁ ¹⁾	l ₁	l ₃	d ₁ ¹⁾	l ₁	l ₃	d ₁ ¹⁾	l ₁	l ₃		
4	EKF47-Y0.75-35.93	30	70	50			25	60	40					500	520
5	EKF57-Y1.5-36.37	35	80	60			28	60	40					575	595
6	EKF57-Y1.5-36.37				35	80	60			28	60	40		610	630
7	EKF67-Y2.2-28.28	45	100	80				35	80	60				690	710
8	EKF67-Y2.2-28.28				45	100	80							735	755
9	EKF77-Y3.0-31.98	55	110	80				40	100	70				800	830
10	EKF77-Y3.0-31.98				55	110	80				40	100	70	850	880
11	EKF77-Y3.0-41.95	70	135	105				50	110	80				960	990
12	EKF77-Y3.0-41.95				70	135	105				50	110	80	1030	1060

规格 Size	尺寸 mm 减速机 mm Dimensions in mm Gear units													
	a	A ₁	A ₂	b	B ₁	c	d _e	e ₃	E	G ₆	G ₆ ⁵⁾	h	H	
4	565	195	200	215	143	28	110	110	270	530	193	188*	200	415
5	640	220	235	255	168	28	130	130	315	605	218	213*	230	482
6	720	220	235	255	168	28	130	130	350	640	218	213*	230	482
7	785	275	275	300	193	35	165	160	385	720	273	266*	280	572
8	890	275	275	300	193	35	165	160	430	765	273	266*	280	582
9	925	315	325	370	231	40	175	185	450	845	347	327*	320	662
10	1025	315	325	380	231	40	175	185	500	895	347	327*	320	662
11	1105	370	385	430	263	50	190	225	545	1010	397	342*	380	795
12	1260	370	385	430	263	50	190	225	615	1080	397	342*	380	795

规格 Size	尺寸 mm 减速机 mm Dimensions in mm Gear units													
	m ₁	m ₃	n ₁	n ₂	s	L ₁ ⁵⁾	L ₃	L ₄	L ₅	L ₆	D ₅ ¹⁾			
4	355	180	105	85	19	447	477*	103	459	137	112	132	132*	
5	430	220	105	100	19	512	507*	125	502	165	132	160	150*	
6	510	220	105	145	19	512	507*	125	502	165	132	160	150*	
7	545	260	120	130	24	555	555*	150	536	210	140	195	190*	
8	650	260	120	190	24	555	555*	150	536	210	140	195	190*	
9	635	320	145	155	28	655	650*	160	556	255	180	230	210*	
10	735	320	145	205	28	655	650*	160	556	255	180	230	210*	
11	775	370	165	180	35	702	692*	180	556	315	180	280	210*	
12	930	370	165	265	35	702	692*	180	556	315	180	280	210*	

规格 Size	尺寸 mm 输出轴 Dimensions in mm Output shaft									润滑油 lubrication		重量 weight	
	EB3SH			EB3HH		EB3DH				EKF	EB3	EKF ³⁾	EB3/EKF ⁴⁾
	d ₂ ¹⁾	G ₂	l ₂	D ₂	G ₄	D ₃	D ₄	G ₄	G ₅	(L)	(L)	(kg)	(kg)
4	80	140	170	80	140	85	85	140	205	2.2	10	36	262
5	100	165	210	95	165	100	100	165	240	3.0	16	52	402
6	110	165	210	105	165	110	110	165	240	3.0	17	52	457
7	120	195	210	115	195	120	120	195	280	3.6	30	66	649
8	130	195	250	125	195	130	130	195	285	3.6	33	66	734
9	140	235	250	135	235	140	145	235	330	6.0	45	92	1017
10	160	235	300	150	235	150	155	235	350	6.0	48	92	1147
11	170	270	300	165	270	165	170	270	400	6.0	79	92	1582
12	180	270	300	180	270	180	185	270	405	6.0	84	92	1857

3) MT.JF 减速机电机重量 (不含润滑油重量), 其余相关数据详见 A2 页。
 4) 主减速机与辅传减速机电机组合总重量 (不含润滑油重量)。
 5) 不带 * 为采用国产背止器, 超退离合器尺寸, 带 * 为采用国外进口背止器, 超退离合器尺寸。
 3) Weight of gear motor MT.JF, oil weight not included, other detailed data refer to Page 82.
 4) Gross weight of combination of main gear unit and auxiliary gear motor (oil weight not included).
 5) Without * is the dimension using domestic backstop and overrunning clutch and with * is the dimension using imported backstop and overrunning clutch.



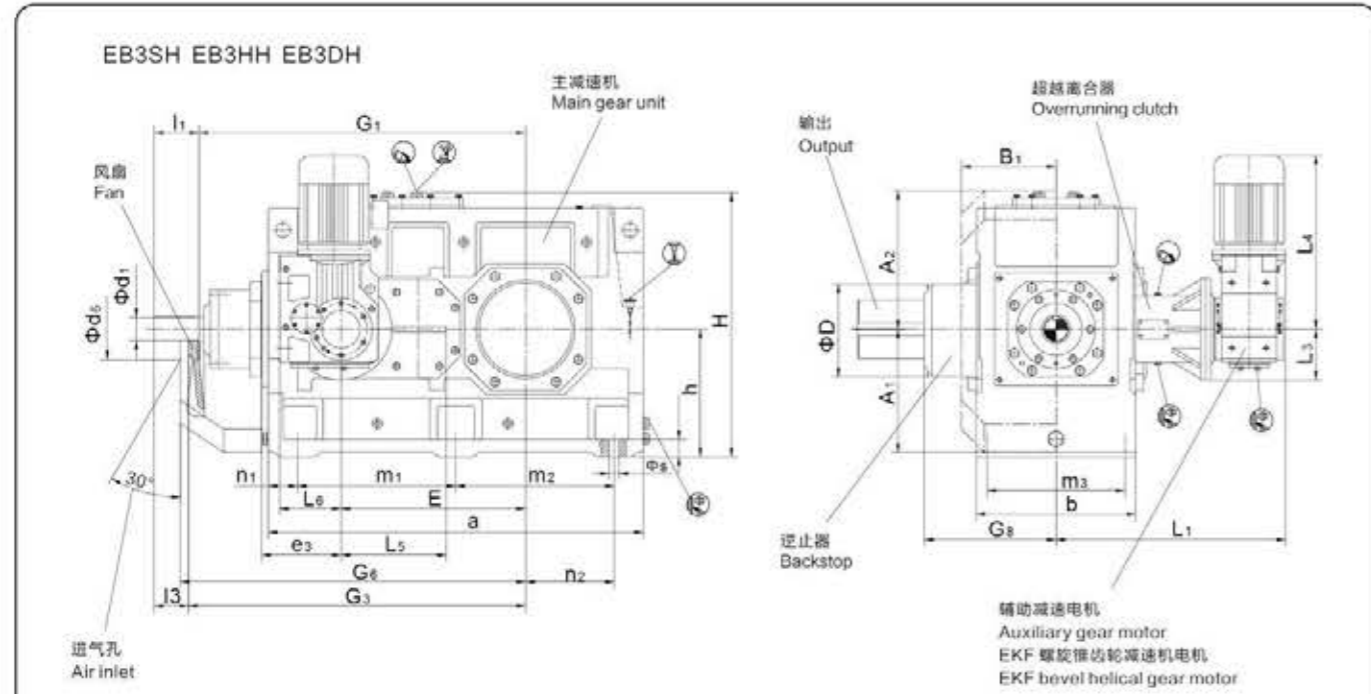
直交轴齿轮箱
Bevel-helical gear units

三级传动
Three Stage

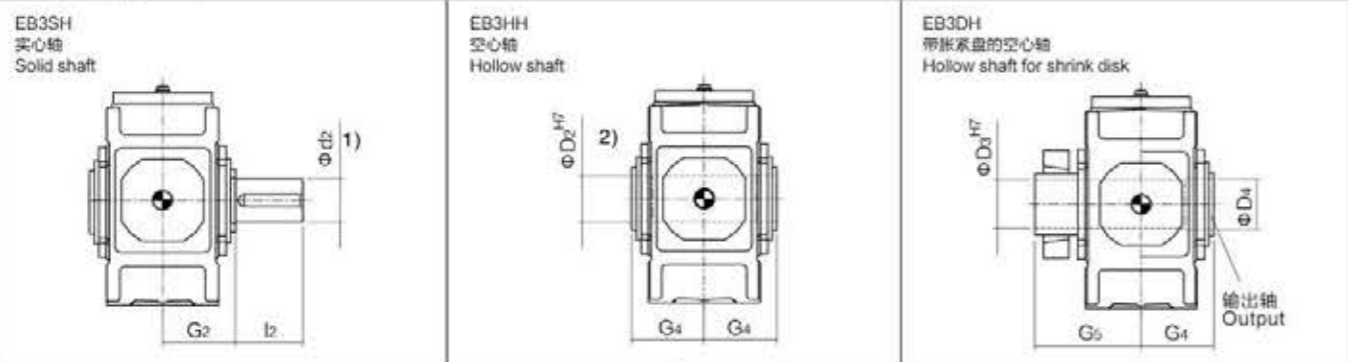
带辅传
with Auxiliary Drive

空载驱动
No-load Drive

类型 TYPES EB3...
规格 SIZES 13...18

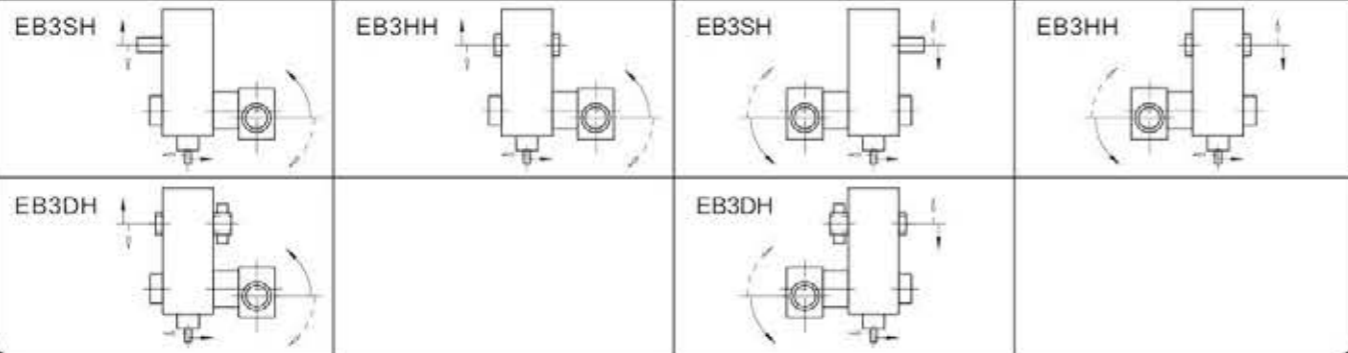


★ 输出轴 Output Shaft



主减速机EB布置形式: D 齿轮减速机EKF输出轴方向: A
Design of main gear unit EB: D
Output shaft direction of gear motor EKF: A

主减速机EB布置形式: B 齿轮减速机EKF输出轴方向: B
Design of main gear unit EB: B
Output shaft direction of gear motor EKF: B



1) $k6 < \phi 50$ $m6 > \phi 50$
有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。 For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 键槽 GB/T1095-1979 Keyway GB/T1095-1979
*) 仅当采用国外超越离合器时加注润滑油, 若采用国产逆止器、超越离合器时则加注润滑油。
*) Fill lubrication only when selecting imported overrunning clutch, if domestic backstop and overrunning clutch are used please fill grease.

直交轴齿轮箱
Bevel-helical gear units

三级传动
Three Stage

带辅传
with Auxiliary Drive

空载驱动
No-load Drive

类型 TYPES EB3...
规格 SIZES 13...18

规格 Size	辅传减速机 Auxiliary gear motor	尺寸 mm Dimensions in mm																						
		输入轴 Input shaft																						
		IN=25-45			IN=25-50			IN=25-56			IN=50-71			IN=56-71			IN=63-71			G1	G3			
$d_1^{(1)}$	l_1	l_3	$d_1^{(1)}$	l_1	l_3	$d_1^{(1)}$	l_1	l_3	$d_1^{(1)}$	l_1	l_3	$d_1^{(1)}$	l_1	l_3	$d_1^{(1)}$	l_1	l_3							
13	EKF87-Y4-43.39	80	165	130									60	140	105					1125	1160			
14	EKF87-Y4-43.39																			60	140	105	1195	1230
15	EKF87-Y4-43.39	90	165	130									70	140	105								1367	1402
16	EKF87-Y4-43.39				90	165	130							70	140	105							1413	1448
17	EKF87-Y4-43.39	110	205	165									80	170	130								1560	1600
18	EKF87-Y4-43.39				110	205	165							80	170	130							1620	1660

规格 Size	尺寸 mm Dimensions in mm														
	减速机 mm Gear units														
	a	A ₁	A ₂	b	B ₁	c	d_6	e_3	E	G ₆	G ₈ ⁵⁾			h	H
13	1290	425	475	550	325	60	210	265	635	1180	453	433*	440	900	
14	1430	425	475	550	325	60	210	265	705	1250	453	433*	440	900	
15	1550	485	520	625	365	70	210	320	762	1420	500	476*	500	1000	
16	1640	485	520	625	365	70	210	320	808	1470	500	476*	500	1000	
17	1740	535	570	690	395	80	230	370	860	1620	532	508*	550	1100	
18	1860	535	570	690	395	80	230	370	920	1680	532	508*	550	1100	

规格 Size	尺寸 mm Dimensions in mm													
	减速机 mm Gear units													
	m ₁	m ₂	m ₃	n ₁	n ₂	s	L ₁ ⁵⁾		L ₃	L ₄	L ₅	L ₆	D ⁵⁾	
13	545	545	475	100	305	35	805	790*	190	628	362	212	320	290*
14	545	685	475	100	375	35	805	790*	190	628	362	212	320	290*
15	655	655	535	120	365	42	850	835*	200	628	443	212	400	290*
16	655	745	535	120	410	42	850	835*	200	628	443	212	400	290*
17	735	735	600	135	390	42	882	867*	225	628	520	212	400	290*
18	735	855	600	135	450	42	882	867*	225	628	520	212	400	290*

规格 Size	尺寸 mm Dimensions in mm									润滑油 lubrication		重量 weight	
	输出轴 Output shaft									EKF ³⁾	EB3	EKF ²⁾	EB3/EKF ⁴⁾
	EB3SH			EB3HH			EB3DH						
	$d_2^{(1)}$	G ₂	l_2	D ₂	G ₄	D ₃	D ₄	G ₄	G ₅	(L)	(L)	(kg)	(kg)
13	200	335	350	190	335	190	190	335	480	11.9	130	113	2493
14	210	335	350	210	335	210	215	335	480	11.9	140	113	2863
15	230	380	410	230	380	230	235	380	550	11.9	210	113	3843
16	240	380	410	240	380	240	245	380	550	11.9	220	113	4068
17	250	415	410	250	415	250	260	415	600	11.9	290	113	5103
18	270	415	470	275	415	280	285	415	600	11.9	330	113	5608

3) EKF减速机电机重量(不含润滑油重量), 其余相关数据详见82页。
4) 主减速机与辅传减速机电机组合重量(不含润滑油重量)。
5) 不带*列为采用国产逆止器、超越离合器时的尺寸, 带*列为采用国外逆止器、超越离合器时的尺寸。
3) Weight of gear motor EKF (oil weight not included), other detailed data refer to Page 82.
4) Gross weight of combination of main gear unit and auxiliary gear motor (oil weight not included).
5) Without * is the dimension using domestic backstop and overrunning clutch and with * is the dimension using imported backstop and overrunning clutch.



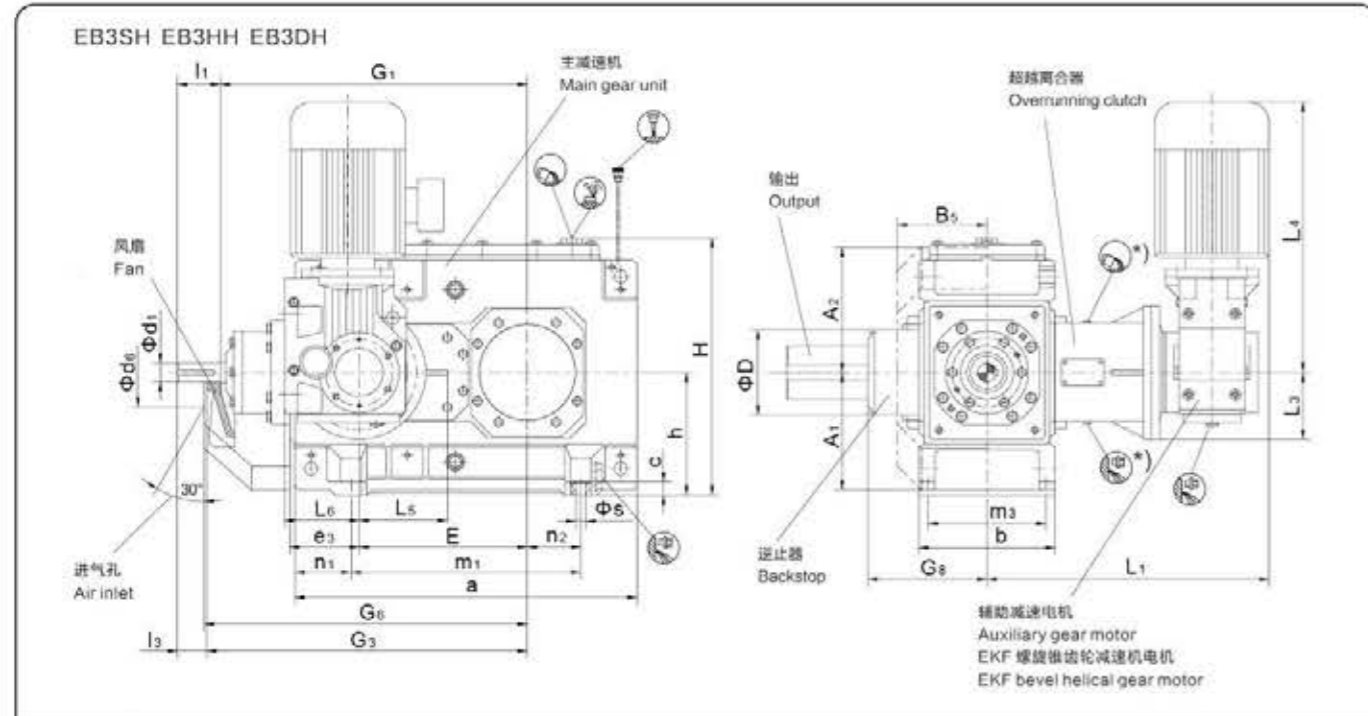
直交轴齿轮箱
Bevel-helical gear units

三级传动
Three Stage

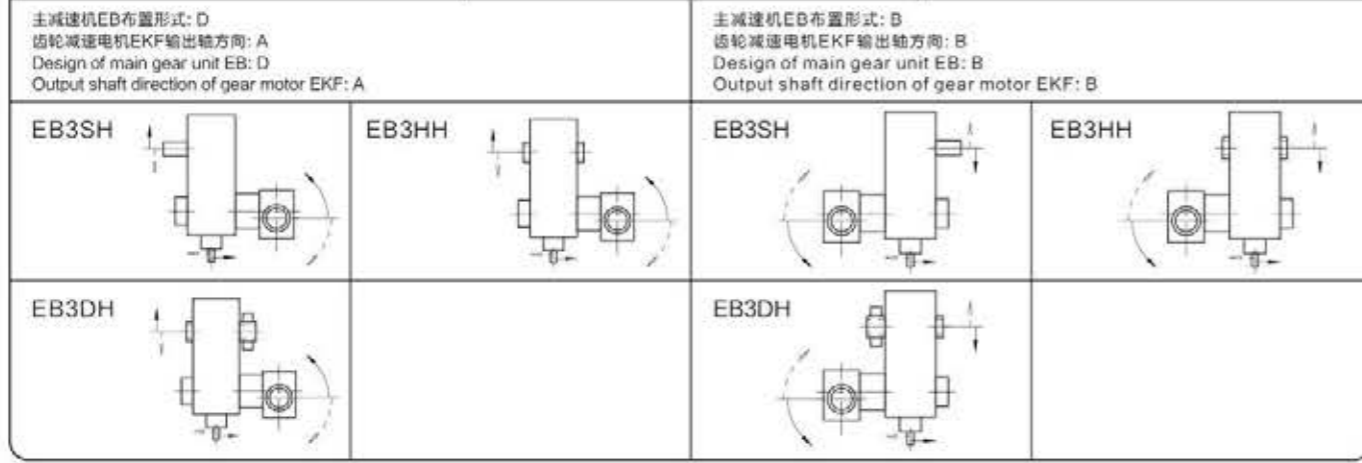
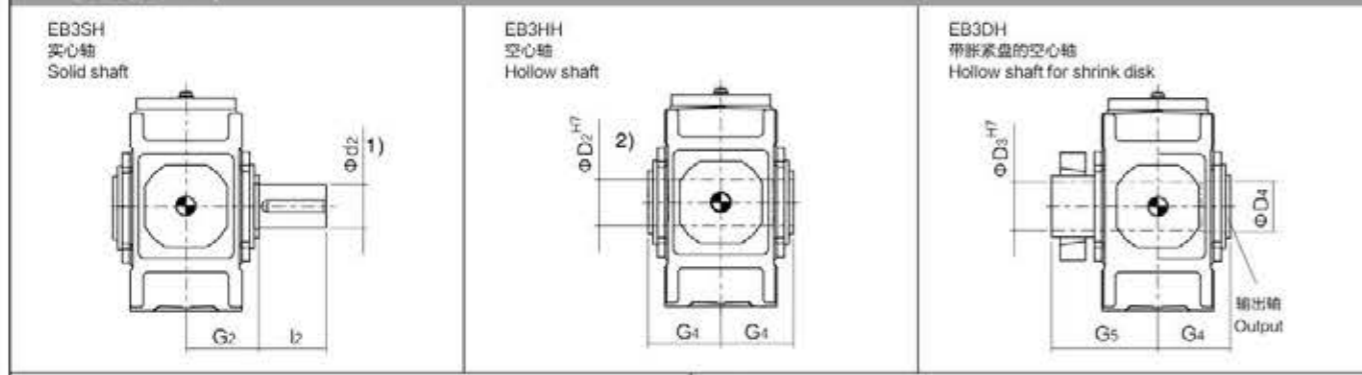
带辅传
with Auxiliary Drive

载荷驱动
Load Drive

类型 TYPES EB3...
规格 SIZES 4...12



★ 输出轴 Output Shaft



1) $k6 \leq \phi 50$ $m6 > \phi 50$
 有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。For parallel key GB/T1095-1979 and for center hole, see page 321-322.
 2) 键槽 GB/T1095-1979 Keyway GB/T1095-1979.
 * 仅当采用国外超程离合器时加注润滑油, 若采用国产逆止器、超程离合器时则加注润滑油。
 * Fill lubrication only when selecting imported overrunning clutch, if domestic backstop and overrunning clutch are used please fill grease.

直交轴齿轮箱
Bevel-helical gear units

三级传动
Three Stage

带辅传
with Auxiliary Drive

载荷驱动
Load Drive

类型 TYPES EB3...
规格 SIZES 4...12

规格 Size	辅传减速机 Auxiliary gear motor	尺寸 mm Dimensions in mm													
		输入轴 Input shaft						输入轴 Input shaft							
		IN=25-45			IN=25-56			IN=50-71			IN=63-71			G1	G3
d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3				
4	EKF57-Y1.1-36.37	30	70	50				25	60	40				500	520
5	EKF67-Y2.2-28.28	35	80	60				28	60	40				575	595
6	EKF67-Y2.2-28.28				35	80	60				28	60	40	610	630
7	EKF77-Y4-27.99	45	100	80				35	80	60				690	710
8	EKF77-Y4-27.99				45	100	80				35	80	60	735	755
9	EKF87-Y5.5-36	55	110	80				40	100	70				800	830
10	EKF87-Y5.5-36				55	110	80				40	100	70	850	880
11	EKF97-Y11-32.44	70	135	105				50	110	80				960	990
12	EKF97-Y11-32.44				70	135	105				50	110	80	1030	1060

规格 Size	尺寸 mm Dimensions in mm													
	减速机 mm Gear units							减速机 mm Gear units						
	a	A1	A2	b	B1	c	d5	e3	E	G6	G8 ³⁾	h	H	
4	565	195	200	215	143	28	110	110	270	530	193	188*	200	415
5	640	220	235	255	168	28	130	130	315	605	218	213*	230	482
6	720	220	235	255	168	28	130	130	350	640	218	213*	230	482
7	785	275	275	300	193	35	165	160	385	720	273	266*	280	572
8	890	275	275	300	193	35	165	160	430	765	273	266*	280	582
9	925	315	325	370	231	40	175	185	450	845	348	327*	320	662
10	1025	315	325	370	231	40	175	185	500	895	348	327*	320	662
11	1105	370	385	430	263	50	190	225	545	1010	397	342*	380	795
12	1260	370	385	430	263	50	190	225	615	1080	397	342*	380	795

规格 Size	尺寸 mm Dimensions in mm												
	减速机 mm Gear units						减速机 mm Gear units						
	m1	m3	n1	n2	s	L1 ⁵⁾	L3	L4	L5	L6	D ⁵⁾		
4	355	180	105	85	19	479	474*	125	447	137	132	132	132*
5	430	220	105	100	19	528	523*	125	536	165	140	160	150*
6	510	220	105	145	19	528	523*	125	536	165	140	160	150*
7	545	260	120	130	24	636	636*	125	693	210	180	195	190*
8	650	260	120	190	24	636	636*	125	693	210	180	195	190*
9	635	320	145	155	28	743	723*	175	674	255	212	230	210*
10	735	320	145	205	28	743	723*	175	674	255	212	230	210*
11	775	370	165	180	35	869	849*	225	806	315	265	280	210*
12	930	370	165	265	35	869	849*	225	806	315	265	280	210*

规格 Size	尺寸 mm Dimensions in mm									润滑油 lubrication		重量 weight	
	输出轴 Output shaft				输出轴 Output shaft					EKF	EB3	EKF ³⁾	EB3/EKF ⁴⁾
	EB3SH	EB3HH	EB3DH	EB3DH	D2	G4	D3	D4	G4				
4	80	140	170	80	140	85	85	140	205	3	10	50	283
5	100	165	210	95	165	100	100	165	240	3.6	16	66	424
6	110	165	210	105	165	110	110	165	240	3.6	17	66	479
7	120	195	210	115	195	120	120	195	280	6	30	98	689
8	130	195	250	125	195	130	130	195	285	6	33	98	774
9	140	235	250	135	235	140	145	235	330	11.9	45	150	1105
10	160	235	300	150	235	150	155	235	350	11.9	48	150	1235
11	170	270	300	165	270	165	170	270	400	21.5	79	248	1821
12	180	270	300	180	270	180	185	270	405	21.5	84	248	2096

3) EKF减速机重量(不含润滑油重量), 其余相关数据详见82页。
 4) 主减速机与辅传减速机电机组合总重量(不含润滑油重量);
 5) 不带*列为采用国产逆止器、超程离合器时尺寸, 带*列为采用国外逆止器、超程离合器时的尺寸。
 3) Weight of gear motor EKF (oil weight not included), other detailed data refer to Page 82.
 4) Gross weight of combination of main gear unit and auxiliary gear motor (oil weight not included).
 5) Without * is the dimension using domestic backstop and overrunning clutch and with * is the dimension using imported backstop and overrunning clutch.

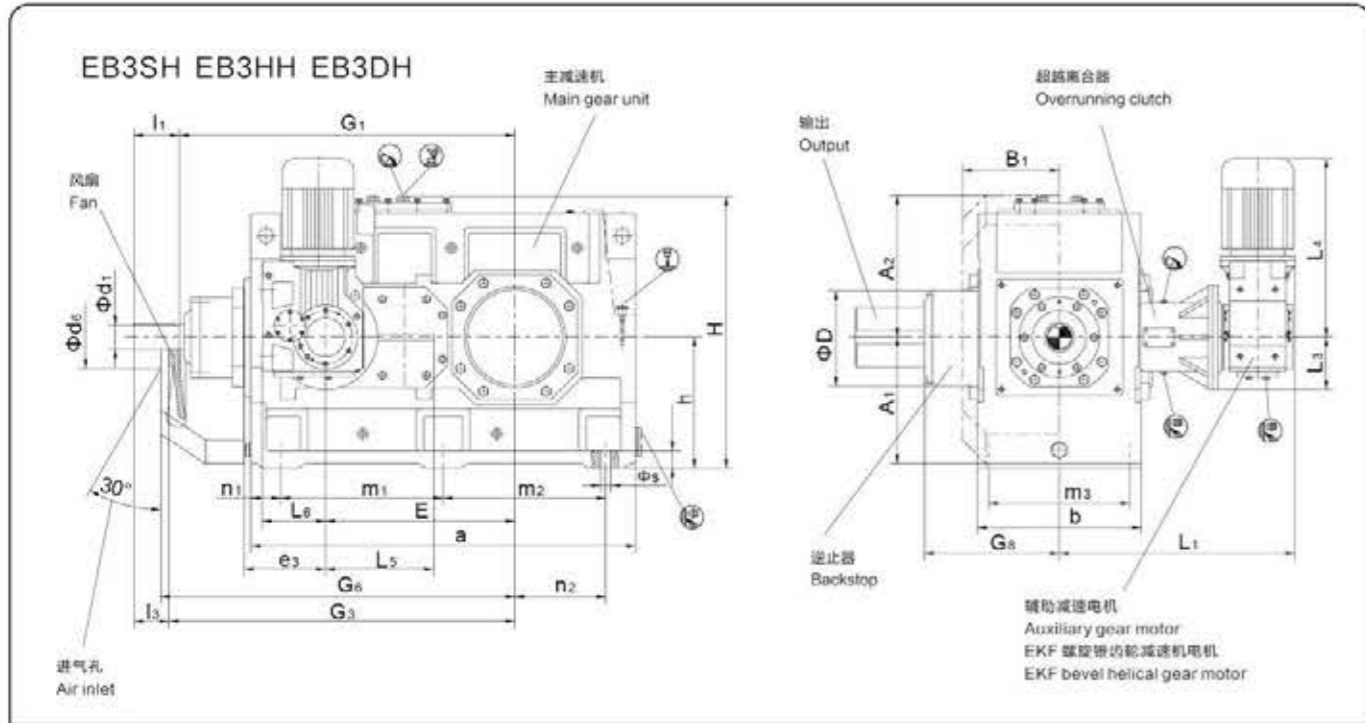


直交轴齿轮箱 Bevel-helical gear units
三级传动 Three Stage
带辅传 with Auxiliary Drive
载荷驱动 Load Drive

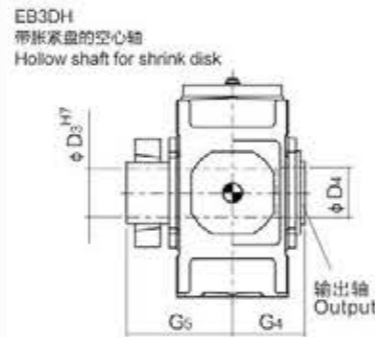
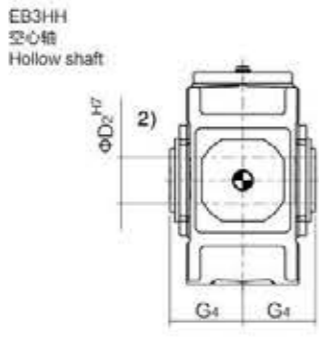
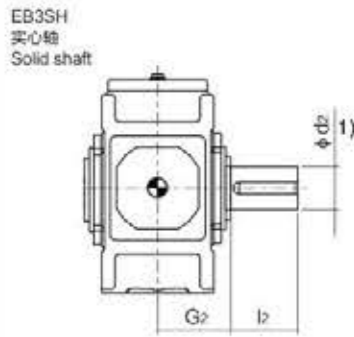
类型 TYPES EB3...
规格 SIZES 13...18

直交轴齿轮箱 Bevel-helical gear units
三级传动 Three Stage
带辅传 with Auxiliary Drive
载荷驱动 Load Drive

类型 TYPES EB3...
规格 SIZES 13...22

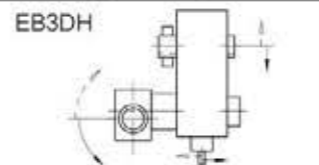
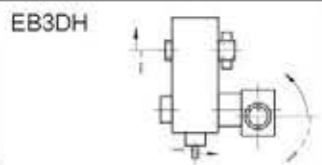
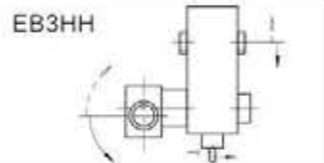
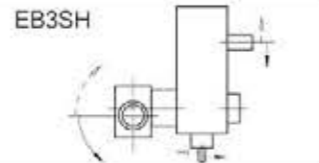
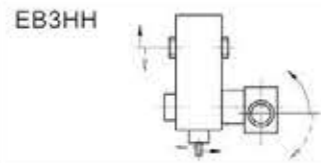
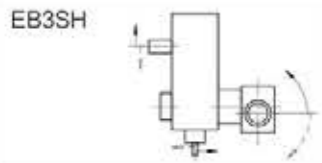


★ 输出轴 Output Shaft



主减速机EB布置形式: D
齿轮减速机EKF输出轴方向: A
Design of main gear unit EB: D
Output shaft direction of gear motor EKF: A

主减速机EB布置形式: B
齿轮减速机EKF输出轴方向: B
Design of main gear unit EB: B
Output shaft direction of gear motor EKF: B



1) k6 < phi 50, m6 > phi 50
有关平键 GB/T1095-1979型和中心孔, 参见第321-322页。For parallel key GB/T1095-1979 and for center hole, see page 321-322.
2) 键槽 GB/T1095-1979 Keyway GB/T1095-1979.

*1) 仅当采用国外超速离合器时加注润滑油, 若采用国产逆止器, 超速离合器时则加注润滑油。
*If fill lubrication only when selecting imported overrunning clutch, if domestic backstop and overrunning clutch are used please fill grease.

规格 Size	辅传减速机 Auxiliary gear motor	尺寸mm Dimensions in mm 输入轴 Input shaft												G1	G3								
		in=25-45			in=25-50			in=25-56			in=50-71					in=56-71			in=63-71				
		d ¹⁾	l ₁	l ₂	d ¹⁾	l ₁	l ₂	d ¹⁾	l ₁	l ₂	d ¹⁾	l ₁	l ₂			d ¹⁾	l ₁	l ₂	d ¹⁾	l ₁	l ₂		
13	EKF107-Y18.5-27.33	80	165	130									60	140	105							1125	1160
14	EKF107-Y18.5-27.33							80	165	130												1195	1230
15	EKF127-Y30-24.91	90	165	130									70	140	105							1367	1402
16	EKF127-Y30-24.91				90	165	130						70	140	105							1413	1448
17	EKF127-Y37-24.91	110	205	165									80	170	130							1560	1600
18	EKF127-Y37-24.91				110	205	165						80	170	130							1620	1660

规格 Size	尺寸mm Dimensions in mm 减速机mm Gear units													
	a	A1	A2	b	B1	c	d ₆	e ₂	E	G ₆	G8 ⁵⁾		h	H
13	1290	425	475	550	325	60	210	265	635	1180	453	433*	440	900
14	1430	425	475	550	325	60	210	265	705	1250	453	433*	440	900
15	1550	485	520	625	365	70	210	320	762	1420	500	476*	500	1000
16	1640	485	520	625	365	70	210	320	808	1470	500	476*	500	1000
17	1740	535	570	690	395	80	230	370	860	1620	532	508*	550	1100
18	1860	535	570	690	395	80	230	370	920	1680	532	508*	550	1100

规格 Size	尺寸mm Dimensions in mm 减速机mm Gear units													
	m1	m2	m3	n1	n2	s	L1 ⁵⁾	L3	L4	L5	L6	D ⁵⁾		
13	545	545	475	100	305	35	1024	986*	225	934	362	315	320	290*
14	545	685	475	100	375	35	1024	986*	225	934	362	315	320	290*
15	655	655	535	120	365	42	1181	1161*	275	1048	443	375	400	290*
16	655	745	535	120	410	42	1181	1161*	275	1048	443	375	400	290*
17	735	735	600	135	390	42	1223	1203*	275	1068	520	375	400	290*
18	735	855	600	135	450	42	1223	1203*	275	1068	520	375	400	290*

规格 Size	尺寸mm Dimensions in mm 输出轴 Output shaft									润滑油 lubrication		重量 weight	
	EB3SH			EB3HH		EB3DH				EKF	EB3	EKF ³⁾	EB3/EKF ⁴⁾
	d2 ¹⁾	G2	l2	D2	G4	D3	D4	G4	G5	(L)	(L)	(kg)	(kg)
13	200	335	350	190	335	190	190	335	480	35	130	286	2666
14	210	335	350	210	335	210	215	335	480	35	140	286	3036
15	230	380	410	230	380	230	235	380	550	55	210	478	4208
16	240	380	410	240	380	240	245	380	550	55	220	478	4438
17	250	415	410	250	415	250	260	415	600	55	290	478	5468
18	270	415	470	275	415	280	285	415	600	55	300	478	5973

3) EKF减速机重量(不含润滑油重量), 其余数据参见82页。
4) 主减速机与辅传减速机组合重量(不含润滑油重量)。
5) 不带*列为采用国产逆止器, 超速离合器时尺寸, 带*列为采用国外逆止器, 超速离合器时的尺寸。
3) Weight of gear motor EKF (oil weight not included), other detailed data refer to Page 82.
4) Gross weight of combination of main gear unit and auxiliary gear motor (oil weight not included).
5) Without * is the dimension using domestic backstop and overrunning clutch and with * is the dimension using imported backstop and overrunning clutch.

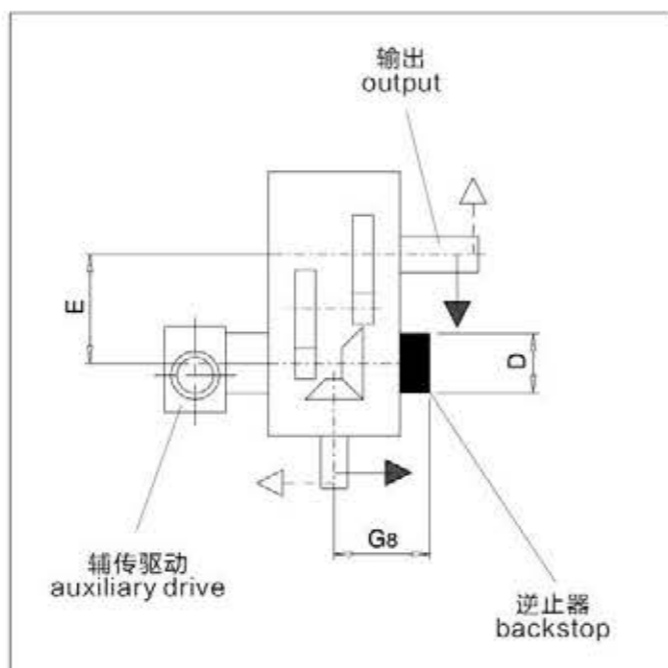


直交轴齿轮箱 逆止器
Bevel-helical gear units Backstops

类型 TYPES EB3...
规格 SIZES 4...18

标准逆止器布置及输入输出转向关系 Standard backstop arrangement and dependence of direction of rotation	
类型 Type	布置形式 Design
	B D
EB3SH	
EB3HH	
EB3DH	

型号/types EB3.H					
规格 Sizes	E mm	G8 mm	D mm		
4	270	193	188*	132	132*
5	315	218	213*	150	160*
6	350	218	213*	150	160*
7	385	273	266*	190	195*
8	430	273	266*	190	195*
9	450	347	327*	210	230*
10	500	347	327*	210	230*
11	545	397	342*	210	280*
12	615	397	342*	210	280*
13	635	453	433*	290	320*
14	705	453	433*	290	320*
15	762	500	476*	290	400*
16	808	500	476*	290	400*
17	860	532	508*	290	400*
18	920	532	508*	290	400*



注：不带*列为采用国产逆止器，超越离合器尺寸；带*列为采用国外逆止器，超越离合器尺寸。
Note: Without * is the dimension using domestic backstop and overrunning clutch and with * is the dimension using imported backstop and overrunning clutch.

直交轴齿轮箱 实际传动比
Bevel-helical Gear Units Actual Ratios

类型 TYPES EB3...
规格 SIZES 4...18

i _N	齿轮箱规格 Gear unit sizes								
	4	5	6	7	8	9	10	11	12
25	25.380	25.421	24.349	25.446	25.152	25.843	25.400	25.185	25.103
28	27.836	27.881	27.211	28.125	27.923	28.563	27.842	27.836	27.517
31.5	30.196	30.245	31.508	30.509	32.084	30.985	32.400	31.975	32.021
35.5	34.771	34.827	34.557	35.131	35.461	35.679	35.811	34.771	35.392
40	39.487	39.551	37.486	39.896	38.468	40.902	38.846	39.861	40.654
45	43.077	43.146	43.166	43.523	44.296	44.202	44.732	43.077	44.209
50	49.060	49.139	49.021	49.568	50.304	50.341	51.280	49.060	50.681
56	55.152	55.240	53.477	55.723	54.877	56.592	55.417	55.152	54.769
63	60.808	60.906	60.904	61.438	62.499	62.396	63.114	60.808	62.376
71	69.293	69.404	68.467	70.011	70.259	71.102	70.951	69.293	70.121

i _N	齿轮箱规格 Gear unit sizes					
	13	14	15	16	17	18
25	25.864	25.131	24.916	24.842	25.409	25.936
28	28.587	27.548	27.847	28.263	28.398	29.507
31.5	32.838	32.057	31.634	31.588	32.259	32.979
35.5	35.709	35.432	34.400	35.883	35.080	37.463
40	40.936	40.700	39.435	39.021	40.215	40.738
45	44.238	44.259	42.617	44.732	43.460	46.702
50	50.383	50.737	48.536	48.341	49.496	50.469
56	56.639	54.831	54.562	55.055	55.641	57.479
63	62.448	62.446	60.158	61.892	61.348	64.616
71	71.161	70.200	68.553	68.239	69.909	71.243