

提供最有竞争力的传动解决方案和服务，持续为客户创造最大价值！
We always provide the most competitive drive solutions and services,
continue to create the maximum value for customers!



杭州雷杜科技有限公司
HANGZHOU LEIDU TECHNOLOGY CO., LTD.

地址: 中国·浙江 杭州市余杭区未来科技城文一西路1378号
1378 West Wenyi Road, Future Technology City, Yuhang District,
Hangzhou City, Zhejiang Province, China
电话/TEL: 0086-0571-87386872 0086-0571-88613361
0-18806770015
传真/FAX: 0086-0571-87386872 0086-0571-88613661
网址/HTTP: //www.yndgearbox.com
邮箱/E-mail: WW2WL@163.com

北京办事处 Beijing Office

地址: 北京市海淀区新都公寓
Xindu Apartment, Haidian District, Beijing
电话/TEL: 0086-010-82955707
0-17794588868

郑州办事处 Zhengzhou Office

地址: 郑州市高新区玉兰街16号龙汇国际
Longhui Interational, No.16, Yulan Street,
High-tech Zone, Zhengzhou
电话/TEL: 0086-0371-63294858 55059702
0-17764584685

山东办事处 Shandong Office

地址: 山东省淄博市高新技术开发区裕民路268号
No.268, Yumin Road, High-Tech Zone, Zibo City,
Shandong
电话/TEL: 0086-0533-7747 888
0-17764550541
传真/FAX: 0086-0533-7868 118

湖南办事处 Hunan Office

地址: 湖南省长沙市芙蓉区张公岭龟山路410号
No.410, Guishan Road, Zhanggongling,
Furong District, Changsha, Hunan
电话/TEL: 0086-0731-83108109
0-17764558808

广东办事处 Guangdong Office

地址: 深圳市宝安区自由路愉盛综合大厦
Yusheng Comprehensive Building, Free Road,
Bao'an District, Shenzhen
电话/TEL: 0-18958075595

注: 本说明书及图片等已严格审核, 但制造过程中仍有可能存在; 内容说明可能会因市场因素而作技术方面的调整, 恕不另行通知。
因此, 本公司保留最终解释权, 并说明本样本内容不能作为合同的组成部分。

Note: This product content has been looked through strictly, but mistakes neglects maybe also exit so we declare this product content isn't part of the agreement between us, and our company hold the finally explain potency. Instructions in the manual may be technically adjusted upon market factors, and there will be no notice in advance. All operations shall take the actual contract as prevail.

生产基地: 浙江杭州
Production base: Hangzhou, Zhejiang

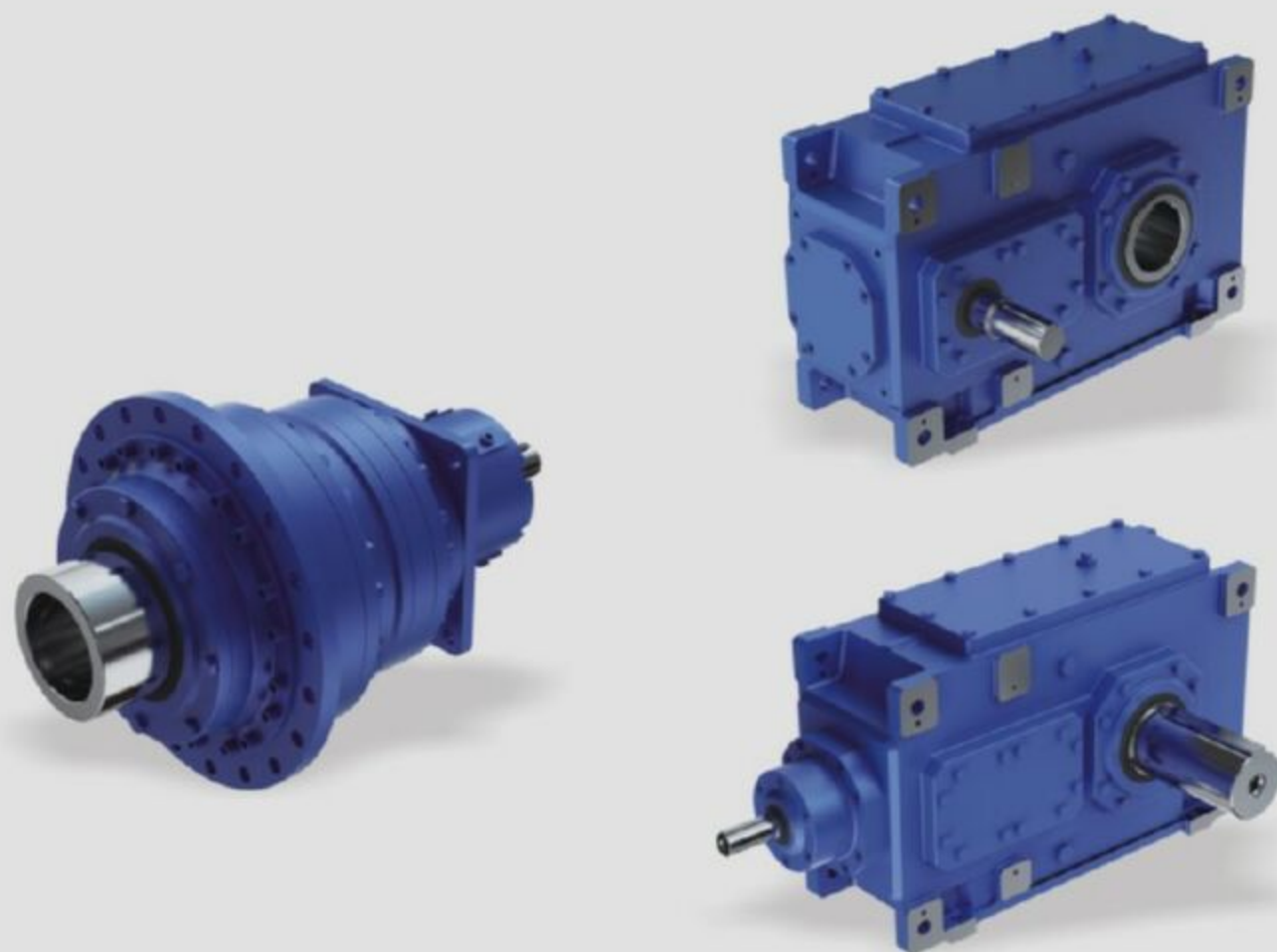


工/B工业齿轮箱
行星齿轮减速机选型手册



H/B GEAR UNITS
P SERIES PLANETARY
GEARBOX

H/B工业齿轮箱
P系列行星齿轮减速机



杭州雷杜科技有限公司
Hangzhou Leidu Technology Co., Ltd.



企业简介 Company

杭州雷杜科技有限公司是一家集产品研发、技术服务、生产经营为一体的专业传动科技型企业。致力于提供更有竞争力的传动解决方案和服务，为客户创造更大的价值！

公司主要产品有R、S、K、F四大系列硬齿面减速机，RV/WP系列蜗轮蜗杆减速机，UD/MB系列无级减速机，P系列精密行星减速机，H/B系列大功率减速机，C/G系列齿轮马达及SWL系列丝杆升降机等。产品广泛应用于环保设备、筑路机械、仓储物流，食品机械、印刷包装、汽车检测、立体车库、石油化工、冶金、陶瓷、玻璃、印染纺织、木工机械等传动设备的各个行业。

围绕“品质至上、服务为先”的战略方针，认真贯彻执行国际质量认证体系，核心产品自主研发并获得多项“国家知识产权局”授予的专利称号，部分产品已列入省技术创新计划项目之中。公司与多家科研机构建立战略合作，并列入“杭州师范大学”教学科研实习基地。年取得了企业自营进出口权，产品远销欧美、东南亚等国家和地区。

“雷杜”自创立至今始终遵循“诚信、专业、高效、共赢”的科学的和管理和服务理念，真诚期待与您共同携手，开拓美好科技未来。

Hangzhou Leidu Technology Co., Ltd. is a professional transmission technology enterprise integrating product research and development, technical services, production and operation. Committed to providing more competitive transmission solutions and services, to create greater value for customers!

The company's main products are R, S, K, F series geared motor, RV/WP series worm reducer, UD/MB series stepless reducer, P series precision planetary reducer, H/B series high-power reducer, C/G series gear motor and SWL series screw elevator. Products are widely used in environmental protection equipment, road building machinery, storage and logistics, food machinery, printing and packaging, automotive testing, three-dimensional garage, petrochemical, metallurgy, ceramics, glass, printing and dyeing textile, woodworking machinery and other transmission equipment industries.

Around the strategic policy of "quality first, service first", we earnestly implement the international quality certification system. The core products are independently developed and awarded many patent titles by the State Intellectual Property Office. Some of the products have been listed in the provincial technical innovation program. The company has established strategic cooperation with several scientific research institutions and has been listed as the teaching and scientific research practice base of Hangzhou Normal University. In, the company gained the right of self import and export, and its products were exported to Europe and America, Southeast Asia and other countries and regions.

Since its inception, Leidu has always followed the scientific management and service concept of "integrity, professionalism, efficiency and win-win" and sincerely looks forward to working with you to open up a bright future of science and technology.

CORPORATE CONCEPT

诚：推心置腹，言而有信；精诚所至，始终如一；
志：志不立，天下无可成之事；有志者，事竟成；
恒：锲而不舍，金石可镂；欲稍得成，从恒下手；
专：凡为一事，事皆贵专；以专而精，以纷而散；
实：实事求是，精益求精，差之毫厘，失之千里；
勤：刻苦求进，勤学善思；懒惰误己，勤奋兴财；

Sincerity: Put your heart in your mouth, believe in your words, and be honest and consistent.

Ambition: Nothing can be done without ambition; if there is a will, there will be competition.

Eternal: Perseverance, stone can be carved; want to get a little bit, from constant hands.

Profession: Everything is for the sake of one thing; it is specialized and refined, and scattered in different ways.

Pragmatism: Seeking truth from facts, strives for perfection, and makes a difference.

Industrious: Diligently seeking progress, diligent learning and good thinking; laziness and wrong self, diligence and prosperity.

产品介绍
Product introduction

R、S、K、F系列斜齿轮减速电机 R,S,K,F series helical gear motors



R系列斜齿轮减速电机
R series helical geared motor



S系列斜齿轮-蜗轮蜗杆减速电机
S series helical-worm geared motor



K系列斜齿轮-伞齿轮减速电机
K series helical-bevel geared motor



F系列平行轴-斜齿轮减速电机
F series parallel shaft-helical geared motor

通用减速机系列 General reducer series	
安装方式：底角，法兰，扭力臂。 Mounting arrangements: foot, flange, torque arm.	
功率 Power(KW)	0.12-200
速比 Ratio	1.3-33000
最大输出扭矩 Output torque(KN.M)	top to 50

HB系列重载齿轮箱 HB series heavy duty gearboxes



H系列斜齿轮减速机
H series helical gearbox



B系列斜齿轮-锥齿轮减速机
B series bevel-helical gearbox

通用减速机系列 General reducer series.	
模块化设计，安装方式多样。可配置逆止器单向传动，以及串联辅助传动。 Highly standard modular designed. No strict limitation to the mounting arrangement. Can be configured to one-way transmission by backstop. Available to install with auxiliary drive.	
功率 Power(KW)	4-6000
速比 Ratio	1.25-450
最大输出扭矩 Output torque(KN.M)	top to 950

产品介绍
Product introduction

重载行星减速机 Heavy duty planetary reducers



N系列行星减速机
N series planetary reducer



P系列行星减速机
P series planetary reducer

通用减速机系列 General reducer series	
单位承载能力极高。 Very high unit capacity.	
功率 Power(KW)	0.37-12000
速比 Ratio	25-4000
最大输出扭矩 Output torque(KN.M)	top to 2600

橡塑行业专用减速机 Special reducers for rubber and plastic industry



单螺杆挤出机减速机
Special reducer for single screw extruder



压延机专用减速机
Special reducer for calendaring machine



平双螺杆挤出机减速机
Special reducer for twin screws extruder



密炼机专用减速机
Special reducer for internal mixer

专用减速机系列 Special reducer series.	
常用于橡塑行业炼胶，挤出，压延设备。 Commonly used in rubber mixer, extruder, calendaring machine of rubber and plastic industry.	
功率 Power(KW)	55-2500
速比 Ratio	8-35
最大输出扭矩 Output torque(KN.M)	top to 300

蜗轮蜗杆减速机 Worm gear motors



RV系列蜗轮减速机
RV series worm gear motor



VF系列蜗轮减速机
VF series worm gear motor



WP系列蜗轮减速机
WP series worm gear motor



UD系列无极变速器
UD series variable speed machine



T系列螺旋伞齿轮转向箱
T series spiral bevel gear reducer



SWL系列蜗轮丝杆升降机
SWL series worm gear screw reducer

通用减速机系列 General reducer series	
铝合金壳体的蜗轮传动减速机。 结构紧凑，多方位安装，免维护。 Aluminum alloy shell, compact structure, multiple installation, maintenance free.	
功率 Power(KW)	0.06-15
速比 Ratio	7.5-100
最大输出扭矩 Output torque(N.M)	top to 1760

摆线针轮减速机 Cycloidal pinwheel reducers



BWD系列摆线减速机
BWD series cycloidal pinwheel reducer



BLD系列摆线减速机
BLD series cycloidal pinwheel reducer



卧式微型摆线减速机
Horizontal micro cycloidal pinwheel reducer



立式微型摆线减速机
Vertical micro cycloidal pinwheel reducer

通用减速机系列 General reducer series	
结构紧凑，通过摆线针轮传递动力。 Compact structure, Cycloidal pinwheel transmission.	
功率 Power(KW)	0.12-90
速比 Ratio	7-650000
最大输出扭矩 Output torque(KN.M)	top to 30

圆柱齿轮减速机 Cylindrical gear reducers



ZDY系列圆柱齿轮减速机
ZDY series cylindrical gear reducer



ZLY系列圆柱齿轮减速机
ZLY series cylindrical gear reducer



ZSY系列圆柱齿轮减速机
ZSY series cylindrical gear reducer



ZFY系列圆柱齿轮减速机
ZFY series cylindrical gear reducer

通用减速机系列 General reducer series	
按行业标准生产，并可配置逆止器单向传动以及串联辅助传动。 Can be configured to one-way transmission by backstop. Available to install with auxiliary drive.	
功率 Power(KW)	1.1-6000
速比 Ratio	1.25-500
最大输出扭矩 Output torque(KN.M)	top to 520

产品介绍
Product introduction

三项异步电机 Three-phase asynchronous motors



YE2系列高效电机
YE2 series high efficiency motor



YBX3系列防爆电机
YBX3 series premium efficiency flameproof motor



YEJ系列制动电机
YEJ series braking motor



YVF2系列变频电机
YVF2 series variable frequency motor

通用电动机系列 General motor series	
常规工业动力。 Conventional industrial power.	
功率 Power(KW)	0.12-315
机座号 Stand No.	63-355
电源频率(Hz) Power frequency	50/60

微小型减速电机 Micro and small gear motors



CH系列减速电机
CH series gear motor



CV系列减速电机
CV series gear moto



直流减速电机
Direct current gear motor



精密行星减速机
High precision planetary reducer

通用减速机系列 General reducer series	
质量轻，噪音低，效率高，寿命长等。 Light weight, low noise, high efficiency, long life etc.	
功率 Power(KW)	0.006-7.5
速比 Ratio	2-200
最大输出扭矩 Output torque(N.M)	top to 7400

产品介绍
Product introduction

双轴桨叶式混合机专用减速机 Special reducer for twin shafts paddle mixe



双轴桨叶式混合机专用减速机
Special reducer for twin shafts paddle mixer



双轴桨叶式混合机
Twin shafts paddle mixer

专用减速机系列 Special reducer series.	
该款减速机专为双轴桨叶式混合机设计，减速机与混合机直联，最大程度的节省了安装空间和生产成本，因而设备运行更加平稳，高效。 The reducer is designed for twin shafts paddle mixer, connect with the mixer directly, saving the installation space and production cost at maximum degree, so the equipment runs more smoothly and efficiently.	
功率 Power(KW)	15-90
速比 Ratio	33-50
最大输出扭矩 Output torque(KN.M)	70

焊接滚轮架专用减速机 Special reducer for welding rotator



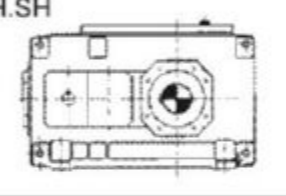
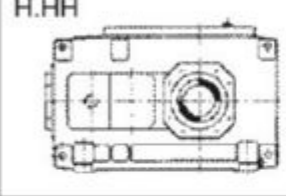
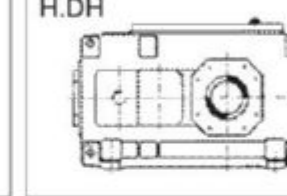
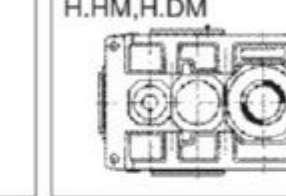
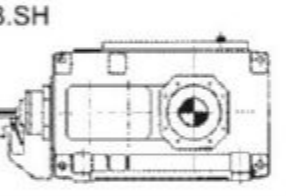
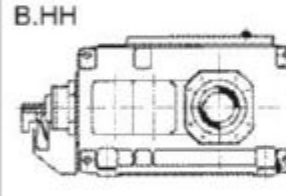
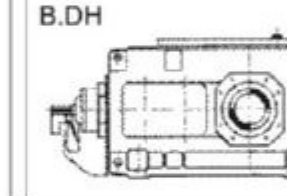
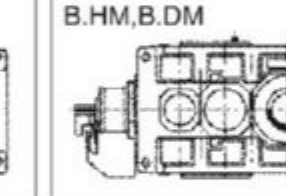
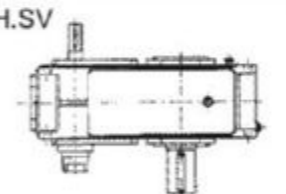
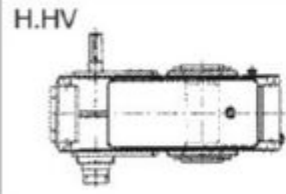
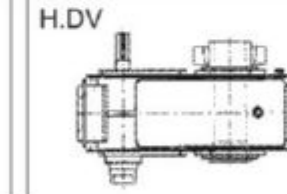
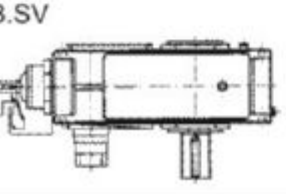
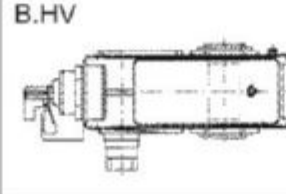
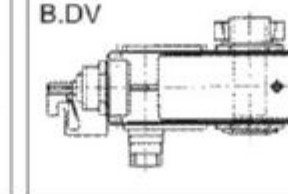
焊接滚轮架专用减速机
Special reducer for welding rotator



焊接滚轮架
Welding rotator

专用减速机系列 Special reducer series	
适用于自调式双驱动滚轮架，移动式焊接滚轮架等各种自动焊接的滚轮架驱动。 The reducers apply to bolt adjustable rotator, self aligning rotator, lead screw adjustable rotator, and fit up rotator, etc.	
功率 Power(KW)	0.18-22
速比 Ratio	300-3400
最大输出扭矩 Output torque(KN.M)	180

基本类型概括 summary of basic types		13-15 页 Pages 13-15		
齿轮箱型号表示方法 Gear units designation of types		16 页 Pages 16		
齿轮箱选型, 额定功率, 输出扭矩, 允许的附加径向力 Selection of gear units, nominal power ratings, output torque, permissible additional radial forces.		17-23 页 Pages 17-23		
安装方式 Mounting	卧式安装 Horizontal	平行轴齿轮箱 Helical gear units H1SH	24-25 页 Pages 24-25	18-39 页 Pages 18-39
		平行轴齿轮箱 Helical gear units H2SH, H2HH, H2DH, H2HM, H2DM H3SH, H3HH, H3DH, H3HM, H3DM H4SH, H4HH, H4DH, H4HM, H4DM	26-29 页 Pages 26-29	40-57 页 Pages 40-57
		直交轴齿轮箱 Bevel-helical gear units B2SH, B2HH, B2DH, B2HM, B2DM B3SH, B3HH, B3DH, B3HM, B3DM B4SH, B4HH, B4DH, B4HM, B4DM	30-37 页 Pages 30-37	
	立式安装 Vertical	平行轴齿轮箱 Helical gear units H2SV, H2HV, H2DV H3SV, H3HV, H3DV H4SV, H4HV, H4DV	74-85 页 Pages 74-85	
直交轴齿轮箱 Bevel-helical gear units B2SV, B2HV, B2DV B3SV, B3HV, B3DV B4SV, B4HV, B4DV		86-98 页 Pages 86-98		
平键及键槽的配合精度, 选用标准ISO Selection of ISO fits, parallel keys and keyways		99 页 Pages 99		
带胀紧盘联接的空心轴或带平键联接的空心轴 Hollow shaft for shrink disk or parallel key connections		100-103 页 Pages 100-103		
实际速比 <i>i</i> /转动惯量 <i>J</i> ₁ Actual ratios <i>i</i> , mass moments of inertia <i>J</i> ₁		104-111 页 Pages 104-111		
冷却盘管 Cooling coils		112 页 Pages 112		
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)		113-121 页 Pages 113-121		
减速机电机法兰联接 Gear units motor mounting with flanges		122-123 页 Pages 122-123		
布置形式 Design		124 页 Pages 124		
标准普通电机的参数及安装尺寸 Standard and ordinary motor parameter and mounting dimension		125 页 Pages 125		

卧式安装 Horizontal mounting position 平行轴齿轮箱 Helical gear units 类型 H1..., H2..., H3..., H4... 1-...4-级传动, $i_N=1.25-450$			
H.SH 	H.HH 	H.DH 	H.HM, H.DM 
直交轴齿轮箱 Bevel-helical gear units 类型 B2..., B3..., B4... 2-...4-级传动, $i_N=5-400$			
B.SH 	B.HH 	B.DH 	B.HM, B.DM 
立式安装 Vertical mounting position 平行轴齿轮箱 Helical gear units 类型 H2.V, H3.V, H4.V 2-...4-级传动, $i_N=6.3-450$			
H.SV 	H.HV 	H.DV 	
直交轴齿轮箱 Bevel-helical gear units 类型 B2.V, B3.V, B4.V 2-...4-级传动, $i_N=5-400$			
B.SV 	B.HV 	B.DV 	

齿轮箱 Gear Units 性能特点 Characteristic

设计

平行轴和直交轴齿轮箱采用全新设计，其独特的创新之处在于：

- 零部件种类减少，而规格型号增加；
- 运转可靠性提高，传动功率增大；
- 可以提供法兰盘式输出轴，使齿轮箱满足在狭小空间的安装要求（根据客户要求供货）。

安装方式

- 齿轮箱既可卧式安装，也可立式安装。
- 如果用户提出要求，也可以采用其他安装形式。
- 安装电机用法兰，扭力支撑装置均为产品的标准配置。

齿轮的噪音特性

- 采用最新设计思想，通过以下途径彻底改善齿轮的噪音特性；
- 利用吸收噪音的箱体结构；
- 采用特大的齿面接触比。

齿轮箱散热

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，主要通过以下方法：

- 增大箱体的表面积；
- 采用大风扇及新型导流风扇罩；
- 根据较低的最大允许油温选择齿轮箱。这样，可因换油周期加长而提供设备运行可靠性，并能降低设备维护费用。

库存

齿轮箱根据单元结构模块化设计原理，大大减少了零部件种类。

Design

Gear units are a completely new design. Outstanding innovations are:

- More size 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).

Mounting position

- Gear units can be supplied for either horizontal or vertical installation.
- Other arrangements are also possible on request.
- Motor bell housings, Torque supports are part of our standard product range.

Noise behaviour

- New concepts were applied to clearly improve the noise emission of the gear units
- Designing noise-absorbing housings
- Achieving exceptionally large contact ratios.

Thermal conduction

Gear units not only have a high efficiency but also a favourable 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 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.

Storing

Gear units have been designed according to a new unit construction principle.

齿轮箱 Gear Units 一般说明 General Informations

注意事项

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罩防护。
- 试车之前，必须认真阅读设备操作说明书。减速机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。实际油量以油标上的标记为准。
- 润滑油粘度须以减速机铭牌上的数值为准。
- 减速机供货时带径向轴封。用户如有特别要求，可提供其它形式的密封装置。
- 转动方向是指输出轴 d_2 的方向。

Attention:


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 reducers 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 reducers are supplied with radial shaft seals. Other sealing variants on request.
- Directions of rotation referring to output shaft d_2 .

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

规格13号以上减速机箱体地脚上配有千斤顶螺丝，箱盖上配有调平面。

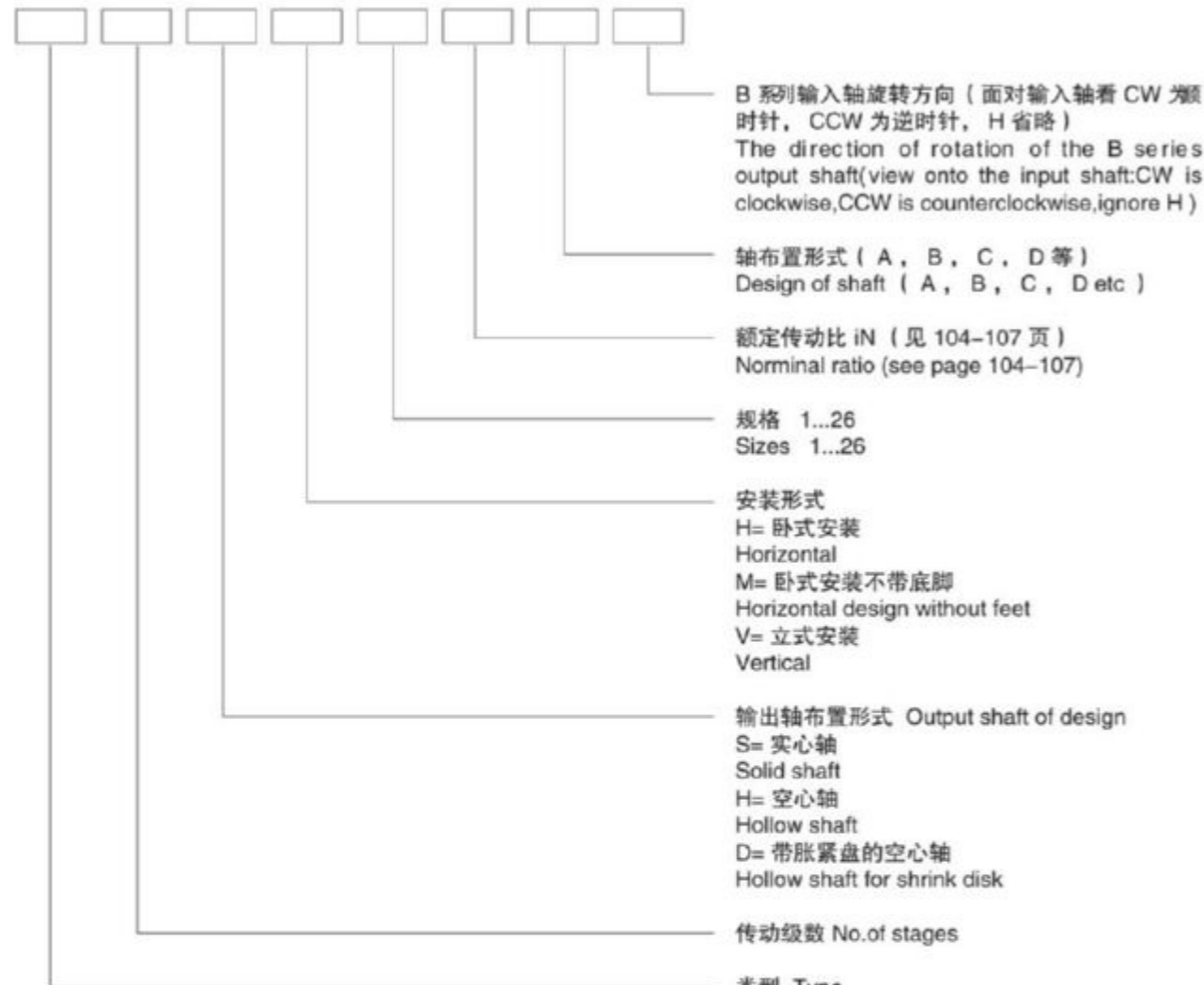
From size 13 up jack screws in the housing feet, and leveling pads on the upper housing part.

基础螺栓的最低性能等级为8.8级

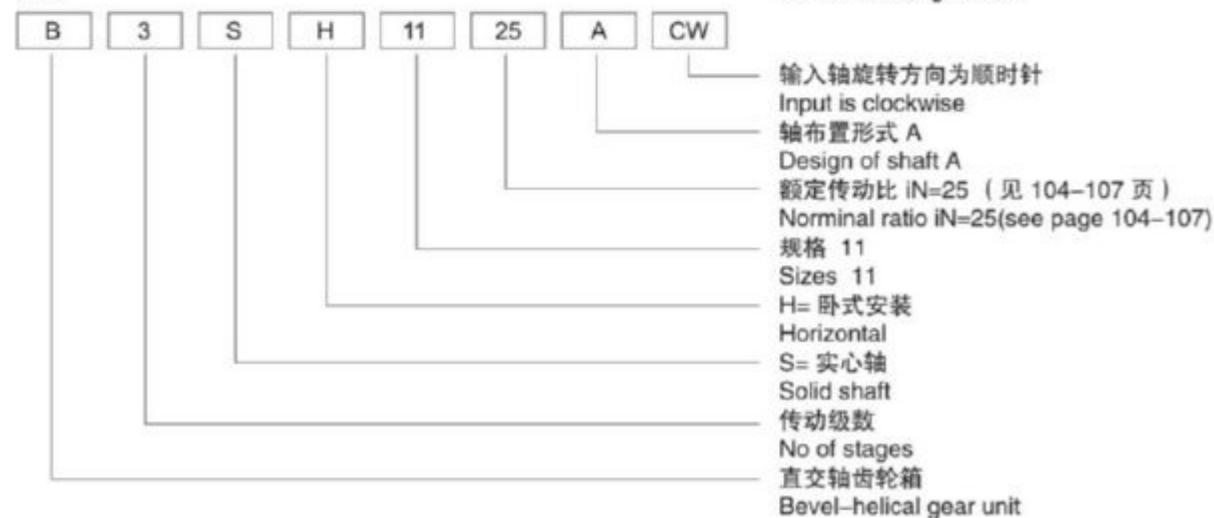
Foundation bolts of min. property class 8.8.

齿轮箱 Gear Units

型号表示方法 Designation of Types



例:



齿轮箱 Gear Units

选型指南 Guidelines for the selection

1. 确定齿轮箱的类型及规格 1. Determination of gear unit type and size	1.1 计算传动比 Find the transmission ratio $i_g = \frac{n_1}{n_2}$	
	1.2 确定齿轮箱的额定功率 Determine nominal power rating of the gear unit $P_n \geq P_2 \times f_1 \times f_2 \times S_A$ 如果不满足下列条件, 请向我们咨询 It is not necessary to consult us, if: $3.33 \times P_2 \geq P_n$	
2. 确定润滑方式 2. Lubrication method to determine	1.3 校核最大扭矩, 如峰值工作扭矩、起动扭矩或制动扭矩, 看其是否满足要求 1.3 Check for maximum torque, e.g. peak operating-, starting -or braking torque $P_n \geq \frac{T_A \times n_1}{9550} \times f_1$ 齿轮箱的规格和传动级数在额定功率选型表中, 可根据 iN 和 PN 确定。 Gear unit sizes and number of reduction stages are given in rating tables depending on iN and PN	
	1.4 检查输出轴上是否允许有附加载荷: 见 36-37 页 1.4 Check whether additional forces on the output shaft are permissible; see pages 36-37	
3. 确定冷却方式 3. Sure cooling way	1.5 根据 104-107 页上的表检查实际传动比是否满足要求 1.5 Check whether the actual ratio i as per table on pages 104-107 is acceptable	
	安装方式 Mounting position	
	卧式安装 Horizontal	立式安装 Vertical
	所有需要润滑的零部件均浸在润滑油中, 或采用飞溅润滑方式, 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. Forced lubricated on request	可选润滑油供给方式: - 浸油润滑 - 通过法兰联接泵或电动泵进行强制润滑。 有关合适的供油方式和选择标准, 参见 84-121 页。 Possible oil supply variations: - Dip lubrication - Forced lubrication by means of flange donpump or motor pump. For preferred variants and criteria for selection, page 84-121
	3.1 如满足以下条件, 则齿轮箱可不带辅助冷却装置: 3.1 Adequate for gear unit without auxiliary cooling, if: $P_2 \leq P_{01} = P_{01} \times f_1 \times f_2 \times f_3 \times f_4$	3.2 如满足以下条件, 则齿轮箱带冷却风扇可满足要求: 3.2 Adequate for gear unit with fan cooling, if: $P_2 \leq P_{02} = P_{02} \times f_1 \times f_2 \times f_3 \times f_{10}$
	3.2 如满足以下条件, 则齿轮箱带冷却盘管可满足要求: 3.2 Adequate for gear unit with fitted cooling coil, if: $P_2 \leq P_{03} = P_{03} \times f_1 \times f_2 \times f_3 \times f_{11}$	3.3 如满足以下条件, 则齿轮箱带冷却盘管和风扇可满足要求: 3.3 Adequate for gear unit with cooling coil and fan, if: $P_2 \leq P_{04} = P_{04} \times f_1 \times f_2 \times f_3 \times f_{12}$
	3.3 如满足以下条件, 则齿轮箱带冷却盘管和风扇可满足要求: 3.3 Adequate for gear unit with cooling coil and fan, if: $P_2 \leq P_{04} = P_{04} \times f_1 \times f_2 \times f_3 \times f_{12}$	3.5 如需要较高的热容量, 则可按用户要求提供外部润滑油冷却装置进行冷却。 3.5 For higher thermal capacities, cooling by external oil, cooler on request

齿轮箱 Gear Units 符号说明 Key to Symbols

E_o	= 每小时工作周期, 以百分比表示, 如 $E_o=80\%/h$ Operating cycle per hour in %, e.g. $E_o=80\%/h$
f_1	= 工作机系数 (表1), 20页 Factor for driven machine (table 1), pages 20
f_2	= 原动机系数 (表2), 21页 Factor for prime mover (table 2), page 21
f_3	= 峰值扭矩系数 (表3), 21页 Peak torque factor (table 3), page 21
f_4, f_5	= 环境温度系数 (表4+表5), 21页 Thermal factors (tables 4 + 5), page 21
f_6, f_7	= 海拔高度系数 (表6+表7), 21页 Factors for altitude (tables 6 + 7), page 21
f_8	= 立式安装齿轮箱供油系数 (表8), 22页 对于卧式安装齿轮箱: $f_8=1$ Oil supply factor for vertical gear units (Table 8), page 22 For horizontal gear units: $f_8=1$
f_9, f_{10} f_{11}, f_{12}	= 热容量系数 (表9...14), 22-23页 Therm alcapacity factors (tables9... 14), pages 22-23
a_1	= 规格系数 Size factor
a_2	= 传动比系数 Transmission ratio factor
i	= 实际传动比 Actual ratio
iN	= 额定传动比 Nominal ratio
i_s	= 要求传动比 Required ratio
n_1	= 输入转速 (r/min) Input speed (r/min)
n_2	= 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, 25-33页 Thermal capacity for gear units without auxiliary cooling, pages 25-33
P_{G2}	= 齿轮箱的热容量, 带冷却风扇, 25-33页 Thermal capacity for gear units with fan cooling, pages 25-33
P_{G3}	= 齿轮箱的热容量, 带内置冷却盘管, 25-33页 Thermal capacity for gear units with built-in cooling coil, pages 25-33
P_{G4}	= 齿轮箱的热容量, 带内置冷却盘管和风扇, 25-33页 Thermal capacity for gear units with built-in cooling coil and fan, pages 25-33
P_N	= 齿轮箱的额定功率(kW), 见选型表, 24-32页 Nominal power rating of gear units(kW), see tables, pages24-32
P_2	= 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)
T_{2N}	= 额定输出扭矩 (kN.m), 34-35页 Nominal output torque (kN.m), pages 34-35
S_A	= 减速机安全系数 (表15) 21页 Safety coefficient of speed reducer (table 15) Page 21

齿轮箱 Gear Units 选型示例 Selection Example

已知参数:

原动机
电机功率: $P_1=75kW$
电机转速: $n_1=1500rpm$
最大起动扭矩: $T_A=720N.m$

工作机

皮带输送机功率: $P_2=66kW$
转速: $n_2=26rpm$
工作制: 12小时/天
每小时起动次数: 7
每小时工作周期: $E_o=100\%$
环境温度: $30^\circ C$
室外安装(风速): ($w \geq 4m/s$)
海拔高度: 海平面
重要性与安全要求: 一般

齿轮箱设计

直交轴齿轮箱
安装方式: 卧式安装
输出轴 d_2 : 位于齿轮箱右侧(面对输入轴), 布置型式C
输出轴 d_2 的转动方向: ccw

KNOWN CRITERIA:

PRIME MOVER
Electric motor: $P_1=75 kW$
Motor speed: $n_1=1500 rpm$
Max. starting torque: $T_A=720 N.m$

DRIVEN MACHINE

Belt conveyor: $P_2=66 kW$
Speed: $n_2=26 rpm$
Duty: 12 h/day
Starts per hour: 7
Operating cycle per hour: $E_o=100\%$
Ambient temperature: $30^\circ C$
Outdoor installation: ($w \geq 4m/s$)
Altitude: sea level
Reliability: normal

GEAR UNIT DESIGN

Bevel-helical reducers
Mounting position: horizontal
Output shaft d_2 : on right hand side design C
Direction of rotation of output shaft d_2 : ccw

要求: 齿轮箱的类型及规格 Required: Type and size of gear units

- 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

$$P_N \geq P_2 \times f_1 \times f_2 \times S_A = 66 \times 1.3 \times 1 \times 1.4 = 120kW$$

从额定功率表中选择: 类型B3, 规格10, 对应的 $P_N=122kW$

Selected from power rating table: type B3, gear unit size 10, with $P_N = 122kW$

$$3.33 \times P_2 \geq P_N \quad 3.33 \times 66 = 219.8kW > P_N$$

- 1.3 检查起动扭矩 Checking the starting torque

$$P_s \geq \frac{T_A \times n_1}{9550} \times f_s = \frac{720 \times 1500}{9550} \times 0.65 = 73.5kW \quad P_N = 122kW > 73.5kW$$

2. 确定热容量 Determination of thermal capacity

根据表中给出的B3型齿轮箱参数, 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 B3

$$P_o = P_{G1} \times f_4 \times f_5 \times f_6 \times f_7 \quad P_o = 78.9kW \times 0.88 \times 1 \times 1 \times (1.23-2.80 \times 0.095 \times 0.15) \quad P_o = 82.6kW$$

$$P_2 = 66kW < P_o = 82.6kW$$

结论: 齿轮箱不带辅助冷却装置, 可满足要求!

Conclusion: A gear units without auxiliary cooling is sufficient!

齿轮箱 Gear Units
服务系数 Service Factors

工作机	日带载运行时间(小时)			工作机	日带载运行时间(小时)				
	<0.5	>0.5-10	>10		<0.5	>0.5-10	>10		
污水处理	浓缩器	-	-	1.2	起重机械	回转机构*	1	1.4	1.8
	压滤过滤器	1	1.3	1.5		俯仰机构	1	1.4	1.8
	絮凝器	0.8	1	1.3		行走机构	1.5	1.75	2
	曝气机	-	1.8	2		提升机构	1	1.1	1.4
	搜集设备	1	1.2	1.3	转臂式起重机	1	1.2	1.6	
	纵向、回转组合接集装置	1	1.3	1.5	化学工业	挤压机	-	-	1.6
	预缩器	-	1.1	1.3		调浆机	-	1.8	1.8
	螺杆泵	-	1.3	1.5		橡胶研光机	-	1.5	1.5
	水轮机	-	-	2		冷却圆筒	-	1.3	1.4
	离心泵	1	1.2	1.3		混料机,用于均匀介质	1	1.3	1.4
	1个活塞容积式泵	1.3	1.4	1.8		混料机,用于非均匀介质	1.4	1.6	1.7
	>1个活塞容积式泵	1.2	1.4	1.5		搅拌机,用于密度均匀介质	1	1.3	1.5
挖泥机	斗式输送机	/	1.6	1.6		搅拌机,用于非密度均匀介质	1.2	1.4	1.6
	倾卸装置	/	1.3	1.5		烘炉	1	1.3	1.5
	行走机构*	1.2	1.6	1.8		离心机	1	1.2	1.3
	斗轮式挖掘机:用于捡拾	/	1.7	1.7	冷却塔风扇	-	-	2	
	斗轮式挖掘机:用于粗料切碎机	/	2.2	2.2	风机(轴流和离心式)	-	1.4	1.5	
	切碎机	/	2.2	2.2	蔗糖生产	甘蔗切碎机*	-	-	1.7
钢铁工业	拉线机	1.25	1.5	1.75		甘蔗碾磨机	-	-	1.7
	绕线机	1	1.25	1.5	甜菜绞碎机	-	-	1.2	
	集中驱动辊道(无反转)	1.25	1.5	1.75	榨取机,机械制冷机,蒸煮机	-	-	1.4	
	单驱动辊道(无反转)	1.5	1.75	2	甜菜清洗机	-	-	1.5	
	集中驱动辊道(有反转)	1.75	2.25	2.5	甜菜切碎机	-	-	1.5	
	单驱动辊道(有反转)	2	2.25	2.75	运货索道	-	1.3	1.4	
纺织工业	织机	1.25	1.5	1.75	索道缆车	往返系统空中索道	-	1.6	1.8
	纺纱机	1	1.25	1.5		T型杆升降机	-	1.3	1.4
	洗涤机	1	1.25	1.5		连续索道	-	1.4	1.6
输送机械	斗式输送机	-	1.2	1.5		水泥工业	混凝土搅拌机	-	1.5
	绞车	1.4	1.6	1.6	破碎机*		-	1.2	1.4
	卷扬机	-	1.5	1.8	回转窑		-	-	2
	皮带输送机<150kw	1	1.2	1.3	管式磨机		-	-	2
	皮带输送机>150kw	1.1	1.3	1.4	选粉机		-	1.6	1.6
	货用电梯*	-	1.2	1.5	碾压机		-	-	2
	客用电梯*	-	1.5	1.8	造纸机械	各种类型**	-	1.8	2
	刮板输送机	-	1.2	1.5		碎浆机驱动装置	-	2	2.25
	自动扶梯	-	1.2	1.4	压缩机械	往复式压缩机	-	1.8	1.9
	轨道行走机构	-	1.5	-		离心式压缩机	-	1.4	1.5

工作机额定功率P2的确定:*)按最大扭矩确定额定功率。**)检验热功率是绝对必要的。

起动次数/每小时	<0.5h	0.5-10h	>10h
<10	1.00	1.00	1
<100	1.15	1.25	1.4
<500	1.25	1.4	1.7

环境温度	10℃	20℃	30℃	40℃	50℃
环境温度系数 f_3	0.88	1.00	1.15	1.35	1.65

齿轮箱 Gear Units
服务系数 Service Factors

原动机	系数 f_4
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

峰值扭矩	每小时峰值负荷次数 load peaks per hour			
	1-5	6-30	31-100	>100
f_5 单向载荷 steady direction of load	0.5	0.65	0.7	0.85
f_5 交变载荷 Alternating direction of load	0.7	0.95	1.10	1.25

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

环境温度 Ambient temperature	每小时工作周期(ED)百分比 % Operating cycle per hour (ED) in %				
	100	80	60	40	20
10℃	1.04	1.10	1.21	1.40	1.86
20℃	1.00	1.06	1.16	1.35	1.79
30℃	0.93	0.99	1.08	1.26	1.66
40℃	0.88	0.93	1.02	1.19	1.58
50℃	0.81	0.86	0.94	1.09	1.45

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_8	1.0	0.95	0.90	0.85	0.80

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_9	1.0	0.98	0.96	0.94	0.92

重要性与安全要求 Importance and safety requirements	一般设备, 减速机失效仅引起单机停产且更换备件 The failure of ordinary equipment and speed reducer can only result in production halts of single machine and replacement of spare parts.	一般设备, 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 or machines, production lines or the whole factory.	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.
S_n	1.1-1.3	1.3-1.5	1.5-1.7

齿轮箱 Gear Units
服务系数 Service Factors

表 8 Table 8 立式安装齿轮箱供油系数。对于卧式安装齿轮箱 $f_6=1.0$ ；当采用强制润滑时， $f_6=1.05$
Oil supply factor for vertical gear units. For horizontal gear units $f_6=1.0$, and in case of forced lubrication $f_6=1.05$

齿轮箱类型 Gear unit type	供油方式 Oil supply	规格 1...12 Sizes 1...12				规格 13...18 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 Cooling coil	带风扇和冷却盘管 With fan and cooling coil	不带辅助冷却装置 Without auxiliary cooling	带冷却风扇 With Fan	带冷却盘管 Cooling coil	带风扇和冷却盘管 With fan and cooling coil
H2.V H3.V H4.V	浸油润滑 Dip lubrication	0.95	*	0.95	*	*	*	*	*
	强制润滑 Forced lubrication	1.15	*	1.05	*	1.15	*	1.05	*
B2.V B3.V B4.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	1.15	1.10	1.10	1.10

表 9 Table 9 不带辅助冷却装置齿轮箱的热容量系数
Thermal capacity factor for gear units without auxiliary cooling

齿轮箱类型 Gear unit type	n r/min	安装位置 Place of installation			H4	B2	B3	B4
		狭小空间安装规格 风速 $\geq 0.5m/s$ Small confined spaces wind velocity $\geq 0.5m/s$	室内大厅，大车间安装 风速 $\geq 1.4m/s$ Large halls workshops Wind velocity $\geq 1.4m/s$	室外安装 风速 $\geq 4.0m/s$ In the open Wind velocity $\geq 4.0m/s$				
H1	750	0.68-0.26Ka1Ka2	0.79-0.27Ka1Ka2	1.00	750	0.78	0.83	1.00
	1000	0.70-0.79Ka1Ka2	0.84-0.85Ka1Ka2	1.14-0.81Ka1Ka2	1000	0.85	0.91-1.60Ka1Ka2	1.10-2.40Ka1Ka2
	1500	0.72-2.50Ka1Ka2	0.89-2.60Ka1Ka2	1.25-2.60Ka1Ka2	1500	0.97-10.0Ka1Ka2	1.03-12.5Ka1Ka2	1.27-14.0Ka1Ka2
	1800	0.71-3.60Ka1Ka2	0.92-4.40Ka1Ka2	1.30-4.20Ka1Ka2	1800	1.02-18.4Ka1Ka2	1.09-21.2Ka1Ka2	1.34-23Ka1Ka2
H2	750	0.76-0.08Ka1Ka2	0.79-0.21Ka1Ka2	1.00	750	0.68-0.09Ka1Ka2	0.77-0.14Ka1Ka2	1.00
	1000	0.76-1.00Ka1Ka2	0.87-1.40Ka1Ka2	1.12-1.30Ka1Ka2	1000	0.69-0.70Ka1Ka2	0.81-0.77Ka1Ka2	1.08-0.64Ka1Ka2
	1500	0.83-4.10Ka1Ka2	0.96-4.60Ka1Ka2	1.25-4.20Ka1Ka2	1500	0.74-3.20Ka1Ka2	0.88-3.30Ka1Ka2	1.20-2.90Ka1Ka2
	1800	0.85-6.80Ka1Ka2	0.98-7.10Ka1Ka2	1.31-6.80Ka1Ka2	1800	0.75-5.60Ka1Ka2	0.90-5.50Ka1Ka2	1.25-4.50Ka1Ka2
H3	750	0.76	0.81-0.06Ka1Ka2	1.0	750	0.73	0.80-0.05Ka1Ka2	1.00
	1000	0.83-1.20Ka1Ka2	0.90-1.36Ka1Ka2	1.11-1.30Ka1Ka2	1000	0.79-0.63Ka1Ka2	0.87-0.81Ka1Ka2	1.10-0.73Ka1Ka2
	1500	0.93-4.70Ka1Ka2	1.00-4.80Ka1Ka2	1.27-5.10Ka1Ka2	1500	0.86-2.40Ka1Ka2	0.95-2.50Ka1Ka2	1.23-2.80Ka1Ka2
	1800	0.96-7.50Ka1Ka2	1.05-7.60Ka1Ka2	1.32-7.40Ka1Ka2	1800	0.88-4.00Ka1Ka2	0.99-4.30Ka1Ka2	1.28-4.30Ka1Ka2

表 10 Table 10 带冷却风扇齿轮箱的装置热容量系数
Thermal capacity factor for gear units with fan

齿轮箱类型 Gear unit type	n r/min	安装位置 Place of installation			H4	B2	B3	
		狭小空间安装规格 风速 $\geq 0.5m/s$ Small confined spaces wind velocity $\geq 0.5m/s$	室内大厅，大车间安装 风速 $\geq 1.4m/s$ Large halls workshops Wind velocity $\geq 1.4m/s$	室外安装 风速 $\geq 4.0m/s$ In the open Wind velocity $\geq 4.0m/s$				
H1	750	0.97-0.05Ka1Ka2	0.97-0.04Ka1Ka2	1.00	750	0.89-0.29Ka1Ka2	0.91-0.25Ka1Ka2	1.00
	1000	1.16-0.33Ka1Ka2	1.20-0.33Ka1Ka2	1.23-0.32Ka1Ka2	1000	1.06-1.30Ka1Ka2	1.08-1.20Ka1Ka2	1.17-0.93Ka1Ka2
	1500	1.53-1.00Ka1Ka2	1.53-0.95Ka1Ka2	1.56-0.94Ka1Ka2	1500	1.38-4.20Ka1Ka2	1.40-4.10Ka1Ka2	1.48-3.70Ka1Ka2
	1800	1.89-1.50Ka1Ka2	1.70-1.50Ka1Ka2	1.73-1.50Ka1Ka2	1800	1.54-6.40Ka1Ka2	1.56-6.40Ka1Ka2	1.64-5.80Ka1Ka2
H2	750	0.95-0.07Ka1Ka2	0.96-0.06Ka1Ka2	1.00	750	0.95	0.96	1.00
	1000	1.16-0.65Ka1Ka2	1.17-0.63Ka1Ka2	1.21-0.55Ka1Ka2	1000	1.13-0.15Ka1Ka2	1.14-0.16Ka1Ka2	1.19-0.19Ka1Ka2
	1500	1.54-2.40Ka1Ka2	1.55-2.40Ka1Ka2	1.58-2.20Ka1Ka2	1500	1.47-0.92Ka1Ka2	1.48-0.92Ka1Ka2	1.52-0.95Ka1Ka2
	1800	1.74-3.80Ka1Ka2	1.75-3.80Ka1Ka2	1.78-3.80Ka1Ka2	1800	1.65-1.70Ka1Ka2	1.66-1.70Ka1Ka2	1.69-1.70Ka1Ka2

表 11 Table 11 带冷却盘管齿轮箱的热容量系数
Thermal capacity factor for gear unit with cooling coil

齿轮箱类型 Gear unit type	n r/min	安装位置 Place of installation			H4	B2	B3	
		狭小空间安装规格 风速 $\geq 0.5m/s$ Small confined spaces wind velocity $\geq 0.5m/s$	室内大厅，大车间安装 风速 $\geq 1.4m/s$ Large halls workshops Wind velocity $\geq 1.4m/s$	室外安装 风速 $\geq 4.0m/s$ In the open Wind velocity $\geq 4.0m/s$				
H1	750	0.87	0.91	1.00	750	0.89	0.91	1.00
	1000	0.97-0.02Ka1Ka2	1.03-0.05Ka1Ka2	1.16-0.10Ka1Ka2	1000	1.04	1.07	1.18-0.38Ka1Ka2
	1500	1.15-0.19Ka1Ka2	1.22-0.23Ka1Ka2	1.30-0.33Ka1Ka2	1500	1.30-0.78Ka1Ka2	1.34-1.10Ka1Ka2	1.47-1.60Ka1Ka2
	1800	1.25-0.42Ka1Ka2	1.32-0.47Ka1Ka2	1.50-0.57Ka1Ka2	1800	1.44-1.70Ka1Ka2	1.48-2.00Ka1Ka2	1.62-2.80Ka1Ka2
H2	750	0.88	0.91	1.00	750	0.86	0.90	1.00
	1000	1.01	1.06-0.08Ka1Ka2	1.17-0.24Ka1Ka2	1000	0.96	1.02	1.15-0.09Ka1Ka2
	1500	1.27-0.79Ka1Ka2	1.33-0.88Ka1Ka2	1.47-1.10Ka1Ka2	1500	1.14	1.19-0.05Ka1Ka2	1.38-0.37Ka1Ka2
	1800	1.40-1.40Ka1Ka2	1.46-1.50Ka1Ka2	1.61-1.70Ka1Ka2	1800	1.21-0.13Ka1Ka2	1.29-0.29Ka1Ka2	1.49-0.64Ka1Ka2

对于系数 $f_6, f_7, f_8, f_9, f_{10}, f_{11}$ 和 f_{12} ， <0.5 ，请与我们联系！ For factors $f_6, f_7, f_8, f_9, f_{10}, f_{11}$ and f_{12} , <0.5 , please refer to us! (* 根据客户要求) On request

齿轮箱 Gear Units
服务系数 Service Factor

表 12 Table 12 带冷却风扇和冷却盘管的齿轮箱的热容量系数
Thermal capacity factor for gear units with fan and cooling coil

齿轮箱类型 Gear unit type	n r/min	安装地点 Place of installation			H3	B2	B3	
		狭小空间安装规格 风速 $\geq 0.5m/s$ Small confined spaces wind velocity $\geq 0.5m/s$	室内大厅，大车间安装 风速 $\geq 1.4m/s$ Large halls, workshops Wind velocity $\geq 1.4m/s$	室外安装 风速 $\geq 4.0m/s$ In the open Wind velocity $\geq 4.0m/s$				
H1	750	0.96	0.98	1.00	750	0.94	0.95	1.00
	1000	1.19-0.09Ka1Ka2	1.20-0.09Ka1Ka2	1.22-0.09Ka1Ka2	1000	1.14-0.46Ka1Ka2	1.15-0.47Ka1Ka2	1.20-0.48Ka1Ka2
	1500	1.56-0.31Ka1Ka2	1.56-0.30Ka1Ka2	1.57-0.29Ka1Ka2	1500	1.51-2.10Ka1Ka2	1.52-2.00Ka1Ka2	1.57-2.00Ka1Ka2
	1800	1.75-0.52Ka1Ka2	1.76-0.52Ka1Ka2	1.77-0.52Ka1Ka2	1800	1.71-3.30Ka1Ka2	1.72-3.30Ka1Ka2	1.77-3.20Ka1Ka2
H2	750	0.97	0.98	1.00	750	0.97	0.98	1.00
	1000	1.19-0.25Ka1Ka2	1.20-0.25Ka1Ka2	1.22-0.25Ka1Ka2	1000	1.17-0.06Ka1Ka2	1.18-0.06Ka1Ka2	1.21-0.12Ka1Ka2
	1500	1.59-1.06Ka1Ka2	1.59-1.00Ka1Ka2	1.61-1.00Ka1Ka2	1500	1.55-0.47Ka1Ka2	1.55-0.47Ka1Ka2	1.58-0.52Ka1Ka2
	1800	1.82-1.80Ka1Ka2	1.82-1.80Ka1Ka2	1.84-1.80Ka1Ka2	1800	1.74-0.81Ka1Ka2	1.75-0.82Ka1Ka2	1.77-0.84Ka1Ka2

对于系数 f_{13} ， <0.5 ，请与我们联系！ For factors f_{13} <0.5 , please refer to us!

表 13 Table 13 尺寸系数 Size factor a1

Size	3	4	5	6	7	8	9	10	11	12	13	14
a1	0.024	0.030	0.060	0.055	0.065	0.075	0.085	0.095	0.135	0.160	0.190	0.200
Size	15	16	17	18	19	20	21	22	23	24	25	26
a1	0.027	0.290	0.320	0.345	0.370	0.390	0.530	0.610				

* 对于这些尺寸，请与我们联系！ * for these sizes, please refer to us!

表 14 Table 14 传动比系数 Transmission ratio factor a2

i	H1SH	i	H2SH	i	H3SH	i	H4SH	i	B2SH	i	B3SH	i	B4SH
1.25	13.000	6.3	1.800	22.4	0.320	100	0.020	5	3.500	12.5	0.950	80	0.110
1.4	12.000	7.1	1.600	25	0.310	112	0.015	5.6	2.800	14	0.850	90	0.100
1.6	10.000	8	1.400	28	0.270	125	0.012	6.3	2.400	16	0.800	100	0.090
1.8	8.500	9	1.100	31.5	0.230	140	0.009	7.1	1.900	18	0.750	112	0.080
2	8.000	10	0.890	35.5	0.190	160	0.007	8	1.600	20	0.700	125	0.070
2.24	7.000	11.2	0.740	40	0.170	180	0.004	9	1.350	22.4	0.650	140	0.060
2.5	6.500	12.5	0.630	45	0.160	200	0.002	10	1.200	25	0.550	160	0.050
2.8	6.000	14	0.530	50	0.110	224	0.000	11.2	1.100	28	0.450	180	0.040
3.15	3.500	16	0.450	56	0.080	250	0.000	12.5	0.950	31.5	0.380	200	0.030
3.55	3.300	18	0.370	63	0.050	280	0.000	14	0.850	35.5	0.330	224	0.020
4	2.900	20	0.330	71	0.045	315	0.000	16	0.800	40	0.300	250	0.010
4.5	2.100	22.4	0.320	80	0.040	355	0.000	18	0.750	45	0.270	280	0.000
5	1.600	25	0.310	90	0.035	400	0.000			50	0.200	315	0.000
5.6	1.600	28	0.270	100	0.020	450	0.000			56	0.150	355	0.000
										63	0.130	400	0.000
										71	0.120		
										80	0.110		
										90	0.100		

H/B工业齿轮箱 GEAR UNITS

平行轴齿轮箱 Helical Gear Units 额定功率 Nominal Power Ratings
 类型 Types H1 规格 Sizes 1...19

额定功率 Nominal Power Ratings																											
齿轮箱规格 Gear unit sizes																											
IN	1	2	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 PN/KW Nominal power ratings PN in kW
1.25	1500	1200	99	327	880	1671	2702																				
	1000	800	66	218	586	1114	1801																				
	750	600	50	163	440	836	1351																				
1.4	1500	1071	83	303	807	1589	2501																				
	1000	714	62	202	538	1039	1667																				
	750	536	47	152	404	780	1252																				
1.6	1500	938	85	285	737	1395	2318	3829																			
	1000	625	57	190	481	929	1545	2618	4123																		
	750	469	43	142	368	697	1159	1964	3094																		
1.8	1500	833	79	299	672	1326	2128	3611																			
	1000	566	53	140	448	885	1421	2410	3860																		
	750	417	40	105	336	664	1085	1808	2895																		
2	1500	750	73	196	644	1217	1983	3353																			
	1000	500	49	131	429	812	1309	2236	3671																		
	750	375	37	98	322	609	982	1677	2678	4751																	
2.24	1500	670	67	175	589	1087	1754	3087																			
	1000	446	45	117	382	724	1198	2055	3283																		
	750	335	34	88	295	544	877	1543	2466	4280																	
2.5	1500	600	63	163	528	974	1571	2764																			
	1000	400	42	109	352	649	1047	1843	3016	4607																	
	750	300	31	82	264	487	785	1382	2282	3455																	
2.8	1500	536	56	152	471	836	1330	2470																			
	1000	367	37	101	314	557	886	1645	2682	4224																	
	750	268	28	76	226	416	665	1235	2021	3171	4799																
3.15	1500	476	50	135	419	758	1221	2088	3409																		
	1000	317	33	90	279	505	813	1391	2270	3850																	
	750	238	25	67	209	379	611	1044	1705	2891	4311																
3.55	1500	423	44	124	368	687	1103	1936	3083																		
	1000	282	30	83	245	458	736	1290	2055	3484																	
	750	211	22	62	183	342	550	966	1538	2607	3822																
4	1500	375	39	110	330	609	982	1728	2780																		
	1000	250	26	73	220	406	654	1152	1853	3194	4529																
	750	188	20	55	165	305	492	866	1394	2402	3406	4823															
4.5	1500	333	29	77	234	481	746	1395	2008	3557																	
	1000	222	19	51	156	321	487	930	1339	2371	3394																
	750	167	14	38	117	241	374	689	1007	1784	2563	3777															
5	1500	300	25	66	198	377	644	1080	1712	2790																	
	1000	200	16	44	132	251	429	706	1141	1860	2597	3644															
	750	150	12	33	99	185	322	529	856	1395	1948	2733															
5.6	1500	268	17	58	168	320	481	802	1454	2371																	
	1000	179	12	37	112	214	328	596	971	1584	2212	2812															
	750	134	9	28	84	160	246	446	727	1186	1656	2105															

采用强制润滑 Forced lubrication required

H/B工业齿轮箱 GEAR UNITS

平行轴齿轮箱 Helical Gear Units 热容量 Thermal Capacities
 类型 Types H1 规格 Sizes 1...19

热容量 Thermal Capacities																											
齿轮箱规格 Gear unit sizes																											
IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
																											热容量 PG (单位为 KW) 取决于冷却方式: PG1: 无辅助冷却装置; PG2: 带冷却风扇; PG3: 带冷却盘管; PG4: 带风扇和冷却盘管。 Thermal capacity PG(in KW) depends on kind of cooling: Pg1: without auxiliary cooling, PG2: fan cooling, PG3: cooling coil, PG4: fan and cooling coil.
1.25	PG1	70.4		110		207		230		190																	
	PG2			171		408		562		642																	
	PG3	109		268		641		923		1322																	
	PG4			322		819		1177		1621																	
1.4	PG1	88.0		110		214		250		247																	
	PG2			169		409		567		670																	
	PG3	105		260		629		901		1305																	
	PG4			312		800		1149		1589																	
1.8	PG1	66.2		108		215		261		303		234															
	PG2			164		389		548		686		967		891													
	PG3	100		214		593		836		1246		2138		2631													
	PG4			295		754		1064		1519		2632		3220													
1.8	PG1	66.0		120		214		274		323		330															
	PG2			181		387		552		682		1000		1011													
	PG3	93.7		264		657		918		1196		2082		2547													
	PG4			319		712		1040		1454		2555		3095													
2	PG1	65.0		116		209		273		334		383		302													
	PG2			174		372		534		666		1010		1085		794											
	PG3	89.1		251		626		775		1135		2004		2483		2249											
	PG4			303		670		985		1382		2449		3001		3099											
2.24	PG1	57.0		112		202		263		335		433		418													
	PG2			166		353		496		643		999		1119		908											
	PG3	83.9		236		490		699		1063		1897		2377		2190											
	PG4			286		628		888		1296		2322		2874		2984											
2.5	PG1	54.1		100		192		252		328		452		466													
	PG2			153		332		466		611		971		1121		1001											
	PG3	75.5		212		453		644		984		1778		2246		2140											
	PG4			257		580		818		1201		2174		2714		2876											
2.8	PG1	52.3		97.0		180		263		347		456		525													
	PG2			143		309		477		630		928		1095		1063											
	PG3	69.8		196		413		649		990		1643		2091		2063											
	PG4			237		529		824																			

H/B工业齿轮箱 GEAR UNITS

平行轴齿轮箱 Helical Gear Units 额定功率 Nominal Power Ratings
 类型 Types H3., H4.. 规格 Sizes 5...26

额定功率 Nominal Power Ratings																										
IN	n1	n2	齿轮箱规格 Gear unit sizes																							
			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 PN.KW Nominal power ratings PN in kW																							
40	1500	38	44	58	82	101	135	171	239	298	350	434	609	688	796	955	1194	1373	1671	1870	2228	2547	3183	3581		
	1000	25	29	38	54	67	89	113	157	196	230	285	401	453	524	628	785	903	1099	1230	1466	1675	2094	2356		
	750	18.8	22	29	40	50	67	85	118	148	173	215	301	341	394	472	591	679	827	925	1102	1260	1575	1772		
45	1500	33	38	50	71	88	117	149	207	259	304	377	529	598	691	829	1037	1192	1451	1624	1935	2212	2764	3110		
	1000	22	25	33	47	59	78	99	138	173	203	251	352	399	461	553	691	795	968	1083	1290	1474	1843	2073		
	750	16.7	19	25	36	45	59	75	105	131	154	191	268	303	350	420	525	603	734	822	970	1119	1399	1574		
50	1500	30	35	46	64	80	107	135	188	236	276	342	481	543	628	754	942	1084	1319	1476	1759	2010	2513	2827		
	1000	20	23	30	43	53	71	90	126	157	184	228	320	362	419	503	626	723	880	994	1173	1340	1675	1885		
	750	15	17	23	32	40	53	68	94	118	138	171	240	272	314	377	471	542	660	738	880	1005	1257	1414		
56	1500	27	31	41	58	72	96	122	170	212	249	308	433	489	565	679	848	975	1187	1329	1583	1809	2262	2545		
	1000	17.9	21	27	38	48	64	81	112	141	165	204	287	324	375	450	562	647	787	891	1050	1200	1499	1687		
	750	13.4	15	20	29	36	48	60	84	105	123	153	215	243	281	337	421	484	589	659	786	898	1123	1263		
63	1500	24	28	36	52	64	85	106	151	188	221	274	385	435	503	603	754	867	1035	1181	1407	1608	2010	2282		
	1000	15.9	18	24	34	42	57	72	100	125	147	181	255	288	333	400	499	574	690	783	932	1066	1332	1498		
	750	11.9	14	18	26	32	42	54	75	93	110	136	191	216	249	299	374	430	523	586	698	797	997	1121		
71	1500	21	24	32	45	56	75	95	132	165	194	240	336	360	440	528	660	759	924	1034	1231	1407	1759	1979		
	1000	14.1	16	21	30	38	50	63	89	111	130	161	226	255	295	354	443	509	620	694	827	945	1181	1329		
	750	10.6	12	16	23	28	38	48	67	83	98	121	170	192	222	266	333	383	466	522	622	710	888	999		
80	1500	18.8	22	29	40	50	67	85	118	148	173	215	301	341	394	472	591	679	827	925	1102	1260	1575	1772		
	1000	12.5	14	19	27	33	45	56	79	98	115	143	200	226	262	314	393	452	550	615	733	838	1047	1178		
	750	9.4	11	14	20	25	33	42	59	74	87	107	151	170	197	236	295	340	413	463	551	630	787	885		
90	1500	16.7	19	25	35	45	59	75	105	131	154	191	268	303	350	420	507	603	717	822	979	1119	1399	1574		
	1000	11.1	13	17	23	30	39	50	70	87	102	127	178	201	232	279	337	401	477	546	651	744	930	1046		
	750	8.3	10	13	17	22	29	37	52	65	76	95	133	150	174	209	252	300	356	406	487	556	695	782		
100	1500	15	18	23	32	40	53	68	94	118	138	171	240	272	314	355	471	528	660	730	880	1005	1257	1414		
	1000	10	12	15	21	27	36	45	63	79	92	114	160	181	209	237	314	351	440	487	586	670	838	942		
	750	7.5	9	11	16	20	27	34	47	59	69	86	120	136	157	177	236	263	330	365	440	503	628	707		
112	1500	13.4	16	20	29	35	48	59	84	105	123	153	215	243	281	337	421	484	589	659	786	898	1123	1263		
	1000	8.9	11	14	19	23	32	39	56	70	82	102	143	161	186	224	280	322	391	438	522	596	746	839		
	750	6.7	8	10	14	18	24	29	42	53	62	75	107	121	140	168	210	242	295	330	393	449	561	631		
125	1500	12	15	19	26	32	43	54	75	94	111	137	192	217	251	302	377	434	528	591	704	804	1005	1131		
	1000	8	10	13	18	21	28	36	50	63	74	91	128	145	168	201	251	289	352	394	469	536	670	754		
	750	6	8	10	13	16	21	27	38	47	55	68	96	109	126	151	188	217	264	295	352	402	503	565		
140	1500	10.7	13	17	23	29	38	48	67	84	99	122	171	194	224	269	336	387	471	527	627	717	896	1008		
	1000	7.1	9	12	16	20	27	34	47	58	68	81	114	129	149	178	223	256	312	349	416	476	595	669		
	750	5.4	7	9	12	15	19	24	34	42	50	62	87	98	113	136	170	195	237	266	317	362	452	509		
160	1500	9.4	12	15	20	25	33	42	59	74	87	107	151	170	197	236	295	340	413	463	551	630	787	885		
	1000	6.3	8	10	14	17	22	28	40	49	58	72	101	114	132	158	196	228	277	310	369	422	528	594		
	750	4.7	6	8	10	13	17	21	30	37	43	54	75	85	98	118	148	170	207	231	276	315	394	443		
180	1500	8.3	10	13	18	22	30	37	52	65	76	95	133	150	174	209	252	300	356	406	487	556	695	782		
	1000	5.6	7	9	12	15	20	25	35	44	52	64	90	101	117	141	176	202	246	276	328	375	469	528		
	750	4.2	5	7	9	11	15	19	26	33	39	48	67	76	88	106	132	152	185	207	264	281	352	396		
200	1500	7.5	9	12	16	20	27	34	47	59	69	86	120	136	157	188	236	271	330	369	440	503	628	707		
	1000	5	6	8	11	13	18	23	31	39	46	57	80	91	105	126	157	181	220	246	293	335	419	471		
	750	3.8	5	6	8	10	14	17	24	30	35	43	61	69	80	95	119	137	167	187	223	255	318	358		
224	1500	6.7	8	10	14	18	24	30	42	53	62	76	107	121	140	168	210	242	295	330	393	449	561	631		
	1000	4.5	6	8	10	12	16	20	28	35	41	51	72	82	94	113	141	163	198	221	264	302	377	424		
	750	3.3	4	5	7	8	10	12	15	21	26	30	38	53	60	69	83	104	119	145	162	194	221	276	311	
250	1500	6	8	10	13	16	21	27	38	47	55	68	96	109	126	151	188	217	264	295	352	402	503	565		
	1000	4	5	6	8	10	14	18	25	31	37	46	64	72	84	101	126	145	176	197	235	268	335	377		
	750	3	4	5	6	8	10	14	19	24	28	34	46	54	63	75	94	108	132	148	176	201	251	283		
280	1500	5.4	7	9	12	14	19	24	34	42	50	62	87	98	113	136	170	195	237	266	317	382	452	509		
	1000	3.6	4	5	7	8	10	12	16	23	28	33	41	58	65	75	90	113	130	158	177	211	241	302	339	
	750	2.7	3	4	5	6	8	10	12	17	21	25	31	43	49	57	68	85	110	119	133	158	181	226	254	
315	1500	4.8	6	8	10	13	17	22	30	38	44	55	77	87	101	121	151	173	211	236	281	322	402	462		
	1000	3.2	4	5	7	8	10	14	20	25	29	37	51	58	67	80	101	116	141	157	188	214	268	302		
	750	2.4	3	4	5	6	8	10	12	15	19	22	27	36	43	50	60	75	87	106	118	141	161	201	226	
355	1500	4.2	5	6	8	10	15	19	26	33	39	48	62	76	84	106	128	152	180	207	246	281	352	396		
	1000	2.8	3	4	5	7	8	10	13	17	22	26	32	41	51	56	70	85	101	120	138	164	186	235	264	
	750	2.1	2	3	4	5	6	8	10	13	16	19	24	31	38	42	53	64	76	90	103	123	141	176	198	
400	1500	3.8	5	6	8	10	14	18	25	31	37	46	64	72	84	101	126	145	176	197	235	268	335	377		
	1000	2.5	3	4	5	7	8	10	12	15	19	22	27	36	43	50	60	75	87	106	118	141	161	201	226	
	750	1.9	2																							

H/B工业齿轮箱 GEAR UNITS

直交轴齿轮箱 Bevel-helical Gear Units 额定功率 Nominal Power Ratings
 类型 Types B3., B4.. 规格 Sizes 3...26

额定功率 Nominal Power Ratings																											
IN	n1	n2	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 PN, KW Nominal power ratings PN in kW																								
31.5	1500	48	18	33	55	73	103	128	171	216	302	377	442	548	709	870	1005	1206	1508	1734	2111						
	1000	32	12.1	22	37	49	69	85	114	144	201	251	296	365	513	670	804	1005	1156	1407	1575	1876	2145	2681	3016		
	750	24	9.0	17	28	36	52	64	85	108	151	188	221	274	385	438	503	603	754	867	1055	1181	1407	1608	2010	2262	
35.5	1500	42	15.8	29	48	64	90	112	150	189	264	330	387	479	673	761	880	1055	1319	1517	1847	2067	2463	2816			
	1000	28	11	19	32	43	60	75	100	126	178	220	258	320	449	507	586	704	880	1012	1231	1378	1642	1876	2346	2639	
	750	21	7.9	15	24	32	45	56	75	95	132	165	194	240	336	380	440	528	650	759	924	1034	1231	1407	1759	1979	
40	1500	38	14	26	44	58	82	101	135	171	239	298	350	434	609	688	796	955	1194	1373	1671	1870	2223	2587			
	1000	25	9	17	29	38	54	67	89	113	157	196	230	285	401	453	524	628	785	903	1099	1230	1466	1675	2094	2356	
	750	18.8	7.1	13	22	29	40	50	67	85	118	148	173	215	301	341	394	472	591	679	827	925	1102	1260	1575	1772	
45	1500	33	12	23	38	50	71	88	117	149	207	259	304	377	529	596	691	829	1037	1192	1451	1624	1935	2212	2764		
	1000	22	8.3	15	25	33	47	59	78	99	138	173	203	251	352	399	461	553	691	795	968	1083	1290	1474	1843	2073	
	750	16.7	6.3	12	19	25	36	45	59	75	105	131	164	191	268	303	350	420	526	603	734	822	979	1119	1399	1574	
50	1500	30	11	21	35	46	64	80	107	136	188	236	276	342	481	543	628	754	942	1083	1319	1476	1759	2010	2513	2827	
	1000	20	8	14	23	30	43	53	71	90	126	157	194	228	320	362	419	503	628	723	880	994	1173	1340	1675	1885	
	750	15	6	10.4	17	23	32	40	53	68	94	118	138	171	240	272	314	377	471	542	660	738	880	1005	1257	1414	
56	1500	27	10.2	19	31	41	58	72	96	122	170	212	249	308	433	489	565	679	848	975	1187	1329	1563	1809	2292	2545	
	1000	17.9	6.7	12	21	27	38	48	64	81	112	141	165	204	287	324	375	450	562	647	787	881	1060	1200	1499	1687	
	750	13.4	5.1	9.3	15	20	29	36	48	60	84	105	123	153	215	243	281	337	421	484	589	659	786	896	1123	1263	
63	1500	24	9	17	28	36	50	64	85	108	151	188	221	274	385	435	503	603	754	867	1055	1181	1407	1608	2010	2262	
	1000	15.9	6	11	18	24	33	42	57	72	100	125	147	181	255	288	333	400	499	574	699	783	932	1066	1332	1498	
	750	11.9	4.5	8.2	14	18	25	32	42	54	75	93	110	136	191	216	249	299	374	430	523	586	696	797	997	1121	
71	1500	21	7.9	14.5	24	32	44	56	75	95	132	165	194	240	336	380	440	528	650	759	924	1034	1231	1407	1759	1979	
	1000	14.1	5.3	9.7	16	21	30	38	50	63	89	111	130	161	226	256	295	354	443	509	620	694	827	945	1181	1329	
	750	10.6	4	7.3	12	16	22	28	38	48	67	83	98	121	170	192	222	266	333	383	466	522	622	710	888	999	
80	1500	18.8			22	28	40	50	67	85	118	148	173	215	301	341	394	472	591	679	827	925	1102	1260	1575	1772	
	1000	12.5			14	18	27	33	45	56	79	98	115	143	200	226	262	314	393	452	550	615	733	838	1047	1178	
	750	9.4			11	14	20	25	33	42	59	74	87	107	151	170	197	236	295	340	413	463	561	630	787	886	
90	1500	16.7			19	24	36	44	59	75	105	131	164	191	268	303	350	420	526	603	734	822	979	1119	1399	1574	
	1000	11.1			13	16	24	30	40	50	70	87	102	127	178	201	232	279	349	401	488	548	651	744	930	1046	
	750	8.3			9.6	12	18	22	30	37	52	65	76	95	133	150	174	209	261	300	365	408	487	586	696	782	
100	1500	15			17.3	23	32	40	53	68	94	118	138	171	240	272	314	377	471	542	660	738	880	1005	1257	1414	
	1000	10			12	15	21	27	36	45	63	79	92	114	160	181	209	251	314	361	440	492	586	670	838	942	
	750	7.5			8.8	11.4	16	20	27	34	47	59	69	86	120	136	157	188	236	271	330	389	440	503	628	707	
112	1500	13.4			15	20	29	36	48	60	84	105	123	153	215	243	281	337	421	484	589	659	786	896	1123	1263	
	1000	8.9			10.3	13.5	19	24	32	40	56	70	82	102	143	161	186	224	280	322	361	438	522	596	746	839	
	750	6.7			7.7	10	14	18	24	30	42	53	62	76	107	121	140	168	210	242	295	330	393	440	561	631	
125	1500	12			14	18	26	32	43	54	75	94	111	137	192	217	251	302	377	434	526	591	704	804	1005	1131	
	1000	8			9.2	12	17	21	28	36	50	63	74	91	126	145	166	201	251	289	352	394	469	536	670	754	
	750	6			6.9	9.1	13	16	21	27	38	47	58	68	96	109	126	151	188	217	264	295	352	402	503	565	
140	1500	10.7			12	16.2	23	29	38	48	67	84	99	122	171	194	224	269	336	387	471	527	627	717	896	1008	
	1000	7.1			8.2	11	15	19	25	32	45	56	65	81	114	129	149	178	223	256	312	349	415	476	595	669	
	750	5.4			6.2	8.2	12	14.4	19	24	34	42	50	62	87	98	113	136	170	195	237	266	317	362	452	509	
160	1500	9.4			11	14.3	20	25	33	42	59	74	87	107	151	170	197	236	295	340	413	463	551	630	787	886	
	1000	6.3			7.3	9.6	14	17	22	28	40	49	58	72	101	114	132	158	198	228	277	310	369	422	528	594	
	750	4.7			5.4	7.1	10	13	17	21	30	37	43	54	75	85	98	118	148	170	207	231	276	315	394	443	
180	1500	8.3			9.6	13	18	22	30	37	52	65	76	95	133	150	174	209	261	300	365	408	487	556	695	782	
	1000	5.6			6.5	8.5	12	15	20	25	36	44	52	64	90	101	117	141	175	202	246	276	328	375	469	528	
	750	4.2			4.8	6.4	9.0	11.2	15	19	26	33	39	48	67	76	88	106	132	152	185	207	246	281	352	396	
200	1500	7.5			8.6	11.4	16	20	27	34	47	59	69	86	120	136	157	188	236	271	330	389	440	503	628	707	
	1000	5			5.8	7.6	11	13.4	18	23	31	39	46	57	80	91	109	129	157	181	220	246	290	335	419	471	
	750	3.8			4.4	5.8	8.2	10	14	17	24	30	36	43	61	69	80	95	110	137	167	187	223	255	318	358	
224	1500	6.4			7.7	10	14.4	18	24	30	42	53	62	76	107	121	140	168	210	242	295	330	393	440	561	631	
	1000	4.5			5.2	6.8	9.7	12	16	20	28	35	41	51	72	82	94	113	141	163	198	221	264	302	377	424	
	750	3.3			3.8	5.0	7.1	9	12	15	21	26	30	38	53	60	69	83	104	119	145	162	194	221	276	311	
250	1500	6			6.9	9.1	13	16	21	27	38	47	55	66	96	109	126	151	188	217	264	295	352	402	503	565	
	1000	4			4.6	6.1	8.6	11	14	18	25	31	37	46	64	72	84	101	129	145	179	197	235	268	335	377	
	750	3			3.5	4.8	6.4	8.0	11	14	19	24	28	34	48	54	63	75	94	108	132	148	176	201	251	28	

H/B工业齿轮箱 GEAR UNITS

平行齿轮箱 Helical Gear Units 额定输出扭矩 Nominal Output Torques
 类型 Types H1.., H2.., H3.., H4.. 规格 Sizes 1...26

传动比 iN, 额定输出扭矩 T2N (KNm) Nominal output torques T2N																													
iN	齿轮箱规格 Gear unit sizes																												
	1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26				
1.25	0.79	2.6			7				13.3						21.5														
1.4	0.83	2.7			7.2				13.9						22.3														
1.6	0.87	2.9			7.5				14.2						23.6	40			63										
1.8	0.91	2.4			7.7				15.2						24.4	41.4			66.3										
2	0.93	2.5			8.2				15.5						25	42.7			68.2	121									
2.24	0.96	2.5			8.4				15.5						25	44			70.3	122									
2.5	1	2.6			8.4				15.5						25	44			72	110									
2.8	1	2.7			8.4				14.9						23.7	44			72	113									
3.15	1	2.7			8.4				15.2						24.5	41.9			68.4	116									
3.55	1	2.8			8.3				15.5						24.9	43.7			69.6	118									
4	1	2.8			8.4				15.5						25	44			70.8	122									
4.5	0.82	2.2			6.7				13.8						21.4	40			57.6	102									
5	0.78	2.1			6.3				12						20.5	33.7			54.5	88.8									
5.6	0.62	2			6				11.4						17.5	31.8			51.8	84.5									
6.3		3.5	6.3	10.5					19						31.5	55.5			86	143									
7.1		3.5	6.3	10.5					19						31.5	55.5			86	143	160	195	230	292	335	410			
8		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458							
9		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458	540						
10		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458	540	620					
11.2		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458	540	620	780				
12.5		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458	540	620	780	880			
14		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458	540	620	780	880			
16		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458	540	620	780	880			
18		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458	540	620	780	880			
20		3.5	6.3	10.5	13.5	19	24		31.5	39.5	55.5	69	86	107	143	160	195	230	292	335	410	458	540	620	780	880			
22.4		3.5	6.2	10.2	13.5	18.6	24		31	39.5	54.5	69	88	107	153	160	200	230	300	335	420	458	560	620	800	880			
25				11	13.5	20.5	24		34	39.5	60	69	88	107	153	173	200	240	300	345	420	470	560	640	800	900			
28				11	13	20.5	23.5	34		38.9	60	67.8	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
31.5				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
35.5				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
40				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
45				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
50				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
56				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
63				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
71				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
80				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
90				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
100				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
112				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
125				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
140				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
160				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
180				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
200				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
224				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
250				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
280				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
315				11	14.5	20.5	25.5	34		43	60	75	88	109	153	173	200	240	300	345	420	470	560	640	800	900			
355					19.6	25.5	33	43		59	75	88	109	140	173	192	240	290	345	410	470	560	640			900			
400					25.5		43			75		109		158		223		335		465						900			
450					24.8		41.6			74		109																	

H/B工业齿轮箱 GEAR UNITS

直交轴齿轮箱 Bevel-helical Gear Units 额定输出扭矩 Nominal Output Torques
 类型 Types B2.., B3.., B4.. 规格 Sizes 1...26

传动比 iN, 额定输出扭矩 T2N (KNm) Nominal output torques T2N																											
iN	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	20	21	22	23	24	25	26	
5	1.15	2	3.1	5.8	9.4				17.8						28			43									
5.6	1.15	2	3.1	5.8	9.4				17.8						28			45									
6.3	1.15	2	3.1	5.8	9.4	12	17.8	22.3	28	35.6	47	55	71	82	130	141	195										
7.1	1.15	2	3.1	5.8	9.4	12	17.8	22.3	28	35.6	49	57	73	84	132	145	195	230									
8	1.15	2	3.1	5.8	9.4	12	17.8	22.3	28	35.6	50.5	59	77	88	132	148	195	230									
9	1.15	2	3.1	5.8	9.4	12	17.8	22.3	28	35.6	50.5	61	78	91	132	148	195	230									
10	1.15	2	3.1	5.8	9.4	12	17.8	22.3	28	35.6	50.5	62	78	95	132	148	195	230									
11.2	1.15	2	3.1	5.8	9.4	12	17.8	22.3	28	35.6	50.5	62	78	97.5	132	148	195	230									

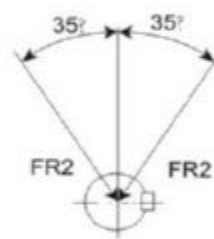
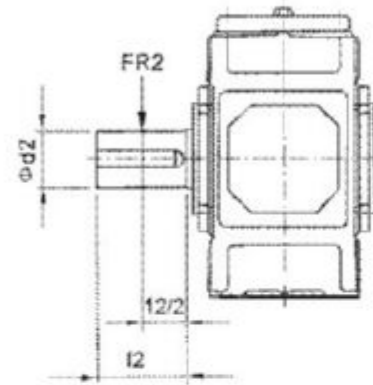
齿轮箱 Gear Units

输出轴 d2 上允许的附加径向力 1)

Permissible Additional Radial Forces on Output Shaft d2 1)

类型 H1S., H2S., H3S., H4S., B2S., B3S., B4S
Types H1S., H2S., H3S., H4S., B2S., B3S., B4S

作用力在轴端中部
Application of force on centre of shaft end



允许的作用力方向
Permissible direction of force

允许的附加径向力 FR2 (kN), 作用于输出轴端中部 3)

Permissible additional radial forces FR2 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) Gear unit sizes 1) , 4																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H1SH	A/B	2)	-	2)	-	2)	-	2)	-	2)	-	2)	-	2)	-	2)	-	2)	-
H2S.	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	18	18	10	28	35	35	112	112	85	135	135	135
H3S.	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
H4S.	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
B2S.	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
B3S.	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
B4S.	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

- 表中数据为最小值。如果给定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力。请与我们联系。
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.
- 根据用户要求供货。On request.
- 当作用力不在轴端中部时, 请参见第36页。For application of force outside the center of the shaft end, see page 36.
- 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。
Use foundation bolts of min. Property class 8.8. Foundation must be dry and grease-free, Permissible additional radial forces on input shaft d1 on request.

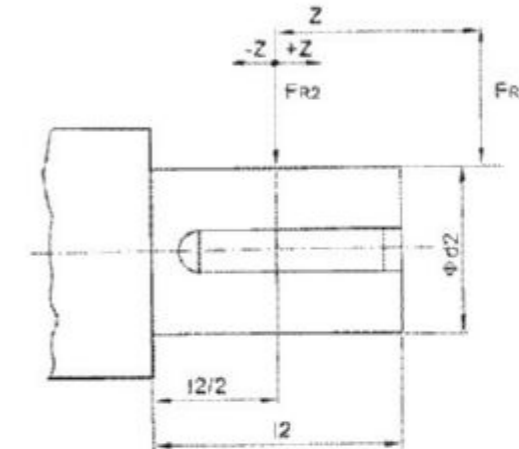
齿轮箱 Gear Units

输出轴 d2 上允许的附加径向力

Permissible Additional Radial Forces on Output Shaft d2

类型 H1S., H2S., H3S., H4S., B2S., B3S., B4S
Types H1S., H2S., H3S., H4S., B2S., B3S., B4S

作用力不在轴端中部
Application of force outside the centre of the shaft end



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

FR22 允许的轴端外部径向力
FR22 Permissible external radial force

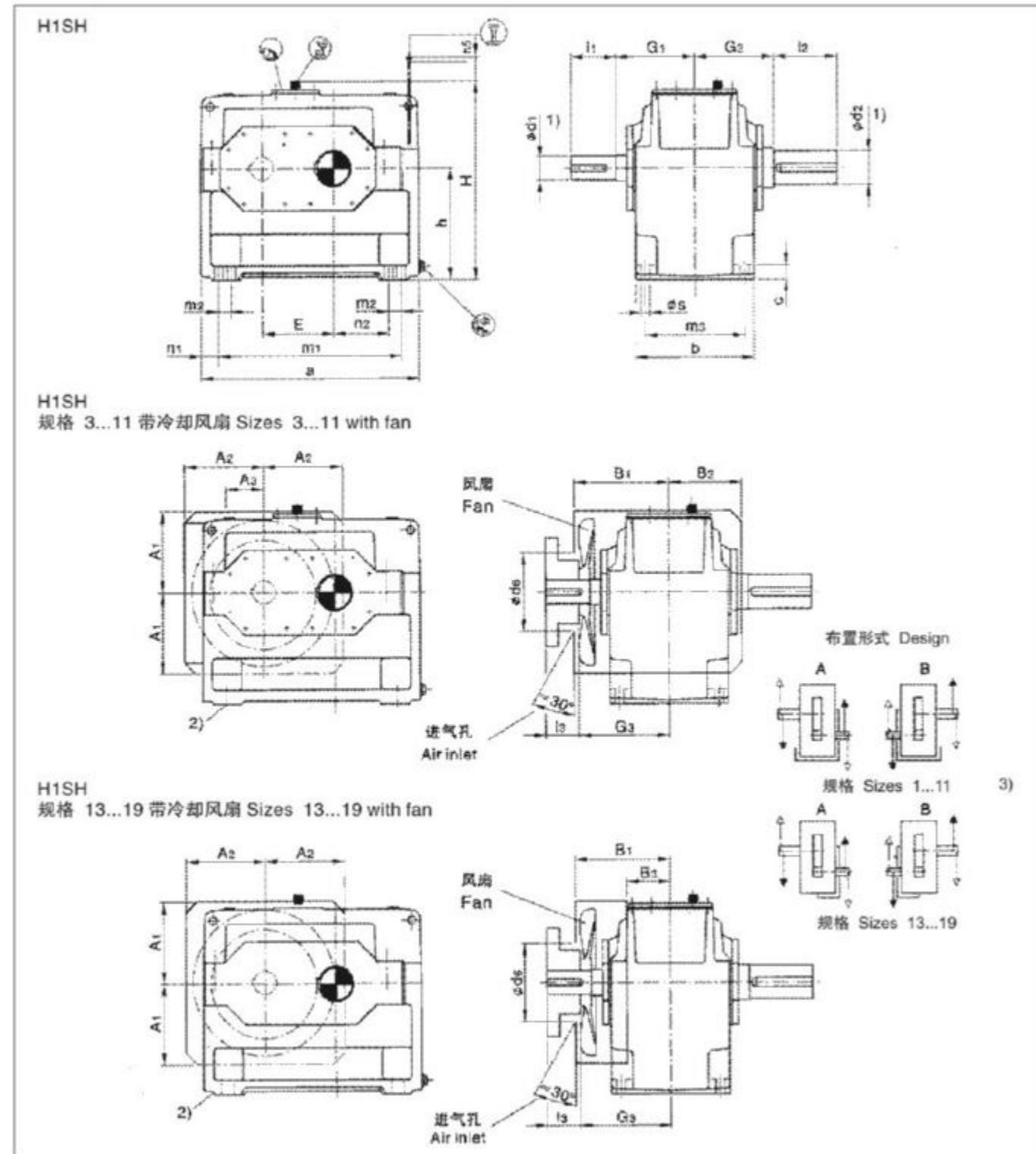
FR2 允许的附加径向力根据 81 页上的表确定
FR2 Permissible additional radial force acc.to table page 81

K 作用力系数根据下表确定
K Factor of application of force acc.to table

作用力系数 K Factor of application of force K																
规格 Size	距离 Z (mm) Distance Z in mm															
	-200	-150	-100	-75	-50	-25	0	25	50	75	100	105	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	

H/B工业齿轮箱 GEAR UNITS

平行轴齿轮箱 Helical Gear Units 单级传动 Single Stage 卧式安装 Horizontal
 类型 Types H1SH 规格 Sizes 1...19



- 1) $k_0 \leq \phi 50$ $m_0 > \phi 50$
 有关平键GB/T1095-1979型和中心孔, 参见第98-99页。For parallel key GB/T1095-1979 and for centre hole, see page 98-99.
- 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.

H/B工业齿轮箱 GEAR UNITS

平行轴齿轮箱 Helical Gear Units 单级传动 Single Stage 卧式安装 Horizontal
 类型 Types H1SH 规格 Sizes 1...19

规格 Size	尺寸 mm Dimensions in mm																
	输入轴 Input																
	iN=1.25-2.8			iN=1.6-2.8			iN=2-2.8			iN=3.15-4			iN=4.5-5.6			G1	G3
d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3	d1 ¹⁾	l1	l3			
1	40	70	-							30	50		24	40	-	110	
3	60	125	105							45	100	80	32	80	60	170	190
5	85	160	130							60	135	105	50	110	80	210	240
7	100	200	165							75	140	105	60	140	105	250	285
9	110	200	165							90	165	130	75	140	105	280	315
11				130	240	205				110	205	170	90	170	135	325	360
13				150	245	200				130	245	200	100	210	165	365	410
15							180	290	240	150	250	200	125	250	200	360	410
17							200	330	280	170	290	240	140	250	200	400	450
19							220	340	290	190	340	290	160	300	250	440	490

规格 Size	尺寸 mm Dimensions in mm																			
	齿轮箱 Gear units																			
a	A1	A2	A3	b	B1	B2	B3	c	d6	E	h	h5	H	m1	m2	m3	n1	n2	s	
1	295	-	-	-	150	-	-	-	18	-	90	140	55	275	220	-	120	37.5	80	12
3	420	150	145	80	200	205	130	-	28	130	130	200	82	375	310	-	160	55	110	19
5	580	225	215	115	285	255	185	-	35	190	185	290	100	525	440	-	240	70	160	24
7	690	255	250	120	375	300	230	-	45	245	225	350	75	625	540	-	315	75	195	28
9	805	300	265	140	425	330	265	-	50	280	265	420	50	735	625	-	350	90	225	35
11	960	360	330	190	515	375	320	-	60	350	320	500	40	875	770	-	440	95	280	35
13	1100	415	350	-	580	430	-	150	70	350	370	580	40	1020	870	-	490	115	315	42
15	1295	500	430	-	545	430	-	120	80	450	442	600	10	1115	1025	-	450	135	370	48
17	1410	550	430	-	615	470	-	150	80	445	490	670	-	1235	1170	130	530	120	425	42
19	1590	630	475	-	690	510	-	190	90	445	555	760	-	1395	1290	150	590	150	465	48

规格 Size	尺寸 mm Dimensions in mm			润滑油 Lubrication (L)	重量 Weight (kg)
	输出轴 Output				
	d2 ¹⁾	G2	l2		
1	45	110	80	2.5	55
3	60	170	125	7	128
5	85	210	160	22	302
7	105	250	200	42	547
9	125	270	210	68	862
11	150	320	240	120	1515
13	180	360	310	175	2395
15	220	360	350	190	3200
17	240	400	400	270	4250
19	270	440	450	390	5800

