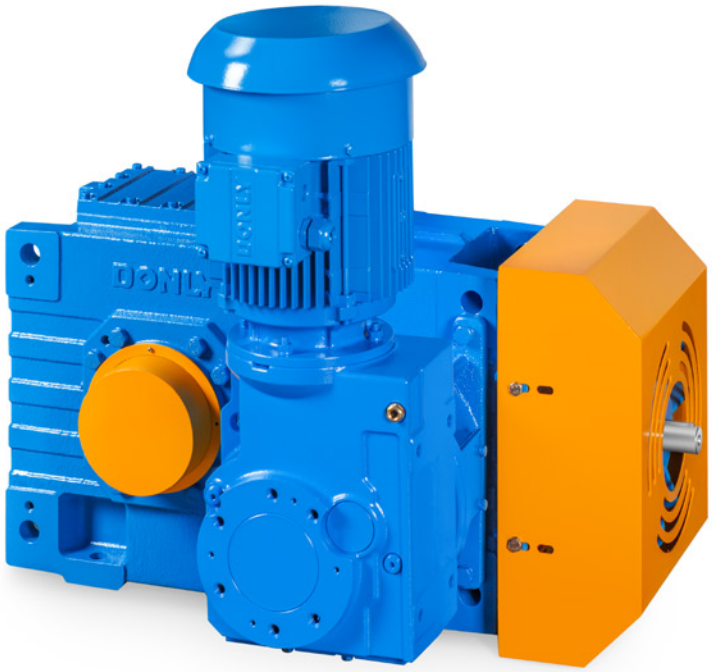
DONLY TRANSMISSION



东力齿轮箱

斗式提升机传动装置

BUCKET ELEVATOR DRIVES

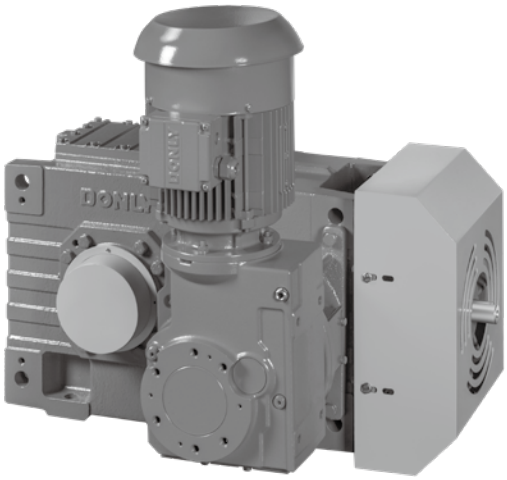
型号 Type DLBE

版本 Edition 2021

DONLY

驱 动 无 限 可 能

DLBE
斗式提升机传动装置
Bucket Elevator Drives



DONLY

6. 轴的描述
Details On Shafts

7. 附件
Accessories

概述

Product Description

1.1 基本类型概述

直交轴齿轮箱
类型 DLBEIII..
类型 DLBEIII .H，3 级传动
规格：4–18

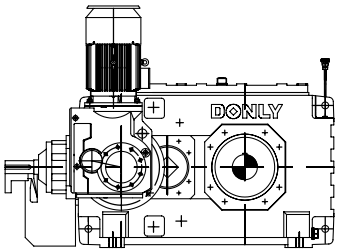
规格 4–12：整体式箱体

1.1 Summary of basic types

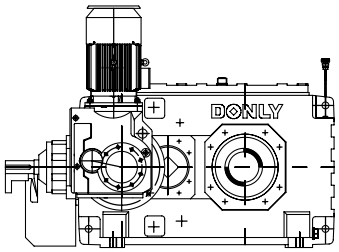
Bevel-helical gear units
Types DLBEIII..
Types DLBEIII .H, 3-stage
Size 4-18

Sizes 4-12: Solid housing

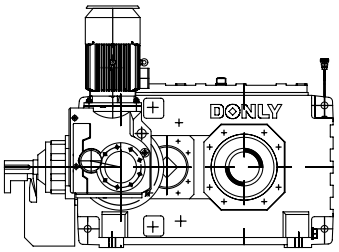
DLBEIIISH



DLBEIIIHH



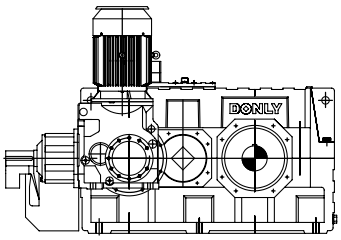
DLBEIIIDH



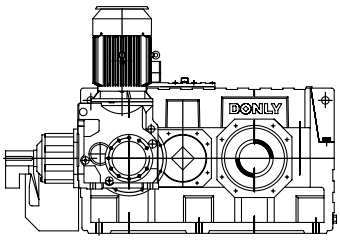
规格 13–18：分体式箱体

Sizes 13-18: Split housing

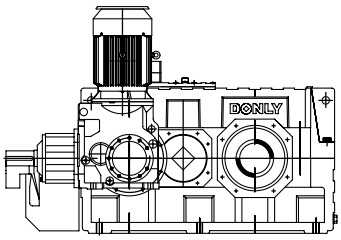
DLBEIIISH



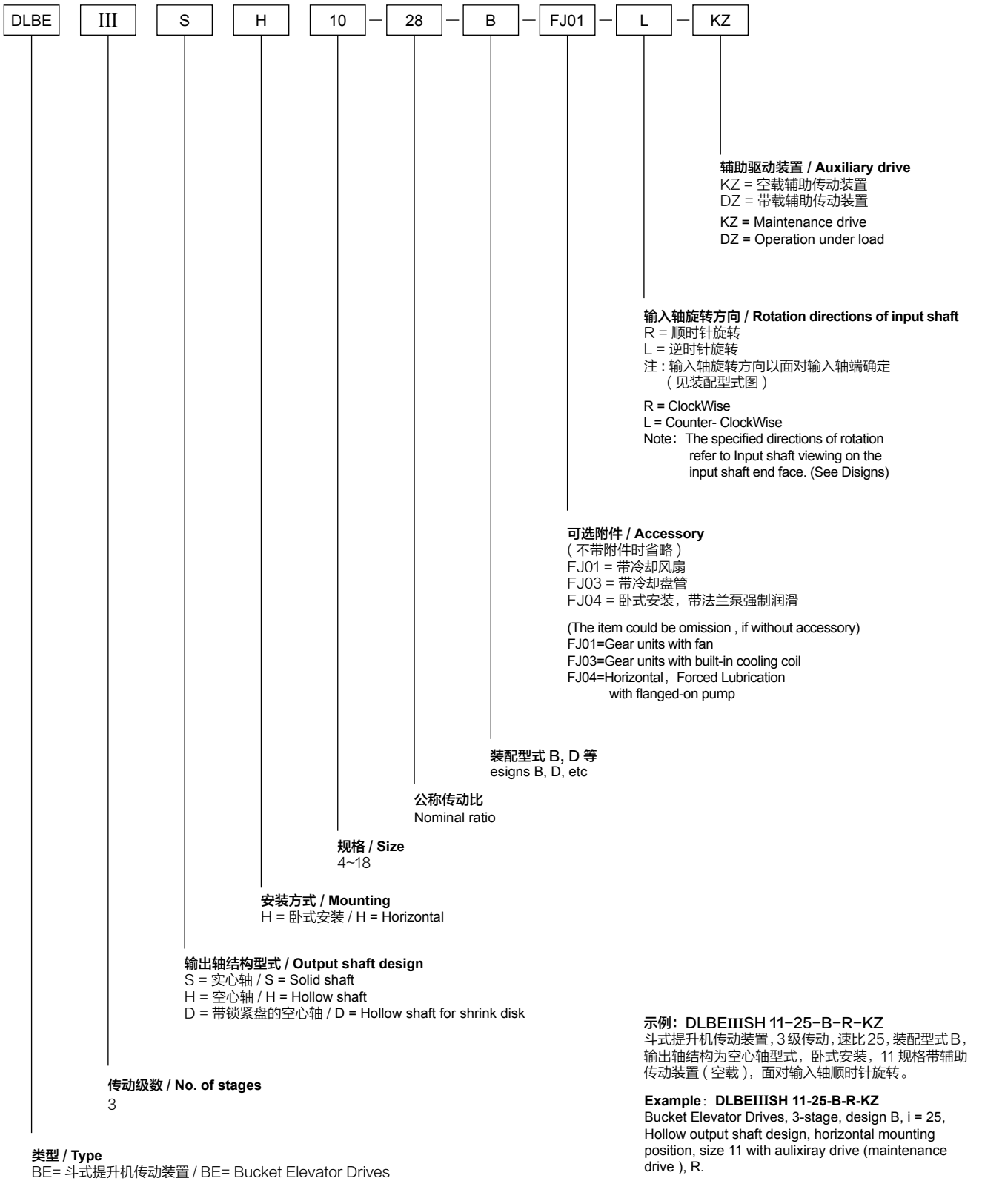
DLBEIIIHH



DLBEIIIDH



1.2 类型标记 1.2 Designation of types



注明：

1. 型号中默认逆止器装置为标准型逆止器。
2. 如有其它需要请在型号后注明。

Note：

1. Models in default backstop device for standard backstop.
2. Please indicate in the type if you have other needs.

1.3 性能特点

设计

DONLY 齿轮箱采用全新设计，其独特的创新在于：

- 零部件种类减少而规格数量增多；
- 传动功率增大，运转可靠性提高；
- 对于较小的安装空间可提供采用法兰盘联接的输出轴以易于齿轮箱的安装（根据用户的要求提供）。

DLBE 系列是根据斗式输送机的结构和传动特点专门设计的齿轮箱传动装置，为国内斗提机生产商首选配套产品。

主、辅助驱动可以通过电控自动切换，方便用户安装和调试。辅助传动不但可以满足用户维护和检修时使用，也满足低速带载传动。

齿轮箱配有逆止装置，可防止设备停车或事故时倒转。

安装方式

东力齿轮箱可以采用卧式安装方式。

无需任何附加措施，只需调节润滑油量和油尺高度即可以使齿轮箱达到以下的倾斜度：

纵向倾斜 ≤ ±5°

横向倾斜 ≤ ±2°

也可以提供其他安装形式，请垂询。

标准齿轮箱可以通过不同附件如电机安装法兰。齿轮箱浮动机座或逆止器等很好地满足客户需求。

噪音特性

采用最新设计理念并通过以下途径显著地改善了齿轮箱的噪音特性：

- 齿轮成型磨削工艺；
- 利用计算机程序设计吸收噪音的箱体结构；
- 达到了非常高的齿面接触率。

散热性能

东力齿轮箱不仅具有很高的传动效率，而且具有良好的性能。

在齿轮箱选型方面东力齿轮箱以较低的最大允许油温为依据。这样，不仅提高了运行可靠性，而且也因换油周期的延长而降低了维护费用。

增强轴设计

提高了输入轴的强度，可承受大的径向载荷和弯矩，确保高的安全性。

库存

东力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。 主要零部件的绝大部份均有库存，从而东力齿轮箱能在短期内供货。

1.1 Summary of basic types

Design

DONLY gear units are a completely newdesign.

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).

DLBE series products are specially desigened according to bucket elevator's structure and transmission characteristics, Which are preferences of domestic bucket elevator manufacturers.

The main and auxiliary drives can be automatic switched through electronic control, convenient for fitting and adjusting by customers.The auxiliary drive not only can be used when machine in maintemane or repair by users,but also meet low speed transmission with load.

The main gear unitequipped with backstop can prevent reversing when machine not running or in malfunction.

Mounting position

DONLY gear units can be supplied for either horizontal installation.

The following inclinations are possible without any additional measures, with the exception of the adjustment of the oil quantity and the length of the oil dipstick:

longitudinal ≤ ±5°

lateral ≤ ±2°

Other arrangements are also possible on request.

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

Noise behaviour

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

- grinding the bevel gears;
- designing noise-absorbing housings by means of the computing program;
- achieving exceptionally large contact ratios.

Thermal conduction

DONLY gear units not only have a high effi-ciency but also a favourable thermal conduction

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

Enhance

It improves the input shaft strength,and can bear large radial load bending moment,ensures high safety.

Storing

DONLY gear units have been designed according to a new unit construction principle. Through this, the variety of parts could be reduced.

The main parts are mostly on stock enabling Donly gear units to delivere at short term.

1.4 一般说明

注意事项!

必须严格遵守以下各项!

样本附图只属范例，并不具有约束力。公司保留变更尺寸的权利。

所注重量仅为平均值，并不具有约束力。

为防止意外事故发生，所有旋转部件均应按照使用者所在国家和地区的安全规范由购置方加罩保护。

前必须认真阅读操作说明。齿轮箱在供货时已做好运行准备，运行前需加注润滑油。

本样本中所示注油量只作为参考值，实际注油量应以油尺上的标记为准。

润滑油粘度应符合齿轮箱铭牌上的数据。

只能采用允许品牌的润滑油。

齿轮箱在供货时已配置了径向油封。如果需要其他类型的轴封敬请垂询。

转动方向是指面向输入轴 d_1 的转动方向。

当安装在室外时应避免阳光照射。应由配置方配装适当的防护设备。

在尺寸图上所使用的符号说明如下:

 = 油尺

 = 通气孔

 = 放油孔

 = 加油孔

地脚螺栓的最低强度等级为 8.8 级。

传动装置的标准油漆为蓝色金属油漆，其它特殊油漆要求请在订货时说明。

1.4 General information

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 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.

Permitted lubricants may be used only.

The gear units are supplied with radial shaft seals. Other sealing variants on request.

Directions of rotation referring to input shaft d_1.

In case of outdoor installation, insolation is to be avoided. The customer has to provide adequate protection.

Explanation of symbols used in the dimensioned drawings:

 = Oil dipstick

 = Breather

 = Oil drain

 = Oil filler

Foundation bolts of min. property class 8.8.

Bucket Elevator Drives from DONLY are painted with blue machine paint. Specaial coatings are available on request.

2.1 符号说明 2.1 Key to symbols

符号说明	Key to Symbols
E_D = 每小时工作周期， 以 % 表示 (例如 E_D = 80 %/ h)	E_D = Operating cycle per hour in %, (e.g.E_D = 80%/ h)
f_1 = 工作机系数 (表 1)，见第 8 页	f_1 = Factor for driven machine (table 1), page 8
f_2 = 原动机系数 (表 2)，见第 8 页	f_2 = Factor for prime mover (table 2), page 8
f_6 = 海拔高度系数 (表 3)，见第 8 页	f_6 = Factor for altitude (table 3), page 8
f_8 = 齿轮箱供油系数 (表 4)，见第 8 页	f_8 = Oil supply factor (table 4), page 8
f_A = 齿轮箱的可靠度系数 (表 5)，见第 8 页	f_A = Reliability factor of gear unit (table 5), page 8
i = 实际传动比	i = Actual ratio
i_N = 额定传动比	i_N = Nominal ratio
is = 要求传动比	is = Required ratio
n_1 = 输入转速 (min^{-1})	n_1 = Input speed (min^{-1})
n_2 = 输出转速 (min^{-1}) (按额定速比计算)	n_2 = Output speed (min^{-1}) (Calculated by nominal ratio)
n_3 = 在通过辅助传动装置时主齿轮箱的输出轴转速。 (50 Hz, n_1 = 1500 min^{-1}; 在 60 Hz 时 n_3 高出 20 % 左右) 见第 19 页	n_3 = Output speed on main gear unit output shaft in case of input via auxiliary drive (50 Hz, n_1 = 1500 min^{-1}; at 60 Hz n_3 will be ≈ 20 % higher), page 19
P_G = 需要的热容量	P_G = Required thermal capacity
P_{GA} = 齿轮箱的基础热容量， 不带辅助冷却装置， 见第 10-15 页	P_{GA} = Thermal capacity for gear units, without auxiliary cooling, pages 10-15
P_{GB} = 齿轮箱的基础热容量， 带冷却风扇， 见第 10-15 页	P_{GB} = Thermal capacity for gear units, with fan cooling, pages 10-15
P_{2N} = 齿轮箱的额定功率 (kW) 见第 9 页选型表	P_{2N} = Nominal power rating of gear unit (kW), see rating tables, page 9
P_2 = 工作机的额定功率	P_2 = Power rating of driven machine (kW)
t = 环境温度 (℃)	t = Ambient temperature (℃)
T_A = 输入轴最大扭矩， 例如：峰值工作扭矩，起动扭矩或制动扭矩 (Nm)	T_A = Max. torque occurring on input shaft, e.g. peak operating-, starting- or brak-ing torque (Nm)
T_{2N} = 额定输出扭矩 (kNm), 见第 16 页	T_{2N} = Nominal output torque (kNm), page 16
T_3 = 在通过辅助传动装置传动时输出轴输出扭矩 (kNm), 见第 19 页	T_3 = Output torque (kNm) on main gear unit output shaft in case of input via auxiliary drive, page 19

2.2 选型指南 2.2 Guidelines for the selection

<table>
<tr><td rowspan="4">1. 确定齿轮箱类型和规格
Determination of gear unit type and size</td><td colspan="2">1.1 确定传动比
Find the transmission ratio
$$i_s = \frac{n_1}{n_2}$$</td></tr>
<tr><td colspan="2">1.2 确定齿轮箱额定功率
Determine nominal power rating of the gear unit
$$P_{2N} \geq P_2 \times f_1 \times f_2 \times f_A$$
如果不满足下列条件请与我们联系
It is not necessary to consult us, if:
$$P_2 \geq 30\% \times P_{2N}$$</td></tr>
<tr><td colspan="2">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：
$$P_{2N} \geq \frac{T_A \times n_1}{9550} \times 0.5$$</td></tr>
<tr><td colspan="2">1.4 校核实际传动比 i，见第 17 页
Check whether the actual ratio i as per tables on pages 17 is acceptable</td></tr>
<tr><td></td><td colspan="2">安装方式：卧式安装
Horizontal mounting position</td></tr>
<tr><td>2. 确定供油方式
Determination of oil supply</td><td>可供选择的润滑油供油方式：
① 飞溅润滑
② 浸油润滑
所有需润滑的零部件均浸在油中
③ 强制润滑 (敬请垂询)</td><td>Possible oil supply variations:
① Splash lubrication
② Dip lubrication
All parts to be lubricated are lying in the oil
③ Forced lubrication (on request)</td></tr>
<tr><td rowspan="3">3. 确定所需热容量 P_G
Determination of required thermal capacity P_G</td><td colspan="2">3.1 如满足以下条件，则齿轮箱可不带辅助冷却装置：
Gear units without auxiliary cooling is adequate, if:
$$f_6 \times P_2 \leq P_{GA} \times f_8 = P_G$$</td></tr>
<tr><td colspan="2">3.2 如满足以下条件，则齿轮箱带冷却风扇可满足要求：
Gear units with fan cooling is adequate, if:
$$f_6 \times P_2 \leq P_{GB} \times f_8 = P_G$$</td></tr>
<tr><td colspan="2">3.3 如果要获得更高的热容量，则可以根据用户要求提供外部润滑
冷却装置进行冷却。
For higher thermal capacities, cooling by extemal oil cooler on request.</td></tr>
</table>

2.3 示例

已知：带式 (单驱动) 斗提机

原动机

电机功率：P_1 = 75 kW
电机转速：n_1 = 1500 min^{-1}
最大起动扭矩：T_A = 720 Nm

工作机

斗式提升机功率：P_2 = 62 kW
转速：n_2 = 26 min^{-1}
每天运行时间：12 小时 / 日
每小时起动次数：7
辅助传动装置 (带载)：n_3 = 2.7 min^{-1}
T_3 = 15 kNm
每小时工作周期：E_D = 100%
环境温度：30℃
室外安装：风速 ⩾ 4 m/s
海拔高度：海平面

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，装配型式 B
输入轴 d_1 旋转方向：面对输入轴 d_1 逆时针旋转

要求：

齿轮箱类型和规格

1. 选择齿轮箱类型和规格

1.1 确定传动比

$$i_s = \frac{n_1}{n_2} = \frac{1500}{26} = 57.7 \qquad i_N = 56$$

1.2 确定齿轮箱额定功率

$$P_{2N} \geq P_2 \times f_1 \times f_2 \times f_A = 62 \times 1.5 \times 1 \times 1.05 = 97.7kW$$

从功率表中选择，齿轮箱规格 9，
对应额定功率 P_{2N} = 100KW，
配置辅助的传动装置 (带载): DLKF77-DE3-132S-4
n_3 = 2.7 min^{-1} 和 T_3 =19.3kNm

满足要求
It is necessary to consult us

$$P_2 \geq 30\% \times P_{2N} \qquad 62(kW) > 30\% \times 100 = 30.3(kW)$$

1.3 起动扭矩校核

$$P_{2N} = \frac{T_A \times n_1}{9550} \times 0.5 = \frac{720 \times 1500}{9550} \times 0.5 = 56.5kW \qquad P_{2N} = 100 \qquad P_{2N} = 100(kW) > 56.5(kW)$$

2. 确定润滑油供油方式

齿轮箱采用飞溅润滑

3. 确定所需热容量 P_G

齿轮箱不带冷却风扇可以满足要求
Gear unit without fan is sufficient

$$f_6 \times P_2 = 1 \times 62 = 62\ (kW) < P_{GA} \times f_8 = 70.3 \times 1 = 70.3(kW) = P_G$$

4. 确定型号：DLBEIIISH9-56-B-L-DZ

2.3 Calculation example

Known criteria: Belt bucket elevator (Single drives)

PRIME MOVER

Electric motor: P_1 = 75 kW
Motor speed: n_1 = 1500 min^{-1}
Max. starting torque: T_A = 720 Nm

DRIVEN MACHINE

Belt conveyor: P_2 = 62 kW
Speed: n_2 = 26 min^{-1}
Duty: 12 h /day
Starts per hour: 7
Auxiliary drive(Load): n_3 = 2.7 min^{-1}
T_3 = 15 kNm
Operating cycle per hour: E_D = 100%
Ambient temperature: 30℃
Outdoor installation: wind velocity ≥ 4 m/s
Altitude: sea level

GEAR UNIT DESIGN

Bevel-helical gear unit
Mounting position: horizontal
Output shaft d_2: on right hand side design B
Direction of rotation of input shaft d_1: L

Required:

Type and size of gear unit

1. Selection of gear unit type and size

1.1 Calculation of transmission ratio

1.2 Determination of the gear unit nominal power rating

Selected from power rating table, gearunit size 9,
with P_{2N} = 100 kW
with Auxiliary drive(Load): DLKF77-DE3-132S-4
n_3 = 2.7 min^{-1} and T_3 =19.3 kNm

1.3 Checking the starting torque

2. Determination of oil supply

Gear unit with splash lubrication

3. Determination of required thermal capa city P_G

4. TYPE：DLBEIIISH9-56-B –L-DZ

2.4 服务系数

表 1 斗式提升机传动工作机系数 f_1

工作机 Driven machines		日带载运行时间，以小时计算 Effective daily operating period under load in hours	
		＜ 10	≥10
水泥行业等重载设备	**Like cement industry heavy duty**		
链式斗提机（双驱动）	Chain bucket elevator drives (double drivers)	1.7	1.8
链式斗提机（单驱动）	Chain bucket elevator drives (single drivers)	1.6	1.7
带式斗提机（双驱动）	Belt bucket elevator drives (double drivers)	1.5	1.6
带式斗提机（单驱动）	Belt bucket elevator drives (single drivers)	1.4	1.5
粮食行业等轻载设备 斗式提升机	**Like commissariat industry light duty** Bucket elevator drives	1.4	1.5

工作机额定功率 P_2 的确定：

*）按最大扭矩确定额定功率

**）检验热容量是绝对必要的

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。

对于未列入此表的工作机械，请与我们联系。

2.4 Service factors

Table 1 Factor for driven machine f_1

Design for power rating of driven machine P_2

*) Designed 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 equipmentmentioned 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.

表 2 原动机系数 f_2

Table 2 Factor for prime mover f_2

电机，液压马达，汽轮机	Electric motors, hydraulic motors, turbines	1.0

表 3 海拔高度系数 f_6

Table 3 Factor for altitude f_6

不带辅助冷却装置 / Without auxiliary cooling					
海拔高度 /Altitude	≤1000	≤2000	≤3000	≤4000	≤5000
f_6	1.0	0.95	0.90	0.85	0.80

表 4 供油系数 f_8

Table 4 Oil supply factor f_8

强制润滑外的卧式齿轮箱	Horizon gear units except for forced lubrication	1.00
强制润滑	Forced lubrication	1.05

表 5 齿轮箱的可靠度系数 f_A

Table 5 Reliability factor of gear unit f_A

重要性与安全要求 Essentiality and safe requirement	一般设备或辅助传动，齿轮箱失效仅引起单机停产且易更换备件 The common auxiliary devices, the gear units are broken to stop single machine and easly replaced	重要设备，齿轮箱失效引起机组、生产线停产。 The important equipment, the gear units are broken to stop engine sets and product line	高度安全要求，齿轮箱失效引起全厂停产或设备人身事故 The high safe requirement, the gear units are broken to stop all parts in the factory and cause life accidents
f_A	$1.0 \leq f_A \leq 1.3$	$1.3 < f_A \leq 1.5$	$1.5 < f_A$

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：室内大空间）

Notes on the thermal capacities:

The values listed refer to place of installation ≤ 1000 m

Wind velocity ≥ 1.4 m/s

(Place of installation: large halls)

3.1 额定功率

类型 DLBEIII..，规格 4−18

3.1 Nominal power ratings

Types DLBEIII.., Sizes 4-18

额定功率 P_{2N} (kW) / Nominal power ratings P_{2N} (kW)																	
i_N	n_1	n_2	齿轮箱规格 / Gear unit sizes														
			4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
25	1800	72	50	87	116	163	205	269	330	478	582	683	851	1153*	1304*	1507*	1809*
	1500	60	42	72	97	136	170	224	275	398	485	569	709	961	1086	1256	1507
	1000	40	28	48	64	90	113	149	183	265	323	379	473	640	724	837	1005
	750	30	21	36	48	68	85	112	137	199	242	284	355	480	543	628	754
28	1800	64	44	77	103	145	182	239	293	425	517	607	757	1025	1159*	1340*	1608*
	1500	54	37	65	87	122	153	201	247	359	436	512	638	865	978	1130	1357
	1000	36	25	43	58	81	102	134	165	239	291	341	425	576	652	753	904
	750	27	19	32	44	61	77	101	124	179	218	256	319	432	489	565	678
31.5	1800	57	39	69	92	129	162	213	261	379	460	541	674	913*	1032*	1193*	1432*
	1500	48	33	58	77	109	136	179	220	319	388	455	567	769	869	1005	1206
	1000	32	22	38	51	72	91	119	146	212	258	303	378	512	579	670	804
	750	24	17	29	38	54	68	89	110	159	194	227	284	384	434	503	603
35.5	1800	51	35	61	82	115	145	190	233	339	412	484	603	817*	923*	1068*	1281*
	1500	42	29	51	68	95	119	157	192	279	339	398	496	672	760	879	1055
	1000	28	19	34	45	63	79	104	128	186	226	265	331	448	507	586	703
	750	21	14	26	34	47	59	78	96	140	170	199	248	336	380	440	527
40	1800	45	31	54	72	102	128	168	206	299	363	427	532	720*	815*	942*	1130*
	1500	38	26	46	61	86	108	142	174	252	307	360	449	608	688	795	954
	1000	25	17	30	40	56	71	93	114	166	202	237	295	400	452	523	628
	750	18	13	23	30	42	53	70	86	125	152	178	221	300	339	392	471
45	1800	40	28	48	64	90	113	149	183	265	323	379	473	640*	724*	837*	1005*
	1500	33	23	40	53	74	93	123	151	219	266	313	390	528	597	691	829
	1000	22	15	26	35	49	62	82	100	146	177	208	260	352	398	460	552
	750	16.6	11	20	26	37	47	62	75	110	133	156	195	264	209	345	414
50	1800	36	25	43	58	81	102	134	165	239	291	341	425	576	652*	753*	904*
	1500	30	21	36	48	68	85	112	137	199	242	284	354	480	543	628	753
	1000	20	14	24	32	45	56	74	91	132	161	189	236	320	362	418	502
	750	15	11	18	24	34	42	56	68	99	121	142	177	240	272	314	377
56	1800	32	22	38	51	72	91	119	146	212	258	303	378	512	579	670*	804*
	1500	27	18	32	43	61	76	100	123	179	218	256	319	432	489	565	678
	1000	17.9	12	21	29	40	50	66	82	119	144	170	211	286	324	374	449
	750	13	9	16	22	30	38	50	62	89	108	128	158	215	243	281	337
63	1800	29	20	34	47	64	82	108	133	192	234	275	343	464	525	607*	728*
	1500	24	16	28	38	53	68	89	110	159	194	227	283	384	434	502	603
	1000	15.9	10	18	25	35	45	59	72	105	128	151	188	254	288	332	399
	750	11.9	7.5	14	19	26	34	44	54	79	96	113	141	191	216	249	299
71	1800	25	17	28	40	52	71	89	114	157	202	237	295	400	452	523*	628*
	1500	21	14	24	34	43	59	74	96	131	169	199	248	336	380	439	527
	1000	14.1	9.7	16	22	29	40	50	64	88	113	133	166	225	255	295	354
	750	10.5	7.5	12	17	22	30	38	48	66	85	100	125	169	191	221	266

卧式安装齿轮箱应采用强制润滑

[*] 敬请垂询

Forced lubrication required on horizontal gear units

[*] Gear units only on request

3.2 热容量

类型 DLBEIII..，规格 4−18，n_1=1500min^{-1}

3.2 Thermal capacities

Types DLBEIII.., Sizes 4-18, n_1=1500min^{-1}

规格 Size	传动比 Ratio	热容量 (kW) (环境温度) Thermal capacity in kW (Ambient temperature)							
		不带冷却风扇 **without** fan / P_{GA}				带冷却风扇 **with** fan/P_{GB}			
		20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃
4	25	41.3	35.4	29.2	22.6	86.7	75.2	63.3	51.0
	28	40.3	34.6	28.6	22.3	83.6	72.6	61.1	49.4
	31.5	38.7	33.2	27.5	21.6	79.7	69.1	58.1	47.2
	35.5	37.0	31.9	26.5	20.9	75.3	65.4	55.0	44.7
	40	32.7	28.2	23.5	18.6	65.3	56.7	47.7	39.0
	45	32.0	27.6	23.0	18.2	63.7	55.4	46.8	37.8
	50	33.6	29.2	24.8	20.1	64.4	56.3	47.9	39.1
	56	30.8	26.8	22.7	18.5	58.4	51.0	43.5	35.5
	63	29.5	25.7	21.8	17.7	55.6	48.6	41.4	33.8
	71	26.9	23.5	19.9	16.2	50.3	44.0	37.4	30.6
5	25	57.5	49.0	40.2	30.9	130	112	94.5	76.1
	28	56.4	48.1	39.6	30.7	125	109	91.7	73.7
	31.5	54.2	46.4	38.4	29.7	120	104	87.3	70.7
	35.5	52.0	44.7	37.0	29.0	113	97.9	82.4	67.0
	40	46.3	39.9	33.1	26.0	98.5	85.4	72.1	58.5
	45	45.3	39.0	32.4	25.6	95.7	83.0	70.2	57.0
	50	46.4	40.4	34.0	27.5	94.4	82.4	69.8	57.1
	56	42.8	37.2	31.4	25.4	86.1	75.1	63.9	52.2
	63	41.1	35.7	30.3	24.5	82.0	71.6	60.9	49.6
	71	38.8	33.7	28.6	23.2	76.6	66.8	56.9	46.4
6	25	65.9	56.0	45.6	34.9	147	128	107	85.7
	28	65.4	55.7	45.7	35.1	145	126	105	84.9
	31.5	63.0	53.9	44.3	34.3	138	120	101	81.4
	35.5	61.7	52.9	43.8	34.0	133	116	97.7	78.8
	40	59.3	51.0	42.1	33.0	127	110	93.0	75.3
	45	56.9	48.9	40.7	32.1	120	104	87.8	71.5
	50	50.6	43.6	36.3	28.7	105	90.9	76.8	62.5
	56	49.3	42.5	35.5	28.1	102	88.2	74.5	60.6
	63	50.4	43.8	37.1	30.0	100	87.4	74.4	60.8
	71	46.3	40.4	34.2	27.8	91.2	79.8	67.9	55.5
7	25	81.2	68.5	55.0	40.8	186	161	134	107
	28	78.4	66.3	53.8	40.5	176	153	128	102
	31.5	75.7	64.1	52.2	39.8	168	145	121	97.4
	35.5	72.7	61.9	50.4	38.7	159	138	115	92.6
	40	64.4	55.0	45.2	34.8	138	119	100	80.6
	45	62.7	53.6	44.2	34.3	133	115	97.2	78.1
	50	65.0	56.3	47.0	37.5	133	115	97.8	79.4
	56	60.1	52.0	43.6	34.8	121	106	89.4	72.7
	63	57.7	49.9	41.9	33.5	116	101	85.1	69.6
	71	54.2	47.0	39.5	31.6	108	93.8	79.4	64.7
8	25	93.6	78.5	62.9	46.2	212	182	152	121
	28	91.6	77.2	62.3	46.3	205	177	148	117
	31.5	90.2	76.4	62.1	47.0	198	171	143	115
	35.5	86.7	73.8	60.1	46.2	187	162	136	109
	40	83.6	71.2	58.1	44.8	178	154	130	104
	45	80.0	68.5	56.5	43.7	168	146	123	99.0
	50	70.9	60.7	50.3	39.1	146	127	107	86.1
	56	68.9	59.2	48.9	38.2	141	123	104	83.1
	63	71.0	61.5	51.7	41.4	141	122	104	84.5
	71	65.6	56.9	47.8	38.4	129	112	94.8	77.6

3.2 热容量

类型 DLBEIII..，规格 4−18，n_1=1500min^{-1}

3.2 Thermal capacities

Types DLBEIII.., Sizes 4-18, n_1=1500min^{-1}

规格 Size	传动比 Ratio	热容量 (kW) (环境温度) Thermal capacity in kW (Ambient temperature)							
		不带冷却风扇 **without** fan / P_{GA}				带冷却风扇 **with** fan/P_{GB}			
		20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃
9	25	106	88.8	69.6	49.6	259	223	185	146
	28	104	86.7	69.1	50.5	248	213	177	141
	31.5	101	84.7	68.0	50.5	237	205	171	136
	35.5	97.1	82.1	66.5	50.0	223	193	161	129
	40	91.8	77.9	63.5	48.2	208	180	150	120
	45	85.5	72.7	59.4	45.3	191	166	139	111
	50	88.7	76.4	63.4	50.0	190	165	139	113
	56	81.6	70.3	58.4	46.2	172	150	126	102
	63	78.3	67.4	56.2	44.5	164	142	120	97.3
	71	72.6	62.7	52.2	41.4	150	131	111	89.3
10	25	113	92.8	71.9	49.3	279	239	198	155
	28	111	91.7	71.9	50.1	270	232	192	151
	31.5	110	92.0	72.8	53.2	259	223	185	147
	35.5	107	90.0	72.0	53.8	247	213	178	141
	40	104	87.9	71.2	53.5	237	204	171	136
	45	100	84.9	69.3	52.7	223	193	162	130
	50	94.9	80.6	65.8	50.6	208	180	151	121
	56	88.5	75.3	61.6	47.5	192	166	139	112
	63	91.1	78.6	65.6	51.9	190	165	139	113
	71	83.8	72.4	60.5	48.0	173	150	127	103
11	25	147	119	90.3	58.4	430	368	305	239
	28	145	119	91.5	62.2	412	353	394	231
	31.5	143	118	92.6	65.3	394	338	382	223
	35.5	141	117	91.8	65.7	379	327	372	216
	40	136	113	90.1	65.4	358	309	257	205
	45	127	106	85.1	62.4	331	285	238	190
	50	137	117	96.3	74.7	330	286	241	196
	56	126	108	89.6	69.9	301	261	221	179
	63	122	105	86.8	68.2	286	249	210	170
	71	113	97.2	80.8	63.7	262	228	192	156
12	25	172	137	99.8	59.5	518	442	364	282
	28	172	140	105	67.2	498	426	353	275
	31.5	172	141	109	74.8	474	407	338	266
	35.5	169	140	110	77.4	453	389	325	256
	40	166	138	110	79.2	432	373	311	247
	45	162	135	108	79.2	417	359	300	239
	50	156	131	105	78.0	394	340	284	227
	56	146	123	99.2	74.0	362	313	261	210
	63	155	133	110	86.1	360	314	264	215
	71	143	123	102	80.3	328	286	242	196
13	25	195	156	115	71.2	556	476	393	306
	28	192	157	119	77.5	532	456	379	297
	31.5	190	156	121	83.4	509	437	364	287
	35.5	187	155	121	85.4	491	423	352	279
	40	182	151	120	86.3	466	402	336	266
	45	171	142	114	82.5	430	370	309	246
	50	188	160	132	102	440	382	321	261
	56	175	150	123	95.9	403	351	296	240
	63	169	145	120	93.5	385	335	283	229
	71	158	136	112	87.7	356	309	262	212

3.2 热容量

类型 DLBEIII..，规格 4−18，n_1=1500 min^{-1}

3.2 Thermal capacities

Types DLBEIII.., Sizes 4-18, n_1=1500min^{-1}

规格 Size	传动比 Ratio	热容量 (kW) (环境温度) Thermal capacity in kW (Ambient temperature)							
		不带冷却风扇 **without** fan / P_{GA}				**带**冷却风扇 **with** fan/P_{GB}			
		20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃
14	25	210	163	112	57.6	638	541	444	341
	28	214	170	123	72.1	616	526	433	335
	31.5	216	176	134	86.6	587	504	418	327
	35.5	214	175	136	92.6	563	483	401	316
	40	210	174	136	96.5	538	463	385	305
	45	206	172	136	97.5	519	448	373	295
	50	200	167	134	97.9	492	424	355	282
	56	187	157	126	93.0	452	391	326	260
	63	204	174	144	112	463	403	340	275
	71	189	162	134	106	425	369	312	253
15	25	224	165	102	-	728	614	497	374
	28	236	180	119	53.4	717	607	495	375
	31.5	236	187	132	71.6	677	575	472	362
	35.5	235	186	135	78.3	654	556	458	353
	40	230	185	138	85.5	621	531	439	340
	45	219	178	134	87.0	574	492	407	317
	50	256	216	175	131	600	521	437	350
	56	240	203	166	125	552	477	403	322
	63	233	198	162	123	529	458	385	310
	71	222	189	155	120	496	431	362	293
16	25	223	157	85.1	-	792	664	533	393
	28	241	182	116	-	753	638	518	392
	31.5	252	194	133	65.5	742	630	514	393
	35.5	250	199	143	82.0	699	596	489	378
	40	249	199	146	88.2	677	578	475	368
	45	243	198	148	95.2	643	550	455	354
	50	230	188	143	95.7	593	509	421	329
	56	267	226	184	139	619	536	451	361
	63	250	212	174	132	568	492	416	333
	71	242	206	169	130	544	472	398	320
17	25	184	105	-	-	923	769	608	438
	28	211	137	55.5	-	919	767	616	451
	31.5	231	165	91.8	-	876	738	595	449
	35.5	237	173	104	28.2	849	718	581	441
	40	242	182	120	49.3	812	690	562	428
	45	234	181	122	57.3	754	641	525	402
	50	301	250	197	140	804	694	580	462
	56	286	240	191	140	743	641	538	430
	63	280	236	180	140	713	617	518	414
	71	270	228	185	138	672	583	488	393
18	25	149	58.3	-	-	973	800	619	431
	28	209	131	-	-	947	791	628	456
	31.5	235	160	78.7	-	941	790	635	470
	35.5	252	183	110	29.2	895	757	614	463
	40	256	192	122	44.6	869	735	597	455
	45	260	199	134	63.7	829	704	576	441
	50	250	195	135	70.0	772	655	538	414
	56	315	263	209	151	819	708	593	473
	63	299	252	202	149	755	654	550	440
	71	293	247	200	149	727	629	530	423

上述热容量适用于矿物油 VG320，t_{max}=90℃。当采用合成齿轮油 (聚乙烯烃)，对于 VG320，t_{max}=95℃，则上述热容量值应乘以系数 1.25，对于 VG220，t_{max}=95℃，则上述热容量值应乘以系数 1.3。

The thermal capacities refer to VG 320 mineral oils at t_{max}=90℃ . If synthetic oils (polyalthaolefin) are uesd, the values are increased by factor x 1.25 for VG320,t_{max}=95℃ , and x1.3 for VG220 at t_{max}=95℃ .

3.2 热容量

类型 DLBEIII..，规格 4−18，n_1=1800min^{-1}

3.2 Thermal capacities

Types DLBEIII.., Sizes 4-18, n_1=1800min^{-1}

规格 Size	传动比 Ratio	热容量 (kW) (环境温度) Thermal capacity in kW (Ambient temperature)							
		不带冷却风扇 **without** fan / P_{GA}				带冷却风扇 **with** fan/P_{GB}			
		20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃
4	25	41.3	34.9	28.3	21.1	97.3	84.0	70.3	56.1
	28	40.5	34.4	28.0	21.2	93.8	81.2	68.1	54.4
	31.5	39.0	33.2	27.1	20.7	89.4	77.5	64.9	52.1
	35.5	37.7	32.1	26.3	20.3	84.6	73.3	61.7	49.6
	40	33.4	28.5	23.5	18.1	73.6	63.8	53.6	43.2
	45	32.7	28.0	23.1	18.0	71.8	62.2	52.4	42.2
	50	35.1	30.4	25.5	20.6	73.2	63.7	54.0	44.1
	56	32.2	28.0	23.5	19.0	66.4	57.8	49.1	40.0
	63	30.9	26.8	22.6	18.2	63.1	55.1	46.7	38.2
	71	28.2	24.5	20.6	16.7	57.2	49.8	42.3	34.5
5	25	56.8	47.6	38.1	27.7	145	125	104	83.4
	28	56.2	47.3	38.2	28.4	141	122	102	81.4
	31.5	54.4	45.9	37.2	28.1	134	116	97.1	77.8
	35.5	52.5	44.6	36.4	27.8	127	110	92.2	73.9
	40	47.0	40.1	32.8	25.2	111	96.1	80.7	64.9
	45	46.1	39.3	32.2	24.9	108	93.3	78.4	63.2
	50	48.2	41.7	35.0	27.9	107	93.2	78.7	64.3
	56	44.6	38.6	32.3	25.9	97.6	85.1	72.2	58.8
	63	42.8	37.1	31.1	25.0	92.7	81.0	68.8	56.0
	71	40.5	35.2	29.6	23.8	86.9	75.6	64.1	52.4
6	25	64.6	54.0	42.8	30.7	164	141	118	93.7
	28	64.6	54.2	43.3	31.5	162	140	117	92.9
	31.5	62.9	53.0	42.8	31.8	155	133	112	89.4
	35.5	61.8	52.4	42.6	32.2	150	129	109	87.2
	40	59.7	50.8	41.4	31.4	143	124	104	83.3
	45	57.6	49.1	40.3	31.1	135	117	98.3	79.0
	50	51.5	44.1	36.3	28.0	118	102	85.9	69.4
	56	50.4	43.2	35.6	27.5	114	99.3	83.6	67.5
	63	52.5	45.5	38.1	30.6	114	99.0	83.9	68.2
	71	48.4	42.0	35.3	28.4	103	90.3	76.7	62.5
7	25	78.0	64.2	49.3	33.6	206	176	146	115
	28	76.2	63.3	49.7	35.0	195	168	140	111
	31.5	74.3	61.8	48.8	35.1	186	160	133	106
	35.5	72.0	60.5	48.4	35.5	177	152	127	101
	40	64.3	54.2	43.5	32.6	154	132	111	88.3
	45	62.9	53.0	42.9	32.1	149	128	107	85.8
	50	66.8	57.4	47.5	37.3	149	129	109	88.5
	56	61.8	53.2	44.1	34.8	137	119	99.9	81.0
	63	59.5	51.2	42.7	33.6	130	113	95.5	77.3
	71	56.1	48.3	40.1	31.8	121	105	89.0	72.1
8	25	89.2	73.0	55.9	36.9	233	200	165	129
	28	88.0	72.6	56.0	38.0	226	193	160	126
	31.5	87.7	73.1	57.5	40.6	219	188	157	124
	35.5	85.4	71.6	57.0	41.3	207	179	149	118
	40	82.6	69.6	55.5	41.1	198	171	142	114
	45	80.0	67.6	54.4	41.1	188	162	136	108
	50	71.3	60.5	49.0	37.3	163	141	118	94.5
	56	69.6	59.0	48.1	36.6	158	136	114	91.6
	63	73.2	63.1	52.5	41.6	158	137	116	94.1
	71	67.8	58.5	48.7	38.7	145	126	106	86.3

3.2 热容量

类型 DLBEIII..，规格 4−18，n_1=1800min^{-1}

3.2 Thermal capacities

Types DLBEIII.., Sizes 4-18, n_1=1800min^{-1}

规格 Size	传动比 Ratio	热容量 (kW) (环境温度) Thermal capacity in kW (Ambient temperature)							
		不带冷却风扇 **without** fan / P_{GA}				**带**冷却风扇 **with** fan/P_{GB}			
		20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃
9	25	99.3	80.2	59.6	37.5	284	242	200	155
	28	98.2	80.1	60.9	40.2	272	232	192	150
	31.5	96.8	79.5	61.4	42.0	261	223	186	146
	35.5	94.4	78.4	61.4	43.2	247	212	176	139
	40	90.4	75.3	59.4	43.3	230	198	165	131
	45	84.6	70.6	56.0	41.1	212	182	152	121
	50	90.1	77.0	63.0	48.8	211	184	154	124
	56	83.1	77.1	58.4	45.4	192	167	140	113
	63	79.8	68.4	56.2	43.8	183	158	133	108
	71	74.3	63.7	52.7	41.0	168	145	123	99.0
10	25	104	82.5	59.2	33.7	304	259	212	164
	28	103	82.6	60.5	36.6	295	252	207	160
	31.5	104	84.9	64.6	42.4	284	243	201	157
	35.5	103	84.1	65.2	44.6	271	232	193	151
	40	101	83.6	65.4	45.5	261	224	186	147
	45	98.4	82.0	65.1	47.1	247	212	177	140
	50	93.9	78.6	62.9	46.2	230	198	165	132
	56	88.1	73.8	59.3	43.6	213	183	153	122
	63	92.8	79.6	65.4	50.9	212	184	155	125
	71	85.8	73.5	60.7	47.5	193	168	141	114
11	25	131	101	68.2	32.5	467	397	325	251
	28	132	103	73.3	39.8	448	382	314	244
	31.5	132	106	77.1	46.3	429	367	302	236
	35.5	132	106	78.8	49.2	415	355	293	230
	40	129	105	79.6	52.2	393	336	279	219
	45	122	99.5	75.8	51.2	363	312	259	204
	50	137	116	93.8	70.9	366	317	266	214
	56	128	108	87.9	67.2	334	289	244	196
	63	124	105	85.8	65.5	319	275	232	187
	71	115	98.0	80.0	61.7	292	253	212	172
12	25	146	107	65.2	20.5	558	471	382	290
	28	153	116	77.6	35.0	538	457	374	287
	31.5	157	125	89.1	50.2	515	440	362	280
	35.5	157	126	92.7	56.3	494	421	348	272
	40	156	127	95.6	61.4	473	405	335	263
	45	154	126	95.9	63.9	456	391	324	255
	50	150	123	95.5	65.7	432	371	308	243
	56	141	117	90.8	63.6	399	342	285	225
	63	156	133	108	82.8	401	347	292	235
	71	145	123	102	77.8	365	317	266	215
13	25	168	125	79.5	30.1	596	504	410	313
	28	172	133	90.1	43.2	572	486	398	306
	31.5	174	137	98.0	55.2	549	469	385	299
	35.5	173	138	101	60.3	531	454	374	292
	40	171	138	103	65.4	505	432	357	280
	45	162	132	99.7	65.4	466	398	330	259
	50	187	157	126	93.8	483	418	351	281
	56	175	148	119	89.9	444	384	323	259
	63	170	144	117	88.4	424	368	310	249
	71	160	136	111	84.3	392	340	286	231

3.2 热容量

类型 DLBEIII..，规格 4−18，n_1=1800min^{-1}

3.2 Thermal capacities

Types DLBEIII.., Sizes 4-18, n_1=1800min^{-1}

规格 Size	传动比 Ratio	热容量 (kW) (环境温度) Thermal capacity in kW (Ambient temperature)							
		不带冷却风扇 **without** fan / P_{GA}				**带**冷却风扇 **with** fan/P_{GB}			
		20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃
14	25	164	112	54.6	-	673	565	454	336
	28	179	130	77.2	20.0	654	552	448	338
	31.5	193	147	100	47.2	630	536	437	339
	35.5	195	154	108	59.9	603	515	423	327
	40	195	157	116	70.1	580	496	409	319
	45	193	156	117	74.2	562	480	397	310
	50	189	155	118	77.9	533	457	378	297
	56	179	147	113	77.1	491	422	350	276
	63	203	172	139	105	508	440	370	297
	71	191	162	132	100	467	405	340	275
15	25	152	86.6	13.6	-	757	630	495	352
	28	177	114	46.3	-	753	629	501	367
	31.5	192	135	73.9	6.2	716	602	485	362
	35.5	198	144	84.6	19.4	697	587	474	357
	40	202	151	96.3	35.8	665	562	457	346
	45	193	148	98.8	43.1	615	521	424	324
	50	247	204	159	112	654	564	469	371
	56	234	198	154	111	602	519	434	345
	63	229	192	152	111	578	499	417	332
	71	220	185	148	109	545	471	394	315
16	25	126	48.9	-	-	812	668	514	354
	28	172	106	31.2	-	788	657	519	375
	31.5	195	131	60.0	-	781	654	524	386
	35.5	209	151	87.1	16.4	743	626	504	378
	40	213	157	97.5	31.0	722	609	494	372
	45	215	164	109	46.7	687	583	474	362
	50	206	159	110	52.5	636	540	440	337
	56	259	215	169	119	675	582	485	385
	63	246	204	163	118	621	536	448	357
	71	239	201	160	117	595	515	430	344
17	25	37.8	-	-	-	929	752	566	372
	28	89.9	-	-	-	939	770	590	405
	31.5	141	64.1	-	-	908	751	591	422
	35.5	159	87.7	-	-	885	737	585	423
	40	179	111	37.1	-	854	714	571	420
	45	182	120	52.2	-	797	668	536	399
	50	280	225	167	103	868	745	617	484
	56	271	220	167	110	802	690	574	453
	63	268	220	170	116	774	665	554	439
	71	262	216	169	118	732	631	525	418
18	25	-	-	-	-	943	749	546	329
	28	71.6	-	-	-	957	779	593	397
	31.5	122	33.3	-	-	963	795	614	427
	35.5	167	91.0	-	-	931	773	611	440
	40	183	109	28.2	-	906	756	603	441
	45	201	132	56.8	-	874	732	589	436
	50	200	139	71.1	-	815	685	552	412
	56	297	242	181	115	885	760	631	496
	63	285	234	180	121	818	704	586	463
	71	282	232	181	127	789	679	567	449

上述热容量适用于矿物油 VG320，t_{max}=90℃。当采用合成齿轮油 (聚乙烯烃)，对于 VG320，t_{max}=95℃，则上述热容量值应乘以系数 1.25，对于 VG220，t_{max}=95℃，则上述热容量值应乘以系数 1.3。

The thermal capacities refer to VG 320 mineral oils at t_{max}=90℃ . If synthetic oils (polyalthaolefin) are uesd, the values are increased by factor x 1.25 for VG320,t_{max}=95℃ , and x1.3 for VG220 at t_{max}=95℃ .

3.3 额定输出扭矩

类型 DLBEIII..，规格 4–18

3.3 Nominal output torques

Types DLBEIII.., Sizes 4-18

规格 / Types DLBEIII..								
名义传动比 i_N，额定输出扭矩 T_{2N} (kNm) / Transmission ratios i_N, Nominal output torques T_{2N} (kNm)								
i_N	齿轮箱规格 / Gear unit sizes							
	4	5	6	7	8	9	10	11
25	6.7	11.6	15.5	21.7	27.2	35.7	43.8	63.5
28	6.7	11.6	15.5	21.7	27.2	35.7	43.8	63.5
31.5	6.7	11.6	15.5	21.7	27.2	35.7	43.8	63.5
35.5	6.7	11.6	15.5	21.7	27.2	35.7	43.8	63.5
40	6.7	11.6	15.5	21.7	27.2	35.7	43.8	63.5
45	6.7	11.6	15.5	21.7	27.2	35.7	43.8	63.5
50	6.7	11.6	15.5	21.7	27.2	35.7	43.8	63.5
56	6.7	11.6	15.5	21.7	27.2	35.7	43.8	63.5
63	6.6	11.4	15.5	21.4	27.2	35.7	43.8	63.5
71	6.6	11	15.5	20	27.2	34	43.8	60

规格 / Types DLBEIII..							
名义传动比 i_N，额定输出扭矩 T_{2N} (kNm) / Transmission ratios i_N, Nominal output torques T_{2N} (kNm)							
i_N	齿轮箱规格 / Gear unit sizes						
	12	13	14	15	16	17	18
25	77.2	90.7	113	153	173	200	240
28	77.2	90.7	113	153	173	200	240
31.5	77.2	90.7	113	153	173	200	240
35.5	77.2	90.7	113	153	173	200	240
40	77.2	90.7	113	153	173	200	240
45	77.2	90.7	113	153	173	200	240
50	77.2	90.7	113	153	173	200	240
56	77.2	90.7	113	153	173	200	240
63	77.2	90.7	113	153	173	200	240
71	77.2	90.7	113	153	173	200	240

3.4 实际传动比

类型 DLBEIII..，规格 4–18

3.4 Actual ratios

Types DLBEIII.., Sizes 4-18

规格 Sizes	DLBEIII.. 公称传动比 / Nominal ratios i_N									
	25	28	31.5	35.5	40	45	50	56	63	71
	DLBEIII.. 实际传动比 / Actual ratios i									
4	25.682	28.168	30.556	35.185	39.957	43.59	49.644	55.808	61.532	70.118
5	26.054	28.576	30.998	35.695	40.536	45.45	50.363	56.616	62.423	71.134
6	24.928	27.859	32.258	35.379	38.379	44.194	50.188	56.271	62.354	70.097
7	24.893	27.513	29.846	34.368	39.029	43.76	48.49	54.511	60.102	68.489
8	24.47	27.167	31.215	34.501	37.425	43.096	48.941	54.873	60.805	68.356
9	24.98	27.609	31.714	34.487	39.536	43.912	48.659	54.701	60.312	68.727
10	24.478	26.832	31.224	34.511	39.643	43.109	49.42	54.89	60.824	68.377
11	25.556	28.246	32.446	35.283	40.447	43.71	49.781	55.963	61.702	70.312
12	25.758	28.235	32.857	36.316	41.716	45.363	52.004	56.199	64.005	71.952
13	24.600	28.889	31.338	36.086	41.368	44.706	50.915	57.237	63.107	71.913
14	25.369	27.809	30.457	35.767	38.799	44.678	51.218	55.35	63.038	70.865
15	25.288	28.263	32.106	34.913	40.024	44.454	49.26	55.377	61.056	69.576
16	25.169	28.635	32.004	36.355	39.534	45.321	50.338	55.78	62.706	69.137
17	25.819	28.856	32.78	35.646	40.864	44.161	50.294	56.539	62.338	71.036
18	25.936	29.507	32.979	37.463	40.738	46.702	50.469	57.479	64.616	71.243

3.5 转动惯量 J_1

类型 DLBEIII..，规格 4–18

转动惯量 J_2 (kgm^2) 是指相对于齿轮箱输出轴 d_2 的转动惯量，可按下列公式计算：$J_2 = i_N^2 \times J_1$.

转动惯量 J_1 (kgm^2) 是指相对于齿轮箱不带冷却风扇的输入轴 d_1 的转动惯量。

如果输入轴 d_1 带有冷却风扇，则应加上 J_L。

敬请垂询带法兰轴的齿轮箱。

3.5 Mass moments of inertia J_1

Types DLBEIII.., Sizes 4-18

The mass moment of inertia J_2 in kgm^2 refers to the output shaft d_2 of a gear unit and is calculated with the following formula: $J_2 = i_N^2 \times J_1$.

The mass moment of inertia J_1 in kgm^2 refers to the input shaft d_1 of a gear unit without fan.

For shaft d_1 with fan, J_L has to be added.

Values for gear units with flanged shaft on request.

转动惯量 J_1 (kgm^2) 是指相对于齿轮箱输入轴 d_1 的转动惯量 / Mass moments of inertia J_1 in kgm^2 referring to shaft d_1								
i_N	齿轮箱规格 / Gear unit sizes							
	4	5	6	7	8	9	10	11
25	0.00466	0.01083	0.01318	0.02838	0.03647	0.06107	0.08374	0.14685
28	0.00404	0.00890	0.01216	0.02386	0.03373	0.05216	0.07643	0.12615
31.5	0.00345	0.0074	0.01116	0.01932	0.02944	0.04021	0.06332	0.09390
35.5	0.00281	0.00596	0.00921	0.01578	0.02473	0.03285	0.0539	0.08411
40	0.0018	0.00426	0.00765	0.01109	0.02006	0.0267	0.04171	0.07235
45	0.00187	0.00403	0.00615	0.00994	0.01634	0.02288	0.03403	0.06256
50	0.00124	0.00311	0.00441	0.00822	0.01153	0.01794	0.0276	0.04693
56	0.00103	0.00253	0.00415	0.00692	0.01029	0.01472	0.02367	0.0386
63	0.00085	0.00212	0.00318	0.00592	0.0085	0.01252	0.01854	0.03275
71	0.00062	0.00152	0.00251	0.00473	0.00715	0.01007	0.01519	0.02632

转动惯量 J_1 (kgm^2) 是指相对于齿轮箱输入轴 d_1 的转动惯量 / Mass moments of inertia J_1 in kgm^2 referring to shaft d_1								
i_N	齿轮箱规格 / Gear unit sizes							
	12	13	16	14	15	16	17	18
25	0.22744	0.32064	1.16802	0.49445	0.90266	1.16802	1.92092	2.46753
28	0.19295	0.27221	0.91872	0.41942	0.77366	0.91872	1.67706	1.94982
31.5	0.15415	0.20104	0.78653	0.33213	0.56216	0.78653	1.21685	1.70015
35.5	0.13213	0.18242	0.57214	0.28162	0.50678	0.57214	1.09767	1.23475
40	0.09852	0.15345	0.51523	0.20816	0.43116	0.51523	0.94874	1.11273
45	0.08794	0.13102	0.43757	0.18847	0.36985	0.43757	0.81943	0.96031
50	0.07526	0.10278	0.37534	0.15804	0.27683	0.37534	0.57181	0.82922
56	0.06508	0.08559	0.28106	0.13502	0.22873	0.28106	0.46962	0.57941
63	0.04883	0.07272	0.23208	0.10581	0.19592	0.23208	0.40573	0.47563
71	0.04012	0.05872	0.19862	0.08794	0.15891	0.19862	0.33356	0.41064

4.1 辅助传动装置

类型 DLBEIII..，规格 4–18

根据不同的应用情况，对于每一种齿轮箱规格均有两种不同功率的辅助传动装置可供选择：

1）空载辅助传动

辅助传动装置的马达是这样确定的，即料斗不带料时斗式提升机可以在低转速下以相同的旋转方向运行。

2）带载辅助传动

辅助传动装置的马达是这样确定的，即按东力标准选择合适的工作机系数后，料斗装满料时斗式提升机可以在低转速下以相同的旋转方向运行。

辅助传动装置的布置形式

辅助传动装置的布置形式辅助传动装置通过一个中间法兰与齿轮箱联接。在辅助传动装置中涉及一个类型为 DLKF 伞齿轮式齿轮马达，此马达通过一个离合器与主齿轮箱联接。此离合器安置在过渡法兰盘中并且由主齿轮箱的润滑油供油。东力伞齿轮式齿轮马达具有独立的供油系统并且在供货时已经注油。为了避免在离合器的功能出现故障时转速过快，此传动组合出于安全考虑应由使用方配置一个转速监控装置。

用于主齿轮箱规格 4 至 12 载荷运行的辅助传动装置应配置一个惯量风扇以支持软起动。

4.1 Auxiliary drive

Types DLBEIII.., Sizes 4-18

Dependent on the case of application, for each gear unit size two different auxiliary drives are available:

1) Maintenance drive

The motor of the auxiliary drive is dimensioned in such a way that the bucket elevator can be operated with empty buckets at low speed in the same direction of rotation.

2) Operation under load

The motor of the auxiliary drive is dimensioned in such a way that the bucket elevator can be operated with full buckets at low speed in the samedirection of rotation.

Design of auxiliary drives

The auxiliay drive is flanged to the main gear unit by means of an intermediate flange. The auxiliary drive is a DONLY bevel geared motor type DLKF which is coupled to the main gear unit via an overrunning clutch. The overrunning clutch is located in the intermediate flange and supplied with oil from the main gear unit. The DONLY bevel geared motor has an own oil filling and is supplied filled with oil. To prevent overspeeds in the case of malfunctions of the overrunning clutch, the customer has to provide a speed monitor for the protection of the drive combination.

The auxiliary drives for operation under load, for main gear unit sizes 4 to12, have a high-inertia fan for supporting smooth starting.

主齿轮箱 Main gear unit	空载辅助传动装置 / Maintenance drive							带载运行 / Operation under load						
规格 Size	1) n_3 rpm	2) T_3 [kNm]	3) 齿轮马达 Geared motor	P_M [kW]	4) T_{MA} T_M	5) I [A]	i	1) n_3 rpm	2) T_3 [kNm]	3) 齿轮马达 Geared motor	P_M [kW]	4) T_{MA} T_M	5) I [A]	i
4	3.0	2.4	DLKF47-DE3-80M-4	0.75	2.3	2.0	29.58	3.0	3.5	DLKF47-DE3-90S-4	1.1	2.3	2.8	29.58
5	3.0	4.8	DLKF47-DE3-90L-4	1.5	2.3	3.7	29.58	3.1	6.6	DLKF57-DE3-100L1-4	2.2	2.3	5.1	28.38
6	2.4	6.0	DLKF47-DE3-90L-4	1.5	2.3	3.7	29.58	2.5	8.3	DLKF57-DE3-100L1-4	2.2	2.3	5.1	28.38
7	3.2	6.4	DLKF57-DE3-100L1-4	2.2	2.3	5.1	28.38	3.1	12.4	DLKF77-DE3-112M-4	4	2.3	8.9	30.46
8	2.6	8.1	DLKF57-DE3-100L1-4	2.2	2.3	5.1	28.38	2.5	15.6	DLKF77-DE3-112M-4	4	2.3	8.9	30.46
9	3.0	9.5	DLKF67-DE3-100L2-4	3	2.3	6.7	30.7	2.7	19.3	DLKF77-DE3-132S-4	5.5	2.3	11.8	34.27
10	2.4	11.9	DLKF67-DE3-100L2-4	3	2.3	6.7	30.7	2.2	24.1	DLKF77-DE3-132S-4	5.5	2.3	11.8	34.27
11	2.2	12.8	DLKF77-DE3-100L2-4	3	2.3	6.7	40.62	2.5	35.5	DLKF87-DE3-132L-4	9.2	2.3	19.3	36.86
12	1.7	16.5	DLKF77-DE3-100L2-4	3	2.3	6.7	40.62	1.9	45.6	DLKF87-DE3-132L-4	9.2	2.3	19.3	36.86
13	2.2	17.4	DLKF77-DE3-112M-4	4	2.3	8.9	40.62	3.2	54.5	DLKF97-DE3-180M-4	18.5	2.2	36.7	28.12
14	1.8	21.5	DLKF77-DE3-112M-4	4	2.3	8.9	40.62	2.6	67.6	DLKF97-DE3-180M-4	18.5	2.2	36.7	28.12
15	2.3	16.8	DLKF77-DE3-112M-4	4	2.3	8.9	40.62	3.3	86.5	DLKF127-DE3-200L-4	30	2.2	58.8	28.42
16	2.0	19.1	DLKF77-DE3-112M-4	4	2.3	8.9	40.62	2.9	98.0	DLKF127-DE3-200L-4	30	2.2	58.8	28.42
17	2.2	17.2	DLKF77-DE3-112M-4	4	2.3	8.9	40.62	3.3	108.2	DLKF127-DE3-225S-4	37	2.2	72.3	28.42
18	1.9	19.6	DLKF77-DE3-112M-4	4	2.3	8.9	40.62	2.9	123.7	DLKF127-DE3-225S-4	37	2.2	72.3	28.42

1) 在通过辅助传动装置时主齿轮箱的输出轴，转速
(50 Hz, n_1 = 1500 min^{-1}; 在 60 Hz 时 n_3 高出 20% 左右)
2) 在通过辅助传动装置时主齿轮箱的输出轴扭矩
3) DLKF 伞齿轮式齿轮马达
4) 辅助启动时，辅助电机启动转矩 T_{MA} 与辅助电机额定转矩 T_M 之比
5) 在 380 V 时的额定电流

1) On main gear unit output shaft in case of input via auxiliary drive
(50 Hz, n_1 = 1500 min^{-1}; at 60 Hz, n_3 will be≈ 20 % higher)
2) The torque on output shaft of main gear unit driver by aulixiary drive
3) DLKF bevel-helical geared motor
4) In case of direct switching on, motor starting torque T_{MA} as a multiple of the nominal motor torque T_M of the auxiliary drive
5) Rated current at 380 V

5.1 带辅助传动的直交轴齿轮箱（空载辅助传动装置）

齿轮箱三级传动

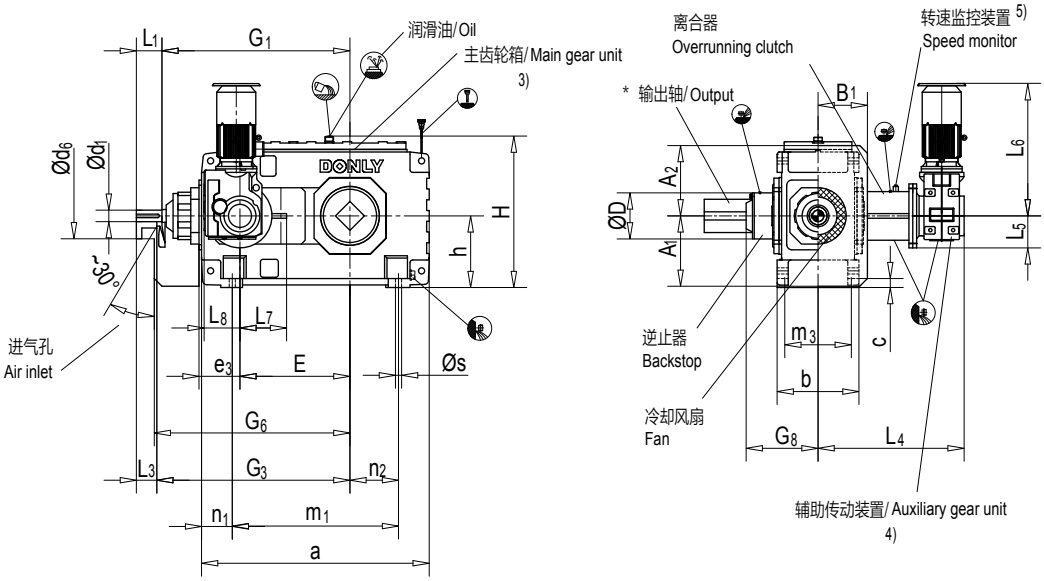
类型 DLBEIII..，规格 4–12

5.1 Bevel-helical gear units with auxiliary drive (Maintenance drive)

Three stage gear units

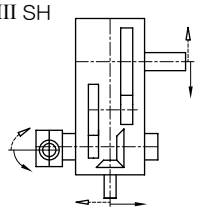
Types DLBEIII.., Sizes 4-12

DLBEIII SH DLBEIII HH DLBEIII DH

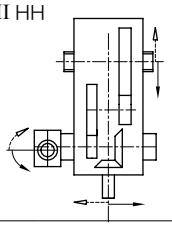


布置形式 / Design B

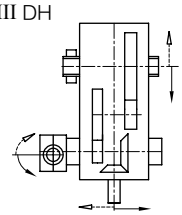
DLBEIII SH



DLBEIII HH

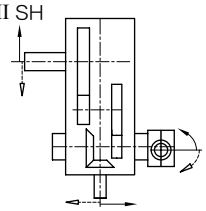


DLBEIII DH

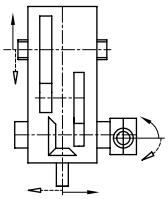


布置形式 / Design D

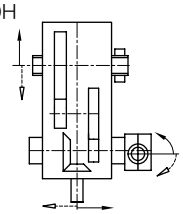
DLBEIII SH



DLBEIII HH

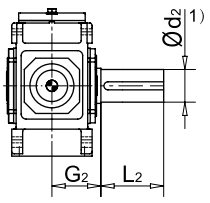


DLBEIII DH

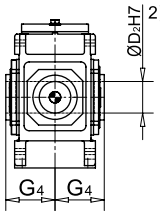


* 输出轴 /Output

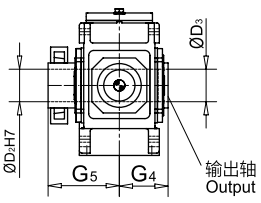
DLBEIII SH
实心轴 /Soild shaft



DLBEIII HH
空心轴 /Hollow shaft



DLBEIII DH
带锁紧盘的空心轴
Hollow shaft
for shrink disk



1) 轴（尺寸以 mm 为单位）：
轴径 ≤ ϕ100，公差为 m6
轴径 > ϕ100，公差为 n6
平键槽按照 GB1095
2) 轮毂键槽宽度按照 GB1801 JS9
平键按照 GB1096.
有关细节见第 28–31 页

1) Shafts (Dimensions in mm):
Shaft diameter ≤ φ100, tolerance m6
Shaft diameter > φ100, tolerance n6
Keyway acc. to GB1095
2) Hub keyway width acc. to GB1801 JS9
Parallel key acc. to GB1096
For details, see pages28-31

5.1 带辅助传动的直交轴齿轮箱（空载辅助传动装置）

齿轮箱三级传动

类型 DLBEIII..，规格 4−12

5.1 Bevel-helical gear units with auxiliary drive (Maintenance drive)

Three stage gear units

Types DLBEIII.., Sizes 4-12

主齿轮箱 Main gear unit 规格 /Size	辅助齿轮箱 Auxiliary gear unit 类型 / 规格 / 减速电机 Type/Size/Gearmotors	输入轴 / Input												G_1	G_3
		i_N=25-45			i_N=25-56			i_N=50-71			i_N=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	DLKF47-DE3-80M-4	32	70	50				28	60	40				500	520
5	DLKF47-DE3-90L-4	38	80	60				32	60	40				575	595
6	DLKF47-DE3-90L-4				38	80	60				32	60	40	610	630
7	DLKF57-DE3-100L1-4	48	100	80				38	80	60				690	710
8	DLKF57-DE3-100L1-4				48	100	80				38	80	60	735	755
9	DLKF67-DE3-100L2-4	60	110	80				48	100	70				800	830
10	DLKF67-DE3-100L2-4				60	110	80				48	100	70	850	880
11	DLKF77-DE3-100L2-4	80	135	105				60	110	80				960	990
12	DLKF77-DE3-100L2-4				80	135	105				60	110	80	1030	1060

规格 Size	齿轮箱 / Gear units																		
	a	b	c	e_3	E	G_6	G_8	h	H	m_1	m_3	n_1	n_2	s	L_4	L_5	L_6	L_7	L_8	D
4	565	215	28	110	270	530	204	200	440	355	180	105	85	19	440	100	460	137	112	132
5	640	255	28	130	315	605	223	230	507	430	220	105	100	19	490	125	480	165	112	150
6	720	255	28	130	350	640	223	230	507	510	220	105	145	19	490	125	480	165	112	150
7	785	300	35	160	385	720	281	280	610	545	260	120	130	24	560	150	560	210	140	175
8	890	300	35	160	430	765	281	280	610	650	260	120	190	24	560	150	560	210	140	175
9	925	370	40	185	450	845	317	320	690	635	320	145	155	28	610	150	590	255	140	190
10	1025	370	40	185	500	895	317	320	690	735	320	145	205	28	610	150	590	255	140	190
11	1105	430	50	225	545	1010	368	380	845	775	370	165	180	35	700	175	620	315	180	210
12	1260	430	50	225	615	1080	368	380	845	930	370	165	265	35	700	175	620	315	180	210

规格 Size	输出轴 / Output								
	DLBEIII SH			DLBEIII HH		DLBEIII DH			
	d_2	G_2	L_2	D_2	G_4	D_2	D_3	G_4	G_5
4	80	140	170	80	140	85	85	140	205
5	100	165	210	95	165	100	100	165	240
6	110	165	210	105	165	110	110	165	240
7	120	195	210	115	195	120	120	195	280
8	130	195	250	125	195	130	130	195	285
9	140	235	250	135	235	140	145	235	330
10	160	235	300	150	235	150	155	235	350
11	170	270	300	165	270	165	170	270	400
12	180	270	300	180	270	180	185	270	405

规格 Size	冷却风扇 / Fan				润滑油 / Oil		重量 / Weight	
					DLK… [4]	DLB.. [3]	DLK… [4]	DLB.. [3]
	A_1	A_2	B_1	d_6	(l) #)	(l) #)	(kg) ##)	(kg) ##)
4	195	200	143	110	2.1	10	44	240
5	220	235	168	130	2.1	16	53	348
6	220	235	168	130	2.1	17	53	408
7	275	275	193	165	3.2	30	66	585
8	275	275	193	165	3.2	33	66	670
9	315	325	231	175	3.7	45	70	960
10	315	325	231	175	3.7	48	70	1100
11	370	385	263	190	6.5	79	98	1565
12	370	385	263	190	6.5	84	98	1840

3）其它数据和尺寸请查阅产品样本 DLH/DLB(2021 版本)
4）其它数据和尺寸请查阅产品样本 DLK(2021 版本)
5）为了避免在离合器功能出现故障时转速过快，此传动组合处于安全考虑应由使用方配置一个转速监控装置，见第 36 页。

#) 参考值；准确的数据应根据与合同相关的文件确定
#) 未注油时

3) Other data and dimensions acc. to brochure DLH/DLB (2021 edition)
4) Other data and dimensions acc. to brochure DLK (2021 edition)
5) To prevent overspeeds in the case of malfuctions of the overrunning clutch, the customer has to provide a speed monitor for the protection of the drive combination, see page 36.

#) Approximate values; Exact data acc. to order- related documentation
#) Without oil filling

5.1 带辅助传动的直交轴齿轮箱（空载辅助传动装置）

齿轮箱三级传动

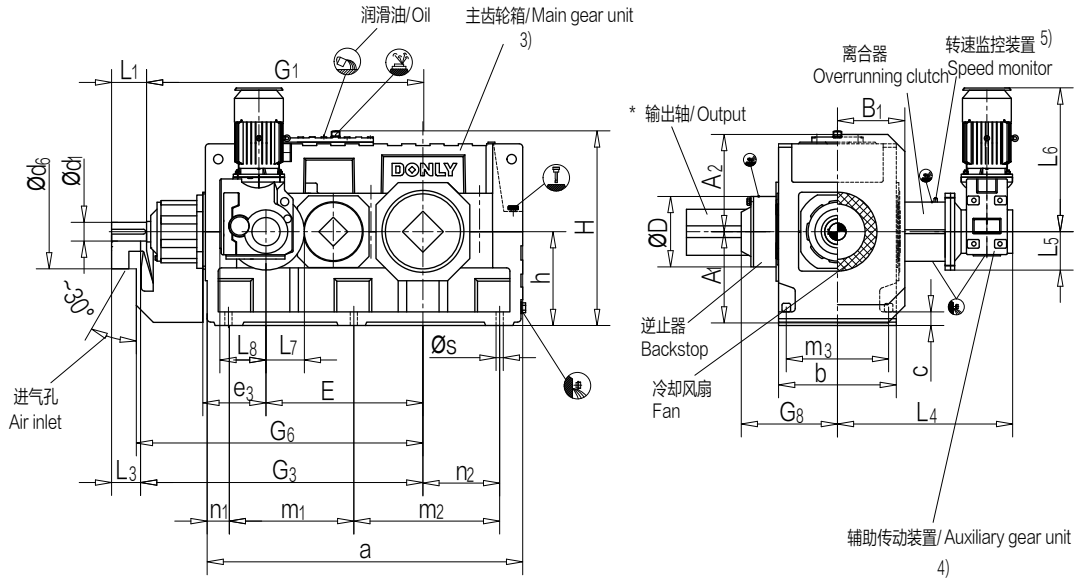
类型 DLBEIII..，规格 13–18

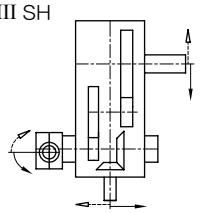
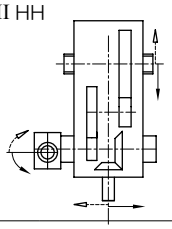
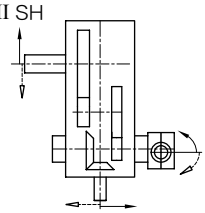
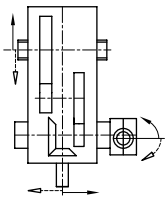
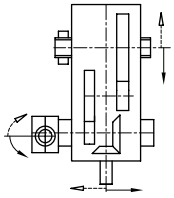
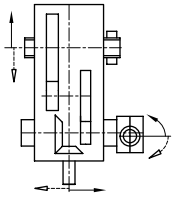
5.1 Bevel-helical gear units with auxiliary drive (Maintenance drive)

Three stage gear units

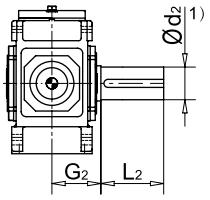
Types DLBEIII.., Sizes 13-18

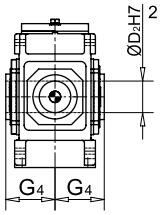
DLBEIII SH DLBEIII HH DLBEIII DH

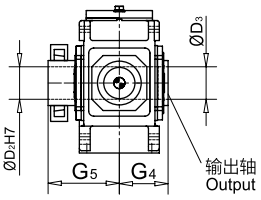


布置形式 /Design B		布置形式 /Design D	
DLBEIII SH 	DLBEIII HH 	DLBEIII SH 	DLBEIII HH 
DLBEIII DH 		DLBEIII DH 	

* 输出轴 /Output

DLBEIII SH 实心轴 /Soild shaft 

DLBEIII HH 空心轴 /Hollow shaft 

DLBEIII DH 带锁紧盘的空心轴 Hollow shaft for shrink disk 

1) 轴（尺寸以 mm 为单位）：
轴径 ≤ ϕ100，公差为 m6
轴径 > ϕ100，公差为 n6
平键槽按照 GB1095
2) 轮毂键槽宽度按照 GB1801 JS9
平键按照 GB1096.
有关细节见第 28–31 页

1) Shafts (Dimensions in mm):
Shaft diameter ≤ φ100, tolerance m6
Shaft diameter > φ100, tolerance n6
Keyway acc. to GB1095
2) Hub keyway width acc. to GB1801 JS9
Parallel key acc. to GB1096
For details, see pages28-31

5.1 带辅助传动的直交轴齿轮箱（空载辅助传动装置）

齿轮箱三级传动

类型 DLBEIII..，规格 13−18

5.1 Bevel-helical gear units with auxiliary drive (Maintenance drive)

Three stage gear units

Types DLBEIII.., Sizes 13-18

主齿轮箱 Main gear unit 规格 /Size	辅助齿轮箱 Auxiliary gear unit 类型 / 规格 / 减速电机 Type/Size/Gearmotors	输入轴 / Input																		G_1	G_3
		i_N=25-45			i_N=25-50			i_N=25-56			i_N=50-71			i_N=56-71			i_N=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	d_1 [1)]	L_1	L_3	d_1 [1)]	L_1	L_3		
13	DLKF77-DE3-112M-4	90	165	130							70	140	105							1125	1160
14	DLKF77-DE3-112M-4							90	165	130							70	140	105	1195	1230
15	DLKF77-DE3-112M-4	100	165	130							80	140	105							1367	1402
16	DLKF77-DE3-112M-4				100	165	130							80	140	105				1413	1448
17	DLKF77-DE3-112M-4	120	205	165							90	170	130							1560	1600
18	DLKF77-DE3-112M-4				120	205	165							80	170	130				1620	1660

规格 Size		齿轮箱 / Gear units																			
	a	b	c	e_3	E	G_6	G_8	h	H	m_1	m_2	m_3	n_1	n_2	s	L_4	L_5	L_6	L_7	L_8	D
13	1290	550	60	265	635	1180	451	440	970	545	545	475	100	305	35	790	225	670	362	180	270
14	1430	550	60	265	705	1250	451	440	970	545	685	475	100	375	35	790	225	670	362	180	270
15	1550	625	70	320	762	1420	497	500	1065	655	655	535	120	365	42	850	275	670	443	180	322
16	1640	625	70	320	808	1470	497	500	1065	655	745	535	120	410	42	850	275	670	443	180	322
17	1740	690	80	370	860	1620	564	550	1160	735	735	600	135	390	42	870	275	670	520	180	412
18	1860	690	80	370	920	1680	564	550	1160	735	855	600	135	450	42	870	275	670	520	180	412

规格 Size	输出轴 / Output								
	DLBEIII SH			DLBEIII HH		DLBEIII DH			
	d_2	G_2	L_2	D_2	G_4	D_2	D_3	G_4	G_5
13	200	335	350	190	335	190	195	335	480
14	210	335	350	210	335	210	215	335	480
15	230	380	410	230	380	230	235	380	550
16	240	380	410	240	380	240	245	380	550
17	250	415	410	250	415	250	260	415	600
18	270	415	470	275	415	280	285	415	600

规格 Size	冷却风扇 / Fan				润滑油 / Oil		重量 / Weight	
					DLK… [4)]	DLB.. [3)]	DLK… [4)]	DLB.. [3)]
	A_1	A_2	B_1	d_6	(l) #	(l) #	(kg) # #	(kg) # #
13	425	435	325	210	6.5	145	105	2527
14	425	435	325	210	6.5	155	105	2897
15	485	520	365	210	6.5	230	105	3895
16	485	520	365	210	6.5	240	105	4160
17	535	570	395	230	6.5	315	105	5143
18	535	570	395	230	6.5	325	105	5647

3) 其它数据和尺寸请查阅产品样本 DLH/DLB(2021 版本)
4) 其它数据和尺寸请查阅产品样本 DLK(2021 版本)
5) 为了避免在离合器功能出现故障时转速过快，此传动组合处于安全考虑应由使用方配置一个转速监控装置，见第 36 页。

#) 参考值；准确的数据应根据与合同相关的文件确定
#) 未注油时

3) Other data and dimensions acc. to brochure DLH/DLB (2021 edition)
4) Other data and dimensions acc. to brochure DLK (2021 edition)
5) To prevent overspeeds in the case of malfuctions of the overrunning clutch, the customer has to provide a speed monitor for the protection of the drive combination, see page 36.

#) Approximate values; Exact data acc. to order- related documentation
#) Without oil filling

5.2 带辅助传动的直交轴齿轮箱（带载辅助传动装置）

齿轮箱三级传动

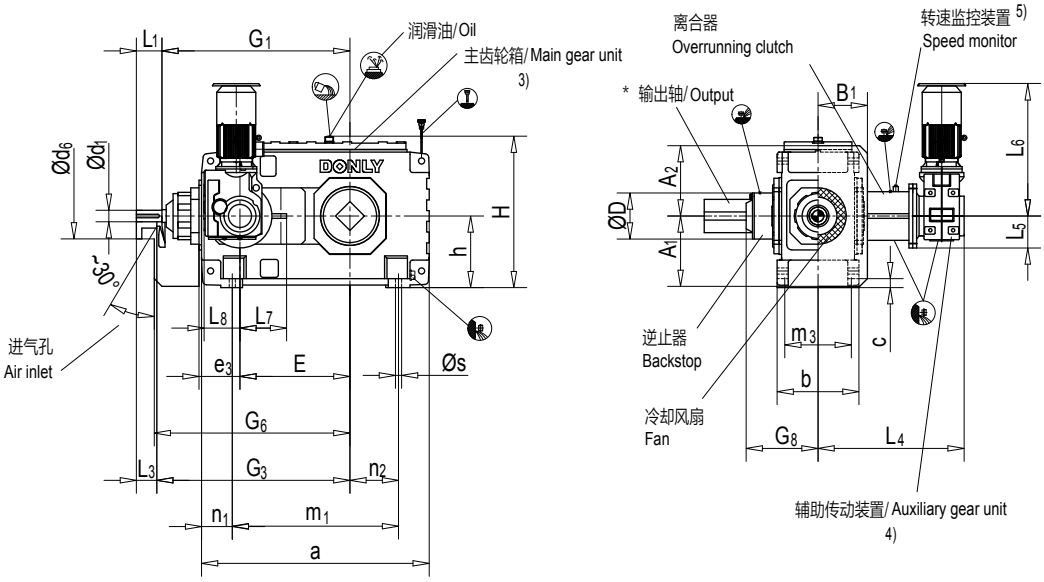
类型 DLBEIII..，规格 4–12

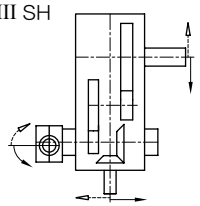
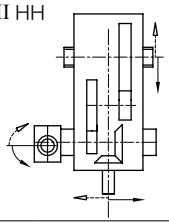
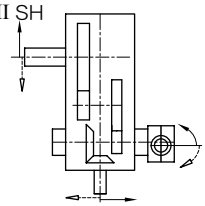
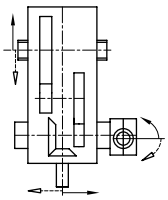
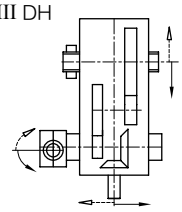
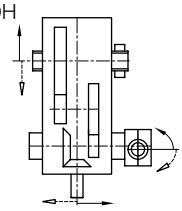
5.2 Bevel-helical gear units with auxiliary drive (Operation under load)

Three stage gear units

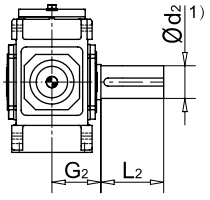
Types DLBEIII.., Sizes 4-12

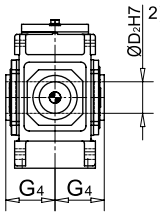
DLBEIII SH DLBEIII HH DLBEIII DH

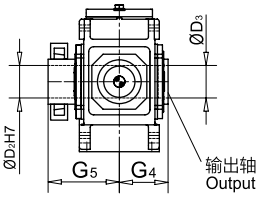


布置形式 /Design B		布置形式 /Design D	
DLBEIII SH 	DLBEIII HH 	DLBEIII SH 	DLBEIII HH 
DLBEIII DH 		DLBEIII DH 	

* 输出轴 /Output

DLBEIII SH 实心轴 /Soild shaft 

DLBEIII HH 空心轴 /Hollow shaft 

DLBEIII DH 带锁紧盘的空心轴 Hollow shaft for shrink disk 

1) 轴（尺寸以 mm 为单位）：
轴径 ≤ ϕ100，公差为 m6
轴径 > ϕ100，公差为 n6
平键槽按照 GB1095
2) 轮毂键槽宽度按照 GB1801 JS9
平键按照 GB1096.
有关细节见第 28–31 页

1) Shafts (Dimensions in mm):
Shaft diameter ≤ φ100, tolerance m6
Shaft diameter > φ100, tolerance n6
Keyway acc. to GB1095
2) Hub keyway width acc. to GB1801 JS9
Parallel key acc. to GB1096
For details, see pages28-31

5.2 带辅助传动的直交轴齿轮箱（带载辅助传动装置）

齿轮箱三级传动

类型 DLBEIII..，规格 4–12

5.2 Bevel-helical gear units with auxiliary drive (Operation under load)

Three stage gear units

Types DLBEIII.., Sizes 4-12

主齿轮箱 Main gear unit 规格 /Size	辅助齿轮箱 Auxiliary geare unit 类型 / 规格 / 减速电机 Type/Size/Gearmotors	输入轴 / Input												G_1	G_3
		i_N=25-45			i_N=25-56			i_N=50-71			i_N=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	DLKF47-DE3-90S-4	32	70	50				28	60	40				500	520
5	DLKF57-DE3-100L1-4	38	80	60				32	60	40				575	595
6	DLKF57-DE3-100L1-4				38	80	60				32	60	40	610	630
7	DLKF77-DE3-112M-4	48	100	80				38	80	60				690	710
8	DLKF77-DE3-112M-4				48	100	80				38	80	60	735	755
9	DLKF77-DE3-132S-4	60	110	80				48	100	70				800	830
10	DLKF77-DE3-132S-4				60	110	80				48	100	70	850	880
11	DLKF87-DE3-132L-4	80	135	105				60	110	80				960	990
12	DLKF87-DE3-132L-4				80	135	105				60	110	80	1030	1060

规格 Size	齿轮箱 / Gear units																		
	a	b	c	e_3	E	G_6	G_8	h	H	m_1	m_3	n_1	n_2	s	L_4	L_5	L_6	L_7	L_8	D
4	565	215	28	110	270	530	204	200	440	355	180	105	85	19	460	100	480	137	112	132
5	640	255	28	130	315	605	223	230	507	430	220	105	100	19	525	125	578	165	140	150
6	720	255	28	130	350	640	223	230	507	510	220	105	145	19	525	125	578	165	140	150
7	785	300	35	160	385	720	281	280	610	545	260	120	130	24	620	150	670	210	180	175
8	890	300	35	160	430	765	281	280	610	650	260	120	190	24	620	150	670	210	180	175
9	925	370	40	185	450	845	317	320	690	635	320	145	155	28	700	150	750	255	180	190
10	1025	370	40	185	500	895	317	320	690	735	320	145	205	28	700	150	750	255	180	190
11	1105	430	50	225	545	1010	368	380	845	775	370	165	180	35	740	175	800	315	212	210
12	1260	430	50	225	615	1080	368	380	845	930	370	165	265	35	740	175	800	315	212	210

规格 Size	输出轴 / Output								
	DLBEIII SH			DLBEIII HH		DLBEIII DH			
	d_2	G_2	L_2	D_2	G_4	D_2	D_3	G_4	G_5
4	80	140	170	80	140	85	85	140	205
5	100	165	210	95	165	100	100	165	240
6	110	165	210	105	165	110	110	165	240
7	120	195	210	115	195	120	120	195	280
8	130	195	250	125	195	130	130	195	285
9	140	235	250	135	235	140	145	235	330
10	160	235	300	150	235	150	155	235	350
11	170	270	300	165	270	165	170	270	400
12	180	270	300	180	270	180	185	270	405

规格 Size	冷却风扇 / Fan				润滑油 / Oil		重量 / Weight	
					DLK…[4]	DLB..[3]	DLK…[4]	DLB..[3]
	A_1	A_2	B_1	d_6	(l) #)	(l) #)	(kg) # #)	(kg) # #)
4	195	200	143	110	2.1	10	49	240
5	220	235	168	130	3.2	16	66	353
6	220	235	168	130	3.2	17	66	413
7	275	275	193	165	6.5	30	105	595
8	275	275	193	165	6.5	33	105	675
9	315	325	231	175	6.5	45	125	975
10	315	325	231	175	6.5	48	125	1135
11	370	385	263	190	13	79	185	1615
12	370	385	263	190	13	84	185	1890

3) 其它数据和尺寸请查阅产品样本 DLH/DLB(2021 版本)
4) 其它数据和尺寸请查阅产品样本 DLK(2021 版本)
5) 为了避免在离合器功能出现故障时转速过快，此传动组合处于安全考虑应由使用方配置一个转速监控装置，见第 36 页。

#) 参考值；准确的数据应根据与合同相关的文件确定
#) 未注油时

3) Other data and dimensions acc. to brochure DLH/DLB (2021 edition)
4) Other data and dimensions acc. to brochure DLK (2021 edition)
5) To prevent overspeeds in the case of malfuctions of the overrunning clutch, the customer has to provide a speed monitor for the protection of the drive combination, see page 36.

#) Approximate values; Exact data acc. to order- related documentation
#) Without oil filling

5.2 带辅助传动的直交轴齿轮箱（带载辅助传动装置）

齿轮箱三级传动

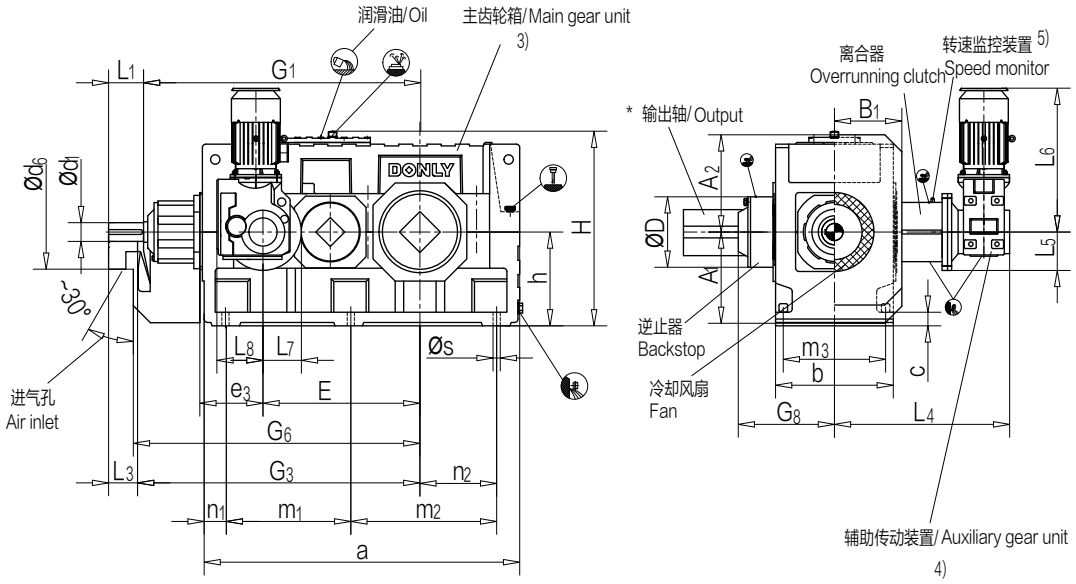
类型 DLBEIII..，规格 13–18

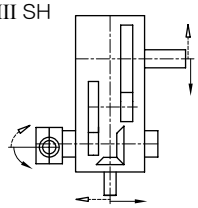
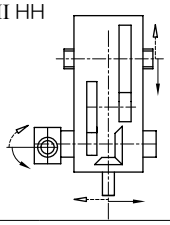
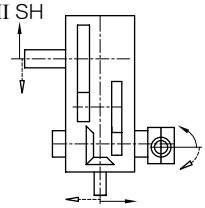
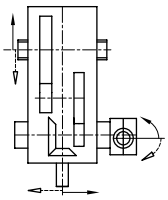
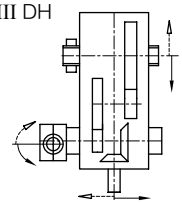
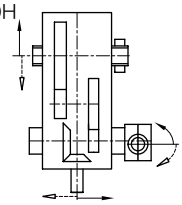
5.2 Bevel-helical gear units with auxiliary drive (Operation under load)

Three stage gear units

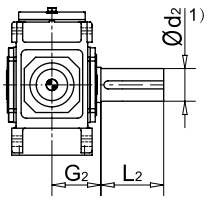
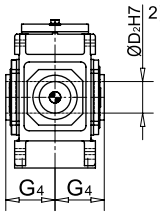
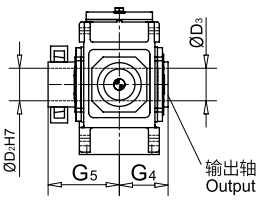
Types DLBEIII.., Sizes 13-18

DLBEIII SH DLBEIII HH DLBEIII DH



布置形式 /Design B		布置形式 /Design D	
DLBEIII SH 	DLBEIII HH 	DLBEIII SH 	DLBEIII HH 
DLBEIII DH 		DLBEIII DH 	

* 输出轴 /Output

DLBEIII SH 实心轴 /Soild shaft	DLBEIII HH 空心轴 /Hollow shaft	DLBEIII DH 带锁紧盘的空心轴 Hollow shaft for shrink disk
		

1) 轴（尺寸以 mm 为单位）：
轴径 ≤ ϕ100，公差为 m6
轴径 > ϕ100，公差为 n6
平键槽按照 GB1095
2) 轮毂键槽宽度按照 GB1801 JS9
平键按照 GB1096.
有关细节见第 28–31 页

1) Shafts (Dimensions in mm):
Shaft diameter ≤ φ100, tolerance m6
Shaft diameter > φ100, tolerance n6
Keyway acc. to GB1095
2) Hub keyway width acc. to GB1801 JS9
Parallel key acc. to GB1096
For details, see pages28-31

5.2 带辅助传动的直交轴齿轮箱（带载辅助传动装置）

齿轮箱三级传动

类型 DLBEIII..，规格 13–18

5.1 Bevel-helical gear units with auxiliary drive (Maintenance drive)

Three stage gear units

Types DLBEIII.., Sizes 13-18

主齿轮箱 Main gear unit 规格 /Size	辅助齿轮箱 Auxiliary gear unit 类型 / 规格 / 减速电机 Type/Size/Gearmotors	输入轴 / Input																		G_1	G_3
		i_N=25-45			i_N=25-50			i_N=25-56			i_N=50-71			i_N=56-71			i_N=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	d_1 [1]	L_1	L_3	d_1 [1]	L_1	L_3		
13	DLKF97-DE3-180M-4	90	165	130							70	140	105							1125	1160
14	DLKF97-DE3-180M-4							90	165	130							70	140	105	1195	1230
15	DLKF127-DE3-200L-4	100	165	130							80	140	105							1367	1402
16	DLKF127-DE3-200L-4				100	165	130							80	140	105				1413	1448
17	DLKF127-DE3-225S-4	120	205	165							90	170	130							1560	1600
18	DLKF127-DE3-225S-4				120	205	165							80	170	130				1620	1660

规格 Size		齿轮箱 / Gear units																			
	a	b	c	e_3	E	G_6	G_8	h	H	m_1	m_2	m_3	n_1	n_2	s	L_4	L_5	L_6	L_7	L_8	D
13	1290	550	60	265	635	1180	451	440	970	545	545	475	100	305	35	950	225	988	362	265	270
14	1430	550	60	265	705	1250	451	440	970	545	685	475	100	375	35	950	225	988	362	265	270
15	1550	625	70	320	762	1420	497	500	1065	655	655	535	120	365	42	1150	275	1175	443	375	322
16	1640	625	70	320	808	1470	497	500	1065	655	745	535	120	410	42	1150	275	1175	443	375	322
17	1740	690	80	370	860	1620	564	550	1160	735	735	600	135	390	42	1230	275	1260	513	375	412
18	1860	690	80	370	920	1680	564	550	1160	735	855	600	135	450	42	1230	275	1260	513	375	412

规格 Size	输出轴 / Output								
	DLBEIII SH			DLBEIII HH		DLBEIII DH			
	d_2	G_2	L_2	D_2	G_4	D_2	D_3	G_4	G_5
13	200	335	350	190	335	190	195	335	480
14	210	335	350	210	335	210	215	335	480
15	230	380	410	230	380	230	235	380	550
16	240	380	410	240	380	240	245	380	550
17	250	415	410	250	415	250	260	415	600
18	270	415	470	275	415	280	285	415	600

规格 Size	冷却风扇 / Fan				润滑油 / Oil		重量 / Weight	
					DLK… [4]	DLB.. [3]	DLK… [4]	DLB.. [3]
	A_1	A_2	B_1	d_6	(l) #)	(l) #)	(kg) ##)	(kg) ##)
13	425	435	325	210	20.5	145	335	2537
14	425	435	325	210	20.5	155	335	2910
15	485	520	365	210	47	230	750	3925
16	485	520	365	210	47	240	750	4200
17	535	570	395	230	47	315	790	5190
18	535	570	395	230	47	325	790	5692

3) 其它数据和尺寸请查阅产品样本 DLH/DLB(2021 版本)
4) 其它数据和尺寸请查阅产品样本 DLK(2021 版本)
5) 为了避免在离合器功能出现故障时转速过快，此传动组合处于安全考虑应由使用方配置一个转速监控装置，见第 36 页。

#) 参考值；准确的数据应根据与合同相关的文件确定
#) 未注油时

3) Other data and dimensions acc. to brochure DLH/DLB (2021 edition)
4) Other data and dimensions acc. to brochure DLK (2021 edition)
5) To prevent overspeeds in the case of malfuctions of the overrunning clutch, the customer has to provide a speed monitor for the protection of the drive combination, see page 36.

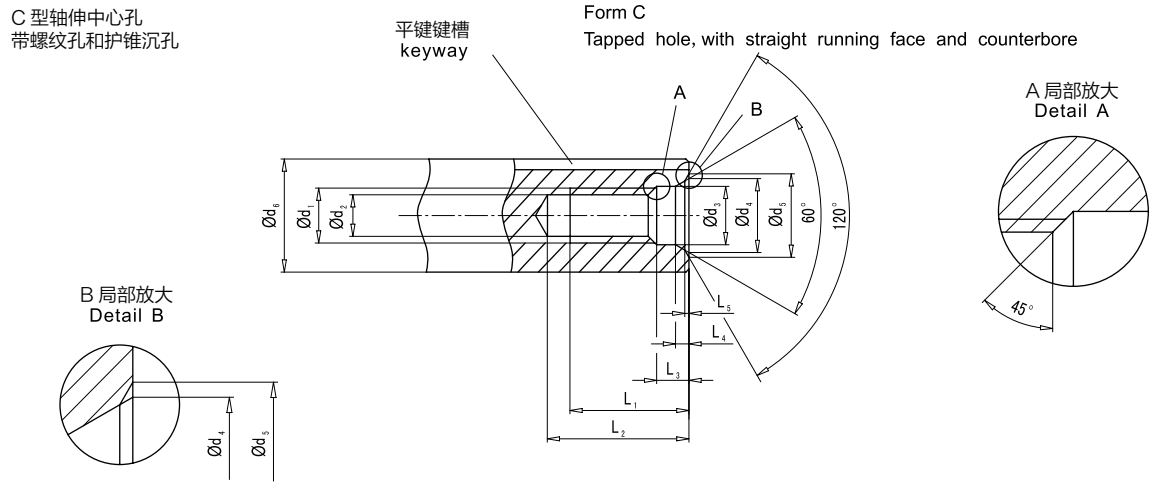
#) Approximate values; Exact data acc. to order- related documentation
#) Without oil filling

6.1 中心孔

C 型轴伸中心孔，按照 GB/T145−2001

6.1 Centre holes

Centre holes, form C in shaft ends GB/T145-2001



φd6 3) 推荐直径范围 Recommended diameters		C 型 / Form C											
大于	至	C 型中心孔	d_1	d_2	d_3	d_4	d_5	L_1	L_2		L_3	L_4	L_5
above	to	C centering	7H	1)				+2	min	max	+1	≈	≈
16	21	CM 6	M6	4.9	6.4	9.6	10.5	16	20	22	5	2.8	0.4
21	24	CM 8	M8	6.6	8.4	12.2	13.2	20	25	28	6	3.3	0.4
24	30	CM 10	M10	8.3	10.5	14.9	16.3	24	30	34	7.5	3.8	0.6
30	38	CM 12	M12	10.1	13	18.1	19.8	28	37	42	9.5	4.4	0.7
38	50	CM 16	M16	13.8	17	23	25.3	36	45	50	12	5.2	1
50	85	CM 20	M20	17.2	21	28.4	31.3	42	53	59	15	6.4	1.3
85	130	CM 24	M24	20.7	25	34.2	38	50	63	68	18	8	1.6
130 2)	225 2)	CM 30	M30 2)	26.2	31	44	48	60	77	83	17	11	1.9
225 2)	320 2)	CM 36	M36 2)	31.6	37	55	60	74	93	99	22	15	2.3
320 2)	500 2)	CM 42	M42 2)	37.1	43	65	71	84	105	111	26	19	2.7
500 2)	710 2)	CM 48	M48 2)	42.5	49	76	83	94	115	121	30	23	3.2

1) 螺纹底孔直径按 GB196 第一系列确定
2) 不是按照标准 GB/T145−2001 确定的尺寸
3) 工件加工后最终直径

1) Drill diameters for tapping-size holes acc.to GB196 PT.1
2) Dimension not acc.to GB/T145-2001
3) Diameter of the finished work piece

6.2 平键和平键槽

配合精度的选择

6.2 Parallel keys and keyways

Selection of fits

配合精度的选择 Selection of fits	轴 / Shaft d 大于 above	至 to	轴公差 Shaft tolerance	孔公差 Bore tolerance
	mm			
轴公差按照东力标准 Shaft tolerance acc. to Donly standard	-	25	k6	H7
	25	100	m6	
	100		n6	

对于重载工作条件，如带载反向回转， 建议采用比较紧密的配合，轮毂键槽宽度亦应选择 GB1801 P9 公差等级。

为此，用户应给出相关信息。

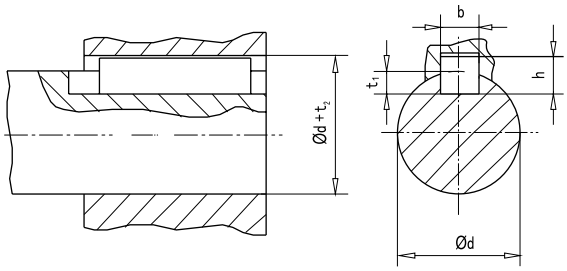
For heavy-duty operating conditions, e.g. reversing under load, it is recommended that a tighter fit and for the hub keyway width the GB1801 P9 tolerance is selected.

In this case, the customer should give the relevant information.

平键 / Parallel keys

平键紧固方式 . 采用无锥度连接
Drive type fastening without taper action

平键和平键槽按照 GB/T1096. GB/T1095
Parallel key and keyway acc. to GB/T1096.



1) 轮毂平键槽宽度 b 的公差带应按 GB/T1801 JS9 确定。重载条件下应按 GB/T1801 P9 确定。

1) The tolerance zone for the hub keyway width b for parallel keys is GB1801 JS9.or GB1801 P9 for heavy-duty operating conditions.

直径 Diameter d		宽度 Width	高度 Height	轴键槽深度 Depth of key-way in shaft	轮毂键槽深度 Depth of key-way in hub
大于 Above	至 To	b 1)	h	t1	$d+t_2$ GB1095
mm					
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

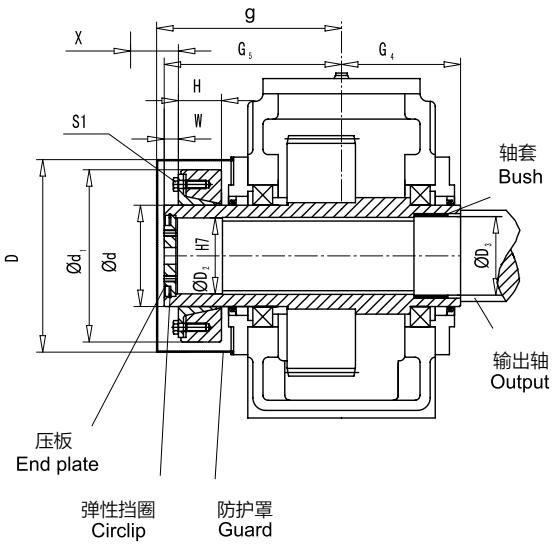
6.3 带锁紧盘的空心轴

类型 DLBEIII D..，规格 4–18

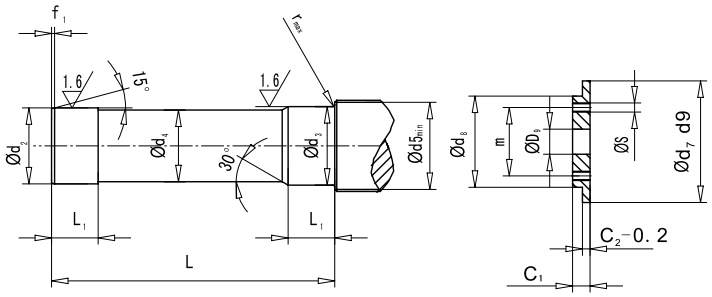
6.3 Hollow shafts for shrink disks

Types DLBEIII D.., Sizes 4-18

X = 要求预留力矩扳手空间
X = Space required for torque wrench



用与锁紧盘联接的工作机驱动轴。
工作机驱动轴表面不得粘有机油或润滑脂。
Driven machine shaft for shrink disk connection. Driven machine shaft must be free of oil or grease.



带按照 GB/T145–2001 加工的 C 型中心孔（螺纹孔）的工作机驱动轴
Driven machine shaft with centre hole form C (tapped hole) acc. to GB/T145–2001

类型 DLBEIII D..

Types DLBEIII D..

齿轮箱规格 Gear unit size	工作机驱动轴 Driven machine shaft								压板 End plate								弹性挡圈 Circlip	空心轴 Hollow shaft				锁紧盘 1) Shrink disk (JB/ZQ4194-2006)					螺钉 Screw	防护罩 Guard	
	d_2	d_3	d_4	d_5	f_1	L	L_1	r	c_1	c_2	d_7	d_8	D_9	m	s	数量 Qty		D_2	D_3	G_4	G_5	类型 Type	d	d_1	H	W	S1	D	g
	mm																	mm											
4	85 h6	85 h6	84.5	95	4	326	48	2	17	7	90	70	22	50	M8	2	90 x 3	85	85	140	205	110×185	110	185	49	20	M12	235	225
5	100 h6	100 h6	99.5	114	5	383	53	2	20	8	105	80	26	55	M10	2	105 x 4	100	100	165	240	125×215	125	215	53	20	M12	275	260
6	110 h6	110 h6	109.5	124	5	383	58	3	20	8	115	85	26	60	M10	2	115 x 4	110	110	165	240	140×230	140	230	58	20	M14	285	255
7	120 h6	120 h6	119.5	134	5	453	68	3	20	8	125	90	26	65	M12	2	125 x 4	120	120	195	280	155×263	155	263	62	23	M14	330	305
8	130 h6	130 h6	129.5	145	6	458	73	3	20	8	135	100	26	70	M12	2	135 x 4	130	130	195	285	165×290	165	290	68	23	M16	340	305
9	140 h6	145 m6	139.5	160	6	539	82	4	23	10	150	110	33	80	M12	2	150 x 4	140	145	235	330	175×300	175	300	68	28	M16	360	355
10	150 h6	155 m6	149.5	170	6	559	92	4	23	10	160	120	33	90	M12	2	160 x 4	150	155	235	350	200×350	200	350	85	28	M16	395	365
11	165 g6	170 m6	164.5	185	7	644	112	4	23	10	175	130	33	90	M12	2	175 x 4	165	170	270	400	220×370	220	370	103	30	M20	435	420
12	180 g6	185 m6	179.5	200	7	649	122	4	23	10	190	140	33	100	M16	2	190 x 4	180	185	270	405	240×405	240	405	107	30	M20	450	420
13`	190 g6	195 m6	189.5	213	7	789	137	5	23	10	200	150	33	110	M16	2	200 x 4	190	195	335	480	260×430	260	430	119	30	M20	500	505
14	210 g6	215 m6	209.5	233	8	784	147	5	28	14	220	170	33	130	M16	2	220 x 5	210	215	335	480	280×460	280	460	132	30	M20	525	505
15	230 g6	235 m6	229.5	253	8	899	157	5	28	14	240	180	39	140	M16	2	240 x 5	230	235	380	550	300×485	300	485	140	35	M24	575	575
16	240 g6	245 m6	239.5	263	8	899	157	5	28	14	250	190	39	150	M20	2	250 x 5	240	245	380	550	320×520	320	520	140	35	M24	595	575
17	250 g6	260 m6	249.5	278	8	982	177	5	30	14	265	200	39	150	M20	2	265 x 5	250	260	415	600	340×570	340	570	155	35	M24	615	630
18	280 g6	285 m6	279.5	306	9	982	177	5	30	14	290	210	39	160	M20	2	290 x 5	280	285	415	600	360×590	360	590	159	35	M24	635	625

1) 锁紧盘不在供货范围之内。
如果需要请另行订购。
在订货时锁紧盘以散件形式提供。
在工作机侧的锁紧盘请垂询。

1) Shrink disk does not belong to our scope of supply.
Please order separately, if required.
In case of order, shrink disk will be supplied as loose item.
Shrink disk on machine side on request.

6.4 带平键联接的空心轴

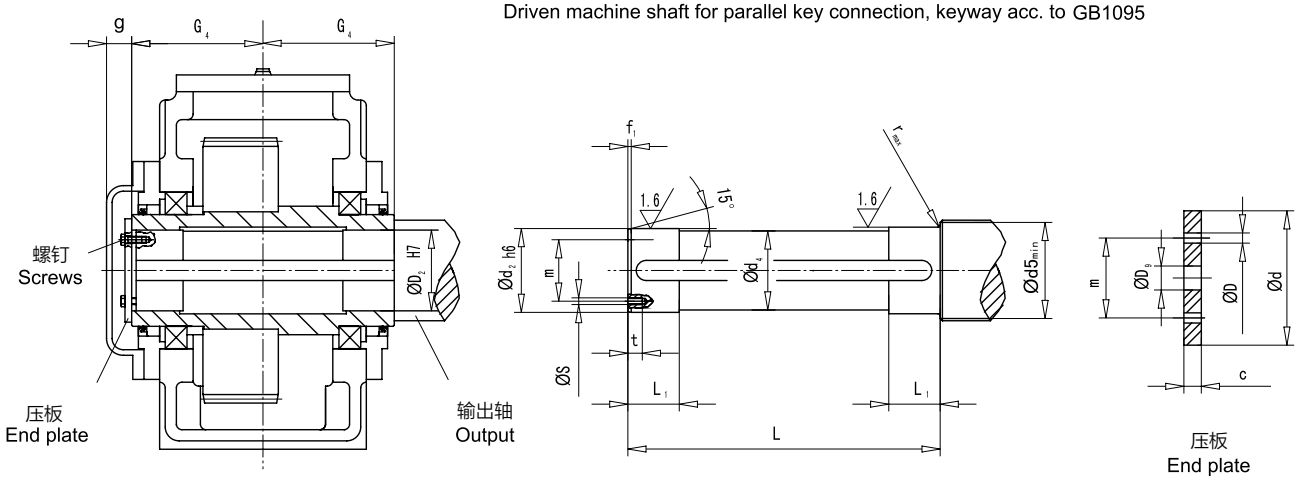
类型 DLBEIII H..，规格 4–18

6.4 Hollow shafts for parallel key connections

Types DLBEIII H.., Sizes 4-18

带平键联接和 C 型中心孔的工作机驱动轴，平键槽按 GB1095

Driven machine shaft for parallel key connection, keyway acc. to GB1095



类型 DLBEIII H..

Types DLBEIII H..

齿轮箱规格 Gear unit size	工作机驱动轴 Driven machine shaft									压板 End plate					螺钉 Screws		空心轴 Hollow shaft		
	d_2	d_4	d_5	f_1	L	L_1	r	S	t	c	D	D_9	d	m	规格 Size	数量 Qty	D_2	G_4	g
	mm																mm		
4	80	79.5	88	4	278	35	1.2	M 10	18	10	11	22	100	60	M 10 x 25	2	80	140	35
5	95	94.5	105	5	328	40	1.6	M 10	18	10	11	26	120	70	M 10 x 25	2	95	165	40
6	105	104.5	116	5	328	45	1.6	M 10	18	10	11	26	120	70	M 10 x 25	2	105	165	40
7	115	114.5	126	5	388	50	1.6	M 12	20	12	13.5	26	140	80	M 12 x 30	2	115	195	40
8	125	124.5	136	6	388	55	2.5	M 12	20	12	13.5	26	150	85	M 12 x 30	2	125	195	40
9	135	134.5	147	6	467	60	2.5	M 12	20	12	13.5	33	160	90	M 12 x 30	2	135	235	45
10	150	149.5	162	6	467	65	2.5	M 12	20	12	13.5	33	185	110	M 12 x 30	2	150	235	45
11	165	164.5	177	7	537	70	2.5	M 16	28	15	17.5	33	195	120	M 16 x 40	2	165	270	45
12	180	179.5	192	7	537	75	2.5	M 16	28	15	17.5	33	220	130	M 16 x 40	2	180	270	45
13	190	189.5	206	7	667	80	3	M 16	28	18	17.5	33	230	140	M 16 x 40	2	190	335	45
14	210	209.5	226	8	667	85	3	M 16	28	18	17.5	33	250	160	M 16 x 40	2	210	335	45
15	230	229.5	248	8	756	100	3	M 20	38	25	22	39	270	180	M 20 x 55	4	230	380	60
16	240	239.5	258	8	756	100	3	M 20	38	25	22	39	280	180	M 20 x 55	4	240	380	60
17	250	249.5	270	8	826	110	4	M 20	38	25	22	39	300	190	M 20 x 55	4	250	415	60
18	275	274.5	295	9	826	120	4	M 20	38	25	22	39	330	210	M 20 x 55	4	275	415	60

平键不在供货范围之内，如果需要请另行订购。

Parallel key does not belong to our scope of supply. Please order separately, if required.

附件

Accessories

7.1 逆止器

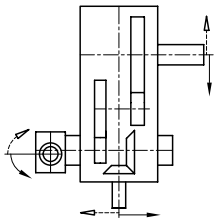
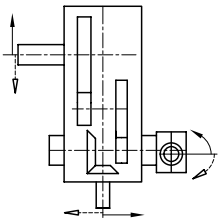
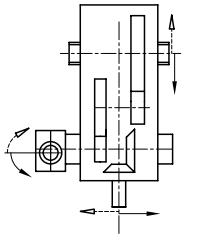
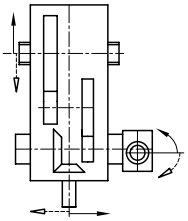
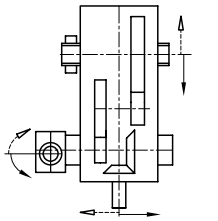
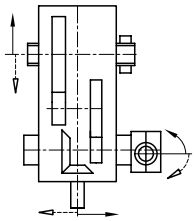
7.1 Backstops

标准逆止器

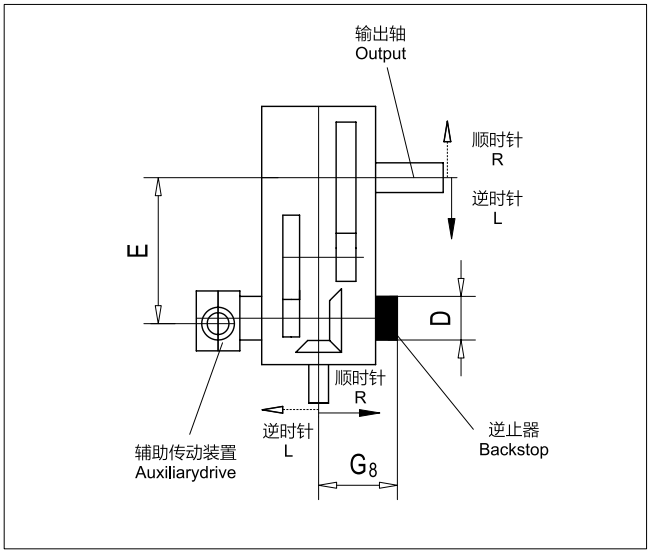
类型 DLBEIII..，规格 4−18

Standard backstops

Types DLBEIII.., Sizes 4-18

标准逆止器的布置及与旋转方向的关系 [1)] Standard backstop arrangement and dependence of direction of rotation [1)]		
类型 /Type	布置形式 /Design B	布置形式 /Design D
DLBEIIISH		
DLBEIIIHH		
DLBEIIIDH		

规格 Sizes	类型 /Type DLBEIII..		
	E	G_8	D
	mm	mm	mm
4	270	204	132
5	315	223	150
6	350	223	150
7	385	281	175
8	430	281	175
9	450	317	190
10	500	317	190
11	545	368	210
12	615	368	210
13	635	451	270
14	705	451	270
15	762	497	322
16	808	497	322
17	860	564	412
18	920	564	412



1）对其它结构的布置形式请向我公司咨询。

1) For other arrangements and designs, please refer to us.

7.1 逆止器

限矩型逆止器

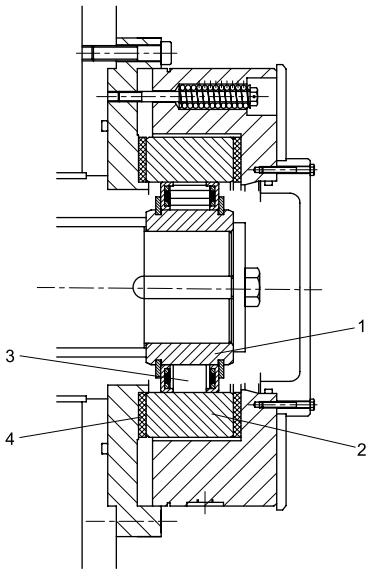
类型 DLBEIII..，规格 4–18

7.1 Backstops

Torque limiting backstops

Types DLBEIII.., Sizes 4-18

逆止器的布置及与旋转方向的关系 [1] (见 32 页)
Backstop arrangement and dependence of direction of rotation [1] (see page 32)

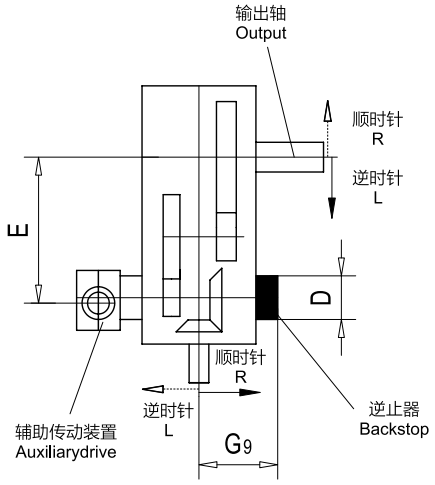


限矩型逆止器 [2]
Torque limiting backstops

1. 内环
2. 外环
3. SX 型楔块
4. 摩擦片

1. Inner ring
2. Outer ring
3. Cage type SX freewheel
4. Friction lining

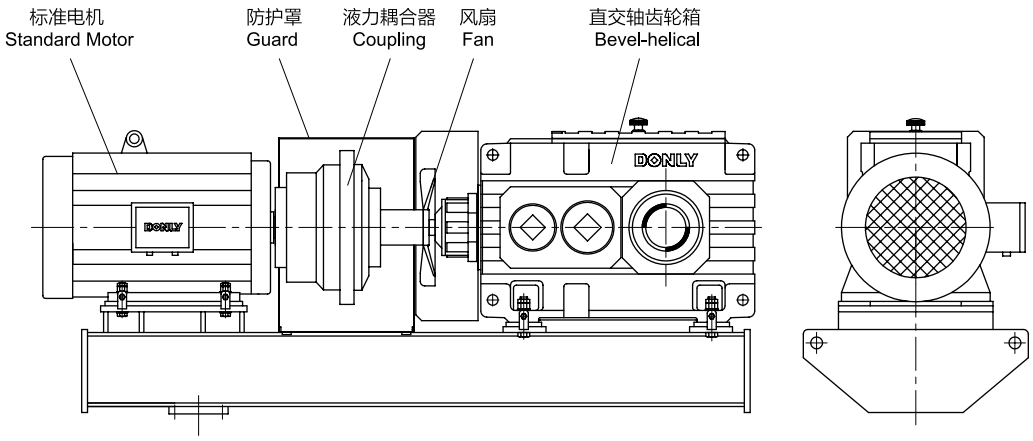
规格 Sizes	类型 / Type DLBEIII..		
	E	G_9	D
	mm	mm	mm
4	270	295	280
5	315	315	280
6	350	315	280
7	385	340	280
8	430	340	280
9	450	390	295
10	500	390	295
11	545	420	371
12	615	420	371
13	635	515	441
14	705	515	441
15	762	580	496
16	808	580	496
17	860	630	630
18	920	630	630



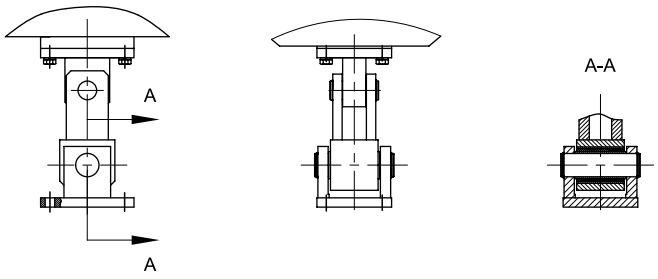
1) 对其它结构的布置形式请向我公司咨询。
2) 在采用双齿轮箱和多齿轮箱组合驱动的情况下，回转扭矩有可能集中到一个齿轮箱和作用在一个逆止器上，这是不允许的。限矩型逆止器将回转扭矩均匀的分配到设备的各齿轮箱上并且还可以将扭矩尖峰分解。如果采用双驱动的情况，请咨询我们。

1) For other arrangements and designs, please refer to us.
2) In case of double and multiple drives, an unacceptable concentration of restoring torque may occur on one gear unit and the backstop fitted to it. The torque limiting backstop evenly distributes the restoring torque between all gear units in a plant and in addition reduces peak torques.In case of double and multiple drives, please refer to us.

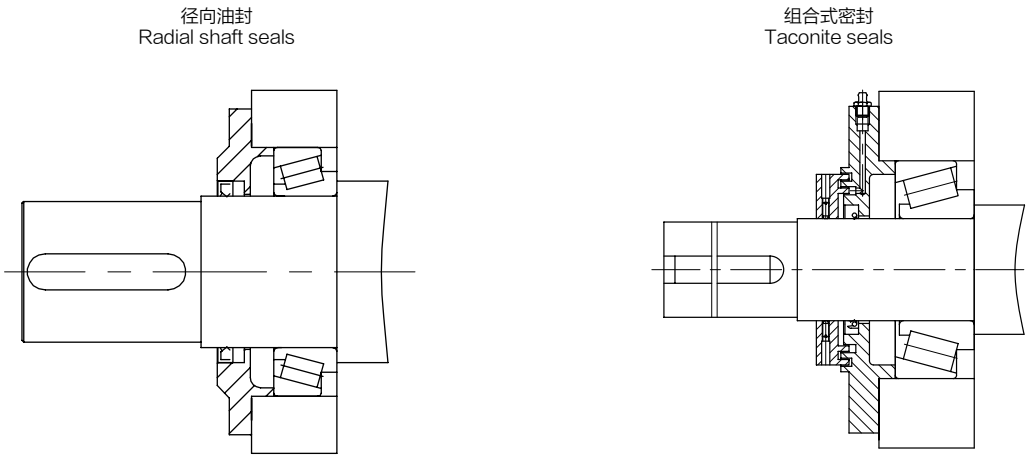
7.2 齿轮箱浮动底座 7.2 Gear units swing-bases



齿轮箱浮动底座支撑
Supports for gear units swing-bases



7.3 轴封方式 7.3 Variants of shaft seals

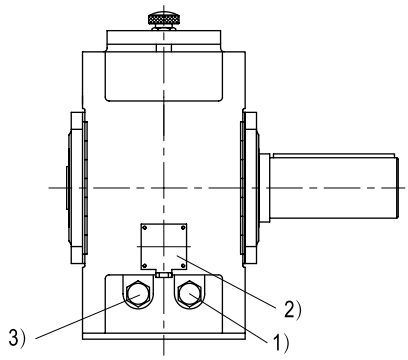


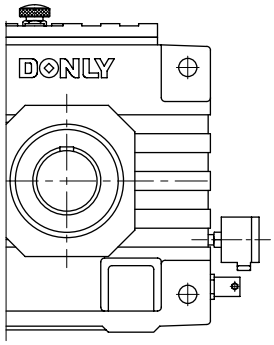
附件 Accessories

7.4 加热元件 7.4 Heating element

1) 旋入式加热元件，技术参数和说明：
防护等级 IP65, 230V，50HZ，
功率与设计指标，请垂询
2) 温度开关， 技术参数和说明
防护等级 IP65， 2 转换接点 (可设定)
最大开关功率：
2A / 230V AC / 460VA cos ϕ = 0.6 (交流)
0.25A / 230V DC / 50W (直流)

1) Screwed heating element; Technical data and notes:
Type of protection IP65, 230V, 50Hz, power rating dependent on design, please on request.
2) Temperature monitor; Technical data and notes: Type of protection IP65, 2 change-over contacts (adjustable), max. switching capacity:
2A / 230V AC / 460VA cosφ = 0.6 (alternating current)
0.25A / 230V DC / 50W (direct current)

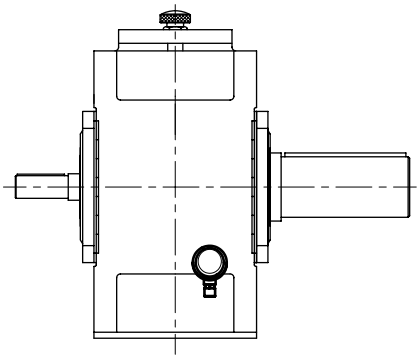


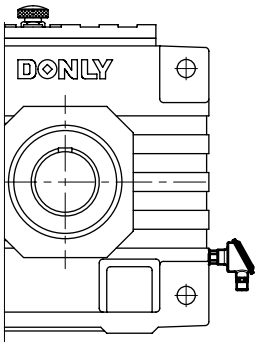


7.5 油温传感器 7.5 Thermometer for oil temperature

电阻式温度计 PT 100
技术参数和说明
接头防护等级 : IP 54
双线联接
用户也可以采用三线或四线连接，必须与分析元件连接!

Resistance thermometer PT 100
Technical data and notes
Type of protection for terminal head: IP 54
Two-wire connection
Three- and four-wire connection at customers is also possible
Connection to an evaluation instrument is necessary!





7.6 转速监控装置

转速监测开关应用于不容许低于或高于某固定转速的场合。通用转速监控装置由转速监控开关，一个非接触式脉冲发生器和一个转速计数器构成。

脉冲发生器是一个 NAMUR一传感器，安装 EN 50227。这些脉冲发生器配置相应的隔离开关放大器则可以在有爆炸危险的区域应用。开始转速计数器设置在超越离合器的中间法兰盘中。

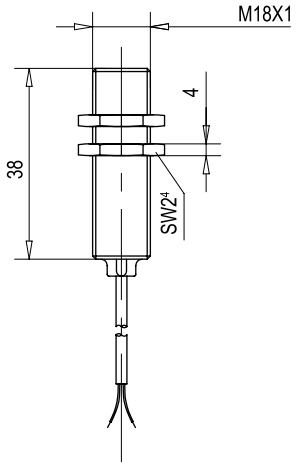
为了避免当超越离合器功能出现故障时齿轮马达超速运行，处于安全考虑，传动装置组合应配置一个转速监测开关。当通过主电机驱动时如果脉冲发生器给出一个信号则表明功能出现了故障。

7.6 Speed monitor

An electric speed monitor is used where a fixed speed may not be exceeded. This univerasIly applicable speed monitoring system consists of a speed monitor, a non- contacting pulse generator and a trip cam made of iron mental.

The pulse generator is a NAMUR sensor according to EN50227. If equipped with respective isolation amplifiers, it can also be used in hazardous locations. The trip cam is located in the intermediate flange on the overrunning clutch.

To prevent overspeeds in the geared motors in case of malfuctions of the overrunning clutch, the customer has to provide a speed monitor for the protection of the drive combination. A malfunction exists, for instance, if the pulse generator trips a signal when the system is driven via the main motor.

技术参数 Technical data		
脉冲发生器 Pulse generator Bi5-G18-Y1 	额定开关距离 Nominal switching cycle	5mm
	安装方式 Mounting type	齐平安装 flush
	外壳材料 Housing meterial	镀铬 chromium-plated
	螺纹 Thread	M18×1 mm
	连接线 Connecting line	LifYY 2×0.5mm^2 / 2m long
	表面材料 Surface material	PA12-GF30
	端盖材料 End cap material	Trogamide T
	工作温度 Operating temperature	-25℃ …+70℃
	防护等级 Type of protection	IP67
	紧固扭矩 Tightening torque	25Nm
	输出信号 Output singal	按照 , acc. to DIN 19234(NAMUR)
	输出电流 Output current	操作 , actuated:≤ 1 mA
		未操作 , not actuated:≤2.2 mA
	输出电压 Output voltage	标准 , nominal 8.2 VDC
	准备状态延迟 Stand-by delay	≤ 1 ms
	开关频率 Operating frequency	1 kHz
	开关滞后 Switching hysteresis	1…10%
	温度漂移 Temperature drift	≤ 10%
	重复性 Reproducibility	≤ 2%

转速监测开关 EWD 敬请垂询!

Speed monitor EWD on request!

说明

1. 需要 BIV 系列和平行轴系列斗提机传动齿轮箱时，敬请垂询。

2. 非斗提机应用时，服务系数的选择敬请垂询。

3. 无法在该样本速比范围中找到的斗提机传动齿轮箱选型，敬请垂询。

Explanation

1. If you need BIV gear units and helical gear units for bucket elevator,please contact us.

2. If you need the choice of service coefficient for the non-bucket elevator application,please contact us.

3. Ratio of the gear units can not be found in the catalog on request.

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