

宁波意泰 Ningbo Yitai technology Hydraulic Co., Ltd.

GFT 系列高速壳转减速机

GFT series of high speed cranked shell reducer

◆概述 Introduction

GFT 系列紧凑型高速壳转减速机是传动机构中的理想减速部件。由于其结构形式特别紧凑，因此这种减速机能应用在安装环境极端困难的地方。该产品采用先进的设计技术和先进的加工手段，有效地保证了高的承载能力和运行的可靠性。

GFT 减速机不仅符合力士乐系列标准，还可根据具体需要，设计提供与意大利布雷维尼、日本帝人、不二越、KYB、Fairfield 或萨澳相似的替代产品。由于本公司具有很强的创新设计能力，因此我们可为客户提供咨询服务和合理选型，以期为客户找到最适合的产品解决方案。

根据设计要求，减速机不仅能与力士乐型定量或变量液压马达相连接，如有必要也可以与其它液压马达相匹配。减速机输入端可根据需要安装弹簧制动、液压释放的多片式停车制动器。制动器的静制动扭矩与所配液压马达输入扭矩相适应（一般大于 1.5 倍）。对于某些减速机还可根据要求安装机械脱离离合器，以便在紧急情况下由其他设备牵引。防止液压元件被损坏。

该类减速机产品已广泛用于旋挖钻机的主辅卷扬和履带行走驱动，履带起重机的主辅、变幅卷扬和履带驱动、各种钻机履带驱动、压路机、高空作业车车轮驱动、铣刨机和煤矿掘进机的动力头和行走驱动、船舶克令吊、码头和集装箱起重机的驱动机构。产品不但已在国内三一重工、徐工集团、中联重科等重点用户中使用，并出口到东南亚、印度、韩国、荷兰和俄罗斯等地区及国家。

GFT series of compact high speed cranked shell reducer is a ideal speed reduce part in the rotating mechanism. Due to its compact structure, it could be used in the severely hard installation conditions. The advanced designs as well as the process technology guarantee the high bearing capacity and the operation liability.

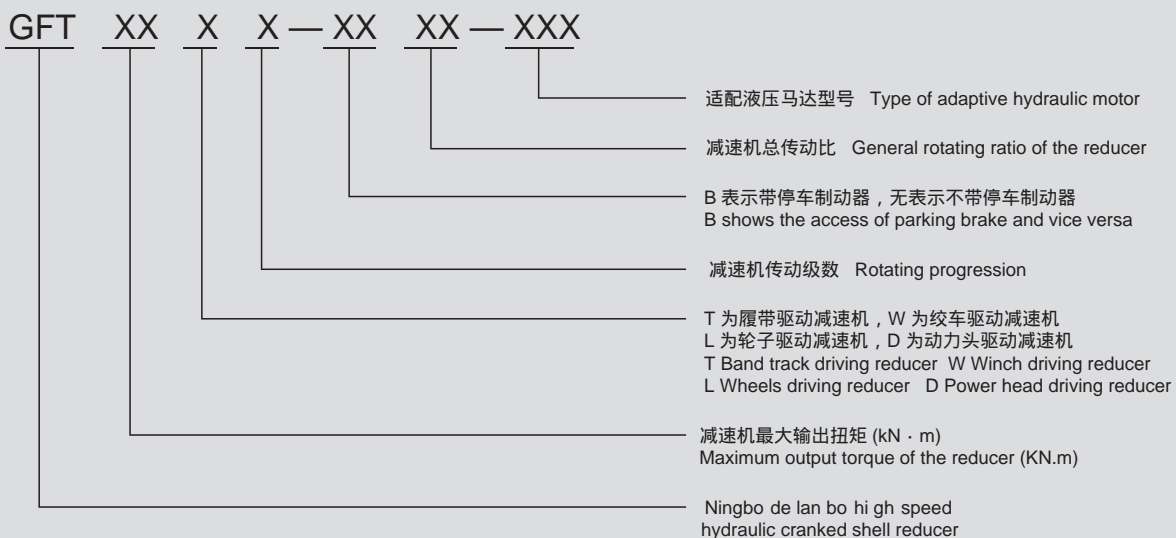
GFT series speed reducers not only meet the Bosch-Rexroth standards but also could offer the surrogate similar to Brevini, Tejin, Nachi, KYB, Fairfield or Sauer according to the specific demands and design. For we have strong creative style of design capacity, we could provide the customers with the consulting service and suitable type selection to find the optimal products resolution for the clients.

As per the design demand, the speed reducers could connect with the Bosch-Rexroth constant and variable hydraulic motors and at the same time could match the other hydraulic motors if necessary. The input end of the reducers could be equipped with spring brake and the multi-plate hydraulic release parking brake according to different needs. The static braking torque of the brake goes with the hydraulic motor's input torque (generally 1.5 times bigger). According to different needs, some reducers could also be equipped with mechanically falling off clutch to be towed by other equipment under emergency, by which the hydraulic components could avoid being damaged.

other products with different installation size and gear ratio. If you need us please don't hesitate to contact us.

This type of reducers has been broadly used for the winches of the rotary drilling rig and also for the band track driving. And they could also apply to the band track hoist, amplitude winches and band track driving, many kinds of band track driving for drilling rig, road roller, wheels driving for aloft work, power head and move driving for the milling machine and the mine tunneling machine and also to the driving facility for shipping cranes, wharf and containers hoist. The products not only have gone to Sany, XCMG and Zoomlion but also have been exported to Southeast Asia, India, Korean, the Netherlands and Russia.

◆型号说明 Specifications



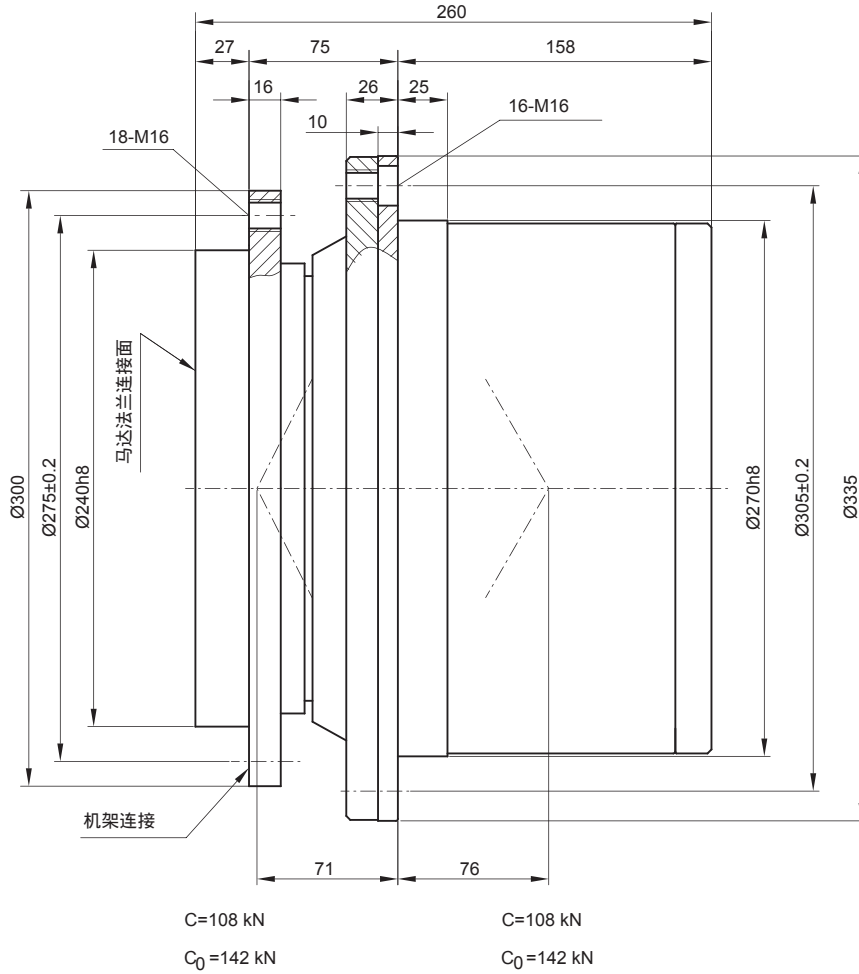
◆型号举例 Specification example

GFT60T3-B86-A2FE80/61WVZL10 表示该减速机最大输出扭矩为 60KN · m，用于行走驱动，采用三级行星减速，带停车制动器，总传动比为 86，所配液压马达型号为 A2FE80/61WVZL10。

GFT60T3-B86-A2FE80/61 WVZL10 shows that the maximum output torque of the reducer for move driving is 60KN.M. Adoption of the third class planet speed reducing and parking brake with the general rotating ratio of 86 and the hydraulic motor A2FE80/61 WVZL10.

GFT 13T2 系列 GFT 13T2 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 最大输出扭矩 Max output torque T_{\max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{BR \max}$ N·m | 制动器工作压力 Brake working pressure MPa |
|---|------------------------------|----------------------------|---------------------------------------|---|---|
| 13000 | 16.3 22.6 32.1 37.6 | A2FE45 A2FE56 A2FE63 | A6VE28 A6VE55 | 2000 | 450-900 |

减速机输入转向与输出转向相反，除表中所示传动比外，对有批量的产品传动比可以另选。

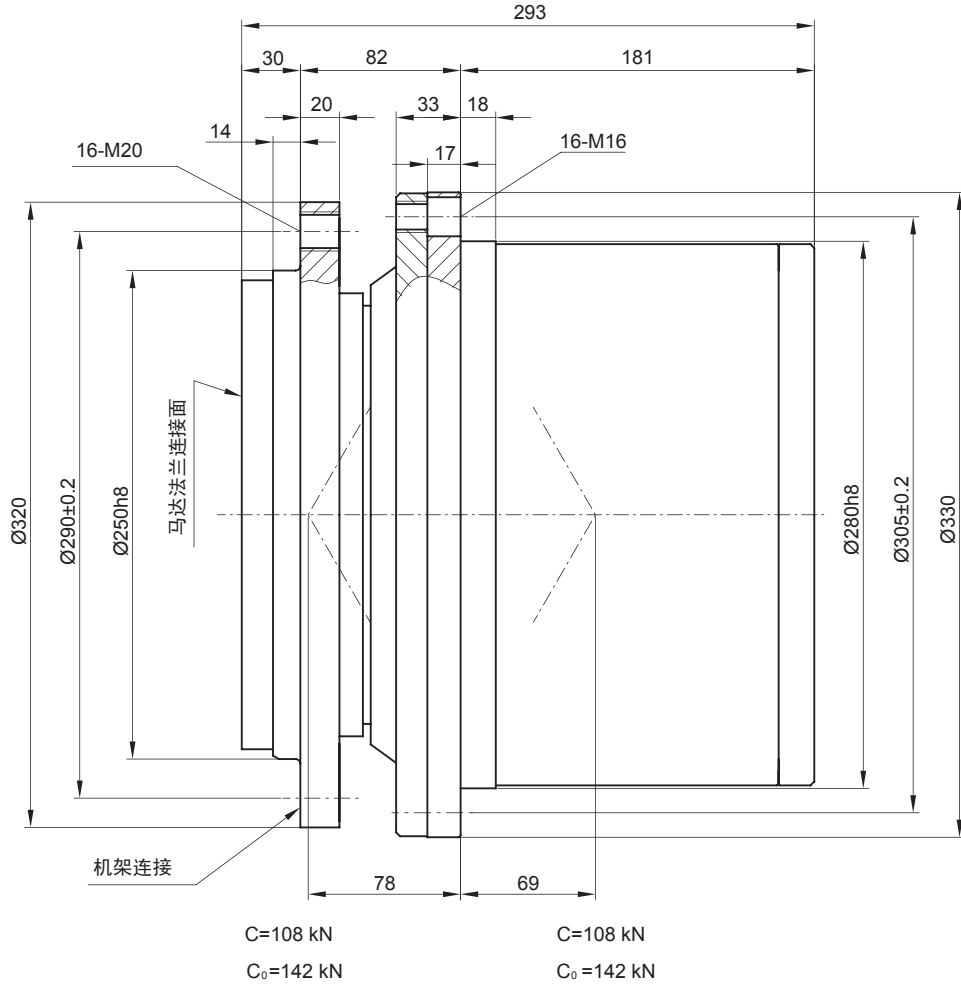
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。

减速机净重约 85kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 85kg.

GFT 17T2 系列 GFT 17T2 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

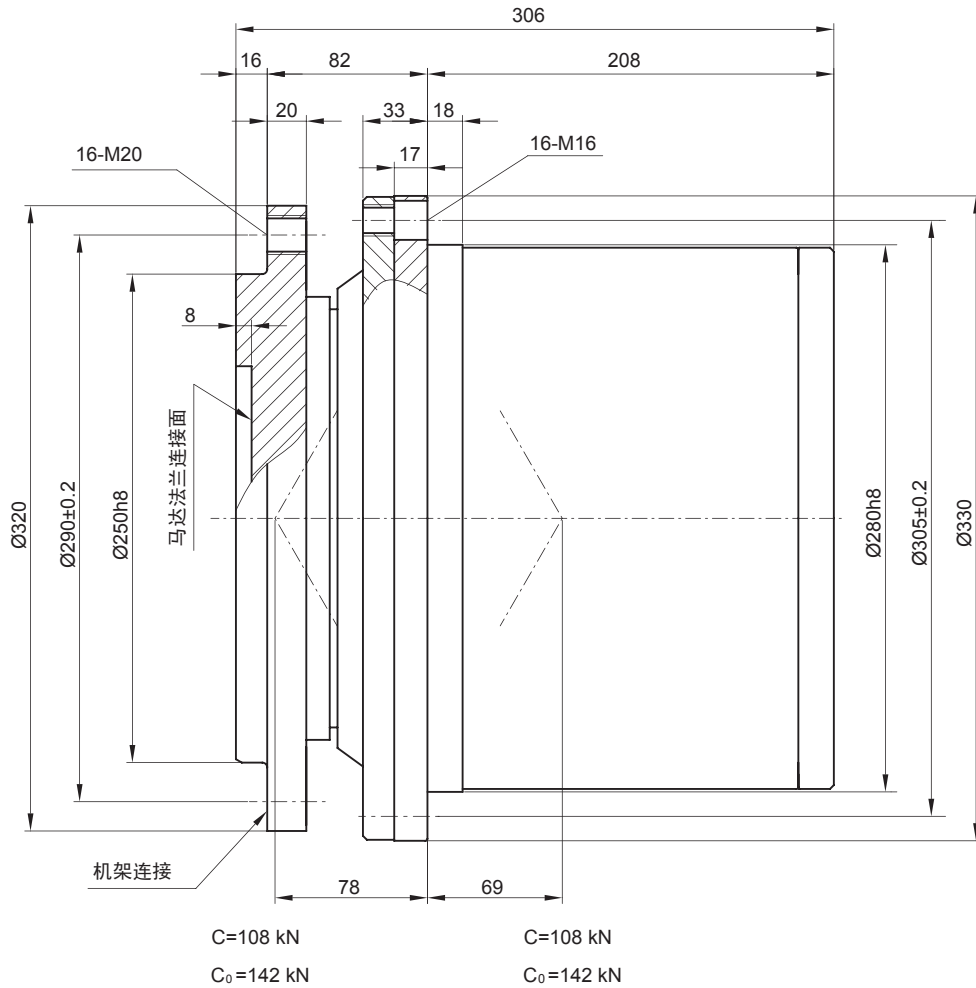
| 最大输出扭矩 Max output torque T _{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque T _{BR max.} N·m | 制动器工作压力 Brake working pressure MPa |
|---|----------------------------|----------------------------|--------|---------------------------------------|--|---|
| 17000 | 26.4 32.1 45.4 54 | A2FE45 A2FE56 A2FE63 | A6VE55 | 2000 | 500-1000 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所示传动比外，对有批量的产品传动比可以另选。
 输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
 减速机净重约 90kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 90kg.

GFT 17T3 系列 GFT 17T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

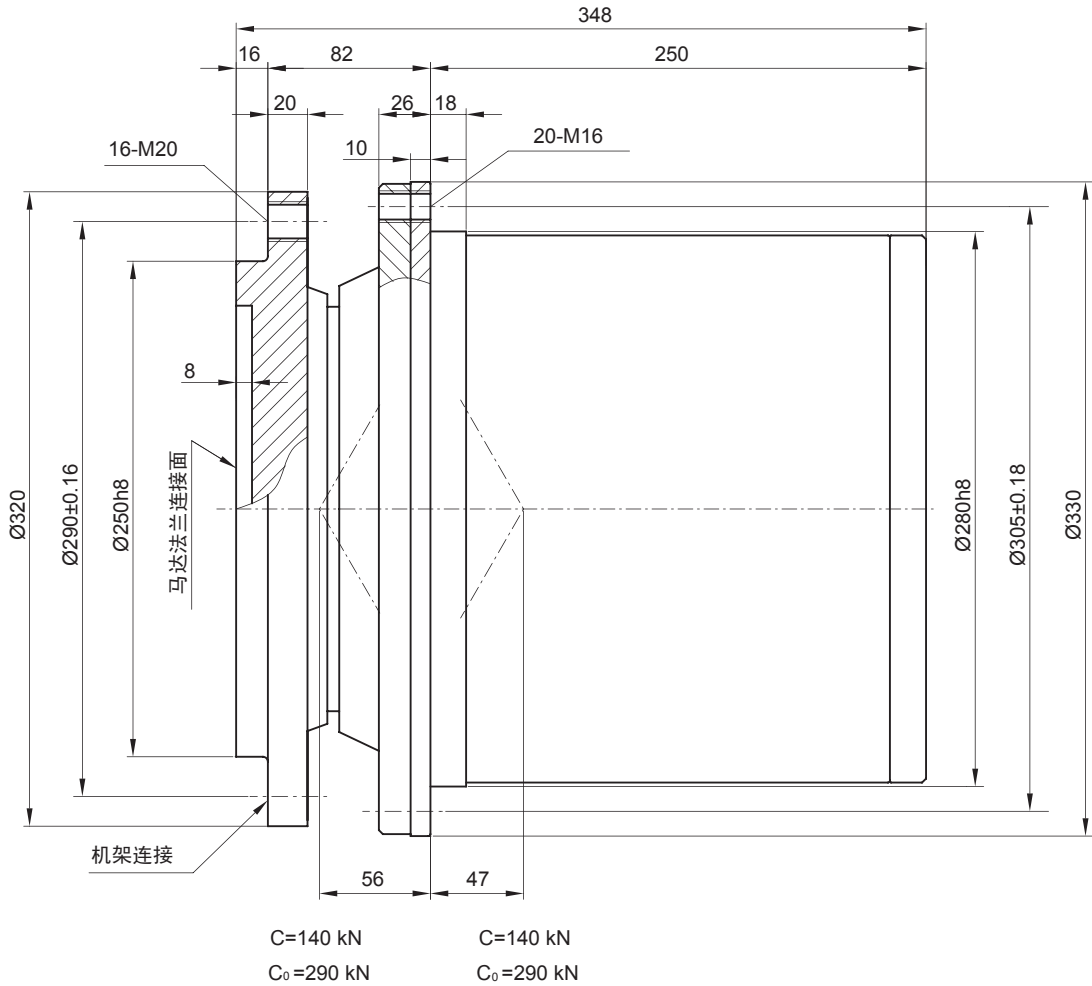
| 最大输出扭矩 Max output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{BR max}$ N·m | 制动器工作压力 Brake working pressure MPa |
|--|------------------------------|--------------------------------------|------------------|---------------------------------------|--|--|
| 17000 | 77.9 88.2 102.6 | A2FE28 A2FE32 A2FE45 A2FE56 | A6VE28 A6VE55 | 2000 | 220-450 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所示传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 100kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 100kg.

GFT 24T3 系列 GFT 24T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

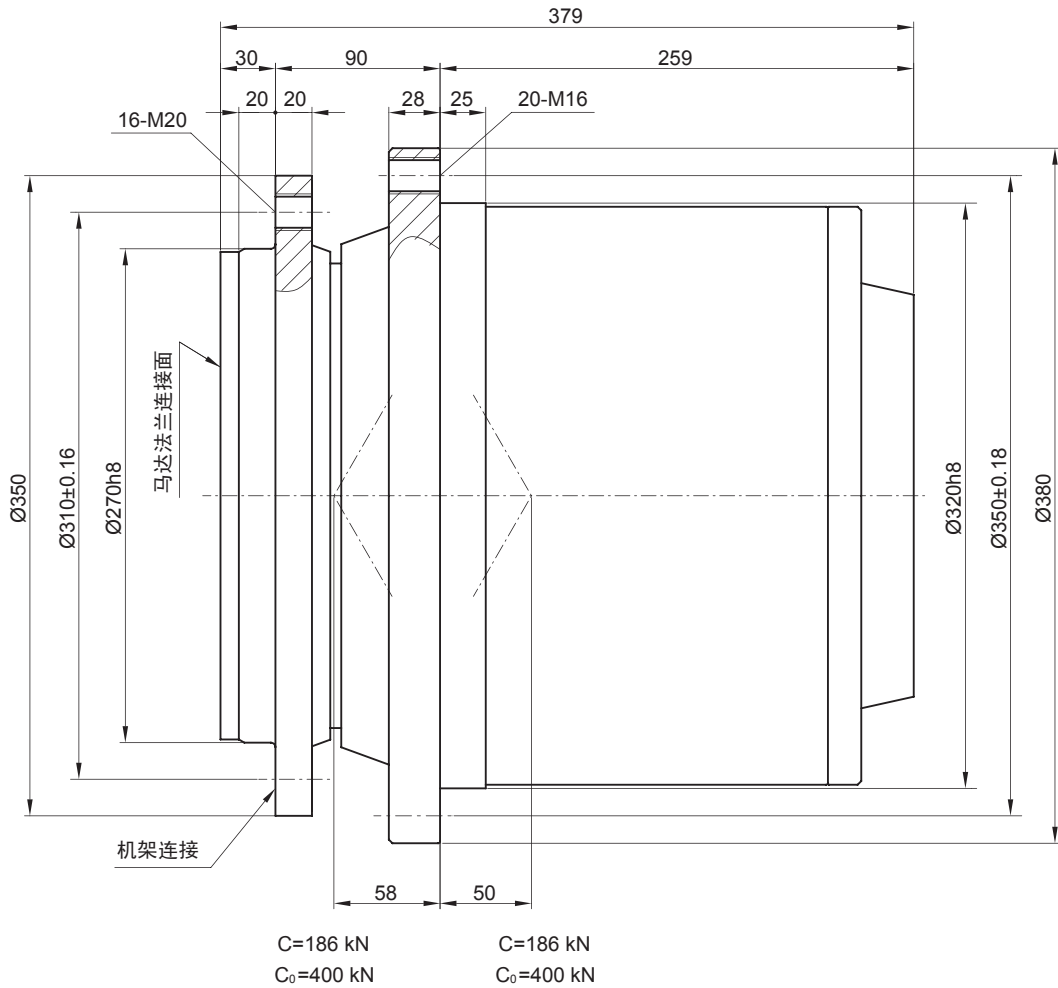
| 最大输出扭矩 Max output torque T _{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque T _{BR max.} N·m | 制动器工作压力 Brake working pressure MPa |
|---|----------------------------|----------------------------|--------|---------------------------------------|--|--|
| 24000 | 90.1 102.6 120.5 | A2FE45 A2FE56 A2FE63 | A6VE55 | 2000 | 400-750 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所列传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 120kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 120kg.

GFT 36T3 系列 GFT 36T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

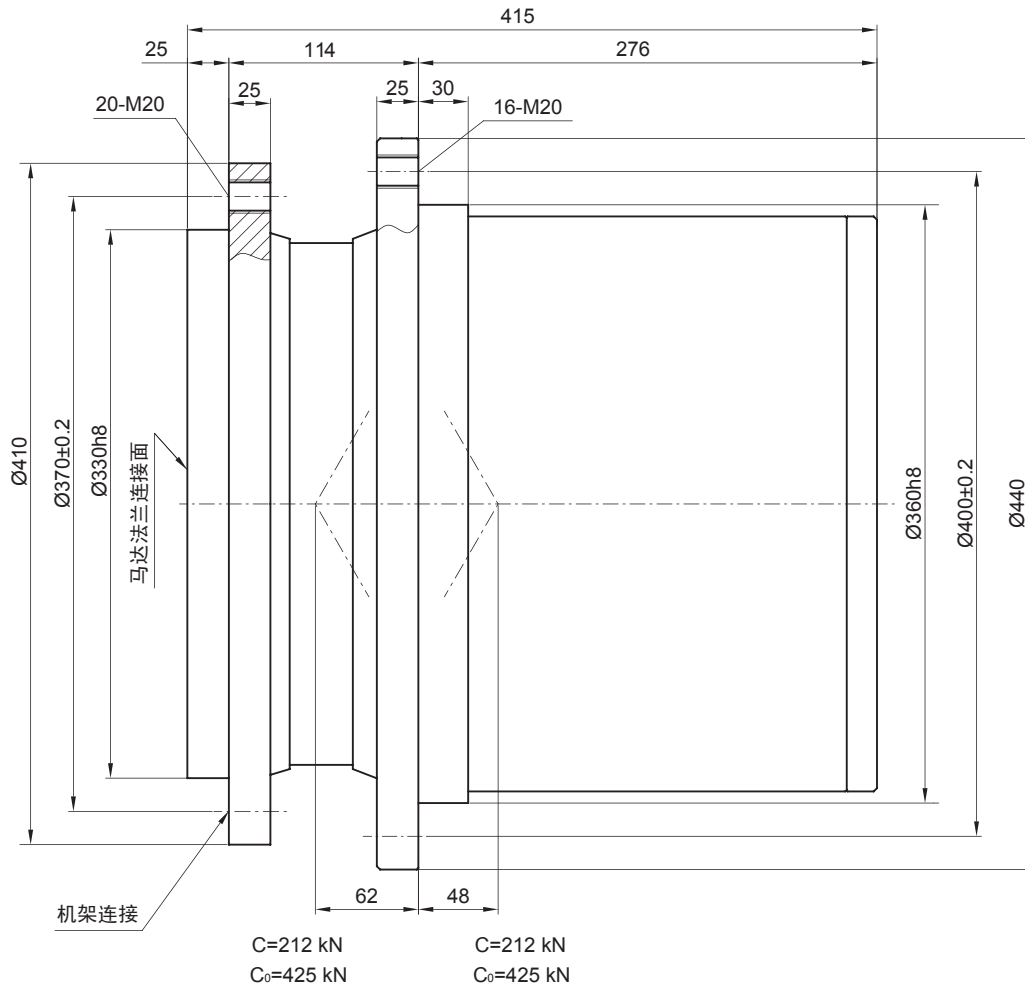
| 最大输出扭矩 Max output torque $T_{\max} \text{ N}\cdot\text{m}$ | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{BR \max.} \text{ N}\cdot\text{m}$ | 制动器工作压力 Brake working pressure MPa |
|--|------------------------------|--|------------------|---------------------------------------|---|--|
| 36000 | 67 79.4 100 116.6 | A2FE45 A2FE56 A2FE63 A2FE80 A2FE90 | A6VE55 A6VE80 | 2000 | 450-800 | 1.8-5 |

减速机输入转向与输出转向相反。除表中所示传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 165kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 165kg.

GFT 50T3 系列 GFT 50T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

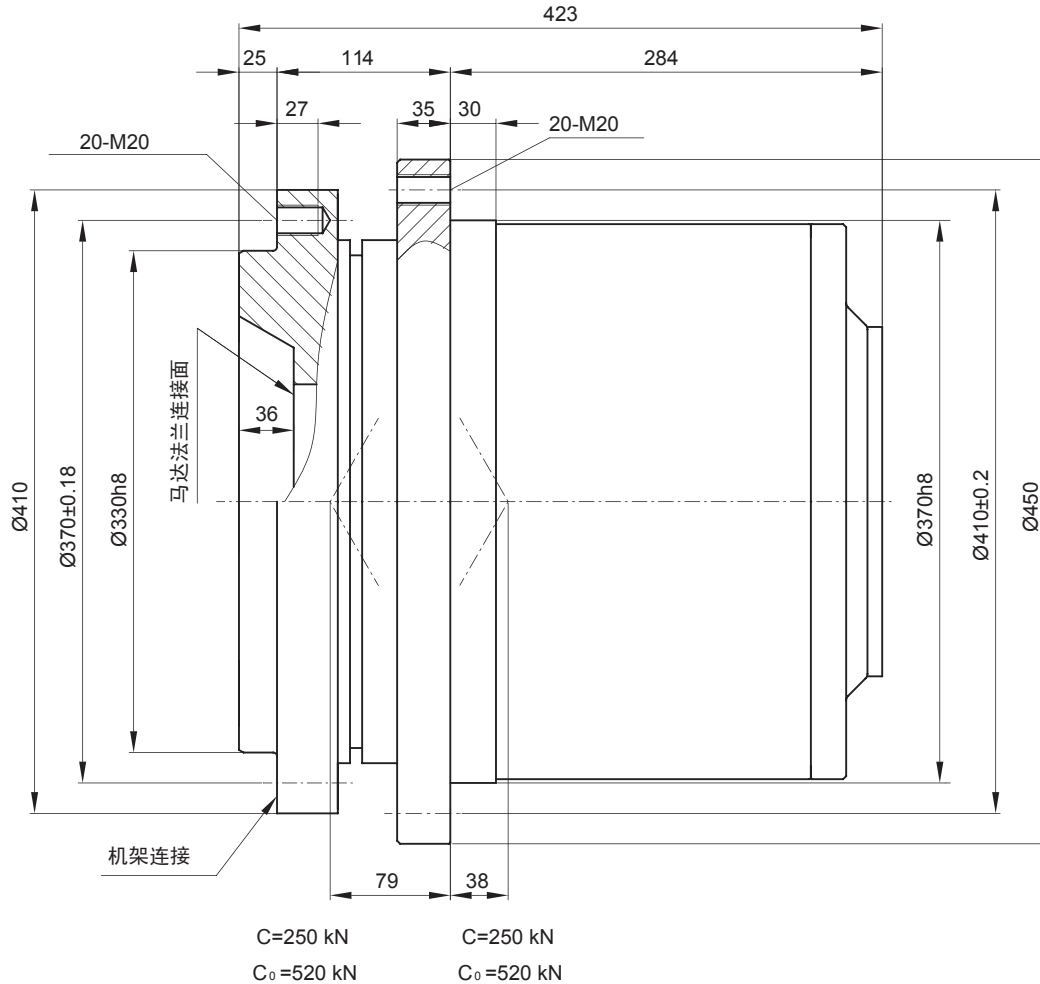
| 最大输出扭矩 Max output torque $T_{\max} \text{ N}\cdot\text{m}$ | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{\text{BR max.}} \text{ N}\cdot\text{m}$ | 制动器工作压力 Brake working pressure MPa |
|--|--|-------------------------|-------------------|--|---|--|
| 50000 | 84.2 91.1 99.8 125.7 146.4 | A2FE80 A2FE90 | A6VE80 A6VE107 | 2000 | 600-1100 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所列传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 220kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 220kg.

GFT 60T3 系列 GFT 60T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

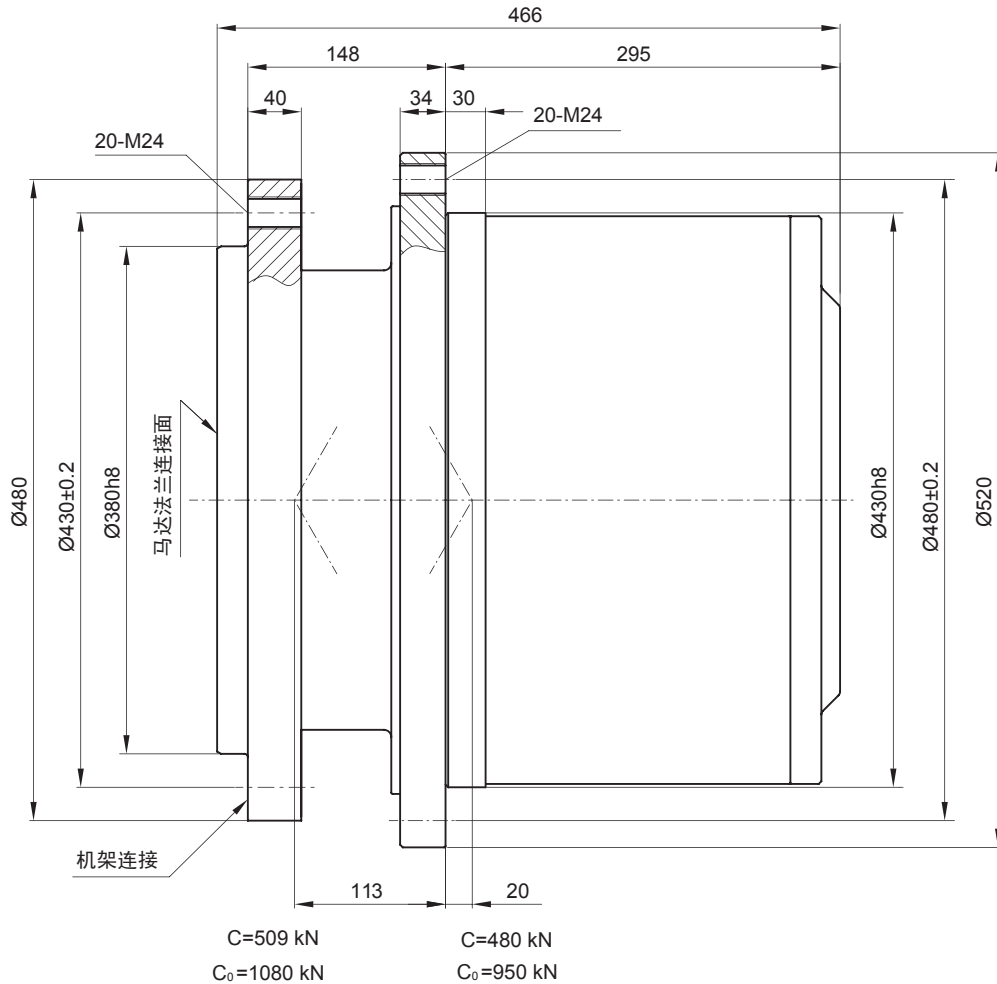
| 最大输出扭矩 Max output torque T _{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque T _{BR max.} N·m | 制动器工作压力 Brake working pressure MPa |
|---|--|--|------------------------------|---------------------------------------|--|--|
| 60000 | 86.5 94.8 105.5 119.8 139.9 169.9 | A2FE80 A2FE90 A2FE107 A2FE125 | A6VE80 A6VE107 A6VE160 | 2000 | 800-1200 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所列传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 230kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 230kg.

GFT 80T3 系列 GFT 80T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

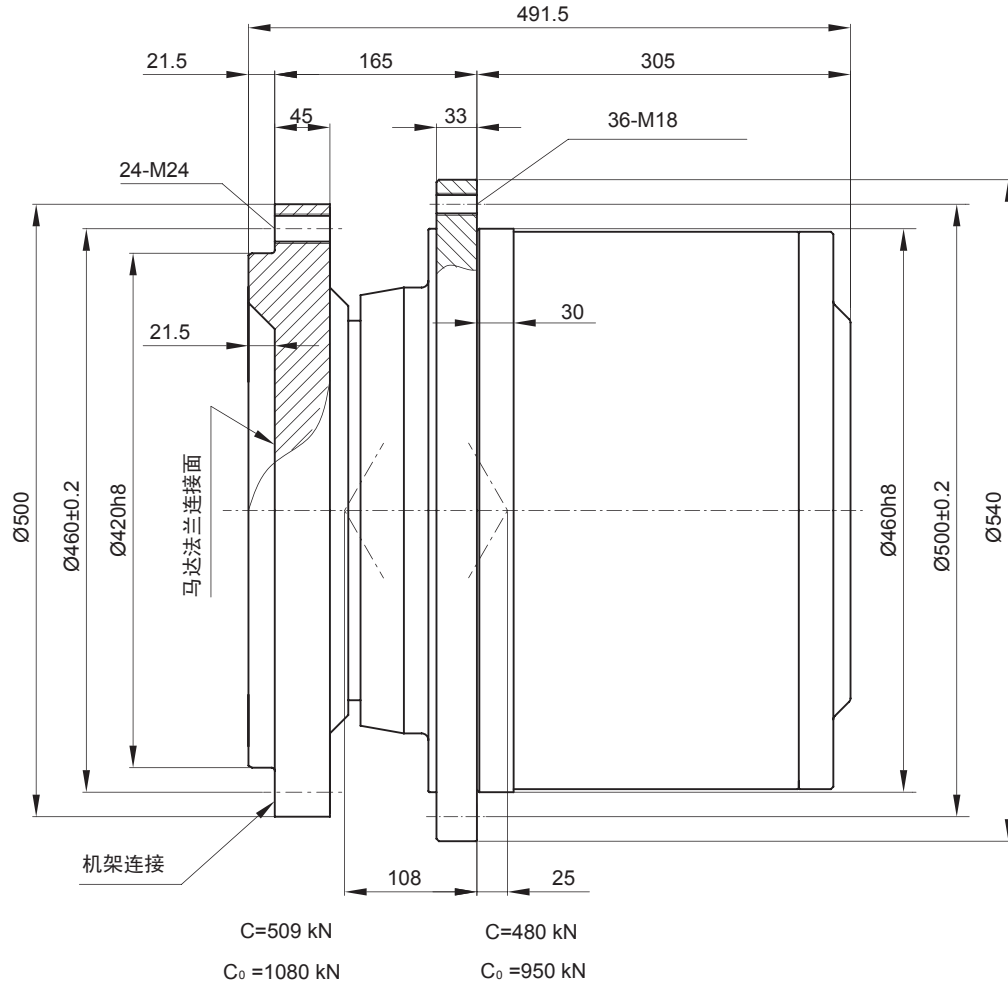
| 最大输出扭矩 Max output torque $T_{\max} \text{ N}\cdot\text{m}$ | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{\text{BR max.}} \text{ N}\cdot\text{m}$ | 制动器工作压力 Brake working pressure MPa |
|--|--|--|--------------------|---------------------------------------|---|--|
| 80000 | 76.7 99 110.9 126.9 149.9 185.4 | A2FE107 A2FE125 A2FE160 A2FE180 | A6VE107 A6VE160 | 2000 | 800-1600 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所列传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 350kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 350kg.

GFT 110T3 系列 GFT 110T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

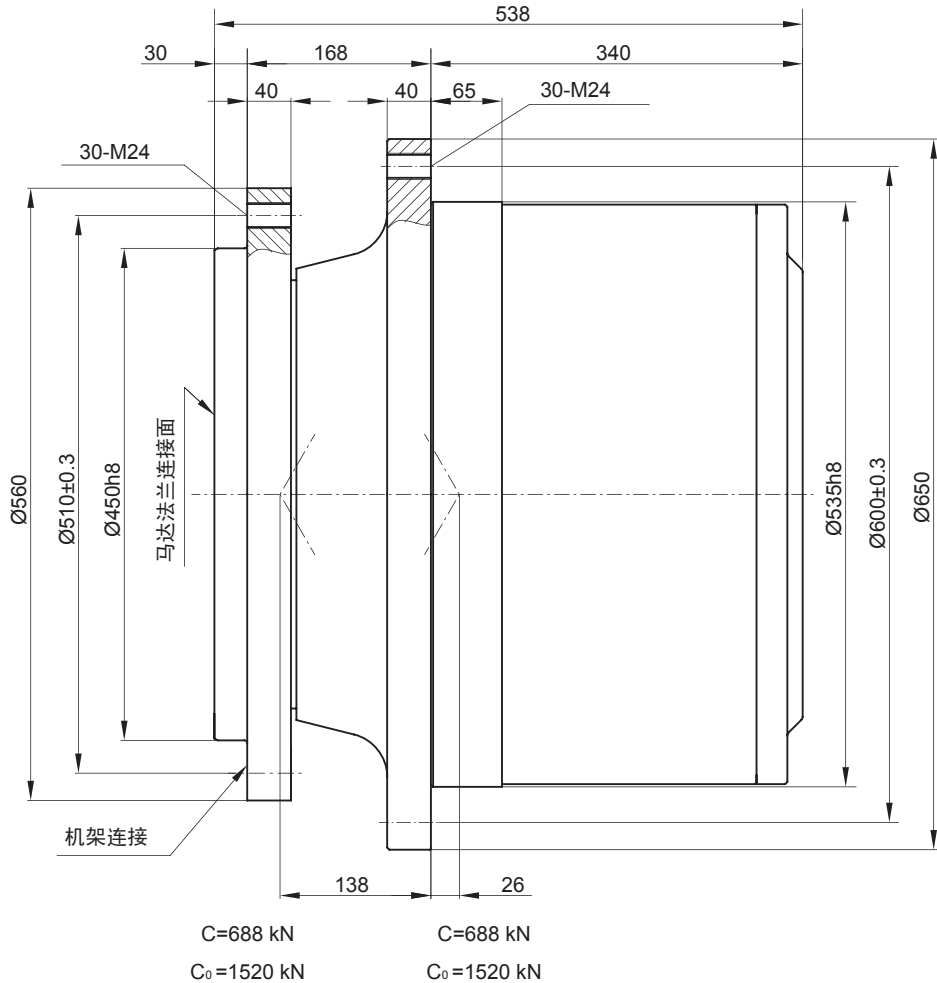
| 最大输出扭矩 Max output torque T_{\max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{BR \max}$ N·m | 制动器工作压力 Brake working pressure MPa |
|---|---|--|--------------------|---------------------------------------|---|--|
| 110000 | 95.8 114.8 128.6 147.2 173.9 215 | A2FE107 A2FE125 A2FE160 A2FE180 | A6VE107 A6VE160 | 2000 | 900-2000 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所示传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 395kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 395kg.

GFT 160T3 系列 GFT 160T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

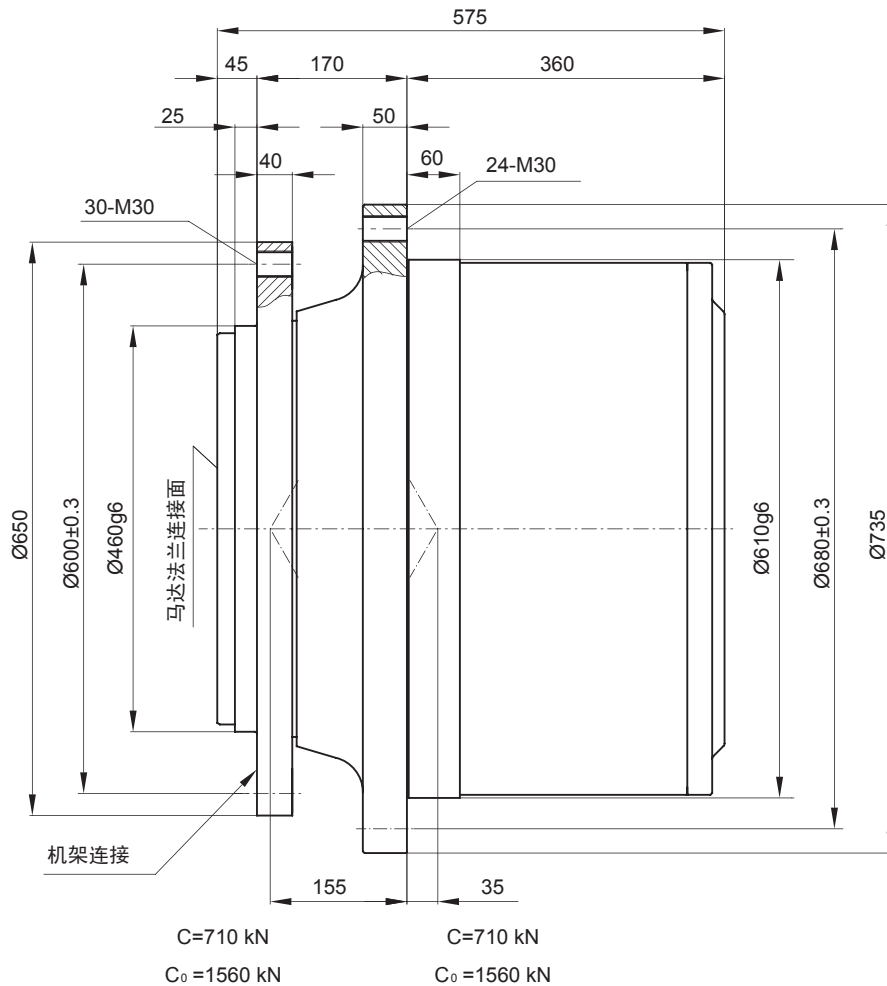
| 最大输出扭矩 Max output torque $T_{\max} \text{ N}\cdot\text{m}$ | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{BR \max} \text{ N}\cdot\text{m}$ | 制动器工作压力 Brake working pressure MPa |
|--|------------------------------|--|--------------------|---------------------------------------|--|--|
| 160000 | 161.8 210.8 251 | A2FE107 A2FE125 A2FE160 A2FE180 | A6VE107 A6VE160 | 2000 | 900-2000 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所示传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 680kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 680kg.

GFT 220T3 系列 GFT 220T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

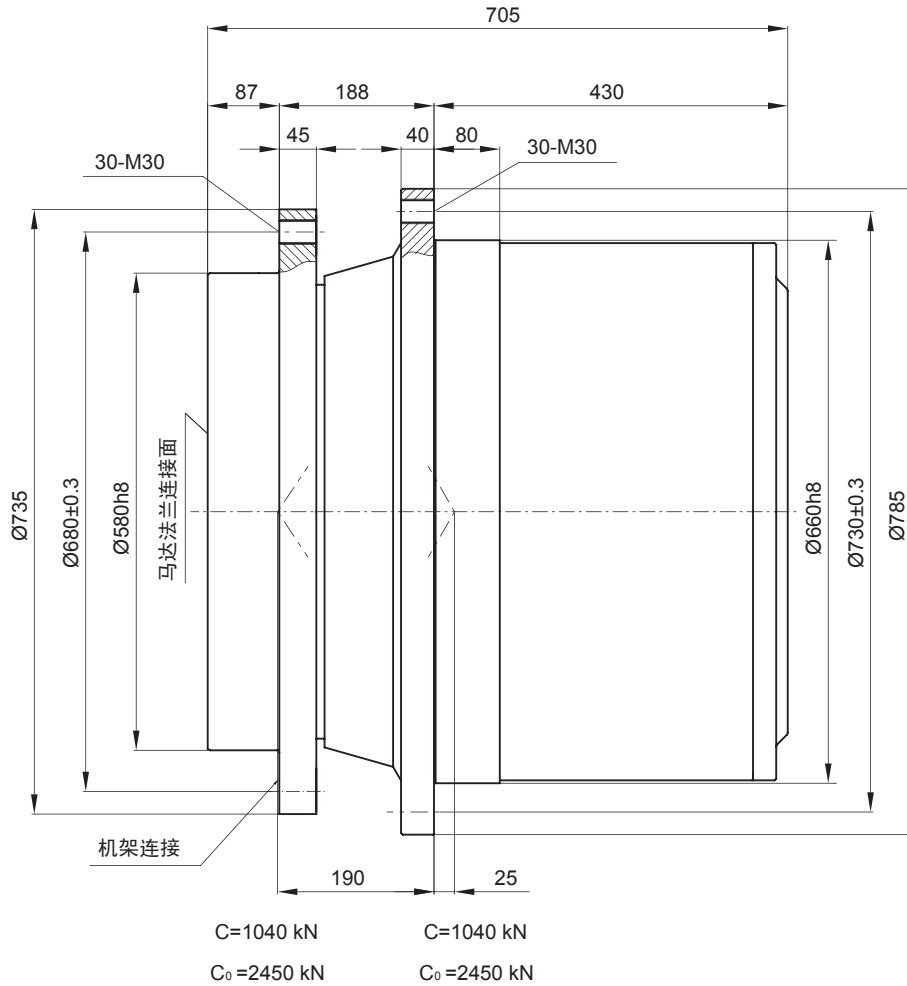
| 最大输出扭矩 Max output torque $T_{\max} \text{ N}\cdot\text{m}$ | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{BR \max} \cdot \text{N}\cdot\text{m}$ | 制动器工作压力 Brake working pressure MPa |
|--|------------------------------|--|--------------------|--|---|---|
| 220000 | 188.9 246.1 293 | A2FE107 A2FE125 A2FE160 A2FE180 | A6VE107 A6VE160 | 2000 | 1200-2400 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所列传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 830kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 830kg.

GFT 330T3 系列 GFT 330T3 series

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 最大输出扭矩 Max output torque T_{\max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | | 最高输入转速 Max input Rotating r/min | 静制动扭矩 Static brake torque $T_{BR \max}$ N·m | 制动器工作压力 Brake working pressure MPa |
|---|--------------------------------|-------------------------|--------------------|---------------------------------------|---|--|
| 330000 | 168.9 209.9 252 302.4 | A2FE250 A2FE355 | A6VE250 A6VE355 | 2000 | 1500-3500 | 1.8-5 |

减速机输入转向与输出转向相反，除表中所列传动比外，对有批量的产品传动比可以另选。
输出转速允用值（样本中示规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员。
减速机净重约 1230kg。

Input rotating direction is of reverse to that of output and except the rotating ratio listed in the table, the rotating ratio for the bulk products could be otherwise chosen. The allowed value for the output rotating (as stated in the example) may varies according to the specific working condition and details could be consulted with our technicians. The net weight of the reducer is 1230kg.

GFT(W) 卷扬减速机 GFT (W) Winch speed reducer

概述 General

静液压卷扬减速机 GFT(W) 系列是卷扬机构的理想驱动装置，在非常艰苦恶劣的使用工况下能提供完美的性能并被证明物有所值。

GFT(W) 系列卷扬减速机适用于所有已知的诸如汽车和履带式起重机，铁路起重机，舰船甲板，码头和集装箱起重机的卷扬机构，因其非常紧凑故可直接安装于卷筒内部，节省空间。另外，其设计亦易于安装。

表面硬化齿轮和氮化内齿圈的采用使之具有低噪音运转的特点，始终如一的高制造标准保证了极好的承载能力和工作可靠性。

轮齿采用 L+S 计算机优化设计并具有最高的安全裕度。

此减速机特点是具有最优的总效率。

本样本中所述减速机经常会更新和技术改进，为满足用户对尺寸和输出的特殊需要，我们可按要求做进一步的变形结构。

无论何时需要，即便在项目阶段，我们随时准备着给您建议并提供帮助，以期为您找到最合适的解决办法。

Hydrostatic winch drives of type GFT(W) Series are the ideal driving components for winches. In the most arduous applications and under inclement operating conditions they have given excellent performance and proven their worth.

GFT(W) Series winch drives are used in all known winch types. eg for use in mobile and track-laying cranes, railway cranes, shipboard, dockside and container cranes. As a result of their extremely compact shape the gears can be directly mounted in the cable drums in a space-saving manner, furthermore, they have been designed for ease of installation.

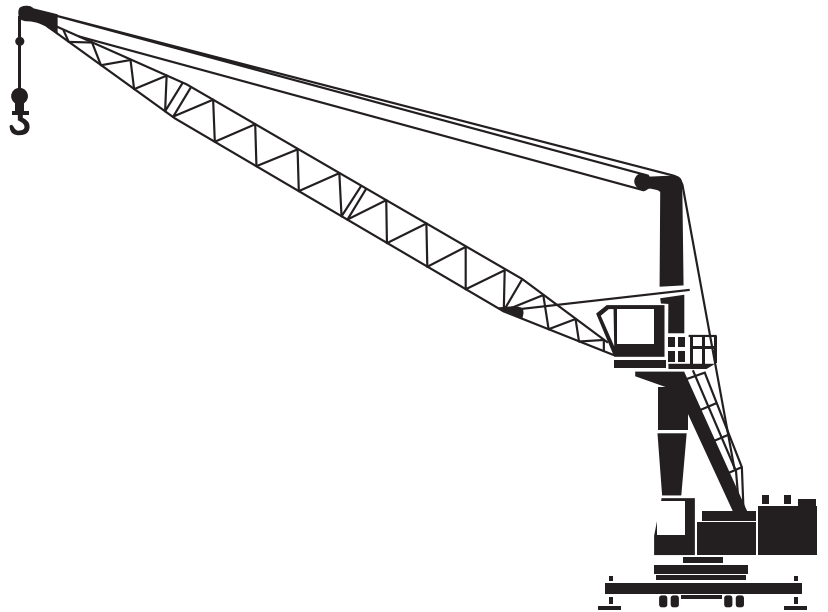
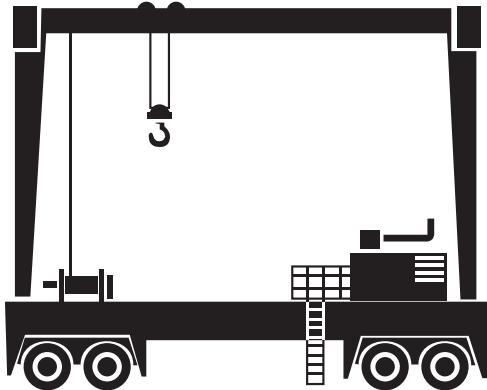
The use of case-hardened gearwheels and nitrided annulus gears has resulted in low-noise running characteristics, and a consistently high manufacturing standard ensures excellent load carrying ability and outstanding operational reliability .

The teeth of the gearwheels are optimized on the basis of L+S computer programs and yield highest safety margins.

The drives feature an optimum total efficiency .

The gear units described in this bulletin are subject to constant updating and technical advancement. To suit the specific needs of our customers with respect to dimensions and output further variants can be made available on request.

We are prepared to give advice and provide assistance whenever needed, even in the project stage, to find the most appropriate application solution for you.



结构特点

模块化结构的高强度行星减速机

结构紧凑，节省空间，两级或三级行星齿轮传动设计
可承受钢丝绳牵引力的高承载力的轴承系统

安装简单

一体化的多片式夹持制动器

低噪声运转

高效率

长寿命

换油方便

Special Features

high-duty planetary gearbox of modular construction

compact, space-saving, two- or three-stage planetary gear design

robust bearing system absorbing the forces exerted by the ring gear

simple mounting

integrated multiple-disk holding brake

low-noise running

high efficiency

long service life

easy oil change

◆使用条件 Application Conditions

减速机设计适用环境温度范围为 -20 至 +40°C。

环境影响诸如咸水、咸气、沙、尘、加超重压、重振动、剧烈冲击以及环境温度，侵入介质及类似问题将会妨碍产品功能，为了实现卷扬减速机的安全设计，此类工况条件必须报告至工厂。

The gearboxes have been designed for use at ambient temperatures ranging between -20°C and +40°C .

Environmental influences such as salt water, salty air, sand, dust, overpressure, heavy vibrations, extreme shocks and ambient temperatures, aggressive media and the like will impede the function of the product. To enable a safe design of the winch drive such conditions must be reported to the Factory .

◆减速机设计 Gearbox Design

此减速机设计基于多年的实践经验。

技术参数中所指最大输出转矩 T_{2max} 对应于 FEM 第 1 部分，第 3 版和第 1X 部分 (FEM 一欧盟标准)，以及 DIN15020, 机构载荷状态分级 L2, 机构利用等级 T5. 对应于机构工作级别 M5.

参考输出转速为最大每分钟 25 转。

如果卷扬机构分级为其它机构工作级别，则其所需输出转矩必须采用系数 K 进行修正 (见第 17 页)

The gearbox design is based on many years of practical application experience .

The maximum output torques T_{2max} indicated under technical data for crane applications relate to FEM Section 1, 3rd Edition and Section IX (FEM - Federation Europeenne de la Manutention), as well as DIN 15020, collective load class L2, service time category T5 corresponding to driver group M5.

The reference output speed is 25 revolutions per minute maximum .

If the swing drive is classified in another driver group the required output torque must be converted by applying factor K (see page 17) .

◆更高转矩 Higher Torques

当减速机传递转矩高于样本中的指定的值时，请与我们联系。

For gearboxes transmitting torques higher than indicated in the catalog please contact us.

◆卷筒 Cable Drum

根据特殊要求，除标准供货范围 (减速机 and 轴端支承轴承) 外，卷扬减速机亦可提供卷筒。

Upon special request and in addition to the standard supplyscope (gearbox and supporting end bearing) the winch also comes with cable drum.

◆绳偏折角 Cable Deflection Angle

为正确地卷绕钢丝绳，要求绳偏折角 维持在允许的极限之内。

绳偏折角 不应小于 0.5°，以防钢丝绳在端部挡盘处堆积并确保它安全地进入下一层。

绳偏折角 不应大于 1.5°，以防钢丝绳从绳槽中脱出，且当卷绕多层时，确保卷筒被正确地装满直到端部挡盘。

Reeling up the cable properly requires the cable deflection angle to be maintained within permissible limits .

The deflection angle should not be less than 0.5°, to prevent the cable from building up at the end plate and make sure it safely moves into the next layer.

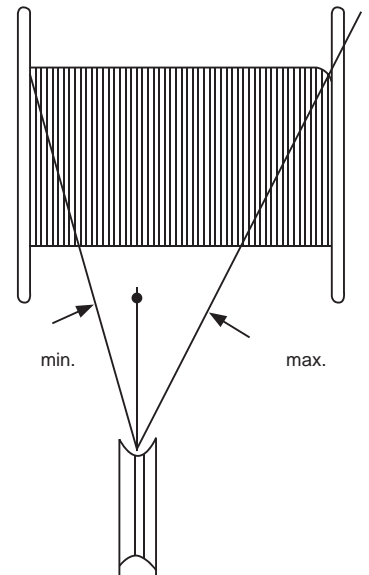
The deflection angle should not exceed 1.5°, to prevent the cable from being pulled against the groove profile and, in case of several cable layers, make sure the cable drum is correctly filled up to the end plates.

◆液压马达 Hydraulic Motors

本减速机设计可直接法兰安装变量或定量液压马达。如果需要，液压马达亦可包含在减速机供货范围中。

The gearbox design enables the direct flange attachment of a constant or variable displacement motor .

If so requested the hydraulic motor can also be included in the gearbox supply.



◆ 制动器 Brake

标准供货范围包括一个置于输入端的弹簧加载，液压释放的多片式停车制动器。

T_{Br} (最小制动力矩) = $1.5 \cdot T_1$ (输入力矩)

此多片式夹持制动器不能用于动态制动。夹持制动力矩因所选择的传动比不同而不同。在制动状态时，制动器释放油路中不得有背压。
The standard supply scope includes a spring—loaded , hydraulically released multiple-disk parking brake arranged on the input side.

$T_{BR \min}$ (brake torque)= $1.5 \cdot T_1$ (input torque)

The multiple-disk holding brake is not to be used as service brake. The holding torque multiplies with the transmission ratio selected.

◆ 润滑 Lubrication

轮齿和轴承采用浸油润滑；
除定期换油外，减速机无须保养。换油非常方便；
换油时必须使用说明书中规定的专用油牌号；
对于相应使用工况所必须的换油周期，同时规定于说明书中；
轴端支承轴承采用脂润滑。

The gear teeth and bearings will be splash lubricated .

Save for regular oil changes the drive units do not require maintenance . Changing the oil is done very easily .

Exclusively the oil brands recommended in the operating manual must be used for this work .

The change intervals necessary for the relevant application conditions are also prescribed in the operating manuals .

The pinion-like antifriction bearing of the output shaft has been provided with a forlife grease filling .



◆机构工作级别和机构利用等级 Driver Groups and Service Time Categories

| Service time category/ 机构利用等级 | | | | T2 | T3 | T4 | T5 | T6 | T7 | T8 |
|--|----|------------------|--|---|------------|------------|------------|------------|-------------|-------------|
| Assumed average service time per day in hours 假定每天平均工作时间 小时 | | | | 0.25-0.5 | 0.5-1 | 1-2 | 2-4 | 4-8 | 8-16 | >16 |
| Theoretic service time per day in hours 理论工作寿命 小时 | | | | 400-500 | 800-1600 | 1600-3200 | 3200-6300 | 6300-12500 | 12500-25000 | 25000-50000 |
| Collective load class/ 载荷状态分级 | | | | Driver Group with k Factor/ 机构工作级别及系数 k | | | | | | |
| Collective groups 载荷状态组 | L1 | light 轻 | maximum loads occurring in exceptional cases only, slight loads constantly 偶尔承受最大载荷 经常承受轻的载荷 | M1 0.90 | M2 0.90 | M3 0.90 | M4 0.90 | M5 0.95 | M6 1.05 | M7 1.2 |
| | L2 | medium 中 | small, medium and maximum loads about equally distributed over service time 工作时间内轻、中和最大载荷分布平均 | M2 0.90 | M3 0.95 | M4 0.95 | M5 1 | M6 1.15 | M7 1.30 | M8 1.50 |
| | L3 | heavy 重 | loads always near maximum 经常承受接近最大的载荷 | M3 1.05 | M4 1.05 | M5 1.10 | M6 1.25 | M7 1.40 | M8 1.60 | M8 1.80 |
| | L4 | very heavy 特重 | always maximum loads 经常承受最大载荷 | M4 1.25 | M5 1.30 | M6 1.45 | M7 1.65 | M8 1.85 | M8 2.10 | M8 2.40 |

减速机选型 Gearbox Selection

T_2 = 输出转矩

F = 单绳拉力 N

D_w = 相应卷绕直径 m

T_2 = output torque

F = cable pull in N

D_w = relevant winding diameter in m

$$T_{2k} = \frac{F \cdot D_w}{2}$$

T_{2k} = 修正的输出转矩的

K 按上表所给机构利用等级和载荷状态所对应的系数。

T_{2k} = corrected output torque

K Factor according to service time category and collective group given the table.

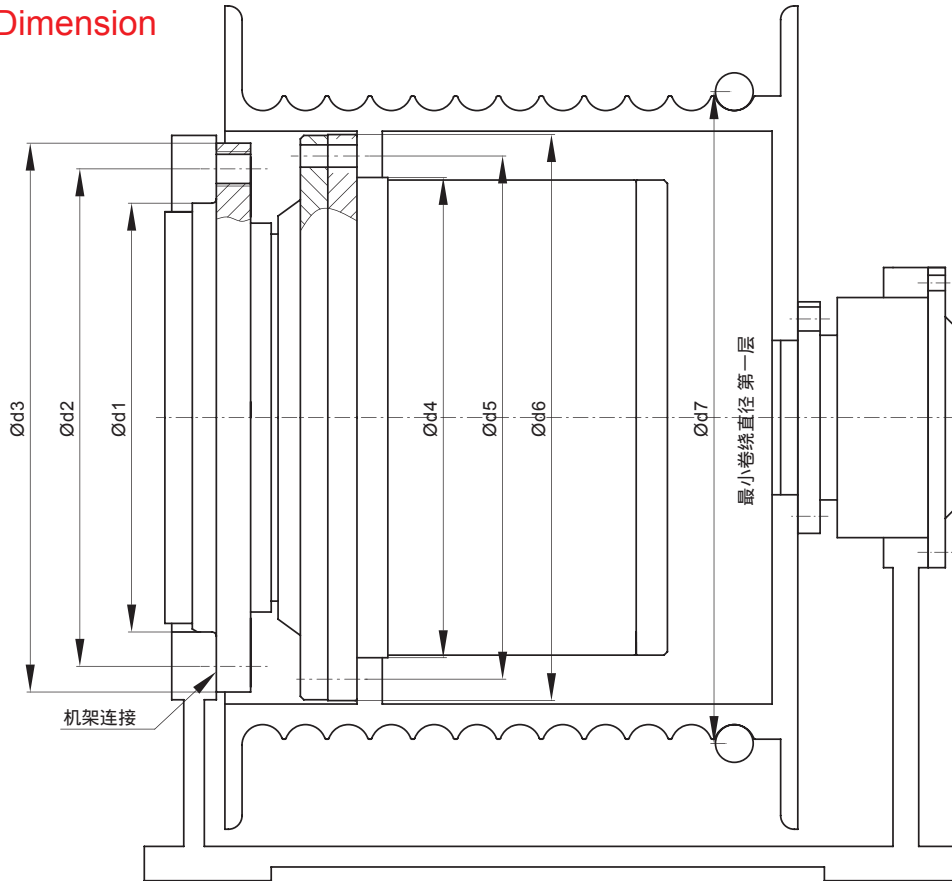
$$T_{2k} = T_2 K$$

减速机选型时 T_{2k} 必须 T_{2max} (见样本)

T_{2k} of the gearbox be selected must be T_{2max} (acc.to bulletin).

GFT(W) 卷扬减速机 GFT (W) Winch speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 型号 Type | 最大拉力 Max pull (KN) | 输出扭矩 Output torque (N·M) | d1 | d2 | d3 | d4 | d5 | d6 | d7 |
|--------------|--------------------------|--------------------------------|-----|-----|-----|-----|-----|-----|-----|
| GFT13T2 (W) | 65 | 13000 | 240 | 275 | 300 | 270 | 305 | 335 | 380 |
| GFT17T2 (W) | 85 | 17000 | 250 | 290 | 320 | 280 | 305 | 330 | 380 |
| GFT17T3 (W) | 85 | 17000 | 250 | 290 | 320 | 280 | 305 | 330 | 380 |
| GFT24T3 (W) | 120 | 24000 | 250 | 290 | 320 | 280 | 305 | 330 | 380 |
| GFT36T3 (W) | 150 | 36000 | 270 | 310 | 350 | 320 | 350 | 380 | 440 |
| GFT50T3 (W) | 190 | 50000 | 330 | 370 | 410 | 360 | 400 | 440 | 500 |
| GFT60T3 (W) | 220 | 60000 | 330 | 370 | 410 | 370 | 410 | 450 | 520 |
| GFT80T3 (W) | 250 | 80000 | 380 | 430 | 480 | 430 | 480 | 520 | 600 |
| GFT110T3 (W) | 320 | 110000 | 420 | 460 | 500 | 460 | 500 | 540 | 640 |
| GFT160T3 (W) | 380 | 160000 | 450 | 510 | 560 | 535 | 600 | 650 | 760 |
| GFT220T3 (W) | 480 | 220000 | 460 | 600 | 650 | 610 | 680 | 735 | 850 |
| GFT330T3 (W) | 650 | 330000 | 580 | 680 | 735 | 660 | 730 | 785 | 925 |

注：如用户需要卷扬减速机和机架一起供货，我公司可以出详细技术图纸供用户选用。

Notes: in case the clients need the winch speed reducer be provided together with the rack, we could offer the detailed technical drawing for the clients.

GFB 系列回转减速机

GFB series rotation speed reducer

◆概述 Introduction

GFB 系列回转装置是轮式或履带式挖掘机、旋挖钻机、履带和汽车起重机、船用克令吊等各种需要驱动转台的设备理想的回转减速部件，在非常恶劣的使用工况下能提供可靠的性能。

产品结构紧凑可直接安装于设备内部，节省空间，安装与保养方便，该产品的内部结构应用了我公司的新技术，外形安装尺寸及主要技术参数与力士乐同类产品基本相同，因而可以替代力士乐进口产品。

该系列减速机不仅能符合力士乐型系列参数和外形安装尺寸，而且可根据具体需要，提供意大利布雷维尼、日本帝人、不二越、KYB 型的替代产品。我们可在客户选型阶段为客户提供相关咨询服务，以期为客户找到最适合的传动解决方案。

根据设计要求，该减速机不仅能与力士乐型定量或变量液压马达联接，还可以与多种其他型号的液压马达相连接。减速机输入端可根据需要安装有弹簧制动、液压释放的多片式停车制动器。制动器的静制动扭矩可与所配液压马达输入扭矩相匹配（一般静制动扭矩大于 1.5 倍马达输入扭矩）。

该产品已广泛用于轮式或履带挖掘机、履带起重机、旋挖钻机、船用克令吊等设备中，产品不但已在国内三一重工、徐工集团等重点用户中使用，并出口到东南亚，中东、印度、韩国、荷兰、俄罗斯等地区和国家。

GFB series rotation speed reducer is a ideal rotation speed reducer for all kinds of equipment that need driving rotation floor, such as wheel style or band track style of excavator, rotary drilling rig, band track and vehicles hoist and shipping use cranes. It could guarantee the reliable performance even under the severely hard working conditions.

Due to its compact structure, this product could directly be installed into the equipment, saving the space and offering the easy installing and maintenance. The inner parts of the products adopt our new tech, with the installation size and the main technical parameters almost similar to that of Bosch-Rexroth, therefore, it could be served as the surrogate for the Bosch-Rexroth imports.

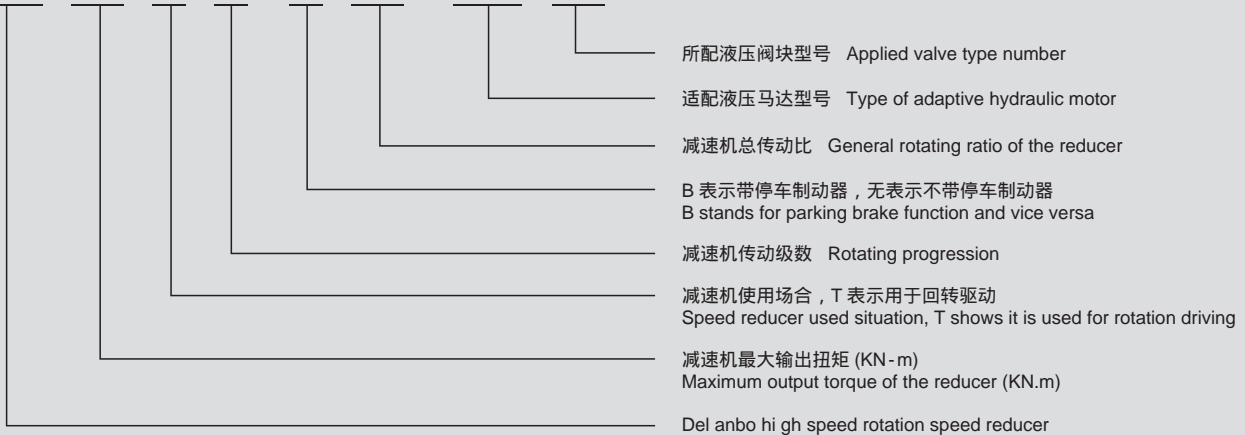
GFB series speed reducers not only meet the Bosch-Rexroth series parameters and installation size but also could offer the surrogate similar to Brevini, Tejin, Nachi, KYB, Fairfield or Sauer according to the specific demands and design. We could provide the customers with the consulting service and suitable selection to find the optimal products resolution for the clients.

As per the design demand, the speed reducers could connect with the Bosch-Rexroth constant and variable hydraulic motors and at the same time could match the other hydraulic motors if necessary. The input end of the reducers could be equipped with spring brake and the multi-plate hydraulic release parking brake according to different needs. The static braking torque of the brake goes with the hydraulic motor 's input torque (generally 1.5 times bigger).

This type of reducers has been broadly used for wheel style or band track style of excavator, band track hoist ,rotary drilling rig and shipping use cranes. The products not only have gone to Sany and XCMG but also have been exported to Southeast Asia, Middle East, India, Korean, the Netherlands and Russia.

◆型号说明 Specifications

GFB XX X X — X XX — XXX — XX



◆型号举例 Specification example

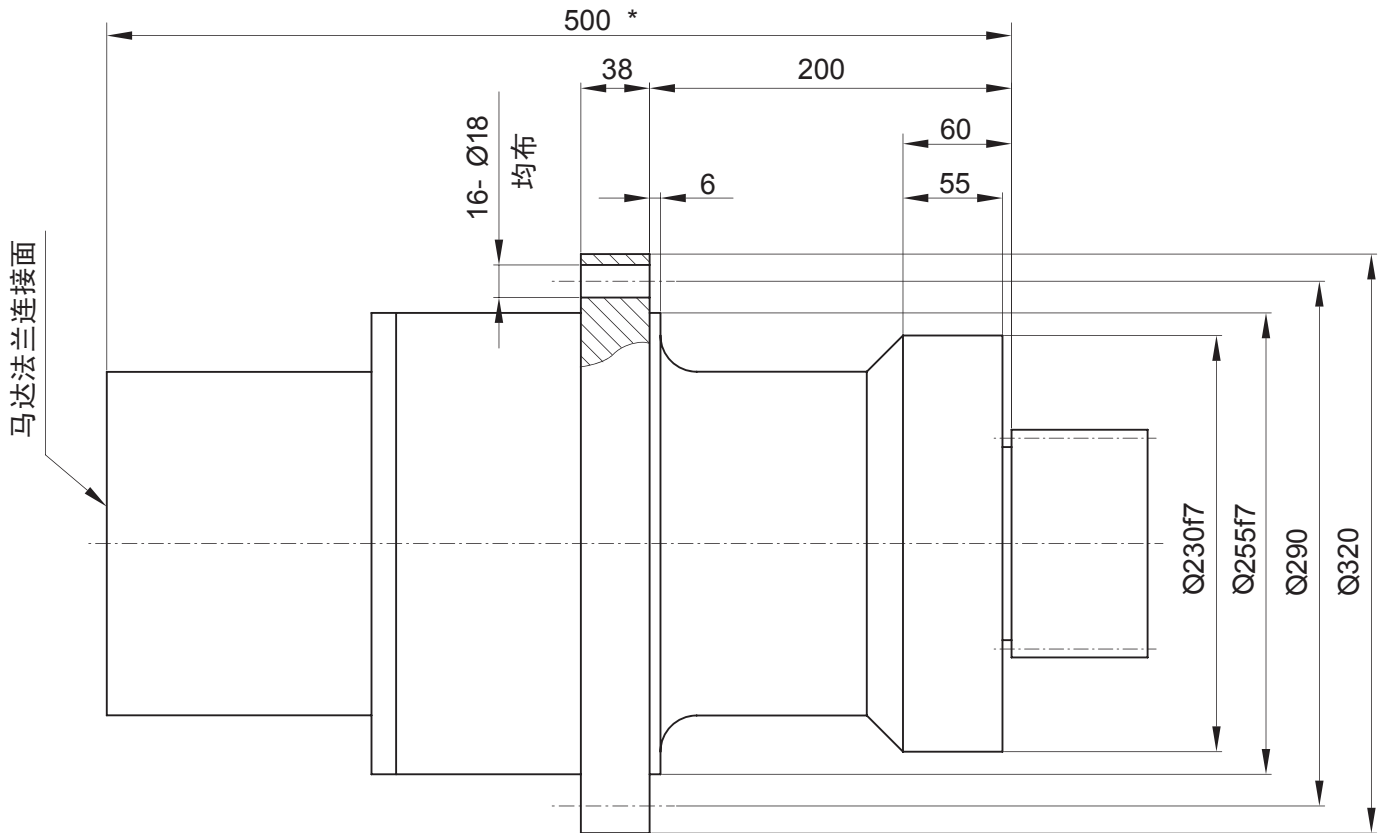
GFBI7T2-B48-A2FE56/61WVZL 表示减速机最大输出扭矩为 12.7KN·m，用于回转驱动，采用二级减速，带液压制动器，总传动比为 48，所配液压马达型号为 A2FE56/61WVZL。

GFB 17T2-B48-A2FE56/61 WVZL shows that the maximum output torque of the reducer for move driving is 12.7KN.M. Adoption of the second class speed reducing and parking brake with the general rotating ratio of 48 and the hydraulic motor A2FE56/61 WVZL.

GFB 17T2/T3 系列回转减速机

GFB 17T2/T3 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|---|--|--|
| 12700 | 27.4 33.1 46.4 78.9 89.2 103.6 | A2FE28 A2FE32 A2FE45 A2FE56 A2FE63 | 500-1000 |

减速机输入转向与输出转向相同。

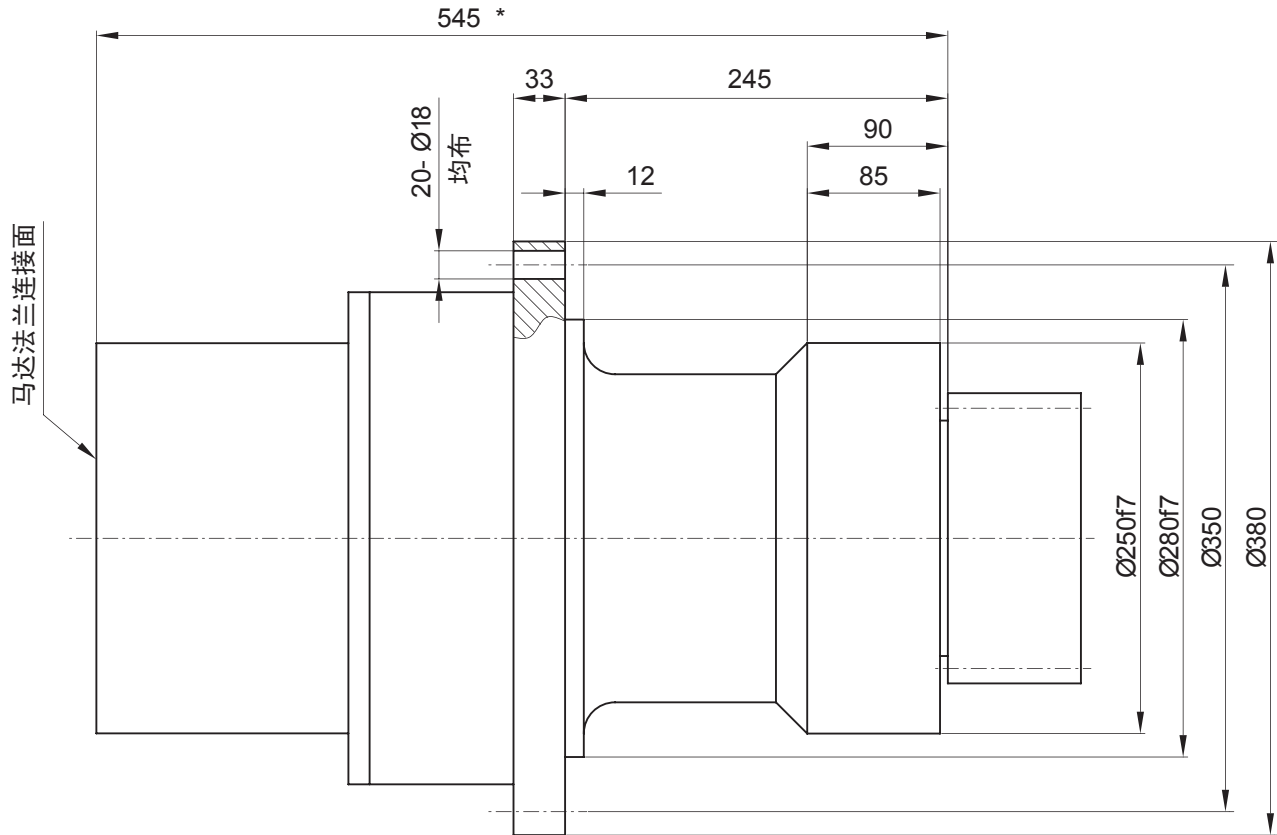
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 26T2 系列回转减速机

GFB 26T2 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|--|--|--|
| 16500 | 27.1 31.4 37.8 43.9 51.5 63 | A2FE45 A2FE56 A2FE63 A2FE80 A2FE90 | 500-1000 |

减速机输入转向与输出转向相同。

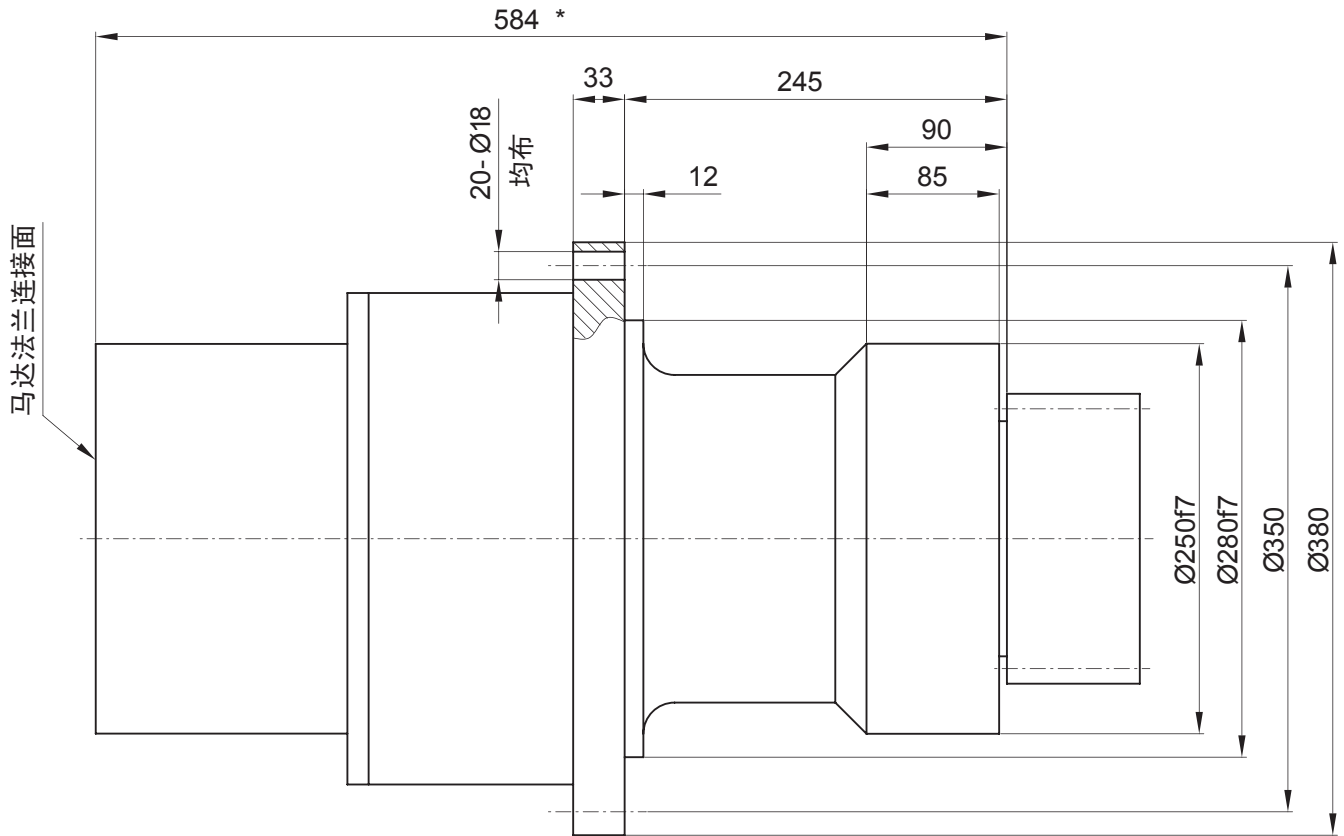
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 36T3 系列回转减速机

GFB 36T3 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|--|--|--|
| 28500 | 67.9 73.5 80.4 89.2 101 117.6 | A2FE45 A2FE56 A2FE63 A2FE80 A2FE90 | 450-800 |

减速机输入转向与输出转向相同。

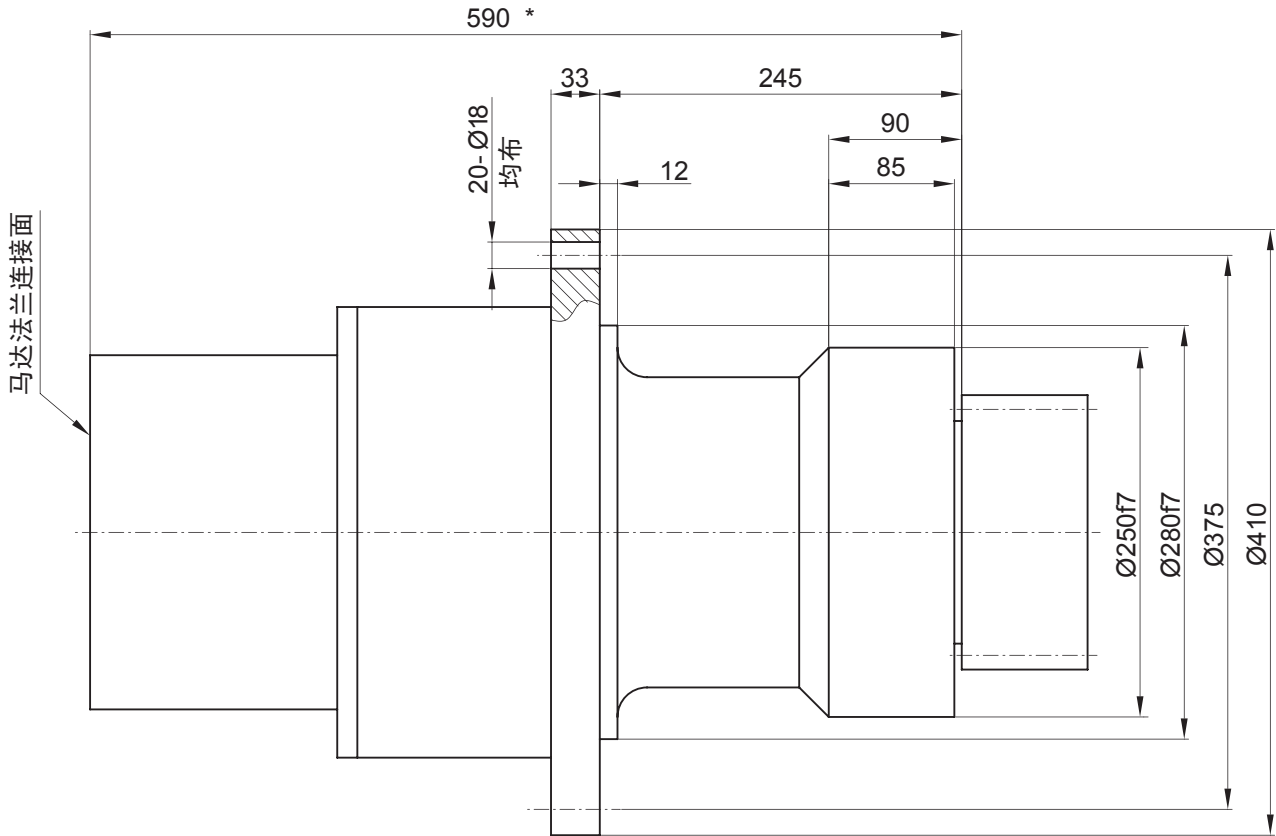
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 40T2 系列回转减速机

GFB 40T2 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|----------------------------|--|--|
| 29000 | 36.4 42 49.3 60.1 | A2FE45 A2FE56 A2FE63 A2FE80 A2FE90 A2FE107 A2FE125 | 800-1200 |

减速机输入转向与输出转向相同。

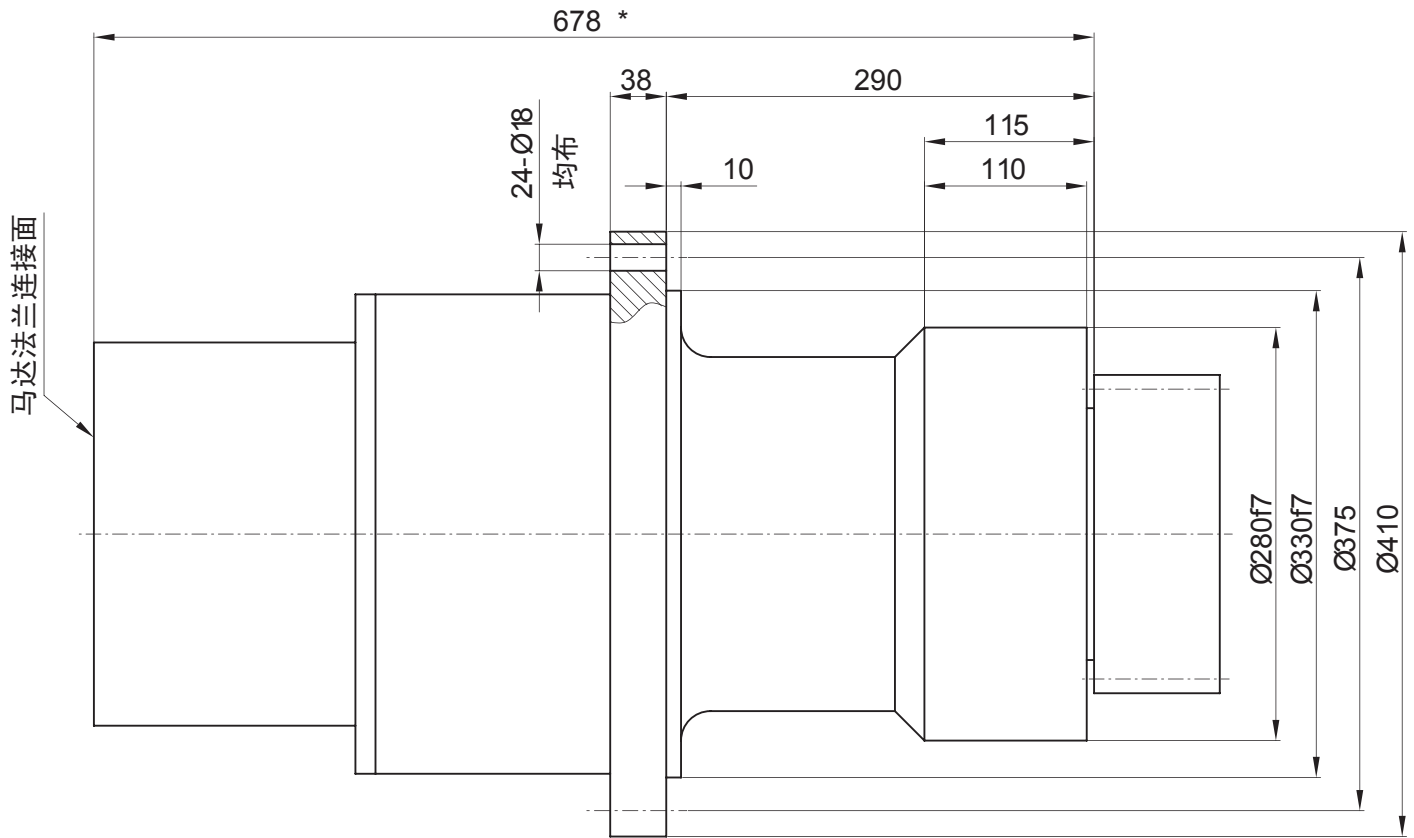
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 50T2 系列回转减速机

GFB 50T2 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|----------------------------|--|--|
| 38000 | 27 32.3 37.8 46.1 | A2FE80 A2FE90 A2FE107 A2FE125 | 1000-1500 |

减速机输入转向与输出转向相同。

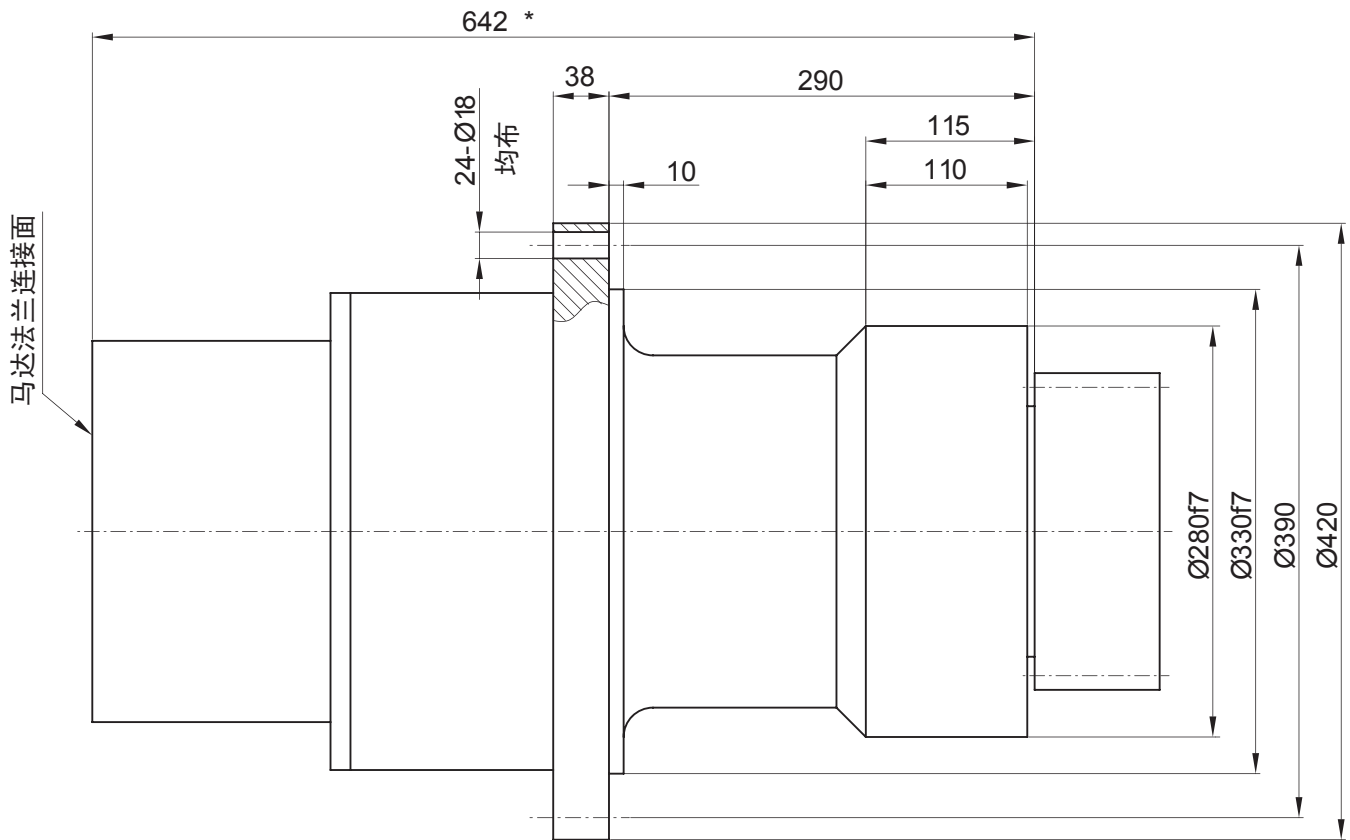
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 50T3 系列回转减速机

GFB 50T3 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|--|--|--|
| 38000 | 85.2 92.1 100.7 111.9 126.7 147.4 | A2FE45 A2FE56 A2FE63 A2FE80 A2FE90 A2FE107 A2FE125 | 600-1100 |

减速机输入转向与输出转向相同。

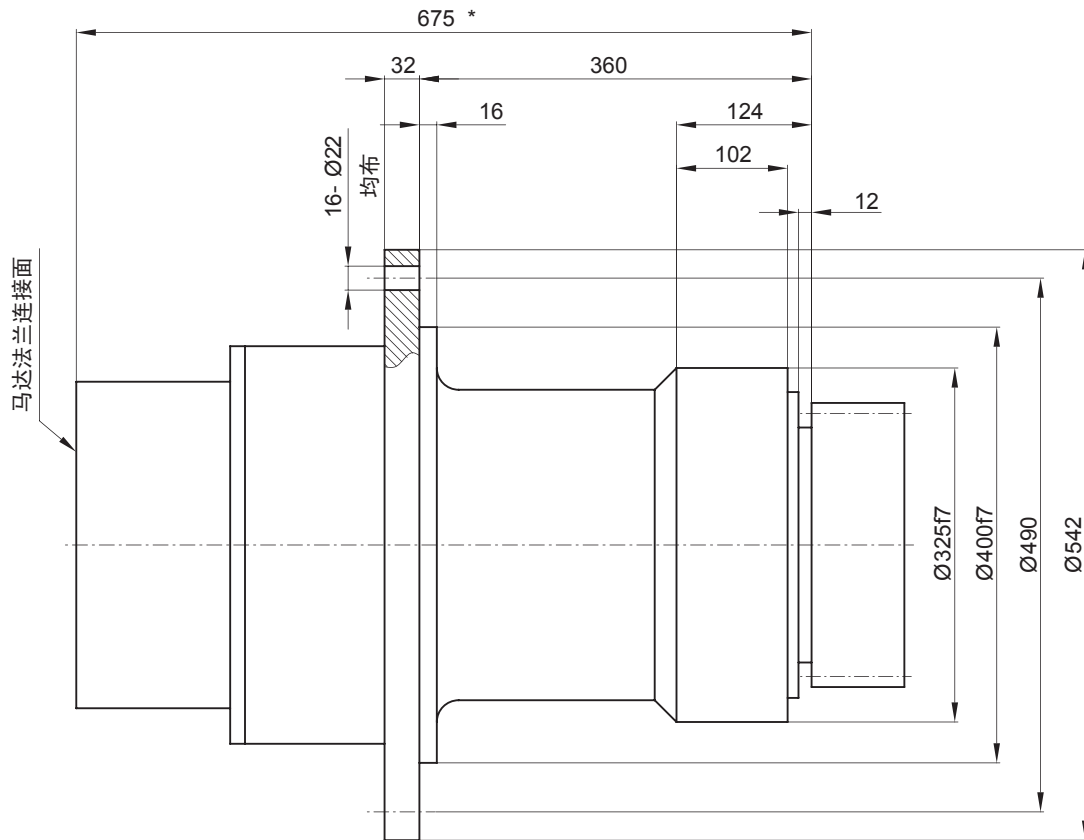
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 60T2 系列回转减速机

GFB 60T2 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|---------------------------|--|--|
| 48500 | 34 40.4 | A2FE80 A2FE90 A2FE107 A2FE125 A2FE160 A2FE180 | 1200-2200 |

减速机输入转向与输出转向相同。

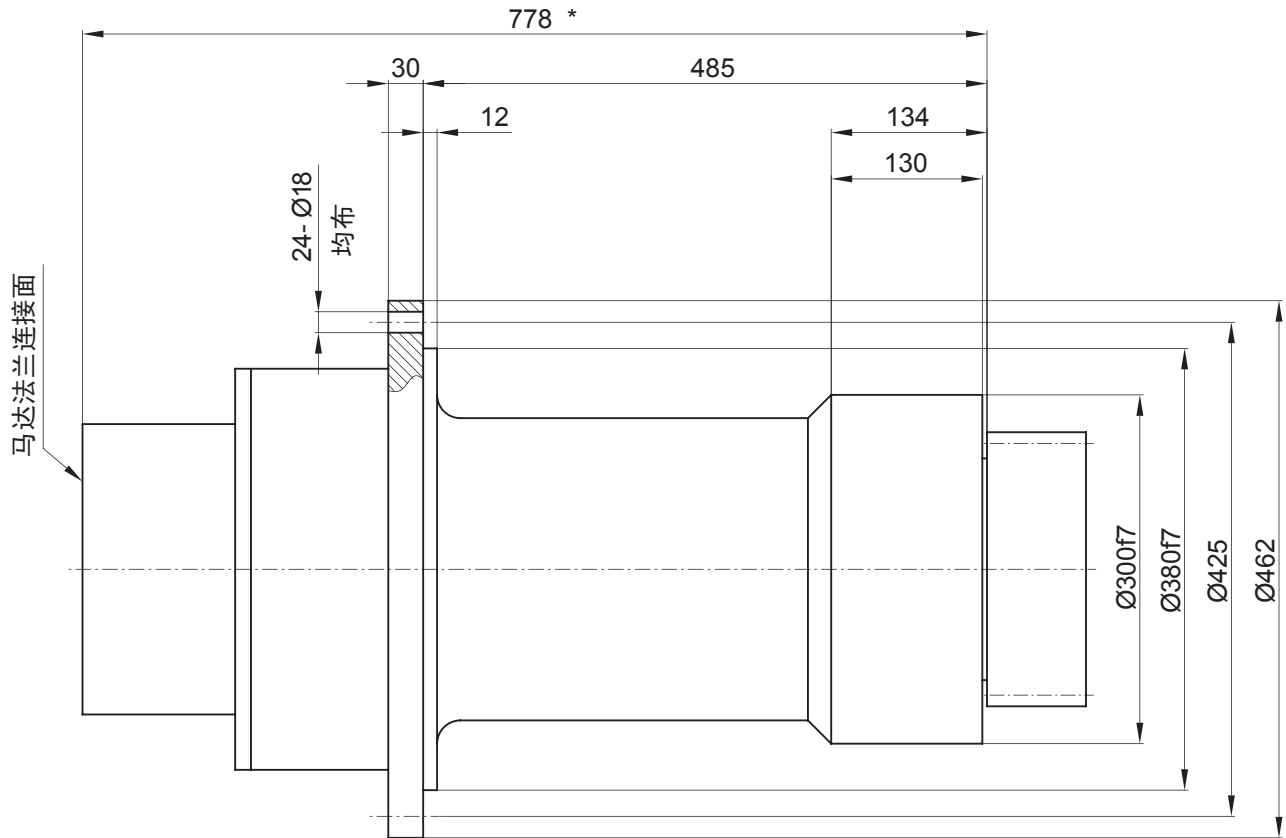
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 60T3 系列回转减速机

GFB 60T3 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|--|--|--|
| 48500 | 87.5 95.8 106.5 120.5 140.9 170.9 | A2FE45 A2FE56 A2FE63 A2FE80 A2FE90 | 800-1200 |

减速机输入转向与输出转向相同。

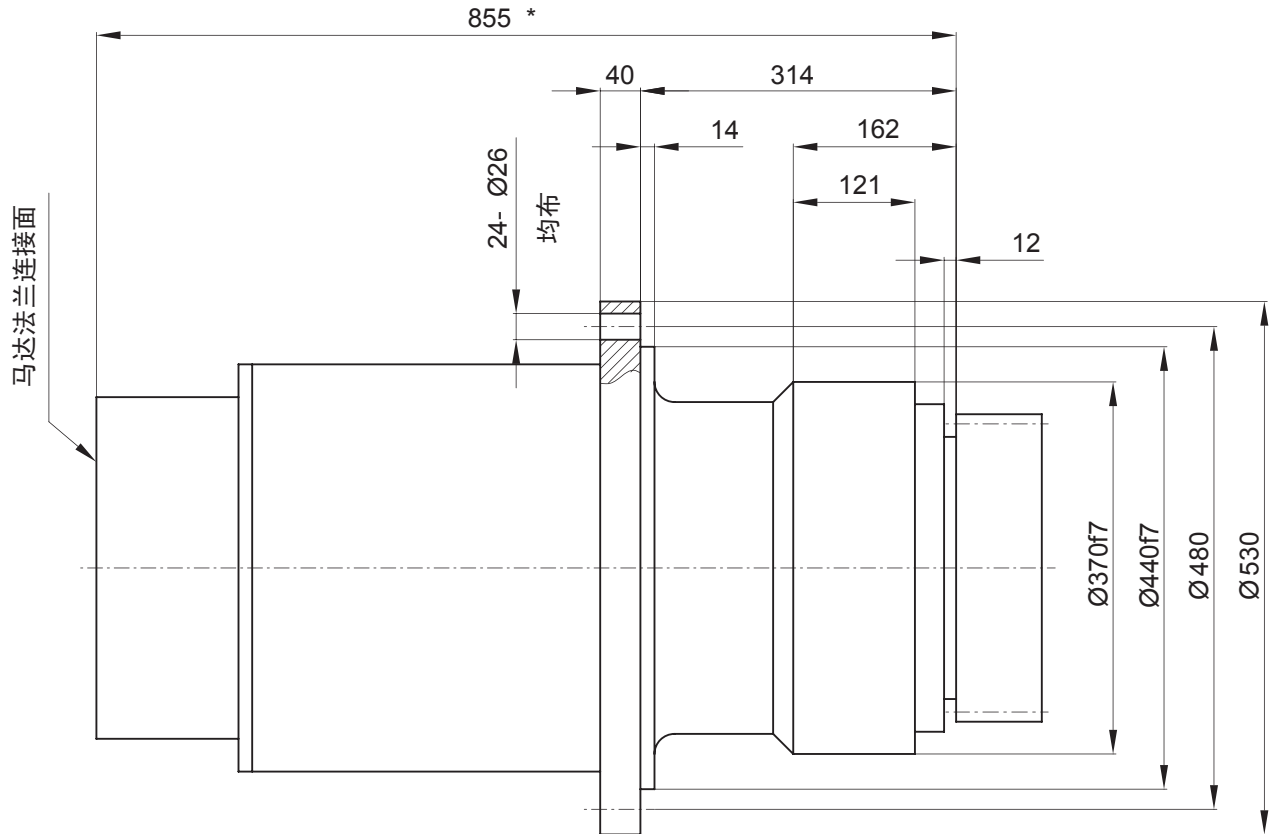
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 80T3 系列回转减速机

GFB 80T3 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max}$ N·m |
|-------------------------------------|--|--|---|
| 68300 | 62.3 80.2 99.9 111.8 127.9 150.9 186.4 | A2FE80 A2FE90 A2FE107 A2FE125 | 800-1600 |

减速机输入转向与输出转向相同。

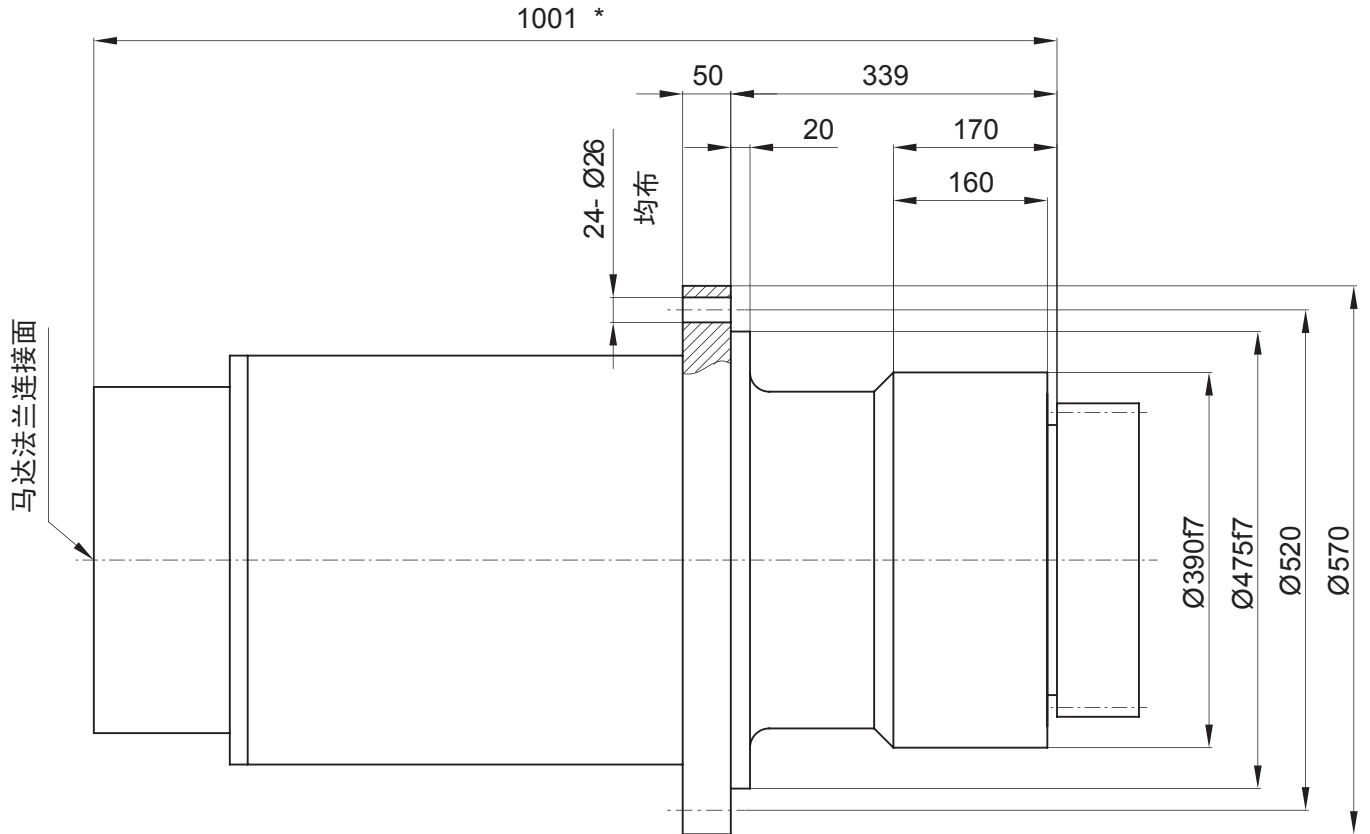
输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

GFB 110T3 系列回转减速机

GFB 110T3 series rotation speed reducer

◆外形尺寸 Dimension



◆技术参数 Technical parameters

| 输出扭矩 Output torque T_{max} N·m | 传动比 Rotating ratio i | 液压马达 Hydraulic motor | 静制动扭矩 Static brake torque $T_{BR max.}$ N·m |
|-------------------------------------|---|--|--|
| 93300 | 80.5 88.6 96.8 129.6 148.2 174.9 | A2FE107 A2FE125 A2FE160 A2FE180 A2FE200 A2FE250 | 900-2000 |

减速机输入转向与输出转向相同。

输出转速允用值（样本中未规定）因实际工况的而有所变化，详情请咨询本公司相关技术人员

Input rotating direction is of reverse to that of output. The allowed value for the output rotating (not stated in the example) may varies according to the specific working condition and details could be consulted with our technicians.

◆使用条件 Service conditions

减速机适用于 -20 至 +40 的环境温度范围。对于使用在诸如盐水等腐蚀性介质、过压、剧烈冲击及环境温度超过规定值等会妨碍产品功能的情况下，为确保减速机的安全应用，用户订货时必须说明所有这些条件，以便于采取必要的特殊设计和措施来保证产品应用的可靠性。

This speed reducer applies to the environment of -20 to +40. To make sure the reducer is used safely, the clients must specify the conditions that may affect the function of the products, such as the caustic medium like saline water, over pressure, fierce impact and other conditions as well as the temperature that cross the specified values before the order is made so as to apply the specific design and protection measures.

◆最大输出 Max output

本样本中技术参数栏中所指的最大输出扭矩应参考 FEM 第 3 版第 1 章 (详见附表 1、2)(FEM: 欧盟标准)，当输出最大转速为每分钟 25 转，集合载荷级别 L2 和运行时间级别 T5 对应于驱动机构类型 M5 时，此时系数 K 为 1。减速机应根据驱动机构的不同类型、不同的载荷级别、不同的运行时间级别和不同的驱动机构类型，可按表 1 和表 2 查出修正系数 K 值，对最大允许的输出扭矩必须除以系数 K 进行修正换算 (见表格)。该换算可计算出减速机对应于各种工况的最大允许输出扭矩。所选择分级可咨询本公司技术人员。

The maximum output torque listed in this sample table shall be referenced to FEM version 3 and chapter 1 (details in schedule 1 and 2) (FEM: EU standards). When the max output rotation speed reach to 25 r/min and assemblage load level L2 as well as the operation time level T5 correspond to the driving mechanism M5, this coefficient is 1. The K coefficient of the reducer could be modified with the reference to Table 1 and Table 2 according to the different types of driving mechanism, load level and operation time while the allowed max output torque shall divide the K coefficient to modify and convert (see in the table). This method could calculate the reducer's allowed max output torque under the different working conditions. The classification problems could be consulted with our technical staff.

驱动机构类型和运行时间级别，按 FEM 1987 年第 3 版，第一章

(FEM: 欧盟标准)

The type and the operation time level for driving mechanism as per FEM, 1987 version 3 chapter 1

(FEM: EU standards)

Table 1 表 1

| 运行时间级别 Operation time level | | | T2 | T3 | T4 | T5 | T6 | T7 | T8 |
|---|-------------------|---|---|------------|------------|------------|------------|-------------|-------------|
| 假定每天的平均工作时间 (小时) Assumed average operating time per day (Hour) | | | 0.25-0.5 | 0.5-1 | 1-2 | 2-4 | 4-8 | 8-16 | > 16 |
| 理论使用寿命 (小时) Nominal life span | | | 400-800 | 800-1600 | 1600-3200 | 3200-6300 | 6300-12500 | 12500-25000 | 25000-50000 |
| 载荷级别 Load level | | | 驱动机构类型与系数 K Type of Driving Mechanism & Coefficient K | | | | | | |
| L1 | 轻 Light | 偶尔承受最大载荷，经常承受轻载荷 Generally the light load with occasionally heavy load | M1 0.90 | M2 0.90 | M3 0.90 | M4 0.90 | M5 0.95 | M6 1.05 | M7 1.2 |
| L2 | 中 Medium | 工作时间内轻、中和重载荷大致平均分布 Equispaced with light, medium and heavy load | M2 0.9 | M3 0.95 | M4 0.95 | M5 1 | M6 1.15 | M7 1.30 | M8 1.50 |
| L3 | 重 Heavy | 经常承受接近最大的载荷 Generally close to the max load | M3 1.05 | M4 1.05 | M5 1.10 | M6 1.25 | M7 1.40 | M8 1.60 | M8 1.80 |
| L4 | 特重 Extra heavy | 经常承受最大载荷 Generally the max load | M4 1.25 | M5 1.30 | M6 1.45 | M7 1.65 | M8 1.85 | M8 2.10 | M8 2.40 |

◆ 分级示例 Classification example

参见 FEM 第 3 版第 1 章
See in FEM Version 3 Chapter 1

Table 2 表 2

| 超重机类型 (名称) Crane type (Name) | 工作元件 (1) Working element | 驱动机构类型 Type for driving mechanism | | | | |
|--|---------------------------------|-----------------------------------|----------------|-----------------|------------------|---------------------|
| | | 起升 Heave | 回转 Rotation | 变幅 Amplitude | 小车行走 Car move | 超重机行走 Crane move |
| 安装用起重机 Installation use crane | | M2-M3 | M2-M3 | M1-M2 | M1-M2 | M2-M3 |
| 装卸桥 Handling bridge | 吊钩 Drop hanger | M5-M6 | M4 | - | M4-M5 | M5-M6 |
| 装卸桥 Handling bridge | 抓斗或磁铁 Grab or magnet | M7-M8 | M6 | - | M6-M7 | M7-M8 |
| 车间用起重机 Workshop use crane | | M6 | M4 | - | M4 | M5 |
| 桥式起重机、碎铁起重机、废钢厂吊车 Bridge crane, Iron smash crane, Scrap iron crane | 抓斗或磁铁 Grab or magnet | M8 | M6 | - | M6-M7 | M7-M8 |
| 卸料桥、集装箱门式起重机 Discharging bridge, Container gantry crane | 吊钩或吊具 Drop hanger or toplift | M6-M7 | M5-M6 | M3-M4 | M6-M7 | M4-M5 |
| 其它门式起重机 (带小车或转台) Other gantry cranes (with cars and rotary tables) | 吊钩 Drop hanger | M4-M5 | M4-M5 | - | M4-M5 | M4-M5 |
| 卸料桥、集装箱门式起重机 (带小车或转台) Discharging bridge, Container gantry crane (with cars and rotary tables) | 抓斗或磁铁 Grab or magnet | M8 | M5-M6 | M3-M4 | M7-M8 | M4-M5 |
| 船坞起重机、船台起重机、拆卸用起重机 Dock crane, slipway crane, disassembly use crane | 吊钩 Drop hanger | M5-M6 | M4-M5 | M4-M5 | M4-M5 | M5-M6 |
| 港口起重机 (可转动、门式 ...), 浮式起重机及浮式起重架 Port crane (rotary, gate type) | 吊钩 Drop hanger | M6-M7 | M5-M6 | M5-M6 | - | M3-M4 |
| 港口起重机 (可转动、门式 ...) 浮式起重机及浮式起重架 Floating crane, floating hoist frame | 抓斗或磁铁 Grab or magnet | M7-M8 | M6-M7 | M6-M7 | - | M4-5 |
| 浮式起重机和浮式起重架, 用于非常高的负荷 (一般在 100t 以上) Floating crane and floating hoist frame for heavy load (above 100t) | | M3-M4 | M3-M4 | M3-M4 | - | - |
| 甲板起重机 Deck crane | 吊钩 Drop hanger | M4 | M3-M4 | M3-M4 | M2 | M3 |
| 甲板起重机 Deck crane | 抓斗或磁铁 Grab or magnet | M5-M6 | M3-M4 | M3-M4 | M4-M5 | M3-M4 |
| 塔式起重机、用于建筑工地 Tower crane for construction site | | M4 | M5 | M4 | M3 | M3 |
| 门式起重吊塔 Gate type derrick tower | | M2-M3 | M1-M2 | M1-M2 | - | - |
| 铁路超重机, 允许用于铁路维修 Railway crane allowed for railway maintenance | | M3-M4 | M2-M3 | M2-M3 | - | - |
| 汽车起重机 Automobiles crane | 吊钩 Drop hanger | M3-M4 | M2-M3 | M2-M3 | - | - |

(1) 此项仅列出了某些典型应用, 仅供参考

(1) only list the typical examples for your reference