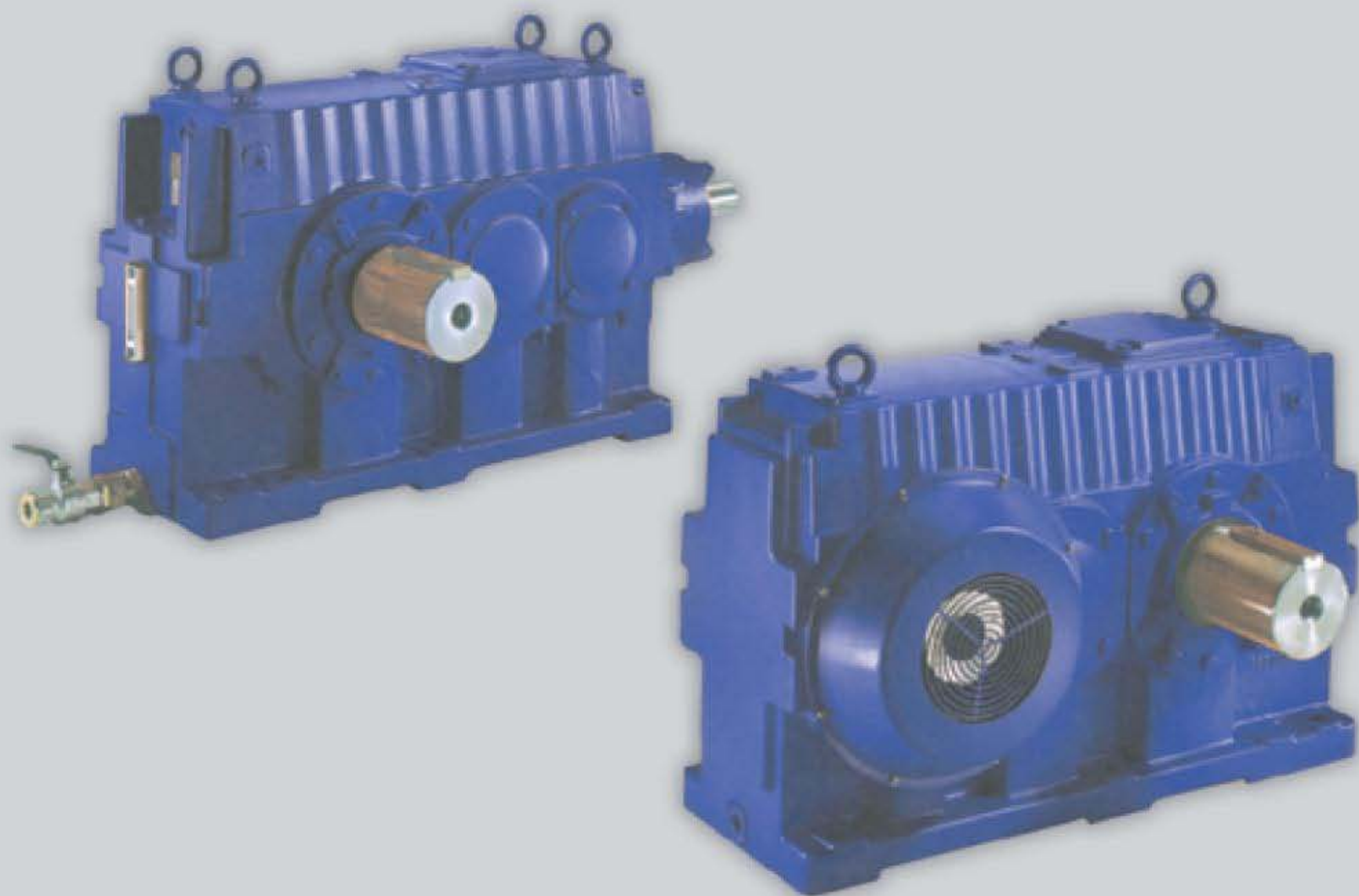




GM 斜齿轮和锥齿轮—斜齿轮减速器



国茂减速机集团有限公司
GUOMAO REDUCER GROUP CO.,LTD.

2010年

GUOMAO

公司概况

国茂减速机集团有限公司（以下简称国茂集团）是一个综合型的国家级民营企业集团，创建于1993年，总部位于国际花园城市——江苏省常州市武进区。国茂集团始终以“持续发展，争创一流”为企业宗旨，以“追求完美品质，始终满足客户”为质量方针，推进品牌战略，提升品牌内涵，调整经营策略，打造规模经济。国茂集团现已拥有总资产4.5亿元，占地面积25万 m²，拥有员工2000余名，各类专业技术人员占员工总数的20%，2008年减速机实现销售产值10.1亿元。国茂集团连续多年被授予“武进区纳税大户奖”、“江苏省AAA级资信企业”、“信用（合同）AAA级企业”、“武进区工业先进企业”、“常州市明星企业”等荣誉称号，“国茂”牌系列减速机被授予“江苏省名牌产品”称号，“国茂”商标被认定为“江苏省著名商标”。

国茂集团以生产“国茂”牌系列减速机为主要产品，具备50万台减速机的年生产能力，品种规格齐全，目前已拥有B、X系列摆线针轮减速机；ZDY、ZLY、ZSY、ZFY系列硬齿面圆柱齿轮减速机；ZLYJ、ZSYJ系列塑料挤出机专用硬齿面减速机；DBY、DCY系列硬齿面圆锥圆柱齿轮减速机；GR系列斜齿轮减速电机；GS系列斜齿轮蜗轮蜗杆减速电机；GK系列弧齿锥齿轮减速电机；GF系列平行轴斜齿轮减速电机；PV系列通用齿轮箱；MBY及JDX系列边缘传动磨机减速机；GMC系列紧凑型通用减速器；GM斜齿轮和锥齿轮-斜齿轮减速机等十几个系列上百个品种的减速机，具备非标减速机从研发、设计、制造的全套技术力量和先进的测试手段。

国茂集团通过了ISO9001:2000质量管理体系认证，ISO14001:2004环境管理体系认证，OHSAS18001:1999职业健康安全管理体系认证。国茂集团拥有从德国引进的Niles成型磨齿机、日本引进的OKUMA卧式加工中心、齿轮检测中心和三坐标测量仪等一大批国内、外先进设备和检测仪器，精良的设备，先进的管理理念，完善的质量管理体系，高素质的员工队伍，再加上全国90多家分公司实行联网服务，极大地满足了客户需求。

国茂集团董事长徐国忠竭诚欢迎国、内外客户莅临指导，合作共赢，共创美好未来！



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2,3,4 – stage Helical Gear Units /Horizontal LSS

2,3,4 – 级斜齿轮减速器/水平 LSS

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GM.R..

3,4,5 – Stage Bevel Helical Gear Units /Horizontal LSS

3,4,5 – 级锥齿轮 – 斜齿轮减速器/水平 LSS

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GM.PV..

2,3,4 – stage Helical Gear Units /Vertical LSS

2,3,4 – 级斜齿轮减速器/垂直 LSS

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GM.RV..

3,4 – stage Bevel Helical Gear Units /Vertical LSS

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2,3,4 – stage Helical Gear Units /Horizontal LSS

2,3,4 – 级斜齿轮减速器/水平 LSS

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GM.R..

3,4,5 – stage Bevel Helical Gear Units /Horizontal LSS

3,4,5 – 级锥齿轮 – 斜齿轮减速器/水平 LSS

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GM.PV..

2,3,4 – stage Helical Gear Units /Vertical LSS

2,3,4 – 级斜齿轮减速器/垂直 LSS

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GM.RV..

3,4 – stage Bevel Helical Gear Units /Vertical LSS

3,4 – 级锥齿轮 – 斜齿轮减速器/垂直 LSS

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Used abbreviations and standards 所用缩写和标准

General

The selection of the gear unit is a demanding task. The customer supplies the following data: drive specification, duty cycle and operation conditions.

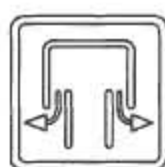
To ensure that the gear unit functions according to the specification, please take GUOMAO instructions into consideration eg. selection, storage, mounting, lubrication, operation and maintenance of the gear unit.

The system of connected rotating parts must be compatible, free from critical speed as well as torsional and other type vibrations within the specified speed range.

Definition of icons used in dimensional drawings



Visual inspection
opening
目视观察孔



Breather
通气帽



Oil filler
加油口

概述

减速器选型是必需做的一项工作。用户应提供下列数据:传动技术要求,负载循环周期和运行条件。

为确保减速器的功能符合技术要求,应根据国茂的说明考虑减速器的选型、贮藏、安装、润滑、运行和维护。

连接转动部件的系统必须是相容的,在规定的速度范围内不受临界速度以及扭转和其它形式振动的影响。

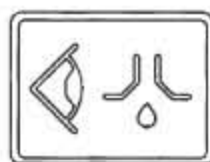
尺寸图中用的插图说明



Oil drainage
放油装置



Oil glass
油观察窗



Oil indication in
case of leakage
泄漏情况油指示

Standards used in dimensional drawings

Keys and keyways: GB/T 1095-2003

Screw strength grade of Foot Mounting Face fixing: 8.8

尺寸图中所用的标准

键和键槽: GB/T 1095-2003

底脚安装面的螺钉强度等级: 8.8

Abbreviations used

LSS = Low Speed Shaft

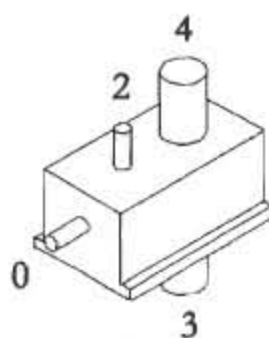
HSS = High Speed Shaft

所用缩写

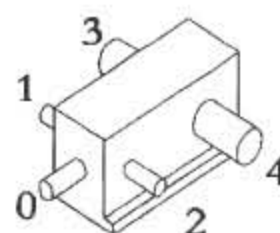
LSS = 低速轴

HSS = 高速轴

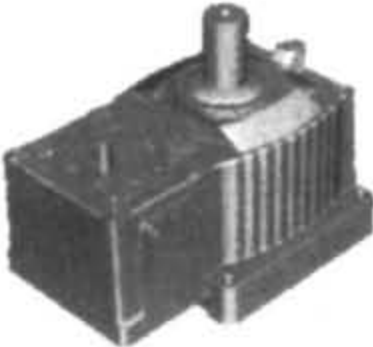
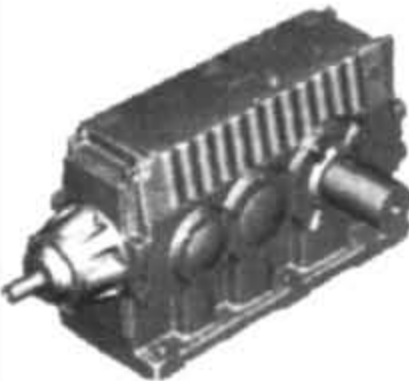
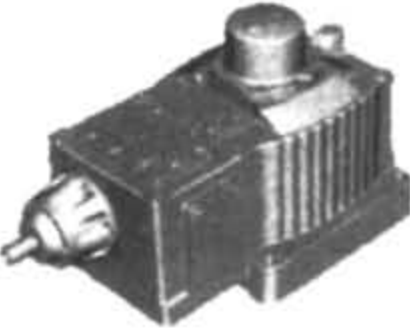
Shaft positions



轴的位置



Type definition
型号标记

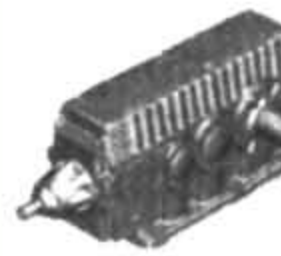
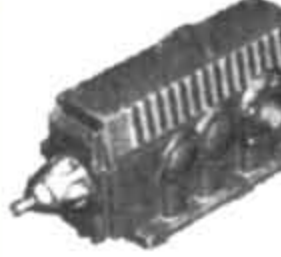
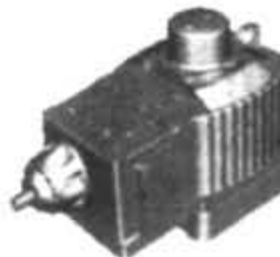
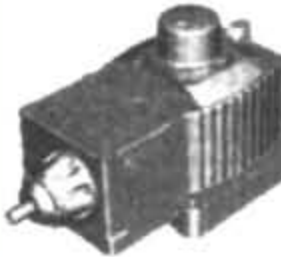
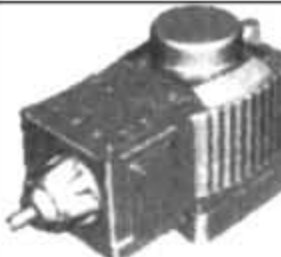
GM 3 P S F 50					
Series 系列	Number of stages 级数	Gear Unit design 减速器结构	LSS type LSS 型式	Attachment 附件	Size 规格
GM series	2 - 3 - 4 - 5	Helical Gear Unit (Parallel Shafts) 斜齿轮减速器(平行轴)	S Solid Shaft 实心轴 	F Foot 底脚	10
		P Horizontal LSS 水平 LSS 			-
		PV Vertical LSS 垂直 LSS 	H Hollow Shaft 空心轴 	T Torque Arm Mounting Bracket 力矩臂 安装座	20
		Bevel Helical Gear Unit (Right - Angle Shafts) 锥齿轮 - 斜齿轮减速器(直角轴)			-
		R Horizontal LSS 水平 LSS 			30
		RV Vertical LSS 垂直 LSS 			-
					40
					-
					50
					-
					60
					-
					70
					-
					80
					-
					90

Product description
产品概览

Number of stages 级数			2	
Helical Gear Units 斜齿轮减速器	Horizontal LSS 水平 LSS	Solid LSS 实心 LSS		GM2PSF Technical Data Page / 页 技术数据 11 Dimensions 尺寸 24
		Hollow LSS 空心 LSS		GM2PHF GM2PHT Technical Data Page / 页 技术数据 11 Dimensions 尺寸 24
	Vertical LSS 垂直 LSS	Solid LSS 实心 LSS		GM2PVSF Technical Data Page / 页 技术数据 17 Dimensions 尺寸 36
		Hollow LSS 空心 LSS		GM2PVHF Technical Data Page / 页 技术数据 17 Dimensions 尺寸 36
Bevel Helical Gear Units 锥齿轮 - 斜齿轮减速器	Horizontal LSS 水平 LSS	Solid LSS 实心 LSS		
		Hollow LSS 空心 LSS		
	Vertical LSS 垂直 LSS	Solid LSS 实心 LSS		
		Hollow LSS 空心 LSS		
Ratio range i_N 传动比范围 i_N			6.3...18	

Product description

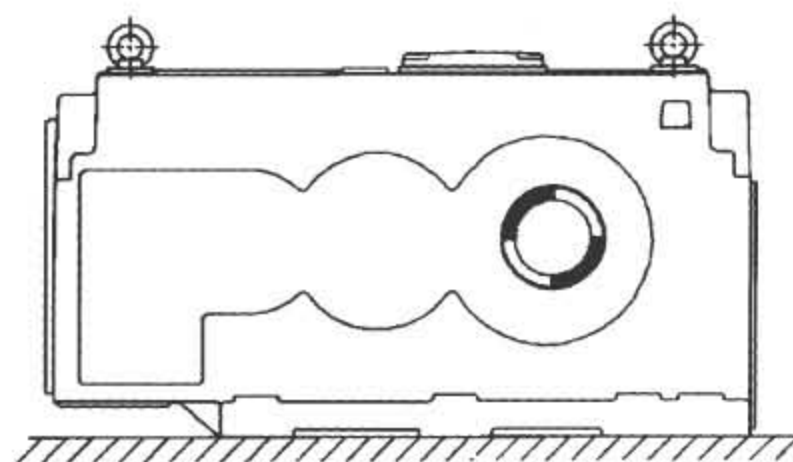
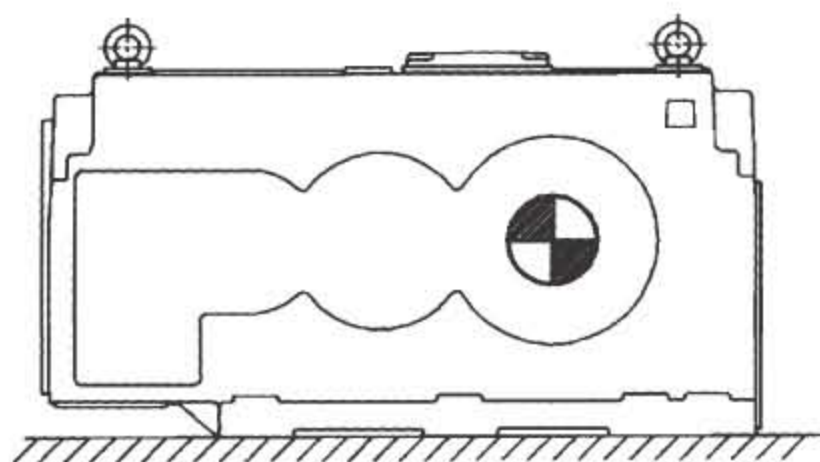
产品概览

3		4		5	
	GM3PSF Technical Data Page/页 技术数据 11 Dimensions 尺寸 26		GM4PSF Technical Data Page/页 技术数据 11 Dimensions 尺寸 28		
	GM3PHF GM3PHT Technical Data Page/页 技术数据 11 Dimensions 尺寸 26		GM4PHF GM4PHT Technical Data Page/页 技术数据 11 Dimensions 尺寸 28		
	GM3PVSF Technical Data Page/页 技术数据 17 Dimensions 尺寸 40		GM4PVSF Technical Data Page/页 技术数据 17 Dimensions 尺寸 44		
	GM3PVHF Technical Data Page/页 技术数据 17 Dimensions 尺寸 40		GM4PVHF Technical Data Page/页 技术数据 17 Dimensions 尺寸 44		
	GM3RSF Technical Data Page/页 技术数据 13 Dimensions 尺寸 30		GM4RSF Technical Data Page/页 技术数据 13 Dimensions 尺寸 32		GM5RSF Technical Data Page/页 技术数据 13 Dimensions 尺寸 34
	GM3RHF GM3RHT Technical Data Page/页 技术数据 13 Dimensions 尺寸 30		GM4RHF GM4RHT Technical Data Page/页 技术数据 13 Dimensions 尺寸 32		GM5RHF GM5RHT Technical Data Page/页 技术数据 13 Dimensions 尺寸 34
	GM3RVSF Technical Data Page/页 技术数据 20 Dimensions 尺寸 48		GM4RVSF Technical Data Page/页 技术数据 20 Dimensions 尺寸 52		
	GM3RVHF Technical Data Page/页 技术数据 20 Dimensions 尺寸 48		GM4RVHF Technical Data Page/页 技术数据 20 Dimensions 尺寸 52		
14... 80 14... 90		90... 315 100... 400		355... 1800	

Typical Drive Arrangement
典型传动装置

Horizontal LSS

水平 LSS



GM. . SF 50-90

Solid LSS/实心 LSS

(S)

Foot Mounting / 底脚安装

(F)

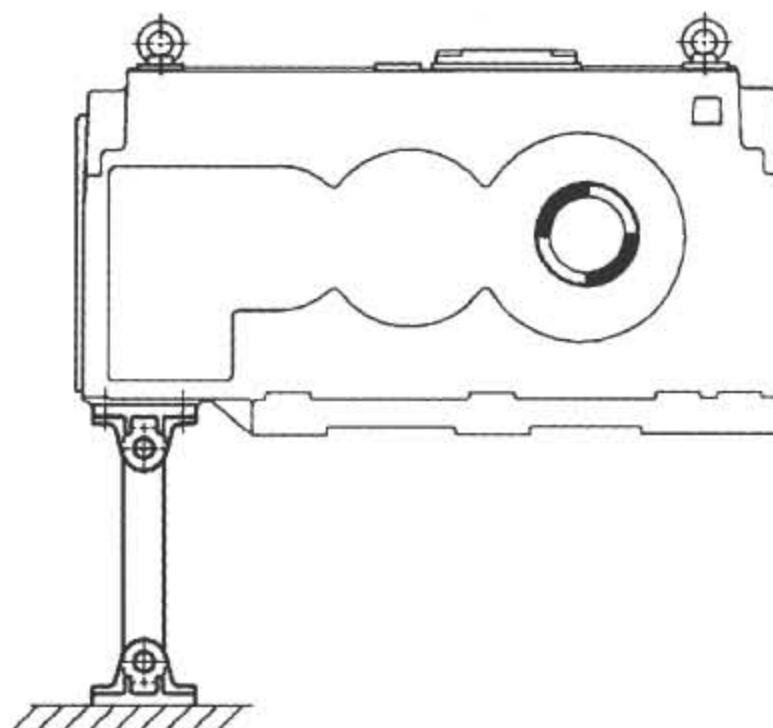
GM. . HF 50-90

Hollow LSS / 空心 LSS

(H)

Foot Mounting / 底脚安装

(F)



GM. . HT50-90

Hollow LSS / 空心 LSS

(H)

Torque Arm Mounting Bracket / 力矩臂安装座

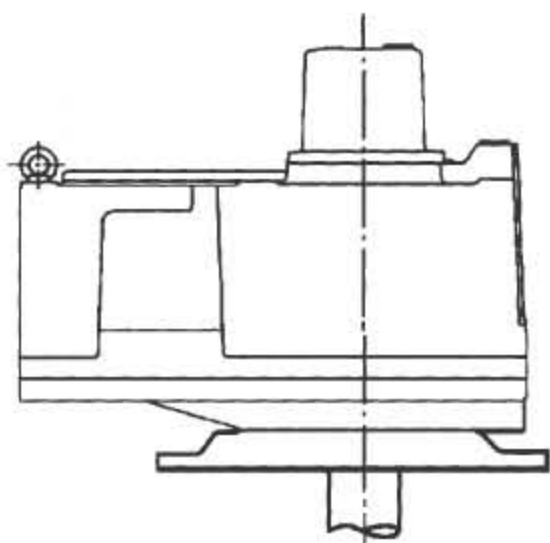
(T)

Torque Arm / 力矩臂

Typical Drive Arrangement
典型传动装置

Vertical LSS

垂直 LSS

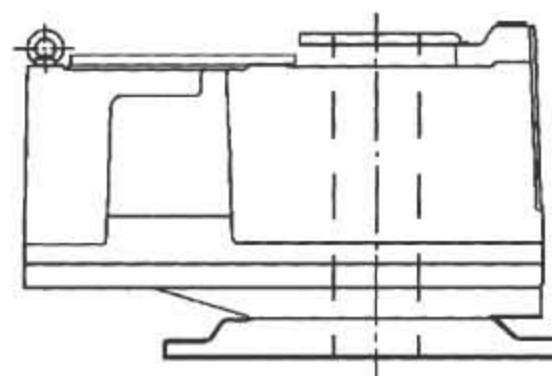


GM. . VSF 10-50

Solid LSS / 实心 LSS

(S)

Mounting F Lange / 安装法兰

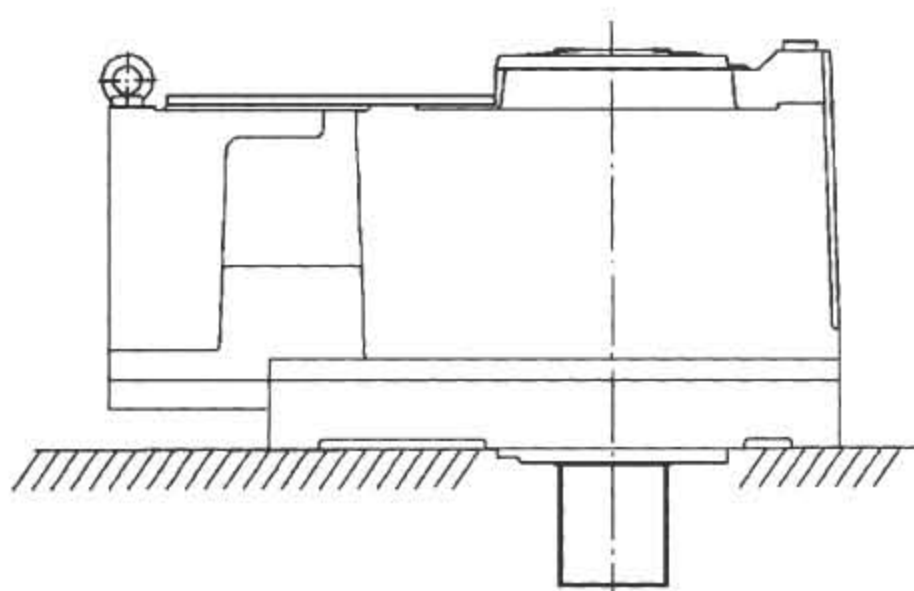


GM. . VHF 10-50

Hollow LSS / 空心 LSS

(H)

Mounting Flange / 安装法兰



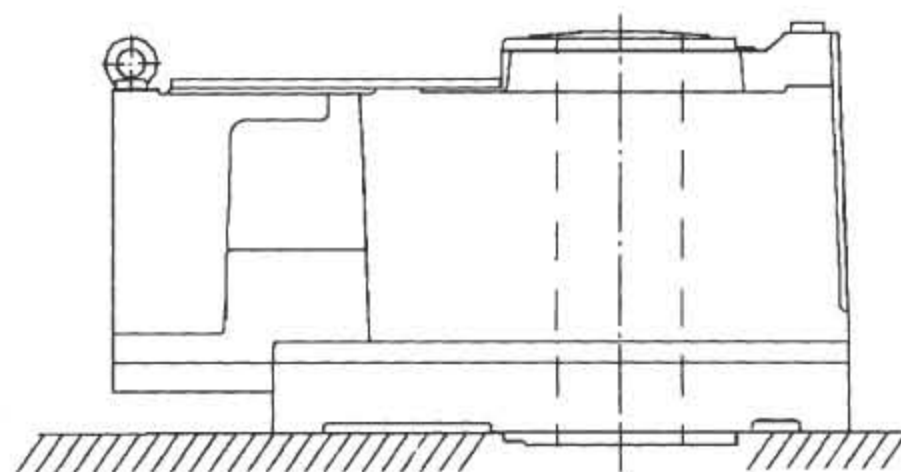
GM. . VSF 60-90

Solid LSS / 实心 LSS

(S)

Foot Mounting / 底脚安装

(F)



GM. . VHF 60-90

Hollow LSS / 空心 LSS

(H)

Foot Mounting / 底脚安装

(F)

Selection Information

选型资料

1. GEAR UNIT SELECTION

1.1 Ratio

Calculate ratio $i = n_1/n_2$ and choose the nearest nominal ratio i_N shown in rating tables. The exact ratios i_{ex} are found in tables (section 2). Choose the gear unit type in conformity with the ratio i_N .

$$(1) \quad i_{ex} = \frac{n_1}{n_2}$$

n_1 = HSS rotation speed 高速轴转速

n_2 = LSS rotation speed 低速轴转速

1.2 Running Power P_{K1} , P_{K2} and Running Torque M_{K2}

$$(2) \quad P_{K1} = \frac{P_{K2}}{\eta}$$

$$(3) \quad P_{K1} = \frac{M_{K2} \times n_2}{9550 \times \eta}$$

P_{K1}, P_{K2} [kW], M_{K2} [Nm]

1.3 Gear Unit selection by means of F_s , S_f

The service factor F_s is determined by the load characteristic of the driving and driven machine. F_s , S_f are given in table 1.2, 1.3.

Select the size of the Gear Unit from the rating table so that the nominal power rating P_{N1} meets the requirements relative to ratio i_N and input speed n_1 (HSS):

$$(4) \quad P_{K1} \times F_s \times S_f \leq P_{N1}$$

1.4 Maximum Power P_{K1max} and maximum Torque M_{K2max}

$$(5) \quad P_{K1max} \leq \frac{2 \times P_{N1}}{F_f}$$

$$(6) \quad M_{K2max} \leq \frac{2 \times M_{N2}}{F_f}$$

P_{N1} [kW]
 M_{N2} [Nm]

Factor F_f is given in table 1.3.

The Gear Unit can be momentarily overloaded. Single load peak should not exceed 10 seconds period.

1.5 External Loads on Shaft Ends

Check the connections of input (HSS) and output (LSS) shafts and the possible radial and axial loads on shaft ends.

1.6 Reversing Drive

Power ratings P_{N1} and torque ratings M_{N2} given in tables are calculated for constant load direction.

When rotation direction changes with full load once per minute, 70% of P_{N1} and M_{N2} can be utilized.

1.7 Thermal Rating

The thermal rating P_T is the actual power rating the gear unit can transmit continuously without exceeding the calculated oil temperature +90°C.

P_{TH} is the nominal thermal rating.

$$(7) \quad P_T = P_{TH} \times f_1 \times f_2 \times f_3$$

f_1 = factor for altitude, see table 1.1.

$f_2 = 1.07$ for torque arm mounted gear units and $f_2 = 1.0$ for foot mounted gear units.

$f_3 = 1.10$ with pressure lubrication and $f_4 = 1.0$ with bath and splash lubrications.

Determine the thermal rating P_T of the gear unit in the actual ambient temperature. If $P_{K1} > P_T$, check if external pressure lubrication and cooling unit can be used.

$$(8) \quad P_{K1} \leq P_T$$

1. 减速器选择

1.1 传动比

计算传动比 $i = n_1/n_2$, 选择功率表中相近的公称传动比 i_N 。
选择与传动比 i_N 一致的减速器型号。

1.2 运行功率 P_{K1} , P_{K2} 和运行转矩 M_{K2}

single stage	$\eta = 0.985$	单级
double stage	$\eta = 0.97$	二级
triple stage	$\eta = 0.955$	三级
quadruple stage	$\eta = 0.94$	四级
quintuple stage	$\eta = 0.93$	五级
η = Efficiency / 效率		

1.3 用 F_s , S_f 选择减速器

使用系数 F_s 由原动机和从动机的载荷特性来确定。 F_s , S_f 列于表 1.2, 1.3 中。

从功率表选择减速器的尺寸, 使额定功率 P_{N1} 满足传动比 i_N 和输入速度 n_1 (HSS) 的要求:

1.4 最大功率 P_{K1max} 和最大转矩 M_{K2max}

系数 F_f 在表 1.4 中给出。

减速器可以瞬时超载, 单项负载峰值不应超过 10 秒。

1.5 轴端外载荷

校核输入 (HSS) 和输出 (LSS) 轴的连接及在轴端的可能的径向和轴向载荷。

1.6 逆向传动

列于表中的额定功率 P_{N1} 和额定转矩 M_{N2} 是恒定负载方向的计算值。

满载时, 转动方向每分钟改变一次能利用 70% 的 P_{N1} 和 M_{N2} 。

1.7 热功率

热功率 P_T 是减速器连续传动时不超过计算油温 +90°C 时的实际功率。 P_{TH} 是减速器的额定热功率。

f_1 = 海拔系数, 见表 1.1.

$f_2 = 1.07$ 一对安装力矩臂的减速器; $f_2 = 1.0$ 一对底脚安装减速器。

$f_3 = 1.10$ 一压力润滑, $f_3 = 1.0$ 一飞溅和浸油润滑。

在实际环境温度下确定减速器的热功率 P_T 。

如果 $P_{K1} > P_T$, 检查是否用外部压力润滑和冷却装置。

Selection Information 选型资料

Table / 表 1.1 Factor for altitude f_1 海拔系数 f_1

	Altitude (meters above sea) / 海拔 (高于海平面, 米)				
	0	1000	2000	3000	4000
f_1	1.0	0.95	0.91	0.87	0.83

f_1 Intermediate values have to be interpolated.
 f_1 中间值内插。

1.8 Lubrication Method

Check from the rating table the lubrication method of the selected gear unit.

1.9 Noise Level

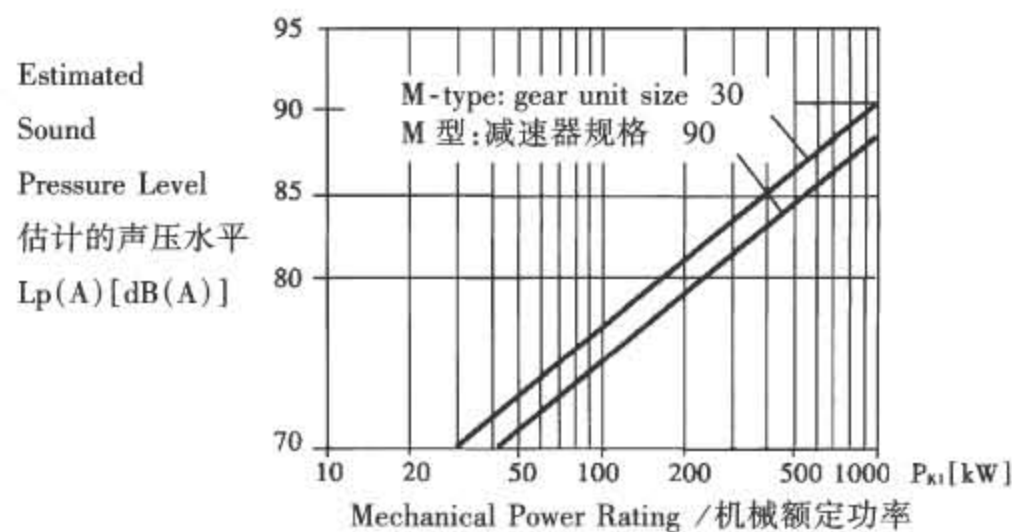
Estimated sound pressure level $L_p(A)$ applies only in free – field conditons at one (1) meter distance from the gear unit surface.

1.8 润滑方法

从功率表来检查所选减速器的润滑方法。

1.9 噪声水平

估计的声压水平 $L_p(A)$ 仅适用于开敞条件, 距离减速器表面 1 米处。



1.10 Final selection

GUOMAO is responsible for selecting the right gear unit. The buyer is responsible for giving the correct load cases and technical requirements.

1.10 最后的选择

国茂对减速器选择的正确性负责, 用户对所给的载荷情况和技术要求负责。

Table / 表 1.2 Service factor F_s / 使用系数 F_s

Driving Machine (Prime Mover) / 驱动机 (原动机)	Load classification of driven machine / 从动机负载等级	Service hours per day / 每天使用小时		
		< 3	3..10	> 10
Electric Motor, Steam or Gas Turbine Water Turbine, Hydraulic Motor / 电动机, 蒸汽机或汽油机, 水轮机, 液压马达	Group / 类别 U	1.00	1.10	1.25
	Group / 类别 M	1.15	1.25	1.50
	Group / 类别 C	1.35	1.50	1.75
	Group / 类别 H	1.55	1.75	2.00
Multicylinder Combustion Engine / 多缸内燃机	Group / 类别 U	1.15	1.25	1.50
	Group / 类别 M	1.35	1.50	1.75
	Group / 类别 C	1.55	1.75	2.00
	Group / 类别 H	1.80	2.00	2.25

These service factors are given as a general guide only. for exceptional working conditions, such as extreme shock loads, frequent starts on full load, reversing drive, rapid acceleration or deceleration, function near to critical speed, braking, high external loads on shaft ends and exceptional ambient conditions, reference to GUOMAO is recommended.

Table / 表 1.3 Safety factor S_r / 可靠性系数 S_r

LOW / 低可靠性要求	1.25
Normal / 一般可靠性要求	1.4
High / 高可靠性要求	1.6

这些使用系数只是根据一般情况给出的。对特殊工作条件, 例如, 激烈的冲击载荷, 满载时频繁启动、逆向传动、快速加速或减速、接近临界速度运行、制动、在轴端有大的外载荷和异常的环境条件等, 请向 国茂 咨询将得到满意的答复。

table / 表 1.4. Maximum load occurrancy factor F_f / 最大载荷出现系数 F_f

maximum load occurrancy / hour 最大载荷出现次数 / h	1..5	6..20	21..40	41..80	81..160	> 160
F_f	1.00	1.20	1.30	1.50	1.75	2.00

Selection Information

选型资料

2.Examples of selection/ 选择实例

Driven Machine / 从动机

Load Class / 载荷等级 (table/表 3)

Rotation Speed / 转速 n_2

P_{K2} or / 或 M_{K2}

Load Peaks / 载荷峰值 (P_{K2max} or M_{K2max})

Duration of Service / 使用持续时间

Starting Frequency / 起动频率

Driving Machine / 驱动机

Nominal Power Rating / rot. speed

额定功率/转速

Gear unit type / 减速器型式

Shaft Position / 轴的位置

Hollow Shaft bore dia / 空心轴内径

Connections / 连接

Motor - Gear Unit / 电动机 - 减速器

Gear unit - driven machine / 减速器 - 从动机

Ambient conditions / 环境条件

Temperature / 温度

Other conditions / 其它条件

Selection of gear unit / 减速器选择

$n_1 / n_2 = i$

Nearest nominal ratio i_N /

最近公称传动比

Gear Unit type (efficiency) / 减速器型号 (效率)

Required / 要求的 F_s , S_t (table / 表 1, 2)

$$P_{K1} = \frac{P_{K2}}{\eta} = \frac{M_{K2} \times n_2}{9550 \times \eta}$$

Selected gear unit / 所选的减速器

$P_{K1} \times F_s \times F_t < P_{N1}$

Example / 例 1

Stone Crusher / 碎石机

Group / 类别 H

130 r/min

350 kW

650 kW

10 h/d, 2400 h/a

1 start per hour / 每小时起动一次

Squirrel Cage Motor / 鼠笼式电动机

355 kW / 1482 r/min

Foot mounted / 底脚安装

Horizontal, parallel / 水平, 平行

-

Flexible Coupling / 弹性联轴器

Gear Coupling / 齿式联轴器

-30... +30°C

Very dusty / 很多灰尘

1482 / 130 = 11.4 : 1

11.2 : 1

GM2PSF ($\eta = 0.97$)

1.75, 1.25

360.8 kW

GM2PSF60

360.8 kW $\times$ 1.75 $\times$ 1.25 < 851 kW

Example / 例 2

Vacuum Filter / 真空过滤器

Group / 类别 M

0.8...4.3 r/min

41000 Nm

48000 Nm

24 h/d, 8000 h/a

seldom / 很少

DC motor / 直流电动机

5-26 kW / 250-1500 mon^{-1}

Hollow Shaft / 空心轴

horizontal, right angle / 水平, 直角

180 mm

V-belt drive / V-带传动 1:1

Hollow Shaft, Shrink Disc /

空心轴, 收缩盘

+35°C

Moist / 潮湿

1500 / 4.3 = 348.8 : 1

355 : 1

GM5RHT ($\eta = 0.93$)

1.5, 1.25

19.9 kW

GM5RHT 70

19.9 kW $\times$ 1.5 $\times$ 1.25 < 46.7 kW

Selection Check and Application Requirements/ 选择检查和应用要求

Checking of P_{K2max} and M_{K2max}

P_{K2max} 和 M_{K2max} 检查

Thermal rating / 热功率 P_T

Cooling devices / 冷却装置

Lubrication method / 润滑方法

Requirements of very dusty or moist conditions

多灰尘或潮湿条件的要求

GM2PSF60 meets the requirements

GM2PSF60 满足要求

202 kW

(by ambient temperature /

用环境温度 +30°C)

Water cooling coil or external cooling system with pressure lubrication is needed /

需要蛇形管水冷却或用压力润滑的外冷却系统

Splash lubrication / 飞溅润滑

Labyrinth seal as standard on LSS and HSS

低速轴和高速轴用迷宫密封

GM5RHT70 meets the requirements

GM5RHT70 满足要求

78 kW

Cooling not required /

不要求冷却

Pressure lubrication without cooler (due to variable speed) /

无冷却器压力润滑 (由于变速)

—

Selection Information

选型资料

Table 3.
load Classification of the Driven Machine

Group U = uniform load
Group C = considerable shocks

Group M = moderate shocks
Group H = heavy shocks

Application	Group	Application	Group	Application	Group
Agitators and Mixers		Machine tools	*	Line Shafts	M
Concrete	M	Metal mills		Presses (Bark, Felt, Size, Suction)	C
Liquids (constant density) and Solids	U	Draw Bench Carriage and main drive	M	Pulpers	C
Liquids (variable density)	M	Flattening Machines	*	Reels	C
Blowers and Fans	M	Slitters	H	Rolls (pick up, wire Drive, wire suction)	C
Compressors		Table Conveyors, non-reversing		Washers	M
Centrifugal	U	-group drives	C	Yankee Cylinders (Dryers)	*
Lobe	M	-individual drives	H	Plastics and Rubber Industry	
Reciprocating, multi - cylinder	M	Table Conveyors, . reversing	*	Calenders and Grinders	H
Reciprocating, single - cylinder, screw	C	Wire Drawing Machines	C	Extruders (Plastics)	M
Conveyors (uniformly loaded or fed)		Winders	C	Extruders (Rubber)	C
Apron, Flight, Screw	U	Mills and Drums (rotary type)		Mixing Mills	*
Belt, Bucket, Chain	U	Ball (mills)	C	Refiners	H
Conveyors (heavy duty not uniformly fed)		Ball (heavy) and Rod (mills)	H	Rubber Mills, 2 on line	H
Apron, Flight, Screw	M	Cement Kilns	C	Rubber Mills, 3 on line	C
Belt, Bucket, Chain	M	Coal Mills	H	Sheeters	H
Live Roll	*	Dryers and Coolers	M	Tubers	*
Shaker, reciprocating	H	Rotary Kilns	C	Warming Mills	C
Cranes and Hoists	*	Mining Industry		Pumps (light)	
Elevators		Cutter head drives	C	Centrifugal	M
Bucket, heavy load	M	Crushers	H	Reciprocating (multi - cylinder)	M
Bucket, uniform load	U	Screens and Shakers	H	Reciprocating (single - cylinder)	C
Escalators	M	Oil Industry	*	Rotary (gear type lobe, vane)	U
Freight	M	Paper and Pulp Industry	*	Screw Pumps	M
Man Lifts	*	Agitators (Chest and Two Shaft)	M	Sewage Disposal Equipment	
Food Industry		Debarking Drums and Barkers	H	Aerators	C
Beet Slicer	M	Beaters and Chippers	H	Collectors	M
Crushers and mills	C	Calenders (antifriction bearings)	C	Mixers	M
Drying Drums	M	Cutter	H	Thickeners	M
Sugar cane Crushers	M	Dryer Cylinders (antifriction bearings)	C	Vacuum filters	M
Generators	U	Filters (pressure and vacuum)	M	Windmills	*
Lumber industry	*	Jordans	C		

Note: * refer to GUOMAO

The values given in Table 3 are based on experience and are valid for applications in general. In the case of a special application or where the loading is not clear, it is recommended that the loads be measured. For applications not included in Table 3, Please refer to GUOMAO

表 3:
从动机载荷分类

U 类: 均匀载荷
C 类: 相当大的冲击载荷

M 类: 中等冲击载荷
H 类: 强冲击载荷

应用	载荷类别	应用	载荷类别	应用	载荷类别
搅拌机和混料机		木材工业	*	低速磨浆机	C
混凝土	M	机床	*	划线轴	M
液体(等浓度)和固体	U	金属加工		压榨机(树皮, 油毡, 胶料, 真空抽吸)	C
液体(变浓度)	M	拉拔机	M	碎浆机	C
鼓风机和风扇	M	平整机	*	卷纸机	C
压缩机		剪切机	H	辊(吸移, 送丝传动, 丝网真空抽吸)	C
离心式	U	辊道 单向		洗浆机	M
罗茨式	M	集中驱动	C	杨克式园网(缸)	*
往复式, 多汽缸	M	单独驱动	H	塑料和橡胶工业	
往复式, 单汽缸, 螺杆式	C	辊道 双向	*	压延和破碎机	H
输送机, 均匀负载或进料		拉拔机	C	挤出机(塑料)	M
平板式, 链板式, 螺旋式	U	绕线机	C	挤出机(橡胶)	C
皮带式, 料斗式, 链条式	U	碾磨机和滚筒(旋转式)		混炼机	*
输送机重负载, 进料不均匀		球磨机(碾磨机)	C	精炼机	H
平板式 链板式, 螺旋式	M	球磨机(重型)和棒磨机(碾磨机)	H	橡胶磨 2 联	H
皮带式, 料斗式, 链条式	M	水泥窑	C	橡胶磨 3 联	C
传动辊式	*	煤碾机	H	压片机	H
摆动式往复	H	干燥机和冷却机	M	制管机	*
起重机和升降机	*	旋转窑	C	热炼机	C
起升机		采矿工业		泵(轻型)	
斗式重负载	M	铰头驱动	C	离心泵	M
斗式均匀负载	U	破碎机	H	往复泵(多缸)	M
升降机		筛和振动筛	H	往复泵(单缸)	C
自动扶梯	M	石油工业	*	旋转泵(凸轮, 齿轮叶片)	U
货梯	M	造纸和纸浆工业	*	螺旋泵	M
客梯	*	搅拌机(贮浆池和两轴)	M	污水处理设备	
食品工业		剥皮鼓和剥皮机	H	通风机	C
甜菜切片机	M	打浆机和削片机	H	除尘器	M
轧碎机和碾磨机	C	压光机(滚动轴承)	C	混合器	M
烘干滚筒	M	切纸机	H	沉降器	M
甘蔗粉碎机	M	烘缸(滚动轴承)	C	真空吸泵过滤器	M
发电机	U	过滤机(压力和真空)	M	风力发电机	*

注: * 向国茂查询

列于表 3 中的值为经验值, 一般应用情况是正确的。对特殊应用或负载不清楚的情况建议实测。

表 3 中不包括的应用情况请向国茂咨询。

2,3,4 - stage Helical Gear Units
Horizontal LSS
2,3,4 级斜齿轮减速器水平 LSS

GM.P. . 50-60
Solid & Hollow LSS
实心 and 空心 LSS

Size 规格	n ₁ r/min	Nominal Mechanical Power Ratings P _{N1} in kW					额定机械功率 P _{N1} (kW)				
		Nominal Ratio i _N					公称传动比 i _N				
		6.3	7.1	8	9	10	11.2	12.5	14	16	18
50	1500	789	729	664	617	571	519	481	444 +	357 +	318 +
	1200	675	623	568	527	488	444 +	402 +	362 +	288 +	257 +
	1000	594	549	500	464 +	423 +	374 +	338 +	304 +	242 +	216 +
60	1500	1307*	1183*	1104*	1017*	918	851	779	700	575	516
	1200	1118*	1012*	945	870	768	695	629 +	565 +	464 +	417 +
	1000	984	891	823	739	645 +	584 +	528 +	475 +	390 +	351 +
70	1500	1619*	1460*	1330*	1221*	1131*	1037*	960	869	802	751
	1200	1385*	1249*	1138*	1044*	967	887	821	743	673	617 +
	1000	1219*	1099*	1002*	919	852	781	717	629 +	566 +	519 +
80	1500	2032*	1825*	1657*	1516*	1396*	1293*	1183*	1093*	1001*	932
	1200	1738*	1561*	1417*	1297*	1194*	1106*	1012*	935	845	767 +
	1000	1530*	1374*	1247*	1141*	1051*	973	885	797 +	710 +	645 +
90	1500	2975*	2726*	2514*	2280*	2040*	1889*	1799*	1599*	1427*	1201*
	1200	2545*	2331*	2150*	1950*	1745*	1595*	1539*	1291*	1152*	961
	1000	2240*	2052*	1893*	1717*	1482*	1339*	1355*	1084*	968 +	801 +

GM2P: When bath lubrication (+) is used, lip seal is required / 用浸油润滑时 (+) 要求唇型密封

		20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
50	1500	314	277 +	251 +	227 +	201 +	181 +	160 +	145 +	130 +	117 +	106 +	95.7 +	75.8 +	67.7 +
	1200	254 +	224 +	203 +	184 +	162 +	147 +	129 +	117 +	105 +	95.1 +	85.6 +	77.5 +	61.4 +	54.8 +
	1000	213 +	188 +	171 +	155 +	137 +	124 +	109 +	98.8 +	88.4 +	80.1 +	72.1 +	65.2 +	51.7 +	46.4 +
60	1500	453	421 +	386 +	343 +	315 +	278 +	252 +	227 +	202 +	183 +	165 +	149 +	122 +	110 +
	1200	387 +	360 +	322 +	281 +	255 +	225 +	204 +	183 +	164 +	148 +	133 +	121 +	98.7 +	88.9 +
	1000	334 +	303 +	271 +	237 +	214 +	189 +	171 +	154 +	138 +	125 +	112 +	102 +	83.1 +	75.1 +
70	1500	687	615	547	500	454	413 +	369 +	337 +	306 +	270 +	241 +	217 +	175 +	161 +
	1200	562 +	504 +	449 +	411 +	373 +	340 +	304 +	277 +	249 +	219 +	195 +	175 +	142 +	130 +
	1000	479 +	429 +	383 +	351 +	319 +	291 +	258 +	233 +	210 +	184 +	163 +	146 +	119 +	110 +
80	1500	857	764	697	634 +	575 +	513 +	468 +	425 +	381 +	346 +	308 +	246 +	219 +	188 +
	1200	701	626 +	572 +	521 +	473 +	423 +	386 +	348 +	310 +	280 +	249 +	199 +	178 +	152 +
	1000	597 +	533 +	488 +	444 +	404 +	360 +	326 +	293 +	261 +	235 +	210 +	168 +	150 +	128 +
90	1500	1121*	1031*	950	874	798	722	653 +	588 +	530 +	416 +	374 +	336 +	301 +	239 +
	1200	959	882	813 +	739 +	665 +	584 +	528 +	475 +	429 +	337 +	303 +	272 +	243 +	194 +
	1000	844	765 +	688 +	622 +	559 +	491 +	444 +	400 +	361 +	283 +	255 +	229 +	205 +	163 +

		100	112	125	140	160	180	200	225	250	280	315	355	400
50	1500	73.9 +	68.1 +	61.0 +	55.2 +	50.0 +	42.4 +	39.2 +	35.0 +	30.7 +	27.6 +	23.3 +	21.4 +	16.7 +
	1200	61.7 +	55.9 +	48.9 +	44.2 +	40.1 +	34.8 +	31.5 +	28.0 +	24.6 +	22.1 +	19.1 +	17.2 +	13.9 +
	1000	51.5 +	46.6 +	40.8 +	36.9 +	33.4 +	29.0 +	26.3 +	23.4 +	20.5 +	18.5 +	16.0 +	14.4 +	12.0 +
60	1500	92.1 +	92.1 +	86.8 +	79.7 +	71.9 +	66.2 +	61.1 +	55.5 +	49.9 +	43.8 +	37.2 +	33.5 +	26.4 +
	1200	78.8 +	78.8 +	72.6 +	66.6 +	60.1 +	55.2 +	50.0 +	44.4 +	40.0 +	35.1 +	29.8 +	26.8 +	22.0 +
	1000	69.4 +	68.1 +	62.7 +	57.5 +	51.1 +	46.1 +	41.7 +	37.0 +	33.4 +	29.2 +	24.9 +	22.4 +	18.9 +
70	1500	167 +	154 +	140 +	114 +	102 +	91.3 +	80.7 +	72.5 +	65.3 +	57.9 +	54.5 +	48.3 +	37.1 +
	1200	138 +	125 +	114 +	91.7 +	81.4 +	73.1 +	64.7 +	58.1 +	52.3 +	46.4 +	43.7 +	38.7 +	29.7 +
	1000	115 +	104 +	95.0 +	76.5 +	67.9 +	61.0 +	53.9 +	48.5 +	43.6 +	38.7 +	36.4 +	32.3 +	24.8 +
80	1500	189 +	183 +	164 +	148 +	118 +	126 +	115 +	99.5 +	89.5 +	79.9 +	69.5 +	61.6 +	54.1 +
	1200	162 +	152 +	137 +	118 +	116 +	103 +	92.3 +	79.6 +	71.6 +	63.9 +	55.6 +	49.3 +	44.0 +
	1000	142 +	132 +	118 +	98.6 +	96.9 +	96.1 +	77.0 +	66.3 +	59.7 +	53.3 +	46.4 +	41.1 +	36.7 +
90	1500	255 +	234 +	229 +	205 +	186 +	171 +	154 +	136 +	122 +	103 +	94.2 +	85.5 +	65.6 +
	1200	218 +	200 +	191 +	171 +	153 +	137 +	123 +	109 +	98.0 +	84.5 +	76.5 +	68.5 +	52.5 +
	1000	192 +	176 +	165 +	144 +	128 +	114 +	103 +	90.8 +	81.8 +	70.4 +	63.8 +	57.1 +	43.8 +

*) Pressure lubrication is required / 要求压力润滑 +) Bath lubrication is possible / 可用浸油润滑

Power ratings: The ratings are nominal, service factor F_s = 1.0.
 Selection of gear unit: see page 7

Lubrication: Splash lubrication is used, unless otherwise indicated.
 Pressure lubrication is highly recommended when the mechanical power rating P_{K1} is higher than 500kW.

Cooling: Additional cooling is required, when the mechanical Power rating P_{K1} is higher than the thermal rating P_T.

功率: 功率为额定值, 使用系数 F_s = 1.0。减速器选择见 7 页

润滑: 除非另有说明, 应当用飞溅润滑。当使用功率 P_{K1} 大于 500kW 时, 建议减速器用压力润滑。

冷却: 如果使用功率 P_{K1} 大于热功率 P_T, 要用人工冷却。

2,3,4 - stage Helical Gear Units
Horizontal LSS
2,3,4 级斜齿轮减速器水平 LSS
GM.P. . 50-60
Solid & Hollow LSS
实心和空心 LSS

Size 规格	Nominal Output Torque M_{N2} in kNm *)										额定输出转矩 M_{N2} (kNm) *)									
	Nominal Ratio i_N										公称传动比 i_N									
	6.3	7.1	8	9	10	11.2	12.5	14	16	18	6.3	7.1	8	9	10	11.2	12.5	14	16	18
50	34,6	35,5	36,9	37,9	38,5	38,7	38,9	39,2	35,6	35,8										
60	56,5	58,6	59,5	59,8	60,2	60,5	60,9	61,2	56,4	56,8										
70	69,5	70,7	73,3	75,6	77,9	80,6	82,5	83,1	83,6	83,9										
80	89,2	90,4	93,9	96,9	100	103	106	107	107	108										
90	129	133	137	143	141	142	156	143	144	134										

	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
50	38,2	38,4	38,6	38,9	39,2	39,4	39,7	39,9	40,2	40,4	40,7	41	37	37,5
60	59,6	59,9	60,2	60,8	61,1	61,6	61,9	62,3	62,7	63,1	63,6	63,9	58,6	59,3
70	85	86,1	87,5	88,7	89,9	91,3	92,1	92,6	93,2	93,8	93,9	94	86,7	87,6
80	110	112	114	115	117	119	119	120	121	122	122	110	111	104
90	151	155	156	157	158	159	160	161	162	146	147	148	149	133

	100	112	125	140	160	180	200	225	250	280	315	355	400
50	45,5	45,5	45,5	45,6	45,6	46,1	46,2	46,2	46,2	46,2	45,5	45,5	43,1
60	63,9	69,6	71,0	72,5	73,1	73,2	73,2	73,3	73,3	73,4	70,0	70,0	68,1
70	102,0	103,0	106,0	94,1	94,2	94,3	94,3	94,4	94,4	94,5	102	102	90,3
80	129	133	136	124	138	138	138	135	135	136	132	132	128
90	170	174	181	181	181	179	182	180	180	177	180	180	155

Maximum torque M_{K2max} is $2 \times M_{N2}$ / 最大转矩 M_{K2max} 为 $2 \times M_{N2}$

*) Calculated with $n_1 = 1000$ r/min / $n_1 = 1000$ r/min 的计算值

Size 规格	Fan pcs 风扇数	Thermal Ratings P_{TH} in kW *)																热功率 P_{TH} (kW) *)							
		Nominal Ratio i_N / Ambient Air Temperature																公称传动比 i_N / 环境空气温度							
		$i_N = 6.3 \dots 12.5$				$i_N = 14 \dots 18$				$i_N = 20 \dots 56$				$i_N = 63 \dots 90$											
		20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C
50	-	206	163	119	76	218	174	131	87	131	105	79	53	139	113	87	61	92	73	54	34				
	1	347	282	217	152	359	294	229	163	215	177	138	99	223	184	145	106	-	-	-	-				
	2	460	378	295	213	472	389	307	224	283	234	184	135	291	241	192	143	-	-	-	-				
60	-	256	202	148	94	270	216	162	108	166	133	101	68	176	143	110	77	117	93	68	43				
	1	431	350	269	188	445	365	284	203	274	224	175	125	283	234	184	135	-	-	-	-				
	2	571	469	366	264	586	483	381	278	359	297	234	171	369	306	244	181	-	-	-	-				
70	-	305	241	177	112	323	258	194	130	217	174	131	88	230	187	144	101	153	121	89	56				
	1	515	418	322	225	532	435	339	242	356	292	228	163	369	305	240	176	-	-	-	-				
	2	682	560	438	315	700	577	455	332	468	386	305	223	481	399	318	236	-	-	-	-				
80	-	362	286	210	133	383	306	230	154	252	202	152	102	267	217	167	117	178	140	103	66				
	1	611	496	381	267	631	517	402	287	414	340	265	190	429	354	279	205	-	-	-	-				
	2	809	664	519	374	830	685	539	394	544	449	354	260	559	464	369	274	-	-	-	-				
90	-	426	336	247	157	450	361	271	181	303	243	183	123	320	260	200	141	213	169	124	79				
	1	718	584	449	314	742	608	473	338	497	407	318	228	515	425	335	245	-	-	-	-				
	2	952	781	610	440	976	805	635	464	653	539	425	312	671	557	443	329	-	-	-	-				

*) Calculated with $n_1 = 1500$ r/min / $n_1 = 1500$ r/min 的计算值

Dimensions / 尺寸

GM2P. . . 24 -

GM3P. . . 26 -

GM4P. . . 28 -

Continuous allowed External Loads F_R, F_A
许用的连续外载荷 F_R, F_A

Helical and Bevel Helical Gear Units,
see pages 15, 16

斜齿轮和锥齿轮 - 斜齿轮减速器
见 15、16 页

3,4,5 - stage Bevel Helical Gear Units Horizontal LSS

3,4,5 级锥齿轮－斜齿轮减速器水平 LSS

GM.R. . 50-90 Solid & Hollow LSS

实心 and 空心 LSS

Size 规格	n ₁ r/min	Nominell Mechanical Power Ratings P _{Nl} in kW								额定机械功率 P _{Nl} (kW)							
		Nominal Ratio i _N								公称传动比 i _N							
		14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
50	1500	331	331	331	272	254+	242+	218+	201+	168+	148+	132+	115+	103+	92.1+	71.7+	64.0+
	1200	283+	283+	279+	220+	204+	196+	176+	162+	135+	119+	106+	93.0+	83.0+	74.6	58.1+	51.8+
	1000	249+	249+	234+	185+	171+	165+	148+	137+	113+	99.5+	89.3+	78.3+	69.9+	62.8+	48.9+	43.7+
60	1500	467	467	453	437	395	352	309+	278+	254+	229+	209+	188+	167+	134+	115+	100+
	1200	376	376	376	353+	320+	284+	250+	225+	206+	185+	169+	152+	135+	115+	92.4+	81.1+
	1000	315	315	315	297+	269+	239+	211+	189+	173+	156+	142+	128+	114+	101+	77.5+	68.3+
70	1500	718	718	711	661	599	511	466	424+	404+	360+	316+	269+	247+	221+	197+	147+
	1200	583	583	583	564	509	414+	377+	343+	326+	294+	254+	218+	200+	179+	159+	119+
	1000	485	485	485	478+	433+	348+	317+	289+	273+	246+	212+	183+	168+	151+	134+	100+
80	1500	824	824	823	803	723	650	546	519	468+	421+	380+	346+	308+	258+	231+	195+
	1200	705	705	704	687	585	526	440+	420+	377+	341+	308+	280+	249+	209+	187+	158+
	1000	600+	600+	600+	600+	492+	442+	368+	353+	315+	287+	259+	236+	210+	176+	157+	133+
90	1500	1099*	1099*	1086*	1015*	953*	866*	759*	678*	626*	562*	499*	434+	386+	332+	281+	265+
	1200	887	887	887	868	770	700	613+	548+	506+	454+	404+	350+	310+	268+	228+	214+
	1000	744	744	744	744	647	588+	516+	461+	426+	382+	339+	294+	259+	226+	192+	180+

		90	100	112	125	140	160	180	200	225	250	280	315
50	1500	82.1+	70.7+	63.3+	56.8+	52.3+	48.1+	43.3+	39.8+	33.6+	29.0+	26.1+	23.9+
	1200	66.0+	57.9+	52.7+	47.5+	43.7+	38.9+	35.6+	32.0+	27.2+	24.2+	21.8+	19.6+
	1000	55.1+	50.0+	45.5+	41.0+	37.5+	32.6+	29.7+	26.7+	22.8+	20.7+	18.3+	16.3+
60	1500	115+	104+	97.7+	88.1+	69.8+	69.8+	67.7+	58.4+	50.7+	46.5+	35.1+	31.6+
	1200	93.2+	84.3+	78.9+	73.7+	56.1+	56.1+	56.1+	47.1+	42.3+	38.7+	29.3+	26.3+
	1000	79.8+	70.7+	66.2+	63.6+	46.8+	46.8+	46.8+	39.6+	35.8+	32.3+	25.3+	22.7+
70	1500	180+	159+	143+	125+	114+	100+	89.6+	79.4+	71.0+	66.8+	61.0+	54.1+
	1200	144+	128+	115+	100+	91.6+	80.3+	71.7+	63.6+	56.9+	54.7+	48.9+	43.3+
	1000	120+	106+	95.8+	83.6+	76.4+	66.9+	59.8+	53.0+	47.5+	45.6+	40.8+	36.1+
80	1500	208+	203+	183+	166+	152+	132+	124+	102+	92.3+	77.8+	70.9+	64.2+
	1200	167+	167+	152+	135+	124+	106+	100+	85.0+	77.1+	62.3+	59.1+	53.6+
	1000	140+	140+	131+	113+	104+	89.2+	84.0+	73.4+	65.1+	51.9+	51.0+	45.3+
90	1500	304+	238+	214+	214+	211+	185+	164+	136+	124+	102+	102+	92.8+
	1200	248+	191+	172+	172+	170+	150+	133+	113+	103+	84.5+	83.9+	74.3+
	1000	208+	160+	143+	143+	142+	126+	111+	97.7+	88.7+	70.5+	70.0+	62.0+

		355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800
50	1500	22.9+	20.0+	18.1+	15.9+	14.5+	12.5+	11.3+	9.90+	8.92+	8.03+	7.04+	6.34+	5.67+	4.90+	4.13+
	1200	18.4+	16.0+	14.5+	12.8+	11.6+	9.98+	9.04+	7.93+	7.14+	6.43+	5.64+	5.07+	4.54+	3.96+	3.34+
	1000	15.3+	13.4+	12.1+	10.7+	9.65+	8.32+	7.54+	6.61+	5.96+	5.36+	4.70+	4.25+	3.85+	3.31+	2.78+
60	1500	33.5+	30.2+	27.1+	24.4+	21.1+	19.0+	17.0+	15.4+	13.7+	12.0+	10.8+	9.68+	8.48+	7.64+	6.33+
	1200	26.8+	24.2+	21.7+	19.5+	16.9+	15.2+	13.7+	12.4+	11.0+	9.62+	8.66+	7.75+	6.80+	6.18+	5.19+
	1000	22.4+	20.2+	18.1+	16.3+	14.1+	12.7+	11.4+	10.3+	9.16+	8.02+	7.23+	6.48+	5.77+	5.26+	4.33+
70	1500	45.9+	40.3+	36.3+	32.8+	29.2+	26.3+	23.4+	22.5+	19.6+	17.8+	15.5+	13.9+	12.5+	11.0+	8.46+
	1200	36.7+	32.3+	29.0+	26.3+	23.4+	21.1+	18.7+	18.0+	15.7+	14.2+	12.4+	11.1+	9.97+	8.93+	6.77+
	1000	30.6+	26.9+	24.2+	21.9+	19.5+	17.6+	15.6+	15.0+	13.1+	11.9+	10.3+	9.34+	8.47+	7.61+	5.64+
80	1500	55.9+	55.9+	51.8+	46.9+	41.7+	36.1+	32.0+	27.8+	25.0+	22.7+	20.8+	17.7+	15.7+	12.9+	12.4+
	1200	44.8+	44.8+	41.5+	37.5+	33.4+	28.8+	25.6+	22.3+	20.0+	18.2+	16.7+	14.2+	12.6+	10.3+	9.94+
	1000	37.5+	37.5+	34.6+	31.3+	27.8+	24.0+	21.4+	18.6+	16.7+	15.2+	13.9+	11.9+	10.7+	8.59+	8.28+
90	1500	82.1+	79.1+	55.9+	55.9+	55.7+	49.8+	43.5+	38.5+	34.6+	30.9+	27.3+	23.8+	21.2+	16.8+	15.0+
	1200	66.0+	63.3+	44.8+	44.8+	44.6+	39.9+	34.8+	30.8+	27.7+	24.7+	21.9+	19.1+	17.0+	13.6+	12.3+
	1000	55.1+	52.8+	37.5+	37.5+	37.2+	33.2+	29.0+	25.7+	23.1+	20.6+	18.3+	16.0+	14.4+	11.6+	10.5+

*) Pressure lubrication is required /要求压力润滑

+) Bath lubrication is possible /可用浸油润滑

Power ratings: The ratings are nominal, service factor Fs=1.0.
Selection of gear unit: see page 7

Lubrication: Splash lubrication is used, unless otherwise indicated. Pressure lubrication is highly recommended when the mechanical power rating P_{Kl} is higher than 500kW.

Cooling: Additional cooling is required, when the mechanical power rating P_{Kl} is higher than the thermal rating P_T.

功率: 功率为额定值, 使用系数 Fs=1.0。减速器选择见 7 页

润滑: 除非另有说明, 应当用飞溅润滑。当使用功率 P_{Kl} 大于 500kW 时, 建议减速器用压力润滑。

冷却: 如果使用功率 P_{Kl} 大于热功率 P_T, 要人工冷却。

3,4,5 - stage Bevel Helical Gear Units
Horizontal LSS
3,4,5 级锥齿轮－斜齿轮减速器水平 LSS
GM.R. . 50-90
Solid & Hollow LSS
实心和空心 LSS

Size 规格	Nominal Output Torque M_{N2} in kNm *								额定输出转矩 M_{N2} (kNm *)							
	Nominal Ratio i_N								公称传动比 i_N							
	14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
50	31,2	35,3	37,8	34	35,9	38,6	38,8	39	36,4	35,2	35,7	35,8	36,1	36,4	32,1	32,3
60	40,9	46,2	51,2	54,1	54,4	54,8	55,2	55,6	55,9	56,2	56,5	56,9	57,3	57	49,4	50,1
70	62,3	70	78	88,1	89,2	81	81,4	81,8	88	88,5	86,4	84,1	84,6	85,1	85,4	73,5
80	78,1	88,7	100	112	104	104	99,7	105	104	107	107	108	109	99,5	100	95,7
90	96,5	110	123	137	136	137	138	139	140	141	142	133	135	132	126	133

	90	100	112	125	140	160	180	200	225	250	280	315
50	43,8	43,7	44,7	45,9	46,4	44,9	46,5	46,5	44,5	46	46	46
60	65,5	64,4	64,6	70,1	57,2	64,6	71,7	67,8	70,6	70,7	63,8	65,4
70	94,7	94,9	94,9	95	95	95,1	95,2	95,2	95,3	103	103	104
80	113	128	135	130	134	128	135	133	134	120	128	128
90	167	143	142	158	175	173	173	175	178	159	178	177

	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800
50	46,3	46,4	46,4	46,4	46,4	46,5	46,5	46,5	46,6	46,6	46,6	46,8	47,5	46,5	44,3
60	70,1	70,2	70,2	70,3	70,3	70,4	70,4	70,4	70,5	70,5	70,5	70,8	72	72,9	69
70	94,7	94,8	94,8	94,9	94,9	95	95,1	103	103	103	103	104	105	107	91,1
80	119	135	139	139	139	135	135	133	133	135	139	134	136	123	130
90	172	183	147	164	183	183	179	177	177	179	177	178	181	164	165

Maximum torque M_{K2max} is $2 \times M_{N2}$ / 最大转矩 M_{K2max} 为 $2 \times M_{N2}$

*) Calculated with $n_1 = 1000$ r/min / 最大转矩 $n_1 = 1000$ r/min 的计算值

Size 规格	Fan pcs 风扇数	Thermal Ratings P_{TH} in kW *								热功率 P_{TH} (kW) *							
		Nominal Ratio i_N / Ambient Air Temperature								公称传动比 i_N / 环境空气温度							
		$i_N = 14 \dots 45$				$i_N = 50 \dots 80$				$i_N = 90 \dots 315$				$i_N = 355 \dots 1800$			
		20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C
50	—	131	100	69	38	147	116	85	54	91	70	49	28	65	48	31	14
	1	242	194	146	98	257	210	162	114	—	—	—	—	—	—	—	—
60	—	160	123	85	47	180	142	104	66	113	87	61	35	81	60	39	18
	1	296	237	179	120	316	257	198	139	—	—	—	—	—	—	—	—
70	—	194	148	102	56	218	172	126	80	149	115	80	46	106	78	51	23
	1	358	287	216	145	382	311	240	168	—	—	—	—	—	—	—	—
80	—	228	174	120	66	256	202	148	94	172	132	92	53	122	90	59	27
	1	421	337	254	170	449	365	281	198	—	—	—	—	—	—	—	—
90	—	270	206	142	79	303	239	175	111	208	160	112	64	148	109	71	33
	1	499	400	301	202	532	433	333	234	—	—	—	—	—	—	—	—

*) Calculated with $n_1 = 1500$ r/min / $n_1 = 1500$ r/min 的计算值

Dimensions / 尺寸

GM3R. . 30 -

GM4R. . 32 -

GM5R. . 34 -

**3,4,5 - stage Bevel Helical Gear Units
Horizontal LSS**
3,4,5 级锥齿轮－斜齿轮减速器水平 LSS

**GM.R. . 50-90
Solid & Hollow LSS**
实心 and 空心 LSS

Continuous allowed External Loads F_R, F_A

许用的连续外载荷 F_R, F_A

Helical and Bevel Helical Gear Units,
GM. P. . 50 – 90 and GM. R. . 50 – 90
Low speed shaft (LSS)end

斜齿轮和锥齿轮－斜齿轮减速器
GM. P. . 50 – 90 和 GM. R. . 50 – 90
低速轴(LSS)端

1. Determining the allowed radial force F_R

1. 许用径向力 F_R 的确定

$$F_R = \frac{F_{RN}}{F_S} K_Y$$

F_R = the allowed actual radial force,
 F_{RN} = the allowed nominal radial force in the middle of the shaft end.
 F_S = service factor (see Gear Unit selection , page 7)
 K_Y = the effect of the radial force location.

F_R = 实际许用径向力
 F_{RN} = 轴端中点许用额定径向力
 F_S = 使用系数(见减速器选择, 7 页)
 K_Y = 径向力位置的影响系数

2. Gear Units with Horizontal Solid LSS (Types:GM. PS, GM. RS)
2.1 Radial external forces

2. 带水平实心输出轴的减速器(型号:GM. PS,GM. RS)
2.1 径向外力

picture 1: The effect of the radial force location.

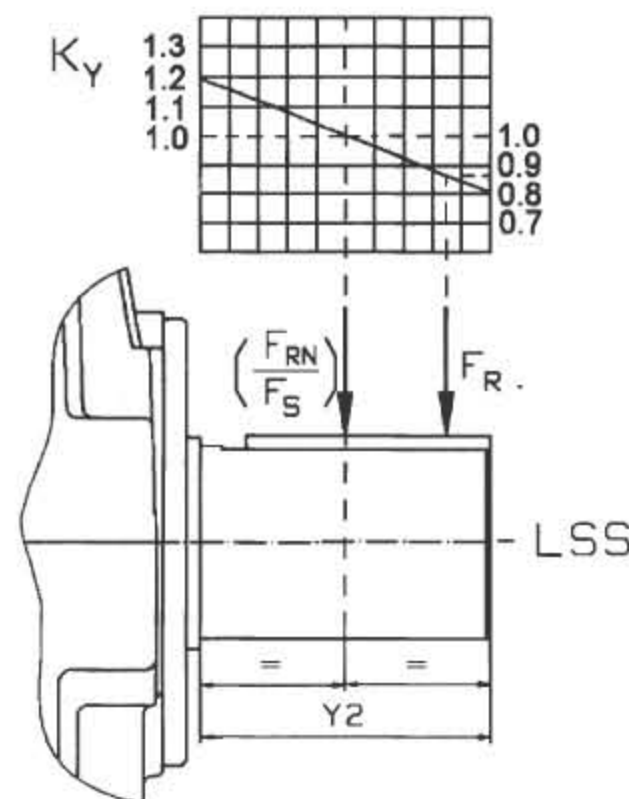


图 1: 径向力位置的影响

**2,3,4,5 - stage Gear Units
Horizontal LSS
2,3,4,5 级减速器水平 LSS**

**Continuous allowed
External Loads F_R, F_A
许用的连续外载荷 F_R, F_A**

Continuous allowed External Loads F_R, F_A

许用的连续外载荷 F_R, F_A

Table 1 and 2: Allowed nominal radial forces F_{RN} when axial force $F_A = 0$ kN

表 1 和表 2: 轴向力 $F_A = 0$ kN 时, 许用额定径向力 F_{RN}

$$F_R = \frac{F_{RN}}{F_S} K_Y$$

Table 1/表 1

Gear unit type/减速器型号	GM2P	GM4P	GM3P	GM3R	GM5R	
Shaft positions/轴的位置	13, 24		14, 23	03, 04		
Gear unit size 减速器 规格	F_{RN} in the middle of the LSS end [kN] 输出轴端中点的 F_{RN} [kN]					
	LSS speed / 输出轴速度 n_2 [r/min]					
	≤ 10	≤ 17	≤ 30	≤ 60	≤ 90	
	50	55	45	33	20	12
	60	85	70	38	22	13
	70	90	75	50	35	28
80	108	95	61	45	30	
90	133	120	72	53	50	

F_{RN} is the allowed radial force to the most unfavorable direction on the LSS End.

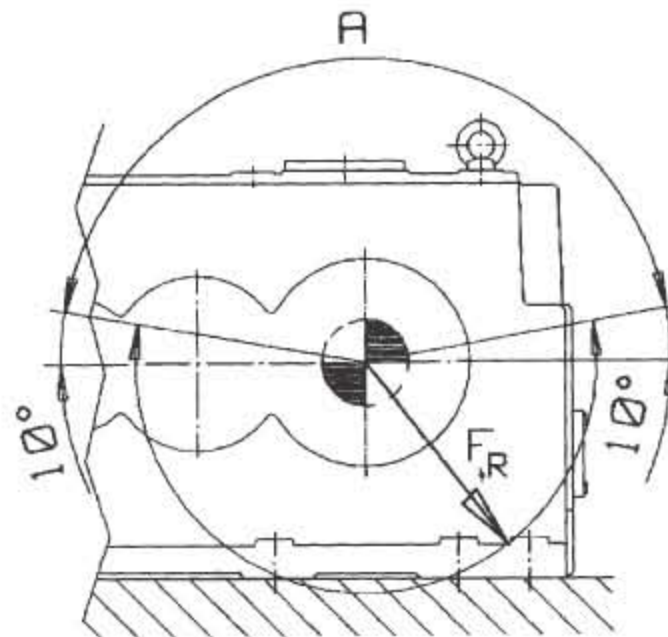
2.2 Allowed radial force directions for foot mounted Gear Unit with Horizontal Solid LSS

Table 2/表 2

Gear unit type/减速器型号	GM2P	GM4P	GM3P	GM4R		
Shaft positions/轴的位置	14, 23		13, 24	03, 04		
Gear unit size 减速器 规格	F_{RN} in the middle of the LSS end [kN] 输出轴端中点的 F_{RN} [kN]					
	LSS speed /输出轴速度 n_2 [r/min]					
	≤ 10	≤ 17	≤ 30	≤ 60	≤ 90	
	50	100	90	78	54	32
	60	141	100	90	58	34
	70	150	130	103	84	70
	80	192	170	138	116	80
90	241	220	170	144	140	

F_{RN} 是输出轴端最不利方向许用的径向力

2.2 水平实心低速轴底脚安装减速器的许用径向力方向



Picture 2: Allowed radial load directions.

Ensure that the Gear Unit is rigidly mounted in order not to be moved by the external forces.

When the radial force F_R is upwards, see segment marked with A, please refer to GUOMAO.

图 2: 许用径向力方向

要确保减速器安装牢固, 以免因外力作用而移动。

当径向力 F_R 向上时 (见符号 A 区域), 请向国茂咨询。

High speed shaft (HSS) end

Gear units are dimensioned to take radial forces in the middle of the HSS end. No axial forces F_A are permitted

V-belt pulley pitch diameter must be greater than 6 times the shaft end diameter.

高速轴(HSS)端

假定径向力作用在高速轴的中点, 无轴向载荷 F_A 来确定减速器尺寸。

V 型带轮节圆直径必须大于轴端直径的 6 倍

2,3,4 - stage Helical Gear Units
Vertical LSS
2,3,4 级斜齿轮减速器垂直LSS
GM.PV. . 10-90
Solid & Hollow LSS
实心和空心 LSS

Size 规格	n ₁ r/min	Nominal Mechanical Power Ratings P _{N1} in kW					额定机械功率 P _{N1} (kW)				
		Nominal Ratio i _N					公称传动比 i _N				
		6.3	7.1	8	9	10	11.2	12.5	14	16	18
10	1500	158*	145 +	129*	117 +	104 +	94.6 +	83.9 +	70.1 +	63.9 +	48.6 +
	1200	130 +	118 +	104 +	94.9 +	84.1 +	76.6 +	67.9 +	56.7 +	51.7 +	39.4 +
	1000	109 +	98.9 +	87.8 +	79.8 +	70.7 +	64.4 +	57.1 +	47.7 +	43.5 +	33.1 +
20	1500	195*	173 +	142 +	133 +	125 +	111 +	101 +	86.1 +	76.3 +	69.5 +
	1200	156 +	139 +	114 +	107 +	101 +	89.7 +	81.7 +	69.6 +	61.7 +	56.2 +
	1000	130 +	117 +	96.8 +	89.8 +	85.2 +	75.5 +	68.7 +	58.6 +	51.9 +	47.3 +
30	1500	351*	325*	296*	275*	250 +	217 +	191 +	173 +	155 +	140 +
	1200	301*	278 +	246 +	224 +	202 +	175 +	154 +	140 +	125 +	113 +
	1000	259 +	234 +	207 +	188 +	170 +	147 +	130 +	118 +	105 +	95.3 +
40	1500	510*	469*	436*	400*	364*	296*	268 +	242 +	216 +	177 +
	1200	429*	402*	373*	343 +	303 +	239 +	217 +	195 +	174 +	143 +
	1000	357 +	353 +	323 +	289 +	254 +	201 +	182 +	164 +	147 +	120 +
50	1500	798*	736*	671*	623*	576*	524*	480*	431 +	343 +	306 +
	1200	683*	630*	574*	533*	485*	429 +	388 +	349 +	277 +	247 +
	1000	601*	555*	497*	451 +	408 +	360 +	326 +	293 +	233 +	208 +
60	1500	1323*	1196*	1116*	1027*	913*	827*	748*	672*	551*	495*
	1200	1131*	1023*	941*	846*	737*	668*	604 +	543 +	445 +	400 +
	1000	983*	864*	790*	710*	619 +	561 +	507 +	456 +	374 +	336 +
70	1500	1606*	1449*	1320*	1213*	1124*	1031*	954*	864*	798*	733*
	1200	1374*	1240*	1129*	1038*	962*	882*	816*	718*	645*	592 +
	1000	1209*	1091*	997*	913*	846*	762*	688*	603 +	542 +	497 +
80	1500	2015*	1810*	1644*	1505*	1387*	1285*	1176*	1087*	996*	912*
	1200	1724*	1548*	1406*	1288*	1186*	1099*	1006*	911*	811*	737 +
	1000	1517*	1363*	1238*	1133*	1044*	955*	849*	765 +	681 +	619 +

		20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
10	1500	54.2 +	49.3 +	43.7 +	38.9 +	35.4 +	31.0 +	28.0 +	25.5 +	21.2 +	18.8 +	16.7 +	15.2 +	11.6 +	10.5 +
	1200	43.6 +	39.9 +	35.4 +	31.5 +	28.7 +	25.1 +	22.7 +	20.6 +	17.0 +	15.2 +	13.5 +	12.3 +	9.36 +	8.55 +
	1000	36.4 +	33.6 +	29.8 +	26.5 +	24.1 +	21.2 +	19.1 +	17.4 +	14.2 +	12.8 +	11.4 +	10.4 +	7.89 +	7.20 +
20	1500	64.0 +	57.7 +	51.1 +	43.8 +	40.9 +	36.4 +	33.1 +	29.8 +	25.5 +	23.1 +	20.5 +	18.2 +	16.6 +	12.5 +
	1200	51.9 +	46.3 +	41.0 +	35.1 +	33.1 +	29.5 +	26.8 +	24.1 +	20.6 +	18.8 +	16.6 +	14.8 +	13.5 +	10.1 +
	1000	43.3 +	38.6 +	34.2 +	29.6 +	27.9 +	24.8 +	22.6 +	20.3 +	17.4 +	15.8 +	14.0 +	12.4 +	11.3 +	8.53 +
30	1500	125 +	113 +	102 +	93.0 +	82.4 +	71.1 +	61.4 +	55.9 +	49.7 +	45.9 +	41.8 +	37.5 +	30.0 +	26.5 +
	1200	101 +	91.6 +	82.9 +	75.3 +	66.7 +	57.5 +	49.1 +	44.7 +	39.8 +	37.2 +	33.9 +	30.4 +	24.3 +	21.5 +
	1000	84.8 +	77.1 +	69.8 +	63.4 +	56.1 +	48.5 +	40.9 +	37.3 +	33.1 +	31.3 +	28.6 +	25.6 +	20.5 +	18.1 +
40	1500	192 +	153 +	141 +	136 +	127 +	112 +	88.1 +	80.1 +	71.0 +	64.1 +	58.4 +	47.6 +	42.1 +	37.6 +
	1200	155 +	123 +	113 +	109 +	103 +	90.7 +	71.3 +	64.9 +	57.5 +	51.6 +	47.0 +	38.6 +	34.1 +	30.5 +
	1000	131 +	103 +	94.9 +	91.4 +	86.3 +	76.4 +	60.1 +	54.6 +	48.4 +	43.0 +	39.1 +	32.5 +	28.7 +	25.7 +
50	1500	307*	271 +	246 +	222 +	196 +	178 +	156 +	142 +	127 +	115 +	103 +	93.7 +	74.2 +	66.2 +
	1200	248 +	219 +	199 +	180 +	159 +	144 +	126 +	115 +	103 +	93.1 +	83.8 +	75.8 +	60.1 +	53.7 +
	1000	209 +	184 +	167 +	151 +	134 +	121 +	106 +	96.7 +	86.5 +	78.4 +	70.5 +	63.8 +	50.6 +	45.4 +
60	1500	395*	368 +	339 +	339 +	307 +	271 +	245 +	221 +	197 +	179 +	161 +	145 +	119 +	107 +
	1200	338 +	315 +	290 +	274 +	249 +	219 +	198 +	179 +	160 +	145 +	130 +	118 +	96.4 +	86.8 +
	1000	297 +	277 +	255 +	231 +	209 +	184 +	167 +	150 +	134 +	122 +	110 +	99.1 +	81.1 +	73.3 +
70	1500	590*	590*	536*	497*	451*	411 +	367 +	334 +	300 +	263 +	235 +	198 +	170 +	156 +
	1200	505 +	501 +	446 +	408 +	371 +	338 +	298 +	270 +	243 +	213 +	190 +	159 +	138 +	127 +
	1000	444 +	427 +	381 +	348 +	314 +	284 +	251 +	227 +	204 +	179 +	159 +	132 +	116 +	107 +
80	1500	743*	632*	587*	542 +	542 +	493 +	453 +	414 +	375 +	338 +	301 +	240 +	214 +	183 +
	1200	636*	541 +	502 +	464 +	464 +	419 +	379 +	340 +	303 +	273 +	244 +	194 +	173 +	148 +
	1000	560 +	476 +	442 +	408 +	399 +	352 +	319 +	286 +	255 +	230 +	205 +	164 +	146 +	125 +
90	1500	1048*	896*	832*	832*	804*	688*	634 +	574 +	518 +	406 +	365 +	328 +	294 +	233 +
	1200	896*	766*	712 +	712 +	650 +	570 +	516 +	464 +	419 +	329 +	296 +	266 +	238 +	189 +
	1000	789*	675 +	627 +	607 +	547 +	480 +	434 +	391 +	352 +	277 +	249 +	224 +	200 +	159 +

2,3,4 - stage Helical Gear Units
Vertical LSS
2,3,4 级斜齿轮减速器垂直LSS
GM.PV. . 10-90
Solid & Hollow LSS
实心和空心 LSS

Size 规格	n ₁ r/min	Nominal Mechanical Power Ratings P _{N1} in kW								额定机械功率 P _{N1} (kW)						
		Nominal Ratio i _N								公称传动比 i _N						
		100	112	125	140	160	180	200	225	250	280	315	355	400		
50	1500	72.1 +	66.4 +	59.6 +	54.0 +	49.0 +	41.5 +	38.3 +	34.4 +	30.1 +	27.1 +	22.8 +	20.9 +	16.3 +		
	1200	57.9 +	54.8 +	47.9 +	43.3 +	39.2 +	34.2 +	31.0 +	27.5 +	24.1 +	21.7 +	18.8 +	16.9 +	13.6 +		
	1000	48.4 +	45.7 +	39.9 +	36.1 +	32.7 +	28.5 +	25.8 +	23.0 +	20.1 +	18.1 +	15.6 +	14.1 +	11.7 +		
60	1500	92.3 +	92.0 +	84.7 +	77.7 +	70.1 +	64.6 +	58.6 +	52.0 +	46.8 +	41.0 +	36.4 +	32.7 +	25.7 +		
	1200	79.0 +	76.9 +	70.8 +	65.0 +	58.6 +	51.8 +	47.0 +	41.6 +	37.5 +	32.8 +	29.1 +	26.2 +	21.4 +		
	1000	69.5 +	66.4 +	60.6 +	56.0 +	50.0 +	43.2 +	39.2 +	34.7 +	31.2 +	27.4 +	24.3 +	21.9 +	18.4 +		
70	1500	149 +	135 +	135 +	112 +	99.3 +	89.2 +	78.9 +	70.9 +	63.8 +	56.6 +	53.2 +	47.2 +	36.9 +		
	1200	119 +	108 +	108 +	89.6 +	79.5 +	71.4 +	63.2 +	56.8 +	51.1 +	45.3 +	42.6 +	37.8 +	29.5 +		
	1000	99.1 +	90.0 +	90.0 +	74.7 +	66.3 +	59.6 +	52.7 +	47.4 +	42.6 +	37.8 +	35.6 +	31.5 +	24.6 +		
80	1500	190 +	179 +	160 +	148 +	135 +	123 +	112 +	88.9 +	80.0 +	70.9 +	68.0 +	60.3 +	52.8 +		
	1200	162 +	148 +	130 +	118 +	113 +	101 +	90.4 +	71.1 +	64.0 +	56.8 +	54.5 +	48.3 +	43.7 +		
	1000	140 +	123 +	108 +	98.5 +	94.8 +	84.3 +	75.4 +	59.3 +	53.3 +	47.3 +	45.5 +	40.3 +	36.5 +		
90	1500	256 +	234 +	223 +	200 +	182 +	155 +	151 +	123 +	110 +	100 +	92.0 +	83.8 +	64.3 +		
	1200	219 +	200 +	186 +	167 +	150 +	124 +	121 +	98.3 +	88.5 +	83.6 +	75.0 +	67.1 +	51.5 +		
	1000	192 +	175 +	158 +	141 +	125 +	103 +	101 +	82.0 +	73.8 +	73.8 +	62.6 +	56.0 +	42.9 +		

*) Pressure lubrication is required / 要求压力润滑

+) Bath lubrication is Possible / 可用浸油润滑

Power ratings: The ratings are nominal , service factor F_s = 1.0.

Selection of gear unit: see page 7

Lubrication: Pressure lubrication (Shaft End Pump) for upper bearings is used , when bath lubrication is not possible. Pressure lubrication is highly recommended when the mechanical power rating P_{K1} is higher than 500 kW.

Cooling: Additional cooling is required, when the mechanical power rating P_{K1} is higher than the thermal rating P_T.

功率: 功率为额定值, 使用系数 F_s = 1.0。减速器选择见 7 页

润滑: 除非另有说明, 应当用飞溅润滑。当使用功率 P_{K1} 大于 500kW 时, 建议减速器用压力润滑。

冷却: 如果使用功率 P_{K1} 大于热功率 P_T, 要用人工的冷却。

Size 规格	Thermal Ratings P _{TH} kW *												热功率 P _{TH} (kW) *											
	Nominal Ratio i _N / Ambient Air Temperature												公称传动比 i _N / 环境空气温度											
	i _N = 6.3...12.5				i _N = 14...18				i _N = 20...56				i _N = 63...90				i _N = 100...400							
	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C				
10	70	54	37	21	76	60	43	27	51	41	30	19	56	45	34	23	-	-	-	-				
20	77	59	41	23	83	65	47	29	56	44	32	20	61	49	37	25	-	-	-	-				
30	109	83	58	32	118	92	67	41	80	63	46	29	86	69	52	34	-	-	-	-				
40	134	103	72	40	145	114	82	51	98	77	56	35	106	85	64	43	-	-	-	-				
50	192	147	102	57	207	162	117	73	140	110	81	51	152	122	92	62	103	80	58	35				
60	262	201	140	78	283	222	161	99	192	151	110	69	207	166	125	84	140	109	79	48				
70	307	235	164	92	332	260	188	116	225	177	129	81	242	194	147	99	164	128	92	56				
80	352	270	187	105	380	298	215	133	257	203	148	93	278	223	168	113	188	147	106	64				
90	-	-	-	-	-	-	-	-	309	243	177	111	333	267	202	136	226	176	127	77				

*) Calculated with n₁ = 1500 r/min / n₁ = 1500 r/min 时计算值

Dimensions / 尺寸

GM2PV... 36 -

GM3PV... 40 -

GM4PV... 44 -

2,3,4 - stage Helical Gear Units
Vertical LSS
2,3,4 级斜齿轮减速器垂直LSS

GM.PV. . 10-90
Solid & Hollow LSS
实心 and 空心 LSS

Size 规格	Nominal Output Torque M_{N2} in kNm *) 额定输出转矩 $M_{N2}(kNm)$ *)									
	Nominal Ratio i_N					公称传动比 i_N				
	6.3	7.1	8	9	10	11.2	12.5	14	16	18
10	6,42	6,46	6,52	6,56	6,61	6,65	6,7	6,24	6,27	5,42
20	7,47	7,47	7,04	7,22	7,85	7,92	7,97	7,54	7,6	7,64
30	15,1	15,2	15,4	15,4	15,5	15,1	15,2	15,3	15,4	15,5
40	20,8	23,1	23,4	23,5	23,7	21,5	21,6	21,7	21,9	20,1
50	35	35,9	36,7	36,9	37,1	37,4	37,6	37,8	34,2	34,4
60	56,4	56,8	57,1	57,4	57,8	58,1	58,5	58,8	54,1	54,5
70	68,9	70,2	72,8	75,1	77,4	78,7	79,1	79,7	80,1	80,5
80	88,5	89,7	93,2	96,2	99,4	101	102	102	103	104

	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
10	6,83	6,97	7,04	7,09	7,14	6,91	6,96	7	6,48	6,54	6,59	6,63	5,71	5,75
20	7,74	7,7	7,69	7,58	8,18	8,24	8,28	8,28	7,88	7,92	7,98	8,05	8,11	7,01
30	15,7	15,8	15,9	16	16,1	15,6	15,1	15,2	15,3	16	16,1	16,3	14,5	14,6
40	24	21,1	22	23,5	24,6	24,8	22,3	22,4	22,6	22,4	22,5	21	21,2	21,3
50	37,4	37,6	37,8	38	38,3	38,6	38,8	39,1	39,3	39,6	39,9	40,1	36,2	36,7
60	53	54,7	56,7	59,2	59,6	60	60,4	60,7	61,1	61,5	62	62,4	57,2	57,9
70	79	85,5	86,9	88	88,6	89,1	89,7	90,2	90,8	91,6	91,8	85,3	84,4	85,3
80	103	100	103	106	115	116	117	117	118	119	120	108	109	101
90	141	137	142	153	154	155	156	157	158	143	143	144	145	130

	100	112	125	140	160	180	200	225	250	280	315	355	400
50	42,7	44,6	44,6	44,6	44,6	45,3	45,3	45,4	45,4	45,4	44,6	44,7	42,1
60	64	67,8	68,6	70,6	71,6	68,7	68,7	68,7	68,7	68,7	68,3	68,4	66,4
70	88,3	88,8	100	91,9	92,1	92,2	92,2	92,3	92,3	92,4	99,8	99,9	89,7
80	127	124	125	124	135	135	135	120	120	121	129	129	128
90	170	173	174	177	177	162	178	162	162	176	176	176	152

Maximum torque M_{K2max} is $2 \times M_{N2}$ / 最大转矩 M_{K2max} 为 $2 \times M_{N2}$

*) Calculated with $n_1 = 1000$ r/min / $n_1 = 1000$ r/min 时计算值

Dimensions / 尺寸

GM2PV. . 36 -

GM3PV. . 40 -

GM4PV. . 44 -

Continuous allowed External Loads F_R, F_A

许用的连续外载荷 F_R, F_A

Helical and Bevel Helical Gear Units,
see pages 22, 23

斜齿轮和锥齿轮 - 斜齿轮减速器,
见 22、23 页

3,4 - stage Bevel Helical Gear Units Vertical LSS

3,4 级锥齿轮—斜齿轮减速器垂直 LSS

GM.RV. . 30-90 Solid & Hollow LSS

实心和空心 LSS

Size 规格	n ₁ r/min	Nominal Mechanical Power Ratings P _{N1} in kW 额定机械功率 P _{N1} (kW)															
		Nominal Ratio i _N 公称传动比 i _N															
		14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
30	1500	172 +	160 +	141 +	128 +	114 +	99.0 +	92.8 +	78.4 +	71.3 +	66.0 +	55.9 +	51.3 +	46.5 +	36.3 +	32.0 +	24.7 +
	1200	138 +	129 +	114 +	103 +	92.2 +	80.2 +	75.1 +	63.5 +	57.8 +	53.3 +	44.8 +	41.6 +	37.7 +	29.4 +	25.9 +	20.0 +
	1000	116 +	109 +	95.7 +	87.1 +	77.4 +	67.5 +	63.2 +	53.5 +	48.6 +	44.7 +	37.5 +	35.0 +	31.7 +	24.8 +	21.8 +	16.9 +
40	1500	172 +	172 +	172 +	172 +	157 +	135 +	119 +	105 +	98.0 +	82.1 +	72.6 +	68.7 +	59.8 +	52.9 +	44.1 +	30.8 +
	1200	138 +	138 +	138 +	138 +	127 +	109 +	95.5 +	84.7 +	79.4 +	66.0 +	58.8 +	55.5 +	48.4 +	42.9 +	35.7 +	25.0 +
	1000	116 +	116 +	116 +	116 +	106 +	92.0 +	79.8 +	71.3 +	66.8 +	55.1 +	49.5 +	46.6 +	40.8 +	36.1 +	30.1 +	21.1 +
50	1500	331 +	331 +	331 +	267 +	254 +	237 +	213 +	196 +	168 +	148 +	129 +	112 +	100 +	90.2 +	70.2 +	62.7 +
	1200	283 +	283 +	273 +	216 +	204 +	192 +	173 +	159 +	135 +	119 +	104 +	91.0 +	81.3 +	73.0 +	56.9 +	50.8 +
	1000	249 +	249 +	229 +	181 +	171 +	161 +	145 +	134 +	113 +	99.5 +	87.5 +	76.6 +	68.4 +	61.5 +	47.9 +	42.8 +
60	1500	467 +	467 +	467 +	426 +	386 +	343 +	302 +	272 +	248 +	223 +	204 +	184 +	163 +	134 +	115 +	97.8 +
	1200	376 +	376 +	376 +	345 +	312 +	277 +	244 +	220 +	201 +	181 +	165 +	149 +	132 +	115 +	92.4 +	79.3 +
	1000	315 +	315 +	315 +	290 +	262 +	233 +	205 +	185 +	169 +	152 +	139 +	125 +	111 +	99.3 +	77.5 +	66.7 +
70	1500	728 +	728 +	728 +	675 +	617 +	499 +	455 +	414 +	406 +	366 +	316 +	263 +	241 +	216 +	193 +	143 +
	1200	583 +	583 +	583 +	558 +	501 +	403 +	368 +	335 +	328 +	296 +	254 +	213 +	195 +	175 +	156 +	116 +
	1000	485 +	485 +	485 +	469 +	421 +	339 +	309 +	282 +	276 +	249 +	212 +	179 +	164 +	147 +	131 +	97.6 +
80	1500	824 +	824 +	824 +	824 +	708 +	636 +	546 +	508 +	463 +	412 +	372 +	339 +	301 +	252 +	225 +	196 +
	1200	705 +	705 +	705 +	705 +	572 +	514 +	440 +	411 +	374 +	334 +	301 +	274 +	244 +	204 +	182 +	159 +
	1000	600 +	600 +	600 +	600 +	481 +	432 +	368 +	346 +	315 +	281 +	253 +	231 +	205 +	171 +	153 +	134 +
90	1500	1099 +	1099 +	1099 +	1099 +	932 +	847 +	742 +	663 +	612 +	549 +	488 +	433 +	386 +	324 +	283 +	258 +
	1200	887 +	887 +	887 +	887 +	753 +	685 +	600 +	536 +	495 +	444 +	395 +	350 +	310 +	262 +	229 +	209 +
	1000	744 +	744 +	744 +	744 +	633 +	575 +	504 +	451 +	416 +	374 +	332 +	293 +	259 +	220 +	193 +	176 +

		90	100	112	125	140	160	180	200	225	250	280	315
50	1500	79.3 +	68.2 +	61.0 +	54.7 +	50.4 +	41.1 +	41.8 +	38.4 +	32.3 +	27.9 +	25.2 +	23.0 +
	1200	63.6 +	55.8 +	50.8 +	45.8 +	42.2 +	32.9 +	34.5 +	31.1 +	26.1 +	23.3 +	21.0 +	19.0 +
	1000	53.1 +	48.3 +	43.9 +	39.6 +	36.6 +	27.4 +	28.8 +	25.9 +	21.9 +	20.0 +	17.7 +	15.8 +
60	1500	110 +	99.7 +	93.4 +	84.7 +	69.8 +	69.8 +	60.7 +	55.2 +	48.6 +	44.7 +	33.5 +	30.1 +
	1200	89.5 +	80.5 +	75.3 +	70.8 +	56.1 +	56.1 +	48.9 +	44.5 +	40.6 +	37.2 +	28.0 +	25.1 +
	1000	77.4 +	67.6 +	62.9 +	61.2 +	46.8 +	46.8 +	41.0 +	37.4 +	34.6 +	31.1 +	24.1 +	21.6 +
70	1500	173 +	154 +	139 +	121 +	110 +	96.8 +	86.5 +	76.7 +	68.6 +	63.9 +	58.3 +	52.1 +
	1200	139 +	123 +	111 +	96.8 +	88.4 +	77.5 +	69.3 +	61.4 +	55.0 +	52.7 +	47.1 +	41.8 +
	1000	116 +	103 +	92.6 +	80.7 +	73.8 +	64.7 +	57.8 +	51.2 +	45.8 +	43.9 +	39.3 +	34.8 +
80	1500	196 +	196 +	176 +	157 +	141 +	121 +	114 +	97.7 +	88.5 +	71.9 +	67.7 +	61.4 +
	1200	157 +	157 +	141 +	127 +	114 +	97.9 +	91.9 +	81.5 +	73.9 +	57.6 +	56.5 +	50.7 +
	1000	130 +	130 +	117 +	106 +	95.5 +	82.1 +	77.1 +	70.3 +	62.8 +	48.0 +	48.7 +	42.3 +
90	1500	293 +	238 +	214 +	214 +	203 +	177 +	157 +	130 +	119 +	97.2 +	97.9 +	88.9 +
	1200	236 +	191 +	172 +	172 +	164 +	143 +	127 +	109 +	99.0 +	81.1 +	80.9 +	71.8 +
	1000	198 +	160 +	143 +	143 +	137 +	120 +	106 +	93.6 +	85.4 +	67.7 +	67.5 +	59.9 +

*) Pressure lubrication is required /要求压力润滑

+) Bath lubrication is possible /可用浸油润滑

Power ratings: The ratings are nominal , service factor F_s = 1.0.

Selection of gear unit: see page 7

Lubrication: Pressure lubrication (Shaft End Pump) for upper bearings is used, when bath lubrication is not possible. Pressure lubrication is highly recommended when the mechanical power rating P_{K1} is higher than 500 kW.

Cooling: Additional cooling is required, when the mechanical power rating P_{K1} is higher than the thermal rating P_T.

功率: 功率为额定值,使用系数 F_s = 1.0。减速器选择见 7 页

润滑: 除非另有说明,应当用飞溅润滑。当使用功率 P_{K1} 大于 500kW 时,建议减速器用压力润滑。

冷却: 如果使用功率 P_{K1} 大于热功率 P_T,要用人工冷却。

3,4 - stage Bevel Helical Gear Units Vertical LSS

3,4 级锥齿轮—斜齿轮减速器垂直 LSS

GM.RV. . 30-90 Solid & Hollow LSS 实心 and 空心 LSS

Size 规格	Nominal Output Torque M_{N2} in kNm *)								额定输出转矩 $M_{N2}(\text{kNm})^*)$							
	Nominal Ratio i_N								公称传动比 i_N							
	14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
30	14,6	15,4	15,6	15,7	16,2	15,9	16	15,5	15,6	15,9	15,2	15,9	16	13,9	14	12,3
40	14,7	16,7	18,6	20,7	21,5	21,3	21,1	21,6	21,7	20,2	20,4	21	20,7	20,9	18,9	15,2
50	31,2	35,3	37	33,3	35,9	37,7	38	38,2	36,4	35,2	34,9	35,1	35,4	35,6	31,5	31,7
60	40,9	46,2	51,2	52,8	53,1	53,4	53,8	54,2	54,5	54,8	55,1	55,5	55,9	56,1	49,4	49
70	62,3	70	78	86,4	86,9	79	79,4	79,8	89	89,5	86,4	82,1	82,6	83,1	83,6	71,6
80	78,1	88,7	100	112	101	102	99,7	103	104	104	105	106	106	97,2	97,8	96,2
90	96,5	110	123	137	133	134	135	136	137	138	138	133	135	129	126	130

	90	100	112	125	140	160	180	200	225	250	280	315
50	42,2	42,1	43,1	44,3	45	47,8	45,1	45,2	42,7	44,5	44,5	44,5
60	63,5	61,6	61,4	67,4	57,2	64,6	62,8	64,1	68,2	68,2	60,8	62,3
70	91,5	91,6	91,7	91,8	91,7	91,9	92	92	92,1	99,6	99,7	99,7
80	105	120	120	122	123	118	124	128	129	111	122	120
90	159	143	142	158	169	165	166	168	171	152	172	171

Maximum torque M_{K2max} is $2 \times M_{N2}$ / 最大转矩 M_{K2max} 为 $2 \times M_{N2}$

*) Calculated with $n_1 = 1000$ r/min / $n_1 = 1000$ r/min 时计算值

Size 规格	Fan pcs 风扇数	Thermal Ratings P _{TH} in kW *)								热功率 P _{TH} (kW) *)							
		Nominal Ratio i _N / Ambient Air Temperature								公称传动比 i _N / 环境空气温度							
		i _N = 14...45				i _N = 50...80				i _N = 90...315							
		20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C	20°C	30°C	40°C	50°C				
30	–	65	47	29	11	77	59	41	23	–	–	–	–				
	1	129	101	73	45	141	113	85	57	–	–	–	–				
40	–	79	57	35	13	94	72	50	28	–	–	–	–				
	1	158	124	90	56	172	138	104	70	–	–	–	–				
50	–	115	83	51	19	136	104	72	40	96	72	48	24				
	1	229	180	130	81	250	201	151	102	–	–	–	–				
60	–	155	112	69	26	183	140	97	54	129	97	65	32				
	1	308	242	175	109	336	270	203	137	–	–	–	–				
70	–	183	133	82	31	217	166	115	64	153	115	77	38				
	1	366	287	208	129	399	320	241	162	–	–	–	–				
80	–	209	151	93	35	247	189	131	73	174	131	87	44				
	1	416	326	236	146	454	364	274	184	–	–	–	–				
90	–	252	182	112	42	298	228	158	88	210	158	105	53				
	1	502	393	285	177	548	439	331	223	–	–	–	–				

*) Calculated with $n_1 = 1000$ /min / $n_1 = 1000$ r/min 时计算值

Dimensions / 尺寸

GM3RV.. 48 -

GM4RV.. 52 -

3,4 - stage Bevel Helical Gear Units Vertical LSS

3,4 级锥齿轮－斜齿轮减速器垂直 LSS

GM.RV. . 30-90 Solid & Hollow LSS

实心 and 空心 LSS

Continuous allowed External Loads F_R, F_A

许用的连续外载荷 F_R, F_A

Helical and Bevel Helical Gear Units,
GM. PV. . 10 – 90 and GM. RV. . 10 – 90

斜齿轮和锥齿轮－斜齿轮减速器,
GM. PV. . 10 – 90 和 GM. RV. . 10 – 90

Low Speed Shaft (LSS) end

低速轴(LSS)端

1. Determining the allowed radial force F_R

1. 许用径向力 F_R 的确定

$$F_R = \frac{F_{RN}}{F_s} K_Y, \quad F_A = \frac{F_{AN}}{F_s}$$

F_R = the allowed actual radial force.

F_R = 实际许用径向力

F_A = the allowed actual axial force.

F_A = 实际许用轴向力

F_{RN} = the allowed nominal radial force in the middle of the shaft end.

F_{RN} = 作用在轴端中点的许用额定径向力, 使用系数 $F_s = 1.0$ 的计算值

F_{AN} = the allowed nominal axial force on the shaft end

F_{AN} = 轴端的许用额定轴向力

F_s = service factor (see Gear unit selection, page 8)

F_s = 使用系数 (见减速器选择 8 页)

K_Y = the effect of the radial force location.

K_Y = 径向力位置的影响系数

2. Gear Units with vertical Solid LSS (Types: GM. PVS, GM. RVS)

2. 带垂直实心低速轴的减速器 (型号: GM. PVS, GM. RVS. .)

2.1 Radial external forces (Picture 1)

2.1 径向外力 (图 1)

Table 1: Allowed nominal radial forces F_{RN} , when axial force $F_A = 0$ kN

表 1: 轴间力 $F_A = 0$ kN 时, 许用额定径向力 F_{RN}

Table 1/表 1

Gear unit size 减速器 规格	F_{RN} in the middle of the LSS end [kN] 低速轴端中点的 F_{RN} [kN]				
	LSS speed / 低速轴速度 n_2 [r / min]				
	≤ 10	≤ 17	≤ 30	≤ 60	≤ 90
10	50	48	45	31	23
20	59	57	55	51	47
30	89	87	85	82	75
40	112	111	110	100	89
50	153	151	149	134	124
60	189	187	185	182	171
70	258	256	236	209	201
80	311	300	276	255	236
90	397	370	343	315	292

F_{RN} is the allowed radial force to the most unfavorable direction on the LSS.

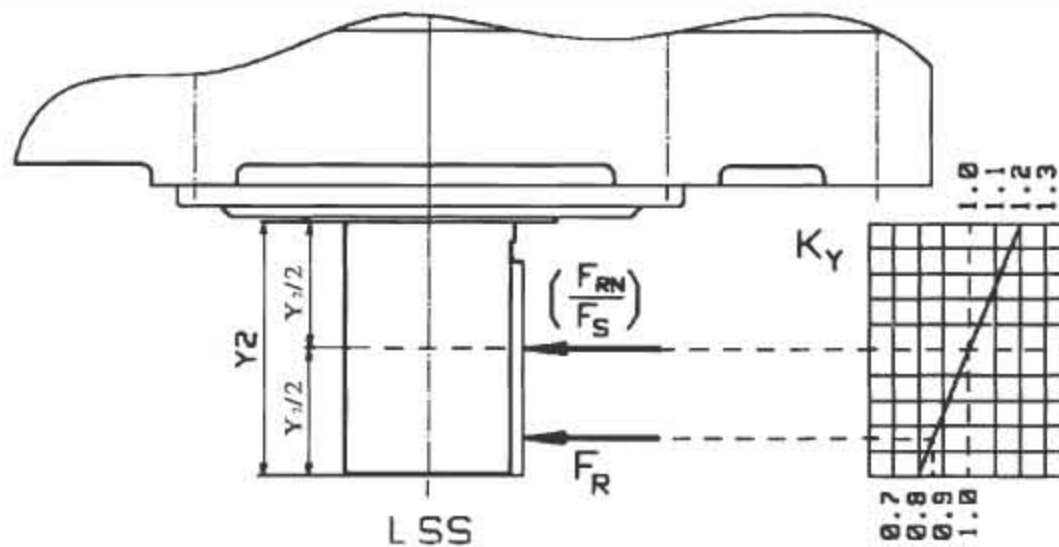
F_{RN} 是输出轴上最不利方向许用的径向力

**2,3,4 - stage Gear Units
Vertical LSS**
2,3,4级减速器垂直LSS

**Continuous allowed
External Loads F_R, F_A**
许用的连续外载荷 F_R, F_A

Continuous allowed External Loads F_R, F_A

许用的连续外载荷 F_R, F_A



Picture 1: The effect of the radial force location

图 1: 径向力位置的影响

2.2 External axial and radial forces (Picture 2)

2.2 轴向外力 and 径向外力 (图 2)

Table 2: Allowed nominal axial and radial forces F_A and F_{RNL} calculated with LSS speed of 50 r/min

表 2: 许用的额定轴向和径向力 F_{AN} 和 F_{RNL} , 输出轴速度 50 r/min 的计算值。

F_{RNL} = the allowed nominal radial force at the distance L from the shaft end.

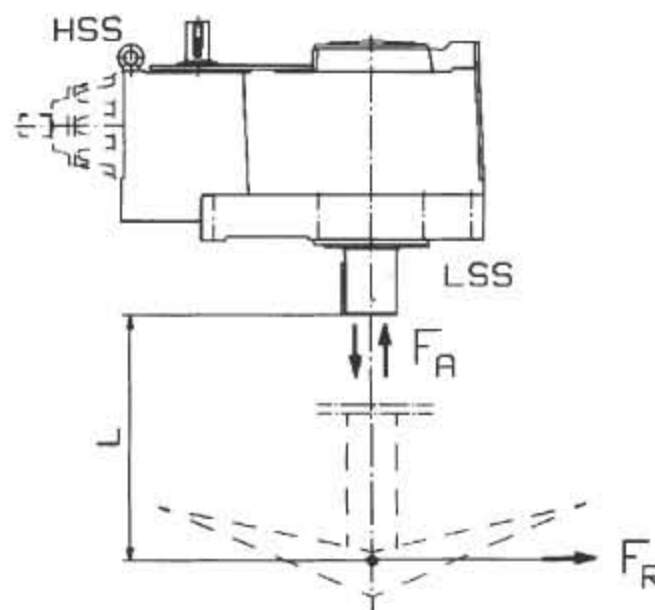
F_{RNL} = 距轴端 L 的许用额定径向力。

Table 1/表 1

$$F_R = \frac{F_{RNL}}{F_s}$$

$$F_A = \frac{F_{AN}}{F_s}$$

Gear unit size 减速器规格	F_{AN} [kN]	F_{RNL} [kN]	L [m]
10	3	1,3	1,4
20	14	4,9	1,6
30	19	8,4	1,6
40	31	9,6	1,7
50	38	15	1,8
60	50	18	2
70	52	23	2
80	68	34	2
90	70	42	2



Picture 2: Radial and axial forces

图 2: 轴向和径向力

Ensure that the Gear Unit is rigidly mounted in order not to be moved by the external forces.

要确保减速器安装牢固, 以免因外力作用而移动。

High speed shaft (HSS) end

高速轴(HSS)端

Gear units are dimensioned to take radial forces in the middle of the HSS end. No axial forces F_A are permitted.

假定径向力作用在高速轴的中点来确定减速器尺寸, 允许无轴向力 F_A 。

V-belt pulley pitch diameter must be greater than 6 times the shaft end diameter.

V 型带轮节圆直径必须大于轴端直径的 6 倍。

2 - stage Helical Gear Units
Horizontal LSS
2 级斜齿轮减速器水平LSS

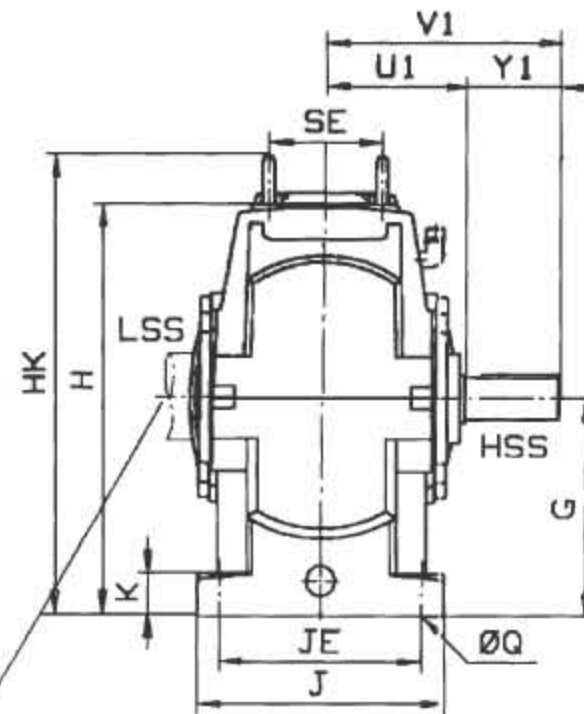
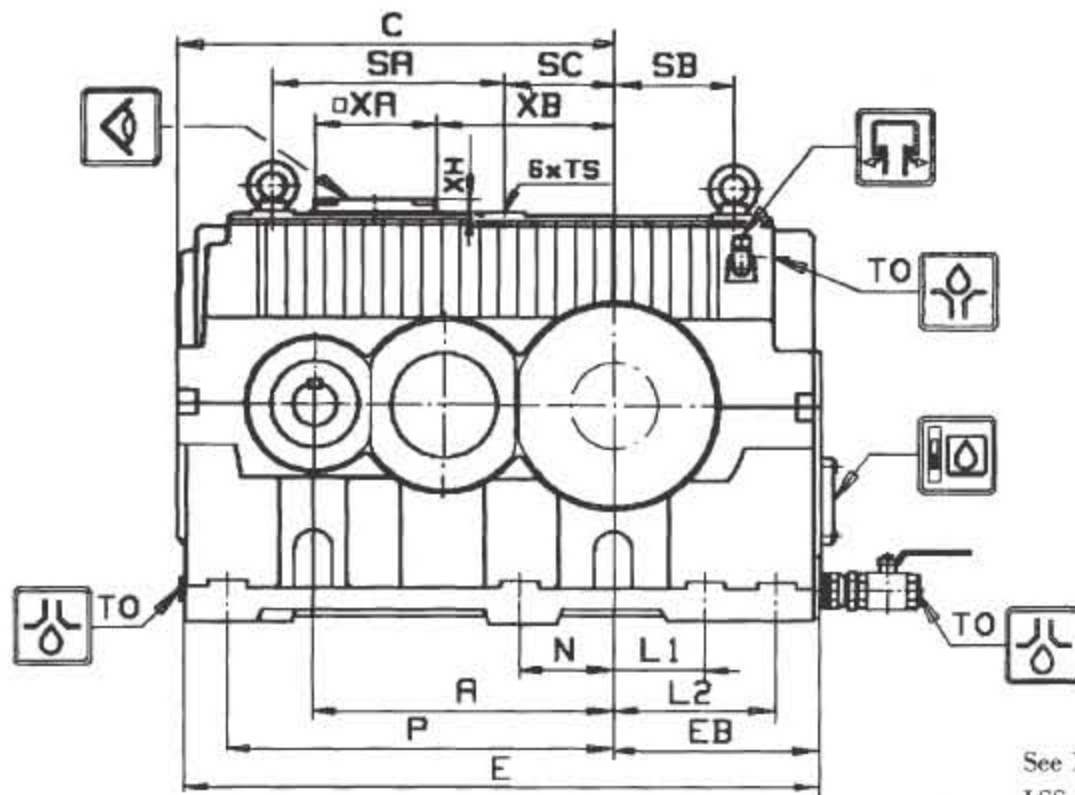
GM2P. .50-90
Solid & Hollow LSS
实心 and 空心LSS

Gear Unit Dimensions, type GM2PSF GM2PHF GM2PHT

减速器尺寸, 型号 GM2PSF GM2PHF GM2PHT

Foot Mounting Face machined for foot mounting,
type GM2PSF GM2PHF

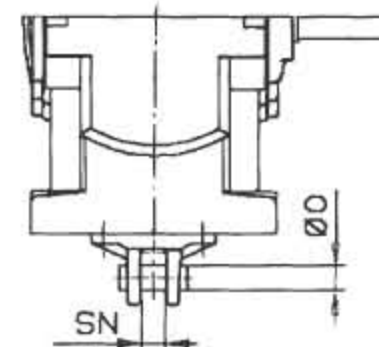
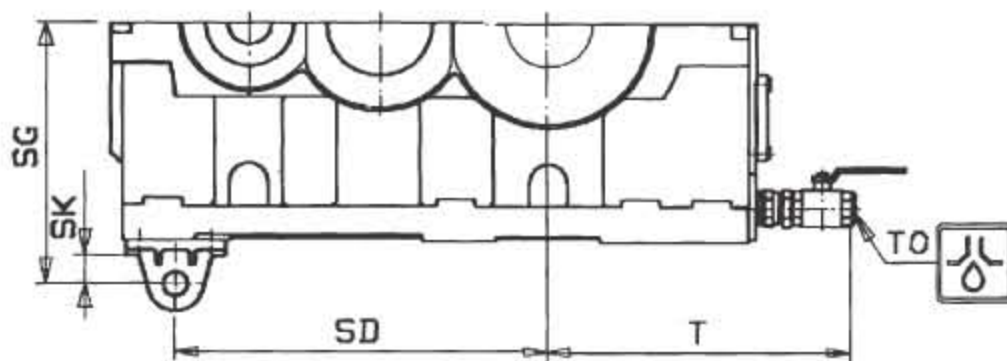
机加的底脚安装面,
型号 GM2PSF GM2PHF



See LSS types, next Page
LSS 型号见下页

Torque Arm Mounting Bracket with unmachined foot
plane, type GM2PHT

带非机加底脚面的力矩臂安装座,
型号 GM2PHT



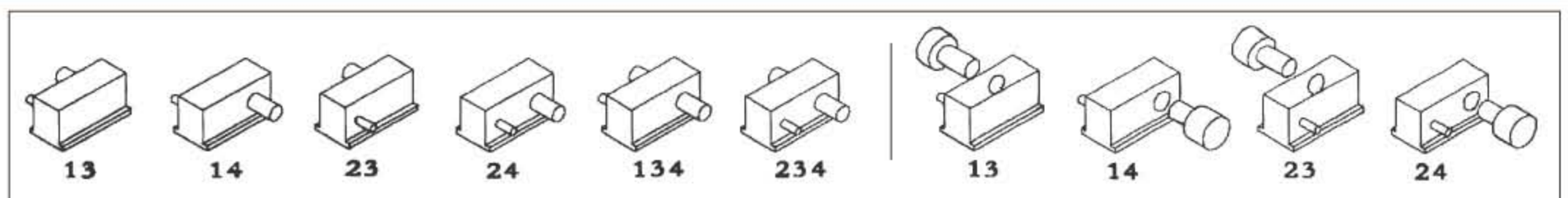
Technical Data Page 11
技术数据 11 页

Size 规格	Housing Dimensions in mm 箱体尺寸 (mm)																			Foot Mounting 底脚安装 Type/型号 GM2PSF GM2PHF					
	A	C	E	EB	G	H	HK	J	K	SA	SB	SC	SE	TS	TO	T	XA	XB	XH	JE	L1	L2	N	P	Q
50	474	687	994	325	350	660	731	396	65	376	190	175	188	M20 × 35	R1 1/2	500	220	253	30	330	148	245	148	600	28
60	546	799	1149	373	400	755	845	460	76	420	215	205	216	M24 × 42	R1 1/2	548	220	305	30	378	170	300	170	700	35
70	623	922	1320	427	460	870	960	506	82	460	276	270	250	M24 × 42	R1 1/2	602	260	370	30	416	194	322	194	800	35
80	673	972	1418	470	505	955	1045	552	90	490	300	280	250	M24 × 42	R1 1/2	645	260	390	30	454	209	369	209	853	42
90	737	1071	1551	512	550	1040	1149	584	97	588	346	291	280	M30 × 53	R1 1/2	687	260	455	30	480	228	418	228	945	42

Size 规格	HSS Dimensions in mm HSS 尺寸 (mm)							Torque Arm Mounting Bracket 力矩臂安装座 Type/型号 GM2PHT					Weight 重量 kg	Oil Capacity/油量 Splash lubrication 飞溅润滑		Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	O	SD	SC	SK	SN		1		1
50	238	125	363	75m6	20h9	79,5	M20	32	580	418	38	32	770	44		38
60	255	150	405	80m6	22h9	85	M20	45	676	482	52	45	1150	48		41
70	287	150	437	95m6	25h9	100	M24	45	795	542	52	45	1695	74		64
80	307	190	497	100m6	28h9	106	M24	45	845	587	52	45	2150	89		79
90	330	190	520	110m6	28h9	116	M24	45	945	632	52	45	2830	118		105

Shaft Positions

轴的位置

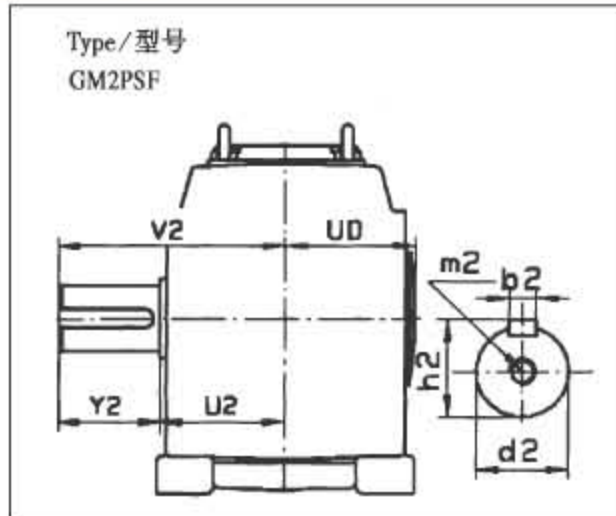


2 - stage Helical Gear Units
Horizontal LSS
2 级斜齿轮减速器水平LSS

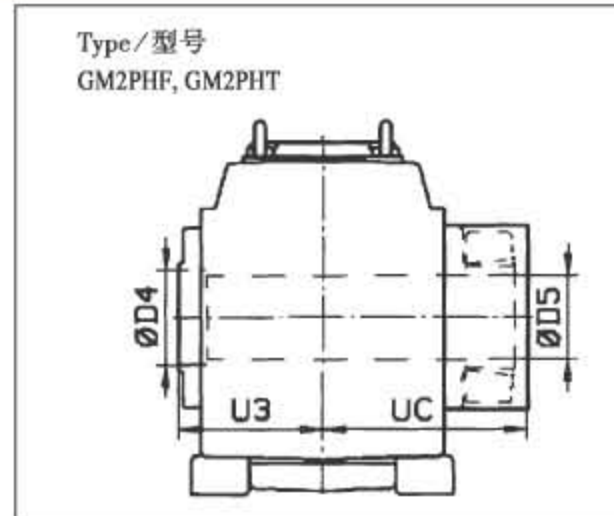
GM2P. .50-90
Solid & Hollow LSS
实心 and 空心LSS

LSS types

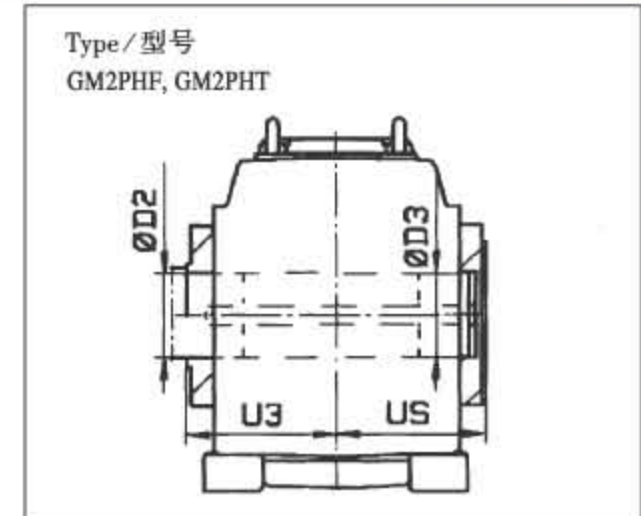
低速轴型号



Solid shaft
实心轴



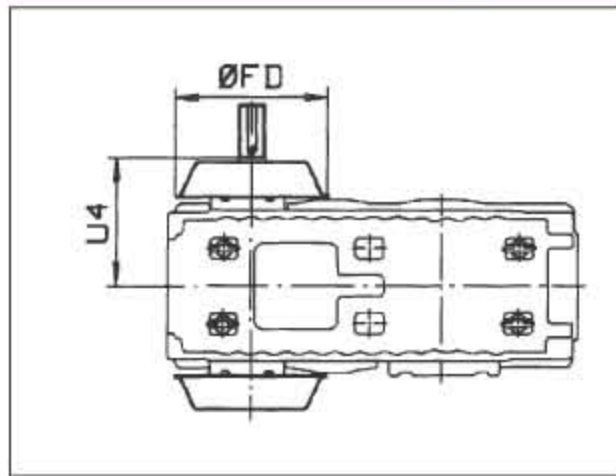
Hollow Shaft, Shrink Disk, page 57
空心轴, 收缩盘, 57 页



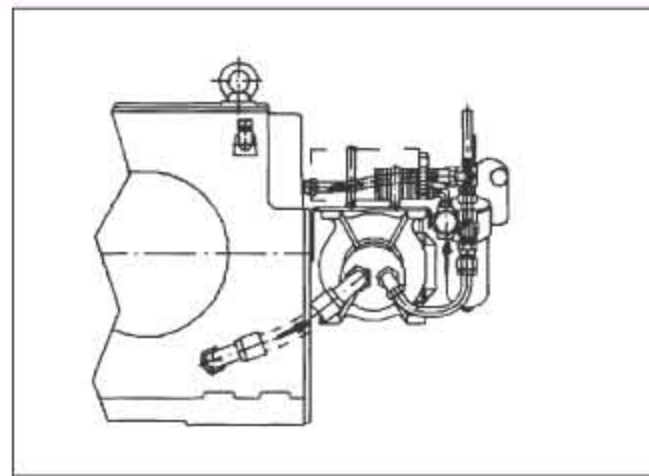
Hollow Shaft, Key Connection, page 61
空心轴, 键连接, 61 页

Common Accessories, see section 4

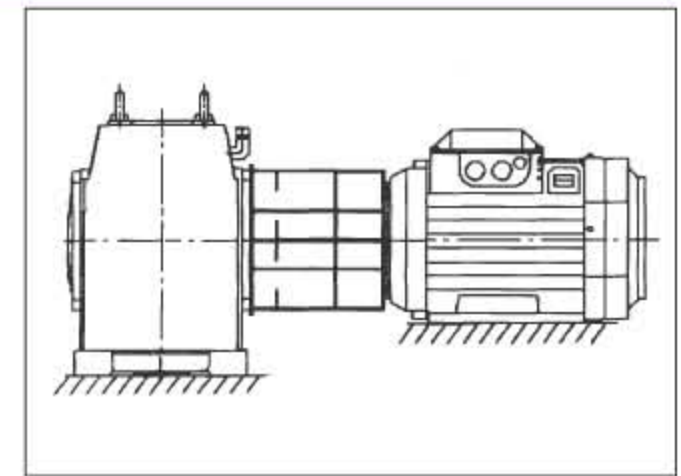
通用附件, 见第4章



Fan, page 65
风扇, 65 页



Lubrication Unit, page 67
润滑装置, 67 页



Coupling Guard, page 74
联轴器保护装置, 74 页

Size 规格	LSS Dimensions in mm Solid Shaft / 实心轴								LSS 尺寸 (mm) Hollow Shaft / 空心轴							Common Accessories 通用附件	
	d2	b2	h2	m2	Y2	U2	V2	UD	U3	UC	D4	D5	US	D2	D3	U4	FD
50	140m6	36h9	148	M30	200	232	432	216	228	336	155	154	232	150	149	355	443
60	160m6	40h9	169	M30	240	261	501	245	255	386	180	179	259	170	169	372	443
70	180m6	45h9	190	M30	240	281	521	274	284	422	190	189	288	190	189	423	547
80	200m6	45h9	210	+	280	315	595	290	302	453	210	209	306	210	209	443	547
90	220m6	50h9	231	+	280	337	617	314	324	501	250	249	328	240	239	466	547

In case of Through going LSS, same dimensions apply.
贯通 LSS 用同样尺寸

+) M20, 2 × 180° distance / 距离 0.6 × d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication and Cooling 润滑和冷却	Page 页
Cooling Coil System 冷却蛇形管系统	66
Shaft End Pump 轴端泵	68
Central Lubrication System connection 集中润滑系统连接	69
Oil Heating System 油加热系统	70

Optional Seal Arrangements 可选择的密封装置	73
Labyrinth seal on HSS and LSS HSS 和 LSS 上用迷宫密封	1)

Through going HSS 贯通高速轴	63
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Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Torque Arm 力矩臂	74
Belt Drive 带传动	75

1) Standard Solution for this Gear Unit type
*) Contact GUOMAO

1) 本型减速器的标准方案
*) 与国茂联系

When bath lubrication (+) is used, lip seal is required /
当用浸油润滑时要求唇型密封

3 - stage Helical Gear Units
Horizontal LSS
3 级斜齿轮减速器水平LSS

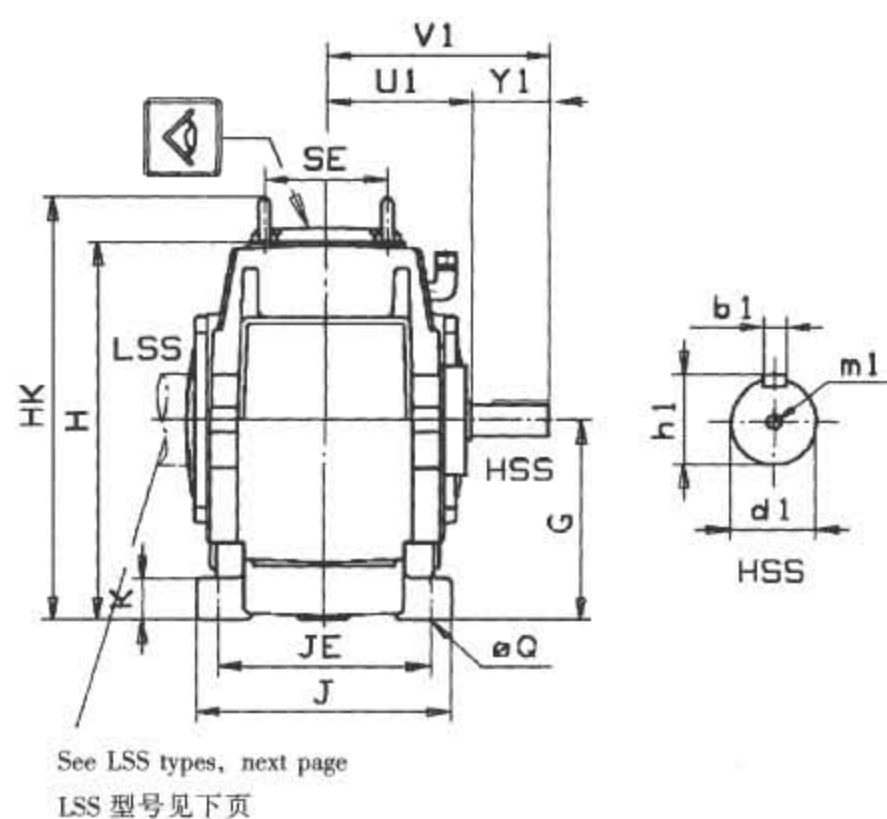
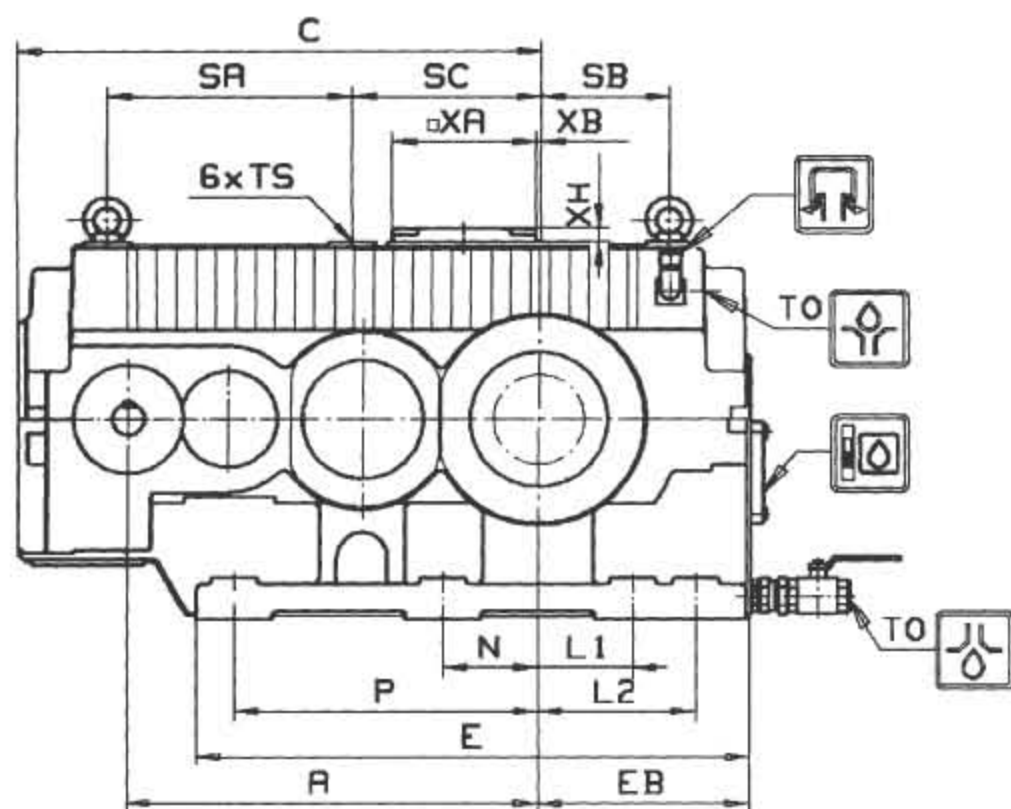
GM3P. .50-90
Solid & Hollow LSS
实心 and 空心LSS

Gear Unit Dimensions, type GM3PSF GM3PHF GM3PHT

减速器尺寸, 型号GM3PSF GM3PHF GM3PHT

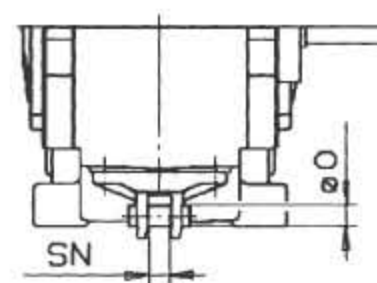
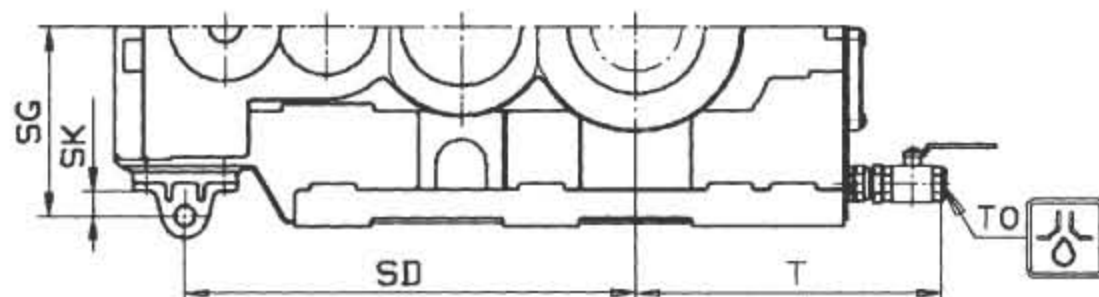
Foot Mounting Face machined for foot mounting,
type GM3PSF GM3PHF

机加的底脚安装面,
型号 GM3PSF GM3PHF



Torque Arm Mounting Bracket with unmachined foot plane,
type GM3PHT

非机加底脚面的力矩臂安装座, 型号 GM3PHT



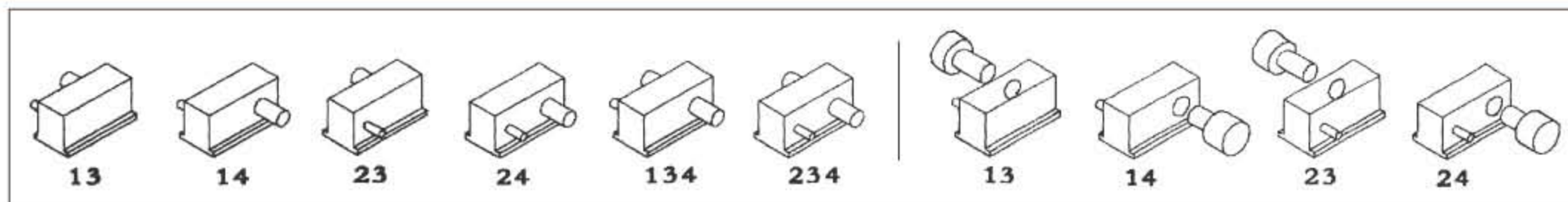
Technical Data page 11
技术数据11 页

Size 规格	Housing Dimensions in mm 箱体尺寸(mm)																			Foot Mounting 底脚安装 Type/型号 GM3PSF GM3PHF					
	A	C	E	EB	G	H	HK	J	K	SA	SB	SC	SE	TS	TO	T	XA	XB	XH	JE	L1	L2	N	P	Q
50	628	796	846	325	310	585	656	396	65	373	198	288	188	M20x35	R1 1/2	500	220	7	30	330	148	245	145	463	28
60	715	884	974	373	350	665	755	460	73	420	245	325	216	M24x42	R1 1/2	548	220	40	30	378	170	300	168	533	35
70	828	1038	1135	427	400	760	850	506	82	475	292	418	250	M24x42	R1 1/2	602	260	92	30	416	194	322	190	633	35
80	878	1089	1230	470	440	835	944	552	90	541	328	395	280	M30x53	R1 1/2	645	260	62	30	454	209	369	209	666	42
90	972	1217	1324	512	480	910	1019	584	97	531	361	525	305	M30x53	R1 1/2	687	260	192	30	480	228	418	228	719	42

Size 规格	HSS Dimensions in mm				HSS 尺寸 (mm)				Torque Arm Mounting Bracket 力矩臂安装座 Type / 型号 GM3PHT					Weight 重量	Oil Capacity / 油量	
		i _N = 20... 90													Splash lubrication 飞溅润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	O	SD	SG	SK	SN	kg	1	1	
50	226	95	321	50k6	14h9	53.5	M16	32	693	294	38	32	835	57	32	
60	251	95	346	55m6	16h9	59	M20	45	775	308	52	45	1200	83	50	
70	280	125	405	65m6	18h9	69	M20	45	928	380	52	45	1675	125	73	
80	300	125	425	70m6	20h9	74.5	M20	45	978	380	52	45	2100	160	97	
90	322	150	472	80m6	22h9	85	M20	45	1107	389	52	45	2770	208	123	

Shaft Positions

轴的位置

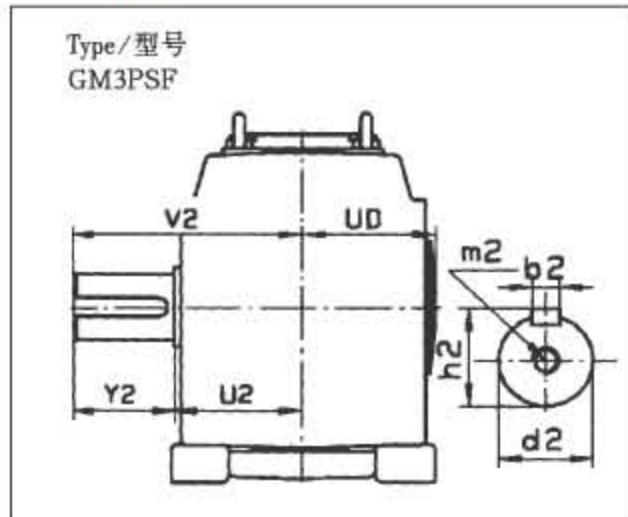


3 - stage Helical Gear Units
Horizontal LSS
3 级斜齿轮减速器水平LSS

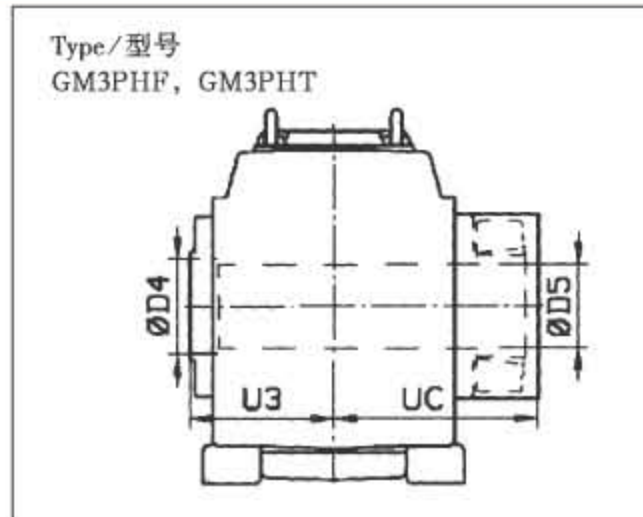
GM3P. .50-90
Solid & Hollow LSS
实心 and 空心LSS

LSS types

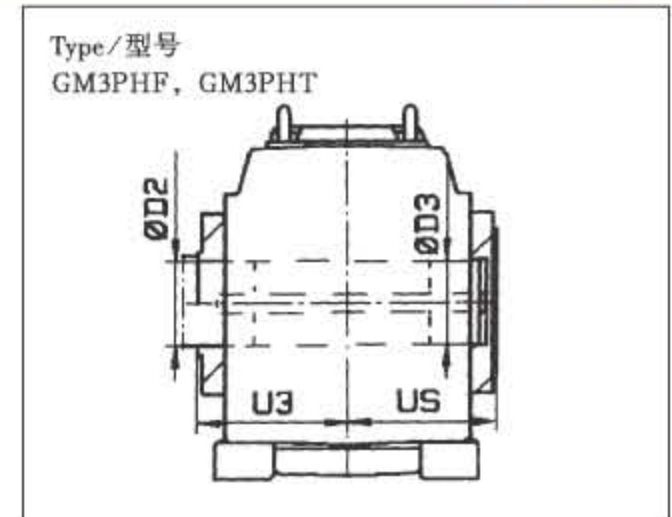
低速轴型号



Solid shaft
实心轴



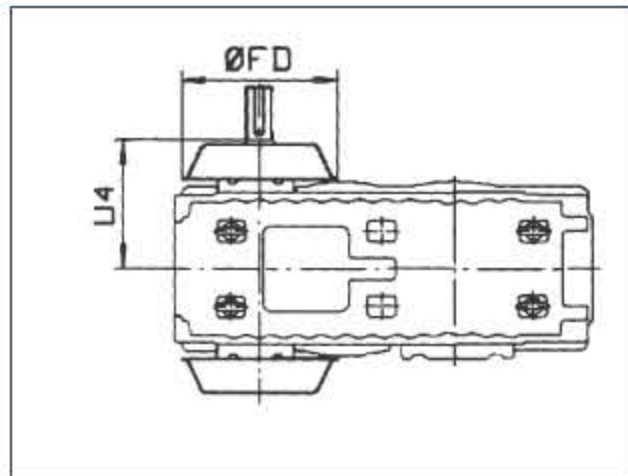
Hollow Shaft, Shrink Disk, page 57
空心轴, 收缩盘, 57 页



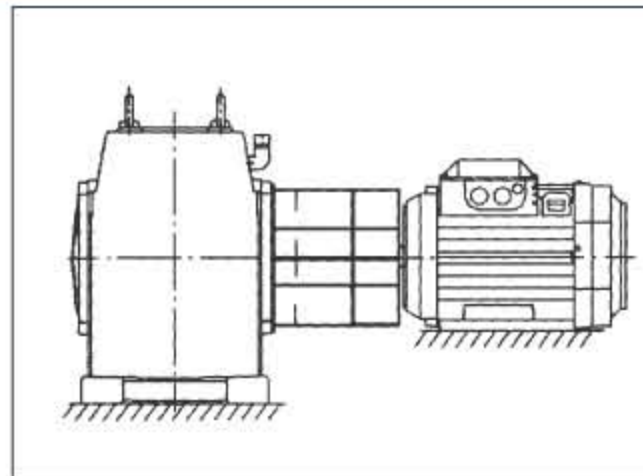
Hollow Shaft, Key Connection, page 61
空心轴, 键连接, 61 页

Common Accessories, see section 4

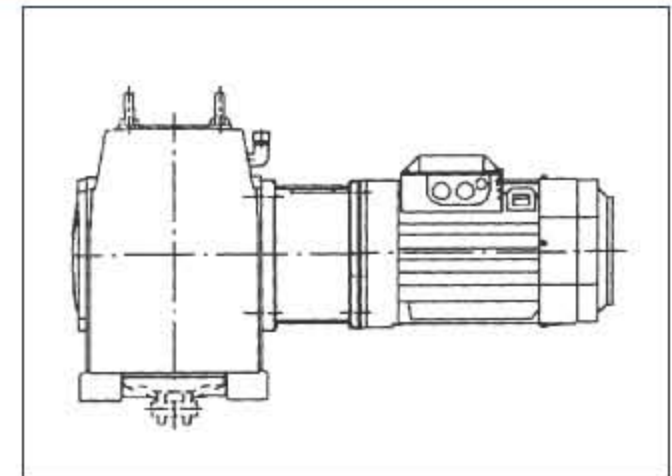
通用附件, 见第4章



Fan, page 65
风扇, 65 页



Coupling Guard page 74
联轴器保护装置, 74 页



Motor Flange, Page 75
电机法兰, 75 页

Size 规格	LSS Dimensions in mm								LSS 尺寸(mm)							Common Accessories	
	Solid Shaft / 实心轴								Hollow Shaft / 空心轴							通用附件	
	d2	b2	h2	m2	Y2	U2	V2	UD	U3	UC	D4	D5	US	D2	D3	U4	FD
50	140m6	36h9	148	M30	200	232	432	216	228	336	155	154	232	150	149	343	443
60	160m6	40h9	169	M30	240	261	501	245	255	386	180	179	259	170	169	367	443
70	180m6	45h9	190	M30	240	281	521	274	284	422	190	189	288	190	189	417	547
80	200m6	45h9	210	+)	280	315	595	290	302	453	210	209	306	210	209	435	547
90	220m6	50h9	231	+)	280	337	617	314	324	501	250	249	328	240	239	457	547

In case of Through going LSS, same dimensions apply.
贯通 LSS 用同样尺寸

+) M20, 2 × 180° distance / 距离 0.6 × d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication and Cooling 润滑和冷却	Page 页
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Lubrication Unit 润滑装置	67
Shaft End Pump 轴端泵	68
Central Lubrication System connections 集中润滑系统连接	69
Oil Heating System 油加热系统	70
Optional Seal Arrangements 可选择的密封装置	73
Lip seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

Through going HSS 贯通高速轴	63
Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Torque Arm 力矩支臂	74
Belt Drive 带传动	75

- 1) Standard Solution for this Gear Unit type
*) Contact GUOMAO
1) 本型减速器的标准方案
*) 与国茂联系

4 - stage Helical Gear Units
Horizontal LSS
4 级斜齿轮减速器水平LSS

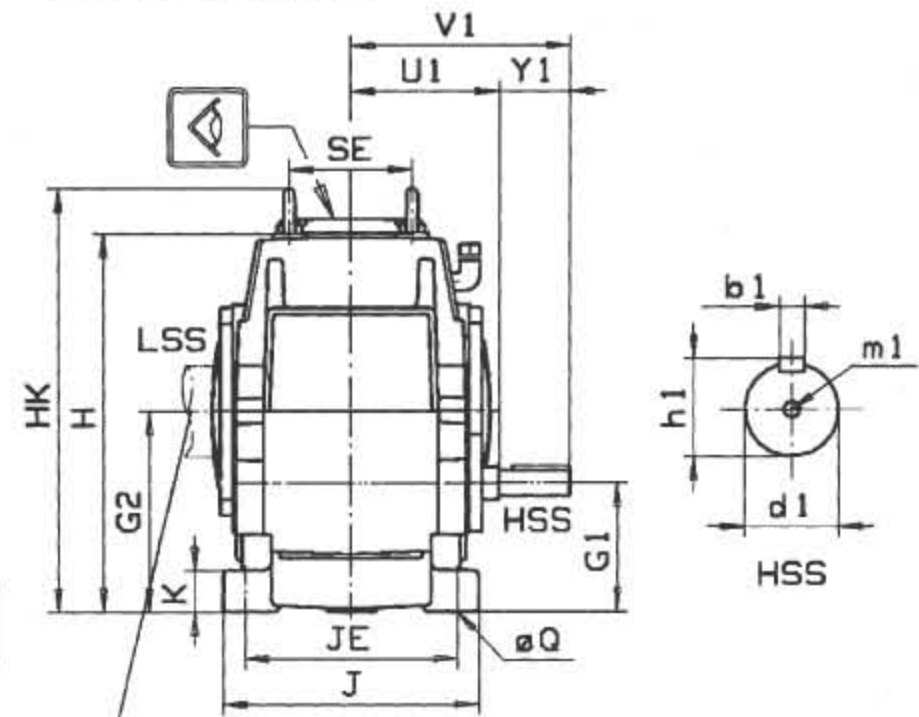
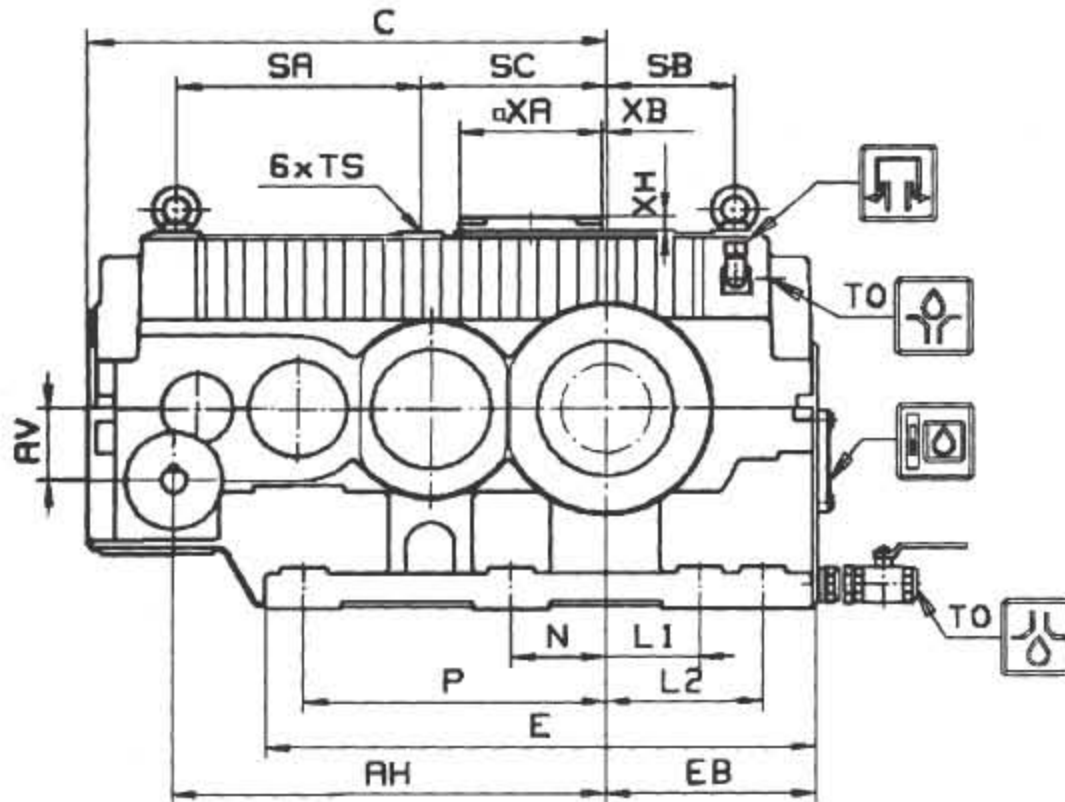
GM4P. .50-90
Solid & Hollow LSS
实心 and 空心LSS

Gear Unit Dimensions, type GM4PSF GM4PHF GM4PHT

减速器尺寸, 型号GM4PSF GM4PHF GM4PHT

Foot Mounting Face machined for foot mounting,
type GM4PSF GM4PHF

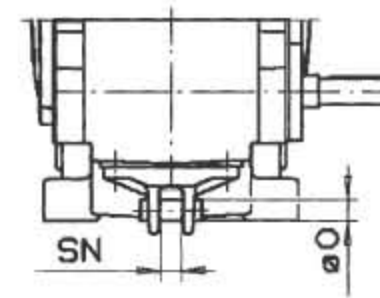
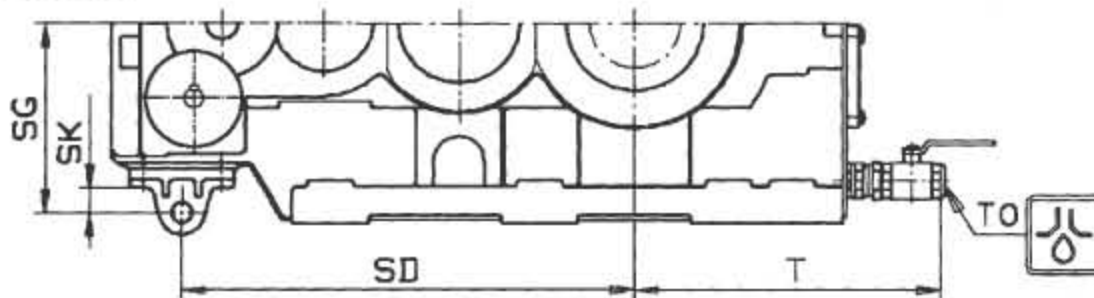
机加的底脚安装面,
型号 GM4PSF GM4PHF



See LSS types, next page
见下页 LSS 型号

Torque Arm Mounting Bracket with unmachined foot plane,
type GM4PHT

非机加底脚面的力矩臂安装座, 型号 GM4PHT



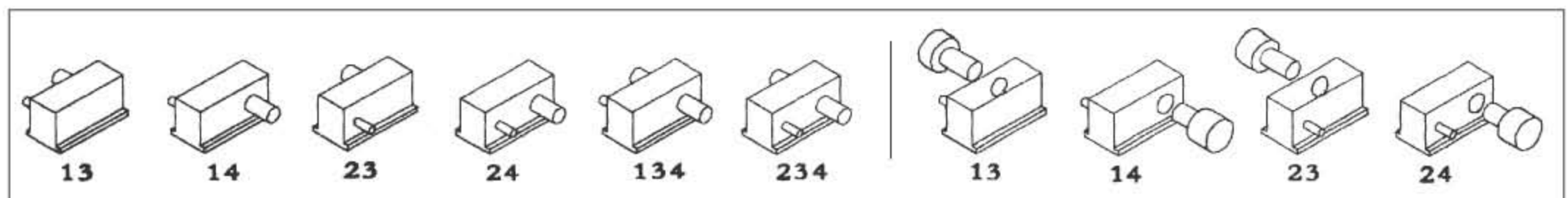
Technical Data page 11
技术数据 11 页

Size 规格	Housing Dimensions in mm 箱体尺寸 (mm)																					Foot Mounting 底脚安装 Type/型号 GM4PSF GM4PHF					
	AH	AV	C	E	EB	G1	G2	H	HK	J	K	SA	SB	SC	SE	TS	TO	T	XA	XB	XH	JE	L1	L2	N	P	Q
50	663	111.6	796	846	325	198.4	310	585	656	396	65	373	198	288	188	M20x35	R1 1/2	500	220	7	30	330	148	245	145	463	28
60	750	111.6	884	974	373	238.4	350	665	755	460	73	420	245	325	216	M24x42	R1 1/2	548	220	40	30	378	170	300	168	533	35
70	868	148.7	1038	1135	427	251.3	400	760	850	506	82	475	292	418	250	M24x42	R1 1/2	602	260	92	30	416	194	322	190	633	35
80	918	148.7	1089	1230	470	291.3	440	835	944	552	90	541	328	395	280	M30x53	R1 1/2	645	260	62	30	454	209	369	209	666	42
90	1047	151.4	1217	1324	512	328.6	480	910	1019	584	97	531	361	525	305	M30x53	R1 1/2	687	260	192	30	480	228	418	228	719	42

Size 规格	HSS Dimensions in mm HSS 尺寸 (mm)							Torque Arm Mounting Bracket 力矩臂安装座 Type / 型号 GM4PHT					Weight 重量	Oil Capacity / 油量	
	i _N = 100... 400													Splash lubrication 飞溅润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	O	SD	SG	SK	SN		kg	1
50	217	70	287	35k6	10h9	38	M12	32	693	294	38	32	845	57	57
60	244	95	339	40k6	12h9	43	M16	45	775	308	52	45	1215	83	83
70	273	95	368	45k6	14h9	48.5	M16	45	928	380	52	45	1700	125	125
80	291	95	386	50k6	14h9	53.5	M16	45	978	380	52	45	2125	160	160
90	313	125	438	60m6	18h9	64	M20	45	1107	389	52	45	2800	208	208

Shaft Positions

轴的位置

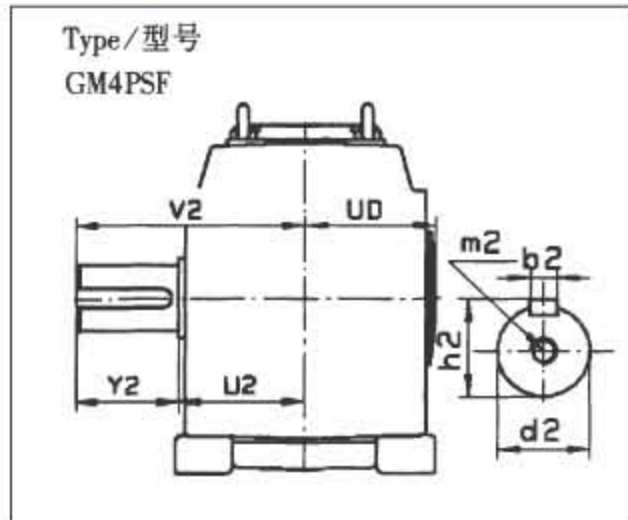


4 - stage Helical Gear Units
Horizontal LSS
4 级斜齿轮减速器水平LSS

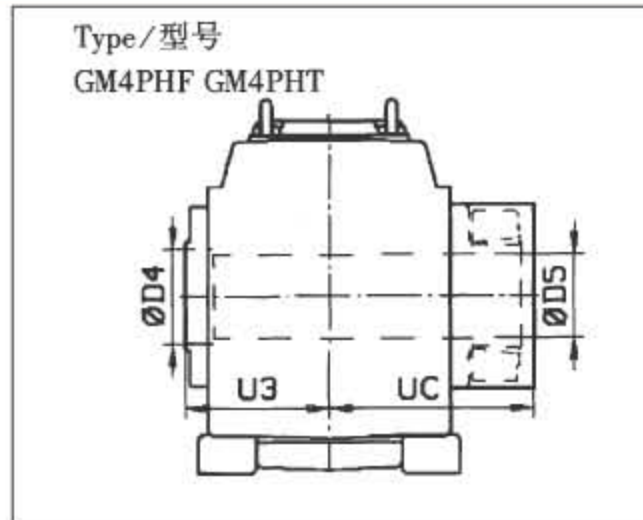
GM4P. .50-90
Solid & Hollow LSS
实心 and 空心LSS

LSS types

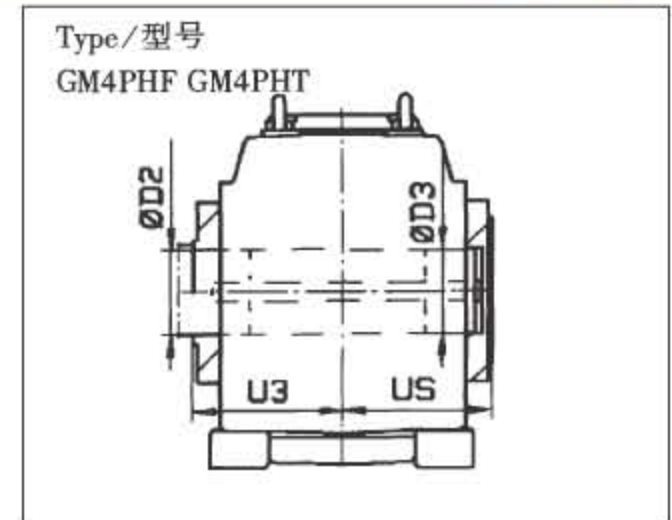
低速轴型号



Solid Shaft
实心轴



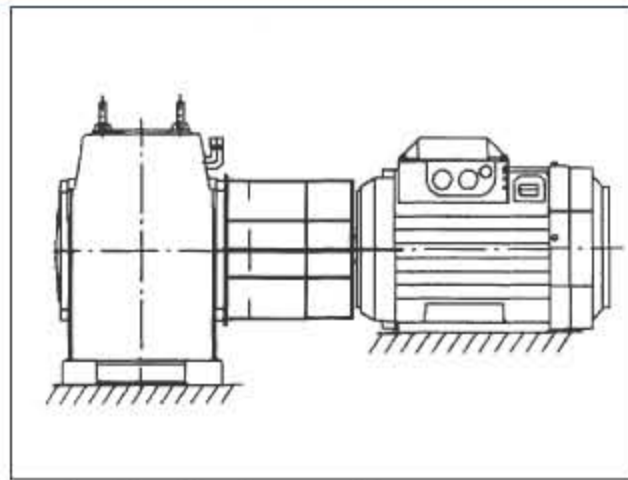
Hollow Shaft, Shrink Disk, page 57
空心轴, 收缩盘, 57 页



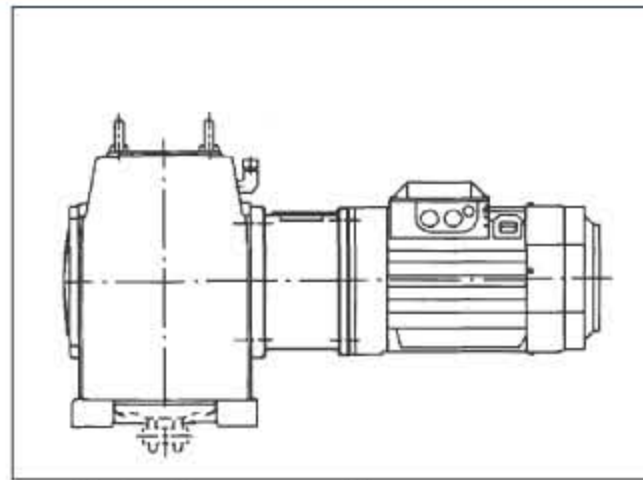
Hollow Shaft, Key Connection, page 61
空心轴, 键连接, 61 页

Common Accessories, see section 4

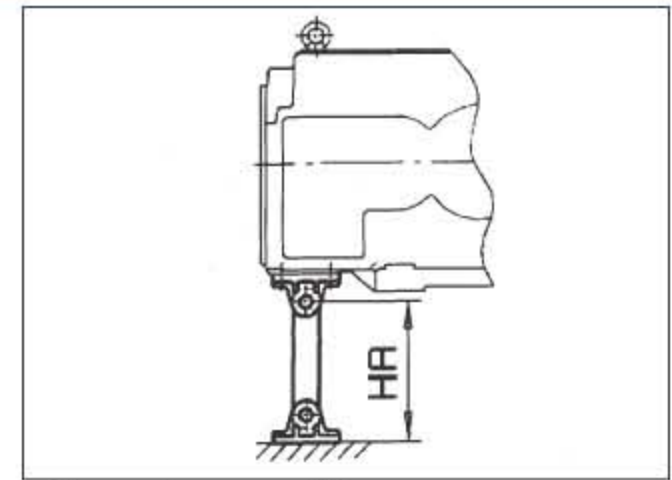
通用附件, 见第4章



Coupling Guard, page 74
联轴器保护装置, 74 页



Motor Flange, page 75
电动机法兰, 75 页。



Torque Arm, page 74
力矩臂, 74 页

Size 规格	LSS Dimensions in mm Solid Shaft / 实心轴								LSS 尺寸 Hollow Shaft / 空心轴							Common Accessories 通用附件	
	d2	b2	h2	m2	Y2	U2	V2	UD	U3	UC	D4	D5	US	D2	D3	HMin	HMax
50	140m6	36h9	148	M30	200	232	432	216	228	336	155	154	232	150	149	125	950
60	160m6	40h9	169	M30	240	261	501	245	255	386	180	179	259	170	169	175	1070
70	180m6	45h9	190	M30	240	281	521	274	284	422	190	189	288	190	189	175	1070
80	200m6	45h9	210	+))	280	315	595	290	302	453	210	209	306	210	209	175	1070
90	220m6	50h9	231	+))	280	337	617	314	324	501	250	249	328	240	239	175	1070

In case of Through going LSS, same dimensions apply.
贯通 LSS 用同样尺寸

+) M20, 2 × 180° distance / 距离 0.6 × d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication 润滑	Page 页
Lubrication Unit 润滑装置	67
Shaft End Pump 轴端泵	68
Central Lubrication System Connection 集中润滑系统连接	69
Oil Heating System 油加热系统	70

Optional Seal Arrangements 可选的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

Through going HSS 贯通 HSS	63
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Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

- 1) Standard Solution for this Gear Unit type
*) Contact GUOMAO
1) 本型减速器的标准方案
*) 与国茂联系

3 - stage Bevel Helical Gear Units
Horizontal LSS
3 级锥齿轮 - 斜齿轮减速器水平 LSS

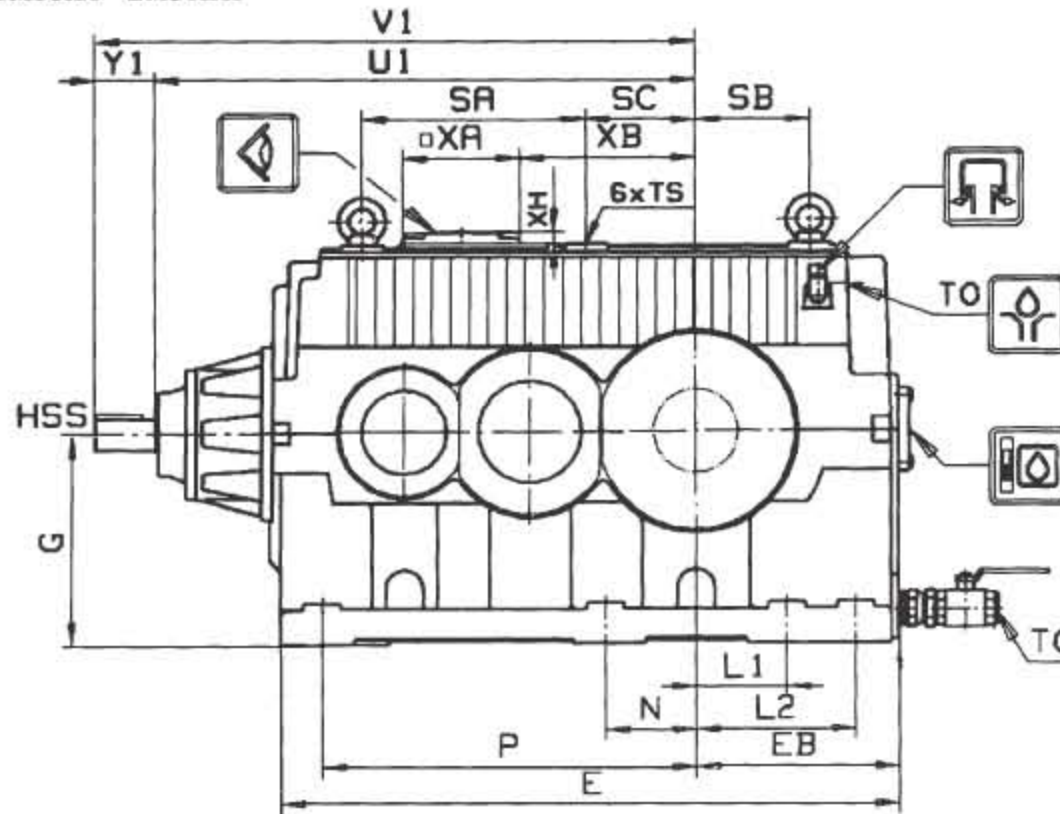
GM3R. .50-90
Solid & Hollow LSS
实心和空心 LSS

Gear Unit Dimensions, type GM3RSF GM3RHF GM3RHT

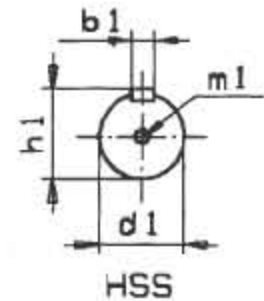
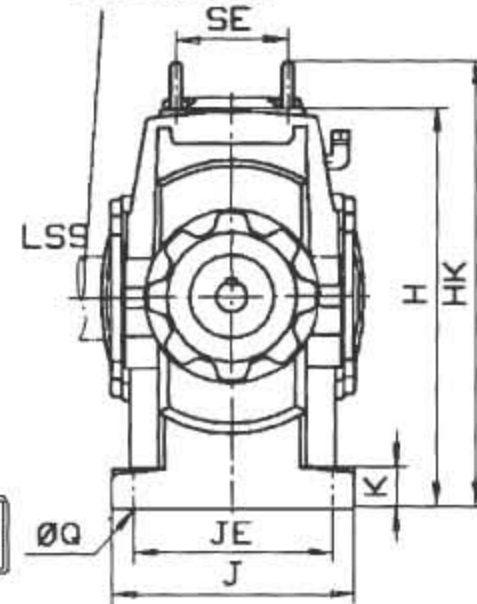
减速器尺寸, 型号 GM3RSF GM3RHF GM3RHT

Foot Mounting Face machined for foot mounting,
type GM3RSF GM3RHF

机加的底脚安装面,
型号 GM3RSF GM3RHF

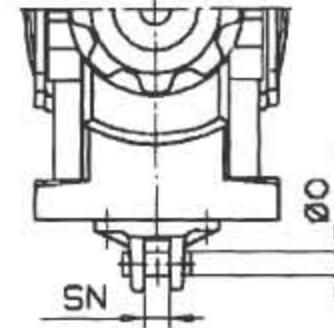
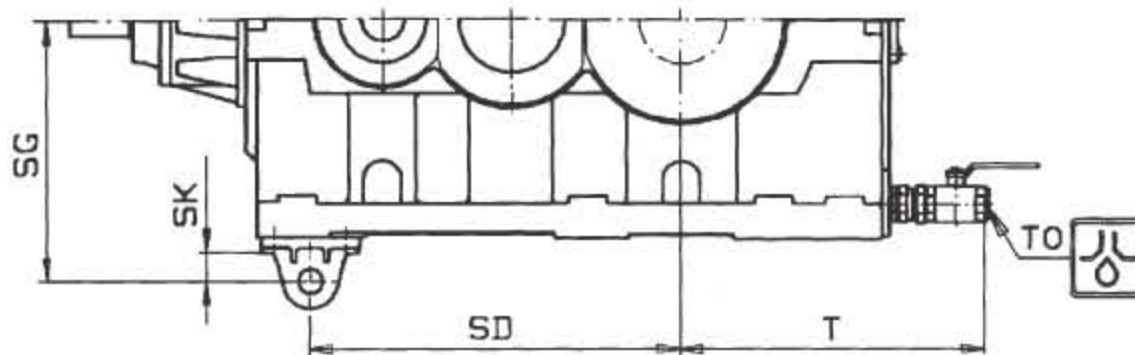


See LSS types, next Page
LSS 型号见下页



Torque Arm Mounting Bracket with unmachined foot plane,
type GM3RHT

带非机加底脚面的力矩臂安装座,
型号 GM3RHT



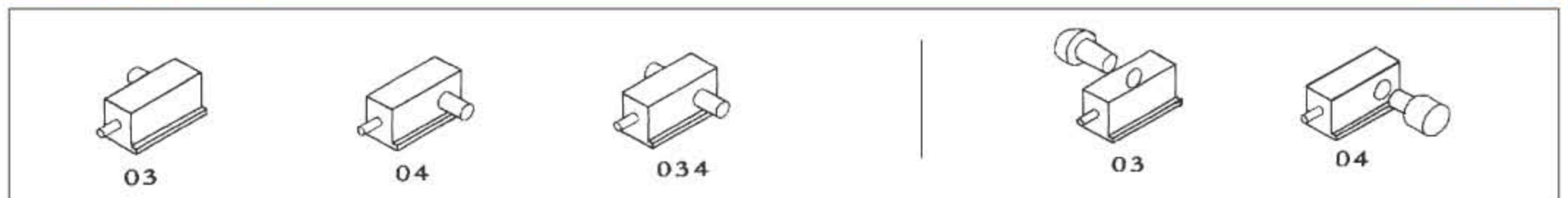
Technical Data Page 13
技术数据 13 页

Size 规格	Housing Dimensions in mm 箱体尺寸 (mm)																	Foot Mounting 底脚安装 Type/型号 GM3RSF GM3RHF					
	E	EB	G	H	HK	J	K	SA	SB	SC	SE	TS	TO	T	XA	XB	XH	JE	L1	L2	N	P	Q
50	994	325	350	660	731	396	65	376	190	175	188	M20x35	R1 1/2	500	220	253	30	330	148	245	148	600	28
60	1149	373	400	755	845	460	76	420	215	205	216	M24x42	R1 1/2	548	220	305	30	378	170	300	170	700	35
70	1320	427	460	870	960	506	82	460	276	270	250	M24x42	R1 1/2	602	260	370	30	416	194	322	194	800	35
80	1418	470	505	955	1045	552	90	490	300	280	250	M24x42	R1 1/2	645	260	390	30	454	209	369	209	853	42
90	1551	512	550	1040	1149	584	97	588	346	291	280	M30x53	R1 1/2	687	260	455	30	480	228	418	228	945	42

Size 规格	HSS Dimensions in mm HSS 尺寸 (mm)												Torque Arm Mounting Bracket 力矩臂安装座 Type/型号 GM3RHT					Weight 重量	Oil Capacity/油量 Splash lubrication 飞溅润滑 Pressure lubrication 压力润滑	
	i _N = 14...56						i _N = 63...80											kg	1	1
	U1	Y1	V1	d1	b1	h1	Y1	V1	d1	b1	h1	M16	O	SD	SG	SK	SN			
50	881	95	976	55m6	16h9	59	95	976	45k6	14h9	48,5	M16	32	580	418	38	32	846	62	38
60	1012	125	1137	65m6	18h9	69	95	1107	55m6	16h9	59	M20	45	676	482	52	45	1273	92	41
70	1142	125	1267	75m6	20h9	79,5	125	1267	60m6	18h9	64	M20	45	795	542	52	45	1879	144	64
	i _N = 14...63						i _N = 71...80											kg	185	79
80	1192	125	1317	75m6	20h9	79,5	125	1317	60m6	18h9	64	M20	45	845	587	52	45	2375	185	79
90	1363	150	1513	90m6	25h9	95	125	1488	70m6	20h9	74,5	M20	45	945	632	52	45	3150	227	105

Shaft Positions

轴的位置

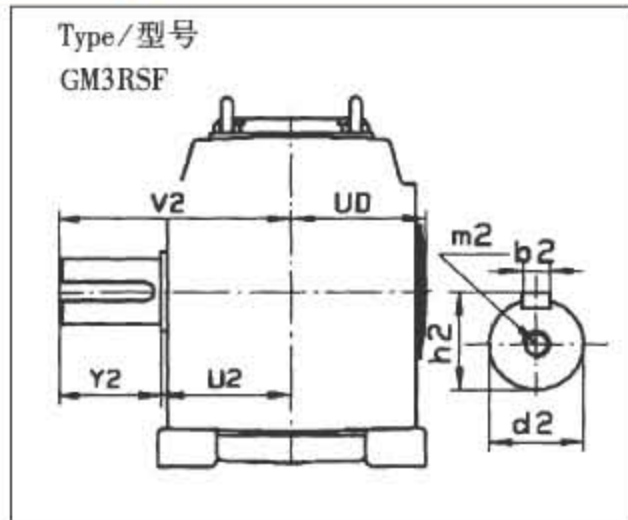


3 - stage Bevel Helical Gear Units
Horizontal LSS
3 级锥齿轮 - 斜齿轮减速器水平 LSS

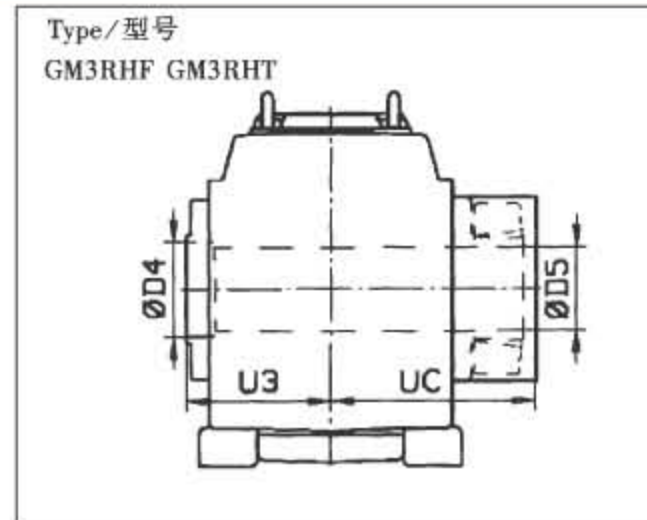
GM3R. .50-90
Solid & Hollow LSS
实心 and 空心 LSS

LSS types

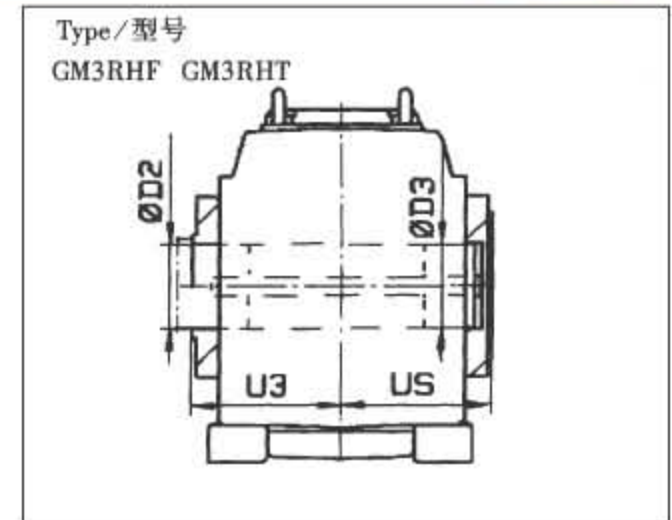
低速轴型号



Solid Shaft
实心轴



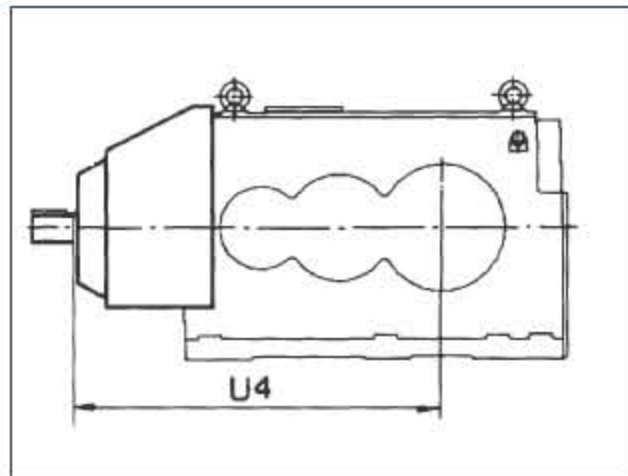
Hollow Shaft, Shrink Disk, page 57
空心轴, 收缩盘, 57 页



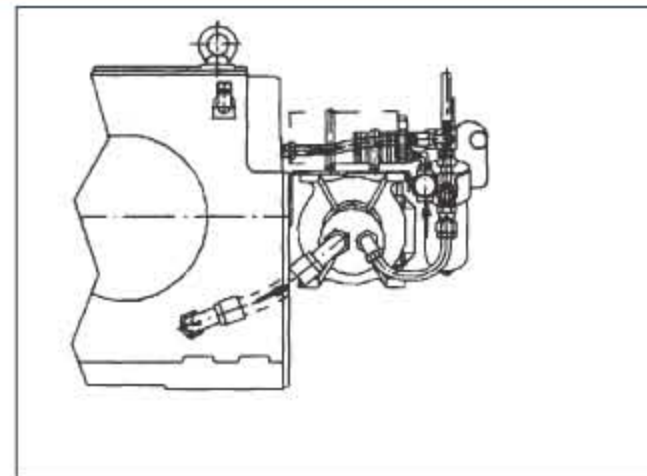
Hollow Shaft, Key Connection, page 61
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Common Accessories, see section 4

通用附件, 见第4章



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风扇, 65 页



Lubrication Unit, page 67
润滑装置, 67 页

Size 规格	LSS Dimensions in mm								LSS 尺寸						Common Accessories	
	Solid Shaft / 实心轴								Hollow Shaft / 空心轴						通用附件	
	d2	b2	h2	m2	Y2	U2	V2	UD	U3	UC	D4	D5	US	D2	D3	U4
50	140m6	36h9	148	M30	200	232	432	216	228	336	155	154	232	150	149	998
60	160m6	40h9	169	M30	240	261	501	245	255	386	180	179	259	170	169	1129
70	180m6	45h9	190	M30	240	281	521	274	284	422	190	189	288	190	189	1278
80	200m6	45h9	210	+)	280	315	595	290	302	453	210	209	306	210	209	1328
90	220m6	50h9	231	+)	280	337	617	314	324	501	250	249	328	240	239	1499

In case of Through going LSS, same dimensions apply.
贯通 LSS 用同样尺寸

+) M20, 2 × 180° distance / 距离 0.6 × d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication and Cooling 润滑和冷却		Page 页
Cooling Coil System 冷却蛇形管系统		66
Shaft End Pump 轴端泵		68
Central Lubrication System Connections 集中润滑系统连接		69
Oil Heating System 油加热系统		70
Optional Seal Arrangements 可选的密封装置		73
Lip seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)	

Coupled Equipment 连接装置		Page 页
Couplings 联轴器		*)
Coupling Guard 联轴器保护装置		74
Torque Arm 力矩臂		74
Belt Drive 带传动		75
Motor Flange 电动机法兰		75

1) Standard Solution for this Gear Unit type

*) Contact GUOMAO

1) 本型减速器的标准方案

*) 与国茂联系

4 - stage Bevel Helical Gear Units
Horizontal LSS

4 级锥齿轮-斜齿轮减速器水平 LSS

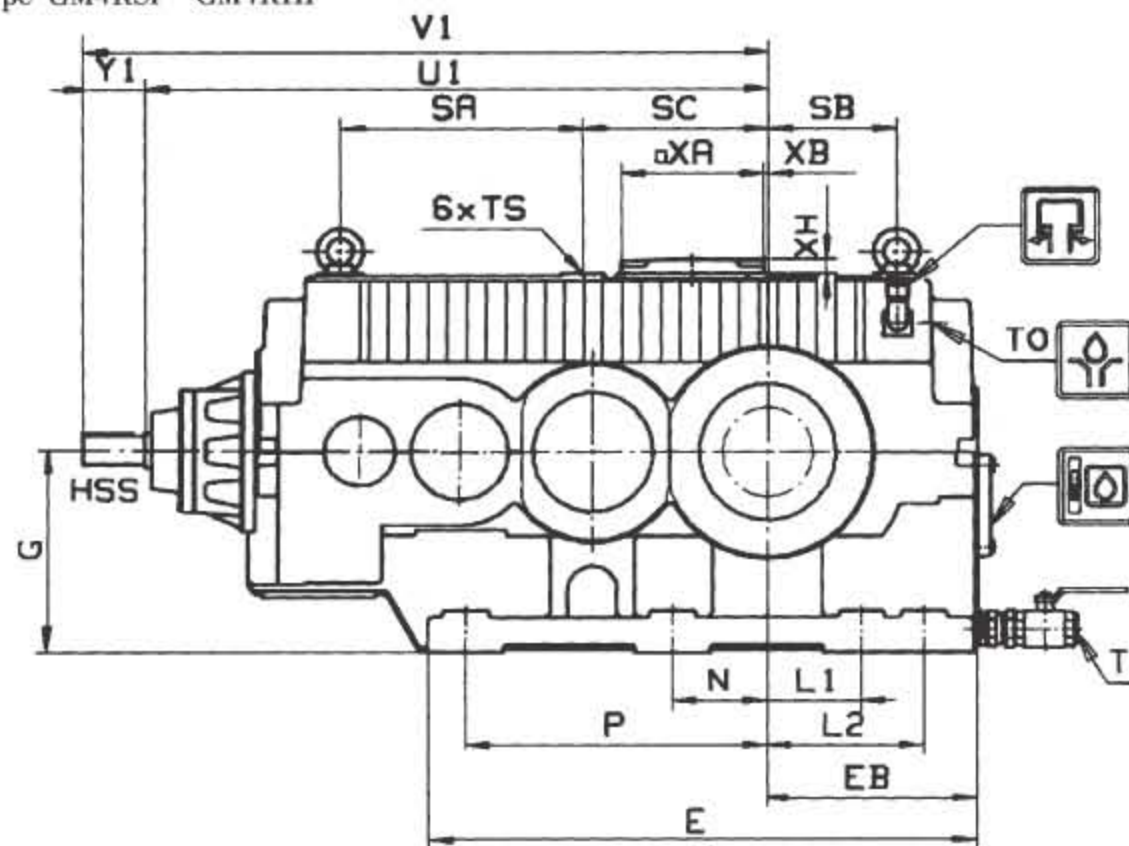
GM4R. .50-90
Solid & Hollow LSS

实心 and 空心 LSS

Gear Unit Dimensions, type GM4RSF GM4RHF GM4RHT

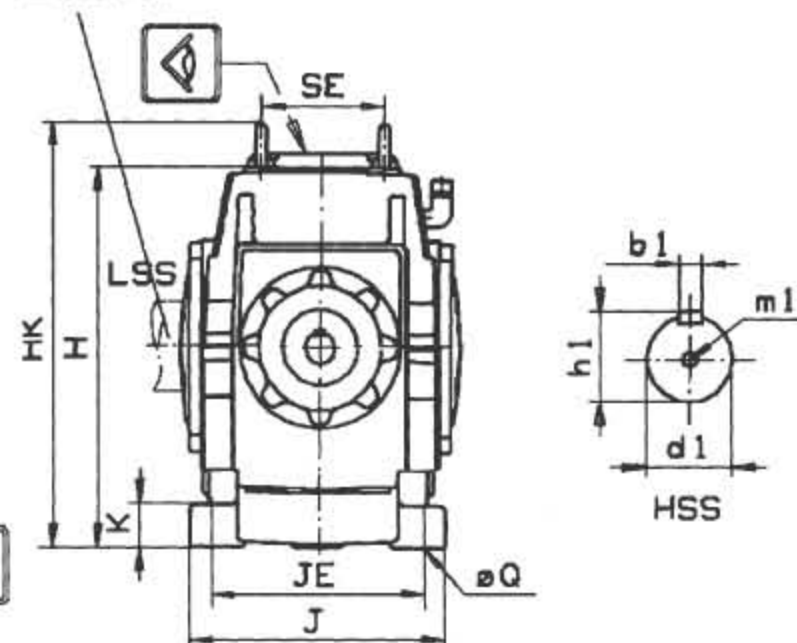
减速器尺寸, 型号 GM4RSF GM4RHF GM4RHT

Foot Mounting Face machined for foot mounting,
type GM4RSF GM4RHF

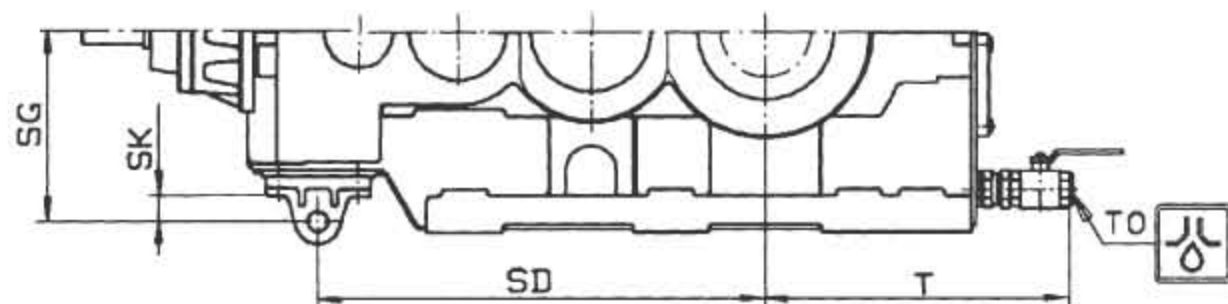


机加的底脚安装面,
型号 GM4RSF GM4RHF

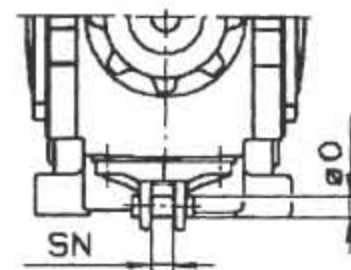
See LSS types, next Page
LSS 型号见下页



Torque Arm Mounting Bracket with unmachined foot plane,
type GM4RHT



带非机加底脚面的力矩臂安装座
型号 GM4RHT



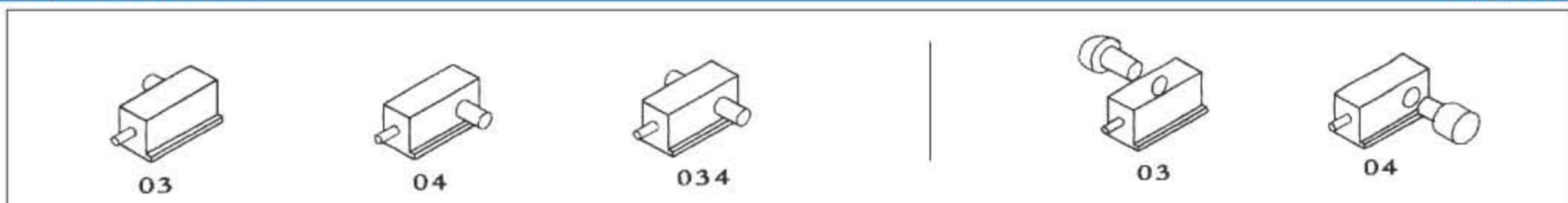
Technical Data Page 13
技术数据 13 页

Size 规格	Housing Dimensions in mm 箱体尺寸 (mm)																	Foot Mounting 底脚安装 Type/型号 GM4RSF GM4RHF					
	E	EB	G	H	HK	J	K	SA	SB	SC	SE	TS	TO	T	XA	XB	XH	JE	L1	L2	N	P	Q
50	846	325	310	585	656	396	65	373	198	288	188	M20x35	R1 1/2	500	220	7	30	330	148	245	145	463	28
60	974	373	350	665	755	460	73	420	245	325	216	M24x42	R1 1/2	548	220	40	30	378	170	300	168	533	35
70	1135	427	400	760	850	506	82	475	292	418	250	M24x42	R1 1/2	602	260	92	30	416	194	322	190	633	35
80	1230	470	440	835	944	552	90	541	328	395	280	M30x53	R1 1/2	645	260	62	30	454	209	369	209	666	42
90	1324	512	480	910	1019	584	97	531	361	525	305	M30x53	R1 1/2	687	260	192	30	480	228	418	228	719	42

Size 规格	HSS Dimensions in mm							HSS 尺寸 (mm)						Torque Arm Mounting Bracket 力矩支臂安装座 Type/型号 GM4RHT					Weight 重量	Oil Capacity/油量	
	i _N = 90... 250							i _N = 280... 315												Splash lubrication 飞溅润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	O	SD	SG	SK	SN		kg	1
50	958	95	1053	45k6	14h9	48.5	M16	70	1028	35k6	10h9	38	M12	32	693	294	38	32	895	58	58
60	1045	95	1140	45k6	14h9	48.5	M16	70	1115	35k6	10h9	38	M12	45	775	308	52	45	1285	85	85
70	1235	95	1330	55m6	16h9	59	M20	95	1330	45k6	14h9	48.5	M16	45	928	380	52	45	1810	128	128
80	1285	95	1380	55m6	16h9	59	M20	95	1380	45k6	14h9	48.5	M16	45	978	380	52	45	2260	164	164
90	1438	125	1563	65m6	18h9	69	M20	95	1533	55m6	16h9	59	M20	45	1107	389	52	45	2980	213	213

Shaft Positions

轴的位置

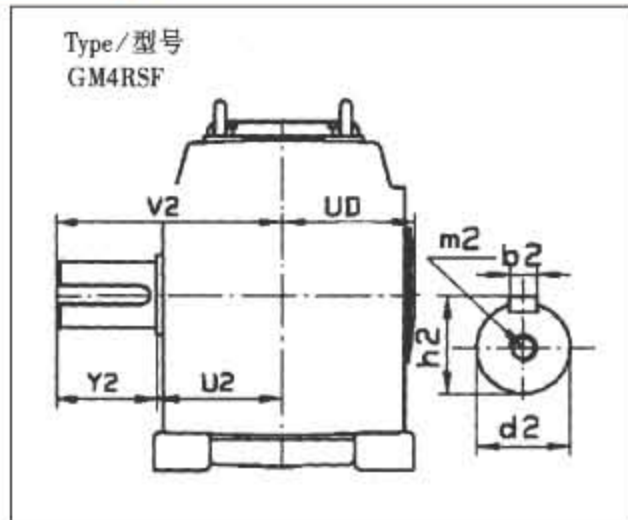


4 - stage Bevel Helical Gear Units
Horizontal LSS
4 级锥齿轮 - 斜齿轮减速器水平 LSS

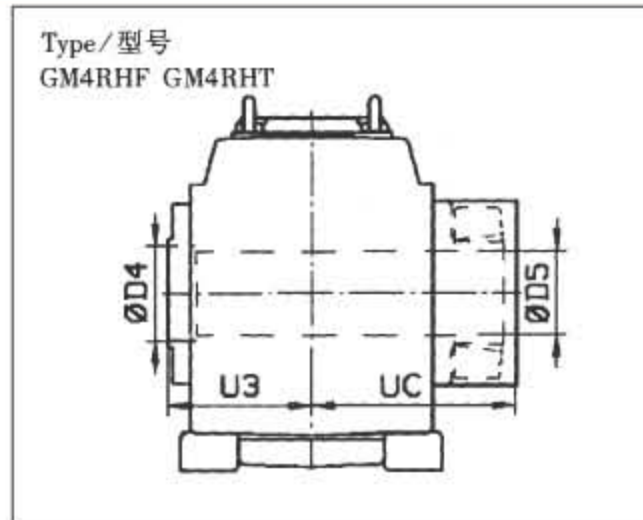
GM4R. .50-90
Solid & Hollow LSS
实心和空心LSS

LSS types

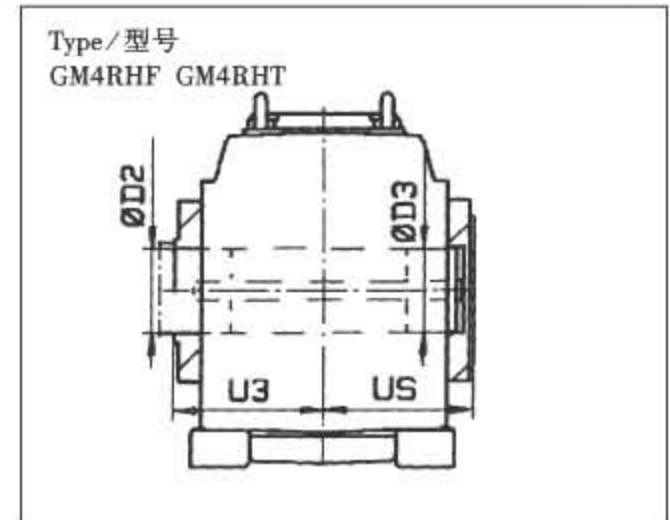
LSS 型号



Type/型号
GM4RSF
Solid Shaft
实心轴



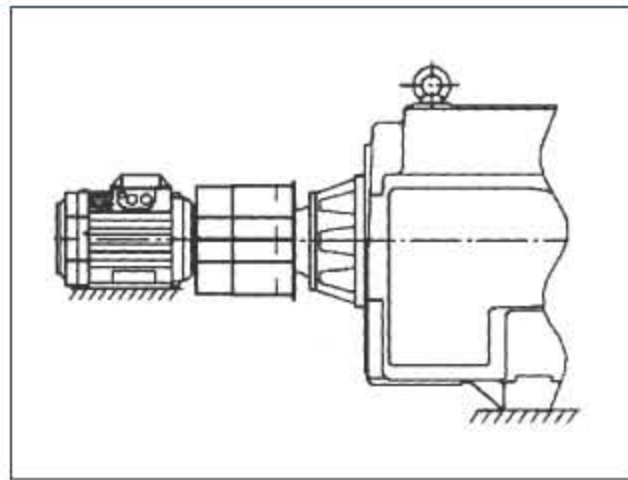
Type/型号
GM4RHF GM4RHT
Hollow Shaft, Shrink Disk, page 57
空心轴, 收缩盘, 57页



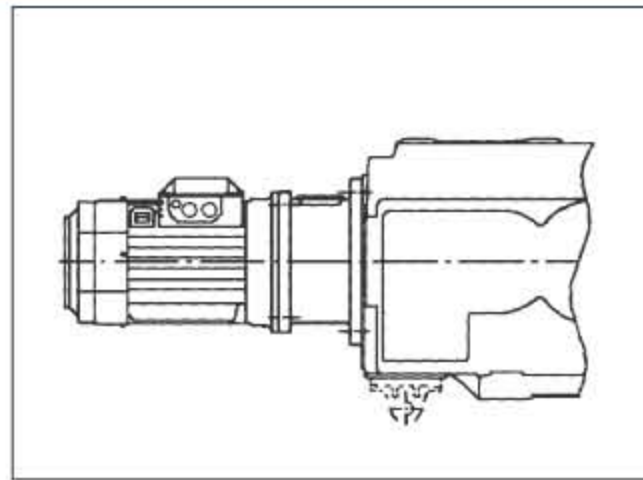
Type/型号
GM4RHF GM4RHT
Hollow Shaft, Key Connection, page 61
空心轴, 键连接, 61页

Common Accessories, see section 4

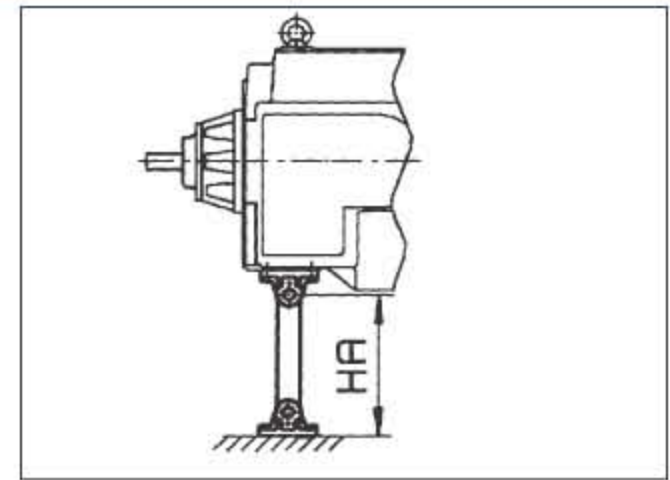
通用附件, 见第4章



Coupling Guard, page 74
联轴器保护装置, 74 页



Motor Flange, page 75
电动机法兰, 75 页



Torque Arm, page 74
力矩支臂, 74 页

Size 规格	LSS Dimensions in mm								LSS 尺寸							Common Accessories 通用附件	
	Solid Shaft / 实心轴								Hollow Shaft / 空心轴								
	d2	b2	h2	m2	Y2	U2	V2	UD	U3	UC	D4	D5	US	D2	D3	HAmín	HAmáx
50	140m6	36h9	148	M30	200	232	432	216	228	336	155	154	232	150	149	125	950
60	160m6	40h9	169	M30	240	261	501	245	255	386	180	179	259	170	169	175	1070
70	180m6	45h9	190	M30	240	281	521	274	284	422	190	189	288	190	189	175	1070
80	200m6	45h9	210	+)	280	315	595	290	302	453	210	209	306	210	209	175	1070
90	220m6	50h9	231	+)	280	337	617	314	324	501	250	249	328	240	239	175	1070

In case of Through going LSS, same dimensions apply.
贯通 LSS 用同样尺寸

+) M20, 2 x 180° distance / 距离 0.6 x d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication 润滑	Page 页
Lubrication Unit 润滑装置	67
Shaft End Pump 轴端泵	68
Central Lubrication System Connections 集中润滑系统连接	69
Oil Heating System 油加热系统	70

Optional Seal Arrangements 可选择的密封装置	Page 页
Lip seal on HSS and LSS HSS 和 LSS 上用唇型密封	73

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

- 1) Standard Solution for this Gear Unit type
*) Contact GUOMAO
1) 本型减速器的标准方案
*) 与国茂联系

5 - stage Bevel Helical Gear Units
Horizontal LSS

5 级锥齿轮-斜齿轮减速器水平 LSS

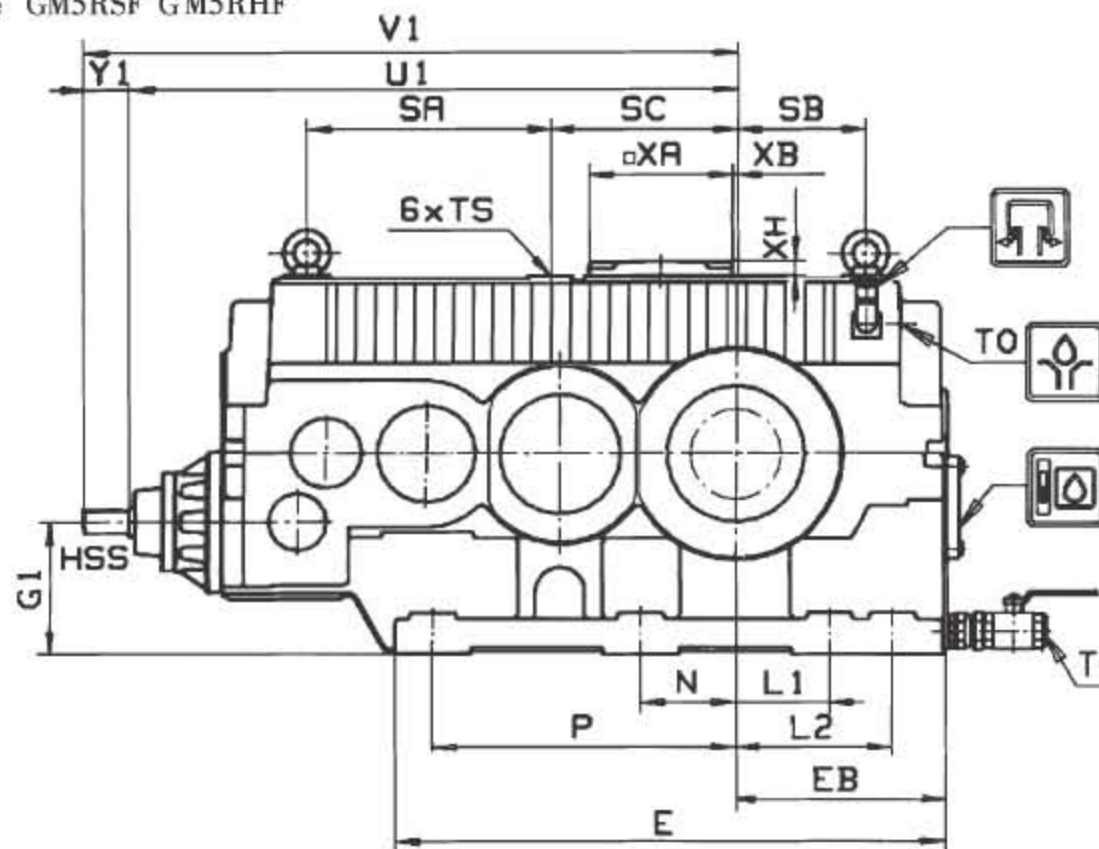
GM5R. .50-90
Solid & Hollow LSS

实心 and 空心 LSS

Gear Unit Dimensions, type GM5RSF GM5RHF GM5RHT

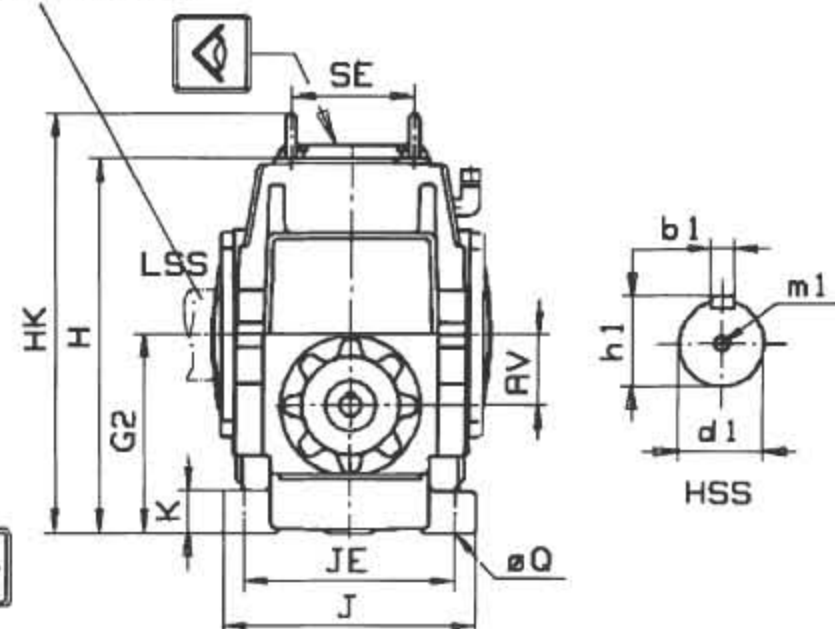
减速器尺寸, 型号 GM5RSF GM5RHF GM5RHT

Foot Mounting Face machined for foot mounting,
type GM5RSF GM5RHF



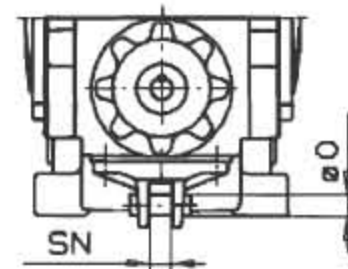
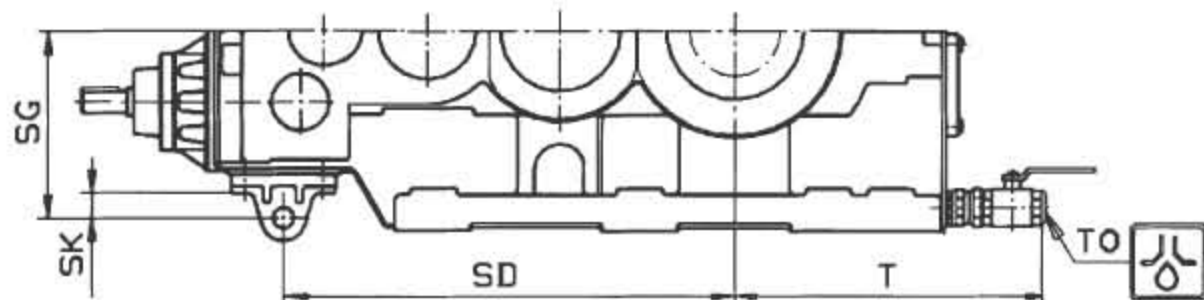
机加的底脚安装面,
型号 GM5RSF GM5RHF

See LSS types, next Page
LSS 型号见下页



Torque Arm Mounting Bracket with unmachined foot plane,
type GM5RHT

带非机加底脚面的力矩臂安装座,
型号 GM5RHT



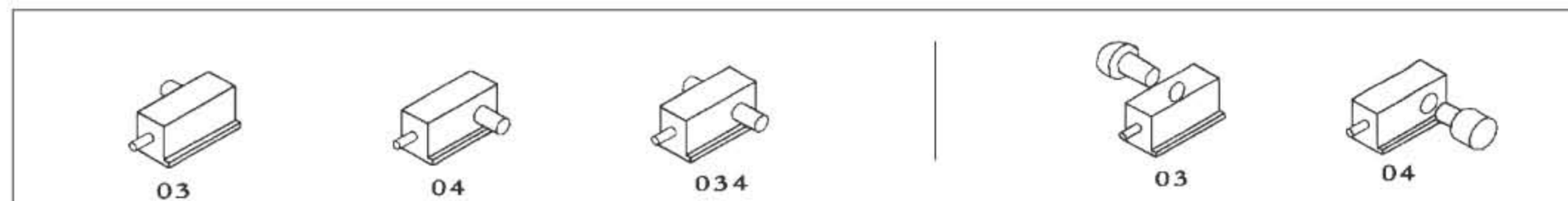
Technical Data Page 13
技术数据 13 页

Size 规格	Housing Dimensions in mm 箱体尺寸 (mm)																			Foot Mounting 底脚安装 Type/型号 GM5RSF GM5RHF					
	AV	E	EB	G1	G2	H	HK	J	K	SA	SB	SC	SE	TS	TO	T	XA	XB	XH	JE	L1	L2	N	P	Q
50	111.6	846	325	198.4	310	585	656	396	65	373	198	288	188	M20x35	R1 1/2	500	220	7	30	330	148	245	145	463	28
60	111.6	974	373	238.4	350	665	755	460	73	420	245	325	216	M24x42	R1 1/2	548	220	40	30	378	170	300	168	533	35
70	148.7	1135	427	251.3	400	760	850	506	82	475	292	418	250	M24x42	R1 1/2	602	260	92	30	416	194	322	190	633	35
80	148.7	1230	470	291.3	440	835	944	552	90	541	328	395	280	M30x53	R1 1/2	645	260	62	30	454	209	369	209	666	42
90	151.4	1324	512	328.6	480	910	1019	584	97	531	361	525	305	M30x53	R1 1/2	687	260	192	30	480	228	418	228	719	42

Size 规格	HSS Dimensions in mm							HSS 尺寸 (mm)						Torque Arm Mounting Bracket 力矩支臂安装座 Type/型号 GM5RHT					Weight	Oil Capacity/油量 Splash lubrication 飞溅润滑		Pressure lubrication 压力润滑
	i _N = 355... 900							i _N = 1000... 1800											重量	1	1	
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	O	SD	SG	SK	SN	kg			
50	931	70	1001	35k6	10h9	38	M12	70	1001	30k6	8h9	33	M10	32	693	294	38	32	900	57	57	
60	1018	70	1088	35k6	10h9	38	M12	70	1088	30k6	8h9	33	M10	45	775	308	52	45	1295	83	83	
70	1198	95	1293	45k6	14h9	48.5	M16	70	1268	35k6	10h9	38	M12	45	928	380	52	45	1820	125	125	
80	1248	95	1343	45k6	14h9	48.5	M16	70	1318	35k6	10h9	38	M12	45	978	380	52	45	2270	160	160	
90	1377	95	1472	45k6	14h9	48.5	M16	70	1447	35k6	10h9	38	M12	45	1107	389	52	45	2980	208	208	

Shaft Positions

轴的位置

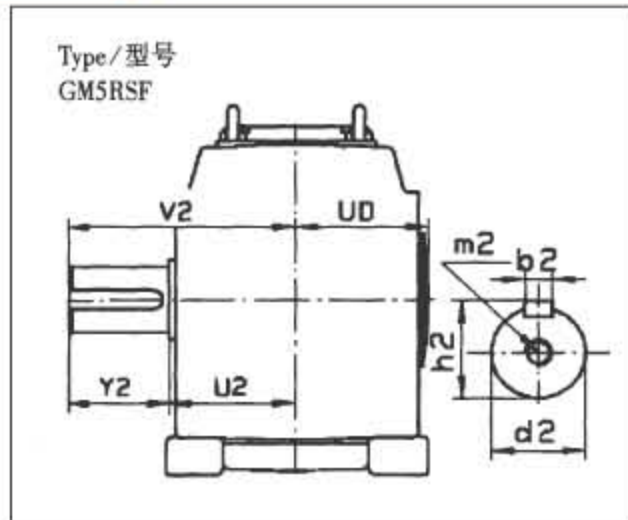


5 - stage Bevel Helical Gear Units
Horizontal LSS
5 级锥齿轮 - 斜齿轮减速器水平 LSS

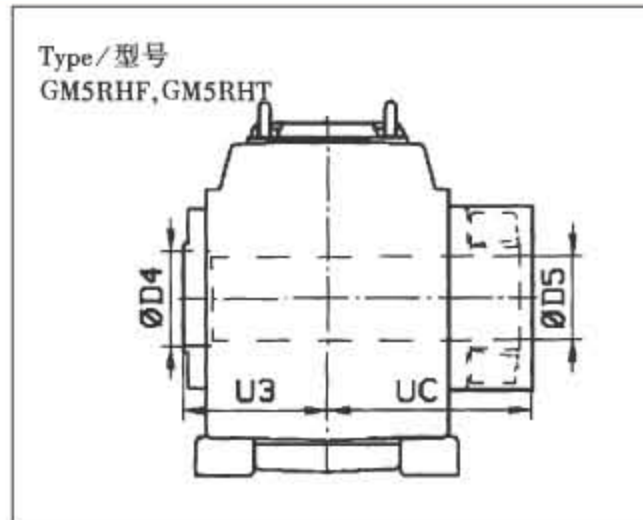
GM5R. .50-90
Solid & Hollow LSS
实心和空心LSS

LSS types

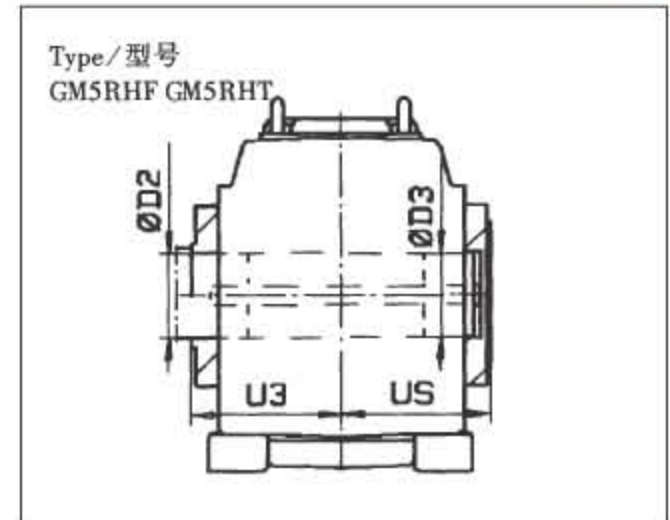
LSS 型号



Solid Shaft
实心轴



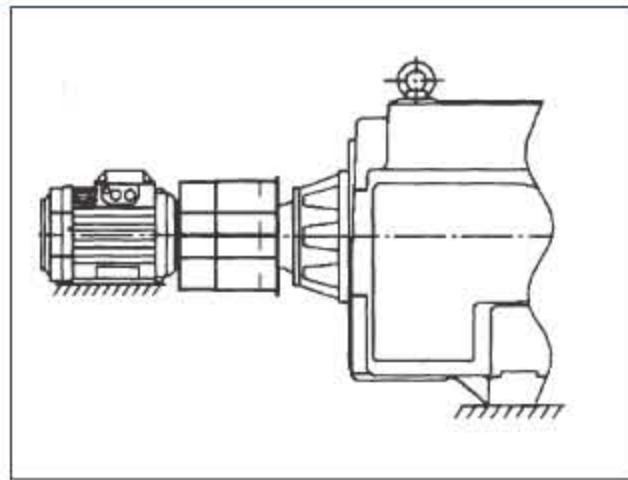
Hollow Shaft, Shrink Disk, page 57
空心轴, 收缩盘, 57 页



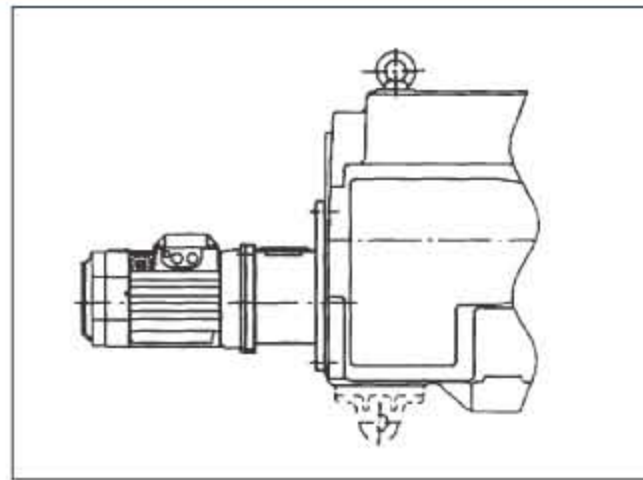
Hollow Shaft, Key Connection, page 61
空心轴, 键连接, 61 页

Common Accessories, see section 4

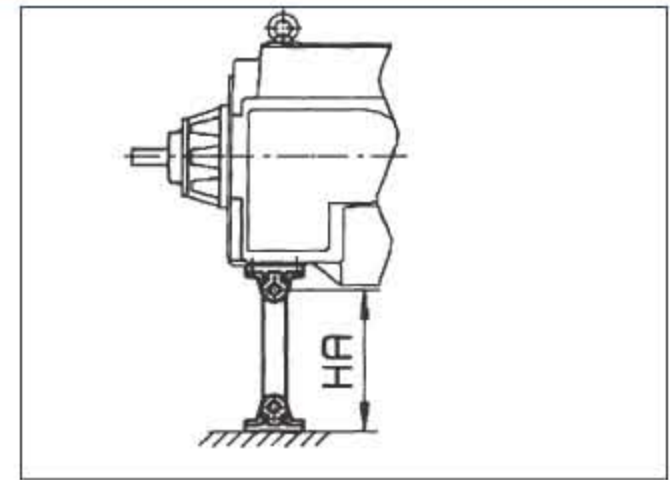
通用附件, 见第4章



Coupling Guard, page 74
联轴器保护装置, 74 页



Motor Flange, page 75
电动机法兰, 75 页



Torque Arm, page 74
力矩臂, 74 页

Size 规格	LSS Dimensions in mm								LSS 尺寸							Common Accessories	
	Solid Shaft / 实心轴								Hollow Shaft / 空心轴							通用附件	
	d2	b2	h2	m2	Y2	U2	V2	UD	U3	UC	D4	D5	US	D2	D3	HAmín	HAmáx
50	140m6	36h9	148	M30	200	232	432	216	228	336	155	154	232	150	149	125	950
60	160m6	40h9	169	M30	240	261	501	245	255	386	180	179	259	170	169	175	1070
70	180m6	45h9	190	M30	240	281	521	274	284	422	190	189	288	190	189	175	1070
80	200m6	45h9	210	+)	280	315	595	290	302	453	210	209	306	210	209	175	1070
90	220m6	50h9	231	+)	280	337	617	314	324	501	250	249	328	240	239	175	1070

In case of Through going LSS, same dimensions apply.
贯通 LSS 用同样尺寸

+) M20, 2 × 180° distance / 距离 0.6 × d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication 润滑	Page 页
Lubrication Unit 润滑装置	67
Shaft End Pump 轴端泵	68
Central Lubrication System Connections 集中润滑系统连接	69
Oil Heating System 油加热系统	70
Optional Seal Arrangements 可选择的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

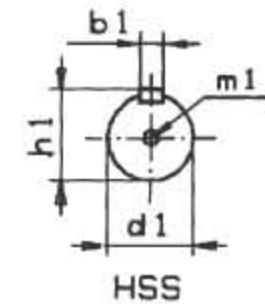
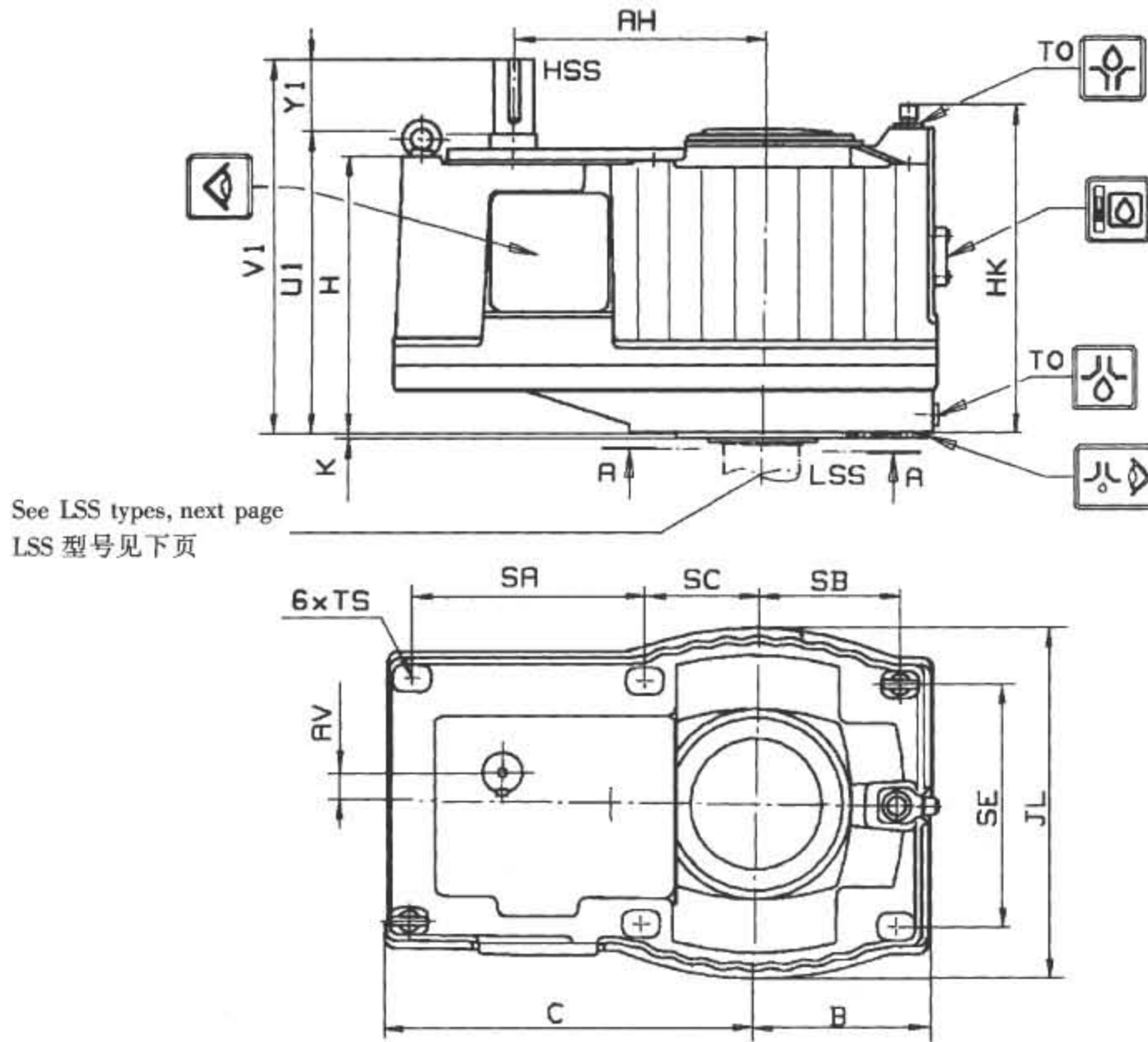
- 1) Standard Solution for this Gear Unit type
*) Contact GUOMAO
1) 本型减速器的标准方案
*) 与国茂联系

2 - stage Helical Gear Units
Vertical LSS
2 级斜齿轮减速器垂直 LSS

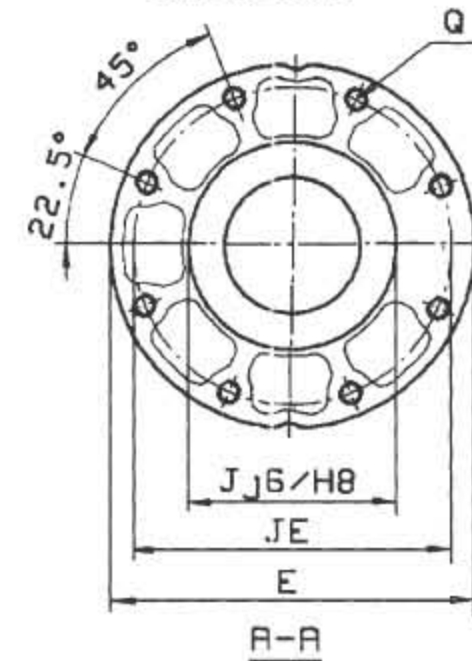
GM2PV. .10-50
Solid & Hollow LSS
实心和空心 LSS

Gear Unit Dimensions, type GM2PVSF GM2PVHF

减速器尺寸, 型号 GM2PVSF GM2PVHF



Mounting Flange support
安装法兰支撑



Technical Data page 17
技术数据 17 页

Size 规格	Housing Dimensions in mm																		箱体尺寸 (mm)	
	AH	AV	B	C	E	H	HK	J	JE	JL	K	Q	SA	SB	SC	SE	TS	TO		
10	266	33,8	195	402	315	314	451	200	275	390	10	M20 × 35	234	155	128	260	M16x32	R1		
20	278	42,5	210	414	348	328	474	215	300	420	10	M24 × 42	236	170	138	280	M16x32	R1		
30	353	42,6	242	522	400	393	548	270	340	484	12	M30 × 53	321	192	171	310	M20x35	R1		
40	396	51,4	275	566	460	431	589	280	400	550	12	M30 × 53	342	225	193	364	M20x35	R1		
50	471	35	325	682	562	499	634	320	490	650	12	M36 × 63	431	270	215	440	M24x42	R1 1/2		

Size 规格	HSS Dimensions In mm			HSS 尺寸(mm)				Weight 重量	Oil Capacity/油量	
		i _N = 6. 3. . . 18							Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	kg		
10	348	70	418	35k6	10h9	38	M12	240	34	14
20	363	70	433	35k6	10h9	38	M12	290	39	16
30	430	95	525	45k6	14h9	48, 5	M16	440	68	25
40	471	95	566	50k6	14h9	53, 5	M16	670	94	34
50	539	125	664	65m6	18h9	69	M20	1020	152	51

Shaft Positions

轴的位置

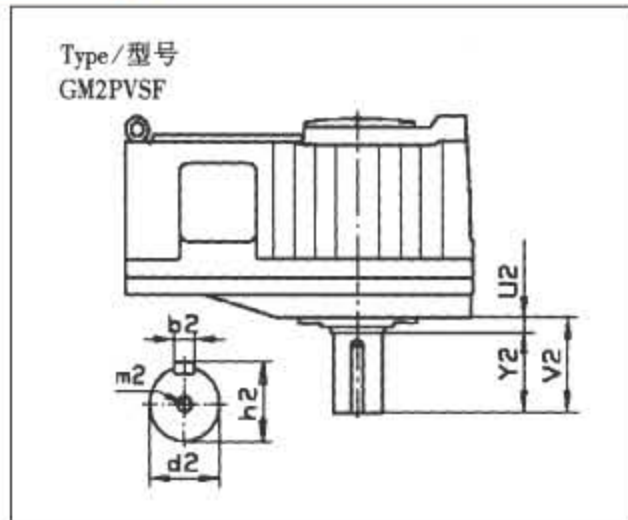


2 - stage Helical Gear Units
Vertical LSS
2 级斜齿轮减速器垂直 LSS

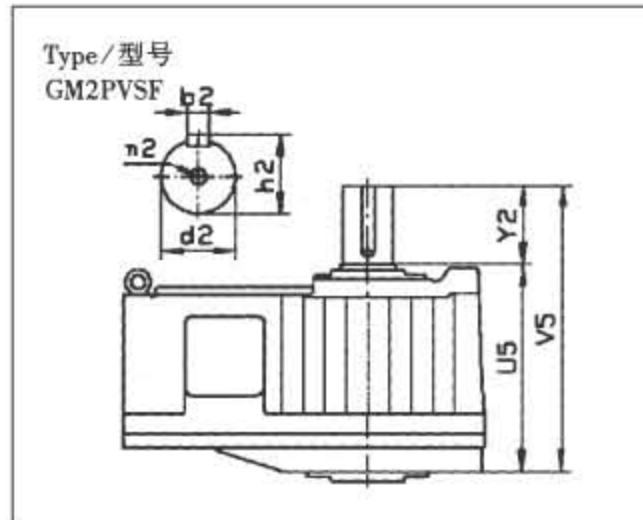
GM2PV. .10-50
Solid & Hollow LSS
实心 and 空心 LSS

LSS types

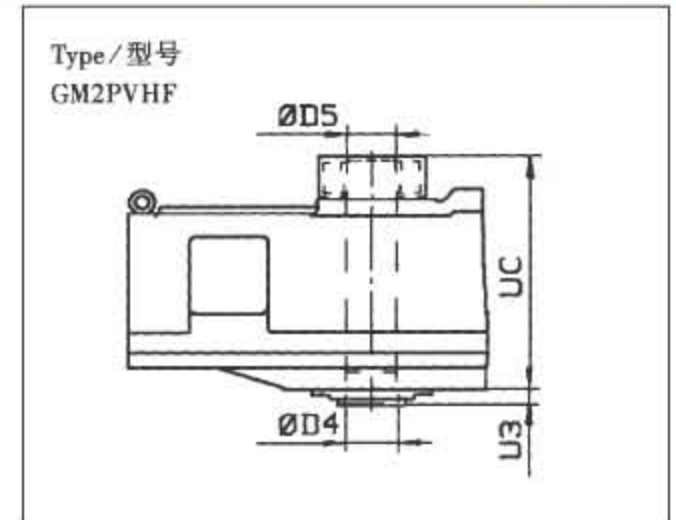
低速轴型号



Solid Shaft downwards
实心轴向下



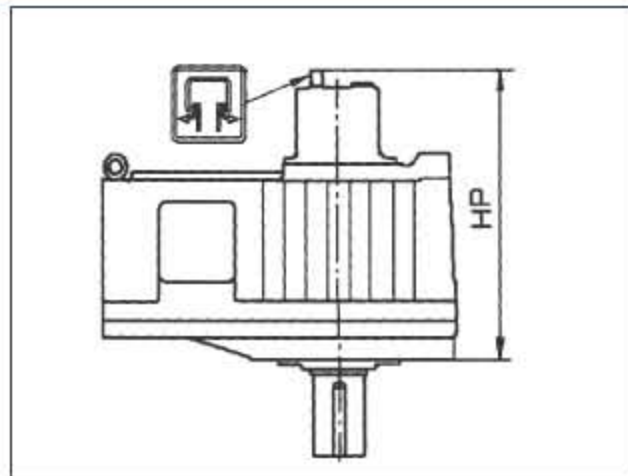
Solid Shaft upwards
实心轴向上



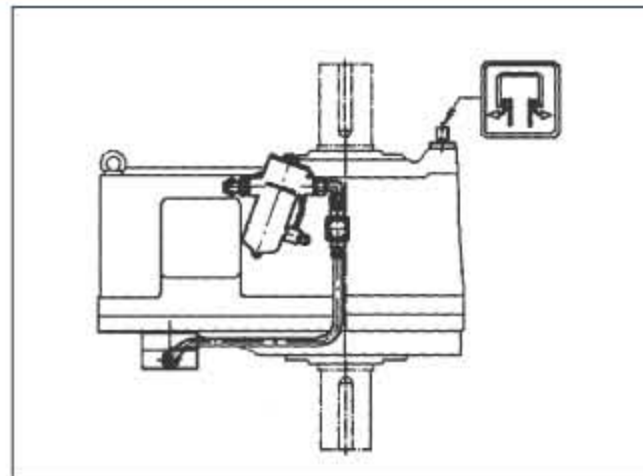
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

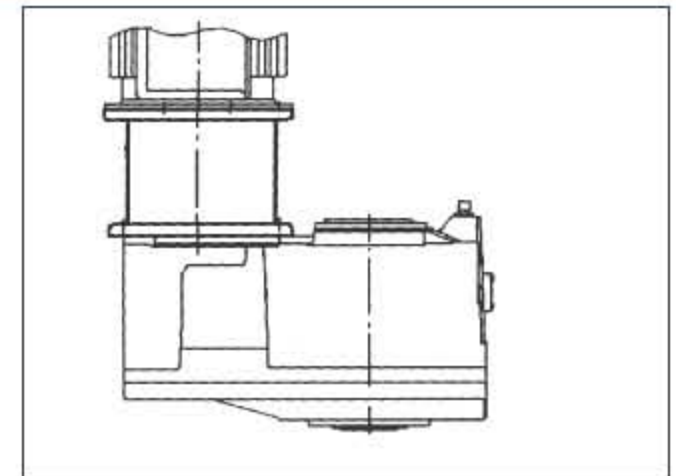
通用附件, 见第4章



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页
压力润滑用



Motor Flange, page 75
电动机法兰, 75 页

Size 规格	LSS Dimensions in mm										LSS 尺寸				Common Accessories	
	Solid Shaft / 实心轴										Hollow Shaft / 空心轴				通用附件	
	d2	b2	h2	m2	Y2	U2	V2	U5	V5		U3	UC	D4	D5	HP	
10	85m6	22h9	90	M20	150	25	175	394	544		25	445	85	84	547	
20	90m6	25h9	95	M24	150	25	175	415	565		25	470	95	94	570	
30	110m6	28h9	116	M24	190	25	215	493	683		25	555	120	119	648	
40	120m6	32h9	127	M24	190	25	215	534	724		25	600	130	129	725	
50	140m6	36h9	148	M30	225	25	250	597	822		25	700	155	154	825	

Other available Accessories, see section 4

提供的其它附件, 见第4章

Mounting Flange 安装法兰	64
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Lubrication 润滑	page 页
Lubrication Unit 润滑装置	2) 67
Oil Heating System 油加热系统	70
Oil Drain Valves 泄油阀	71
Expansion tank for moist environment 潮湿环境膨胀箱	72

Optional Seal Arrangements 可选的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

- 1) Standard Solution for this Gear Unit type
2) For Gear Unit size 50
*) Contact GUOMAO

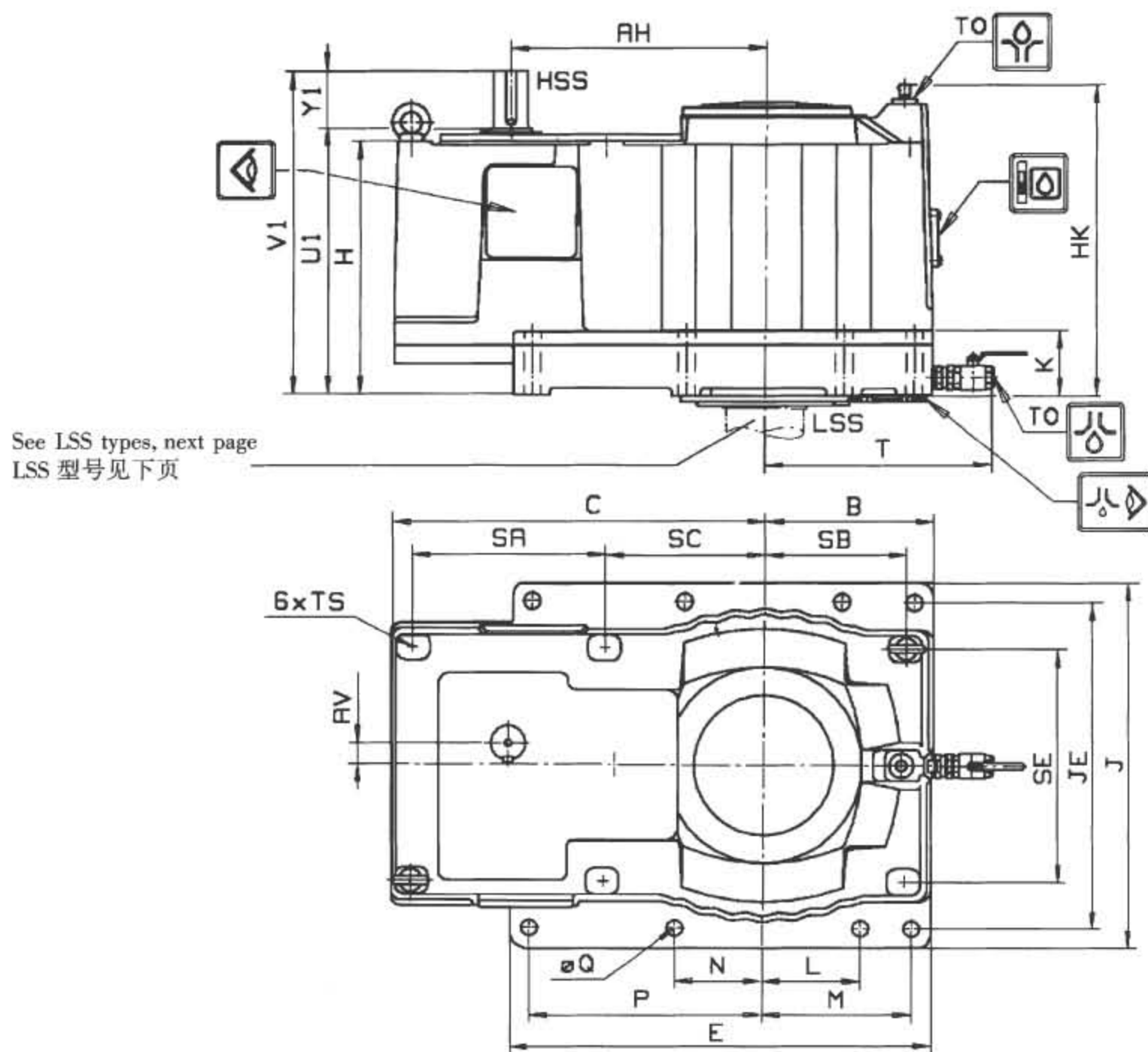
- 1) 本型减速器的标准方案
2) 对减速器 50
*) 与国茂联系

2 - stage Helical Gear Units
Vertical LSS
2 级斜齿轮减速器垂直 LSS

GM2PV. .60-80
Solid & Hollow LSS
实心 and 空心 LSS

Gear Unit Dimensions, type GM2PVSF GM2PVHF

减速器尺寸, 型号 GM2PVSF GM2PVHF



See LSS types, next page
LSS 型号见下页

Technical Data page 17
技术数据 17 页

Size 规格	Housing Dimensions in mm															箱体尺寸 (mm)						
	AH	AV	B	C	E	H	HK	J	JE	K	L	M	N	P	Q	SA	SB	SC	SE	TS	TO	T
60	531	82,6	405	778	810	570	711	810	700	165	—	350	—	350	48	397	343	343	486	M24x42	R1 1/2	572
70	614	69,0	405	906	1010	620	771	920	810	171	—	350	235	550	48	480	343	388	576	M24x42	R1 1/2	572
80	665	67,1	440	959	1100	662	823	1000	890	182	235	385	235	605	48	481	367	427	608	M30x53	R1 1/2	607

Size 规格	HSS Dimensions in mm			HSS 尺寸(mm)				Weight 重量	Oil Capacity / 油量	
	i _N = 6. 3 . . 18								Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	kg		
60	610	125	735	75m6	20h9	79, 5	M20	1480	183	61
70	666	150	816	90m6	25h9	95	M24	2060	263	86
80	709	150	859	95m6	25h9	100	M24	2570	353	122

Shaft Positions

轴的位置

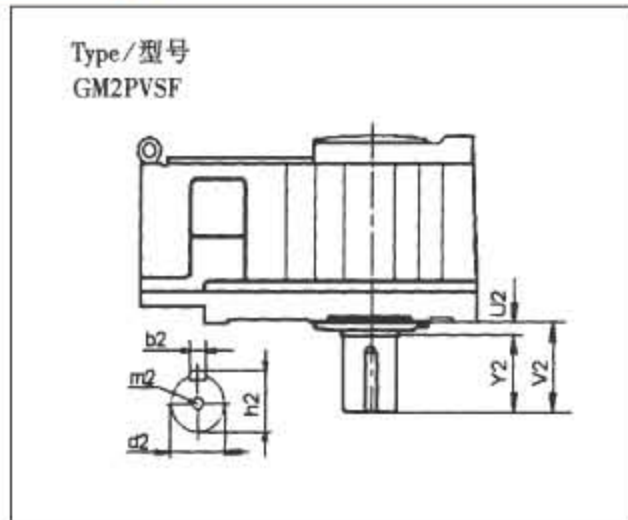


2 - stage Helical Gear Units
Vertical LSS
2 级斜齿轮减速器垂直 LSS

GM2PV. .60-80
Solid & Hollow LSS
实心 and 空心 LSS

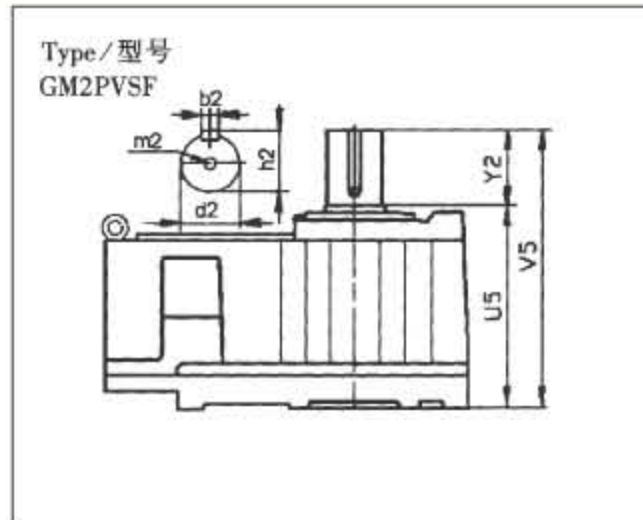
LSS types

低速轴型号



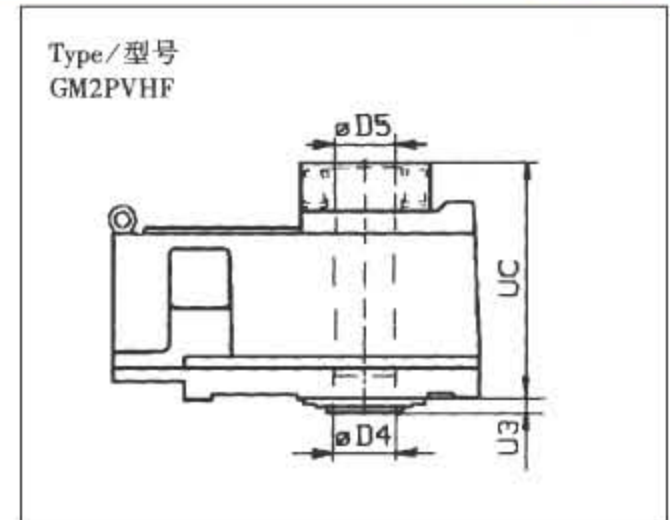
Type/型号
GM2PVSF

Solid Shaft downwards
实心轴向下



Type/型号
GM2PVSF

Solid Shaft upwards
实心轴向上

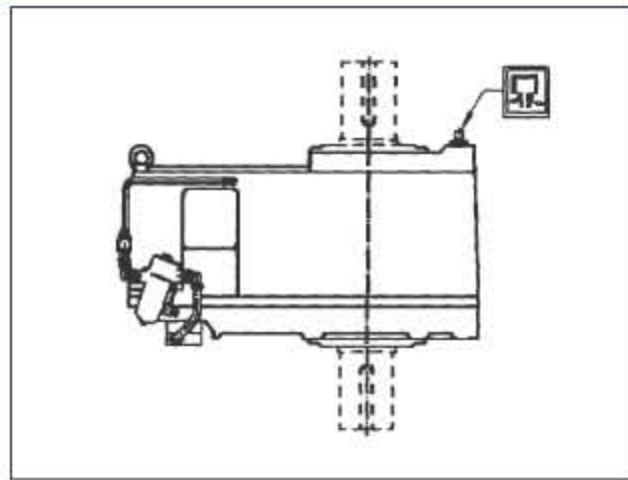


Type/型号
GM2PVHF

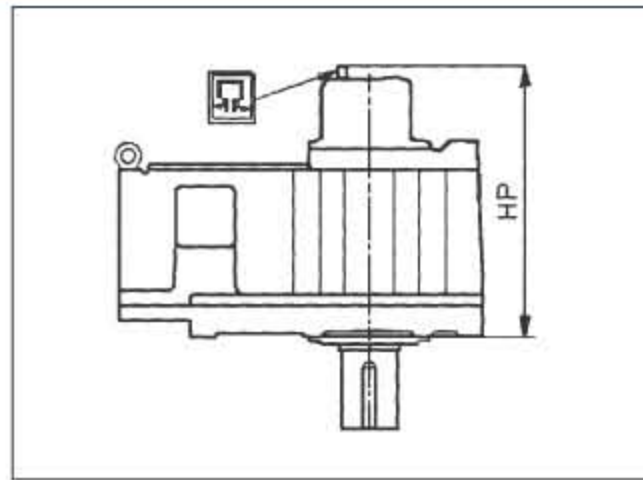
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

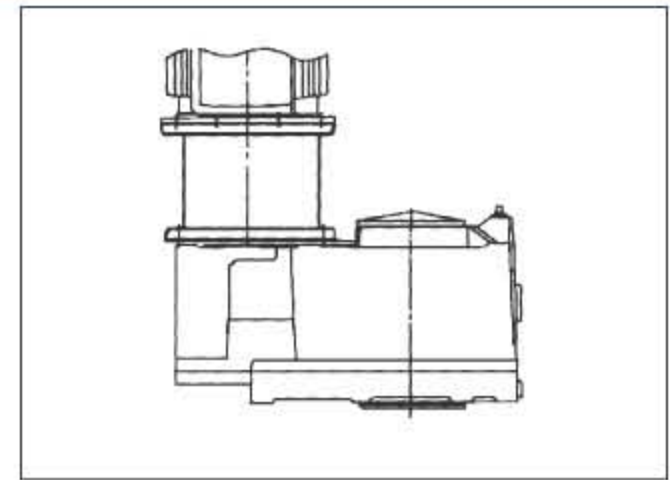
通用附件, 见第4章



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页
压力润滑用



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Motor Flange, page 75
电动机法兰, 75 页

Size 规格	LSS Dimensions in mm									LSS 尺寸				Common Accessories	
	Solid Shaft / 实心轴									Hollow Shaft / 空心轴				通用附件	
	d2	b2	h2	m2	Y2	U2	V2	U5	V5	U3	UC	D4	D5	HP	
60	160m6	40h9	169	M30	270	35	305	674	944	35	796	180	179	984	
70	180m6	45h9	190	M30	270	35	305	725	995	35	863	190	189	1084	
80	200m6	45h9	210	+)	315	35	350	785	1100	35	928	210	209	1275	

+) M20, 2 x 180° distance / 距离 0.6 x d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication 润滑	page 页
Lubrication Unit 润滑装置	67
Oil Heating System 油加热系统	70
Expansion tank for moist environment 潮湿环境膨胀箱	72

Optional Seal Arrangements 可选择的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*1
Belt Drive 带传动	75

1) Standard Solution for this Gear Unit type

*) Contact GUOMAO

1) 本减速器型号的标准方案

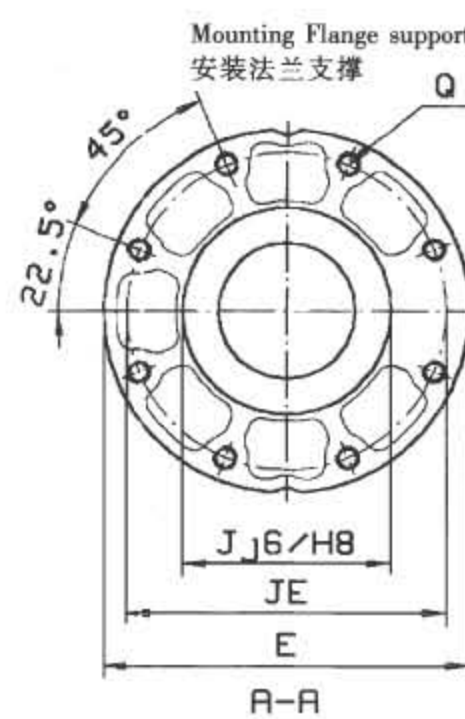
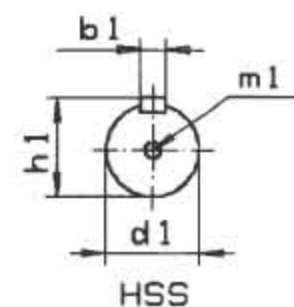
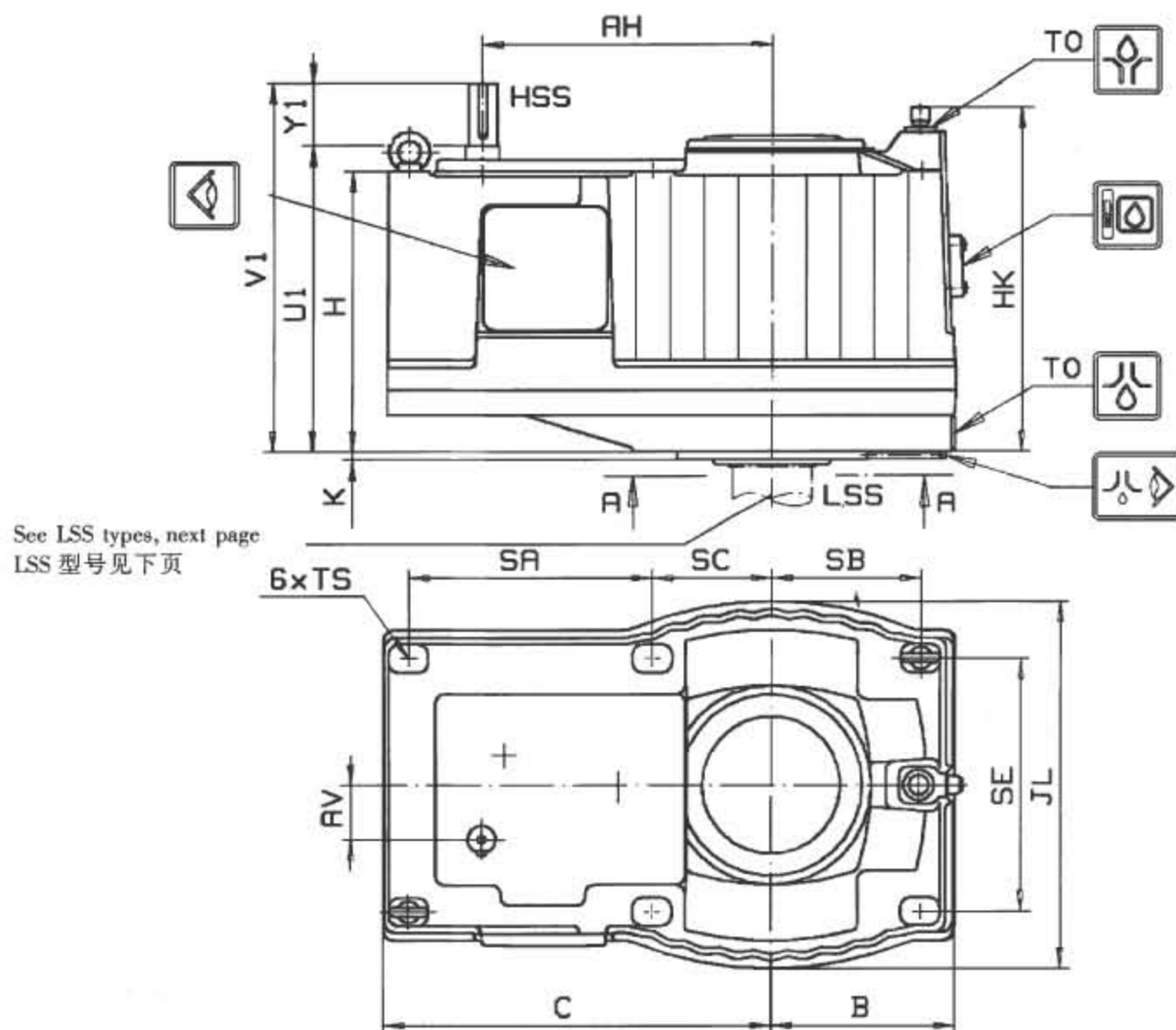
*) 与国茂联系

3 - stage Helical Gear Units
Vertical LSS
3 级斜齿轮减速器垂直 LSS

GM3PV. .10-50
Solid & Hollow LSS
实心 and 空心 LSS

Gear Unit Dimensions, type GM3PVSF GM3PVHF

减速器尺寸, 型号 GM3PVSF GM3PVHF



Technical Data page 17

技术数据 17 页

Size 规格	Housing Dimensions in mm																	箱体尺寸 (mm)	
	AH	AV	B	C	E	H	HK	J	JE	JL	K	Q	SA	SB	SC	SE	TS	TO	
10	281	56,9	195	402	315	314	451	200	275	390	10	M20x35	234	155	128	260	M16x32	R1	
20	303	46,0	210	414	348	328	474	215	300	420	10	M24x42	236	170	138	280	M16x32	R1	
30	381	71,0	242	522	400	393	548	270	340	484	12	M30x53	321	192	171	310	M20x35	R1	
40	422	62,7	275	566	460	431	589	280	400	550	12	M30x53	342	225	193	364	M20x35	R1	
50	511	113,8	325	682	562	499	634	320	490	650	12	M36x63	431	270	215	440	M24x42	R1 1/2	

Size 规格	HSS Dimensions in mm			HSS 尺寸(mm)				Weight 重量	Oil Capacity/油量	
		i _N = 20... 90							Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	kg		
10	344	70	414	35k6	10h9	38	M12	240	33	13
20	358	70	428	35k6	10h9	38	M12	290	38	15
30	426	95	521	40k6	12h9	43	M16	430	66	24
40	470	95	565	40k6	12h9	43	M16	660	92	33
50	539	95	634	45k6	14h9	48.5	M16	1010	150	50

Shaft Positions

轴的位置

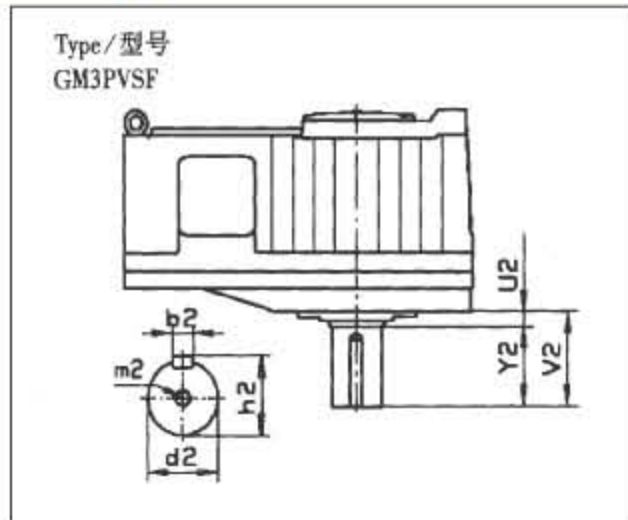


3 - stage Helical Gear Units
Vertical LSS
3 级斜齿轮减速器垂直 LSS

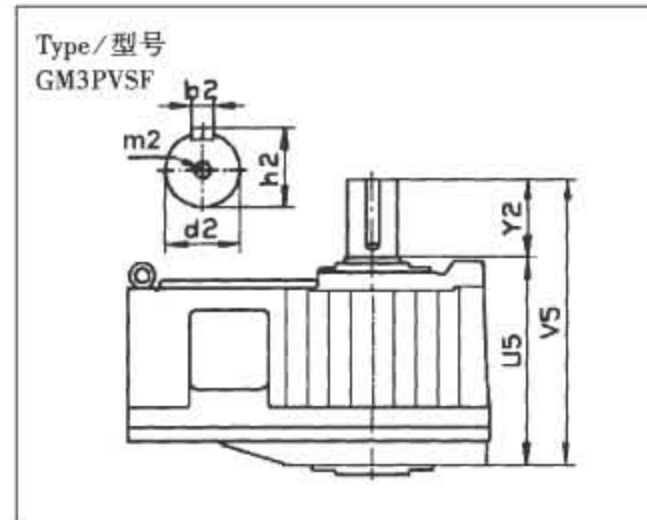
GM3PV. .10-50
Solid & Hollow LSS
实心 and 空心 LSS

LSS types

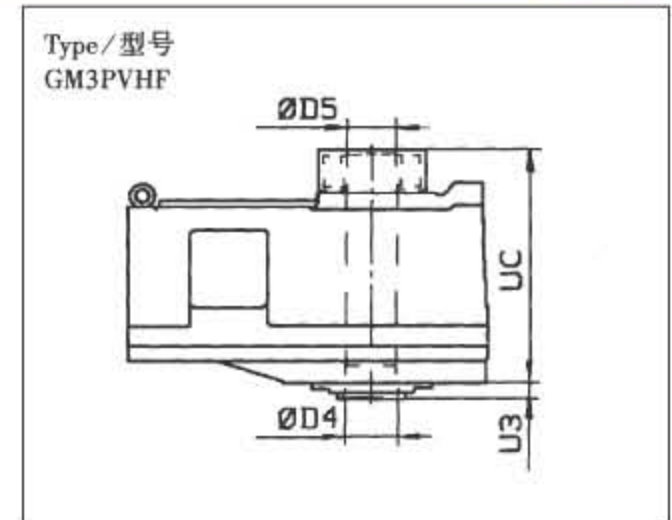
低速轴型号



Solid Shaft downwards
实心轴向下



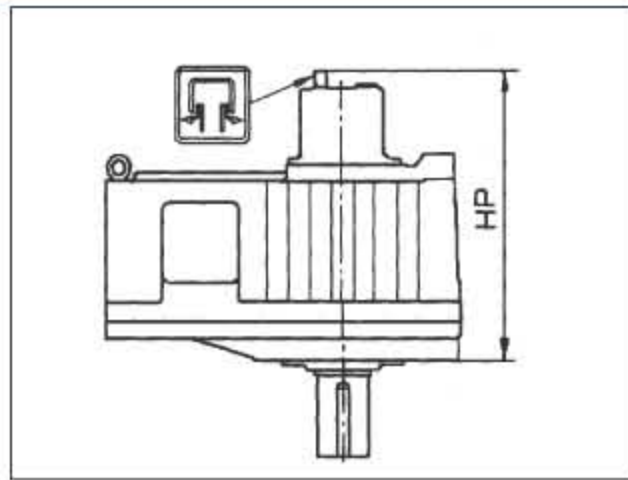
Solid Shaft upwards
实心轴向上



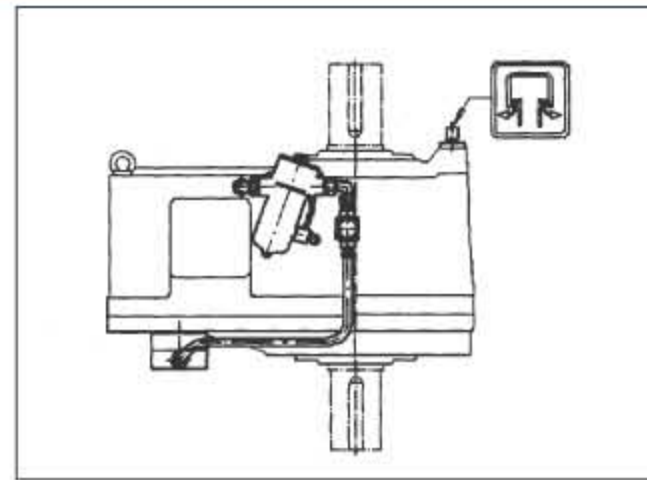
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

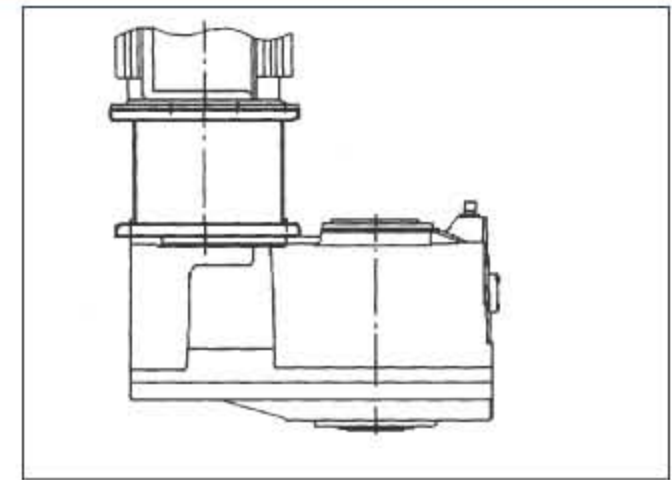
通用附件, 见第4章



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页
压力润滑用



Motor Flange, page 75
电动机法兰, 75 页

Size 规格	LSS Dimensions in mm									LSS 尺寸				Common Accessories	
	Solid Shaft / 实心轴									Hollow Shaft / 空心轴				通用附件	
	d2	b2	h2	m2	Y2	U2	V2	U5	V5	U3	UC	D4	D5	HP	
10	85m6	22h9	90	M20	150	25	175	394	544	25	445	85	84	547	
20	90m6	25h9	95	M24	150	25	175	415	565	25	470	95	94	570	
30	110m6	28h9	116	M24	190	25	215	493	683	25	555	120	119	648	
40	120m6	32h9	127	M24	190	25	215	534	724	25	600	130	129	725	
50	140m6	36h9	148	M30	225	25	250	597	822	25	700	155	154	825	

Other available Accessories, see section 4

提供的其它附件, 见第4章

Mounting Flange 安装法兰	64
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Optional Seal Arrangements 可选的密封装置	67
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1) Standard Solution for this Gear Unit type

2) For Gear Unit size 50

*) Contact GUOMAO

Lubrication 润滑	page 页
Lubrication Unit 润滑装置	67
Oil Heating System 油加热系统	2) 70
Oil Drain Valves 泄油阀	71
Expansion tank for moist environment 潮湿环境膨胀箱	72

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

1) 本型减速器的标准方案

2) 对减速器 50

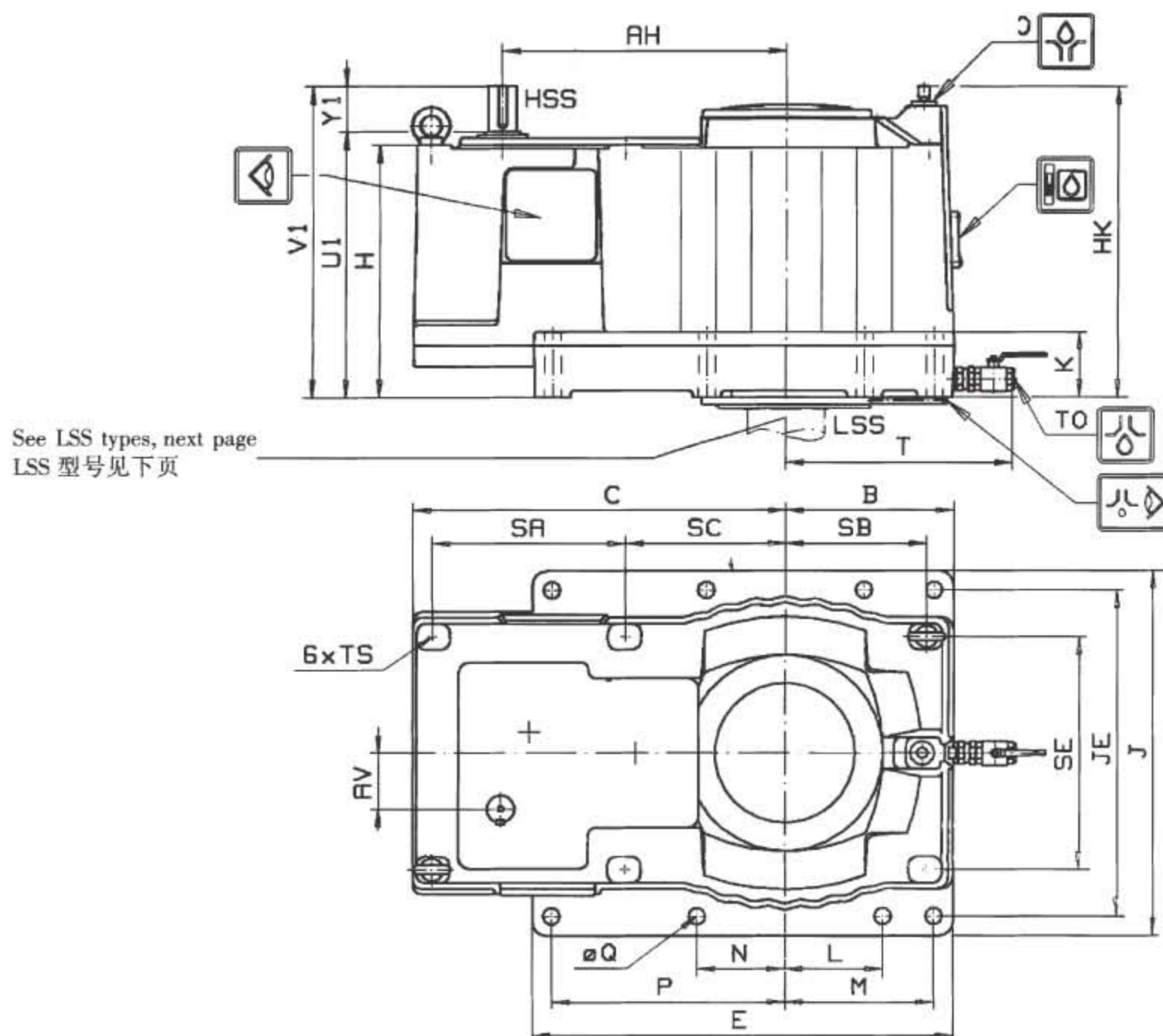
*) 与国茂联系

3 - stage Helical Gear Units
Vertical LSS
3 级斜齿轮减速器垂直 LSS

GM3PV. .60-90
Solid & Hollow LSS
实心 and 空心 LSS

Gear Unit Dimensions, type GM3PVSF GM3PVHF

减速器尺寸, 型号 GM3PVSF GM3PVHF



See LSS types, next page
LSS 型号见下页

Technical Data page 17
技术数据 17 页

Size 规格	Housing Dimensions in mm														箱体尺寸(mm)							
	AH	AV	B	C	E	H	HK	J	JE	K	L	M	N	P	Q	SA	SB	SC	SE	TS	TO	T
60	606	68,8	405	778	810	570	711	810	700	165	–	350	–	350	48	397	343	343	486	M24x42	R1 1/2	572
70	694	119,7	405	906	1010	620	771	920	810	171	–	350	235	550	48	480	343	388	576	M24x42	R1 1/2	572
80	745	121,7	440	959	1100	662	823	1000	890	182	235	385	235	605	48	481	367	427	608	M30x53	R1 1/2	607
90	811	160,2	480	1061	1200	722	893	1040	930	188	235	425	235	665	48	550	407	459	654	M30x53	R1 1/2	647

Size 规格	HSS Dimensions in mm				HSS 尺寸 (mm)			Weight 重量	Oil Capacity / 油量	
	i _n = 20... 90								Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	kg		
60	610	95	705	50k6	14h9	53, 5	M16	1450	180	60
70	660	125	785	60m6	18h9	64	M20	2050	260	85
80	702	125	827	65m6	18h9	69	M20	2540	350	120
90	762	125	887	75m6	20h9	79, 5	M20	3230	450	150

Shaft Positions

轴的位置

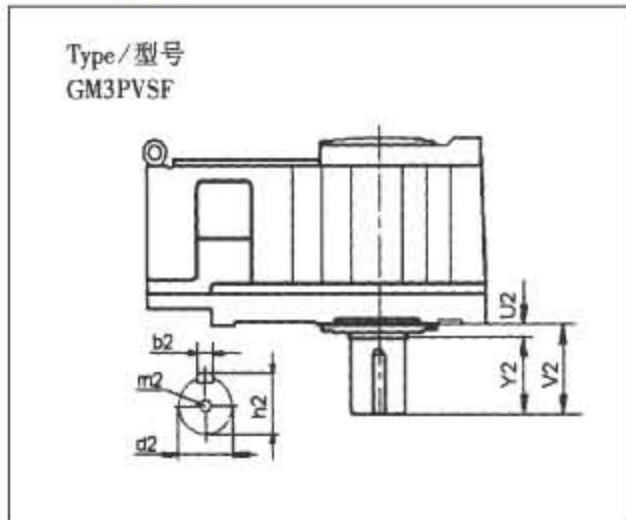


3 - stage Helical Gear Units
Vertical LSS
3 级斜齿轮减速器垂直 LSS

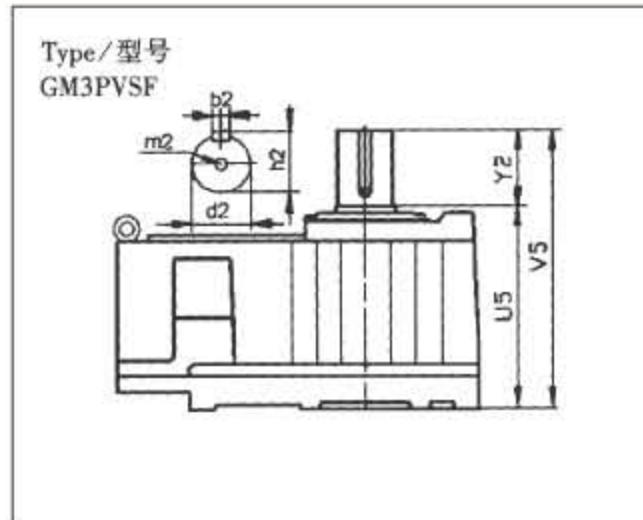
GM3PV. .60-90
Solid & Hollow LSS
实心 and 空心 LSS

LSS types

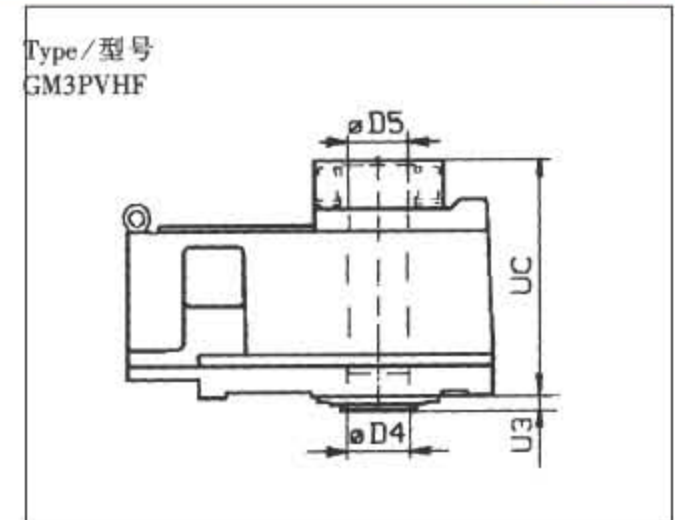
低速轴型号



Solid Shaft downwards
实心轴向下



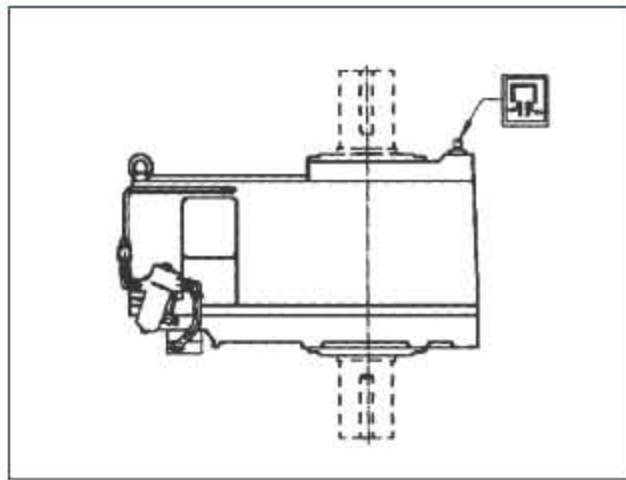
Solid Shaft upwards
实心轴向上



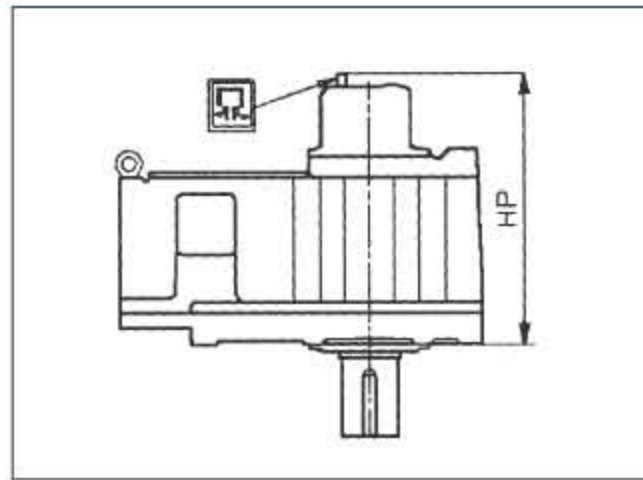
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

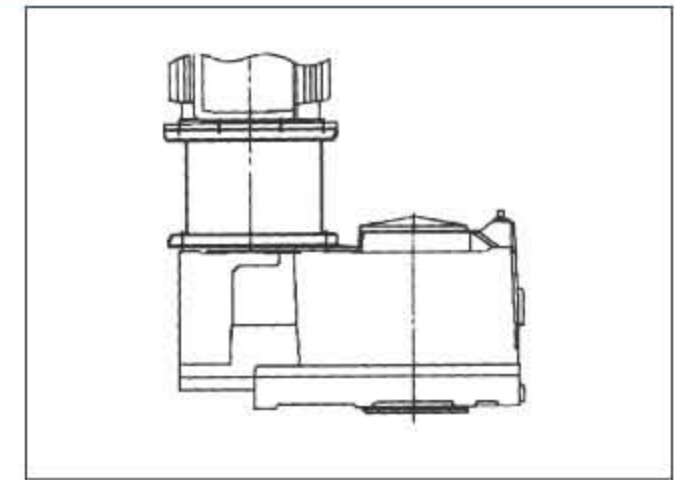
通用附件, 见第4章



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页
压力润滑用



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Motor Flange, page 75
电动机法兰, 75 页

Size 规格	LSS Dimensions in mm									LSS 尺寸				Common Accessories 通用附件
	Solid Shaft / 实心轴									Hollow Shaft / 空心轴				HP
	d2	b2	h2	m2	Y2	U2	V2	U5	V5	U3	UC	D4	D5	
60	160m6	40h9	169	M30	270	35	305	674	944	35	796	180	179	984
70	180m6	45h9	190	M30	270	35	305	725	995	35	863	190	189	1084
80	200m6	45h9	210	+)	315	35	350	785	1100	35	928	210	209	1275
90	220m6	50h9	231	+)	315	35	350	855	1170	35	1024	250	249	1350

+) M20, 2 x 180° distance / 距离 0.6 x d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication 润滑	page 页
Lubrication Unit 润滑装置	67
Oil Heating System 油加热系统	70
Expansion tank for moist environment 潮湿环境膨胀箱	72

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

1) Standard Solution for this Gear Unit type

*) Contact GUOMAO

1) 本型减速器的标准方案

*) 与国茂联系

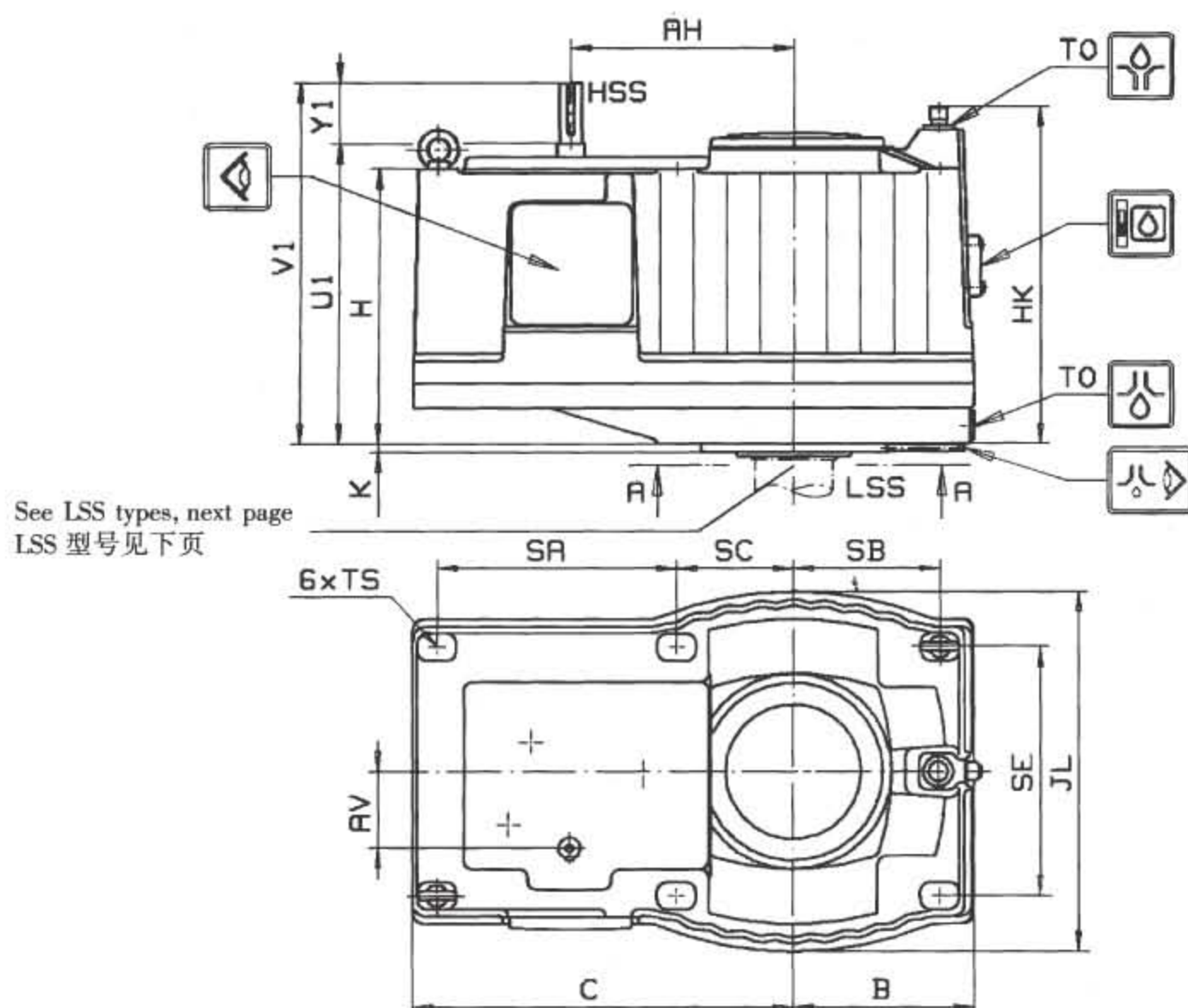
Optional Seal Arrangements 可选择的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

4 - stage Helical Gear Units
Vertical LSS
4 级斜齿轮减速器垂直 LSS

GM4PV. .50
Solid & Hollow LSS
实心 and 空心 LSS

Gear Unit Dimensions, type GM4PVSF GM4PVHF

减速器尺寸, 型号 GM4PVSF GM4PVHF



Technical Data page 17
技术数据 17 页

Size 规格	Housing Dimensions in mm										箱体尺寸 (mm)								
	AH	AV	B	C	E	H	HK	J	JE	JL	K	Q	SA	SB	SC	SE	TS	TO	
50	406	165,4	325	682	562	499	634	320	490	650	12	M36x63	431	270	215	440	M24x42	R11/2	

Size 规格	HSS Dimensions in mm				HSS 尺寸(mm)			Weight 重量	Oil Capacity/油量	
	i _N = 100... 400								Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	kg	1	1
50	539	70	609	35k6	10h9	38	M12	1030	148	49

Shaft Positions

轴的位置

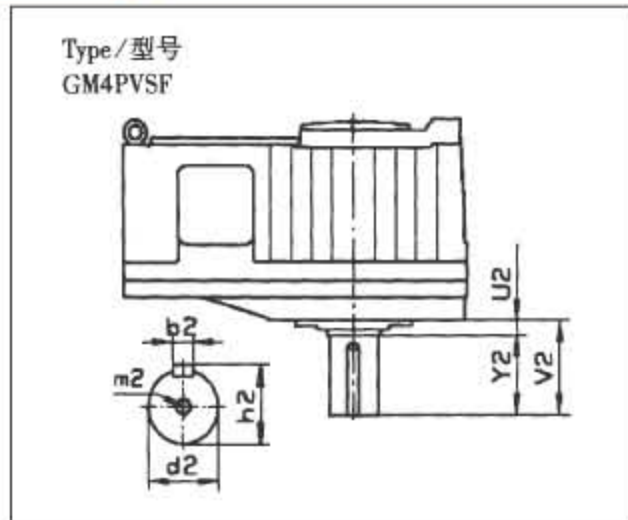


4 - stage Helical Gear Units
Vertical LSS
4 级斜齿轮减速器垂直 LSS

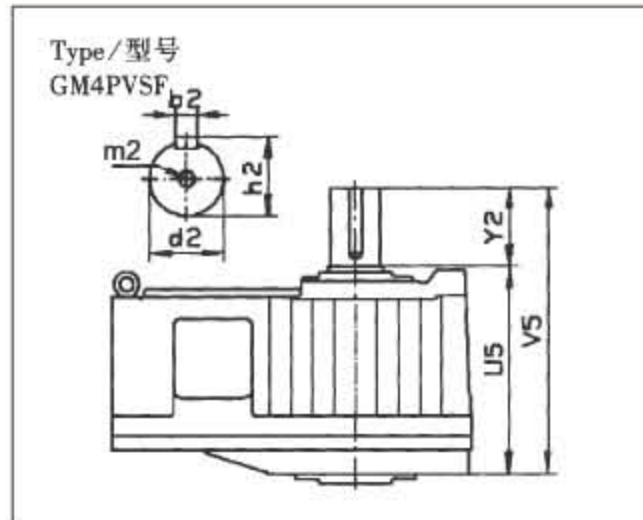
GM4PV. .50
Solid & Hollow LSS
实心 and 空心 LSS

LSS types

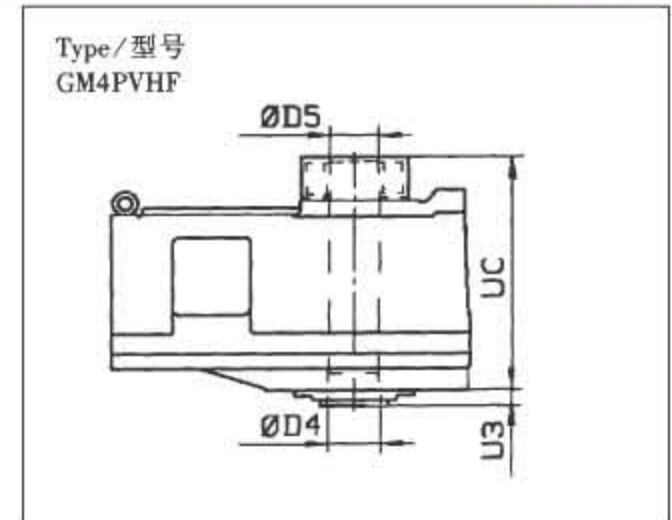
低速轴型号



Solid Shaft downwards
实心轴向下



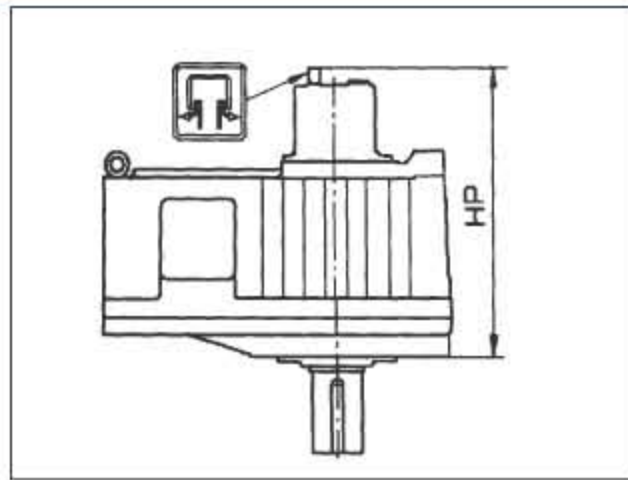
Solid Shaft upwards
实心轴向上



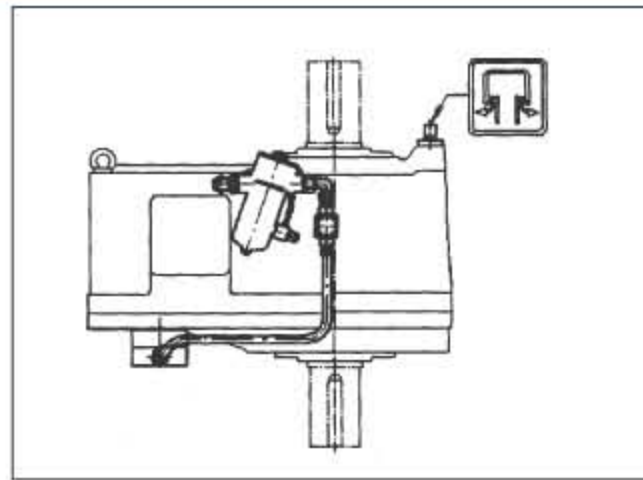
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

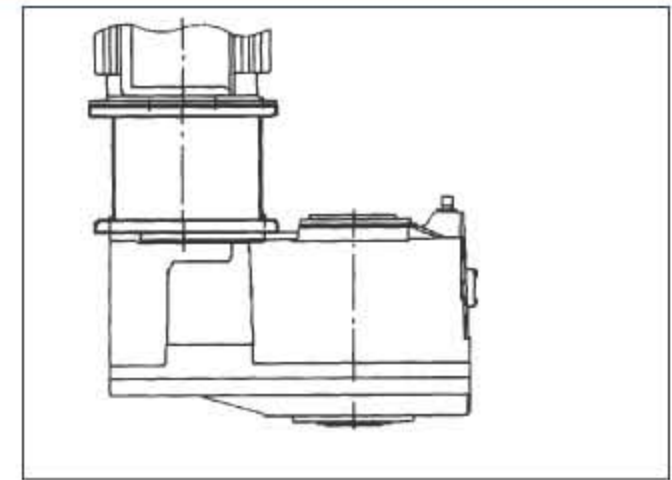
通用附件, 见第4章



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页, 压力润滑用



Motor Flange, page 75
电动机法兰, 75 页

Size 规格	LSS Dimensions in mm										LSS 尺寸				Common Accessories	
	Solid Shaft / 实心轴										Hollow Shaft / 空心轴				通用附件	
	d2	b2	h2	m2	Y2	U2	V2	U5	V5		U3	UC	D4	D5	HP	
50	140m6	36h9	148	M30	225	25	250	597	822		25	700	155	154	825	

Other available Accessories, see section 4

提供的其它附件, 见第4章

Mounting Flange 安装法兰	64
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Lubrication 润滑	page 页
Lubrication Unit 润滑装置	67
Oil Heating System 油加热系统	70
Oil Drain Valves 泄油阀	71
Expansion tank for moist environment 潮湿环境膨胀箱	72

Optional Seal Arrangements 可选的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

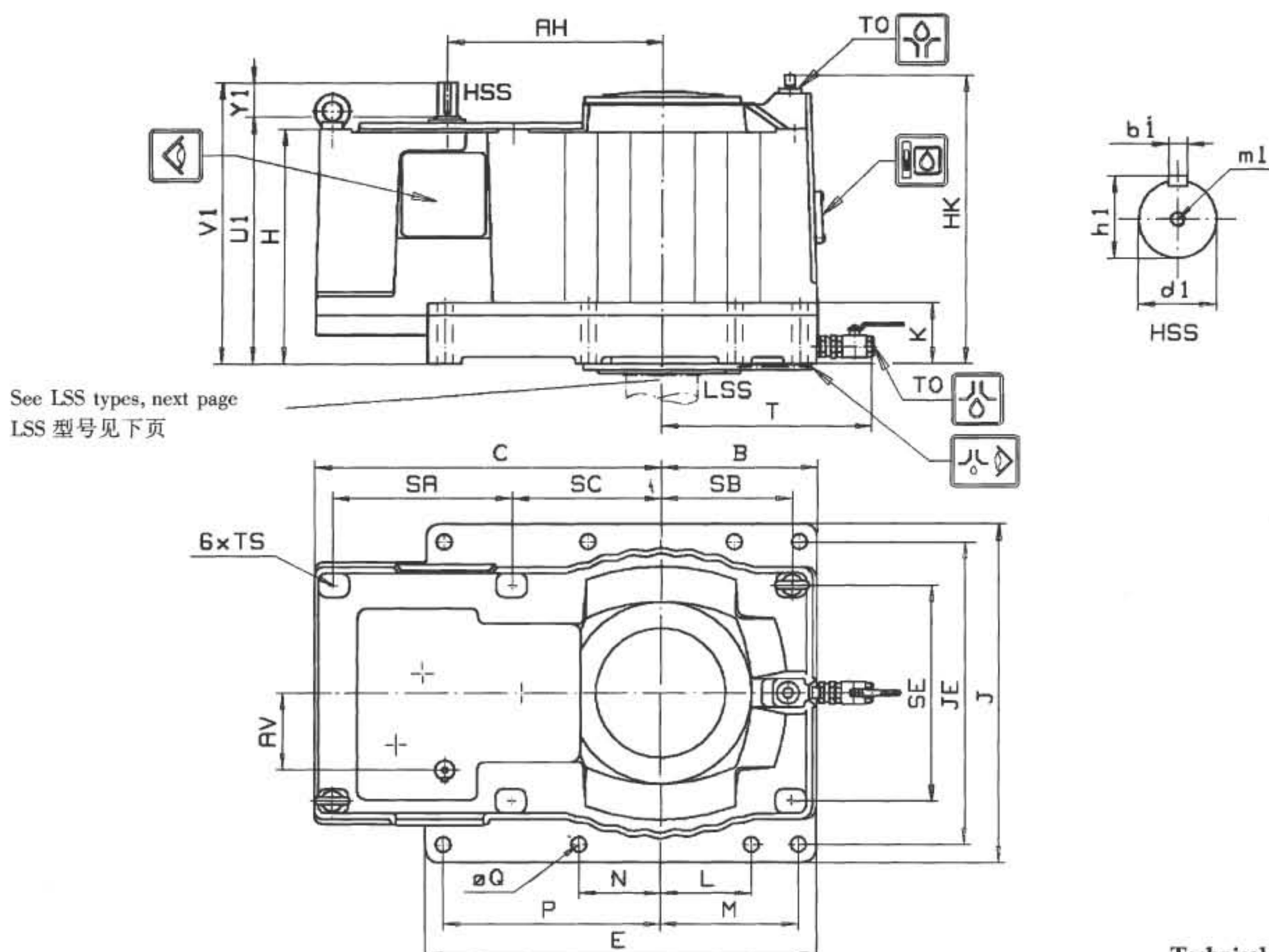
- 1) Standard Solution for this Gear Unit type
*) Contact GUOMAO
1) 本型减速器的标准方案
*) 与国茂联系

4 - stage Helical Gear Units
Vertical LSS
4 级斜齿轮减速器垂直 LSS

GM4PV. .60-90
Solid & Hollow LSS
实心 and 空心 LSS

Gear Unit Dimensions, type GM4PVSF GM4PVHF

减速器尺寸, 型号 GM4PVSF GM4PVHF



Technical Data page 17
技术数据 17 页

Size 规格	Housing Dimensions in mm																			箱体尺寸 (mm)		
	AH	AV	B	C	E	H	HK	J	JE	K	L	M	N	P	Q	SA	SB	SC	SE	TS	TO	T
60	526	154,2	405	778	810	570	711	810	700	165	-	350	-	350	48	397	343	343	486	M24 × 42	R1 1/2	572
70	569	209,7	405	906	1010	620	771	920	810	171	-	350	235	550	48	480	343	388	576	M24 × 42	R1 1/2	572
80	625	218,2	440	959	1100	662	823	1000	890	182	235	385	235	605	48	481	367	427	608	M30 × 53	R1 1/2	607
90	670	253,3	480	1061	1200	722	893	1040	930	188	235	425	235	665	48	550	407	459	654	M30 × 53	R1 1/2	647

Size 规格	HSS Dimensions in mm				HSS 尺寸 (mm)			Weight 重量	Oil Capacity/油量	
	i _N = 100... 400								Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1			
60	610	70	680	35k6	10h9	38	M12	1470	177	59
70	660	95	755	45k6	14h9	48, 5	M16	2090	257	84
80	702	95	797	45k6	14h9	48, 5	M16	2590	347	118
90	762	95	857	55m6	16h9	59	M20	3290	446	148

Shaft Positions

轴的位置

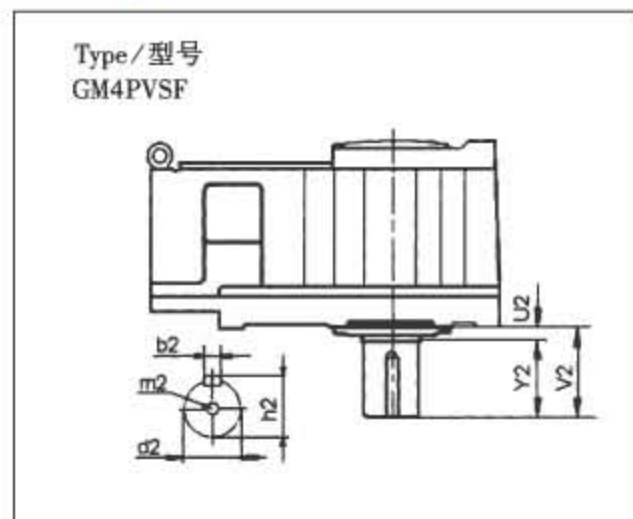


4 - stage Helical Gear Units
Vertical LSS
4 级斜齿轮减速器垂直 LSS

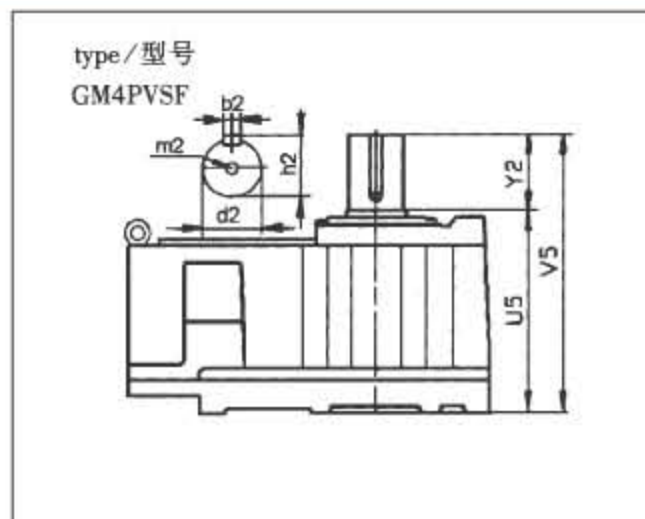
GM4PV. .60-90
Solid & Hollow LSS
实心 and 空心 LSS

LSS types

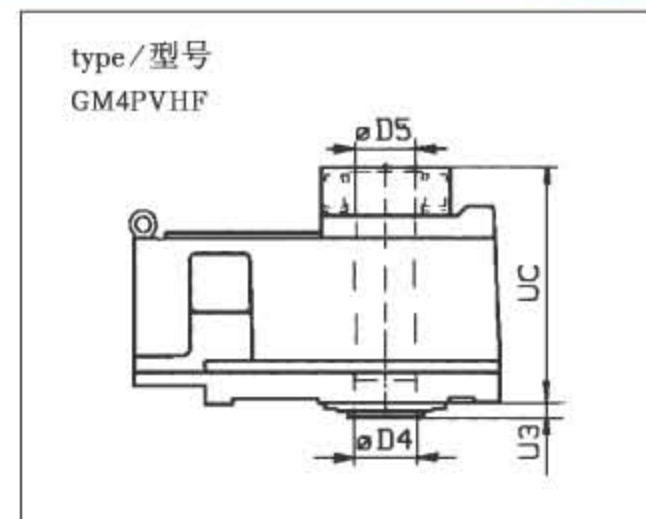
低速轴型号



Solid Shaft downwards
实心轴向下



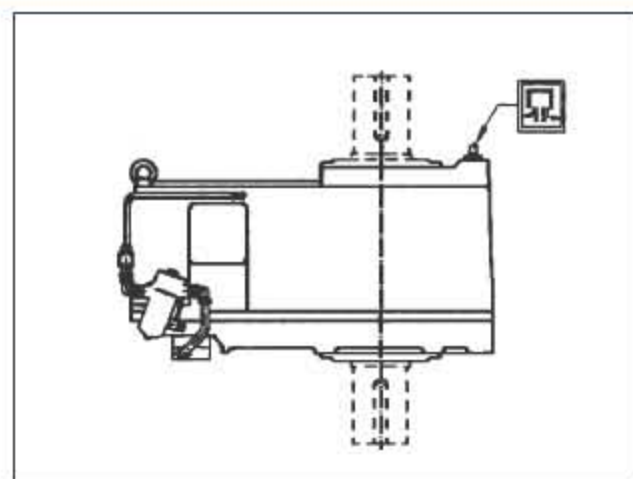
Solid Shaft upwards
实心轴向上



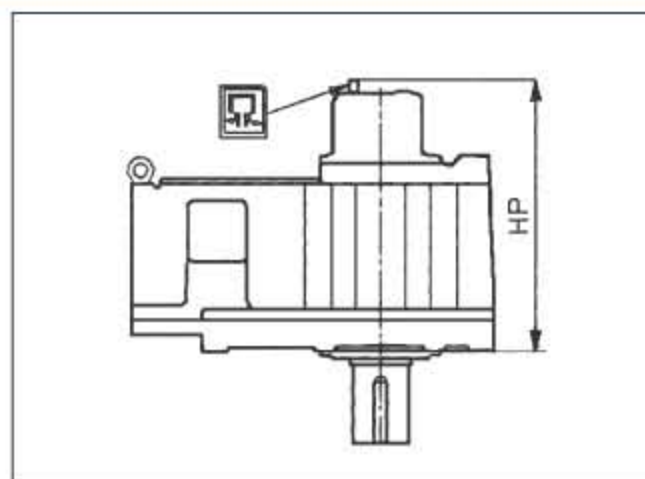
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

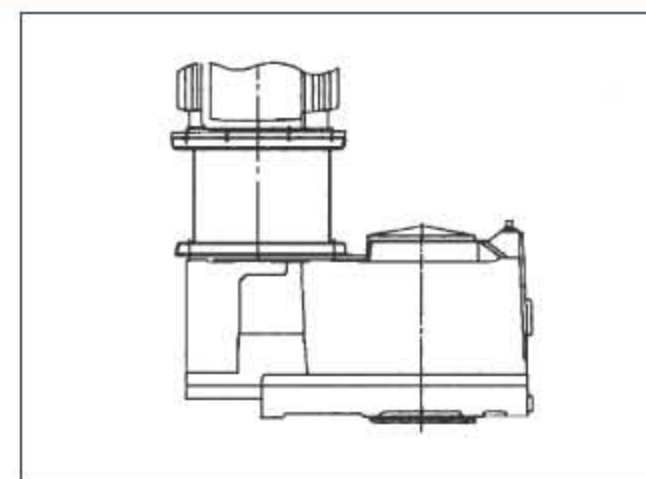
通用附件, 见第4章



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页, 压力润滑用



Expansion Tank, With Bath Lubrication /
膨胀箱, 浸油润滑用



Motor Flange, page 75
电动机法兰, 75 页

Size 规格	LSS Dimensions in mm										LSS 尺寸				Common Accessories	
	Solid Shaft / 实心轴										Hollow Shaft / 空心轴				通用附件	
	d2	b2	h2	m2	Y2	U2	V2	U5	V5		U3	UC	D4	D5	HP	
60	160m6	40h9	169	M30	270	35	305	674	944		35	796	180	179	984	
70	180m6	45h9	190	M30	270	35	305	725	995		35	863	190	189	1084	
80	200m6	45h9	210	+)	315	35	350	785	1100		35	928	210	209	1275	
90	220m6	50h9	231	+)	315	35	350	855	1170		35	1024	250	249	1350	

+) M20, 2 × 180° distance / 距离 0.6 × d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

lubrication 润滑	page 页
lubrication Unit 润滑装置	67
Oil Heating System 油加热系统	70
Expansion tank for moist environment 潮湿环境膨胀箱	72

Optional Seal Arrangements 可选择的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

1) Standard Solution for this Gear Unit type

*) Contact GUOMAO

1) 本型减速器的标准方案

*) 与国茂联系

3 - stage Bevel Helical Gear Units

Vertical LSS

3 级锥齿轮-斜齿轮减速器垂直LSS

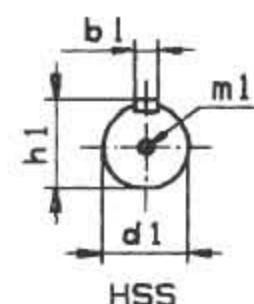
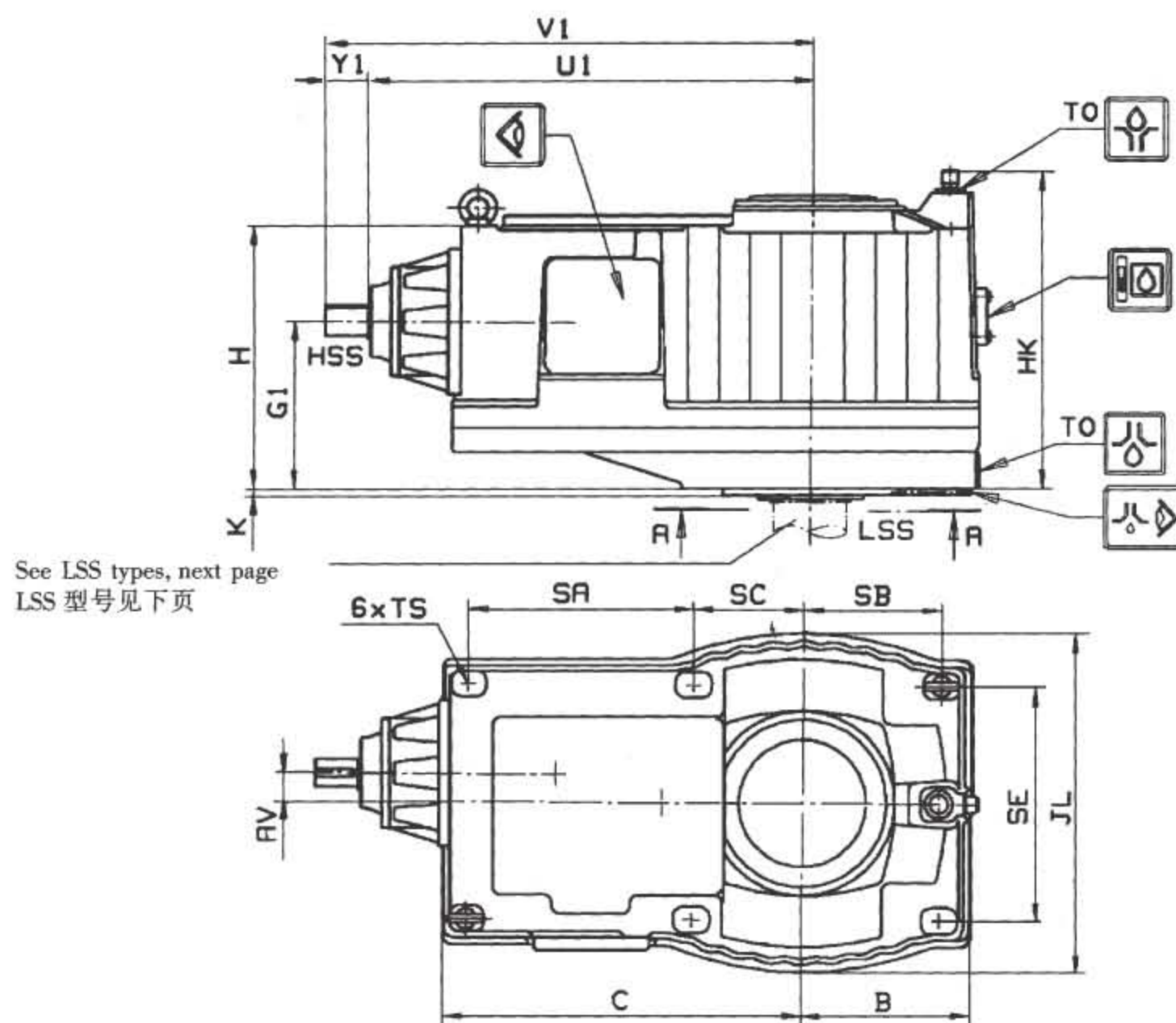
GM3RV. .30-50

Solid & Hollow LSS

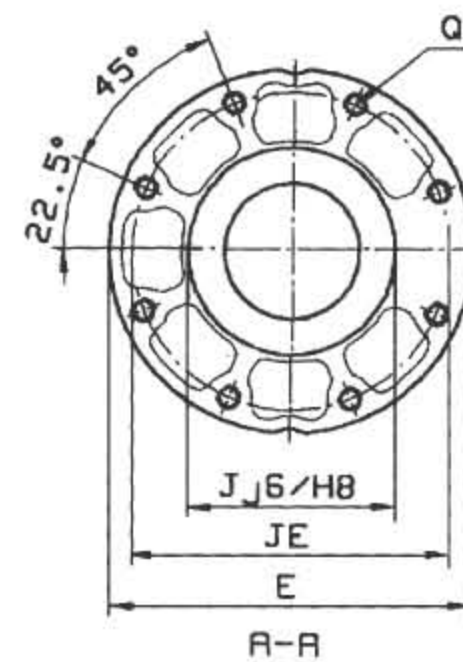
实心 and 空心LSS

Gear Unit Dimensions, type GM3RVSF GM3RVHF

减速器尺寸, 型号 GM3RVSF GM3RVHF



Mounting Flange support
安装法兰支撑



Technical Data page 20
技术数据 20 页

Size 规格	Housing Dimensions in mm																	箱体尺寸 (mm)	
	AV	B	C	E	G1	H	HK	J	JE	JL	K	Q	SA	SB	SC	SE	TS	TO	
30	42,6	242	522	400	252	393	548	270	340	484	12	M30x53	321	192	171	310	M20x35	R1	
40	51,4	275	566	460	275	431	589	280	400	550	12	M30x53	342	225	193	364	M20x35	R1	
50	34,9	325	682	562	314	499	634	320	490	650	12	M36x63	431	270	215	440	M24x42	R1 1/2	

Size 规格	HSS Dimensions in mm							HSS 尺寸(mm)						Weight 重量	Oil Capacity/油量	
		i _N =14. . . 63						i _N =71. . . 80							Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1			
30	683	95	778	45k6	14h9	48,5	M16	70	753	35k6	10h9	38	M12	460	66	24
40	726	95	821	45k6	14h9	48,5	M16	95	821	45k6	14h9	48,5	M16	700	92	33
		i _N =14. . . 56						i _N =63. . . 80								
50	878	95	973	55m6	16h9	59	M20	95	973	45k6	14h9	48,5	M16	1040	150	50

Shaft Positions

轴的位置

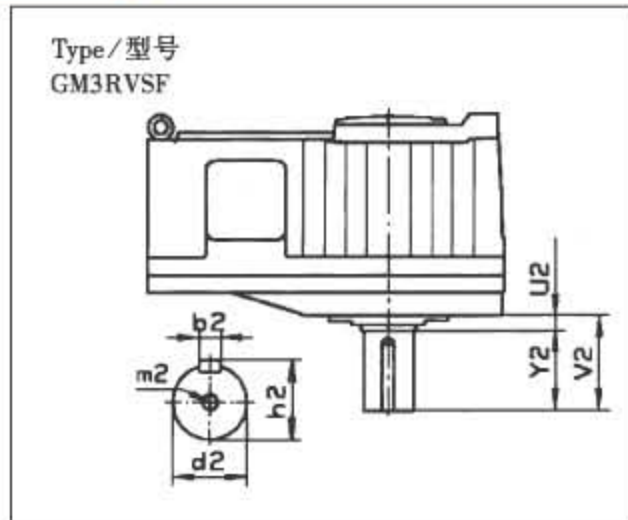


**3 - stage Bevel Helical Gear Units
Vertical LSS**
3 级锥齿轮-斜齿轮减速器垂直 LSS

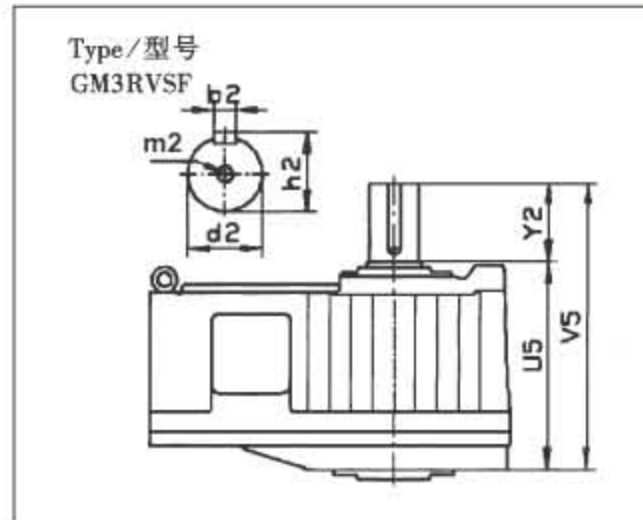
**GM3RV. .30-50
Solid & Hollow LSS**
实心 and 空心 LSS

LSS types

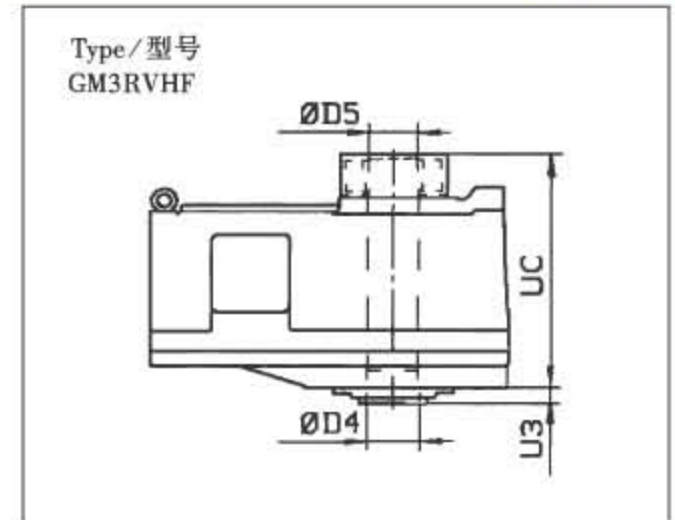
低速轴型号



Solid Shaft downwards
实心轴向下



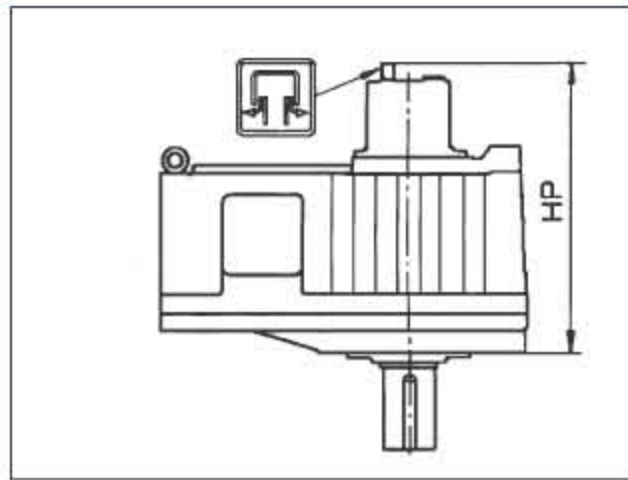
Solid Shaft upwards
实心轴向上



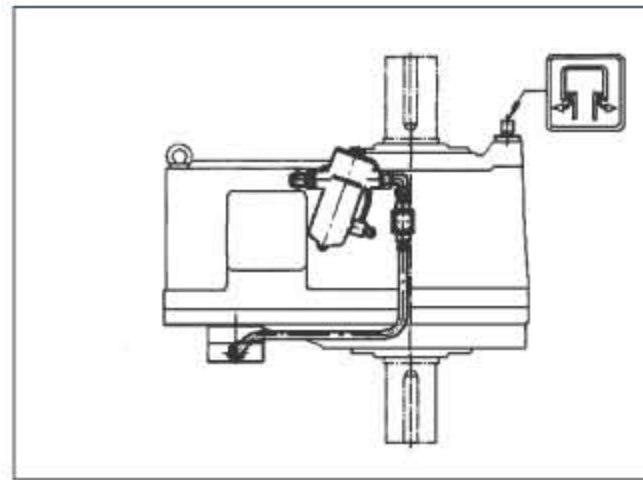
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

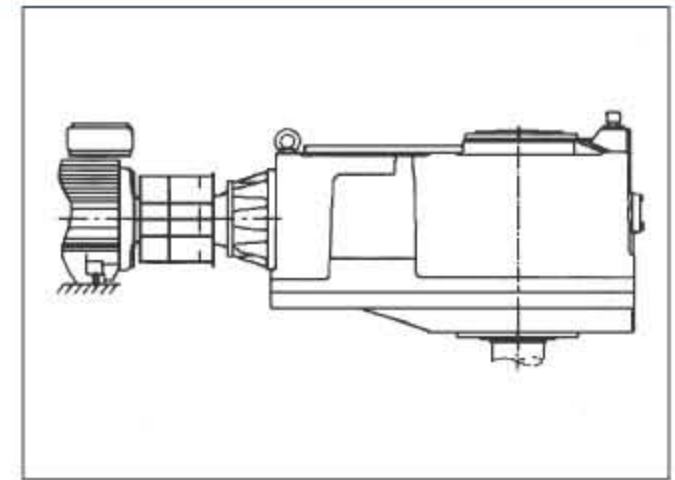
通用附件, 见第4章



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页, 压力润滑用



Coupling Guard, page 74
联轴器保护装置, 74 页

Size 规格	LSS Dimensions in mm								LSS 尺寸(mm)				Common Accessories 通用附件	
	Solid Shaft / 实心轴								Hollow Shaft / 空心轴					
	d2	b2	h2	m2	Y2	U2	V2	U5	V5	U3	UC	D4	D5	HP
30	110m6	28h9	116	M24	190	25	215	493	683	25	555	120	119	648
40	120m6	32h9	127	M24	190	25	215	534	724	25	600	130	129	725
50	140m6	36h9	148	M30	225	25	250	597	822	25	700	155	154	825

Other available Accessories, see section 4

提供的其它附件, 见第4章

Mounting Flange 安装法兰	64
Cooling 冷却	page 页
Fan 风扇	65
Lubrication 润滑	page 页
Lubrication Unit 润滑装置	67
Oil Heating System 油加热系统	2) 70
Oil Drain Valves 泄油阀	71
Expansion tank for moist environment 潮湿环境膨胀箱	72

Optional Seal Arrangements 可选的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)
Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

- 1) Standard Solution for this Gear Unit type
2) For Gear Unit size 50
*) Contact GUOMAO
1) 本型减速器的标准方案
2) 对减速器 50
*) 与国茂联系

3 - stage Bevel Helical Gear Units

Vertical LSS

3 级锥齿轮-斜齿轮减速器垂直LSS

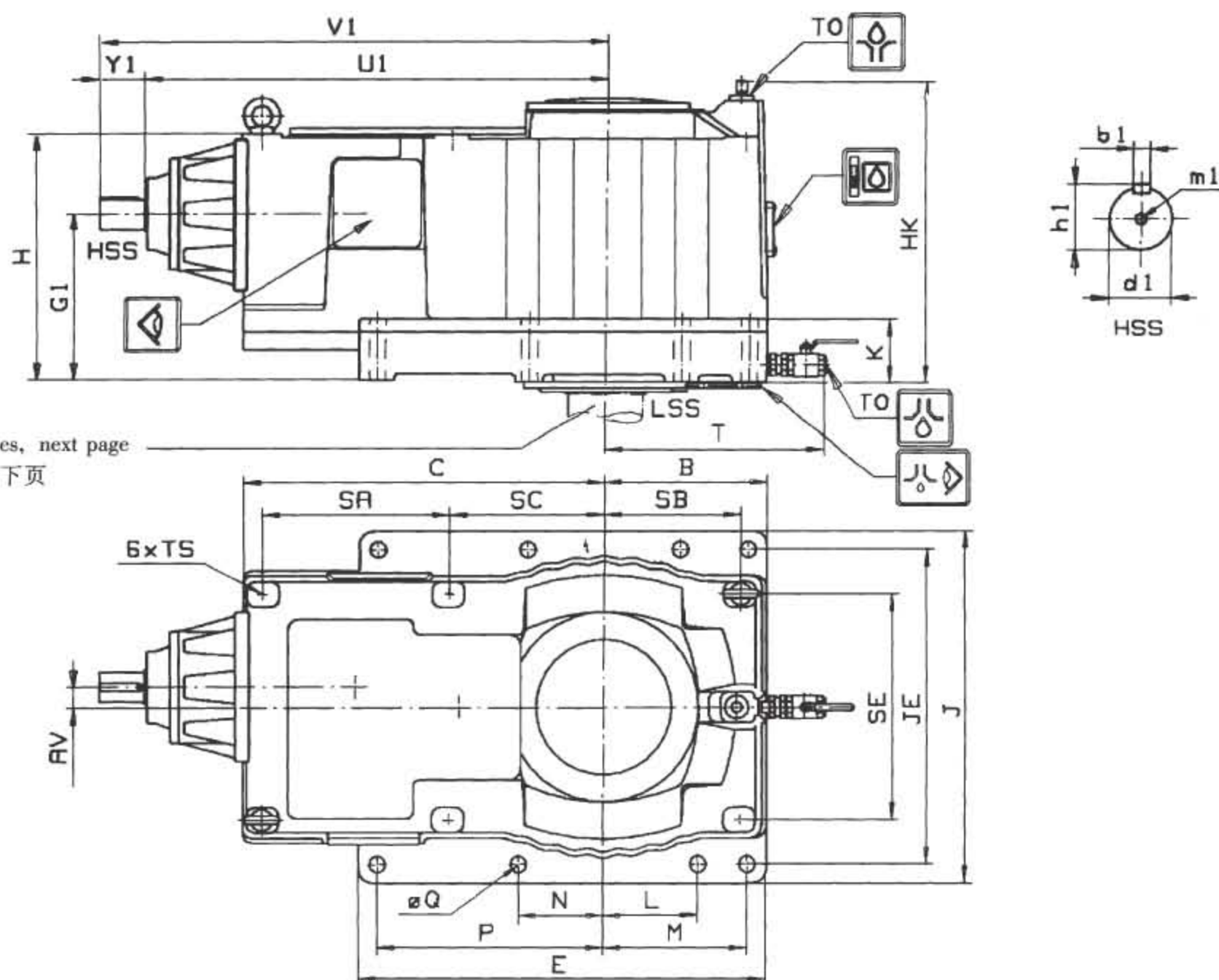
GM3RV. .60-90

Solid & Hollow LSS

实心 and 空心LSS

Gear Unit Dimensions, type GM3RVSF GM3RVHF

减速器尺寸, 型号 GM3RVSF GM3RVHF



Technical Data Page 20

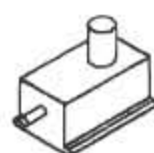
技术数据 20页

Size 规格	Housing Dimensions in mm														箱体尺寸(mm)							
	AV	B	C	E	G1	H	HK	J	JE	K	L	M	N	P	Q	SA	SB	SC	SE	TS	TO	T
60	82,6	405	778	810	362	570	711	810	700	165	-	350	-	350	48	397	343	343	486	M24x42	R1 1/2	572
70	69,0	405	906	1010	389	620	771	920	810	171	-	350	235	550	48	480	343	388	576	M24x42	R1 1/2	572
80	67,1	440	959	1100	413	662	823	1000	890	182	235	385	235	605	48	481	367	427	608	M30x53	R1 1/2	607
90	60,8	480	1061	1200	446	722	893	1040	930	188	235	425	235	665	48	550	407	459	654	M30x53	R1 1/2	647

Size 规格	HSS Dimensions in mm							HSS 尺寸(mm)						Weight 重量	Oil Capacity/油量		
	i _N = 14... 56							i _N = 63... 80							Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑	
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	kg			1
60	997	125	1122	65m6	18h9	69	M20	95	1092	55m6	16h9	59	M20	1530	180	60	
70	1133	125	1258	75m6	20h9	79,5	M20	125	1258	60m6	18h9	64	M20	2160	260	85	
		i _N = 14... 63							i _N = 71... 80								
80	1184	125	1309	75m6	20h9	79,5	M20	125	1309	60m6	18h9	64	M20	2680	350	120	
90	1357	150	1507	90m6	25h9	95	M24	125	1482	70m6	20h9	74,5	M20	3440	450	150	

Shaft Positions

轴的位置



04



03



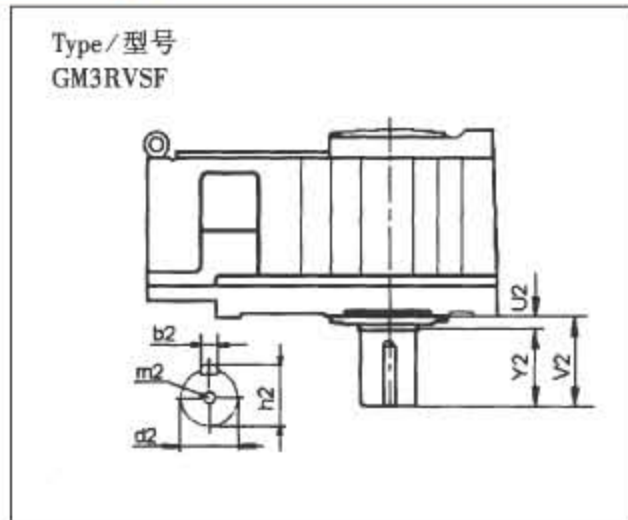
03

**3 - stage Bevel Helical Gear Units
Vertical LSS**
3 级锥齿轮－斜齿轮减速器垂直 LSS

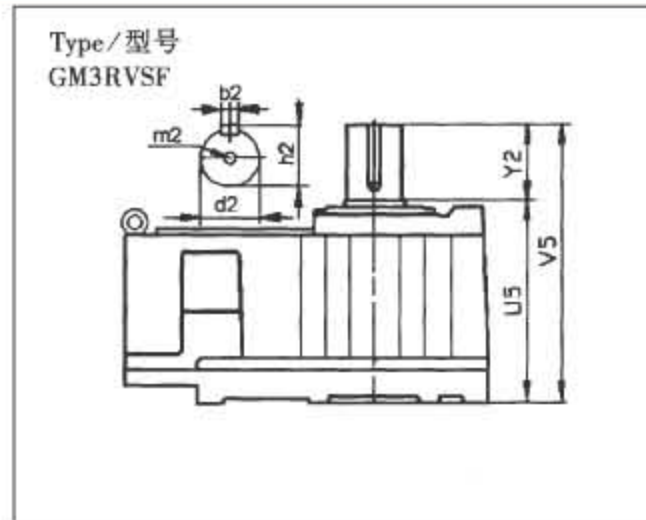
**GM3RV. .60-90
Solid & Hollow LSS**
实心 and 空心 LSS

LSS types

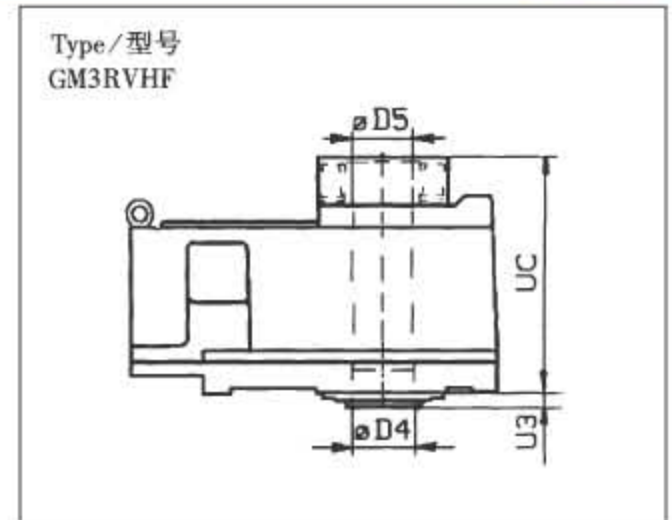
低速轴型号



Type/型号
GM3RVSF
Solid Shaft downwards
实心轴向下



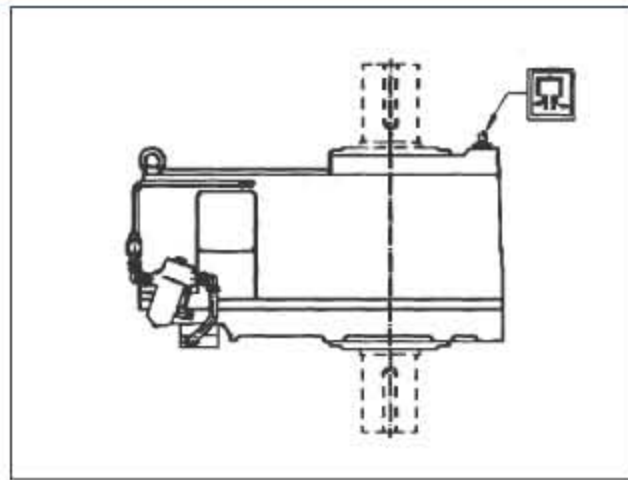
Type/型号
GM3RVSF
Solid Shaft upwards
实心轴向上



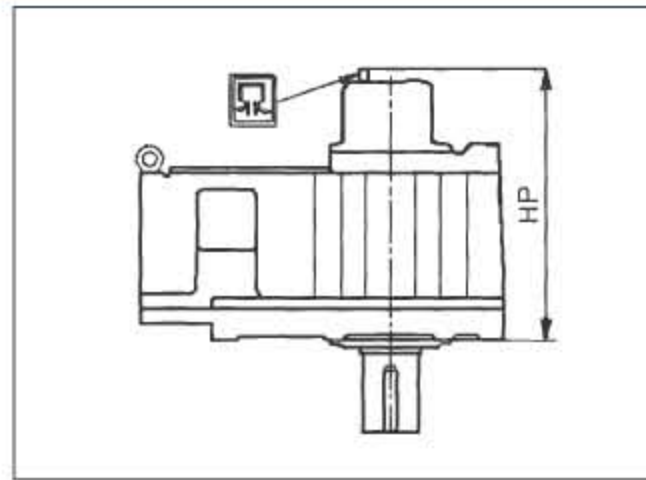
Type/型号
GM3RVHF
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

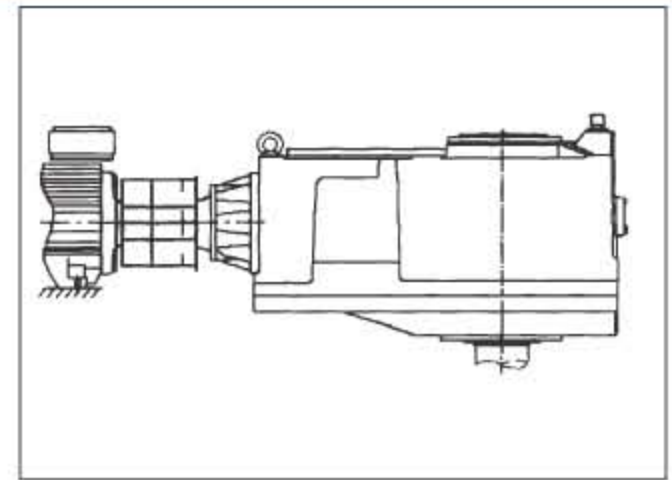
通用附件, 见第4章



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页, 压力润滑用



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Coupling Guard, page 74
联轴器保护装置, 74 页

Size 规格	LSS Dimensions in mm									LSS 尺寸				Common Accessories
	Solid Shaft / 实心轴									Hollow Shaft / 空心轴				通用附件
	d2	b2	h2	m2	Y2	U2	V2	U5	V5	U3	UC	D4	D5	HP
60	160m6	40h9	169	M30	270	35	305	674	944	35	796	180	179	984
70	180m6	45h9	190	M30	270	35	305	725	995	35	863	190	189	1084
80	200m6	45h9	210	+)	315	35	350	785	1100	35	928	210	209	1275
90	220m6	50h9	231	+)	315	35	350	855	1170	35	1024	250	249	1350

+) M20, 2 × 180° distance / 距离 0.6 × d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Cooling 冷却	page 页
Fan 风扇	65

Lubrication 润滑	page 页
Lubrication Unit 润滑装置	67
Oil Heating System 油加热系统	70
Expansion tank for moist environment 潮湿环境膨胀箱	72

Optional Seal Arrangements 可选的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)

Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Belt Drive 带传动	75

1) Standard Solution for this Gear Unit type

*) Contact GUOMAO

1) 本型减速器的标准方案

*) 与国茂联系

4 - stage Bevel Helical Gear Units

Vertical LSS

4 级锥齿轮-斜齿轮减速器垂直LSS

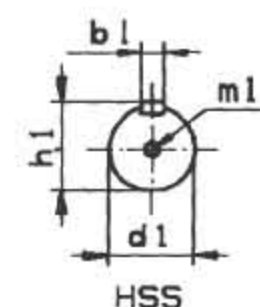
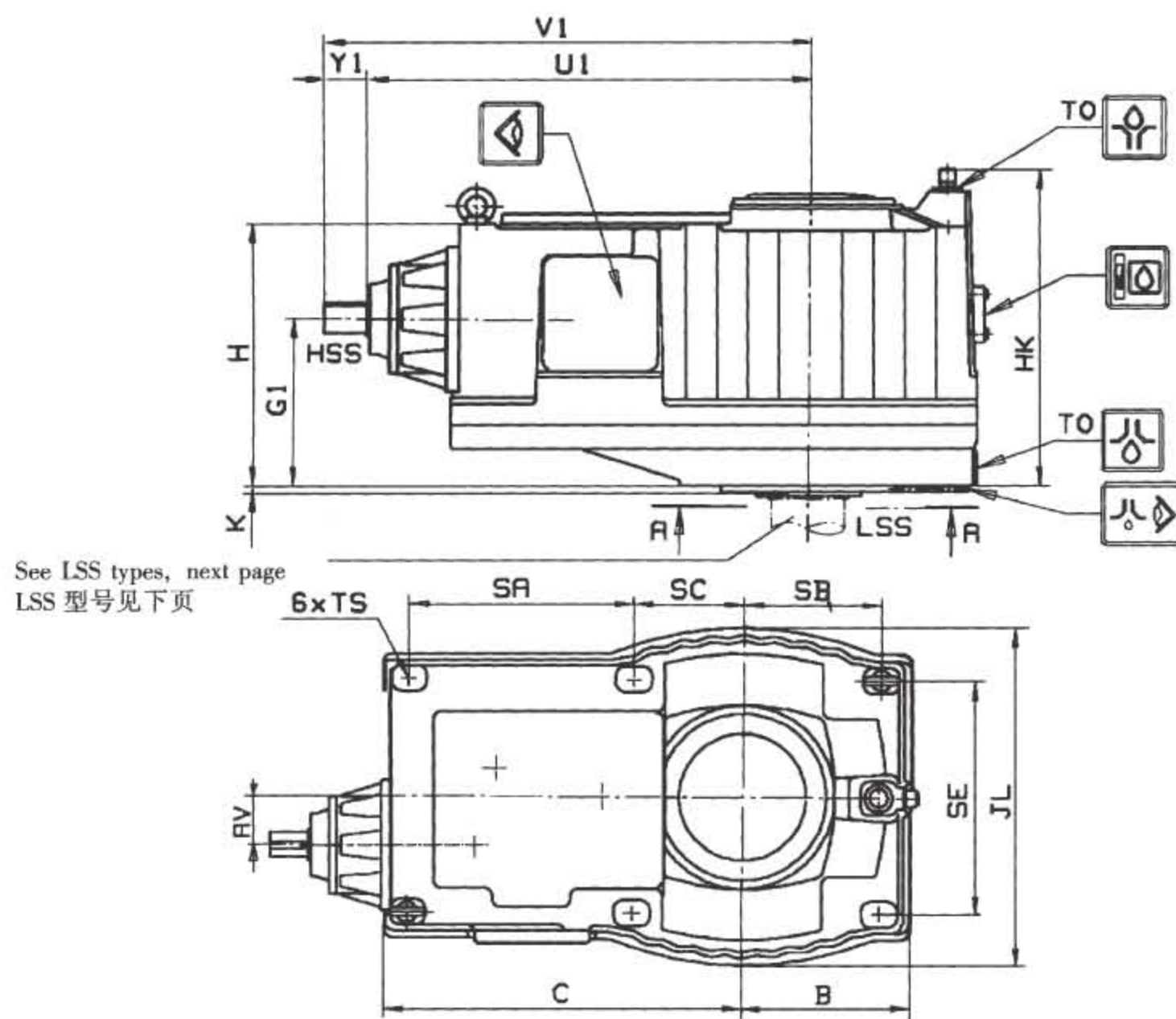
GM4RV. .50

Solid & Hollow LSS

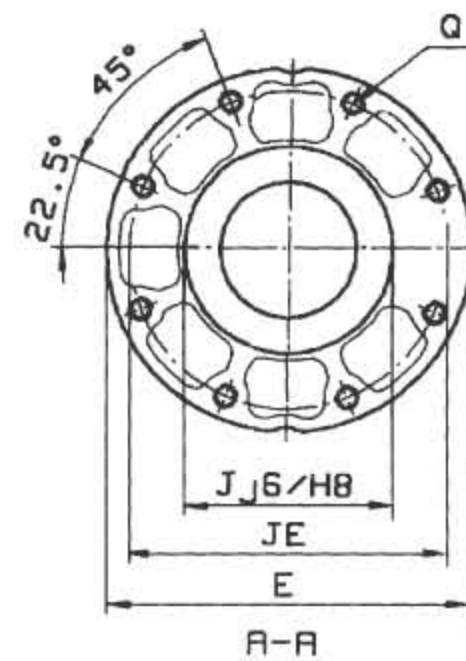
实心 and 空心LSS

Gear Unit Dimensions, type GM4RVSF GM4RVHF

减速器尺寸, 型号 GM4RVSF GM4RVHF



Mounting Flange support
安装法兰支撑



Technical Data page 20
技术数据 20 页

Size 规格	Housing Dimensions in mm										箱体尺寸 (mm)								
	AV	B	C	E	G1	H	HK	J	JE	JL	K	Q	SA	SB	SC	SE	TS	TO	
50	113.8	325	682	562	314	499	634	320	490	650	12	M36x63	431	270	215	440	M24x42	R1 1/2	

Size 规格	HSS Dimensions in mm							HSS 尺寸 (mm)							Weight 重量	Oil Capacity / 油量	
	$i_N=90 \dots 250$							$i_N=280 \dots 315$								Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	kg			
50	841	95	936	45k6	14h9	48, 5	M16	70	911	35k6	10h9	38	M12	1100	148	49	

Shaft Positions

轴的位置

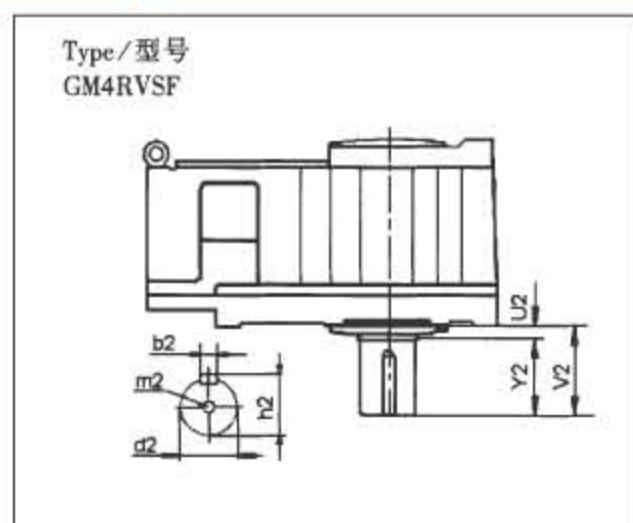


**4 - stage Bevel Helical Gear Units
Vertical LSS**
4 级锥齿轮-斜齿轮减速器垂直 LSS

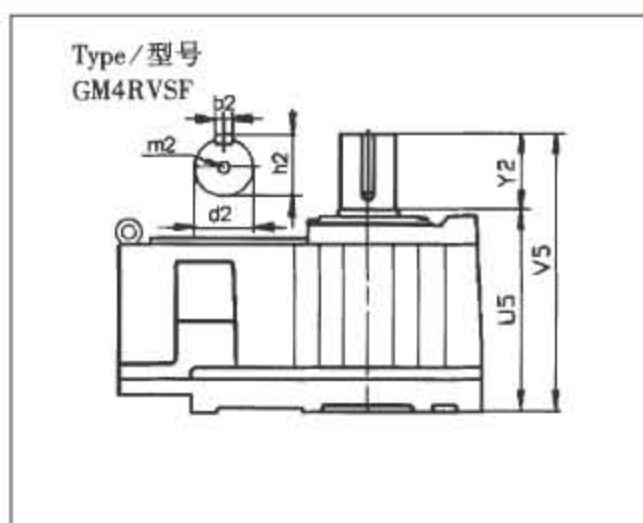
**GM4RV. .50
Solid & Hollow LSS**
实心 and 空心 LSS

LSS types

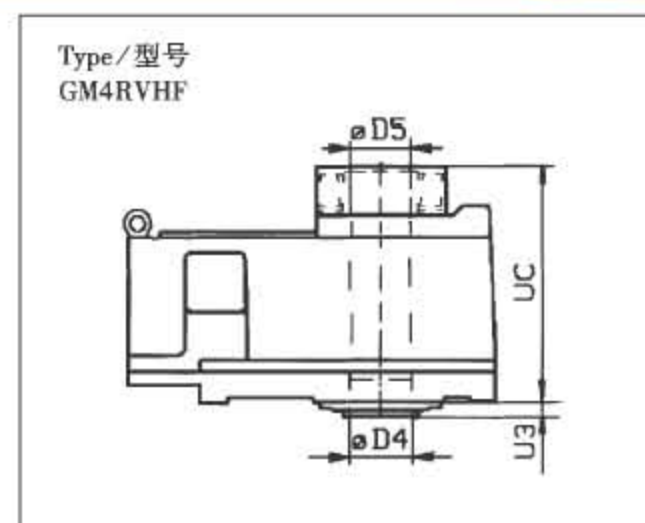
低速轴型号



Type/型号
GM4RVSF
Solid Shaft downwards
实心轴向下



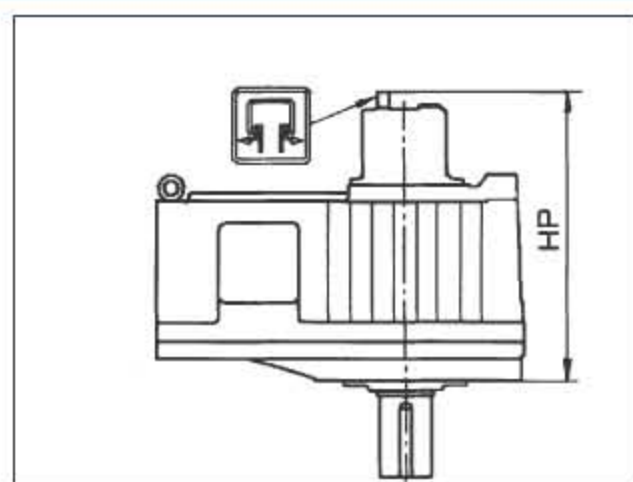
Type/型号
GM4RVSF
Solid Shaft upwards
实心轴向上



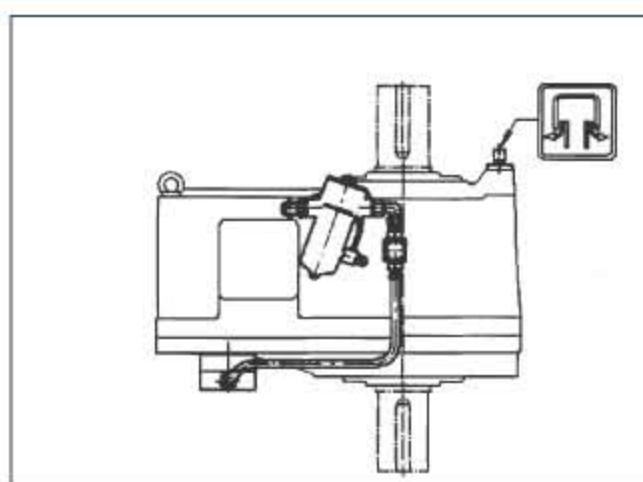
Type/型号
GM4RVHF
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

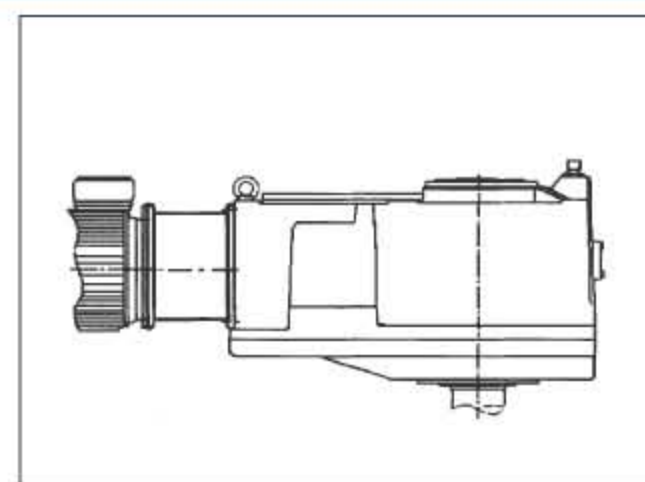
通用附件, 见第4章



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页, 压力润滑用



Motor Flange, page 75
电动机法兰, 75 页

Size 规格	LSS Dimensions in mm										LSS 尺寸 (mm)				Common Accessories	
	Solid Shaft / 实心轴										Hollow Shaft / 空心轴				通用附件	
	d2	b2	h2	m2	Y2	U2	V2	U5	V5		U3	UC	D4	D5	HP	
50	140m6	36h9	148	M30	225	25	250	597	822		25	700	155	154	825	

Other available Accessories, see section 4

提供的其它附件, 见第4章

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Optional Seal Arrangements 可选的密封装置	73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封	1)
Coupled Equipment 连接装置	Page 页
Couplings 联轴器	*)
Coupling Guard 联轴器保护装置	74
Belt Drive 带传动	75

1) Standard Solution for this Gear Unit type

*) Contact GUOMAO

1) 本型减速器的标准方案

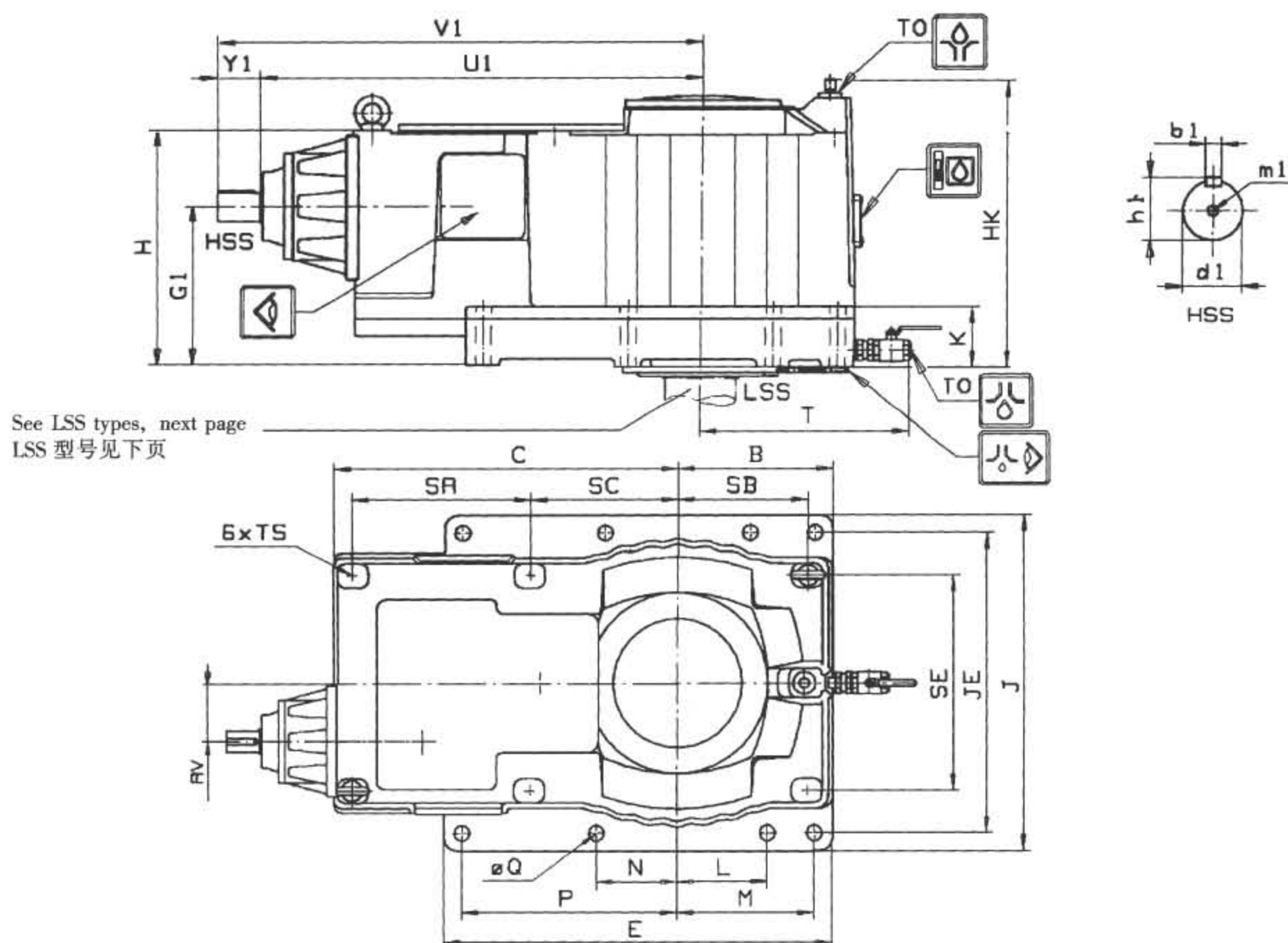
*) 与国茂联系

4 - stage Bevel Helical Gear Units
Vertical LSS
4 级锥齿轮 - 斜齿轮减速器垂直 LSS

GM4RV. .60-90
Solid & Hollow LSS
实心 and 空心 LSS

Gear Unit Dimensions, type GM4RVSF GM4RVHF

减速器尺寸, 型号 GM4RVSF GM4RVHF



Technical Data page 20
技术数据 20 页

Size 规格	Housing Dimensions in mm											箱体尺寸(mm)										
	AV	B	C	E	G1	H	HK	J	JE	K	L	M	N	P	Q	SA	SB	SC	SE	TS	TO	T
60	68,8	405	778	810	362	570	711	810	700	165	-	350	-	350	48	397	343	343	486	M24x42	R1 1/2	572
70	119,7	405	906	1010	389	620	771	920	810	171	-	350	235	550	48	480	343	388	576	M24x42	R1 1/2	572
80	121,7	440	959	1100	413	662	823	1000	890	182	235	385	235	605	48	481	367	427	608	M30x53	R1 1/2	607
90	160,2	480	1061	1200	446	722	893	1040	930	188	235	425	235	665	48	550	407	459	654	M30x53	R1 1/2	647

Size 规格	HSS Dimensions in mm							HSS 尺寸 (mm)						Weight 重量	Oil Capacity / 油量	
	i _N = 90... 250							i _N = 280... 315							Bath Lubrication 浸油润滑	Pressure lubrication 压力润滑
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	kg		
60	936	95	1031	45k6	14h9	48, 5	M16	70	1006	35k6	10h9	38	M12	1580	177	59
70	1101	95	1196	55m6	16h9	59	M20	95	1196	45k6	14h9	48, 5	M16	2230	257	84
80	1152	95	1247	55m6	16h9	59	M20	95	1247	45k6	14h9	48, 5	M16	2770	347	118
90	1277	125	1402	65m6	18h9	69	M20	95	1372	55m6	16h9	59	M20	3550	446	148

Shaft Positions

轴的位置



4 - stage Bevel Helical Gear Units
Vertical LSS

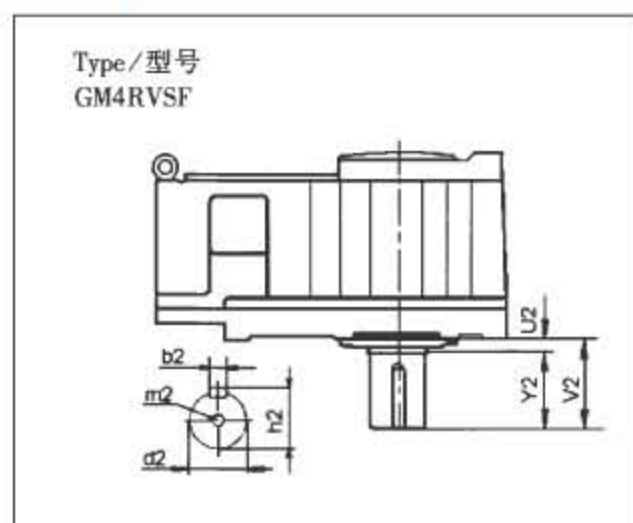
4 级锥齿轮-斜齿轮减速器垂直 LSS

GM4RV. .60-90
Solid & Hollow LSS

实心 and 空心 LSS

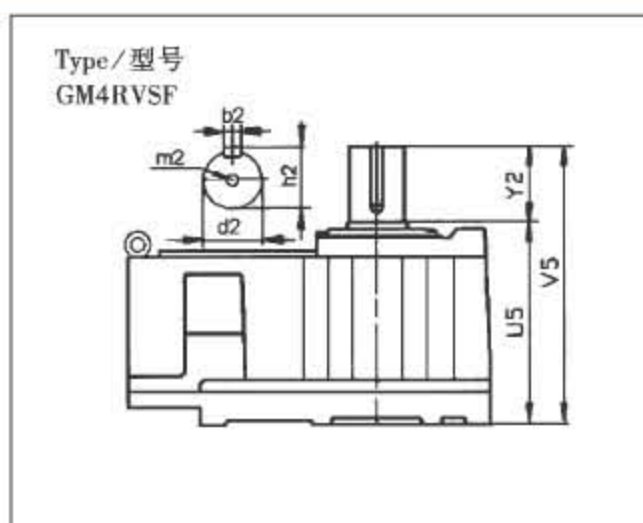
LSS types

低速轴型号



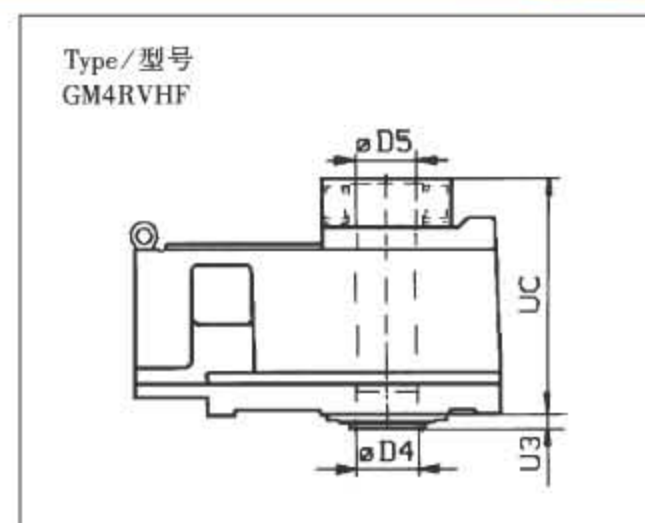
Type/型号
GM4RVSF

Solid Shaft downwards
实心轴向下



Type/型号
GM4RVSF

Solid Shaft upwards
实心轴向上

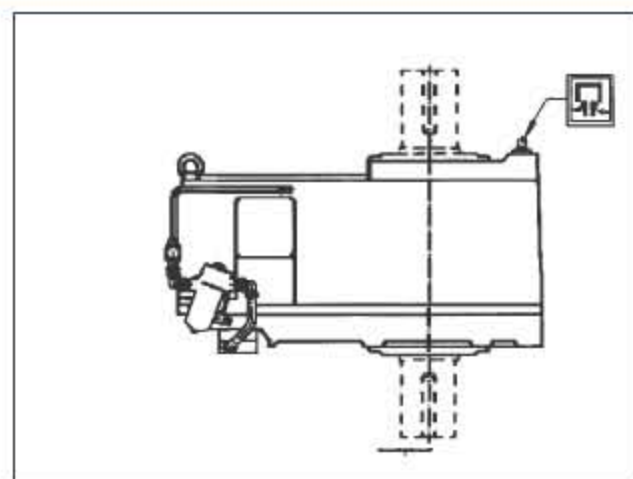


Type/型号
GM4RVHF

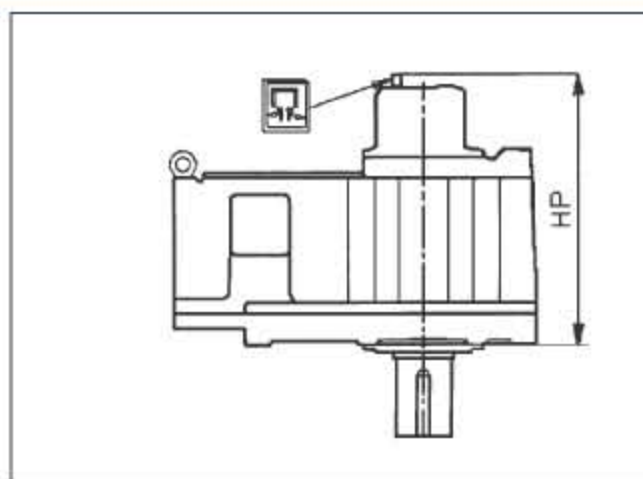
Hollow Shaft, Shrink Disk, page 59
空心轴, 收缩盘, 59 页

Common Accessories, see section 4

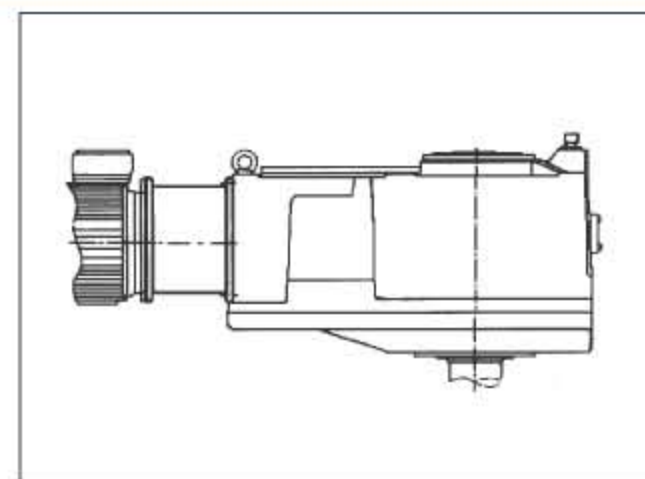
通用附件, 见第4章



Shaft End Pump, page 68
With Pressure Lubrication
轴端泵 68 页, 压力润滑用



Expansion Tank, With Bath Lubrication/
膨胀箱, 浸油润滑用



Motor Flange, page 75
电动机法兰, 75 页

Size 规格	LSS Dimensions in mm										LSS 尺寸				Common Accessories 通用附件	
	Solid Shaft / 实心轴										Hollow Shaft / 空心轴				HP	
	d2	b2	h2	m2	Y2	U2	V2	U5	V5		U3	UC	D4	D5		
60	160m6	40h9	169	M30	270	35	305	674	944		35	796	180	179	984	
70	180m6	45h9	190	M30	270	35	305	725	995		35	863	190	189	1084	
80	200m6	45h9	210	+)	315	35	350	785	1100		35	928	210	209	1275	
90	220m6	50h9	231	+)	315	35	350	855	1170		35	1024	250	249	1350	

+) M20, 2 x 180° distance / 距离 0.6 x d2

Other available Accessories, see section 4

提供的其它附件, 见第4章

Lubrication 润滑		page 页
Lubrication Unit 润滑装置		67
Oil Heating System 油加热系统		70
Expansion tank for moist environment 潮湿环境膨胀箱		72
Optional Seal Arrangements 可选的密封装置		73
Lip Seal on HSS and LSS HSS 和 LSS 上用唇型密封		1)

Coupled Equipment 连接装置		Page 页
Couplings 联轴器		*)
Coupling Guard 联轴器保护装置		74
Belt Drive 带传动		75

1) Standard Solution for this Gear Unit type

*) Contact GUOMAO

1) 本型减速器的标准方案

*) 与国茂联系

Modular accessories

模块附件

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Hollow Shaft
空心轴

Shrink Disk
收缩盘

Shrink Disk

收缩盘

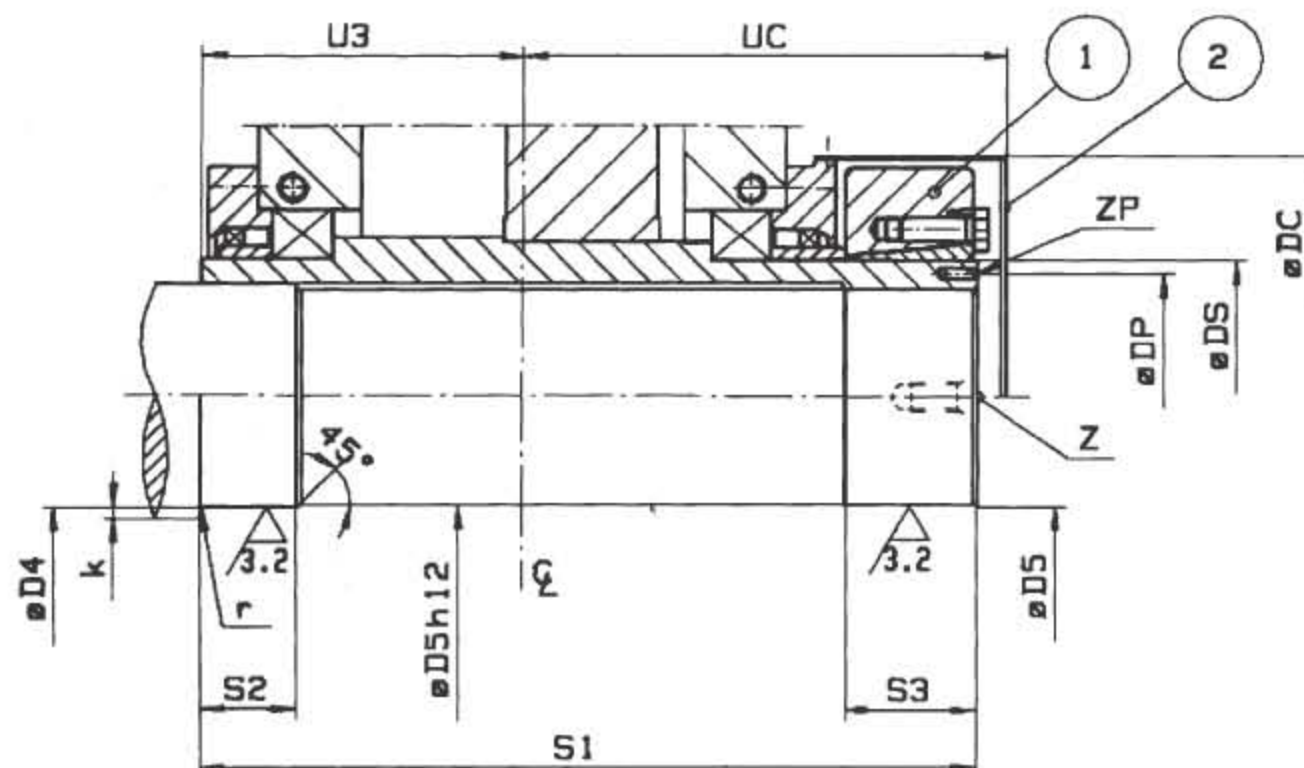
Hollow Shaft Bore and Driven Shaft End for Hollow Shaft Gear Units

空心轴减速器的空心轴孔和从动轴端。

If not specified, the shrink disk shall be on the opposite side of the driven machine.

如果不特别指明,收缩盘总是放在从动机的对面。

Basic solution
基本方案



Item 1: Shrink Disk
Item 2: Cover
序号 1: 收缩盘
序号 2: 护罩

Horizontal Output Shaft
Mounting with Shrink Disk

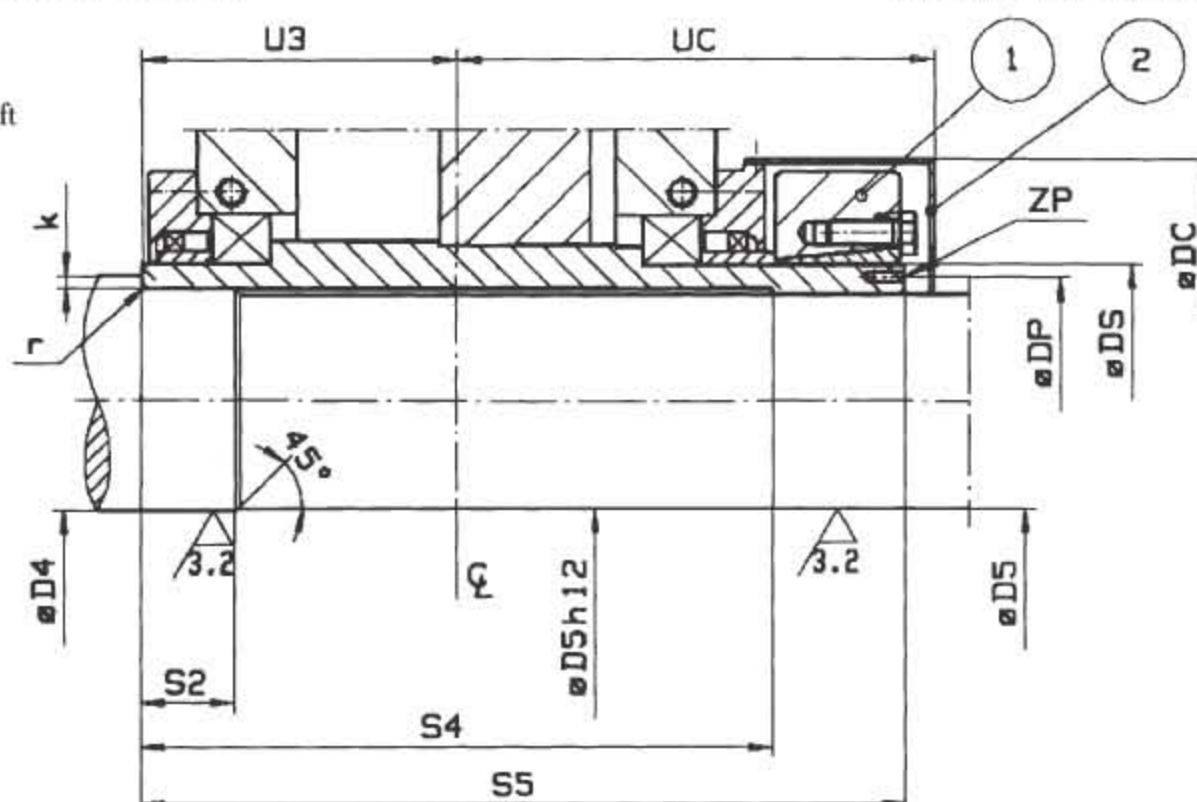
水平输出轴
收缩盘安装

Gear Unit size 减速器规格	Dimensions in [mm]													尺寸[mm]				
	Shrink Disk 收缩盘			Shaft end of driven machine 从动机的轴端										Hollow Shaft 空心轴		Cover 护罩		
	Size 尺寸 stand	ØDS	Ma *) [Nm]	ØD4		ØD5	S1	S2	S3	S4	S5	k min	r max	U3	ØDP	ZP 6x60°	ØDC	UC
50	185 / d = 190	190	250	135	155 js7 / H8	154 h6 / H7	548	78	85	463	548	7	5	228	172	M10x20	346	336
60	220 / d = 220	220	490	160	180 js7 / H8	179 g6 / H7	620	90	102	518	620	7	5	255	200	M10x20	420	386
70	240 / d = 240	240	490	180	190 js7 / H8	189 g6 / H7	683	95	105	578	683	7	5	284	215	M12x24	465	422
80	260 / d = 260	260	490	190	210 js7 / H8	209 g6 / H7	730	105	120	610	730	8	6	302	235	M12x24	505	453
90	300 / d = 300	300	840	230	250 js7 / H8	249 g6 / H7	796	125	140	656	796	8	6	324	275	M12x24	545	501

Z) Threaded holes according to customers standard. Recommended for assembly.
ZP) For disassembly tools.
*) Tightening torque of shrink disk screws.

Z) 螺纹孔按用户标准,对推荐组件。
ZP) 对拆卸工具。
*) 收缩盘螺钉的拧紧力矩。

Through going shaft
贯通轴



Item 1: Shrink Disk
Item 2: Cover
序号 1: 收缩盘
序号 2: 护罩

Hollow Shaft
空心轴

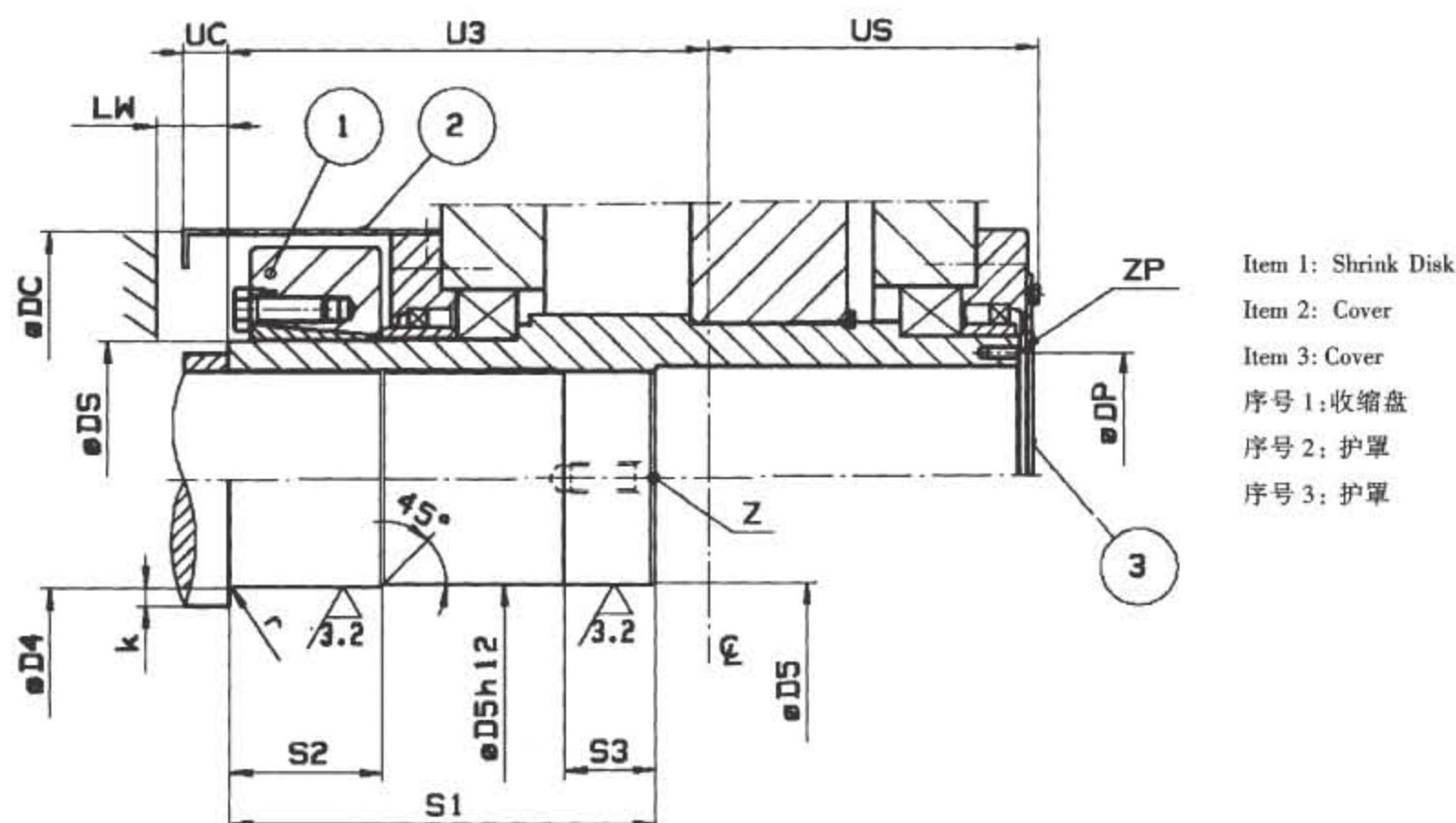
Shrink Disk
收缩盘

Shrink Disk

收缩盘

Hollow Shaft Bore and Driven Shaft End for Hollow
Shaft Gear Units

空心轴减速器的空心轴孔和从动轴端



Horizontal Output Shaft
Mounting with Shrink Disk

水平输出轴
收缩盘安装

Gear Unit size 减速器 规格	Dimensions in [mm]												尺寸[mm]						
	Shrink Disk 收缩盘			Shaft end of driven machine 从动机的轴端									Hollow Shaft 空心轴		Cover 护罩				
	Size 尺寸 stand	ØDS	Ma *) [Nm]	ØD4		ØD5	S1	S2	S3	k min	r max	U3	ØDP	ZP 6x60°	ØDC	LW min.	US	UC	
50	185/d = 190	190	250	135	155 h6/H7	154 js6/H7	310	85	40	7	18	5	320	172	M10x20	346	75	232	60
60	220/d = 220	220	490	160	180 g6/H7	179 js6/H7	360	102	45	7	20	5	365	200	M10x20	420	100	259	85
70	240/d = 240	240	490	180	190 g6/H7	189 js6/H7	380	105	50	7	25	5	399	215	M12x24	465	100	288	85
80	260/d = 260	260	490	190	210 g6/H7	209 js6/H7	420	120	55	8	25	6	428	235	M12x24	505	100	306	85
90	300/d = 300	300	840	230	250 g6/H7	249 js6/H7	500	140	65	8	25	6	472	275	M12x24	545	100	328	85

Z) Threaded holes according to customers standard. Recommended for assembly.

ZP) For disassembly tools.

*) Tightening torque of shrink disk screws.

Z) 螺纹孔按用户标准, 对推荐组件。

ZP) 对拆卸工具。

*) 收缩盘螺钉的拧紧力矩。

Hollow Shaft
空心轴

Shrink Disk
收缩盘

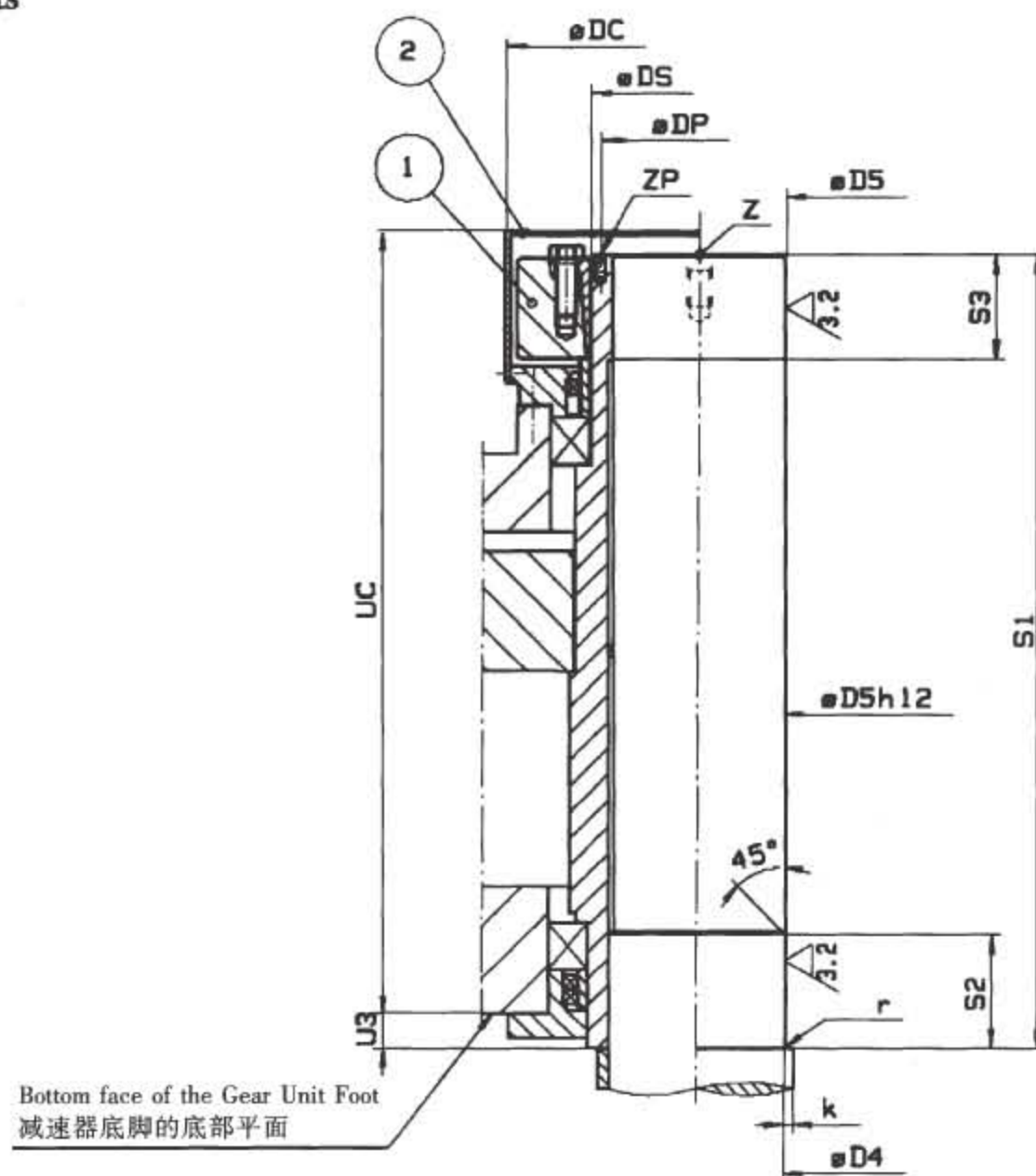
Shrink Disk

收缩盘

Hollow Shaft Bore and Driven Shaft End for Hollow
Shaft Gear Units

空心轴减速器的空心轴孔和从动轴端

Basic solution
基本方案



Item 1: Shrink Disk
Item 2: cover
序号 1: 收缩盘
序号 2: 护罩

Vertical Output Shaft
Mounting with Shrink Disk

垂直输出轴
收缩盘安装

Gear Unit size 减速器规格	Dimensions in [mm] 尺寸 [mm]																
	Shrink Disk 收缩盘			Shaft end of driven machine 从动机的轴端									Hollow Shaft 空心轴		Cover 护罩		
	Size 尺寸 stand	ØDS	Ma *) [Nm]	ØD4		ØD5	S1	S2	S3	k		r	U3	ØDP	ZP 6x60°	ØDC	UC
10	110/d = 110	110	100	75	85 js7/H8	84 h6/H7	453	45	48	4	12	3	25	97	M6x12	205	445
20	125/d = 120	120	100	85	95 js7/H8	94 h6/H7	476	50	52	5	12	3	25	107	M6x12	235	470
30	155/d = 150	150	160	110	120 js7/H8	119 h6/H7	564	62	62	6	15	4	25	135	M6x12	280	555
40	155/d = 160	160	160	115	130 js7/H8	129 h6/H7	605	65	62	6	15	4	25	145	M8x16	285	600
50	185/d = 190	190	250	135	155 js7/H8	154 h6/H7	704	78	85	7	18	5	25	172	M10x20	346	700
60	220/d = 220	220	490	160	180 js7/H8	179 g6/H7	810	90	102	7	20	5	35	200	M10x20	420	796
70	240/d = 240	240	490	180	190 js7/H8	189 g6/H7	875	95	105	7	25	5	35	215	M12x24	465	863
80	260/d = 260	260	490	190	210 js7/H8	209 g6/H7	938	105	120	8	25	6	35	235	M12x24	505	928
90	300/d = 300	300	840	230	250 js7/H8	249 g6/H7	1030	125	140	8	25	6	35	275	M12x24	545	1024

Z) Threaded holes according to customers standard. Recommended for assembly.
ZP) For disassembly tools.
*) Tightening torque of shrink disk screws.

Z) 螺纹孔按用户标准, 对推荐组件。
ZP) 对拆卸工具。
*) 收缩盘螺钉的拧紧力矩。

Hollow Shaft
空心轴

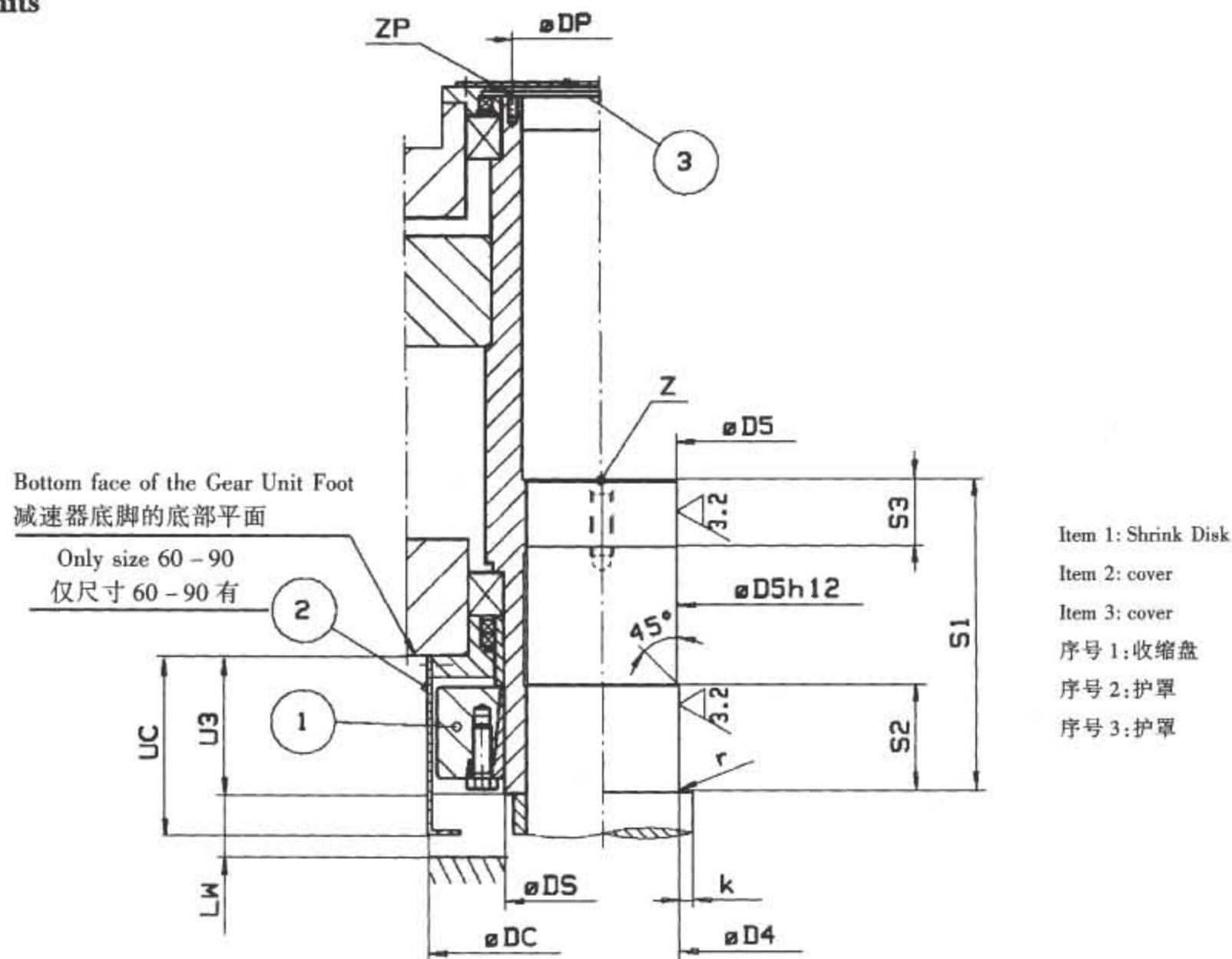
Shrink Disk
收缩盘

Shrink Disk

收缩盘

Hollow Shaft bore and driven Shaft End for Hollow
Shaft Gear Units

空心轴减速器的空心轴孔和从动轴端



Vertical Output Shaft
Mounting with Shrink Disk

垂直输出轴
收缩盘安装

Gear Unit size 减速器规格	Dimensions in [mm] 尺寸[mm]													Hollow Shaft 空心轴					Cover 护罩		
	Shrink Disk 收缩盘			Shaft end of driven machine 从动机的轴端																	
	Size 尺寸 stand	ØDS	Ma *) [Nm]	ØD4		ØD5	S1	S2	S3	k		r	U3	ØDP	ZP 6x60°	ØDC	UC	LW			
				min.	stand.					min	max	max									
10	110/d = 110	110	100	75	85 h6/H7	84 js6/H7	170	48	20	4	12	3	80	97	M6x12	205	135	70			
20	125/d = 120	120	100	85	95 h6/H7	94 js6/H7	190	52	25	5	12	3	84	107	M6x12	235	140	70			
30	155/d = 150	150	160	110	120 h6/H7	119 js6/H7	250	62	30	6	12	4	94	135	M6x12	285	155	75			
40	155/d = 160	160	250	115	130 h6/H7	129 js6/H7	260	62	35	6	15	4	94	145	M8x16	285	155	75			
50	185/d = 190	190	250	135	155 h6/H7	154 js6/H7	310	85	40	7	18	5	117	172	M10x20	346	179	75			
60	220/d = 220	220	490	160	180 g6/H7	179 js6/H7	360	102	45	7	20	5	148	200	M10x20	420	235	100			
70	240/d = 240	240	490	180	190 g6/H7	189 js6/H7	380	105	50	7	25	5	152	215	M12x24	460	240	100			
80	260/d = 260	260	490	190	210 g6/H7	209 js6/H7	420	120	55	8	25	6	164	235	M12x24	505	250	100			
90	300/d = 300	300	840	230	250 g6/H7	249 js6/H7	500	140	65	8	25	6	185	275	M12x24	545	270	100			

Z) Threaded holes according to customers standard. Recommended for assembly.

ZP) For disassembly tools.

*) Tightening torque of shrink disk screws.

Z) 螺纹孔按用户标准, 对推荐组件。

ZP) 对拆卸工具。

*) 收缩盘螺钉的拧紧力矩。

Hollow Shaft
空心轴

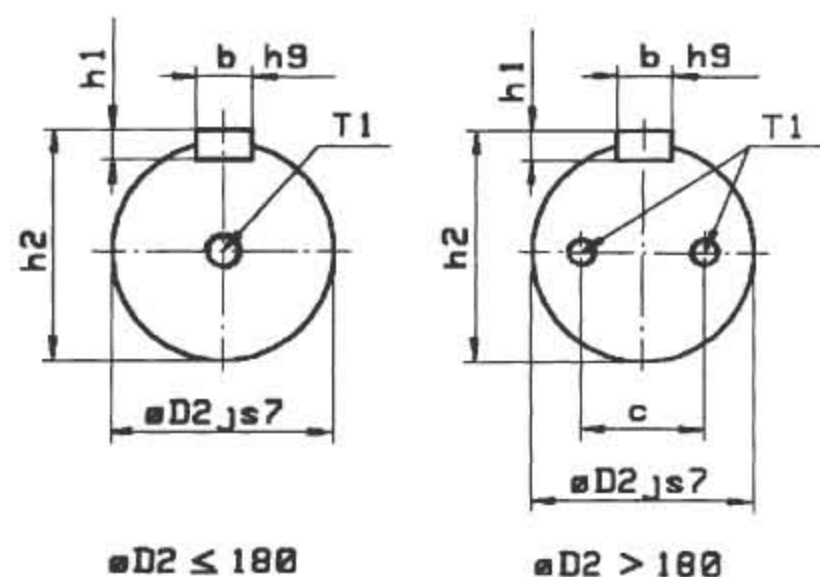
Key Connection
键连接

Key Connection

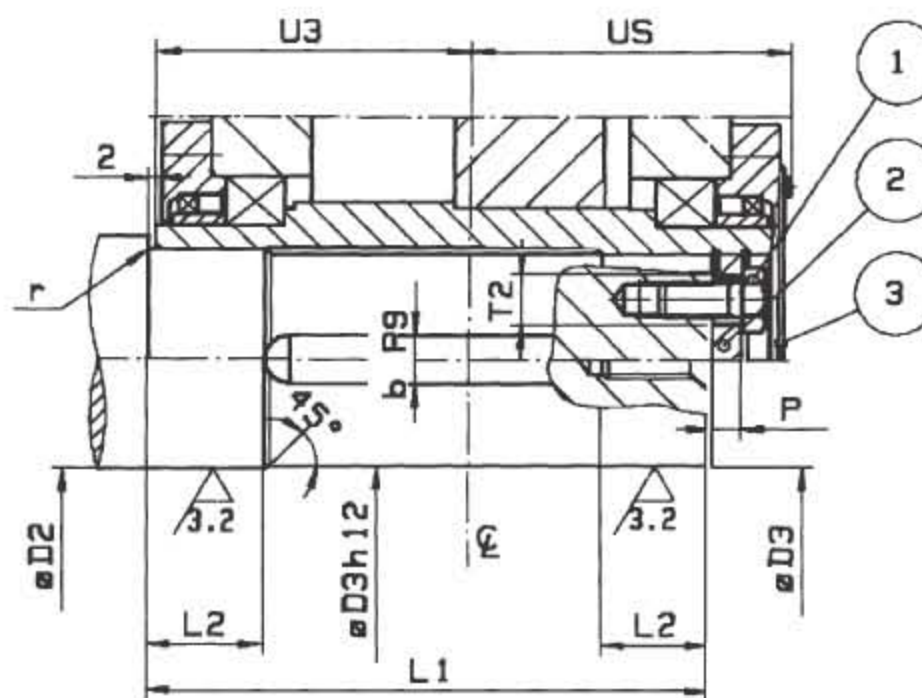
键连接

Hollow Shaft Bore and Driven Shaft End for Hollow
Shaft Gear Units

空心轴减速器的空心轴孔和从动轴端



Shaft End
轴端



Item 1: Screws are not included
in normal delivery
Item 2: End Plate
Item 3: Cover

序号:1 正常订货不包括螺钉
序号:2 端板
序号:3 护罩

Horizontal Output Shaft

水平输出轴

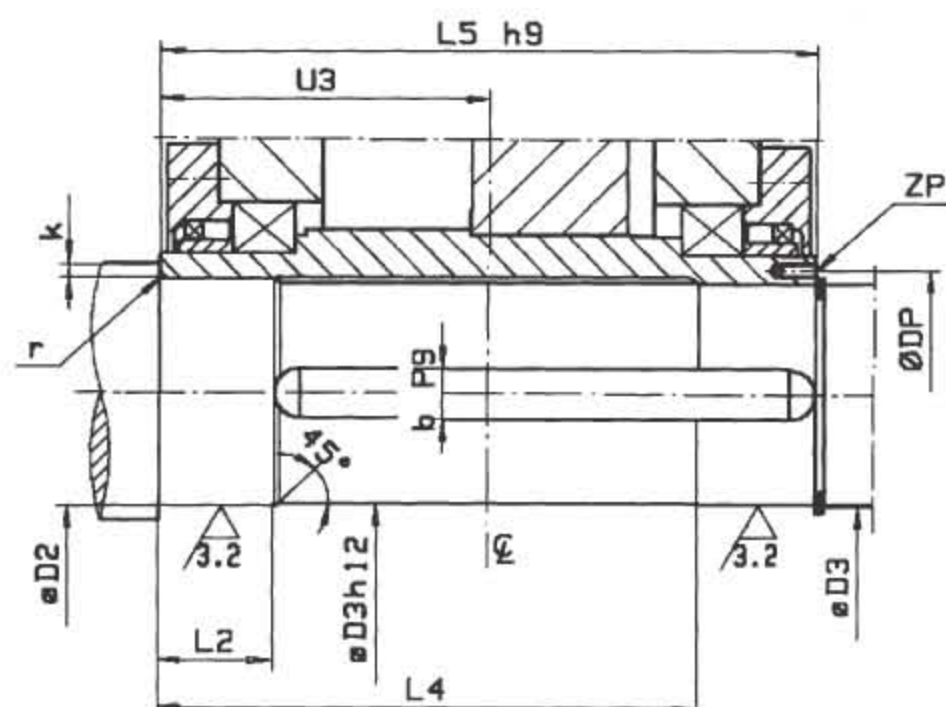
Standard mounting with key

标准安装用键

Gear Unit size 减速器 规格	Dimensions in [mm]														尺寸[mm]									
	ØD2		ØD3	L1	L2	L4	L5	P	T1	c	T2	U3	US	ZP 6x60°	ØDP	Screw 螺钉		b	h1	h2	k*)	r		
	min.	standard														Size 尺寸	Pcs 件数				min	max		
50	135	150js7/H8	149js7/H8	394	75	381	456	24	M30x60	—	M36	228	232	M10x20	172	M30x80	1	36	20	158	6	4		
60	160	170js7/H8	169js7/H8	448	85	425	510	24	M30x60	—	M36	255	259	M10x20	200	M30x80	1	40	22	179	7	5		
70	180	190js7/H8	189js7/H8	506	95	473	568	30	M20x36	114	M24	284	288	M12x24	215	M20x60	2	45	25	200	7	5		
80	190	210js7/H8	209js7/H8	542	105	499	604	30	M20x36	126	M24	302	306	M12x24	235	M20x60	2	50	28	221	8	6		
90	230	240js7/H8	239js7/H8	586	120	528	648	30	M24x45	144	M30	324	328	M12x24	275	M24x70	2	56	32	252	8	6		

*)Shoulder required only for Through Going Shaft. *)仅贯通轴要求台肩

Through going shaft
贯通轴



Hollow Shaft
空心轴

Key Connection
键连接

Key Connection

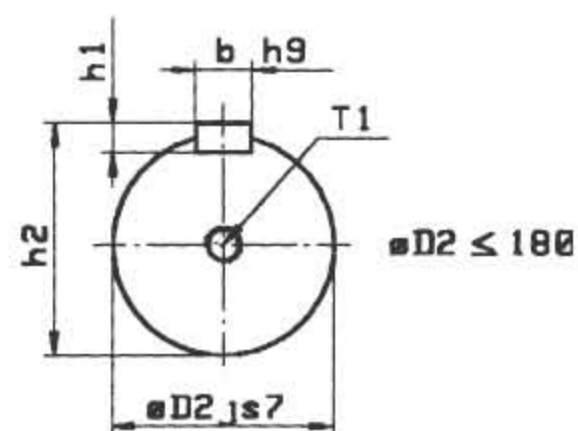
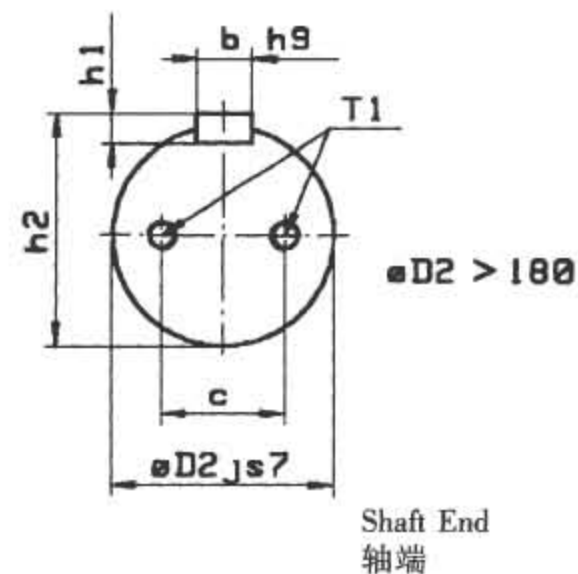
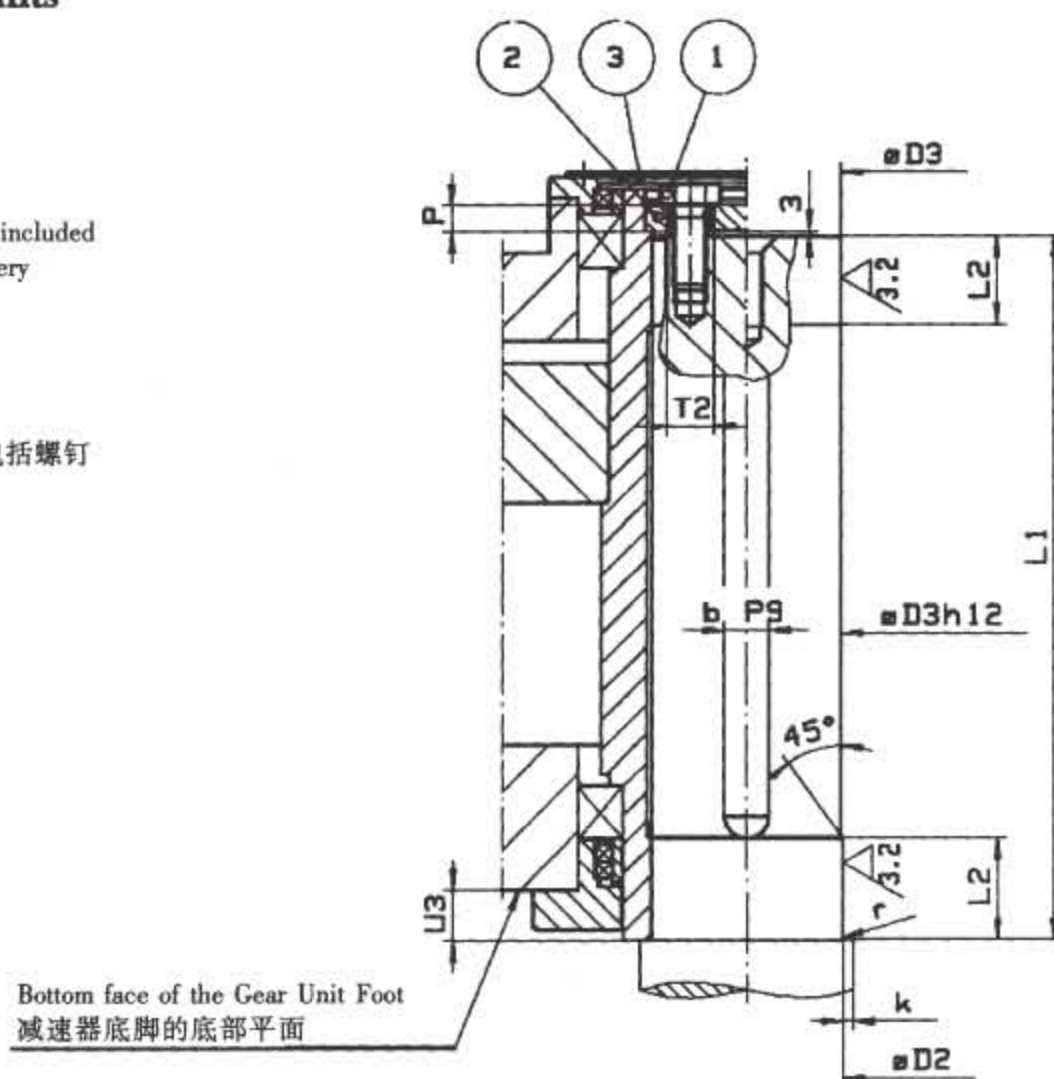
键连接

Hollow Shaft Bore and Driven Shaft End for Hollow
Shaft Gear Units

空心轴减速器的空心轴孔和从动轴端

Item 1: Screws are not included
in normal delivery
Item 2: End Plate
Item 3: Cover

序号:1 正常订货不包括螺钉
序号:2 端板
序号:3 护罩



Horizontal Output Shaft

垂直输出轴

Standard mounting with Key

标准安装用键

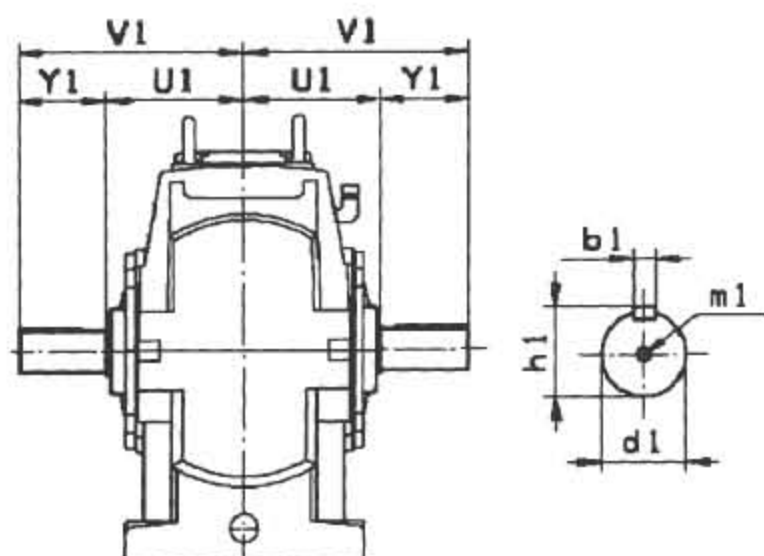
Gear Unit size 减速器 规格	Dimensions in [mm]										尺寸[mm]							
	ØD2		ØD3	L1	L2	U3	T1	c	T2	P	Screw 螺钉		b	h1	h2	k		r
	min.	standard									Size 尺寸	Pcs 件数				min	max	max
10	75	85 js7/H8	84 js7/H8	350	45	25	M20x42	-	M24	20	M20x60	1	22	14	90	4	12	3
20	85	95 js7/H8	94 js7/H8	365	50	25	M24x50	-	M30	20	M24x60	1	25	14	100	5	12	3
30	110	120 js7/H8	119 js7/H8	440	60	25	M24x50	-	M30	24	M24x70	1	32	18	127	6	15	4
40	115	130 js7/H8	129 js7/H8	480	65	25	M24x50	-	M30	24	M24x70	1	32	18	137	6	15	4
50	135	150 js7/H8	149 js7/H8	550	75	25	M30x60	-	M36	24	M30x80	1	36	20	158	6	20	4
60	160	170 js7/H8	169 js7/H8	635	85	35	M30x60	-	M36	24	M30x80	1	40	22	179	7	25	5
70	180	190 js7/H8	189 js7/H8	695	95	35	M20x36	114	M24	30	M20x60	2	45	25	200	7	25	5
80	190	210 js7/H8	209 js7/H8	750	105	35	M20x36	126	M24	30	M20x60	2	50	28	221	8	25	6
90	230	240 js7/H8	239 js7/H8	820	120	35	M24x45	144	M30	30	M24x70	2	56	32	252	8	30	6

Through going HSS
贯通高速轴

Through going HSS

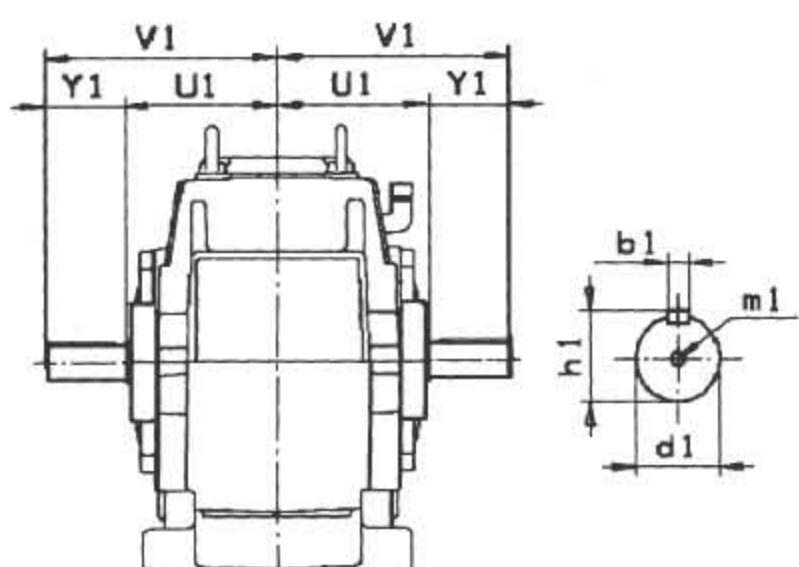
贯通高速轴

Type/型号, GM2P..50-90



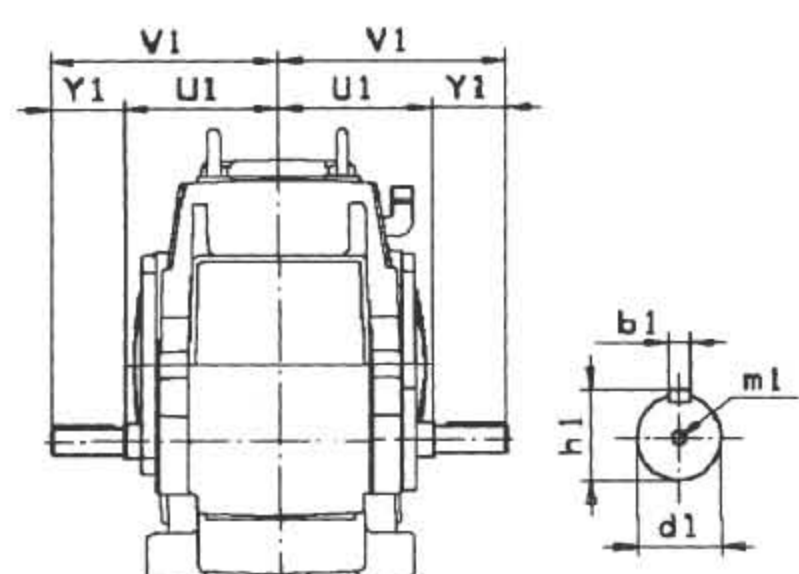
Gear unit size 减速器 规格	HSS Dimensions in mm							HSS 尺寸[mm]					
	$i_N = 6.3 \dots 12.5$							$i_N = 14 \dots 18$					
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1
50	238	125	363	75m6	20h9	79.5	M20	125	363	60m6	18h9	64	M20
60	255	150	405	80m6	22h9	85	M20	125	380	70m6	20h9	74.5	M20
	$i_N = 6.3 \dots 14$							$i_N = 16 \dots 18$					
70	287	150	437	95m6	25h9	100	M24	150	437	80m6	22h9	85	M20
80	307	190	497	100m6	28h9	106	M24	150	457	85m6	22h9	90	M20
90	330	190	520	110m6	28h9	116	M24	150	480	95m6	25h9	100	M24

Type/型号, GM3P..50-90



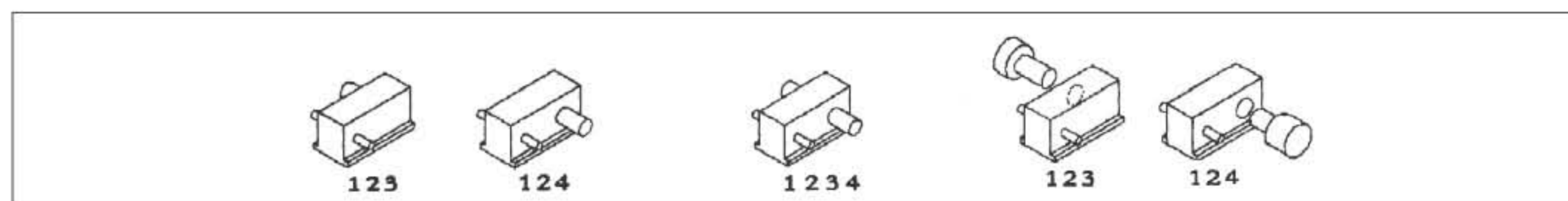
Gear unit size 减速器 规格	HSS Dimensions in mm							HSS 尺寸[mm]					
	$i_N = 20 \dots 63$							$i_N = 71 \dots 90$					
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1
50	226	95	321	50k6	14h9	53.5	M16	95	321	40k6	12h9	43	M16
60	251	95	346	55m6	16h9	59	M20	95	346	45k6	14h9	48.5	M16
	$i_N = 20 \dots 56$							$i_N = 63 \dots 90$					
70	280	125	405	65m6	18h9	69	M20	95	375	55m6	16h9	59	M20
	$i_N = 20 \dots 40$							$i_N = 45 \dots 90$					
80	300	125	425	70m6	20h9	74.5	M20	125	425	60m6	18h9	64	M20
	$i_N = 20 \dots 56$							$i_N = 63 \dots 90$					
90	322	150	472	80m6	22h9	85	M20	125	447	70m6	20h9	74.5	M20

Type/型号, GM4P..50-90



Gear unit size 减速器 规格	HSS Dimensions in mm							HSS 尺寸[mm]					
	$i_N = 100 \dots 140$							$i_N = 160 \dots 400$					
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1
50	217	70	287	35k6	10h9	38	M12	70	287	30k6	8h9	33	M10
60	244	95	339	40k6	12h9	43	M16	70	314	30k6	8h9	33	M10
	$i_N = 100 \dots 225$							$i_N = 250 \dots 400$					
70	273	95	368	45k6	14h9	48.5	M16	95	368	40k6	12h9	43	M16
80	291	95	386	50k6	14h9	53.5	M16	95	386	40k6	12h9	43	M16
	$i_N = 100 \dots 140$							$i_N = 160 \dots 400$					
90	313	125	438	60m6	18h9	64	M20	95	408	50k6	14h9	53.5	M16

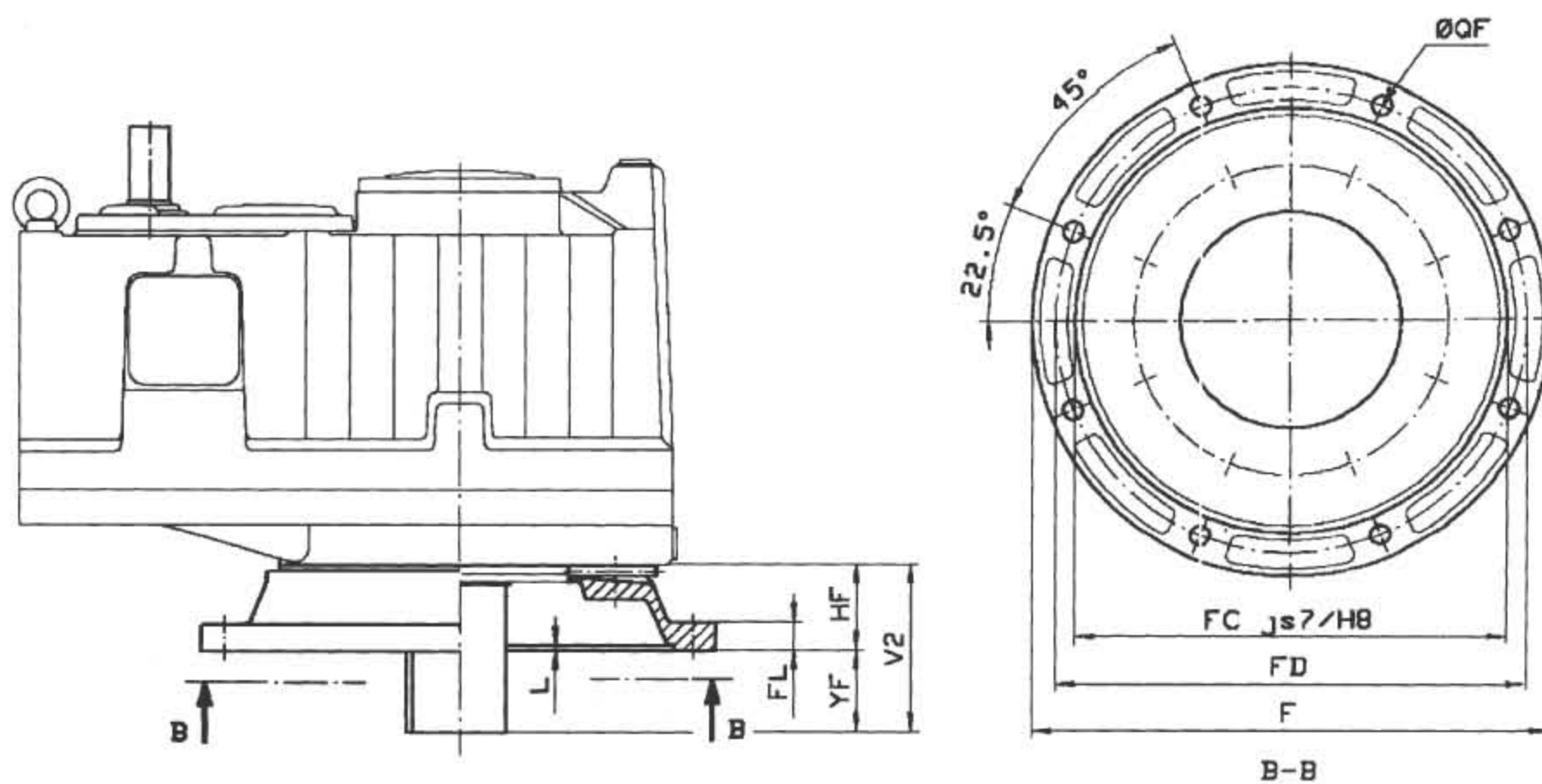
Shaft Positions / 轴的位置



Mounting Flange
安装法兰

Mounting Flange

安装法兰



Vertical LSS/垂直 LSS

Gear unit size 减速器 规格	F	FD	FC js7/H8	ØQF	L	FL	YF	HF	V2
10	450	400	350	18	6	24	65	110	175
20	480	430	380	22	6	25	65	110	175
30	560	500	450	26	6	30	105	110	215
40	660	600	550	26	7	36	105	110	215
50	820	740	680	33	7	45	140	110	250

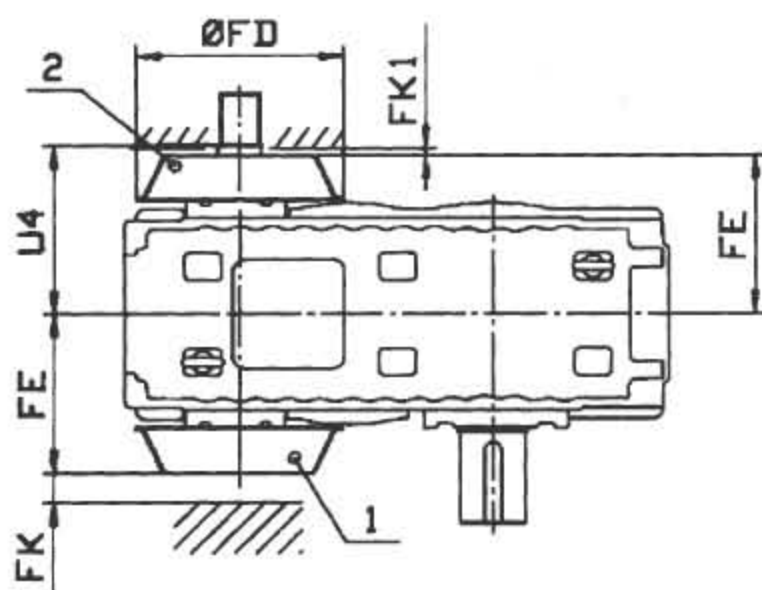
Cooling
冷却

Fans
风扇

Fan

风扇

Types/ 型号 GM2P.., GM3P..



1. Fan on the HSS at the opposite side as the motor/
风扇在高速轴上电动机的对面
2. Fan on the HSS/风扇在高速轴上

Gear Unit 减速器	Fan*) 风扇*)	U4	ØFD	FE	FK _{min}	FK1 _{min}
GM2P50	Ø315	355	443	326	55	20
GM2P60	Ø315	372	443	343	55	20
GM2P70	Ø400	423	547	394	65	20
GM2P80	Ø400	443	547	414	65	20
GM2P90	Ø400	466	547	437	65	20

*) Outer diameter of the Fan

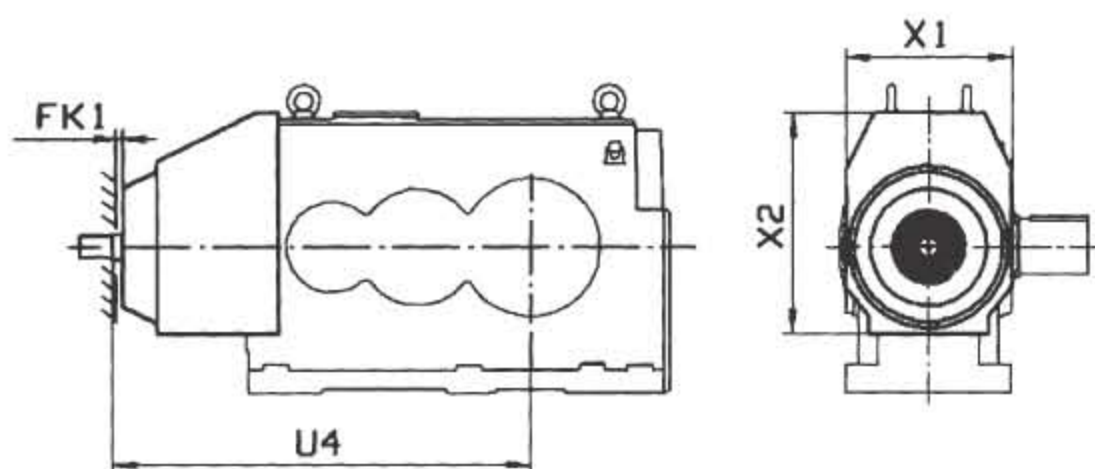
*) 风扇的外面直径

Gear Unit 减速器	Fan*) 风扇*)	U4	ØFD	FE	FK _{min}	FK1 _{min}
GM3P50	Ø315	343	443	314	55	20
GM3P60	Ø315	367	443	338	55	20
GM3P70	Ø400	417	547	388	65	20
GM3P80	Ø400	435	547	406	65	20
GM3P90	Ø400	457	547	428	65	20

*) Outer diameter of the Fan

*) 风扇的外面直径

Type/ 型号 GM3R..

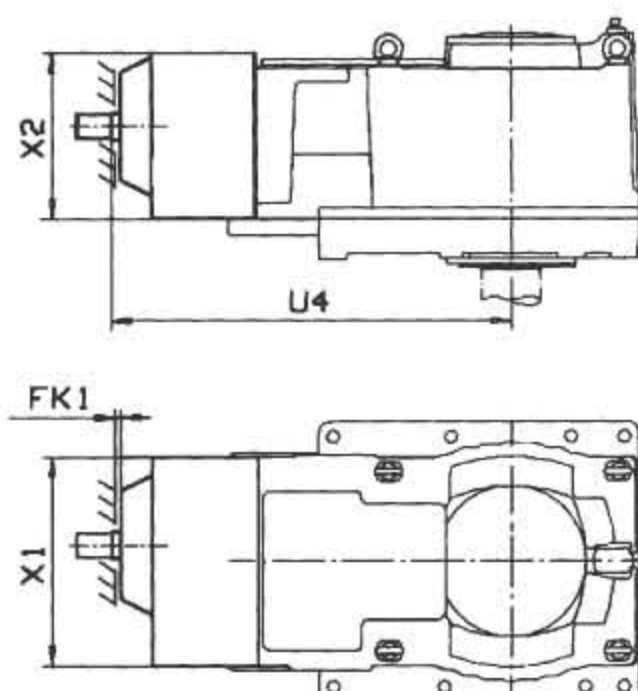


Gear Unit 减速器	Fan*) 风扇*)	U4	X1	X2	FK1 _{min}
GM3R50	Ø315	998	406	537	20
GM3R60	Ø315	1129	460	582	20
GM3R70	Ø400	1278	518	689	20
GM3R80	Ø400	1328	554	729	20
GM3R90	Ø400	1499	598	769	20

*) Outer diameter of the Fan

*) 风扇的外面直径

Types/ 型号 GM3RV..



Gear Unit 减速器	Fan*) 风扇*)	U4	X1	X2	FK1 _{min}
GM3RV30	Ø200	758	450	371	15
GM3RV40	Ø250	821	504	423	15
GM3RV50	Ø315	995	590	491	20
GM3RV60	Ø315	1114	640	519	20
GM3RV70	Ø400	1269	740	607	20
GM3RV80	Ø400	1320	800	625	20
GM3RV90	Ø400	1493	846	652	20

*) Outer diameter of the Fan

*) 风扇的外面直径

Cooling
冷却

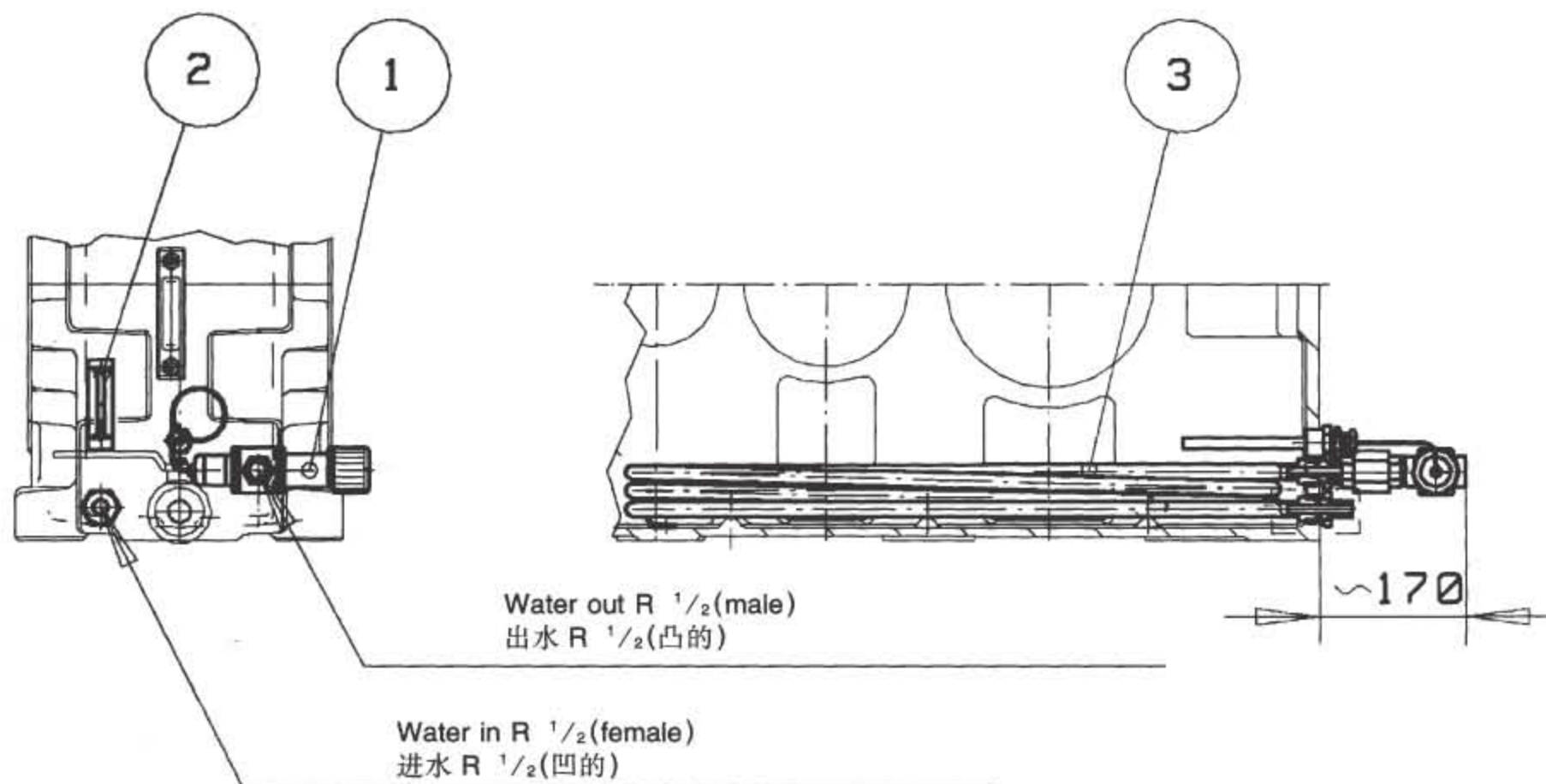
Cooling Coil System
冷却蛇形管系统

Cooling Coil System

冷却蛇形管系统

Cooling Coil is used with Bath and Splash Lubrication when no Fan Can be used because of environment.

对浸油和飞溅润滑，如果因为环境条件不能用风扇时用冷却蛇形管。



Components:

1. Thermostatic Water Valve
2. Thermometer, scale 0...100°C (+32...+212°F)
3. Cooling Pipe, material AISI 316

元件:

1. 恒温水阀门
2. 温度计, 刻度 0...100°C (+32...+212 °F)
3. 冷却管, 材料 AISI 316

Lubrication 润滑

Lubrication Unit 润滑装置

Lubrication Unit

润滑装置

1. Selecting oil flow and cooling rating

- $P_L = \left(P_{K1} - \frac{P_T}{2} \right) (1 - \eta)$ [kW]
- $Q_R = 2.3 \times P_L$ [dm³/min]
- $Q_P \geq Q_R$

Single reduction	$\eta = 0.985$
Double reduction	$\eta = 0.97$
Triple reduction	$\eta = 0.955$
Quadruple reduction	$\eta = 0.94$
Quintuple reduction	$\eta = 0.93$

P_L = power loss to be cooled [kW]
 P_{K1} = gear unit running load [kW]
 P_T = gear unit thermal rating (from catalogue) [kW]
 η = efficiency
 Q_R = oil flow needed for cooling the gear unit [dm³/min]
 Q_P = Oil pump output [dm³/min]

1.1 Choosing the size of the Oil Cooler:

- $P_C \geq F_L \times P_L$ $\left| \begin{array}{l} F_L = 1.1 \dots 1.2 \\ \text{clean} \dots \text{dirty cooling media} \end{array} \right.$

P_C = Cooling Rating (see table 1, 2 and 3) [kW]
 F_L = safety factor for cooling capacity

1.2. Water flow needed for Water / Oil Coolers:

- $Q_W \leq 2 \times P_L$, Plate Cooler, type P
- $Q_W = 1.5 \dots 3 \times P_L$, Pipe Cooler, types B, BS or R

clean... dirty water

Q_W = water flow [dm³/min]

1. 油的流量的冷却功率选择

- $P_L = \left(P_{K1} - \frac{P_T}{2} \right) (1 - \eta)$ [kW]
- $Q_R = 2.3 \times P_L$ [dm³/min]
- $Q_P \geq Q_R$

单级减速	$\eta = 0.985$
两级减速	$\eta = 0.97$
三级减速	$\eta = 0.955$
四级减速	$\eta = 0.94$
五级减速	$\eta = 0.93$

P_L = 冷却功率损失 [kW]
 P_{K1} = 减速器运行负载 [kW]
 P_T = 减速器热功率 (来自产品样本) [kW]
 η = 效率
 Q_R = 减速器冷却所需的油的流量 [dm³/min]
 Q_P = 油泵输出功率 [dm³/min]

1.1 油冷却器的尺寸选择:

- $P_C \geq F_L \times P_L$ $\left| \begin{array}{l} F_L = 1.1 \dots 1.2 \\ \text{清洁的} \dots \text{脏的冷却介质} \end{array} \right.$

P_C = 冷却功率 (见表 1, 2, 3) [kW]
 F_L = 冷却容量的安全系数

1.2 水/油冷却器所需水的流量:

- $Q_W \leq 2 \times P_L$, 板式冷却器, 型号 P
- $Q_W = 1.5 \dots 3 \times P_L$, 管式冷却器, 型号 B, BS 或 R

清洁... 脏水

Q_W = 水流量 [dm³/min]

Lubrication 润滑

Shaft End Pump 轴端泵

Shaft End Pump

轴端泵

Available Pump outputs Q_p : 11, 18, 28, 44, 65 dm^3/min at 1500rpm.

When additional cooling is required use Lubrication Unit with Water or Air Cooler

可提供的泵的输出 Q_p 有: 10, 15, 20, 25 dm^3/min

如果要求附加冷却时使用带水或空气冷却器的润滑装置。

1. Shaft End Pump for Gear Unit with Vertical Output Shaft

Shaft End Pump is used when

- Pressure lubrication is required and a motor pump is unpreferable.
- Dry Well design is required and a motor pump is unpreferable.

When designing the Gear Unit Mounting Plate, adequate space must be allowed for the SHP pump.

1. 垂直输出轴的减速器的轴端泵

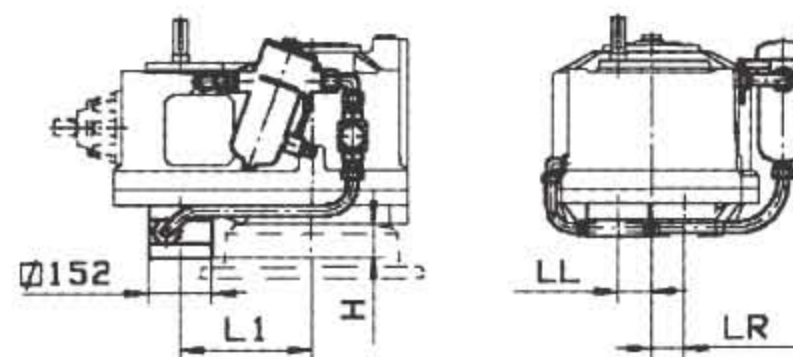
轴端泵用于:

- 要求压力润滑而电动泵不可取时
- 要求干燥腔防漏结构而电动泵不可取时

在设计减速器安装平板时, 必须考虑 SHP 泵所需的适当的空间。

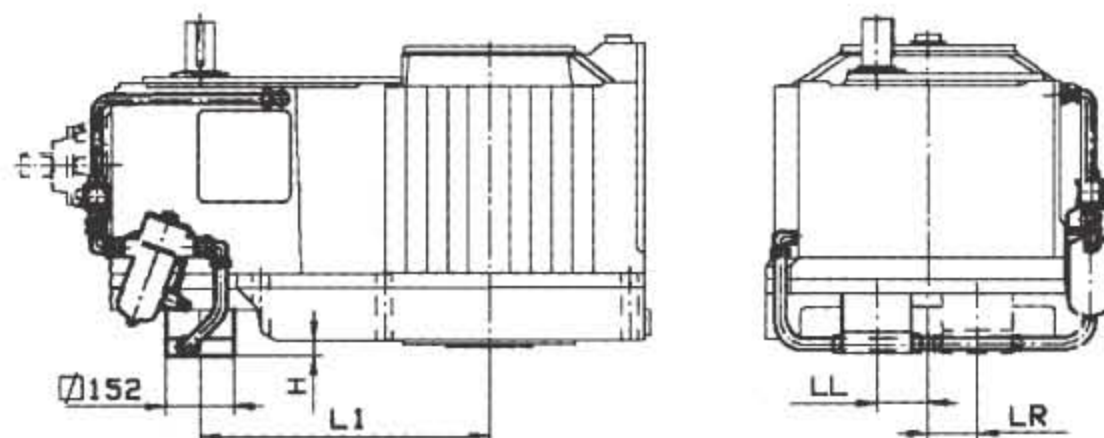
GEAR UNIT SIZE 10-50

减速器规格 10-50



GEAR UNIT SIZE 60-90

减速器规格 60-90



Gear unit size 减速器规格	H_{max}	Types/ 型号 GM2PV, GM3PV, GM3RV..	
		L1	LL
10	77	266	7
20	78	278	16
30	61	353	16
40	56	396	25

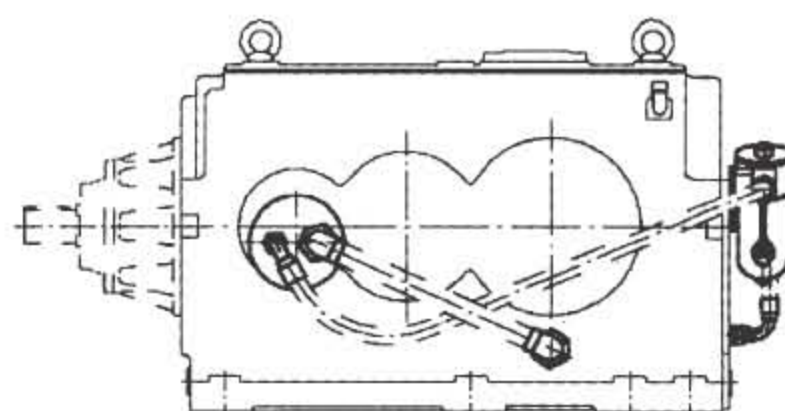
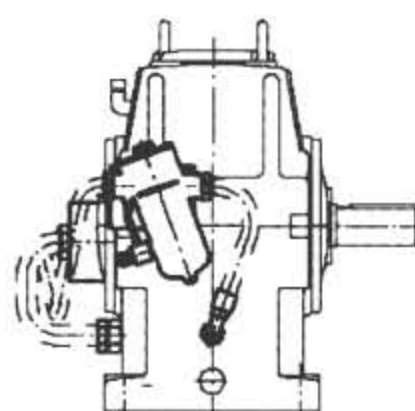
Gear unit size 减速器规格	H_{max}	Types/ 型号 GM2PV, GM3RV..		Types/ 型号 GM3PV, GM4PV, GM4RV..	
		L1	LL	L1	LR
50	47	471	27	511	69
60	28	531	109	606	95
70	26	614	95	694	146
80	21	665	93	745	148
90	17	731	87	811	186

2. Shaft End Pump for Gear Units with horizontal Output Shaft

The Shaft End Pump, type SHP, is used when pressure lubrication is needed and a motor pump is unpreferable.

2. 水平输出轴的减速器的轴端泵

当需要压力润滑和电动泵不可取时用 SHP 轴端泵。



Lubrication
润滑

Central Lubrication System connections
集中润滑系统连接

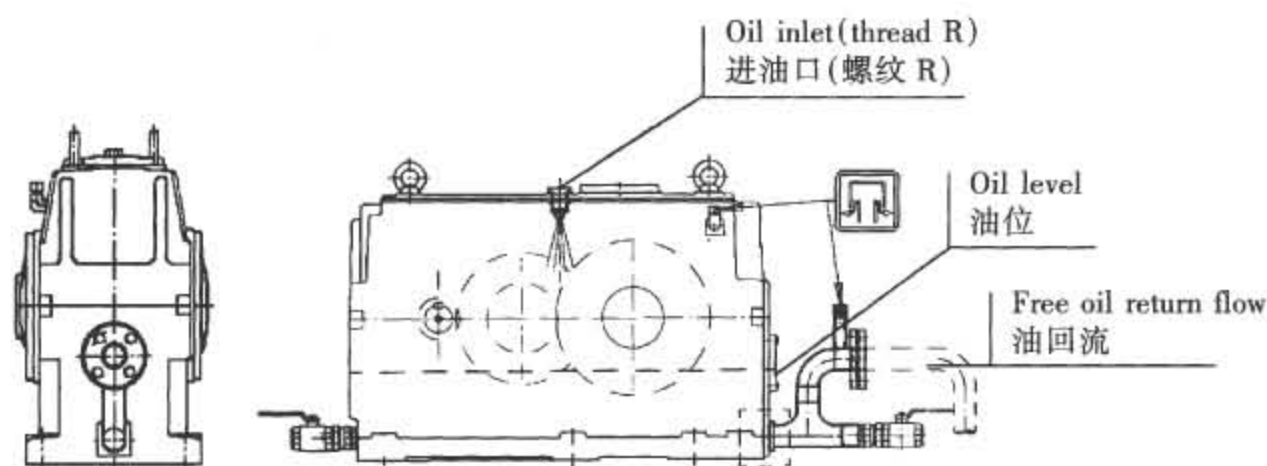
Central Lubrication System connections

集中润滑系统连接

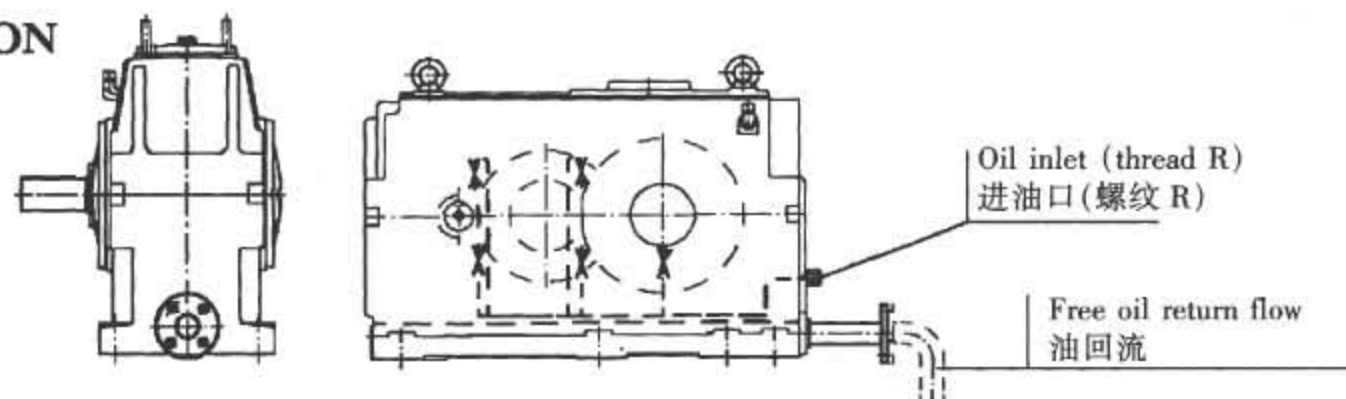
Equipment to connect the gear unit to the centralized oil filtering and cooling system

连接减速器与集中滤油和冷却系统的装置

SPLASH LUBRICATION
飞溅润滑



PRESSURE LUBRICATION
压力润滑



Thread R (female):

- $R^{3/4}$, when $Q < 30 \text{ l/min}$

$Q = \text{oil flow}$

- $R1^{1/4}$, when $30 < Q < 80 \text{ l/min}$

The diameter and height of the oil outlet pipe vary according to the gear unit size, lubrication method, oil viscosity and oil amount.

GUOMAO can deliver a visual or electrical flow meter to ensure the right oil flow into the gear unit.

Dimensions of the attachment flange depend on the pipe diameter and are according to the standard DIN 2642

螺纹 R(内螺纹):

- 当 $Q < 30 \text{ l/min}$ 时, $R^{3/4}$, $Q = \text{油流量}$

- 当 $30 < Q < 80 \text{ l/min}$ 时, $R1^{1/4}$

油管出口直径和长度随减速器尺寸、润滑方法、油的粘度和油量而变化。

国茂可以提供目视或电子流量计, 保证油正确流入减速器。连接法兰的尺寸与管子直径有关, 根据标准 DIN 2642。

Lubrication 润滑

Oil Heating System 油加热系统

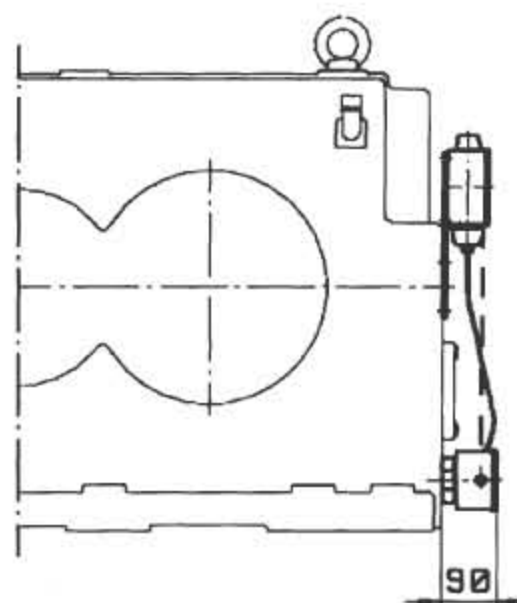
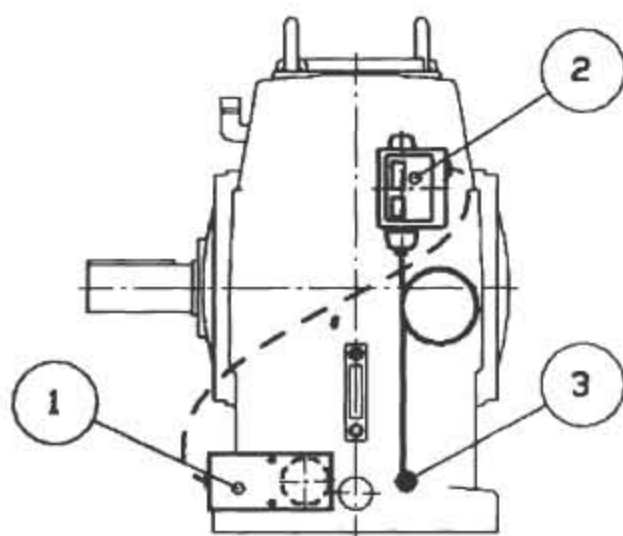
Oil Heating System

油加热系统

Oil heating system is used to ensure the function of the lubrication in cold condition start ups.

为保证冷却条件下启动时的润滑功能，使用油加热器。

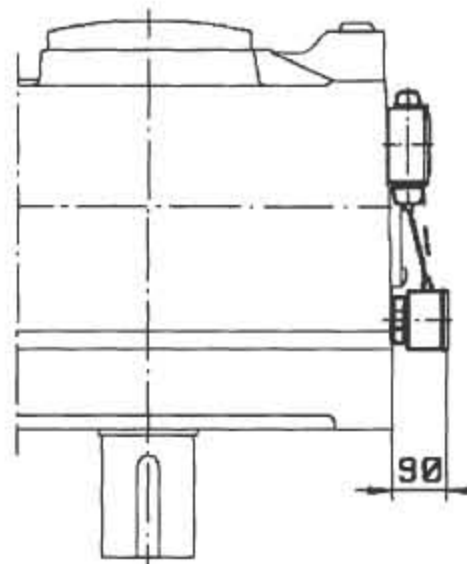
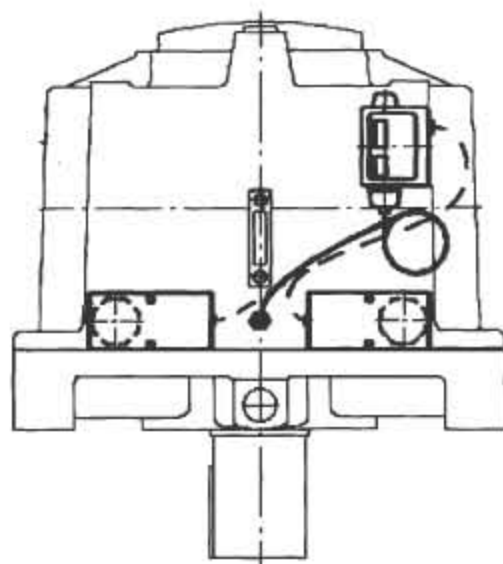
HORIZONTAL LSS 水平 LSS



Components/组件:
1. Oil heater/油加热器
2. Thermostat/恒温器
3. Sensor/传感器

Gear unit size 减速器规格	GM2P.,GM3R	GM3P	GM4P.,GM4R.,GM5R	GM3P
	Power [W], 功率 [W]	Power [W], 功率 [W]	Power [W], 功率 [W]	Voltage [V], 电压 [V]
50	1000	1000	1500	400/230
60	1500	1000	1500	400/230
70	1500	2000	2000	400/230
80	2000	1500 + 1500	2330	400/230
90	2330	1500 + 1500	2330	400/230

VERTICAL LSS/ 垂直 LSS



One heater is also possible.

也可是一个加热器

Gear units with vertical LSS, 带垂直 LSS 的减速器

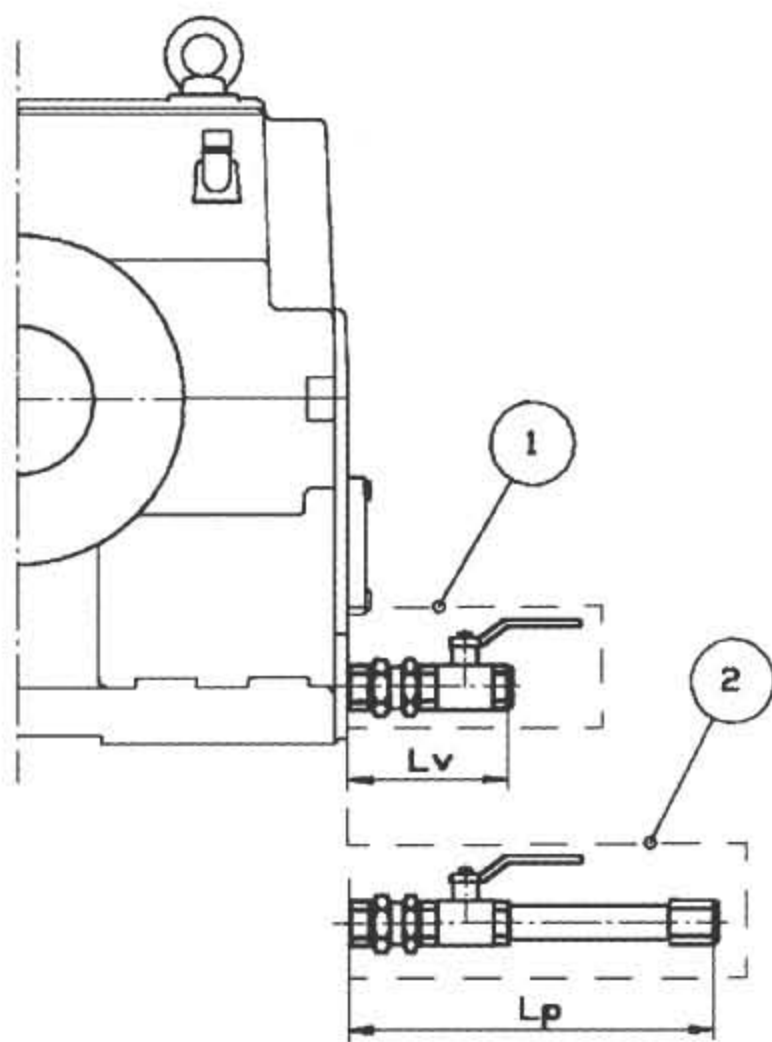
Gear unit size 减速器规格	Power [W] 功率 [W]	Voltage [V] 电压 [V]
GM(R)PV. . 50	1000 + 1500	400/230
GM(R)PV. . 60	1500 + 2500	400/230
GM(R)PV. . 70	1500 + 2500	400/230
GM(R)PV. . 80	2000 + 3000	400/230
GM(R)PV. . 90	2000 + 3000	400/230

Lubrication
润滑

Oil Drain Valves 泄油阀
Oil Dipstick 油尺

Oil Drain Valves

泄油阀



Size of the oil drain valve depends on the size of gear unit. Oil drain valve can be furnished with an extension tube. Standard lengths (L_p) are in table. Other lengths are also possible.

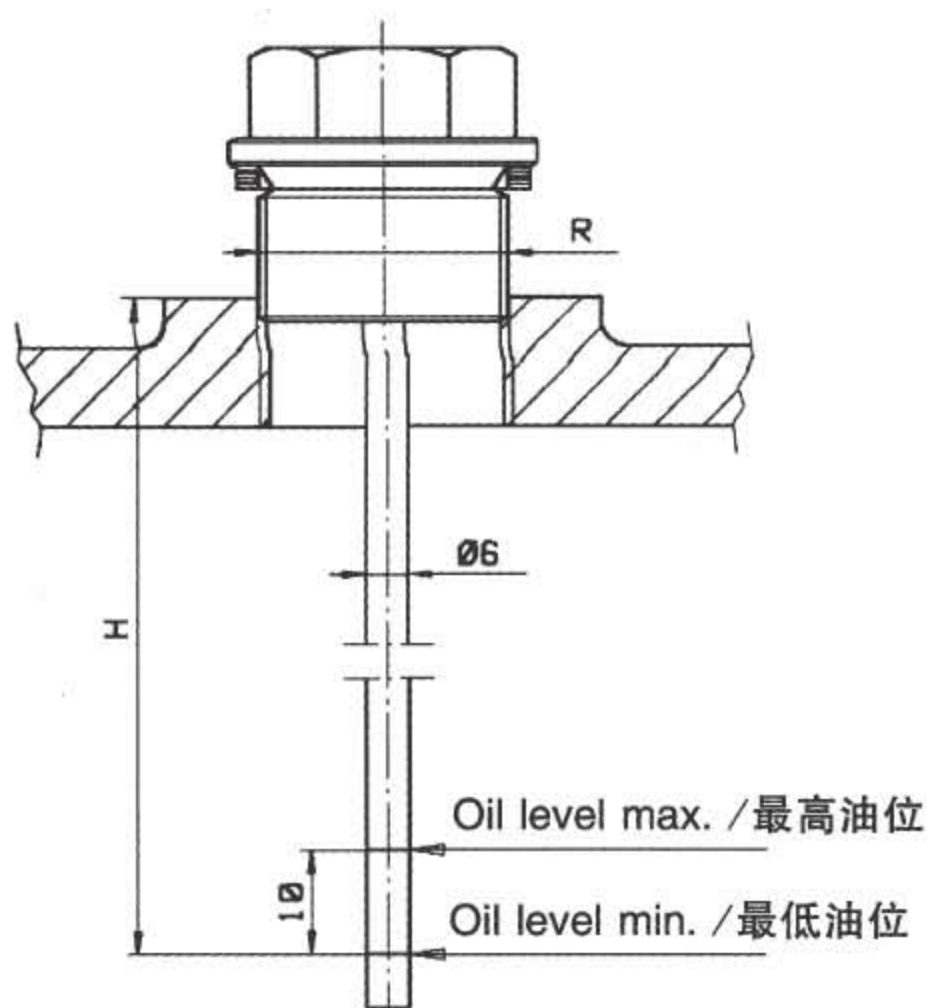
泄油阀的尺寸取决于减速器的规格。泄油阀可以备伸长管，标准长度 (L_p) 列于表中，也可以用其它长度。

Oil drain valve lengths / 泄油阀长度

Size 尺寸	Length L_v 长度 L_v	Length L_p 长度 L_p	
R 1/2	100	—	—
R 3/4	115	290	430
R1	140	300	450
R1 1/2	175	350	470

Oil Dipstick, Oil filler Plug

油尺/注油塞



Oil level H is indicated when the Oil Filler Plug is unscrewed.

Oil level can be checked only when Gear Unit is not running.

Water and dirt penetration into the Gear Unit must be prevented while checking the oil level.

拧松注油塞指示油位 H。

只能在减速器不运行时检查油位。

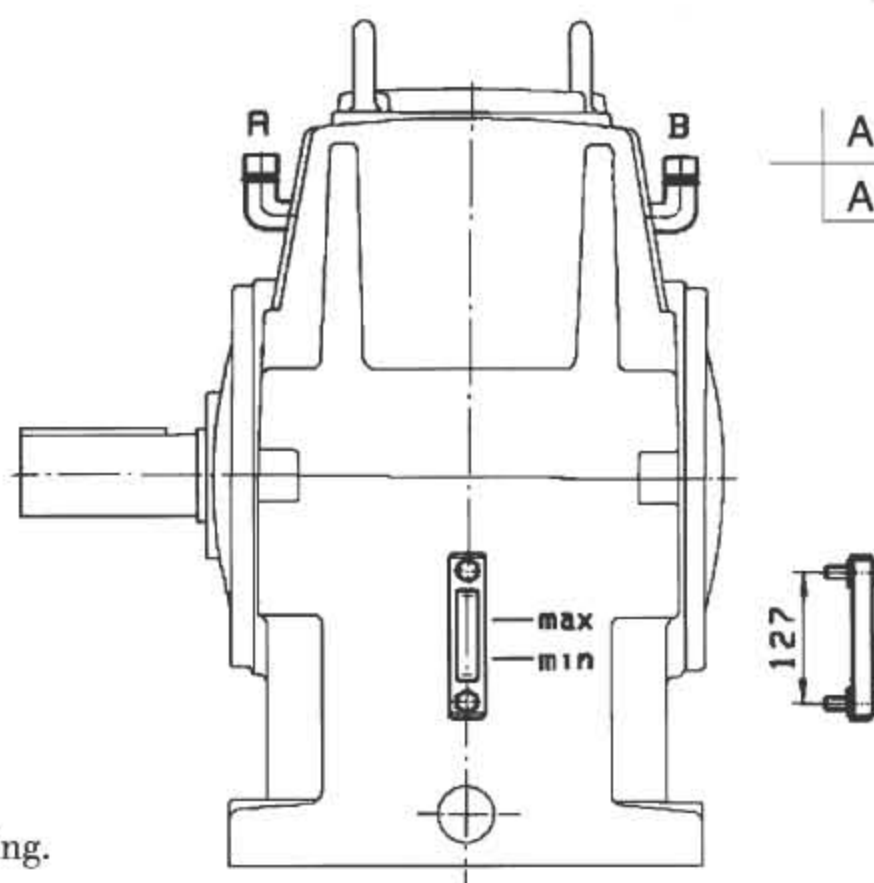
检查油位时应防止水和污物进入减速器内。

Lubrication
润滑

Oil Sightglass and Breather 油观察孔和通气装置
Expansion tank 膨胀箱

Oil Sightglass and Breather

油观察孔和通气装置



A and B are alternatives

A 和 B 二者选一

Oil level can be checked only when the gear unit is not running.

只能在减速器停止运行时才能检查油位。

Oil sightglass and breather are standard equipments of the gear unit. Filtration degree of the standard breather is $40\mu\text{m}$.

油观察孔和通气装置是减速器的标准设备。标准通气装置的过滤能力是 $40\mu\text{m}$ 。

Air breather prevents the forming of over pressure inside the gear unit and prevents dirt penetration into the gear unit.

通气装置防止减速器内气体形成超压和污物渗入减速器内。

Expansion tank for moist environment

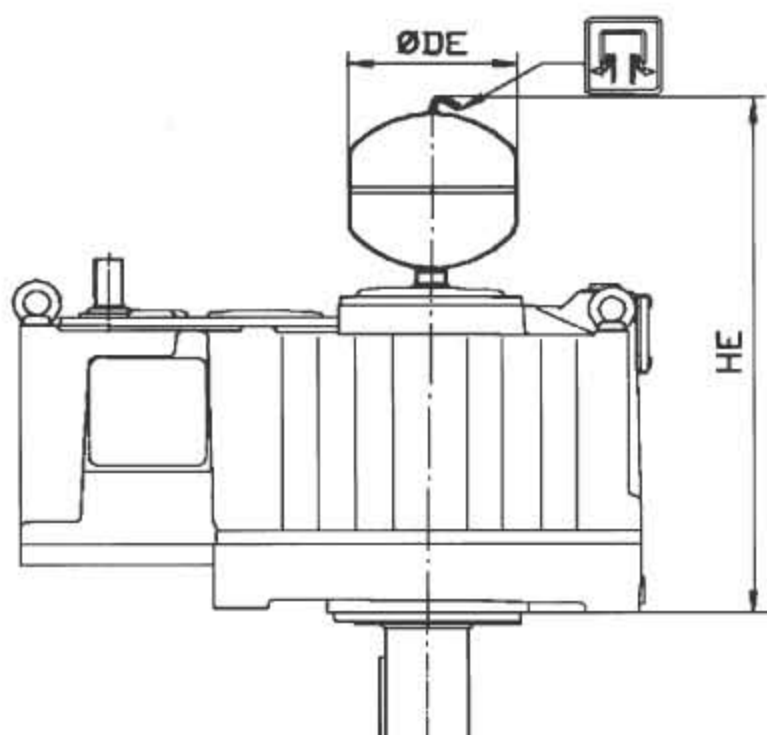
潮湿环境膨胀箱

Expansion tank for moist environment

潮湿环境膨胀箱

A rubber diaphragm is used inside the expansion tank to prevent dirt and water from getting inside the gear unit.

在膨胀箱内用橡胶隔板防止污物和水进入减速器内。



Gear unit size 减速器规格	HE (max)	ØDE
10	675	315
20	700	315
30	775	315
40	800	315
50	950	315
60	1050	315
70	1200	450
80(标准)	1275	450
90(标准)	1350	450

Optional Seal Arrangements

可选的密封装置

Optional Seal Arrangements

可选的密封装置

Seal arrangement selection does not effect on outer shaft end dimensions. Standard seal arrangement for each gear unit type are introduced in section 3.

密封装置的选择不影响外部的轴端尺寸, 在第 3 章介绍了各种型速器的标准密封装置。

Horizontal shaft, both high speed shaft (HSS) and low speed shaft (LSS)

水平轴, 高速轴(HSS)和低速轴 (LSS)

Seal arrangement alternatives on each shaft:

各轴上可供选择的密封装置:

- * single lip seal with dust protection cover (basic solution)
 - clean environment
- * double lip seal with regreaseable dust protection cover
 - dusty environment with abrasive particles
- * labyrinth seal
 - high rotating speeds or high running temperatures

- * 带防尘盖的单唇密封(基本方案)
 - 清洁环境
- * 带防尘盖的双唇密封
 - 带磨蚀粒子的灰尘环境
- * 迷宫密封
 - 高的转速或高的运行温度

Vertical high speed shaft (HSS) upwards

高速轴(HSS) 垂直向上

- * single lip seal with dust protection cover (basic solution)

- * 带防尘盖的单唇密封(基本方案)

Vertical high speed shaft (HSS) downwards

高速轴(HSS) 垂直向下

- * double lip seal with dust protection cover

- * 带防尘盖的双唇密封

Vertical low speed shaft (LSS) upwards

低速轴(LSS) 垂直向上

- * single lip seal with dust protection cover (basic solution)
 - clean environment
- * double lip seal with regreaseable dust protection cover
 - wet and /or dusty environment with abrasive particles

- * 带防尘盖的单唇密封(基本方案)
 - 清洁环境
- * 带防尘盖的双唇密封
 - 潮湿和/或带磨蚀粒子的灰尘环境

Vertical low speed shaft (LSS) downwards

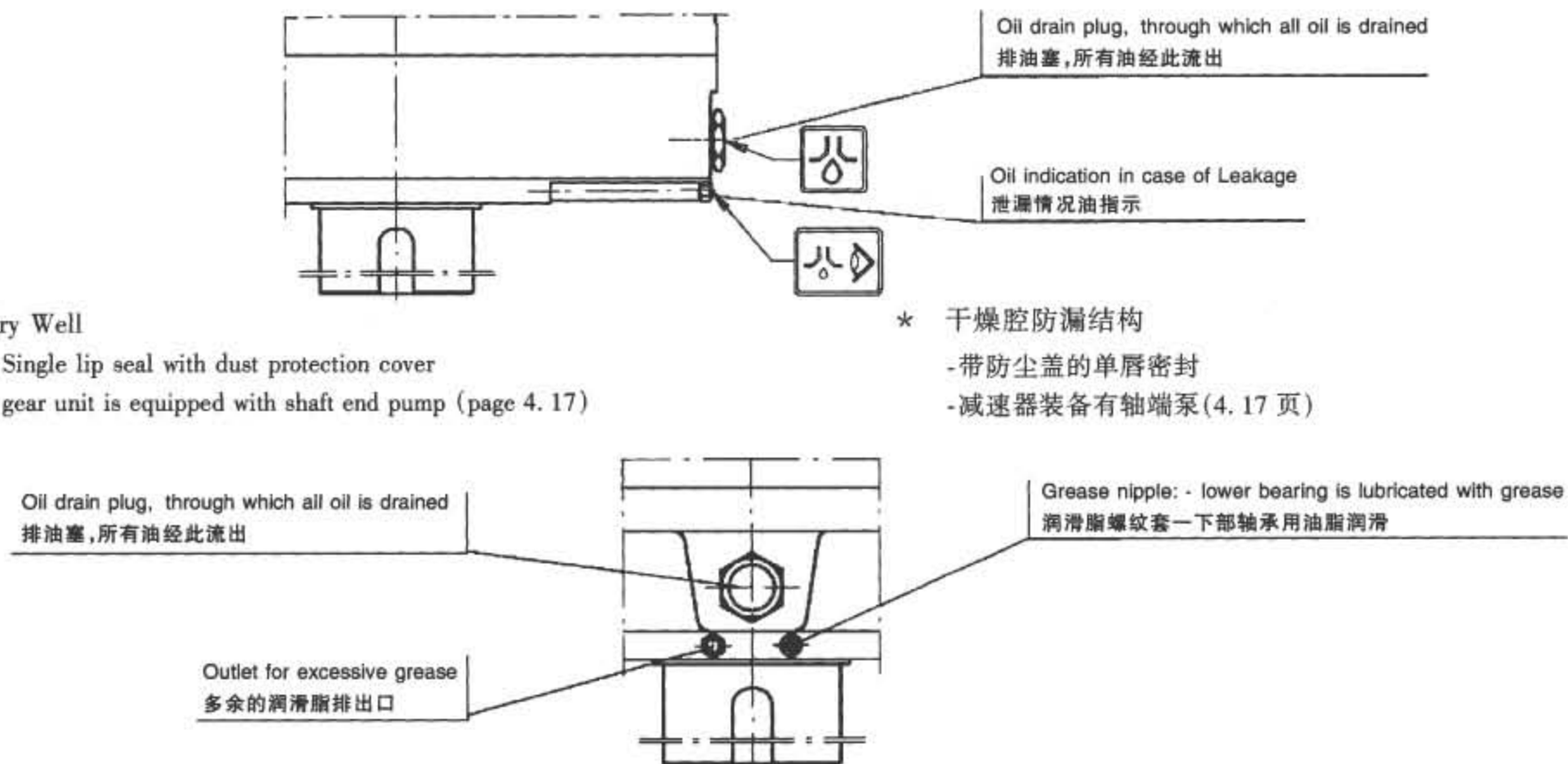
低速轴(LSS) 垂直向下

- * double lip seal with dust protection cover(basic solution)

- * 带防尘盖的双唇密封(基本方案)

- * Dry Well
 - Single lip seal with dust protection cover
 - gear unit is equipped with shaft end pump (page 4. 17)

- * 干燥腔防漏结构
 - 带防尘盖的单唇密封
 - 减速器装备有轴端泵(4. 17 页)



Lip seal material

唇型密封材料

- * NBR
 - when the running temperature of the oil is less than 80℃
- * VITON
 - when the running temperature of the oil is over 80℃
 - when hot media is flowing through the low speed shaft warming up the seal surfaces
 - when outside source radiates heat on the seal warming it up
 - always on HSS

- * NBR 丁腈橡胶
 - 当油的运行温度小于 80℃ 时
- * VITON 氟橡胶
 - 当油的运行温度超过 80℃ 时
 - 当热介质流过低速轴使密封面变热时
 - 当外部因素辐射热使密封变热时
 - 常用于高速轴

VITON is less sensitive to become hard than NBR in high temperatures.

VITON 在高温时变硬的敏感性比 NBR 要小。

Coupled Equipment
连接装置

Coupling Guard 联轴器保护装置
Torque arm 力矩臂

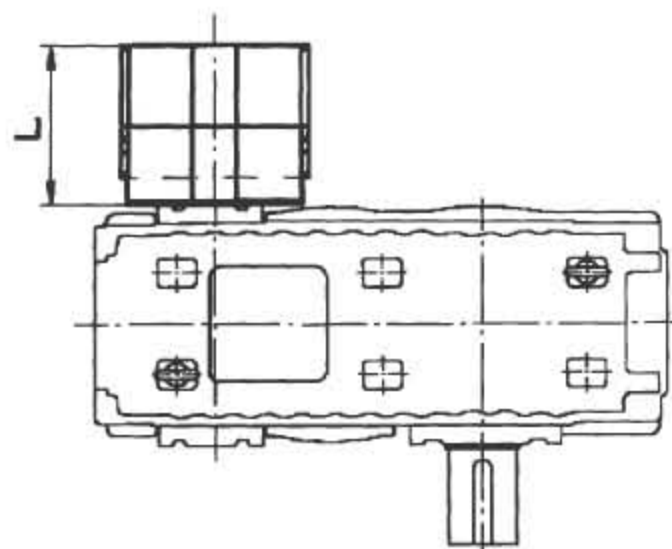
Coupling Guard

联轴器保护装置

Coupling guard attached to the gear unit

连到减速器上的联轴器保护装置

HELICAL GEAR UNITS /
斜齿轮减速器

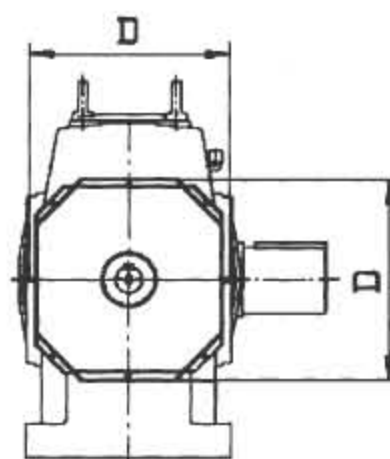
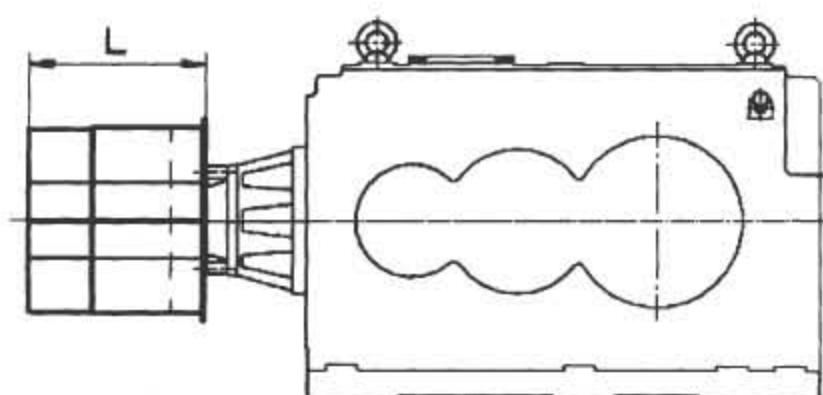


Size 规格	Max. Coupling diameter 联轴器的 最大直径	Max. *) Shaft diameter 轴的最大 直径*)	Length [L] 长度 [L]	Diameter [D] 直径 [D]
1	140	65	138-190	216
2	140	65	190-294	216
3	230	105	190-294	306
4	230	105	297-483	306
5	290	105	297-483	408
6	360	145	297-483	436
7	470	205	483-830	546
8	570	250	483-830	646

*) Max shaft diameter of driving / driven machine

*) 原动 / 从动机轴的最大直径

BEVEL - HELICAL GEAR UNITS /
锥齿轮 - 斜齿轮减速器



When cooling fan is used the coupling guard is fixed separately.
用冷却风扇时联轴器单独固定

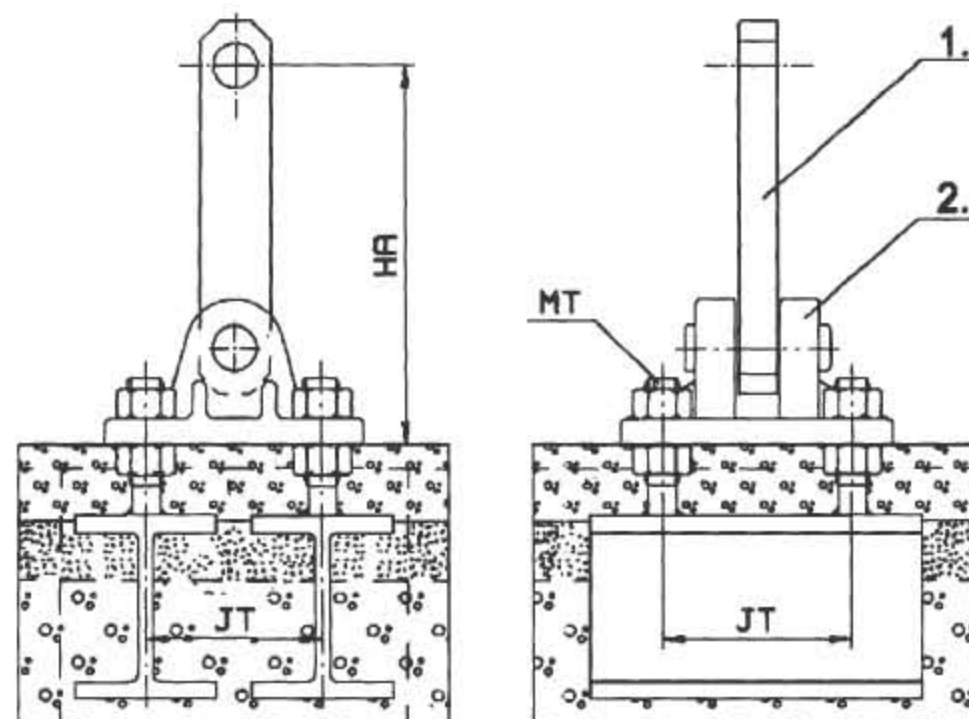
Torque arm

力矩臂

When ordering the torque arm, dimension HA must be advised. It can be freely chosen between HA_{min} - HA_{max} . If HA is to be longer than HA_{max} the torque reaction arm will be of special design.

订购力矩臂时必须告知 HA 尺寸。可以在 HA_{min} - HA_{max} 之间任意选择。如果 HA 比 HA_{max} 长，力矩反作用支臂要专门设计。

Gear unit size 减速器规格	HA	JT	MT
50	125...950	125	M20
60-90	175...1070	180	M24



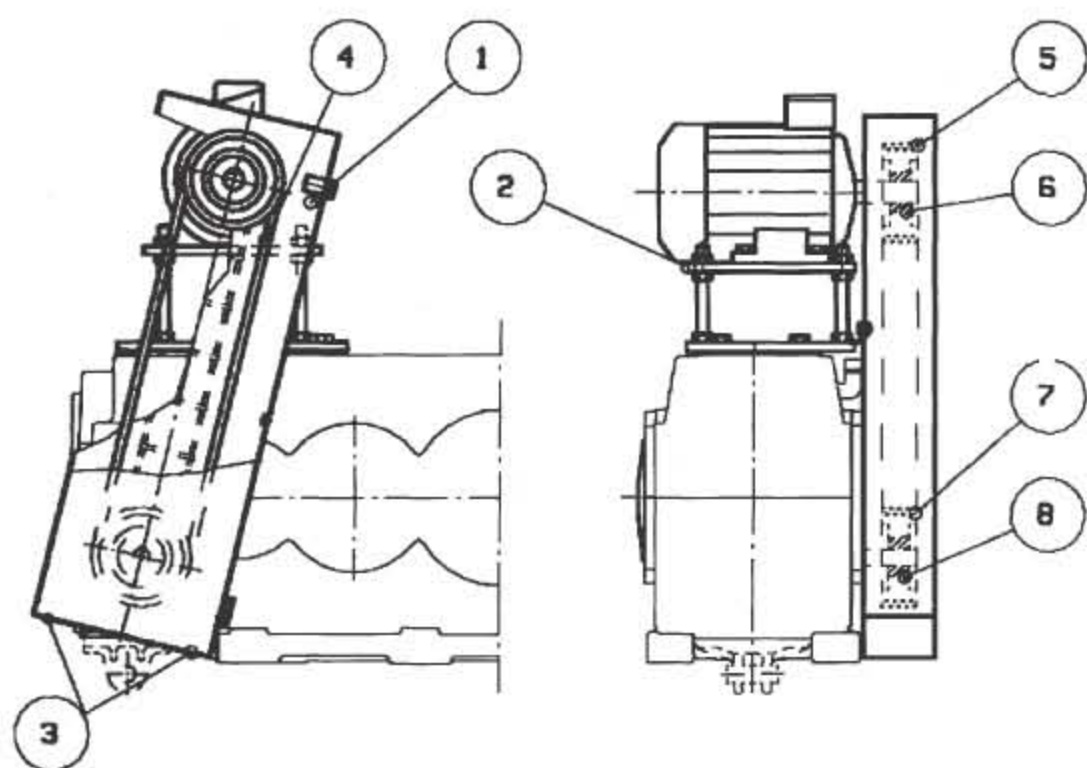
1. and 2. are included in delivery
供货时包括 1 和 2

Coupled Equipment
连接装置

Belt Drive 带传动
Motor Flange 电动机法兰

Belt Drive

带传动

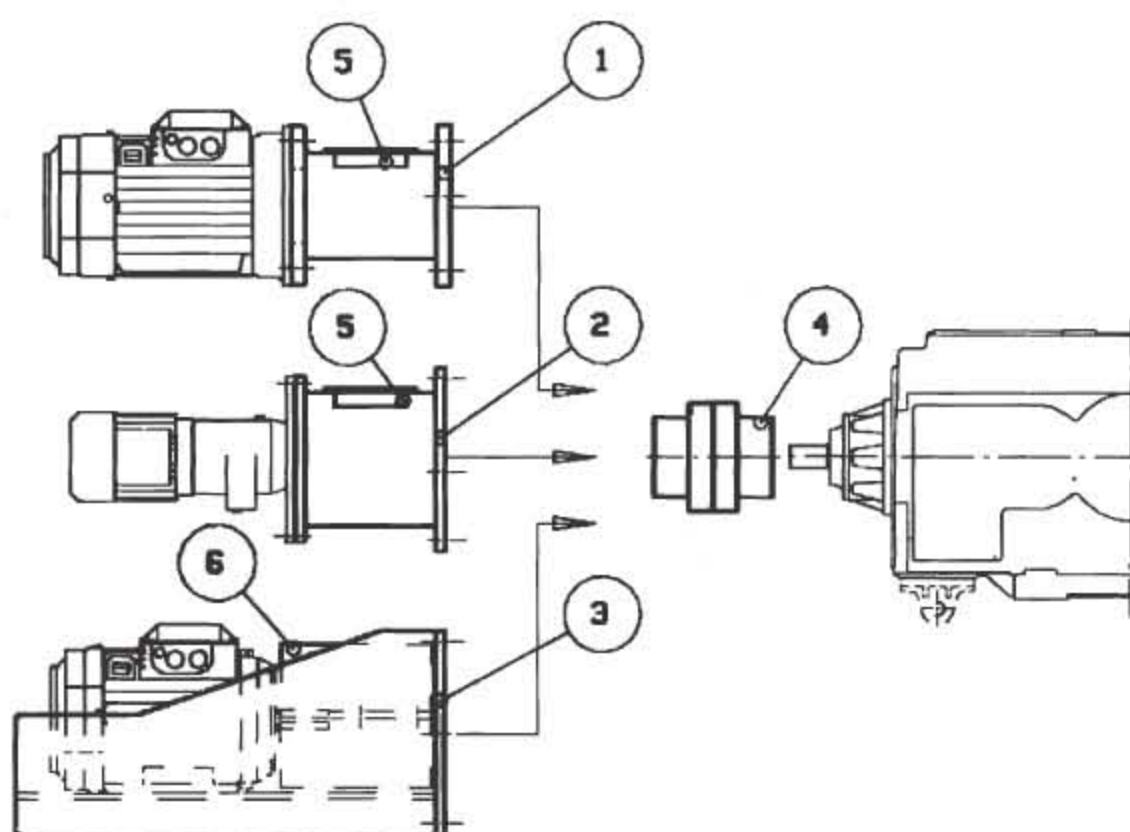


Components / 组件

1. Belt guard / 胶带保护装置
2. Motor bracket / 电动机支架
3. Water drain / 排水口
4. V - belts / V - 型带
5. Pulley(dp) / 带轮
6. Taper bushing / 锥形衬套
7. Pulley(DP) / 带轮
8. Taper bushing / 锥形衬套

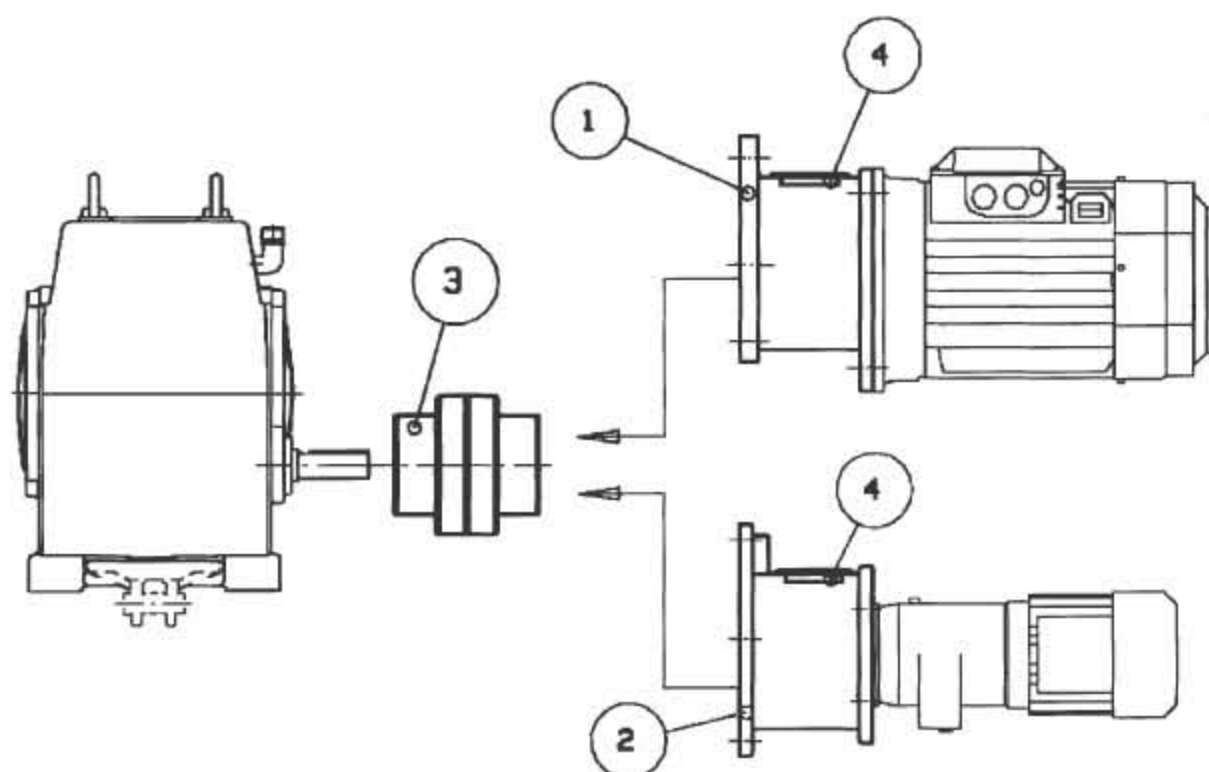
Motor Flange

电动机法兰



Components / 组件

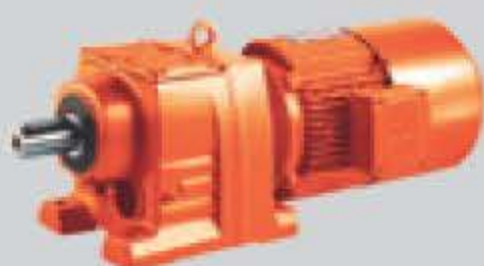
1. Motor flange / 电动机法兰
2. Gearmotor flange / 减速电机法兰
3. Sugar scoop / 斗式支架
4. Coupling / 联轴器
5. Inspection cover / 检查盖
6. Coupling guard / 联轴器保护装置



Components / 组件

1. Motor flange / 电动机法兰
2. Gearmotor flange / 减速电机法兰
3. Coupling / 联轴器
4. Inspection cover / 检查盖

国茂产品系列



GR斜齿轮减速电机



GS斜齿轮-蜗轮蜗杆减速电机



GK斜齿轮-弧齿锥齿轮减速电机



GF平行轴-斜齿轮减速电机



BWD摆线针轮减速机



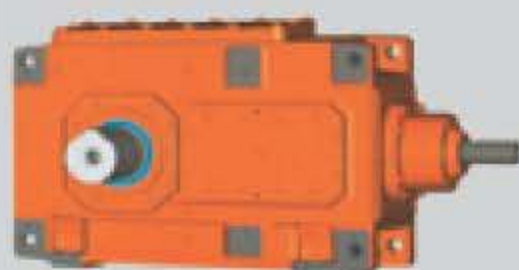
NGW型减速机



电机



ZLYJ挤型机用硬齿面减速机



PV系列通用齿轮箱



GM系列减速机



GMC紧凑型通用减速器



MBY边缘传动磨机减速机



Z硬齿面圆柱齿轮减速机



DCY硬齿面圆锥圆柱齿轮减速机



JZQ软齿面圆柱齿轮减速机



QJ型起重机立式减速机



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