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产品设计

- ◆ 采用二维、三维和有限元分析软件设计：减速机的型号按扭矩和传动比采用递减形式划分，更符合客户的要求避免了功率的浪费。
- ◆ 齿轮精度按照ISO1328-1997圆柱齿轮精度设计。
- ◆ 齿轮强度按ISO6336-1996直齿和斜齿轮承载能力计算方法设计。
- ◆ 材料和热处理的质量控制按ISO6336-5：1996直齿和斜齿轮，承载能力计算方法，第5部分材料的强度和质量。
- ◆ 设计采用了大风扇和新型导流风扇罩。
- ◆ 通过圆锥齿轮磨削工艺和采用计算机程序设计使噪音大大的降低。
- ◆ 强大的设计能力和经验能为客户提供非标设计。

Design

- ◆ Adopt 2D,3D optimal design and finite element analysis software. Type of gear units are classified via degression by torque and ratio to avoid power loss.
- ◆ Gear precision comply with spur gear precision stated in ISO1328-1997.
- ◆ Gear intensity comply with spur gear and helical gear loading capacity calculating method stated in ISO6336-1996.
- ◆ Quality of material and heat treatment comply with spur gear and helical gear loading capacity calculating method stated in the fifth part of ISO6336-5: 1996----Quality and Intensity of Material.
- ◆ Newly designed big fan and blower casing.
- ◆ Reduce noise greatly by adopting bevel gear grinding technology and computer programming software.
- ◆ Our powerful design capability and abundant experience in this field make us offer custom design.

产品特点

- ◆ 从箱体到内部齿轮，采用完全的模块化设计，零部件的种类减少而规格数量增多，适合大规模生产及灵活多变的选型。
- ◆ 铸造箱体采用高强度HT250材质，结构刚性好、减震性能优越，易于提高轴的强度和轴承寿命。
- ◆ 齿轮采用优质高纯度合金钢18CrNiMo7-6，可控渗碳淬火，齿面硬度高达HRC60±2，齿面磨削精度5级，特殊要求可达3级，磨削齿轮直径 $\phi 2500\text{mm}$ 。
- ◆ 齿形、齿向进行修形，大大降低了噪声，提高了承载能力。
- ◆ 所有齿轮均经过喷丸处理，有效降低了热处理后的残余应力，同时提高了齿轮的抗疲劳强度。

Characteristics

- ◆ Modular optimal design is widely used in the designing of any gear units parts(from casing to inner gear) which makes it possible for us to reduce the variety of parts of gears units and increase the variety of models, so, it is helpful for mass production and flexible model selection.
- ◆ The use of high intensity cast iron---HT250 and the structure is high rigidity and better cushioning, which improves the life of bears and intensity of shafts.
- ◆ High quality and high purity alloy steel---18CrNiMo7-6 is used in making gears, and after controllable carburizing and quenching ,the surface hardness of the gear teeth can reach to HRC60±2, grinding precision of the gear teeth surface can reach to the fifth class, and even can reach to the third class in terms of special requirment,Diameter of grinding gears $\phi 2500\text{mm}$.
- ◆ The correction of tooth shape and alignment reduces noise greatly and improves its loading capability.
- ◆ That the shot blasting for the gears effectively reduce residual stress due to heat treatment, and at the same time improves the gear's fatigue resistance.

注意事项	Attention!
必须严格遵守以下各项！ ■ 样本中的附图只属范例，并不具有约束力。公司保留变更尺寸的权利。 ■ 所注重量仅为平均值，并不具有约束力。 ■ 为防止意外事故发生，所有旋转部件均应按照使用者所在国家和地区的安全规范由购置方加罩保护。 ■ 试车之前必须认真阅读操作说明。齿轮箱在供货时已处于准运行状态，运行前需加注润滑油。 ■ 本样本中所示注油量只作为参考值，实际注油量应以油尺上的标记为准。 ■ 润滑油粘度应符合齿轮箱铭牌上的数据。 ■ 只能采用允许品牌的润滑油。 ■ 齿轮箱在供货时已配置了径向油封。如果需要其他类型的油封敬请垂询。 ■ 转动方向是指面向输出轴时输出轴d₂的转动方向。 ■ 当安装在室外时应避免阳光照射。应由购置方配装适当的防护设备。	The following items are absolutely to be observed! ■ Illustrations are examples only and are not strictly binding. Dimensions are subject to change. ■ The weights are mean values and not strictly binding. ■ To prevent accidents, all rotating parts should be guarded according to local and national safety regulations. ■ Prior to commissioning, the operating instructions must be observed. The gear units are delivered ready for operation but without oil filling. ■ Oil quantities given are guide values only. The exact quantity of oil depends on the marks on the oil dipstick. The oil viscosity has to correspond to the data given on the name plate. ■ Permitted lubricants may be used only. ■ The gear units are supplied with radial shaft seals. Other sealing variants on request. ■ Directions of rotation referring to output shaft d₂. ■ In case of outdoor installation, insolation is to be avoided. The customer has to provide adequate protection.

型号标记
Type definition

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

所用缩写和标准及典型传动装置
Used abbreviations、standards and
Typical Drive Arrangement

尺寸图中所用标准

Standards used in dimensional drawings

键和键槽: GB1095

Keys and keyways: GB1095

地脚安装面螺钉强度等级: 6.8

Screw strength grade of Foot Mounting Face fixing: 6.8

所用缩写

Abbreviation used

高速轴: HSS

High Speed Shaft : HSS

低速轴: LSS

Low Speed Shaft:LSS

尺寸图中所用插图说明

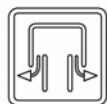
Definition of icons used in dimensional drawings



目视观察孔
Visual inspection
opening



放油装置
Oil drainage



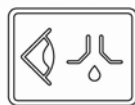
通气帽
Breather



油观察窗
Oil glass



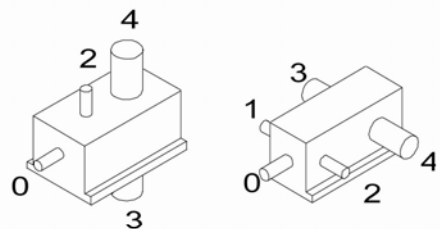
加油口
Oil filler



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

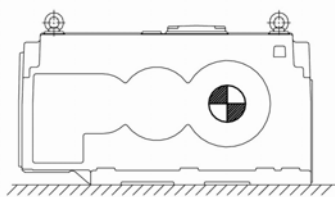
轴的位置

Shaft positions

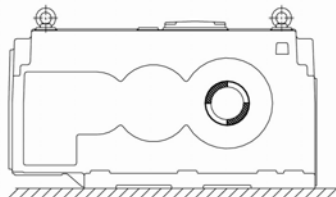


典型传动装置

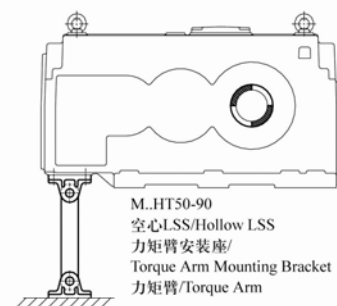
Typical Drive Arrangement



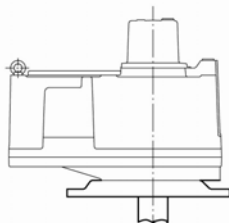
M..SF50-90
实心LSS/Solid LSS (S)
地脚安装/Foot Mounting (F)



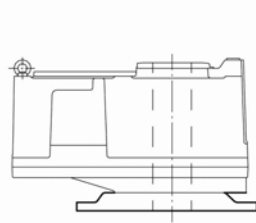
M..HF50-90
空心LSS/Solid LSS (H)
地脚安装/Foot Mounting (F)



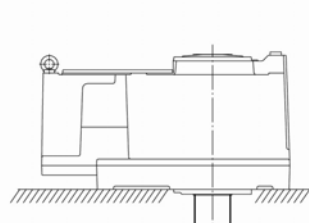
M..HT50-90
空心LSS/Hollow LSS (H)
力矩臂安装座/
Torque Arm Mounting Bracket (T)
力矩臂/Torque Arm



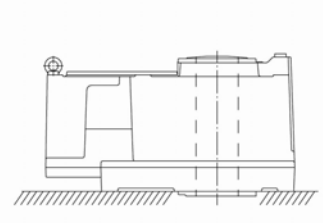
M..VSF10-50
实心LSS/Solid LSS (S)
地脚安装/Foot Mounting (F)
安装法兰/Mounting Flange



M..VHF10-50
空心LSS/Hollow LSS (H)
地脚安装/Foot Mounting (F)
安装法兰/Mounting Flange



M..VSF60-90
实心LSS/Solid LSS (S)
地脚安装/Foot Mounting (F)



M..VHF60-90
空心LSS/Hollow LSS (H)
地脚安装/Foot Mounting (F)

选型资料 Selection Information

齿轮箱选型指南

Gear Units for the Selection Constant output

1. 确定齿轮箱的类型和规格 Determination of gear unit type and size	1.1 确定传动比/Find the trasmission ratio $i = \frac{n_1}{n_2}$ 根据<i>i</i>选择功率表中相近的公称传动比<i>i_N</i>/ Choose the nearest nominal ratio <i>i_N</i> shown in rating tables depending on <i>i</i>. 1.2 确定齿轮箱额定功率/Determine nominal power rating of the gear unit $P_{k1} = \frac{P_{k2}}{\eta} \quad P_{k1} = \frac{M_{k2} \times n_2}{9550 \times \eta} \quad P_{N1} \geq P_{k1} \times F_s$ 1.3 校核最大功率<i>P_{k1max}</i>和最大<i>M_{k2max}</i> /Check for Maximun Power <i>P_{k1max}</i> and maximum Torgue <i>M_{k2max}</i> $P_{k1max} \leq \frac{2 \times P_{N1}}{F_F} \quad M_{k2max} \leq \frac{2 \times M_{N2}}{F_F}$ 根据<i>i_N</i>和<i>P_{N1}</i>在额定功率表中确定齿轮箱的规格和传动级数, <i>F_s</i>列于表2中 Gear Unit sizes and number of reduction stages are given in rating tables depending on <i>i_N</i> and <i>P_{N1}</i>, <i>F_s</i> is given in table 2 1.4 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 Check the connections of input (HSS) and output (LSS) shafts and the possible radial and axial loads on shaft ends				
2. 确定所需要的热功率 Determination of required thermal capacity	在实际环境温度下确定减速器的热功率<i>P_T</i> Determine the thermal rating <i>P_T</i> of the gear unit in the actual ambient temperature $P_T = P_{TH} \times f_1 \times f_2 \times f_3$ 如果<i>P_{k1}</i> > <i>P_T</i>, 检查是否用外部压力润滑和冷却装置 If <i>P_{k1}</i> > <i>P_T</i>, check if external pressure lubriecation and cooling unit can be used <i>P_{k1}</i> ≤ <i>P_T</i> 满足要求 It is not necessary to consult us				
3. 确定润滑方式 Determination of oil lubrification	安装方式/Mounting Position <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">卧式安装/Horizontal</th><th style="width: 50%; text-align: center;">立式安装/Vertical</th></tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> 1.采用飞溅润滑方式 Splash lubricated 2.按用户要求提供强制润滑方式 Forced lubrication on request </td><td style="vertical-align: top;"> 1.膨胀箱润滑 Expansion Tank lubricated 2.通过可逆泵或电机泵强制润滑 Forced lubrication by pump or motor pump 3.按用户要求提供强制润滑方式。 Forced lubrication on request </td></tr> </tbody> </table>	卧式安装/Horizontal	立式安装/Vertical	1.采用飞溅润滑方式 Splash lubricated 2.按用户要求提供强制润滑方式 Forced lubrication on request	1.膨胀箱润滑 Expansion Tank lubricated 2.通过可逆泵或电机泵强制润滑 Forced lubrication by pump or motor pump 3.按用户要求提供强制润滑方式。 Forced lubrication on request
卧式安装/Horizontal	立式安装/Vertical				
1.采用飞溅润滑方式 Splash lubricated 2.按用户要求提供强制润滑方式 Forced lubrication on request	1.膨胀箱润滑 Expansion Tank lubricated 2.通过可逆泵或电机泵强制润滑 Forced lubrication by pump or motor pump 3.按用户要求提供强制润滑方式。 Forced lubrication on request				

齿轮箱符号说明

Gear Units key to symbols

i — 要求传动比/Required ratio

i_{ex} — 精确传动比/Exact ratio

P_{k1} — 运行功率 (KW) /Running Power(KW)

P_{k2} — 工作机功率 (KW) /Working Power(KW)

n₁ — 输入转速 (r/min) /Input speed(r/min)

n₂ — 输出转速 (r/min) /Output speed(r/min)

M_{k2} — 运行转矩 (Nm) /Running Torque(Nm)

F_s — 使用系数 / Service factor

P_{N1} — 额定功率 (KW) / Nominal Power rating(KW)

M_{N2} — 额定转矩 (Nm) /Nominal torque rating(Nm)

P_T — 计算热功率 (KW) /Calculative thermal rating(KW)

P_{TH} — 额定热功率 (KW) /Nominal thermal rating(KW)

F_F — 最大载荷出现系数/maximun load occurrancy

η — 效率/Efficiency

单级/Single stage *η*=0.985

二级/Double stage *η*=0.97

三级/Rriple stage *η*=0.955

四级/Quadruple stage *η*=0.94

五级/Quintuqle stage *η*=0.93

f₁ — 海拔系数/Factor for alitiade

f₂ = 1.07 — 对安装力矩臂的减速器

For torque arm mounted gear units

f₂ = 1.0 — 对地脚安装减速器

For foot mounted gear unit

f₃ = 1.1 — 压力润滑/With pressure lubrication and

f₃ = 1.0 — 飞溅和浸油润滑/With bath and splash lubrication

选型资料

Selection Information

表/Table 1

从动机载荷分类 /load Classification of the Driven Machine

U 类:均匀载荷 /Group U: uniform load

C 类:相当大的冲击载荷 /Group C: considerable shocks

M 类:中等冲击载荷 /Group M: moderate shocks

H 类:强冲击载荷 /Group H: heavy shocks

应用 Application	载荷类别 Group	应用 Application	载荷类别 Group	应用 Application	载荷类别 Group
搅拌机 and 混料机 Agitators and Mixers		木材工业 Lumber industry	*	低速磨浆机 Jordans	C
混凝土 Concrete	M	机床 Machine tools	*	划线轴 Line Shafts	M
液体(等浓度)和固体 Liquids (constant density)and Solids	U	金属加工 Metal mills		压榨机(树皮,油毡,胶料,真空抽吸) Presses(Bark, Felt, Size, Suction)	C
液体(变浓度) Liquids (variable density)	M	拉拔机 Draw Bench Carriage and main drive	M	碎浆机 Pulpers	C
鼓风机和风扇 Blowers and Fans	M	平整机 Flattening Machines	*	卷纸机 Reels	C
压缩机 Compressors		剪切机 Slitters	H	辊(吸移,送丝传动,丝网真空抽吸) Rolls(pick up, wire Drive, wire suction)	C
离心式 Centrifugal	U	辊道 单向 Table Conveyors, non-reversing		洗浆机 Washers	M
罗茨式 Lobe	M	集中驱动 -group drives	C	杨克式园网(缸) Yankee Cylinders (Dryers)	*
往复式,多汽缸 Reciprocating, multi - cylinder	M	单独驱动 -individual drives	H	塑料和橡胶工业 Plastics and Rubber Industry	
往复式,单汽缸,螺杆式 Reciprocating, single - cylinder, screw	C	辊道 双向 Table Conveyors, . reversing	*	压延和破碎机 Calenders and Grinders	H
输送机,均匀负载或进料 Conveyors (uniformly loaded or fed)		拉拔机 Wire Drawing Machines	C	挤出机(塑料) Extruders (Plastics)	M
平板式,链板式,螺旋式 Apron, Flight, Screw	U	绕线机 Winders	C	挤出机(橡胶) Extruders (Rubber)	C
皮带式,料斗式,链条式 Belt, Bucket, Chain	U	碾磨机和滚筒(旋转式) Mills and Drums (rotary type)		混炼机 Mixing Mills	*
输送机重负载、进料不均匀 Conveyors (heavy duty not uniformly fed)		球磨机(碾磨机) Ball (mills)	C	精炼机 Refiners	H
平板式 链板式,螺旋式 Apron, Flight, Screw	M	球磨机(重型)和棒磨机(碾磨机) Ball (heavy)and Rod(mills)	H	橡胶磨 2 联 Rubber Mills, 2 on line	H
皮带式,料斗式,链条式 Belt, Bucket, Chain	M	水泥窑 Cement Kilns	C	橡胶磨 3 联 Rubber Mills, 3 on line	C
传动辊式 Live Roll	*	煤碾机 Coal Mills	H	压片机 Sheeters	H
摆动式往复 Shaker, reciprocating	H	干燥机和冷却机 Dryers and Coolers	M	制管机 Tubers	*
起重机和升降機 Cranes and Hoists	*	旋转窑 Rotary Kilns	C	热炼机 Warming Mills	C
起升机 Elevators		采矿工业 Mining Industry		泵(轻型) Pumps (light)	
斗式重负载 Bucket, heavy load	M	铣头驱动 Cutter head drives	C	离心泵 Centrifugal	M
斗式均匀负载 Bucket, uniform load	U	破碎机 Crushers	H	往复泵(多缸) Reciprocating(multi - cylinder)	M
升降機 Lift		筛和振动筛 Screens and Shakers	H	往复泵(单缸) Reciprocating (single - cylinder)	C
自动扶梯 Escalators	M	石油工业 Oil Industry	*	旋转泵(凸轮,齿轮叶片) Rotary (gear type, lobe, vane)	U
货梯 Freight	M	造纸和纸浆工业 Paper and Pulp Industry	*	螺旋泵 Screw Pumps	M
客梯 Man Lifts	*	搅拌机(贮浆池和两轴) Agitators (Chest and Two Shaft)	M	污水处理设备 Sewage Disposal Equipment	
食品工业 Food Industry		剥皮鼓和剥皮机 Debarking Drums and Barkers	H	通风机 Aerators	C
甜菜切片機 Beet Slicer	M	打浆机和削片机 Beaters and Chippers	H	除尘器 Collectors	M
轧碎机和碾磨机 Crushers and mills	C	压光机(滚动轴承) Calenders (antifriction bearings)	C	混合器 Mixers	M
烘干滚筒 Drying Drums	M	切纸机 Cutter	H	沉降器 Thickeners	M
甘蔗粉碎機 Sugar cane Crushers	M	烘缸(滚动轴承) Dryer Cylinders (antifriction bearings)	C	真空吸泵过滤器 Vacuum filters	M
发电机 Generators	U	过滤器(压力和真空) Filters (pressure and vacuum)	M	风力发电机 Windmills	*

列于表 1 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。

The values given in Table 1 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

选型资料

Selection Information

表/ Table 2 使用系数 F_s / Service factor F_s

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

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

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

表/ table 3 最大载荷出现系数 F_F / Maximum load occurrancy factor F_F

最大载荷出现次数 / h maximum load occurrancy / hour	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

表/ table 4 海拔系数 f_1 / Factor for altitude f_1

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

f_1 中间值内插。

f_1 Intermediate values have to be interpolated.

计算示例

Calculation Example

从动机/Driven Machine	例/Example 1	例/Example 2
载荷等级(表/table 1)/Load Class	碎石机/Stone Crusher	真空过滤器/Vacuum Filter
转速 n_2 /Rotation Speed	类别/Group H	类别/Group M
P_{K2} 或/ or M_{K2}	130min ⁻¹	0.8—4.3 min ⁻¹
载荷峰值/Load Peaks (P_{K2max} or M_{K2max})	350kW	41000 Nm
使用持续时间/Duration of Service	650kW	48000 Nm
起动频率/Starting Frequency	10 h/d, 2400 h/a	24 h/d, 8000 h/a
驱动器/Driving Machine	每小时起动一次/1 start per hour	很少/seldom
额定功率/转速	鼠笼式电动机/Squirrel Cage Motor	直流电动机/DC motor
Nominal Power Rating /rot. speed	355 kW/1482 min ⁻¹	5-26 kW/250-1500mon ⁻¹
减速器型式/Gear unit type	底脚安装/Foot mounted	空心轴/Hollow Shaft
轴的位置/Shaft Position	水平, 平行/Horizontal, parallel	水平, 直角/horizontal, right angle
空心轴内径/Hollow Shaft bore dia	—	180 mm
连接/Connections		
电动机—减速器/Motor—Gear Unit	弹性联轴器/Flexible Coupling	V-带传动/V-belt drive 1:1
减速器—从动机/Gear unit—driven machine	齿式联轴器/Gear Coupling	空心轴, 收缩盘/ Hollow Shaft, Shrink Disc
环境条件/Ambient conditions		
温度/Temperature	— 30 — + 30℃	+ 35℃
其它条件/Other conditions	很多灰尘/Very dusty	潮湿/Moist
减速器选择/Selection of gear unit		
$n_1/n_2 = i$	1482/130 = 11.4:1	1500/4.4 = 348.8:1
最近公称传动比/ Nearest nominal ratio i_N	11.2:1	355:1
减速器型号(效率)/Gear Unit type (efficiency)	M2PSF($\eta = 0.97$)	M5RHT ($\eta = 0.93$)
要求的 F_s /Required (表/table 2)	1.75	1.5
$P_{K1} = \frac{P_{K2}}{\eta} = \frac{M_{K2} \times n_2}{9550 \times \eta}$	360.8kW	19.9kW
所选的减速器/Selected gear unit	M2PSF60	M5RHT60
$P_{K1} \times F_s < P_{N1}$	360.8kW $\times$ 1.75 < 851kW	19.9kW $\times$ 1.5 < 33.5 kW
选择检查和应用要求/Selection Check and Application Requirements		
减速器精确传动比/Gear Unit exact ratio i_{ex}	11.189	352.66
P_{K2max} 和 M_{K2max} 检查	M2PSF60 满足要求	M5RHT60 满足要求
Checking of P_{K2max} and M_{K2max}	M2PSF60 meets the requirements	M5RHT60 meets the requirements
热功率/Thermal rating P_T	202kW	60kW
	(用环境温度/ by ambient temperature + 30℃)	
冷却装置/Cooling devices	需要蛇形管水冷却或用压力润滑的外冷却系统/ Water cooling coil or external cooling system with pressure lubrication is needed	不要求冷却/ Cooling not required
润滑方法/Lubrication method	飞溅润滑/Splash lubrication	无冷却器压力润滑(由于变速)/ Pressure lubrication without cooler(due to variable speed)
多灰尘或潮湿条件的要求	低速轴和高速轴用迷宫密封	——
Requirements of very dusty or moist conditions	Labyrinth seal as standard on LSS and HSS	
冷环境温度的要求(冷起动等)/ Requirements of cold ambient temperature (cold start etc.)	用合成 PAO 油 Use of synthetic PAO oil	——

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

额定功率
Nominal Power Ratings
热功率
Thermal Ratings

M. P. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

规格 Size	n ₁ min ⁻¹	额定机械功率 P _{N1} (kW) / Nominal Mechanical Power Ratings P _{N1} in kW									
		公称传动比 i _N / Nominal Ratio i _N									
		6.3	7.1	8	9	10	11.2	12.5	14	16	18
50	1800	896	828	754	700	648	590	547	505	424	378
	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	1800	1485*	1344*	1255*	1155*	1042*	967	896	827	684	615
	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	1800	1839*	1659*	1511*	1387*	1285*	1178*	1090*	987	911	854
	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	1800	2308*	2073*	1882*	1722*	1586*	1469*	1344*	1242*	1138*	1059*
	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	1800	3380*	3097*	2856*	2590*	2318*	2147*	2044*	1831*	1681*	1441*
	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 +

M2P: 用浸油润滑时 (+) 要求唇型密封 / When bath lubrication (+) is used, lip seal is required

规格 Size	n ₁ min ⁻¹	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
		358	328	299 +	270 +	239 +	216 +	190 +	172 +	154 +	140 +	126 +	114 +	90.0 +	80.4 +
50	1800	314	277 +	251 +	227 +	201 +	181 +	160 +	145 +	130 +	117 +	106 +	95.7 +	75.8 +	67.7 +
	1500	254 +	224 +	203 +	184 +	162 +	147 +	129 +	117 +	105 +	95.1 +	85.6 +	77.5 +	61.4 +	54.8 +
	1200	213 +	188 +	171 +	155 +	137 +	124 +	109 +	98.8 +	88.4 +	80.1 +	72.1 +	65.2 +	51.7 +	46.4 +
	1000	514	478	439	390	360	327 +	299 +	269 +	240 +	218 +	196 +	177 +	145 +	130 +
60	1800	453	421 +	386 +	343 +	315 +	278 +	252 +	227 +	202 +	183 +	165 +	149 +	122 +	110 +
	1500	387 +	360 +	322 +	281 +	255 +	225 +	204 +	183 +	164 +	148 +	133 +	121 +	98.7 +	88.9 +
	1200	334 +	303 +	271 +	237 +	214 +	189 +	171 +	154 +	138 +	125 +	112 +	102 +	83.1 +	75.1 +
	1000	795	721	644	588	533	485	432	394 +	358 +	317 +	285 +	258 +	208 +	191 +
70	1800	687	615	547	500	454	413 +	369 +	337 +	306 +	270 +	241 +	217 +	175 +	161 +
	1500	562 +	504 +	449 +	411 +	373 +	340 +	304 +	277 +	249 +	219 +	195 +	175 +	142 +	130 +
	1200	479 +	429 +	383 +	351 +	319 +	291 +	258 +	233 +	210 +	184 +	163 +	146 +	119 +	110 +
	1000	982	879	817	746	676	603	549 +	497 +	446 +	405 +	365 +	293 +	261 +	223 +
80	1800	857	764	697	634 +	575 +	513 +	468 +	425 +	381 +	346 +	308 +	246 +	219 +	188 +
	1500	701	626 +	572 +	521 +	473 +	423 +	386 +	348 +	310 +	280 +	249 +	199 +	178 +	152 +
	1200	597 +	533 +	488 +	444 +	404 +	360 +	326 +	293 +	261 +	235 +	210 +	168 +	150 +	128 +
	1000	1273*	1172*	1079*	992	907	832	771	699	630	495	445	400 +	358 +	284 +
90	1800	1121*	1031*	950	874	798	722	653 +	588 +	530 +	416 +	374 +	336 +	301 +	239 +
	1500	959	882	813 +	739 +	665 +	584 +	528 +	475 +	429 +	337 +	303 +	272 +	243 +	194 +
	1200	844	765 +	688 +	622 +	559 +	491 +	444 +	400 +	361 +	283 +	255 +	229 +	205 +	163 +
	1000														

规格 Size	n ₁ min ⁻¹	100	112	125	140	160	180	200	225	250	280	315	355	400
		87.9 +	80.0 +	70.8 +	65.2 +	60.0 +	49.1 +	45.4 +	41.2 +	36.8 +	33.1 +	27.1 +	24.8 +	19.4 +
50	1800	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 +
	1500	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 +
	1200	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 +
	1000	105 +	105 +	102 +	92.2 +	83.3 +	76.6 +	70.8 +	64.3 +	59.0 +	52.5 +	43.4 +	39.9 +	30.6 +
60	1800	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 +
	1500	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 +
	1200	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 +
	1000	195 +	180 +	162 +	137 +	122 +	109 +	96.8 +	87.0 +	78.3 +	69.4 +	64.1 +	57.9 +	44.2 +
70	1800	167 +	154 +	140 +	114 +	102 +	91.3 +	80.7 +	72.5 +	65.3 +	57.9 +	54.5 +	48.3 +	37.1 +
	1500	138 +	125 +	114 +	91.7 +	81.4 +	73.1 +	64.7 +	58.1 +	52.3 +	46.4 +	43.7 +	38.7 +	29.7 +
	1200	115 +	104 +	95.0 +	76.5 +	67.9 +	61.0 +	53.9 +	48.5 +	43.6 +	38.7 +	36.4 +	32.3 +	24.8 +
	1000	215 +	215 +	191 +	177 +	160 +	146 +	133 +	119 +	107 +	95.9 +	80.9 +	73.3 +	62.8 +
80	1800	189 +	183 +	164 +	148 +	138 +	126 +	115 +	99.5 +	89.5 +	79.9 +	69.5 +	61.6 +	54.1 +
	1500	162 +	152 +	137 +	118 +	116 +	103 +	92.3 +	79.6 +	71.6 +	63.9 +	55.6 +	49.3 +	44.0 +
	1200	142 +	132 +	118 +	98.6 +	96.9 +	96.1 +	77.0 +	66.3 +	59.7 +	53.3 +	46.4 +	41.1 +	36.7 +
	1000	289 +	265 +	265 +	238 +	216 +	200 +	181 +	163 +	147 +	119 +	109 +	99.7 +	78.7 +
90	1800	255 +	234 +	229 +	205 +	186 +	171 +	154 +	136 +	122 +	103 +	94.2 +	85.5 +	65.6 +
	1500	218 +	200 +	191 +	171 +	153 +	137 +	123 +	109 +	98.0 +	84.5 +	76.5 +	68.5 +	52.5 +
	1200	192 +	176 +	165 +	144 +	128 +	114 +	103 +	90.8 +	81.8 +	70.4 +	63.8 +	57.1 +	43.8 +
	1000													

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

功率: 功率为额定值, 使用系数 F_s = 1.0。

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_r, 要人工冷却。

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

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

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_r.

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

额定功率
Nominal Power Ratings
热功率
Thermal Ratings

M. P. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

规格 Size	风扇数 Fan pcs	热功率 $P_{TH}(kW)^{*1}$ / Thermal Ratings P_{TH} in kW *1																			
		公称传动比 i_N / Nominal Ratio i_N																			
		环境空气温度 / Ambient Air Temperature																			
		$i_N=6.3-12.5$				$i_N=14-18$				$i_N=20-56$				$i_N=63-90$				$i_N=100-400$			
		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
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	–	–	–	–

*1 $n_1 = 1500$ 1/min 的计算值 / Calculated with $n_1 = 1500$ 1/min

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

额定功率
Nominal Power Ratings
热功率
Thermal Ratings

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

规格 Size	n ₁ min ⁻¹	额定机械功率 P _{N1} (kW) / Nominal Mechanical Power Ratings P _{N1} in kW															
		公称传动比 i _N / Nominal Ratio i _N															
		14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
50	1800	376	376	376	324	303	288	259	238+	201+	177+	158+	136+	122+	108+	85.1+	76.0+
	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	1800	542	542	514	514	470	418	368	331	302	272+	248+	223+	199+	152+	137+	119+
	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	1800	815*	815*	807*	751*	680*	609*	554*	505*	459*	410	372+	320+	294+	263+	234+	174+
	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	1800	936*	936*	935*	912*	861*	774*	651*	617*	559*	501*	452	411	366+	306+	274+	232+
	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	1800	-	-	-	-	-	-	-	-	-	-	-	516*	462+	394+	333+	315+
	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+

规格 Size	n ₁ min ⁻¹	热功率 P _T (kW) / Thermal Power Ratings P _T in kW															
		公称传动比 i _N / Nominal Ratio i _N															
		90	100	112	125	140	160	180	200	225	250	280	315	355	400	450	500
50	1800	97.8+	84.0+	75.1+	66.5+	60.5+	55.6+	50.2+	46.1+	40.1+	33.5+	30.3+	27.7+	24.9+	21.7+	19.1+	17.3+
	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+	21.4+	18.4+	15.9+	14.5+
	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+	17.3+	15.3+	13.4+	12.8+
	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+	14.4+	12.4+	10.7+	9.65+
60	1800	136+	124+	116+	103+	83.5+	83.5+	78.3+	69.6+	58.6+	53.9+	40.6+	36.5+	33.5+	30.2+	27.1+	24.4+
	1500	115+	104+	97.7+	88.1+	69.8+	69.8+	67.7+	58.4+	50.7+	46.5+	35.1+	31.6+	28.4+	24.8+	21.4+	19.0+
	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+	23.3+	20.2+	17.7+	15.6+
	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+	20.0+	17.4+	15.1+	13.7+
70	1800	207+	191+	172+	150+	137+	120+	107+	95.2+	85.2+	77.3+	70.6+	64.0+	57.4+	50.8+	44.2+	38.6+
	1500	180+	159+	143+	125+	114+	100+	89.6+	79.4+	71.0+	66.8+	61.0+	54.1+	47.5+	40.9+	34.3+	28.7+
	1200	144+	128+	115+	100+	91.6+	80.3+	71.7+	63.6+	56.9+	54.7+	48.9+	43.3+	37.7+	31.1+	24.5+	18.9+
	1000	120+	106+	95.8+	83.6+	76.4+	66.9+	59.8+	53.0+	47.5+	45.6+	40.8+	36.1+	31.4+	25.8+	20.2+	14.6+
80	1800	238+	238+	217+	195+	176+	158+	147+	118+	107+	93.2+	82.2+	74.5+	67.9+	61.3+	54.7+	48.1+
	1500	208+	203+	183+	166+	152+	132+	124+	102+	92.3+	77.8+	70.9+	64.2+	57.6+	51.0+	44.4+	37.8+
	1200	167+	167+	152+	135+	124+	106+	100+	85.0+	77.1+	62.3+	59.1+	53.6+	47.0+	40.4+	33.8+	27.2+
	1000	140+	140+	131+	113+	104+	89.2+	84.0+	73.4+	65.1+	51.9+	51.0+	45.3+	38.7+	32.1+	25.5+	18.9+
90	1800	345	284+	255+	255+	244+	221+	196+	157+	144+	118+	119+	108+	97.8+	86.7+	75.6+	64.5+
	1500	304+	238+	214+	214+	211+	185+	164+	136+	124+	102+	102+	92.8+	81.7+	70.6+	59.5+	48.4+
	1200	248+	191+	172+	172+	170+	150+	133+	113+	103+	84.5+	83.9+	74.3+	63.2+	52.1+	41.0+	30.0+
	1000	208+	160+	143+	143+	142+	126+	111+	97.7+	88.7+	70.5+	70.0+	62.0+	50.9+	39.8+	28.7+	17.6+

规格 Size	n ₁ min ⁻¹	热功率 P _T (kW) / Thermal Power Ratings P _T in kW															
		公称传动比 i _N / Nominal Ratio i _N															
		355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800	2000
50	1800	27.5+	24.0+	21.7+	19.1+	17.3+	14.9+	13.5+	11.9+	10.7+	9.62+	8.44+	7.60+	6.79+	5.87+	4.95+	4.13+
	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+	3.34+
	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+	2.78+
	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+	2.28+
60	1800	39.9+	36.2+	32.5+	29.2+	25.3+	22.8+	20.4+	18.5+	16.4+	14.4+	13.0+	11.6+	10.2+	9.16+	7.59+	6.33+
	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+	5.19+
	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+	4.33+
	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+	3.59+
70	1800	55.0+	48.3+	43.5+	39.3+	35.0+	31.6+	28.1+	26.9+	23.5+	21.3+	18.5+	16.7+	14.9+	13.2+	10.2+	8.46+
	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+	6.77+
	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+	5.64+
	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+	4.54+
80	1800	66.8+	66.8+	62.1+	56.2+	49.9+	43.3+	38.5+	33.4+	29.9+	27.3+	25.0+	21.3+	18.9+	15.4+	14.9+	12.4+
	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+	10.4+
	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+	8.28+
	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+	6.77+
90	1800	98.2+	94.8+	66.8+	66.8+	66.8+	59.7+	52.1+	46.1+	41.5+	37.0+	32.8+	28.6+	25.4+	20.1+	18.0+	15.0+
	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+	12.3+
	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+	10.5+
	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+	8.8+

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

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

功率: 功率为额定值, 使用系数 F_s=1.0.

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

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。

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

冷却: 如果使用功率 P_{K1} 大于热功率 P_T, 要用人工冷却。

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

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

额定功率
Nominal Power Ratings
热功率
Thermal Ratings

M. R. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

规格 Size	风扇数 Fan pcs	热功率 $P_{TH}(kW)^{*})$ / Thermal Ratings P_{TH} in kW $^{*})$															
		公称传动比 i_N / Nominal Ratio i_N															
		环境空气温度 / Ambient Air Temperature															
		$i_N = 14 - 45$				$i_N = 50 - 80$				$i_N = 90 - 315$				$i_N = 355 - 1800$			
		20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃
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	–	–	–	–	–	–	–	–

*) $n_1 = 1500$ 1/min 的计算值 / Calculated with $n_1 = 1500$ 1/min

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

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

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

1. 许用径向力 F_R 的确定

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
 K_Y = 径向力位置的影响系数

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

图 1: 径向力位置的影响

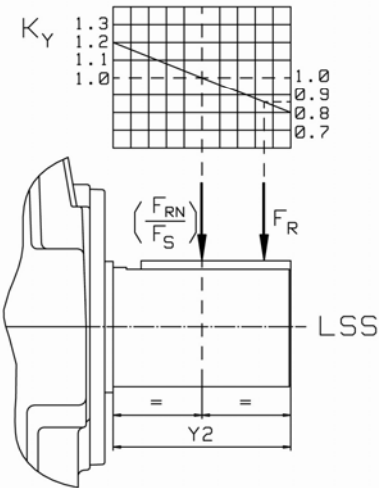


表 1 和表 2: 轴向力 $F_A = 0$ kN 时, 许用额定径向力 F_{RN}

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

表 1 / Table 1

减速器型号/Gear unit type	M2P	M4P	M3P	M3R	M5R
轴的位置 / Shaft positions	13, 24	14, 23	03, 04		
减速器规格 Gear unit size	输出轴端中点的 F_{RN} [kN] F_{RN} in the middle of the LSS end [kN]				
	输出轴速度 / LSS speed n_2 [1/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} 是输出轴端最不利方向许用的径向力

.13.

Continuous allowed External Loads F_R, F_A

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

1. Determining the allowed radial force F_R

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
 K_Y = the effect of the radial force location.

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

picture 1: The effect of the radial force location.

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

表 2 / Table 2

减速器型号/Gear unit type	M2P	M4P	M3P	M4R
轴的位置 / Shaft positions	14, 23	13, 24	03, 04	
减速器规格 Gear unit size	输出轴端中点的 F_{RN} [kN] F_{RN} in the middle of the LSS end [kN]			
	输出轴速度 / LSS speed n_2 [1/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} is the allowed radial force to the most unfavorable direction on the LSS End.

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

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

Continuous allowed External Loads F_R, F_A

2.2 水平实心低速轴底脚安装减速器的许用径向力方向

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

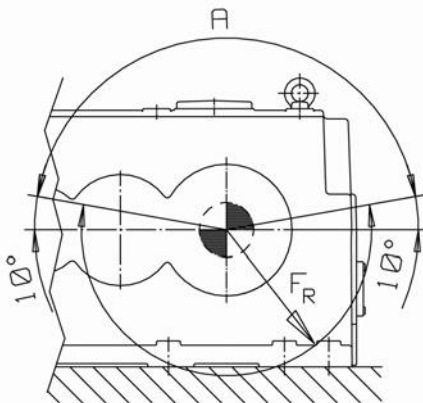


图 2:许用径向力方向

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)

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

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

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.

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

额定功率
Nominal Power Ratings
热功率
Thermal Ratings

M. PV. . 10-90
实心和空心 LSS
Solid & Hollow LSS

规格 Size	n ₁ min ⁻¹	额定机械功率 P _{N1} (kW) / Nominal Mechanical Power Ratings P _{N1} in kW									
		公称传动比 i _N / Nominal Ratio i _N									
		6.3	7.1	8	9	10	11.2	12.5	14	16	18
10	1800	179*	165*	151*	140 +	124 +	113 +	99.7 +	83.4 +	75.9 +	57.8 +
	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	1800	231*	206*	169*	159 +	149 +	132 +	120 +	102 +	90.7 +	82.6 +
	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	1800	399*	369*	336*	312*	289*	258*	227*	206 +	184 +	167 +
	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	1800	580*	533*	496*	455*	414*	352*	319*	287*	257 +	210 +
	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	1800	907*	837*	762*	708*	655*	595*	552*	509*	408*	364*
	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	1800	1503*	1359*	1268*	1166*	1052*	976*	891*	800*	656*	590*
	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	1800	1825*	1646*	1500*	1378*	1277*	1171*	1084*	982*	907*	850*
	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	1800	2289*	2057*	1868*	1710*	1576*	1459*	1336*	235*	1132*	1053*
	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	1800	64.4 +	58.5 +	51.9 +	46.2 +	42.1 +	36.8 +	33.3 +	30.3 +	25.4 +	22.3 +	19.8 +	18.1 +	13.7 +	12.5 +
	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	1800	72.7 +	67.7 +	61.2 +	52.4 +	48.6 +	43.2 +	39.4 +	35.4 +	30.2 +	27.5 +	24.3 +	21.6 +	19.7 +	14.8 +
	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	1800	148 +	135 +	122 +	111 +	97.9 +	84.4 +	73.7 +	67.1 +	59.7 +	54.6 +	49.7 +	44.5 +	35.6 +	31.4 +
	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	1800	229 +	183 +	168 +	162 +	151 +	133 +	105 +	95.2 +	84.4 +	76.1 +	69.3 +	56.6 +	50.0 +	44.7 +
	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	1800	358*	314*	292 +	264 +	234 +	211 +	186 +	169 +	151 +	137 +	123 +	111 +	88.1 +	78.0 +
	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	1800	448*	418*	385*	385*	365*	322 +	292 +	263 +	234 +	212 +	191 +	173 +	141 +	127 +
	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	1800	671*	371*	609*	566*	530*	482*	430*	392 +	355 +	313 +	279 +	238 +	202 +	186 +
	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	1800	845*	718*	667*	616*	616*	560*	515 +	471 +	443 +	402 +	358 +	285 +	254 +	218 +
	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	1800	1191*	1018*	946*	946*	946*	782*	720*	683*	616*	483*	434*	390 +	349 +	277 +
	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 级斜齿轮减速器垂直 LSS
2, 3, 4-stage Helical Gear Units
Vertical LSS

额定功率
Nominal Power Ratings
热功率
Thermal Ratings

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

规格 Size	n_1 min^{-1}	额定机械功率 P_{N1} (kW) / Nominal Mechanical Power Ratings P_{N1} in kW												
		公称传动比 i_N / Nominal Ratio i_N												
		100	112	125	140	160	180	200	225	250	280	315	355	400
50	1800	85.6 +	78.0 +	69.0 +	63.6 +	58.7 +	48.1 +	44.4 +	40.4 +	36.1 +	32.5 +	26.5 +	24.3 +	18.9 +
	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	1800	105 +	105 +	99.0 +	89.9 +	81.2 +	74.7 +	69.0 +	62.3 +	56.1 +	49.2 +	42.3 +	38.8 +	29.8 +
	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	1800	178 +	162 +	157 +	134 +	119 +	107 +	94.6 +	85.0 +	76.5 +	67.8 +	62.3 +	56.5 +	43.1 +
	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	1800	216 +	212 +	187 +	177 +	157 +	142 +	130 +	107 +	96.0 +	85.1 +	79.0 +	71.5 +	61.3 +
	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	1800	290 +	266 +	263 +	232 +	211 +	185 +	177 +	147 +	132 +	116 +	107 +	97.4 +	77.7 +
	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 +

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

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

功率: 功率为额定值, 使用系数 $F_s = 1.0$ 。

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。

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

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 .

规格 Size	热功率 $P_{TH}(kW)^{*1})$ / Thermal Ratings P_{TH} in kW $^{*1)}$																			
	公称传动比 i_N / Nominal Ratio i_N																			
	环境空气温度 / Ambient Air Temperature																			
	$i_N=6.3-12.5$				$i_N=14-18$				$i_N=20-56$				$i_N=63-90$				$i_N=100-400$			
	20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃	20℃	30℃	40℃	50℃
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

*) $n_1 = 1500 \text{ 1/min}$ 时计算值 / Calculated with $n_1 = 1500 \text{ 1/min}$

3,4 级锥齿轮 – 斜齿轮减速器垂直 LSS

3,4-stage Bevel Helical Gear Units

Vertical LSS

额定功率
Nominal Power Ratings

热功率
Thermal Ratings

M. RV. . 30-90

实心空心 LSS
Solid & Hollow LSS

规格 Size	n ₁ min ⁻¹	额定机械功率 P _{N1} (kW) / Nominal Mechanical Power Ratings P _{N1} in kW															
		公称传动比 i _N / Nominal Ratio i _N															
		14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
30	1800	196*	190*	167*	152*	136+	118+	110+	93.2+	84.7+	78.7+	66.8+	60.9+	55.3+	43.1+	38.0+	29.3+
	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	1800	200*	200*	200*	200*	200*	161*	142+	124+	116+	98.2+	86.3+	81.9+	71.0+	62.8+	52.3+	36.6+
	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	1800	376*	376*	376*	317*	303*	282*	253*	233+	201+	177+	153+	133+	119+	107+	83.4+	74.5+
	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	1800	556*	556*	556*	507*	459*	408*	359*	323*	295*	265+	242+	218+	194+	152+	137+	116+
	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	1800	874*	874*	872*	780*	714*	594*	541*	493*	483*	435*	378+	312+	287+	256+	229+	170+
	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	1800	936*	936*	936*	842*	757*	651*	604*	550*	490*	442*	403*	358+	299+	268+	233+	
	1500	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	1800	-	-	-	-	-	-	-	-	-	-	-	515*	462+	385+	335+	307+
	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	1800	94.2+	81.0+	72.5+	64.1+	58.3+	49.4+	48.4+	44.5+	38.5+	32.3+	29.1+	26.6+
	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	1800	131+	119+	111+	99.4+	83.5+	81.9+	72.4+	65.7+	56.3+	51.7+	38.8+	34.9+
	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	1800	206+	184+	166+	145+	132+	116+	104+	91.9+	82.3+	74.1+	67.6+	61.3+
	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	1800	235+	233+	209+	187+	168+	145+	136+	113+	103+	86.2+	78.5+	71.2+
	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	1800	349*	284+	255+	255+	236+	210+	187+	151+	138+	113+	114+	103+
	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+

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

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

功率: 功率为额定值, 使用系数 F_s = 1.0。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。**Power ratings:** The ratings are nominal, service factor F_s = 1.0.**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.

3,4 级锥齿轮 – 斜齿轮减速器垂直 LSS
3, 4-stage Bevel Helical Gear Units
Vertical LSS

额定功率
Nominal Power Ratings
 热功率
Thermal Ratings

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

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

*) $n_1 = 1000$ 1/min 时计算值 / Calculated with $n_1 = 1000$ 1/min

2, 3, 4 级减速器垂直 LSS

2, 3, 4-stage Gear Units

Vertical LSS

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

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

低速轴(LSS)端

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 = 实际许用径向力

F_A = 实际许用轴向力

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} = 轴端的许用额定轴向力

F_s = 使用系数

K_Y = 径向力位置的影响系数

2. 带垂直实心低速轴的减速器(型号:M. PVS, M. RVS. .)

2.1 径向外力(图 1)

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

表 1 / Table 1

减速器 规格 Gear unit size	低速轴端中点的 F_{RN} [kN] F_{RN} in the middle of the LSS end [kN]				
	低速轴速度 / LSS speed n_2 [1 / 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} 是输出轴上最不利方向许用的径向力

Continuous allowed External Loads F_R, F_A

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

Low Speed Shaft (LSS) end

1. DetermininK the allowed radial force F_R

F_R = the allowed actual radial force.

F_A = the allowed actual axial force.

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

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

F_s = service factor

K_Y = the effect of the radial force location.

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

2.1 Radial external forces(Picture 1)

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

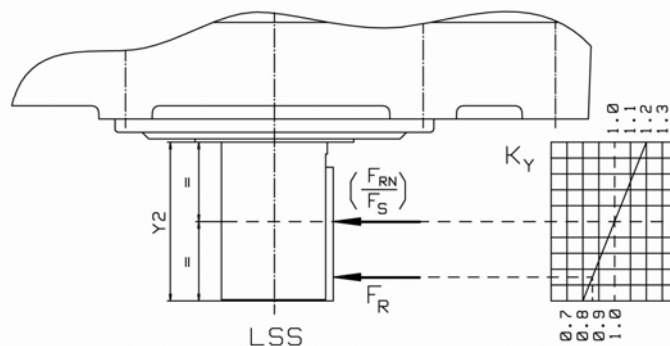


图 1: 径向力位置的影响

2.2 轴向外力和径向外力(图 2)

表 2: 许用的额定轴向和径向力 F_{AN} 和 F_{RN} , 输出轴速度 50 1/min 的计算值.

F_{RNL} = 距轴端 L 的许用额定径向力。

.19.

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

Picture 1: The effect of the radial force location

2.2 External axial and radial forces(Picture 2)

Table 2: Allowed nominal axial and radial forces F_A and F_{RN} calculated with LSS speed of 50 1/min

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

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

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 Continuous allowed External Loads F_R, F_A

表 1 / Table 1

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

减速器规格 Gear unit size	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

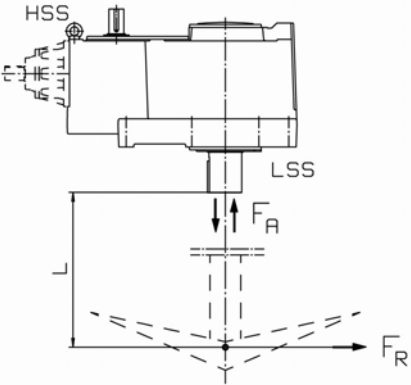


图 2: 轴向和径向力

要确保减速器安装牢固, 以免因外力作用而移动。

高速轴(HSS)端

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 型带轮节圆直径必须大于轴端直径的 6 倍。

Picture 2: Radial and axial forces

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

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.

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

精确传动比/Exact Ratios
额定转矩/Nominal Torque
许用转速/Allowed Rotational Speed

M. P. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

规格 Size	精确传动比 i_{ex} / Exact Ratios i_{ex}									
	公称传动比 i_N / Nominal Ratio i_N									
	6.3	7.1	8	9	10	11.2	12.5	14	16	18
50	6.2857	6.9954	7.9694	8.8242	9.8214	11.189	12.435	13.918	15.850	17.895
60	6.1933	7.0968	7.8030	8.7302	10.083	11.189	12.435	13.918	15.617	17.471
70	6.1523	6.9424	7.9038	8.8811	9.8737	11.143	12.419	14.259	15.952	17.471
80	6.2968	7.1057	8.1250	9.1667	10.278	11.435	12.940	14.444	16.322	18.056
90	6.2074	7.0113	7.8207	8.9654	10.278	11.435	12.457	14.280	16.086	18.056

	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
50	19.643	22.376	24.776	27.576	31.414	34.964	40.021	44.288	49.840	55.391	62.000	68.896	78.456	88.579
60	19.568	21.664	24.384	28.164	31.251	35.717	39.626	44.246	49.882	55.438	62.053	68.959	77.373	86.562
70	19.476	21.980	25.040	27.726	30.900	34.392	39.179	43.543	48.738	55.959	63.179	70.685	79.762	87.357
80	20.267	23.095	25.572	28.462	31.667	36.075	40.093	44.876	50.781	56.686	64.000	72.222	81.611	89.071
90	19.657	22.259	24.904	27.708	30.990	35.511	39.466	44.140	49.286	56.500	63.241	70.752	79.698	89.507

	100	112	125	140	160	180	200	225	250	280	315	355	400
50	98.368	108.70	124.41	137.68	152.02	177.15	195.61	220.13	251.19	279.13	317.91	353.27	400.64
60	102.53	113.75	126.22	140.36	159.50	176.98	195.42	220.31	244.83	279.39	313.50	348.39	401.00
70	99.213	109.79	123.91	137.04	154.65	172.36	194.81	217.11	241.25	272.38	312.57	352.90	406.19
80	101.32	112.61	128.89	139.76	158.70	178.60	199.90	226.21	251.37	283.80	316.64	357.50	390.18
90	98.606	110.10	122.36	140.27	158.14	174.55	196.95	220.27	244.79	280.71	313.33	350.55	393.69

规格 Size	额定输出转矩 M_{N2} (kNm) [*] / Nominal Output Torque M_{N2} in kNm [*]									
	公称传动比 i_N / Nominal Ratio i_N									
	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

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

^{*}) $n_1 = 1000$ 1/min 的计算值 / Calculated with $n_1 = 1000$ 1/min

规格 Size	许用转速 n_{1max} (r/min) [*] / Allowed Rotational Speed n_{1max} in r/min [*]									
	公称传动比 i_N / Nominal Ratio i_N									
	6.3	7.1	8	9	10	11.2	12.5	14	16	18
50	2096	2253	2470	2660	2882	3000	3000	3000	3000	3000
60	1810	1985	2122	2302	2565	2779	2800	2800	2800	2800
70	1580	1580	1725	1873	2023	2200	2400	2400	2400	2400
80	1491	1491	1633	1778	1933	2094	2200	2200	2200	2200
90	1368	1485	1604	1771	1771	1900	1900	1900	1900	1900

	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
50	2790	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
60	2747	2778	2778	2778	2778	2778	2778	2778	2778	2778	2778	2778	2778	2778
70	2253	2253	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
80	2096	2182	2182	2182	2182	2182	2182	2182	2182	2182	2182	2182	2182	2182
90	1810	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910	1910

	100	112	125	140	160	180	200	225	250	280	315	355	400
50	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
60	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
70	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
80	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
90	2546	2546	2546	2546	2546	2546	2546	2546	2546	2546	2546	2546	2546

^{*}) 对飞溅润滑 / With splash lubrication

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

精确传动比/Exact Ratios
额定转矩/Nominal Torque
许用转速/Allowed Rotational Speed

M. R. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

规格 Size	精确传动比 i_{ex} / Exact Ratios i_{ex}															
	公称传动比 i_n / Nominal Ratio i_n															
	14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
50	13,730	15,509	17,666	20,118	23,076	25,647	28,707	31,316	35,260	38,773	43,776	50,191	56,667	63,445	71,952	81,177
60	14,203	16,042	17,800	19,972	22,196	25,114	28,725	32,152	35,398	39,562	43,503	48,670	55,102	61,944	69,885	80,439
70	14,069	15,800	17,609	20,217	22,612	25,528	28,149	31,047	35,342	39,381	44,586	50,311	55,102	61,944	69,885	80,439
80	14,279	16,213	18,347	20,480	23,111	25,848	29,691	32,741	36,111	40,806	45,469	50,298	56,945	62,149	69,866	78,824
90	14,216	16,150	18,063	20,168	23,121	25,554	29,354	33,065	36,957	40,360	45,741	49,653	56,945	63,953	71,752	81,111
	90	100	112	125	140	160	180	200	225	250	280	315				
50	88,583	97,191	109,38	124,60	137,98	153,33	174,70	194,13	217,29	247,44	280,37	313,82				
60	91,441	101,440	108,69	122,76	135,92	153,52	170,61	190,96	219,58	244,02	280,87	320,55				
70	87,909	99,254	110,31	126,65	138,49	158,31	177,20	200,07	223,83	252,58	282,59	319,05				
80	89,899	102,08	114,26	128,30	143,60	159,71	179,50	202,57	228,70	258,44	279,26	315,56				
90	89,457	99,981	110,60	123,06	137,63	153,68	173,98	199,45	223,14	250,61	283,01	318,79				
	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800	
50	340,73	390,00	431,59	490,44	541,53	628,75	694,25	792,23	880,47	978,58	1116,7	1240,9	1388,9	1581,7	1793,7	
60	352,66	391,26	436,87	485,53	560,89	623,37	696,04	768,54	866,45	988,78	1098,9	1230,0	1403,6	1559,8	1795,4	
70	348,13	396,59	440,76	487,76	548,90	608,45	684,72	772,66	887,12	977,10	1125,1	1250,3	1398,8	1579,3	1817,8	
80	357,23	406,96	452,29	500,52	563,26	633,95	713,42	805,07	898,69	1005,5	1122,4	1266,6	1430,0	1615,9	1763,6	
90	351,07	390,18	440,83	492,22	554,93	621,14	694,70	775,68	862,02	979,14	1093,3	1253,3	1411,8	1585,6	1773,9	

规格 Size	额定输出转矩 M _{N2} (kNm) ^{*)} / Nominal Output Torque M _{N2} in kNm ^{*)}															
	公称传动比 i _N / Nominal Ratio 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, 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	

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

^{*)} 最大转矩 $n_1 = 1000$ 1/min 的计算值 / Calculated with $n_1 = 1000$ 1/min

规格 Size	许用转速 $n_{1\max}(\text{r/min})^{*)}$ / Allowed Rotational Speed $n_{1\max}$ in $\text{r/min}^{*)}$															
	公称传动比 i_N / Nominal Ratio i_N															
	14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
50	2059	2059	2059	2059	2297	2297	2297	2297	2297	2474	2474	2474	2474	3000	3000	3000
60	1845	1845	1845	1845	1845	2010	2010	2010	2010	2010	2144	2144	2144	2680	2680	2680
70	1517	1517	1517	1517	1694	1787	1787	1787	1787	2010	2010	2010	2010	2474	2474	2474
80	1517	1517	1517	1517	1517	1694	1787	1787	1787	1787	2010	2010	2010	2010	2474	2474
90	1340	1340	1340	1340	1340	1340	1340	1340	1340	1340	1340	1462	1462	1462	2010	2010
	90	100	112	125	140	160	180	200	225	250	280	315				
50	2924	2924	2924	2924	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
60	2924	2924	2924	2924	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
70	2297	2297	2297	2297	2297	2474	2474	2474	2474	2474	2474	2474	2474	3000	3000	3000
80	2297	2297	2297	2297	2297	2297	2474	2474	2474	2474	2474	2474	2474	3000	3000	3000
90	2010	2010	2144	2144	2144	2144	2144	2144	2144	2144	2144	2144	2144	2680	2680	2680
	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800	
50	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
60	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
70	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
80	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
90	2924	2924	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000

^{*)} 对飞溅润滑 / With splash lubrication

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

精确传动比/Exact Ratios
 额定转矩/Nominal Torque
 许用转速/Allowed Rotational Speed

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

规格 Size	精确传动比 i_{ex} / Exact Ratios i_{ex}									
	公称传动比 i_N / Nominal Ratio i_N									
	6.3	7.1	8	9	10	11.2	12.5	14	16	18
10	6.3333	7.0571	8.0156	8.8667	10.086	11.147	12.667	14.105	15.575	17.667
20	6.2000	6.9086	7.8469	8.6800	9.9556	11.325	12.516	13.895	15.790	17.434
30	6.3158	7.0289	8.0075	8.8664	9.8684	11.080	12.682	14.034	15.793	17.550
40	6.3000	7.0603	7.8167	8.7983	10.056	11.528	12.789	14.280	16.100	18.081
50	6.2857	6.9954	7.9694	8.8242	9.8214	11.189	12.435	13.918	15.850	17.895
60	6.1933	7.0968	7.8030	8.7302	10.083	11.189	12.435	13.918	15.617	17.471
70	6.1523	6.9424	7.9038	8.8811	9.8737	11.143	12.419	14.259	15.952	17.471
80	6.2968	7.1057	8.1250	9.1667	10.278	11.435	12.940	14.444	16.322	18.056

	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
10	20.577	22.761	25.893	29.318	32.400	35.829	39.871	44.122	50.139	55.857	63.474	69.939	79.333	87.597
20	19.600	21.850	24.640	28.030	32.149	36.402	40.229	44.767	49.700	55.000	62.526	71.053	78.454	90.022
30	20.269	22.443	24.979	27.632	31.433	35.290	40.394	44.640	50.727	56.136	61.984	69.754	77.604	88.556
40	20.112	22.410	25.454	28.156	31.238	35.535	40.737	45.019	51.157	57.121	63.071	70.834	80.831	91.128
50	19.643	22.376	24.776	27.576	31.414	34.964	40.021	44.288	49.840	55.391	62.000	68.896	78.456	88.579
60	19.568	21.664	24.384	28.164	31.251	35.717	39.626	44.246	49.882	55.438	62.053	68.959	77.373	86.562
70	19.476	21.980	25.040	27.726	30.900	34.392	39.179	43.543	48.738	55.959	63.179	70.685	79.762	87.357
80	20.267	23.095	25.572	28.462	31.667	36.075	40.093	44.876	50.781	56.686	64.000	72.222	81.611	89.071
90	19.657	22.259	24.904	27.708	30.990	35.511	39.466	44.140	49.286	56.500	63.241	70.752	79.698	89.507

	100	112	125	140	160	180	200	225	250	280	315	355	400
50	98.369	108.70	124.41	137.68	152.02	177.15	195.61	220.13	251.19	279.13	317.91	353.27	400.64
60	102.5282	113.75	126.22	140.36	159.50	176.98	195.42	220.31	244.83	279.39	313.50	348.39	401.00
70	99.2133	109.79	123.91	137.04	154.65	172.36	194.81	217.11	241.25	272.38	312.57	352.90	406.19
80	101.3231	112.61	128.89	139.76	158.70	178.60	199.90	226.21	251.37	283.80	316.64	357.50	390.18
90	98.9059	110.10	122.36	140.27	158.14	174.55	196.95	220.27	244.79	280.71	313.33	350.55	393.69

规格 Size	额定输出转矩 $M_{N2}(\text{kNm})^{*})$ / Nominal Output Torque M_{N2} in $\text{kNm}^{*})$									
	公称传动比 i_N / Nominal Ratio 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

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

*) $n_1 = 1000 \text{ 1/min}$ 时计算值 / Calculated with $n_1 = 1000 \text{ 1/min}$

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

精确传动比/Exact Ratios
 额定转矩/Nominal Torque
 许用转速/Allowed Rotational Speed

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

规格 Size	许用转速 n_{1max} (r / min) ^{*)} / Allowed Rotational Speed n_{1max} in r / min ^{*)}										
	公称传动比 i_N / Nominal Ratio i_N										
	6.3	7.1	8	9	10	11.2	12.5	14	16	18	
10	1469	1581	1729	1860	2049	2213	2448	2448	3652	2652	
20	1469	1581	1729	1860	1860	2049	2213	2213	2448	2652	
30	1116	1200	1315	1416	1534	1534	1702	1844	2029	2213	
40	1017	1098	1180	1285	1421	1421	1539	1679	1850	1850	
50	838	901	988	1064	1152	1274	1385	1517	1517	1676	
60	724	794	849	921	1026	1111	1208	1323	1323	1451	
70	632	632	690	749	809	886	963	1074	1176	1268	
80	596	596	653	711	773	837	921	1005	1106	1206	

	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
10	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
20	2705	2920	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
30	2305	2305	2305	2481	2732	2732	2732	2951	3000	3000	3000	3000	3000	3000
40	1958	2108	2305	2481	2481	2732	2732	2951	3000	3000	3000	3000	3000	3000
50	1488	1753	1888	1888	1888	2046	2270	2459	2705	2705	2705	2951	2951	2951
60	1465	1573	1714	1714	1714	1895	2053	2239	2467	2467	2467	2691	2691	2691
70	1202	1202	1317	1418	1418	1537	1699	1847	2022	2022	2235	2235	2235	2235
80	1117	1317	1418	1537	1537	1699	1847	2022	2022	2022	2182	2182	2182	2182
90	965	1132	1228	1228	1228	1482	1611	1611	1611	1611	1764	1910	1910	1910

	100	112	125	140	160	180	200	225	250	280	315	355	400
50	2951	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
60	2732	2732	2732	2951	3000	3000	3000	3000	3000	3000	3000	3000	3000
70	2270	2459	2459	2459	2459	2459	2705	2705	2951	2951	2951	2951	2951
80	2046	2046	2270	2459	2459	2705	2705	2705	2951	2951	2951	2951	2951
90	2053	2239	2239	2239	2467	2239	2467	2467	2546	2546	2546	2546	2546

*) 用浸油润滑 / With bath lubrication

3,4 级锥齿轮 – 斜齿轮减速器垂直 LSS
3, 4-stage Bevel Helical Gear Units
Vertical LSS

精确传动比/Exact Ratios
 额定转矩/Nominal Torque
 许用转速/Allowed Rotational Speed

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

规格 Size	精确传动比 i_{ex} / Exact Ratios i_{ex}															
	公称传动比 i_N / Nominal Ratio i_N															
	14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
30	13,863	15,582	17,835	19,737	22,984	25,833	27,679	31,705	35,085	38,955	44,365	49,810	55,350	61,579	70,283	80,182
40	13,976	15,878	17,615	19,669	22,174	25,420	29,024	33,272	35,649	40,249	45,203	49,546	55,643	63,372	68,938	79,171
50	13,730	15,508	17,666	20,118	23,076	25,647	28,707	31,316	35,260	38,773	43,776	50,191	56,667	63,445	71,952	81,177
60	14,203	16,042	17,800	19,972	22,196	25,114	28,725	32,152	35,398	39,562	43,503	48,670	55,102	61,944	69,885	80,439
70	14,069	15,800	17,609	20,217	22,612	25,528	28,149	31,047	35,342	39,381	44,586	50,311	55,102	61,944	69,885	80,439
80	14,279	16,213	18,347	20,480	23,111	25,848	29,691	32,741	36,111	40,806	45,469	50,298	56,945	62,149	69,866	78,824
90	14,216	16,150	18,063	20,168	23,121	25,554	29,354	33,065	35,957	40,360	45,741	49,653	56,945	63,953	71,752	81,111
	90	100	112	125	140	160	180	200	225	250	280	315				
50	88,583	97,191	109,38	124,60	137,98	153,33	174,70	194,13	217,29	247,44	280,37	313,82				
60	91,441	101,440	108,69	122,76	135,92	153,52	170,61	190,96	219,58	244,02	280,87	320,55				
70	87,909	99,254	110,31	126,65	138,49	158,31	177,20	200,07	223,83	252,58	282,59	319,05				
80	89,899	102,08	114,26	128,30	143,60	159,71	179,50	202,57	228,70	258,44	279,26	315,56				
90	89,457	99,981	110,60	123,06	137,63	153,68	173,98	199,45	223,14	250,61	283,01	318,79				

规格 Size	额定输出转矩 $M_{N2}(\text{kNm})^{*1}$ / Nominal Output Torque M_{N2} in kNm *1															
	公称传动比 i_N / Nominal Ratio 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	67,8	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				

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

*1) $n_1 = 1000$ 1/min 时计算值 / Calculated with $n_1 = 1000$ 1/min

Size 规格	许用转速 $n_{1max}(\text{r/min})^{*1}$ / Allowed Rotational Speed n_{1max} in r/min *1															
	公称传动比 i_N / Nominal Ratio i_N															
	14	16	18	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80
30	1799	1799	1799	1799	2367	2367	2517	2821	2821	3000	3000	3000	3000	3000	3000	3000
40	1799	1799	1799	1799	1799	1799	2367	2367	2517	2821	2821	3000	3000	3000	3000	3000
50	1373	1373	1373	1373	1781	1781	1781	1946	2184	2388	2388	2474	2474	3000	3000	3000
60	1230	1230	1230	1230	1230	1394	1592	1758	1948	2141	2141	2141	2144	2680	2680	2680
70	1011	1011	1011	1011	1129	1291	1433	1580	1731	1957	1957	1957	1957	2197	2451	2451
80	1011	1011	1011	1011	1011	1129	1291	1433	1580	1731	1731	1957	1957	2197	2451	2451
90	943	943	943	943	943	1041	1203	1203	1303	1303	1340	1462	1462	1462	2010	2010
	90	100	112	125	140	160	180	200	225	250	280	315				
50	2821	2821	2821	2821	3000	3000	3000	3000	3000	3000	3000	3000				
60	2821	2821	2821	2821	3000	3000	3000	3000	3000	3000	3000	3000				
70	2184	2184	2184	2184	2696	2696	2696	2696	2696	2696	2696	2696				
80	2184	2184	2184	2184	2184	2696	2696	2696	2696	2696	2696	2696				
90	1948	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419	2419				

*1) With bath lubrication / 用浸油润滑

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

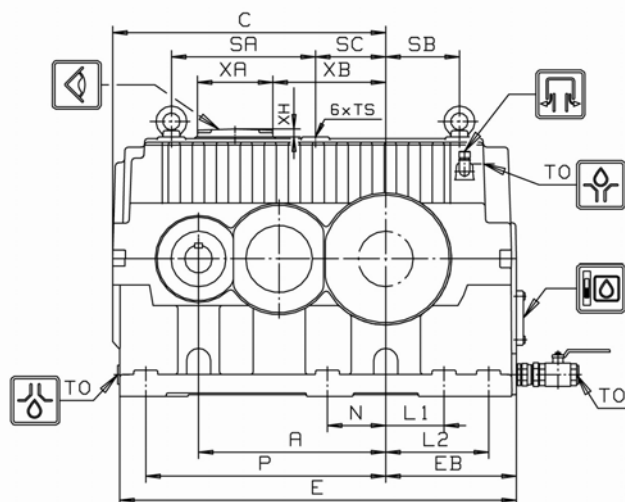
M2P..50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M2PSF M2PHF M2PHT

Gear Unit Dimensions, type M2PSF M2PHF M2PHT

机加的底脚安装面,
 型号 M2PSF M2PHF

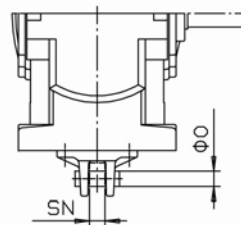
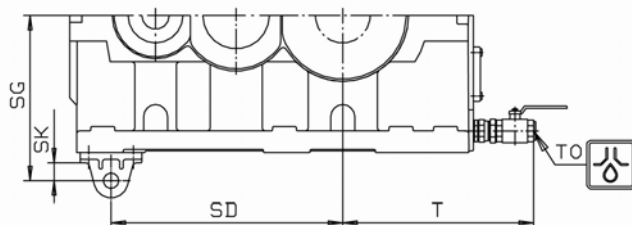
Foot Mounting Face machined for foot mounting,
 type M2PSF M2PHF



LSS 型号见下页
 See LSS types, next Page

带非机加底脚面的力矩臂安装座,
 型号 M2PHT

Torque Arm Mounting Bracket with unmachined foot
 plane, type M2PHT



规格 size	箱体尺寸(mm)										Housing Dimensions in mm										底脚安装 Foot Mounting 型号 / Type M2PSF M2PHF					
	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	

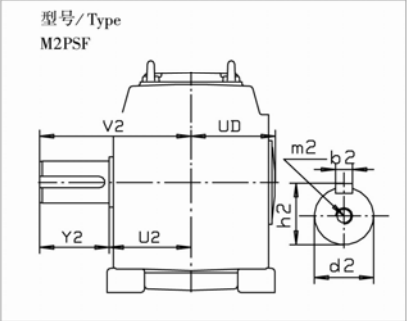
规格 size	HSS 尺寸 (mm)							力矩臂安装座 Torque Arm Mounting Bracket 型号 / Type M2PHT					重量 Weight	油量 / Oil Capacity	
	is = 6.3 – 18							O	SD	SG	SK	SN		飞溅润滑 Splash lubrication	压力润滑 Pressure lubrication
	U1	Y1	V1	d1	b1	h1	m1						kg	l	l
50	238	125	363	75m6	20h9	79,5	M20	32	580	418	38	32	770	44	38
60	255	150	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

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

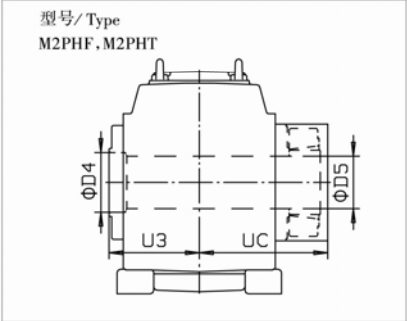
M2P..50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

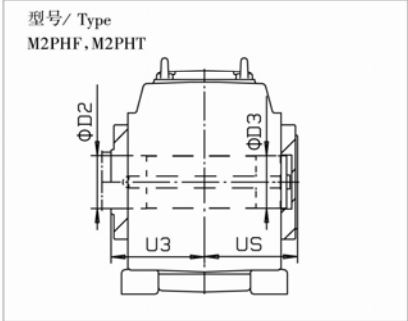
LSS types



实心轴
Solid shaft



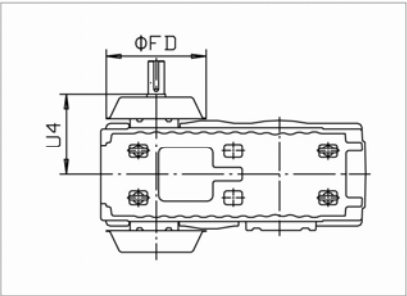
空心轴, 收缩盘
Hollow Shaft, Shrink Disk



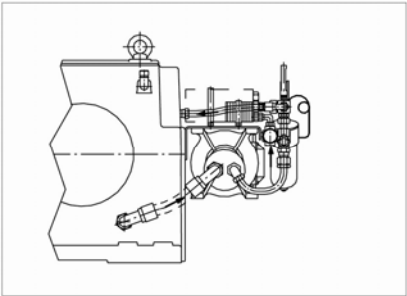
空心轴, 键连接
Hollow Shaft, Key Connection

通用附件

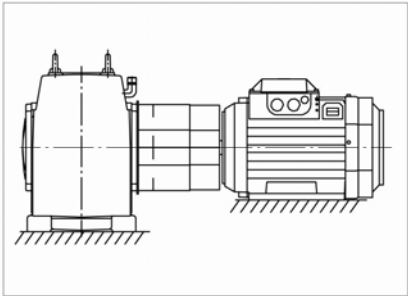
Common Accessories



风扇
Fan



润滑装置
Lubrication Unit



联轴器保护装置
Coupling Guard

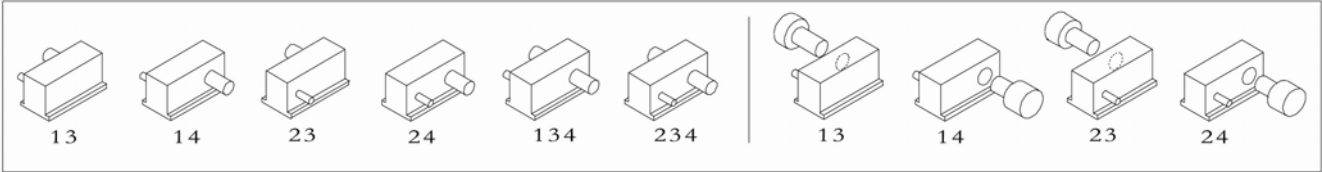
规格 size	LSS 尺寸 (mm) 实心轴 / Solid Shaft								LSS Dimensions in mm 空心轴 / Hollow Shaft							通用附件 Common Accessories	
	d2	b2	h2	m2	Y2	U2	V2	UD	U3	UC	D4	D5	US	D2	D3	U4	FD
50	140m6	36h9	148	M30	200	232	432	216	228	336	155	154	232	150	149	355	443
60	160m6	40h9	169	M30	240	261	501	245	255	386	180	179	259	170	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

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

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

轴的位置

Shaft Positions



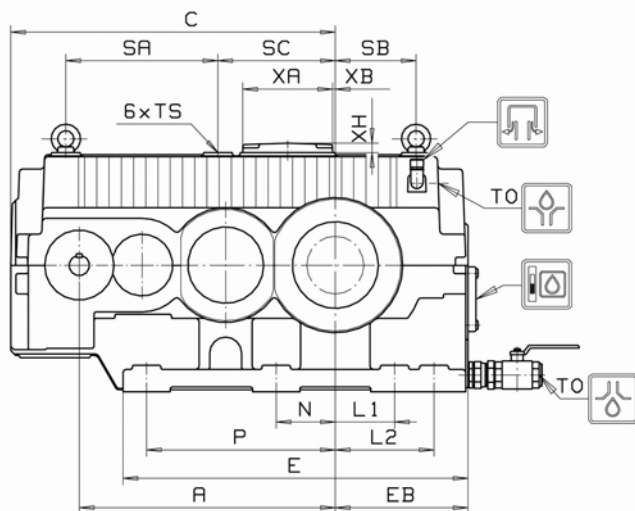
3 级斜齿轮减速器水平 LSS
3-stage Helical Gear Units
Horizontal LSS

M3P..50 – 90

实心 and 空心 LSS
Solid & Hollow LSS

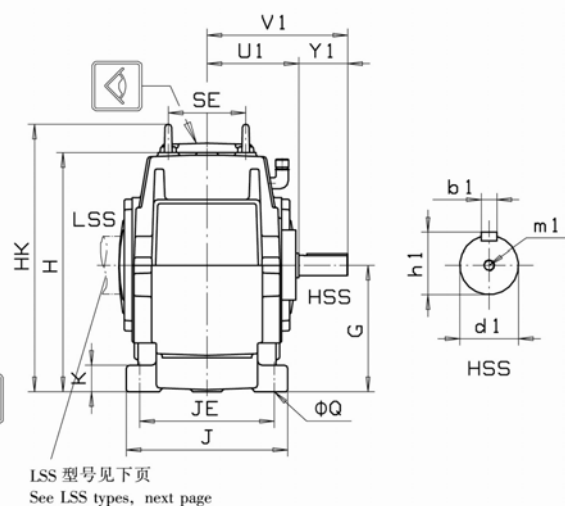
减速器尺寸, 型号 M3PSF M3PHF M3PHT

机加的底脚安装面,
 型号 M3PSF M3PHF



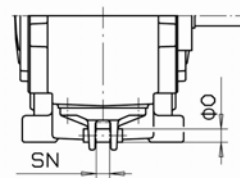
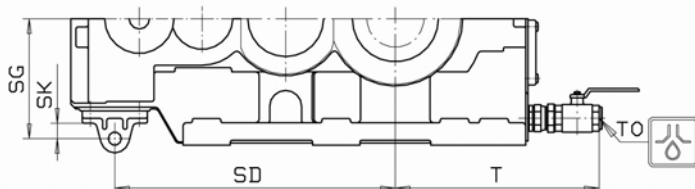
Gear Unit Dimensions , type M3PSF M3PHF M3PHT

Foot Mounting Face machined for foot mounting,
 type M3PSF M3PHF



非机加底脚面的力矩臂安装座, 型号 M3PHT

Torque Arm Mounting Bracket with unmachined foot plane,
 type M3PHT



规格 size	箱体尺寸(mm)																			Housing Dimensions in mm																			底脚安装 Foot Mounting					
	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	M20×35	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	M24×42	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	M24×42	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	M30×53	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	M30×53	R1 1/2	687	260	192	30	480	228	418	228	719	42																			

规格 size	HSS 尺寸 (mm)							力矩臂安装座 Torque Arm Mounting Bracket 型号 / Type M3PHT					重量 Weight	油量 / Oil Capacity	
	i _N = 20 – 90							O	SD	SG	SK	SN		飞溅润滑 Splash lubrication	压力润滑 Pressure lubrication
	U1	Y1	V1	d1	b1	h1	m1						kg	l	l
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

3 级斜齿轮减速器水平 LSS

3-stage Helical Gear Units

Horizontal LSS

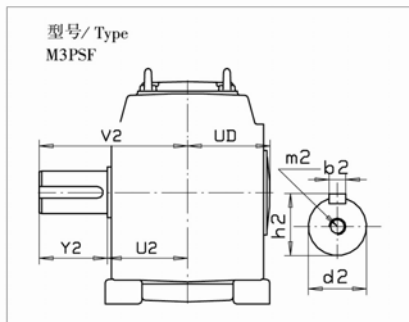
M3P..50 – 90

实心 and 空心 LSS

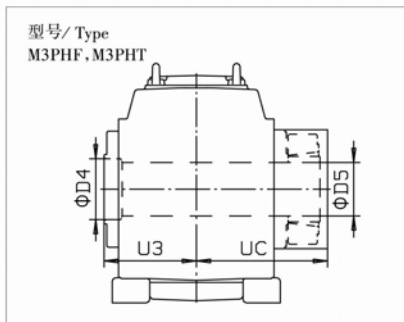
Solid & Hollow LSS

低速轴型号

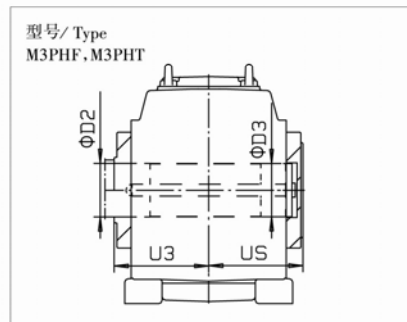
LSS types



实心轴
Solid shaft



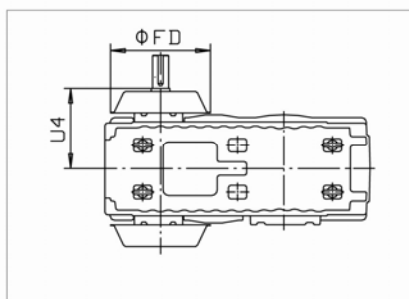
空心轴, 收缩盘
Hollow Shaft, Shrink Disk



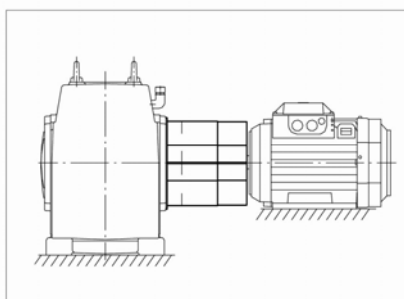
空心轴, 键连接
Hollow Shaft, Key Connection

通用附件

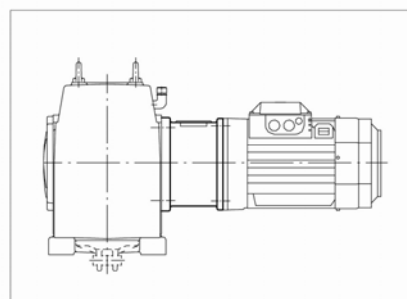
Common Accessories



风扇
Fan



联轴器保护装置
Coupling Guard



电机法兰
Motor Flange

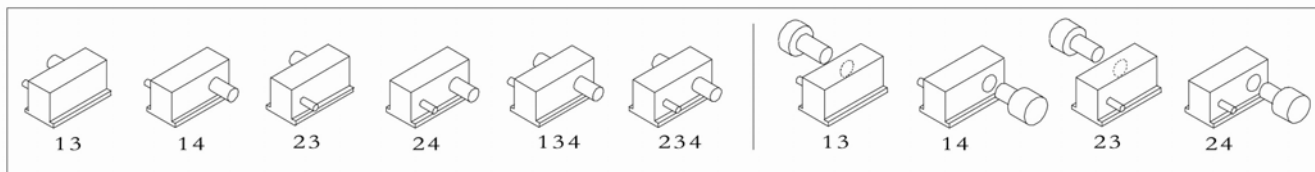
size 规格	LSS 尺寸 (mm)									LSS Dimensions in mm						通用附件 Common Accessories	
	实心轴 / Solid Shaft									空心轴 / Hollow Shaft						U4	FD
50	140m6	36h9	148	M30	200	232	432	216	228	336	155	154	232	150	149	343	443
60	160m6	40h9	169	M30	240	261	501	245	255	386	180	179	259	170	169	367	443
70	180m6	45h9	190	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

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

+) 距离 $0.6 \times d2 / M20, 2 \times 180^\circ$ distance

轴的位置

Shaft Positions



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

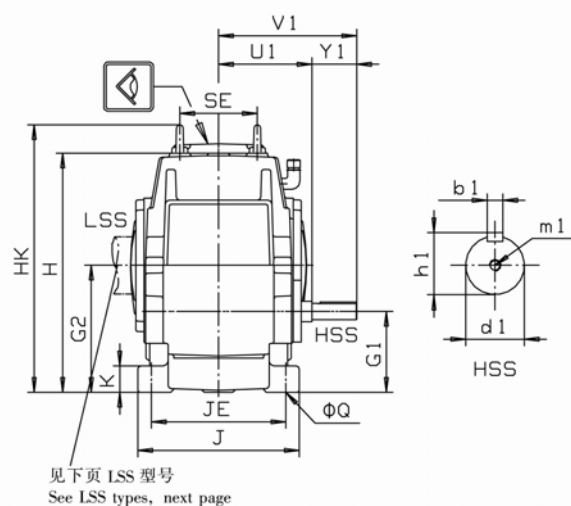
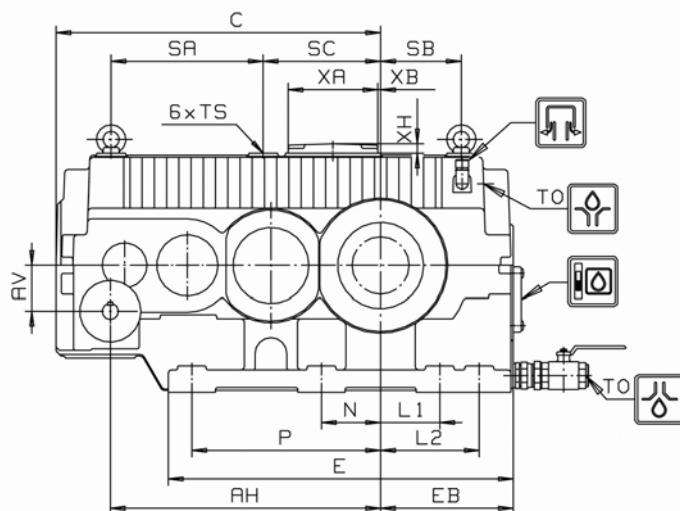
M4P..50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M4PSF M4PHF M4PHT

Gear Unit Dimensions, type M4PSF M4PHF M4PHT

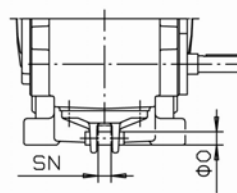
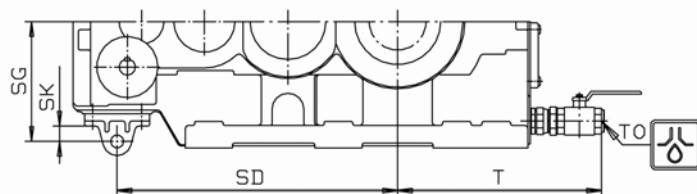
机加的底脚安装面,
型号 M4PSF M4PHF

Foot Mounting Face machined for foot mounting,
type M4PSF M4PHF



非机加底脚面的力矩臂安装座, 型号 M4PHT

Torque Arm Mounting Bracket with unmachined foot plane,
type M4PHT



规格 size	箱体尺寸(mm)																					底脚安装 Foot Mounting					
	Housing Dimensions in mm																					型号/Type M4PSF M4PHF					
	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	M20×35	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	M24×42	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	M24×42	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	M30×53	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	M30×53	R1 1/2	687	260	192	30	480	228	418	228	719	42

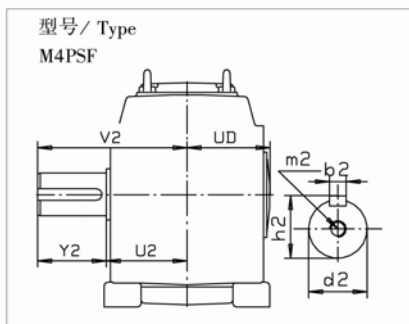
规格 size	HSS 尺寸 (mm) HSS Dimensions in mm							力矩臂安装座 Torque Arm Mounting Bracket 型号 / Type M4PHT					重量 Weight kg	油量 / Oil Capacity 飞溅润滑 压力润滑 Splash lubrication 压力润滑 Pressure lubrication	
	U1	Y1	V1	d1	b1	h1	m1	O	SD	SG	SK	SN		l	l
50	217	70	287	35k6	10h9	38	M12	32	693	294	38	32	845	57	57
60	244	95	339	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

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

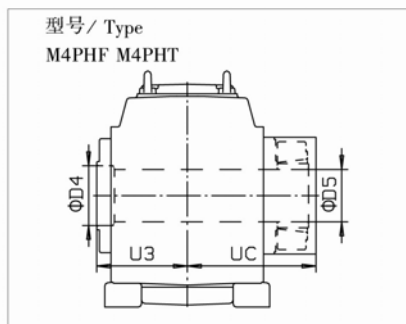
M4P..50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

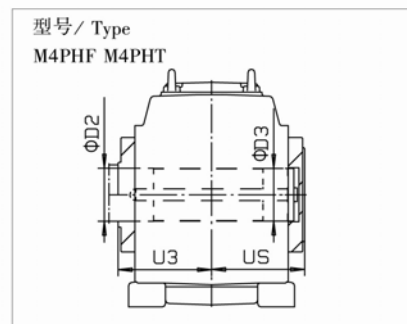
LSS types



实心轴
Solid Shaft



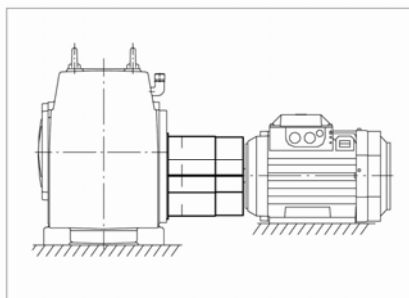
空心轴, 收缩盘
Hollow Shaft, Shrink Disk



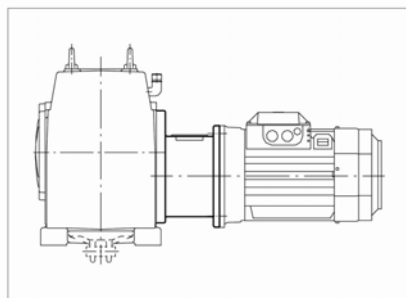
空心轴, 键连接
Hollow Shaft, Key Connection

通用附件

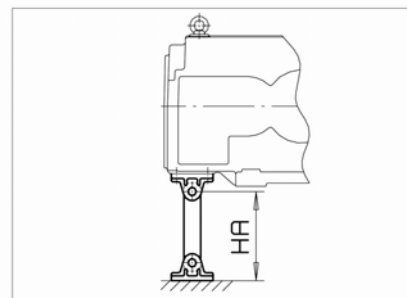
Common Accessories



联轴器保护装置
Coupling Guard



电动机法兰
Motor Flange



力矩臂
Torque Arm

规格 size	LSS 尺寸								LSS Dimensions in mm							通用附件	
	实心轴 / Solid Shaft								空心轴 / Hollow Shaft							Common Accessories	
	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

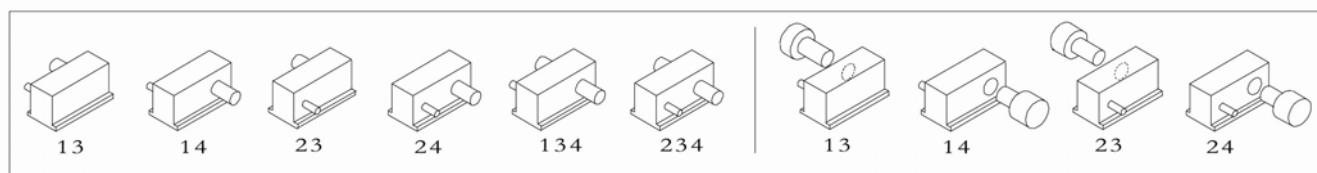
贯通 LSS 用同样尺寸

In case of Through going LSS, same dimensions apply.

+) 距离 $0.6 \times d2 / M20, 2 \times 180^\circ$ distance

轴的位置

Shaft Positions



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

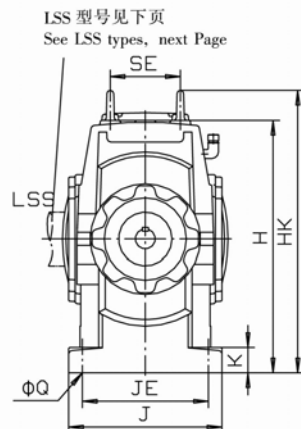
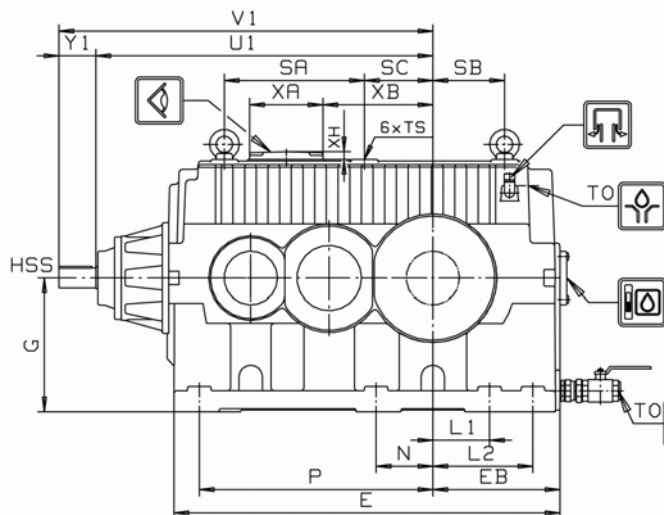
M3R. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M3RSF M3RHF M3RHT

Gear Unit Dimensions, type M3RSF M3RHF M3RHT

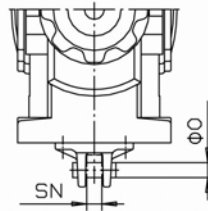
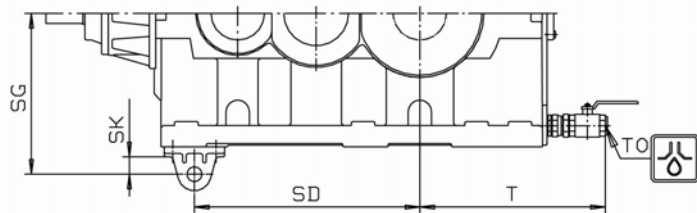
机加的底脚安装面,
 型号 M3RSF M3RHF

Foot Mounting Face machined for foot mounting,
 type M3RSF M3RHF



带非机加底脚面的力矩臂安装座,
 型号 M3RHT

Torque Arm Mounting Bracket with unmachined foot plane,
 type M3RHT



规格 size	箱体尺寸 (mm) Housing Dimensions in mm																	底脚安装 Foot Mounting 型号 / Type M3RSF M3RHF					
	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	M20×35	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	M24×42	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	M24×42	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	M24×42	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	M30×53	R1 1/2	687	260	455	30	480	228	418	228	945	42

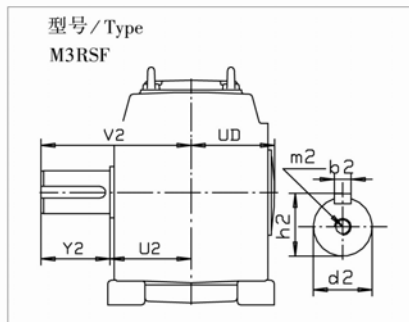
规格 size	HSS 尺寸 (mm)							HSS Dimensions in mm							力矩支臂安装座 Torque Arm Mounting Bracket 型号 /Type M3RHT					重量 Weight	油量 / Oil Capacity 飞溅润滑 Splash lubrication		压力润滑 Pressure lubrication	
	i _N = 14 – 56							i _N = 63 – 80													1		1	
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	O	SD	SG	SK	SN	kg					
50	881	95	976	55m6	16h9	59	M20	95	976	45k6	14h9	48,5	M16	32	580	418	38	32	846	62	38			
60	1012	125	1137	65m6	18h9	69	M20	95	1107	55m6	16h9	59	M20	45	676	482	52	45	1273	92	41			
70	1142	125	1267	75m6	20h9	79,5	M20	125	1267	60m6	18h9	64	M20	45	795	542	52	45	1879	144	64			
	i _N = 14 – 63							i _N = 71 – 80																
80	1192	125	1317	75m6	20h9	79,5	M20	125	1317	60m6	18h9	64	M20	45	845	587	52	45	2375	185	79			
90	1363	150	1513	90m6	25h9	95	M24	125	1488	70m6	20h9	74,5	M20	45	945	632	52	45	3150	227	105			

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

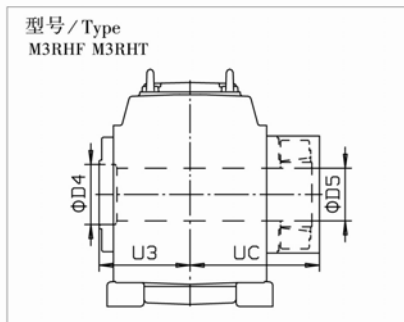
M3R. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

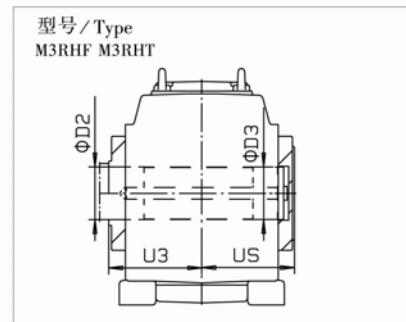
LSS types



实心轴
Solid Shaft



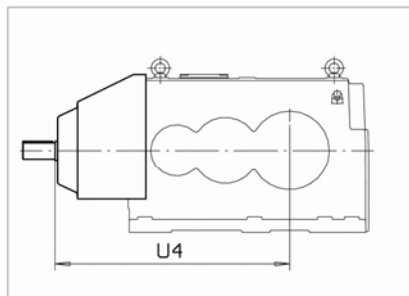
空心轴, 收缩盘
Hollow Shaft, Shrink Disk



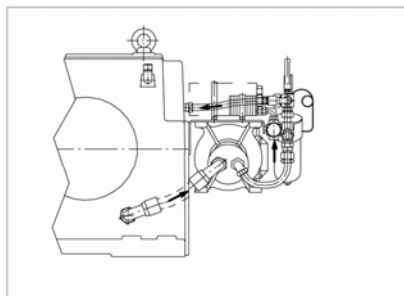
空心轴, 键连接
Hollow Shaft, Key Connection

通用附件

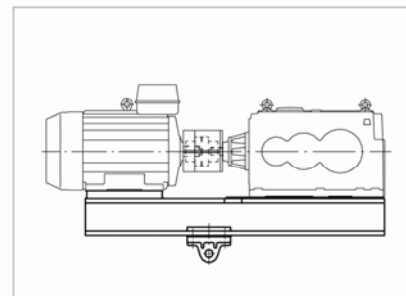
Common Accessories



风扇
Fan



润滑装置
Lubrication Unit



电动机摆动底座
Swing Base for motor

规格 size	LSS 尺寸								LSS Dimensions in mm							通用附件
	实心轴 / Solid Shaft								空心轴 / Hollow Shaft							Common Accessories
	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

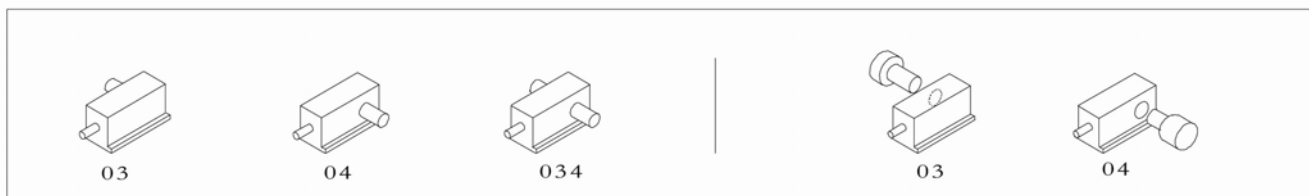
贯通 LSS 用同样尺寸

In case of Through going LSS, same dimensions apply.

+) 距离 $0.6 \times d2 / M20, 2 \times 180^\circ$ distance

轴的位置

Shaft Positions

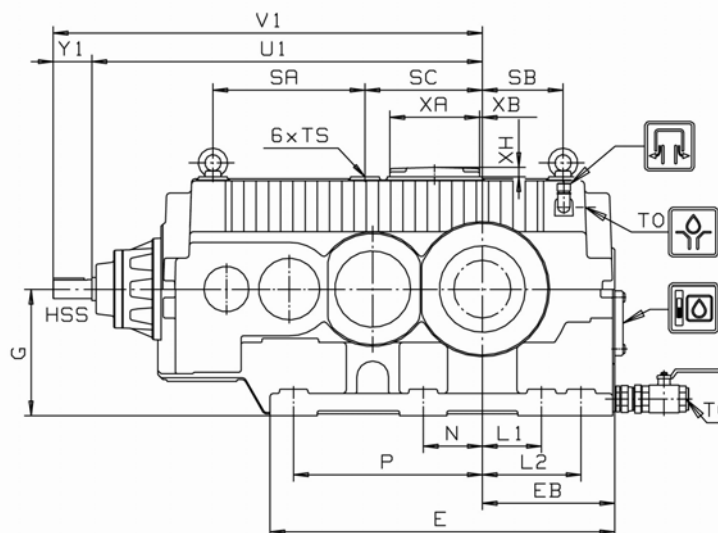


4 级锥齿轮 – 斜齿轮减速器水平 LSS
4-stage Bevel Helical Gear Units
Horizontal LSS

M4R. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M4RSF M4RHF M4RHT

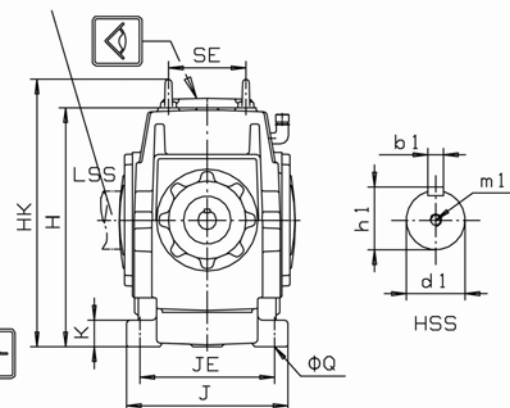
机加的底脚安装面,
 型号 M4RSF M4RHF



Gear Unit Dimensions, type M4RSF M4RHF M4RHT

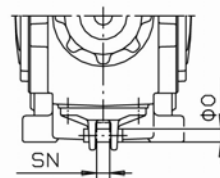
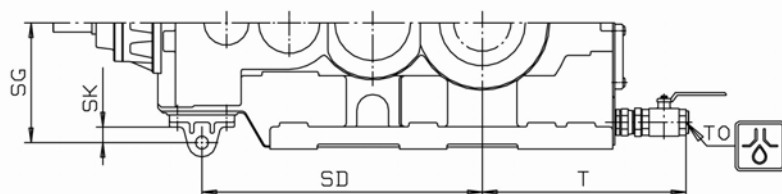
Foot Mounting Face machined for foot mounting,
 type M4RSF M4RHF

LSS 型号见下页
 See LSS types, next Page



带非机加底脚面的力矩臂安装座
 型号 M4RHT

Torque Arm Mounting Bracket with unmachined foot plane,
 type M4RHT



规格 size	箱体尺寸 (mm)																	Housing Dimensions in mm							底脚安装 Foot Mounting 型号/Type M4RSF M4RHF					
	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	M20×35	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	M24×42	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	M24×42	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	M30×53	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	M30×53	R1 1/2	687	260	192	30	480	228	418	228	719	42							

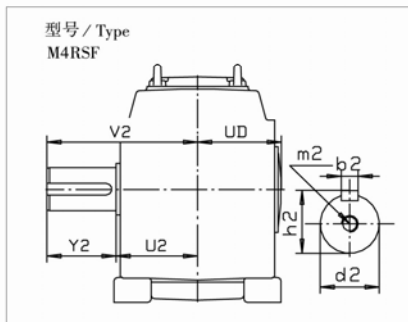
规格 size	HSS 尺寸 (mm)							HSS Dimensions in mm							力矩支臂安装座 Torque Arm Mounting Bracket 型号 / Type M4RHT					重量 Weight	油量 / Oil Capacity 飞溅润滑 Splash lubrication		压力润滑 Pressure lubrication	
	i _N = 90 – 250							i _N = 280 – 315													l	I		
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	O	SD	SG	SK	SN	kg					
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			

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

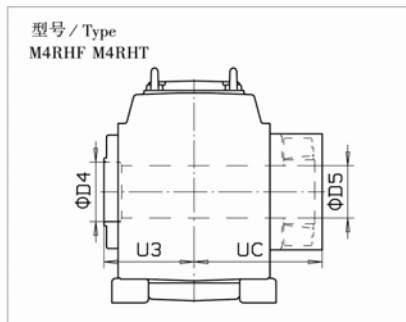
M4R. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

LSS 型号

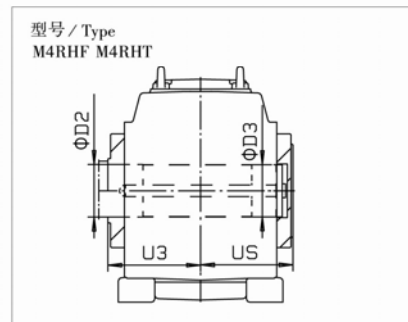
LSS types



实心轴
Solid Shaft



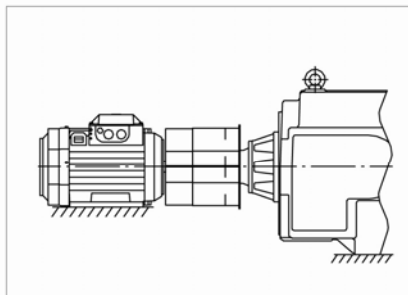
空心轴, 收缩盘
Hollow Shaft, Shrink Disk



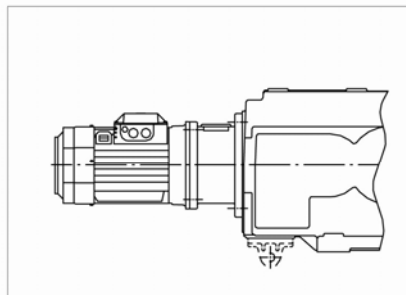
空心轴, 键连接
Hollow Shaft, Key Connection

通用附件

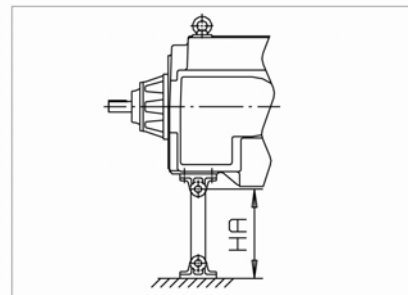
Common Accessories



联轴器保护装置
Coupling Guard



电动机法兰
Motor Flange



力矩支臂
Torque Arm

规格 size	LSS 尺寸 实心轴 / Solid Shaft								LSS Dimensions in mm 空心轴 / Hollow Shaft							通用附件 Common Accessories	
	d2	b2	h2	m2	Y2	U2	V2	UD	U3	UC	D4	D5	US	D2	D3	HAmin	HAmay
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

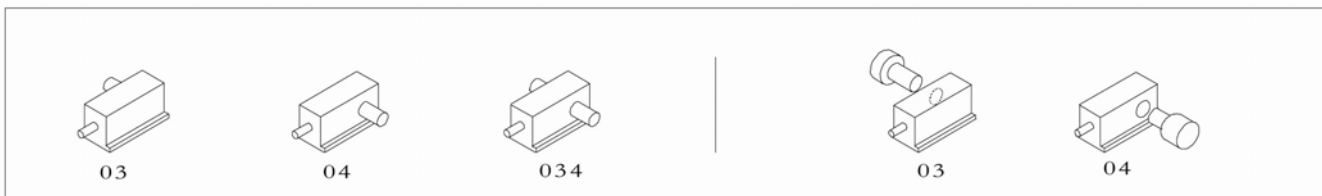
贯通 LSS 用同样尺寸

In case of Through going LSS, same dimensions apply.

+) 距离 $0.6 \times d2$ / $M20, 2 \times 180^\circ$ distance

轴的位置

Shaft Positions



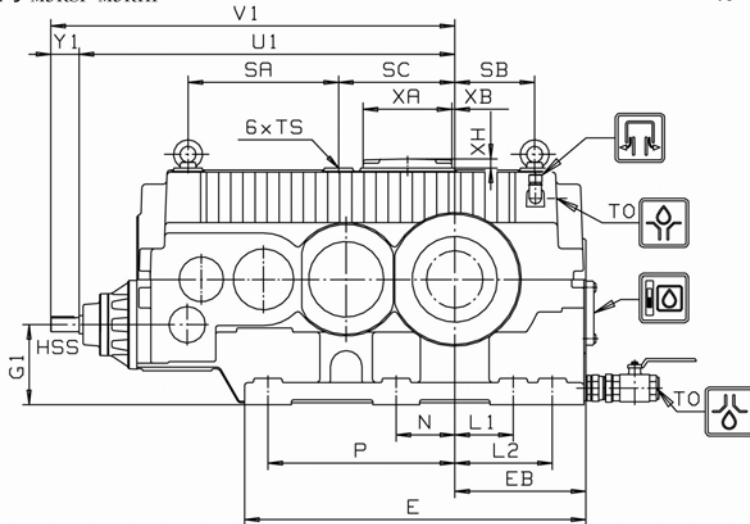
5 级锥齿轮 – 斜齿轮减速器水平 LSS
5-stage Bevel Helical Gear Units
Horizontal LSS

M5R. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M5RSF M5RHF M5RHT

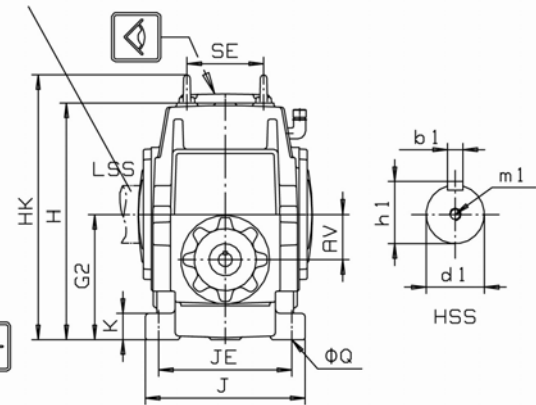
Gear Unit Dimensions type M5RSF M5RHF M5RHT

机加的底脚安装面,
型号 M5RSF M5RHF



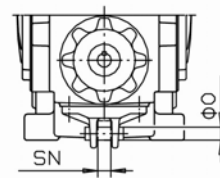
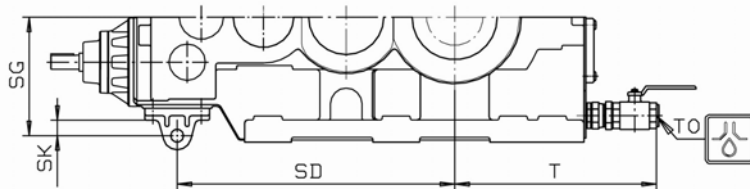
Foot Mounting Face machined for foot mounting,
type M5RSF M5RHF

LSS 型号见下页
See LSS types, next Page



带非机加底脚面的力矩臂安装座,
型号 M5RHT

Torque Arm Mounting Bracket with unmachined foot plane,
type M5RHT



规格 size	箱体尺寸(mm) Housing Dimensions in mm																		底脚安装 Foot Mounting 型号/Type M5RSF M5RHF						
	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	M20×35	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	M24×42	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	M24×42	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	M30×53	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	M30×53	R1 1/2	687	260	192	30	480	228	418	228	719	42

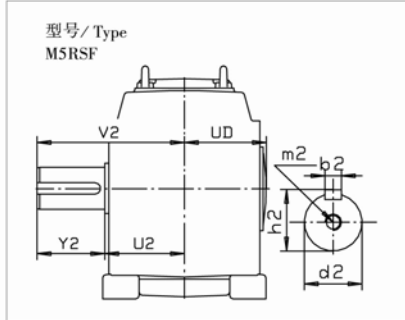
规格 size	HSS 尺寸(mm)							HSS Dimensions in mm						力矩支臂安装座 Torque Arm Mounting Bracket 型号/Type M5RHT					重量 Weight	油量 / Oil Capacity	
	i _N =355－900							i _N =1000－1800												飞溅润滑 Splash lubrication	压力润滑 Pressure lubrication
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	O	SD	SG	SK	SN		kg	1
50	931	70	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

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

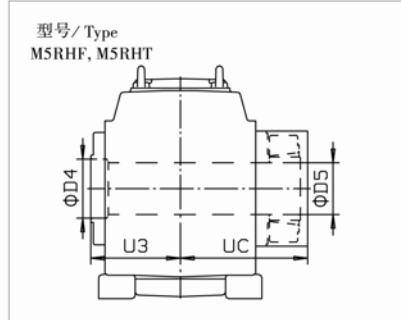
M5R. . 50 – 90
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

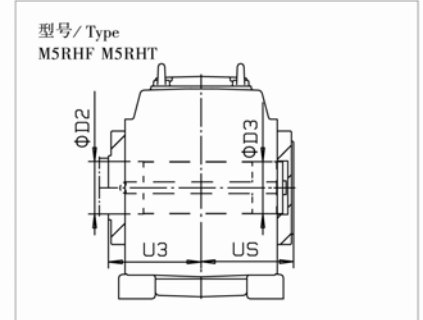
LSS types



实心轴
Solid Shaft



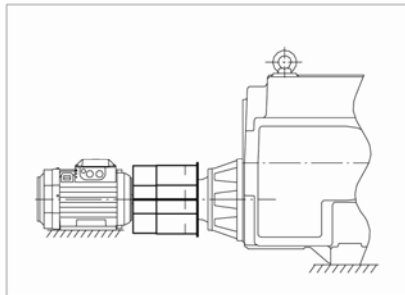
空心轴 收缩盘
Hollow Shaft, Shrink Disk



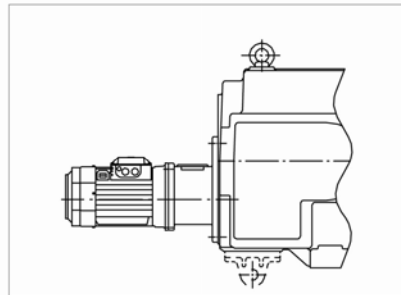
空心轴 键连接
Hollow Shaft, Key Connection

通用附件

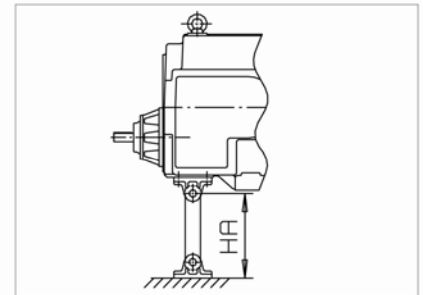
Common Accessories



联轴器保护装置
Coupling Guard



电动机法兰
Motor Flange



力矩臂
Torque Arm

规格 size	LSS 尺寸								LSS Dimensions in mm								通用附件 Common Accessories	
	实心轴 / Solid Shaft								空心轴 / Hollow Shaft								HAmin	HAmay
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

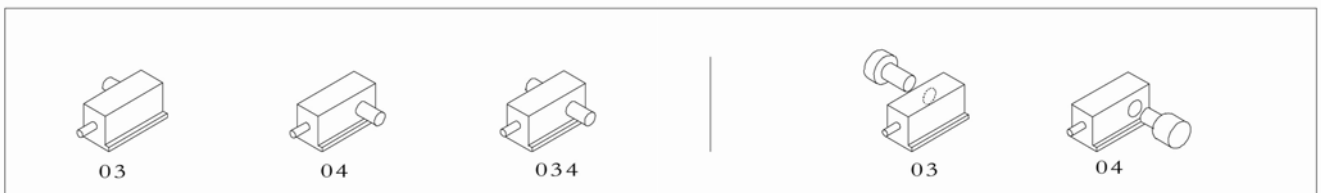
贯通 LSS 用同样尺寸

In case of Through going LSS, same dimensions apply.

+) 距离 $0.6 \times d2 / M20, 2 \times 180^\circ$ distance

轴的位置

Shaft Positions

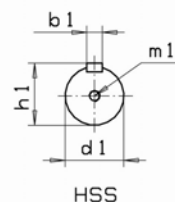
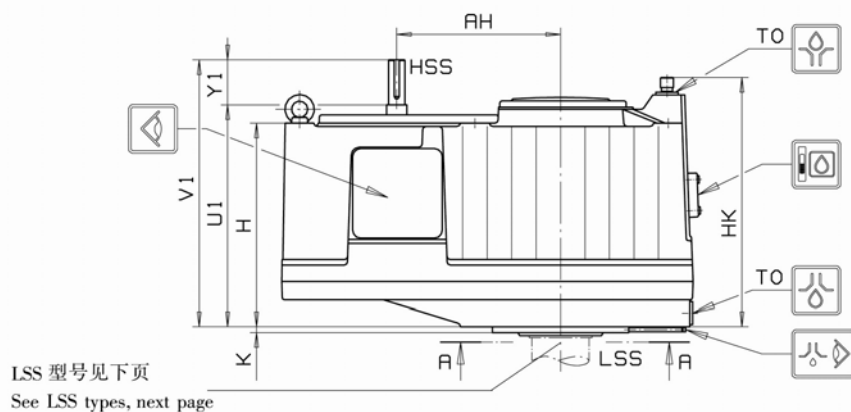


2 级斜齿轮减速器垂直 LSS
2-stage Helical Gear Units
Vertical LSS

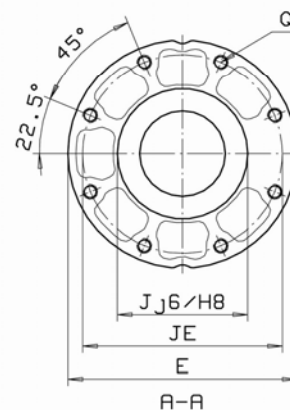
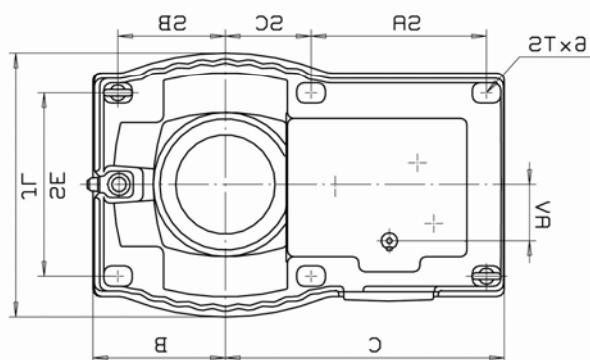
M2PV.. 10 – 50
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M2PVSF M2PVHF

Gear Unit Dimensions, type M2PVSF M2PVHF



安装法兰支撑
Mounting Flange support



规格 size	箱体尺寸 (mm)										Housing Dimensions in 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	M16×32	R1	
20	278	42,5	210	414	348	328	474	215	300	420	10	M24 × 42	236	170	138	280	M16×32	R1	
30	353	42,6	242	522	400	393	548	270	340	484	12	M30 × 53	321	192	171	310	M20×35	R1	
40	396	51,4	275	566	460	431	589	280	400	550	12	M30 × 53	342	225	193	364	M20×35	R1	
50	471	53,0	325	682	562	499	634	320	490	650	12	M36 × 63	431	270	215	440	M24×42	R1 1/2	

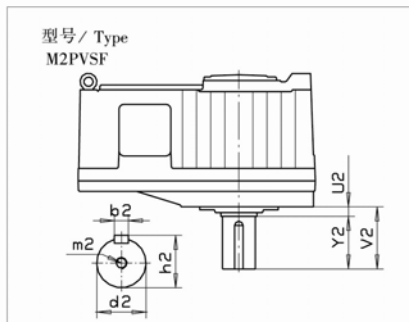
规格 size	HSS 尺寸 (mm)			HSS Dimensions in mm				重量 Weight	油量 / Oil Capacity	
				i _N = 6.3 – 18					浸油润滑 Bath Lubrication	压力润滑 Pressure Lubrication
	U1	Y1	V1	d1	b1	h1	m1	kg	l	l
10	348	70	418	35k6	10h9	38	M12	240	34	14
20	363	70	433	35k6	10h9	38	M12	290	39	16
30	430	95	525	45k6	14h9	48, 5	M16	440	68	25
40	471	95	566	50k6	14h9	53, 5	M16	670	94	34
50	539	125	664	65m6	18h9	69	M20	1020	152	51

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

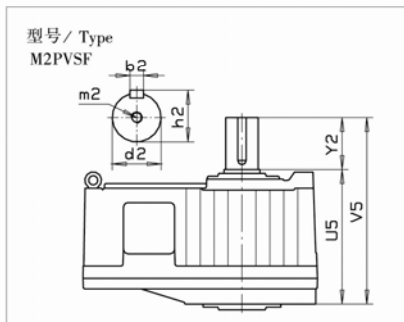
M2PV.. 10 – 50
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

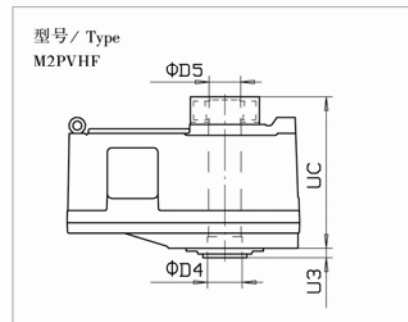
LSS types



实心轴向下
Solid Shaft downwards



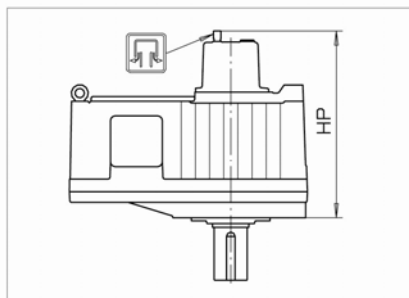
实心轴向上
Solid Shaft upwards



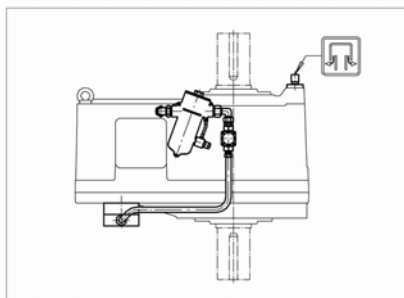
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

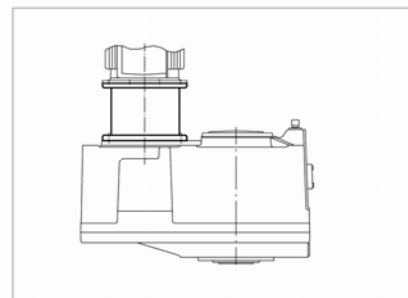
Common Accessories



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



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



电动机法兰
Motor Flange

规格 size	LSS 尺寸									LSS Dimensions in mm				通用附件 Common Accessories	
	实心轴 / Solid Shaft									空心轴 / Hollow Shaft					
	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	

轴的位置

Shaft Positions



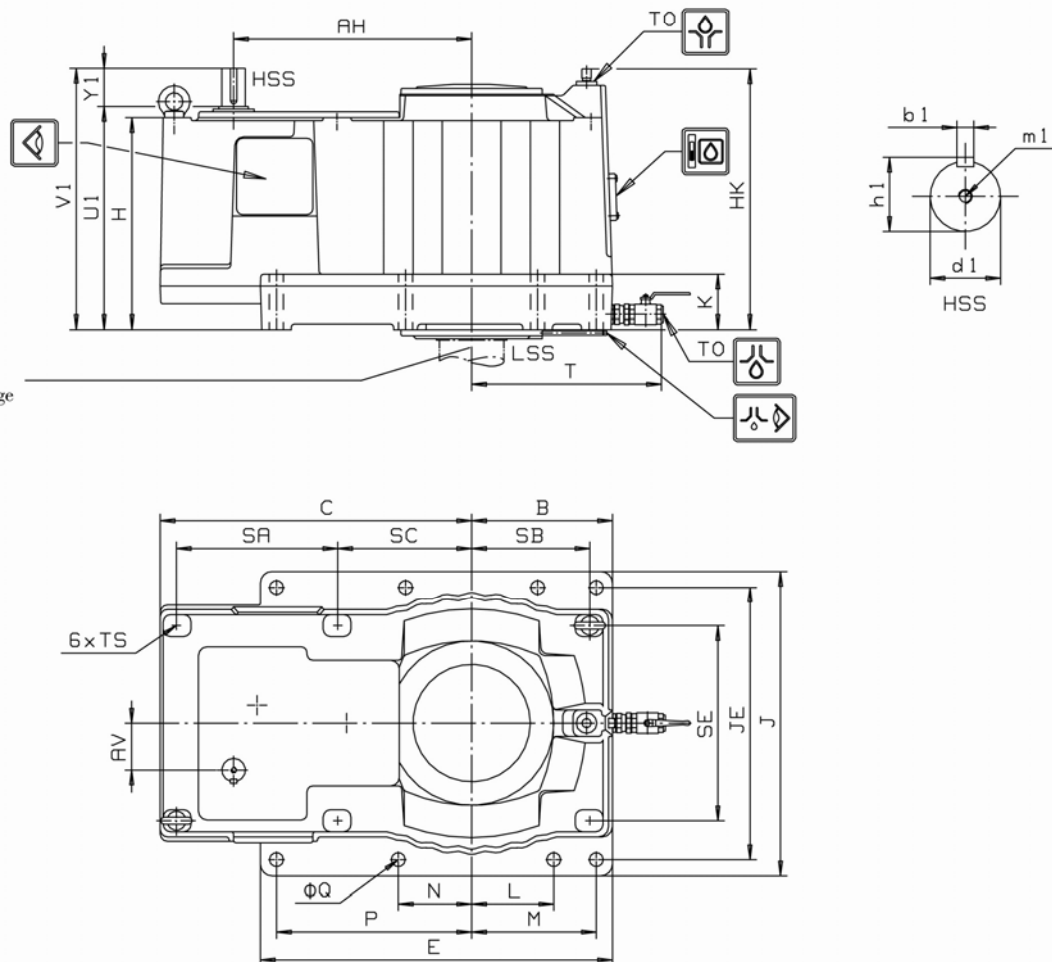
2 级斜齿轮减速器垂直 LSS
2-stage Helical Gear Units
Vertical LSS

M2PV.. 60 – 80
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M2PVSF M2PVHF

Gear Unit Dimensions , type M2PVSF M2PVHF

LSS 型号见下页
 See LSS types, next page



规格 size	箱体尺寸 (mm)																Housing Dimensions in 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	M24×42	R1 1/2	572		
70	614	69,0	405	906	1010	620	771	920	810	171	-	350	235	550	48	480	343	388	576	M24×42	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	M30×53	R1 1/2	607		

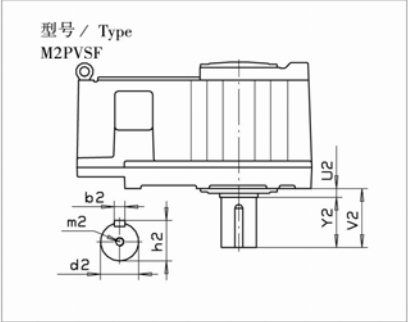
规格 size	HSS 尺寸 (mm)			HSS Dimensions in mm				重量 Weight kg	油量 / Oil Capacity	
				$i_N = 6.3 - 18$					浸油润滑 Bath Lubrication	压力润滑 Pressure lubrication
	U1	Y1	V1	d1	b1	h1	m1		l	l
60	610	125	735	75m6	20h9	79,5	M20	1480	183	61
70	666	150	816	90m6	25h9	95	M24	2060	263	86
80	709	150	859	95m6	25h9	100	M24	2570	353	122

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

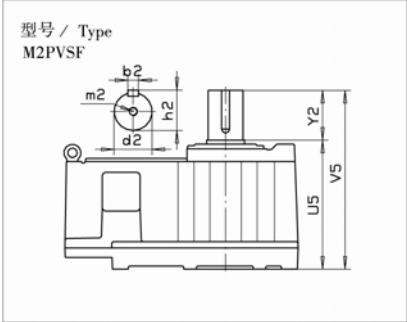
M2PV..60 – 80
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

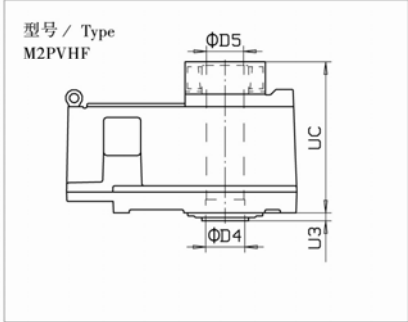
LSS types



实心轴向下
Solid Shaft downwards



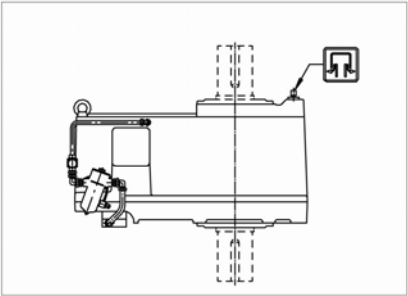
实心轴向上
Solid Shaft upwards



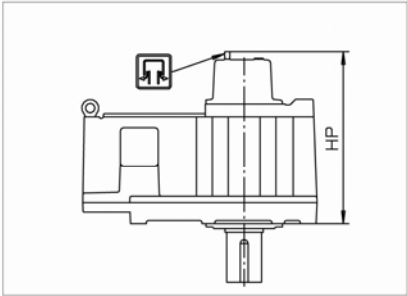
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

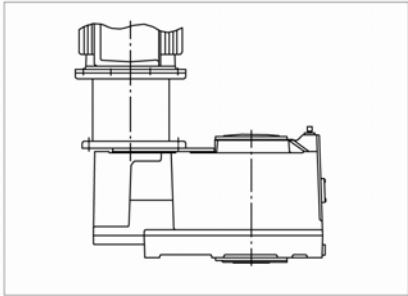
Common Accessories



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



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



电动机法兰
Motor Flange

规格 size	LSS 尺寸										LSS Dimensions in mm				通用附件
	实心轴 / Solid Shaft										空心轴 / Hollow Shaft				Common Accessories
	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

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

轴的位置

Shaft Positions

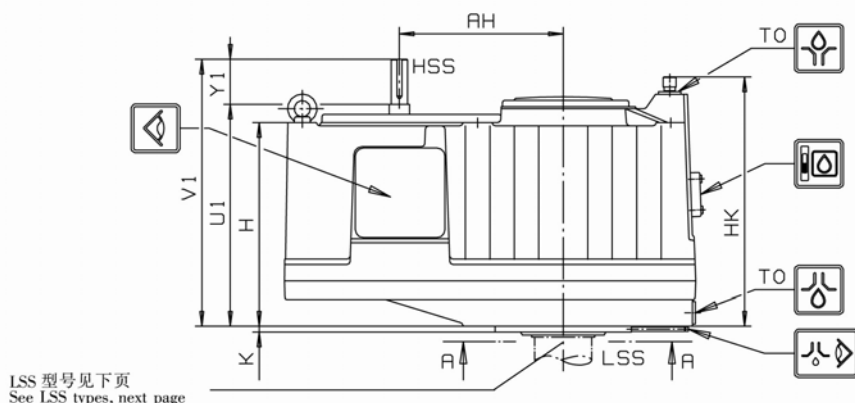


3 级斜齿轮减速器垂直 LSS
3-stage Helical Gear Units
Vertical LSS

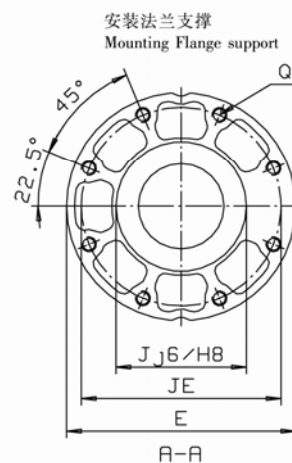
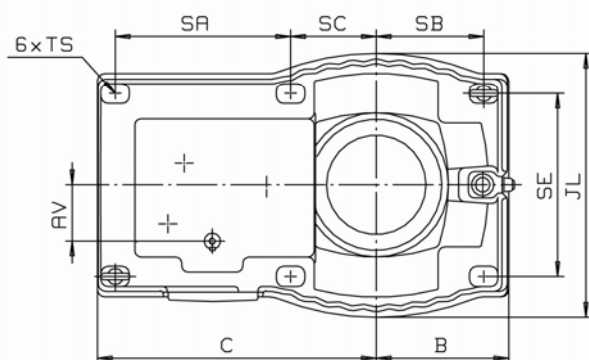
M3PV.. 10 – 50
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M3PVSF M3PVHF

Gear Unit Dimensions . type M3PVSF, M3PVHF



LSS 型号见下页
See LSS types, next page



规格 size	箱体尺寸 (mm)										Housing Dimensions in 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	M20×35	234	155	128	260	M16×32	R1		
20	303	46,0	210	414	348	328	474	215	300	420	10	M24×42	236	170	138	280	M16×32	R1		
30	381	71,0	242	522	400	393	548	270	340	484	12	M30×53	321	192	171	310	M20×35	R1		
40	422	62,7	275	566	460	431	589	280	400	550	12	M30×53	342	225	193	364	M20×35	R1		
50	511	95,7	325	682	562	499	634	320	490	650	12	M36×63	431	270	215	440	M24×42	R1 1/2		

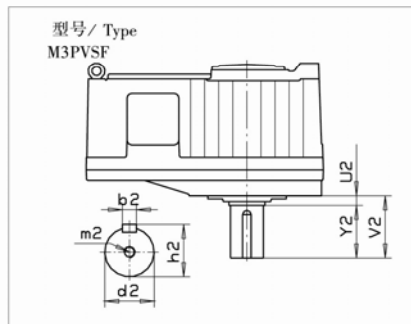
规格 size	HSS 尺寸 (mm)			HSS Dimensions in mm				重量 Weight	油量 / Oil Capacity	
									浸油润滑 Bath Lubrication	压力润滑 Pressure Lubrication
	in = 20 - 90									
	U1	Y1	V1	d1	b1	h1	m1	kg	l	l
10	344	70	414	35k6	10h9	38	M12	240	33	13
20	358	70	428	35k6	10h9	38	M12	290	38	15
30	426	95	521	40k6	12h9	43	M16	430	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

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

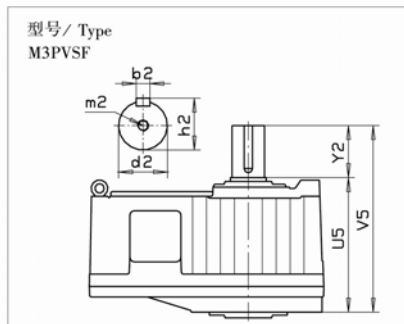
M3PV.. 10 – 50
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

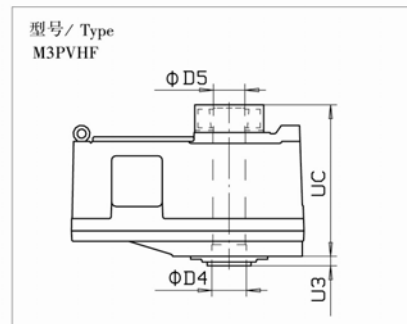
LSS types



实心轴向下
Solid Shaft downwards



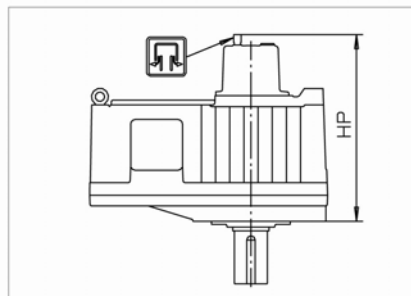
实心轴向上
Solid Shaft upwards



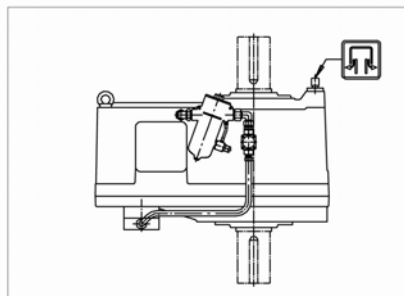
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

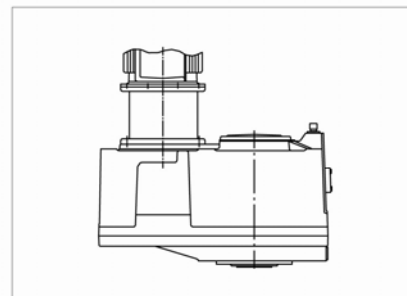
Common Accessories



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



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



电动机法兰
Motor Flange

规格 size	LSS 尺寸										LSS Dimensions in mm				通用附件
	实心轴 / Solid Shaft										空心轴 / Hollow Shaft				Common Accessories
	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

轴的位置

Shaft Positions

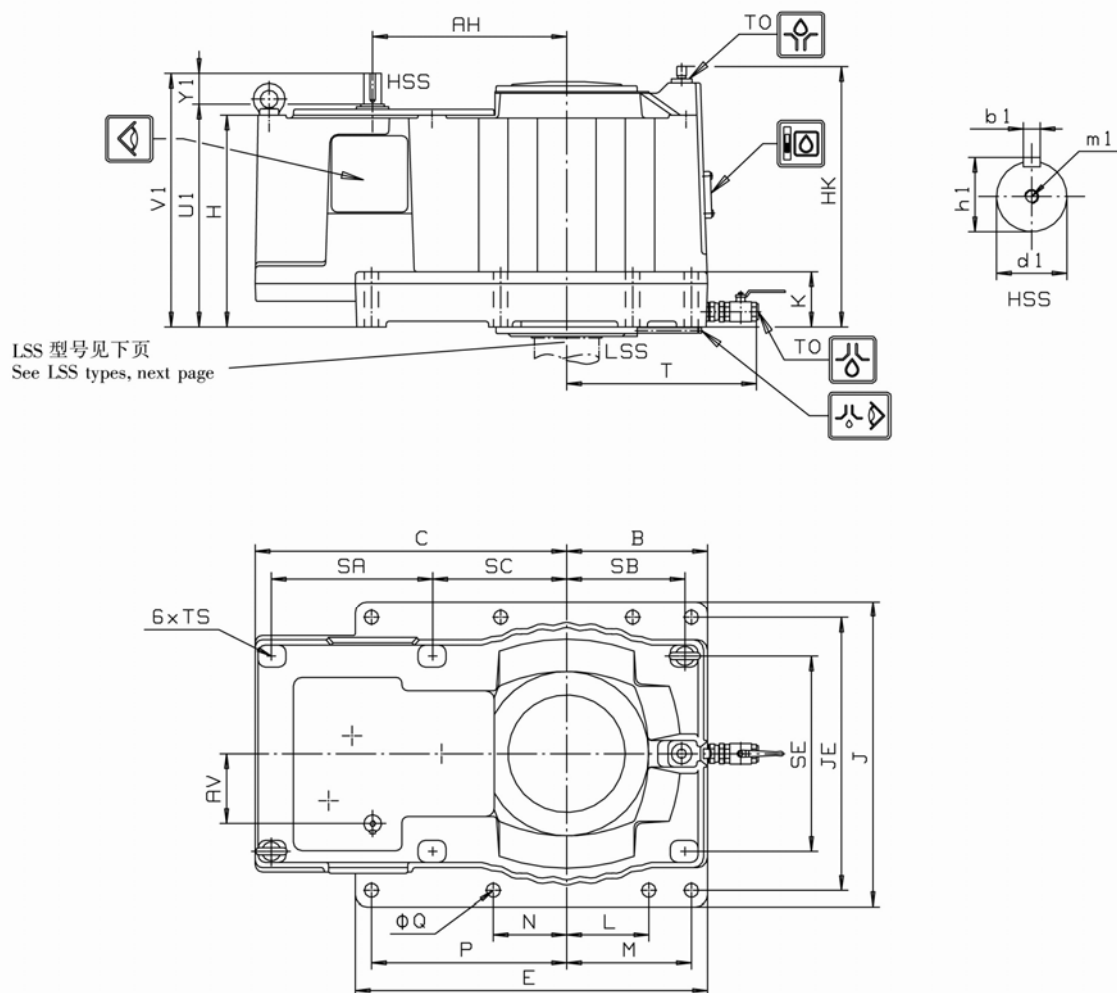


3 级斜齿轮减速器垂直 LSS
3-stage Helical Gear Units
Vertical LSS

M3PV.. 60 – 90
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M3PVSF M3PVHF

Gear Unit Dimensions, type M3PVSF M3PVHF



规格 size	箱体尺寸 (mm)												Housing Dimensions in 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	M24×42	R1 1/2	572
70	694	119, 7	405	906	1010	620	771	920	810	171	–	350	235	550	48	480	343	388	576	M24×42	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	M30×53	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	M30×53	R1 1/2	647

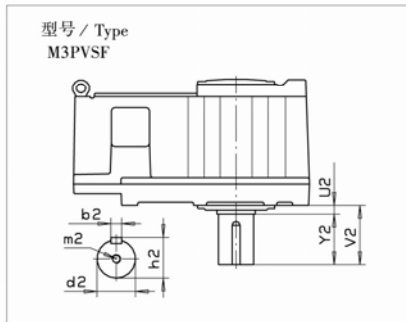
规格 size	HSS 尺寸 (mm)			HSS Dimensions in mm				重量 Weight	油量 / Oil Capacity	
	i _n = 20 – 90						浸油润滑 Bath Lubrication		压力润滑 Pressure Lubrication	
	U1	Y1	V1	d1	b1	h1	m1		1	1
60	610	95	705	50k6	14h9	53, 5	M16	1450	180	60
70	660	125	785	60m6	18h9	64	M20	2050	260	85
80	702	125	827	65m6	18h9	69	M20	2540	350	120
90	762	125	887	75m6	20h9	79, 5	M20	3230	450	150

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

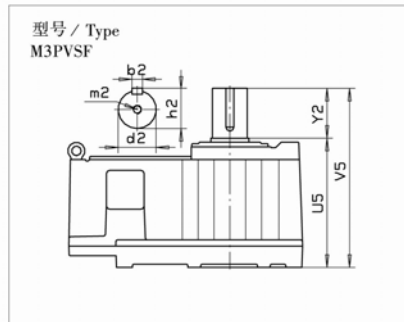
M3PV.. 60 – 90
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

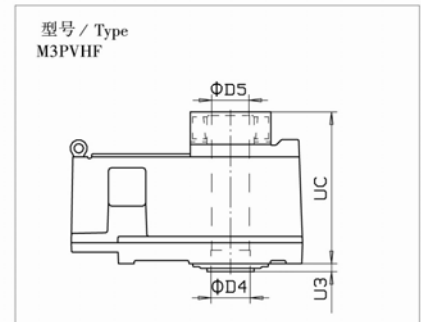
LSS types



实心轴向下
Solid Shaft downwards



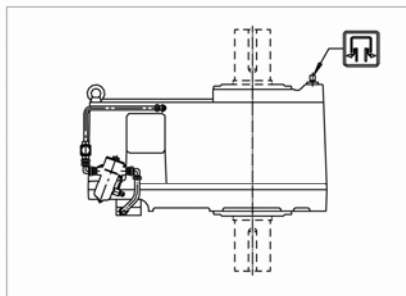
实心轴向上
Solid Shaft upwards



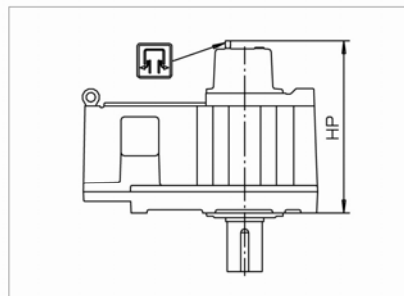
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

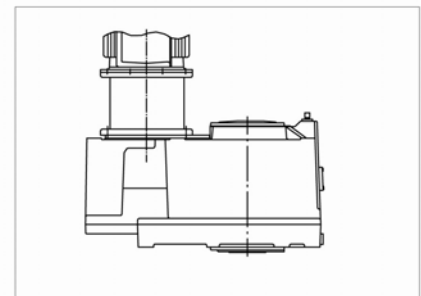
Common Accessories



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



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



电动机法兰
Motor Flange

规格 size	LSS 尺寸 实心轴 / Solid Shaft									LSS Dimensions in mm 空心轴 / Hollow Shaft				通用附件 Common Accessories
	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

+) 距离 $0.6 \times d2 / M20, 2 \times 180^\circ$ distance

轴的位置

Shaft Positions

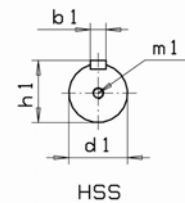
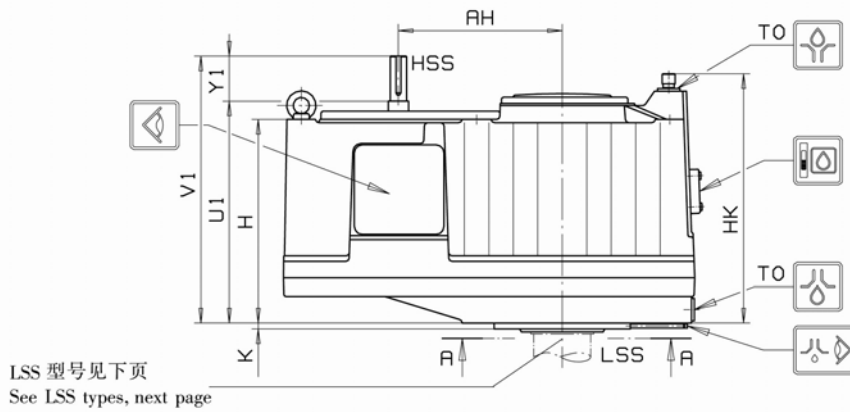


4 级斜齿轮减速器垂直 LSS
4-stage Helical Gear Units
Vertical LSS

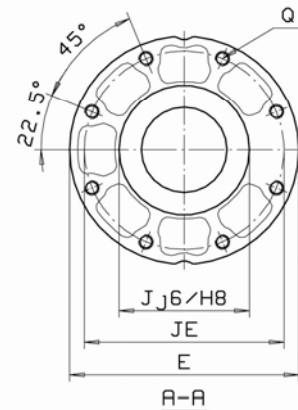
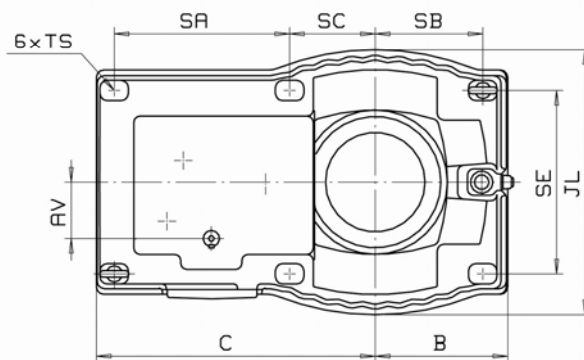
M4PV..50
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M4PVSF M4PVHF

Gear Unit Dimensions . type M4PVSF, M4PVHF



安装法兰支撑
Mounting Flange support



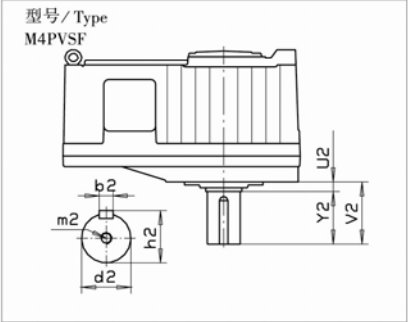
规格 size	箱体尺寸 (mm)										Housing Dimensions in mm									
	AH	AV	B	C	E	H	HK	J	JE	JL	K	Q	SA	SB	SC	SE	TS	TO		
50	406	147,4	325	682	562	499	634	320	490	650	12	M36×63	431	270	215	440	M24×42	R11/2		

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

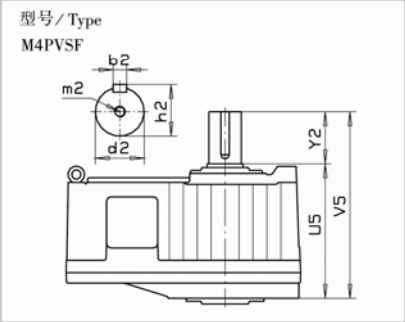
4 级斜齿轮减速器垂直 LSS
4-stage Helical Gear Units
Vertical LSS

M4PV..50
实心 and 空心 LSS
Solid & Hollow LSS

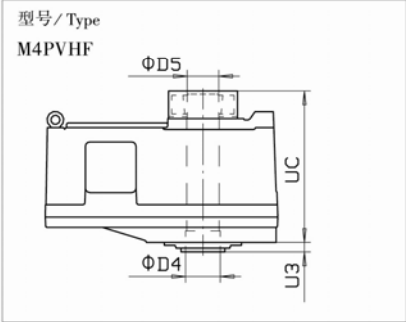
低速轴型号 LSS types



实心轴向下
Solid Shaft downwards

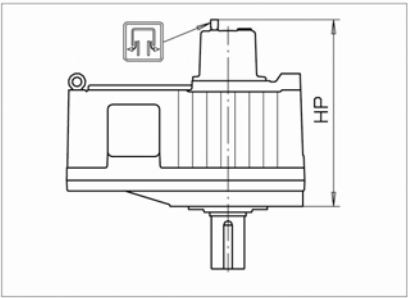


实心轴向上
Solid Shaft upwards

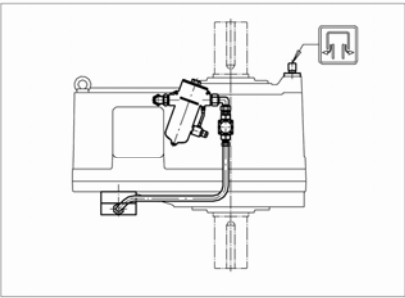


空心轴, 收缩盘
Hollow Shaft, Shrink Disk

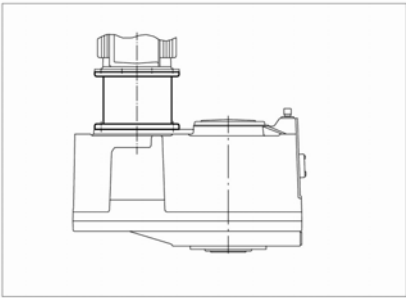
通用附件 Common Accessories



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



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



电动机法兰
Motor Flange

规格 size	LSS 尺寸 (mm)									LSS Dimensions in mm				通用附件
	实心轴 / Solid Shaft									空心轴 / Hollow Shaft				Common Accessories
	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

轴的位置 Shaft Positions



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

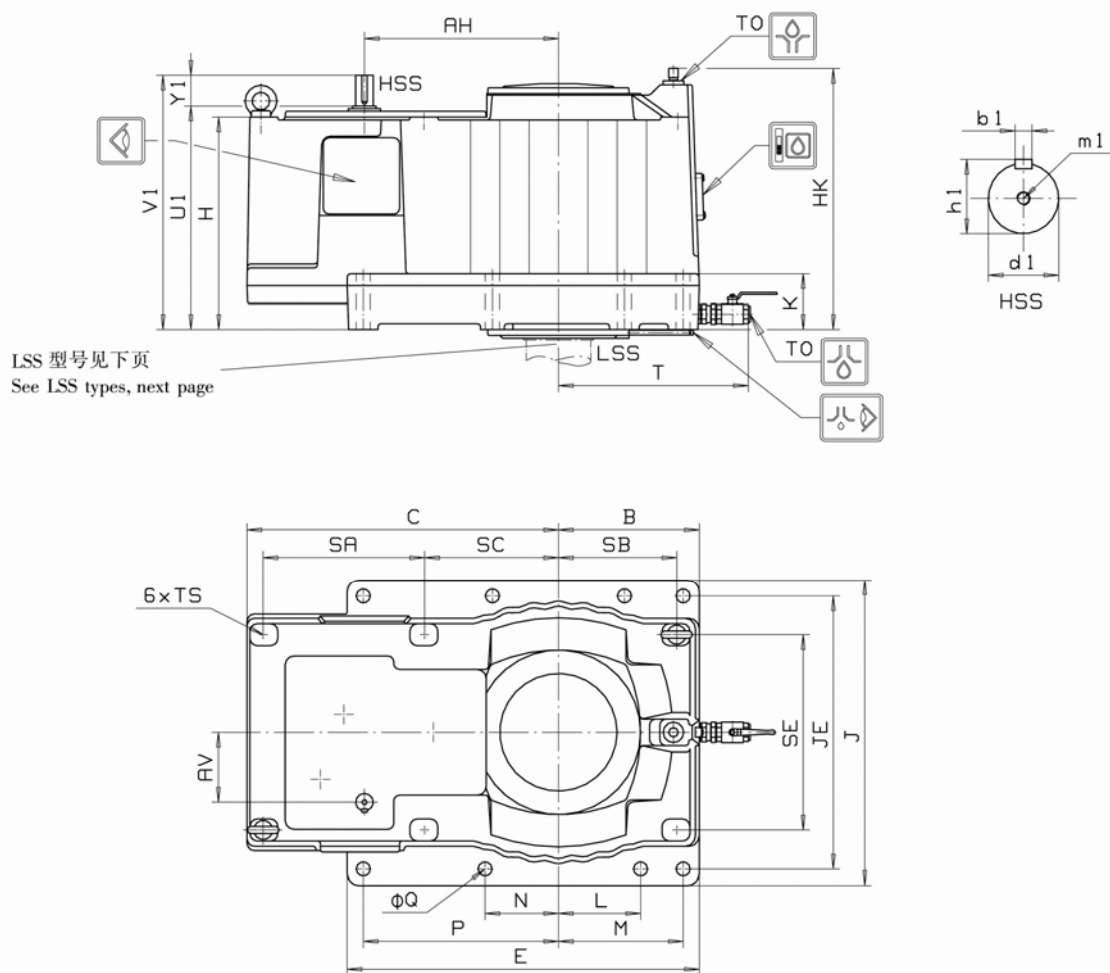
M4PV.. 60-90

实心 and 空心 LSS

Solid & Hollow LSS

减速器尺寸, 型号 M4PVSF M4PVHF

Gear Unit Dimensions . type M4PVSF, M4PVHF



规格 size	箱体尺寸 (mm)																Housing Dimensions in 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		

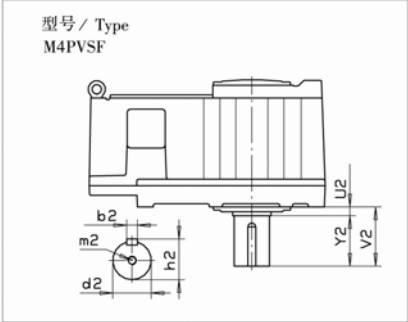
规格 size	HSS 尺寸 (mm)							重量 Weight	油量 / Oil Capacity	
	HSS Dimensions in mm								浸油润滑 Bath Lubrication	压力润滑 Pressure lubrication
	i _n = 100 – 400									
	U1	Y1	V1	d1	b1	h1	m1	kg	l	l
60	610	70	680	35k6	10h9	38	M12	1470	177	59
70	660	95	755	45k6	14h9	48, 5	M16	2090	257	84
80	702	95	797	45k6	14h9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

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

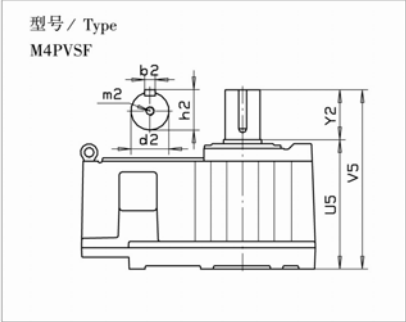
M4PV. . 60-90
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

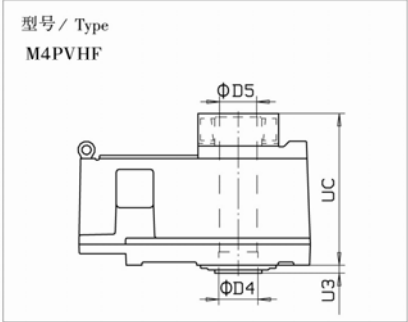
LSS types



实心轴向下
Solid Shaft downwards



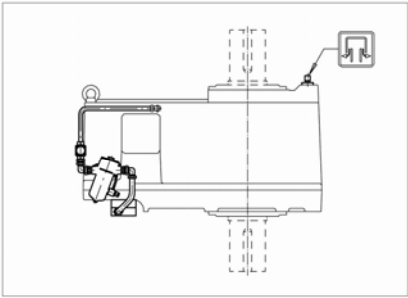
实心轴向上
Solid Shaft upwards



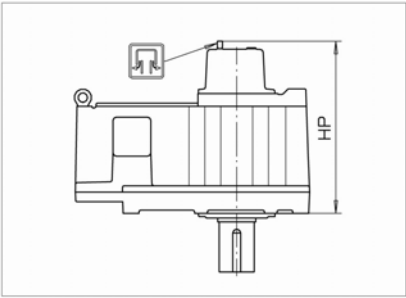
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

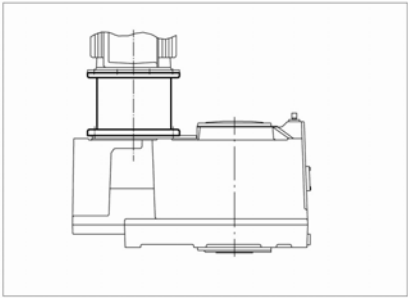
Common Accessories



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



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



电动机法兰
Motor Flange

规格 size	LSS 尺寸									LSS Dimensions in mm				通用附件
	实心轴 / Solid Shaft									空心轴 / Hollow Shaft				Common Accessories
	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

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

轴的位置

Shaft Positions



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

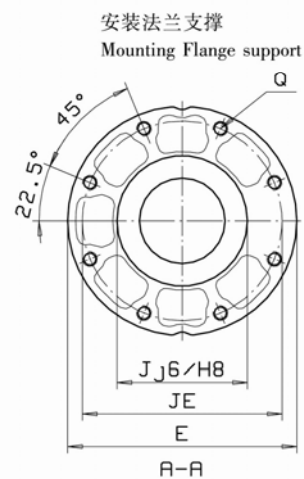
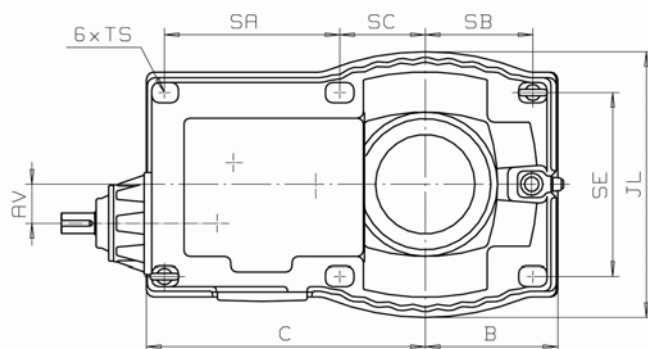
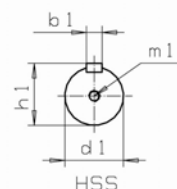
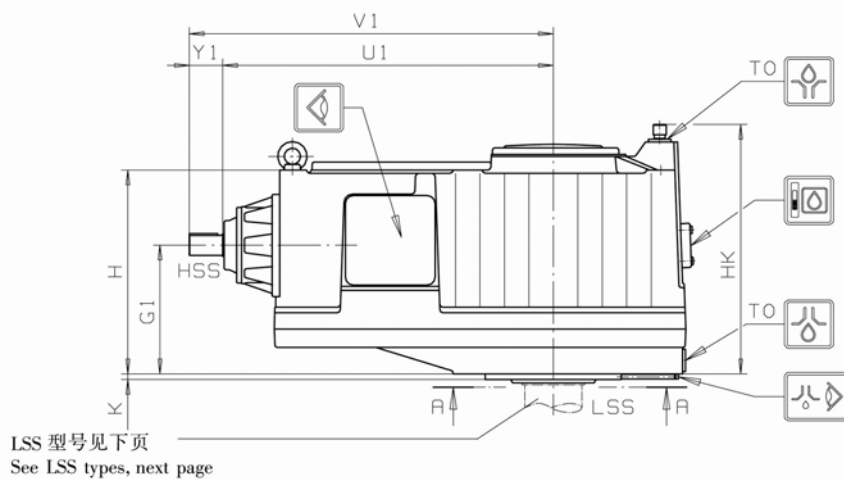
M3RV.. 30-50

实心 and 空心 LSS

Solid & Hollow LSS

减速器尺寸, 型号 M3RVSF M3RVHF

Gear Unit Dimensions . type M3RVSF, M3RVHF



规格 size	箱体尺寸 (mm)										Housing Dimensions in 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	M30×53	321	192	171	310	M20×35	R1	
40	51,4	275	566	460	275	431	589	280	400	550	12	M30×53	342	225	193	364	M20×35	R1	
50	53,0	325	682	562	314	499	634	320	490	650	12	M36×63	431	270	215	440	M24×42	R1 1/2	

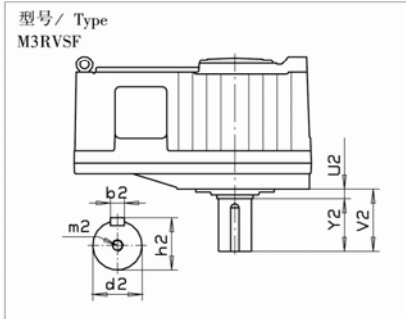
规格 size	HSS 尺寸 (mm)							HSS Dimensions in mm							重量 Weight kg	油量 / Oil Capacity	
	i _N = 14 – 63							i _N = 71 – 80								浸油润滑 Bath Lubrication 1	压力润滑 Pressure lubrication 1
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1				
30	683	95	778	45k6	14h9	48, 5	M16	70	753	35k6	10h9	38	M12	460	66	24	
40	726	95	821	45k6	14h9	48, 5	M16	95	821	45k6	14h9	48, 5	M16	700	92	33	
50	i _N = 14 – 56							i _N = 63 – 80							1040	150	50
	878	95	973	55m6	16h9	59	M20	95	973	45k6	14h9	48, 5	M16				

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

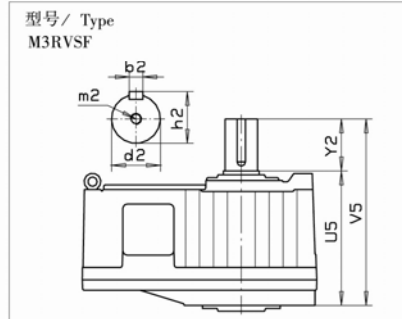
M3RV..30-50
实心 and 空心 LSS
Solis & Hollow LSS

低速轴型号

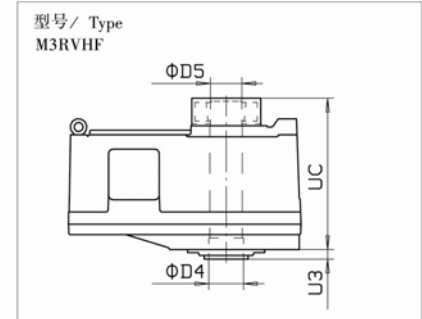
LSS types



实心轴向下
Solid Shaft downwards



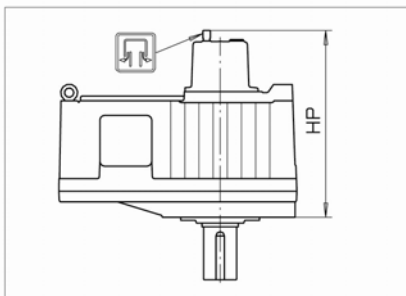
实心轴向上
Solid Shaft upwards



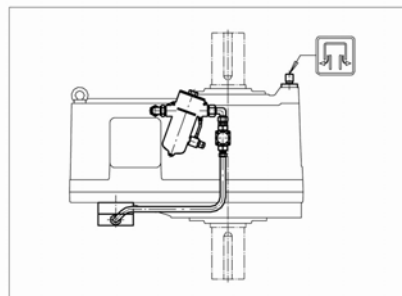
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

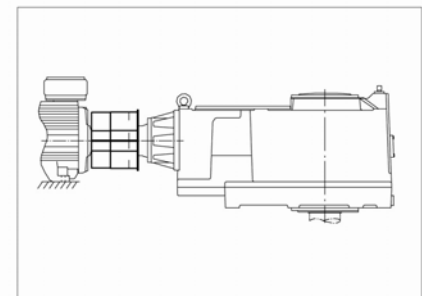
Common Accessories



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



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



联轴器保护装置
Coupling Guard

规格 size	LSS 尺寸(mm)									LSS Dimensions in mm				通用附件 Common Accessories	
	实心轴 / Solid Shaft									空心轴 / Hollow Shaft					
	d2	b2	h2	m2	Y2	U2	V2	U5	V5	U3	UC	D4	D5		
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	

轴的位置

Shaft Positions

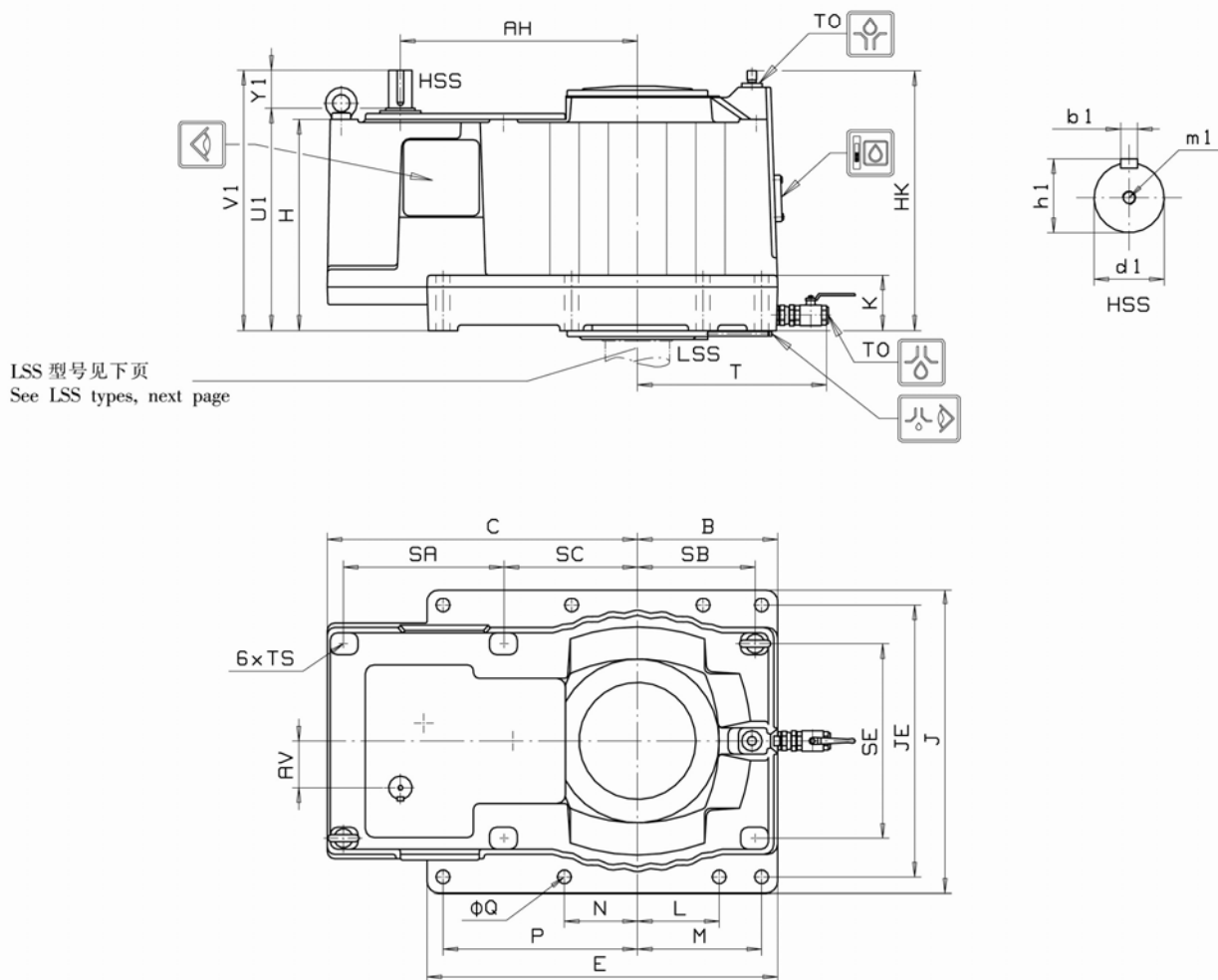


3 级锥齿轮-斜齿轮减速器垂直 LSS
3-stage Bevel Helical Gear Units
Vertical LSS

M3RV..60-90
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M3RVSF M3RVHF

Gear Unit Dimensions ,type M3RVSF M3RVHF



LSS 型号见下页
 See LSS types, next page

规格 size	箱体尺寸(mm)											Housing Dimensions in 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 ½	572
70	69,0	405	906	1010	389	620	771	920	810	171	–	350	235	550	48	480	343	388	576	M24x42	R1 ½	572
80	67,1	440	959	1100	413	662	823	1000	890	182	235	385	235	605	48	481	367	427	608	M30x53	R1 ½	607
90	60,8	480	106	1200	446	722	893	1040	930	188	235	425	235	665	48	550	407	459	654	M30x53	R1 ½	647

规格 size	HSS 尺寸(mm)							HSS Dimensions in mm						重量 Weight	油量/Oil Capacity	
	i _N = 14 – 56							i _N = 63 – 80							浸油润滑 Bath Lubrication	压力润滑 Pressure Lubrication
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	kg	1	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

3 级锥齿轮 – 斜齿轮减速器垂直 LSS

3-stage Bevel Helical Gear Units

Vertical LSS

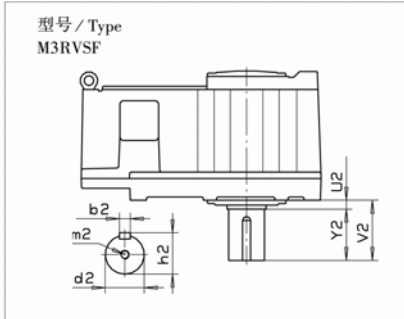
M3RV.. 60-90

实心 and 空心 LSS

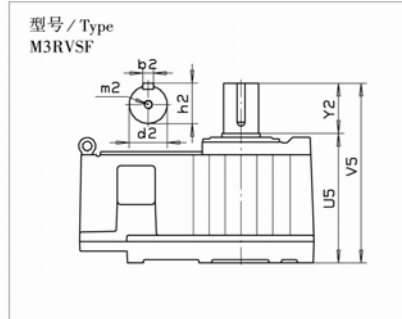
Solid & Hollow LSS

低速轴型号

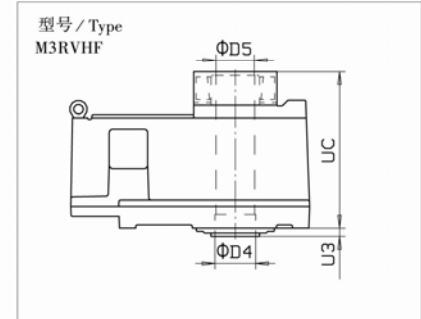
LSS types



实心轴向下
Solid Shaft downwards



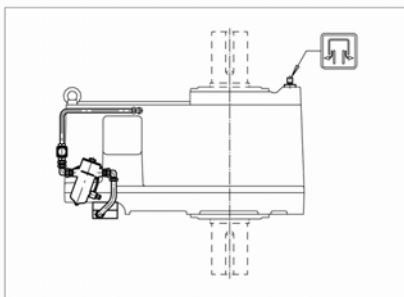
实心轴向上
Solid Shaft upwards



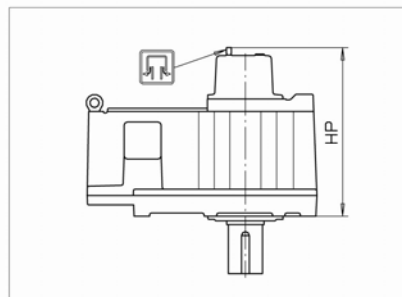
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

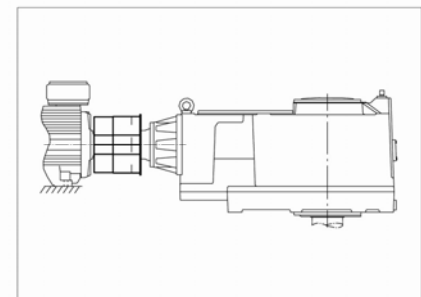
Common Accessorie



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



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



联轴器保护装置
Coupling Guard

规格 size	LSS 尺寸									LSS Dimensions in mm				通用附件
	实心轴 / Solid Shaft									空心轴 / Hollow Shaft				Common Accessories
	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

+) 距离 $0.6 \times d2 / M20, 2 \times 180^\circ$ distance

轴的位置

Shaft Positions

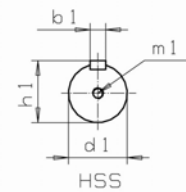
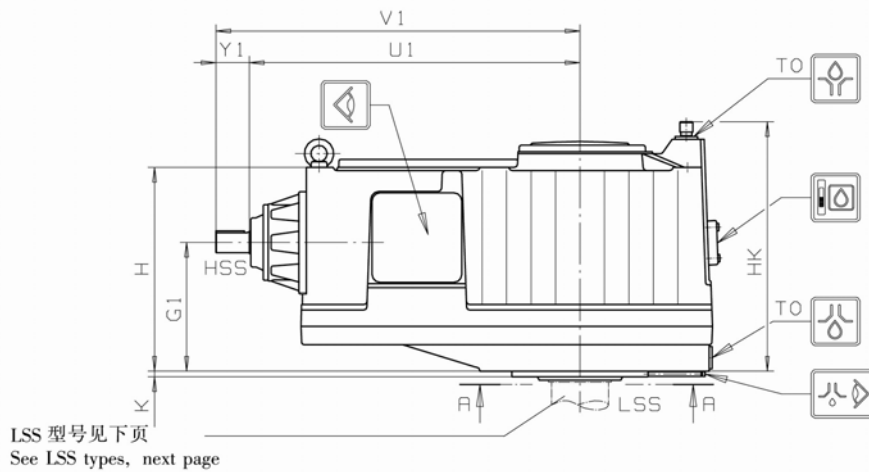


4 级锥齿轮 – 斜齿轮减速器垂直 LSS
4-stage Bevel Helical Gear Units
Vertical LSS

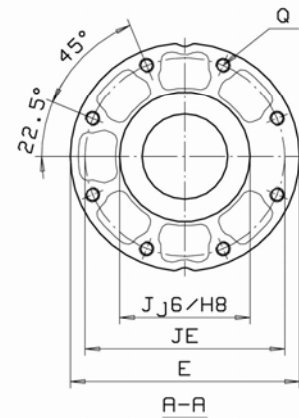
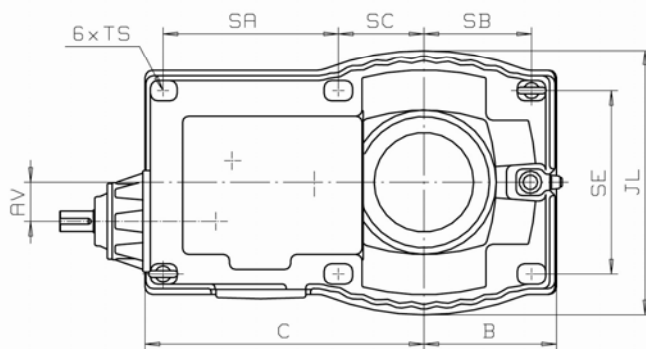
M4RV..50
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M4RVSF M4RVHF

Gear Unit Dimensions, type M4RVSF M4RVHF



安装法兰支撑
Mounting Flange support



规格 size	箱体尺寸 (mm)											Housing Dimensions in mm							
	AV	B	C	E	G1	H	HK	J	JE	JL	K	Q	SA	SB	SC	SE	TS	TO	
50	95.7	325	682	562	314	499	634	320	490	650	12	M36×63	431	270	215	440	M24×42	R1 1/2	

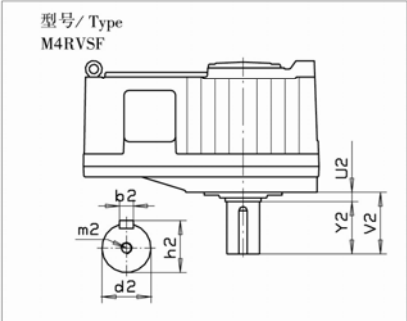
规格 size	HSS 尺寸 (mm)							HSS Dimensions in mm						重量 Weight	油量 / Oil Capacity	
	i _N = 90 – 250							i _N = 280 – 315							浸油润滑 Bath Lubrication	压力润滑 Pressure Lubrication
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	kg	1	1
50	841	95	936	45k6	14h9	48, 5	M16	70	911	35k6	10h9	38	M12	1100	148	49

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

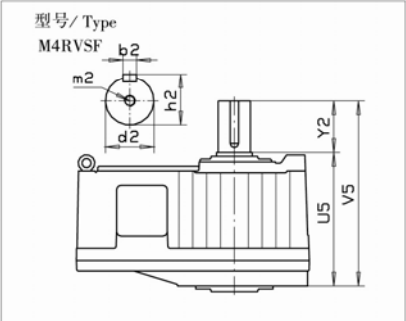
M4RV. . 50
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

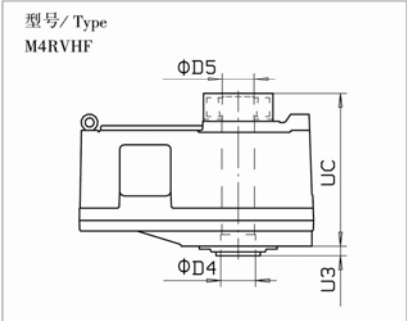
LSS types



实心轴向下
Solid Shaft downwards



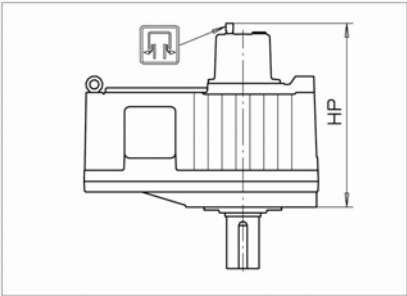
实心轴向上
Solid Shaft upwards



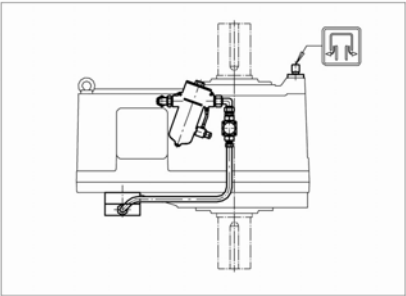
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

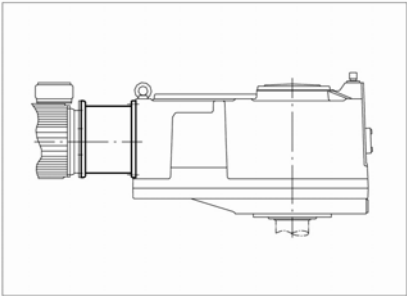
Common Accessories



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



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



电动机法兰
Motor Flange

规格 size	LSS 尺寸 (mm)									LSS Dimensions in mm				通用附件 Common Accessories
	实心轴 / Solid Shaft									空心轴 / Hollow Shaft				HP
50	d2	b2	h2	m2	Y2	U2	V2	U5	V5	U3	UC	D4	D5	825

轴的位置

Shaft Positions

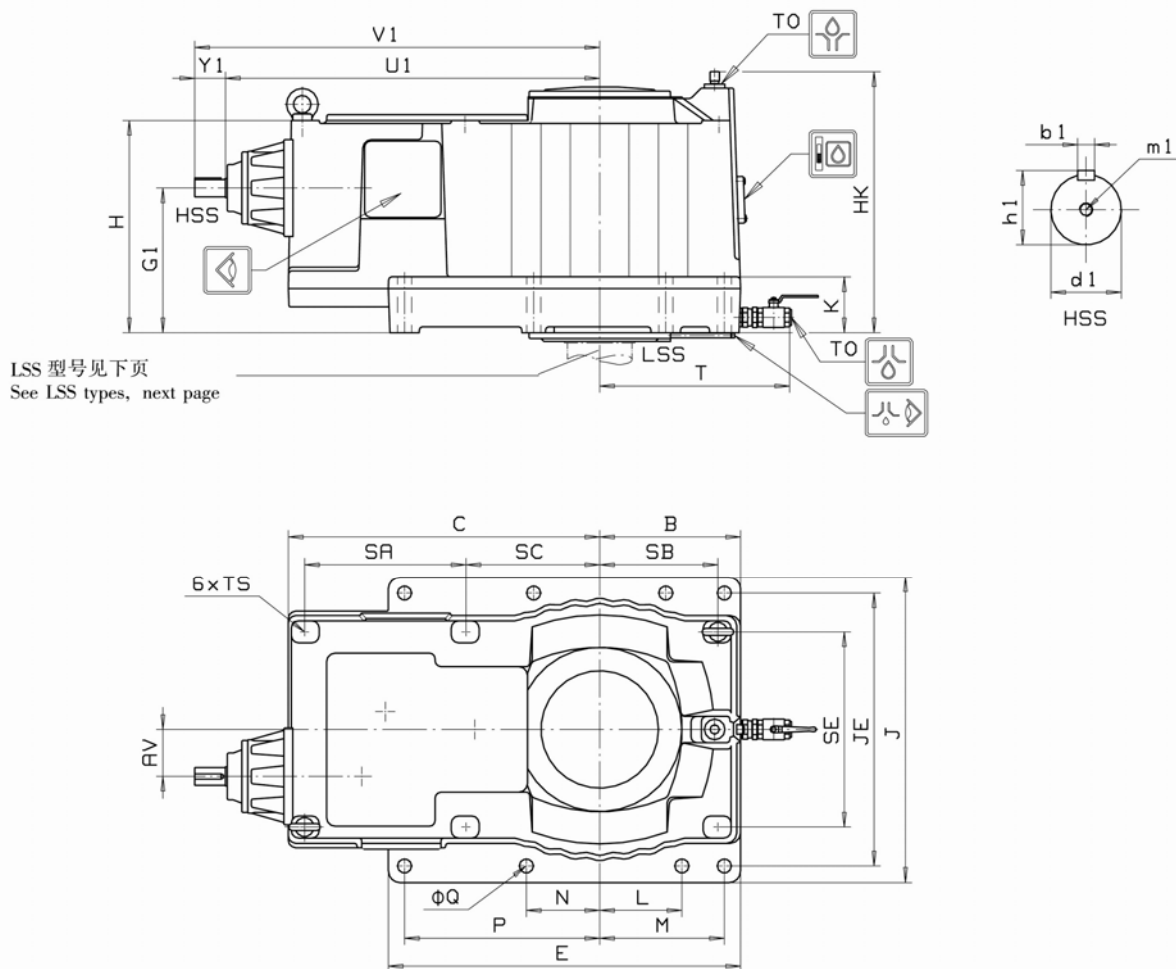


4 级锥齿轮 – 斜齿轮减速器垂直 LSS
4-stage Bevel Helical Gear Units
Vertical LSS

M4RV.. 60-90
实心 and 空心 LSS
Solid & Hollow LSS

减速器尺寸, 型号 M4RVSF M4RVHF

Gear Unit Dimensions, type M4RVSF M4RVHF



规格 size	箱体尺寸(mm)										Housing Dimensions in mm											
	AV	B	C	E	GI	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	M24×42	R1 1/2	572
70	119, 7	405	906	1010	389	620	771	920	810	171	-	350	235	550	48	480	343	388	576	M24×42	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	M30×53	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	M30×53	R1 1/2	647

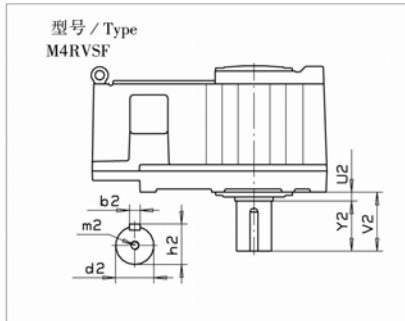
规格 size	HSS 尺寸 (mm)								HSS Dimensions in mm						重量 Weight kg	油量 / Oil Capacity	
	i _N = 90 – 250								i _N = 280 – 315							浸油润滑 Bath Lubrication	压力润滑 Pressure lubrication
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	l			
60	936	95	1031	45k6	14h9	48, 5	M16	70	1006	35k6	10h9	38	M12	1580	177	59	
70	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	

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

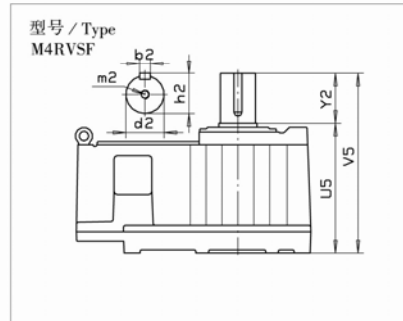
M4RV. . 60-90
实心 and 空心 LSS
Solid & Hollow LSS

低速轴型号

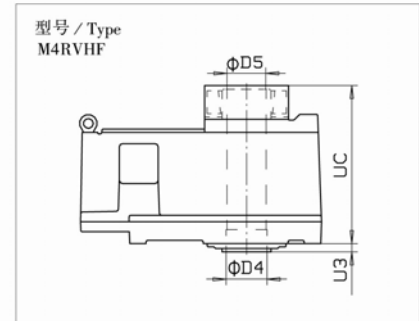
LSS types



实心轴向下
Solid Shaft downwards



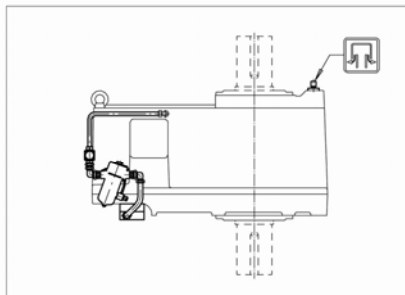
实心轴向上
Solid Shaft upwards



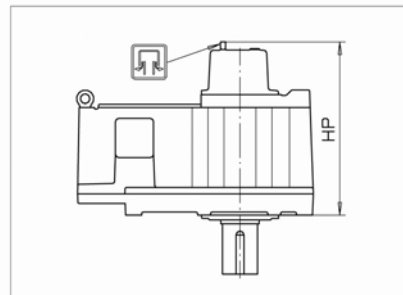
空心轴, 收缩盘
Hollow Shaft, Shrink Disk

通用附件

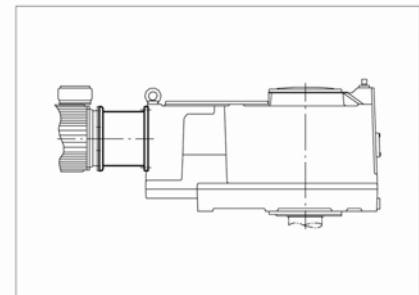
Common Accessories



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



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



电动机法兰
Motor Flange

规格 size	LSS 尺寸									LSS Dimensions in mm				通用附件 Common Accessories	
	实心轴 / Solid Shaft									空心轴 / Hollow Shaft				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	

+) 距离 $0.6 \times d2 / M20, 2 \times 180^\circ$ distance

轴的位置

Shaft Positions



空心轴
Hollow Shaft

收缩盘
Shrink Disk

收缩盘

Shrink Disk

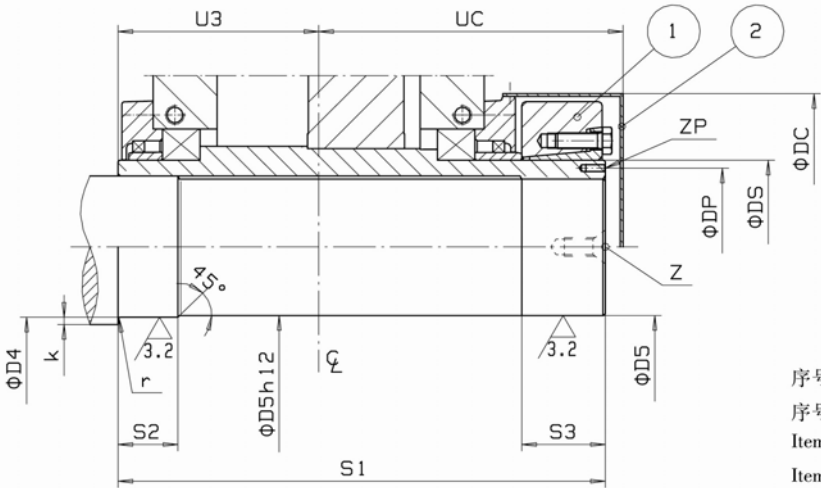
空心轴减速器的空心轴孔和从动轴端

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

如果不特别指明,收缩盘总是放在从动机的对面。

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

基本方案
Basic solution



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

水平输出轴
收缩盘安装

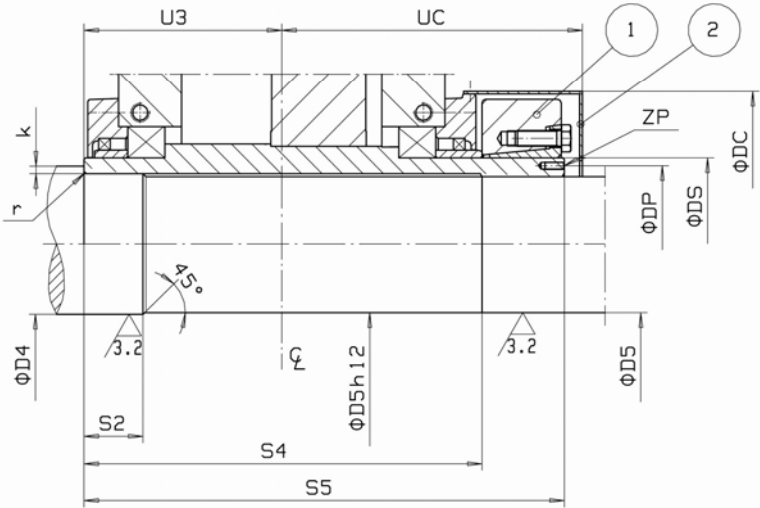
Horizontal Output Shaft
Mounting with Shrink Disk

减速器 规格 Gear Unit size	尺寸 [mm]														Dimensions in [mm]			
	收缩盘 Shrink Disk			从动机的轴端 Shaft end of driven machine											空心轴 Hollow Shaft		护罩 Cover	
	尺寸 Size stand	ΦDS	Ma *) [Nm]	ΦD4 min.	ΦD4 stand.	ΦD5	S1	S2	S3	S4	S5	k min	r max	U3	ΦDP	ZP 6×60°	ΦDC	UC
50	185 / d = 190	190	250	135	155 js7 / H8	154 h6 / H7	548	78	85	463	548	7	5	228	172	M10×20	346	336
60	220 / d = 220	220	490	160	180 js7 / H8	179 g6 / H7	620	90	102	518	620	7	5	255	200	M10×20	387	386
70	240 / d = 240	240	490	180	190 js7 / H8	189 g6 / H7	683	95	105	578	683	7	5	284	215	M12×24	425	422
80	260 / d = 260	260	490	190	210 js7 / H8	209 g6 / H7	730	105	120	610	730	8	6	302	235	M12×24	454	453
90	300 / d = 300	300	840	230	250 js7 / H8	249 g6 / H7	796	125	140	656	796	8	6	324	275	M12×24	513	501

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。

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

贯通轴
Through going shaft



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

空心轴
Hollow Shaft

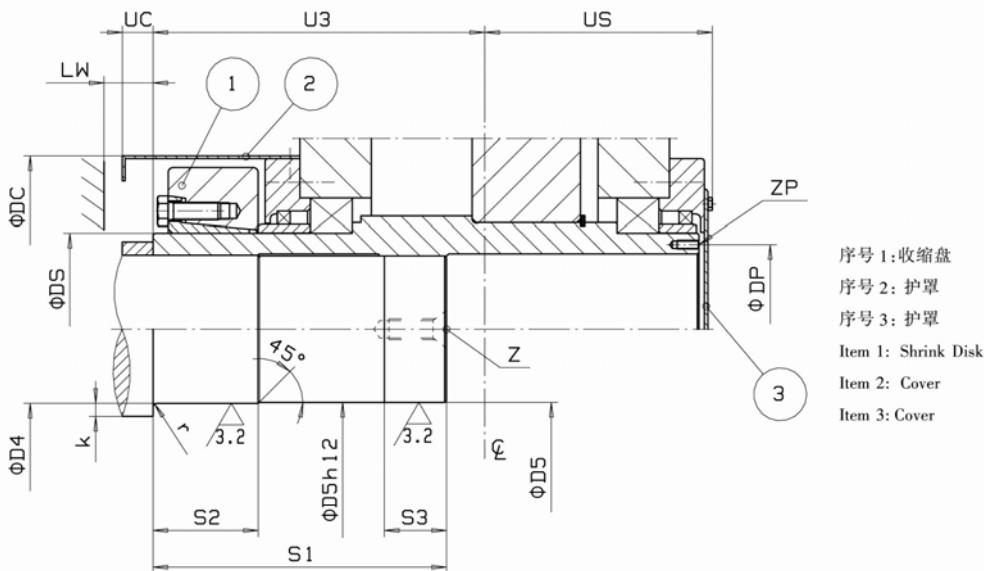
收缩盘
Shrink Disk

收缩盘

Shrink Disk

空心轴减速器的空心轴孔和从动轴端

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



水平输出轴
收缩盘安装

Horizontal Output Shaft
Mounting with Shrink Disk

减速器 规格 Gear Unit size	尺寸 [mm]										Dimensions in [mm]									
	收缩盘 Shrink Disk			从动机的轴端 Shaft end of driven machine										空心轴 Hollow Shaft		护罩 Cover				
	尺寸 Size stand	ΦDS	Ma *) [Nm]	ΦD4		ΦD5	S1	S2	S3	k		r max	U3	ΦDP	ZP 6×60°	ΦDC	LW min.	US	UC	
				min.	stand.					min	max									
50	185 / d = 190	190	250	135	155 h6 / H7	154 js6 / H7	310	85	40	7	18	5	320	172	M10×20	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	M10×20	387	100	259	85	
70	240 / d = 240	240	490	180	190 g6 / H7	189 js6 / H7	380	105	50	7	25	5	399	215	M12×24	425	100	288	85	
80	260 / d = 260	260	490	190	210 g6 / H7	209 js6 / H7	420	120	55	8	25	6	428	235	M12×24	454	100	306	85	
90	300 / d = 300	300	840	230	250 g6 / H7	249 js6 / H7	500	140	65	8	25	6	472	275	M12×24	513	100	328	85	

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。

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

空心轴
Hollow Shaft

收缩盘
Shrink Disk

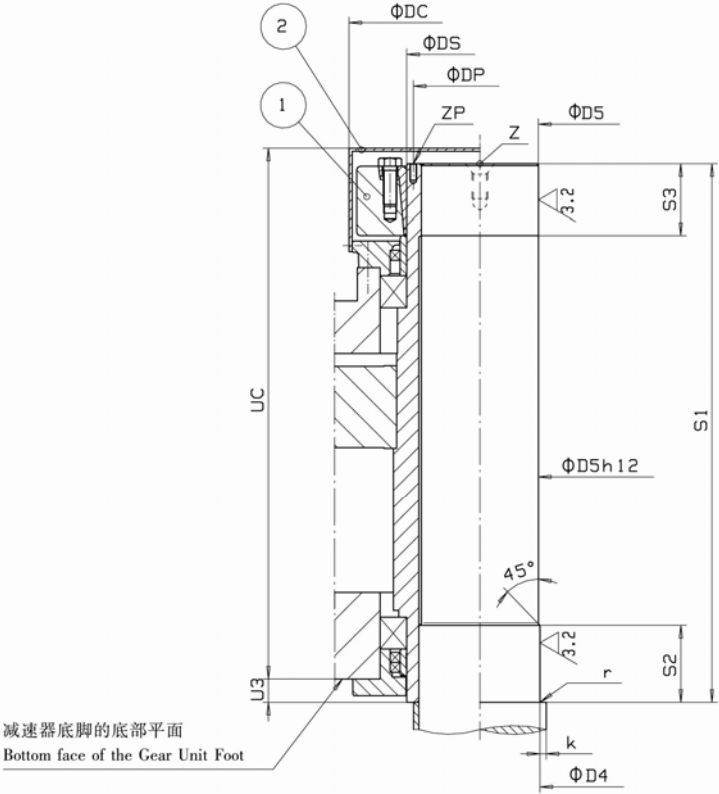
收缩盘

Shrink Disk

空心轴减速器的空心轴孔和从动轴端

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

基本方案
Basic solution



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

垂直输出轴
收缩盘安装

Vertical Output Shaft
Mounting with Shrink Disk

减速器 规格	尺寸 [mm]																Dimensions in [mm]															
	收缩盘 Shrink Disk				从动机的轴端										空心轴 Hollow Shaft				护罩 Cover													
	尺寸 Size stand	ΦDS	Ma) [Nm]	ΦD4		ΦD5	S1	S2	S3	k		r	U3	ΦDP	ZP 6×60°	ΦDC	UC															
Gear Unit size				min.	stand.					min	max	max																				
10	110 / d = 110	110	100	75	85 js7 / H8	84 h6 / H7	453	45	48	4	12	3	25	97	M6×12	205	445															
20	125 / d = 120	120	100	85	95 js7 / H8	94 h6 / H7	476	50	52	5	12	3	25	107	M6×12	235	470															
30	155 / d = 150	150	160	110	120 js7 / H8	119 h6 / H7	564	62	62	6	15	4	25	135	M6×12	280	555															
40	155 / d = 160	160	160	115	130 js7 / H8	129 h6 / H7	605	65	62	6	15	4	25	145	M8×16	285	600															
50	185 / d = 190	190	250	135	155 js7 / H8	154 h6 / H7	704	78	85	7	18	5	25	172	M10×20	346	700															
60	220 / d = 220	220	490	160	180 js7 / H8	179 g6 / H7	810	90	102	7	20	5	35	200	M10×20	387	796															
70	240 / d = 240	240	490	180	190 js7 / H8	189 g6 / H7	875	95	105	7	25	5	35	215	M12×24	425	863															
80	260 / d = 260	260	490	190	210 js7 / H8	209 g6 / H7	938	105	120	8	25	6	35	235	M12×24	454	928															
90	300 / d = 300	300	840	230	250 js7 / H8	249 g6 / H7	1030	125	140	8	25	6	35	275	M12×24	513	1024															

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

空心轴 Hollow Shaft

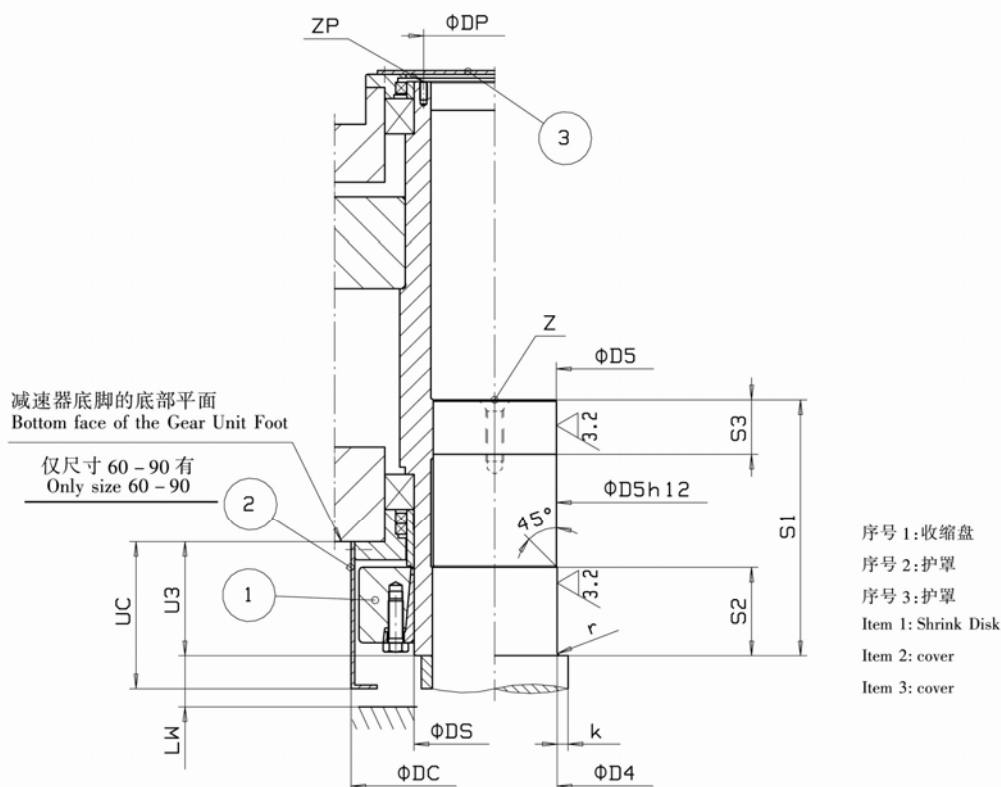
收缩盘 Shrink Disk

收缩盘

Shrink Disk

空心轴减速器的空心轴孔和从动轴端

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



垂直输出轴 收缩盘安装

Vertical Output Shaft Mounting with Shrink Disk

减速器 规格 Gear Unit size	尺寸[mm] Dimensions in [mm]																	
	收缩盘 Shrink Disk			从动机的轴端 Shaft end of driven machine										空心轴 Hollow Shaft		护罩 Cover		
	尺寸 Size stand	ΦDS	Ma *) [Nm]	ΦD4 min. stand.		ΦD5	S1	S2	S3	k min max		r max	U3	ΦDP	ZP 6×60°	ΦDC	UC	LW
10	110 / d = 110	110	100	75	85 h6 / H7	84 js6 / H7	170	48	20	4	12	3	80	97	M6×12	205	135	70
20	125 / d = 120	120	100	85	95 h6 / H7	94 js6 / H7	190	52	25	5	12	3	84	107	M6×12	235	140	70
30	155 / d = 150	150	160	110	120 h6 / H7	119 js6 / H7	250	62	30	6	12	4	94	135	M6×12	285	155	75
40	155 / d = 160	160	250	115	130 h6 / H7	129 js6 / H7	260	62	35	6	15	4	94	145	M8×16	285	155	75
50	185 / d = 190	190	250	135	155 h6 / H7	154 js6 / H7	310	85	40	7	18	5	117	172	M10×20	346	179	75
60	220 / d = 220	220	490	160	180 g6 / H7	179 js6 / H7	360	102	45	7	20	5	148	200	M10×20	387	235	100
70	240 / d = 240	240	490	180	190 g6 / H7	189 js6 / H7	380	105	50	7	25	5	152	215	M12×24	425	240	100
80	260 / d = 260	260	490	190	210 g6 / H7	209 js6 / H7	420	120	55	8	25	6	164	235	M12×24	454	250	100
90	300 / d = 300	300	840	230	250 g6 / H7	249 js6 / H7	500	140	65	8	25	6	185	275	M12×24	513	270	100

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。

Z) Threaded holes according to customers standard. Recommended for assembly.
ZP) For disassembly tools.

*) Tightening torque of shrink disk screws.

空心轴
Hollow Shaft

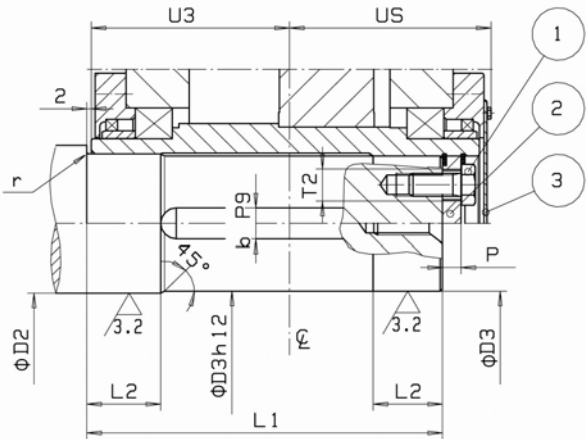
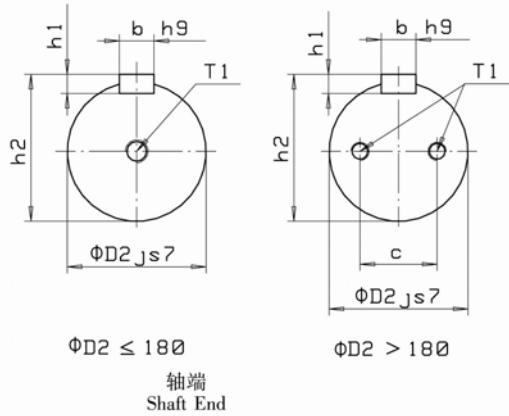
键连接
Key Connection

键连接

Key Connection

空心轴减速器的空心轴孔和从动轴端

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



序号:1 正常订货不包括螺钉
序号:2 端板
序号:3 护罩
Item 1: Screws are not included in normal delivery
Item 2: End Plate
Item 3: Cover

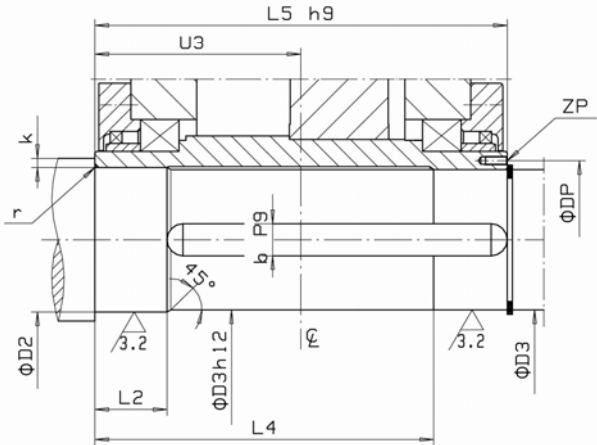
水平输出轴
标准安装用键

Horizontal Output Shaft
Standard mounting with key

减速器 规格 Gear Unit size	尺寸 [mm]										Dimensions in [mm]											
	ΦD2		ΦD3	L1	L2	L4	L5	P	T1	c	T2	U3	US	ZP 6×60°	ΦDP	螺钉 Screw		b	h1	h2	k*)	r
																尺寸 Size	件数 Pcs					
	min.	standard																				min
50	135	150 js7 / H8	149 js7 / H8	394	75	381	456	24	M30×60	—	M36	228	232	M10×20	172	M30×80	1	36	20	158	6	4
60	160	170 js7 / H8	169 js7 / H8	448	85	425	510	24	M30×60	—	M36	255	259	M10×20	200	M30×80	1	40	22	179	7	5
70	180	190 js7 / H8	189 js7 / H8	506	95	473	568	30	M20×36	114	M24	284	288	M12×24	215	M20×60	2	45	25	200	7	5
80	190	210 js7 / H8	209 js7 / H8	542	105	499	604	30	M20×36	126	M24	302	306	M12×24	235	M20×60	2	50	28	221	8	6
90	230	240 js7 / H8	239 js7 / H8	586	120	528	648	30	M24×45	144	M30	324	328	M12×24	275	M24×70	2	56	32	252	8	6

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

贯通轴
Through going shaft



空心轴
Hollow Shaft

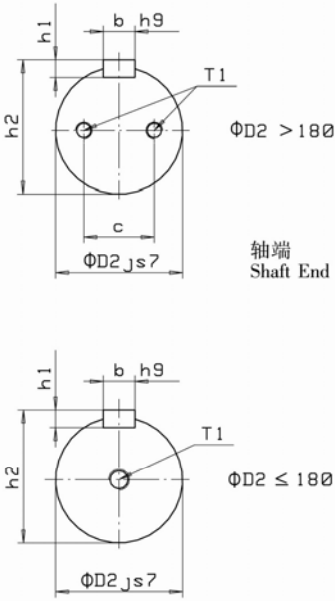
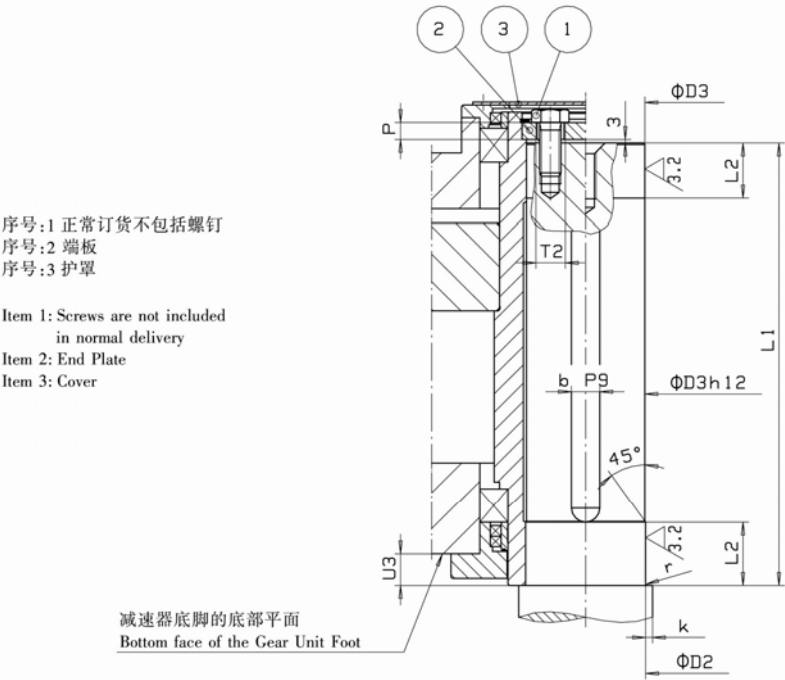
键连接
Key Connection

键连接

Key Connection

空心轴减速器的空心轴孔和从动轴端

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



垂直输出轴
标准安装用键

Horizontal Output Shaft
Standard mounting with Key

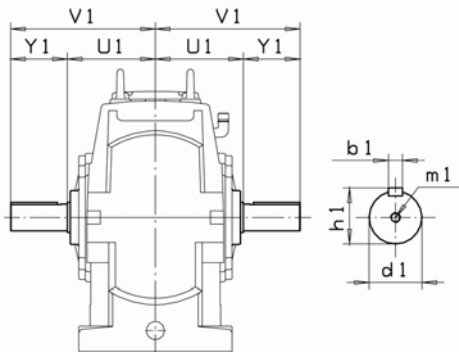
减速机 规格 Gear Unit size	尺寸[mm]										Dimensions in [mm]							
	ΦD2		ΦD3	L1	L2	U3	T1	c	T2	P	螺钉 Screw		b	h1	h2	k		r
	min.	standard									尺寸 Size	件数 Pcs				min	max	max
10	75	85 js7/H8	84 js7/H8	350	45	25	M20×42	—	M24	20	M20×60	1	22	14	90	4	12	3
20	85	95 js7/H8	94 js7/H8	365	50	25	M24×50	—	M30	20	M24×60	1	25	14	100	5	12	3
30	110	120 js7/H8	119 js7/H8	440	60	25	M24×50	—	M30	24	M24×70	1	32	18	127	6	15	4
40	115	130 js7/H8	129 js7/H8	480	65	25	M24×50	—	M30	24	M24×70	1	32	18	137	6	15	4
50	135	150 js7/H8	149 js7/H8	550	75	25	M30×60	—	M36	24	M30×80	1	36	20	158	6	20	4
60	160	170 js7/H8	169 js7/H8	635	85	35	M30×60	—	M36	24	M30×80	1	40	22	179	7	25	5
70	180	190 js7/H8	189 js7/H8	695	95	35	M20×36	114	M24	30	M20×60	2	45	25	200	7	25	5
80	190	210 js7/H8	209 js7/H8	750	105	35	M20×36	126	M24	30	M20×60	2	50	28	221	8	25	6
90	230	240 js7/H8	239 js7/H8	820	120	35	M24×45	144	M30	30	M24×70	2	56	32	252	8	30	6

贯通高速轴 Through going HSS

贯通高速轴

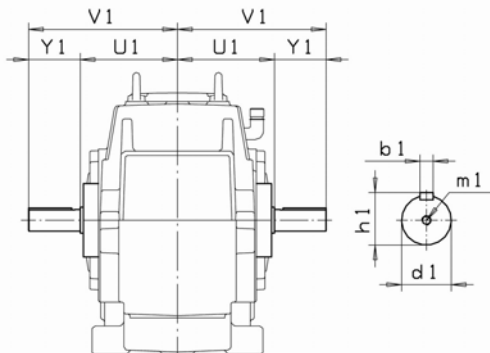
Through going HSS

型号/ Type ,M2P. . 50 – 90



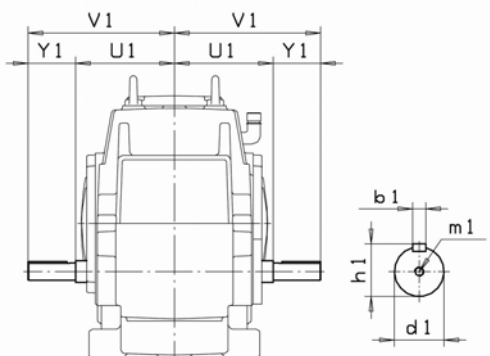
规格 减速机 Gear unit size	HSS 尺寸 [mm]							HSS Dimensions in mm						
	$i_N = 6.3 - 12.5$							$i_N = 14 - 18$						
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	
50	238	125	363	75m6	20h9	79.5	M20	125	363	60m6	18h9	64	M20	
60	255	150	405	80m6	22h9	85	M20	125	380	70m6	20h9	74.5	M20	
	$i_N = 6.3 - 14$							$i_N = 16 - 18$						
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	

型号/ Type ,M3P. . 50 – 90



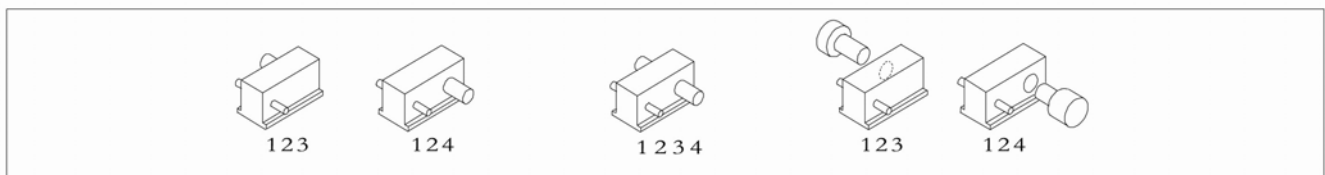
规格 减速机 Gear unit size	HSS 尺寸 [mm]							HSS Dimensions in mm						
	$i_N = 20 - 63$							$i_N = 71 - 90$						
	U1	Y1	V1	d1	b1	h1	m1	Y1	V1	d1	b1	h1	m1	
50	226	95	321	50k6	14h9	53.5	M16	95	321	40k6	12h9	43	M16	
60	251	95	346	55m6	16h9	59	M20	95	346	45k6	14h9	48.5	M16	
	$i_N = 20 - 56$							$i_N = 63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

型号/ Type ,M4P. . 50 – 90



减速机 规格 Gear unit size	HSS 尺寸 [mm]							HSS Dimensions in mm						
	$i_N = 100 - 140$							$i_N = 160 - 400$						
	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	
	$i_N = 100 - 225$							$i_N = 250 - 400$						
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	
	$i_N = 100 - 140$							$i_N = 160 - 400$						
90	313	125	438	60m6	18h9	64	M20	95	408	50k6	14h9	53.5	M16	

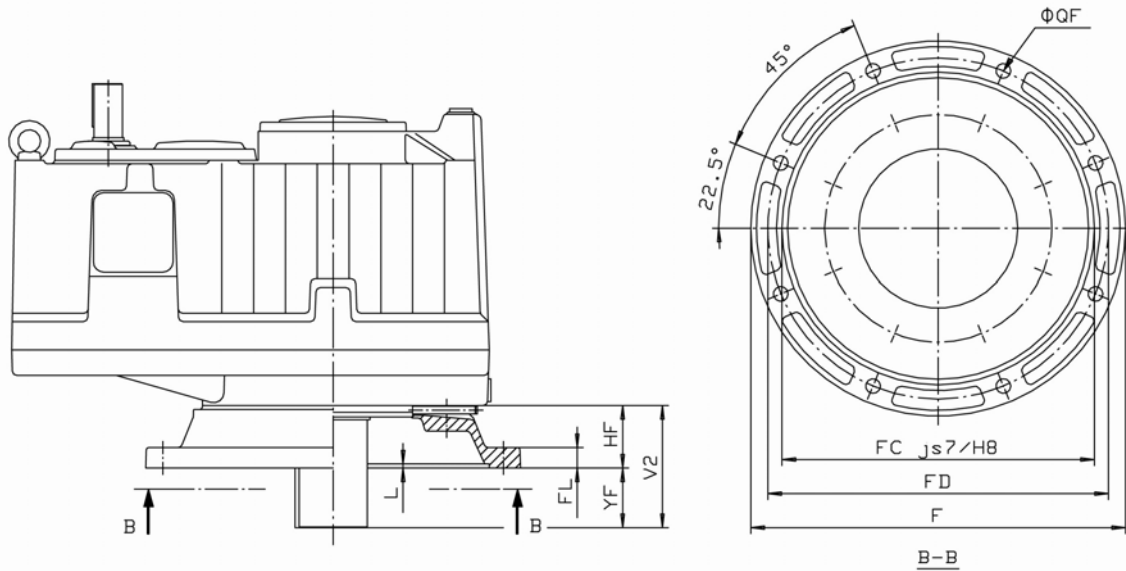
轴的位置/ Shaft Positions



安装法兰 Mounting Flange

安装法兰

Mounting Flange



垂直 LSS / Vertical LSS

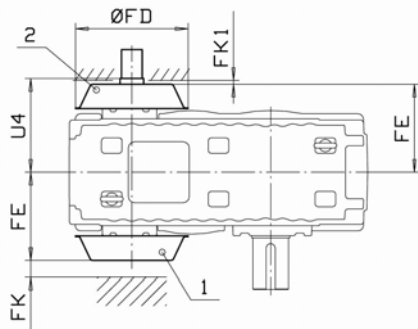
减速器 规格 Gear unit size	F	FD	FC js7/H8	ΦQF	L	FL	YF	HF	V2
10	450	400	350	18	6	24	65	110	175
20	480	430	380	22	6	25	65	110	175
30	560	500	450	26	6	30	105	110	215
40	660	600	550	26	7	36	105	110	215
50	820	740	680	33	7	45	140	110	250

风扇 Fan

风扇

Fan

型号/Type M2P..M3P..



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

减速器 Gear Unit	风扇*) Fan*)	n_{lmax} min^{-1}	U4	ΦFD	FE	FK _{min}	FK1 _{min}
M2P50	φ 315	3000	355	443	326	55	20
M2P60	φ 315	3000	372	443	343	55	20
M2P70	φ 400	2350	423	547	394	65	20
M2P80	φ 400	2350	443	547	414	65	20
M2P90	φ 400	2350	466	547	437	65	20

*) 风扇的外面直径

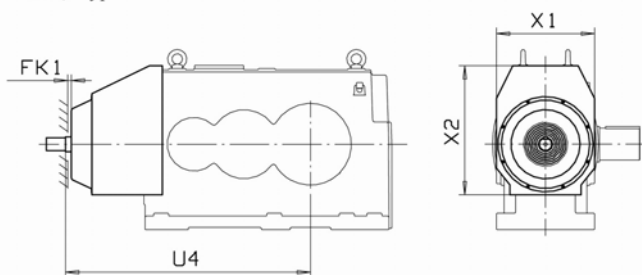
*) Outer diameter of the Fan

减速器 Gear Unit	风扇*) Fan*)	n_{lmax} min^{-1}	U4	ΦFD	FE	FK _{min}	FK1 _{min}
M3P50	φ 315	3000	343	443	314	55	20
M3P60	φ 315	3000	367	443	338	55	20
M3P70	φ 400	2350	417	547	388	65	20
M3P80	φ 400	2350	435	547	406	65	20
M3P90	φ 400	2350	457	547	428	65	20

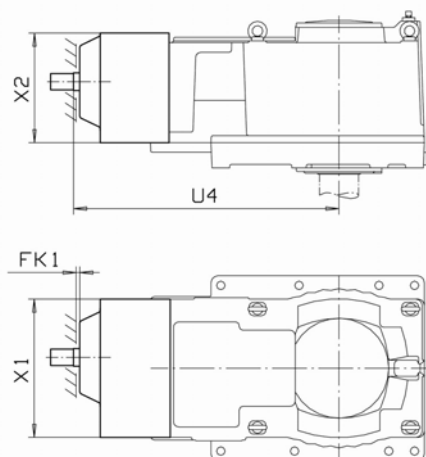
*) 风扇的外面直径

*) Outer diameter of the Fan

型号/Type M3R..



型号/Type M3RV..



减速器 Gear Unit	风扇*) Fan*)	n_{lmax} min^{-1}	U4	X1	X2	FK1 _{min}
M3R50	φ 315	3000	998	406	537	20
M3R60	φ 315	3000	1129	460	582	20
M3R70	φ 400	2350	1278	518	689	20
M3R80	φ 400	2350	1328	554	729	20
M3R90	φ 400	2350	1499	598	769	20

*) 风扇的外面直径

*) Outer diameter of the Fan

减速器 Gear Unit	风扇*) Fan*)	n_{lmax} min^{-1}	U4	X1	X2	FK1 _{min}
M3RV30	φ 200	3000	758	450	371	15
M3RV40	φ 250	3000	821	504	423	15
M3RV50	φ 315	3000	998	590	491	20
M3RV60	φ 315	3000	1114	640	519	20
M3RV70	φ 400	2350	1269	740	607	20
M3RV80	φ 400	2350	1320	800	625	20
M3RV90	φ 400	2350	1493	846	652	20

*) 风扇的外面直径

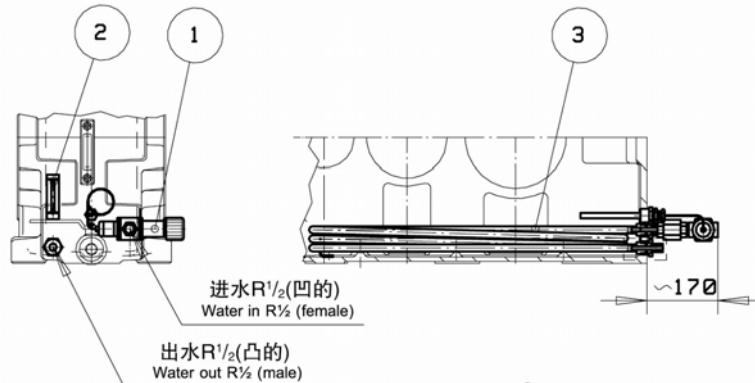
*) Outer diameter of the Fan

冷却盘管系统 Cooling Coil System

冷却盘管系统

对浸油和飞溅润滑，如果因为环境条件不能有风扇时用冷却盘管。

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



元件:

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

Components:

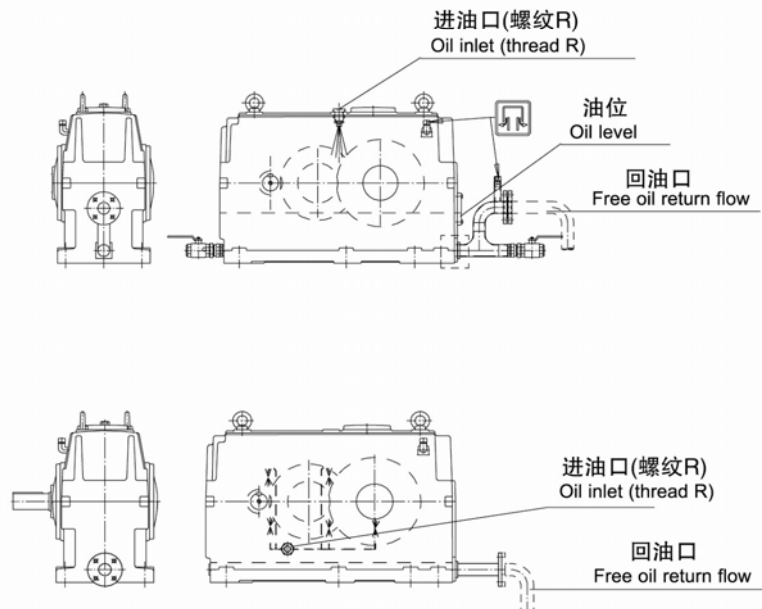
1. Thermostatic Water Valve
2. Thermometer, scale 0—100℃ (+32—+212° F)
3. Cooling Pipe, material AISI 316

集中润滑系统连接

Central lubricatin System connections

连接减速器与集中滤油和冷却系统的装置

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



螺纹R(内螺纹)

当 $Q < 30\text{L/min}$ 时, R3/4, Q =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。

Thread R(female)

R3/4, when $Q < 30\text{L/min}$ 时, Q =oil flow

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

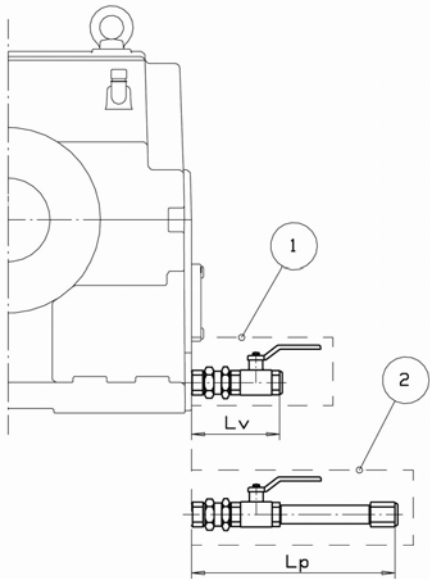
The diameter and height of the oil outlet pipe vary according to the gear unit size, lubrication method, oil viscosity and oil amount.

泄油阀
Oil Drain Valves

油尺
Oil Dipstick

泄油阀

Oil Drain Valves



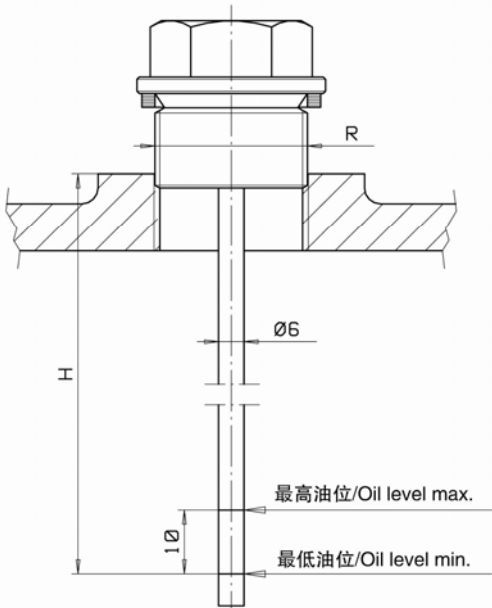
泄油阀的尺寸取决于减速器的规格。泄油阀可以备伸长管，标准长度（Lp）列于表中，也可以用其它长度。

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(Lp) are in table. Other lengths are also possible.

泄油阀长度		Oil drain valve lengths	
尺寸 Size	长度 L _v Length L _v	长度 L _p Length L _p	
R1/2	100	-	-
R3/4	115	290	430
R1	140	300	450
R1 1/2	175	350	470

油尺/注油塞

Oil Dipstick, Oil filler Plug



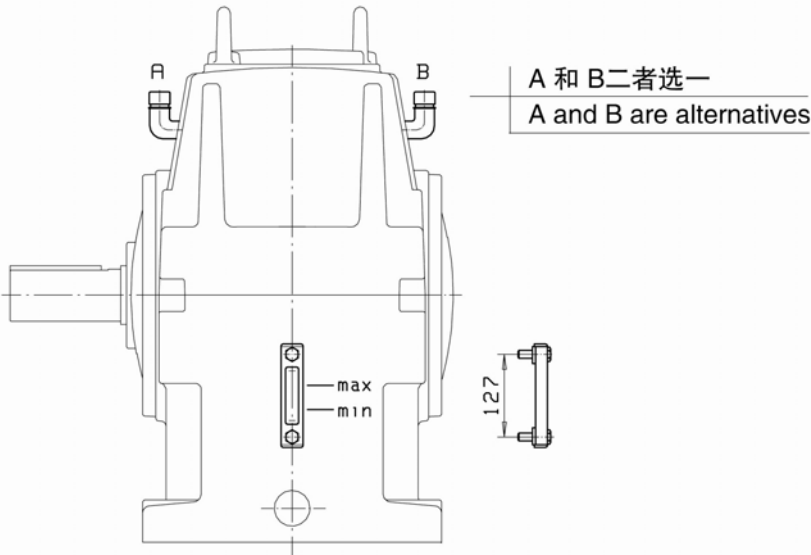
拧松注油塞指示油位H。
只能在减速器不运行时检查油位。
检查油位时应防止水和污物进入减速器内。

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.

油观察孔和通气装置
Oil Sightglass and Breather

潮湿环境膨胀箱
Expansion tank for moist environment

油观察孔和通气装置Oil Sightglass and Breather



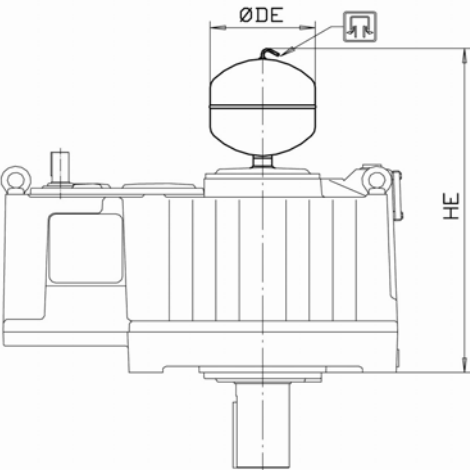
只能在减速器停止运行时才能检查油位。
油观察孔和通气装置是减速器的标准设备。标准通气装置的过滤能力是40μm。
通气装置防止减速器内气体形成超压和污物渗入减速器内。

Oil lever can be checked only when the gear unit is not running.
Oil sithtglass and breather are standard equipments of the gear unit.Filtration degree of the standard breather is 40μm.
Air breather prevents the forming of over pressure inside the gear unit and prevents dirt penetration into the gear unit.

潮湿环境膨胀箱Expansion tank for moist environment

在膨胀箱内用橡胶隔板防止污物和水进入
减速器内

Arubber diaphgram is used inside the expansion tank to prevent
dirt and water from getting inside the gear unit



减速器规格 Gear unit size	HE (max)	ΦDE
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

可选的密封装置 Optional Seal Arrangements

可选的密封装置

水平轴，高速轴（HSS）和低速轴（LSS）

- * 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

垂直轴，高速轴（HSS）垂直向上

- * 带防尘盖的单唇密封（基本方案）

垂直轴，高速轴（HSS）垂直向下

- * 带防尘盖的双唇密封

垂直轴，低速轴（LSS）垂直向上

- * 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

垂直轴，低速轴（LSS）垂直向下

- * 带防尘盖的双唇密封（基本方案）

Optional Seal Arrangements

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

- * 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

Vertical, Vertical high speed shaft (HSS) upwards

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

Vertical, Vertical high speed shaft (HSS) downwards

- * double lip seal with dust protection cover

Vertical, Vertical low speed shaft (LSS) upwards

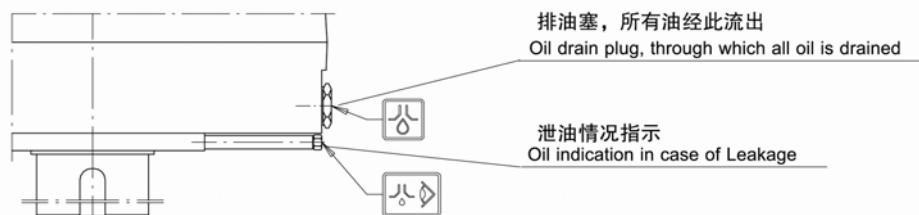
- * single lip seal with dust protection cover (basic solution)
 - clean environment

- * double lip seal with regreaseable dust protection cover

— wet and /or dusty environment with abrasive particles

Vertical, Vertical low speed shaft (LSS) downwards

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



- * 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

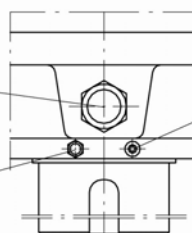
- * Dry Well

—Single lip seal with dust protection cover
—gear unit is equipped with shaft end pump

排油塞，所有油经此流出

Oil drain plug, through which all oil is drained

多余的润滑脂排出口
Outlet for excessive grease



唇型密封材料

- * NBR丁腈橡胶
 - 当油的运行温度小于80℃时
- * VITON氟橡胶
 - 当油的运行温度大于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在高温时变硬的敏感性比NBR要小。

Lip seal material

- * 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

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

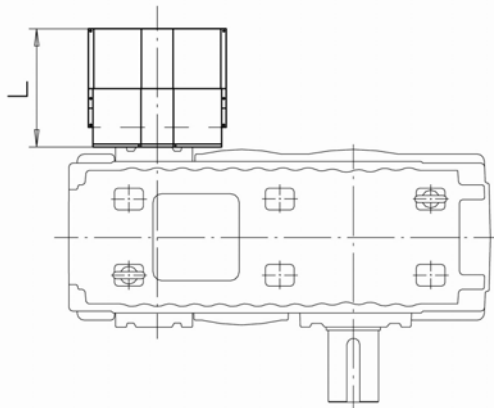
联轴器保护装置
Coupling Guard

力矩臂
Torque arm

联轴器保护装置

连到减速器上的联轴器保护装置

斜齿轮减速器/
Helical gear units



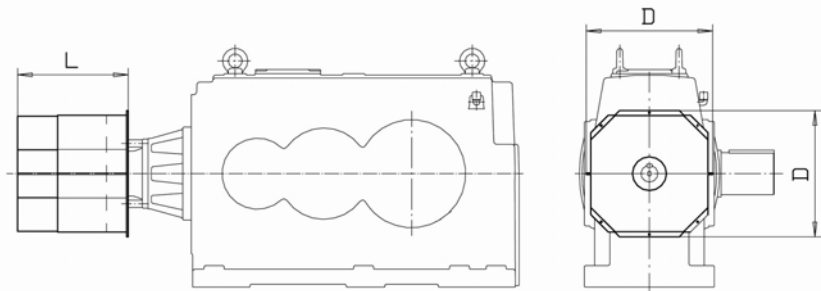
Coupling Guard

Coupling guard attached to the gear unit

规格 Size	联轴器的 最大直径 Max Coupling diameter	轴的 最大直径*) Max Shaft diameter*)	长度 [L] Length [L]	直径 [D] Diameter [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

*) 原动/从动机轴的最大直径
*) Max shaft diameter of driving/driven machine

锥齿轮-斜齿轮减速器/
Bevel-Helical gear units



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

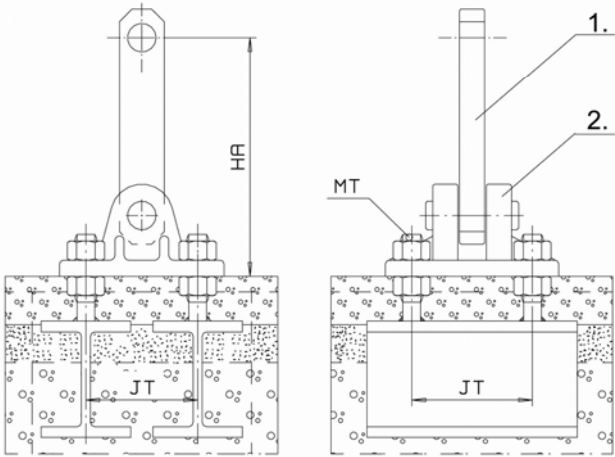
力臂矩

Torque arm

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。

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.

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



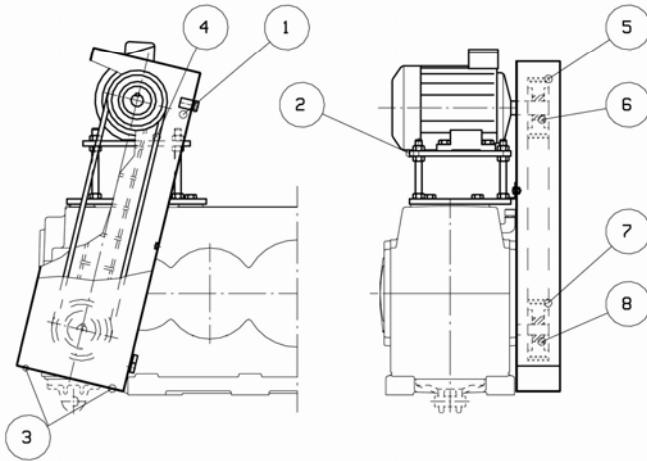
供货时包括1和2/1.and 2.are included in delivery.

带传动 Belt Drive

电动机法兰 Motmr Flange

带传动

Beit Drive

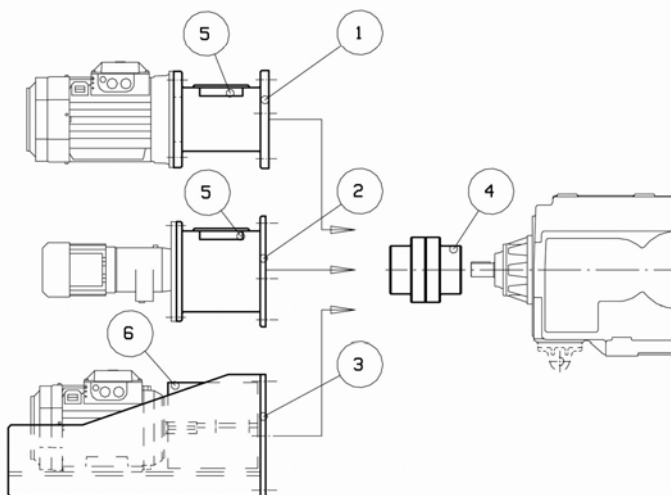


组件/Components

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

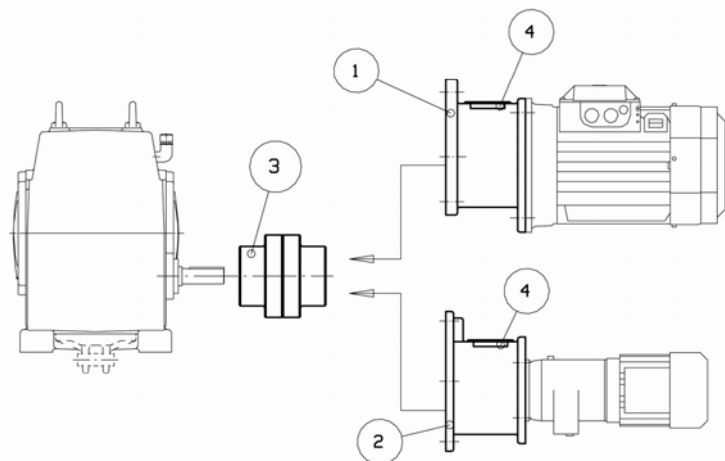
电动机法兰

Motor Flange



组件/Components

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

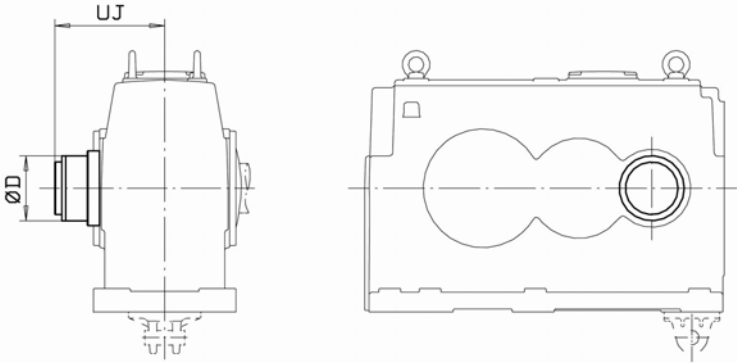


组件/Components

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

逆止器

Back Stop



根据制动输出力矩至减速器额定输出力矩 M_{N2} 确定逆止器尺寸。

Backstops are dimensioned to brake output torques up to gear unit nominal output torque M_{N2} .

减速器型号 M2P / Gear units types M2P..

减速器 规格 Gear unit size	$i_N=6.3-12.5$			$i_N=14-18$		
	逆止器 Backstop	ΦD	UJ	逆止器 Backstop	ΦD	UJ
50	FXM85-40SX	175	322	FXM86-25DX	150	288
60	FXM100-40SX	190	349	FXM85-40SX	175	349
70	FXM120-50SX	210	374	FXM85-40SX	175	378
80	FXM140-50SX	230	407	FXM100-40SX	190	401
90	FXM170-63SX	280	461	FXM120-50SX	210	429

减速器型号 M3P / Gear units types M3P..

Gear unit size 减速器规格	$i_N=20-31.5$			$i_N=35.5-90$		
	逆止器 Backstop	ϕD	UJ	逆止器 Backstop	ϕD	UJ
50	FXM85-40SX	175	306	FXM76-25DX	140	281
60	FXM100-40SX	190	340	FXM101-25DX	175	328
	$i_N=20-80$			$i_N=31.5-90$		
70	FXM120-50SX	210	379	FXM100-40SX	190	369
	$i_N=20-35.5$			$i_N=40-90$		
80	FXM120-50SX	210	397	FXM100-40SX	190	387
	$i_N=20-90$					
90	FXM120-50SX	210	419			

减速器型号 M4P / Gear units types M4P..

减速器 规格 Gear unit size	$i_N=100-180$			$i_N=200-400$		
	逆止器 Backstop	ΦD	UJ	逆止器 Backstop	ΦD	UJ
50	FXM46-25DX	95	264	FXM31-17DX	90	264
60	FXM46-25DX	95	291	FXM31-17DX	90	291
70	FXM51-25DX	102	325	FXM46-25DX	95	325
80	FXM56-25DX	110	343	FXM46-25DX	95	343
90	FXM66-25DX	125	370	FXM51-25DX	102	365

逆止器
Back Stop

电动机摆动底座
Swing Base for motor

逆止器

Back Stop

减速器型号 M3R / Gear units types M3R..

Gear unit size 减速器规格	i _N =14-25			i _N =28-80		
	逆止器 Backstop	ΦD	UJ	逆止器 Backstop	ΦD	UJ
50	FXM120-50SX	210	328	FXM100-40SX	190	318
	i _N =14-80					
60	FXM120-50SX	210	350			
	i _N =14-18			i _N =20-80		
70	FXM140-50SX	245	394	FXM120-50SX	210	389
	i _N =14-35.5			i _N =40-80		
80	FXM140-50SX	245	412	FXM120-50SX	210	407
	i _N =14-28			i _N =31.5-80		
90	FXM170-63SX	290	457	FXM140-50SX	245	444

减速器型号 M4R / Gear units types M4R..

减速器 规格 Gear unit size	i _N =90-160			i _N =180-315		
	逆止器 Backstop	ΦD	UJ	逆止器 Backstop	ΦD	UJ
50	FXM56-25DX	100	250	FXM51-25DX	100	250
60	FXM66-25DX	110	281	FXM56-25DX	110	281
70	FXM86-25DX	125	324	FXM56-25DX	110	324
80	FXM86-25DX	130	342	FXM66-25DX	125	342
90	FXM85-40SX	150	371	FXM76-25DX	130	371

减速器型号 M5R / Gear units types M5R..

减速器 规格 Gear unit size	i _N =355-1800		
	逆止器 Backstop	ΦD*)	UJ
50	AE 30	-	203
60	AE 30	-	230
70	AE 40	-	259
80	AE 40	-	277
90	AE 50	-	301

*) 逆止器在轴承座里面

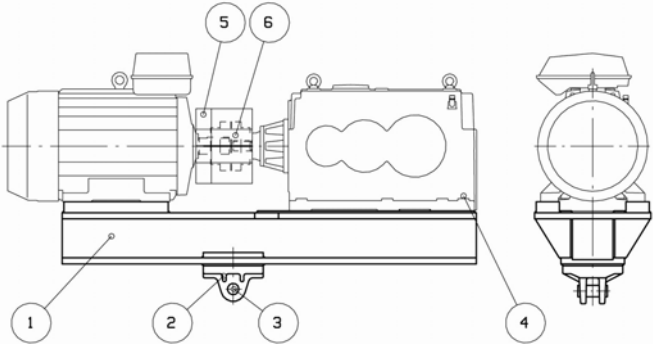
*) Backstop is inside bearing housing.

电动机摆动底座

Swing Base for motor

根据订货单设计和制造输送机传动的摆动底座

Swing bases for conveyor drives are designed and manufactured according to order



- 1.摆动底座/Swing Base beam
- 2.力矩臂安装座/Torque Arm mounting bracket
- 3.力矩臂销钉/Torque Arm pin
- 4.紧固螺钉/Fastening screws
- 5.联轴器保护装置/Coupling Guard
- 6.联轴器/Coupling