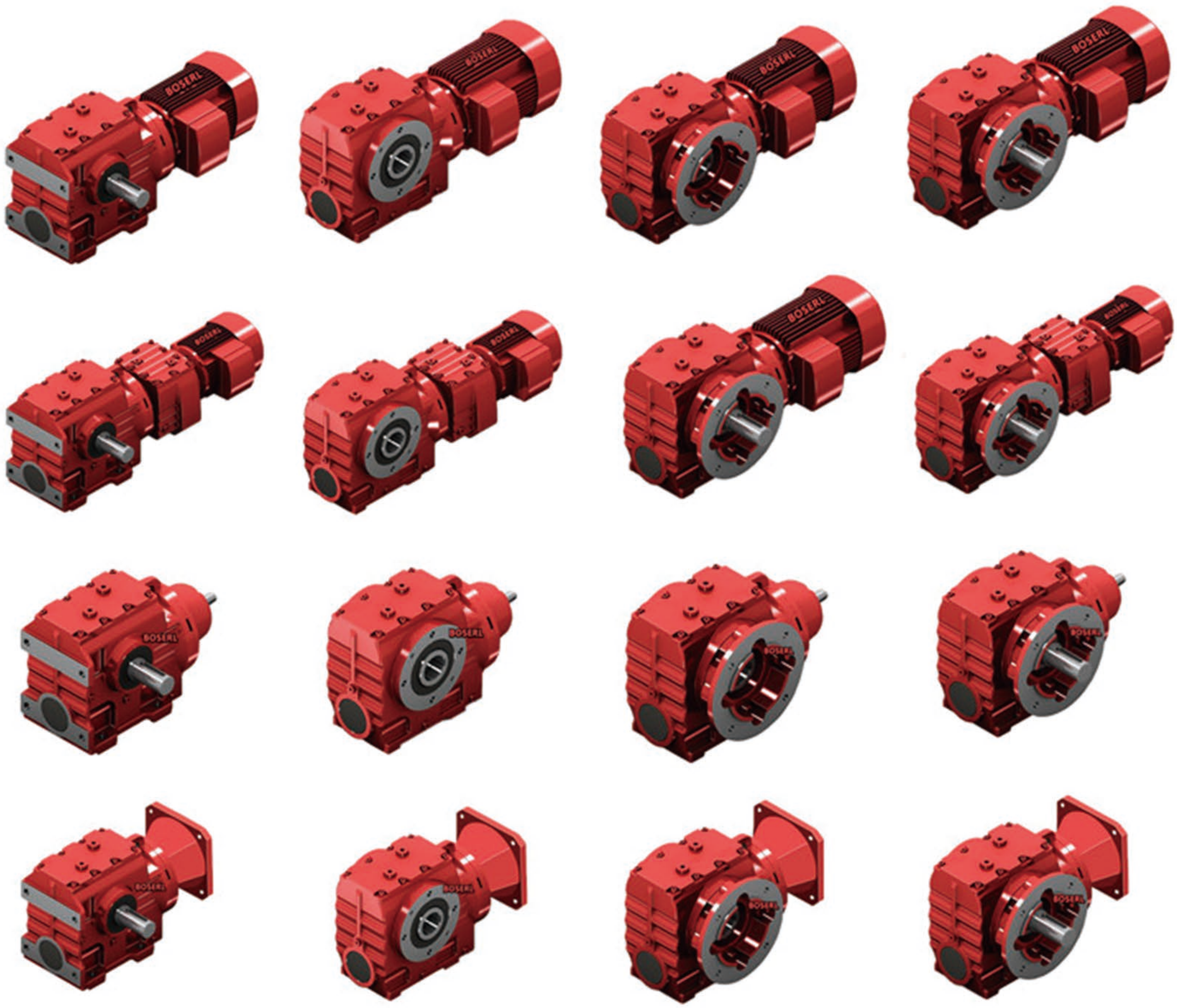
BOSERL

专注减速机电机 研发 制造

您设备的速度，BOSERL可以满足

S SA SAF SF



2021

广东伯仕传动科技有限公司

Guangdong Boserl Transmission Technology Co.,Ltd

德国BOSERL减速机成立于2010年，专注于减速机电机设备研发、制造，目前已经和多个国内外大型企业建立技术合作共享关系。

通过建立以品质为核心的技术链生态，以市场需求和企业自身转型升级为动力，BOSERL已迅速成长为国内外减速机电机设备行业的领头羊，成为减速机电机设备行业的深耕版"新SEW"

我公司的主要产品有：R/F/K/S四大系列齿轮减速机、蜗轮蜗杆减速机、标准工业齿轮箱、小型减速电机，功率覆盖5W-9550KW的标准系列。

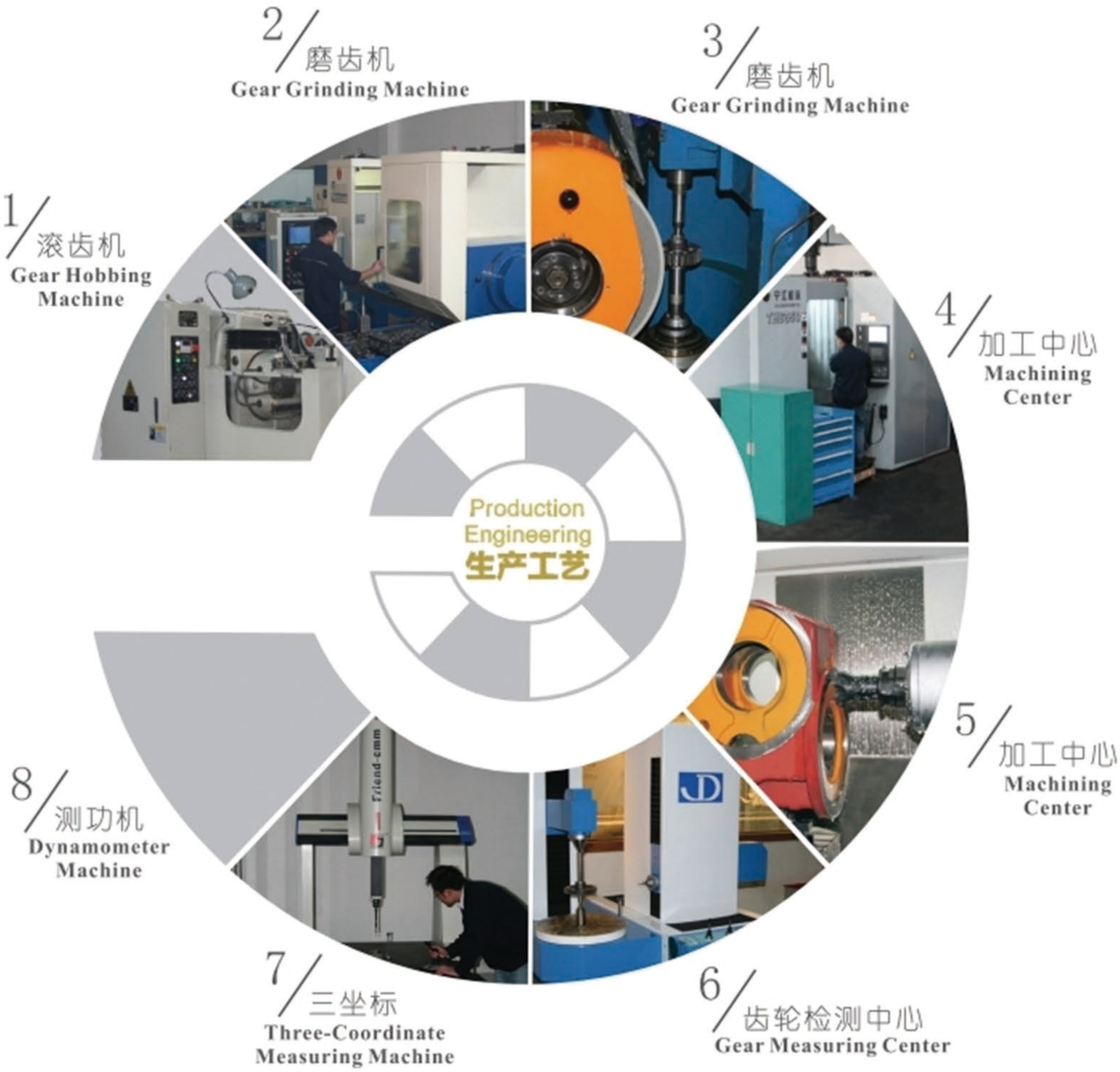
以全新的“模块组合”概念，为机电电子一体化的发展提供了更加广阔的空间，应用于各种机械设备中，包括钢铁、冶金、水泥、矿山、基建、建材、环保、造纸、港口、机场、高铁、地铁、石化、轻工、电镀、变位机、卷扬机、舞台机械、食品饮料及仓储物流等等。在国家重点工程项目中减速机的产品有着广泛的应用，如国内各主要港口、 首都机场及国内各大机场、首都剧场、北京人民大会堂大、小礼堂改造工程、 天津夏利、长春一汽、上海通用、大众、上海磁悬浮列车工程, 各大污水处理项目以及著名的中华世纪坛、三峡水利工程等等。

多年来，公司不断引进德国新设备如：Niles成形磨齿机、新工艺，采用CAD / CAM / CAI技术，逐步健全了生产、安装、售后服务，质量保证模式，严格按照ISO - 9001 - 2000质量体系要素运做，，确保生产高品质、高规格的产品。

公司团队均已在机电行业从业达到10年以上专业人才组成，团队专注为客户解决传动上所有难题，以多样式方案为客户提供技术支持，提高客户生产效率，降低企业成本，减少客户不必要的浪费及损失，BOSERL已为十几万家企业提供产品解决方案，做到全心全意为客户着想，用价廉物美的产品提供最优质的服务。

实现价值最大化是每个企业的最核心需求。我们发现这个需求并未很好地得到满足，创立BOSERL就是为了实现这个朴素的愿望，帮助更多企业以更便捷、更高效地完成价值最大化，在行业的竞争中处于更加有利的位置,让世界因我们的付出而更加精彩，实现企业价值最大化。

这就是BOSEL！您设备的速度，BOSERL可以满足！


2/磨齿机
Gear Grinding Machine
3/磨齿机
Gear Grinding Machine
1/滚齿机
Gear Hobbing Machine
4/加工中心
Machining Center
Production Engineering
生产工艺
5/加工中心
Machining Center
8/测功机
Dynamometer Machine
7/三坐标
Three-Coordinate Measuring Machine
6/齿轮检测中心
Gear Measuring Center

1.5 选型表注释 / Selection Table Explanation

性能参数表结构说明 /Performance Parameter Table Structure

P_1 [kW]	n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size	Input Configuration

- P_1 [kW] → 电机功率 Power of motor
- n_2 [1/min] → 输出转速 Output speed
- M_2 [Nm] → 输出扭矩 Output torque
- i → 减速比 Ratio
- Fr [N] → 径向载荷 Permitted Overhung load Output side
- K → 服务系数 Service factor
- Frame size → 机座规格 Frame size
- Input Configuration → 输入配置 Input Configuration

性能参数表结构说明 / Performance Parameter Table Structure

M_{2max} [Nm]	n_2 [1/min]	i	Fr [N]	Frame size	Motor

- M_{2max} [Nm] → 极限输出扭矩 Max. Permitted Output torque
- n_2 [1/min] → 输出转速 Output speed
- i → 减速比 Ratio
- Fr [N] → 径向载荷 Permitted Overhung load Output side
- Frame size → 机座规格 Frame size
- Motor → 电机型号 Motor type

功率配置表结构说明 /Power Combination

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	功率 Power	功率 Power	功率 Power	功率 Power	功率 Power	功率 Power

- n_2 [1/min] → 输出转速 Output speed
- M_{2max} [Nm] → 极限输出扭矩 Max. Permitted Output torque
- Fr [N] → 径向载荷 Permitted Overhung load Output side
- i → 减速比 Ratio

1.6. 润滑油 / Lubrication

1.6.1 润滑油类型 / Types of Lubrication

	环境温度(℃) Ambient Temperature(℃)	ISO粘度 ISO Viscosity Class	SHELL	Mobil MOBIL	bp BP	润滑油类型 Lubrication Type
GR GF GK GS	-40 ~ +10	VG 220	Shell Omala 200	Mobilgear 630	BP Energol GR-XP 220	矿物油 Mineral Oil
	-20 ~ +25	VG 150 VG 100	Shell Omala 100	Mobilgear 627	BP Energol GR-XP 100	
	-30 ~ +10	VG68-46 VG 32	Shell Tellus 32	Mobil D.T.E 13M		
	-40 ~ -20	VG 22 VG 15	Shell Tellus 32	Mobil D.T.E 11M	BP Energol HLP-HM 15	
	-40 ~ +80	VG 220	Shell Tellus 32	Mobil SHC 630		合成油 Synthetic Oil
	-40 ~ +10	VG 32		Mobil SHC 624		

1.6.2 润滑油量表

规定的加注量为参考值。精确值的变化与级数和传动比有关。请您在加注润滑油时一定要注意油位螺栓所指示的精确油量。后期调整安装方式时，您必须根据改变后的安装方式相应调整加注润滑剂。下表中列出了安装方式M1-M6的减速器相应的标准参考润滑油注入量值。

1.6.2 Lubricant Fill Quantity

The specified fill quantities are recommended values. The precise value varies depending on the number of stages and gear ratio. When filling, it is essential to check the oil level plug since it indicates the precise oil capacity. The following tables show guide values For lubricant fill quantities in relation to the mounting position M1 -M6.

GS..

减速器型号 Gear units	加注量 Fill quantity in liters 单位:升(L) Unit: L					
	M1	M2	M3	M4	M5	M6
GS37	0.25	0.40	0.50	0.55	0.40	0.40
GS47	0.35	0.80	0.70/0.90	1.00	0.80	0.80
GS57	0.50	1.20	1.00/1.20	1.45	1.30	1.30
GS67	1.00	2.00	2.20/3.10	3.10	2.60	2.60
GS77	1.90	4.20	3.70/5.40	5.90	4.40	4.40
GS87	3.30	8.10	6.90/10.4	11.3	8.40	8.40
GS97	6.80	15.0	13.4/18.0	21.8	17.0	17.0

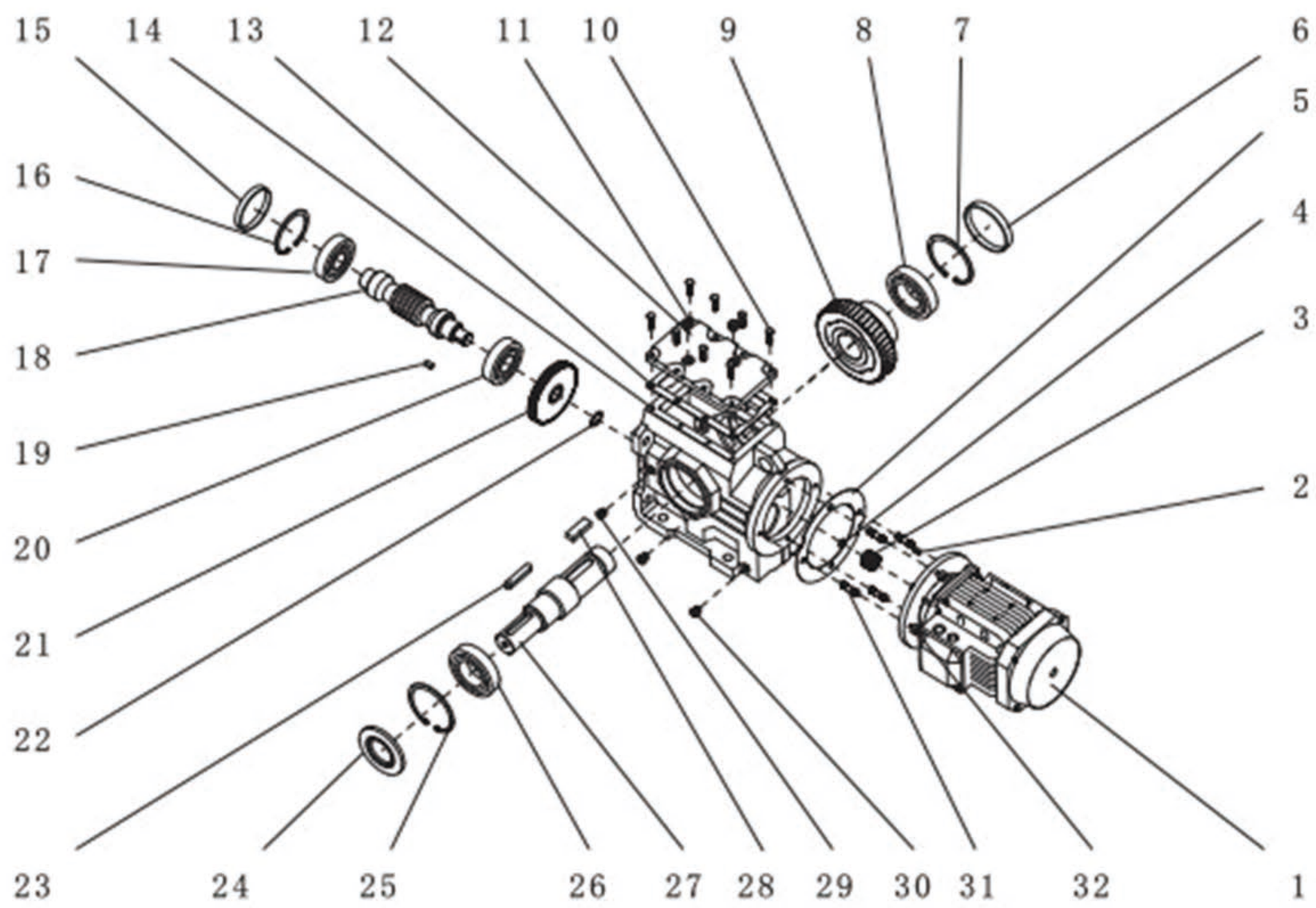
GSF..

减速器型号 Gear units	加注量 Fill quantity in liters 单位:升(L) Unit: L					
	M1	M2	M3	M4	M5	M6
GSF37	0.25	0.40	0.50	0.55	0.40	0.40
GSF47	0.40	0.90	0.90/1.05	1.05	1.00	1.00
GSF57	0.50	1.20	1.00/1.50	1.55	1.40	1.40
GSF67	1.00	2.20	2.30/3.00	3.20	2.70	2.70
GSF77	1.90	4.10	3.90/5.80	6.50	4.90	4.90
GSF87	3.80	8.00	7.10/10.1	12.0	9.10	9.10
GSF97	7.40	15.0	13.8/18.8	22.6	18.0	18.0

GSA..,GSH.., GSAF..,GSHF.., GSAZ..,GSHZ..

减速器型号 Gear units	加注量 Fill quantity in liters 单位:升(L) Unit: L					
	M1	M2	M3	M4	M5	M6
GS..37	0.25	0.40	0.50	0.50	0.40	0.40
GS..47	0.40	0.80	0.70/0.90	1.00	0.80	0.80
GS..57	0.50	1.10	1.00/1.50	1.50	1.20	1.20
GS..67	1.00	2.00	1.80/2.60	2.90	2.50	2.50
GS..77	1.80	3.90	3.60/5.00	5.80	4.50	4.50
GS..87	3.80	7.40	6.00/8.70	10.8	8.00	8.00
GS..97	7.00	14.0	11.4/16.0	20.5	15.7	15.7

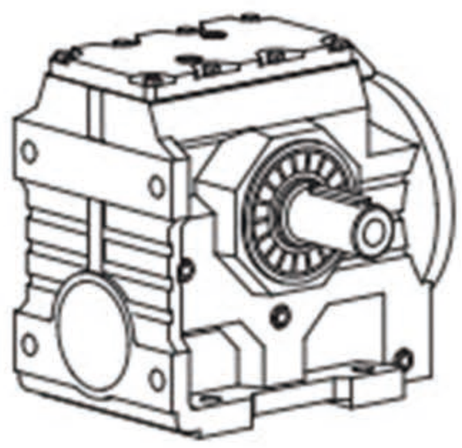
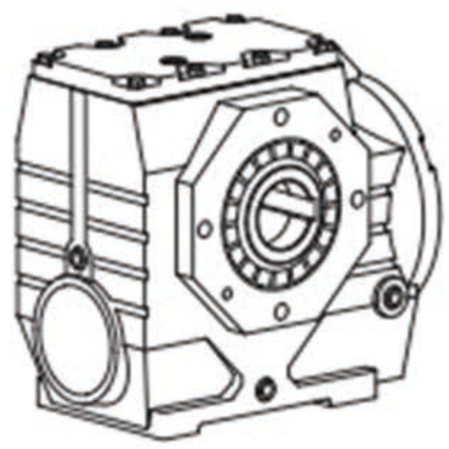
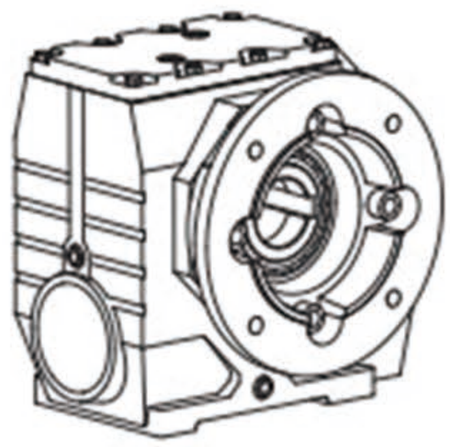
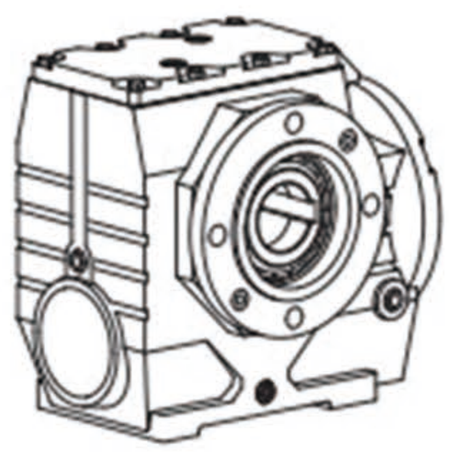
5.1 部件分解图 / Spare Parts List

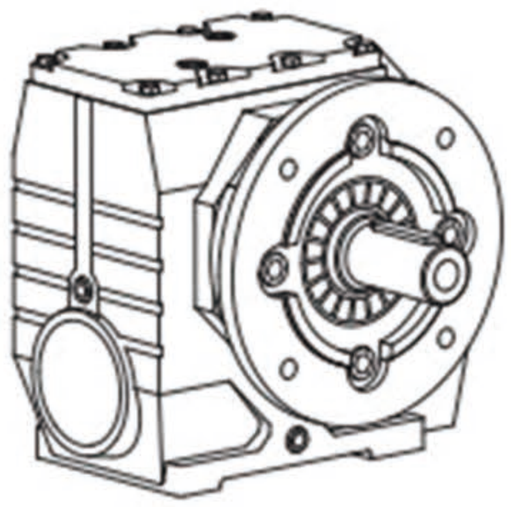


1 电机/motor
2 平键/flat key
3 齿轮/gear
4 轴用挡圈/retaining rings for shaft
5 纸垫/gasket
6 平面油封/plan seal
7 孔用挡圈/retaining rings for bores
8 轴承/bearing
9 蜗轮/worm gear
10 外六角螺钉/hex head screw
11 油塞/oil level plug
12 盖板/cover plate
13 纸垫/gasket
14 箱体/housing
15 平面油封/plan seal
16 孔用挡圈/retaining rings for bores
17 轴承/bearing
18 蜗杆/worm
19 平键/flat key
20 轴承/bearing
21 齿轮/gear
22 轴用挡圈/retaining rings for shaft
23 平键/flat key
24 骨架油封/skeleton oil seal
25 孔用挡圈/retaining rings for bores
26 轴承/bearing
27 输出轴/output shaft
28 平键/flat key
29 油塞/oil level plug
30 油塞/oil level plug
31 双头螺柱/stud
32 六角螺母/hexagon nut

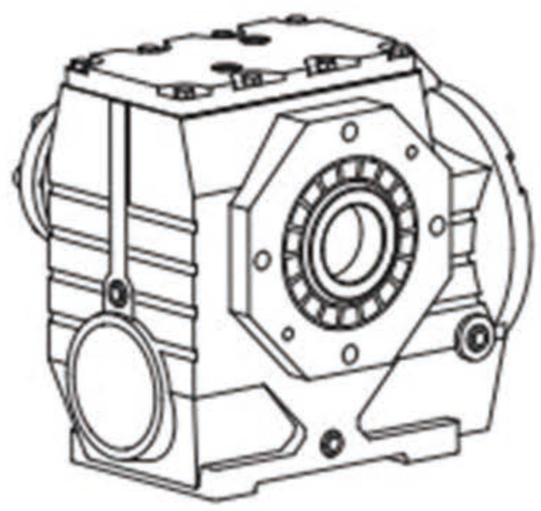
5.2 机型版本 / Versions

5.2.1 基本型式 / Basic Versions

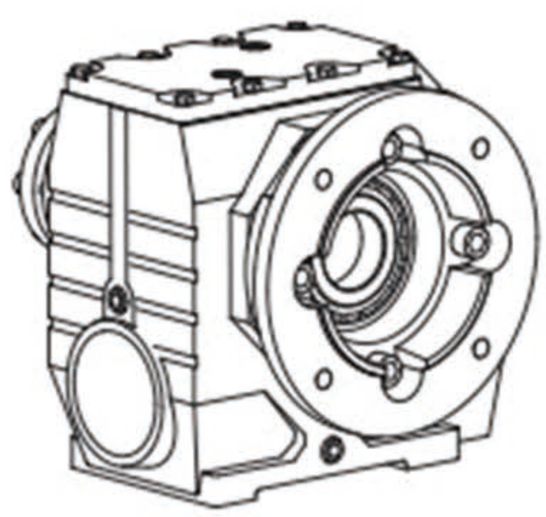
	**GS..** 底脚安装斜齿轮-蜗轮蜗杆减速机 Foot-mounted helical worm geared units.
	**GSA..** 空心轴安装斜齿轮-蜗轮蜗杆减速机 Helical-worm geared units with hollow shaft.
	**GSAF..** B5法兰空心轴安装斜齿轮-蜗轮蜗杆减速机 Helical-worm geared units in B5 flange mounted version with hollow shaft.
	**GSAZ..** B14法兰空心轴安装斜齿轮-蜗轮蜗杆减速机 Helical-worm geared units in B14 flange mounted version with hollow shaft.



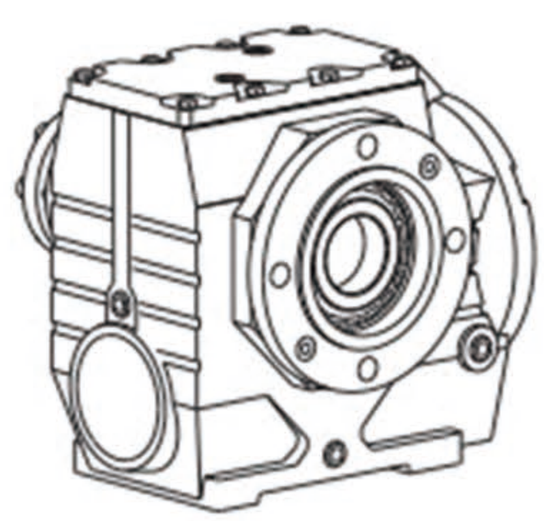
GSF..
B5法兰安装斜齿轮-蜗轮蜗杆减速机
Helical-worm geared units in B5 flange mounted version.



GSH..
空心轴锁紧盘安装斜齿轮-蜗轮蜗杆减速机
Helical-wrom geared units with hollow shaft and shrink disk.

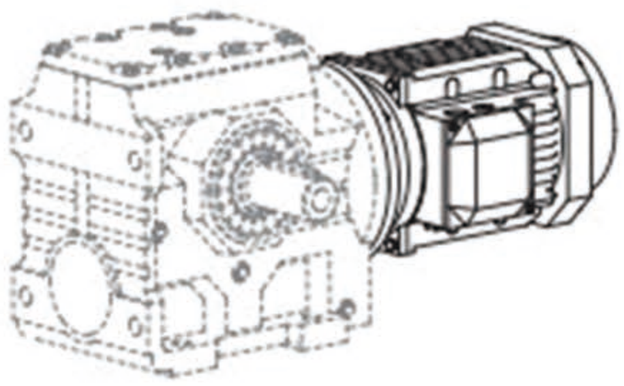
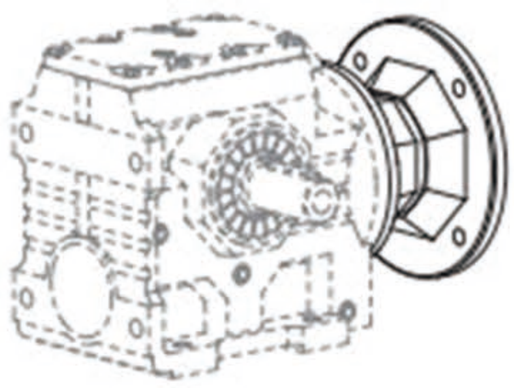
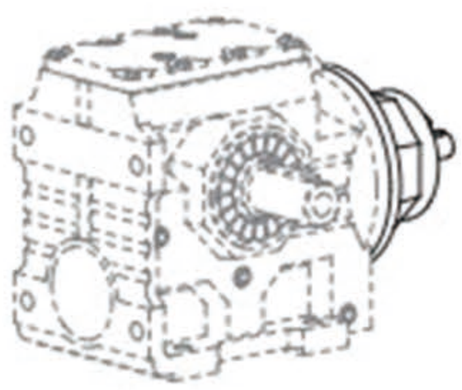


GSHF..
B5法兰空心轴锁紧盘安装斜齿轮-蜗轮蜗杆减速机
Helical-worm geared units in B5 flange-mounted version with hollow shaft and shrink disk.



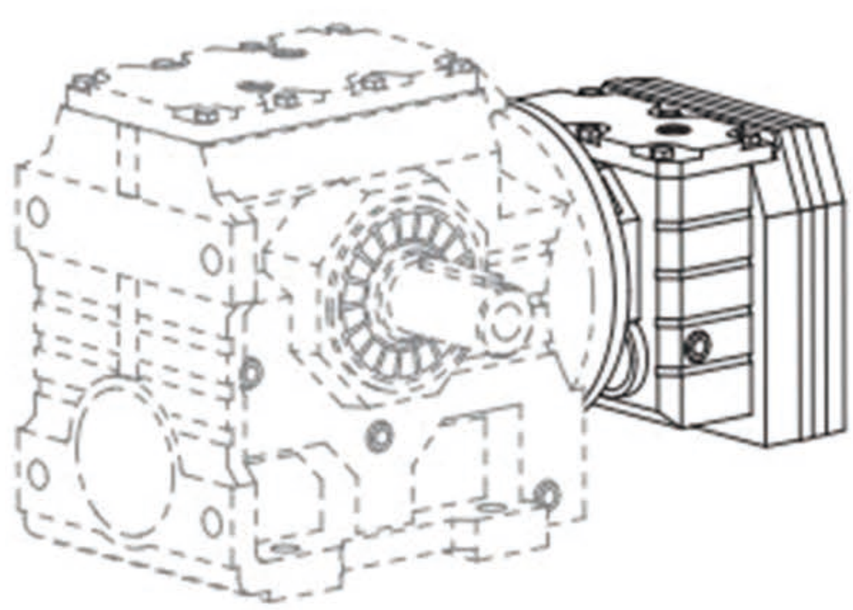
GSHZ..
B14法兰空心轴锁紧盘安装斜齿轮-蜗轮蜗杆减速机
Helical-worm geared units in B14 flange-mounted version with hollow shaft and shrink disk.

5.2.2 输入型式 / Input Versions

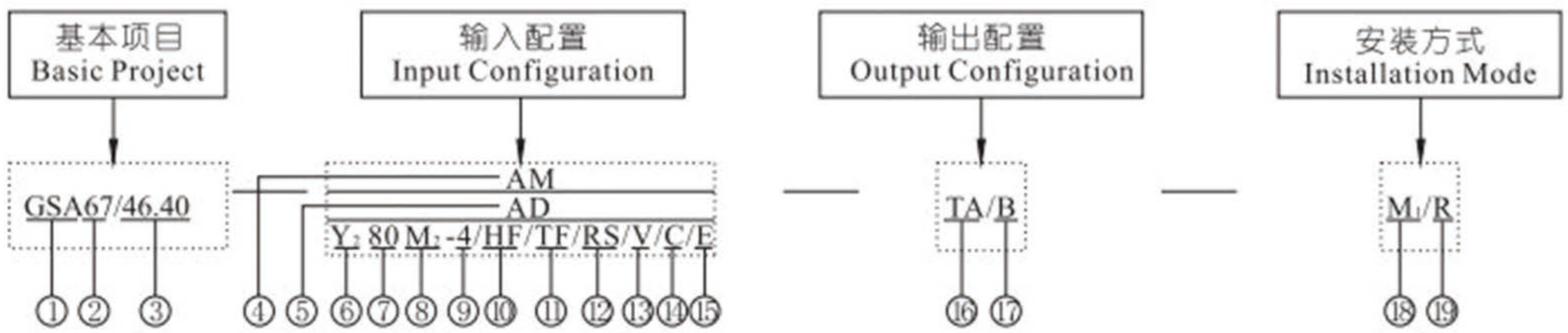
	**GS.. Y..** 直联电机输入 Input with geared motors.
	**GS.. AM..** AM（IEC）法兰输入 Input with AM adapters for mounting IEC motors.
	**GS.. AD..** AD 轴输入 Input with AD shaft assembly.

5.2.3 **GS..与 GRF..组合** / GS.. and GRF.. Combination

当需要特别低速输出时，可选择 GRF 齿轮箱作为 GS 齿轮箱的输入。
If special low speed is needed, GRF.. gearbox can be the input of GS.. Gearbox.



5.3 产品标注 / Product Code



	标号 NO.	含义 Meaning	说明 Explanation
基本项目 Basic Project	①	系列代号 Series Code	GS、GSF、GSA...(详见5.2.1) GS,GSF,GSA...(see 5.2.1).
	②	机座号 Frame Size	机座号: 37、47、57... Frame Size: 37, 47, 57...
	③	传动比 Transmission Ratio	传动比 i Transmission Ratio I.
输入配置 Input Configuration	④	法兰输入代号 Flange Input Code	AM(IEC): 63、71、80...
	⑤	轴输入代号 Shaft Input Code	AD: 1、2、3...
	⑥	电机代号 Motor Code	Y_2: 三相异步电动机 Y_2: Three Phase Asynchronous Motor. YD: 变极多速三相异步电动机 YD: Variable-pole Multi-speed Three Phase Asynchronous Motor. YS: 小功率三相异步电动机 YS: Small Power Three Phase Asynchronous Motor. YVF_2: 变频调速三相异步电动机 YVF_2: Variable Frequency Speed Control Three Phase Asynchronous Motor. Y_2EJ: 电磁制动三相异步电动机 Y_2EJ: Electromagnetic Brake Three Phase Asynchronous Motor. YB2: 隔爆三相异步电动机 YB2: Flame Proof Three Phase Asynchronous Motor.
	⑦	电机机座号 Motor Frame Size.	63、71、80...
	⑧	电机定子铁芯长度代号 Length Code of Stator Core.	M、M_1、M_2、S、S_1、S_2、L、L_1、L_2
	⑨	电机极数 Pole Number of Motor.	2、4、6、8

	标号 NO.	含义 Meaning	说明 Explanation
输入配置 Input Configuration	⑩	手动释放装置 Manual Release Device	无 代 码: 无手动释放装置 No Code: No manual release device. H F: 手动释放装置带自锁功能 H F: Manual release device with self-locking Fun-Ction. H R: 手动释放装置不带自锁功能 H R: Manual release device without self-Locking function.
	⑪	电机热保护装置 Motor Heat-protection Device.	无 代 码: 无电机热保护装置 No Code: No motor heat-protection device. T F: 电机热保护装置 T F: Motor heat-protection device.
	⑫	逆止器 Backstop	无 代 码: 无逆止器 No Code: No backstop. R S: 逆止器 R S: Backstop.
	⑬	强制冷却风扇 Forced Cooling Fan	无 代 码: 无强制冷却风扇 No Code: no forced cooling fan. V: 强制冷却风扇 V: Forced cooling fan.
	⑭	防雨罩 Cover	无 代 码: 无风扇防护罩 No Code: No fan cover. C: 防雨罩 C: cover.
	⑮	编码器 Encoder	无 代 码 : 无编码器 No Code: No encoder. E: 编码器 E: Encoder
输出配置 Output Configuration	⑯	扭力臂 Torque Arm	无 代 码: 无扭力臂 No Code: No torque arm. T A: 扭力臂指向 A T A: Torque arm pointing to A. T B: 扭力臂指向B T B: Torque arm pointing to B.
	⑰	法兰或轴指向 Flange or Shaft Pointing direction.	A: 法兰或轴指向A A: Flange or shaft pointing to A. B: 法兰或轴指向B B: Flange or shaft pointing to B. A+B: 双出轴或双法兰 A+B: Double flange or shaft.
安装方式 Mounting Positions	⑱	安装方位 Mounting Position	M1、M2、M3、M4、M5、M6
	⑲	电机接线盒方位 Position for motor terminal box.	R、B、L、T

说明:

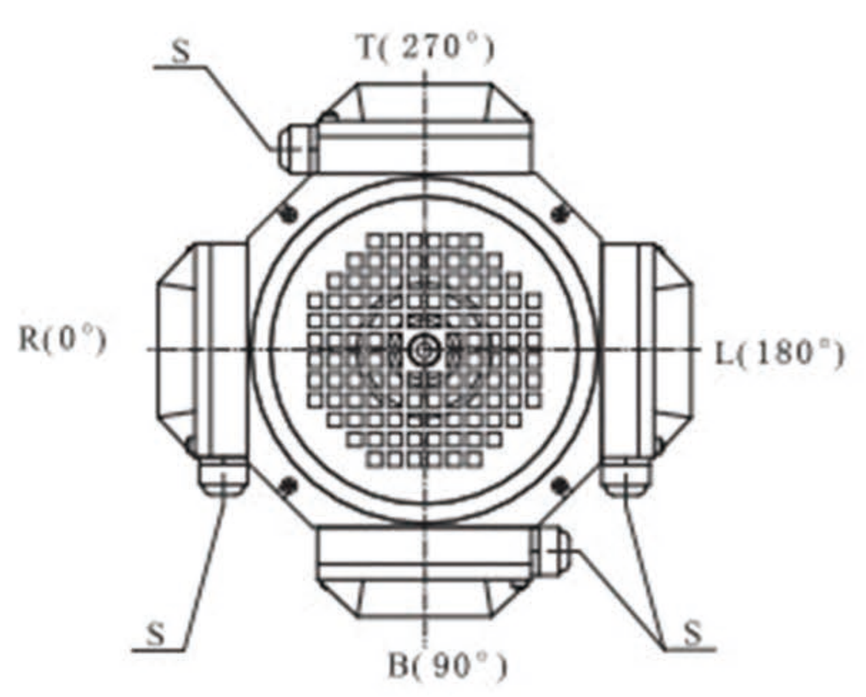
1. 基本项目不可省略;
2. 输入配置中，只能在 AM、AD 和电机之间选择一种;
3. 输出配置参数若省略，默认按A方向提供;
4. 安装方式参数若省略，默认按 M1 安装方位，R 接线盒方位提供。

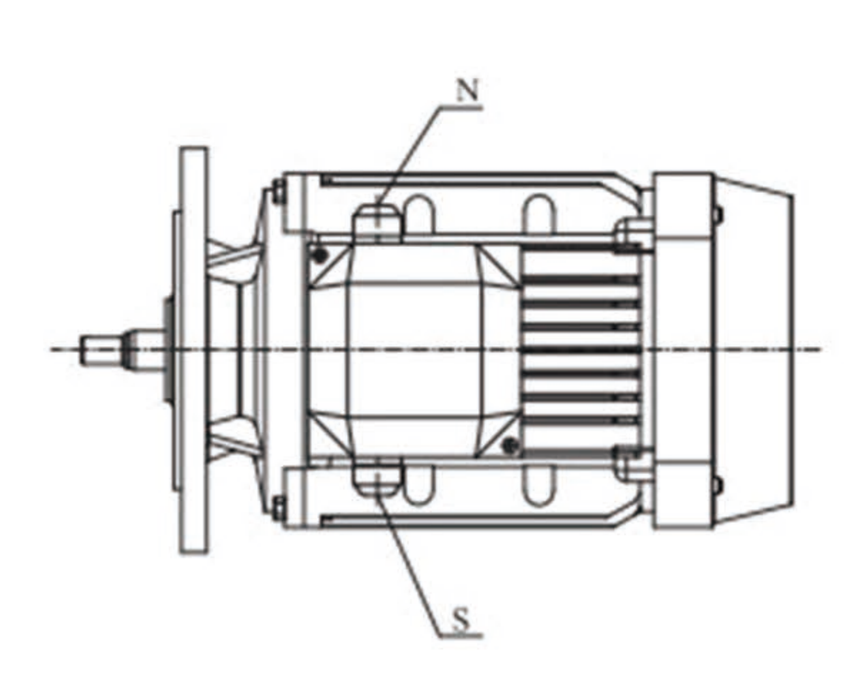
Notes:

1. Basic project can not be omitted.
2. Input configuration can only be one of AM, AD and motor.
3. If no output configuration, default pointing direction will be A.
4. If not mounting position, default mounting position will be M1, default position for motor terminal will be R.

5.4 安装方位 / Mounting Positions

5.4.1 电机接线盒方位 / Position of Motor Terminal Box





R(0°): 默认接线盒方位
R(0°): Default Position for Motor Terminal Box
注: 图为M1安装方位。
Mark :This picture is the installation position of M1

S: 默认进线方位
S: Default Line Position

说明:

上图的视图方向为: 从电机尾部的风罩向前看。

可提供R (0°)、B (90°)、L (180°)、T (270°) 四种电机接线盒方位。其中 R (0°) 位置是默认方位。如无特别说明，将按默认方位提供。

可提供 S 和 N 两种进线方位，其中 S 位置是默认方位。如无特别说明，将按默认方位提供。

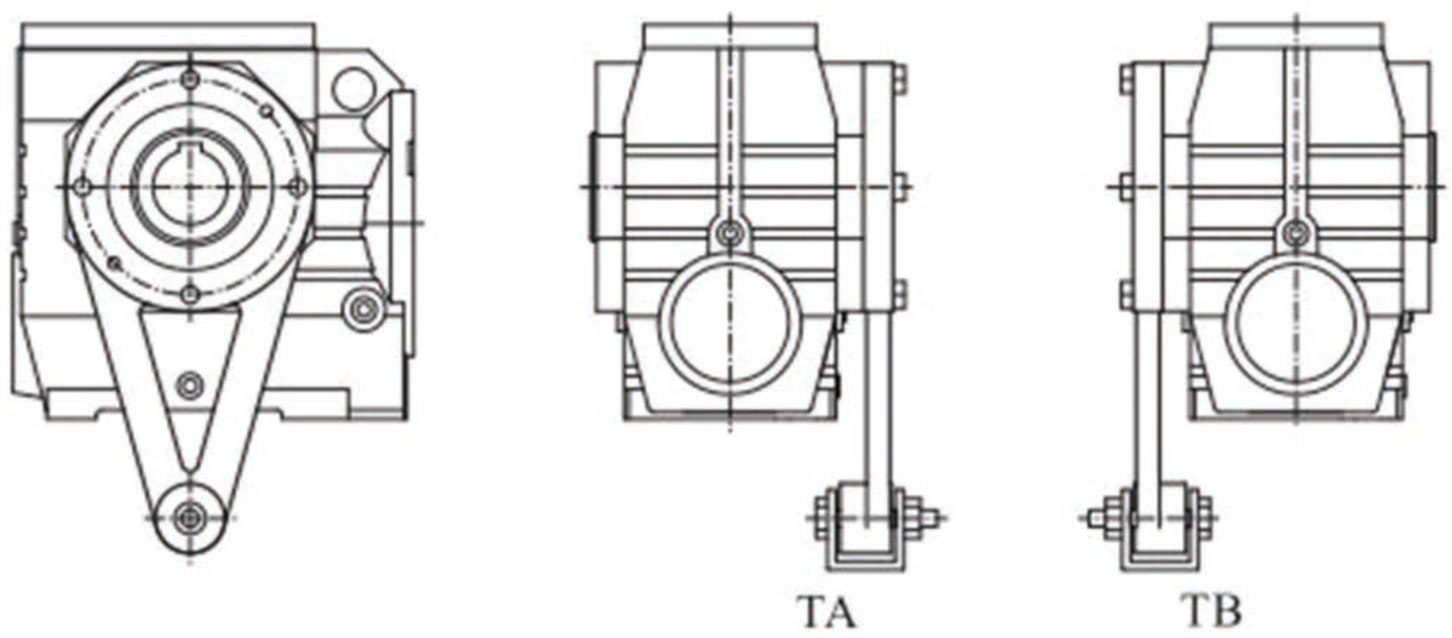
Notes:

The view direction of above figure: from the fan cover in the end of the motor to look forward.

There will be four position for motor terminal box: R(0°)、B(90°)、L(180°)、T(270°). And default position is R(0°).If no special explaination, it will be provided in default position.If no special explaination, it will be provided in default position.

There will be two line position: S and N. Default position is S.If no special explaination, it will be provided in default position.If no special explaination, it will be provided in default position.

5.4.2 扭力臂方位 / Position of Torque Arm



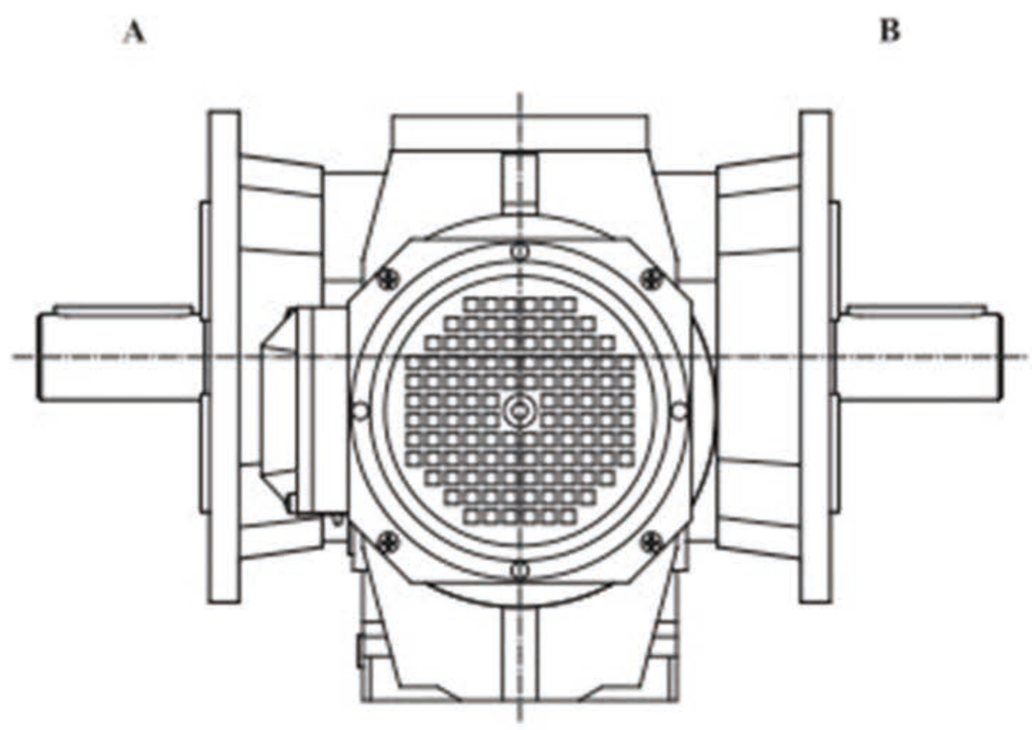
说明:

扭力臂方位 TA 与 TB 是对称的。

Notes:

TA and TB are symmetrical.

5.4.3 法兰或轴指向 / Position of The Output Shaft and Flange



说明:

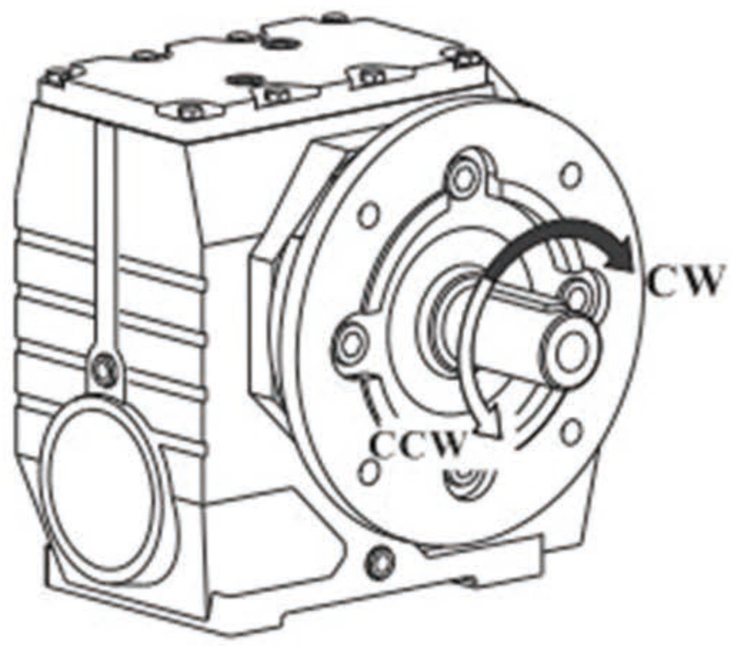
上图的视图方向为：从电机尾部的风罩向前看。

可提供 A、B 或 A+B 三种输出法兰或输出轴的方位。

Notes:

The view direction of above figure is from the fan cover in the end of the motor to look forward. There are three positions: A or B or A+B.

5.4.4 输出轴旋转方向 / Direction of Rotation of Output Shaft.



说明:

当减速电机带逆止器时，需规定输出轴的旋转方向。

上图中，从输出轴观看，顺时针旋转规定为 CW；逆时针旋转规定为 CCW。

当减速电机采用 A+B 方式输出时（见5. 4. 3），需指出给定的旋转方向是从 A 端观看还是从 B 端观看。

Notes:

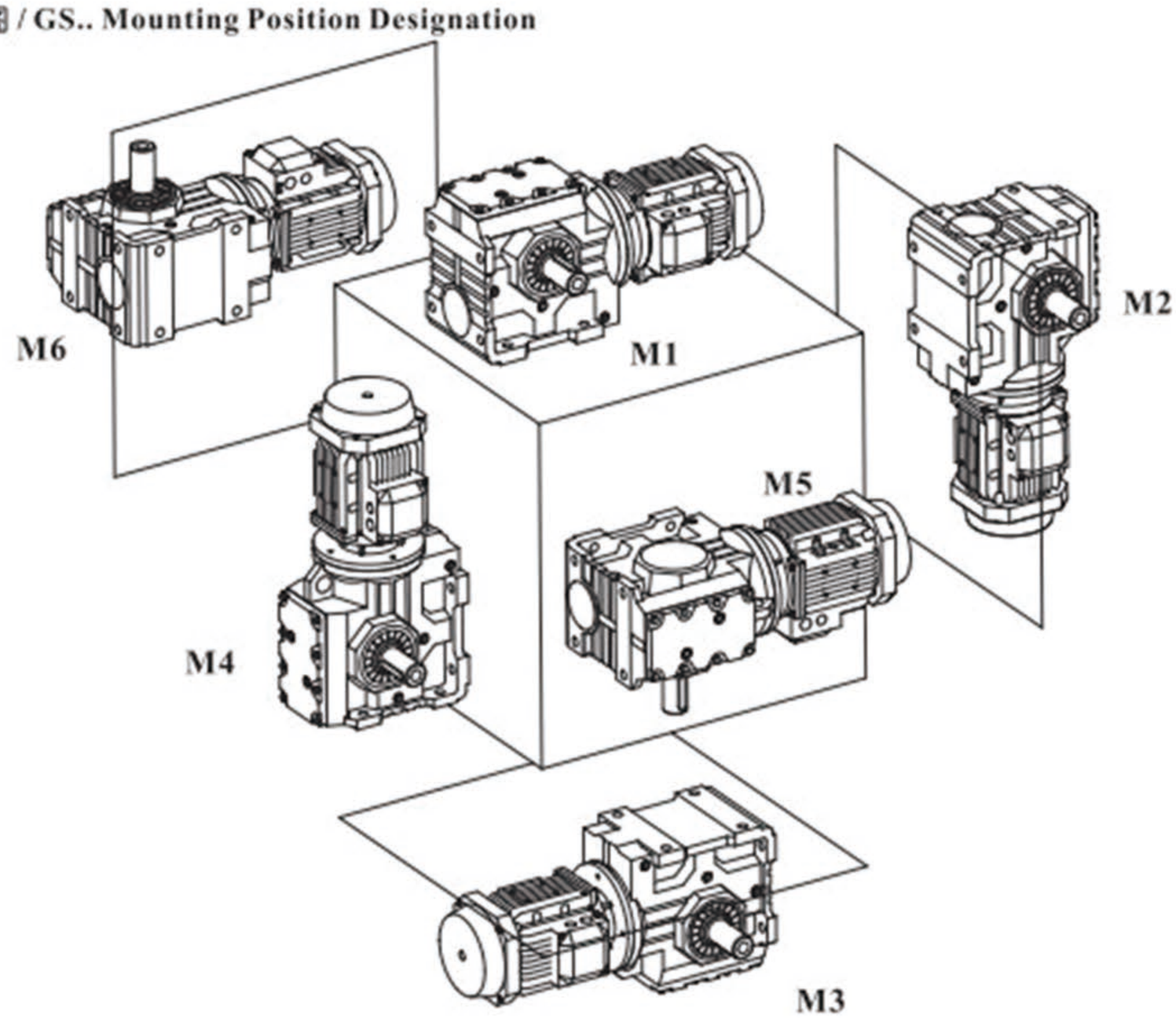
It is necessary to stipulate the direction of ratation of the output shaft if the drive has a back stop.
For above figure, the following definition applies:
Looking onto the output shaft.
CW = Rotating Clockwise
CCW = Rotation Counter-clockwise
If the position of the output shaft or flange is A+B, it is necessary to stipulate for certain direction of rotation, it was looked on the A or B.

5.4.5 油位符号说明 / Oil Level Symbol Explanation

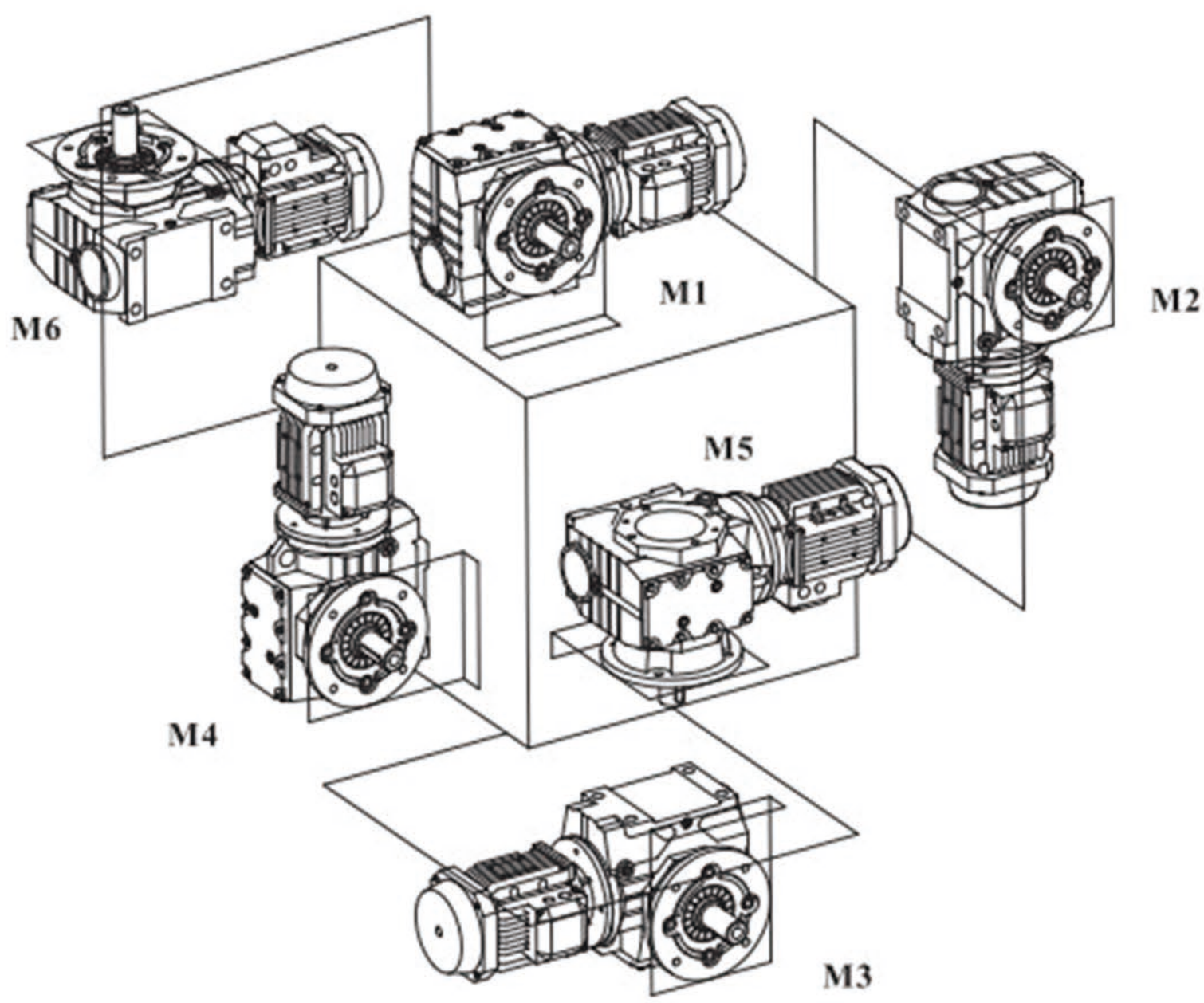
符号 Symbol	含义	Meaning
	通气帽	BREATHER VALVE
	油标	OIL LEVEL PLUG
	排油塞	OIL DRAIN PLUG

5.4.6 安装位置示意 / Mounting Position Designation

GS..安装位置示意图 / GS.. Mounting Position Designation



GSF..安装位置示意图 / GSF.. Mounting Position Designation



5.4.7 安装方位 / Mounting Positions

*→提示:

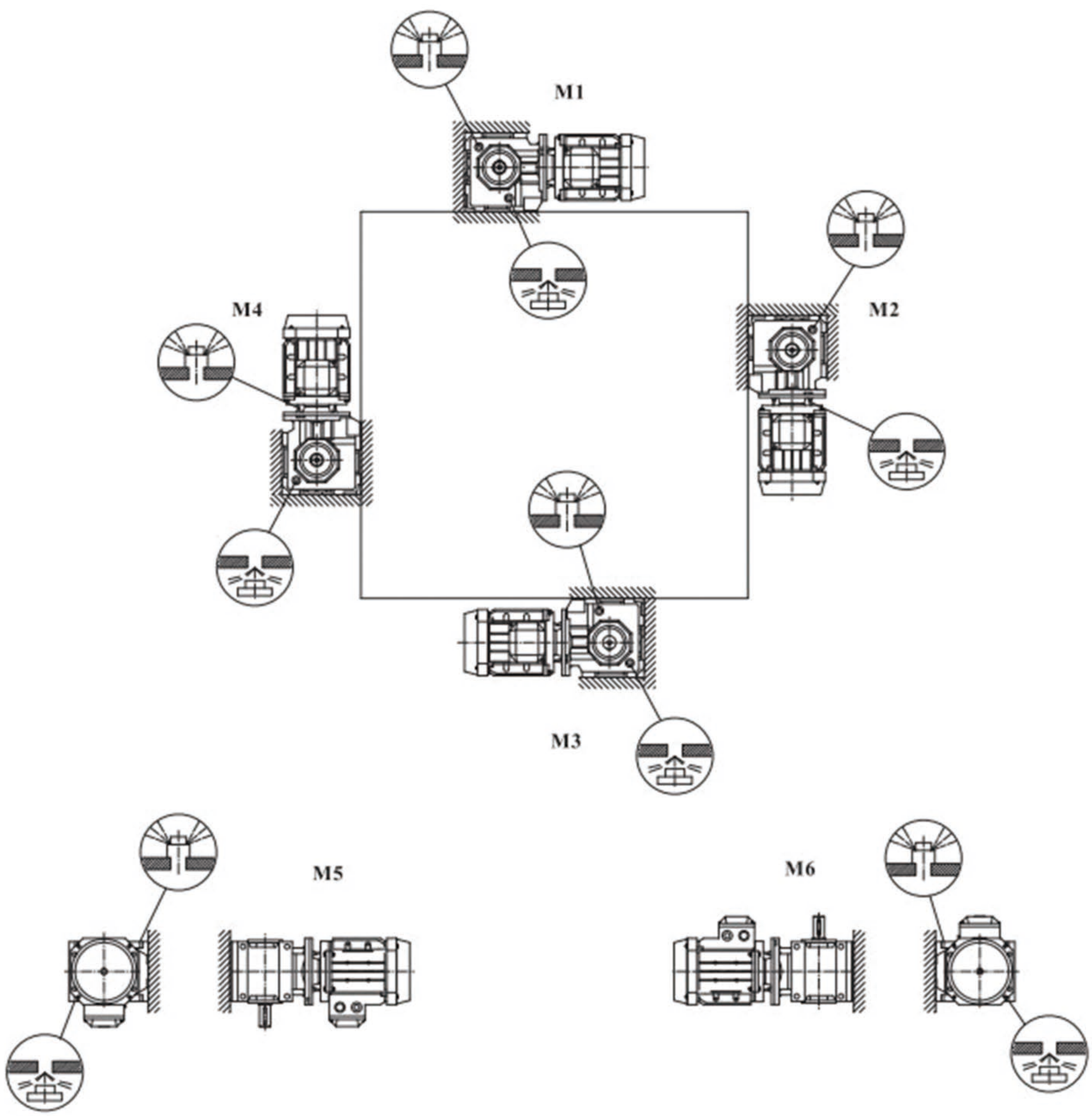
当采用下表列出的安装方式及输入转速时，齿轮箱会产生不可忽视的搅油损失。请联系本公司。

*→Reminder:

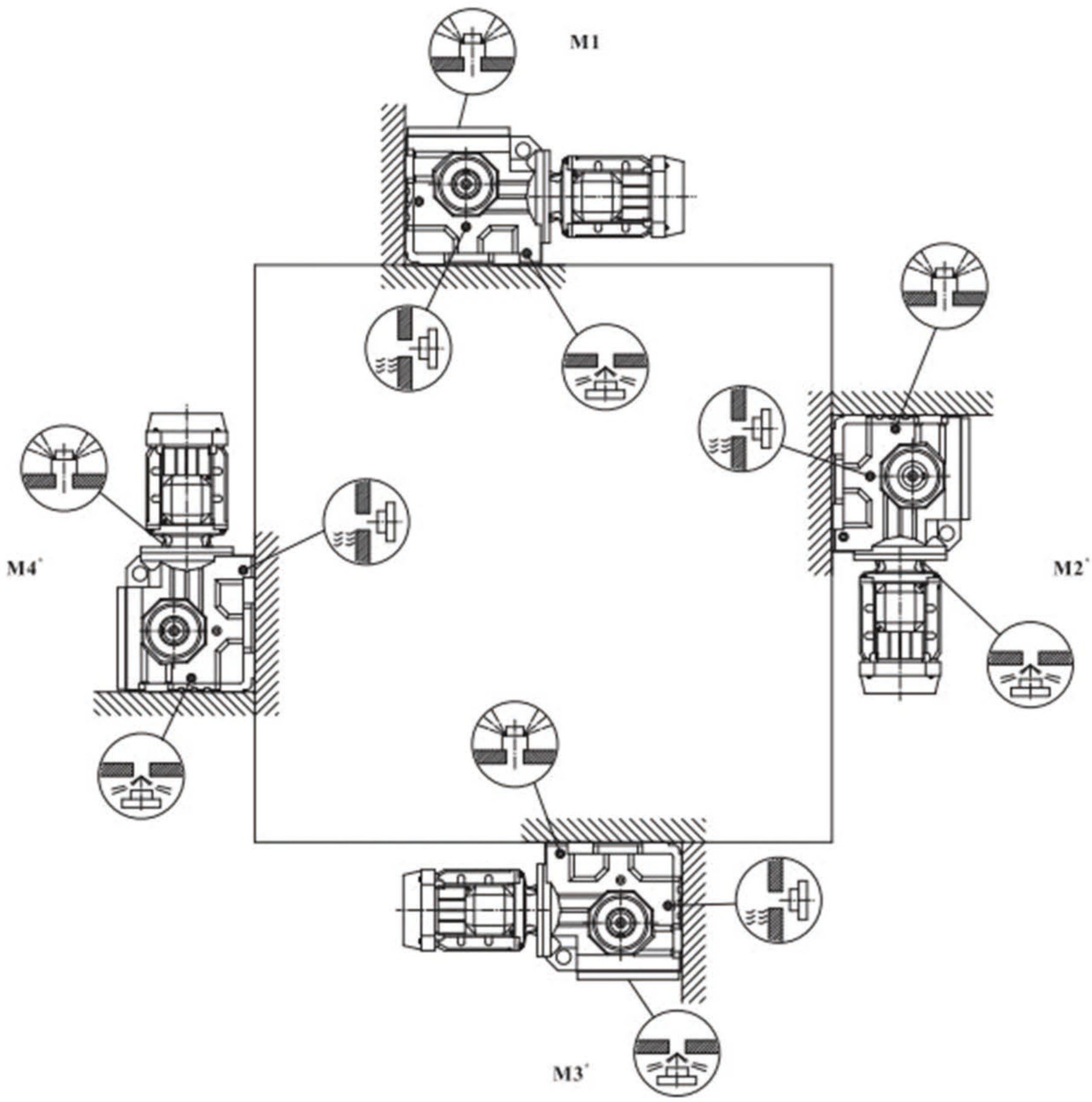
Increased churning losses may arise in the following mounting positions. Contact Greatwall Machinery.

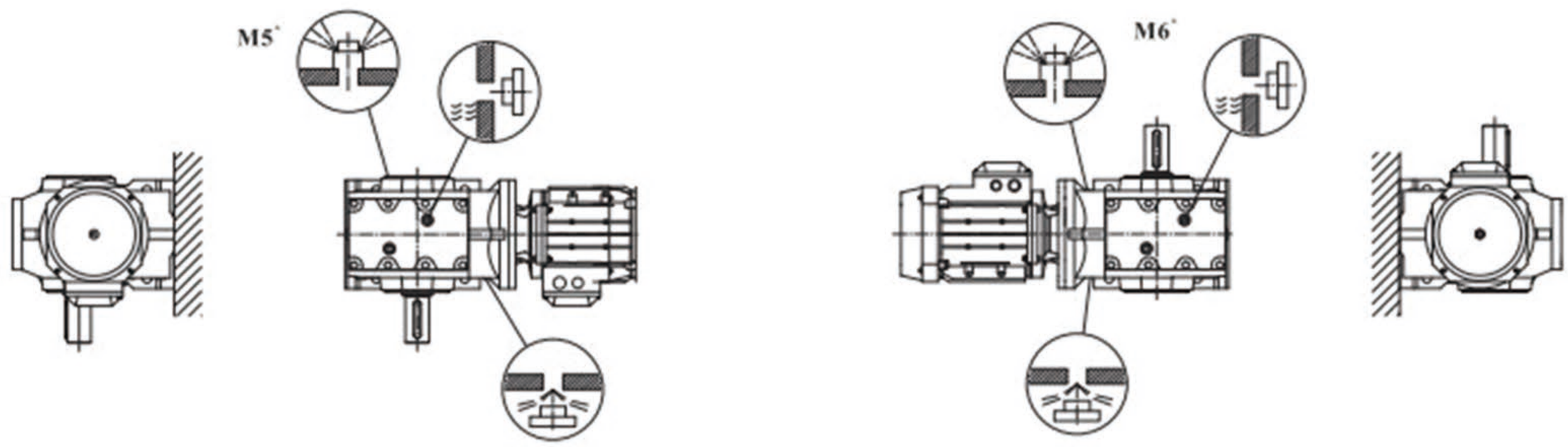
安装方式 Mounting Position	齿轮箱规格 Gear Unit Size	输入转速 Input Speed（r/min）
M2，M3，M4，M5，M6	77-97	>2500

GS37

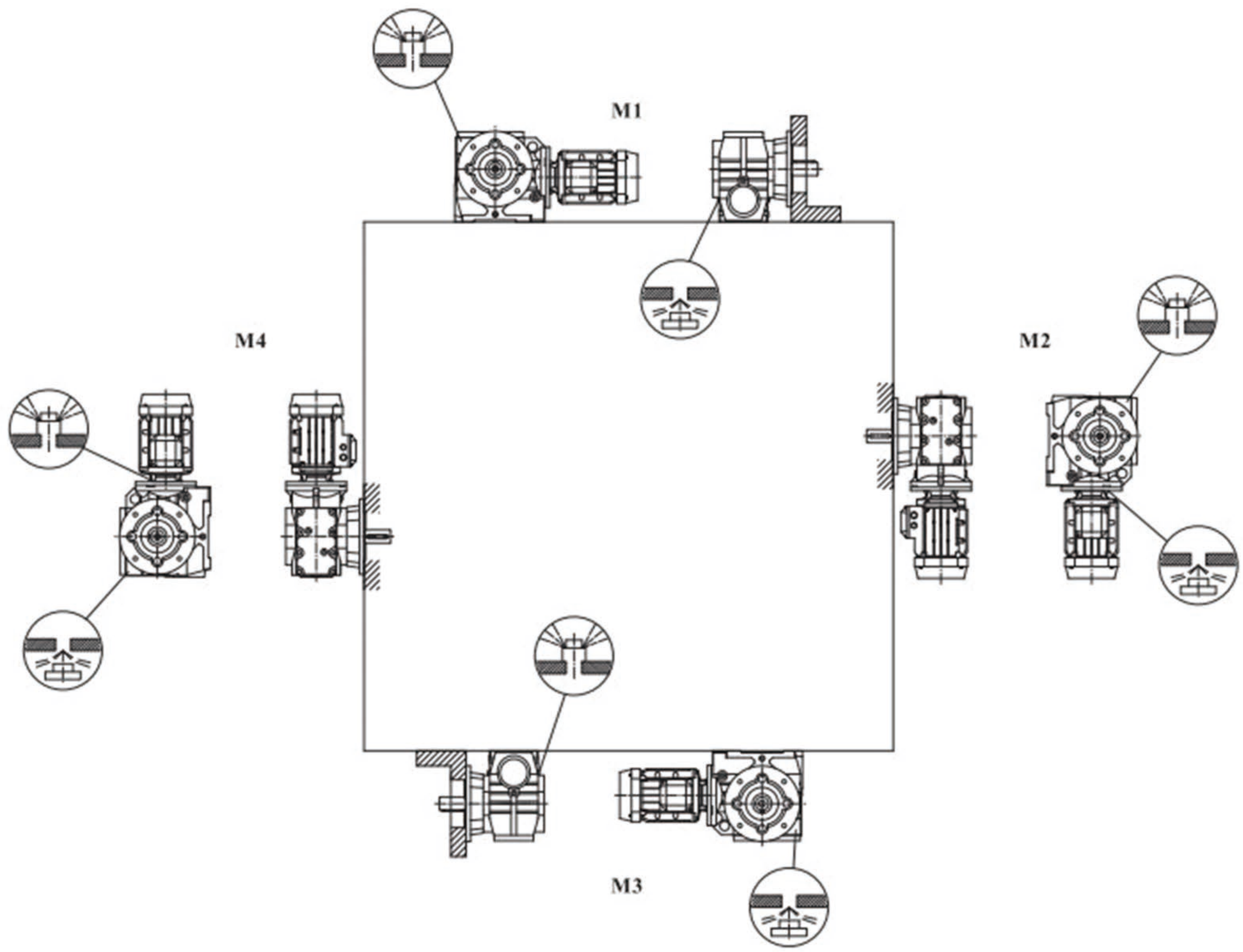


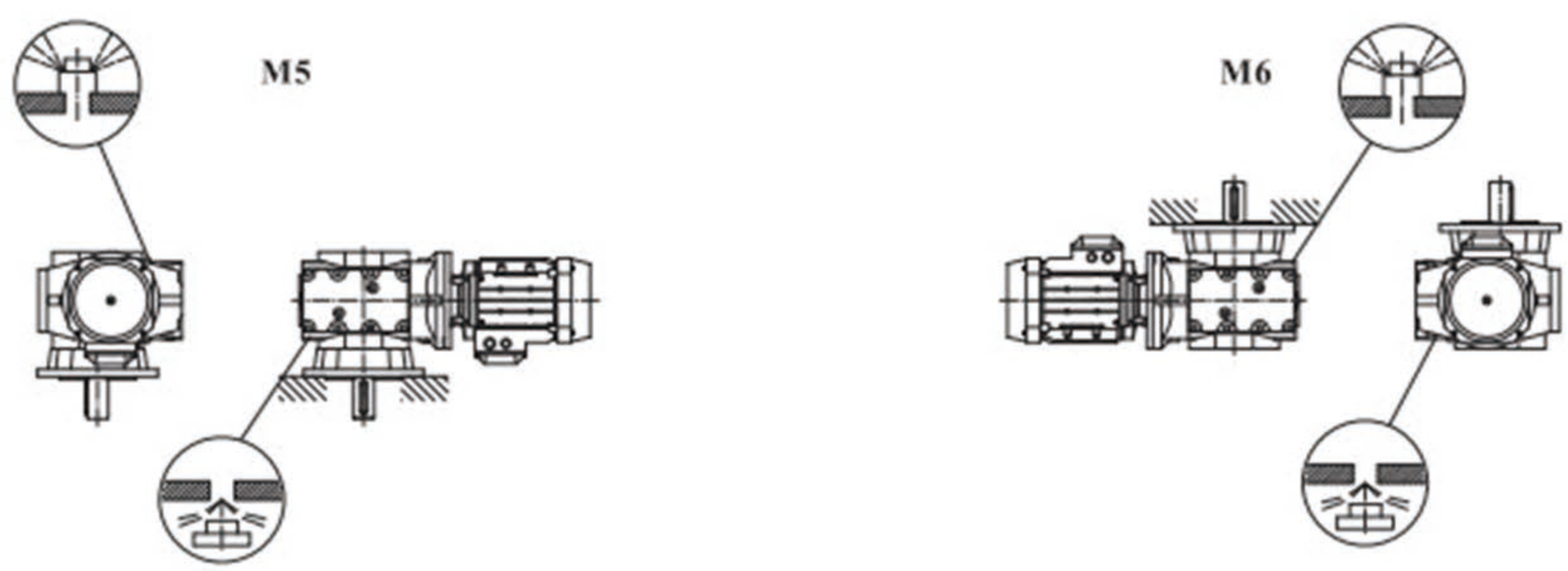
GS47~97



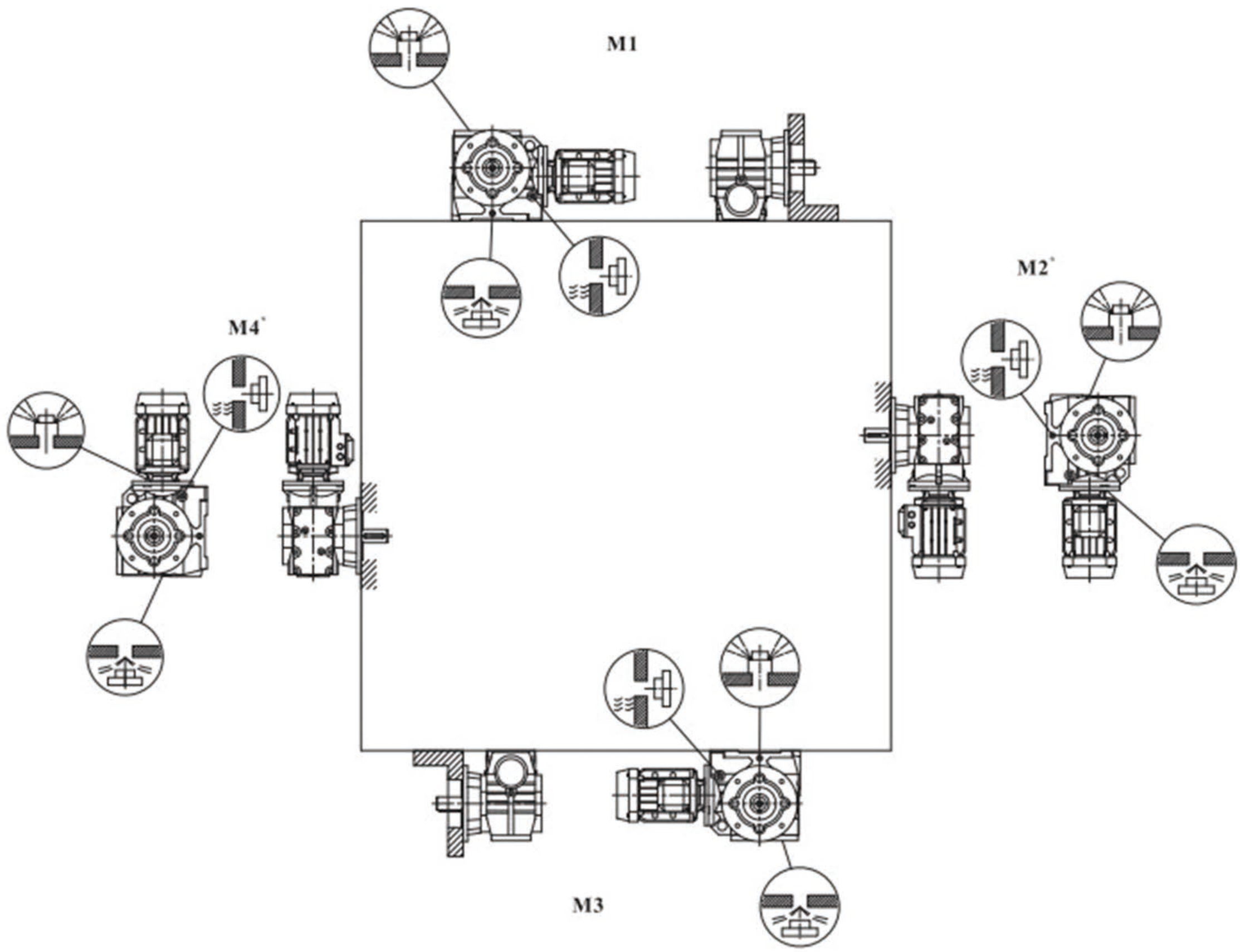


* →page 225


M1
M2
M3
M4

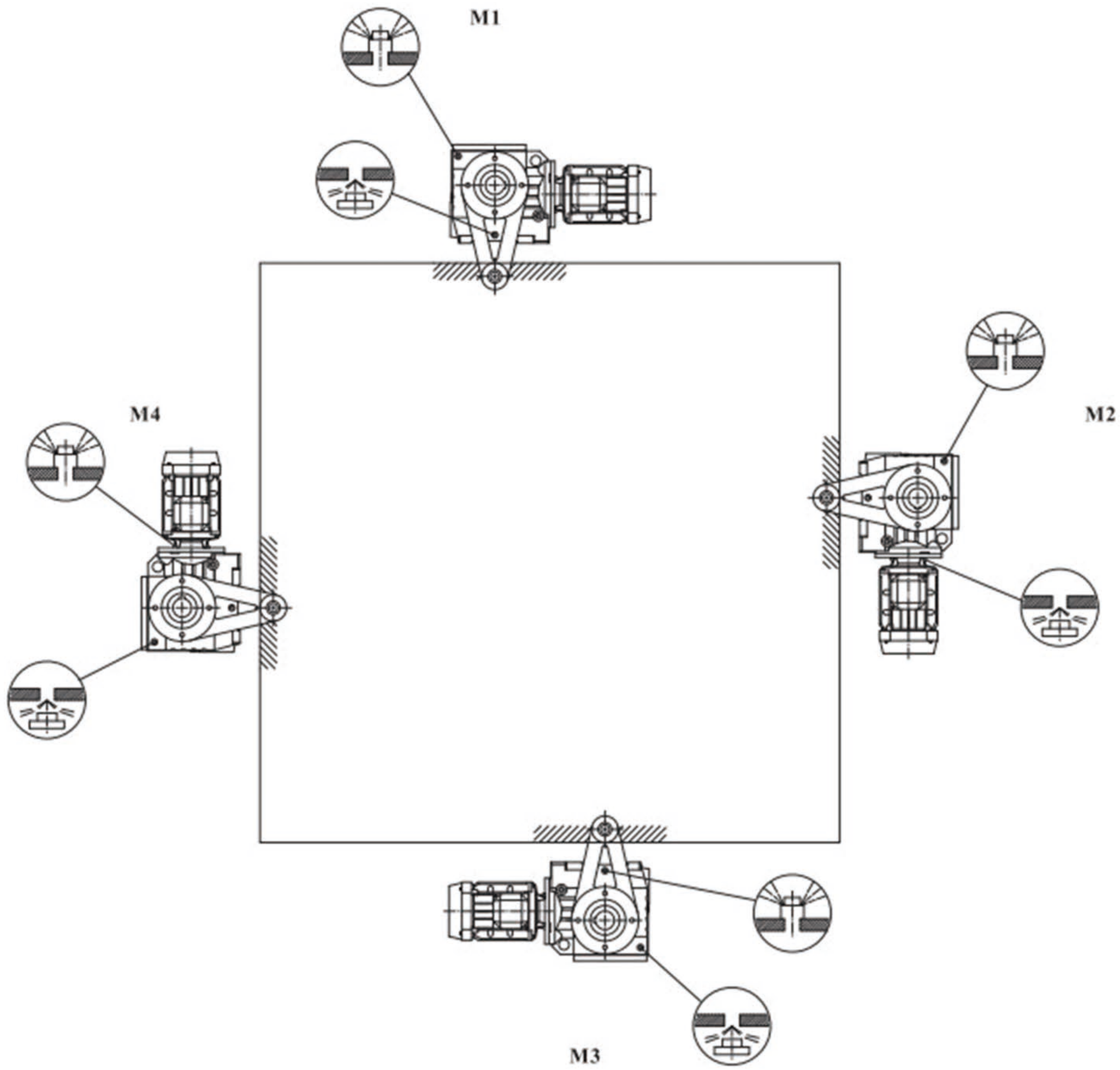

M5
M6

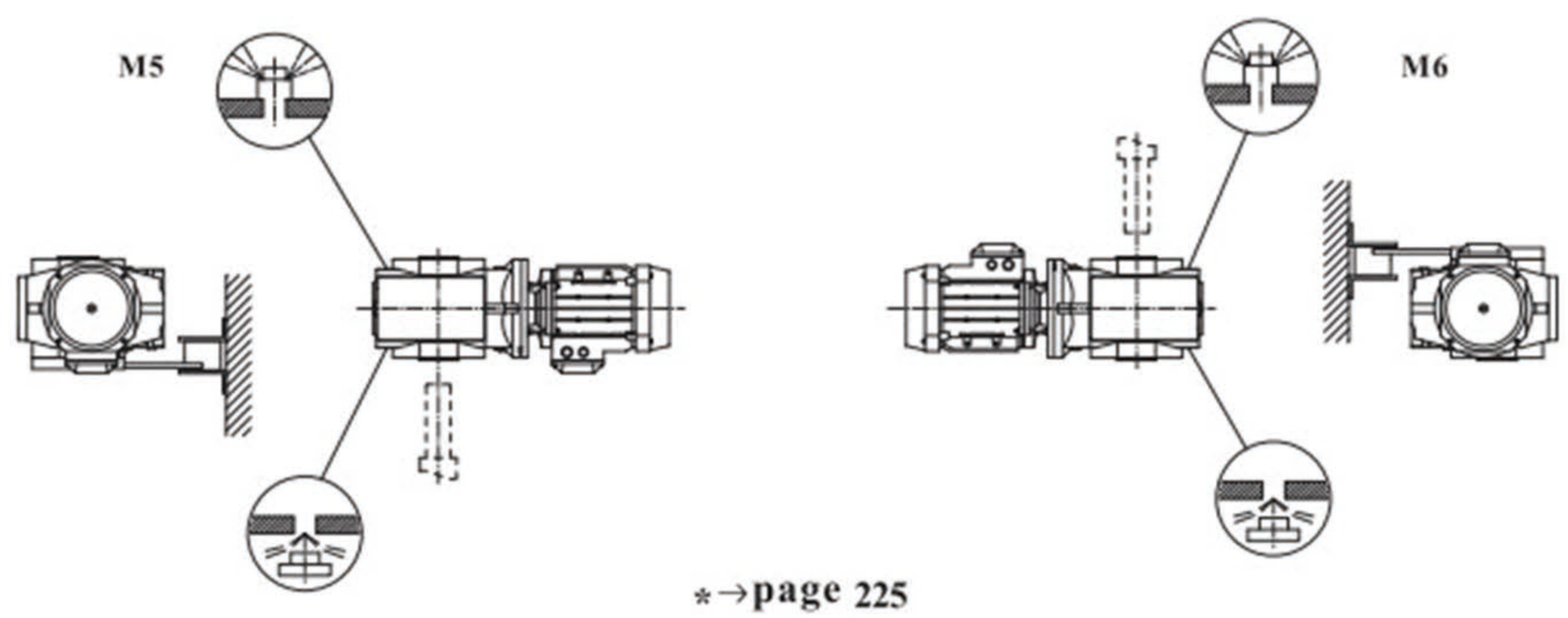
GSF/GSAF/GSHF/GSAZ47~97



*→page 225

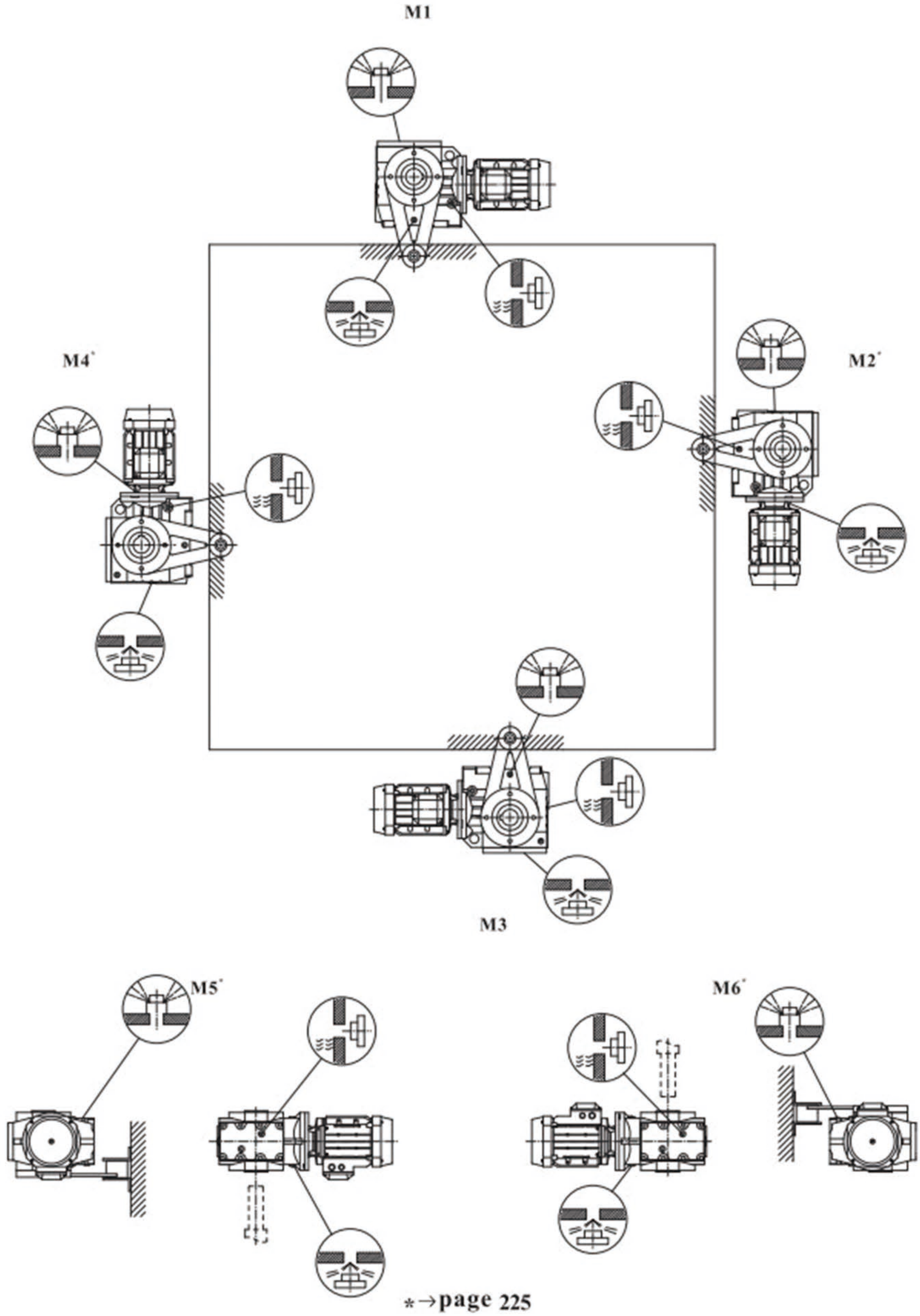
GSA/GSH37/T





* →page 225

GSA/GSH47~97/T



* →page 225

5.5 减速器组合表 / Gear Unit Combination Table

为得到特别低的输出转速，可以通过GRF齿轮箱与 GS 齿轮箱相连的方式实现。

当采用这种传动方案时，可配置电动机的功率依赖于减速机的极限输出扭矩，而不能通过电动机的额定功率和减速机的总传动比计算得出减速机的输出扭矩。

GRF series of gear units and GS series of gear units can be connected together to get special output speed.

For this transmission scheme, the power of the motor depends on the limit output torque of the gearbox, instead of the output torque calculated based on rated power of the motor and the transmission ratio of the gear unit.

GS..与GRF..齿轮箱可能的组合 / Possible Combination of GS.. and GRF..

	GRF17	GRF27	GRF37	GRF47	GRF57
GS..37					
GS..47					
GS..57					
GS..67					
GS..77					
GS..87					
GS..97					

说明：

▭ ：表示可能的组合。

▭ ：表示不允许的组合。

Notes:

▭ : Possible Combination.

▭ : Impossible Combination.

5.6 GS..功率配置 / GS..Power Configuration

GS37 n_1=1400 1/min									92Nm
n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.12 ~0.55	0.75 1.10				
8.90	92	3000	157.43						
9.70	92	3000	144.40						
11.0	91	3000	122.94						
13.0	88	3000	106.00						
14.0	87	3000	98.80						
16.0	86	3000	86.36						
17.0	85	3000	80.96						
20.0	84	3000	71.44						
22.0	82	3000	63.33						
25.0	81	3000	55.93						
26.0	80	3000	53.83						
27.0	81	3000	51.30						
32.0	81	3000	43.68						
37.0	79	3000	37.66						
40.0	78	3000	35.10						
46.0	76	2860	30.68						
49.0	75	2800	28.76						
55.0	74	2660	25.38						
62.0	73	2530	22.50						
70.0	52	2470	19.89						
73.0	71	2380	19.13						
77.0	52	2380	18.24						
90.0	50	2240	15.53						
105	49	2110	13.39						
112	48	2060	12.48						
128	48	1940	10.91						
137	47	1900	10.23						
155	46	1810	9.02						
175	45	1730	8.00						
206	43	1630	6.80						
221	35	1670	6.33						
260	34	1570	5.38						
288	33	1520	4.86						
353	32	1400	3.97						

GS47 n_1=1400 1/min									170Nm
n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.12 ~0.55	0.75 1.10	1.50			
7.00	170	5340	201.00						
7.60	170	5340	184.80						
8.90	170	5340	158.12						
10.0	168	5350	137.05						
11.0	168	5350	128.10						

GS47 n_1=1400 1/min									170Nm
n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.12 ~0.55	0.75 1.10	1.50			
13.0	168	5350	110.73						
15.0	168	5350	94.08						
17.0	167	5360	84.00						
20.0	167	5360	71.75						
20.0	155	5370	69.39						
21.0	167	5360	67.20						
22.0	155	5370	63.80						
25.0	165	5320	56.61						
26.0	155	5150	54.59						
30.0	155	4850	47.32						
32.0	155	4710	44.22						
37.0	155	4420	38.23						
43.0	155	4120	32.48						
48.0	155	3920	29.00						
57.0	155	3650	24.77						
60.0	152	3570	23.20						
69.0	110	3370	20.33						
72.0	144	3370	19.54						
79.0	110	3160	17.62						
85.0	110	3060	16.47						
98.0	110	2850	14.24						
116	109	2650	12.10						
130	109	2500	10.80						
152	109	2310	9.23						
162	109	2230	8.64						
192	103	2110	7.28						
205	78	2300	6.83						

GS57 n_1=1400 1/min									295Nm
n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.12 ~0.55	0.75 1.10	1.50	2.20 3.00		
7.00	295	7130	201.00						
7.60	295	7130	184.80						
8.90	295	7130	158.12						
10.0	295	7130	137.05						
11.0	295	7130	128.10						
13.0	295	7130	110.73						
15.0	295	7130	94.08						
17.0	295	7130	84.00						
20.0	290	7170	71.75						
20.0	245	7520	69.39						
21.0	285	7220	67.20						
22.0	245	7520	63.80						

GS57 n_1=1400 1/min — 295Nm

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.12 ~0.55	0.75 1.10	1.50	2.20 3.00		
25.0	265	7370	56.61						
26.0	245	7520	54.59						
30.0	245	7520	47.32						
32.0	245	7520	44.22						
37.0	245	7320	38.23						
43.0	245	6840	32.48						
48.0	245	6520	29.00						
57.0	245	6100	24.77						
60.0	245	5930	23.20						
69.0	168	5690	20.33						
72.0	215	5720	19.54						
79.0	168	5350	17.62						
85.0	168	5200	16.47						
98.0	169	4860	14.24						
116	169	4520	12.10						
130	169	4290	10.80						
152	169	3990	9.23						
162	166	3900	8.64						
192	146	3790	7.28						
205	100	4100	6.83						
219	98	4010	6.40						
260	95	3760	5.39						
294	93	3590	4.76						
350	88	3380	4.00						

GS67 n_1=1400 1/min — 520Nm

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.25 ~0.55	0.75 1.10	1.50	2.20 3.00	4.00	5.50
6.40	520	8680	217.41						
7.40	520	8680	190.11						
7.80	520	8680	180.60						
8.80	520	8680	158.45						
10.0	520	8680	134.40						
12.0	520	8680	121.33						
13.0	520	8680	106.75						
14.0	520	8680	100.80						
16.0	520	8680	85.83						
18.0	520	8680	78.00						
19.0	480	9020	75.06						
21.0	520	8680	67.57						
21.0	480	9020	65.63						
22.0	480	9020	62.35						
24.0	500	8850	58.80						
26.0	480	8670	54.70						
30.0	480	8060	46.40						

GS67 n_1=1400 1/min — 520Nm

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.25 ~0.55	0.75 1.10	1.50	2.20 3.00	4.00	5.50
33.0	480	7690	41.89						
38.0	480	7250	36.85						
40.0	480	7060	34.80						
47.0	480	6540	29.63						
52.0	480	6240	26.93						
57.0	340	6040	24.44						
60.0	480	5810	23.33						
60.0	340	5890	23.22						
69.0	340	5520	20.37						
69.0	425	5760	20.30						
81.0	340	5080	17.28						
90.0	340	4820	15.60						
102	340	4510	13.73						
108	340	4310	12.96						
127	340	3660	11.03						
140	340	3290	10.03						
161	335	2860	8.69						
185	295	3220	7.56						

GS77 n_1=1400 1/min — 1270Nm

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.55	0.75 1.10	1.50	2.20 3.00	4.00	5.50 7.50
5.50	1270	11700	256.47						
6.20	1270	11700	225.26						
6.50	1270	11700	214.00						
7.40	1270	11700	189.09						
8.70	1260	11800	161.60						
9.40	1240	12000	148.15						
11.0	1210	12200	130.00						
11.0	1200	12300	123.20						
13.0	1170	12600	107.83						
14.0	1140	12800	97.14						
16.0	1100	13100	85.22						
19.0	1070	12800	75.20						
19.0	1100	11900	75.09						
20.0	1100	11600	71.33						
21.0	1040	12300	66.67						
22.0	1100	10900	63.03						
25.0	990	11600	56.92						
26.0	1100	10100	53.87						
28.0	1100	9650	49.38						
32.0	1100	9010	43.33						
34.0	1100	8750	41.07						
39.0	1100	8140	35.94						
43.0	1090	7720	32.38						

GS77 n_1=1400 1/min — 1270Nm

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.55	0.75 1.10	1.50	2.20 3.00	4.00	5.50 7.50
49.0	1050	7370	28.41						
56.0	1020	7010	25.07						
61.0	705	5960	22.89						
63.0	980	6740	22.22						
67.0	705	5380	20.99						
74.0	930	6390	18.97						
76.0	705	4550	18.42						
80.0	710	4120	17.45						
92.0	710	3320	15.28						
102	710	2710	13.76						
116	720	1800	12.07						
131	720	1130	10.65						
148	725	415	9.44						
174	680	440	8.06						

GS87 n_1=1400 1/min — 2280Nm

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.75 1.10	1.50	2.20 3.00	4.00	5.50 7.50	11.0 15.0
4.90	2280	27900	288.00						
5.40	2280	27900	258.18						
6.30	2280	27900	222.40						
6.90	2260	28000	202.96						
7.80	2210	28100	180.00						
9.30	2150	28200	151.30						
10.0	2100	28300	139.05						
11.0	2060	28300	123.48						
13.0	2000	28400	110.40						
14.0	1960	29100	99.26						
15.0	1510	28600	91.20						
16.0	1880	29000	86.15						
17.0	1600	28700	81.76						
18.0	1820	29000	77.14						
20.0	1600	29000	70.43						
22.0	1600	28900	64.27						
22.0	1700	28900	64.00						
25.0	1600	29000	57.00						
29.0	1600	29000	47.91						
32.0	1600	29000	44.03						
36.0	1600	28200	39.10						
40.0	1600	27100	34.96						
45.0	1600	26000	31.43						
51.0	1600	24700	27.28						
55.0	1240	23400	25.50						
57.0	1600	23700	24.43						
65.0	1240	21800	21.43						

GS87 n_1=1400 1/min — 2280Nm

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	0.75 1.10	1.50	2.20 3.00	4.00	5.50 7.50	11.0 15.0
69.0	1600	22100	20.27						
71.0	1240	21100	19.70						
80.0	1240	20200	17.49						
90.0	1240	19300	15.64						
100	1240	18500	14.06						
115	1240	17400	12.21						
128	1240	16400	10.93						
154	1140	15900	9.07						
178	1010	15700	7.88						

GS97 n_1=1400 1/min — 4000Nm

n_2 [1/min]	M_{2max} [Nm]	Fr [N]	i	1.50	2.20 3.00	4.00	5.50 7.50	11.0 15.0	18.5 22.0
4.90	4000	33200	286.40						
5.30	4000	33200	262.22						
6.00	4000	33200	231.67						
7.10	4000	33200	196.52						
7.70	3920	33400	180.95						
8.70	3840	33500	161.74						
9.60	3730	33700	145.60						
11.0	3650	33900	131.85						
12.0	3510	34100	116.92						
13.0	3440	34300	105.71						
16.0	3240	34600	89.60						
17.0	3230	34600	80.85						
18.0	3080	34800	78.26						
20.0	3300	34500	71.43						
21.0	2900	35100	65.45						
23.0	3300	34500	60.59						
25.0	3300	34500	55.79						
28.0	3300	34500	49.87						
31.0	3300	34100	44.89						
34.0	3300	32800	40.65						
39.0	3300	31300	36.05						
43.0	3200	30400	32.60						
51.0	3010	29000	27.63						
53.0	2600	26100	26.39						
58.0	2870	28000	24.13						
59.0	2600	24500	23.59						
66.0	2600	22800	21.23						
73.0	2600	21200	19.23						
82.0	2570	19700	17.05						
91.0	2470	19400	15.42						
107	2330	18800	13.07						
123	2210	18400	11.41						
147	2040	18200	9.55						
169	1770	18800	8.26						

5.7 GS..性能参数 / GS.. Performance Parameters

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.12kw							
0.12	4740	11267	25100	0.90	GS	97 GRF57	Y..63M1-4 AM63 AD2
0.14	4330	10078	32500	0.95	GSF	97 GRF57	
0.16	3590	8608	34000	1.15	GSA	97 GRF57	
0.18	3180	7554	34700	1.30	GSAF	97 GRF57	
0.21	2690	6706	27100	0.95	GS	87 GRF57	Y..63M1-4 AM63 AD2
0.23	2400	5875	27700	1.05	GSF	87 GRF57	
0.27	1980	5187	28500	1.25	GSA	87 GRF57	
0.30	1760	4606	28800	1.40	GSAF	87 GRF57	
0.36	1460	3872	29200	1.70			
0.39	1370	3540	7240	0.90	GS	77 GRF37	Y..63M1-4 AM63 AD2
0.45	1200	3098	12300	1.05	GSF	77 GRF37	
0.58	1320	2374	10600	0.95	GSA	77 GRF37	
0.66	1160	2083	12600	1.05	GSAF	77 GRF37	
0.76	980	1813	13900	1.25			
0.79	930	1745	14200	1.30			
0.86	860	1600	14600	1.45			
0.98	755	1404	15100	1.65			
1.10	660	1245	15500	1.90			
1.20	585	1194	7990	0.95	GS	67 GRF37	Y..63M1-4 AM63 AD2
1.30	530	1045	8560	1.05	GSF	67 GRF37	
1.50	455	914	9180	1.25	GSA	67 GRF37	
1.70	415	809	9460	1.35	GSAF	67 GRF37	
1.90	365	712	9780	1.55			
2.20	305	615	10100	1.85			
2.50	275	543	10200	2.10			
2.90	225	469	10400	2.50			
3.30	200	424	10500	2.80			
3.80	187	365	10500	3.00			
2.10	325	655	6800	0.90	GS	57 GRF17	Y..63M1-4 AM63 -
2.40	285	574	7200	1.05	GSF	57 GRF17	
2.70	250	506	7480	1.20	GSA	57 GRF17	
3.20	215	438	7700	1.40	GSAF	57 GRF17	
3.60	189	388	7850	1.60			
4.10	169	336	7950	1.80			
4.70	145	294	8050	2.10			
5.10	139	269	8070	2.20			
3.20	215	438	5010	0.85	GS	47 GRF17	Y..63M1-4 AM63 -
3.60	189	388	5170	1.00	GSF	47 GRF17	
4.10	168	336	5290	1.10	GSA	47 GRF17	
4.70	143	294	5420	1.30	GSAF	47 GRF17	
5.40	98	257	5660	1.90			
6.00	118	229	5550	1.55			
6.90	102	200	5610	1.80			
7.40	96	187	5640	1.95			
6.80	103	202	3000	0.90	GS	37 GRF17	Y..63M1-4 AM63 -
7.70	91	179	3000	1.00	GSF	37 GRF17	
8.70	82	158	3000	1.15	GSA	37 GRF17	
9.60	75	144	3000	1.20	GSAF	37 GRF17	
12.0	61	118	3000	1.50			
13.0	57	110	3000	1.60			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.12kw							
6.90	95	201.00	5680	1.80	GS	47	Y..63M1-4 AM63 AD1
7.50	89	184.80	5700	1.90	GSF	47	
8.70	77	158.12	5740	2.20	GSA	47	
10.0	68	137.05	5780	2.50	GSAF	47	
11.0	64	128.10	5790	2.60			
12.0	57	110.73	5810	3.00			
8.80	74	157.43	3000	1.25	GS	37	Y..63M1-4 AM63 AD1
9.60	68	144.40	3000	1.35	GSF	37	
11.0	60	122.94	3000	1.55	GSA	37	
13.0	52	106.00	3000	1.70	GSAF	37	
14.0	49	98.80	3000	1.75			
16.0	44	86.36	3000	1.95			
17.0	41	80.96	3000	2.10			
19.0	37	71.44	3000	2.30	GS	37	Y..63M1-4 AM63 AD1
22.0	33	63.33	3000	2.50	GSF	37	
25.0	35	55.93	3000	2.30	GSA	37	
					GSAF	37	
27.0	33	51.30	3000	2.50	GS	37	Y..63M1-4 AM63 AD1
32.0	28	43.68	3000	2.90	GSF	37	
37.0	24	37.66	3000	3.20	GSA	37	
39.0	23	35.10	3000	3.40	GSAF	37	
45.0	20	30.68	3000	3.70			
48.0	19	28.76	3000	3.90			
54.0	17	25.38	3000	4.40			
61.0	15	22.50	3000	4.80			
69.0	14	19.89	3000	3.60			
76.0	13	18.24	3000	3.90			
89.0	11	15.53	2870	4.40			
P_1=0.18kw							
0.29	3010	4606	19200	0.85	GS	87 GRF57	Y..63M2-4 AM63 AD2
0.34	2510	3872	27500	1.00	GSF	87 GRF57	
0.38	2420	3475	27700	1.05	GSA	87 GRF57	
0.45	2030	2905	28400	1.25	GSAF	87 GRF57	
0.51	1760	2586	28800	1.40			
0.57	1570	2335	29100	1.60			
0.64	1360	2054	29300	1.85			
0.72	1200	1824	29500	2.10			
0.81	1080	1631	29600	2.30	GS	87 GRF57	Y..63M2-4 AM63 AD3
					GSF	87 GRF57	
					GSA	87 GRF57	
					GSAF	87 GRF57	
0.94	1240	1404	11900	1.00	GS	77 GRF37	Y..63M2-4 AM63 AD2
1.10	1090	1245	13200	1.15	GSF	77 GRF37	
					GSA	77 GRF37	
					GSAF	77 GRF37	

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.18kw							
1.20	1020	1100	13700	1.20	GS	77 GRF37	Y..63M_2-4 AM63 AD2
1.40	870	954	14500	1.40	GSF	77 GRF37	
1.60	770	837	15000	1.60	GSA	77 GRF37	
1.80	640	714	15600	1.95	GSAF	77 GRF37	
2.10	565	637	15800	2.20			
2.30	515	574	16000	2.40			
1.90	600	712	7860	0.95	GS	67 GRF37	Y..63M_2-4 AM63 AD2
2.20	505	615	8800	1.15	GSF	67 GRF37	
2.40	450	543	9230	1.25	GSA	67 GRF37	
2.80	375	469	9720	1.50	GSAF	67 GRF37	
3.10	340	424	9930	1.65			
3.60	305	365	10100	1.85			
3.00	355	438	6520	0.85	GS	57 GRF17	Y..63M_2-4 AM63 -
3.40	310	388	6970	0.95	GSF	57 GRF17	
3.90	275	336	7290	1.10	GSA	57 GRF17	
4.50	235	294	7560	1.25	GSAF	57 GRF17	
4.90	225	269	7650	1.35			
5.80	193	229	7830	1.55			
6.50	174	204	7920	1.75			
7.00	159	187	7990	1.90			
4.50	235	294	4480	0.80	GS	47 GRF17	Y..63M_2-4 AM63 -
5.10	162	257	5380	1.15	GSF	47 GRF17	
5.80	190	229	5170	0.95	GSA	47 GRF17	
6.60	167	200	5300	1.10	GSAF	47 GRF17	
7.00	156	187	5360	1.20			
8.00	138	165	5450	1.35			
9.00	124	148	5520	1.50			
10.0	110	131	5580	1.70			
4.00	250	217.41	10300	2.20	GS	67	Y..71M_1-6 AM71 AD2
4.60	220	190.11	10400	2.50	GSF	67	
4.80	210	180.60	10400	2.60	GSA	67	
					GSAF	67	
4.30	220	201.00	7670	1.35	GS	57	Y..71M_1-6 AM71 AD1
4.70	205	184.80	7760	1.45	GSF	57	
5.50	180	158.12	7900	1.65	GSA	57	
6.40	158	137.05	7990	1.85	GSAF	57	
6.60	154	201.00	8010	1.90	GS	57	Y..63M_2-4 AM63 AD1
7.10	143	184.80	8050	2.10	GSF	57	
8.40	125	158.12	8120	2.40	GSA	57	
9.60	110	137.05	8160	2.70	GSAF	57	
4.30	210	201.00	5090	0.85	GS	47	Y..71M_1-6 AM71 AD1
4.70	199	184.80	5180	0.90	GSF	47	
5.50	173	158.12	5320	1.00	GSA	47	
6.40	153	137.05	5420	1.10	GSAF	47	
6.80	144	128.10	5460	1.20			
6.60	149	201.00	5440	1.15	GS	47	Y..63M_2-4 AM63 AD1
7.10	138	184.80	5490	1.25	GSF	47	
8.40	121	158.12	5570	1.40	GSA	47	
9.60	106	137.05	5630	1.60	GSAF	47	
10.0	100	128.10	5660	1.65			
12.0	88	110.73	5700	1.90			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.18kw							
14.0	77	94.08	5750	2.20	GS	47	Y..63M_2-4 AM63 AD1
16.0	69	84.00	5770	2.40	GSF	47	
18.0	60	71.75	5800	2.80	GSA	47	
19.0	69	69.39	5750	2.20	GSAF	47	
8.40	115	157.43	3000	0.80	GS	37	Y..63M_2-4 AM63 AD1
9.10	107	144.40	3000	0.85	GSF	37	
11.0	93	122.94	3000	1.00	GSA	37	
12.0	82	106.00	3000	1.10	GSAF	37	
13.0	77	98.80	3000	1.15			
15.0	68	86.36	3000	1.25			
16.0	64	80.96	3000	1.30			
18.0	58	71.44	3000	1.45	GS	37	Y..63M_2-4 AM63 AD1
21.0	52	63.33	3000	1.60	GSF	37	
24.0	55	55.93	3000	1.45	GSA	37	
26.0	51	51.30	3000	1.60	GSAF	37	
30.0	44	43.68	3000	1.85			
35.0	38	37.66	3000	2.10			
38.0	36	35.10	3000	2.20			
43.0	32	30.68	3000	2.40			
46.0	30	28.76	3000	2.50			
52.0	26	25.38	3000	2.80			
59.0	24	22.50	3000	3.10			
66.0	22	19.89	3000	2.30			
72.0	21	18.24	2940	2.50			
85.0	18	15.53	2810	2.80			
99.0	15	13.39	2700	3.20	GS	37	Y..63M_2-4 AM63 AD2
106	14	12.48	2650	3.40	GSF	37	
121	13	10.91	2550	3.80	GSA	37	
129	12	10.23	2500	4.00	GSAF	37	
P_1=0.25kw							
0.45	2930	2905	22200	0.85	GS	87 GRF57	Y..71M_1-4 AM71 AD2
0.50	2560	2586	27400	1.00	GSF	87 GRF57	
0.56	2290	2335	27900	1.10	GSA	87 GRF57	
0.63	1990	2054	28400	1.25	GSAF	87 GRF57	
0.71	1770	1824	28800	1.40			
0.80	1580	1631	29100	1.60	GS	87 GRF57	Y..71M_1-4 AM71 AD3
1.40	930	930	29700	2.70	GSF	87 GRF57	
					GSA	87 GRF57	
					GSAF	87 GRF57	
1.40	1250	954	11800	1.00	GS	77 GRF37	Y..71M_1-4 AM71 AD2
1.60	1100	837	13100	1.10	GSF	77 GRF37	
1.80	920	714	14200	1.35	GSA	77 GRF37	
2.00	820	637	14800	1.50	GSAF	77 GRF37	
2.30	745	574	15200	1.65			
2.60	635	499	15600	1.95			
2.40	650	543	6280	0.85	GS	67 GRF37	Y..71M_1-4 AM71 AD2
2.80	550	469	8390	1.05	GSF	67 GRF37	
3.10	495	424	8880	1.15	GSA	67 GRF37	
3.60	440	365	9320	1.30	GSAF	67 GRF37	
4.10	380	319	9700	1.50			
4.60	335	281	9960	1.70			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.25kw							
4.40	340	340	6640	0.85	GS	57 GRF17	Y..71M_1-4
4.80	320	320	6870	0.95	GSF	57 GRF17	AM71
5.70	275	275	7280	1.10	GSA	57 GRF17	-
6.40	245	245	7490	1.20	GSAF	57 GRF17	
6.90	225	187	7630	1.30			
7.90	200	165	7780	1.50			
9.90	162	131	7980	1.85			
4.10	340	217.41	9920	1.65	GS	67	Y..71M_2-6
4.70	300	190.11	10100	1.85	GSF	67	AM71
5.00	290	180.60	10200	1.90	GSA	67	AD2
5.60	255	158.45	10300	2.10	GSAF	67	
6.00	245	217.41	10300	2.10	GS	67	Y..71M_1-4
6.80	215	190.11	10400	2.40	GSF	67	AM71
7.20	205	180.60	10500	2.50	GSA	67	AD2
8.20	187	158.45	10500	2.80	GSAF	67	
9.70	161	134.40	10600	3.20			
11.0	147	121.33	10600	3.50			
12.0	131	106.75	10700	4.00			
4.40	300	201.00	7080	1.00	GS	57	Y..71M_2-6
4.80	275	184.80	7270	1.10	GSF	57	AM71
5.70	240	158.12	7530	1.20	GSA	57	AD1
6.50	210	137.05	7710	1.35	GSAF	57	
7.00	200	128.10	7780	1.45			
6.50	215	201.00	7700	1.35	GS	57	Y..71M_1-4
7.00	200	184.80	7790	1.45	GSF	57	AM71
8.20	176	158.12	7920	1.70	GSA	57	AD1
9.50	155	137.05	8010	1.90	GSAF	57	
10.0	146	128.10	8040	2.00			
12.0	128	110.73	8110	2.30			
14.0	111	94.08	8160	2.60			
15.0	100	84.00	8190	2.90			
6.50	205	201.00	5120	0.80	GS	47	Y..71M_1-4
7.00	194	184.80	5210	0.85	GSF	47	AM71
8.20	170	158.12	5340	1.00	GSA	47	AD1
9.50	150	137.05	5440	1.10	GSAF	47	
10.0	141	128.10	5480	1.20			
12.0	124	110.73	5560	1.35			
14.0	108	94.08	5630	1.55			
15.0	98	84.00	5670	1.70			
18.0	85	71.75	5720	1.95			
19.0	97	69.39	5640	1.60			
19.0	80	67.20	5740	2.10			
20.0	90	63.80	5670	1.70			
24.0	78	54.59	5720	2.00			
27.0	68	47.32	5760	2.30			
13.0	108	98.80	3000	0.80	GS	37	Y..71M_1-4
15.0	96	86.36	3000	0.90	GSF	37	AM71
16.0	91	80.96	3000	0.95	GSA	37	AD1
18.0	81	71.44	3000	1.05	GSAF	37	
21.0	73	63.33	3000	1.10			
23.0	78	55.93	3000	1.05			
25.0	72	51.30	3000	1.15			
30.0	62	43.68	3000	1.30			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.25kw							
35.0	54	37.66	3000	1.45	GS	37	Y..71M_1-4
37.0	51	35.10	3000	1.55	GSF	37	AM71
					GSA	37	AD1
					GSAF	37	
42.0	45	30.68	3000	1.70	GS	37	Y..71M_1-4
45.0	42	28.76	3000	1.80	GSF	37	AM71
51.0	37	25.38	3000	2.00	GSA	37	AD1
58.0	33	22.50	3000	2.20	GSAF	37	
65.0	32	19.89	2870	1.65			
71.0	29	18.24	2820	1.80			
84.0	25	15.53	2710	2.00			
97.0	22	13.39	2620	2.30	GS	37	Y..71M_1-4
104	20	12.48	2570	2.40	GSF	37	AM71
119	18	10.91	2480	2.70	GSA	37	AD2
127	17	10.23	2440	2.80	GSAF	37	
144	15	9.02	2360	3.10			
162	13	8.00	2280	3.40			
191	191	6.80	2180	3.80			
205	205	6.33	2130	3.30			
241	241	5.38	2030	3.80			
267	267	4.86	1980	4.10			
328	328	3.97	1860	4.80			
92.0	21	28.76	2740	3.00	GS	37	Y..63M_2-2
105	19	25.38	2650	3.30	GSF	37	AM63
118	17	22.50	2560	3.40	GSA	37	AD1
134	16	19.89	2410	2.80	GSAF	37	
146	15	18.24	2350	3.00			
171	12	15.53	2250	3.40			
199	11	13.39	2160	3.80	GS	37	Y..63M_2-2
213	10	12.48	2120	4.00	GSF	37	AM63
					GSA	37	AD2
					GSAF	37	
P_1=0.37kw							
0.67	2850	2054	24500	0.90	GS	87 GRF57	Y..71M_2-4
0.76	2530	1824	27400	1.00	GSF	87 GRF57	AM71
					GSA	87 GRF57	AD2
					GSAF	87 GRF57	
0.85	2260	1631	28000	1.10	GS	87 GRF57	Y..71M_1-4
1.50	1340	930	29400	1.85	GSF	87 GRF57	AM71
1.70	1210	831	29500	2.10	GSA	87 GRF57	AD3
					GSAF	87 GRF57	
1.90	1310	714	11300	0.95	GS	77 GRF37	Y..71M_2-4
2.20	1160	637	12600	1.05	GSF	77 GRF37	AM71
2.40	1050	574	13400	1.15	GSA	77 GRF37	AD2
2.80	900	499	14300	1.35	GSAF	77 GRF37	
3.20	795	438	14900	1.55			
3.60	705	389	15300	1.75			
3.80	620	365	7560	0.90	GS	67 GRF37	Y..71M_2-4
4.30	540	319	8450	1.05	GSF	67 GRF37	AM71
4.90	475	281	9030	1.20	GSA	67 GRF37	AD2
5.60	430	246	9380	1.30	GSAF	67 GRF37	

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.37kw							
3.50	635	256.47	15600	2.00	GS	77	Y..80M_1-6
4.00	565	225.26	15800	2.20	GSF	77	AM80
4.20	540	214.00	15900	2.30	GSA	77	AD2
					GSAF	77	
4.20	500	217.41	8830	1.10	GS	67	Y..80M_1-6
4.80	445	190.11	9280	1.25	GSF	67	AM80
5.00	425	180.60	9410	1.30	GSA	67	AD2
5.70	380	158.45	9710	1.45	GSAF	67	
6.40	345	217.41	9900	1.50			
7.30	305	190.11	10100	1.70	GS	67	Y..71M_2-4
7.60	290	180.60	10200	1.75	GSF	67	AM71
8.70	260	158.45	10300	2.00	GSA	67	AD2
10.0	225	134.40	10400	2.30	GSAF	67	
11.0	205	121.33	10500	2.50			
5.70	355	158.12	6510	0.85			
6.60	310	137.05	6950	0.95	GS	57	Y..80M_1-6
7.10	295	128.10	7110	1.00	GSF	57	AM80
8.20	260	110.73	7400	1.15	GSA	57	AD1
9.60	225	94.08	7640	1.30	GSAF	57	
11.0	205	84.00	7770	1.45			
6.90	300	201.00	7050	0.95			
7.50	280	184.80	7230	1.05			
8.70	245	158.12	7510	1.20	GS	57	Y..71M_2-4
10.0	215	137.05	7690	1.35	GSF	57	AM71
11.0	205	128.10	7770	1.45	GSA	57	AD1
12.0	180	110.73	7900	1.65	GSAF	57	
15.0	156	94.08	8000	1.90			
16.0	141	84.00	8060	2.10			
19.0	122	71.75	8130	2.40	GS	57	Y..71M_2-4
20.0	139	69.39	8070	1.75	GSF	57	AM71
21.0	115	67.20	8150	2.50	GSA	57	AD2
22.0	128	63.80	8110	1.90	GSAF	57	
10.0	210	137.05	5110	0.80			
11.0	198	128.10	5180	0.85			
12.0	175	110.73	5320	0.95			
15.0	151	94.08	5430	1.10			
16.0	137	84.00	5500	1.20			
19.0	119	71.75	5580	1.40	GS	47	Y..71M_2-4
20.0	136	69.39	5460	1.15	GSF	47	AM71
21.0	112	67.20	5610	1.50	GSA	47	AD1
22.0	126	63.80	5510	1.25	GSAF	47	
25.0	109	54.59	5590	1.40			
29.0	96	47.32	5410	1.60			
31.0	90	44.22	5330	1.75			
36.0	78	38.23	5140	2.00			
42.0	67	32.48	4930	2.30			
48.0	60	29.00	4790	2.60	GS	47	Y..71M_2-4
56.0	52	24.77	4590	3.00	GSF	47	AM71
59.0	49	23.20	4510	3.10	GSA	47	AD2
68.0	46	20.33	4180	2.40	GSAF	47	
78.0	40	17.62	4030	2.80			
84.0	37	16.47	3960	3.00			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.37kw							
22.0	103	63.33	3000	0.80			
27.0	101	51.30	3000	0.80			
32.0	87	43.68	3000	0.95			
37.0	76	37.66	3000	1.05			
39.0	71	35.10	3000	1.10			
45.0	62	30.68	3000	1.20	GS	37	Y..71M_2-4
48.0	59	28.76	3000	1.30	GSF	37	AM71
54.0	52	25.38	2940	1.40	GSA	37	AD1
61.0	47	22.50	2870	1.55	GSAF	37	
69.0	44	19.89	2610	1.20			
76.0	41	18.24	2570	1.30			
89.0	35	15.53	2500	1.45			
103	30	13.39	2420	1.60			
111	28	12.48	2390	1.70			
126	25	10.91	2320	1.95			
135	23	10.23	2280	2.00			
153	21	9.02	2220	2.20	GS	37	Y..71M_2-4
172	18	8.00	2150	2.40	GSF	37	AM71
203	16	6.80	2070	2.70	GSA	37	AD2
218	15	6.33	2020	2.40	GSAF	37	
256	12	5.38	1930	2.70			
284	11	4.86	1880	2.90			
348	9.3	3.97	1780	3.40			
104	28	25.38	2540	2.20			
118	25	22.50	2460	2.30	GS	37	Y..71M_1-2
133	24	19.89	2290	1.85	GSF	37	AM71
145	22	18.24	2240	2.00	GSA	37	AD1
171	19	15.53	2160	2.30	GSAF	37	
198	16	13.39	2080	2.60			
212	15	12.48	2040	2.70	GS	37	Y..71M_1-2
243	13	10.91	1970	3.00	GSF	37	AM71
259	12	10.23	1940	3.10	GSA	37	AD2
294	11	9.02	1870	3.30	GSAF	37	
P_1=0.55kw							
1.00	2800	1332	25400	0.90			
1.20	2530	1191	27400	1.00			
1.30	2200	1032	28100	1.15			
1.50	2030	930	28400	1.25	GS	87 GRF57	Y..80M_1-4
1.70	1840	831	28700	1.35	GSF	87 GRF57	AM80
1.90	1600	719	29000	1.55	GSA	87 GRF57	AD3
2.20	1390	624	29300	1.80	GSAF	87 GRF57	
2.50	1260	558	29400	2.00			
3.20	1010	435	29700	2.40			
3.20	1200	438	12300	1.05			
3.60	1070	389	13300	1.15	GS	77 GRF37	Y..80M_1-4
4.20	900	327	14400	1.35	GSF	77 GRF37	AM80
4.80	810	289	14800	1.50	GSA	77 GRF37	AD2
5.50	705	250	15300	1.75	GSAF	77 GRF37	
5.60	645	246	6520	0.90	GS	67 GRF37	Y..80M_1-4
6.20	580	221	8080	1.00	GSF	67 GRF37	AM80
7.00	525	198	8590	1.10	GSA	67 GRF37	AD2
8.20	450	168	9220	1.25	GSAF	67 GRF37	

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.55kw							
3.20	1110	288.00	29600	2.20	GS	87	Y..80M_2-6
3.50	1000	258.18	29700	2.40	GSF	87	AM80
4.10	880	222.40	29800	2.70	GSA	87	AD2
4.50	810	202.96	29800	2.90	GSAF	87	
3.60	940	256.47	14200	1.35	GS	77	Y..80M_2-6
4.10	830	225.26	14700	1.50	GSF	77	AM80
4.30	800	214.00	14900	1.60	GSA	77	AD2
4.80	715	189.09	15300	1.75	GSAF	77	
5.70	620	161.60	15600	2.00			
5.40	650	256.47	15500	1.95	GS	77	Y..80M_1-4
6.10	580	225.26	15800	2.20	GSF	77	AM80
6.40	550	214.00	15900	2.30	GSA	77	AD2
7.30	495	189.09	16000	2.60	GSAF	77	
6.40	515	217.41	8720	1.00	GS	67	Y..80M_1-4
7.30	455	190.11	9190	1.15	GSF	67	AM80
7.60	435	180.60	9340	1.20	GSA	67	AD2
8.70	385	158.45	9650	1.35	GSAF	67	
10.0	335	134.40	9950	1.55			
11.0	305	121.33	10100	1.70			
13.0	270	106.75	10200	1.90			
14.0	255	100.80	10300	2.00			
16.0	220	85.83	10400	2.30			
18.0	225	75.06	10400	2.10			
21.0	200	65.63	10500	2.40			
9.70	330	94.08	6760	0.90	GS	57	Y..80M_2-6
11.0	300	84.00	7070	1.00	GSF	57	AM80
					GSA	57	AD1
					GSAF	57	
13.0	260	71.75	7390	1.10	GS	57	Y..80M_2-6
14.0	245	67.20	7500	1.20	GSF	57	AM80
17.0	240	54.59	7540	1.10	GSA	57	AD2
19.0	210	47.32	7730	1.30	GSAF	57	
21.0	199	44.22	7800	1.35			
24.0	173	38.23	7930	1.55			
8.70	365	158.12	6390	0.80	GS	57	Y..80M_1-4
10.0	320	137.05	6860	0.90	GSF	57	AM80
11.0	300	128.10	7040	0.95	GSA	57	AD1
12.0	265	110.73	7350	1.10	GSAF	57	
15.0	230	94.08	7600	1.25			
16.0	205	84.00	7740	1.40			
19.0	182	71.75	7890	1.60	GS	57	Y..80M_1-4
21.0	172	67.20	7940	1.65	GSF	57	AM80
25.0	165	54.59	7970	1.50	GSA	57	AD2
29.0	144	47.32	8050	1.70	GSAF	57	
31.0	135	44.22	8080	1.80			
36.0	118	38.23	8140	2.10			
42.0	101	32.48	7940	2.40			
48.0	91	29.00	7690	2.70			
56.0	78	24.77	7360	3.10			
59.0	74	23.20	7220	3.30			
68.0	68	20.33	6740	2.50			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.55kw							
16.0	200	84.00	5160	0.80	GS	47	Y..80M_1-4
19.0	177	71.75	5310	0.95	GSF	47	AM80
21.0	167	67.20	5360	1.00	GSA	47	AD1
25.0	162	54.59	5120	0.95	GSAF	47	
29.0	142	47.32	5000	1.10			
31.0	133	44.22	4940	1.15			
36.0	116	38.23	4800	1.35	GS	47	Y..80M_1-4
42.0	100	32.48	4640	1.55	GSF	47	AM80
48.0	90	29.00	4530	1.75	GSA	47	AD2
56.0	77	24.77	4360	2.00	GSAF	47	
59.0	73	23.20	4300	2.10			
68.0	68	20.33	3910	1.60			
78.0	59	17.62	3790	1.85			
84.0	56	16.47	3740	2.00			
97.0	48	14.24	3620	2.30			
114	41	12.10	3480	2.60			
128	37	10.80	3390	3.00			
150	32	9.23	3260	3.40			
45.0	93	30.68	2680	0.80	GS	37	Y..80M_1-4
48.0	87	28.76	2660	0.85	GSF	37	AM80
54.0	78	25.38	2630	0.95	GSA	37	AD1
61.0	69	22.50	2590	1.05	GSAF	37	
89.0	52	15.53	2230	0.95			
103	45	13.39	2190	1.10			
72.0	60	19.13	2530	1.20	GS	37	Y..80M_1-4
111	42	12.48	2170	1.15	GSF	37	AM80
126	37	10.91	2130	1.30	GSA	37	AD2
135	35	10.23	2110	1.35	GSAF	37	
153	31	9.02	2060	1.50			
172	27	8.00	2010	1.65			
203	23	6.80	1950	1.85			
218	22	6.33	1900	1.60			
256	19	5.38	1830	1.85			
284	17	4.86	1790	1.95			
348	14	3.97	1700	2.30			
98.0	45	28.76	2400	1.45	GS	37	Y..71M_2-2
111	40	25.38	2340	1.55	GSF	37	AM71
125	35	22.50	2290	1.60	GSA	37	AD1
141	33	19.89	2090	1.35	GSAF	37	
154	30	18.24	2060	1.45			
181	26	15.53	2000	1.60			
210	23	13.39	1930	1.80			
225	21	12.48	1900	1.90			
258	18	10.91	1850	2.10			
275	17	10.23	1820	2.20			
311	15	9.02	1770	2.30			
351	14	8.00	1710	2.60			
413	12	6.80	1640	2.50			
P_1=0.75kw							
1.20	4710	1223	23400	0.90	GS	97 GRF57	Y..80M_2-4
1.30	4130	1070	32200	1.00	GSF	97 GRF57	AM80
1.60	3550	928	34000	1.20	GSA	97 GRF57	AD2
1.70	3140	824	34700	1.35	GSAF	97 GRF57	

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.75kw							
2.00	2240	714	35900	1.85	GS	97 GRF57	Y..80M$_2$-4 AM80 AD3
2.30	2380	626	35800	1.75	GSF	97 GRF57	
2.70	2040	538	36100	2.00	GSA	97 GRF57	
3.00	1850	484	36300	2.30	GSAF	97 GRF57	
1.40	2940	1032	21700	0.85	GS	87 GRF57	Y..80M$_2$-4 AM80 AD3
1.50	2710	930	27000	0.90	GSF	87 GRF57	
1.70	2450	831	27600	1.00	GSA	87 GRF57	
2.00	2130	719	28200	1.15	GSAF	87 GRF57	
2.30	1860	624	28700	1.35			
2.60	1680	558	28900	1.50			
3.30	1340	435	29300	1.80			
4.40	1030	323	29700	2.30			
4.40	1200	327	12300	1.05	GS	77 GRF37	Y..80M$_2$-4 AM80 AD2
5.00	1080	289	13200	1.15	GSF	77 GRF37	
5.70	930	250	14200	1.30	GSA	77 GRF37	
6.60	820	219	14800	1.50	GSAF	77 GRF37	
3.30	1480	288.00	29200	1.65	GS	87	Y..90S-6 AM90 AD2
3.60	1340	258.18	29400	1.80	GSF	87	
4.20	1170	222.40	29500	2.00	GSA	87	
4.60	1080	202.96	29600	2.20	GSAF	87	
5.00	1010	288.00	29700	2.20	GS	87	Y..80M$_2$-4 AM80 AD2
5.60	910	258.18	29800	2.50	GSF	87	
6.40	800	222.40	29800	2.80	GSA	87	
7.10	735	202.96	29900	3.10	GSAF	87	
4.20	1110	225.26	13000	1.15	GS	77	Y..90S-6 AM90 AD2
4.40	1060	214.00	13400	1.20	GSF	77	
5.00	950	189.09	14100	1.35	GSA	77	
5.80	820	161.60	14800	1.55	GSAF	77	
5.60	850	256.47	14600	1.50	GS	77	Y..80M$_2$-4 AM80 AD2
6.40	760	225.26	15100	1.65	GSF	77	
6.70	730	214.00	15200	1.75	GSA	77	
7.60	650	189.09	15500	1.95	GSAF	77	
8.90	565	161.60	15800	2.20			
9.70	520	148.15	16000	2.40			
11.0	460	130.00	16000	2.60			
12.0	440	123.20	16000	2.70			
13.0	390	107.83	16000	3.00			
7.60	600	190.11	7820	0.85	GS	67	Y..80M$_2$-4 AM80 AD2
8.00	575	180.60	8120	0.90	GSF	67	
9.10	510	158.45	8740	1.00	GSA	67	
11.0	440	134.40	9300	1.15	GSAF	67	
12.0	400	121.33	9560	1.30			
13.0	360	106.75	9820	1.45			
14.0	340	100.80	9920	1.50			
17.0	295	85.83	10100	1.75			
19.0	300	75.06	10100	1.60			
22.0	260	65.63	10300	1.80			
23.0	250	62.35	10300	1.90			
26.0	220	54.70	10200	2.20			
31.0	191	46.40	9740	2.50			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.75kw							
13.0	345	71.75	6590	0.85	GS	57	Y..90S-6 AM90 AD2
14.0	330	67.20	6800	0.90	GSF	57	
17.0	280	56.61	7230	1.05	GSA	57	
20.0	280	47.32	7250	0.95	GSAF	57	
21.0	260	44.22	7380	1.00			
13.0	350	110.73	6550	0.85	GS	57	Y..80M$_2$-4 AM80 AD1
15.0	305	94.08	7040	0.95	GSF	57	
17.0	275	84.00	7290	1.05	GSA	57	
					GSAF	57	
20.0	235	71.75	7560	1.20	GS	57	Y..80M$_2$-4 AM80 AD2
21.0	225	67.20	7640	1.25	GSF	57	
26.0	215	54.59	7700	1.15	GSA	57	
30.0	190	47.32	7850	1.30	GSAF	57	
32.0	178	44.22	7910	1.40			
38.0	155	38.23	7910	1.60			
44.0	133	32.48	7590	1.85			
49.0	119	29.00	7380	2.00			
58.0	103	24.77	7080	2.40			
62.0	96	23.20	6950	2.50			
71.0	90	20.33	6420	1.90			
81.0	78	17.62	6200	2.20			
87.0	73	16.47	6100	2.30			
101	64	14.24	5870	2.70			
30.0	187	47.32	4510	0.85	GS	47	Y..80M$_2$-4 AM80 AD1
32.0	175	44.22	4480	0.90	GSF	47	
					GSA	47	
					GSAF	47	
38.0	153	38.23	4400	1.00	GS	47	Y..80M$_2$-4 AM80 AD2
44.0	131	32.48	4290	1.20	GSF	47	
49.0	118	29.00	4200	1.30	GSA	47	
58.0	102	24.77	4080	1.55	GSAF	47	
62.0	96	23.20	4030	1.60			
71.0	89	20.33	3590	1.25			
81.0	78	17.62	3510	1.40			
87.0	73	16.47	3470	1.50			
101	63	14.24	3380	1.75			
119	54	12.10	3280	2.00			
133	48	10.80	3200	2.20			
156	42	9.23	3090	2.60	GS	47	Y..80M$_2$-4 AM80 AD2
166	39	8.64	3040	2.80	GSF	47	
197	33	7.28	2920	3.10	GSA	47	
224	29	6.40	2810	2.60	GSAF	47	
266	25	5.39	2690	3.00			
301	22	4.76	2610	3.30			
359	18	4.00	2490	3.30			
75.0	78	19.13	2260	0.90	GS	37	Y..80M$_2$-4 AM80 AD2
115	55	12.48	1930	0.85	GSF	37	
132	48	10.91	1910	1.00	GSA	37	
140	46	10.23	1900	1.05	GSAF	37	
159	40	9.02	1880	1.15			
179	36	8.00	1850	1.25			
211	31	6.80	1800	1.40			
227	29	6.33	1760	1.20			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=0.75kw							
267	24	5.38	1710	1.40	GS	37	Y..80M$_2$-4
295	22	4.86	1680	1.50	GSF	37	AM80
362	18	3.97	1610	1.75	GSA	37	AD2
					GSAF	37	
151	40	19.13	2060	1.10			
216	30	13.39	1800	1.35			
232	28	12.48	1780	1.45	GS	37	Y..80M$_1$-2
265	24	10.91	1730	1.60	GSF	37	AM80
283	23	10.23	1710	1.65	GSA	37	AD2
320	20	9.02	1670	1.75	GSAF	37	
361	18	8.00	1630	1.95			
425	16	6.80	1570	1.85			
186	35	15.53	1840	1.20	GS	37	Y..80M$_1$-2
					GSF	37	AM80
					GSA	37	AD1
					GSAF	37	
P_1=1.10kw							
1.70	4700	824	23500	0.90	GS	97 GRF57	Y..90S-4
					GSF	97 GRF57	AM90
					GSA	97 GRF57	AD2
					GSAF	97 GRF57	
2.00	3360	714	34400	1.25	GS	97 GRF57	Y..90S-4
2.30	3570	626	34000	1.15	GSF	97 GRF57	AM90
2.60	3070	538	34800	1.35	GSA	97 GRF57	AD3
2.90	2780	484	35300	1.50	GSAF	97 GRF57	
3.40	2410	420	35700	1.75			
2.30	2800	624	25500	0.90			
2.60	2530	558	27400	1.00			
2.90	2230	485	28000	1.10			
3.30	2030	435	28400	1.20	GS	87 GRF57	Y..90S-4
3.80	1780	378	28800	1.35	GSF	87 GRF57	AM90
4.40	1550	323	29100	1.55	GSA	87 GRF57	AD3
5.00	1360	281	29300	1.75	GSAF	87 GRF57	
5.60	1450	255	29200	1.35			
6.40	1270	222	29400	1.55			
6.90	1190	205	29500	1.65			
6.50	1230	219	12000	1.00	GS	77 GRF37	Y..90S-4
					GSF	77 GRF37	AM90
					GSA	77 GRF37	AD2
					GSAF	77 GRF37	
3.30	2260	286.40	35900	1.85	GS	97	Y..90L-6
3.60	2080	262.22	36100	2.00	GSF	97	AM90
4.10	1860	231.67	36300	2.20	GSA	97	AD3
					GSAF	97	
3.60	1970	258.18	28500	1.25	GS	87	Y..90L-6
4.20	1720	222.40	28900	1.40	GSF	87	AM90
4.60	1580	202.96	29100	1.50	GSA	87	AD2
					GSAF	87	

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=1.10kw							
4.90	1490	288.00	29200	1.50			
5.50	1350	258.18	29300	1.70	GS	87	Y..90S-4
6.40	1180	222.40	29500	1.90	GSF	87	AM90
7.00	1080	202.96	29600	2.10	GSA	87	AD2
7.90	970	180.00	29700	2.30	GSAF	87	
9.40	830	151.30	29800	2.60			
6.30	1130	225.26	12900	1.10			
6.60	1080	214.00	13300	1.15			
7.50	960	189.09	14000	1.30			
8.80	830	161.60	14700	1.50	GS	77	Y..90S-4
9.60	775	148.15	15000	1.60	GSF	77	AM90
11.0	685	130.00	15400	1.75	GSA	77	AD2
12.0	655	123.20	15500	1.85	GSAF	77	
13.0	575	107.83	15800	2.00			
15.0	525	97.14	15900	2.20			
17.0	465	85.22	16000	2.40			
12.0	595	121.33	7880	0.85			
13.0	530	106.75	8550	0.95			
14.0	505	100.80	8800	1.05			
17.0	435	85.83	9340	1.20			
18.0	400	78.00	9580	1.30	GS	67	Y..90S-4
22.0	390	65.63	9640	1.20	GSF	67	AM90
23.0	370	62.35	9750	1.30	GSA	67	AD2
26.0	330	54.70	9540	1.45	GSAF	67	
31.0	280	46.40	9210	1.70			
34.0	255	41.89	9010	1.85			
39.0	225	36.85	8750	2.10			
41.0	215	34.80	8630	2.20			
48.0	185	29.63	8300	2.60			
20.0	350	71.75	6530	0.80	GS	57	Y..90S-4
21.0	330	67.20	6750	0.85	GSF	57	AM90
25.0	285	56.61	7210	0.95	GSA	57	AD2
30.0	280	47.32	7250	0.85	GSAF	57	
32.0	260	44.22	7390	0.95			
37.0	225	38.23	7390	1.05			
44.0	197	32.48	7150	1.25			
49.0	177	29.00	6980	1.40			
57.0	152	24.77	6740	1.60	GS	57	Y..90S-4
61.0	143	23.20	6640	1.70	GSF	57	AM90
73.0	121	19.54	6370	1.75	GSA	57	AD2
81.0	116	17.62	5850	1.45	GSAF	57	
86.0	108	16.47	5770	1.55			
100	94	14.24	5590	1.80			
117	80	12.10	5380	2.10			
131	72	10.80	5240	2.40			
154	62	9.23	5040	2.70			
49.0	175	29.00	3720	0.90			
57.0	151	24.77	3660	1.05			
61.0	142	23.20	3640	1.05	GS	47	Y..90S-4
73.0	120	19.54	3560	1.20	GSF	47	AM90
81.0	115	17.62	3070	0.95	GSA	47	AD2
86.0	108	16.47	3060	1.00	GSAF	47	
100	94	14.24	3030	1.15			
117	80	12.10	2980	1.35			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=1.10kw							
131	72	10.80	2930	1.50			
154	62	9.23	2860	1.75			
164	58	8.64	2830	1.90	GS	47	Y..90S-4
195	49	7.28	2740	2.10	GSF	47	AM90
222	44	6.40	2650	1.75	GSA	47	AD2
263	37	5.39	2560	2.00	GSAF	47	
298	32	4.76	2490	2.20			
355	27	4.00	2390	2.20			
178	53	8.00	1580	0.85			
209	45	6.80	1580	0.95	GS	37	Y..90S-4
224	42	6.33	1540	0.80	GSF	37	AM90
264	36	5.38	1520	0.95	GSA	37	AD2
292	33	4.86	1510	1.00	GSAF	37	
358	27	3.97	1470	1.20			
214	44	13.39	1580	0.95			
230	41	12.48	1570	0.95	GS	37	Y..80M$_2$-2
263	36	10.91	1560	1.10	GSF	37	AM80
281	34	10.23	1550	1.10	GSA	37	AD2
318	30	9.02	1520	1.20	GSAF	37	
359	27	8.00	1500	1.30			
422	23	6.80	1460	1.25			
P_1=1.50kw							
2.00	4580	714	29300	0.90			
2.30	4870	626	19700	0.85	GS	97 GRF57	Y..90L-4
2.70	4200	538	31300	1.00	GSF	97 GRF57	AM90
3.00	3790	484	33600	1.10	GSA	97 GRF57	AD3
3.40	3300	420	34500	1.25	GSAF	97 GRF57	
3.80	2980	376	35000	1.40			
4.40	2610	327	35500	1.60			
3.00	3050	485	17700	0.80			
3.30	2770	435	26100	0.90			
3.80	2440	378	27600	1.00	GS	87 GRF57	Y..90L-4
4.40	2120	323	28200	1.15	GSF	87 GRF57	AM90
5.10	1860	281	28700	1.30	GSA	87 GRF57	AD3
5.60	1990	255	28400	1.00	GSAF	87 GRF57	
6.40	1740	222	28800	1.15			
7.00	1620	205	29000	1.20			
3.30	3080	286.40	34800	1.35	GS	97	Y..100L-6
3.60	2840	262.22	35200	1.45	GSF	97	AM100
4.10	2540	231.67	35600	1.65	GSA	97	AD3
4.80	2190	196.52	36000	1.90	GSAF	97	
5.00	2100	286.40	36100	1.90	GS	97	
5.40	1940	262.22	36200	2.10	GSF	97	Y..90L-4
6.20	1730	231.67	36400	2.30	GSA	97	AM90
7.30	1480	196.52	36600	2.70	GSAF	97	AD3
3.60	2680	258.18	27100	0.90	GS	87	Y..100L-6
4.20	2340	222.40	27800	1.00	GSF	87	AM100
4.60	2160	202.96	28200	1.10	GSA	87	AD2
5.20	1930	180.00	28500	1.20	GSAF	87	

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=1.50kw							
5.00	2030	288.00	28400	1.10			
5.50	1830	258.18	28700	1.25			
6.40	1600	222.40	29000	1.40			
7.00	1470	202.96	29200	1.55	GS	87	Y..90L-4
7.90	1320	180.00	29400	1.65	GSF	87	AM90
9.40	1120	151.30	29600	1.90	GSA	87	AD2
10.0	1040	139.05	29700	2.00	GSAF	87	
12.0	930	123.48	29700	2.20			
13.0	840	110.40	29800	2.40			
14.0	760	99.26	29900	2.60			
7.60	1310	189.09	11300	0.95			
8.80	1130	161.60	12800	1.10			
9.60	1050	148.15	13500	1.20			
11.0	930	130.00	14200	1.30			
12.0	880	123.20	14500	1.35			
13.0	785	107.83	15000	1.50			
15.0	710	97.14	15300	1.60	GS	77	Y..90L-4
17.0	630	85.22	15400	1.75	GSF	77	AM90
19.0	635	75.09	14100	1.70	GSA	77	AD2
20.0	605	71.33	14000	1.80	GSAF	77	
21.0	500	66.67	14500	2.10			
23.0	540	63.03	13600	2.00			
25.0	430	56.92	14000	2.30			
27.0	465	53.87	13200	2.40			
29.0	425	49.38	12900	2.60			
33.0	375	43.33	12500	2.90			
17.0	590	85.83	7940	0.90			
18.0	540	78.00	8460	0.95			
22.0	530	65.63	8570	0.90			
23.0	505	62.35	8800	0.95			
26.0	445	54.70	8790	1.05			
31.0	380	46.40	8570	1.25			
34.0	345	41.89	8420	1.40			
39.0	305	36.85	8230	1.55	GS	67	Y..90L-4
41.0	290	34.80	8140	1.65	GSF	67	AM90
48.0	250	29.63	7880	1.90	GSA	67	AD2
53.0	225	26.93	7720	2.10	GSAF	67	
59.0	215	24.44	6990	1.55			
62.0	205	23.22	6930	1.65			
70.0	184	20.37	6770	1.85			
83.0	157	17.28	6560	2.20			
92.0	142	15.60	6420	2.40			
104	125	13.73	6240	2.70			
44.0	265	32.48	6620	0.90			
49.0	235	29.00	6500	1.00			
58.0	205	24.77	6330	1.20			
62.0	194	23.20	6250	1.25			
73.0	164	19.54	6040	1.30	GS	57	Y..90L-4
81.0	157	17.62	5420	1.05	GSF	57	AM90
87.0	147	16.47	5360	1.15	GSA	57	AD2
100	128	14.24	5240	1.35	GSAF	57	
118	109	12.10	5080	1.55			
132	98	10.80	4970	1.75			
155	84	9.23	4800	2.00			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=1.50kw							
100	127	14.24	2620	0.85	GS	47	Y..90L-4
118	108	12.10	2620	1.00	GSF	47	AM90
132	97	10.80	2620	1.10	GSA	47	AD2
155	83	9.23	2590	1.30	GSAF	47	
166	78	8.64	2580	1.40			
196	66	7.28	2530	1.55	GS	47	Y..90L-4
223	59	6.40	2450	1.30	GSF	47	AM90
265	50	5.39	2390	1.50	GSA	47	AD2
300	44	4.76	2340	1.65	GSAF	47	
358	37	4.00	2260	1.65			
314	42	9.02	1350	0.85	GS	47	Y..90S-2
354	37	8.00	1350	0.95	GSF	47	AM90
416	32	6.80	1330	0.90	GSA	47	AD2
					GSAF	47	
P_1=2.20kw							
3.40	4890	420	19000	0.85	GS	97 GRF57	Y..100L1-4
3.80	4410	376	28300	0.95	GSF	97 GRF57	AM100
4.40	3870	327	33400	1.10	GSA	97 GRF57	AD3
5.00	3420	287	34300	1.25	GSAF	97 GRF57	
5.70	2990	252	35000	1.40			
3.30	4460	286.40	31100	0.95	GS	97	Y..112M-6
3.60	4110	262.22	32900	1.00	GSF	97	AM112
4.10	3670	231.67	33800	1.15	GSA	97	AD3
4.90	3160	196.52	34700	1.35	GSAF	97	
5.00	3090	286.40	34800	1.30	GS	97	Y..100L1-4
5.40	2850	262.22	35200	1.40	GSF	97	AM100
6.20	2540	231.67	35600	1.55	GSA	97	AD3
7.20	2180	196.52	36000	1.85	GSAF	97	
7.90	2020	180.95	36100	1.95			
8.80	1820	161.74	36300	2.10			
9.80	1650	145.60	36500	2.20			
11.0	1500	131.85	36600	2.40			
12.0	1340	116.92	36700	2.60			
13.0	1220	105.71	36800	2.80			
16.0	1040	89.60	36900	3.10			
5.50	2700	258.18	27000	0.85	GS	87	Y..100L1-4
6.40	2360	222.40	27800	0.95	GSF	87	AM100
7.00	2170	202.96	28100	1.05	GSA	87	AD2
7.90	1940	180.00	28500	1.15	GSAF	87	
9.40	1650	151.30	29000	1.30			
10.0	1530	139.05	29100	1.35			
12.0	1370	123.48	29300	1.50			
13.0	1230	110.40	29500	1.60			
14.0	1120	99.26	29600	1.75	GS	87	Y..100L1-4
17.0	980	86.15	29700	1.90	GSF	87	AM100
17.0	1050	81.76	29600	1.50	GSA	87	AD2
18.0	880	77.14	29800	2.10	GSAF	87	
20.0	910	70.43	29800	1.75			
22.0	830	64.27	29800	1.90			
25.0	740	57.00	29900	2.20			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=2.20kw							
11.0	1370	130.00	7440	0.90	GS	77	Y..100L1-4
12.0	1300	123.20	11300	0.90	GSF	77	AM100
13.0	1150	107.83	12700	1.00	GSA	77	AD2
15.0	1040	97.14	13500	1.10	GSAF	77	
17.0	920	85.22	14100	1.20			
19.0	820	75.20	13800	1.30			
21.0	735	66.67	13500	1.40			
23.0	795	63.03	12400	1.40			
25.0	635	56.92	13100	1.55			
26.0	685	53.87	12100	1.60			
29.0	630	49.38	11900	1.75			
33.0	555	43.33	11700	2.00			
35.0	525	41.07	11500	2.10			
40.0	460	35.94	11300	2.40	GS	77	Y..100L1-4
44.0	420	32.38	11000	2.60	GSF	77	AM100
50.0	370	28.41	10700	2.80	GSA	77	AD3
57.0	325	25.07	10400	3.10	GSAF	77	
62.0	305	22.89	9470	2.30			
68.0	280	20.99	9320	2.50			
31.0	560	46.40	7470	0.85	GS	67	Y..100L1-4
34.0	510	41.89	7430	0.95	GSF	67	AM100
39.0	450	36.85	7350	1.05	GSA	67	AD2
41.0	425	34.80	7310	1.10	GSAF	67	
48.0	365	29.63	7170	1.30			
53.0	335	26.93	7070	1.45	GS	67	Y..100L1-4
61.0	290	23.33	6910	1.65	GSF	67	AM100
70.0	270	20.37	6060	1.25	GSA	67	AD2
82.0	230	17.28	5950	1.50	GSAF	67	
91.0	205	15.60	5870	1.65			
104	184	13.73	5760	1.85			
110	174	12.96	5700	1.95			
129	149	11.03	5540	2.30	GS	67	Y..100L1-4
142	136	10.03	5440	2.50	GSF	67	AM100
164	118	8.69	5280	2.80	GSA	67	AD3
					GSAF	67	
100	188	14.24	4640	0.90	GS	57	Y..100L1-4
118	160	12.10	4570	1.05	GSF	57	AM100
132	144	10.80	4520	1.20	GSA	57	AD2
154	123	9.23	4420	1.35	GSAF	57	
165	116	8.64	4370	1.45			
196	98	7.28	4240	1.50			
223	87	6.40	4090	1.15			
264	73	5.39	3960	1.30			
299	65	4.76	3850	1.45			
356	55	4.00	3710	1.60			
P_1=3.00kw							
5.10	4580	287	25700	0.90	GS	97 GRF57	Y..100L2-4
5.80	4020	252	33100	1.05	GSF	97 GRF57	AM100
6.60	3510	219	34100	1.20	GSA	97 GRF57	AD3
7.10	3300	205	34500	1.25	GSAF	97 GRF57	

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=3.00kw							
5.10	4140	286.40	32900	0.95	GS	97	Y..100L_2-4
5.60	3820	262.22	33600	1.05	GSF	97	AM100
6.30	3410	231.67	34300	1.15	GSA	97	AD3
7.40	2920	196.52	35100	1.35	GSAF	97	
8.00	2710	180.95	35400	1.45			
9.00	2440	161.74	35700	1.55			
10.0	2210	145.60	36000	1.70			
11.0	2010	131.85	36200	1.80	GS	97	Y..100L_2-4
12.0	1800	116.92	36300	1.95	GSF	97	AM100
14.0	1630	105.71	36500	2.10	GSA	97	AD3
16.0	1390	89.60	36700	2.30	GSAF	97	
18.0	1410	80.85	36600	2.30			
8.10	2600	180.00	27300	0.85	GS	87	Y..100L_2-4
9.60	2210	151.30	28100	0.95	GSF	87	AM100
10.0	2050	139.05	28400	1.00	GSA	87	AD2
12.0	1830	123.48	28700	1.10	GSAF	87	
13.0	1650	110.40	29000	1.20			
15.0	1490	99.26	29200	1.30			
17.0	1310	86.15	29400	1.45			
18.0	1400	81.76	29300	1.15			
19.0	1180	77.14	29500	1.55			
21.0	1210	70.43	29500	1.30			
23.0	1110	64.27	29600	1.45			
26.0	990	57.00	29700	1.60			
30.0	830	47.91	29800	1.90	GS	87	Y..100L_2-4
33.0	770	44.03	29900	2.10	GSF	87	AM100
37.0	685	39.10	29900	2.30	GSA	87	AD3
42.0	615	34.96	29900	2.60	GSAF	87	
17.0	1240	85.22	11900	0.90	GS	77	Y..100L_2-4
19.0	1100	75.20	12500	0.95	GSF	77	AM100
22.0	980	66.67	12300	1.05	GSA	77	AD2
23.0	1060	63.03	10900	1.05	GSAF	77	
26.0	850	56.92	12000	1.15			
27.0	910	53.87	10800	1.20			
29.0	840	49.38	10800	1.30			
34.0	740	43.33	10600	1.50			
35.0	705	41.07	10600	1.55			
40.0	620	35.94	10400	1.75	GS	77	Y..100L_2-4
45.0	560	32.38	10200	1.95	GSF	77	AM100
51.0	490	28.41	10000	2.10	GSA	77	AD3
58.0	435	25.07	9770	2.30	GSAF	77	
64.0	410	22.89	8640	1.70			
69.0	375	20.99	8550	1.85			
79.0	330	18.42	8400	2.10			
83.0	315	17.45	8340	2.20			
95.0	275	15.28	8160	2.60			
106	250	13.76	8010	2.80			
121	220	12.07	7810	3.30			
137	195	10.65	7610	3.70			
42.0	570	34.80	6350	0.85	GS	67	Y..100L_2-4
49.0	490	29.63	6340	1.00	GSF	67	AM100
54.0	445	26.93	6320	1.05	GSA	67	AD2
62.0	390	23.33	6250	1.25	GSAF	67	

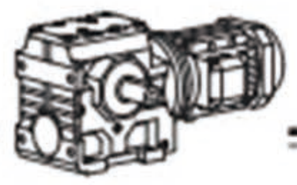
n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=3.00kw							
71.0	360	20.37	5240	0.95	GS	67	Y..100L_2-4
84.0	305	17.28	5250	1.10	GSF	67	AM100
93.0	275	15.60	5230	1.20	GSA	67	AD2
106	245	13.73	5190	1.40	GSAF	67	
112	230	12.96	5170	1.45			
132	199	11.03	5080	1.70	GS	67	Y..100L_2-4
145	181	10.03	5020	1.90	GSF	67	AM100
167	157	8.69	4910	2.10	GSA	67	AD3
192	137	7.56	4800	2.20	GSAF	67	
135	192	10.80	3990	0.90	GS	57	Y..100L_2-4
158	164	9.23	3960	1.05	GSF	57	AM100
168	154	8.64	3950	1.10	GSA	57	AD2
200	130	7.28	3880	1.10	GSAF	57	
227	116	6.40	3760	0.85			
270	98	5.39	3670	0.95			
306	87	4.76	3600	1.05			
364	73	4.00	3480	1.20			
P_1=4.00kw							
6.70	4690	219	24100	0.90	GS	97 GRF57	Y..112M-4
7.10	4410	205	28500	0.95	GSF	97 GRF57	AM112
					GSA	97 GRF57	AD3
					GSAF	97 GRF57	
6.30	4530	231.67	30200	0.90	GS	97	Y..112M-4
7.40	3890	196.52	33400	1.05	GSF	97	AM112
8.10	3600	180.95	34000	1.10	GSA	97	AD3
9.00	3240	161.74	34600	1.20	GSAF	97	
10.0	2940	145.60	35000	1.25			
11.0	2680	131.85	35400	1.35			
12.0	2390	116.92	35800	1.45			
14.0	2170	105.71	36000	1.60			
16.0	1850	89.60	36300	1.75			
18.0	1880	80.85	36300	1.70			
20.0	1670	71.43	36400	1.95	GS	97	Y..112M-4
24.0	1420	60.59	36600	2.30	GSF	97	AM112
26.0	1310	55.79	36700	2.50	GSA	97	AD4
					GSAF	97	
12.0	2440	123.48	27600	0.85	GS	87	Y..112M-4
13.0	2200	110.40	28100	0.90	GSF	87	AM112
15.0	1990	99.26	28500	1.00	GSA	87	AD2
17.0	1740	86.15	28800	1.10	GSAF	87	
19.0	1570	77.14	29100	1.15			
21.0	1610	70.43	29000	1.00			
23.0	1480	64.27	29200	1.10			
26.0	1310	57.00	29400	1.20			
30.0	1110	47.91	29600	1.45	GS	87	Y..112M-4
33.0	1020	44.03	29700	1.55	GSF	87	AM112
37.0	910	39.10	29700	1.75	GSA	87	AD3
42.0	820	34.96	29700	1.95	GSAF	87	
46.0	740	31.43	28900	2.20			
54.0	645	27.28	28000	2.50			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size	Input Configuration
P_1=4.00kw						
57.0	615	25.50	26400	2.00	GS 87 GSF 87 GSA 87 GSAF 87	Y..112M-4 AM112 AD4
26.0 27.0 30.0 34.0 36.0	1130 1210 1120 980 930	56.92 53.87 49.38 43.33 41.07	10800 9280 9330 9370 9370	0.85 0.90 1.00 1.10 1.15	GS 77 GSF 77 GSA 77 GSAF 77	Y..112M-4 AM112 AD2
41.0 45.0 51.0 58.0 64.0 70.0 79.0 84.0 96.0 106 121	820 745 655 580 545 500 440 420 365 330 290	35.94 32.38 28.41 25.07 22.89 20.99 18.42 17.45 15.28 13.76 12.07	9330 9270 9160 9040 7650 7640 7600 7580 7490 7400 7280	1.35 1.45 1.60 1.75 1.30 1.40 1.60 1.70 1.90 2.10 2.40	GS 77 GSF 77 GSA 77 GSAF 77	Y..112M-4 AM112 AD3
137 155 181	255 230 197	10.65 9.44 8.06	7140 6990 6790	2.80 3.20 3.40	GS 77 GSF 77 GSA 77 GSAF 77	Y..112M-4 AM112 AD4
84.0 94.0 106 113	405 370 325 305	17.28 15.60 13.73 12.96	3910 4270 4510 4520	0.85 0.90 1.05 1.10	GS 67 GSF 67 GSA 67 GSAF 67	Y..112M-4 AM112 AD2
132 146 168 193	260 240 205 182	11.03 10.03 8.69 7.56	4530 4520 4480 4420	1.30 1.40 1.60 1.60	GS 67 GSF 67 GSA 67 GSAF 67	Y..112M-4 AM112 AD3
P_1=5.50kw						
9.00 10.0 11.0 12.0 14.0 16.0 19.0 22.0	4470 4050 3690 3300 3000 2560 2250 1900	161.74 145.60 131.85 116.92 105.71 89.60 78.26 65.45	31000 33100 33800 34500 35000 35500 35900 36300	0.85 0.90 1.00 1.05 1.15 1.25 1.35 1.55	GS 97 GSF 97 GSA 97 GSAF 97	Y..132S-4 AM132 AD3
20.0 24.0 26.0 29.0 32.0 36.0	2300 1960 1810 1620 1470 1330	71.43 60.59 55.79 49.87 44.89 40.65	35800 36200 36300 36500 36600 36700	1.45 1.70 1.80 2.00 2.20 2.50	GS 97 GSF 97 GSA 97 GSAF 97	Y..132S-4 AM132 AD4
19.0 26.0 30.0	2160 1810 1530	77.14 57.00 47.91	28200 28700 29100	0.85 0.90 1.05	GS 87 GSF 87 GSA 87 GSAF 87	Y..132S-4 AM132 AD2

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size	Input Configuration
P_1=5.50kw						
23.0 33.0 37.0 42.0 46.0 53.0	1810 1410 1260 1130 1020 890	64.00 44.03 39.10 34.96 31.43 27.28	28700 29200 29100 28500 27900 27100	0.95 1.15 1.25 1.40 1.55 1.80	GS 87 GSF 87 GSA 87 GSAF 87	Y..132S-4 AM132 AD3
57.0 68.0 74.0 83.0 93.0 103 119 133	850 715 660 585 525 475 410 370	25.50 21.43 19.70 17.49 15.64 14.06 12.21 10.93	25200 24400 24000 23400 22900 22400 21700 21100	1.45 1.70 1.85 2.10 2.40 2.60 3.00 3.30	GS 87 GSF 87 GSA 87 GSAF 87	Y..132S-4 AM132 AD4
35.0	1290	41.07	7590	0.85	GS 77 GSF 77 GSA 77 GSAF 77	Y..132S-4 AM132 AD2
40.0 45.0 51.0 58.0 65.0 79.0 83.0 95.0 106 121 137 154 180	1130 1020 900 800 710 610 580 505 460 400 355 315 270	35.94 32.38 28.41 25.07 22.22 18.42 17.45 15.28 13.76 12.07 10.65 9.44 8.06	7770 7860 7920 7940 7920 6000 6240 6500 6510 6490 6440 6380 6260	0.95 1.05 1.15 1.25 1.35 1.15 1.20 1.40 1.55 1.80 2.00 2.30 2.50	GS 77 GSF 77 GSA 77 GSAF 77	Y..132S-4 AM132 AD3
132 145 167 192	360 330 285 250	11.03 10.03 8.69 7.56	2990 3310 3720 3850	0.95 1.00 1.15 1.15	GS 67 GSF 67 GSA 67 GSAF 67	Y..132S-4 AM132 AD3
P_1=7.50kw						
14.0 16.0 19.0 22.0	4050 3460 3040 2560	105.71 89.60 78.26 65.45	33100 34200 34900 35500	0.85 0.95 1.00 1.15	GS 97 GSF 97 GSA 97 GSAF 97	Y..132M-4 AM132 AD3
21.0 24.0 26.0 29.0 33.0 36.0 41.0 45.0 56.0	3110 2650 2450 2190 1980 1800 1600 1450 1200	71.43 60.59 55.79 49.87 44.89 40.65 36.05 32.60 26.39	34800 35400 35700 36000 36200 36300 36000 35300 31900	1.05 1.25 1.35 1.50 1.65 1.85 2.10 2.20 2.20	GS 97 GSF 97 GSA 97 GSAF 97	Y..132M-4 AM132 AD4
62.0 69.0 76.0	1080 970 880	23.59 21.23 19.23	31200 30600 30000	2.40 2.70 2.90	GS 97 GSF 97 GSA 97 GSAF 97	Y..132M-4 AM132 AD5

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=7.50kw							
33.0	1910	44.03	27700	0.85	GS	87	Y..132M-4
38.0	1700	39.10	27300	0.95	GSF	87	AM132
42.0	1520	34.96	26900	1.05	GSA	87	AD3
47.0	1370	31.43	26400	1.15	GSAF	87	
54.0	1200	27.28	25800	1.35			
58.0	1150	25.50	23400	1.10			
69.0	970	21.43	22900	1.30			
75.0	890	19.70	22600	1.40			
84.0	795	17.49	22200	1.55	GS	87	Y..132M-4
94.0	710	15.64	21800	1.75	GSF	87	AM132
105	640	14.06	21400	1.95	GSA	87	AD4
120	555	12.21	20800	2.20	GSAF	87	
135	500	10.93	20400	2.50			
162	415	9.07	19600	2.70			
186	360	7.88	19000	2.80			
52.0	1220	28.41	6290	0.85			
59.0	1080	25.07	6490	0.95			
66.0	960	22.22	6620	1.00	GS	77	Y..132M-4
80.0	820	18.42	2080	0.85	GSF	77	AM132
84.0	780	17.45	2500	0.90	GSA	77	AD3
96.0	685	15.28	3420	1.05	GSAF	77	
107	620	13.76	4040	1.15			
122	545	12.07	4690	1.30			
138	480	10.65	5210	1.50	GS	77	Y..132M-4
156	425	9.44	5560	1.70	GSF	77	AM132
182	365	8.06	5560	1.85	GSA	77	AD4
					GSAF	77	
P_1=11.0kw							
26.0	3580	55.79	34000	0.90			
30.0	3210	49.87	34600	1.05	GS	97	Y..160M-4
33.0	2900	44.89	34700	1.15	GSF	97	AM160
36.0	2630	40.65	34200	1.25	GSA	97	AD4
41.0	2340	36.05	33700	1.40	GSAF	97	
45.0	2120	32.60	33100	1.50			
56.0	1760	26.39	29300	1.45			
63.0	1580	23.59	28900	1.65			
69.0	1420	21.23	28500	1.80	GS	97	
77.0	1290	19.23	28100	2.00	GSF	97	Y..160M-4
86.0	1140	17.05	27500	2.20	GSA	97	AM160
96.0	1040	15.42	27100	2.40	GSAF	97	AD5
113	880	13.07	26200	2.60			
129	770	11.41	25500	2.90			
54.0	1750	27.28	23600	0.90	GS	87	Y..160M-4
					GSF	87	AM160
					GSA	87	AD3
					GSAF	87	
60.0	1570	24.43	23300	1.00			
73.0	1310	20.27	22700	1.20	GS	87	Y..160M-4
75.0	1300	19.70	20300	0.95	GSF	87	AM160
84.0	1160	17.49	20200	1.05	GSA	87	AD4
94.0	1040	15.64	20000	1.20	GSAF	87	
105	930	14.06	19700	1.30			

n_2 [1/min]	M_2 [Nm]	i	Fr [N]	K	Frame size		Input Configuration
P_1=11.0kw							
121	810	12.21	19400	1.50	GS	87	Y..160M-4
135	730	10.93	19100	1.70	GSF	87	AM160
163	605	9.07	18500	1.85	GSA	87	AD4
187	530	7.88	18000	1.90	GSAF	87	
P_1=15.0kw							
33.0	3980	44.89	31400	0.85	GS	97	Y..160L-4
36.0	3610	40.65	31300	0.90	GSF	97	AM160
41.0	3210	36.05	31000	1.05	GSA	97	AD4
45.0	2910	32.60	30700	1.10	GSAF	97	
56.0	2420	26.39	26400	1.05			
62.0	2170	23.59	26300	1.20			
69.0	1950	21.23	26200	1.35			
76.0	1770	19.23	26000	1.45	GS	97	
86.0	1570	17.05	25700	1.65	GSF	97	Y..160L-4
95.0	1420	15.42	25400	1.75	GSA	97	AM160
112	1210	13.07	24800	1.90	GSAF	97	AD5
128	1060	11.41	24300	2.10			
153	880	9.55	23600	2.30			
177	770	8.26	22900	2.30			
94.0	1430	15.64	16800	0.85			
104	1280	14.06	17900	0.95	GS	87	
120	1120	12.21	17800	1.10	GSF	87	Y..160L-4
134	1000	10.93	17600	1.25	GSA	87	AM160
162	830	9.07	17300	1.35	GSAF	87	AD4
186	725	7.88	17000	1.40			
P_1=18.5kw							
					GS	97	
41.0	3960	36.05	28700	0.85	GSF	97	Y..180M-4
45.0	3590	32.60	28600	0.90	GSA	97	AM180
					GSAF	97	AD4
53.0	3050	27.63	28400	1.00			
61.0	2670	24.13	28100	1.05			
69.0	2410	21.23	24100	1.10			
76.0	2190	19.23	24100	1.20	GS	97	
86.0	1940	17.05	24000	1.30	GSF	97	Y..180M-4
95.0	1760	15.42	23900	1.40	GSA	97	AM180
112	1490	13.07	23500	1.55	GSAF	97	AD5
128	1300	11.41	23200	1.70			
153	1090	9.55	22600	1.85			
177	950	8.26	22100	1.85			
P_1=22.0kw							
53.0	3610	27.63	26600	0.85			
61.0	3160	24.13	26500	0.90			
69.0	2850	21.23	18600	0.90			
77.0	2580	19.23	20500	1.00	GS	97	
86.0	2290	17.05	22300	1.10	GSF	97	Y..180L-4
96.0	2080	15.42	22400	1.20	GSA	97	AM180
113	1760	13.07	22300	1.30	GSAF	97	AD5
129	1540	11.41	22100	1.45			
155	1290	9.55	21700	1.60			
178	1120	8.26	21300	1.60			



5.8 GS../GRF..性能参数 / GS../GRF.. Performance Parameters

n_2 [1/min]	i	Fr [N]	Frame size		Motor
M_{2max}=92Nm					
0.14	10037	3000			
0.16	8654	3000			
0.17	8066	3000			
0.20	7051	3000			
0.23	6079	3000			
0.25	5431	3000			
0.29	4747	3000			
0.33	4155	3000	GS	37 GRF17	Y..63M$_1$-4
0.38	3632	3000	GSF	37 GRF17	Y..63M$_1$-4
0.48	2866	3000	GSA	37 GRF17	Y..63M$_1$-4
0.56	2471	3000	GSAF	37 GRF17	Y..63M$_1$-4
0.64	2160	3000			
0.73	1887	3000			
0.83	1665	3000			
0.95	1456	3000			
1.10	1271	3000			
1.20	1121	3000			
1.40	994	3000			
1.60	869	3000			
1.80	774	3000			
2.10	666	3000			
2.30	596	3000			
2.60	521	3000	GS	37 GRF17	Y..63M$_1$-4
3.00	456	3000	GSF	37 GRF17	Y..63M$_1$-4
3.50	398	3000	GSA	37 GRF17	Y..63M$_1$-4
3.90	351	3000	GSAF	37 GRF17	Y..63M$_1$-4
4.60	303	3000			
5.20	265	3000			
6.00	232	3000			
6.80	202	3000			
7.40	179	3000	GS	37 GRF17	Y..63M$_2$-4
8.30	158	3000	GSF	37 GRF17	Y..63M$_2$-4
9.10	144	3000	GSA	37 GRF17	Y..63M$_2$-4
11.0	118	3000	GSAF	37 GRF17	Y..63M$_2$-4
12.0	110	3000			
M_{2max}=185Nm					
0.11	12909	5250			
0.12	11189	5250			
0.13	10374	5250			
0.15	8992	5250			
0.18	7860	5250			
0.20	6887	5250			
0.23	6055	5250			
0.26	5292	5250	GS	47 GRF17	Y..63M$_1$-4
0.30	4637	5250	GSF	47 GRF17	Y..63M$_1$-4
0.34	4092	5250	GSA	47 GRF17	Y..63M$_1$-4
0.39	3582	5200	GSAF	47 GRF17	Y..63M$_1$-4
0.44	3131	5200			
0.51	2714	5200			
0.57	2412	5200			
0.65	2131	5200			
0.74	1863	5200			
0.83	1663	5200			
0.96	1435	5200			

n_2 [1/min]	i	Fr [N]	Frame size		Motor
M_{2max}=185Nm					
1.10	1254	5200			
1.20	1120	5200			
1.30	1083	5200			
1.40	965	5200	GS	47 GRF17	Y..63M$_1$-4
1.60	865	5200	GSF	47 GRF17	Y..63M$_1$-4
1.80	750	5200	GSA	47 GRF17	Y..63M$_1$-4
2.10	655	5200	GSAF	47 GRF17	Y..63M$_1$-4
2.40	574	5200			
2.70	506	5200			
3.20	438	5200			
3.60	388	5200			
3.90	336	5200	GS	47 GRF17	Y..63M$_2$-4
4.50	294	5200	GSF	47 GRF17	Y..63M$_2$-4
5.80	229	5200	GSA	47 GRF17	Y..63M$_2$-4
			GSAF	47 GRF17	Y..63M$_2$-4
5.00	257	5260	GS	47 GRF17	Y..71M$_1$-4
6.50	200	5200	GSF	47 GRF17	Y..71M$_1$-4
6.90	187	5200	GSA	47 GRF17	Y..71M$_1$-4
7.90	165	5200	GSAF	47 GRF17	Y..71M$_1$-4
9.40	148	5200	GS	47 GRF17	Y..71M$_2$-4
11.0	131	5200	GSF	47 GRF17	Y..71M$_2$-4
			GSA	47 GRF17	Y..71M$_2$-4
			GSAF	47 GRF17	Y..71M$_2$-4
M_{2max}=330Nm					
0.11	12909	6800			
0.12	11189	6800			
0.13	10374	6800			
0.15	8992	6800			
0.18	7860	6800	GS	57 GRF17	Y..63M$_1$-4
0.20	6887	6800	GSF	57 GRF17	Y..63M$_1$-4
0.23	6055	6800	GSA	57 GRF17	Y..63M$_1$-4
0.26	5292	6800	GSAF	57 GRF17	Y..63M$_1$-4
0.30	4637	6800			
0.34	4092	6800			
0.38	3628	6800			
M_{2max}=300Nm					
0.44	3131	7080			
0.51	2714	7080			
0.57	2412	7080			
0.65	2131	7080			
0.74	1863	7080			
0.83	1663	7080	GS	57 GRF17	Y..63M$_1$-4
0.96	1435	7080	GSF	57 GRF17	Y..63M$_1$-4
1.10	1254	7080	GSA	57 GRF17	Y..63M$_1$-4
1.30	1083	7080	GSAF	57 GRF17	Y..63M$_1$-4
1.40	965	7080			
1.60	865	7080			
1.80	750	7080			
2.10	655	7080			

n_2 [1/min]	i	Fr [N]	Frame size		Motor
M_{2max}=300Nm					
2.30	574	7080	GS	57 GRF17	Y..63M_2-4
2.60	506	7080	GSF	57 GRF17	Y..63M_2-4
3.00	438	7080	GSA	57 GRF17	Y..63M_2-4
3.40	388	7080	GSAF	57 GRF17	Y..63M_2-4
3.90	336	7080	GS	57 GRF17	Y..71M_1-4
4.40	294	7080	GSF	57 GRF17	Y..71M_1-4
4.80	269	7080	GSA	57 GRF17	Y..71M_1-4
			GSAF	57 GRF17	Y..71M_1-4
6.00	229	7080	GS	57 GRF17	Y..71M_2-4
6.80	204	7080	GSF	57 GRF17	Y..71M_2-4
7.40	187	7080	GSA	57 GRF17	Y..71M_2-4
			GSAF	57 GRF17	Y..71M_2-4
8.40	165	7080	GS	57 GRF17	Y..80M_1-4
11.0	131	7080	GSF	57 GRF17	Y..80M_1-4
			GSA	57 GRF17	Y..80M_1-4
			GSAF	57 GRF17	Y..80M_1-4
M_{2max}=570Nm					
0.06	21362	8190			
0.07	19594	8190			
0.08	18120	8190			
0.08	16682	8190			
0.10	14383	8190			
0.11	12774	8190			
0.13	11013	8190			
0.14	9694	8190			
0.16	8529	8190			
0.19	7455	8190			
0.21	6531	8190	GS	67 GRF37	Y..63M_1-4
0.24	5759	8190	GSF	67 GRF37	Y..63M_1-4
0.28	4965	8190	GSA	67 GRF37	Y..63M_1-4
0.31	4410	8190	GSAF	67 GRF37	Y..63M_1-4
0.36	3880	8190			
0.40	3432	8190			
0.47	2944	8190			
0.52	2630	8190			
0.61	2279	8190			
0.69	2014	8190			
0.78	1772	8190			
0.88	1559	8190			
1.00	1363	8190			
1.20	1194	8190			
1.30	1045	8190	GS	67 GRF37	Y..63M_2-4
1.40	914	8190	GSF	67 GRF37	Y..63M_2-4
1.60	809	8190	GSA	67 GRF37	Y..63M_2-4
1.90	712	8190	GSAF	67 GRF37	Y..63M_2-4
			GS	67 GRF37	Y..71M_1-4
2.10	615	8190	GSF	67 GRF37	Y..71M_1-4
2.40	543	8190	GSA	67 GRF37	Y..71M_1-4
			GSAF	67 GRF37	Y..71M_1-4

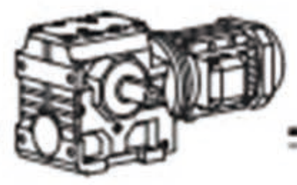
n_2 [1/min]	i	Fr [N]	Frame size		Motor
M_{2max}=570Nm					
2.90	469	8190	GS	67 GRF37	Y..71M_2-4
3.30	424	8190	GSF	67 GRF37	Y..71M_2-4
3.80	365	8190	GSA	67 GRF37	Y..71M_2-4
			GSAF	67 GRF37	Y..71M_2-4
4.30	319	8190	GS	67 GRF37	Y..80M_1-4
4.90	281	8190	GSF	67 GRF37	Y..80M_1-4
5.60	246	8190	GSA	67 GRF37	Y..80M_1-4
6.20	221	8190	GSAF	67 GRF37	Y..80M_1-4
7.30	198	8190	GS	67 GRF37	Y..80M_2-4
			GSF	67 GRF37	Y..80M_2-4
			GSA	67 GRF37	Y..80M_2-4
			GSAF	67 GRF37	Y..80M_2-4
M_{2max}=1270Nm					
0.05	25493	11700			
0.06	21787	11700			
0.07	19907	11700			
0.08	17013	11700			
0.09	14668	11700			
0.11	13110	11700			
0.12	11569	11700	GS	77 GRF37	Y..63M_1-4
0.14	9887	11700	GSF	77 GRF37	Y..63M_1-4
0.16	8817	11700	GSA	77 GRF37	Y..63M_1-4
0.18	7735	11700	GSAF	77 GRF37	Y..63M_1-4
0.20	6735	11700			
0.23	5943	11700			
0.26	5214	11700			
0.30	4618	11700			
0.35	3992	11700			
0.39	3540	11700			
0.43	3098	11700	GS	77 GRF37	Y..63M_2-4
			GSF	77 GRF37	Y..63M_2-4
			GSA	77 GRF37	Y..63M_2-4
			GSAF	77 GRF37	Y..63M_2-4
M_{2max}=1240Nm					
			GS	77 GRF37	Y..63M_1-4
0.50	2753	12000	GSF	77 GRF37	Y..63M_1-4
0.58	2374	12000	GSA	77 GRF37	Y..63M_1-4
			GSAF	77 GRF37	Y..63M_1-4
0.63	2083	12000	GS	77 GRF37	Y..63M_2-4
0.73	1813	12000	GSF	77 GRF37	Y..63M_2-4
0.76	1745	12000	GSA	77 GRF37	Y..63M_2-4
0.82	1600	12000	GSAF	77 GRF37	Y..63M_2-4
0.94	1404	12000			
1.00	1245	12000	GS	77 GRF37	Y..71M_1-4
1.20	1100	12000	GSF	77 GRF37	Y..71M_1-4
1.40	954	12000	GSA	77 GRF37	Y..71M_1-4
			GSAF	77 GRF37	Y..71M_1-4

n_2 [1/min]	i	Fr [N]	Frame size		Motor
M_{2max}=1240Nm					
1.60 1.90	837 714	12000 12000	GS GSF GSA GSAF	77 GRF37 77 GRF37 77 GRF37 77 GRF37	Y..71M$_2$-4 Y..71M$_2$-4 Y..71M$_2$-4 Y..71M$_2$-4
2.20 2.40 2.80	637 574 499	12000 12000 12000	GS GSF GSA GSAF	77 GRF37 77 GRF37 77 GRF37 77 GRF37	Y..80M$_1$-4 Y..80M$_1$-4 Y..80M$_1$-4 Y..80M$_1$-4
3.30 3.70	438 389	12000 12000	GS GSF GSA GSAF	77 GRF37 77 GRF37 77 GRF37 77 GRF37	Y..80M$_2$-4 Y..80M$_2$-4 Y..80M$_2$-4 Y..80M$_2$-4
4.30 4.90 5.70	327 289 250	12000 12000 12000	GS GSF GSA GSAF	77 GRF37 77 GRF37 77 GRF37 77 GRF37	Y..90S-4 Y..90S-4 Y..90S-4 Y..90S-4
6.50	219	12000	GS GSF GSA GSAF	77 GRF37 77 GRF37 77 GRF37 77 GRF37	Y..90L-4 Y..90L-4 Y..90L-4 Y..90L-4
M_{2max}=2500Nm					
0.05 0.06 0.07 0.08 0.08 0.09 0.10 0.12 0.14 0.16 0.18 0.21	25987 23940 20568 18265 16774 14820 13160 11200 9904 8549 7643 6706	27500 27500 27500 27500 27500 27500 27500 27500 27500 27500 27500 27500	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..63M$_1$-4 Y..63M$_1$-4 Y..63M$_1$-4 Y..63M$_1$-4
0.22 0.25 0.29 0.34	5875 5187 4606 3872	27500 27500 27500 27500	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..63M$_2$-4 Y..63M$_2$-4 Y..63M$_2$-4 Y..63M$_2$-4
0.37 0.45 0.50	3475 2905 2586	27500 27500 27500	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..71M$_1$-4 Y..71M$_1$-4 Y..71M$_1$-4 Y..71M$_1$-4
0.59 0.67 0.76	2335 2054 1824	27500 27500 27500	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..71M$_2$-4 Y..71M$_2$-4 Y..71M$_2$-4 Y..71M$_2$-4
0.85 1.00 1.20	1631 1332 1191	27500 27500 27500	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..80M$_1$-4 Y..80M$_1$-4 Y..80M$_1$-4 Y..80M$_1$-4

n_2 [1/min]	i	Fr [N]	Frame size		Motor
M_{2max}=2500Nm					
1.40 1.50	1032 930	27500 27500	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..80M$_2$-4 Y..80M$_2$-4 Y..80M$_2$-4 Y..80M$_2$-4
1.70 2.00 2.30 2.60	831 719 624 558	27500 27500 27500 27500	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..90S-4 Y..90S-4 Y..90S-4 Y..90S-4
3.00	485	27500	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..90L-4 Y..90L-4 Y..90L-4 Y..90L-4
M_{2max}=2450Nm					
3.30	435	27600	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..90L-4 Y..90L-4 Y..90L-4 Y..90L-4
3.80	378	27600	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..100L$_1$-4 Y..100L$_1$-4 Y..100L$_1$-4 Y..100L$_1$-4
M_{2max}=2400Nm					
4.40 5.10	323 281	27700 27700	GS GSF GSA GSAF	87 GRF57 87 GRF57 87 GRF57 87 GRF57	Y..100L$_1$-4 Y..100L$_1$-4 Y..100L$_1$-4 Y..100L$_1$-4
M_{2max}=4200Nm					
0.04 0.04 0.05 0.06 0.06 0.07	33818 31154 27847 24641 21537 18749	32800 32800 32800 32800 32800 32800	GS GSF GSA GSAF	97 GRF57 97 GRF57 97 GRF57 97 GRF57	Y..63M$_1$-4 Y..63M$_1$-4 Y..63M$_1$-4 Y..63M$_1$-4
0.09 0.09 0.11 0.12 0.14	16233 14576 12752 11267 10078	32800 32800 32800 32800 32800	GS GSF GSA GSAF	97 GRF57 97 GRF57 97 GRF57 97 GRF57	Y..63M$_1$-4 Y..63M$_1$-4 Y..63M$_1$-4 Y..63M$_1$-4
0.15 0.17 0.20 0.23 0.27	8608 7554 6640 5780 4937	32800 32800 31300 31300 31300	GS GSF GSA GSAF	97 GRF57 97 GRF57 97 GRF57 97 GRF57	Y..63M$_2$-4 Y..63M$_2$-4 Y..63M$_2$-4 Y..63M$_2$-4
0.29 0.32 0.38 0.42	4444 4017 3453 3108	31300 31300 31300 31300	GS GSF GSA GSAF	97 GRF57 97 GRF57 97 GRF57 97 GRF57	Y..71M$_1$-4 Y..71M$_1$-4 Y..71M$_1$-4 Y..71M$_1$-4

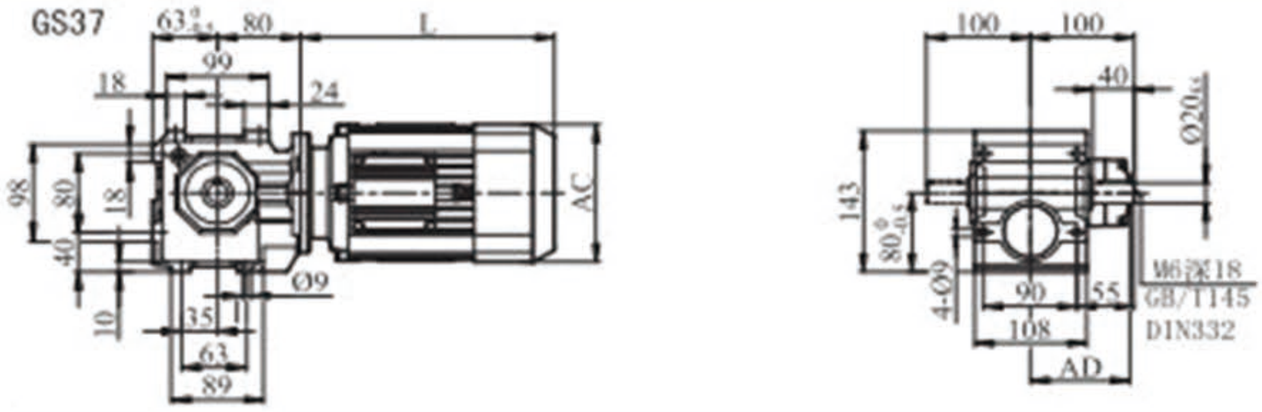
n_2 [1/min]	i	Fr [N]	Frame size		Motor
M_{2max}=4200Nm					
0.52	2654	31300	GS	97 GRF57	Y..71M_2-4
0.59	2329	31300	GSF	97 GRF57	Y..71M_2-4
			GSA	97 GRF57	Y..71M_2-4
			GSAF	97 GRF57	Y..71M_2-4
0.66	2081	31300	GS	97 GRF57	Y..80M_1-4
0.74	1860	31300	GSF	97 GRF57	Y..80M_1-4
0.88	1574	31300	GSA	97 GRF57	Y..80M_1-4
			GSAF	97 GRF57	Y..80M_1-4
1.00	1394	31300	GS	97 GRF57	Y..80M_2-4
1.20	1223	31300	GSF	97 GRF57	Y..80M_2-4
			GSA	97 GRF57	Y..80M_2-4
			GSAF	97 GRF57	Y..80M_2-4
1.30	1070	31300	GS	97 GRF57	Y..90S-4
1.50	928	31300	GSF	97 GRF57	Y..90S-4
1.70	824	31300	GSA	97 GRF57	Y..90S-4
			GSAF	97 GRF57	Y..90S-4

n_2 [1/min]	i	Fr [N]	Frame size		Motor
M_{2max}=4200Nm					
2.00	714	32800	GS	97 GRF57	Y..90L-4
2.30	626	31300	GSF	97 GRF57	Y..90L-4
2.70	538	31300	GSA	97 GRF57	Y..90L-4
			GSAF	97 GRF57	Y..90L-4
2.90	484	31400	GS	97 GRF57	Y..100L_1-4
3.40	420	31400	GSF	97 GRF57	Y..100L_1-4
3.80	376	31400	GSA	97 GRF57	Y..100L_1-4
			GSAF	97 GRF57	Y..100L_1-4
4.40	327	31500	GS	97 GRF57	Y..100L_2-4
5.10	287	31500	GSF	97 GRF57	Y..100L_2-4
			GSA	97 GRF57	Y..100L_2-4
			GSAF	97 GRF57	Y..100L_2-4
5.80	252	31500	GS	97 GRF57	Y..112M-4
6.70	219	31600	GSF	97 GRF57	Y..112M-4
			GSA	97 GRF57	Y..112M-4
			GSAF	97 GRF57	Y..112M-4

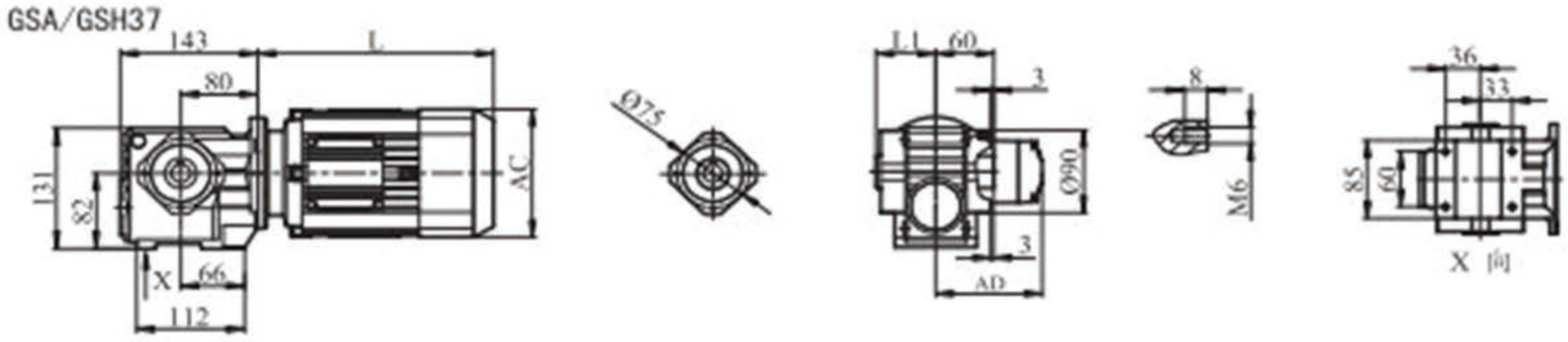


5.9 外形尺寸 / Dimensions

GS37

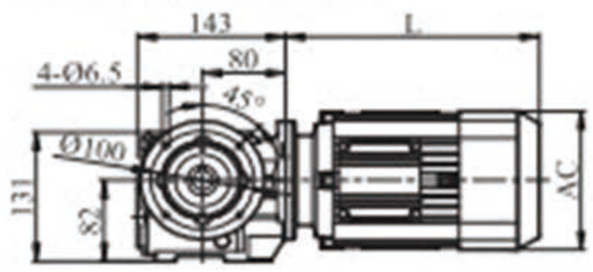


GSA/GSH37

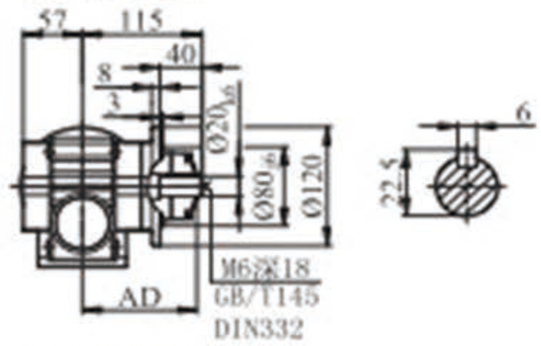


型号 Size	GSA	GSH
	GSAZ	GSHZ
	GSAF	GSHF
L1	60	79

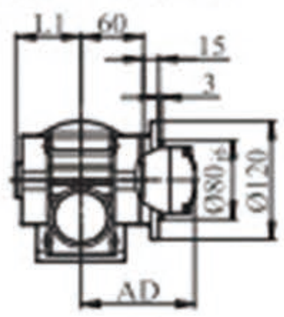
GSF/GSAF/GSHF37-Ø120



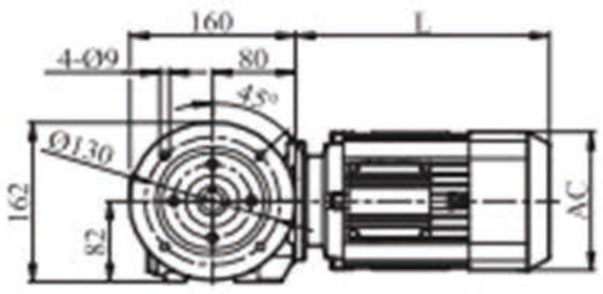
GSF37/Ø120



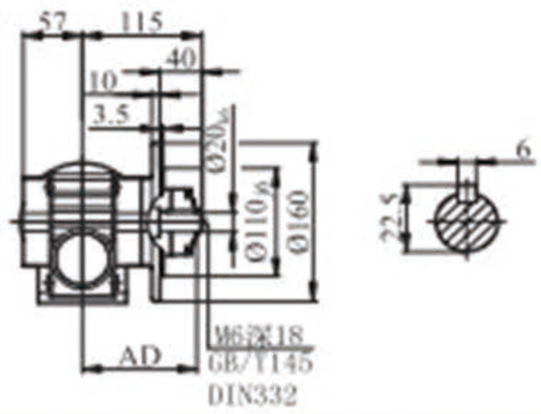
GSAF37/GSHF/Ø120



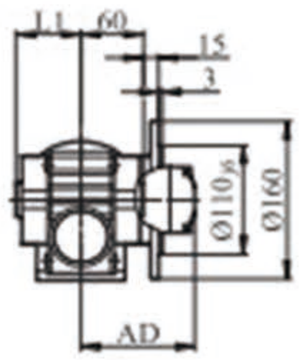
GSF/GSAF/GSHF37-Ø160



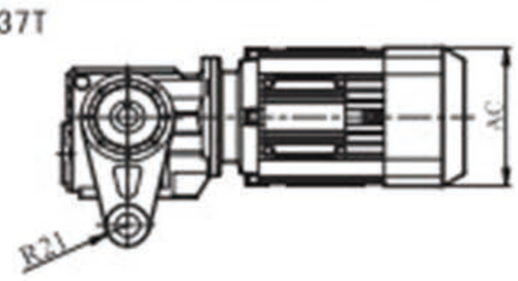
GSF37/Ø160

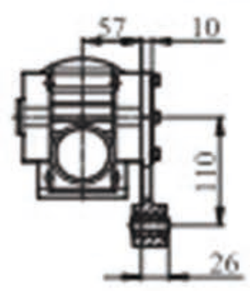


GSAF37/GSHF/Ø160

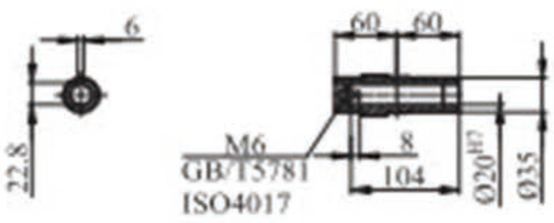


GSA37T

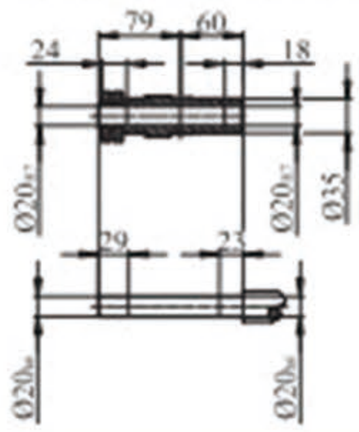




GSA/GSAZ/GSAF37输出轴

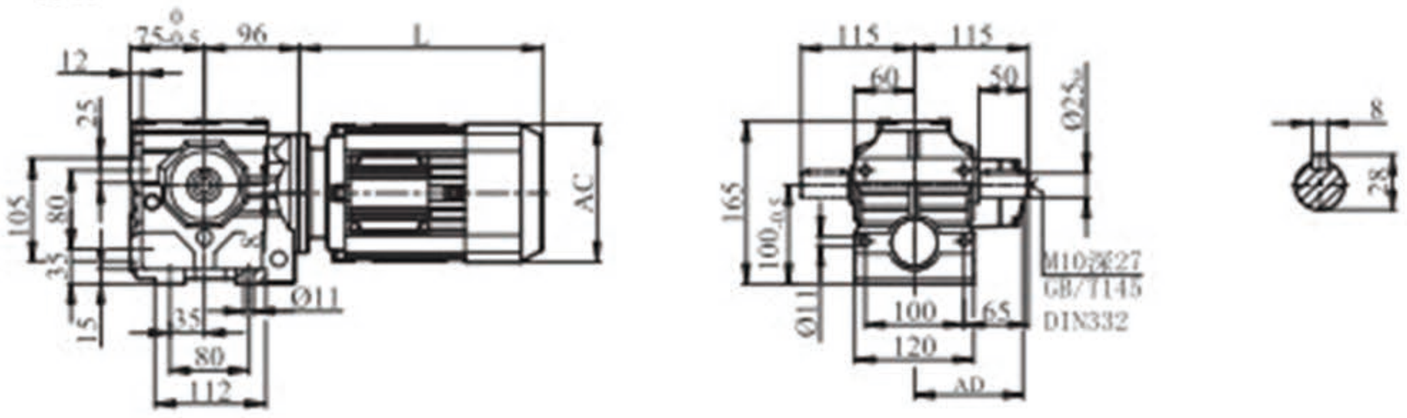


GSH/GSHZ/GSHF37输出轴

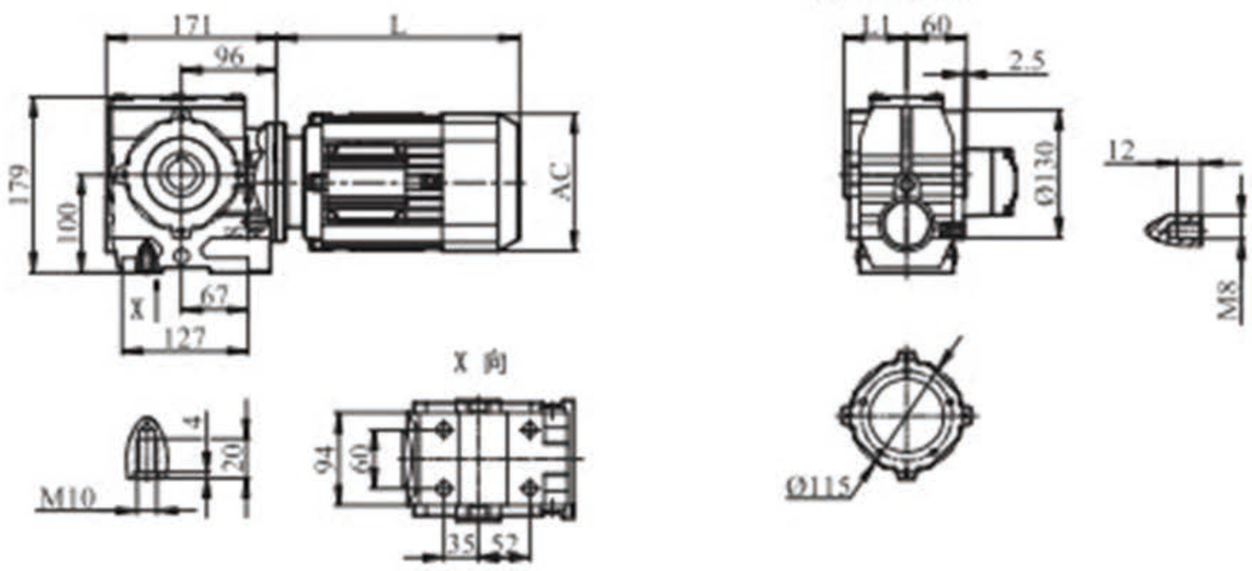


Y2电机机座号 Motor Size	63	71	80	90S	90L
L	225	260	290	300	330
AC	120	145	170	190	190
AD	110	130	135	145	145

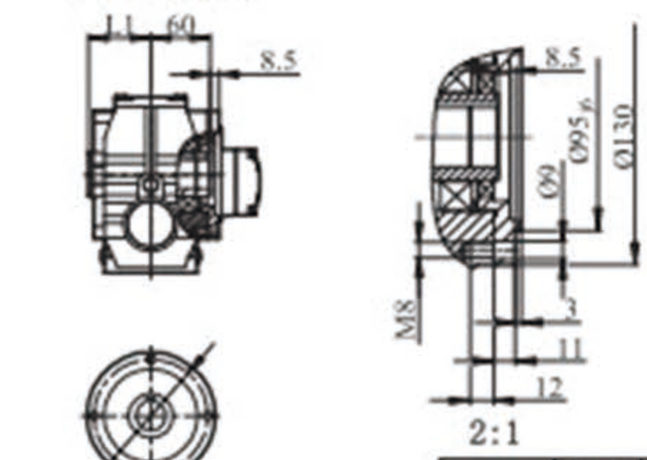
GS47



GSA/GSH47

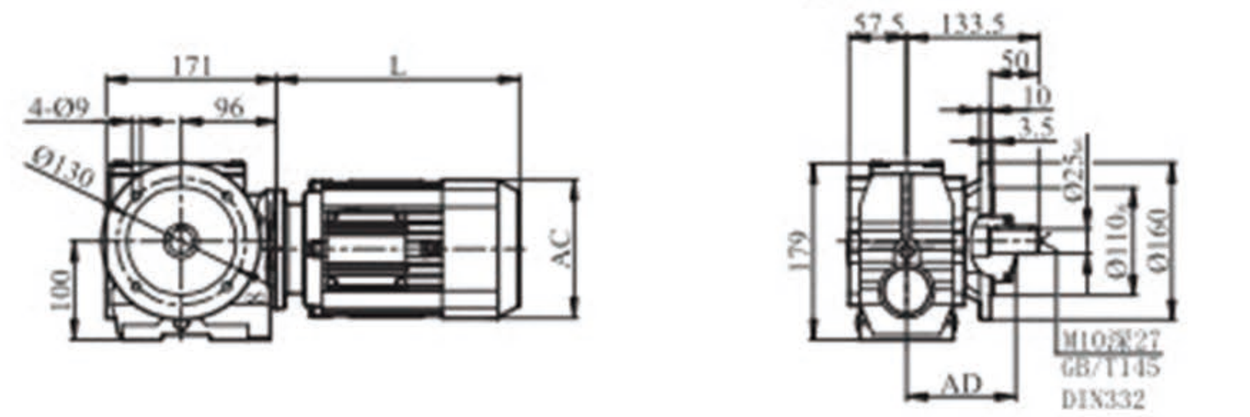


GSAZ/GSHZ47

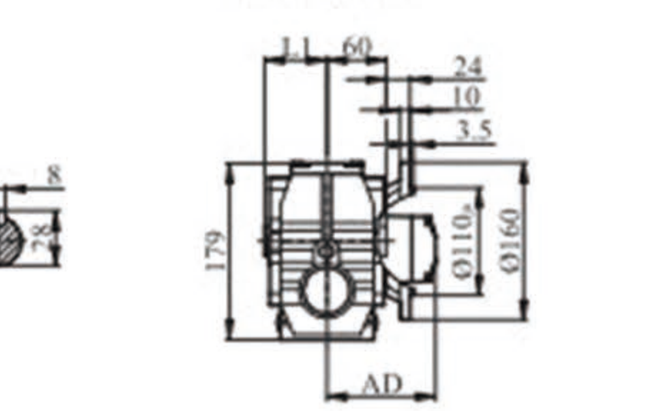


型号 Size	GSA	GSH
	GSAZ	GSHZ
	GSAF	GSHF
L1	60	86

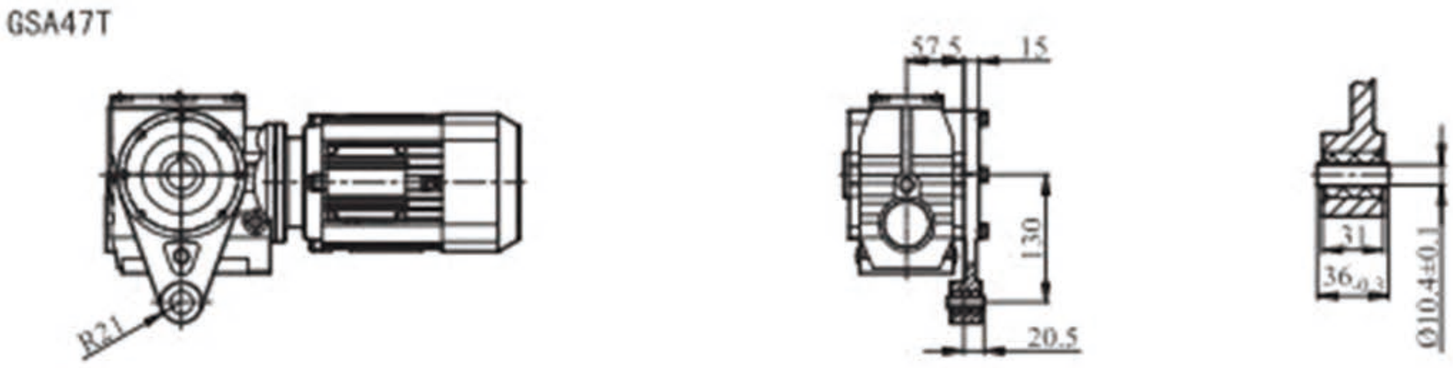
GSF47



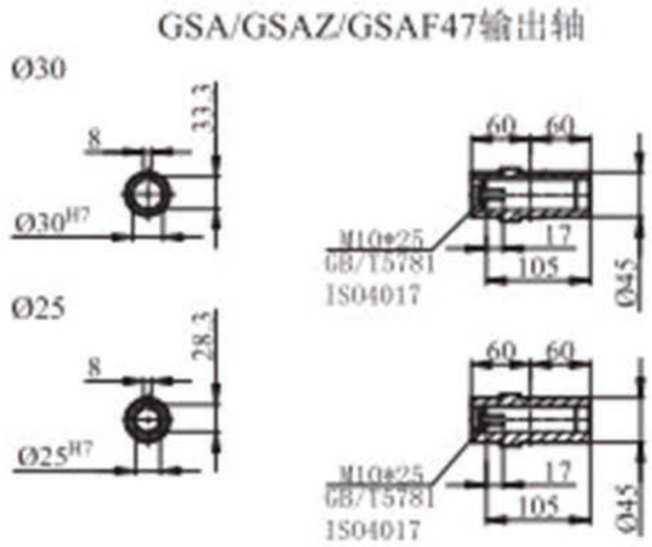
GSAF/GSHF47



GSA47T



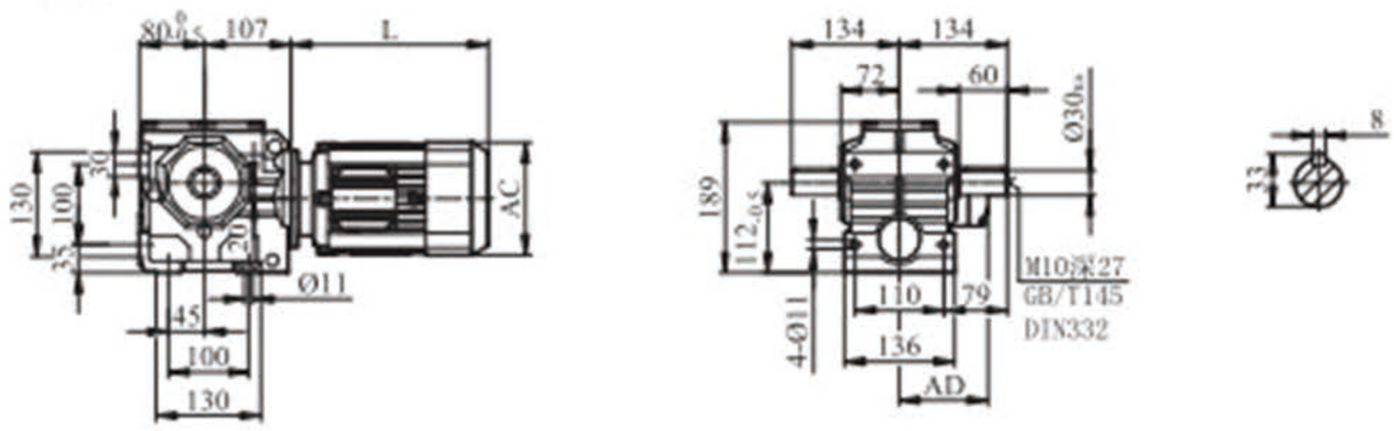
GSA/GSAZ/GSAF47输出轴



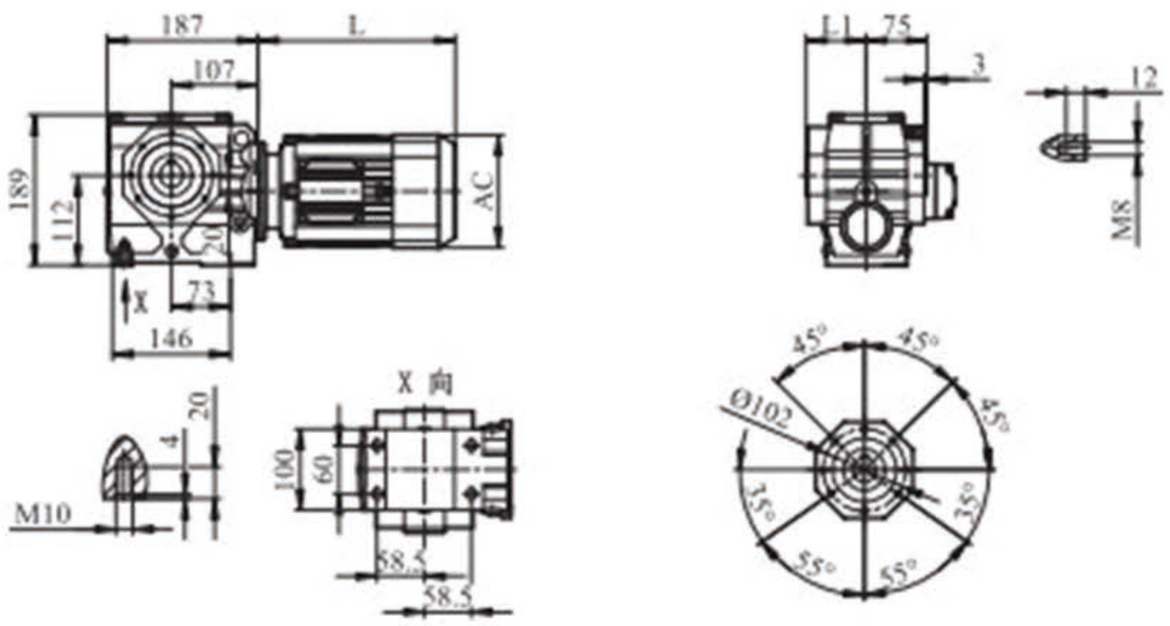
GSH/GSHZ/GSHF47输出轴

Y2电机机座号 MOtOr Size	63	71	80	90S	90L	100
L	205	260	290	300	330	340
AC	120	145	170	190	190	195
AD	110	130	135	145	145	180

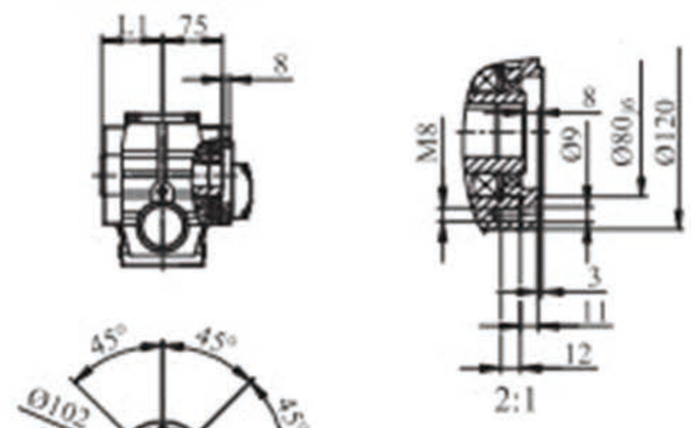
GS57



GSA/GSH57

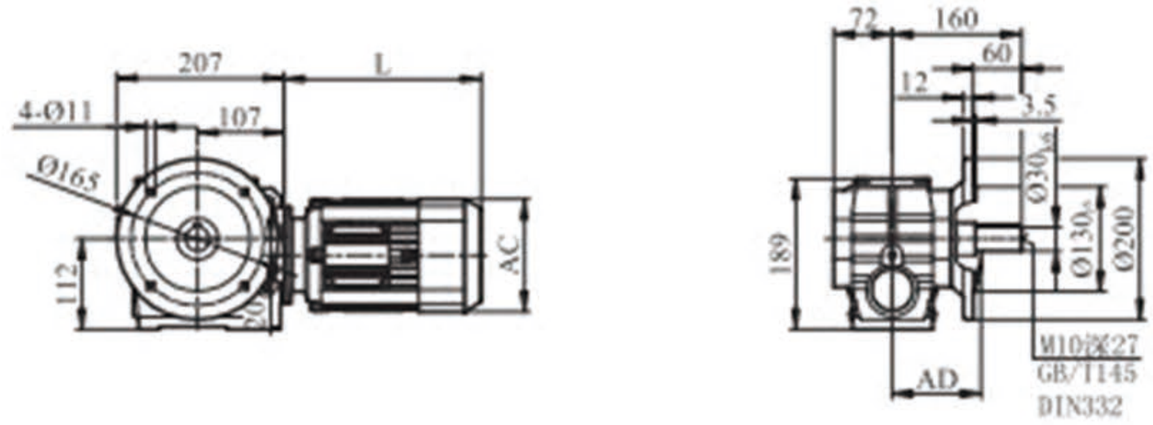


GSAZ/GSHZ57

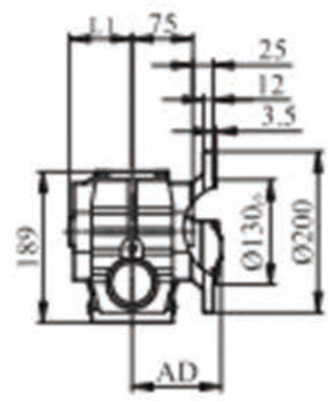


型号 Size	GSA	GKS
	GSAZ	GSHZ
	GSAF	GSHF
L1	75	105

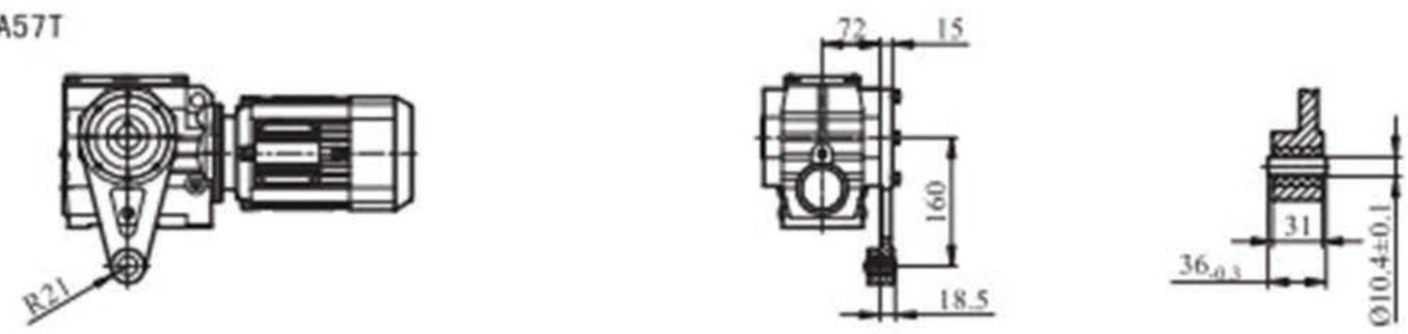
GSF57



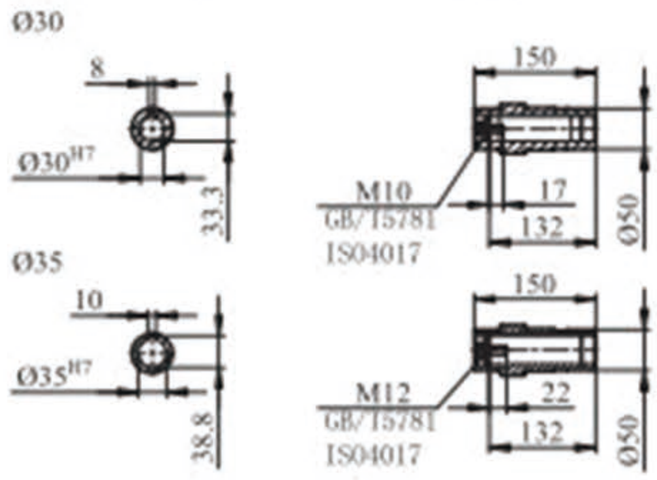
GSAF/GSHF57



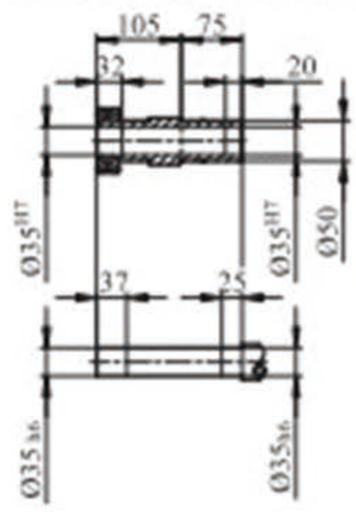
GSA57T



GSA/GSAZ/GSAF57输出轴

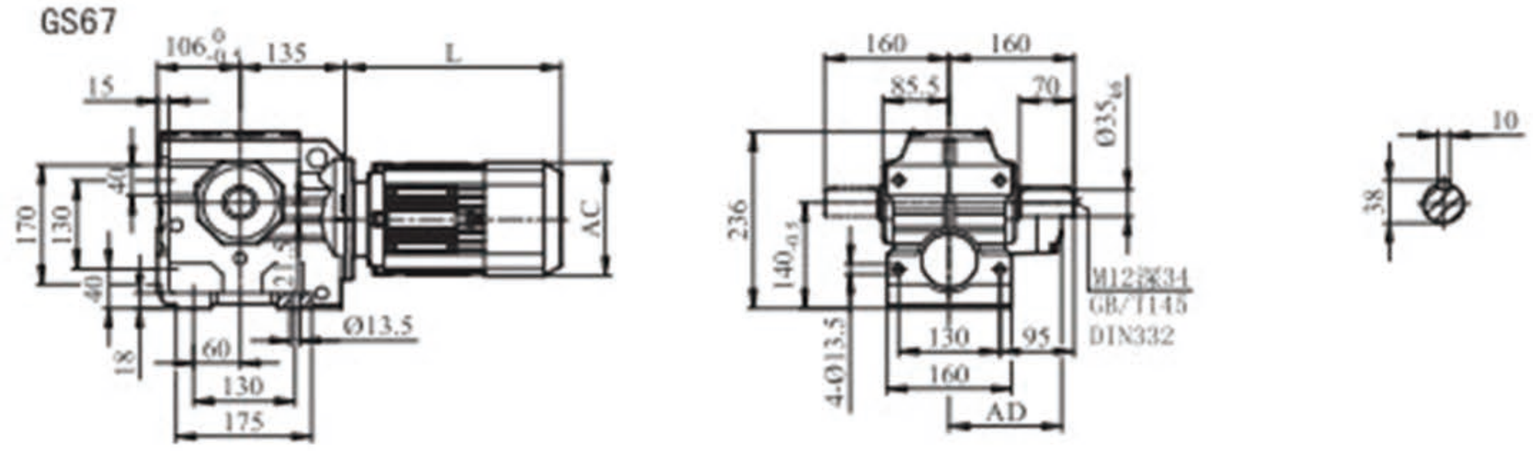


GSH/GSHZ/GSHF57输出轴

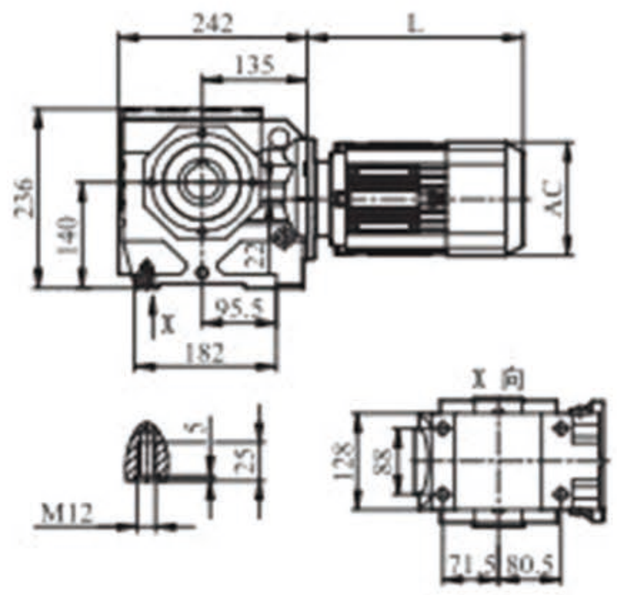


Y2电机机座号 MOtOr Size	63	71	80	90S	90L	100
L	205	260	290	300	330	330
AC	120	145	170	190	190	210
AD	110	130	135	145	145	160

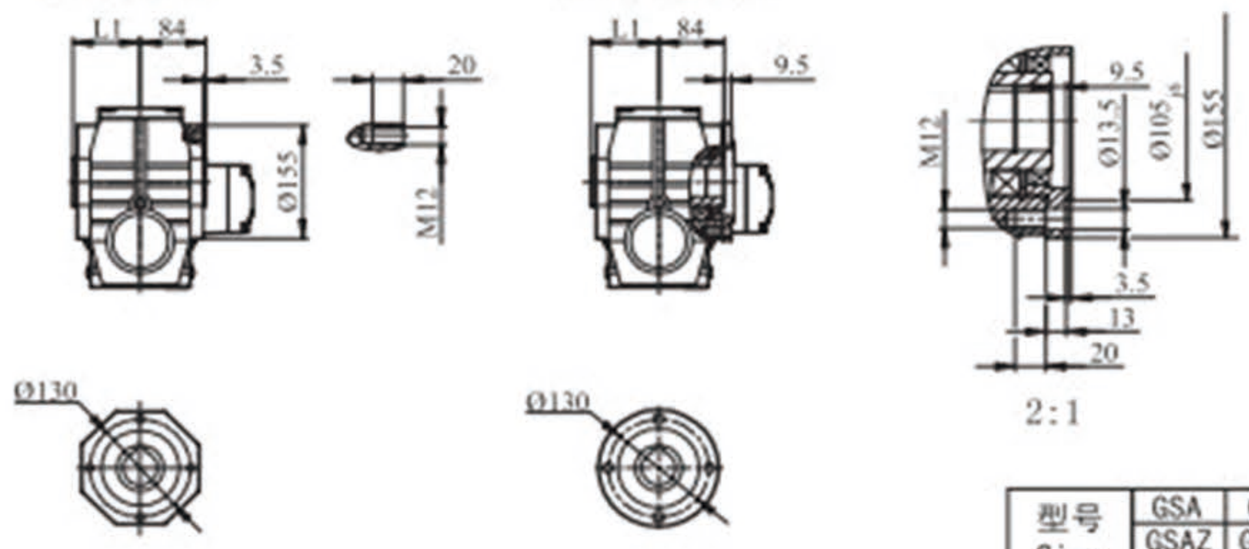
GS67



GSA/GSH67

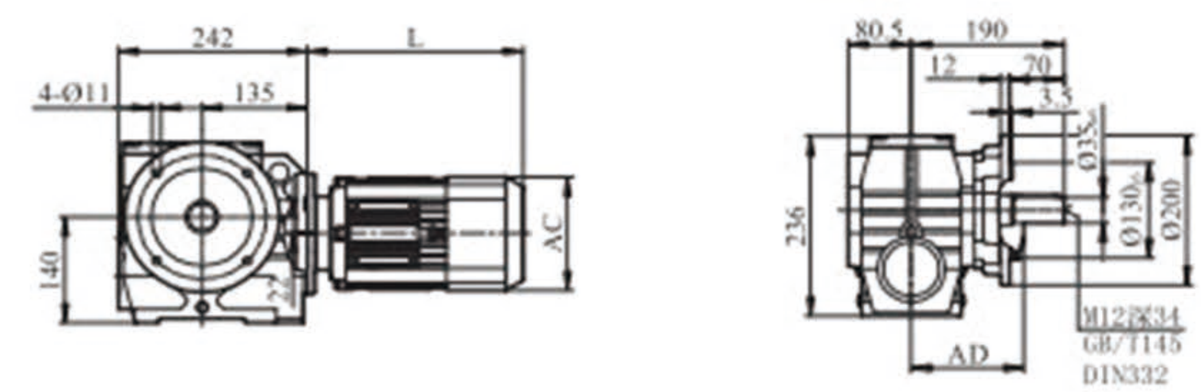


GSAZ/GSHZ67

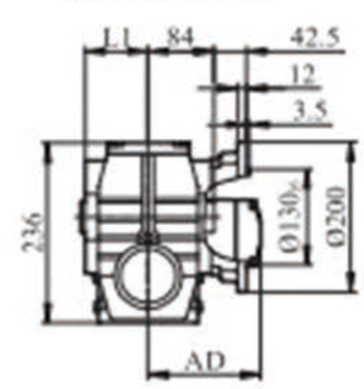


型号 Size	GSA	GSH
	GSAZ	GSHZ
	GSAF	GSHF
L1	84	120

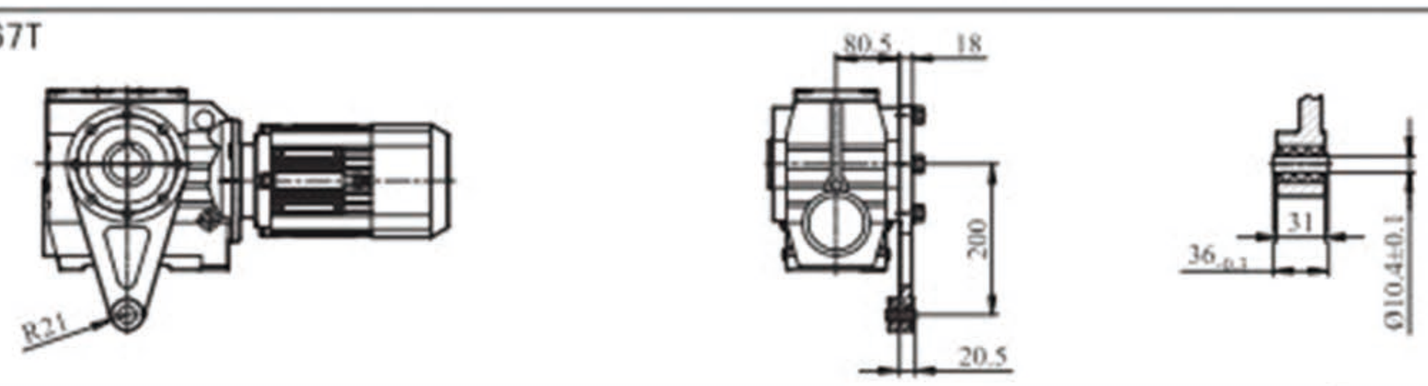
GSF67



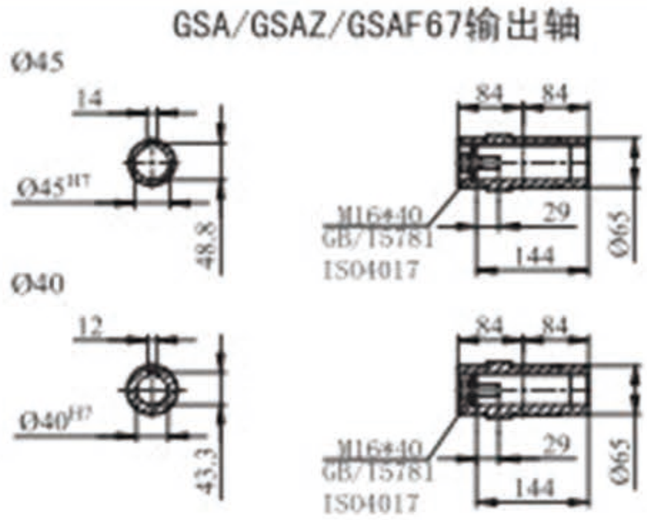
GSAF/GSHF67



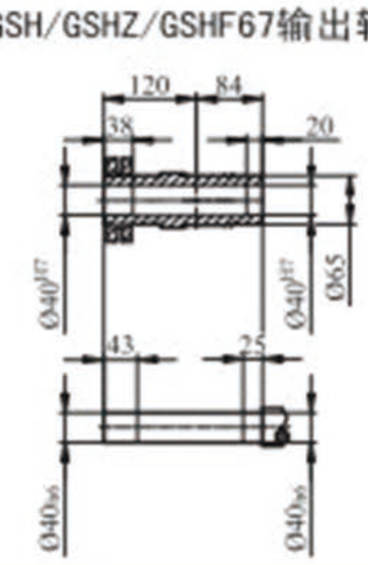
GSA67T



GSA/GSAZ/GSAF67输出轴

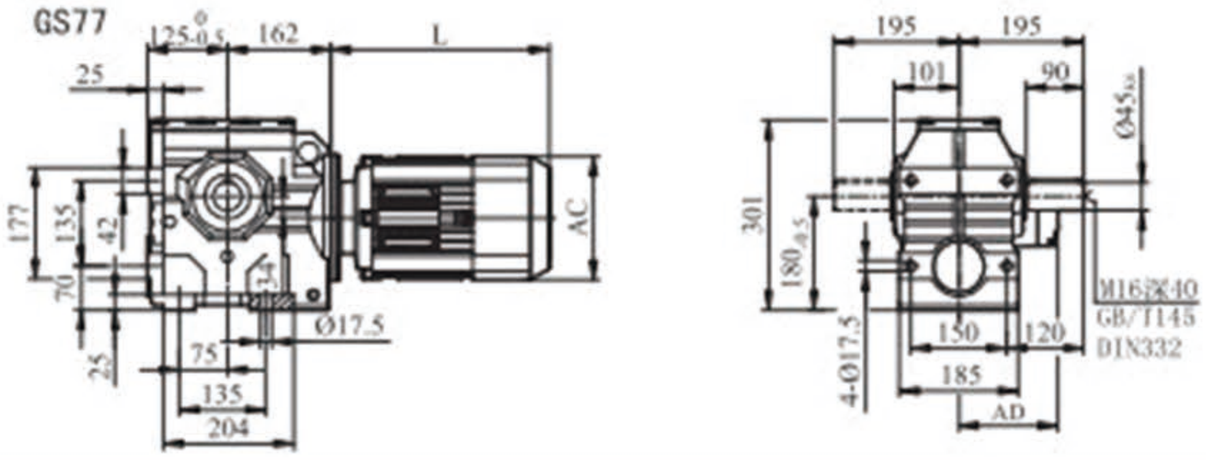


GSH/GSHZ/GSHF67输出轴

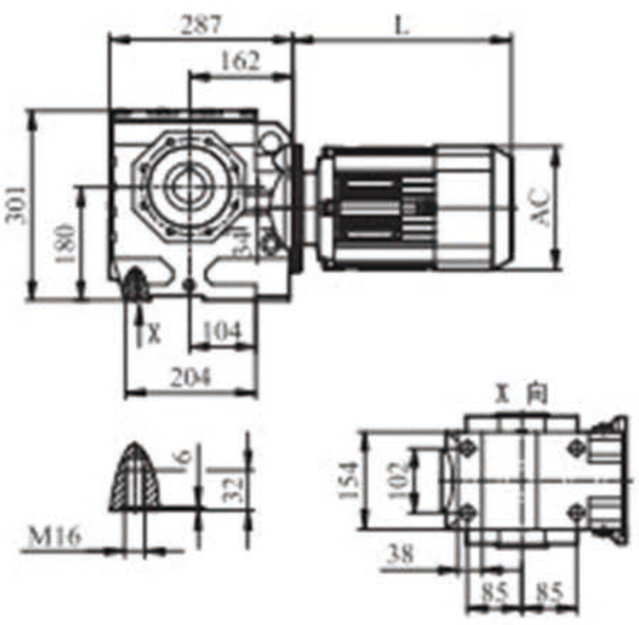


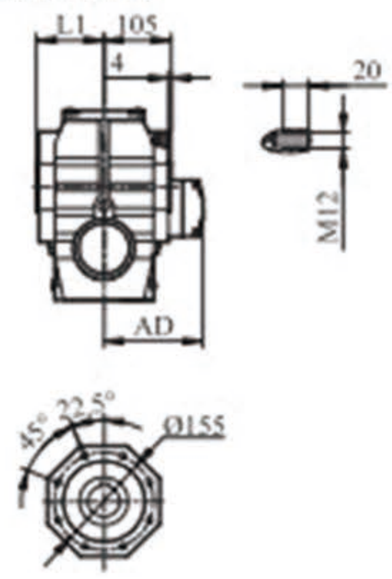
Y2电机机座号 MOtOr Size	63	71	80	90S	90L	100	112M	132S	
L	205	260	290	300	330	330	380	430	
AC	120	145	170	190	190	210	230	280	
AD	110	130	135	145	145	160	215	215	

GS77

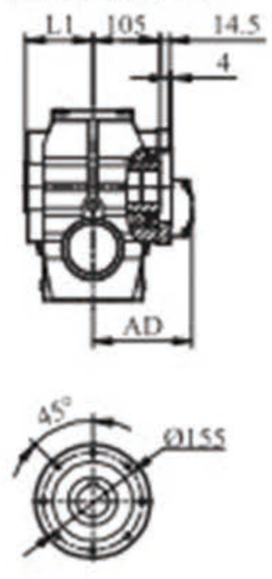


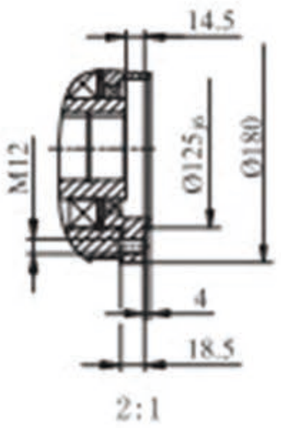
GSA/GSH77





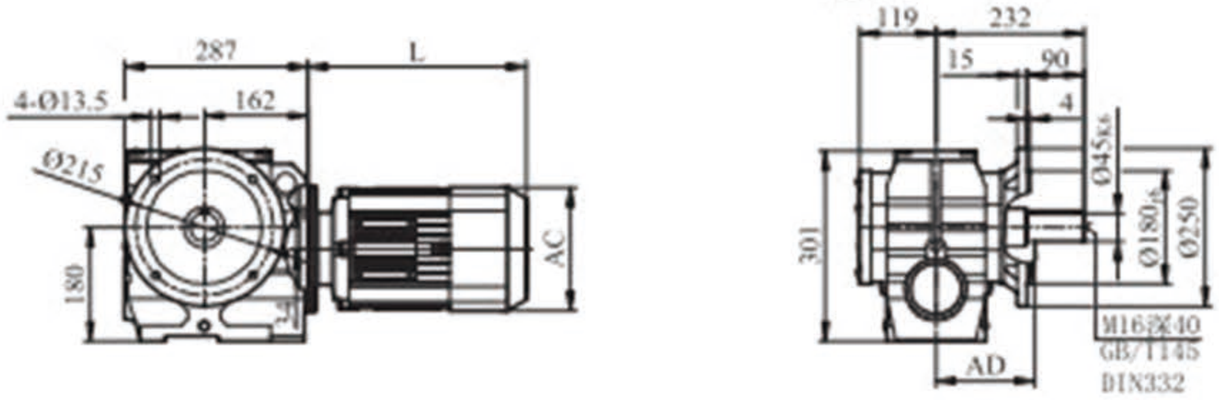
GSAZ/GSHZ77



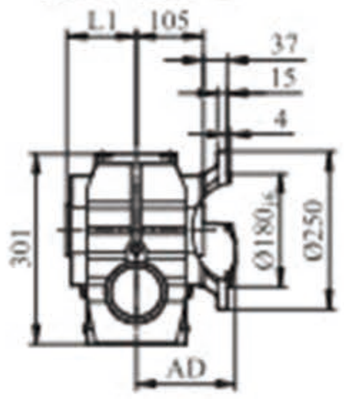


型号 Size	GSA	GSH
	GSAZ	GSHZ
	GSAF	GSHF
L1	105	139

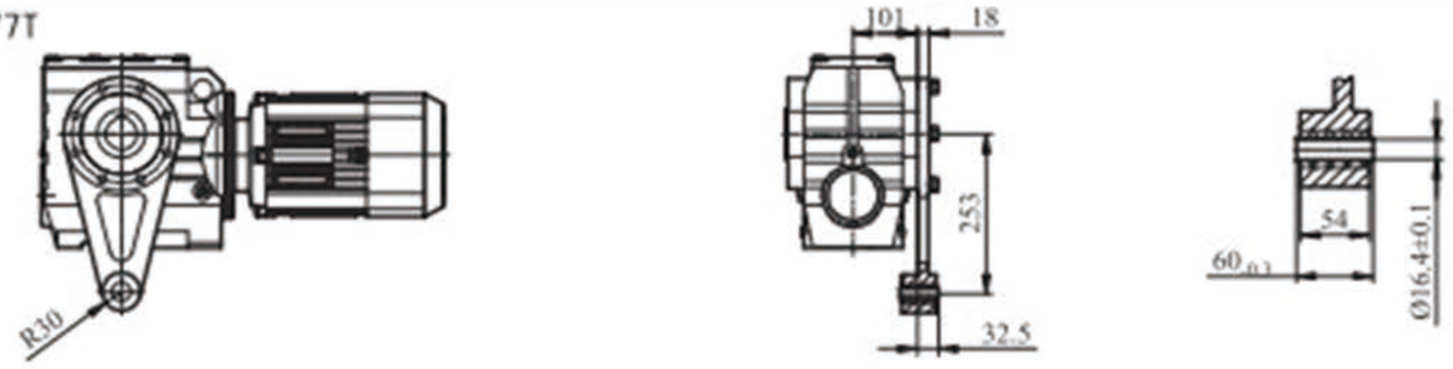
GSF77



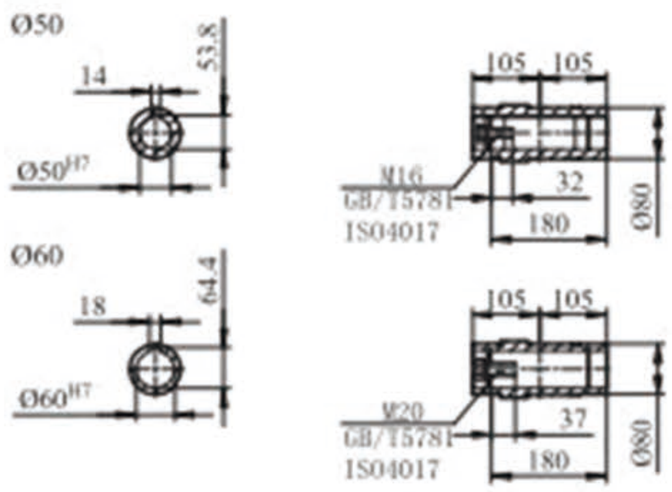
GSAF/GSHF77



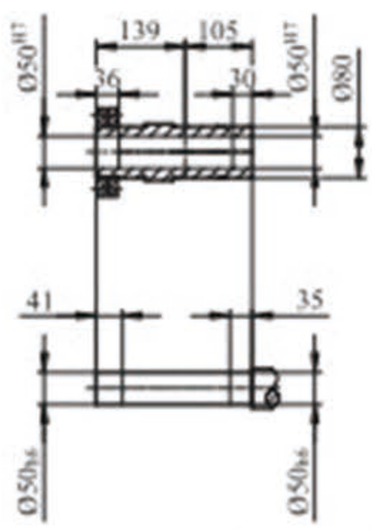
GSA77T



GSA/GSAZ/GSAF77输出轴

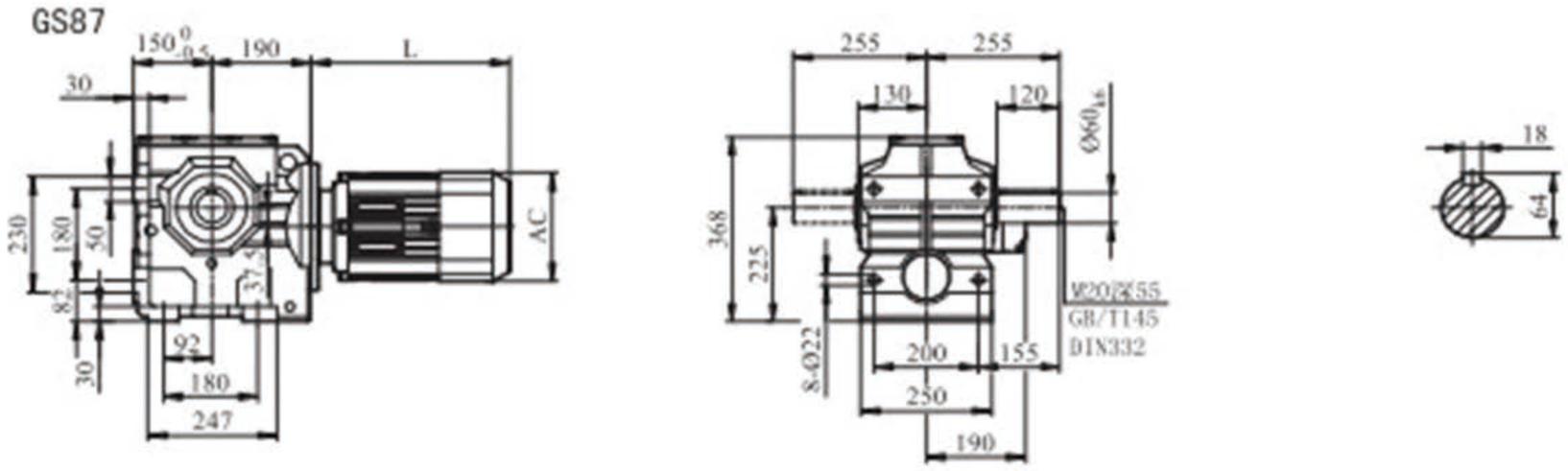


GSH/GSHZ/GSHF77输出轴

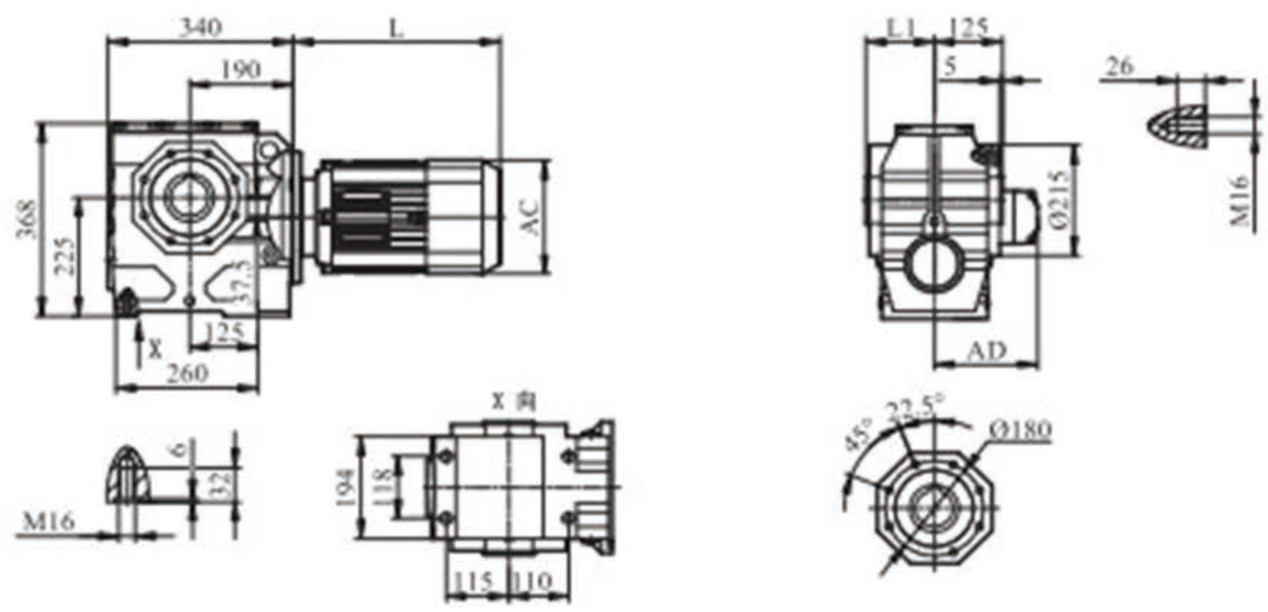


Y2电机机座号 MOtOr Size	80	90S	90L	100	112M	132S	132M	160M
L	284	292	322	322	370	418	457	524
AC	170	190	190	210	230	280	280	315
AD	135	145	145	160	215	215	215	255

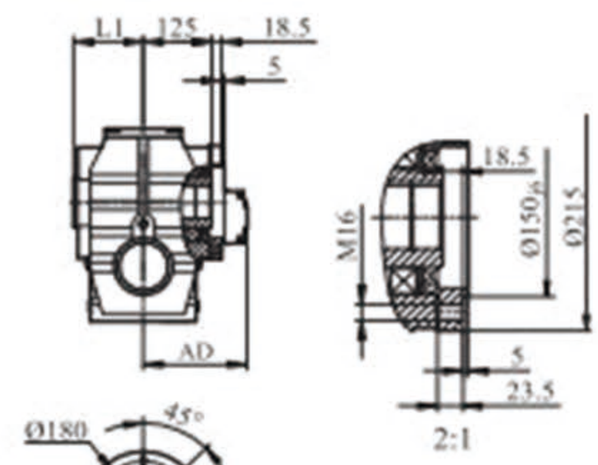
GS87



GSA/GSH87

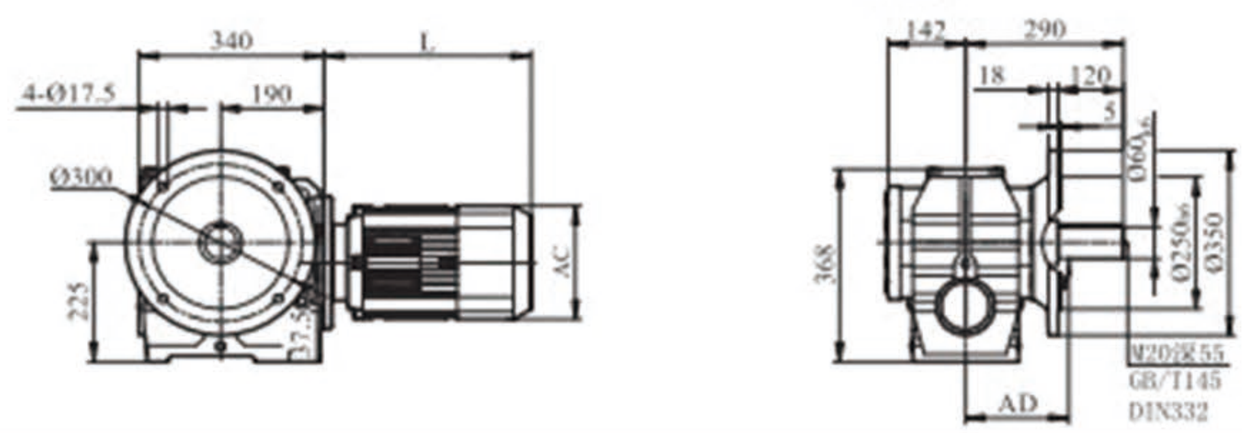


GSAZ/GSHZ87

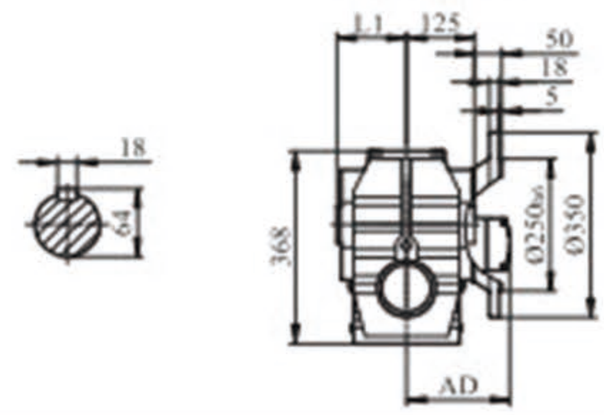


型号 Size	GSA	GSH
	GSAZ	GSHZ
	GSAF	GSHF
L1	125	165

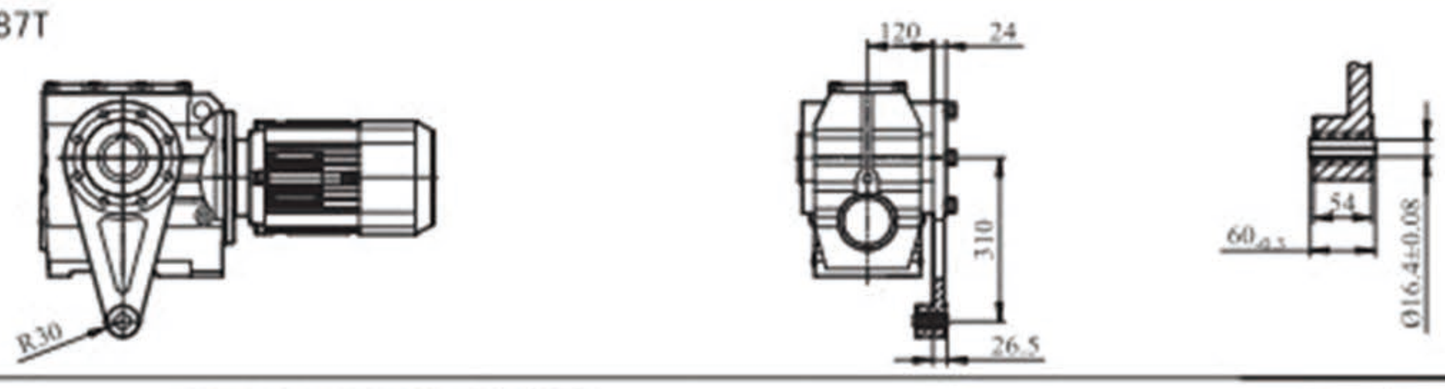
GSF87



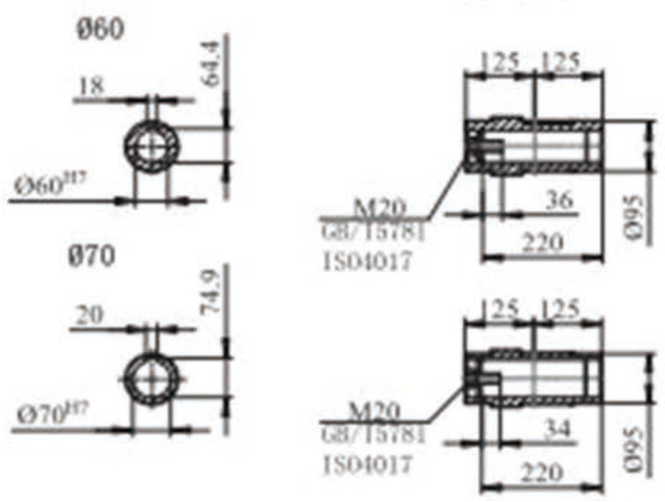
GSAF/GSHF87



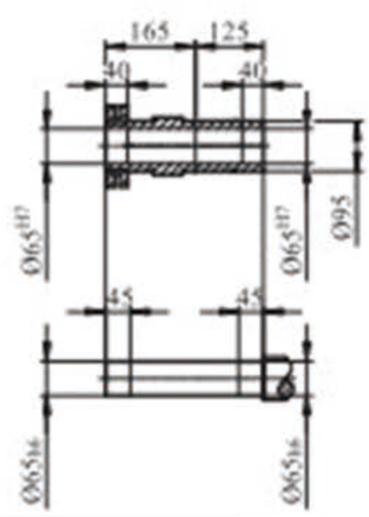
GSA87T



GSA/GSAZ/GSAF87输出轴

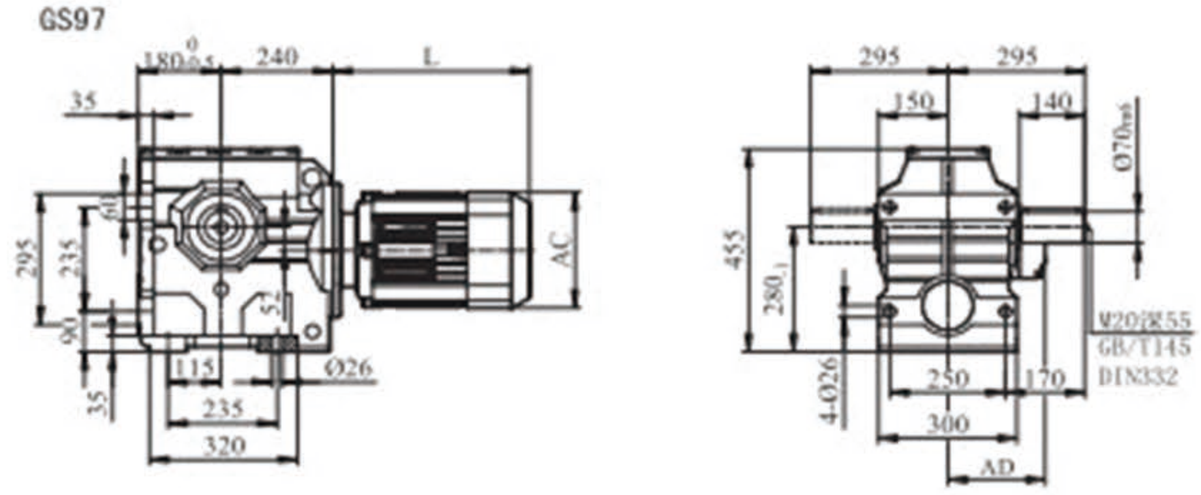


GSH/GSHZ/GSHF87输出轴

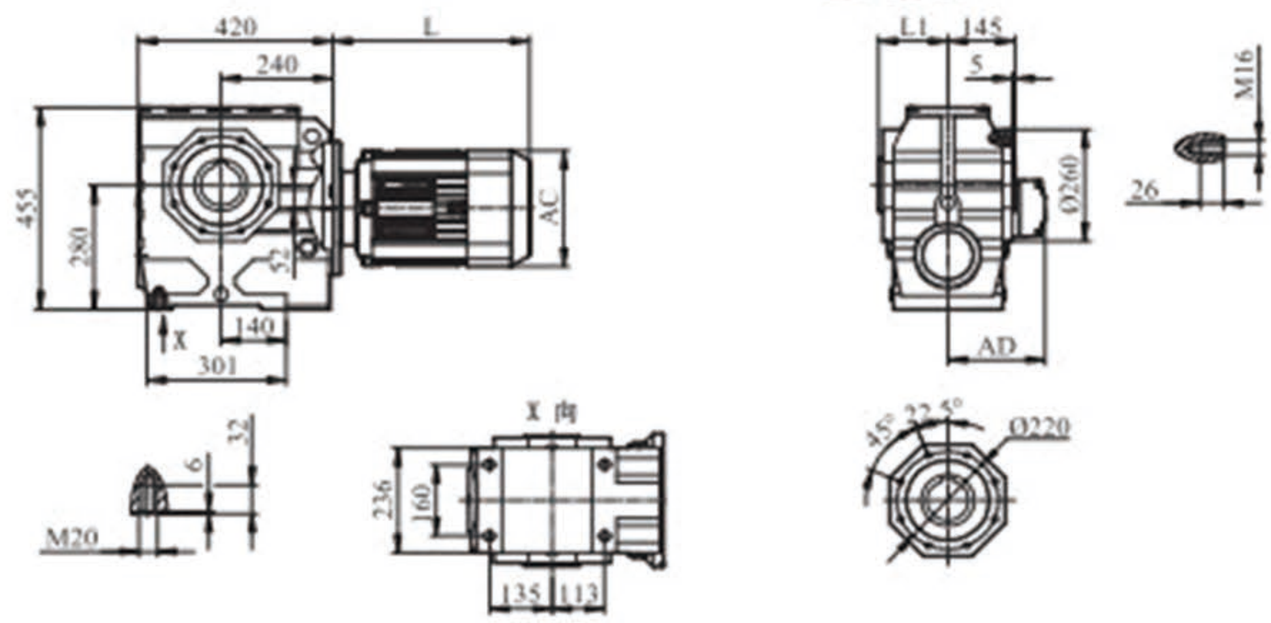


Y2电机机座号 MOtOr Size	80	90S	90L	100	112M	132S	132M	160M	160L
L	280	288	318	318	365	413	452	524	547
AC	170	190	190	210	230	280	280	315	315
AD	135	145	145	160	215	215	215	255	255

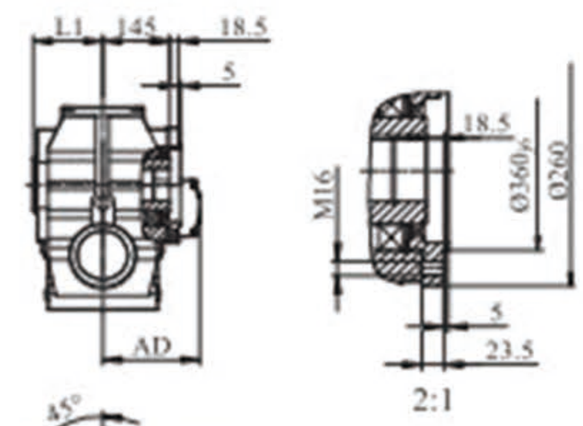
GS97



GSA/GSH97

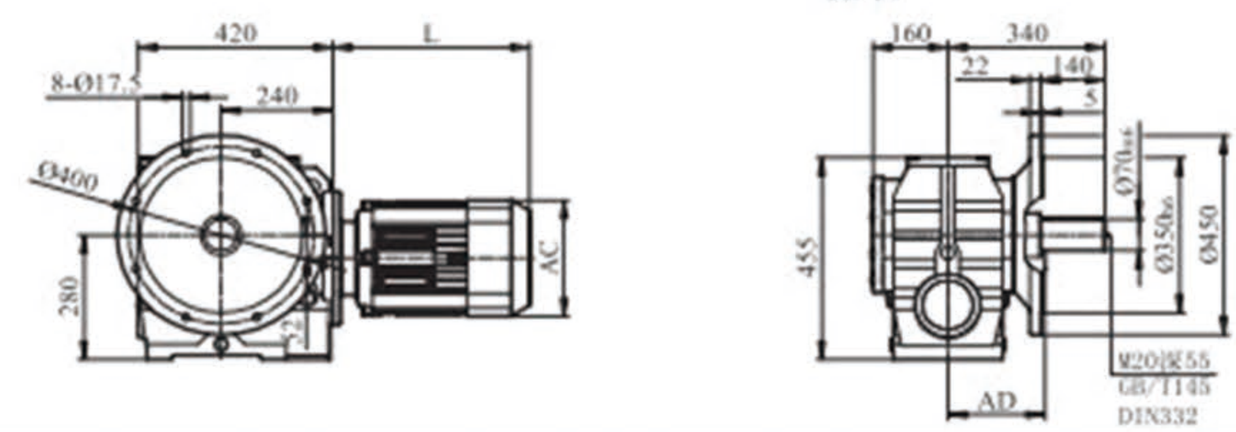


GSAZ/GSHZ97

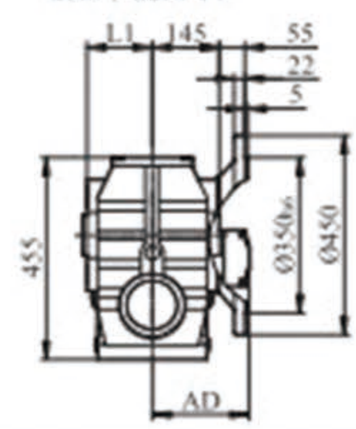


型号 Size	GSA	GSH
	GSAZ	GSHZ
	GSAF	GSHF
L1	145	200

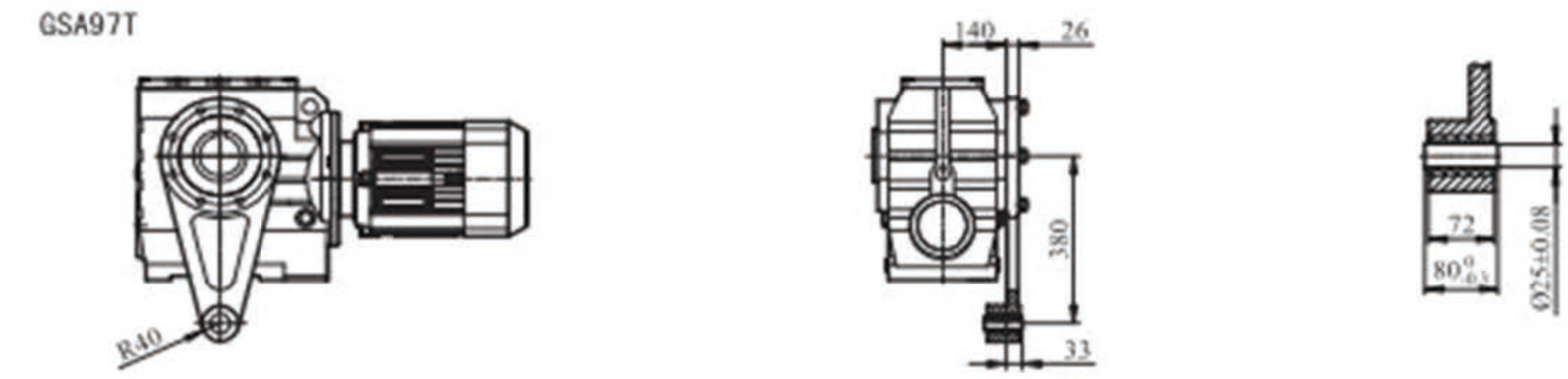
GSF97



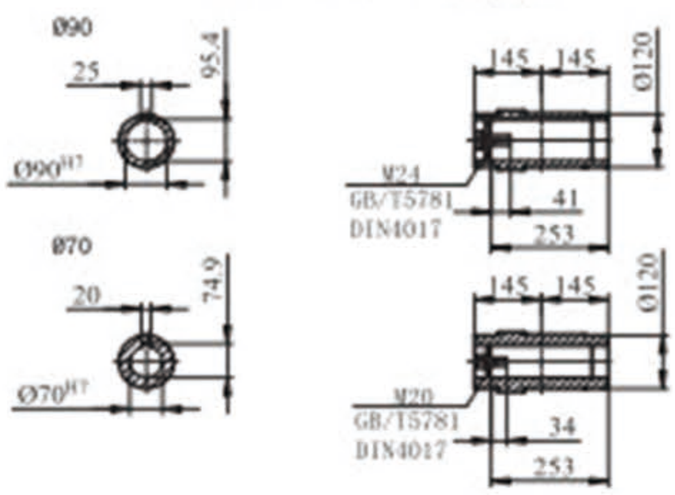
GSAF/GSHF97



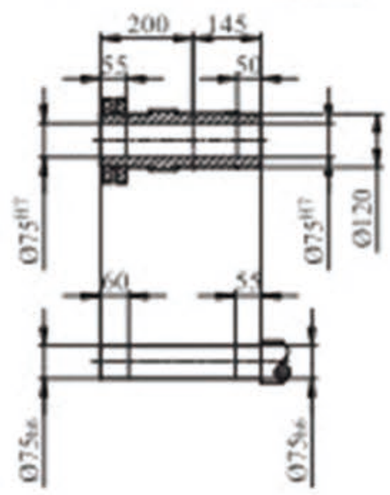
GSA97T



GSA/GSAZ/GSAF97输出轴



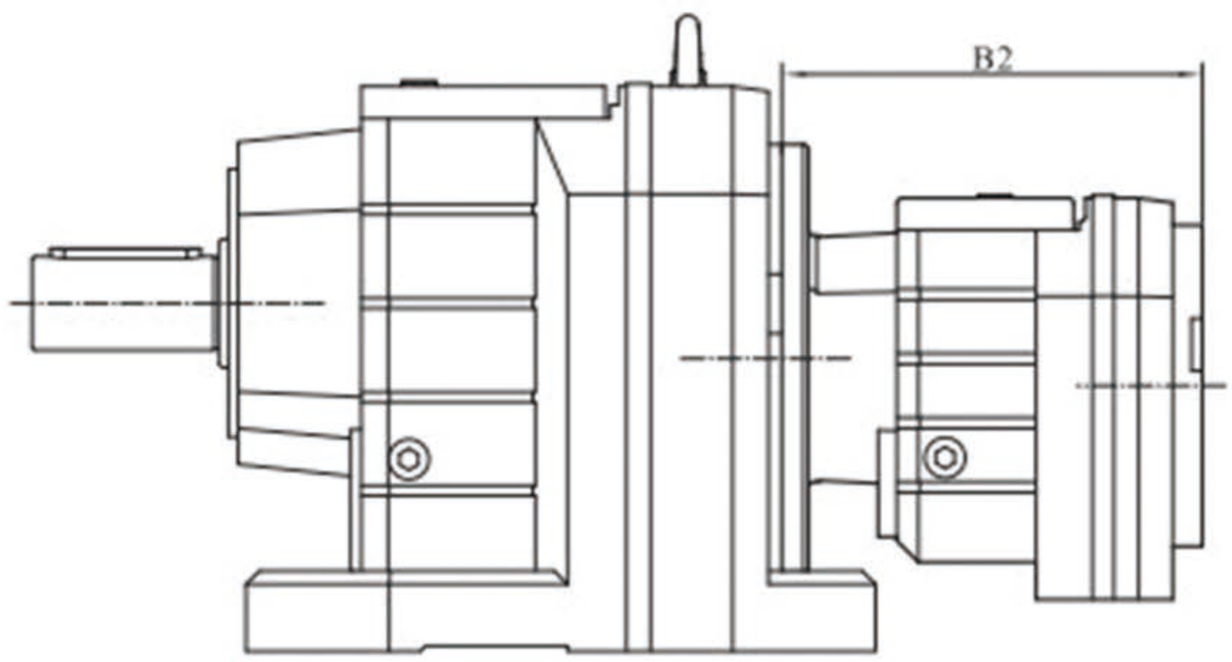
GSH/GSHZ/GSHF97输出轴



Y2电机机座号 MOtOr Size	90S	90L	100	112M	132S	132M	160M	160L	180M	180L
L	280	310	312	360	408	487	524	519	555	588
AC	190	190	210	230	280	280	315	315	350	350
AD	145	145	160	215	215	215	255	255	280	280

6. 输入模块外形尺寸/ Dimensions of Input Module

6. 1 GRF..外形尺寸/ GRF.. Dimensions



机座号/Frame size	B2
GR..27GRF17	139
GR..37GRF17	139
GR..47GRF37	157
GR..57GRF37	157
GR..67GRF37	157
GR..77GRF37	157
GR..87GRF57	187
GR..97GRF57	187
GR..107GRF77	220
GR..137GRF77	220
GR..147GRF77	220
GR..147GRF87	272
GR..167GRF97	320
GR..167GRF107	355

机座号/Frame size	B2
GF..27GRF17	139
GF..37GRF17	139
GF..47GRF17	139
GF..57GRF37	157
GF..67GRF37	157
GF..77GRF37	157
GF..87GRF57	187
GF..97GRF57	187
GF..107GRF77	220
GF..127GRF77	220
GF..127GRF87	272
GF..157GRF97	320

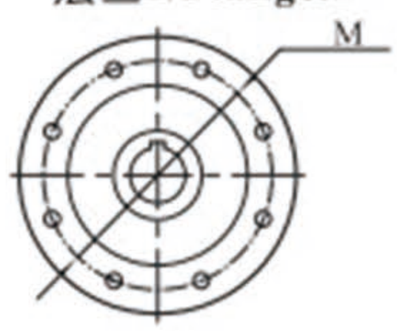
机座号/Frame size	B2
GK..37GRF17	139
GK..47GRF37	157
GK..57GRF37	157
GK..67GRF37	157
GK..77GRF37	157
GK..87GRF57	187
GK..97GRF57	187
GK..107GRF77	220
GK..127GRF77	220
GK..127GRF87	272
GK..157GRF97	320
GK..157GRF107	355
GK..167GRF97	320
GK..167GRF107	355
GK..187GRF97	320
GK..187GRF107	355

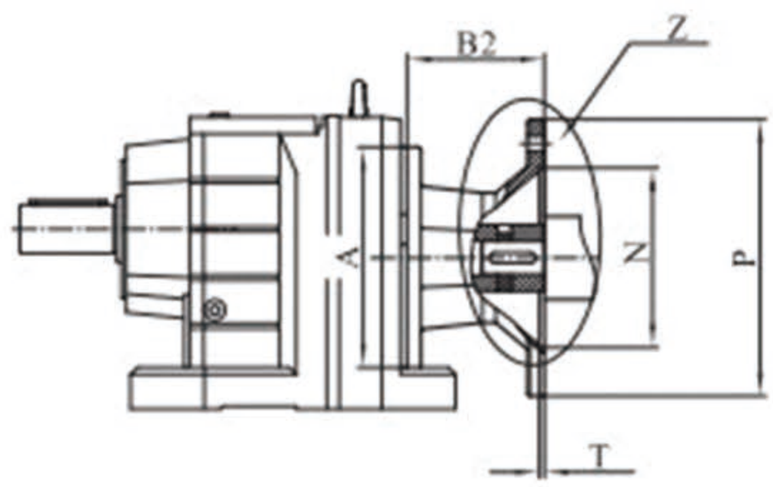
机座号/Frame size	B2
GS..37GRF17	139
GS..47GRF17	139
GS..57GRF17	139
GS..67GRF37	157
GS..77GRF37	157
GS..87GRF57	187
GS..97GRF57	187

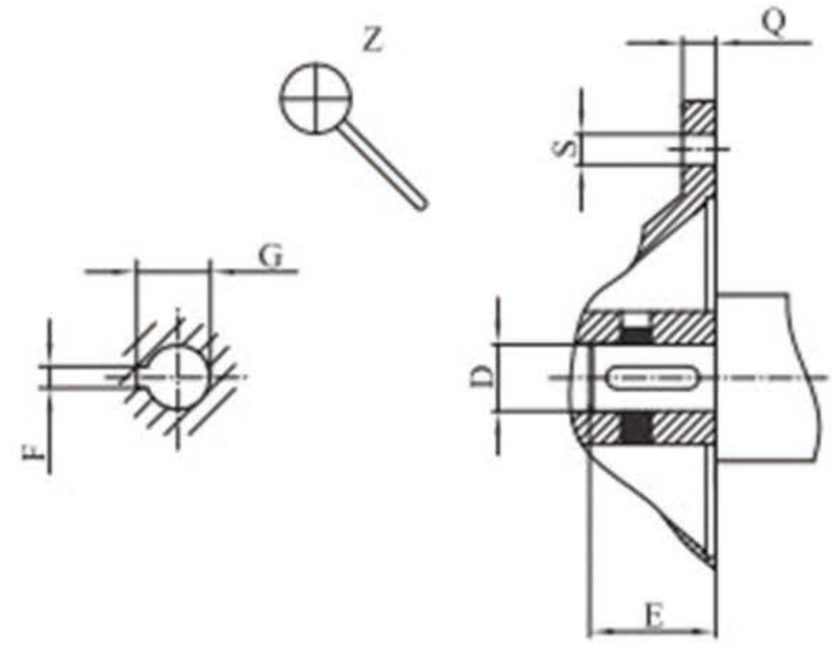
6.2 AM(IEC)..外形尺寸/AM（IEC）.. Dimensions

法兰1/Flange.1

法兰2/Flange.2





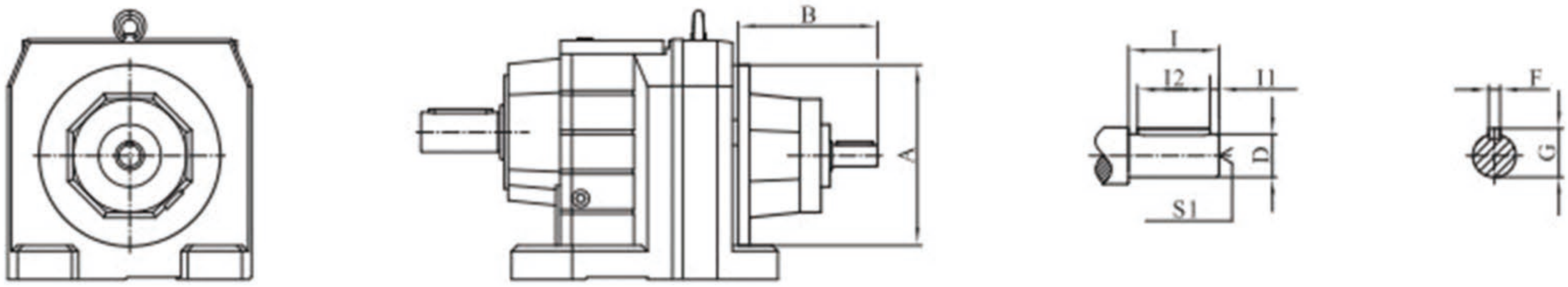


型号 Frame size	AM	Flange	A	B2	D	E	F	G	M	N	P	Q	S	T
GR..27/37 GF..27/37/47 GS..37/47/57 GK..37	AM63	1	120	70	11	23	4	12.8	115	95	140	10	4-Φ9	3.5
	AM71				14	30	5	16.3	130	110	160			
	AM80			90	19	40	6	21.8	165	130	200	12	4-Φ11	4.5
	AM90				24	50	8	27.3						
	AM100			110	28	60	8	31.3	215	180	250	15	4-Φ13.5	5
GR..47/57/67 GF..57/67 GS..67 GK..47/57/67	AM63	1	160	70	11	23	4	12.8	115	95	140	10	4-Φ9	3.5
	AM71				14	30	5	16.3	130	110	160			
	AM80			90	19	40	6	21.8	165	130	200	12	4-Φ11	4.5
	AM90				24	50	8	27.3						
	AM100			110	28	60	8	31.3	215	180	250	15	4-Φ13.5	5
	AM112													
	AM132S/M			140	38	80	10	41.3	265	230	300	16		
GR..77 GF..77 GS..77 GK..77	AM63	1	200	70	11	23	4	12.8	115	95	140	10	4-Φ9	3.5
	AM71				14	30	5	16.3	130	110	160			
	AM80			90	19	40	6	21.8	165	130	200	12	4-Φ11	4.5
	AM90				24	50	8	27.3						
	AM100			110	28	60	8	31.3	215	180	250	15	4-Φ13.5	5
	AM112													
	AM132S/M			140	38	80	10	41.3	265	230	300	16		
	AM132ML													
	AM160			180	42	110	12	45.3	300	250	350	18	4-Φ17.5	6
GR..87 GF..87 GS..87 GK..87	AM80	1	250	90	19	40	6	21.8	165	130	200	12	4-Φ11	4.5
	AM90				24	50	8	27.3						
	AM100			110	28	60	8	31.3	215	180	250	15	4-Φ13.5	5
	AM112													
	AM132S/M			140	38	80	10	41.3	265	230	300	16		
	AM132ML													
	AM160			180	42	110	12	45.3	300	250	350	18	4-Φ17.5	6
	AM180				48		14	51.8						

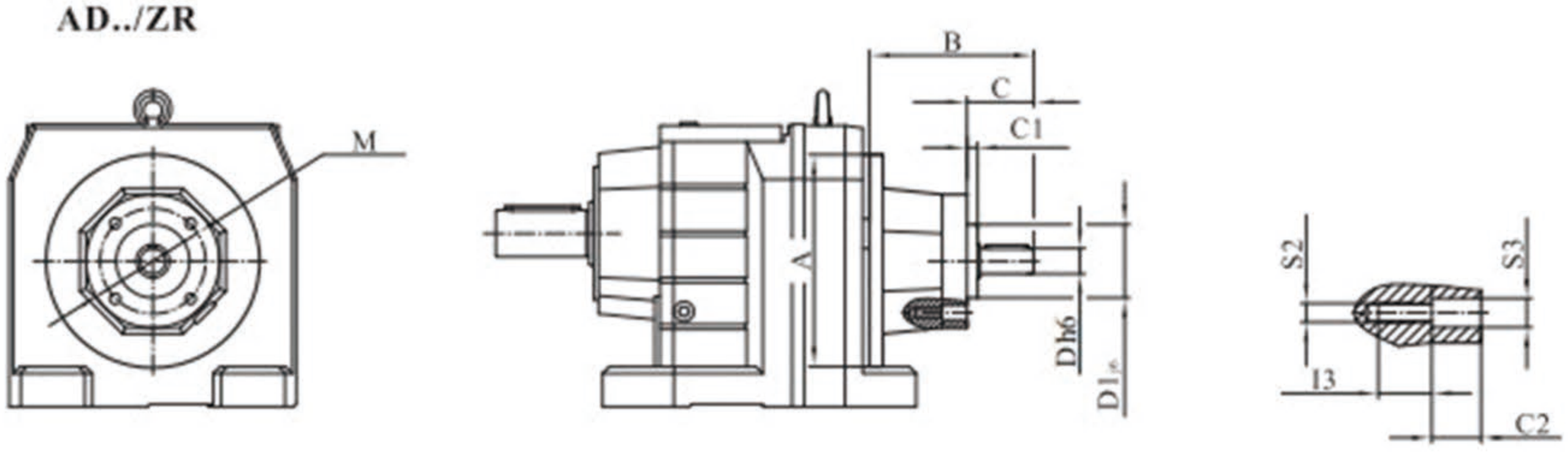
型号 Frame size	AM	Flange	A	B2	D	E	F	G	M	N	P	Q	S	T
GR..97 GF..97 GS..97 GK..97	AM90	1	300	90	24	50	8	27.3	165	130	200	12	4-Φ11	4.5
	AM100			110	28	60	8	31.3	215	180	250	15	4-Φ13.5	5
	AM112													
	AM132S/M			140	38	80	10	41.3	265	230	300	16		
	AM132ML													
	AM160			180	42	110	12	45.3	300	250	350	18	4-Φ17.5	6
	AM180				48		14	51.8						
	AM200			210	55		16	59.3	350	300	400	20		7
GR..107 GF..107 GK..107	AM100	1	350	110	28	60	8	31.3	215	180	250	15	4-Φ13.5	5
	AM112													
	AM132S/M			140	38	80	10	41.3	265	230	300	16		
	AM132ML													
	AM160			180	42	110	12	45.3	300	250	350	18	4-Φ17.5	6
	AM180				48		14	51.8						
	AM200			210	55		16	59.3	350	300	400	20		7
	AM225	2		250	60	140	18	64.4	400	350	450	22	8-Φ17.5	
GR..137	AM132S/M	1	400	140	38	80	10	41.3	265	230	300	16	4-Φ13.5	5
	AM132ML													
	AM160			180	42	110	12	45.3	300	250	350	18	4-Φ17.5	6
	AM180				48		14	51.8						
	AM200			210	55		16	59.3	350	300	400	20		7
	AM225	2		250	60	140	18	64.4	400	350	450	22	8-Φ17.5	
	AM250			320	65			69.4	500	450	550	25	8-Φ17.5	
GR..147 GF..127 GK..127	AM132S/M	1	450	140	38	80	10	41.3	265	230	300	16	4-Φ13.5	5
	AM132ML													
	AM160			180	42	110	12	45.3	300	250	350	18	4-Φ17.5	6
	AM180				48		14	51.8						
	AM200			210	55		16	59.3	350	300	400	20		7
	AM225	2		250	60	140	18	64.4	400	350	450	22	8-Φ17.5	
	AM250			320	65			69.4	500	450	550	25		
	AM280				75		20	79.9						
GR..167 GF..157 GK..157 GK..167 GK..187	AM160	1	550	180	42	110	12	45.3	300	250	350	18	4-Φ17.5	6
	AM180				48		14	51.8						
	AM200			210	55		16	59.3	350	300	400	20		7
	AM225	2		250	60	140	18	64.4	400	350	450	22	8-Φ17.5	
	AM250			320	65			69.4	500	450	550	25		
	AM280				75		20	79.9						

6.3 AD..外形尺寸/AD.. Dimensions

AD..



AD../ZR



型号 Frame size	AD..	A	B	C	C1	C2	D	D1	F	G	I	I1	I2	I3	M	S1	S2	S3
GR..27	AD1	120	100	-	-	-	16	-	5	18	40	4	32	-	-	M5*12.5	-	-
GF..27	AD2，AD2/ZR		114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
GR/GF..37	AD1		100	-	-	-	16	-	5	18	40	4	32	-	-	M5*12.5	-	-
GK/GS..37	AD2，AD2/ZR		114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
GF..47	AD1		100	-	-	-	16	-	5	18	40	4	32	-	-	M5*12.5	-	-
GS..47	AD2，AD2/ZR		114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
GS..57	AD1		100	-	-	-	16	-	5	18	40	4	32	-	-	M5*12.5	-	-
	AD2，AD2/ZR		114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
GR..47	AD2，AD2/ZR	160	114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
GK..47	AD3，AD3/ZR		130	60	8	15.5	24	70	8	27	50	5	40	16	98	M8*19	M10	11
GR/GF..57	AD2，AD2/ZR		114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
GK..57	AD3，AD3/ZR		130	60	8	15.5	24	70	8	27	50	5	40	16	98	M8*19	M10	11
GR/GF..67	AD2，AD2/ZR		114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
GK/GS..67	AD3，AD3/ZR		130	60	8	15.5	24	70	8	27	50	5	40	16	98	M8*19	M10	11
GR/GF..77 GK/GS..77	AD2，AD2/ZR	200	114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
	AD3，AD3/ZR		130	60	8	15.5	24	70	8	27	50	5	40	16	98	M8*19	M10	11
	AD4，AD4/ZR		186	95.5	13	16	38	92	10	41	80	5	70	20	120	M12*28	M12	13.5
GR/GF..87 GK/GS..87	AD2，AD2/ZR	250	114	50	8	13.5	19	55	6	21.5	40	4	32	12	78	M6*16	M8	9
	AD3，AD3/ZR		130	70	8	15.5	28	70	8	31	60	5	50	16	98	M8*19	M10	11
	AD4，AD4/ZR		186	95.5	13	16	38	92	10	41	80	5	70	20	120	M12*28	M12	13.5
	AD5，AD5/ZR		240	126	11	24	42	120	12	45	110	10	70	20	160	M16*36	M12	13.5

型号 Frame size	AD..	A	B	C	C1	C2	D	D1	F	G	I	I1	I2	I3	M	S1	S2	S3
GR/GF..97 GK/GS..97	AD3，AD3/ZR	300	130	70	8	15.5	28	70	8	31	60	5	50	16	98	M8*19	M10	11
	AD4，AD4/ZR		186	95.5	13	16	38	92	10	41	80	5	70	20	120	M12*28	M12	13.5
	AD5，AD5/ZR		240	126	11	24	42	120	12	45	110	10	70	20	160	M16*36	M12	13.5
	AD6，AD6/ZR		271.5	130.5	11	22.5	48	130	14	51.5	110	10	80	26	193	M16*36	M16	17.5
GR..107 GF..107 GK..107	AD3，AD3/ZR	350	130	70	8	15.5	28	70	8	31	60	5	50	16	98	M8*19	M10	11
	AD4，AD4/ZR		186	95.5	13	16	38	92	10	41	80	5	70	20	120	M12*28	M12	13.5
	AD5，AD5/ZR		240	126	11	24	42	120	12	45	110	10	70	20	160	M16*36	M12	13.5
	AD6，AD6/ZR		271.5	130.5	11	22.5	48	130	14	51.5	110	10	80	26	193	M16*36	M16	17.5
GF..127 GK..127	AD4，AD4/ZR	450	186	95.5	13	16	38	92	10	41	80	5	70	20	120	M12*28	M12	13.5
	AD5，AD5/ZR		240	126	11	24	42	120	12	45	110	10	70	20	160	M12*28	M12	13.5
	AD6，AD6/ZR		271.5	130.5	11	22.5	48	130	14	51.5	110	10	80	26	193	M16*36	M16	17.5
	AD7，AD7/ZR		282.5	133	13	19	55	125	16	59	110	10	90	30	190	M20*42	M20	22
	AD8，AD8/ZR		374	155	15	22.5	70	120	20	74.5	140	15	110	19.5	210	M20*12	M12	13.5
GR..137	AD4，AD4/ZR	400	186	95.5	13	16	38	92	10	41	80	5	70	20	120	M12*28	M12	13.5
	AD5，AD5/ZR		240	126	11	24	42	120	12	45	110	10	70	20	160	M16*36	M12	13.5
	AD6，AD6/ZR		271.5	130.5	11	22.5	48	130	14	51.5	110	10	80	26	193	M16*36	M16	17.5
	AD7，AD7/ZR		282.5	133	13	19	55	125	16	59	110	10	90	30	190	M20*42	M20	22
GR147	AD4，AD4/ZR	450	186	95.5	13	16	38	92	10	41	80	5	70	20	120	M12*28	M12	13.5
	AD5，AD5/ZR		240	126	11	24	42	120	12	45	110	10	70	20	160	M12*28	M12	13.5
	AD6，AD6/ZR		271.5	130.5	11	22.5	48	130	14	51.5	110	10	80	26	193	M16*36	M16	17.5
	AD7，AD7/ZR		282.5	133	13	19	55	125	16	59	110	10	90	30	190	M20*42	M20	22
	AD8，AD8/ZR		374	155	15	22.5	70	120	20	74.5	140	15	110	19.5	210	M20*12	M12	13.5
GF..157 GK..157	AD5，AD5/ZR	550	240	126	11	24	42	120	12	45	110	10	70	20	160	M12*28	M12	13.5
	AD6，AD6/ZR		271.5	130.5	11	22.5	48	130	14	51.5	110	10	80	26	193	M16*36	M16	17.5
	AD7，AD7/ZR		282.5	133	13	19	55	125	16	59	110	10	90	30	190	M20*42	M20	22
	AD8，AD8/ZR		374	155	15	22.5	70	120	20	74.5	140	15	110	19.5	210	M20*12	M12	13.5
GR..167 GK..167	AD5，AD5/ZR	550	240	126	11	24	42	120	12	45	110	10	70	20	160	M16*36	M12	13.5
	AD6，AD6/ZR		271.5	130.5	11	22.5	48	130	14	51.5	110	10	80	26	193	M16*36	M16	17.5
	AD7，AD7/ZR		282.5	133	13	19	55	125	16	59	110	10	90	30	190	M20*42	M20	22
	AD8，AD8/ZR		374	155	15	22.5	70	120	20	74.5	140	15	110	19.5	210	M20*42	M12	13.5
GK..187	AD5，AD5/ZR	550	240	126	11	24	42	120	12	45	110	10	70	20	160	M16*36	M12	13.5
	AD6，AD6/ZR		271.5	130.5	11	22.5	48	130	14	51.5	110	10	80	26	193	M16*36	M16	17.5
	AD7，AD7/ZR		282.5	133	13	19	55	125	16	59	110	10	90	30	190	M20*42	M20	22
	AD8，AD8/ZR		374	155	15	22.5	70	120	20	74.5	140	15	110	19.5	210	M20*42	M12	13.5

7. 选型指南 / Selection Guide

减速机通常是根据恒转矩、起停不频繁及常温的情况设计。在按选型参数表选择减速器机型号前，先根据负载要求确定需要的输出扭矩，然后根据工况确定使用系数及减速机型号。

The gear units are designed under the condition as follows: constant torque, low start up frequency, normal atmospheric temperature. Before choosing a gear unit in the performance parameter table, first determine the output torque according to the load type, then determine the service factor and gear unit type according to the working condition.

7.1 选型相关参数 / Relevant Parameter

参数名称 Parameter	符号 Code	计算公式 Calculation formula	说明 Note
功率 Power	P	$P_1=P_2/\eta$ [Nm] $P_{1n}\geqslant P_1\times K$ [Nm]	P_1-输入功率 -Input power P_2-输出功率 -Out Power P_{1n}-电机额定功率 -Rated power of driving motor η-传动效率 -Transmission efficiency K-使用系数 -Service factor
传动比 Ratio	I	$I=n_1/n_2$	n_1-输入转速 -Input speed n_2-输出转速 -Output speed
扭矩 Torque	M	$M_2=9550\times P_1\times\eta/n_2$ [Nm] $M_{2n}\geqslant M_2\times K$ [Nm]	M_2-输出扭矩 -Output torque M_{2n}-选用输出扭矩 -Selected output torque

说明:

1. GR,GF,GK减速器的传动效率 η 为94%；
2. 为了优化工作条件和提高使用寿命，建议使用1400 r/min或更低转速；
3. 传动比通常为小数，在选型表中保留两位小数。

Notes:

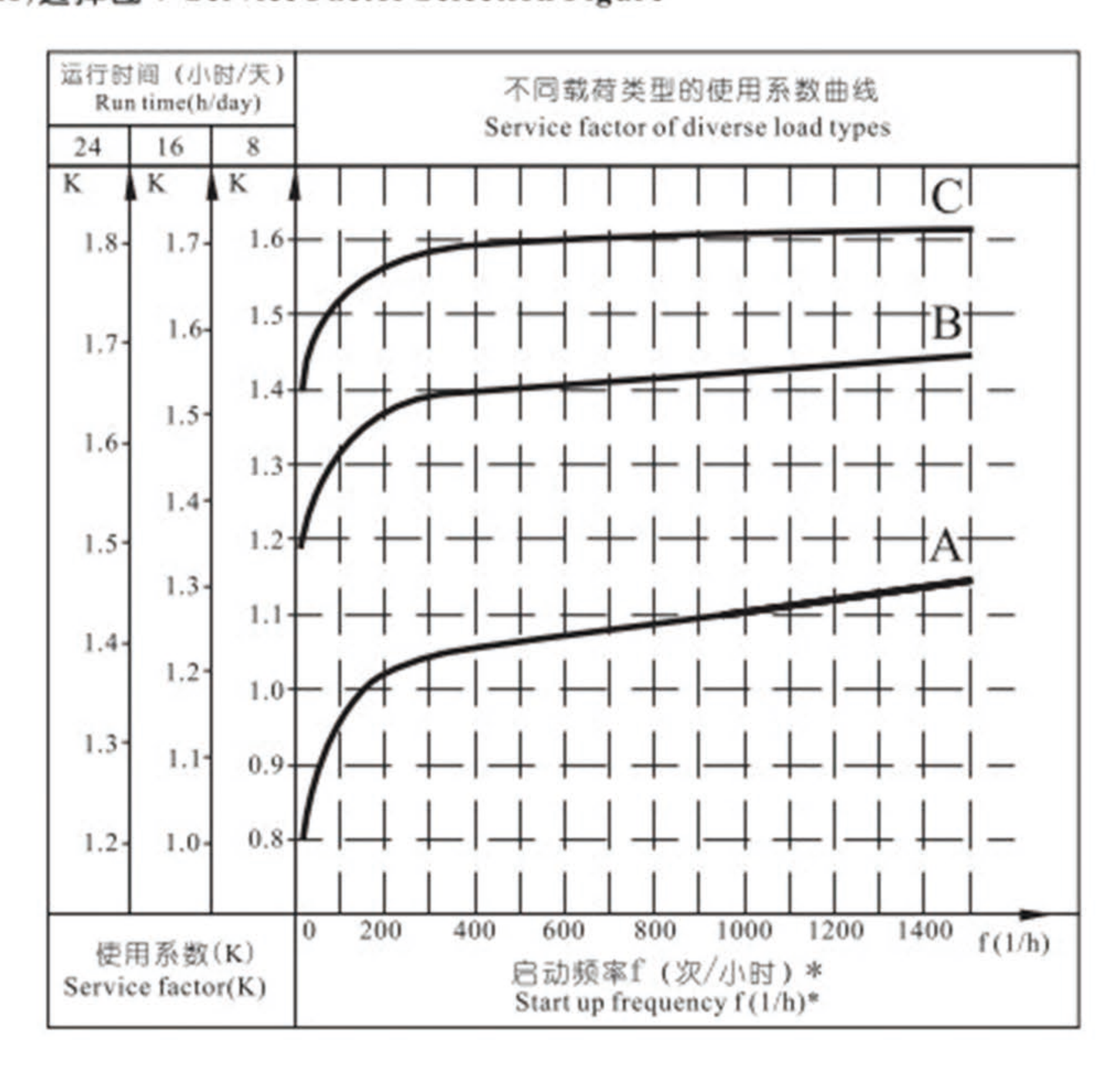
1. GR,GF,GK gear units' transmission efficiency η=94%.
2. To optimize the working conditions and prolong the service life, 1400 r/min or lower rotation speed is suggested.
3. Usually transmission ratio is decimal fraction with 2 radix point tagged in selection table.

7.2 使用系数(K) / Service Factor (K)

减速机的运行与载荷类型、运行时间、启动频次及环境温度等因素有关。为了正确选择减速机的型号，我们将这些影响因素综合为一个使用系数K。

The running of gear unit is related to load type, daily operation time, start up frequency and ambient temperature. Service factory, K, is determined by these factors.

(1) 使用系数(K)选择图 / Service Factor Selection Figure



说明:

(1).图中的A、B、C为载荷类型

-A: 均匀载荷;

-B: 中等冲击载荷;

-C: 重冲击载荷。

(2). * 启动频率f，包括每小时所有启动、制动的次数，及变速电机高低速切换时的次数。

(3).环境温度对使用系数的影响:

-环境温度30/40℃ : K*(1.15-1.35)

-环境温度40/50℃ : K*(1.35-1.65)

-环境温度50/60℃ : K*(1.65-1.85)

Notes:

1. A, B, C in above figure is load type.
   - A: Uniform Load.
   - B: Moderate Load.
   - C: Heavy Load.
2. * Start up frequency, including all the starts, brakes and speed switching when using variable speed motor.
3. Effect of ambient temperature on service factor:
   - Ambient Temperature30/40℃:K*(1.15-1.35).
   - Ambient Temperature40/50℃:K*(1.35-1.65).
   - Ambient Temperature50/60℃:K*(1.65-1.85).

（2）载荷类型表 / Load Type Table

用途 Application		载荷类型 Load type	用途 Application		载荷类型 Load type	用途 Application		载荷类型 Load type
钢铁工业 Iron and steel industry	链式传送机 Chain conveyer	B	运输 Transmission	皮带式输送机（散状物） Ribbon conveyer (bulk)	B	食品工业 Food industry	粉碎机 Kibbler	C
	绕线机(带材或线材) Winding machine (strip or wire)	B		皮带式输送机（块状物） Ribbon conveyer (nubby)	C		甘蔗切碎机 Cane chopper	B
	拉丝机 Draw bench machine	B		斗士提升机 Bucket lifter	B		甜菜切碎机 Beet chopper	B
	辊道(重的) Roller table (heavy)	C		链式提升机 Chain lifter	C		甜菜清洗机 Beet washer	B
	辊道(轻的) Roller table (light)	B		螺旋输送机 Worm conveyer	B		搅拌机(液状物) Mixer(liquid)	A
	横向移动设备 Horizontal mobile device	B		运货升降机 Lifter	B		搅拌机(半液状物) Mixer(semi-liquid)	B
	连续铸造设备 Continuous casting equipment	C		回旋输送机 Whirl conveyer	C	木工及建筑工业 Carpentry & construction industry	剥皮机 Barker	C
	铸锭装卸机械 Ingot handling equipment	C		冷却或干燥滚筒 Cooling or dryness rolling drum	B		刨床 Planer	B
	滚轮调整传动装置 Roller adjust device	B		搅拌机(块状物) Mixer(nubby)	B		木工机床 Wood processing machine	A
	辊式拉伸矫直机 Tension roller straightening	B		离心机 Centrifuge	B		筑路机械 Road building machine	B
运输 Transmission	板式输送机 Plate conveyer	B		压延或挤压机 Calender/extruder	B		混凝土搅拌机 Concrete mixer	B
	压载升降机 Ballast lifter	B		搅拌机 Mixer	C			
	斗士输送机 Bucket conveyer	B		滚轧机 Roller machine	C			

7.3 径向载荷 / Radial Loads

当减速机输出轴承受径向载荷时，须根据下面的公式对减速机输出轴的受力进行计算，并将此计算结果 F_{ra} 与性能参数表中的许可径向力 F_r 进行比较。

减速机输出轴的实际径向力 F_{ra} 不允许大于性能参数表中的数值 F_r。

The radial load on the output bearing is calculated as follow: compare the calculation result Frawith the permitted radial loads given in theselection table.

F_{ra} has to be smaller than or equal to F_r.

$$F_{ra}=2000*M*f_z/d_0\ [N]$$

F_{ra}: 作用在输出轴中点的径向力[N]

M: 作用在输出轴上的扭矩[Nm]

f_z: 传动附加系数（见下表）

d_0: 输出轴上传动件平均直径[mm]

F_{ra}: Radial force application in the centre of the output shaft.

M: Torque on the output shaft.

f_z: Transmission element factor (following table)

d_0: Average diameter of the mounted transmission element .

传动件 Transmission element	传动附加系数f_z Transmission element factor f_z	注释 comments
齿轮 Gears	1.00	=17齿 teeth
	1.15	<17齿 teeth
链轮 Chain sprockets	1.00	=20齿 teeth
	1.25	<20 齿 teeth
	1.4	<13 齿 teeth
V带轮 Narrow V-belt pulleys	1.75	有预紧力作用 Influence of the tensile force
平带轮 Flat-belt pulleys	2.5	有预紧力作用 Influence of the tensile force
齿带轮 Toothed belt pulleys	2.5	有预紧力作用 Influence of the tensile force

当径向载荷作用点不在输出轴的中点时，必须根据下面的公式重新计算减速机允许的最大径向力 F_r'。

F_{xL} 是基于轴承使用寿命的；

F_{xW} 是基于输出轴强度的。

将 F_{xL} 和 F_{xW} 中的较小者作为减速机允许的最大径向力 Fr'。

The radial loads must calculated using the following formula in the event of force application not in the centre of the shaft end.

The smaller of the two values F_{xL} (according to the bearing service lift) and F_{xW} (according to the shaft strength) is the permitted value for the radial load F_r'.

$$F_{xL}=Fr*a/(b+x)\ [N]$$

$$F_{xW}=c/(f+x)\ [N]$$

F_r：性能参数表中列出的许可径向力[N]

x：轴肩到实际作用点的距离[mm]

a,b,f：减速机径向转换常数[mm]（见下表）

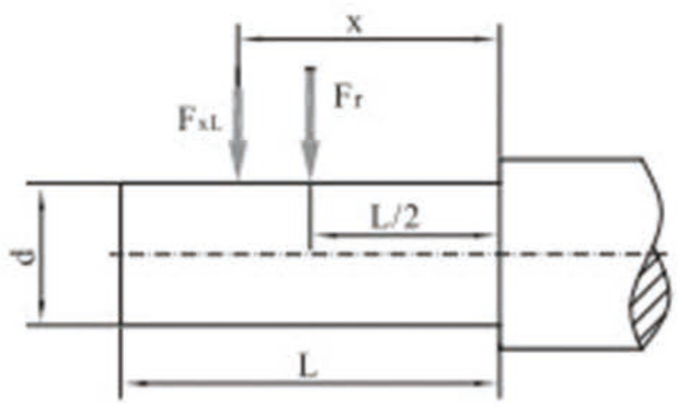
c：减速机径向转换常数[N.mm]（见下表）

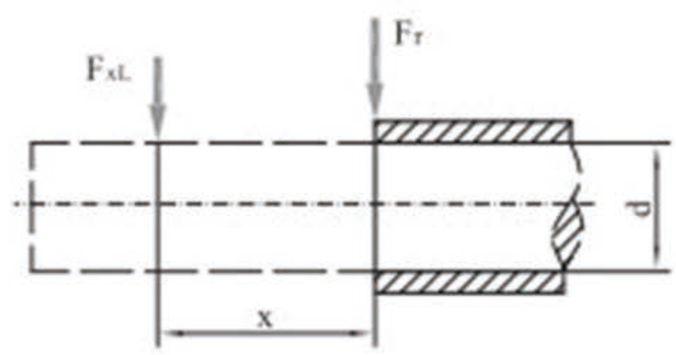
F_r: Permitted overhung load according to the selection table[N]

x: Distance from the shaft shoulder to the force application point[mm]

a,b,f: Gear unit constant for overhung load conversion[mm](see below table)

c: Gear unit constant for overhung load conversion[N.mm]





减速机型号 Gear unit type	a [mm]	b [mm]	c [mm]	f [mm]	d [mm]	L [mm]
GRX57	43.5	23.5	$1.51x10^5$	34.2	20	40
GRX67	52.5	27.5	$2.42x10^5$	39.7	25	50
GRX77	60.5	30.5	$1.95x10^5$	0	30	60
GRX87	73.5	33.5	$7.69x10^5$	48.9	40	80
GRX97	86.5	36.5	$1.43x10^6$	53.9	50	100
GRX107	102.5	42.5	$2.47x10^6$	62.3	60	120
GR07	72.0	52.0	$4.67x10^4$	11	20	40
GR17	88.5	68.5	$6.527x10^4$	17	20	40
GR27	106.5	81.5	$1.56x10^5$	11.8	25	50
GR37	118	93	$1.24x10^5$	0	25	50
GR47	137	107	$2.44x10^5$	15	30	60
GR57	147.5	112.5	$3.77x10^5$	18	35	70
GR67	168.5	133.5	$2.51x10^5$	0	35	70
GR77	173.7	133.7	$3.97x10^5$	0	40	80
GR87	216.7	166.7	$8.47x10^5$	0	50	100
GR97	255.5	195.5	$1.19x10^6$	0	60	120
GR107	285.5	215.5	$2.06x10^6$	0	70	140
GR137	343.5	285.5	$6.14x10^6$	30	90	170
GR147	402	297	$8.65x10^6$	33	110	210
GR167	450	345	$1.26x10^7$	0	120	210
GF..27	109.5	84.50	$1.13x10^5$	0	25	50
GF..37	123.5	98.50	$1.07x10^5$	0	25	50
GF..47	153.5	123.5	$1.40x10^5$	0	30	60
GF..57	170.7	135.7	$2.70x10^5$	0	35	70
GF..67	181.3	141.3	$4.12x10^5$	0	40	80

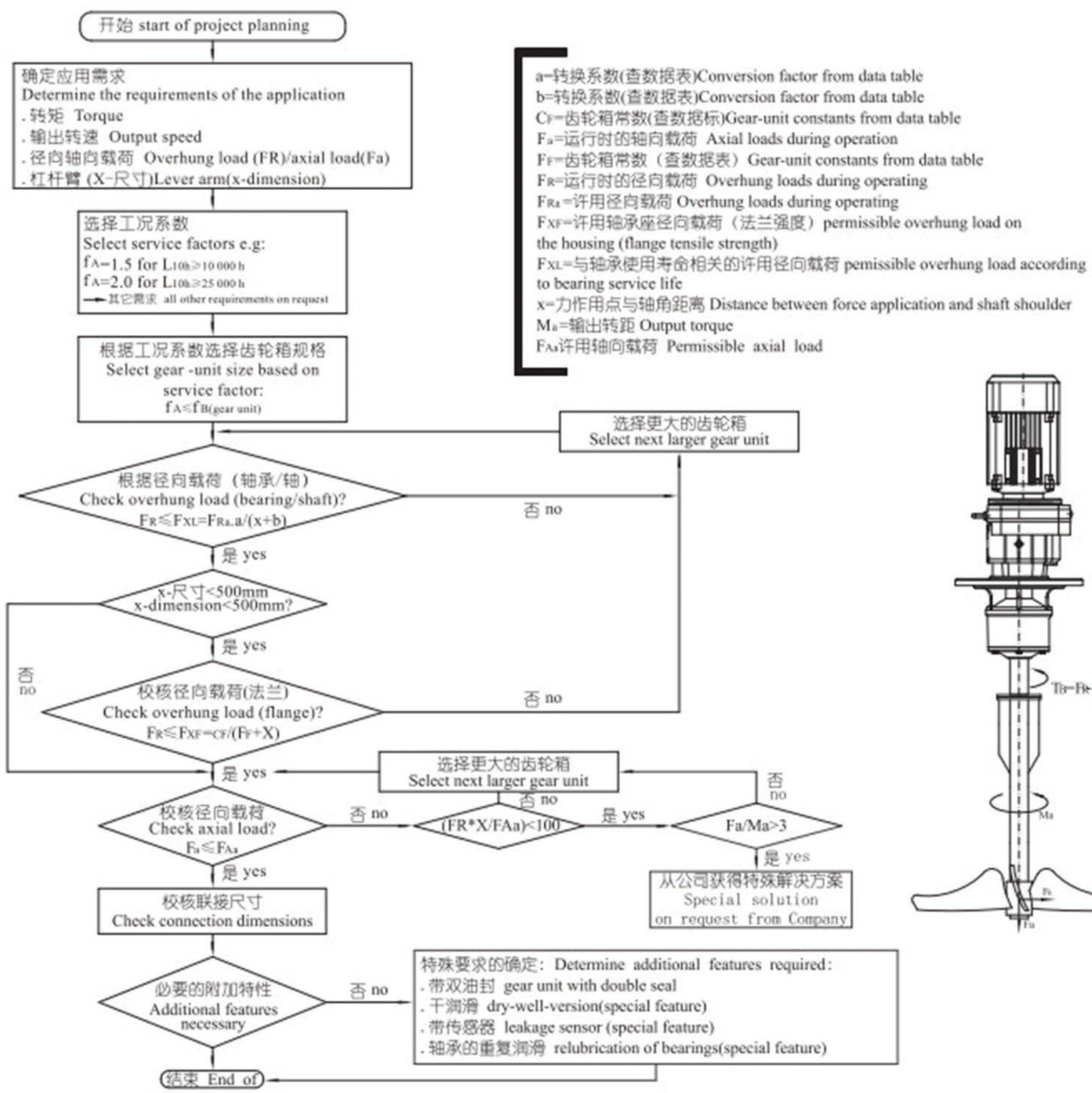
减速机型号 Gear unit type	a [mm]	b [mm]	c [mm]	f [mm]	d [mm]	L [mm]
GF..77	215.8	165.8	$7.87x10^5$	0	50	100
GF..87	263.0	203.0	$1.06x10^6$	0	60	120
GF..97	350.0	280.0	$2.09x10^6$	0	70	140
GF..107	373.5	288.5	$4.23x10^6$	0	90	170
GF..127	442.5	337.5	$9.45x10^6$	0	110	210
GF..157	512.0	407.0	$1.05x10^7$	0	120	210
GK..37	123.5	98.50	$1.41x10^5$	0	25	50
GK..47	153.5	123.5	$1.78x10^5$	0	30	60
GK..57	169.7	134.7	$6.8x10^5$	32	35	70
GK..67	181.3	141.3	$4.12x10^5$	0	40	80
GK..77	215.8	165.8	$7.69x10^5$	0	50	100
GK..87	252.0	192.0	$1.64x10^6$	0	60	120
GK..97	319.0	249.0	$2.8x10^6$	0	70	140
GK..107	373.5	288.5	$5.53x10^6$	0	90	170
GK..127	443.5	338.5	$8.31x10^6$	0	110	210
GK..157	509.0	404.0	$1.18x10^7$	0	120	210
GK..167	621.5	496.5	$1.88x10^7$	0	160	250
GK..187	720.5	560.5	$3.04x10^7$	0	190	320
GS..37	118.5	98.50	$6.00x10^4$	0	20	40
GS..47	130.0	105.0	$1.33x10^5$	0	25	50
GS..57	150.0	120.0	$2.14x10^5$	0	30	60
GS..67	184.0	149.0	$3.04x10^5$	0	35	70
GS..77	224.0	179.0	$5.26x10^5$	0	45	90
GS..87	281.5	221.5	$1.68x10^6$	0	60	120
GS..97	326.3	256.3	$2.54x10^6$	0	70	140

7.4 GRM. . 选型 / Selection procedure of GRM..

7.4.1 GRM齿轮减速电机 / GRM geared motors

GRM齿轮减速电机是一种带有扩展输出轴承座的特种齿轮减速电机，可用于大悬挂载荷，大轴向载荷和大变化载荷的场合。其主要性能参数同R系列标准齿轮减速电机.

GRM geared motors are a special type of helical geared motor with an extended output bearing housing. They are specially designed for agitator aplications and can be used in applications subject to high overhung and axial loads as well as flexural torque. The remaining data correspond to the standard helical geared motors.



7.4.2 许用径向和轴向载荷 / Permitted overhung and axial loads

根据不同的服务系数fB和不同的标称轴承使用寿命LH10提供下述的许用径向载荷FRa和轴向载荷FAa

The permitted overhung loads FRa and axial loads FAa are specified for various service factors fB and nominal bearing service life LH10

fA=1.5/L10h=10000h

		na[rpm]							
		<16	16-25	26-40	41-60	61-100	101-160	161-250	251-400
GRM57	FRA[N]	400	400	400	400	400	405	410	415
	FAa[N]	18800	15000	11500	9700	7100	5650	4450	3800
GRM67	FRA[N]	575	575	575	580	575	585	590	600
	FAa[N]	19000	18900	15300	11900	9210	7470	5870	5050
GRM77	FRA[N]	1200	1200	1200	1200	1200	1210	1210	1220
	FAa[N]	22000	22000	19400	15100	11400	9220	7200	6710
GRM87	FRA[N]	1970	1970	1970	1970	1980	1990	2000	2010
	FAa[N]	30000	30000	23600	18000	14300	11000	8940	8030
GRM97	FRA[N]	2980	2980	2990	3010	3050	3060	3060	3080
	FAa[N]	40000	36100	27300	20300	15900	12600	9640	7810
GRM107	FRA[N]	4230	4230	4230	4230	4230	4230	3580	3580
	FAa[N]	48000	41000	30300	23000	18000	13100	9550	9030
GRM137	FRA[N]	8710	8710	8710	8710	7220	5060	3980	6750
	FAa[N]	70000	70000	70000	57600	46900	44000	35600	32400
GRM147	FRA[N]	11100	11100	11100	11100	10600	10600	8640	10800
	FAa[N]	70000	70000	69700	58400	45600	38000	32800	30800
GRM167	FRA[N]	14600	14600	14600	14600	14600	14700	—	—
	FAa[N]	70000	70000	70000	60300	45300	36900	—	—

fA=2.0/L10h=25000h

		na[rpm]							
		<16	16-25	26-40	41-60	61-100	101-160	161-250	251-400
GRM57	FRA[N]	410	410	410	410	410	415	415	420
	FAa[N]	12100	9600	7350	6050	4300	3350	2600	2200
GRM67	FRA[N]	590	590	590	595	590	595	600	605
	FAa[N]	15800	12000	9580	7330	5580	4460	3460	2930
GRM77	FRA[N]	1210	1210	1210	1210	1210	1220	1220	1220
	FAa[N]	20000	15400	11900	9070	6670	5280	4010	3700
GRM87	FRA[N]	2000	2000	2000	2000	2000	1720	1690	1710
	FAa[N]	24600	19200	14300	10600	8190	6100	5490	4860
GRM97	FRA[N]	3040	3040	3040	3050	3070	3080	2540	2430
	FAa[N]	28400	22000	16200	11600	8850	6840	5830	4760
GRM107	FRA[N]	4330	4330	4330	4330	4330	4230	3580	3580
	FAa[N]	32300	24800	17800	13000	9780	8170	5950	5620
GRM137	FRA[N]	8850	8850	8850	8830	5660	4020	3200	5240

		na[rpm]							
		<16	16-25	26-40	41-60	61-100	101-160	161-250	251-400
	F_{Aa}[N]	70000	59900	48000	37900	33800	31700	25600	23300
GRM147	F_{RA}[N]	11400	11400	11400	11400	11400	8320	6850	8440
	F_{Aa}[N]	70000	60600	45900	39900	33500	27900	24100	22600
GRM167	F_{RA}[N]	15100	15100	15100	15100	15100	13100	—	—
	F_{Aa}[N]	70000	63500	51600	37800	26800	23600	—	—

7.4.3 转换系数和齿轮箱常数 / Conversion factors and gear unit constants

计算GRM齿轮减速电机额定径向载荷FXL(X≠1000mm)的转换系数

The following conversion factors and gear unit constants apply to calculating the approved overhung load FXL atpoint x≠1000 mm for GRM geared motors:

齿轮箱型号 Gear unit type	a	b	C_F(F_B=1.5)	C_F(F_B=2.0)	F_F
GRM57	1047	47	1220600	1260400	277
GRM67	1047	47	2047600	2100000	297.5
GRM77	1050	50	2512800	2574700	340.5
GRM87	1056.5	56.5	4917800	5029000	414
GRM97	1061	61	10911600	11124100	481
GRM107	1069	69	15367000	15652000	554.5
GRM137	1088	88	25291700	25993600	650
GRM147	1091	91	30038700	31173900	756
GRM167	1089.5	89.5	42096100	43654300	869

GRM减速箱的增加重量 / Additional Weights of GRM gear units

型号 Type	用GRF系列最小的法兰所增加的重量表 △m[kg] Additional weight in addition to RF ,related to the smallest GRF flange
GRM57	12.0
GRM67	15.8
GRM77	25.0
GRM87	29.7
GRM97	51.3
GRM107	88.0
GRM137	111.1
GRM147	167.4
GRM167	195.4

8. 存放与维护 / Storage And Maintenance

8.1 存放 / Storage

(1) 减速机应存放在防雨雪、无震动、温度和湿度无骤然变化、无污染和粉尘、无腐蚀性蒸汽的环境中。

(2) 减速机与地面之间应放置合适的间隔材料。

(3) 开箱后暂不使用的减速机，应在各加工面上涂防锈油，并及时放回包装箱内。

1. Under roof, protected against rain and snow, no shock loads, Temperature and humidity without sudden change, no pollution and dust, no corrosive vapor environment.
2. Underlay the block and other material between the ground and equipment
3. The opened but not used gear units should be added with the anti-corrosive oil on its surface and then return to the packing containers timely.

8.2 维护 / Maintenance

注意：在对减速机进行检查或维护前，请务必切断减速机驱动电机的电源，防止触电！等待减速机冷却！

(1) 首次换油应在减速机工作300小时后进行。换油时须用合适的清洁剂冲洗齿轮箱，不得将合成油与矿物油混合。

(2) 每隔6个月或工作3000小时后，检查润滑油及油位。当采用 AM 输入时，还应检查弹性体，必要时进行更换。

(3) 如果减速机加注了矿物润滑油，应根据油池稳态温度的不同，最长三年检查一次润滑油的品质是否改变。

(4) 如果减速机加注了合成润滑油，应根据油池稳态温度的不同，最长五年检查一次润滑油的品质是否改变。

(5) 根据减速机工作环境的不同，更换输出轴上的油封。

(6) 产品出现故障时，不要拆卸部件，与本公司售后服务部门联系（需提供减速器规格，铭牌编号，已使用时间，和故障类型）后再采取合理的措施。

Attention: Before inspection or maintenance, please be sure to cut off the reducer drive motor power, prevent electric shock! And wait until the reducer cooled down.

1. For gear units, first oil change should be after about 300 hours (run-in-period). The right lotion is required to clean the gear units with care. Never mix the synthetic oil and mineral oil together.
2. Every 3000 working time or six months, you have to check the oil and oil level. For AM input gear units, the elastomer should be tested or replaced if necessary.
3. For mineral oil, at least every 3 years inspection is needed. Then change the mineral oil and replace the bearing grease.
4. For Synthetic oil, at least every 5 years inspection is needed. Then change the synthetic oil and rep-lace the bearing grease.
5. Depending on the operating conditions, change the Oil seal on output shaft.
6. Once the malfunctions appear, stop disassembling The parts, and firstly please contact the customer service (the information about specification,series number, timed used and malfunction problem), then take the reasonable measures.

9. 订货需知 / Notice For Order

订购减速机时请提供以下信息：

(1) 减速机型号（传动比、输入配置、输出配置、功率和安装方式）。
(2) 订购数量。
(3) 其他特殊要求。
(4) 单位名称、联系人、联系电话。

Please provide the following information when place the orders:

1. The model mark of the gear ung positionnit(type, Ratio,power and mounti).
2. Quantity.
3. Other special requirements.
4. company, contact and telephone.

10. 故障及排除 / Malfunction and Remedy

故障	可能的原因	解决办法
异常、均匀的运转噪声。	1. 滚动/碾压噪声：轴承损坏。 2. 冲击型噪声：齿轮啮合不均匀。	1. 检查润滑油，更换轴承。 2. 请向客户服务部咨询。
异常、不均匀的运转噪声。	润滑油中有异物。	1. 停机向客户服务部咨询 。 2. 检查润滑油。
机油泄漏 * 1. 在减速机盖板上。 2. 在电机法兰上。 3. 在电机轴密封圈上。 4. 在减速器法兰上。 5. 在输出轴密封圈上。	1. 减速机密封垫发生泄漏。 2. 轴上的油封损坏。 3. 减速机没有排气。	1. 在密封垫上涂密封胶并拧紧螺栓。 2. 更换油封。 3. 给减速机排气（参见“安装方式”）。
机油从排气阀旁渗出	1. 机油太多。 2. 传动装置安装方式错误。 3. 频繁冷起动（润滑油起泡沫）。	1. 修正油量（参见“润滑油”）。 2. 正确安装排气阀并且矫正油位（参见“安装方式”）。
减速机输入端驱动正常，但是输出轴不转动。	减速机中的轴与轮毂联接失效。	请向客户服务部咨询。
AM（IEC）连接器弹性体过早磨损或失效	1. 接触腐蚀性物质（液体或气体）。 2. 过高的环境温度。最大的环境温度允许 −20℃ 到+80℃。 3. 过大的负载。	请向客户服务部咨询。

*：在磨合试运转阶段（24小时的运转时间内），轴密封圈有可能出现短暂、少量的渗油现象。

Problem	Possible Cause	Remedy
Unusual, regular running noise.	1. Meshing/grinding noise; Bearing damage. 2. Knocking noise; Irregularity in the gearings.	1. Check the oil, change bearings. 2. Contact customer service.
Unusual, irregular running noise.	Foreign bodies in the oil.	1. Check the oil. 2. Stop the drive and contact customer service.
Oil leaking: 1. from the gear cover plate. 2. from the motor flange. 3. from the motor oil seal. 4. from the gear unit flange. 5. from the output end oil seal.	1. Rubber seal on the gear cover leaking . 2. Seal defective. 3. Gear unit not vented.	1. Tighten the bolts on the gear cover plate and observe the gear unit. 2. Change the seals. 3. Vent the gear unit (see " Mounting Posi tions"). 4. Contact customer service.
Oil leaking from breathing valve.	1. Two much oil. 2. Drive operated in incorrect mounting position. 3. Frequent cold starts(oil foams) and/or high oil level.	1. Correct the oil level (see sec. "inspection and maintenance") 2. Mount the breather valve correctly (see sec. "Mounting Positions") and correct the oil level (s "Lubricants").
Output shaft does not turn although the motor is running or the input shaft is rotated.	Connection between shaft and hub in gear unit interrupted.	Contact customer service.
Premature wear or failure in AM(IEC) coupling elastomer.	1. Contacted with aggressive fluids/oil; 2. Impermissibly high ambient/contact temperature. Maximum permitted temperature-20℃ to +80℃.	Contact customer service.

Note: Short-term oil/grease leakage at the oil seal is possible in the run-in phase (24 hour running time).