S Series Gearbox Units

Isfahan Shakerin Gearbox

NEW

گیربکس‌های سری S

شاکرین گیربکس اصفهان

2023 Edition

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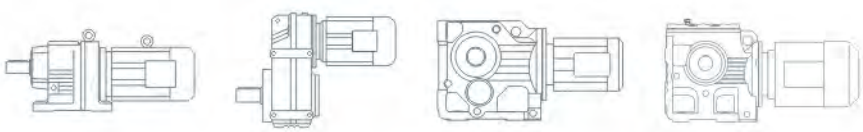


1.
Product pictures

SHR Helical Geared Motor

SHR	SHRF	SHRX	SHRXF
			

SHF Parallel Shaft–Helical Geared Motor

SHF	SHFA	SHFF	SHFAF
			

SHK Helical–Bevel Geared Motor

SHK	SHKA	SHKF	SHKAF
			

SHS Helical–Worm Geared Motor

SHS	SHSA	SHSF	SHSAF
			

2.
Product introduction

SHAKERIN SH.. Series gear motor is the drive products with international advanced level, including SHR series Helical geared motor, SHF series Parallel shaft–Helical geared motor, SHK series Helical–Bevel geared motor, SHS series Helical –Worm.

SHAKERIN SH.. series products follow Motor the philosophy of modularization and optimization, adopt finite element analysis method and unique lower noise technology in designing gear, to insure advanced design. The classi fication of ratio is so acurate that.

Our corpotation also provides other product options such as combined geared motor, shrink disk, spline hollow shaft, B14 flange, please consult our company for further information.

3.
Model notes

3.1 Reducer Model Introduction

SHR	F	67	II	D	80	N	4	/	BMG	HF	TF	128.97	M1	180°
1	2	3	4	5	6	7	8		9	10	11	12	13	14

1 Product Code

SHR--Helical Geared Motor
SHF--Parallel Shaft-Helical Geared Motor
SHK--Helical-Bevel Geared Motor
SHS--Helical-Worm Geared Motor

2 Installation type

No Code--Feet mounted
F--Flange mounted
..F--Feet and Flange mounted
M--Flange mounted with extended bearing housing
X--Single stage Feet mounted
XF--Single stage Flange mounted

3 Gear Unit Size

67--Gear Unit Size 67

4 Flange Size

I--No Code--No flange or only one flnge or the smallest flnge
II--Second bigger flange
III--Biggest flange

5 ElecSHRomotor

D--Three-phase Asychronous Motor (IP54)

6 Frame Size

80--Height of motor center is 80mm

7 Stator Length

D、K、N、S、M、ML、L

8 Number of Poles

4--4 Poles

9 Brake

No Code--No Brakes
BMG--Brakes

10 Brake Release

No Brake Release
Manual release (lock in the brake release position)
Brake Release
Manual release (automatic braking position)

11 Thermistor

No Code--No Thermistor
SHF--Thermistor Sensor

12 Ratio

128.97--Ratio 128.97

13 Mounting Position

M1--Mounting Position M1

14 Terminal Box Position

No Code--TerminalBox Position is 0°
180°--Terminal Box Position is 180°

SHF	A	67	/	G	D	80	N	4	/	BMG	HF	TF	109.04	M1	180°
1	2	3		4	5	6	7	8		9	10	11	12	13	14

1 Product Code

SHR--Helical Geared Motor
SHF--Parallel Shaft-Helical Geared Motor
SHK--Helical-Bevel Geared Motor
SHS--Helical-Worm Geared Motor

2 Unit Model

No Code--Feet mounted
F--Flange mounted
A--Hollow Shaft mounted
AF--Flange mounted with Hollow Shaft

3 Gear Unit Size

67--Gear Unit Size 67

4 Torque Arm

No Code--No Torque Arw
G--Torque Arm

5 ElecSHRomotor

D--Three-phase Asychronous Motor (IP54)

6 Frame Size

80--Height of motor center is 80mm

7 Stator Length

D、K、N、S、M、ML、L

8 Number of Poles

4--4 Poles

9 Brake

No Code--No Brakes
BMG--Brakes

10 Brake Release

No Brake Release
Manual release (lock in the brake release position)
Brake Release
Manual release (automatic braking position)

11 Thermistor

No Code--No Thermistor
SHF--Thermistor Sensor

12 Ratio

109.04--Ratio 109.04

13 Mounting Position

M1--Mounting Position M1

14 Terminal Box Position

No Code--TerminalBox Position is 0°
180°--Terminal Box Position is 180°

SHK	A	67	/	T	D	80	N	4	/	BMG	/	HF	/	TF	/	108.03	/	B	/	M1	/	180°
1	2	3		4	5	6	7	8		9		10		11		12		13		14		15

1 Product Code

SHR--Helical Geared Motor
SHF--Parallel Shaft-Helical Geared Motor
SHK--Helical-Bevel Geared Motor
SHS--Helical-Worm Geared Motor

2 Unit Model

No Code--Feet mounted
F--Flange mounted
A--Hollow Shaft mounted
AF--Flange mounted with Hollow Shaft

3 Gear Unit Size

67--Gear Unit Size 67

4 Torque Arm

No Code--No Torque Arw
G--Torque Arm

5 ElecSHRomotor

D--Three-phase Asychronous Motor (IP54)

6 Frame Size

80--Height of motor center is 80mm

7 Stator Length

D、K、N、S、M、ML、L

8 Number of Poles

4--4 Poles

9 Brake

No Code--No Brakes
BMG--Brakes

10 Brake Release

No Brake Release
Manual release (lock in the brake release position)
Brake Release
Manual release (automatic braking position)

11 Thermistor

No Code--No Thermistor
SHF--Thermistor Sensor

12 Ratio

108.03--Ratio 108.03

13 Position of the Output Shaft

A--Shaft with A
B--Shaft with B
AB--Shaft with A+B

14 Mounting Position

M1--Mounting Position M1

15 Terminal Box Position

No Code--TerminalBox Position is 0°
180°--Terminal Box Position is 180°

SHS	A	67	/	T	D	80	N	4	/	BMG	/	HF	/	TF	/	106.75	/	d45	/	B	/	M1	/	180°
1	2	3		4	5	6	7	8		9		10		11		12		13		14		15		16

1 Product Code

SHR--Helical Geared Motor
SHF--Parallel Shaft-Helical Geared Motor
SHK--Helical-Bevel Geared Motor
SHS--Helical-Worm Geared Motor

2 Unit Model

No Code--Feet mounted
F--Flange mounted
A--Hollow Shaft mounted
AF--Flange mounted with Hollow Shaft

3 Gear Unit Size

67--Gear Unit Size 67

4 Torque Arm

No Code--No Torque Arw
T--Torque Arm

5 ElecSHRomotor

D--Three-phase Asychronous Motor (IP54)

6 Frame Size

80--Height of motor center is 80mm

7 Stator Length

D、K、N、S、M、ML、L

8 Number of Poles

4--4 Poles

9 Brake

No Code--No Brakes
BMG--Brakes

10 Brake Release

No Code--No Brake Release
HF--Manual release (lock in the brake release position) Brake Release
HR--Manual release (automatic braking position)

11 Thermistor

No Code--No Thermistor
SHF--Thermistor Sensor

12 Ratio

106.75--Ratio 106.75

13 Hollow shaft diameter

d45--Hollow shaft diamerter is 45

14 Position of the Output Shaft

A--Shaft with A
B--Shaft with B
AB--Shaft with A+B

15 Mounting Position

M1--Mounting Position M1

16 Terminal Box Position

No Code--TerminalBox Position is 0°
180°--Terminal Box Position is 180°

3.2 Type of gear motor and gear motor with brake

SHR, SHF, SHK, SHS
Gear motor

There are the types of Helical (SHR), Parallel shaft–Helical (SHF), Helical–Bevei (SHK) and Helical–Worm (SHS) geared motors. we supplied in the table.

Model	减速电机 Gear motor			
	(SHR) Helical	(SHF) Parallel shaft	(SHK) Helical bevel	(SHS) Helical worm
Foot mounted	•	•	•	•
B5 flange mounted	•	•	•	•
Foot/B5 flange mounted	• 2)	•	• 3)	–
Hollow shaft mounted	–	•	• 1)	• 1)
Hollow shaft with shrink disk	–	•	• 1)	• 1)
Splined hollow shaft mounted	–	•	• 1)	–
Hollow shaft with shrink disk+foot mounted	–	•	•	–
Hollow shaft with Key+foot mounted	–	•	•	–
Splined hollow shaft mounted+foot mouted	–	•	•	–
Hollow shaft with Key+B5 flange mounted	–	•	•	•
Hollow shaft with shrink disk+B5 flange mounted	–	•	•	•
Splined hollow shaft mounted+B5 flange mounted	–	•	•	–
Hollow shaft with Key+B14 flange mounted	–	•	•	•
Hollow shaft with shrink disk+B14 flange mounted	–	•	•	•
Splined hollow shaft mounted+B14 flange mounted	–	•	•	–

· The normal type
– Can't use
1) You can use torque arm
2) Only used for SHR12– SHR87
3) Only used for SHR127– SHR157

Multi–stage
geared motor

You can achieve the particularly low output speed by using multi–stage geared motor. The method is mounting a helical gear unit as a second gear units on the input end. Notice that restrict the motor power according the maximum permitted output torque.

SHRM geared motor

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

Brake motors

On request, Motors and geared motors can be supplied with an integrated mechanical brake. The brake is an electromagnetic disk brake with a DC coil which is released electrically and braked using spring force. The design principle means the brake is applied if the power fails. This means it complies with fundamental safety requirements. The brake can also be released mechanically if fitted with manual brake release. For this purpose, either a hand lever or a setscrew is supplied with the brake. The hand lever springs back automatically and the setscrew can be locked. The brake is activated by a brake control system which is in the wiring switch cabinet.

3.3 Unit designations for gear units and options

Helical gear units

SHR..	Foot–mounted
SHRF..	Flange–mounted
SHR..F	Foot and flange–mounted
SHRM..	Flange–mounted with the extended bearing housing
SHRX..	Single–stage flange–mounted
SHRXF..	Single–stage foot–mounted

Parallel shaft helical gear units

SHF..	Foot mounted
SHFA..B	Flange mounted with hollow shaft
SHFH..B	Foot mounted with hollow shaft and shrink disk
SHFV..B	Foot mounted with hollow shaft and splined hollow shaft
SHFF..	B5 flange mounted
SHFAF..	B5 flange mounted with hollow shaft
SHFHF..	B5 flange mounted with hollow shaft and shrink disk
SHFVF..	B5 flange mounted with spined hollow shaft disk
SHFA..	Hollow shaft mounted
SHFH..	Hollow shaft with shrink disk

SHFV..	Splined hollow shaft mounted
SHFAZ..	B14 flange mounted with hollow shaft
SHFHZ..	B14 flange mounted with hollow shaft disk
SHFVZ..	B14 flange mounted with splined hollow shaft

Helical–Bevel gear units

SHK..	Foot mounted
SHKA..B	Foot mounted with hollow shaft
SHKH..B	Foot mounted with hollow shaft and shrink disk
SHKV..B	Foot mounted with hollow shaft and splined hollow shaft
SHKF..	B5 flange mounted
SHKAF..	B5 flange mounted with hollow shaft
SHKHF..	B5 flange mounted with hollow shaft and shrink disk
SHKVF..	B5 flange mounted with spined hollow shaft disk
SHKA..	Hollow shaft mounted
SHKH..	Hollow shaft with shrink disk
SHKV..	Splined hollow shaft mounted
SHKAZ..	B14 flange mounted with hollow shaft
SHKHZ..	B14 flange mounted with hollow shaft disk
SHKVZ..	B14 flange mounted with spined hollow shaft

Helical–Worm gear units

SHS..	Foot mounted
SHSF..	B5 flange mounted
SHSAF..	B5 flange mounted with hollow shaft
SHSHF..	B5 flange mounted with hollow shaft and shrink disk
SHSA..	Hollow shaft mounted
SHSH..	Hollow shaft with shrink disk
SHSAZ..	B14 flange mounted with hollow shaft
SHSHZ..	B14 flange mounted with hollow shaft disk

3.4 The name of AC motors and its accessories

Pole-Changing AC motors with soft start

SD...	Pole-changing foot mounted

Motor options

BMG	Brake
../HF	..with lock manual brake release
../HR	..with automatic manual brake disengaging
/RE	Backstop
/TF	Thermistor sensor(PTC resistance)
/TH	Thermostat (bimetallic switch)
/U	Non-vemtilated
/V	Forced cooling fan.3 × 380-415V_{AC}, 50HZ
/VS	Forced cooling fan.1 × 220-266V_{AC}, 50HZ
/VR	Forced cooling fan.1 × 24$_{DC}$
/Z	Additional flywheel mass
/C	Protection cowl for the fan guard
-SRD	Roller motor

Encoder on AC motor options

/AV1Y	Absolute encoder with solid shaft. MSI and sin/cos signals and 24V_{DC} supply
/ES..T	Encoder with spread shaft. TTL(RS-422)SIgnals and 5V_{DC} supply
/ES..S	Encoder with spread shaft. Sin/cos signals and 24V_{DC} supply
/ES..R	Encoder with spread shaft,TTL(RS-422)signals and 24$_{DC}$supply
/ES..C	Encoder with spread shaft, HTL
/EV1T	Encoder with spread shaft. TTL(RS-422)signals and 5V_{DC}supply
/EV1S	Encoder with spread shaft. signals and 24V_{DC} supply
/EV1R	Encoder with spread shaft. TTL(RS-422)signals and 24V_{DC} supply
/EV1C	Encoder with spread shaft, HTL
/NV1..	Proximity sensor with A track and 24V_{DC} supply
/NV2..	Proximity sensor with A/B track and 24V_{DC} supply

Selection of gear reducer

4.1 Drive selection data

Certain data are essential to specify the components for your drive. These are.

Drive selection data			
n_{amin}	Minimum output speed	[rpm]	
n_{amax}	Maximum output speed	[rpm]	
P_a at n_{amin}	Output power at minimum output speed	[kW]	
p_a at n_{amax}	Output power at maximum output speed	[kW]	
M_a at n_{amin}	Output torque at minimum output speed	[Nm]	
M_a at n_{amax}	Output torque at minimum output speed	[Nm]	
F_R	Overhung load on output shaft.Assumes force application is in the center of shaft end. If not, please specify the exact application point indicating the application angle and direction of rotation of the shaft for a check calculation	[N]	
F_A	Axial load(tension and compression)on output shaft	[N]	
J_{load}	Mass moment of inertia to be driven	[10^{-4}kgm^2]	
SHR/F/K/S M1-M6	Required gear unit type and mounting position(→sec. Mounting positions, churning losses)	–	
IP..	Required protect rank	–	
ϑ_{env}	Ambient temperature	[°C]	
H	Altitude	[M above sea level]	
S...,..%cdf	Operating mode and intermittency factor cdf; alternatively,exact load cycle can be specified.	–	
Z	Starting frequency;alternativly,exact load cycle can be specified	[No.per h]	
f_{mains}	Supply frequency	[Hz]	
V_{mot} V_{brake}	Operating voltage of motor and brake	[V]	
M_B	Required braking torque	[Nm]	
For inverter operation: Required control mode and setting range			

4.2 Project planning sequence

Example

The following flowchart diaplays a schematic view of the procedure for planning a project incorporating a positioning drive. The drive comprises a geard motor which is powered by and inverter

Calculation of the relevant application date
–Technical data and ambient conditions
–Positioning accuracy
–Speed setting range(true–running accuracy)
–calculation of the travel cycle

↓

Calculation of the relevant application date
–Static, dynamic and regenerative power
–Speeds
–Touque
–Travel cycle

↓

Cear unit selection
–Definition of gear unit size, reduction ratio and type
–Check for positioning accuracy
–Check for gear unit load ability(Ma max≥Ma(t))

↓

Control System selection depending on
–Positioning accuracy
–Speed range
–Control mode

↓

Inverter operation mode
–Voltage–controlled inverter with and without speed control
–Voltage–controlled, flux vector–controlled inverter with and without speed control
–Current–controlled, flux vector–controlled inverter

↓

Motor selection
–Maximum torque
–In dynamic drives: effective torque at medium speed
–Maximum speed
–In dynamic drives: torque curves
–Thermal loading(setting range, cyclic duration factor)
–Selection of the correct encoder
–Motor equipment(barke, plug connection, TF temperature sensor monitoring, erc.)

↓

Inverter selection
–Motor/inverter assignment
–Continuous power and peak power in voltage–controlled inverters
–Continuous current and peak current in current–controlled inverters

↓

Selecting the braking resistor
–Based on the calculated regenerative power and cdf

↓

Options
–EMC measures
–Operation/communication board
–Additional functions

↓

Check to see if all requirements have been met

Figure: Project planning process

4.3 Efficiency of gear units

The efficiency of the gear units is mainly determined by the gearing, mash and bearing friction. Please note that the starting efficiency of a gear unit is always less than its efficiency at operating speed. This fact is especially obvious in helical–worm and right–angle geared motors.

SHR, SHF, SHK gear units

The efficiency of helical, parallel shaft and helical–bevel gear units varies according to the unmber of gear stages, between 94%(3–stage)and 98%(1–stage).

SHS gear units

The gearing in helical–worm and gear units produces a high proportion of sliding friction. As a result, these gear units may have higher gearing losses than SHR, SHF or SHK gear units, and thus be less efficient. The cause of factors are:

–Gear ratio of the helical–worm
–Input speed
–Gear unit temperature
SHAKERIN gear units are designed as helical worm which makes them significantly more efficient than standard worm gear units. The efficiency may reach η <0.5 if the helical–worm stage has a very high ratio step.

Self–locking condition

Retrodriving torques on helical–worm gear units produce an efficiency of $\eta' = 2 - 1/\eta$, which is significantly less favorable than the forwards efficiency η. The helical–worm or Spiroplan gear unit is self–locking if the forwards efficiency $\eta \leq 0.5$.A few helical–worm gear units with the largest gear ratio are statically self–locking. Please contact company if you wish to wish to make technical use of the braking effect of self–locking characteristics.

Running–inphase

The tooth flanks of new helical–worm and gear units are not yet completely smooth. For the friction angle is greater, the efficiency will be less than operation. This effect becomes more apparent in the greater ratio.

In The first beginning,the given efficiency number should minus as follows

	Helical-worm	i range
1start	approx.12%	approx.50-280
2start	approx.6%	approx.20-75
3start	approx.3%	approx.20-90
4start	-	-
5start	approx.3%	approx.6-25
6start	approx.2%	approx.7-25

The running-in phase normally lasts 24 hours. Helical-worm gear units achieve their listed rated efficiency values when:
-The gear unit has been run is completely
-The gear unit has reached normal operation temperature
-The recommended lubricant has been filled in
The gear unit is working within the rated load range

Churning losses

In certain gear unit mounting positions the first reduction stage is completely immersed in the lubricant. For large gear unit sizes and high circumferential velocities of the input stage, this gives rise to churning losses constituting a factor which cannot be ignored. Please contact company if you wish to use gear units of this type. If possible, use the mounting position M1 for SHR, SHK and SHS gear units in order to keep the churning losses in low.

4.4 Service factor

Determining of the service factor

Gear unit selection needs to consider a certain factor which we use f_B to express. Theservice factor is determined by the daily operating time and the starting frequency. Three load classifications are also considered to depend on the mass acceleration factor. You can read the different serive factor from the figure as follows. The service factor determined using this diagram must be small than or equal to the service factor as given in the selection tables.

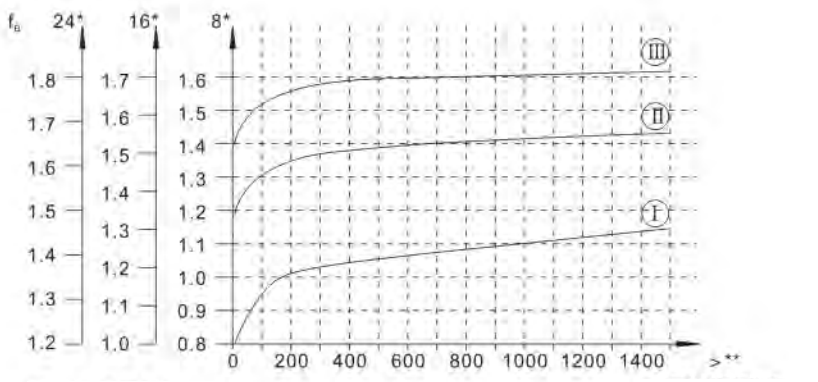


Fig:service factor f_s

Daily operating time in hours/day
Starting frequency Z:The cycles include all staring and and braking procedures as well as changes from low tohigh and high to low speed.

Load classification

Three load classifications are differentiated:
Ⅰ. Uniform, approved mass acceleration factor≤0.2
Ⅱ. Moderate shock load, approved mass acceleration factor≤3
Ⅲ. Severe shock load, approved mass acceleration factor≤10

Mass acceleration factor

The mass acceleration factor is calculated as follows:

$$\textbf{Mass acceleration factor=}\ \frac{\textbf{All external kmass moments of inertia}}{\textbf{Mass moment of inertia on the motor end}}$$

"All external mass moments of inertia" are the mass moments of inertia of the driven machine and the gear unit, scaled down to the motor speed. The calculation for scaling down to the motor speed performed using the following formula: $J_x=j\cdot(\frac{n}{n_M})2$

J_x=Reduced mass moment of inertia on the motor shaft
J=Mass moment of inertia referenced to the output speed of the gear unit
N=Output speed of the gear unit
N_M=Motor speed

"Mass moment of inertia on the motor" if it equips the brake and the flywheel fan (Z fan), the components' mass moment of inertia or large overhung loads. Please contact company in this case.

Service factor: f_B

The method for determining the maximum approved continuous torque M_{axax} and then deriving the service factor $f_B=M_{amax}/M_a$ is not defined in a standard and varies greatly from manufacturer to manufacturer. With their service factor $f_B=1$, drives afford an extremely high level of safety and reliability in the fatigue strength range (exception:wearing of the worm wheel in helical–Worm gear units), Under a certain circumstances, the service factor may not be comparable to the information given details for your specific drive. If there is any questions, please contact company to get the special drive equipments' document in detail.

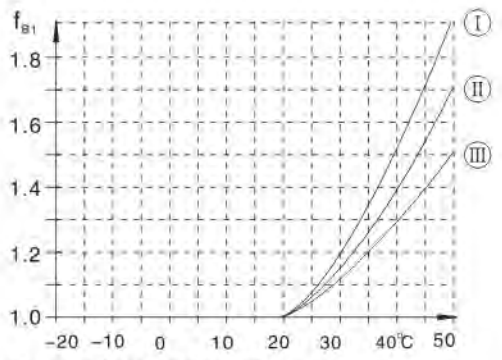
Example

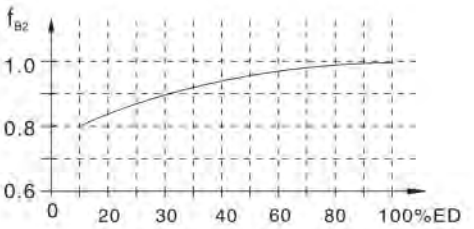
Mass acceleration factor 2.5(load classification II),14 hours/day operating time(check the figure at16h/d)and 300 cycles/hour produce a service factor $f_B=1.51$ as shown in Fig.2.According to the selection table, the selected motor must have an f_B Value of 1.15 or greater.

Helical–worm gear untis

Two further service factors have to be taken into account with helical–worm gear units in addition to the selection factor f_B shown in Fig.2.These are :
–f_{B1}=Service factor from the ambient temperature
–f_{B2}=Service factor from the cyclic duration factor

Additional service factors f_{B1} and f_{B2} can be determined by diagrams is Fig.4.For the f_{B1}factor,we can define it Just in the same way as f_B.





Additional service factors f_{B1} and f_{B2}

$$cdf\ (\%) = \frac{\text{Time under load in min/h}}{60}\ 100$$

Please contact company case of temperatures below –20℃($\rightarrow f_{B1}$).

The total service factor for helical–worm gear units is calculated as follows: $F_{Btot}=f_B \cdot f_{B1} \cdot f_{B2}$

Example

If the geared motor with the service factor $f_B=1.51$ in the prevenient example is a helical–worm geared motor.

Ambient temperature υ =40℃$\rightarrow f_{B1}$=1.38(read off at load classification II)

Time under load=40min/h$\rightarrow$cdf=66.7%$\rightarrow f_{B2}$=0.95
The total service factor is $F_{Btot}=1.51 \cdot 1.38 \cdot 0.95=1.98$

According to the selection tables, the selected helical–worm geared motor must have a f_B value of 1.98 or greater.

4.5 Overhung and axial loads

Determining overhung load

When determining the overhung load, the type of transmission element mounted on the shaft end must be comsidered. The transmission element factors f_z are listed as follows:

Transmission element	Transmission element factor f_z	Comments
Gears	1.15	<17teeth
Chain sprockets	1.40	<13teeth
Chain sprockets	1.25	<20teeth
Narrow V-belt pulleys	1.75	Pre-tensioning influence
Flat belt pulleys	2.50	Pre-tensioning influence
Toothed belt pulleys	2.5	Pre-tensioning influence

The overhung load exerted on the motor or gear shaft is the calculated as follows:

$$F_R = \frac{M_d \cdot 2000}{d_o} \cdot f_z$$

F_R Overhung load in N
M_d Torque in N·m
d_o Mean diameter of the mounted transmission element in mm
f_z Transmission element factor

Permitted overhung load

According the rate service life L_{H10} of the anti-friction bearings to define the permitted overhung loads. For the special operating conditions, the permitted overhung loads can be determined by the modified service life L_{na}.

The permitted overhung loads F_{Ra} for the output shafts of foot-mounted gear units with a sold shaft are listed in the selection tables for geared motors. Please contact company in case of other types.

The data refer to the radial force acting midway on the shaft end(with right-angle gear units on the A-side output).Worst case conditions have been asumed fot the force application angle α and the direction of rotation.

Only 50% of the F_{Ra} Value specified in the selection tables permitted in mounting position M1 with wall attachment on the front face for SHK and SHS gear units.

Helical–bevel geared motors SHK167 and SHK187 in mounting positions M1 to M4:If the mounting position is different the position we offered (M1–M4), the overhung load F_{Ra} lasted in the selection tables.

Foot and flange–mounted helical geared motors(SHR..F): A maximum of 50% of the overhung load F_{Ra} specified in the selection tables in the case of torque transmission via the flange mounting.when the torque transmission via the flange mounting the overhung load F_{Ra} will only be 50% compared with the F_{Ra} lasted the selection tables.

Higher approved overhung loads

It possible to achieve a higher overhung load by exactly considering the force application angle $\propto$ and the direction of rotation. In addition, higger output shaft loads are permitted if heavy duty bearings are installed, especially with SHR、SHF and SHK gear units. Please contact company in this case.

Definition of force application

Force application is defined according to the following diagram:

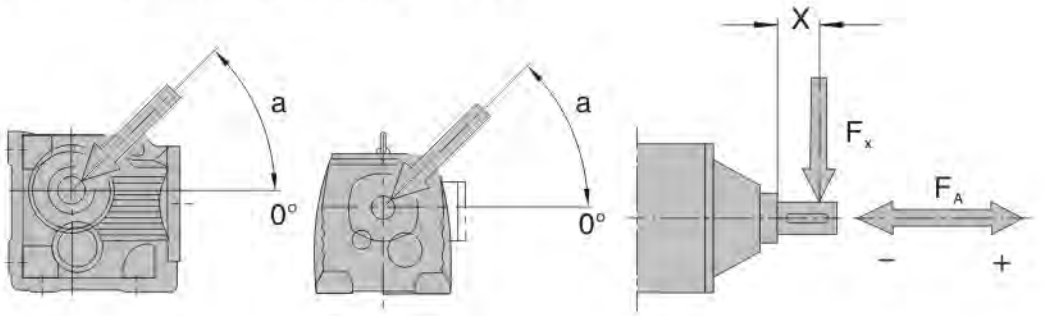


Fig: Defined of force application

F_X=Approved overhung load at point X[N]
F_A=Approved axial load [N]

Approved axial loads

If there is no overhung load. then an axial load FA (tension or compression) amountion to 50% of the overhung load given in the selection tables is approved. This applies to the following geared motors:

- Helical geared motors except for SHK..to SHR..167..
- Parallel shaft and helical–bevel geared motors with solid shaft except for SHF97..
- Helical–worm geared motors with solid shaft

Please contact company for all other types of gear units and in the event of significantly greater axial loads or combinations of overhung load and axial load.

Overhung load conversion for off–center force application

The approved overhung loads given in the selection tables must be calculated using the following form–ulae in the event of force application not in the center of the shaft e–nd. The smaller of the two value F_{xl} (according to bearing service life)and F_{xw} (according to shaft strength) is the approved value for the overhung load at pointx. Note that the calculation apply to M_{amax}

F_{xL} acc.to bearing service life

$$F_{xL} = F_{Ra} \cdot \frac{a}{b+x} \text{ [N]}$$

F_{xW} from the shaft strength

$$F_{xW} = \frac{c}{f+x} \text{ [N]}$$

F_{Ra}
Approved overhung load(x=1/2)for foot–mounted gear units according to the selection tables in [N]

X
Distance from the shaft shoulder to the force application point in[mm]

a,b,f
Gear unit constants for overhung load conversion[mm]

c
Gear unit constant for overhung load conversion[Nmm]

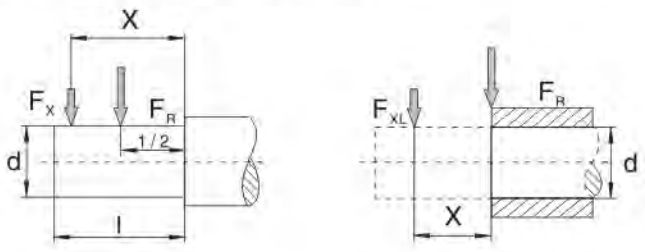


Fig: Overhung load Fx for off–center force application

Gear unit constants for overhung load conversion

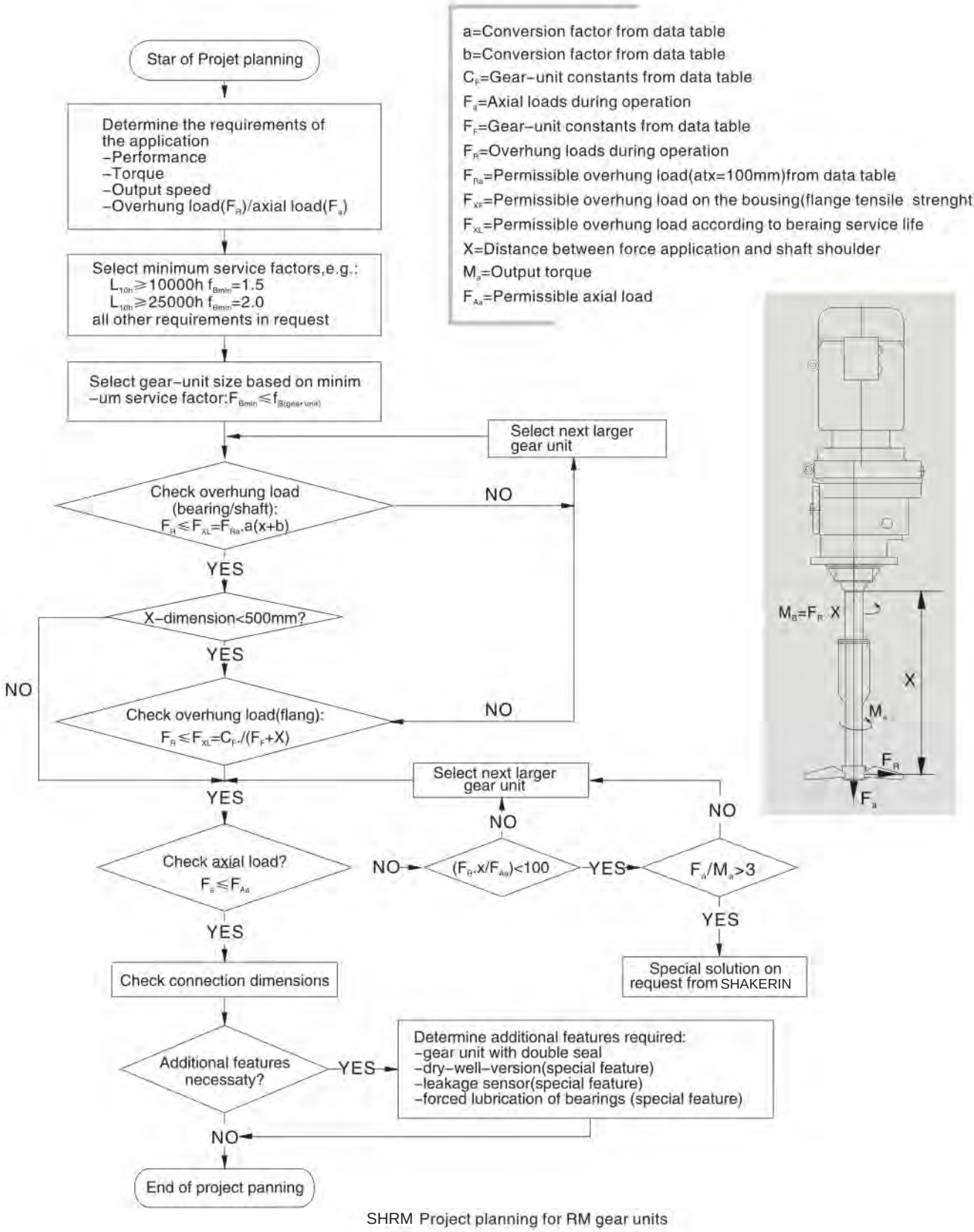
Gear unit type	a [mm]	b [mm]	c [Nmm]	f [mm]	d [mm]	l [mm]
SHR17	88.5	68.5	6.527×10^4	17	20	40
SHR27	106.5	81.5	1.56×10^5	11.8	25	50
SHR37	118	93	1.24×10^5	0	25	50
SHR47	137	107	2.44×10^5	15	20	60
SHR57	147.5	112.5	3.77×10^5	18	35	70
SHR67	168.5	133.5	2.51×10^5	0	35	70
SHR77	173.7	133.7	3.97×10^5	0	40	80
SHR87	216.7	166.7	8.47×10^5	0	50	100
SHR97	255.5	195.5	1.19×10^6	0	60	120
SHR107	285.5	215.5	2.06×10^6	0	70	140
SHR137	343.5	258.5	6.14×10^5	30	90	170
SHR147	402	297	8.65×10^6	33	110	210
SHR167	450	345	1.26×10^7	0	120	210
SHRX57	43.5	23.5	1.51×10^5	34.2	20	40
SHRX67	52.5	27.5	2.42×10^5	39.7	25	50
SHRX77	60.5	30.5	1.95×10^5	0	30	60
SHRX87	73.5	33.5	7.69×10^5	48.9	40	80
SHRX97	86.5	36.5	1.43×10^6	53.9	50	100
SHRX107	102.5	42.5	2.47×10^6	62.3	60	120
SHF37	123.5	98.5	1.07×10^5	0	25	50
SHF47	153.5	123.5	1.78×10^5	0	30	60
SHF57	170.7	135.7	5.49×10^5	32	35	70
SHF67	181.3	141.3	4.12×10^5	0	40	80
SHF77	215.8	165.8	7.87×10^5	0	50	100
SHF87	263	203	1.19×10^6	0	60	120
SHF97	350	280	2.09×10^6	0	70	140
SHF107	373.5	288.5	4.23×10^6	0	90	170
SHF127	442.5	337.5	9.49×10^6	0	110	210
SHF157	512	407	1.05×10^7	0	120	210
SHK37	123.5	98.5	1.41×10^5	0	25	50
SHK47	153.5	123.5	1.78×10^5	0	30	60
SHK57	168.7	134.7	6.8×10^5	31	35	70
SHK67	181.3	141.3	4.12×10^5	0	40	80
SHK77	215.8	165.8	7.69×10^5	0	50	100
SHK87	252	192	1.64×10^6	0	60	120
SHK97	319	249	2.8×10^6	0	70	140
SHK107	373.5	288.5	5.53×10^6	0	90	170
SHK127	443.5	338.5	8.31×10^6	0	110	210
SHK157	509	404	1.18×10^7	0	120	210
SHK167	621.5	496.5	1.88×10^7	0	160	250
SHK187	720.5	560.5	3.04×10^7	0	190	320
SHS37	118.5	98.5	6.0×10^4	0	20	40
SHS47	130	105	1.33×10^5	0	25	50
SHS57	150	120	2.14×10^5	0	30	60
SHS67	184	149	3.04×10^5	0	35	70
SHS77	224	179	5.26×10^5	0	45	90
SHS87	281.5	221.5	1.68×10^6	0	60	120
SHS97	326.3	256.3	2.54×10^6	0	70	140

Values for types not listed are available on request.

4.6 SHRM gear reducer

Project planning

You must take account of the higher overhung and axial loads when planning projects with RM helical geared motors with extended bearing hosing.Please adhere to the following p–roject planning project planning procedure:



SHRM Project planning for RM gear units

Permitted overhung loads and axial forces

The permitted overhung loads F_{Ra} and axial loads F_{Aa} are specified for variousservice factors f_B and normal b –earing service life L_{H10}

f_{Bmin}=1.5
L_{10h}=10000h

Gear unit size	Na[rpm]	<16	16–25	26–40	41–60	61–100	101–250	161–250	251–400
SHRM57	F_{RA}[N]	400	400	400	400	400	405	410	415
	F_{RA}[N]	18800	1500	11500	9700	7100	5650	4450	3800
SHRM67	F_{RA}[N]	575	575	575	580	575	585	590	600
	F_{RA}[N]	19000	18900	15300	11900	9210	7470	5870	5050
SHRM77	F_{RA}[N]	1200	1200	1200	1200	1200	1210	1210	1220
	F_{RA}[N]	22000	22000	19400	15100	11400	9220	7200	6710
SHRM87	F_{RA}[N]	1970	1970	1970	1970	1980	1990	2000	2010
	F_{RA}[N]	30000	30000	23600	18000	14300	11000	8940	8030
SHRM97	F_{RA}[N]	2980	2980	2980	2990	3010	3050	3060	3080
	F_{RA}[N]	40000	36100	27300	20300	15900	12600	9640	7810
SHRM107	F_{RA}[N]	4230	4230	4230	4230	4230	4230	3580	3830
	F_{RA}[N]	48000	41000	30300	23000	18000	13100	9550	9030
SHRM137	F_{RA}[N]	8710	8710	8710	8710	7220	5060	3980	6750
	F_{RA}[N]	70000	70000	70000	57600	46900	44000	35600	32400
SHRM147	F_{RA}[N]	11100	11100	11100	11100	11100	10600	8640	10800
	F_{RA}[N]	70000	70000	69700	58400	45600	38000	32800	30800
SHRM167	F_{RA}[N]	14600	14600	14600	14600	14600	14700	–	–
	F_{RA}[N]	70000	70000	70000	60300	45300	36900	–	–

F_{Bmin}=2.0
L_{10h}=25000h

Gear unit size	Na[rpm]	<16	16–25	26–40	41–60	61–100	101–250	161–250	251–400
SHRM57	F_{RA}[N]	410	410	410	410	410	415	415	420
	F_{RA}[N]	12100	9600	7350	6050	4300	3350	2600	2200
SHRM67	F_{RA}[N]	590	590	590	595	590	595	600	605
	F_{RA}[N]	15800	12000	9580	7330	5580	4460	3460	2930
SHRM77	F_{RA}[N]	1210	1210	1210	1210	1210	1220	1220	1220
	F_{RA}[N]	20000	15400	11900	9070	6670	5280	4010	3700
SHRM87	F_{RA}[N]	2000	2000	2000	2000	2000	1720	1690	1710
	F_{RA}[N]	24600	19200	14300	10600	8190	6100	5490	4860
SHRM97	F_{RA}[N]	3040	3040	3040	3050	3070	3080	2540	2430
	F_{RA}[N]	28400	22000	16200	11600	8850	6840	5830	4760
SHRM107	F_{RA}[N]	4330	4330	4330	4330	4330	3350	2810	2990
	F_{RA}[N]	32300	24800	17800	13000	9780	8170	5950	5620
SHRM137	F_{RA}[N]	8850	8850	8850	8830	5660	4020	3200	5240
	F_{RA}[N]	70000	59900	48000	37900	33800	31700	25600	23300
SHRM147	F_{RA}[N]	11400	11400	11400	11400	11400	8320	6850	8440
	F_{RA}[N]	70000	60600	45900	39900	33500	27900	24100	22600
SHRM167	F_{RA}[N]	15100	15100	15100	15100	15100	13100	–	–
	F_{RA}[N]	70000	63500	51600	37800	26800	23600	–	–

Conversion factors and gear unit constants

The following conversion factors and gear unit constants apply to calculating the permitted overhung load F_{xL} at paint X≠1000mm for SHRM gear motors.

Gear unit size	a	b	$c_F(f_B=1.5)$	$C_F(f_B=2.0)$	F_F
SHRM57	1047	47	1220600	1260400	277
SHRM67	1047	47	2047600	2100000	297.5
SHRM77	1050	50	2512800	2574700	340.5
SHRM87	1056.5	56.5	4917800	5029000	414
SHRM97	1061	61	10911600	11124100	481
SHRM107	1069	69	15367000	15652000	554.5
SHRM137	1088	88	25291700	25993600	650
SHRM147	1091	91	30038700	31173900	756
SHRM167	1089.5	89.5	42096100	43654300	869

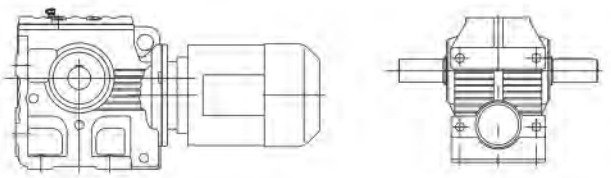
Additional weights of SHRM gear units

Gear unit size	Additional weight in addition to RF_1 related to the smallest RF flange Δm[kg]
SHRM57	12.0
SHRM67	15.8
SHRM77	25.0
SHRM87	29.7
SHRM97	51.3
SHRM107	88.0
SHRM137	111.1
SHRM147	167.4
SHRM167	195.4

8.
SHF Helical – Worm Geared Motor

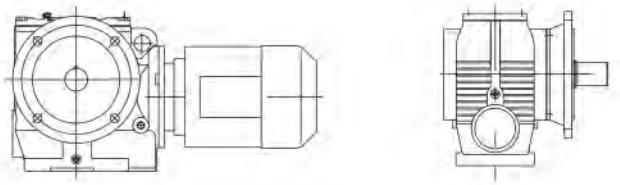
8.1 Versions of geared motors

The following types of helical – worm gearmotor can be supplied:



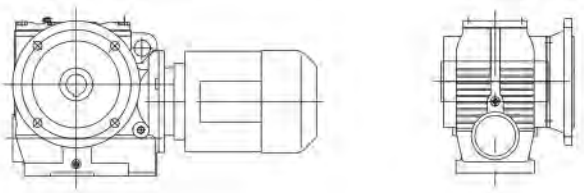
SHS..D..

Foot – mounted helical – worm gearmotor



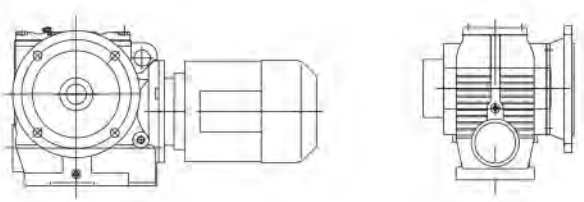
SHSF..D..

Helical – worm gearmotor flange – mounted version.



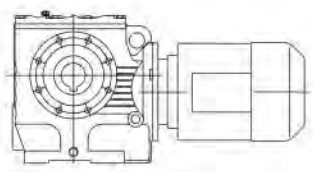
SHSAF..D..

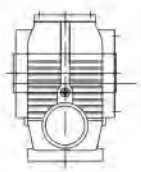
Helical – worm gearmotor in B5 flange – mounted version with hollow shaft.



SHSHF..D..

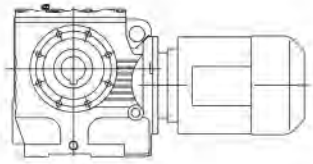
Helical – worm gearmotor in B5 flange – mounted version with hollow shaft and shrink disk.

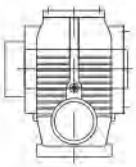




SHSA..D..

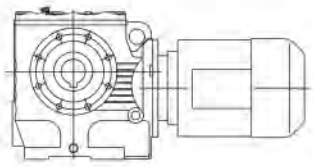
Helical – worm gearmotor with hollow shaft.

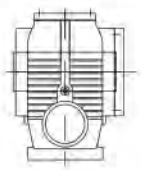




SHSH..D..

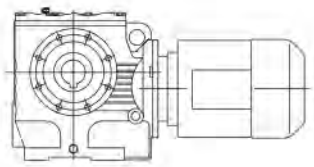
Helical – worm gearmotor with hollow shaft and shrink disk.

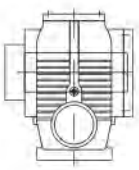




SHSAZ..D..

Helical – worm gearmotor in B14 flange –mounted version with hollow shaft





SHSHZ..D..

Helical – worm gearmotor in B14 flange –mounted version with hollow shaft and shrink disk.

8.2 Type of Combination

The below is combination table between gear box and electro motor in each list the ratio range.

Gear unit size	Stages	D63 D71	D80	D90	D100	D112	D132S	D132M
SHS/SF/SA/SAF37	2	6.80–18.24 19.89–51.30 55.93–157.43	6.80–15.53 19.13 22.50–43.68 53.83 63.33–122.94	6.80–13.39 19.13 22.50–37.66 53.83 63.33–106.00				
SHS/SF/SA/SAF47	2	7.28–17.62 20.33–54.59 63.80–201.00	7.28–17.62 20.33–54.59 67.20 71.75–158.12	7.28–19.54 23.20–47.32 56.61 67.20 71.75–137.05	7.28–14.24 19.54 23.20–38.23 56.61 67.20 71.75–110.73			
SHF/SF/SA/SAF57	2	7.28–17.62 20.33–54.59 63.80–201.00	7.28–17.62 20.33–54.59 67.20 71.75–158.12	7.28–19.54 23.20–47.32 56.61 67.20 71.75–137.05	7.28–14.24 19.54 23.20–38.23 56.61 67.20 71.75–110.73			
SHS/SF/SA/SAF67	2	11.03–17.28 20.37–23.22 24.44 29.63–54.70 62.35–65.63 75.06 85.83–217.41	8.69–17.28 20.37–23.22 24.44–54.70 62.35–65.63 75.06 85.83–217.41	7.56–17.28 20.37–23.22 24.44–54.70 62.35–65.63 78.00–190.1	7.56–17.28 20.37 23.33 26.93–54.70 67.57 78.00–158.45	7.56–20.30 23.33 26.93–46.40 58.80 67.57 78.00–134.40	7.56–13.73 20.30 23.33 26.93–36.85 58.80 67.57 78.00–106.75	7.56–13.73 20.30 23.33 26.93–36.85 58.80 67.57 78.00–106.75
SHS/SF/SA/SAF77	2	15.28–18.42 20.99 22.89 35.94–53.87 63.03 71.33–75.09 107.83–256.47	12.07–18.42 20.99 22.89 28.41–53.87 63.03 71.33–75.09 85.22–256.47	8.06–18.42 20.99 22.89–75.09 85.22–225.26	8.06–18.42 20.99 22.89–66.67 75.20–189.09	8.06–18.42 20.99 22.89–56.92 66.67 75.20–161.60	8.06–18.97 22.22 25.07–43.33 56.92 66.67 75.20–130.00	8.06–18.97 22.22 25.07–43.33 56.92 66.67 75.20–130.00
SHS/SF/SA/SAF87	2		17.49–19.70 21.43 25.50 39.10–57.00 64.27–70.43 81.76 91.20	12.21–19.70 21.43 25.50–57.00 64.27–70.43 81.76–288.00	9.07–19.70 21.43 25.50–57.00 64.27–86.15 99.26–258.18	9.07–19.70 21.43 25.50–57.00 64.27–77.14 86.15 99.26–222.40	7.88–19.70 21.43 25.50–64.00 77.14 86.15 99.26–180.00	7.88–19.70 21.43 25.50–64.00 77.14 86.15 99.26–180.00
SHS/SF/SA/SAF97	2		23.59 26.39 49.87–60.59 71.43 80.85 161.74–286.40	17.05–23.59 26.39 36.05–60.59 71.43 80.85 116.92–286.40	13.07–23.859 26.39 32.60–60.59 71.43 80.85–286.40	13.07–23.59 26.39 32.60–60.59 71.43 80.85–286.40	8.26–23.59 26.39 32.60–78.26 89.60–231.67	8.26–23.59 26.39 32.60–78.26 89.60–231.67

Gear unit size	Stages	D132ML	D160M	D160L	D180			
SHS/SF/SA/SAF77	2	8.06–13.76 18.97 22.22 25.07–32.38 56.92 66.67 75.20–97.14	8.06–13.76 18.97 22.22 25.07–32.38 56.92 66.67 75.20–97.14					
SHS/SF/SA/SAF87	2	7.88–20.27 24.43 27.28–44.03 64.00 77.14 86.15 99.26–139.05	7.88–20.27 24.43 27.28–44.03 64.00 77.14 86.15 99.26–139.05	7.88–20.27 24.43 27.28–44.03 64.00 77.14 86.15 99.26–139.05	7.88–15.64 20.27 24.43 27.28–34.96 64.00 77.14 86.15 99.26–110.40			
SHS/SF/SA/SAF97	2	8.26–23.59 26.39 32.60–55.79 65.45 78.26 89.60–180.95	8.26–23.59 26.39 32.60–55.79 65.45 78.26 89.60–180.95	8.26–23.59 26.39 32.60–55.79 65.45 78.26 89.60–180.95	8.26–21.23 24.13 27.63–44.89 65.45 78.26 89.60–145.60			

8.3 Ratio and Max.Torque

SHS37-57 n_e=1400 1/min

SHS37				90Nm
i	n_a [1/min]	M_{amax} [Nm]	F_{Ra} [N]	AD
157.43	8.9	92	3000	
144.40	9.7	92	3000	
122.94	11	91	3000	
106.00	13	88	3000	
98.80	14	87	3000	AD_1
86.36	16	86	3000	
80.96	17	85	3000	
71.44	20	84	3000	
63.33	22	82	3000	
55.93	25	81	3000	
53.83	26	80	3000	AD_2
51.30	27	81	3000	
43.68	32	81	3000	
37.66	37	79	3000	
35.10	40	78	3000	
30.68	46	76	2870	AD_1
28.76	49	75	2800	
25.38	55	74	2660	
22.50	62	73	2530	
19.89	70	52	2470	
19.13	73	71	2380	AD_2
18.24	77	52	2380	AD_1
15.53	90	50	2240	
13.39	105	49	2110	
12.48	112	48	2060	
10.91	128	48	1940	
10.23	137	47	1900	AD_2
9.02	155	46	1810	
8.00	175	45	1730	
6.80	206	43	1630	

SHS47				170Nm
i	n_a [1/min]	M_{amax} [Nm]	F_{Ra} [N]	AD
201.00	7.0	170	5340	
184.80	7.6	170	5340	
158.12	8.9	170	5340	
137.05	10	168	5350	
128.10	11	168	5350	
110.73	13	168	5350	AD_1
94.08	15	168	5350	
84.00	17	167	5360	
71.75	20	167	5360	
69.39	20	155	5370	
67.20	21	167	5360	
63.80	22	155	5370	
56.61	25	165	5320	AD_2
54.59	26	155	5150	
47.32	30	155	4850	AD_1
44.22	32	155	4710	
38.23	37	155	4430	
32.48	43	155	4120	
29.00	48	155	3920	
24.77	57	155	3650	
23.20	60	152	3570	
20.33	69	110	3370	
19.54	72	144	3370	AD_2
17.62	79	110	3160	
16.47	85	110	3060	
14.24	98	110	2850	
12.10	116	109	2650	
10.80	130	109	2500	
9.23	152	109	2310	
8.64	162	109	2230	
7.28	192	103	2110	

SHS57				300Nm
i	n_a [1/min]	M_{amax} [Nm]	F_{Ra} [N]	AD
201.00	7.0	295	7130	
184.80	7.6	295	7130	
158.12	8.9	295	7130	
137.05	10	295	7130	AD_1
128.10	11	295	7130	
110.73	13	295	7130	
94.08	15	295	7130	
84.00	17	295	7130	
71.75	20	290	7170	
69.39	20	245	7520	
67.20	21	285	7220	
63.80	22	245	7520	
56.61	25	265	7370	
54.59	26	245	7520	
47.32	30	245	7520	
44.22	32	245	7520	
38.23	37	245	7320	
32.48	43	245	6840	
29.00	48	245	6520	AD_2
24.77	57	245	6100	
23.20	60	245	5930	
20.33	69	168	5690	
19.54	72	215	5720	
17.62	79	168	5350	
16.47	85	168	5200	
14.24	98	169	4860	
12.10	116	169	4520	
10.80	130	169	4290	
9.23	152	169	3990	
8.64	162	166	3900	
7.28	192	146	3790	

SHS67-87 n_e=1400 1/min

SHS67				520Nm
i	n_a [1/min]	M_{amax} [Nm]	F_{Ra} [N]	AD
217.41	6.4	520	8680	
190.11	7.4	520	8680	
180.60	7.8	520	8680	
158.45	8.8	520	8680	
134.40	10	520	8680	
121.33	12	520	8680	
106.75	13	520	8680	AD_2
100.80	14	520	8680	
85.83	16	520	8680	
78.00	18	520	8680	
75.06	19	480	9020	
67.57	21	520	8680	
65.63	21	480	9020	
62.35	22	480	9020	
58.80	24	500	8850	AD_3
54.70	26	480	8670	
46.40	30	480	8060	
41.89	33	480	7690	
36.85	38	480	7250	
34.80	40	480	7060	AD_2
29.63	47	480	6540	
26.93	52	480	6240	
24.44	57	340	6040	
23.33	60	480	5810	
23.22	60	340	5890	
20.37	69	340	5520	
20.30	69	425	5760	AD_3
17.28	81	340	5080	
15.60	90	340	4820	AD_2
13.73	102	340	4510	
12.96	108	340	4310	
11.03	127	340	3660	
10.03	140	340	3290	AD_3
8.69	161	335	2860	
7.56	185	295	3220	

SHS77				1270Nm
i	n_a [1/min]	M_{amax} [Nm]	F_{Ra} [N]	AD
256.47	5.5	1270	11800	
225.26	6.2	1270	11800	
214.00	6.5	1270	11800	
189.09	7.4	1270	11800	
161.60	8.7	1260	11900	
148.15	9.4	1240	12000	
130.00	11	1210	12300	
123.20	11	1200	12400	
107.83	13	1170	12600	
97.14	14	1140	12900	AD_2
85.22	16	1100	13200	
75.20	19	1070	13400	
75.09	19	1100	13200	
71.33	20	1100	13200	
66.67	21	1040	13600	
63.03	22	1100	12800	
56.92	25	990	13300	
53.87	26	1100	11900	
49.38	28	1100	11500	
43.33	32	1100	10800	
41.07	34	1100	10500	
35.94	39	1100	9850	
32.38	43	1090	9400	
28.41	49	1050	8970	
25.07	56	1020	8550	
22.89	61	705	7440	
22.22	63	980	8220	
20.99	67	705	6820	AD_3
18.97	74	930	7800	
18.42	76	705	5920	
17.45	80	710	5470	
15.28	92	710	4610	
13.76	102	710	3960	
12.07	116	720	3000	
10.65	131	720	2280	
9.44	148	725	1040	AD_4
8.06	174	680	1160	

SHS87				2280Nm
i	n_a [1/min]	M_{amax} [Nm]	F_{Ra} [N]	AD
288.00	4.9	2280	27900	
258.18	5.4	2280	27900	
222.40	6.3	2280	27900	
202.96	6.9	2260	28000	
180.00	7.8	2210	28100	
151.30	9.3	2150	28200	
139.05	10	2100	28300	
123.48	11	2060	28300	AD_2
110.40	13	2000	28400	
99.26	14	1960	28500	
91.20	15	1510	29100	
86.15	16	1880	28600	
81.76	17	1600	29000	
77.14	18	1820	28700	
70.43	20	1600	29000	
64.27	22	1600	29000	
64.00	22	1700	28900	AD_3
57.00	25	1600	29000	AD_2
47.91	29	1600	29000	
44.03	32	1600	29000	
39.10	36	1600	28200	AD_3
34.96	40	1600	27100	
31.43	45	1600	26000	
27.28	51	1600	24700	
25.50	55	1240	23400	
24.43	57	1600	23700	
21.43	65	1240	21800	
20.27	69	1600	22100	
19.70	71	1240	21100	
17.49	80	1240	20200	AD_4
15.64	90	1240	19300	
14.06	100	1240	18500	
12.21	115	1240	17400	
10.93	128	1240	16600	
9.07	154	1140	15900	
7.88	178	1010	15700	

SHS97, SHS37/47R17 n_e=1400 1/min

SHS97				4000Nm
i	n_a [1/min]	$M_{a max}$ [Nm]	F_{Rz} [N]	AD
286.40	4.9	4000	36300	
262.22	5.3	4000	36300	
231.67	6.0	4000	36300	
196.52	7.1	4000	36300	
180.95	7.7	3920	36500	
161.74	8.7	3840	36600	AD_3
145.60	9.6	3730	36800	
131.85	11	3650	37000	
116.92	12	3510	37200	
105.71	13	3440	37300	
89.60	16	3240	37600	
80.85	17	3230	37600	
78.26	18	3080	37900	
71.43	20	3300	37500	AD_4
65.45	21	2900	38100	AD_3
60.59	23	3300	37500	
55.79	25	3300	37100	
49.87	28	3300	35600	
44.89	31	3300	34100	AD_4
40.65	34	3300	32800	
36.05	39	3300	31300	
32.60	43	3200	30400	
27.63	51	3010	29000	AD_5
26.39	53	2600	26100	AD_4
24.13	58	2870	28000	
23.59	59	2600	24900	
21.23	66	2600	23700	
19.23	73	2600	22700	
17.05	82	2570	21100	AD_5
15.42	91	2470	20800	
13.07	107	2330	20100	
11.41	123	2210	19500	
9.55	147	2040	18800	
8.26	169	1770	18800	

SHS37R17			90Nm
i	n_a [1/min]	$M_{a max}$ [Nm]	F_{Rz} [N]
10037	0.14	92	3000
8654	0.16	92	3000
8066	0.17	92	3000
7051	0.20	92	3000
6079	0.23	92	3000
5431	0.26	92	3000
4747	0.29	92	3000
4155	0.34	92	3000
3632	0.39	92	3000
2866	0.49	92	3000
2471	0.57	92	3000
2160	0.65	92	3000
1887	0.74	92	3000
1665	0.84	92	3000
1456	0.96	92	3000
1271	1.1	92	3000
1121	1.2	92	3000
994	1.4	92	3000
869	1.6	92	3000
774	1.8	92	3000
666	2.1	92	3000
596	2.3	92	3000
521	2.7	92	3000
456	3.1	92	3000
398	3.5	92	3000
351	4.0	92	3000
303	4.6	92	3000
265	5.3	92	3000
232	6.0	92	3000
202	6.9	92	3000
179	7.8	92	3000
158	8.9	92	3000
144	9.7	92	3000
118	12	92	3000
110	13	92	3000

SHS47R17			185Nm
i	n_a [1/min]	$M_{a max}$ [Nm]	F_{Rz} [N]
12909	0.11	185	5250
11189	0.13	185	5250
10374	0.13	185	5250
8992	0.16	185	5250
7860	0.18	185	5250
6887	0.20	185	5250
6055	0.23	185	5250
5292	0.26	185	5250
4637	0.30	185	5250
4092	0.34	185	5250
3582	0.39	185	5200
3131	0.45	185	5200
2714	0.52	185	5200
2412	0.58	185	5200
2131	0.66	185	5200
1863	0.75	185	5200
1663	0.84	185	5200
1435	0.98	185	5200
1254	1.1	185	5200
1120	1.2	185	5200
1083	1.3	185	5200
965	1.5	185	5200
956	1.5	185	5210
865	1.6	185	5200
750	1.9	185	5200
655	2.1	185	5200
574	2.4	185	5200
506	2.8	185	5200
438	3.2	185	5200
388	3.6	185	5200
336	4.2	185	5200
294	4.8	185	5200
257	5.4	185	5260
229	6.1	185	5200
200	7.0	185	5200
187	7.5	185	5200
165	8.5	185	5200
148	9.5	185	5200
131	11	185	5200

SHS57R17, SHS67/77R37 n_e=1400 1/min

SHS57R17			300Nm
i	n_a [1/min]	$M_{a max}$ [Nm]	F_{Ra} [N]
12909	0.11	330	6800
11189	0.13	330	6800
10374	0.13	330	6800
8992	0.16	330	6800
7860	0.18	330	6800
6887	0.20	330	6800
6055	0.23	330	6800
5292	0.26	330	6800
4637	0.30	330	6800
4092	0.34	330	6800
3628	0.39	330	6800
3131	0.45	300	7090
2714	0.52	300	7090
2412	0.58	300	7090
2131	0.66	300	7090
1863	0.75	300	7090
1663	0.84	300	7090
1435	0.98	300	7090
1254	1.1	300	7090
1083	1.3	300	7090
965	1.5	300	7090
865	1.6	300	7090
750	1.9	300	7090
655	2.1	300	7090
574	2.4	300	7090
506	2.8	300	7090
438	3.2	300	7090
388	3.6	300	7090
336	4.2	300	7090
294	4.8	300	7090
269	5.2	300	7090
229	6.1	300	7090
204	6.9	300	7090
187	7.5	300	7090
165	8.5	300	7090
131	11	300	7090

SHS67R37			570Nm
i	n_a [1/min]	$M_{a max}$ [Nm]	F_{Ra} [N]
21362	0.07	570	8190
19594	0.07	570	8190
18120	0.08	570	8190
16682	0.08	570	8190
14383	0.10	570	8190
12774	0.11	570	8190
11013	0.13	570	8190
9694	0.14	570	8190
8529	0.16	570	8190
7455	0.19	570	8190
6531	0.21	570	8190
5759	0.24	570	8190
4965	0.28	570	8190
4410	0.32	570	8190
3880	0.36	570	8190
3432	0.41	570	8190
2944	0.48	570	8190
2630	0.53	570	8190
2279	0.61	570	8190
2014	0.70	570	8190
1772	0.79	570	8190
1559	0.90	570	8190
1363	1.0	570	8190
1194	1.2	570	8190
1045	1.3	570	8190
914	1.5	570	8190
809	1.7	570	8190
712	2.0	570	8190
615	2.3	570	8190
543	2.6	570	8190
469	3.0	570	8190
424	3.3	570	8190
365	3.8	570	8190
319	4.4	570	8190
281	5.0	570	8190
246	5.7	570	8190
221	6.3	570	8190
198	7.1	570	8190
168	8.3	570	8190
156	9.0	570	8190

SHS77R37			1270Nm
i	n_a [1/min]	$M_{a max}$ [Nm]	F_{Ra} [N]
25493	0.05	1270	11700
21787	0.06	1270	11700
19907	0.07	1270	11700
17013	0.08	1270	11700
14668	0.10	1270	11700
13110	0.11	1270	11700
11569	0.12	1270	11700
9887	0.14	1270	11700
8817	0.16	1270	11700
7735	0.18	1270	11700
6735	0.21	1270	11700
5943	0.24	1270	11700
5214	0.27	1270	11700
4618	0.30	1270	11700
3992	0.35	1270	11700
3540	0.40	1270	11700
3098	0.45	1270	11700
2753	0.51	1240	12000
2374	0.59	1240	12000
2083	0.67	1240	12000
1813	0.77	1240	12000
1745	0.80	1240	12000
1600	0.88	1240	12000
1404	1.0	1240	12000
1245	1.1	1240	12000
1100	1.3	1240	12000
954	1.5	1240	12000
837	1.7	1240	12000
714	2.0	1240	12000
637	2.2	1240	12000
574	2.4	1240	12000
499	2.8	1240	12000
438	3.2	1240	12000
389	3.6	1240	12000
327	4.3	1240	12000
289	4.8	1240	12000
250	5.6	1240	12000
219	6.4	1240	12000

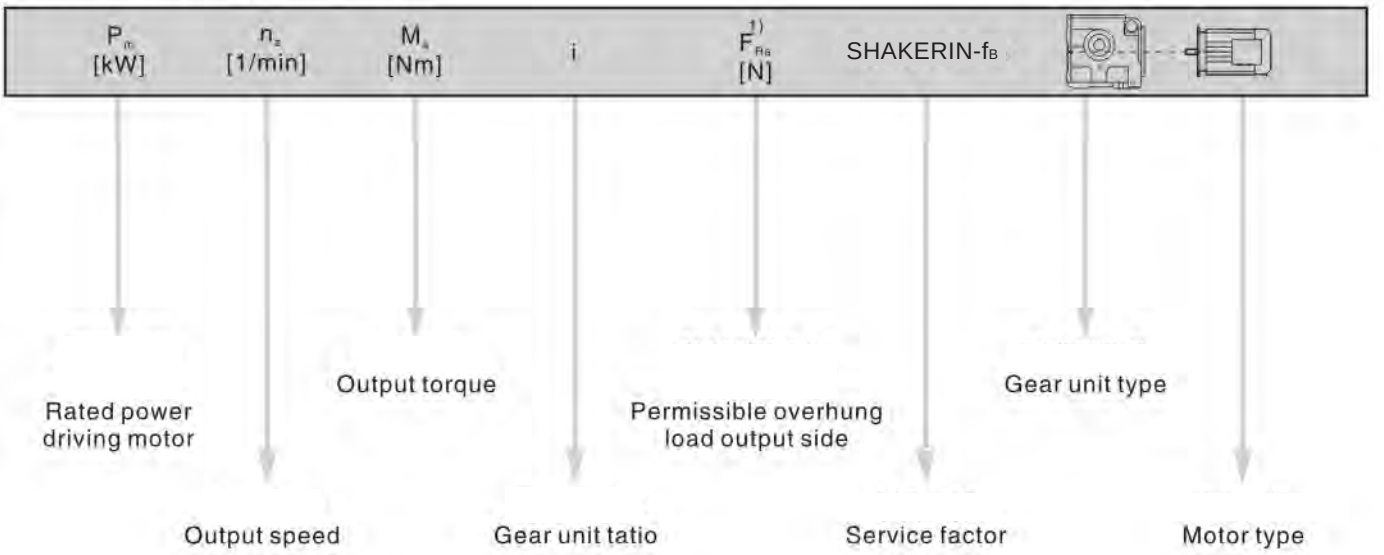
SHS87/97R57 n_e=1400 1/min

SHS87R57			2500Nm
i	n_a [1/min]	M_{amax} [Nm]	F_{Ra} [N]
25987	0.05	2500	27500
23940	0.06	2500	27500
20568	0.07	2500	27500
18265	0.08	2500	27500
16774	0.08	2500	27500
14820	0.09	2500	27500
13160	0.11	2500	27500
11200	0.12	2500	27500
9904	0.14	2500	27500
8549	0.16	2500	27500
7643	0.18	2500	27500
6706	0.21	2500	27500
5875	0.24	2500	27500
5187	0.27	2500	27500
4606	0.30	2500	27500
3872	0.36	2500	27500
3475	0.40	2500	27500
2905	0.48	2500	27500
2586	0.54	2500	27500
2335	0.60	2500	27500
2054	0.68	2500	27500
1824	0.77	2500	27500
1631	0.86	2500	27500
1332	1.1	2500	27500
1191	1.2	2500	27500
1032	1.4	2500	27500
930	1.5	2500	27500
831	1.7	2500	27500
719	1.9	2500	27500
624	2.2	2500	27500
558	2.5	2500	27500
485	2.9	2500	27500
435	3.2	2450	27600
378	3.7	2450	27600
323	4.3	2400	27700
281	5.0	2400	27700
255	5.5	1980	28400
222	6.3	1980	28400
205	6.8	1980	28400

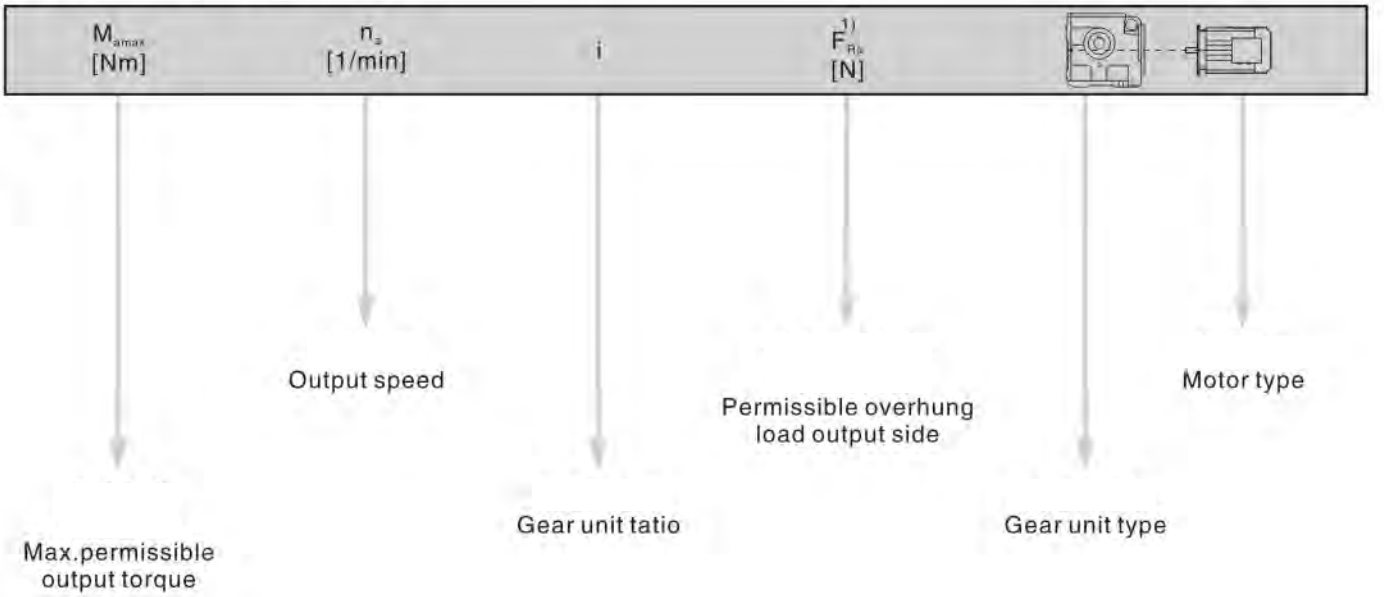
SHS97R57			4200Nm
i	n_a [1/min]	M_{amax} [Nm]	F_{Ra} [N]
33818	0.04	4200	34200
31154	0.04	4200	34200
27847	0.05	4200	34200
24641	0.06	4200	34200
21537	0.07	4200	34200
18749	0.07	4200	34200
16233	0.09	4200	34200
14576	0.10	4200	34200
12752	0.11	4200	34200
11267	0.12	4200	34200
10078	0.14	4200	34200
8608	0.16	4200	34200
7554	0.19	4200	34200
6640	0.21	4200	30600
5780	0.24	4200	30600
4937	0.28	4200	30600
4444	0.32	4200	30600
4017	0.35	4200	30600
3453	0.41	4200	30600
3108	0.45	4200	30600
2654	0.53	4200	30600
2329	0.60	4200	30600
2081	0.67	4200	30600
1860	0.75	4200	30600
1574	0.89	4200	30600
1394	1.0	4200	30600
1223	1.1	4200	30600
1070	1.3	4200	30600
928	1.5	4200	30600
824	1.7	4200	30600
714	2.0	4200	34400
626	2.2	4200	30600
538	2.6	4200	30600
484	2.9	4200	30700
420	3.3	4200	30700
376	3.7	4200	30800
327	4.3	4200	30800
287	4.9	4200	30900
252	5.6	4200	31000
219	6.4	4200	31000
205	6.8	4200	31000

8.4 Selection table

Selection table for geared motors



For particularly low output speeds



Cuttine

※EEXE motor is optional.

1) Overhung load specified for foot –mounted gear unit with solid shaft

Notice:

In drives for particularly low output speeds (multi–stage geared motor), the motor power must belimited according to maximum permitted output torque of the gear unit.

Output speed n_a [1/min]	Output torque M_a [N·m]	Ratio i	Permitted overhung load F_{Ra} [N]	Service factor f_B	Model
0.12kW					
0.12	4610	11267	28700	0.90	SHS 97 R57 D63S4
0.14	4210	10078	32800	1.00	SHSF 97 R57 D63S4
0.16	3500	8608	34200	1.20	SHSA 97 R57 D63S4
0.18	3090	7554	34800	1.35	SHSAF 97 R57 D63S4
0.18	3120	7643	14400	0.80	
0.21	2630	6706	27200	0.95	SHS 87 R57 D63S4
0.23	2330	5875	27800	1.05	SHSF 87 R57 D63S4
0.27	1960	5187	28500	1.25	SHSA 87 R57 D63S4
0.30	1740	4606	28800	1.45	SHSAF 87 R57 D63S4
0.36	1450	3872	29200	1.70	
0.39	1340	3540	9700	0.95	
0.45	1170	3098	12500	1.10	
0.58	1280	2374	11600	0.95	SHS 77 R37 D63S4
0.66	1130	2083	12900	1.10	SHSF 77 R37 D63S4
0.76	960	1813	14100	1.30	SHSA 77 R37 D63S4
0.79	910	1745	14300	1.35	SHSAF 77 R37 D63S4
0.86	840	1600	14700	1.50	
0.98	735	1404	15200	1.70	
1.1	645	1245	15600	1.90	
1.0	665	1363	4800	0.85	SHS 67 R37 D63S4
1.2	575	1194	8160	1.00	SHSF 67 R37 D63S4
1.3	515	1045	8720	1.10	SHSA 67 R37 D63S4
1.5	445	914	9280	1.30	SHSAF 67 R37 D63S4
1.7	400	809	9580	1.40	
1.9	355	712	9860	1.60	
2.2	295	615	10100	1.95	SHS 67 R37 D63S4
2.5	265	543	10300	2.2	SHSF 67 R37 D63S4
2.9	220	469	10400	2.6	SHSA 67 R37 D63S4
3.3	197	424	10500	2.9	SHSAF 67 R37 D63S4
3.8	180	365	10500	3.2	
2.1	315	655	6930	0.95	
2.4	275	574	7290	1.10	
2.7	240	506	7540	1.25	SHS 57 R17 D63S4
3.2	210	438	7750	1.45	SHSF 57 R17 D63S4
3.6	183	388	7880	1.65	SHSA 57 R17 D63S4
4.1	163	336	7980	1.85	SHSAF 57 R17 D63S4
4.7	140	294	8070	2.1	
5.1	134	269	8090	2.2	
3.2	210	438	5060	0.90	
3.6	183	388	5210	1.00	
4.1	162	336	5320	1.15	SHS 47 R17 D63S4
4.7	139	294	5450	1.35	SHSF 47 R17 D63S4
5.4	95	257	5680	1.95	SHSA 47 R17 D63S4
6.0	113	229	5570	1.65	SHSAF 47 R17 D63S4
6.9	99	200	5630	1.90	
7.4	92	187	5660	2.0	
6.8	99	202	3000	0.95	
7.7	88	179	3000	1.05	SHS 37 R17 D63S4
8.7	78	158	3000	1.15	SHSF 37 R17 D63S4
9.6	72	144	3000	1.25	SHSA 37 R17 D63S4
12	59	118	3000	1.55	SHSAF 37 R17 D63S4
13	55	110	3000	1.65	
4.5	143	201.00	8050	2.1	SHS 57 D63M6
4.9	133	184.80	8090	2.2	SHSF 57 D63M6
5.7	116	158.12	8150	2.5	SHSA 57 D63M6
6.6	103	137.05	8180	2.9	SHSAF 57 D63M6
4.5	138	201.00	5490	1.30	
4.9	129	184.80	5540	1.40	SHS 47 D63M6
5.7	112	158.12	5610	1.55	SHSF 47 D63M6
6.6	99	137.05	5660	1.75	SHSA 47 D63M6
7.0	93	128.10	5680	1.85	SHSAF 47 D63M6

Output speed n_a [1/min]	Output torque M_a [N·m]	Ratio i	Permitted overhung load F_{Ra} [N]	Service factor f_B	Model
0.12kW					
6.9	95	201.00	5680	1.80	
7.5	89	184.80	5700	1.90	SHS 47 D63S4
8.7	77	158.12	5740	2.2	SHSF 47 D63S4
10	68	137.05	5780	2.5	SHSA 47 D63S4
11	64	128.10	5790	2.6	SHSAF 47 D63S4
12	57	110.73	5810	3.0	
5.7	107	157.43	3000	0.85	
6.2	99	144.40	3000	0.95	SHS 37 D63M6
7.3	86	122.94	3000	1.05	SHSF 37 D63M6
8.5	76	106.00	3000	1.20	SHSA 37 D63M6
9.1	71	98.80	3000	1.30	SHSAF 37 D63M6
10	64	86.36	3000	1.45	
8.8	74	157.43	3000	1.25	
9.6	68	144.40	3000	1.35	SHS 37 D63S4
11	60	122.94	3000	1.55	SHSF 37 D63S4
13	52	106.00	3000	1.70	SHSA 37 D63S4
14	49	98.80	3000	1.75	SHSAF 37 D63S4
16	44	86.36	3000	1.95	
17	41	80.96	3000	2.1	
19	37	71.44	3000	2.3	
22	33	63.33	3000	2.5	
25	35	55.93	3000	2.3	
27	33	51.30	3000	2.5	
32	28	43.68	3000	2.9	
37	25	37.66	3000	3.2	SHS 37 D63S4
39	23	35.10	3000	3.4	SHSF 37 D63S4
45	20	30.68	3000	3.7	SHSA 37 D63S4
48	19	28.76	3000	3.9	SHSAF 37 D63S4
54	17	25.38	3000	4.3	
61	15	22.50	3000	4.8	
69	14	19.89	3000	3.6	
76	13	18.24	3000	3.9	
89	11	15.53	2870	4.4	
0.18kW					
0.29	2970	4606	20900	0.85	SHS 87 R57 D63M4
0.34	2480	3872	27500	1.00	SHSF 87 R57 D63M4
					SHSA 87 R57 D63M4
					SHSAF 87 R57 D63M4
0.38	2350	3475	27800	1.05	
0.45	1970	2905	28500	1.25	SHS 87 R57 D63M4
0.51	1710	2586	28900	1.45	SHSF 87 R57 D63M4
0.57	1520	2335	29100	1.65	SHSA 87 R57 D63M4
0.64	1320	2054	29400	1.90	SHSAF 87 R57 D63M4
0.72	1170	1824	29500	2.1	
0.81	1050	1631	29600	2.4	
					SHS 77 R37 D63M4
0.94	1220	1404	12200	1.00	SHSF 77 R37 D63M4
1.1	1070	1245	13000	1.15	SHSA 77 R37 D63M4
					SHSAF 77 R37 D63M4
1.2	990	1100	13900	1.25	
1.4	850	954	14700	1.45	SHS 77 R37 D63M4
1.6	745	837	15200	1.65	SHSF 77 R37 D63M4
1.9	625	714	15600	2.0	SHSA 77 R37 D63M4
2.1	555	637	15900	2.2	SHSAF 77 R37 D63M4
2.3	500	574	16000	2.5	
1.6	660	809	5140	0.85	
1.9	580	712	8060	1.00	SHS 67 R37 D63M4
2.2	490	615	8920	1.15	SHSF 67 R37 D63M4
2.4	440	543	9330	1.30	SHSA 67 R37 D63M4
2.8	370	469	9780	1.55	SHSAF 67 R37 D63M4
3.1	335	424	9970	1.70	
3.6	295	365	10100	1.90	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [1] [N]	Service factor f_s	Model
0.18kW					
3.0	345	438	6630	0.85	
3.4	305	388	7040	1.00	
3.9	270	336	7350	1.10	SHS 57 R17 D63M4
4.5	235	294	7600	1.30	SHSF 57 R17 D63M4
4.9	220	269	7690	1.35	SHSA 57 R17 D63M4
5.8	188	229	7860	1.60	SHSAF 57 R17 D63M4
6.5	169	204	7950	1.80	
7.1	154	187	8010	1.95	
4.5	230	294	4910	0.80	
5.1	158	257	5400	1.15	
5.8	185	229	5200	1.00	SHS 47 R17 D63M4
6.6	162	200	5330	1.15	SHSF 47 R17 D63M4
7.1	152	187	5380	1.20	SHSA 47 R17 D63M4
8.0	134	165	5470	1.40	SHSAF 47 R17 D63M4
8.9	121	148	5530	1.55	
10	108	131	5590	1.70	
4.0	255	217.41	10300	2.2	SHS 67 D63L6
4.6	225	190.11	10400	2.5	SHSF 67 D63L6
4.8	215	180.60	10400	2.6	SHSA 67 D63L6
					SHSAF 67 D63L6
4.3	220	201.00	7670	1.35	SHS 57 D63L6
4.7	205	184.80	7760	1.45	SHSF 57 D63L6
5.5	180	158.12	7900	1.65	SHSA 57 D63L6
6.3	159	137.05	7990	1.85	SHSAF 57 D63L6
6.6	154	201.00	8010	1.90	SHS 57 D63M4
7.1	143	184.80	8050	2.1	SHSF 57 D63M4
8.4	125	158.12	8120	2.4	SHSA 57 D63M4
9.6	110	137.05	8160	2.7	SHSAF 57 D63M4
4.3	215	201.00	5090	0.85	SHS 47 D63L6
4.7	199	184.80	5180	0.90	SHSF 47 D63L6
5.5	173	158.12	5320	1.00	SHSA 47 D63L6
6.3	153	137.05	5420	1.10	SHSAF 47 D63L6
6.8	144	128.10	5470	1.20	
6.6	149	201.00	5440	1.15	
7.1	138	184.80	5490	1.25	
8.4	121	158.12	5570	1.40	
9.6	107	137.05	5630	1.60	SHS 47 D63M4
10	100	128.10	5660	1.65	SHSF 47 D63M4
12	88	110.73	5700	1.90	SHSA 47 D63M4
14	77	94.08	5750	2.2	SHSAF 47 D63M4
16	69	84.00	5770	2.4	
18	60	71.75	5800	2.8	
19	69	69.39	5750	2.2	
8.4	115	157.43	3000	0.80	
9.1	107	144.40	3000	0.85	
11	93	122.94	3000	1.00	SHS 37 D63M4
12	82	106.00	3000	1.10	SHSF 37 D63M4
13	77	98.80	3000	1.15	SHSA 37 D63M4
15	68	86.36	3000	1.25	SHSAF 37 D63M4
16	64	80.96	3000	1.30	
18	58	71.44	3000	1.45	
21	52	63.33	3000	1.60	
24	55	55.93	3000	1.45	
26	51	51.30	3000	1.60	
30	44	43.68	3000	1.85	
35	38	37.66	3000	2.1	
38	36	35.10	3000	2.2	
43	32	30.68	3000	2.4	SHS 37 D63M4
46	30	28.76	3000	2.5	SHSF 37 D63M4
52	27	25.38	3000	2.8	SHSA 37 D63M4
59	24	22.50	3000	3.1	SHSAF 37 D63M4
66	22	19.89	3000	2.3	
72	21	18.24	2940	2.5	
85	18	15.53	2810	2.8	
99	15	13.39	2700	3.2	
106	14	12.48	2650	3.4	
121	13	10.91	2550	3.8	
129	12	10.23	2500	4.0	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [1] [N]	Service factor f_s	Model
0.25kW					
0.45	2860	2905	24300	0.85	
0.50	2500	2586	27500	1.00	
0.56	2240	2335	28000	1.10	SHS 87 R57 D63L4
0.63	1950	2054	28500	1.30	SHSF 87 R57 D63L4
0.71	1730	1824	28900	1.45	SHSA 87 R57 D63L4
0.80	1550	1631	29100	1.60	SHSAF 87 R57 D63L4
1.4	910	930	29800	2.8	
1.4	1230	954	12100	1.00	
1.5	1080	837	13300	1.15	SHS 77 R37 D63L4
1.8	910	714	14400	1.35	SHSF 77 R37 D63L4
2.0	810	637	14900	1.55	SHSA 77 R37 D63L4
2.3	730	574	15200	1.70	SHSAF 77 R37 D63L4
2.6	625	499	15600	2.0	
2.4	635	543	7420	0.90	
2.8	540	469	8500	1.05	SHS 67 R37 D63L4
3.1	485	424	8970	1.15	SHSF 67 R37 D63L4
3.6	430	365	9390	1.30	SHSA 67 R37 D63L4
4.1	375	319	9750	1.50	SHSAF 67 R37 D63L4
4.6	330	281	9990	1.75	
4.4	340	294	6720	0.90	
4.8	315	269	6950	0.95	
5.7	270	229	7330	1.10	SHS 57 R17 D63L4
6.4	245	204	7530	1.25	SHSF 57 R17 D63L4
6.9	225	187	7660	1.35	SHSA 57 R17 D63L4
7.9	198	165	7810	1.50	SHSAF 57 R17 D63L4
9.9	159	131	7990	1.90	
3.1	435	217.41	9350	1.30	SHS 67 D80N8*
3.6	390	190.11	9670	1.45	SHSF 67 D80N8*
3.8	370	180.60	9770	1.50	SHSA 67 D80N8*
4.3	330	158.45	9980	1.70	SHSAF 67 D80N8*
4.1	350	217.41	9890	1.60	SHS 67 D71D6
4.6	310	190.11	10100	1.80	SHSF 67 D71D6
4.9	295	180.60	10100	1.90	SHSA 67 D71D6
5.6	265	158.45	10300	2.1	SHSAF 67 D71D6
6.0	245	217.41	10300	2.1	
6.8	220	190.11	10400	2.4	
7.2	210	180.60	10500	2.5	SHS 67 D63L4
8.2	187	158.45	10500	2.8	SHSF 67 D63L4
9.7	161	134.40	10600	3.2	SHSA 67 D63L4
11	147	121.33	10600	3.5	SHSAF 67 D63L4
12	131	106.75	10700	4.0	
4.4	305	201.00	7050	1.00	
4.8	285	184.80	7230	1.05	SHS 57 D71D6
5.6	245	158.12	7510	1.20	SHSF 57 D71D6
6.4	220	137.05	7690	1.35	SHSA 57 D71D6
6.9	205	128.10	7760	1.45	SHSAF 57 D71D6
6.5	215	201.00	7700	1.35	
7.0	200	184.80	7790	1.45	
8.2	176	158.12	7920	1.70	SHS 57 D63L4
9.5	155	137.05	8010	1.90	SHSF 57 D63L4
10	146	128.10	8040	2.0	SHSA 57 D63L4
12	129	110.73	8110	2.3	SHSAF 57 D63L4
14	111	94.08	8160	2.7	
15	101	84.00	8190	2.9	

Output speed n_2 [1/min]	Output torque M_2 [N · m]	Ratio i	Permitted overhung load F_{R2} [N]	Service factor f_B	Model
0.25kW					
6.5	210	201.00	5120	0.80	
7.0	195	184.80	5210	0.85	
8.2	170	158.12	5340	1.00	
9.5	150	137.05	5440	1.10	
10	141	128.10	5480	1.20	
12	124	110.73	5560	1.35	SHS 47 D63L4
14	108	94.08	5630	1.55	SHSF 47 D63L4
15	98	84.00	5670	1.70	SHSA 47 D63L4
18	85	71.75	5720	1.95	SHSAF 47 D63L4
19	97	69.39	5640	1.60	
19	80	67.20	5740	2.1	
20	90	63.80	5670	1.70	
24	78	54.59	5720	2.0	
27	68	47.32	5760	2.3	
13	108	98.80	3000	0.80	
15	96	86.36	3000	0.90	
16	91	80.96	3000	0.95	
18	81	71.44	3000	1.05	
21	73	63.33	3000	1.10	
23	78	55.93	3000	1.05	
25	72	51.30	3000	1.15	
30	62	43.68	3000	1.30	
35	54	37.66	3000	1.45	SHS 37 D63L4
37	51	35.10	3000	1.55	SHSF 37 D63L4
42	45	30.68	3000	1.70	SHSA 37 D63L4
45	42	28.76	3000	1.80	SHSAF 37 D63L4
51	37	25.38	3000	2.0	
58	33	22.50	3000	2.2	
65	32	19.89	2870	1.65	
71	29	18.24	2820	1.80	
84	25	15.53	2710	2.0	
97	22	13.39	2620	2.3	
104	20	12.48	2570	2.4	
119	18	10.91	2480	2.7	
127	17	10.23	2440	2.8	
144	15	9.02	2360	3.1	
163	13	8.00	2290	3.4	
191	11	6.80	2180	3.8	
92	21	28.76	2740	3.0	
105	19	25.38	2650	3.3	
118	17	22.50	2560	3.4	SHS 37 D63M2
134	16	19.89	2410	2.8	SHSF 37 D63M2
146	15	18.24	2350	3.0	SHSA 37 D63M2
171	13	15.53	2250	3.4	SHSAF 37 D63M2
199	11	13.39	2160	3.8	
213	10	12.48	2120	4.0	
0.37kW					
0.67	2810	2054	25400	0.90	SHS 87 R57 D71D4
0.76	2490	1824	27500	1.00	SHSF 87 R57 D71D4
0.85	2230	1631	28000	1.10	SHSA 87 R57 D71D4
1.5	1320	930	29400	1.90	SHSAF 87 R57 D71D4
1.7	1190	831	29500	2.1	
1.9	1290	714	11500	0.95	
2.2	1150	637	12700	1.10	SHS 77 R37 D71D4
2.4	1040	574	13600	1.20	SHSF 77 R37 D71D4
2.8	900	499	14400	1.40	SHSA 77 R37 D71D4
3.2	785	438	15000	1.60	SHSAF 77 R37 D71D4
3.5	700	389	15400	1.80	
3.8	615	365	7700	0.95	SHS 67 R37 D71D4
4.3	535	319	8540	1.05	SHSF 67 R37 D71D4
4.9	470	281	9080	1.20	SHSA 67 R37 D71D4
5.6	425	246	9430	1.35	SHSAF 67 R37 D71D4
2.4	980	288.00	29700	2.5	SHS 87 D90S8
2.6	890	258.18	29800	2.8	SHSF 87 D90S8
3.1	775	222.40	29900	3.2	SHSA 87 D90S8
					SHSAF 87 D90S8

Output speed n_2 [1/min]	Output torque M_2 [N · m]	Ratio i	Permitted overhung load F_{R2} [N]	Service factor f_B	Model
0.37kW					
3.0	735	225.26	15200	1.75	SHS 77 D90S8
3.2	700	214.00	15300	1.80	SHSF 77 D90S8
3.6	630	189.09	15600	2.0	SHSA 77 D90S8
4.2	545	161.60	15900	2.3	SHSAF 77 D90S8
3.5	645	256.47	15600	2.0	SHS 77 D80K6
4.0	575	225.26	15800	2.2	SHSF 77 D80K6
4.2	545	214.00	15900	2.3	SHSA 77 D80K6
					SHSAF 77 D80K6
4.1	505	217.41	8810	1.10	SHS 67 D80K6
4.7	450	190.11	9260	1.25	SHSF 67 D80K6
5.0	430	180.60	9400	1.30	SHSA 67 D80K6
5.7	380	158.45	9700	1.45	SHSAF 67 D80K6
6.3	345	217.41	9900	1.50	
7.3	310	190.11	10100	1.70	SHS 67 D71D4
7.6	295	180.60	10200	1.75	SHSF 67 D71D4
8.7	260	158.45	10300	2.0	SHSA 67 D71D4
10	225	134.40	10400	2.3	SHSAF 67 D71D4
11	205	121.33	10500	2.5	
5.7	360	158.12	6490	0.80	
6.6	315	137.05	6930	0.95	SHS 57 D80K6
7.0	300	128.10	7100	1.00	SHSF 57 D80K6
8.1	265	110.73	7390	1.10	SHSA 57 D80K6
9.6	230	94.08	7630	1.30	SHSAF 57 D80K6
11	205	84.00	7760	1.45	
6.9	305	201.00	7050	0.95	
7.5	285	184.80	7230	1.05	
8.7	245	158.12	7510	1.20	
10	220	137.05	7690	1.35	
11	205	128.10	7770	1.45	SHS 57 D71D4
12	180	110.73	7900	1.65	SHSF 57 D71D4
15	156	94.08	8000	1.90	SHSA 57 D71D4
16	141	84.00	8060	2.1	SHSAF 57 D71D4
19	122	71.75	8130	2.4	
20	139	69.39	8070	1.75	
21	115	67.20	8150	2.5	
22	128	63.80	8110	1.90	
10	210	137.05	5110	0.80	
11	199	128.10	5190	0.85	
12	175	110.73	5320	0.95	
15	151	94.08	5430	1.10	
16	137	84.00	5500	1.20	
19	119	71.75	5580	1.40	
20	136	69.39	5460	1.15	
21	112	67.20	5610	1.50	SHS 47 D71D4
22	126	63.80	5510	1.25	SHSF 47 D71D4
25	109	54.59	5590	1.40	SHSA 47 D71D4
29	96	47.32	5410	1.60	SHSAF 47 D71D4
31	90	44.22	5330	1.75	
36	78	38.23	5140	2.0	
42	67	32.48	4930	2.3	
48	60	29.00	4790	2.6	
56	52	24.77	4590	3.0	
59	49	23.20	4510	3.1	
68	46	20.33	4180	2.4	
78	40	17.62	4030	2.8	
84	37	16.47	3960	3.0	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [1] [N]	Service factor f_s	Model
0.37kW					
22	103	63.33	3000	0.80	
27	101	51.30	3000	0.80	
32	87	43.68	3000	0.95	
37	76	37.66	3000	1.05	
39	71	35.10	3000	1.10	
45	63	30.68	3000	1.20	
48	59	28.76	3000	1.30	SHS 37 D71D4
54	52	25.38	2940	1.40	SHSF 37 D71D4
61	47	22.50	2870	1.55	SHSA 37 D71D4
69	44	19.89	2610	1.20	SHSAF 37 D71D4
76	41	18.24	2570	1.30	
89	35	15.53	2500	1.45	
103	30	13.39	2420	1.60	
111	28	12.48	2390	1.70	
127	25	10.91	2320	1.95	
135	23	10.23	2280	2.0	
153	21	9.02	2220	2.2	
173	18	8.00	2150	2.5	
203	16	6.80	2070	2.7	
104	28	25.38	2540	2.2	
118	25	22.50	2460	2.3	
133	24	19.89	2290	1.85	
145	22	18.24	2250	2.0	SHS 37 D63L2
171	19	15.53	2160	2.3	SHSF 37 D63L2
198	16	13.39	2080	2.5	SHSA 37 D63L2
212	15	12.48	2040	2.7	SHSAF 37 D63L2
243	13	10.91	1970	3.0	
259	12	10.23	1940	3.1	
294	11	9.02	1870	3.3	
0.55kW					
1.0	2810	1332	25400	0.90	
1.1	2540	1191	27400	1.00	
1.3	2210	1032	28100	1.15	SHS 87 R57 D80K4
1.5	2040	930	28400	1.25	SHSF 87 R57 D80K4
1.6	1840	831	28700	1.35	SHSA 87 R57 D80K4
1.9	1600	719	29000	1.55	SHSAF 87 R57 D80K4
2.2	1400	624	29300	1.80	
2.4	1270	558	29400	1.95	
3.1	1010	435	29700	2.4	
2.7	1380	499	6920	0.90	
3.1	1210	438	12300	1.05	SHS 77 R37 D80K4
3.5	1070	389	13300	1.15	SHSF 77 R37 D80K4
4.2	910	327	14300	1.35	SHSA 77 R37 D80K4
4.7	820	289	14800	1.50	SHSAF 77 R37 D80K4
5.4	710	250	15300	1.75	
5.5	650	246	6600	0.90	SHS 67 R37 D80K4
6.2	580	221	8080	1.00	SHSF 67 R37 D80K4
6.9	530	198	8590	1.10	SHSA 67 R37 D80K4
8.1	455	168	9230	1.25	SHSAF 67 R37 D80K4
2.4	1450	288.00	29200	1.70	SHS 87 D90L8
2.6	1320	258.18	29400	1.85	SHSF 87 D90L8
3.1	1150	222.40	29600	2.1	SHSA 87 D90L8
					SHSAF 87 D90L8
3.1	1130	288.00	29600	2.2	SHS 87 D80N6
3.5	1020	258.18	29700	2.4	SHSF 87 D80N6
4.1	900	222.40	29800	2.7	SHSA 87 D80N6
4.4	820	202.96	29800	2.9	SHSAF 87 D80N6
3.0	1090	225.26	13200	1.15	SHS 77 D90L8
3.2	1040	214.00	13500	1.20	SHSF 77 D90L8
3.6	930	189.09	14200	1.35	SHSA 77 D90L8
4.2	810	161.60	14900	1.55	SHSAF 77 D90L8
3.5	960	256.47	14100	1.35	SHS 77 D80N6
4.0	850	225.26	14700	1.50	SHSF 77 D80N6
4.2	810	214.00	14800	1.55	SHSA 77 D80N6
4.8	730	189.09	15200	1.75	SHSAF 77 D80N6
5.6	635	161.60	15600	2.0	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [1] [N]	Service factor f_s	Model
0.55kW					
5.3	660	256.47	15500	1.90	SHS 77 D80K4
6.0	590	225.26	15800	2.2	SHSF 77 D80K4
6.4	560	214.00	15800	2.3	SHSA 77 D80K4
7.2	505	189.09	16000	2.5	SHSAF 77 D80K4
6.3	520	217.41	8660	1.00	
7.2	465	190.11	9150	1.10	
7.5	445	180.60	9300	1.15	
8.6	395	158.45	9620	1.30	SHS 67 D80K4
10	340	134.40	9930	1.55	SHSF 67 D80K4
11	310	121.33	10100	1.65	SHSA 67 D80K4
13	275	106.75	10200	1.85	SHSAF 67 D80K4
13	265	100.80	10300	1.95	
16	230	85.83	10400	2.3	
18	230	75.06	10400	2.1	
21	205	65.63	10500	2.3	
9.6	340	94.08	6710	0.85	
11	305	84.00	7030	0.95	
13	265	71.75	7360	1.10	SHS 57 D80N6
13	250	67.20	7470	1.15	SHSF 57 D80N6
16	245	54.59	7520	1.10	SHSA 57 D80N6
19	215	47.32	7710	1.25	SHSAF 57 D80N6
20	200	44.22	7790	1.35	
24	176	38.23	7920	1.55	
8.6	370	158.12	6330	0.80	
9.9	330	137.05	6820	0.90	
11	310	128.10	7010	0.95	
12	270	110.73	7320	1.10	
14	235	94.08	7590	1.25	
16	210	84.00	7730	1.40	
19	184	71.75	7880	1.55	SHS 57 D80K4
20	174	67.20	7930	1.65	SHSF 57 D80K4
25	167	54.59	7960	1.45	SHSA 57 D80K4
29	146	47.32	8040	1.70	SHSAF 57 D80K4
31	137	44.22	8080	1.80	
36	120	38.23	8130	2.0	
42	103	32.48	7970	2.4	
47	92	29.00	7730	2.7	
55	79	24.77	7390	3.1	
59	75	23.20	7250	3.3	
67	69	20.33	6760	2.4	
16	205	84.00	5140	0.80	
19	179	71.75	5290	0.95	
20	169	67.20	5350	1.00	
25	165	54.59	5130	0.95	
29	144	47.32	5010	1.10	
31	135	44.22	4950	1.15	
36	118	38.23	4810	1.30	
42	101	32.48	4650	1.55	SHS 47 D80K4
47	91	29.00	4540	1.70	SHSF 47 D80K4
55	78	24.77	4380	2.0	SHSA 47 D80K4
59	74	23.20	4310	2.1	SHSAF 47 D80K4
67	69	20.33	3920	1.60	
77	60	17.62	3810	1.85	
83	56	16.47	3750	1.95	
96	49	14.24	3630	2.2	
112	42	12.10	3500	2.6	
126	37	10.80	3400	2.9	
147	32	9.23	3270	3.4	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_B	Model
0.55kW					
44	94	30.68	2680	0.80	
47	89	28.76	2670	0.85	
54	79	25.38	2630	0.95	
60	70	22.50	2600	1.05	
71	60	19.13	2540	1.20	SHS 37 D80K4
88	53	15.53	2230	0.95	SHSF 37 D80K4
102	46	13.39	2200	1.10	SHSA 37 D80K4
109	43	12.48	2180	1.15	SHSAF 37 D80K4
125	37	10.91	2130	1.30	
133	35	10.23	2110	1.35	
151	31	9.02	2070	1.50	
170	28	8.00	2020	1.60	
200	24	6.80	1950	1.80	
94	46	28.76	2420	1.40	
106	41	25.38	2360	1.50	
120	37	22.50	2310	1.55	
136	34	19.89	2100	1.30	
148	32	18.24	2070	1.40	SHS 37 D71D2
174	27	15.53	2010	1.55	SHSF 37 D71D2
202	24	13.39	1950	1.75	SHSA 37 D71D2
216	22	12.48	1920	1.85	SHSAF 37 D71D2
248	19	10.91	1870	2.0	
264	18	10.23	1840	2.1	
299	16	9.02	1780	2.2	
338	14	8.00	1730	2.5	
397	12	6.80	1660	2.4	
0.75kW					
1.1	4840	1223	21300	0.85	
1.3	4240	1070	30700	1.00	
1.5	3650	928	33900	1.15	SHS 97 R57 D80N4
1.7	3230	824	34600	1.30	SHSF 97 R57 D80N4
1.9	2300	714	35900	1.85	SHSA 97 R57 D80N4
2.2	2450	626	35700	1.70	SHSAF 97 R57 D80N4
2.6	2110	538	36100	2.0	
2.8	1900	484	36300	2.2	
1.3	3030	1032	18700	0.85	
1.5	2780	930	25900	0.90	
1.7	2510	831	2750	1.00	SHS 87 R57 D80N4
1.9	2190	719	28100	1.15	SHSF 87 R57 D80N4
2.2	1920	624	28600	1.30	SHSA 87 R57 D80N4
2.5	1730	558	28900	1.45	SHSAF 87 R57 D80N4
3.2	1390	435	29300	1.75	
4.3	1060	323	29600	2.3	
4.2	1240	327	12000	1.00	SHS 77 R37 D80N4
4.8	1110	289	13100	1.10	SHSF 77 R37 D80N4
5.5	960	250	14000	1.30	SHSA 77 R37 D80N4
6.3	850	219	14700	1.45	SHSAF 77 R37 D80N4
2.4	2040	286.40	36100	2.1	SHS 97 D100M8
2.6	1890	262.22	36300	2.2	SHSF 97 D100M8
3.0	1690	231.67	36400	2.5	SHSA 97 D100M8
					SHSAF 97 D100M8
3.1	1540	288.00	29100	1.60	SHS 87 D90S6
3.5	1400	258.18	29300	1.75	SHSF 87 D90S6
4.1	1220	222.40	29500	1.95	SHSA 87 D90S6
4.4	1120	202.96	29600	2.1	SHSAF 87 D90S6
4.8	1050	288.00	29600	2.2	SHS 87 D80N4
5.3	950	258.18	29700	2.4	SHSF 87 D80N4
6.2	830	222.40	29800	2.8	SHSA 87 D80N4
6.8	765	202.96	29900	3.0	SHSAF 87 D80N4
4.0	1160	225.26	12700	1.10	SHS 77 D90S6
4.2	1110	214.00	13100	1.15	SHSF 77 D90S6
4.8	990	189.09	13900	1.30	SHSA 77 D90S6
5.6	860	161.60	14600	1.45	SHSAF 77 D90S6

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_B	Model
0.75kW					
5.4	890	256.47	14500	1.45	
6.1	790	225.26	14900	1.60	
6.4	755	214.00	15100	1.70	SHS 77 D80N4
7.3	675	189.09	15400	1.90	SHSF 77 D80N4
8.5	585	161.60	15800	2.2	SHSA 77 D80N4
9.3	545	148.15	15900	2.3	SHSAF 77 D80N4
11	480	130.00	16000	2.5	
11	460	123.20	16000	2.6	
13	405	107.83	16000	2.9	
7.3	625	190.11	7570	0.85	
7.6	595	180.60	7900	0.85	
8.7	530	158.45	8570	1.00	
10	460	134.40	9180	1.15	
11	420	121.33	9470	1.25	SHS 67 D80N4
13	375	106.75	9750	1.40	SHSF 67 D80N4
14	355	100.80	9860	1.45	SHSA 67 D80N4
16	305	85.83	10100	1.70	SHSAF 67 D80N4
18	310	75.06	10100	1.55	
21	275	65.63	10200	1.75	
22	260	62.35	10300	1.85	
25	230	54.70	10300	2.1	
30	198	46.40	9840	2.4	
13	365	71.75	6430	0.80	SHS 57 D90S6
13	345	67.20	6660	0.85	SHSF 57 D90S6
16	295	56.61	7140	1.00	SHSA 57 D90S6
19	295	47.32	7150	0.90	SHSAF 57 D90S6
20	275	44.22	7300	1.00	
12	365	110.73	6400	0.80	
15	315	94.08	6930	0.95	
16	285	84.00	7210	1.05	
19	250	71.75	7500	1.15	
21	235	67.20	7590	1.20	
25	225	54.59	7650	1.10	
29	197	47.32	7810	1.25	SHS 57 D80N4
31	185	44.22	7870	1.35	SHSF 57 D80N4
36	161	38.23	7980	1.50	SHSA 57 D80N4
42	138	32.48	7670	1.80	SHSAF 57 D80N4
48	124	29.00	7450	2.0	
56	107	24.77	7150	2.3	
59	100	23.20	7030	2.5	
68	93	20.33	6490	1.80	
78	81	17.62	6260	2.1	
84	76	16.47	6160	2.2	
97	66	14.24	5930	2.6	
29	194	47.32	4530	0.80	SHS 47 D80N4
31	182	44.22	4500	0.85	SHSF 47 D80N4
36	159	38.23	4420	1.00	SHSA 47 D80N4
42	136	32.48	4310	1.15	SHSAF 47 D80N4
48	122	29.00	4230	1.25	
56	106	24.77	4110	1.45	
59	99	23.20	4060	1.55	
68	93	20.33	3610	1.20	
78	81	17.62	3530	1.35	SHS 47 D80N4
84	76	16.47	3490	1.45	SHSF 47 D80N4
97	66	14.24	3410	1.65	SHSA 47 D80N4
114	56	12.10	3300	1.95	SHSAF 47 D80N4
128	50	10.80	3230	2.2	
150	43	9.23	3120	2.5	
160	41	8.64	3070	2.7	
190	34	7.28	2950	3.0	
72	81	19.13	2270	0.85	
111	57	12.48	1930	0.85	SHS 37 D80N4
127	50	10.91	1920	0.95	SHSF 37 D80N4
135	47	10.23	1910	1.00	SHSA 37 D80N4
153	42	9.02	1890	1.10	SHSAF 37 D80N4
173	37	8.00	1860	1.20	
203	32	6.80	1820	1.35	

Output speed n_2 [1/min]	Output torque M_2 [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_B	Model
0.75kW					
141	43	19.13	2090	1.05	SHS 37 D80K2
174	37	15.53	1860	1.15	SHSF 37 D80K2
202	32	13.39	1820	1.30	SHSA 37 D80K2
216	30	12.48	1800	1.35	SHSAF 37 D80K2
248	26	10.91	1760	1.50	
264	25	10.23	1740	1.55	
299	22	9.02	1690	1.65	
338	19	8.00	1650	1.80	
397	17	6.80	1590	1.75	
1.1kW					
1.7	4720	824	23300	0.90	
2.0	3370	714	34400	1.25	SHS 97 R57 D90S4
2.2	3590	626	34000	1.15	SHSF 97 R57 D90S4
2.6	3090	538	34800	1.35	SHSA 97 R57 D90S4
2.9	2790	484	35200	1.50	SHSAF 97 R57 D90S4
3.3	2430	420	35700	1.75	
2.2	2820	624	25400	0.90	
2.5	2550	558	27400	1.00	
2.9	2240	485	28000	1.10	SHS 87 R57 D90S4
3.2	2040	435	28400	1.20	SHSF 87 R57 D90S4
3.7	1790	378	28800	1.35	SHSA 87 R57 D90S4
4.3	1560	323	29100	1.55	SHSAF 87 R57 D90S4
5.0	1370	281	29300	1.75	
5.5	1460	255	29200	1.35	
6.3	1280	222	29400	1.55	
6.8	1200	205	29500	1.65	
6.4	1240	219	12000	1.00	SHS 77 R37 D90S4 SHSF 77 R37 D90S4 SHSA 77 R37 D90S4 SHSAF 77 R37 D90S4
2.4	3030	286.40	34900	1.40	SHS 97 D100L8
2.6	2800	262.22	35200	1.50	SHSF 97 D100L8
2.9	2500	231.67	35600	1.70	SHSA 97 D100L8
3.5	2160	196.52	36000	1.95	SHSAF 97 D100L8
3.2	2310	286.40	35900	1.80	SHS 97 D90L6
3.5	2130	262.22	36000	1.95	SHSF 97 D90L6
4.0	1900	231.67	36300	2.2	SHSA 97 D90L6
					SHSAF 97 D90L6
3.2	2220	288.00	28100	1.10	SHS 87 D90L6
3.6	2010	258.18	28400	1.20	SHSF 87 D90L6
4.1	1760	222.40	28800	1.35	SHSA 87 D90L6
4.5	1620	202.96	29000	1.45	SHSAF 87 D90L6
4.9	1520	288.00	29100	1.50	
5.4	1370	258.18	29300	1.65	SHS 87 D90S4
6.3	1200	222.40	29500	1.90	SHSF 87 D90S4
6.9	1100	202.96	29600	2.0	SHSA 87 D90S4
7.8	990	180.00	29700	2.2	SHSAF 87 D90S4
9.2	840	151.30	29800	2.5	
6.2	1150	225.26	12800	1.10	
6.5	1100	214.00	13200	1.15	
7.4	980	189.09	13900	1.30	SHS 77 D90S4
8.7	850	161.60	14700	1.50	SHSF 77 D90S4
9.4	785	148.15	15000	1.60	SHSA 77 D90S4
11	695	130.00	15400	1.75	SHSAF 77 D90S4
11	665	123.20	15500	1.80	
13	585	107.83	15800	2.0	
14	535	97.14	15900	2.1	
16	470	85.22	16000	2.3	

Output speed n_2 [1/min]	Output torque M_2 [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_B	Model
1.1kW					
12	605	121.33	7790	0.85	
13	540	106.75	8490	0.95	
14	515	100.80	8740	1.00	
16	445	85.83	9300	1.15	
18	405	78.00	9550	1.30	SHS 67 D90S4
21	400	65.63	9610	1.20	SHSF 67 D90S4
22	380	62.35	9720	1.25	SHSA 67 D90S4
26	335	54.70	9560	1.45	SHSAF 67 D90S4
30	285	46.40	9240	1.65	
33	260	41.89	9040	1.85	
38	230	36.85	8780	2.1	
40	220	34.80	8660	2.2	
47	187	29.63	8330	2.6	
20	360	71.75	6480	0.80	SHS 57 D90S4
21	340	67.20	6710	0.85	SHSF 57 D90S4
25	290	56.61	7180	0.90	SHSA 57 D90S4
30	285	47.32	7220	0.85	SHSAF 57 D90S4
32	265	44.22	7360	0.90	
37	235	38.23	7410	1.05	
43	200	32.48	7170	1.25	
48	179	29.00	7000	1.35	SHS 57 D90S4
57	154	24.77	6760	1.60	SHSF 57 D90S4
60	145	23.20	6660	1.70	SHSA 57 D90S4
72	123	19.54	6390	1.75	SHSAF 57 D90S4
79	117	17.62	5870	1.45	
85	110	16.47	5780	1.55	
98	95	14.24	5610	1.75	
116	82	12.10	5400	2.1	
130	73	10.80	5260	2.3	
152	63	9.23	5050	2.7	
48	177	29.00	3720	0.90	
57	153	24.77	3670	1.00	SHS 47 D90S4
60	143	23.20	3640	1.05	SHSF 47 D90S4
72	122	19.54	3560	1.20	SHSA 47 D90S4
79	117	17.62	3070	0.95	SHSAF 47 D90S4
85	109	16.47	3060	1.00	
98	95	14.24	3030	1.15	
116	81	12.10	2980	1.35	SHS 47 D90S4
130	73	10.80	2940	1.50	SHSF 47 D90S4
152	63	9.23	2870	1.75	SHSA 47 D90S4
162	59	8.64	2840	1.85	SHSAF 47 D90S4
192	50	7.28	2750	2.1	
175	54	8.00	1570	0.85	SHS 37 D90S4
206	46	6.80	1580	0.95	SHSF 37 D90S4
					SHSA 37 D90S4
					SHSAF 37 D90S4
202	47	13.39	1590	0.85	
216	44	12.48	1580	0.90	SHS 37 D80N2
248	39	10.91	1570	1.00	SHSF 37 D80N2
264	36	10.23	1560	1.05	SHSA 37 D80N2
299	32	9.02	1540	1.10	SHSAF 37 D80N2
338	28	8.00	1510	1.25	
397	24	6.80	1470	1.20	
1.5kW					
2.0	4590	714	29100	0.90	
2.2	4890	626	19100	0.85	SHS 97 R57 D90L4
2.6	4220	538	31100	1.00	SHSF 97 R57 D90L4
2.9	3810	484	33600	1.10	SHSA 97 R57 D90L4
3.4	3310	420	34500	1.25	SHSAF 97 R57 D90L4
3.8	2990	376	35000	1.40	
4.3	2630	327	35500	1.60	
2.9	3060	485	17200	0.80	
3.2	2780	435	25900	0.90	
3.7	2450	378	27600	1.00	SHS 87 R57 D90L4
4.4	2130	323	28200	1.15	SHSF 87 R57 D90L4
5.0	1870	281	28600	1.30	SHSA 87 R57 D90L4
5.5	2000	255	28400	1.00	SHSAF 87 R57 D90L4
6.3	1750	222	28800	1.15	
6.9	1630	205	29000	1.20	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_B	Model
1.5kW					
2.4	4030	286.40	33100	1.05	SHS 97D112M8
2.7	3720	262.22	33700	1.15	SHSF 97D112M8
3.0	3330	231.67	34400	1.25	SHSA 97D112M8
3.6	2870	196.52	35200	1.45	SHSAF 97D112M8
3.2	3150	286.40	34700	1.35	SHS 97D100M6
3.5	2910	262.22	35100	1.45	SHSF 97D100M6
4.0	2600	231.67	35500	1.60	SHSA 97D100M6
4.7	2230	196.52	35900	1.90	SHSAF 97D100M6
4.9	2130	286.40	36000	1.90	SHS 97D90L4
5.4	1970	262.22	36200	2.0	SHSF 97D90L4
6.1	1760	231.67	36400	2.3	SHSA 97D90L4
7.2	1510	196.52	36600	2.7	SHSAF 97D90L4
3.6	2740	258.18	26600	0.90	SHS 87D100M6
4.1	2390	222.40	27700	1.00	SHSF 87D100M6
4.5	2200	202.96	28100	1.10	SHSA 87D100M6
5.1	1980	180.00	28500	1.20	SHSAF 87D100M6
4.9	2060	288.00	28300	1.10	
5.5	1860	258.18	28700	1.20	
6.3	1630	222.40	29000	1.40	
6.9	1500	202.96	29200	1.50	SHS 87D90L4
7.8	1340	180.00	29400	1.65	SHSF 87D90L4
9.3	1140	151.30	29600	1.90	SHSA 87D90L4
10	1060	139.05	29600	2.0	SHSAF 87D90L4
11	950	123.48	29700	2.2	
13	850	110.40	29800	2.3	
14	770	99.26	29900	2.5	
7.5	1330	189.09	10600	0.95	
8.7	1150	161.60	12700	1.10	
9.5	1060	148.15	13400	1.15	
11	940	130.00	14100	1.30	
11	900	123.20	14400	1.35	
13	795	107.83	14900	1.45	
15	725	97.14	15300	1.60	SHS 77D90L4
17	640	85.22	15400	1.70	SHSF 77D90L4
19	650	75.09	14100	1.70	SHSA 77D90L4
20	620	71.33	14000	1.80	SHSAF 77D90L4
21	510	66.67	14600	2.0	
22	550	63.03	13700	2.0	
25	440	56.92	14000	2.3	
26	470	53.87	13200	2.3	
29	435	49.38	13000	2.5	
33	385	43.33	12600	2.9	
16	600	85.83	7850	0.85	SHS 67D90L4
18	550	78.00	8390	0.95	SHSF 67D90L4
21	540	65.63	8510	0.90	SHSA 67D90L4
					SHSAF 67D90L4
23	515	62.35	8740	0.95	
26	455	54.70	8810	1.05	
30	390	46.40	8590	1.25	
34	355	41.89	8450	1.35	
38	310	36.85	8250	1.55	
41	295	34.80	8160	1.60	SHS 67D90L4
48	255	29.63	7900	1.90	SHSF 67D90L4
52	230	26.93	7740	2.1	SHSA 67D90L4
58	220	24.44	7000	1.55	SHSAF 67D90L4
61	210	23.22	6950	1.60	
69	186	20.37	6790	1.85	
82	159	17.28	6580	2.1	
90	144	15.60	6440	2.4	
103	127	13.73	6260	2.7	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_B	Model
1.5kW					
43	270	32.48	6630	0.90	
49	245	29.00	6520	1.00	
57	210	24.77	6340	1.15	
61	196	23.20	6270	1.25	
72	167	19.54	6060	1.30	SHS 57 D90L4
80	159	17.62	5430	1.05	SHSF 57 D90L4
86	149	16.47	5380	1.15	SHSA 57 D90L4
99	129	14.24	5250	1.30	SHSAF 57 D90L4
117	110	12.10	5100	1.55	
131	99	10.80	4980	1.70	
153	85	9.23	4820	2.0	
99	129	14.24	2610	0.85	SHS 47 D90L4
117	110	12.10	2620	1.00	SHSF 47 D90L4
131	99	10.80	2620	1.10	SHSA 47 D90L4
					SHSAF 47 D90L4
153	85	9.23	2590	1.30	SHS 47 D90L4
163	79	8.64	2580	1.35	SHSF 47 D90L4
194	67	7.28	2530	1.55	SHSA 47 D90L4
					SHSAF 47 D90L4
299	44	9.02	1330	0.85	SHS 37 D90S2
338	39	8.00	1350	0.90	SHSF 37 D90S2
397	33	6.80	1340	0.90	SHSA 37 D90S2
					SHSAF 37 D90S2
2.2kW					
3.4	4900	420	18800	0.85	SHS 97R57 D100M4
3.8	4410	376	28300	0.95	SHSF 97R57 D100M4
4.3	3870	327	33500	1.10	SHSA 97R57 D100M4
4.9	3420	287	34300	1.25	SHSAF 97R57 D100M4
5.6	3000	252	35000	1.40	
3.3	4530	286.40	30200	0.95	SHS 97 D112M6
3.6	4180	262.22	32800	1.00	SHSF 97 D112M6
4.1	3730	231.67	33700	1.15	SHSA 97 D112M6
4.8	3210	196.52	34600	1.30	SHSAF 97 D112M6
4.9	3130	286.40	34800	1.30	
5.4	2890	262.22	35100	1.40	
6.1	2570	231.67	35500	1.55	
7.2	2210	196.52	36000	1.80	
7.8	2050	180.95	36100	1.90	SHS 97 D100M4
8.7	1840	161.74	36300	2.1	SHSF 97 D100M4
9.7	1670	145.60	36500	2.2	SHSA 97 D100M4
11	1520	131.85	36600	2.4	SHSAF 97 D100M4
12	1360	116.92	36700	2.6	
13	1240	105.71	36800	2.8	
16	1060	89.60	36900	3.1	
5.5	2730	258.18	26800	0.85	
6.3	2380	222.40	27700	0.95	
6.9	2190	202.96	28100	1.05	
7.8	1970	180.00	28500	1.10	
9.3	1680	151.30	28900	1.30	
10	1550	139.05	29100	1.35	SHS 87 D100M4
11	1390	123.48	29300	1.50	SHSF 87 D100M4
13	1250	110.40	29500	1.60	SHSA 87 D100M4
14	1130	99.26	29600	1.75	SHSAF 87 D100M4
16	990	86.15	29700	1.90	
17	1060	81.76	29600	1.50	
18	890	77.14	29800	2.0	
20	920	70.43	29700	1.75	
22	840	64.27	29800	1.90	
25	750	57.00	29900	2.1	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [1] [N]	Service factor f_s	Model		
2.2kW							
11	1390	130.00	6140	0.85			
11	1320	123.20	11100	0.90			
13	1170	107.83	12600	1.00			
15	1060	97.14	13400	1.10			
17	940	85.22	14100	1.15			
19	840	75.20	13800	1.30			
21	745	66.67	13500	1.40			
22	810	63.03	12400	1.35	SHS	77	D100M4
25	645	56.92	13100	1.55	SHSF	77	D100M4
26	695	53.87	12100	1.60	SHSA	77	D100M4
29	635	49.38	11900	1.75	SHSAF	77	D100M4
33	560	43.33	11700	1.95			
34	535	41.07	11600	2.1			
39	470	35.94	11300	2.3			
44	425	32.38	11000	2.6			
50	375	28.41	10700	2.8			
56	330	25.07	10400	3.1			
62	310	22.89	9490	2.3			
67	285	20.99	9340	2.5			
30	570	46.40	7480	0.85			
34	515	41.89	7440	0.95			
38	460	36.85	7360	1.05			
41	435	34.80	7320	1.10			
48	370	29.63	7180	1.30			
52	340	26.93	7080	1.40	SHS	67	D100M4
60	295	23.33	6920	1.60	SHSF	67	D100M4
69	275	20.37	6060	1.25	SHSA	67	D100M4
82	235	17.28	5960	1.45	SHSAF	67	D100M4
90	210	15.60	5880	1.60			
103	186	13.73	5770	1.85			
109	176	12.96	5710	1.95			
128	151	11.03	5550	2.3			
141	137	10.03	5450	2.5			
162	119	8.69	5300	2.8			
99	190	14.24	4640	0.90			
117	162	12.10	4580	1.05	SHS	57	D100M4
131	145	10.80	4520	1.15	SHSF	57	D100M4
153	124	9.23	4420	1.35	SHSA	57	D100M4
163	117	8.64	4380	1.40	SHSAF	57	D100M4
194	99	7.28	4250	1.50			
3.0kW							
4.9	4710	287	23700	0.90	SHS	97R57	D100L4
5.6	4140	252	32400	1.00	SHSF	97R57	D100L4
6.4	3620	219	33900	1.15	SHSA	97R57	D100L4
6.8	3400	205	34300	1.25	SHSAF	97R57	D100L4
4.9	4290	286.40	32600	0.95			
5.3	3960	262.22	33300	1.00			
6.0	3530	231.67	34100	1.15			
7.1	3040	196.52	34900	1.30			
7.7	2810	180.95	35200	1.40	SHS	97	D100L4
8.7	2530	161.74	35600	1.50	SHSF	97	D100L4
9.6	2300	145.60	35900	1.65	SHSA	97	D100L4
11	2090	131.85	36100	1.75	SHSAF	97	D100L4
12	1870	116.92	36300	1.90			
13	1700	105.71	36400	2.0			
16	1450	89.60	36600	2.2			
17	1470	80.85	36600	2.2			

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [1] [N]	Service factor f_s	Model		
3.0kW							
7.8	2700	180.00	27100	0.80			
9.2	2300	151.30	27900	0.95			
10	2130	139.05	28200	1.00			
11	1900	123.48	28600	1.10			
13	1720	110.40	28900	1.15			
14	1550	99.26	29100	1.25			
16	1360	86.15	29300	1.40	SHS	87	D100L4
17	1460	81.76	29200	1.10	SHSF	87	D100L4
18	1230	77.14	29500	1.50	SHSA	87	D100L4
20	1260	70.43	29400	1.25	SHSAF	87	D100L4
22	1160	64.27	29500	1.40			
25	1030	57.00	29700	1.55			
29	870	47.91	29800	1.85			
32	800	44.03	29800	2.0			
36	715	39.10	29900	2.2			
40	640	34.96	29900	2.5			
16	1290	85.22	11500	0.85	SHS	77	D100L4
19	1150	75.20	12500	0.95	SHSF	77	D100L4
21	1020	66.67	12400	1.00	SHSA	77	D100L4
22	1110	63.03	10900	1.00	SHSAF	77	D100L4
25	880	56.92	12100	1.10			
26	950	53.87	10800	1.15			
28	880	49.38	10800	1.25			
32	770	43.33	10700	1.40			
34	735	41.07	10600	1.50			
39	645	35.94	10400	1.70			
43	585	32.38	10300	1.85	SHS	77	D100L4
49	515	28.41	10100	2.0	SHSF	77	D100L4
56	455	25.07	9840	2.2	SHSA	77	D100L4
61	430	22.89	8680	1.65	SHSAF	77	D100L4
67	395	20.99	8590	1.80			
76	345	18.42	8450	2.0			
80	330	17.45	8390	2.2			
92	290	15.28	8210	2.5			
102	260	13.76	8060	2.7			
116	230	12.07	7870	3.1			
131	205	10.65	7670	3.5			
40	595	34.80	6350	0.80	SHS	67	D100L4
47	510	29.63	6350	0.95	SHSF	67	D100L4
52	465	26.93	6330	1.05	SHSA	67	D100L4
					SHSAF	67	D100L4
60	405	23.33	6270	1.20			
69	375	20.37	5230	0.90			
81	320	17.28	5250	1.05			
90	290	15.60	5240	1.15	SHS	67	D100L4
102	255	13.73	5210	1.35	SHSF	67	D100L4
108	240	12.96	5190	1.40	SHSA	67	D100L4
127	205	11.03	5100	1.65	SHSAF	67	D100L4
140	188	10.03	5050	1.80			
161	164	8.69	4940	2.0			
185	143	7.56	4830	2.1			
130	199	10.80	3990	0.85	SHS	57	D100L4
152	171	9.23	3970	1.00	SHSF	57	D100L4
162	160	8.64	3960	1.05	SHSA	57	D100L4
192	136	7.28	3900	1.10	SHSAF	57	D100L4
4.0kW							
					SHS	97R57	D112M4
6.5	4780	219	22700	0.90	SHSF	97R57	D112M4
6.9	4490	205	27300	0.95	SHSA	97R57	D112M4
					SHSAF	97R57	D112M4

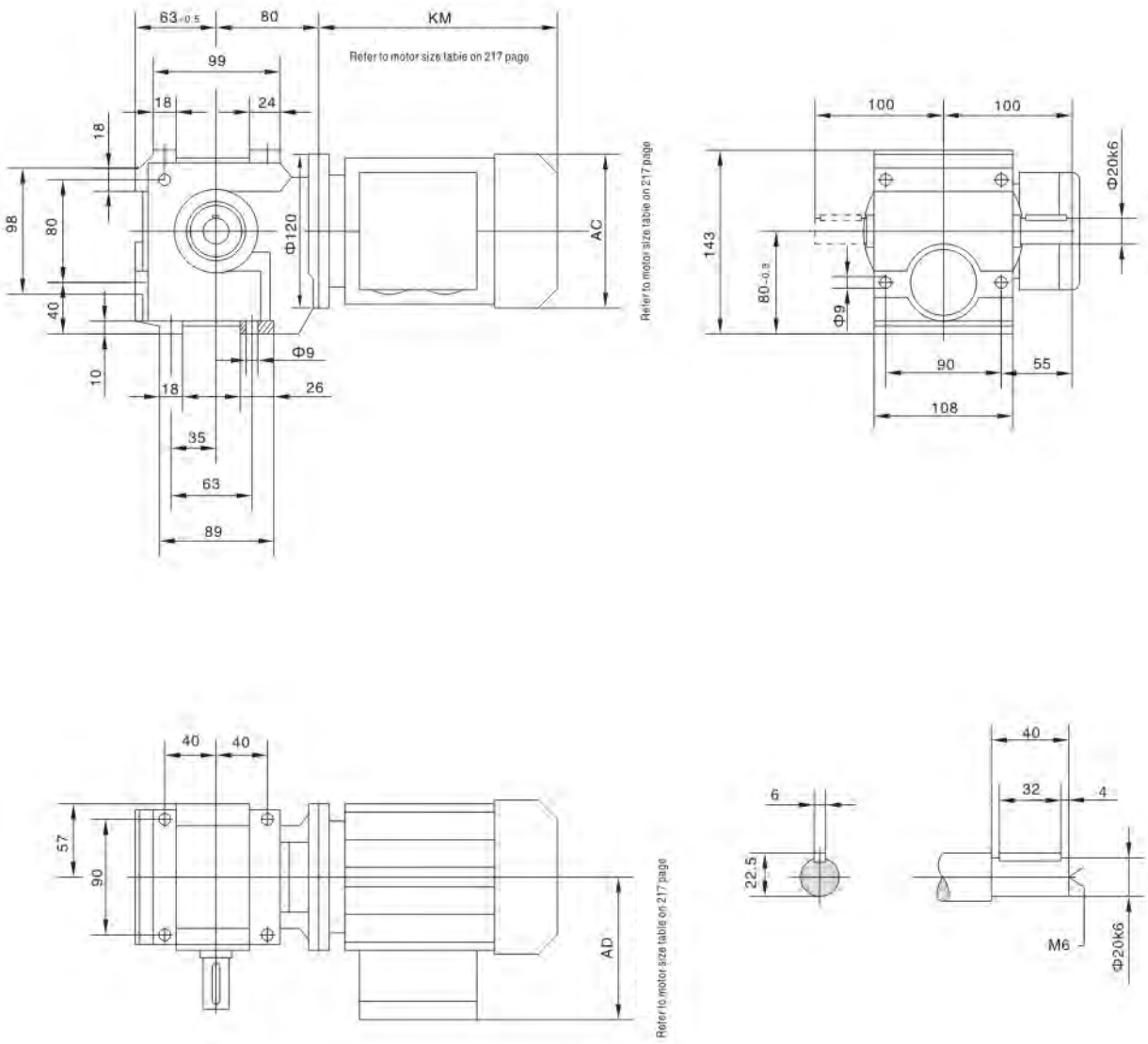
Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_B	Model
4.0kW					
6.1	4650	231.67	28300	0.85	
7.2	3990	196.52	33200	1.00	
7.8	3700	180.95	33800	1.05	
8.8	3330	161.74	34400	1.15	
9.8	3020	145.60	34900	1.25	SHS 97 D112M4
11	2750	131.85	35300	1.35	SHSF 97 D112M4
12	2460	116.92	35700	1.45	SHSA 97 D112M4
13	2230	105.71	35900	1.55	SHSAF 97 D112M4
16	1910	89.60	36300	1.70	
18	1940	80.85	36200	1.65	
20	1720	71.43	36400	1.90	
23	1470	60.59	36600	2.2	
25	1350	55.79	36700	2.4	
12	2510	123.48	27500	0.80	
13	2260	110.40	28000	0.90	
14	2040	99.26	28400	0.95	
16	1790	86.15	28800	1.05	
18	1610	77.14	29000	1.15	
20	1660	70.43	28900	0.95	SHS 87 D112M4
22	1520	64.27	29100	1.05	SHSF 87 D112M4
25	1350	57.00	29300	1.20	SHSA 87 D112M4
30	1150	47.91	29500	1.40	SHSAF 87 D112M4
32	1060	44.03	29600	1.50	
36	940	39.10	29700	1.70	
41	840	34.96	29800	1.90	
45	760	31.43	29100	2.1	
52	665	27.28	28200	2.4	
56	635	25.50	26600	1.95	
25	1160	56.92	10800	0.85	SHS 77 D112M4
26	1250	53.87	9250	0.90	SHSF 77 D112M4
29	1150	49.38	9320	0.95	SHSA 77 D112M4
33	1020	43.33	9370	1.10	SHSAF 77 D112M4
35	960	41.07	9370	1.15	
40	850	35.94	9340	1.30	
44	765	32.38	9290	1.40	
50	675	28.41	9190	1.55	
57	600	25.07	9070	1.70	
62	565	22.89	7650	1.25	SHS 77 D112M4
68	520	20.99	7650	1.35	SHSF 77 D112M4
77	455	18.42	7620	1.55	SHSA 77 D112M4
81	435	17.45	7590	1.65	SHSAF 77 D112M4
93	380	15.28	7510	1.85	
103	345	13.76	7430	2.1	
118	300	12.07	7310	2.4	
133	265	10.65	7170	2.7	
150	235	9.44	7030	3.1	
176	205	8.06	6830	3.3	
82	420	17.28	3810	0.80	
91	380	15.60	4180	0.90	
103	335	13.73	4500	1.00	SHS 67 D112M4
110	320	12.96	4520	1.05	SHSF 67 D112M4
129	270	11.03	4530	1.25	SHSA 67 D112M4
142	245	10.03	4520	1.35	SHSAF 67 D112M4
163	215	8.69	4490	1.55	
188	188	7.56	4430	1.55	
5.5kW					
8.8	4550	161.74	29900	0.85	
9.8	4130	145.60	32900	0.90	
11	3760	131.85	33700	0.95	
12	3360	116.92	34400	1.05	
14	3050	105.71	34900	1.15	
16	2610	89.60	35500	1.25	SHS 97 D132S4
18	2290	78.26	35900	1.35	SHSF 97 D132S4
20	2350	71.43	35800	1.40	SHSA 97 D132S4
22	1930	65.45	36200	1.50	SHSAF 97 D132S4
24	2000	60.59	36200	1.65	
26	1850	55.79	36300	1.80	
29	1660	49.87	36500	2.0	
32	1500	44.89	36600	2.2	
35	1360	40.65	36700	2.4	

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_B	Model
5.5kW					
19	2200	77.14	28100	0.85	SHS 87 D132S4
22	1850	64.00	28700	0.90	SHSF 87 D132S4
25	1850	57.00	28700	0.85	SHSA 87 D132S4
30	1560	47.91	29100	1.00	SHSAF 87 D132S4
32	1440	44.03	29200	1.10	
37	1280	39.10	29200	1.25	
41	1150	34.96	28600	1.40	
45	1040	31.43	28000	1.55	
52	910	27.28	27200	1.75	SHS 87 D132S4
56	870	25.50	25200	1.45	SHSF 87 D132S4
67	730	21.43	24500	1.70	SHSA 87 D132S4
73	675	19.70	24100	1.85	SHSAF 87 D132S4
82	600	17.49	23500	2.1	
91	535	15.64	23000	2.3	
102	485	14.06	22500	2.6	
117	420	12.21	21800	3.0	
131	375	10.93	21200	3.3	
35	1320	41.07	7560	0.85	SHS 77 D132S4
40	1160	35.94	7750	0.95	SHSF 77 D132S4
44	1050	32.38	7850	1.05	SHSA 77 D132S4
					SHSAF 77 D132S4
50	920	28.41	7920	1.15	
57	820	25.07	7940	1.25	
64	725	22.22	7920	1.35	
78	625	18.42	5920	1.15	SHS 77 D132S4
82	590	17.45	6170	1.20	SHSF 77 D132S4
94	520	15.28	6490	1.35	SHSA 77 D132S4
104	470	13.76	6510	1.50	SHSAF 77 D132S4
118	410	12.07	6500	1.75	
134	365	10.65	6450	2.0	
151	325	9.44	6390	2.2	
177	275	8.06	6280	2.5	
130	370	11.03	2930	0.90	SHS 67 D132S4
143	340	10.03	3260	1.00	SHSF 67 D132S4
165	295	8.69	3670	1.15	SHSA 67 D132S4
189	255	7.56	3850	1.15	SHSAF 67 D132S4
7.5kW					
14	4160	105.71	32900	0.85	
16	3560	89.60	34100	0.90	
18	3130	78.26	34800	1.00	
20	3200	71.43	34600	1.05	
22	2630	65.45	35500	1.10	
24	2730	60.59	35300	1.20	SHS 97 D132M4
26	2520	55.79	35600	1.30	SHSF 97 D132M4
29	2260	49.87	35900	1.45	SHSA 97 D132M4
32	2040	44.89	36100	1.60	SHSAF 97 D132M4
35	1850	40.65	36300	1.80	
40	1650	36.05	36200	2.0	
44	1490	32.60	35500	2.2	
54	1240	26.39	32000	2.1	
61	1110	23.59	31400	2.3	
67	1000	21.23	30700	2.6	
74	910	19.23	30100	2.9	
32	1970	44.03	27800	0.80	SHS 87 D132M4
37	1750	39.10	27400	0.90	SHSF 87 D132M4
41	1570	34.96	27000	1.00	SHSA 87 D132M4
					SHSAF 87 D132M4
45	1420	31.43	26500	1.15	
52	1230	27.28	25900	1.30	
56	1180	25.50	23500	1.05	
67	1000	21.43	23000	1.25	SHS 87 D132M4
73	920	19.70	22700	1.35	SHSF 87 D132M4
82	820	17.49	22300	1.50	SHSA 87 D132M4
91	730	15.64	21900	1.70	SHSAF 87 D132M4
102	660	14.06	21500	1.90	
117	575	12.21	20900	2.2	
131	515	10.93	20500	2.4	
158	430	9.07	19700	2.7	
181	375	7.88	19100	2.7	

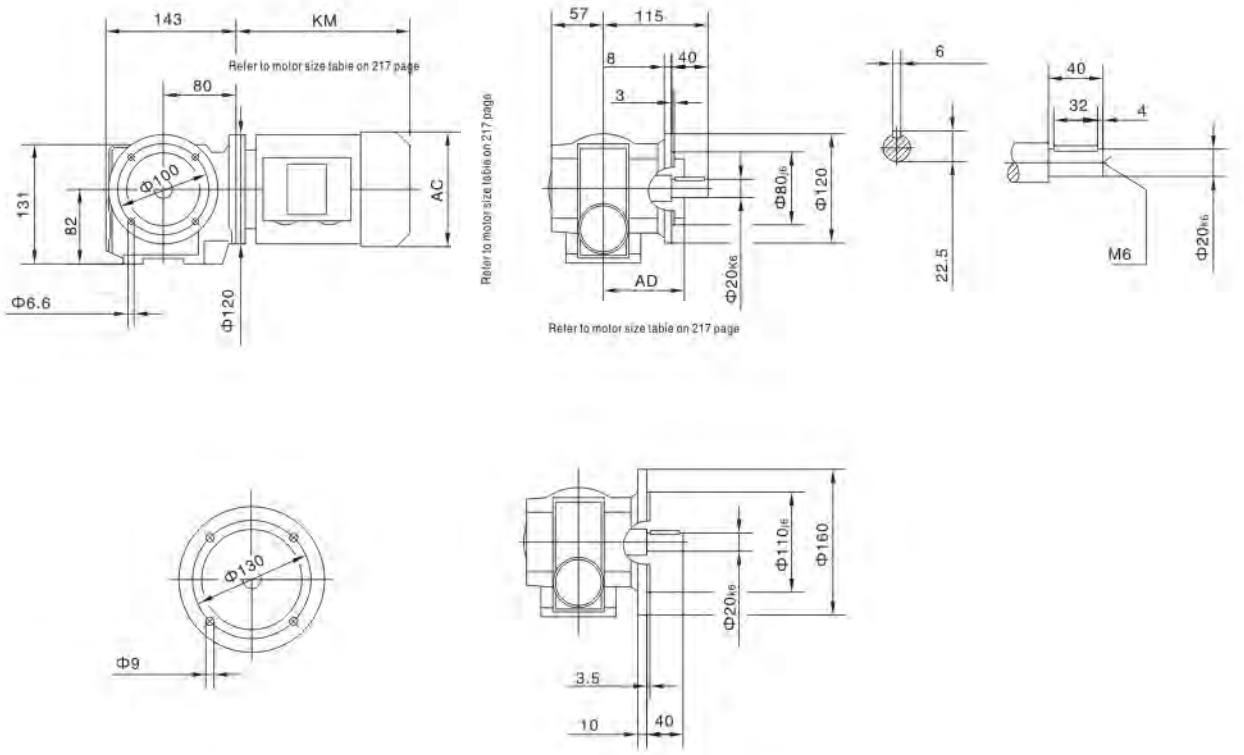
Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_s	Model
7.5kW					
50	1260	28.41	6240	0.85	SHS 77D132M4
57	1110	25.07	6450	0.90	SHSF 77D132M4
64	990	22.22	6600	1.00	SHSA 77D132M4
78	850	18.42	1860	0.85	SHSAF 77D132M4
82	810	17.45	2290	0.90	
94	705	15.28	3250	1.00	
104	640	13.76	3890	1.10	SHS 77D132M4
118	560	12.07	4570	1.30	SHSF 77D132M4
134	495	10.65	5110	1.45	SHSA 77D132M4
151	440	9.44	5540	1.65	SHSAF 77D132M4
177	380	8.06	5560	1.80	
9.2kW					
18	3810	78.26	33600	0.80	SHS 97D132ML4
22	3210	65.45	34600	0.90	SHSF 97D132ML4
26	3070	55.79	34800	1.05	SHSA 97D132ML4
					SHSAF 97D132ML4
29	2750	49.87	35300	1.20	
32	2480	44.89	35600	1.35	
35	2260	40.65	35700	1.45	
40	2010	36.05	35000	1.65	
44	1820	32.60	34400	1.75	
55	1510	26.39	30700	1.70	SHS 97D132ML4
61	1350	23.59	30200	1.90	SHSF 97D132ML4
68	1220	21.23	29700	2.1	SHSA 97D132ML4
75	1110	19.23	29200	2.3	SHSAF 97D132ML4
84	980	17.05	28500	2.6	
93	890	15.42	28000	2.8	
110	755	13.07	27000	3.1	
126	660	11.41	26200	3.3	
41	1910	34.96	25600	0.85	SHS 87D132ML4
46	1730	31.43	25300	0.95	SHSF 87D132ML4
53	1500	27.28	24800	1.05	SHSA 87D132ML4
59	1350	24.43	24400	1.20	SHSAF 87D132ML4
71	1120	20.27	23700	1.40	
73	1120	19.70	21600	1.10	
82	1000	17.49	21300	1.25	
92	890	15.64	21000	1.40	SHS 87D132ML4
102	800	14.06	20700	1.55	SHSF 87D132ML4
118	700	12.21	20200	1.75	SHSA 87D132ML4
132	625	10.93	19800	2.0	SHSAF 87D132ML4
159	520	9.07	19100	2.2	
183	455	7.88	18600	2.2	
76	1040	18.97	5760	0.90	
105	780	13.76	1350	0.90	SHS 77D132ML4
119	685	12.07	2290	1.05	SHSF 77D132ML4
135	605	10.65	3060	1.20	SHSA 77D132ML4
152	535	9.44	3690	1.35	SHSAF 77D132ML4
179	460	8.06	4360	1.50	
11.0kW					
26	3670	55.79	33800	0.90	
29	3290	49.87	34500	1.00	
32	2970	44.89	34800	1.10	
35	2700	40.65	34400	1.20	
40	2400	36.05	33800	1.40	
44	2170	32.60	33300	1.45	SHS 97D160M4
55	1810	26.39	29400	1.45	SHSF 97D160M4
61	1620	23.59	29000	1.60	SHSA 97D160M4
68	1460	21.23	28600	1.80	SHSAF 97D160M4
75	1320	19.23	28200	1.95	
84	1180	17.05	27600	2.2	
93	1070	15.42	27200	2.3	
110	900	13.07	26400	2.6	
126	790	11.41	25700	2.8	
53	1800	27.28	23700	0.90	SHS 87D160M4
59	1610	24.43	23400	1.00	SHSF 87D160M4
71	1340	20.27	22800	1.20	SHSA 87D160M4
					SHSAF 87D160M4

Output speed n_a [1/min]	Output torque M_a [N · m]	Ratio i	Permitted overhung load F_{ra} [N]	Service factor f_s	Model
11.0kW					
73	1340	19.70	20400	0.95	
82	1190	17.49	20200	1.05	
92	1070	15.64	20000	1.15	SHS 87D160M4
102	960	14.06	19800	1.30	SHSF 87D160M4
118	840	12.21	19400	1.50	SHSA 87D160M4
132	750	10.93	19100	1.65	SHSAF 87D160M4
159	625	9.07	18600	1.85	
183	545	7.88	18100	1.85	
15.0kW					
33	4000	44.89	31400	0.85	SHS 97D160L4
36	3630	40.65	31300	0.90	SHSF 97D160L4
41	3230	36.05	31000	1.00	SHSA 97D160L4
					SHSAF 97D160L4
45	2920	32.60	30800	1.10	
55	2430	26.39	26400	1.05	
62	2180	23.59	26300	1.20	
69	1970	21.23	26200	1.30	SHS 97D160L4
76	1780	19.23	26000	1.45	SHSF 97D160L4
86	1580	17.05	25700	1.60	SHSA 97D160L4
95	1430	15.42	25400	1.70	SHSAF 97D160L4
112	1220	13.07	24800	1.90	
128	1060	11.41	24300	2.1	
153	890	9.55	23600	2.3	
177	775	8.26	22900	2.3	
93	1430	15.64	17900	0.85	SHS 87D160L4
104	1290	14.06	17900	0.95	SHSF 87D160L4
120	1120	12.21	17800	1.10	SHSA 87D160L4
					SHSAF 87D160L4
134	1010	10.93	17600	1.25	SHS 87D160L4
161	840	9.07	17300	1.35	SHSF 87D160L4
185	730	7.88	17000	1.40	SHSA 87D160L4
					SHSAF 87D160L4
18.5kW					
41	3970	36.05	28700	0.85	
45	3590	32.60	28600	0.90	
53	3060	27.63	28400	1.00	
61	2680	24.13	28100	1.05	
69	2420	21.23	24100	1.10	SHS 97D180M4
76	2190	19.23	24100	1.20	SHSF 97D180M4
86	1950	17.05	24000	1.30	SHSA 97D180M4
95	1760	15.42	23900	1.40	SHSAF 97D180M4
112	1500	13.07	23500	1.55	
128	1310	11.41	23200	1.70	
153	1100	9.55	22600	1.85	
177	950	8.26	22100	1.85	
22kW					
53	3630	27.63	26600	0.85	SHS 97D180L4
61	3180	24.13	26500	0.90	SHSF 97D180L4
69	2870	21.23	19800	0.90	SHSA 97D180L4
76	2600	19.23	21800	1.00	SHSAF 97D180L4
86	2310	17.05	22300	1.10	
95	2090	15.42	22400	1.20	
112	1780	13.07	22300	1.30	SHS 97D180L4
128	1560	11.41	22100	1.40	SHSF 97D180L4
153	1300	9.55	21700	1.55	SHSA 97D180L4
177	1130	8.26	21300	1.55	SHSAF 97D180L4

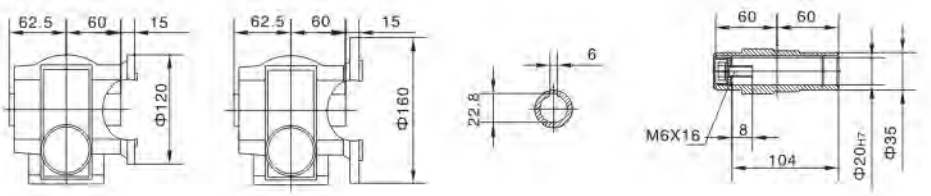
SHS37..


63
80
KM
Refer to motor size table on 217 page
99
18
24
18
98
80
40
10
Φ120
AC
Φ9
18
26
35
63
89
100
100
Φ20k6
143
80
Φ9
90
55
108
40
40
57
90
AD
Refer to motor size table on 217 page
6
22.5
40
32
4
M6
Φ20k6

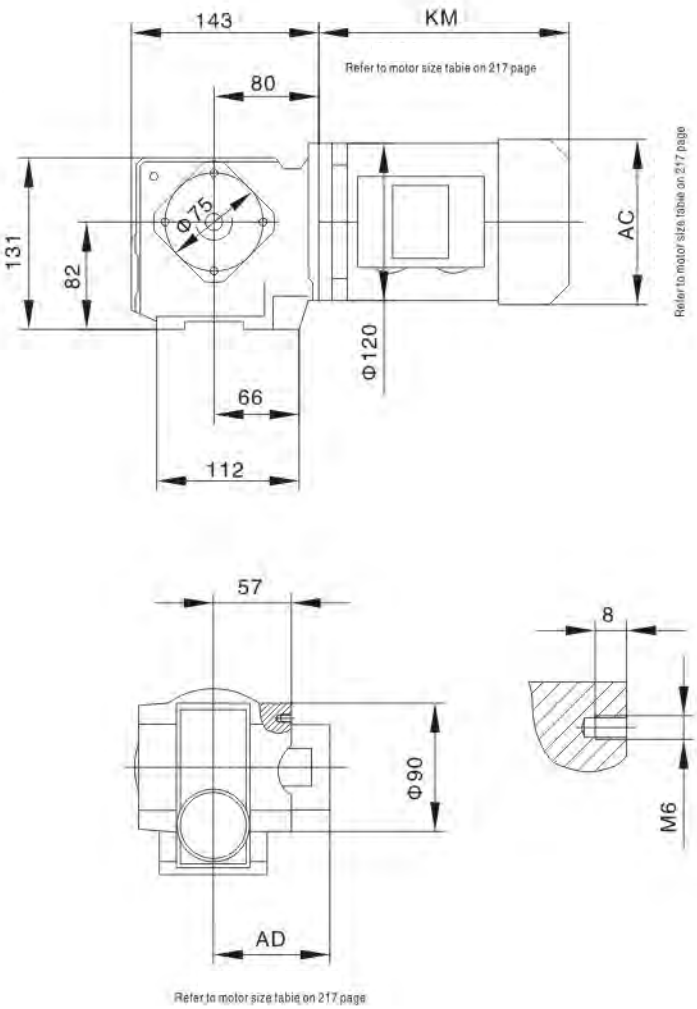
SHSF37..

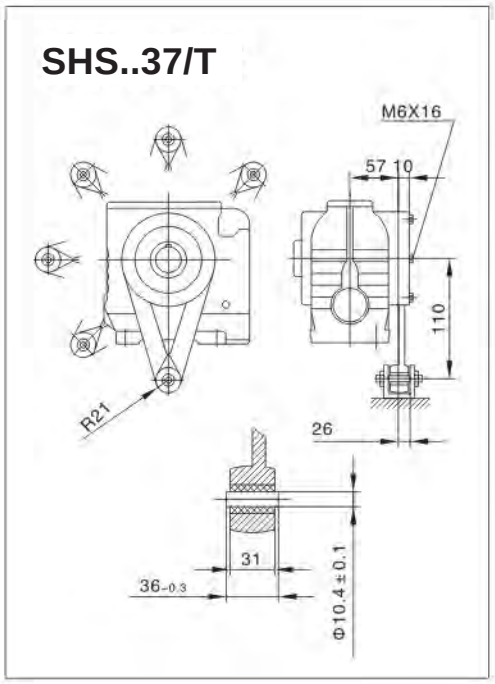


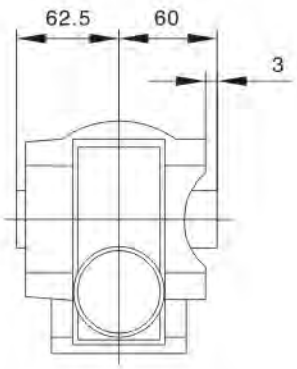
SHSAF37..

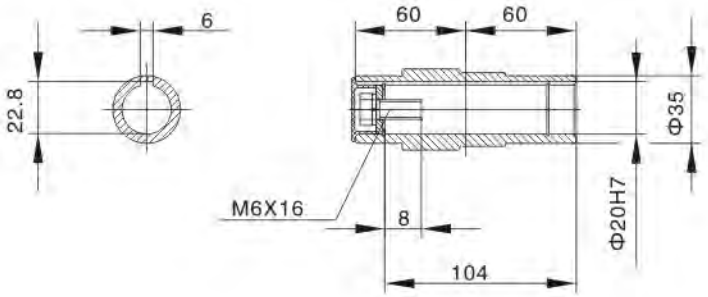


SHSA37..

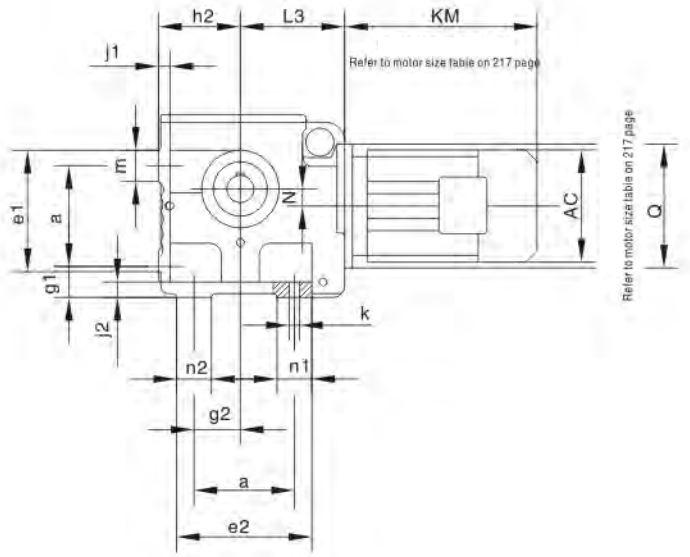

143
KM
Refer to motor size table on 217 page
80
131
82
Φ75
AC
Refer to motor size table on 217 page
Φ120
66
112
57
Φ90
8
M6
AD
Refer to motor size table on 217 page

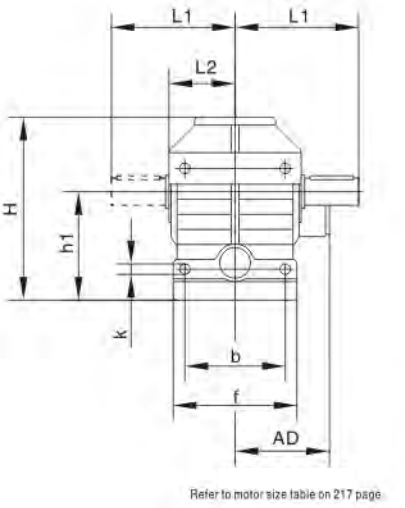

SHS..37/T
M6X16
57
10
110
R21
26
31
36-0.3
Φ10.4±0.1

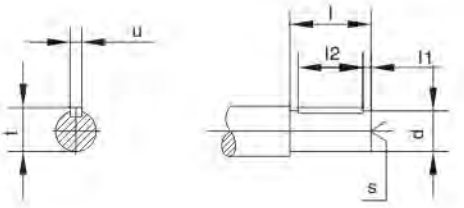

62.5
60
3


6
22.8
60
60
Φ35
M6X16
8
Φ20H7
104

SHS47.. ~ SHS97..

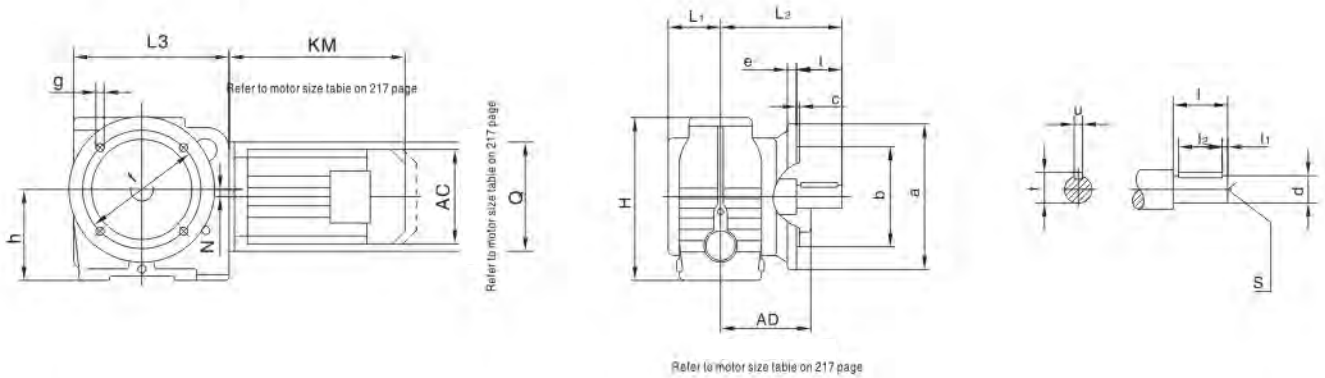




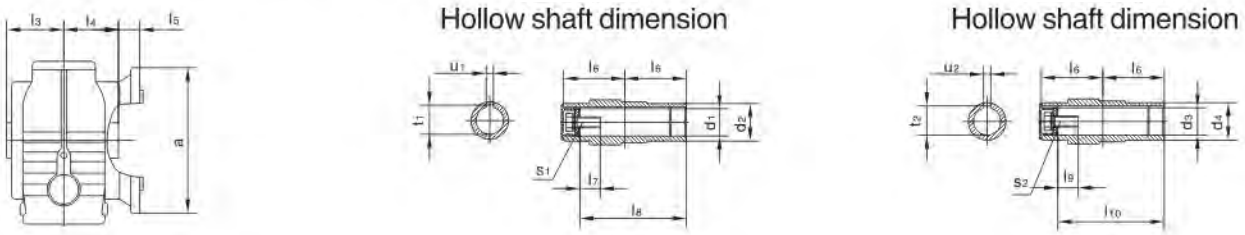


Model	a b	e1 e2 f	g1 g2	h1 h2	j1 j2 k	m n1 n2	Shaft dimension d l	 l1 l2	 s	 t u	L1 L2 L3	H	N Q
SHS47..	80 100	105 112 120	35 35	$100_{-0.5}$ $75_{-0.5}$	12 15 11	25 30 30	25k6 50	5 40	M10	28 8	115 60 96	165	8 120
SHS57..	100 110	130 130 136	35 45	$112_{-0.5}$ $80_{-0.5}$	12 15 11	30 30 30	30k6 60	3.5 50	M10	33 8	134 71 107	189	20 120
SHS67..	130 130	170 175 160	40 60	$140_{-0.5}$ $106_{-0.5}$	15 20 13.5	40 45 45	35k6 70	7 56	M12	38 10	160 85.5 135	236	22 160
SHS77..	135 150	177 204 185	70 75	$180_{-0.5}$ $125_{-0.5}$	25 25 17.5	42 50 69	45k6 90	5 80	M16	48.5 14	195 101 162	301	34 200
SHS87..	180 200	230 247 250	82 92	$225_{-0.5}$ $150_{-0.5}$	30 30 22	50 60 67	60m6 120	5 110	M20	64 18	255 130 190	368	37.5 250
SHS97..	235 250	295 320 300	90 115	280_{-1} $180_{-0.5}$	35 35 26	60 80 85	70m6 140	7.5 125	M20	74.5 20	295 150 240	455	52 300

SHSF47.. ~ SHSF97..

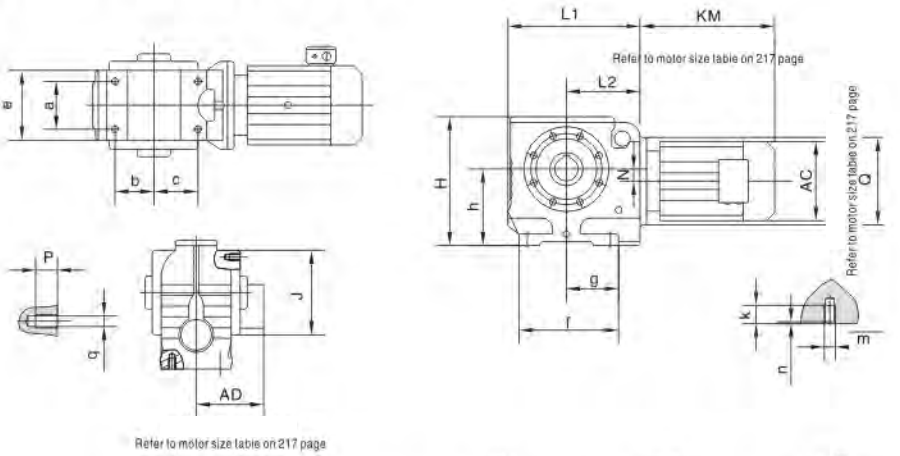


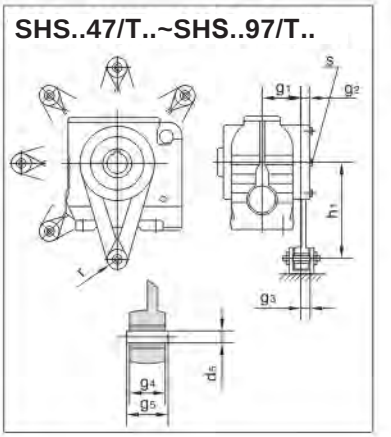
SHSAF47.. ~ SHSAF97..

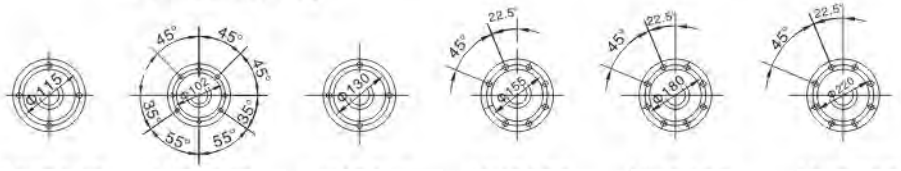


Model	flange form	a b	c e	f g h	Shaft dimension d l	 l1 l2	 s t u	Hollow shaft dimension d1 d2	 l3 l4 l5	 l6 l7 l8	 s t u	Hollow shaft dimension d3 d4	 l9 l10	 s2 t2 u2	H	L1 L2 L3	N Q
SHSF47.. SHSAF47..	Flg.1	160 110j6	3.5 10	130 9 100	25k6 50	5 40	M10 28 8	30^{H7} 45	63 60 24	60 17 105	M10X25 33.3 8	25^{H7} 45	17 105	M10X25 28.3 8	179	57.5 133.5 171	8 120
SHSF57.. SHSAF57..	Flg.1	200 130j6	3.5 12	165 11 112	30k6 60	3.5 50	M10 33 8	35^{H7} 50	78 75 25	75 22 132	M12X30 38.3 10	30^{H7} 50	17 132	M10X25 33.3 8	189	72 160 187	20 120
SHSF67.. SHSAF67..	Flg.1	200 130j6	3.5 12	165 11 140	35k6 70	7 56	M12 38 10	45^{H7} 65	87 84 42.5	84 29 144	M16X40 48.8 14	40^{H7} 65	29 144	M16X40 43.3 12	236	80.5 190 242	22 160
SHSF77.. SHSAF77..	Flg.1	250 180j6	4 15	215 13.5 180	45k6 90	5 80	M16 48.5 14	60^{H7} 80	108 105 45.5	105 37 180	M20X50 64.4 18	50^{H7} 80	32 183	M16X45 53.8 14	301	121 232 287	34 200
SHSF87.. SHSAF87..	Flg.1	350 250h6	5 18	300 17.5 225	60m6 120	5 110	M20 64 18	70^{H7} 95	128 125 52.5	125 34 220	M20X50 74.9 20	60^{H7} 95	36 220	M20X50 64.4 18	368	145 290 340	37.5 250
SHSF97.. SHSAF97..	Flg.2	450 350h6	5 22	400 17.5 280	70m6 140	7.5 125	M20 74.5 20	90^{H7} 120	149 145 60	145 41 255	M24X60 95.4 25	70^{H7} 120	34 260	M20X50 74.9 20	455	165 340 420	52 300

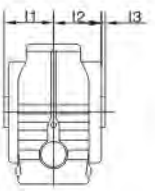
SHSA47.. ~ SHSA97..



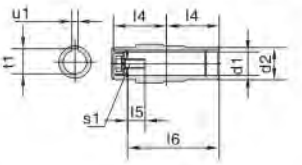




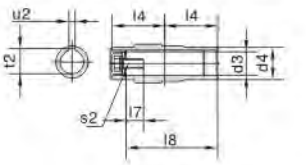
SHSA47.. SHSA57.. SHSA67.. SHSA77.. SHSA87.. SHSA97..



Hollow shaft dimension

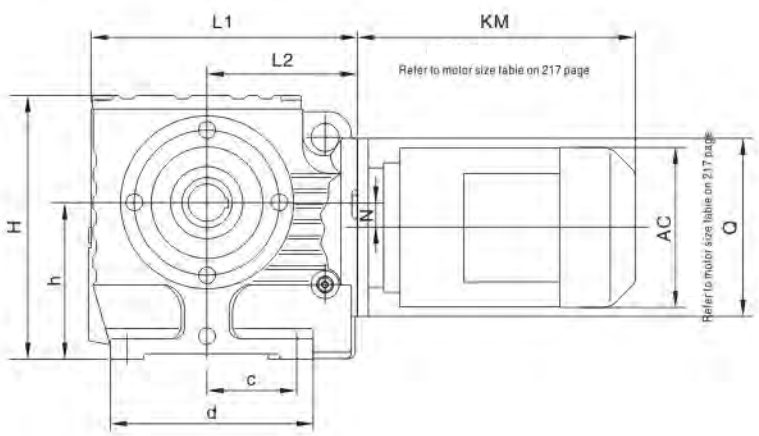


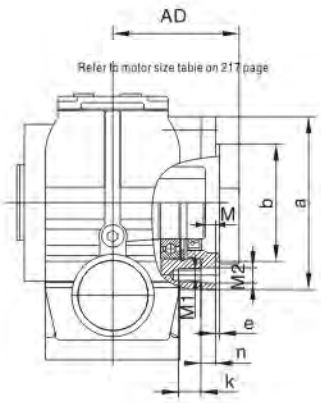
Hollow shaft dimension



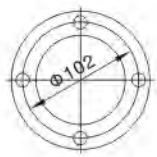
Model	a b c	e f g	h	k m h	p q	Hollow shaft dimension				Hollow shaft dimension			Torque arm form			H L1 L2	N Q
						d1 d2	l1 l2 l3	l4 l5 l6	s1 t1 u1	d3 d4	l7 l8	s2 t2 u2	g1 g2 g3	g4 g5 h1	d5 r s3		
SHSA47.. SHS..47/T..	60 35 52	94 127 67	100	20 M10 4	12 M8	30 H7 45	63 60 2.5	60 17 105	M10X25 33.3 8	25 H7 45	17 105	M10X25 28.3 8	57.5 15 20.5	31 36-0.3 130	10.4±0.1 21 M8X25	179 171 96	8 120
SHSA57.. SHS..57/T..	60 58.5 58.5	100 146 73	112	20 M10 4	12 M8	35 H7 50	78 75 3	75 22 132	M12X30 38.3 10	30 H7 50	17 132	M10X25 33.3 8	72 15 18.5	31 36-0.3 160	10.4±0.1 21 M8X25	189 187 107	20 120
SHSA67.. SHS..67/T..	88 71.5 80.5	128 182 95.5	140	25 M12 5	20 M12	45 H7 65	87 84 3.5	84 29 144	M16X40 48.8 14	40 H7 65	29 144	M16X40 43.3 12	80.5 18 19.5	31 36-0.3 200	10.4±0.1 21 M12X35	236 242 135	22 160
SHSA77.. SHS..77/T..	102 85 85	154 204 104	180	32 M16 6	20 M12	60 H7 80	108 105 4	105 37 180	M20X50 64.4 18	50 H7 80	32 183	M16X45 53.8 14	101 18 32.5	54 60-0.3 250	16.4±0.08 30 M12X35	301 287 162	34 200
SHSA87.. SHS..87/T..	118 115 110	194 260 125	225	32 M16 6	26 M16	70 H7 95	128 125 5	125 34 220	M20X50 74.9 20	60 H7 95	36 220	M20X50 64.4 18	120 24 25.5	54 60-0.5 310	16.4±0.08 30 M16X45	368 340 190	37.5 250
SHSA97.. SHS..97/T..	160 135 113	236 301 140	280	36 M20 6	26 M16	90 H7 120	149 145 5	145 41 255	M24X60 95.4 25	70 H7 120	34 260	M20X50 74.9 20	140 26 33	72 80-0.5 380	25±0.08 40 M16X50	455 420 240	52 300

SHSAZ47.. ~ SHSAZ97..

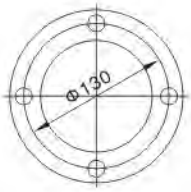




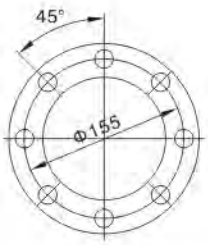
SHSAZ47..



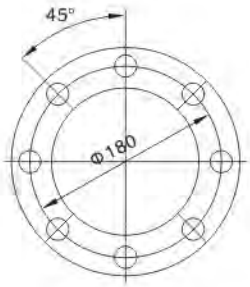
SHSAZ57..



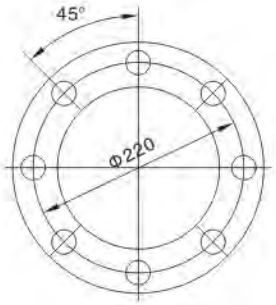
SHSAZ67..



SHSAZ77..



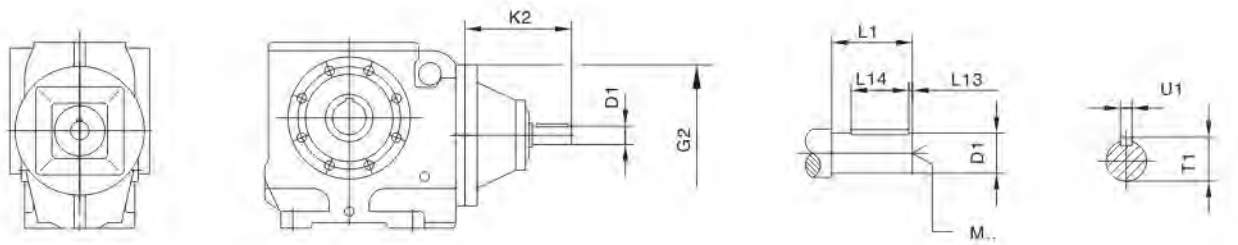
SHSAZ87..



SHSAZ97..

Model	a	b	c	d	e	h	H	k	L1	L2	M	M1	M2	N	n	Q
SHSAZ47..	130	95j6	67	127	3	100	179	12	171	96	8.5	M8	9	8	11	120
SHSAZ57..	120	80j6	73	146	3	112	189	12	187	107	8	M8	9	20	11	120
SHSAZ47..	155	105j6	95.5	182	3.5	140	236	20	242	135	9.5	M12	13.5	22	13	160
SHSAZ47..	180	125j6	104	204	4	180	301	18.5	287	162	14.5	M12	13.5	34	18.5	200
SHSAZ47..	215	150j6	125	260	5	225	368	23.5	340	190	18.5	M16	17.5	37.5	23.5	250
SHSAZ47..	260	180j6	140	301	5	280	455	23.5	420	240	18.5	M16	17.5	52	23.5	300

SHS..AD..



Gear unit type	Motor adcopator	G2	K2	D1	L1	L13	L14	T1	U1	M
SHS..37 SHS..47,S..57	AD1	120	102	16	40	4	32	18	5	M5
	AD2		130	19	40	4	32	21.5	6	M6
SHS..67	AD2	160	123	19	40	4	32	21.5	6	M6
	AD3		159	24	50	5	40	27	8	M8
SHS..77	AD2	200	116	19	40	4	32	21.5	6	M6
	AD3		151	24	50	5	40	27	8	M8
	AD4		224	38	80	5	70	41	10	M12
SHS..87	AD2	250	111	19	40	4	32	21.5	6	M6
	AD3		156	28	60	5	50	31	8	M10
	AD4		219	38	80	5	70	41	10	M12
	AD5		292	42	110	10	70	45	12	M16
SHS..97	AD3	300	151	28	60	5	50	31	8	M10
	AD4		214	38	80	5	70	41	10	M12
	AD5		287	42	110	10	70	45	12	M16
	AD6		327	48	110	10	80	51.5	14	M16

SHS..AM..

Fig.1

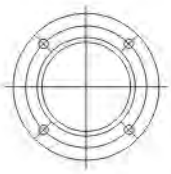
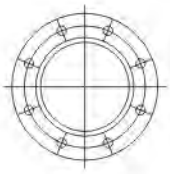
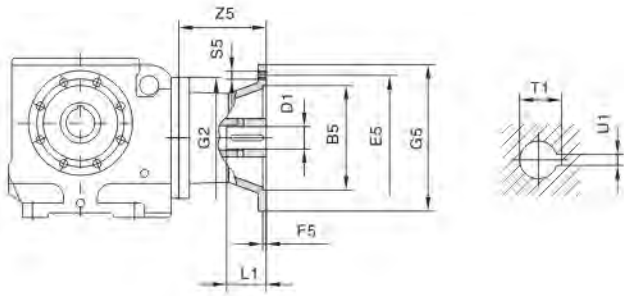


Fig.2

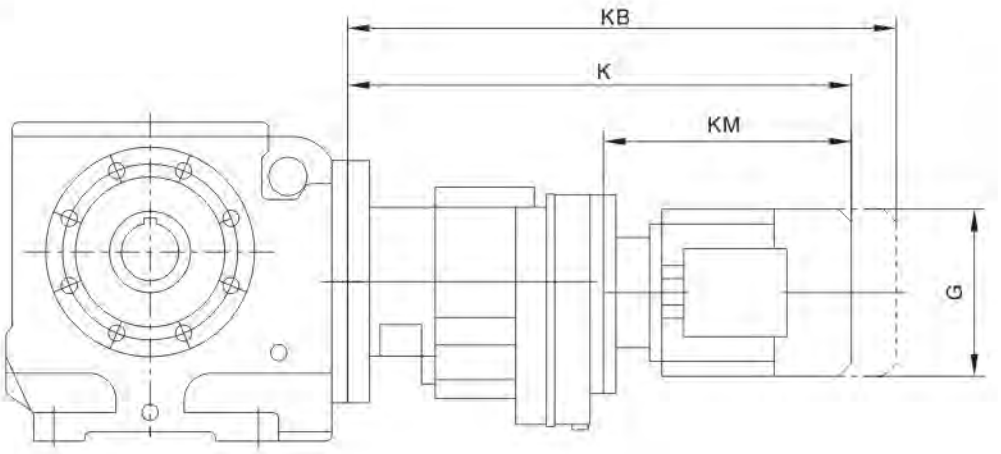




Gear unit type	Motor adcopator	Fig	B5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
SHS..37 SHS..47,S..57	AM63	1	95	115	3.5	120	140	M8	72	11	23	12.8	4
	AM71[1)]		110	130			160			14	30	16.3	5
	AM80[1)]		130	165	4.5		200	M10	106	19	40	21.8	6
	AM90[1)]									24	50	27.3	8
SHS..67	AM63	1	95	115	3.5	160	140	M8	66	11	23	12.8	4
	AM71		110	130			160			14	30	16.3	5
	AM80		130	165	4.5		200	M10	99	19	40	21.8	6
	AM90									24	50	27.3	8
	AM100[1)]		180	215	5		250	M12	134	28	60	31.3	8
	AM112[1)]												
SHS..77	AM63	1	95	115	3.5	200	140	M8	60	11	23	12.8	4
	AM71		110	130			160			14	30	16.3	5
	AM80		130	165	4.5		200	M10	92	19	40	21.8	6
	AM90									24	50	27.3	8
	AM100[1)]		180	215	5		250	M12	126	28	60	31.3	8
	AM112[1)]												
	AM132S[1)] AM132M[1)]		230	265			300		179	38	80	41.3	10
	AM132ML[1)]												
SHS..87	AM80	1	130	165	4.5	250	200	M10	87	19	40	21.8	6
	AM90									24	50	27.3	8
	AM100		180	215	5		250	M12	121	28	60	31.3	8
	AM112												
	AM132MS AM132M		230	265			300		174	38	80	41.3	10
	AM132ML												
	AM160[1)]		250	300	6		350	M16	232	42	110	45.3	12
	AM180[1)]									48		51.8	14
SHS..97	AM100	1	180	215	5	300	250	M12	116	28	60	31.3	8
	AM112												
	AM132S AM132M		230	265			300		169	38	80	41.3	10
	AM132ML												
	AM160		250	300	6		350	M16	227	42	110	45.3	12
	AM180									48		51.8	14
	AM200[1)]		300	350	7		400		268	55		59.3	16
	AM225[1)]	2	350	400			450		283	60	140	64.4	18

1)
Dimension G5/2 May protrude past foot mounting surface if mounted on SHS foot-mounted gear unit, please check.

SHS..R..



Gear unit type	Motor type	G	K	KB	KM
SHS..37R17	D63..	155	368	425	193
	D71D	155	369	433	194
	D80..	155	419	483	244
SHS..47R17 SHS..57R37	D63..	155	400	425	193
	D71D	155	401	433	194
	D80..	155	451	483	244
SHS..67R37	D63..	155	410	457	235
	D71D	155	401	465	236
	D80..	155	451	515	286
	D90..	155	451	536	286
SHS..77R37	D63..	155	392	449	235
	D71D	155	393	457	236
	D80..	155	443	507	286
	D90..	210	443	528	286
SHS..87R57	D63..	155	445	502	229
	D71D	155	445	509	229
	D80..	155	495	559	279
	D90..	210	495	580	279
	D100M	210	545	630	329
	D100L	210	565	650	349
SHS..97R57	D63..	155	440	497	229
	D71D	155	440	504	229
	D80..	155	490	554	279
	D90..	210	510	595	299
	D100M	210	540	625	329
	D100L	210	560	645	349
	D112M	240	575	655	364

Ntoes: The dimension of motor in the above table is only refence. If you have special require require. Please consult us.

9.
Important notes of design and mounting

9.1 Installation/removal of gear units with hollow shafts and keys

Installation — Always use the supplied NOCO Fluid paste during the assembly procedure. It avoids contact corrosion and easy for disassembly.

The key dimension X is defined by the customer, however X must be >DK.

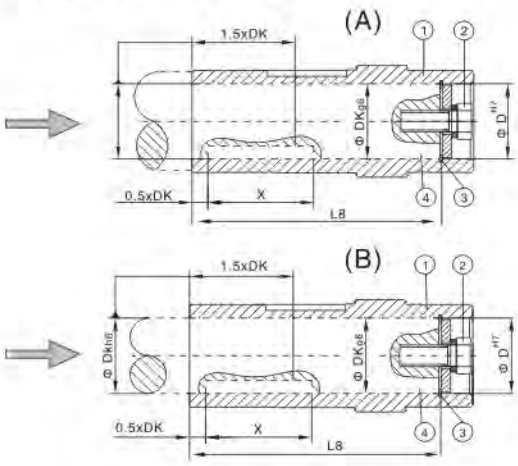
Customer shaft — Recommends two methods for mounting gear unit with hollow shafts and keys onto the input shaft of the driven machine(=customer shaft):

1.
Install with supplied fastening elements
2.
Install using the optional installation /removal kit

9.1.1 Supplied fastening elements

The following fastening elements are supplied as standard:

Rataining screw with washer① Circlip ②



Installation length of customer shaft with contact shoulde(A)must be L8−1mm

Installtion length of customer shaft with contact shoulde(B)must equal to L8

The retaining screw② must be tightened to the tightening torque MS listed in the following table

① Hollow shaft
② Retaining screw with washer
③ Circlip
④ Customer shaft

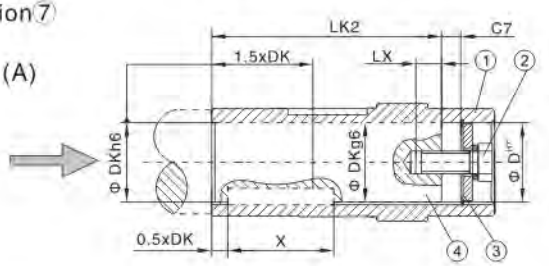
Fig: Customer shaft with contact shoulder(A)and with contact shoulder(B)

Gear unit type	D^{H7}[mm]	DK[mm]	L8[mm]	MS[Nm]
SHSA..37	20	20	84,106,104	8
SHSA..47	25	25	105	20
SHFA..37,SHKA..37,SHSA..47,SHSA..57	30	30	105 132	20
SHFA..47,SHKA..47,SHSA..57	35	35	132	20
SHFA..57,SHKA.57 SHFA..67, SHKA.67 SHSA..67	40	40	142 156 144	40
SHSA..67	45	45	144	40
SHFA..77,SHKA..77,SHSA..77	50	50	183	40
SHFA..87,SHFA..87, SHSA..77, SHSA..87,	60	60	210 180,220	80
SHFA..97,SHFA..97, SHSA..87, SHSA..97,	70	70	270 220,260	80
SHFA..107,SHKA..107,SHSA..97	90	90	313,313,255	200
SHFA..127,SHKA..127,	100	100	373	200
SHFA..157,SHKA..157,	120	120	460	200

9.1.2 Installation / removal kit

You can use the optional installation/removal kit for installation. The kit can be ordered for the specific gear unit types by quoting the part numbers in the table below.
The accesseriyes of the tools includorg:
–Distance piece for installation without contact shoulder⑤
–Retaining screw for installation②
–Removal washer for installation⑦
–Fixed nut for removal⑧

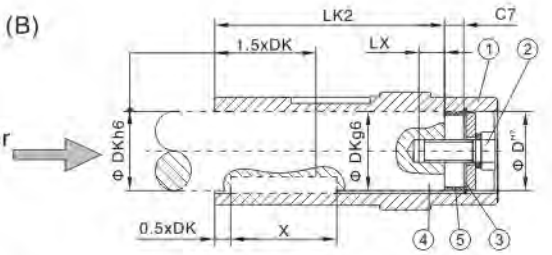
(A)



The installation length of the customer shaft must be LK2.
The distance piece must not be used if the customer shaft does have a contact shouder(A).

①
②
③
④
⑤

(B)



The installation length of the customer shaft must be LK2.
The distance piece must not be used if the customer shaft does have a contact shouder(B).

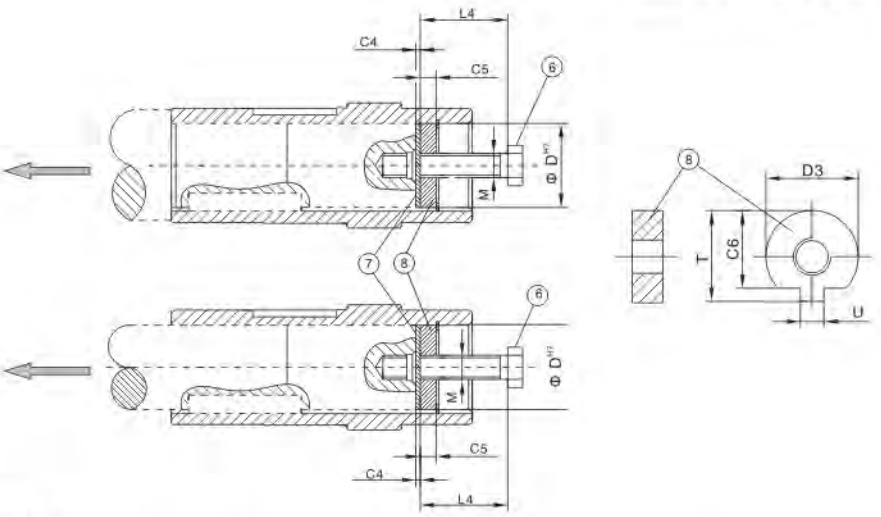
①Hollow shaft
②Retaining screw with washer
③Chirclip
④Customer shaft
⑤Distance piece

Fig: Customer shaft with contact shoulder (A) and without contact shoulder (B)

Gear unit type	D^{H7}[mm]	DK[mm]	LK2[mm]	LX^{+2}[Nm]	C7[Nm]	MS[Nm]
SHSA..37	20	20	92	16	12	8
SHSA..47	25	25	89	22	16	20
SHFA..37,SHKA..37,SHSA..47 SHSA..57	30	30	89 89,116	22	16	20
SHFA..47,SHKA..47,SHSA..57	35	35	114	28	18	20
SHFA..57,SHKA..57 SHFA..67, SHKA..57 SHSA..67	40	40	124 138,138,126	36	18	40
SHSA..67	45	45	126	36	18	40
SHFA..77,SHKA..77,SHSA..77	50	50	165	36	18	40
SHFA..87,SHKA..87, SHSA..77, SHSA..87,	60	60	188 158,198	42	22	80
SHFA..97,SHKA..97, SHSA..87, SHSA..97,	70	70	248 198, 238	42	22	80
SHFA..107,SHKA..107,SHSA..97	90	90	287 229	50	26	200
SHFA..127,SHKA..127,	100	100	347	50	26	200
SHFA..157,SHKA..157,	120	120	434	50	26	200

Removal

Applies prior installation with the installation /removal kit only.
Proceed as follows for removal:
1.Remone the retaining screw ⑥
2.Remove the Circlip ③ and if used, the distance piece ⑤
3.Insed the removal washer ⑦ and the fixed nut ⑧ between the customer shaft ④ and circlip ③ according to Fig.
4.Re-insert the cirlip ③.
5.Re-insert the retaining screw ⑥.You can now push the gear unit off the shaft.



⑥ Retaining screw
⑦ Removal washer
⑧ Fixed nut for removal

Fig.Removal

Model	D^{H7} [mm]	M	C4 [mm]	C5 [mm]	C6 [mm]	$U^{-0.5}$ [mm]	$T3^{-0.5}$ [mm]	$D^{-0.5\,L4}$ [mm]	Installation/ removal kit part number
SHSA..37	20	M6	5	6	15.5	5.5	22.5	19.7	25
SHSA..47	25	M10	5	10	20	7.5	28	24.7	35
SHFA..37,SHKA..37,SHSA..57	30	M10	5	10	25	7.5	33	29.7	35
SHFA..47,SHSA..57	35	M12	5	12	29	9.5	38	34.7	45
SHFA..57,SHKA..57,SHFA..67,SHKA..67,SHSA..67	40	M16	5	12	34	11.5	41.9	39.7	50
SHSA..67	45	M16	5	12	38.5	13.5	48.5	44.7	50
SHFA..77,SHKA..77,SHSA..77	50	M16	5	12	43.5	13.5	53.5	49.7	50
SHFA..87,SHKA..87,SHSA..77, SHSA..87	60	M20	5	16	56	17.5	64	59.7	60
SHFA..97,SHKA..97,SHSA..97	70	M20	5	16	65.5	19.5	74.5	69.7	60
SHFA..107,SHKA..107,SHSA..97	90	M24	5	20	80	24.5	95	89.7	70
SHFA..127,SHKA..127,	100	M24	5	20	89	27.5	106	99.7	70
SHFA..157,SHKA..157,	120	M24	5	20	107	31	127	119.7	70

9.2 Shouldered hollow shaft with shrink disk (option)

Gear unit with a hollow shaft and shrink disk (parallel shaft helical gear units H/FHF/SH/SHF47–97) can be supplied with an optional larger hole diameter D'
The standard is D'=D.

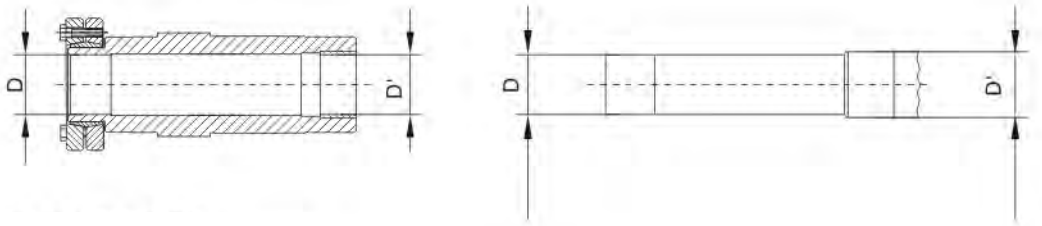


Fig: Optional hole diameter D'

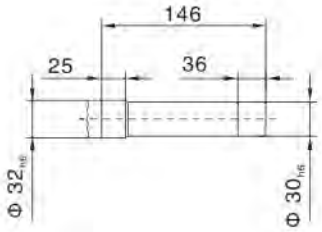
Gear unit size	D/D' Hole diameter
SHFH/FHF/FHZ37,SHKH/KHF/KHZ37,SHSH/SHF/SHZ47	30/32
SHFH/FHF/FHZ47,SHKH/KHF/KHZ47,SHSH/SHF/SHZ57	35/36
SHFH/FHF/FHZ57,SHKH/KHF/KHZ57	40/42
SHFH/FHF/FHZ67,SHKH/KHF/KHZ67,SHSH/SHF/SHZ67	40/42
SHFH/FHF/FHZ77,SHKH/KHF/KHZ77,SHSH/SHF/SHZ77	50/52
SHFH/FHF/FHZ87,SHKH/KHF/KHZ87,SHSH/SHF/SHZ87	65/66
SHFH/FHF/FHZ97,SHKH/KHF/KHZ97,SHSH/SHF/SHZ97	75/76
SHFH/FHF/FHZ107,SHKH/KHF/KHZ107	95/96
SHFH/FHF/FHZ127,SHKH/KHF/KHZ127	105/106
SHFH/FHF/FHZ157,SHKH/KHF/KHZ157	125/126

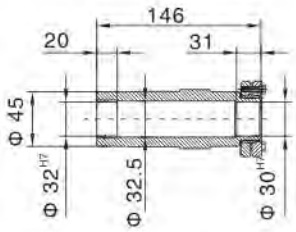
Diameter D/D' must be specified when ordering gear units with a shouldered hollow shaft (optional bole diameter D').

Parallel shaft helical gear unit with shouldered hollow shaft

SHFH/FHF/FHZ37

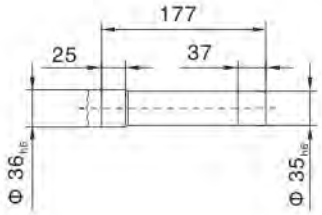
Φ 30^{H7}/Φ 32^{H7}

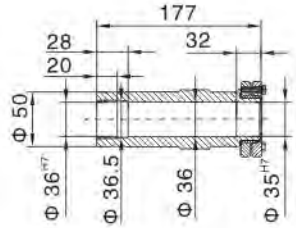




SHFH/FHF/FHZ47

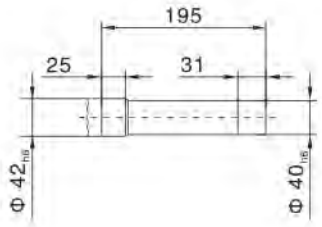
Φ 35^{H7}/Φ 36^{H7}

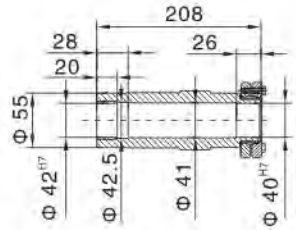




SHFH/FHF/FHZ57

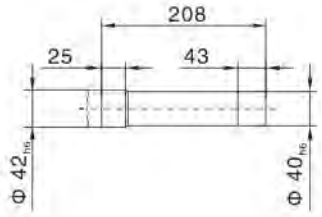
Φ 40^{H7}/Φ 42^{H7}

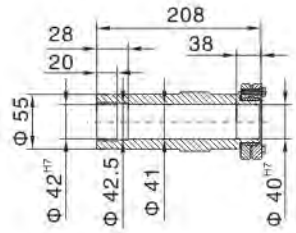




SHFH/FHF/FHZ67

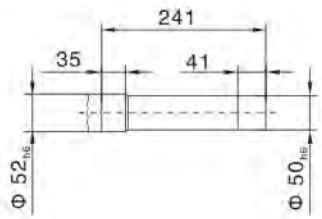
Φ 40^{H7}/Φ 42^{H7}

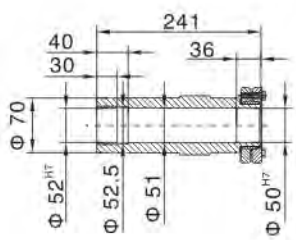




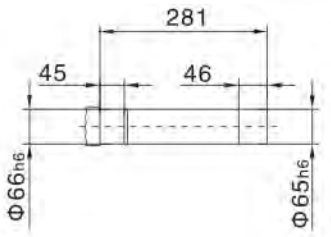
SHFH/FHF/FHZ77

Φ 50^{H7}/Φ52^{H7}



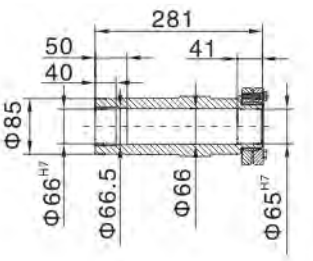


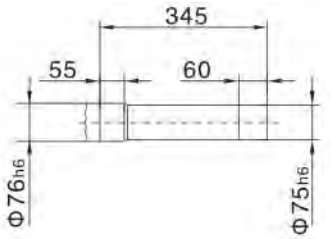
Parallel shaft helical gear unit with shouldered hollow shaft



SHFH/FHF/FHZ87

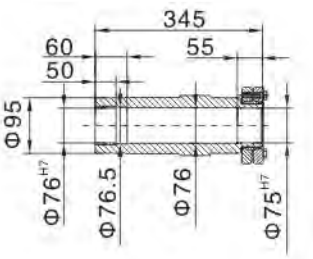
Φ65^{H7}/Φ66^{H7}

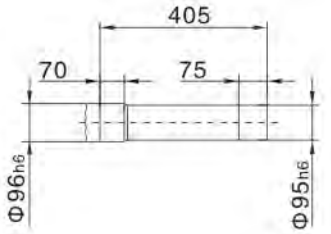




SHFH/FHF/FHZ97

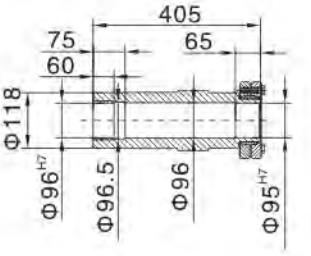
Φ75^{H7}/Φ76^{H7}

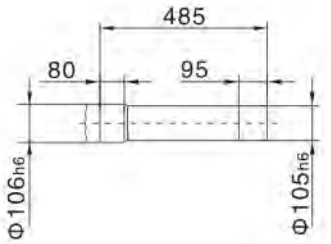




SHFH/FHF/FHZ107

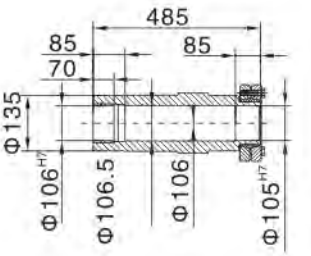
Φ95^{H7}/Φ96^{H7}





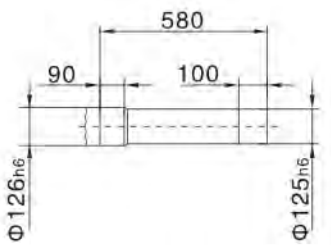
SHFH/FHF/FHZ127

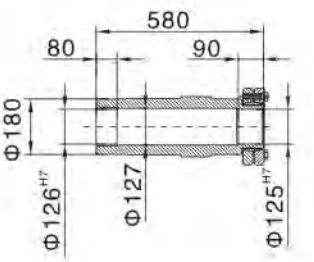
Φ105^{H7}/Φ106^{H7}



SHFH/FHF/FHZ157

Φ125^{H7}/Φ126^{H7}

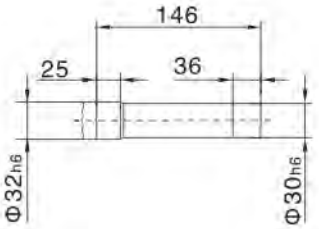


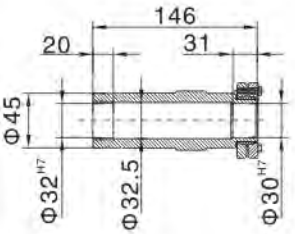


Helical–bevel gear unit with shouldered hollow shaft

SHKH/KHF/KHZ37

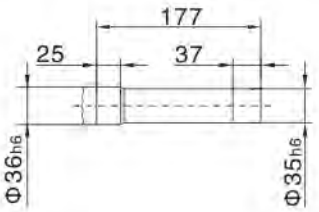
$\Phi 30^{H7}/\Phi 32^{H7}$

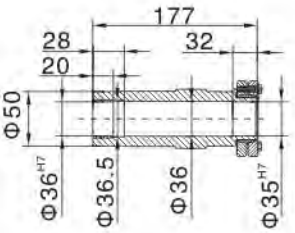




SHKH/KHF/KHZ47

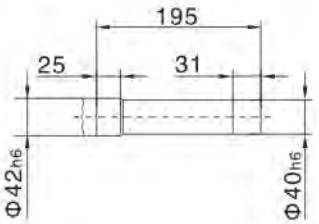
$\Phi 35^{H7}/\Phi 36^{H7}$

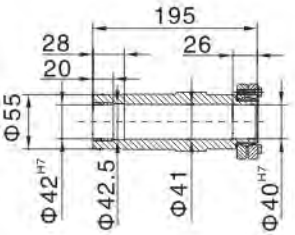




SHKH/KHF/KHZ57

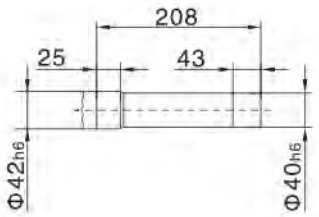
$\Phi 40^{H7}/\Phi 42^{H7}$

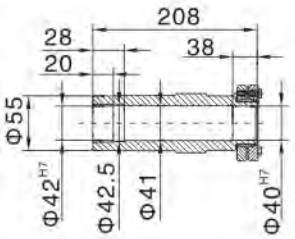




SHKH/KHF/KHZ67

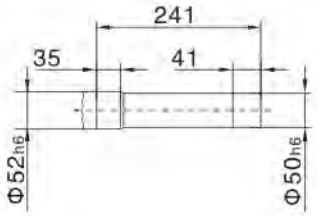
$\Phi 40^{H7}/\Phi 42^{H7}$

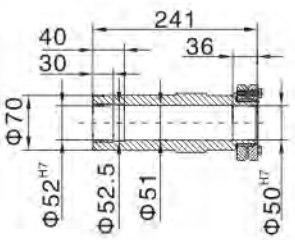




SHKH/KHF/KHZ77

$\Phi 50^{H7}/\Phi 52^{H7}$

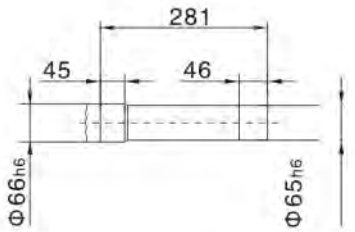


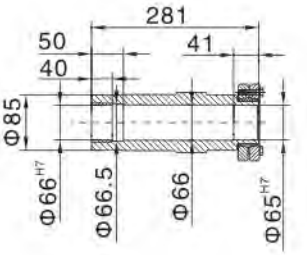


Helical–bevel gear unit with shouldered hollow shaft

SHKH/KHF/KHZ87

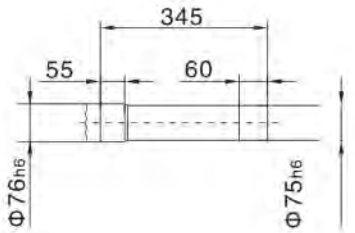
Φ65^{H7}/Φ66^{H7}

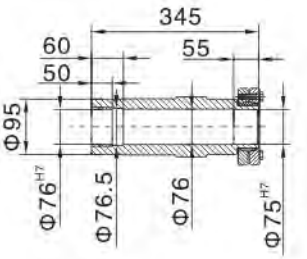




SHKH/KHF/KHZ97

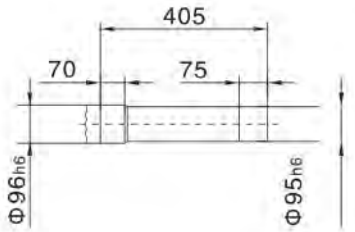
Φ75^{H7}/Φ76^{H7}

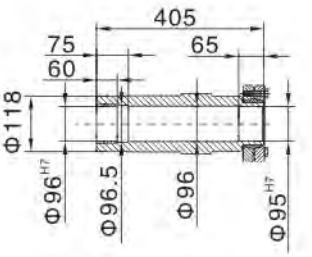




SHKH/KHF/KHZ107

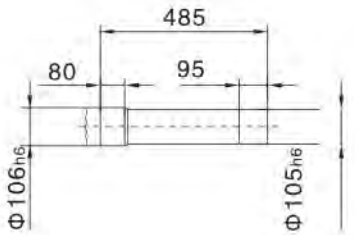
Φ95^{H7}/Φ96^{H7}

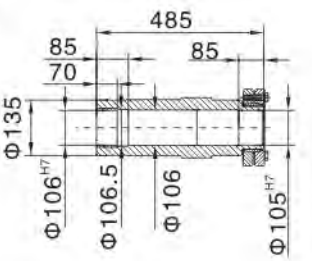




SHKH/KHF/KHZ127

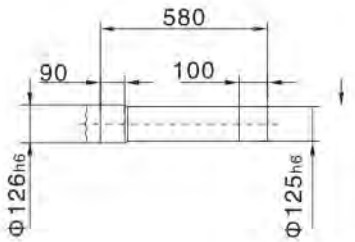
Φ105^{H7}/Φ106^{H7}

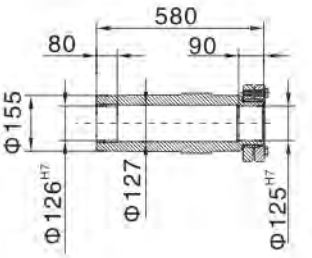




SHKH/KHF/KHZ157

Φ125^{H7}/Φ126^{H7}

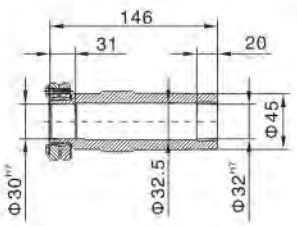


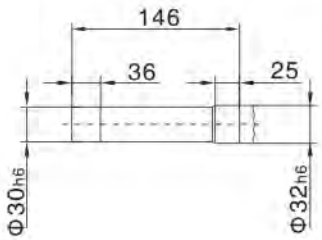


Helical–worm gear unit with shouldered hollow shaft

SHSH/SHF/SHZ47

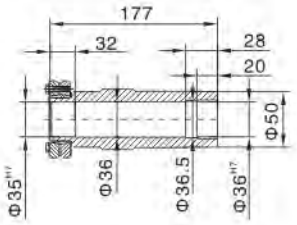
$\Phi 30^{H7}/\Phi 32^{H7}$

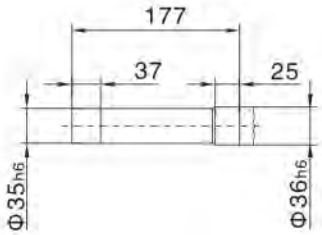




SHSH/SHF/SHZ57

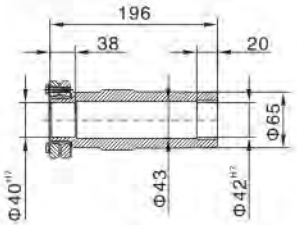
$\Phi 35^{H7}/\Phi 36^{H7}$

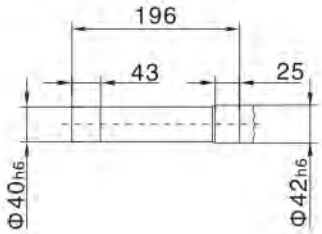




SHSH/SHF/SHZ67

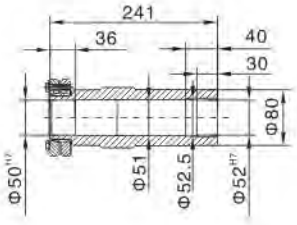
$\Phi 40^{H7}/\Phi 42^{H7}$

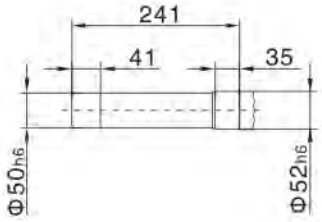




SHSH/SHF/SHZ77

$\Phi 50^{H7}/\Phi 52^{H7}$

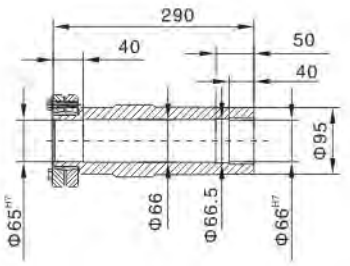


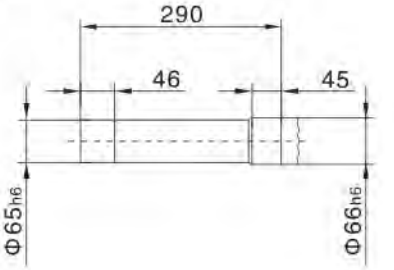


Helical–worm gear unit with shouldered hollow shaft

SHSH/SHF/SHZ87

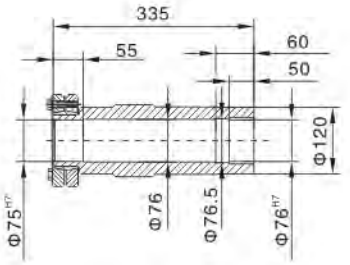
Φ65^{H7}/Φ66^{H7}

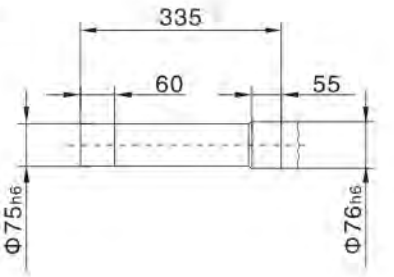




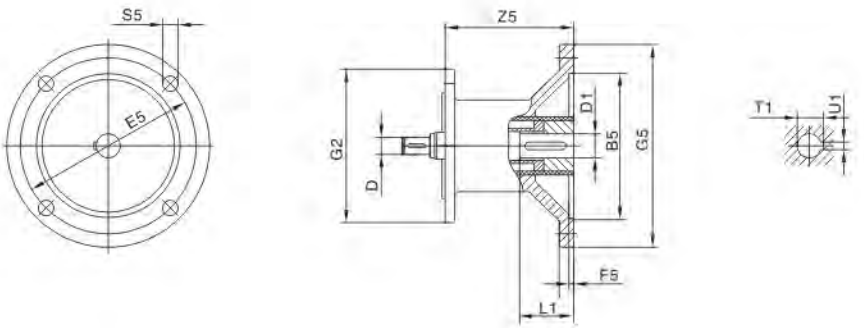
SHSH/SHF/SHZ97

Φ75^{H7}/Φ76^{H7}



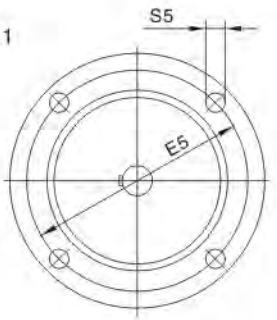


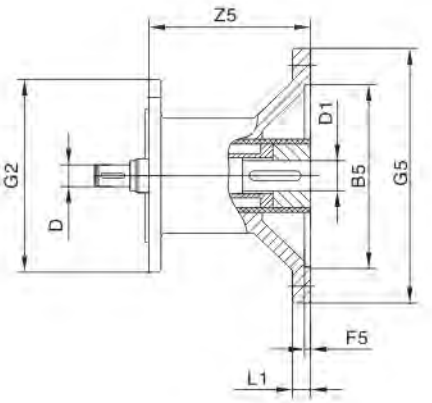
9.3 Coupling for mounting of IEC motors



Gear unit type	Coupling type	B5	D	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
SHR..27,SHR..37 SHF..37,SHF..47 SHK..37 SHS..37,SHS..47 SHS..57	AM63	95	10	115	3.5	120	140	M8	72	11	23	12.8	4
	AM71[1)]	110		130			160			14	30	16.3	5
	AM80[1)]	130	12	165	4.5		200	M10	106	19	40	21.8	6
	AM90[1)]		14							24	50	27.3	8
SHR..47,SHR..57 SHK..67 SHF..57,SHF..67 SHK..47,SHK..57 SHK..67 SHS..67	AM63	95	10	115	3.5	160	140	M8	66	11	23	12.8	4
	AM71	110		130			160			14	30	16.3	5
	AM80	130	12	165	4.5		200	M10	99	19	40	21.8	6
	AM90		14							24	50	27.3	8
	AM100[1)]	180	16	215	5		250	M12	134	28	60	31.3	8
	AM112[1)]		18										
SHR..77 SHF..77 SHK..77 SHS..77	AM63	95	10	115	3.5	200	140	M8	60	11	23	12.8	4
	AM71	110		130			160			14	30	16.3	5
	AM80	130	12	165	4.5		200	M10	92	19	40	21.8	6
	AM90		14							24	50	27.3	8
	AM100[1)]	180	16	215	5		250	M12	126	28	60	31.3	8
	AM112[1)]		18										
	AM132S[1)] AM132M[1)]	230	22	265			300		179	38	80	41.3	10
	AM132ML[1)]		28										
SHR..87 SHF..87 SHK..87 SHS..87	AM80	130	12	165	4.5	250	200	M10	87	19	40	21.8	6
	AM90		14							24	50	27.3	8
	AM100	180	16	215	5		250	M12	121	28	60	31.3	8
	AM112		18										
	AM132S AM132M	230	22	265			300		174	38	80	41.3	10
	AM132ML		28										
	AM160[1)]	250	28	300	6		350	M16	232	42	110	45.3	12
	AM180[1)]		32							48		51.8	14

Fig.1





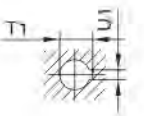
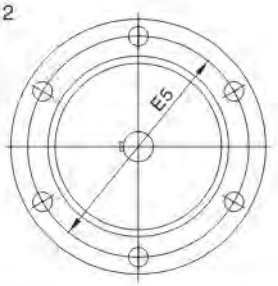


Fig.2



Gear unit type	Coupling type	Fig	B5	D	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
SHR..97 SHF..97 SHK..97 SHS..97	AM100	1	180	16	215	5	300	250	M12	116	28	60	31.3	8
	AM112			18										
	AM132S AM132M		230	22	265			300		169	38	80	41.3	10
	AM132ML			28										
	AM160		250	28	300	6		350	M16	227	42	110	45.3	12
	AM180			32							48		51.8	14
	AM200		300	38	350	7		400		268	55		59.3	16
	AM225[1)]	2	350	38	400			450		283	60	140	64.4	18
SHR..107 SHF..107 SHK..107	AM100	1	180	16	215	5	350	250	M12	110	28	60	31.3	8
	AM112			18										
	AM132S AM132M		230	22	265			300		163	38	80	41.3	10
	AM132ML			28										
	AM160		250	28	300	6		350	M16	221	42	110	45.3	12
	AM180			32							48		51.8	14
	AM200		300	38	350	7		400		262	55		59.3	16
	AM225	2	350	38	400			450		277	60	140	64.4	18
SHR..137	AM132S AM132M	1	230	22	265	5	400	300	M12	156	38	80	41.3	10
	AM132ML			28										
	AM160		250	28	300	6		350	M16	214	42	110	45.3	12
	AM180			32							48		51.8	14
	AM200		300	38	350	7		400		255	55		59.3	16
	AM225	2	350	38	400			450		270	60	140	64.4	18

1)
Dimension 1/2 G5 may protrude past foot mounting surface if mounted on SHR、SHK or SHS foot-mounted gear unit, Please check.

Fig.1

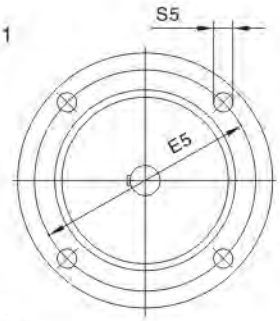
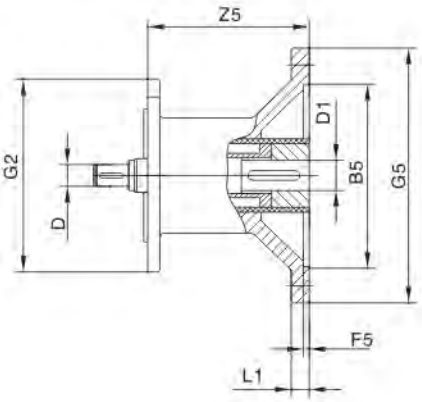
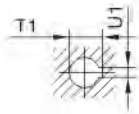


Fig.2

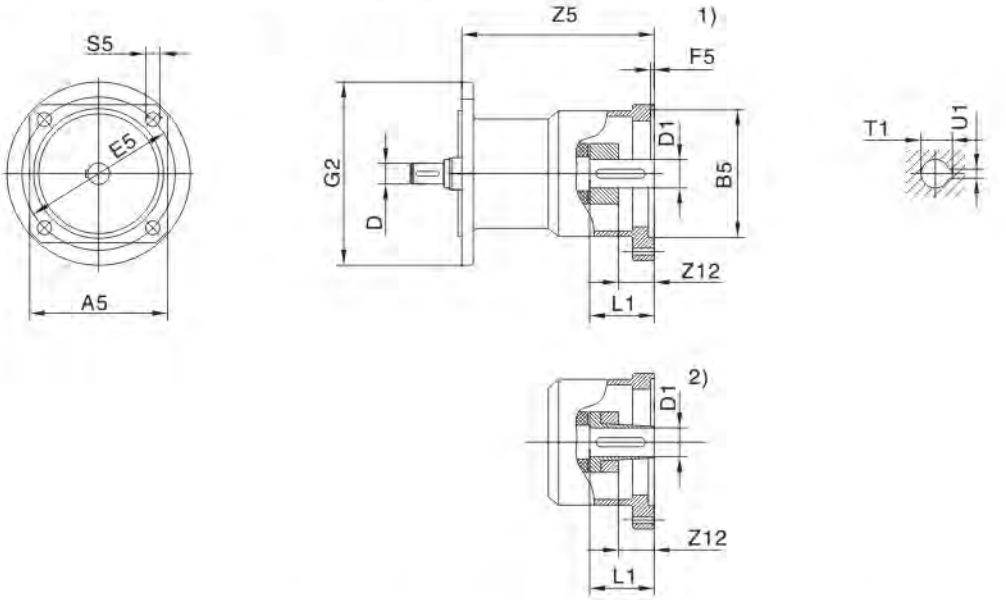




Gear unit type	Coupling type	Fig	B5	D	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
SHR..147 SHF..127 SHK..127	AM132S AM132M	1	230	22	265	5	450	300	M12	148	38	80	41.3	10
	AM132ML			28										
	AM160		250	28	300	6		350	M16	206	42	110	45.3	12
	AM180			32							48		51.8	14
	AM200		300	38	350	7		400		247	55		59.3	16
	AM225	2	350	38	400			450		262	60	140	64.4	18
	AM250		450	48	500			550		336	65		69.4	
	AM280										75		79.9	20
SHR..167 SHF..157 SHK..157 SHK..167 SHK..187	AM160	1	250	28	300	6	550	350	M16	198	42	110	45.3	12
	AM180			32							48		51.8	14
	AM200		300	38	350	7		400		239	55		59.3	16
	AM225	2	350	38	400			450		254	60	140	64.4	18
	AM250		450	48	500			550		328	65		69.4	
	AM280										75		79.9	20

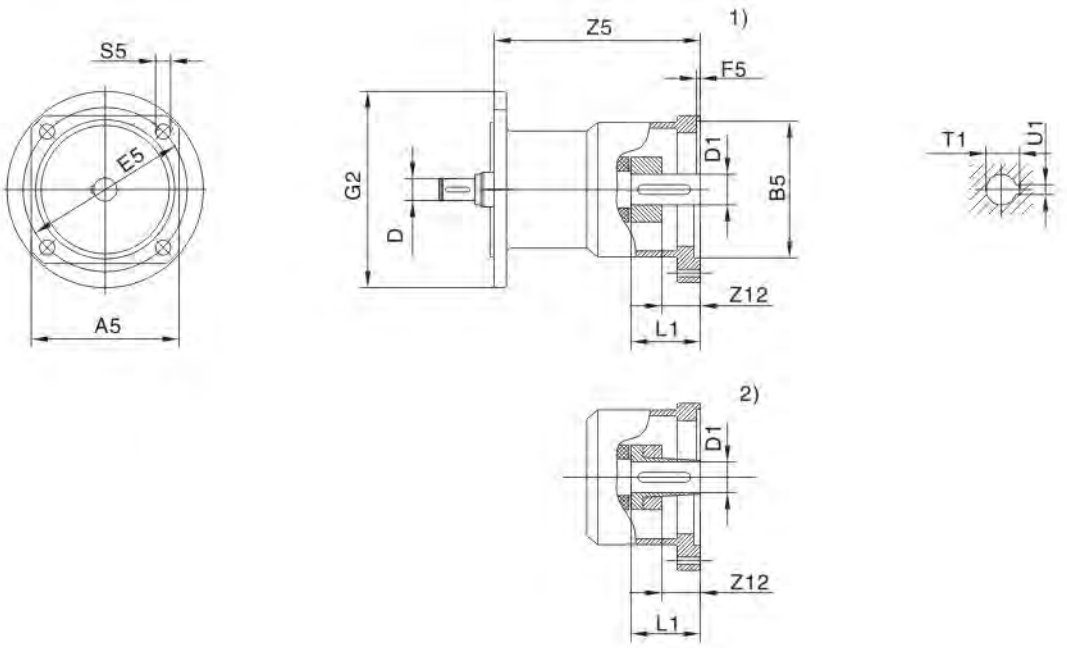
1)
Dimension 1/2 G5 may protrude past foot mounting surface if mounted on SHR、SHK or SHS foot-mounted gear unit, Please check.

9.4 Adapter for mounting of servomotors



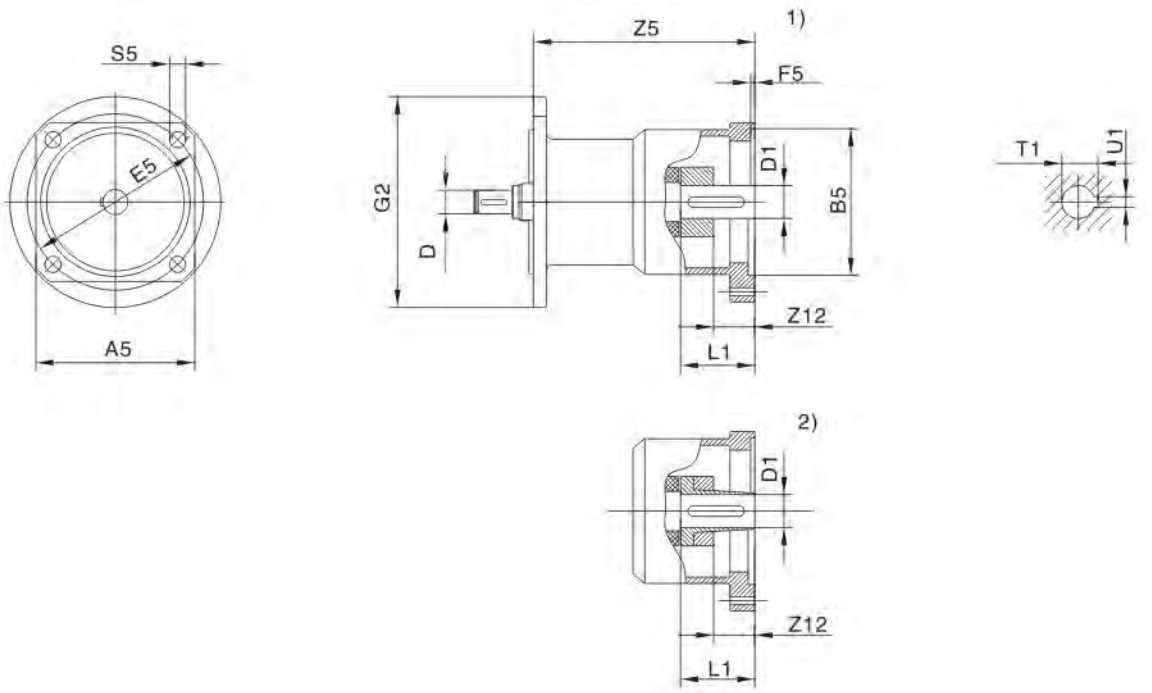
Gear unit type	Coupling type	A5	B5	D	E5	F5	G2	S5	Z5	Z12[1]	Z12[2]	D1	L1	T1[1]	U1[1]
SHR..27 SHR..37 SHF..37 SHF..47 SHK..37 SHS..37 SHS..47 SHS..57	AQ..80/1	82	60	10 12	75	3	120	M5	104.5	5.5	5.5	11	23	12.8	4
	AQ..80/2											14	30	16.3	5
	AQ..80/3		50		95			M6							
	AQ..100/1	100	80	10 12 14 16	100	4		M6	129.5	–	–	14	30	16.3	5
	AQ..100/2		95		115			M8							
	AQ..100/3		80		100			M6	143.5	7	14	19	40	21.8	6
	AQ..100/4		95		115			M8							
	AQ..115/1	115	95		130			M8	152.5	16	23	19	40	21.8	6
	AQ..115/2		110												
	AQ..115/3									21	16	24	50	27.3	8
SHR..47 SHR..57 SHR..67 SHF..57 SHF..67 SHK..47 SHK..57 SHK..67 SHS..67	AQ..80/1	82	60	10 12	75	3	160	M5	98	5.5	5.5	11	23	12.8	4
	AQ..80/2											14	30	16.3	5
	AQ..80/3		50		95			M6							
	AQ..100/1	100	80	10 12 14 16	100	4		M6	122.5	–	–	14	30	16.3	5
	AQ..100/2		95		115			M8							
	AQ..100/3		80		100			M6	136.5	7	14	19	40	21.8	6
	AQ..100/4		95		115			M8							
	AQ..115/1	115	95		130			M8	145.5	16	23	19	40	21.8	6
	AQ..115/2		110												
	AQ..115/3									21	16	24	50	27.3	8
	AQ..140/1	140	110	16	165	5		M10	175	21	16	24	50	27.3	8
	AQ..140/2		130	18											
	AQ..140/3			22					188	24	22	32	60	35.5	10

1) Applies to type with key way (AQA..)
2) Applies to type with clamping ring hub (AQH..)



Gear unit type	Coupling type	A5	B5	D	E5	F5	G2	S5	Z5	Z12[1]	Z12[2]	D1	L1	T1[1]	U1[1]
SHR..77 SHF..77 SHK..77 SHS..77	AQ..80/1	82	60	10 12	75	3	200	M5	92	5.5	5.5	11	23	12.8	4
	AQ..80/2				75							14	30	16.3	5
	AQ..80/3		50		95			M6							
	AQ..100/1	100	80	10 12 14 16	100	4		M6	115.5	–	–	14	30	16.3	5
	AQ..100/2		95		115			M8							
	AQ..100/3		80		100			M6	129.5	7	14	19	40	21.8	6
	AQ..100/4		95		115			M8							
	AQ..115/1	115	95		130			M8	138.5	16	23	19	40	21.8	6
	AQ..115/2		110												
	AQ..115/3									21	16	24	50	27.3	8
	AQ..140/1	140	110	16 18 22	165	5		M10	167	21	16	24	50	27.3	8
	AQ..140/2		130												
	AQ..140/3								180	24	22	32	60	35.3	10
	AQ..190/1	190	130	22 28	215			M12	225.5	26	24	32	60	35.3	10
	AQ..190/2		180												
	AQ..190/3								249.5	39	34	38	80	41.3	10
SHR..87 SHF..87 SHK..87 SHS..87	AQ..100/1	100	80	12 14 16	100	4	250	M6	110.5	–	–	14	30	16.3	5
	AQ..100/2		95		115			M8							
	AQ..100/3		80		100			M6	124.5	7	14	19	40	21.8	6
	AQ..100/4		95		115			M8							
	AQ..115/1	115	95		130			M8	133.5	16	23	19	40	21.8	6
	AQ..115/2		110												
	AQ..115/3									21	16	24	50	27.3	8
	AQ..140/1	140	110	16	165	5		M10	162	21	16	24	50	27.3	8
	AQ..140/2		130	18											
	AQ..140/3			22					175	24	22	32	60	35.3	10
	AQ..190/1	190	130	22 28	215			M12	220.5	26	24	32	60	35.3	10
	AQ..190/2		180												
	AQ..190/3								244.5	39	34	38	80	41.3	10

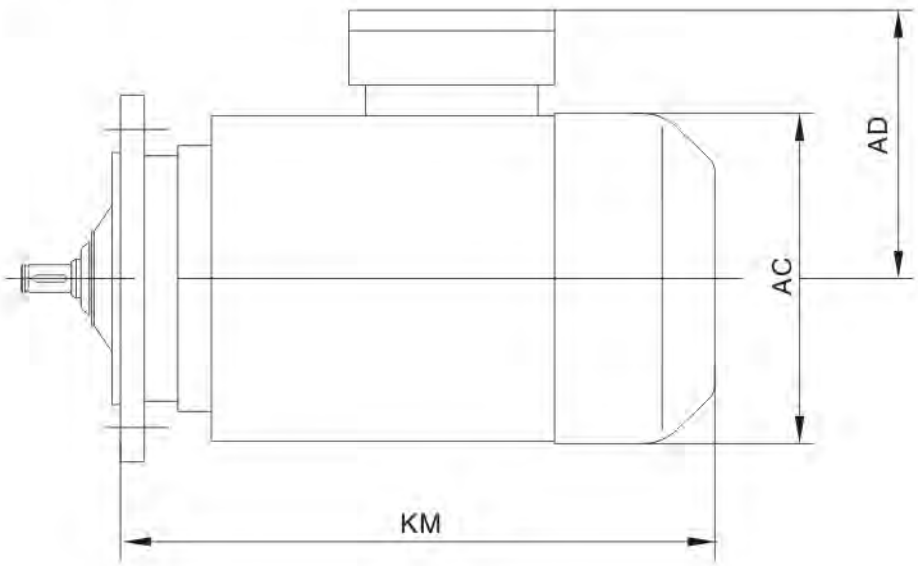
1) Applies to type with key way (AQA..)
2) Applies to type with clamping ring hub (AQH..)



Gear unit type	Coupling type	A5	B5	D	E5	F5	G2	S5	Z5	Z12[1]	Z12[2]	D1	L1	T1[1]	U1[1]
SHR..97 SHF..97 SHK..97 SHS..97	AQ..140/1	140	110	16 18 22	165	5	300	M10	157	21	16	24	50	27.3	8
	AQ..140/2		130												
	AQ..140/3								170	24	22	32	60	35.3	10
	AQ..190/1	190	130	22 28	215			M12	215.5	26	24	32	60	35.3	10
	AQ..190/2		180												
	AQ..190/3								239.5	39	34	38	80	41.3	
SHR..107 SHF..107 SHK..107	AQ..140/1	140	110	16 18 22	165		350	M10	151	21	16	24	50	27.3	8
	AQ..140/2		130												
	AQ..140/3								164	24	22	32	60	35.3	10
	AQ..190/1	190	130	22 28	215			M12	209.5	26	24	32	60	35.3	10
	AQ..190/2		180												
	AQ..190/3								233.5	39	34	38	80	41.3	
SHR..137	AQ..190/1	190	130	22 28	215		400	M12	202.5	-	25	32	60	35.3	10
	AQ..190/2		180												
	AQ..190/3								226.5	39	34	38	80	41.3	
SHR..147 SHF..127 SHK..127	AQ..190/1		130	22 28			450		194.5	26	24	32	60	35.3	
	AQ..190/2		180												
	AQ..190/3								218.5	39	34	38	80	41.3	

1) Applies to type with key way (AQA..)
2) Applies to type with clamping ring hub (AQH..)

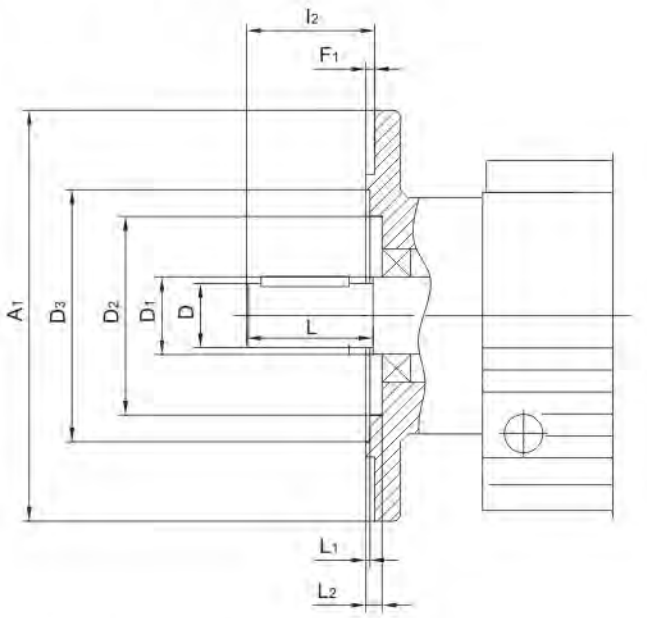
9.5 The size of motor



Model	D63M	D71M	D80M	D90S D90L	D100L	D112M	D132S D132L	D160M D160L	D180M D180L	D200L	D225S D225M	D250M	D280S D280M	D315S D315M
AC	130	145	175	195	215	240	275	330	380	420	470	510	580	612
AD	70	80	145	155	180	190	210	255	280	305	335	370	400	430
KM	250	280	320	342 367	400	408	473 513	560 615	645 685	710	724 754	810	895 945	1010 1065

Notice: The data in the above table is only for reference. If you have any special requirements, please contact us.

9.6 Flange contours of SHRF.. and SHR..F gear units



Check dimensions L1 and L2 for selection and installation of output elements

Type	A1	D	D1	D2		D3	F1	12	L	L1		L2
				SHRF	SHR..F					SHRF	SHR..F	
SHRF17,SHR17F	120	20	25	46	46	65	3	40	40	1	1	5
	140				–	78	3			1	–	5
SHRF27,SHR27F	120	25	30	54	4	66	3	50	50	1	1	6
	140				–	79	3			3	–	7
	160				–	92	3.5			3	–	7
SHRF37,SHR37F	120	25	35	60	63	70	3	50	50	5	4	7
	160				–	96	3.5			1	–	7.5
	200				–	119	3.5			1	–	7.5
SHRF47,SHR47F	140	30	35	72	64	82	3	60	60	4	1	6
	160				–	96	3.5			0.5	–	6.5
	200				–	116	3.5			0.5	–	6.5
SHRF57,SHR57F	160	35	40	76	75	96	3.5	70	70	4	2.5	5
	200				–	116	3.5			0	–	5
	250				–	160	4			0.5	–	5.5
SHRF67,SHR67F	200	35	50	90	90	118	3.5	70	70	2	4	7
	250				–	160	4			1	–	7.5
SHRF77,SHR77F	250	40	52	112	100	160	4	80	80	0.5	2.5	7
	300				–	210	4			0.5	–	7
SHRF87,SHR87F	300	50	62	123	122	210	4	100	100	0	1.5	8
	350				–	226	5			1	–	9
SHRF97	350	60	72	136		236	5	120	120	0		9
	450					320						
SHRF107	350	70	82	157		232	5	140	140	0		11
	450			186		316						
SHRF137	450	90	108	180		316	5	170	170	0		10
	550					416						
SHRF147	450	110	125	210		316	5	210	210	0		10
	550					416						
SHRF167	550	120	145	290		416	5	210	210	1		10
	660					517	6			2		11

9.7 Gear unit mounting

Always use bolts quality 8.8 for mounting gear units and geared motors.

Exception

Bolts of quality 10.9 must be used for used for fastening the flange to the customer supplied unit in order to transmit the rated torque specified in the catalog. These bolts must be used in case following flange – mounnted helical geared motors (SHRF..) and foot/flange – mounted helical geared motors (SHR..F..) :

- SHRF37, SHRF37F with flange Φ 120mm
- SHRF47, SHRF47F with flange Φ 140mm
- SHRF57, SHRF57F with flange Φ 160mm

Torque arms for SHKH167..,SHKH187..

As standard, there are no torque arms available for gear unit sizes SHKH167..and SHKH187 Please contact company if you require torque arms for these gear units. We will submit The configuration of recommendations.

9.8 Lubricants

Greneral information

Unless there is a special requirement, SHAKERIN always supplies the drives that with lubricant fill specifically for the reducer and mounting position. When ordering a drive, the decisve factor of lubricant fill qwantites is the drives mounting position. You must adapt the lubricant fill to any subsequent change made to the mounting position check P222 for the (Lubricant fill quantities)

Lubricating conglutination

Commend the lubricant oil in P221. The grade and conglutination index in the following.

DIN(ISO,SAE) Normal lubricating	Conglutination index	Ambient temperature	Gear unit type
Mineral oil CLp(cc)	ISOVG 220	-10-+40	SHR , SHF , SHK
	ISOVG 680	0-+40	SHS

The special lubricante oil. must be used in special situation. For example requesting use the oil with long life-span.If you want, we can afford the biology decompose oil for food ndustry.

DIN(ISO,SAE) Normal lubricating	Conglutination index	Ambient temperature	Gear unit type
Mineral oil CLp(CC)	ISOVG 100	-20-+25	SHR , SHF , SHK
Synthetic fluid,clp pg	ISOVG 220	-25-+80	SHR , SHF , SHK
Synthetic fluid,CLP HC	ISOVG 460	-30-+80	SHS

Anti-friction bearing greases

DIN(ISO,SAE) Normal lubricating	Ambient temperature	Gear unit type
K32N/K2K mineral bearing lubricating lipin K32N/K2K	-30-+60	Normal type:motor reducer
KHC 2R-40 synthetic bearing lubricating lipin K2R-40	-40-+80	Reducers need to inject the synthetic lubricant
K3N-30 mineral bearing lubricating lipin K3N-30	-25-+80	Special type:select the motor in different situation
K2S-50 synthetic bearing lubricating lipin K2S-50	-45--25	Special type:select the motor in different situation

Lubricant table

Gear unit type	Ambient temperature 0° +50 +100	DIN(ISO)	ISO NLGI	Mobil	Shell	KLÜBER LUBRICATION	ARAL	BP	Tribol		Optimol	FUCHS
SHR SHF SHK	-10 +40	CLP (CC)	VG 220	Mobilgear 630	Shell Omala 220	Klüberoil GEM 1-225	Aral Degol Bg220	BP Energol GR-Xp220	Tribol 1100/220	Meropa 220	Optigear BM220	Renolin CLP 220
	-25 +80	CLP PG	VG 220	Mobil Glygoyle 30	Shell Tivela WB	Klübersynth GH 6-220	Aral Degol Gs220	BP Energol SR-Xp220	Tribol 800/220	Synlube CLP 220	Optiflex A 220	
	*-40 +80	CLP HC	VG 220	Mobil SHC 630	Shell Omala 220 HD	Klübersynth GEM 4-220	Aral Degol PAS220		Tribol 1510/200	Pinnacle EP 220	Optigear Synthetic A 220	Renolin Unisyn CLP 220
	*-40 +40		VG 150	Mobil SHC 629		Klübersynth GEM 4-150						
	-20 +25	CLP (CC)	VG 150 VG 100	Mobilgear 629	Shell Omala 100	Klüberoil GEM 1-150	Aral Degol Bg100	BP Energol GR-Xp100	Tribol 1000/100	Meropa 150	Optigear BM220	Renolin CLP 150
	-30 +10		VG 68-46 VG 32	Mobil D.T.E 15M	Shell Tellus T32	Klüberoil GEM 1-68	Aral Degol Bg46		Tribol 1100/68	Anubia EP 46	Optigear 32	Renolin B 46 HVI
	*-40 +10	CLP HC	VG 32	Mobil SHC 624		Klübersynth GEM 4-32				Cetus PAO 46		
	*-40 -20	HLP (HM)	VG 22 VG 15	Mobil D.T.E 11M	Shell Tellus T15	ISOFLEX MT 30 ROT		BP Energol HLP-HM10		Aircraft Hydr.Oil 15		
SHS	0 +40	CLP (CC)	VG 680	Mobilgear 636	Shell Omala 680	Klüberoil GEM 1-680	Aral Degol Bg680	BP Energol GR-Xp680	Tribol 1100/680	Meropa 680	Optigear BM 680	Renolin CLP 680
	-20 +60	CLP PG	VG 680 1)	Mobil Glygoyle HE 680		Klübersynth Gh 6-680		BP Enersyn SG-Xp680	Tribol 800/680	Synlube CLP 680		
	*-30 +80	CLP PHC	VG 460	Mobil SHC 634	Shell Omala 460 HD	Klübersynth GEM 4-460						
	*-40 +10		VG 150	Mobil SHC 629		Klübersynth GEM 4-150						
	-20 +10	CLP (CC)	VG 150 VG 100	Mobil D.T.E 18M	Shell Omala 100	Klüberoil GEM 1-150	Aral Degol Bg100	BP Energol GR-Xp100	Tribol 1100/100	Meropa 100	Optigear BM 100	Renolin CLP 150
	-25 +20	CLP PG	VG 220 1)	Mobil Glygoyle 30		Klübersynth GH 6-220			Tribol 800/220	Synlube CLP 220	Optiflex A 220	
	*-40 0	CLP HG	VG 32	Mobil SHC 624		Klübersynth GEM 4-32				Cetus PAO 48		
SHR SHK SHF SHS	*-30 +40	HCE	VG 460 4)		Shell Cassida Fluid GL 460	Klüberol 4UH1-460	Aral Eural Bear 460				Optileb GT 460	
	-20 +40	E	VG 460 5)			Klüberbio CA2-460					Optisynt BS 460	
SHF27 SHR17 SHR27	-25 +60	DIN 51181	00 2)	Glygoyle Grease 00	Shell Tivela Compound A	Klübersynth GE 46-1200				Multifak 6833EP 00		
	-15 +40		000-0 2)	Mobilux EP 004	Shell Alvania GL 00		Aralub MFL 00	BP Energrease LS-EP 00		Multifak EP 000	Longtime PD 00	Renolin SF 7-041

= Synthetic lubricant
= Mineral lubricant

1)With the Helical-worm geared motors use PG oil. Please contact with company
2)Small conglutination index oil, other types of reducers. Please contact with company.
3)Food or beverage industry used oil.
4)biology decompose oil.
--High request when start-up in low temperature.

1)
2)
3)
4)
*

CLPPG=
CLP HC=
E=
HCE=

CLP=
HLP=

CLP:Petrolatam oil
HLP:Hydraulic pressure oil
KBTS/Ga/Vi

Lubricant fill quantities

The specified fill quantities are recommended values. The precise vary 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.

(SHR)
Helical gear units(SHR..)

The following tables show referenced values for lubricant fill quantities in relation to relation to the Mounting position M1–M6

Gear unit type	Fill quantity(L)					
	M1[1]	M2[1]	M3	M4	M5	M6
SHR17/R17F	0.25	0.6	0.35	0.6	0.35	0.35
SHR27/R27F	0.25/0.4	0.7	0.4	0.7	0.4	0.4
SHR37/R37F	0.3/1	0.9	1	1.1	0.8	1
SHR47/R47F	0.7/1.5	1.6	1.5	1.7	1.5	1.5
SHR57/R57F	0.8/1.7	1.9	1.7	2.1	1.7	1.7
SHR67/R67F	1.1/2.3	2.6/3.5	2.8	3.2	1.8	2
SHR77/R77F	1.2/3	3.8/4.3	3.6	4.3	2.5	3.4
SHR87/R87F	2.3/6	6.7/8.4	7.2	7.7	6.3	6.5
SHR97	4.6/9.8	11.7/14	11.7	13.4	11.3	11.7
SHR107	6/13.7	16.3	16.9	19.2	13.2	15.9
SHR137	10/25	28	29.5	31.5	25	25
SHR147	15.4/40	46.5	48	52	39.5	41
SHR167	27/70	82	78	88	66	69

Gear unit type	Fill quantity(L)					
	M1[1]	M2[1]	M3	M4	M5	M6
SHRF17	0.25	0.6	0.35	0.6	0.35	0.35
SHRF27	0.25/0.4	0.7	0.4	0.7	0.4	0.4
SHRF37	0.4/1	0.9	1	1.1	0.8	1
SHRF47	0.7/1.5	1.6	1.5	1.7	1.5	1.5
SHRF57	0.8/1.7	1.8	1.7	2	1.7	1.7
SHRF67	1.1/2.5	2.7/3.6	2.7	3.1	1.9	2.1
SHRF77	1.2/2.6	3.8/4.1	3.3	4.1	2.4	3
SHRF87	2.4/6	6.8/7.9	7.1	7.7	6.3	6.4
SHRF97	5.1/10.2	11.9/14	11.2	14	11.2	11.8
SHRF107	6.3/14.9	15.9	17	19.2	13.1	15.9
SHRF137	9.5/25	27	29	32.5	25	25
SHRF147	16.4/42	47	48	52	42	42
SHRF167	26/70	82	78	88	65	71

1)
The output end gear unit of multi-stage gear units be filled with the larger oil volume.

Gear unit type	Fill quantity(L)					
	M1	M2	M3	M4	M5	M6
SHRX57	0.6	0.8	1.3	1.3	0.9	0.9
SHRX67	0.8	0.8	1.7	1.9	1.1	1.1
SHRX77	1.1	1.5	2.6	2.7	1.6	1.6
SHRX87	1.7	2.5	4.8	4.8	2.9	2.9
SHRX97	2.1	3.4	7.4	7	4.8	4.8
SHRX107	3.9	5.6	11.6	11.9	7.7	7.7

Gear unit type	Fill quantity(L)					
	M1	M2	M3	M4	M5	M6
SHRX57	0.5	0.8	1.1	1.1	0.7	0.7
SHRX67	0.7	0.8	1.5	1.7	1	1
SHRX77	0.9	1.5	2.4	2.5	1.6	1.6
SHRX87	1.6	2.5	4.9	4.7	2.9	2.9
SHRX97	2.1	3.6	7.1	7	4.8	4.8
SHRX107	3.1	5.9	11.2	10.5	7.2	7.2

Parallel shaft helical gear units.(SHF..)

SHF..,SHFA..B,SHFH..B,SHFV..B

Gear unit type	Fill quantity(L)					
	M1	M2	M3	M4	M5	M6
SHF37	1	1.2	0.7	1.2	1	1.1
SHF47	1.5	1.8	1.1	1.9	1.5	1.7
SHF57	2.6	3.7	2.1	3.5	2.8	2.9
SHF67	2.7	3.8	1.9	3.8	2.9	3.2
SHF77	5	7.3	4.3	8	6	6.3
SHF87	10	13.0	7.7	13.8	10.8	11
SHF97	18.5	22.5	12.6	25.2	18.5	20
SHF107	24.5	32	19.5	37.5	27	27
SHF127	40.5	55	34	61	46.5	47
SHF157	69	104	63	105	86	78

SHFF..

Gear unit type	Fill quantity(L)					
	M1	M2	M3	M4	M5	M6
SHFF37	1	1.2	0.7	1.3	1	1.1
SHFF47	1.6	1.9	1.1	1.9	1.5	1.7
SHFF57	2.8	3.8	2.1	3.7	2.9	3
SHFF67	2.7	3.8	1.9	3.8	2.9	3.2
SHFF77	5.1	7.3	4.3	8.1	6	6.3
SHFF87	10.3	13.2	7.8	14.1	11	11.2
SHFF97	19	22.5	12.6	25.5	18.9	20.5
SHFF107	25.5	32	19.5	38.5	27.5	28
SHFF127	41.5	56	34	63	46.5	49
SHFF157	72	105	64	106	87	79

SHFA..,SHFH..,SHFV..,SHFAF.., SHFHF..,SHFVF..,SHFAZ..,SHFHZ..,SHFVZ

Gear unit type	Fill quantity(L)					
	M1	M2	M3	M4	M5	M6
SHF..37	1	1.2	0.7	1.2	1	1.1
SHF..47	1.5	1.8	1.1	1.9	15	1.7
SHF..57	2.7	3.8	2.1	3.6	2.9	3
SHF..67	2.7	3.8	1.9	3.8	2.9	3.2
SHF..77	5	7.3	4.3	8	6	6.3
SHF..87	10	13.0	77	13.8	10.8	11
SHF..97	18.5	22.5	12.6	25.0	18.5	20
SHF..107	24.5	32	19.5	37.5	27	27
SHF..127	39	55	34	61	45	46.5
SHF..157	68	103	62	104	85.	77

Helical–bevel Gear unit (SHK..)

SHK..,SHKA..B,SHKH..B,SHKV..B

Gear unit type	Fill quantity(L)					
	M1	M2	M3	M4	M5	M6
SHK..37	0.5	1	1	1.3	1	1
SHK..47	0.8	1.3	1.5	2	1.6	1.6
SHK..57	1.2	2.3	2.5	3	2.6	2.4
SHK..67	1.1	2.4	2.6	3.4	2.6	2.6
SHK..77	2.2	4.1	4.4	5.9	4.2	4.4
SHK..87	3.7	8	8.7	10.9	7.8	8
SHK..97	7	14	15.7	20	15.7	15.5
SHK..107	10	21	25.5	33.5	24	24
SHK..127	21	41.5	44	54	40	41
SHK..157	31	62	6.5	90	58	62
SHK..167	35	100	100	125	85	85
SHK..187	60	170	170	205	130	130

SHKF..

Gear unit type	Fill quantity(L)					
	M1	M2	M3	M4	M5	M6
SHKF37	0.5	1.1	1.1	1.5	1	1
SHKF47	0.8	1.3	1.7	2.2	1.6	1.6
SHKF57	1.3	2.3	2.7	3	2.9	2.7
SHKF67	1.1	2.4	2.8	3.6	2.7	2.7
SHKF77	2.1	4.1	4.4	6	4.5	4.5
SHKF87	3.7	8.2	9	11.9	8.4	8.4
SHKF97	7	14.7	17.3	21.5	15.7	16.5
SHKF107	10	22	26	35	25	25
SHKF127	21	41.5	46	55	41	41
SHKF157	31	66	69	92	62	62

SHKA..,SHKH..,SHKV..,SHKAF.., SHKHF..,SHKVF..,SHKAZ..,SHKHZ..,SHKVZ

Gear unit type	Fill quantity(L)					
	M1	M2	M3	M4	M5	M6
SHK..37	0.5	1	1	1.4	1	1
SHK..47	0.8	1.3	1.6	2.1	1.6	1.6
SHK..57	1.3	2.3	2.7	3	2.9	2.7
SHK..67	1.1	2.4	2.7	3.6	2.6	2.6
SHK..77	2.1	4.1	4.6	6	4.4	4.4
SHK..87	3.7	8.2	8.8	11.1	8	8
SHK..97	7	14.7	15.7	20	15.7	15.7
SHK..107	10	20.5	24	32	24	24
SHK..127	21	41.5	43	52	40	40
SHK..157	31	66	67	87	62	62
SHK..167	35	100	100	125	85	85
SHK..187	60	170	170	205	130	130

Helical-worm Gear units.(SHS..)

SHS..

Gear unit type	Fill quantity(L)					
	M1	M2	M3[1]	M4	M5	M6
SHS37	0.25	0.4	0.5	0.6	0.4	0.4
SHS47	0.35	0.8	0.7	1.1	0.8	0.8
SHS57	0.5	1.2	1	1.5	1.3	1.3
SHS67	1	2.0	2.2/3.1	3.2	2.6	2.6
SHS77	1.9	4.2	3.7/5.4	6	4.4	4.4
SHS87	3.3	8.1	6.9/10.4	12	8.4	8.4
SHS97	6.8	15	13.4/18	22.5	17	17

1)
The output end unit of multi-stage gear units must be filled with the larger oil volume.

SHSF..

Gear unit type	Fill quantity(L)					
	M1	M2	M3[1]	M4	M5	M6
SHSF37	0.25	0.4	0.5	0.6	0.4	0.4
SHSF47	0.4	0.9	0.9	1.2	1.0	1
SHSF57	0.5	1.2	1	1.6	1.4	1.4
SHSF67	1	2.2	2.3/3	3.2	2.7	2.7
SHSF77	1.9	4.1	3.9/5.8	6.5	4.9	4.9
SHSF87	3.8	8	7.1/10.1	12	9.1	9.1
SHSF97	7.4	15	13.8/18.8	23.6	18	18

1)
The output end unit of multi-stage gear units must be filled with the larger oil volume.

SHSA..,SHSH..,SHSAF..,SHSHF.., SHSAZ..,SHSHZ.

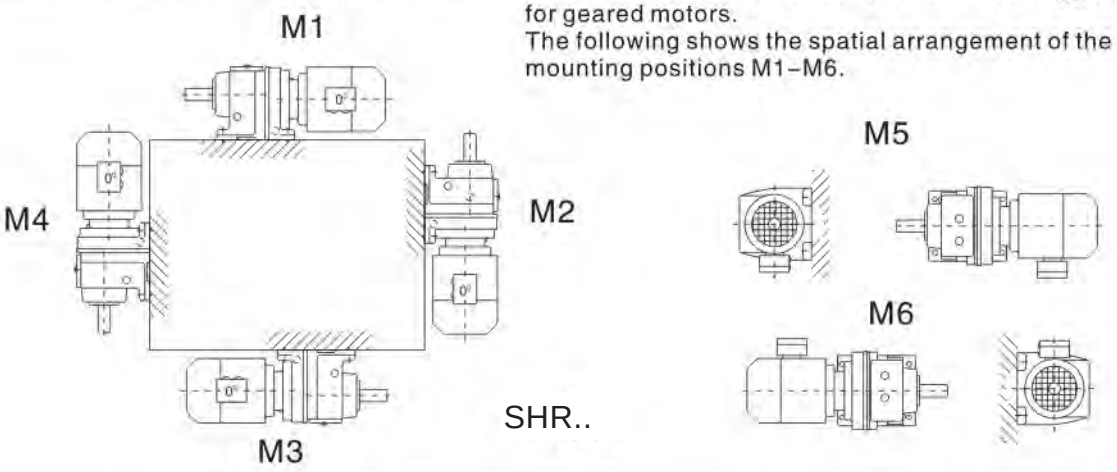
Gear unit type	Fill quantity(L)					
	M1	M2	M3[1]	M4	M5	M6
SHS..37	0.25	0.4	0.5	0.6	0.4	0.4
SHS..47	0.4	0.8	0.7	1.1	0.8	0.8
SHS..57	0.5	1.1	1	1.6	1.2	1.2
SHS..67	1	2	1.8/2.6	2.9	2.5	2.5
SHS..77	1.8	3.9	3.6/5	5.9	4.5	4.5
SHS..87	3.8	7.4	6/8.7	11.2	8	8
SHS..97	7	14	11.4/16	21	15.7	15.7

1)
The output end unit of multi-stage gear units must be filled with the larger oil volume.

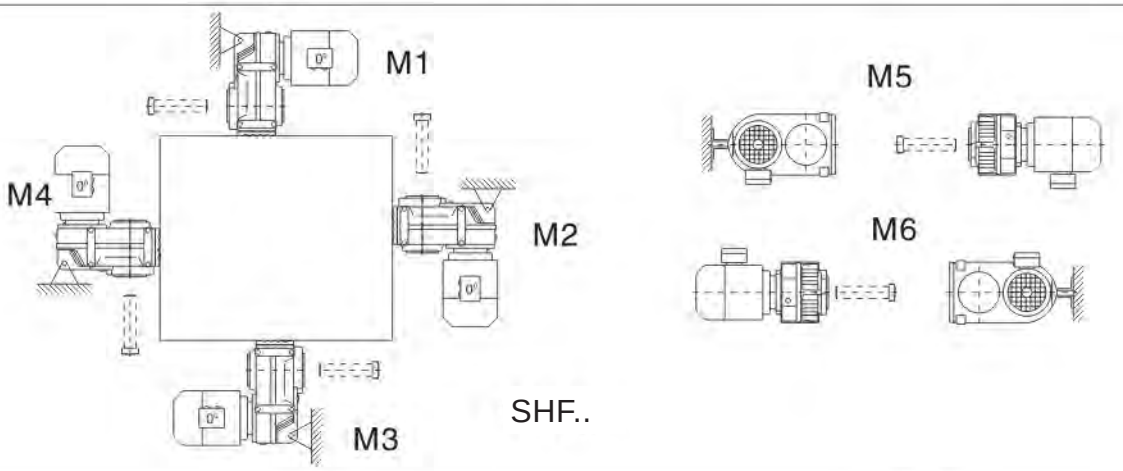
10.
Monnting Position

10.1 Mounnting position designation

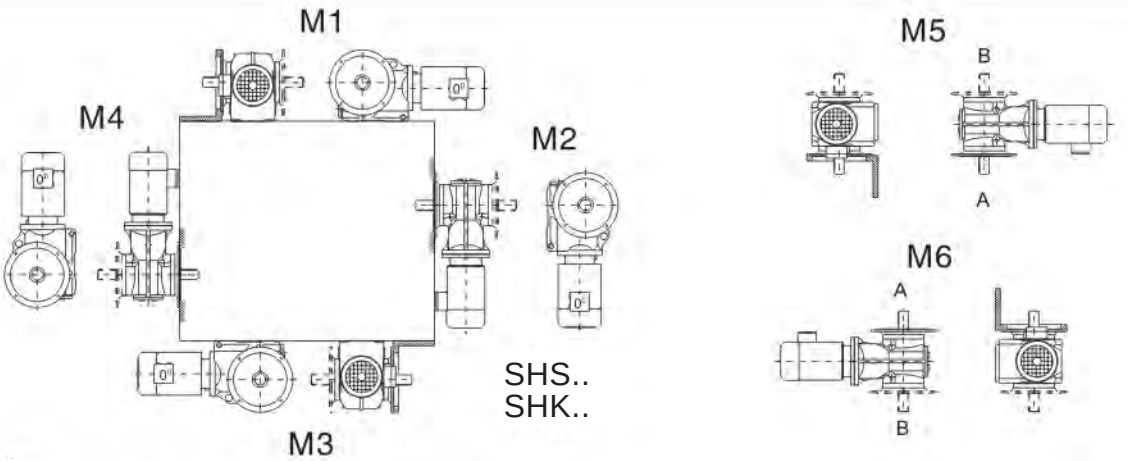
SHAKERIN differentiates between six mouning position M1–M6 for geared motors.
The following shows the spatial arrangement of the gear units in mounting positions M1–M6.



SHR..



SHF..



SHS..
SHK..

Important indention information

Except the mounting position,the indention informations for depicting the figure of gear

Unit exactly are necessary
Position of the motor terminal box
For the right-angle shaft reducers:output shaft connection.
For the right-angle shaft reducers:with shrink-disk:with or without feange.
For the drive with a backstop: the Direction of rotation.

Position of the motor terminal box cable entry

Possible positions of the teminal box are 0° ,90° ,180° or 270° as ciewed onto the fan guard=B-side
In addition, the position of the cable entry can be selected. The possibilities are "X" (=normal position), "1", "2", or "3"

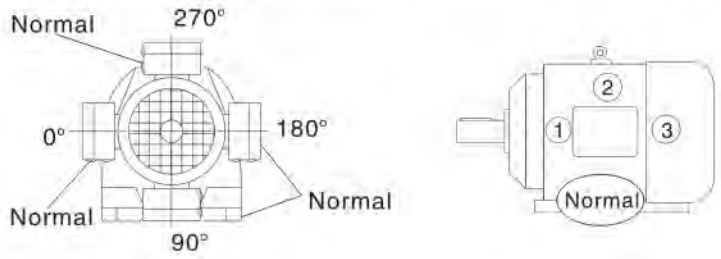


Fig:Position of the terminal box and cable entry

STOP

Unless other information is given regarding the terminal box,the 0° type with "X"cable entry will be supplied.We recommend selecting cable enty "2"with mounting position M3.
The terminal box cannot be positioned at 90° on the SHR17D71 geared motor.
Cable entry "2"is not possible with the D71..BMG motor with terminal box position 90°

Direction of totatiom of the drive with a backstop

If the drive has a RS backstop,it is necessary to stipulate the direction of drive rotation.
The following defintion applies:
Looking onto the output shaft:Clockwise(CW)=Rotating to the right
Counterclockwise(CCW)=Rotating to the left

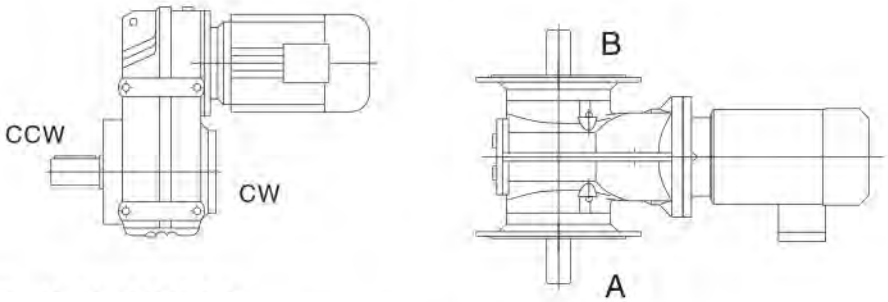


Fig: Direction of rotation of the output shaft

In right-angle gear units, it is necessary to indicate if the direction of rotation is given where be looked from the A or B end.

Position of the output shaft

In right-angle gear units, it is necenssary to indicate the position of the output shaft and output flange:A or B or A+B

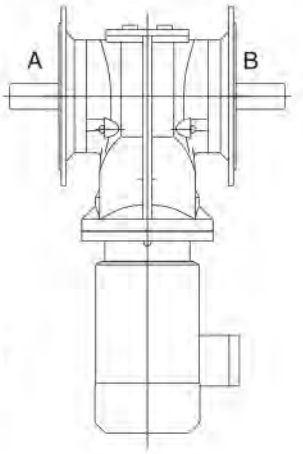


Fig:Position of the Output shaft

Position of the connection end in tight-angle gear units with shrink disk

In shaft mounted righ-angle gear units with shrink disk,it is necessary to indicate whether the A or B end is the connection end.In Fig.The A end and is the connection end.The shrink disk is located opposite the connection end.

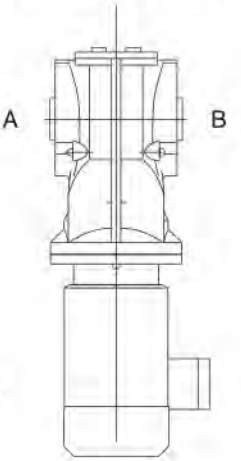


Fig:Position of the connection end

Sample orders

Connection end at bottom only is possible with SHK167/K187 helical-beveal gear units in mounting positions M5 and M6.

Type	Mounting position	Shaft with	Position of shrink disk	Flange	Position of teminal box	Position of cable enty	ration direction	Output direction
SHKF47D71D4/RS	M5	A	-	B	0°	"Normal"	CW	A
SHSF97D180M4	M2	A+B	-	A+B	180°	"2"	-	A+B
SHKH107D160L4	M1	A	B	-	270°	"3"	-	-

Symbols used

The following table shows the symbols used in the mounting position sheets and what they mean:

Symbol	Meaning
	Breather valve
	Oil level plug
	Oil drain plug
	In line plug

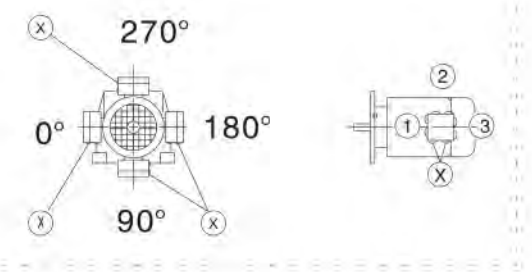
Churning losses

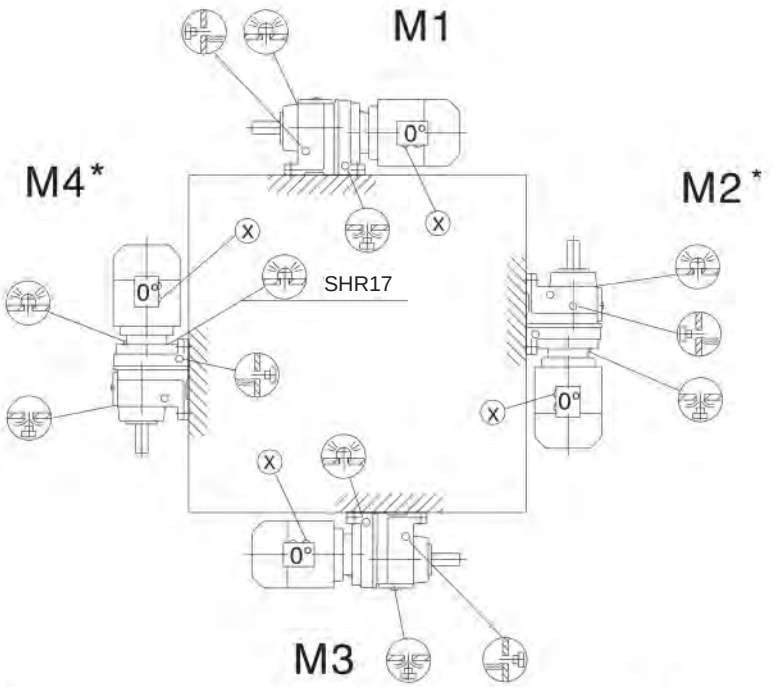
In creased churning losses may arise in some mounting positions,
Please contact company in case of the following combinations.

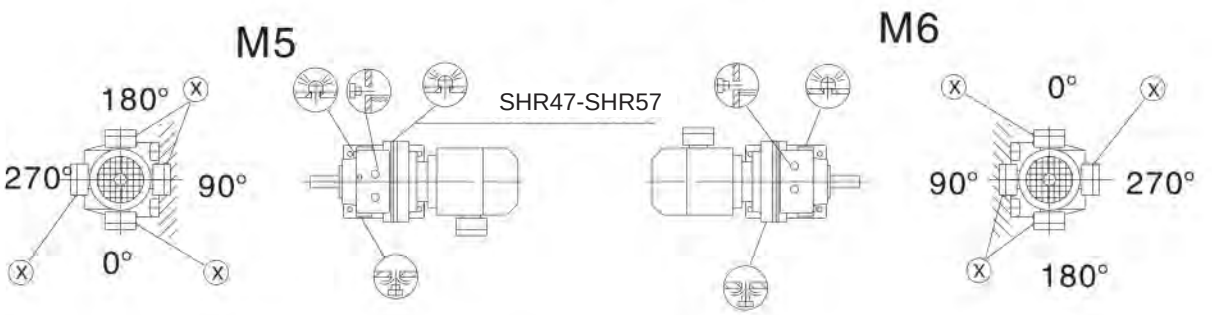
Mounting position	Gear unit type	Gear unit size	(rpm) Input speed
M2,M4	SHR	97–107	>2500
		>107	>1500
M2,M3,M4, M5,M6	SHF	97–107	>2500
		>107	>1500
	SHK	77–107	>2500
		>107	>1500
	SHS	77–97	>2500

10.2 Mounting position of Helical gear unit

SHR17-SHR167

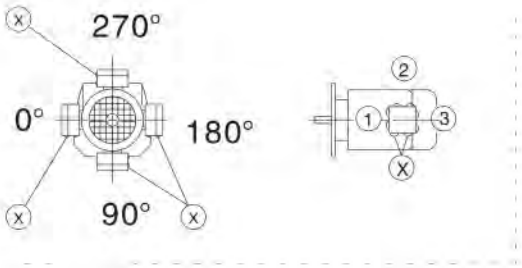


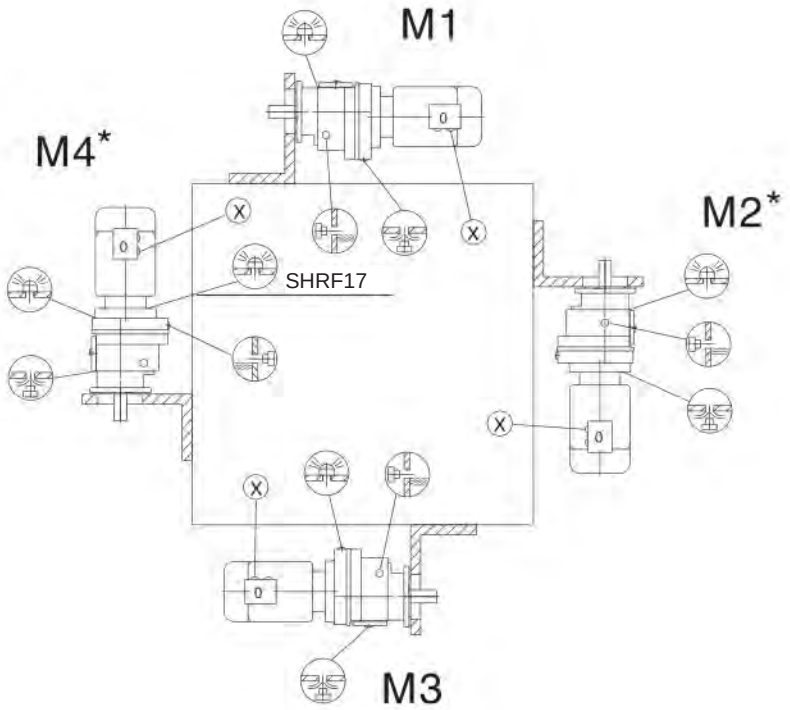


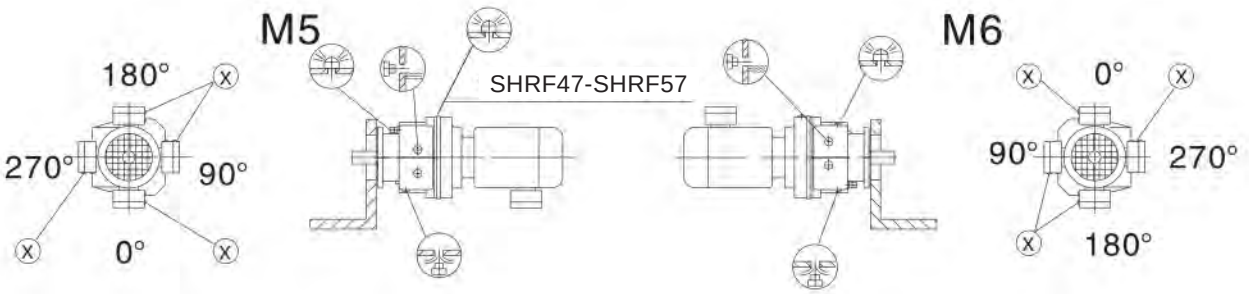


SHR17,SHR27		M1,M3,M5,M6
SHR47,SHR57		M5
SHR17,SHR27		

SHRF17-SHRF167

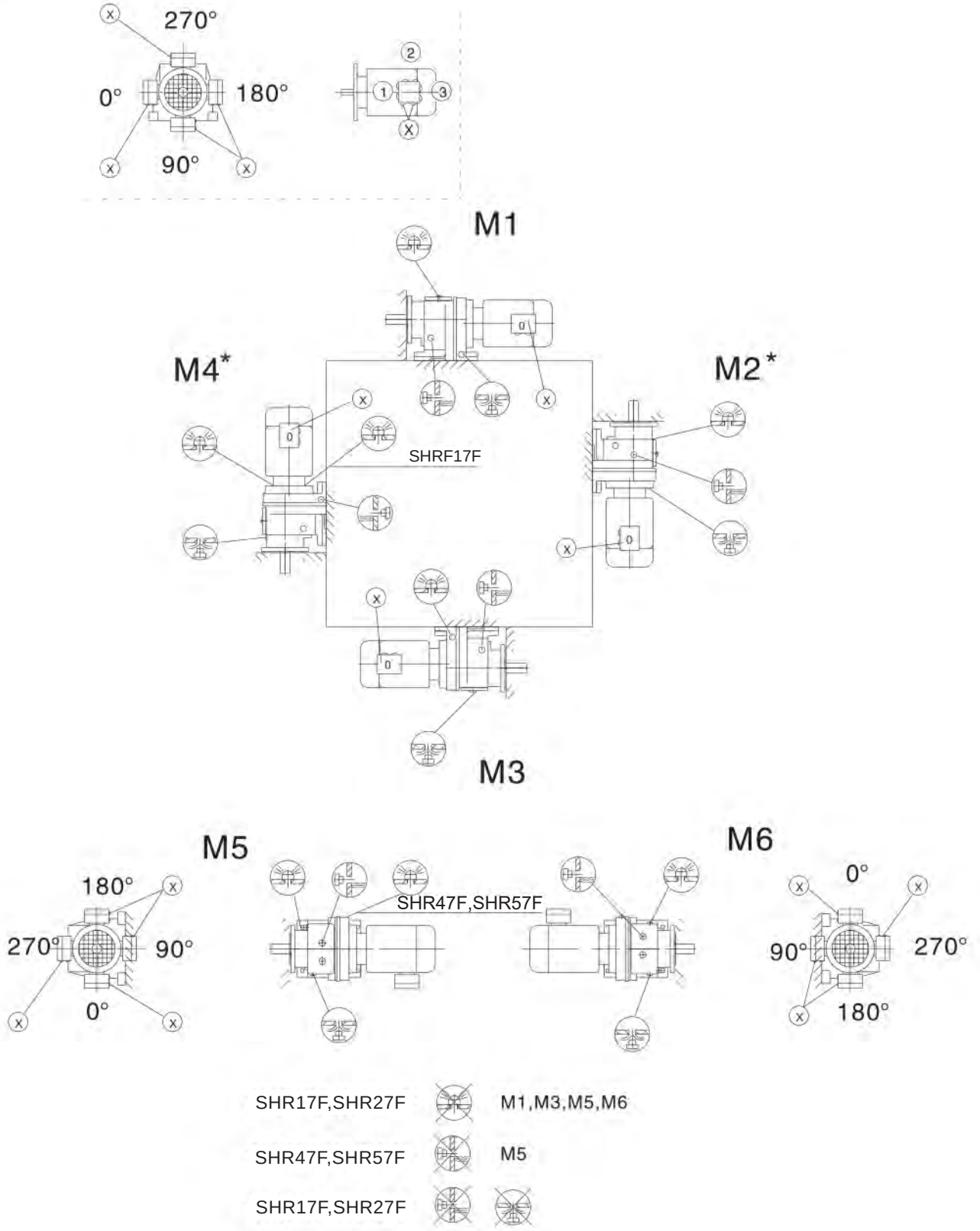






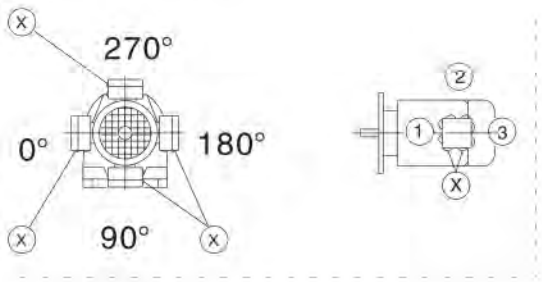
SHRF17,SHRF27		M1,M3,M5,M6
SHRF47,SHRF57		M5
SHRF17,SHRF27		

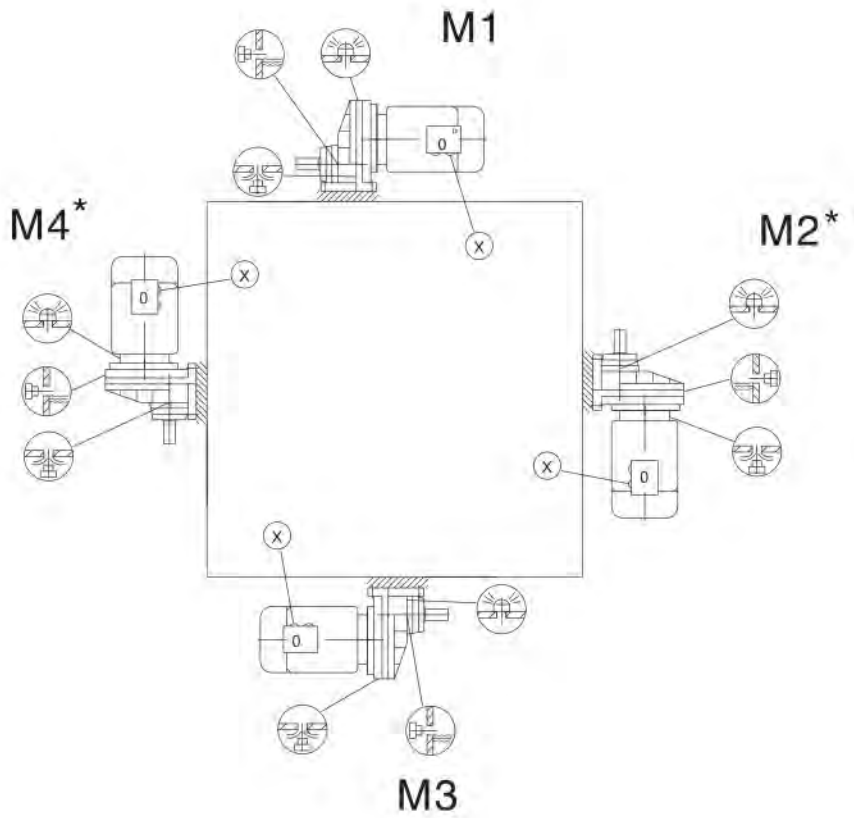
SHR17F-SHR87F

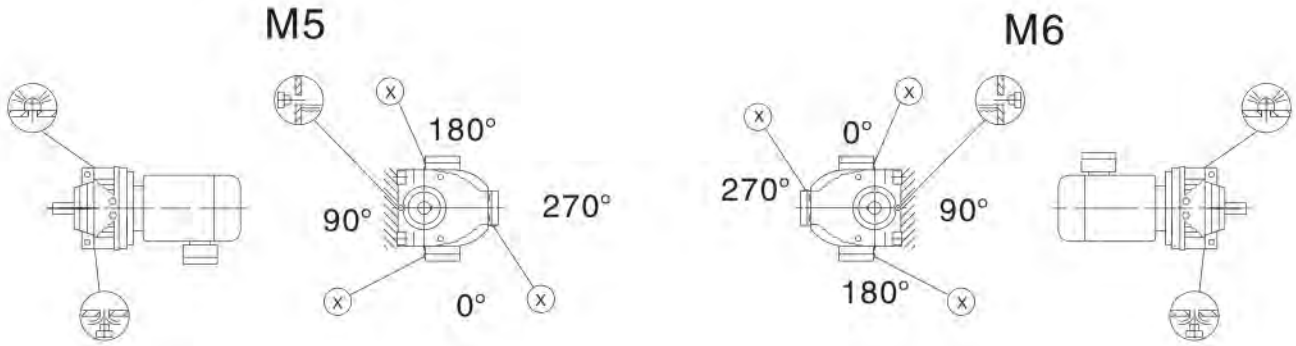


SHR17F,SHR27F		M1,M3,M5,M6
SHR47F,SHR57F		M5
SHR17F,SHR27F		

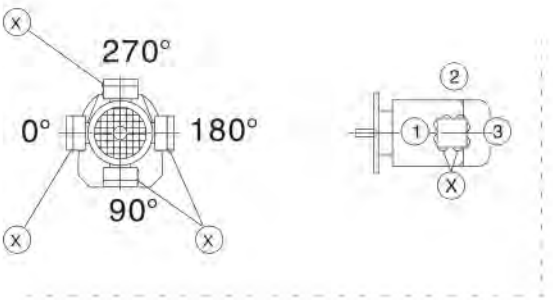
SHRX57-SHRX107

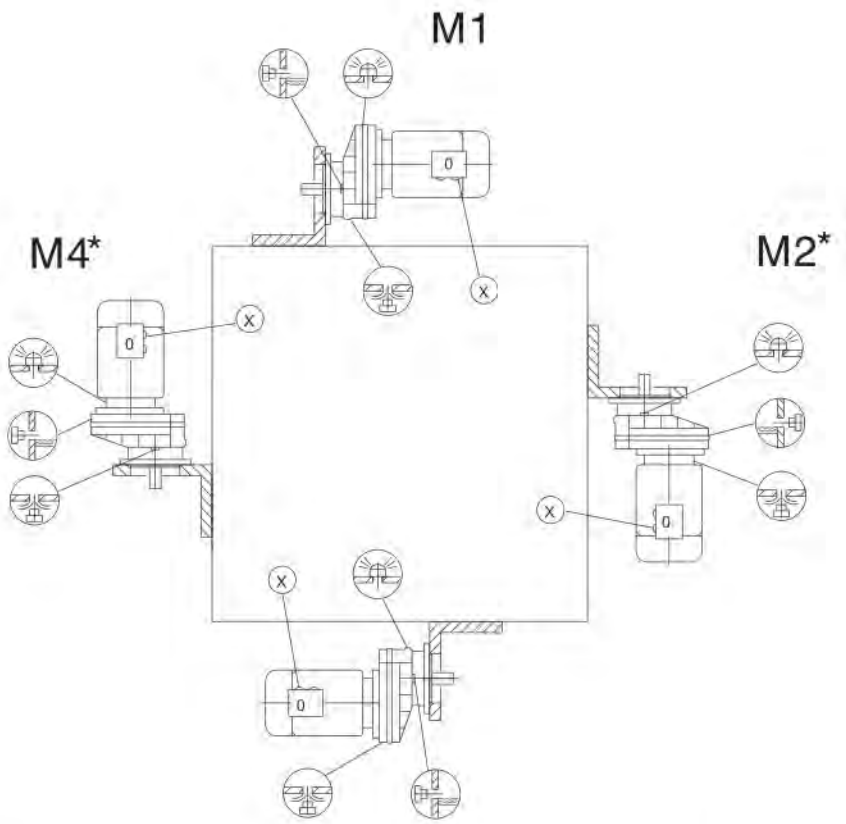


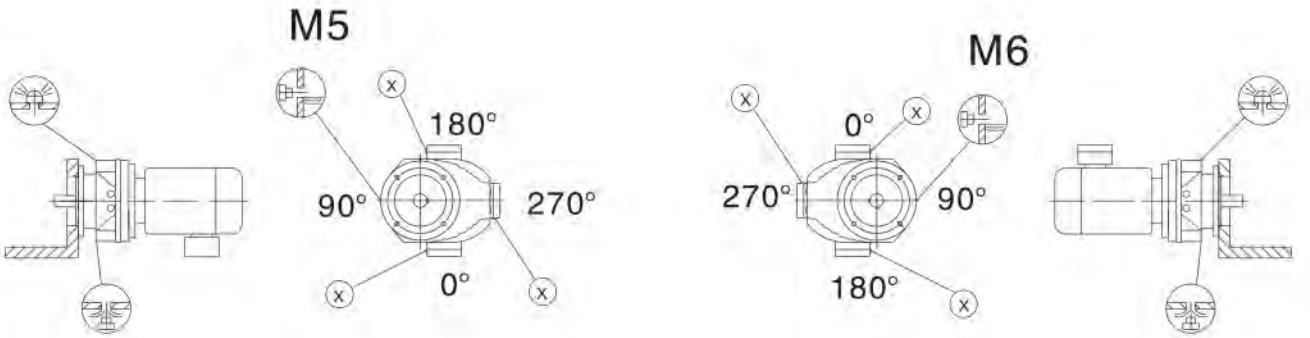




SHRXF57-SHRXF107

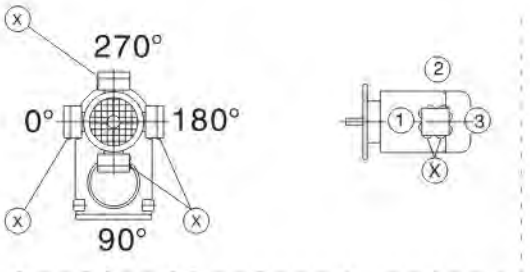


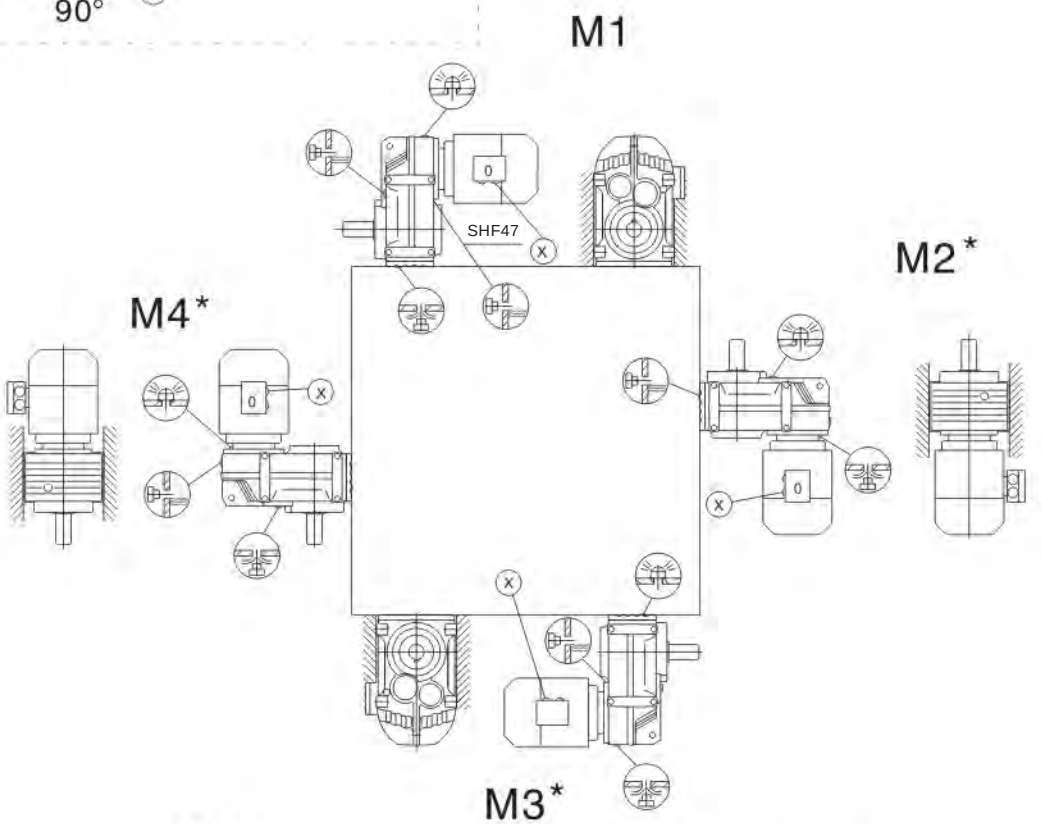


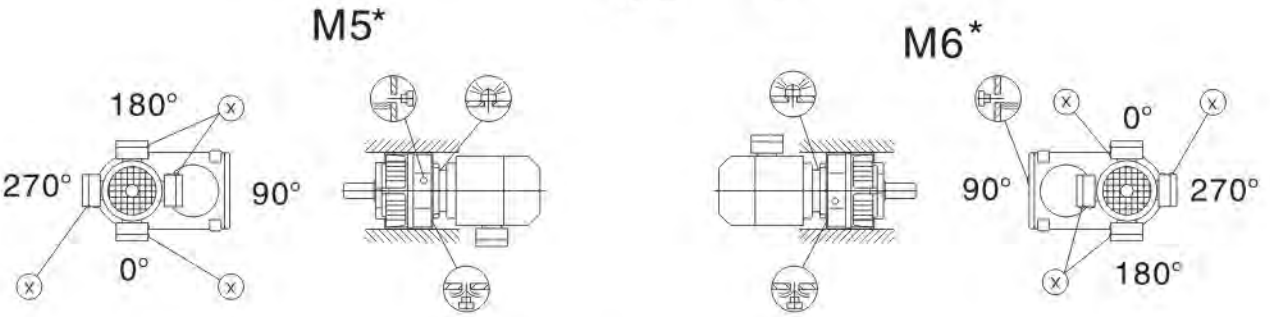


10.3 Mounting position of parallel shaft helical Gear unit

SHF/FA..B/FH27B-157B, SHFV27B-107B

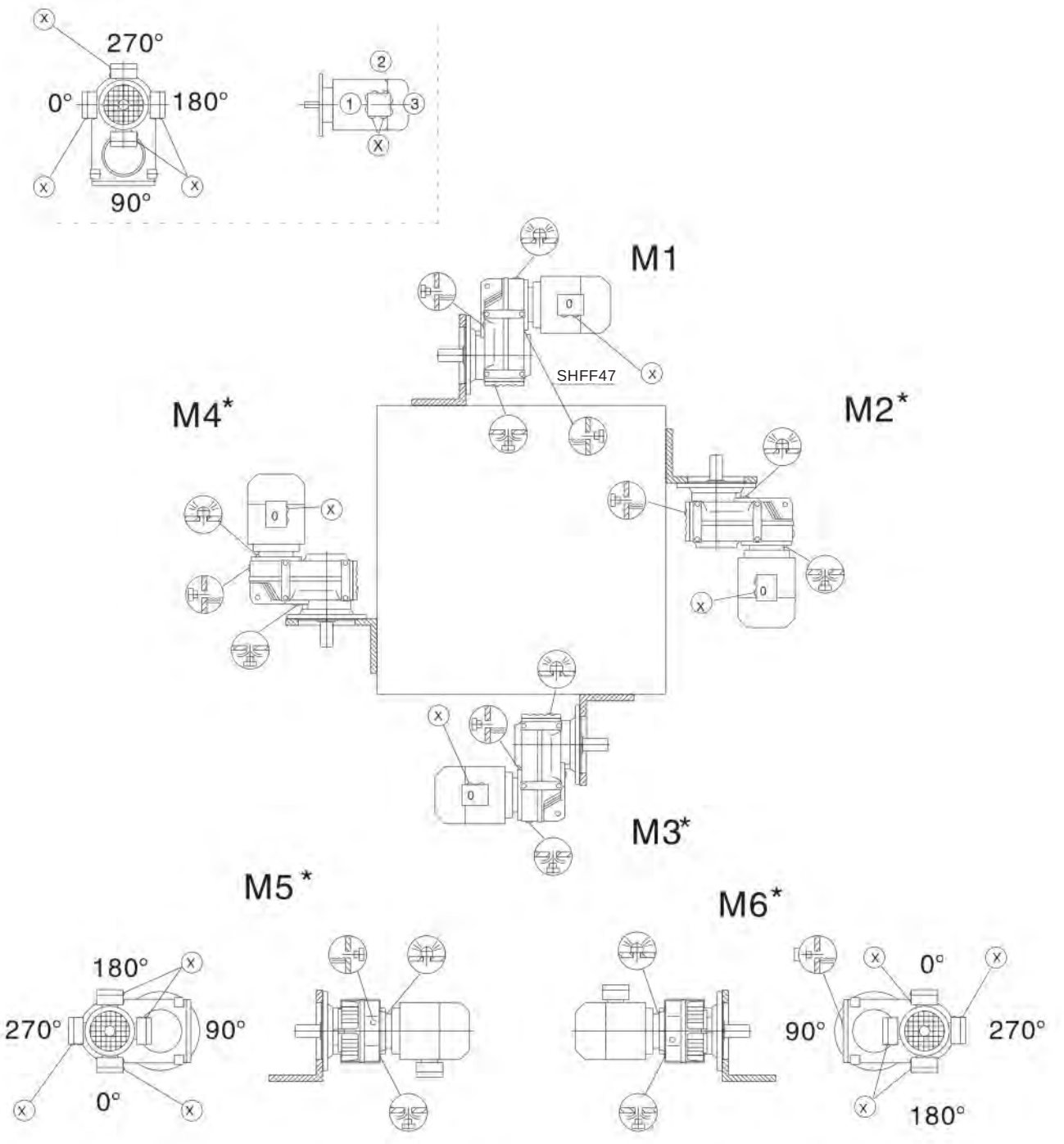






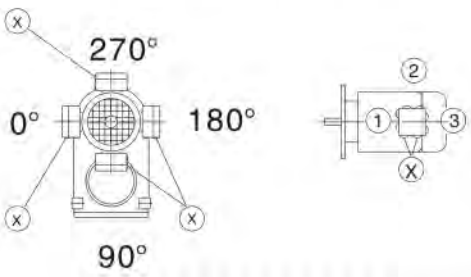
SHF..27		M1,M3,M5,M6
SHF..27		M1–M6
SHF..27		M1,M3,M5,M6

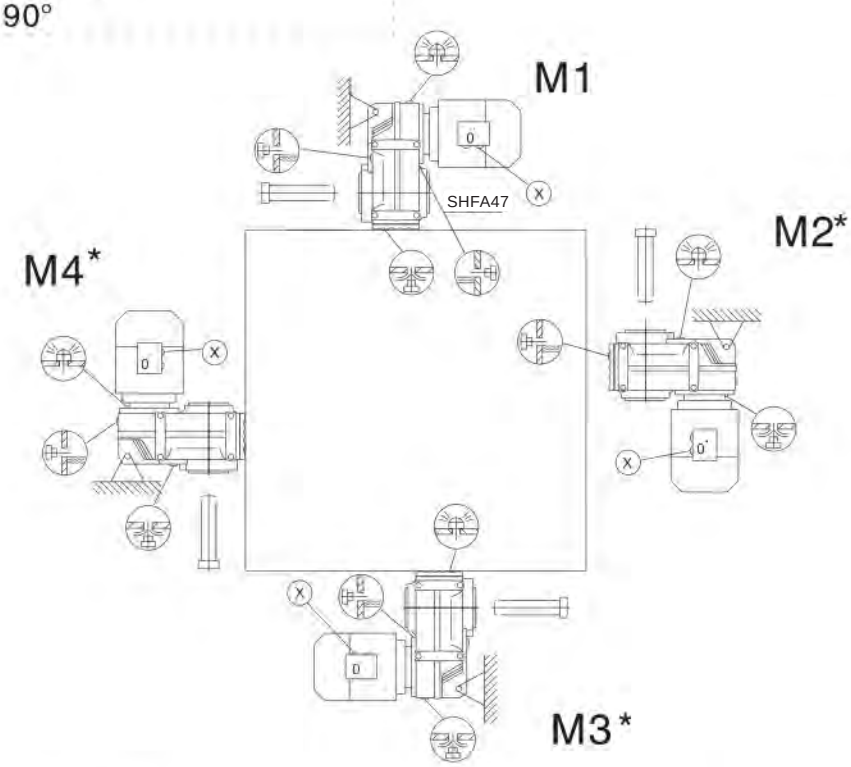
SHFF/FAF/FHF/FAZ/FHZ27-157, SHFVF/FVZ27-107

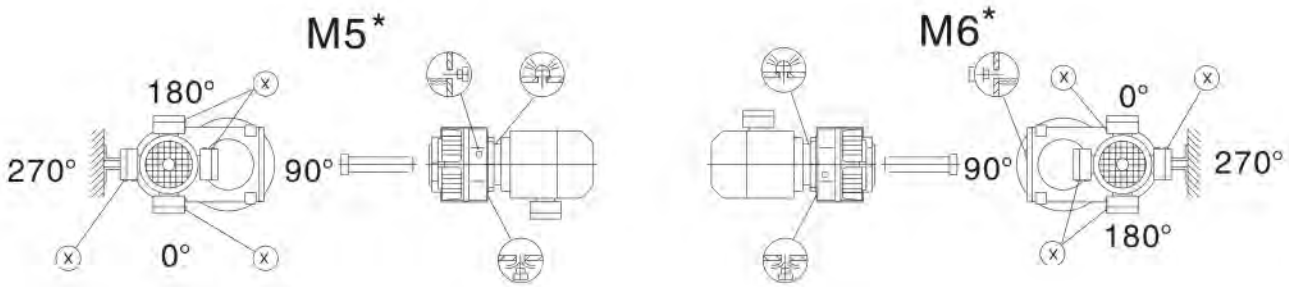


SHF..27		M1,M3,M5,M6
SHF..27		M1–M6
SHF..27		M1,M3,M5,M6

SHFA/FH27-157, SHFV27-107



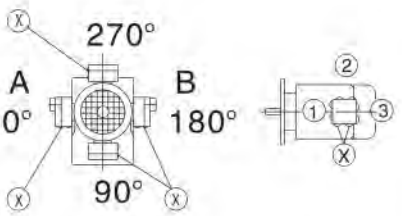


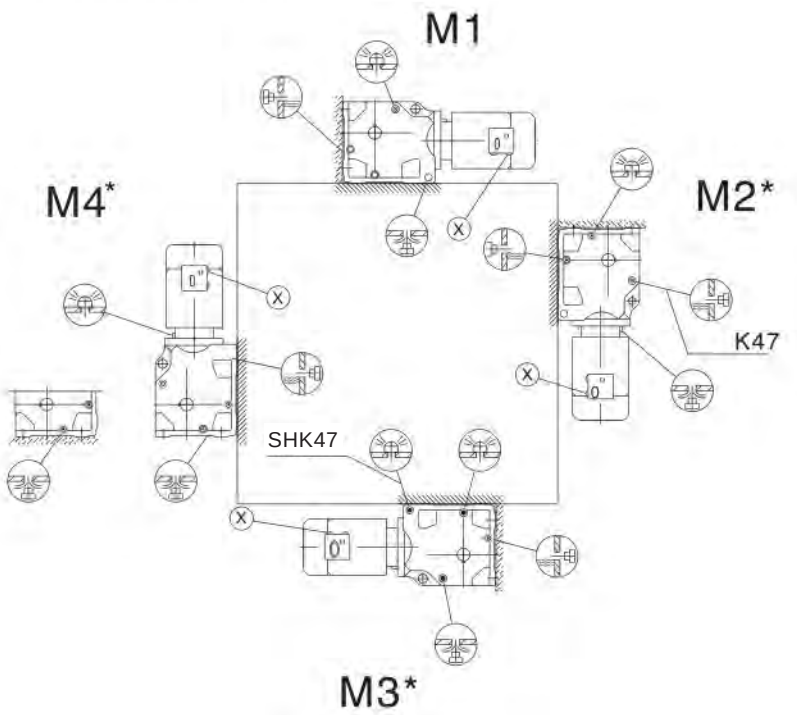


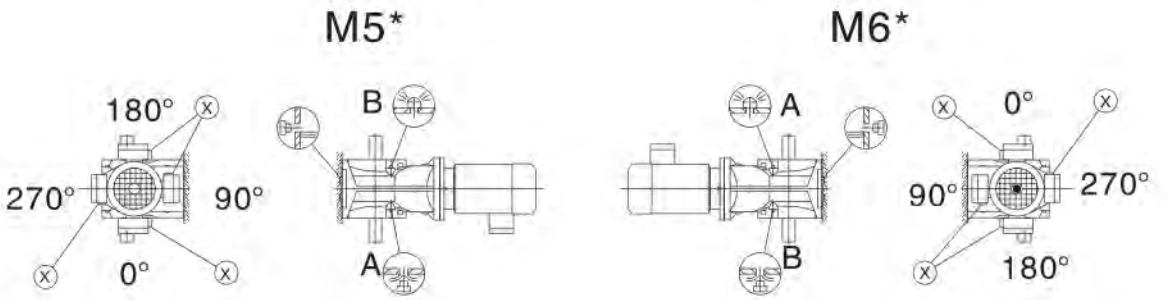
SHF..27		M1,M3,M5,M6
SHF..27		M1–M6
SHF..27		M1,M3,M5,M6

Mounting position of helical – bevel Gear unit

SHK/KA..B/KH37B-157B, SHKV37B-107B

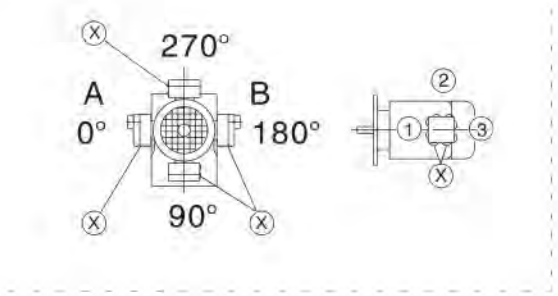


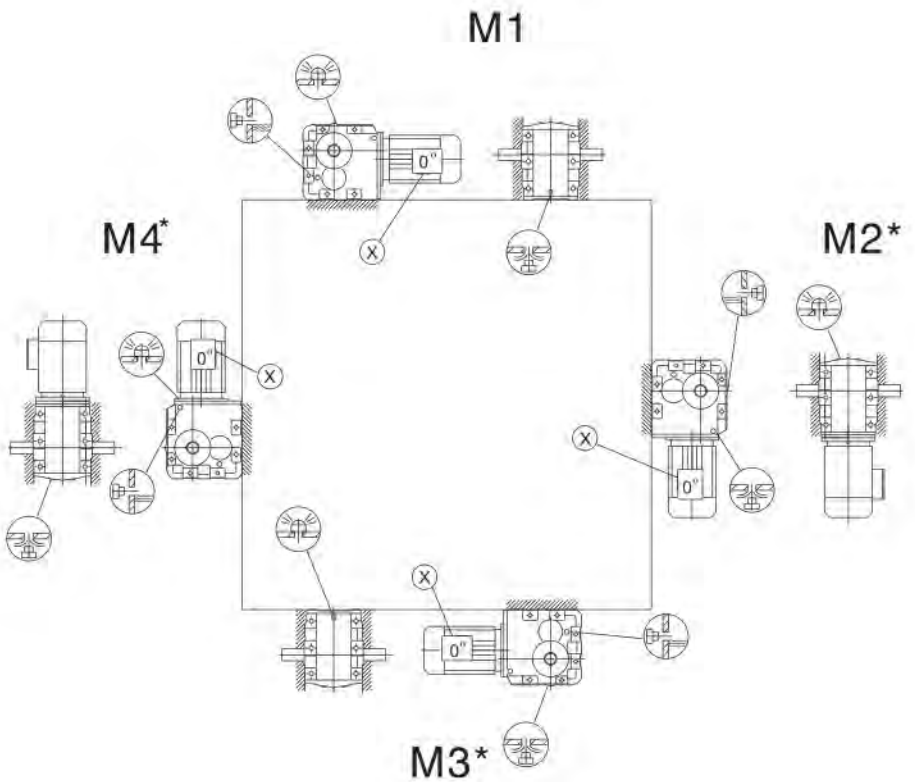


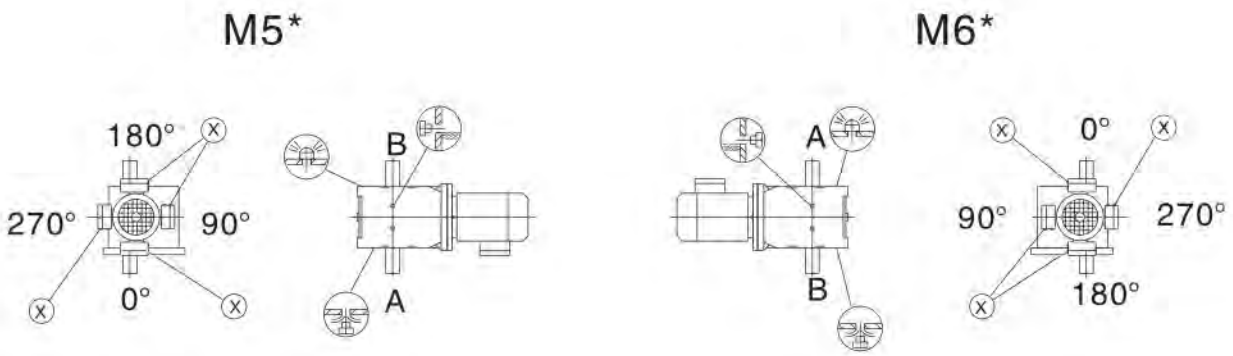


Important:Please refer to the information in the "Geared Motors"catalog.Optional Planning for Gear units Ouerhung and axial loads part"(P21)

SHK167-187, SHKH167B-187B

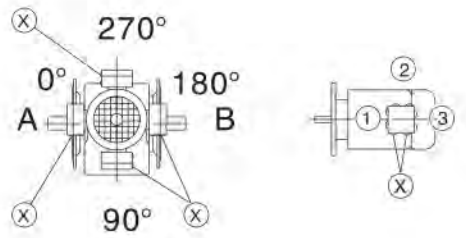


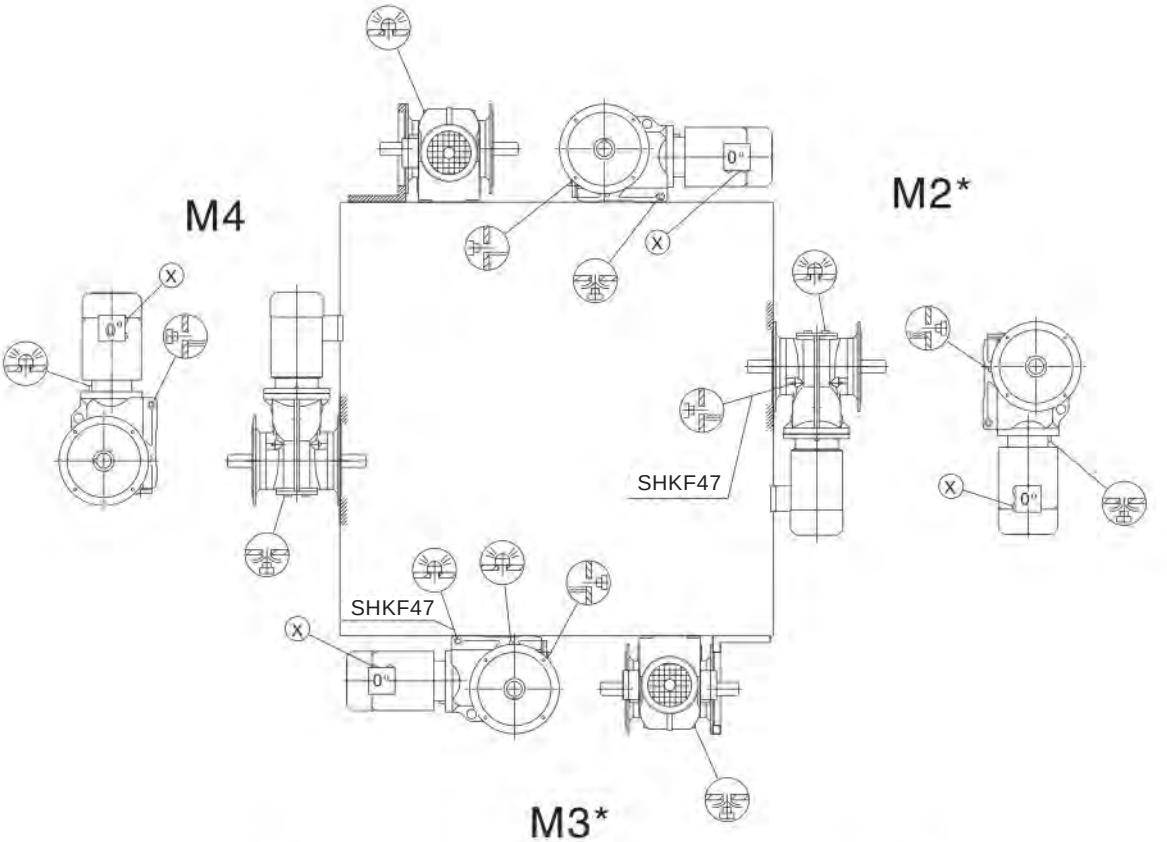


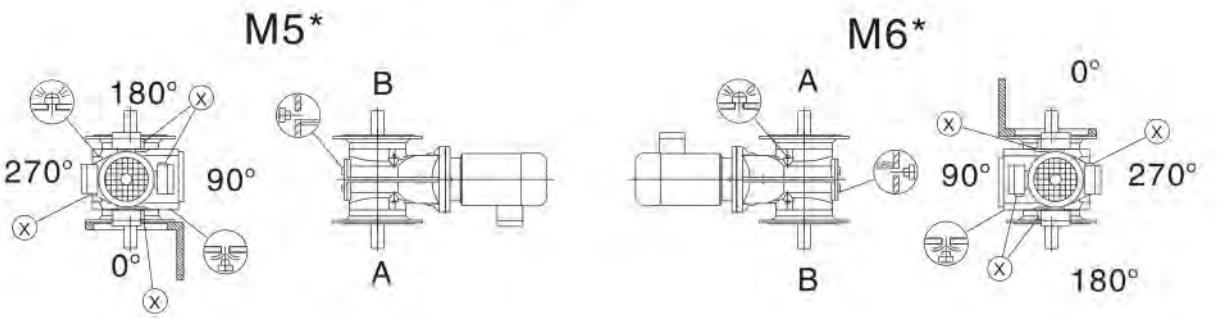


Important:Please refer to the information in the "Geared Motors"catalog.Optional Planning for Gear units Ouerhung and axial loads part"(P21)

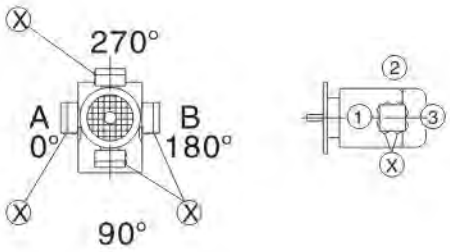
SHKF/KAF/KAZ/KHZ37-157, SHKVF/FVZ37-107

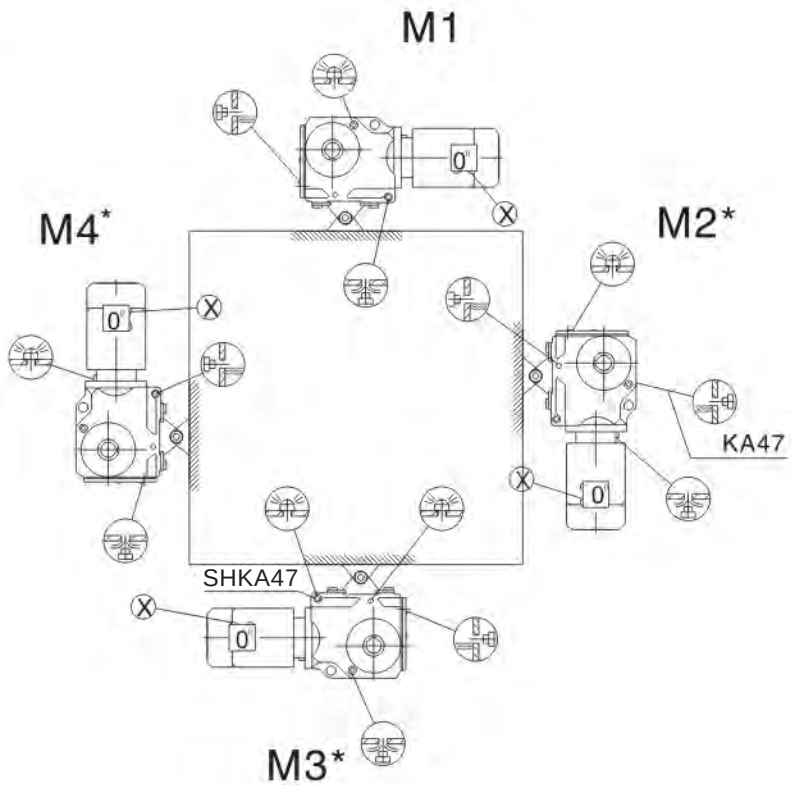


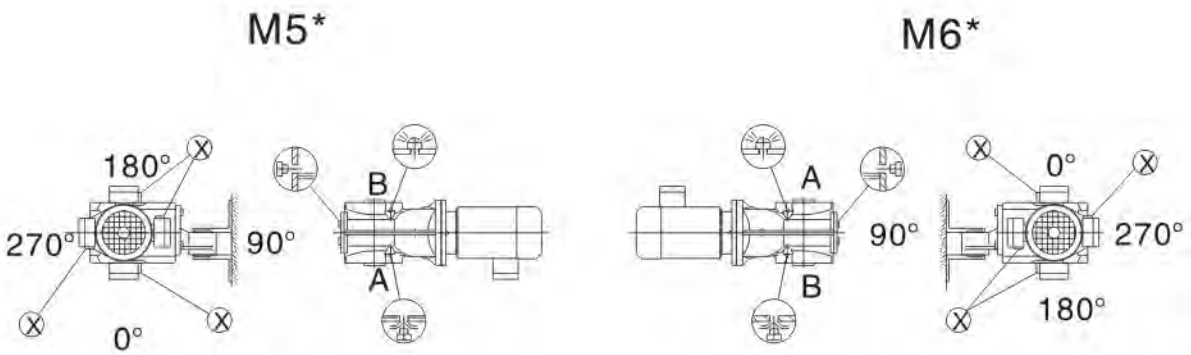




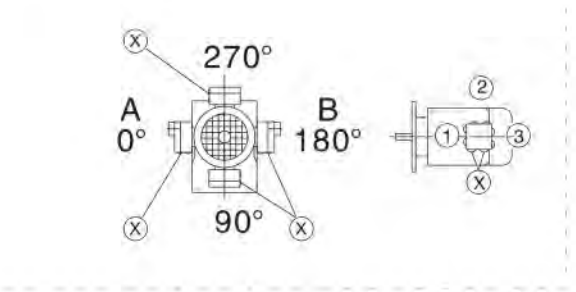
SHKA/KH37-157/T, SHKV37-107/T

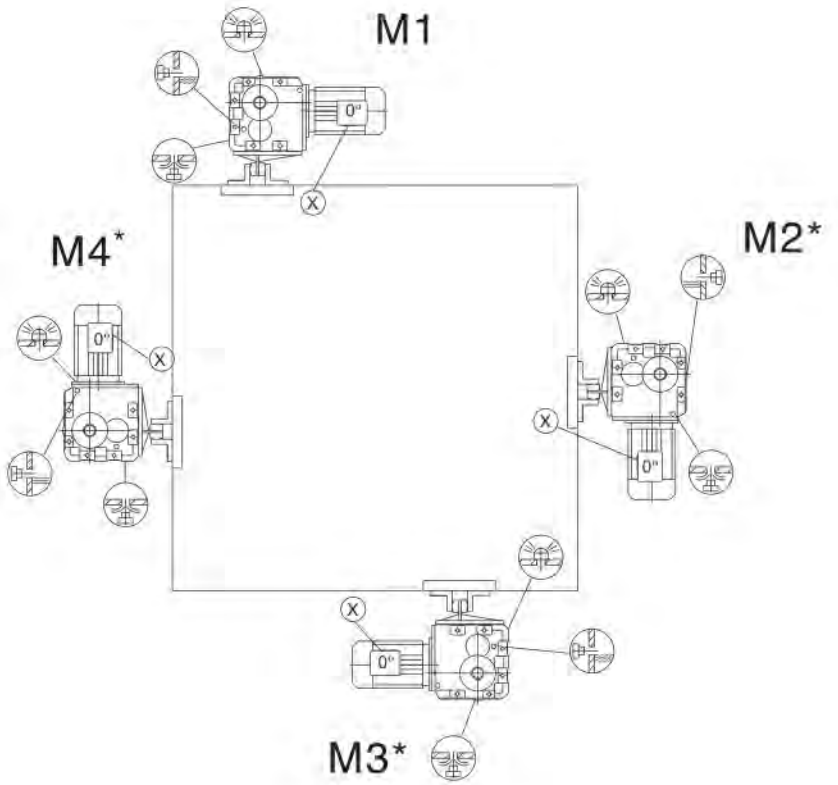


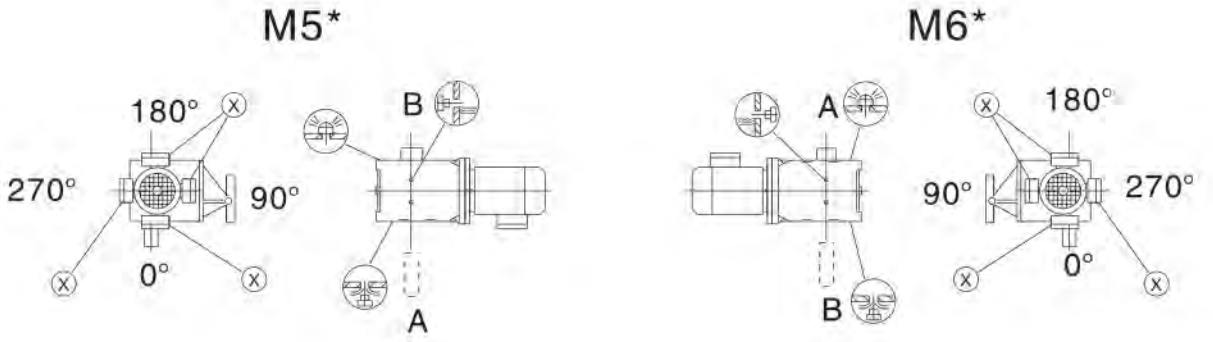




SHKH167-187

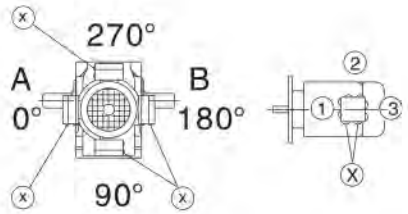


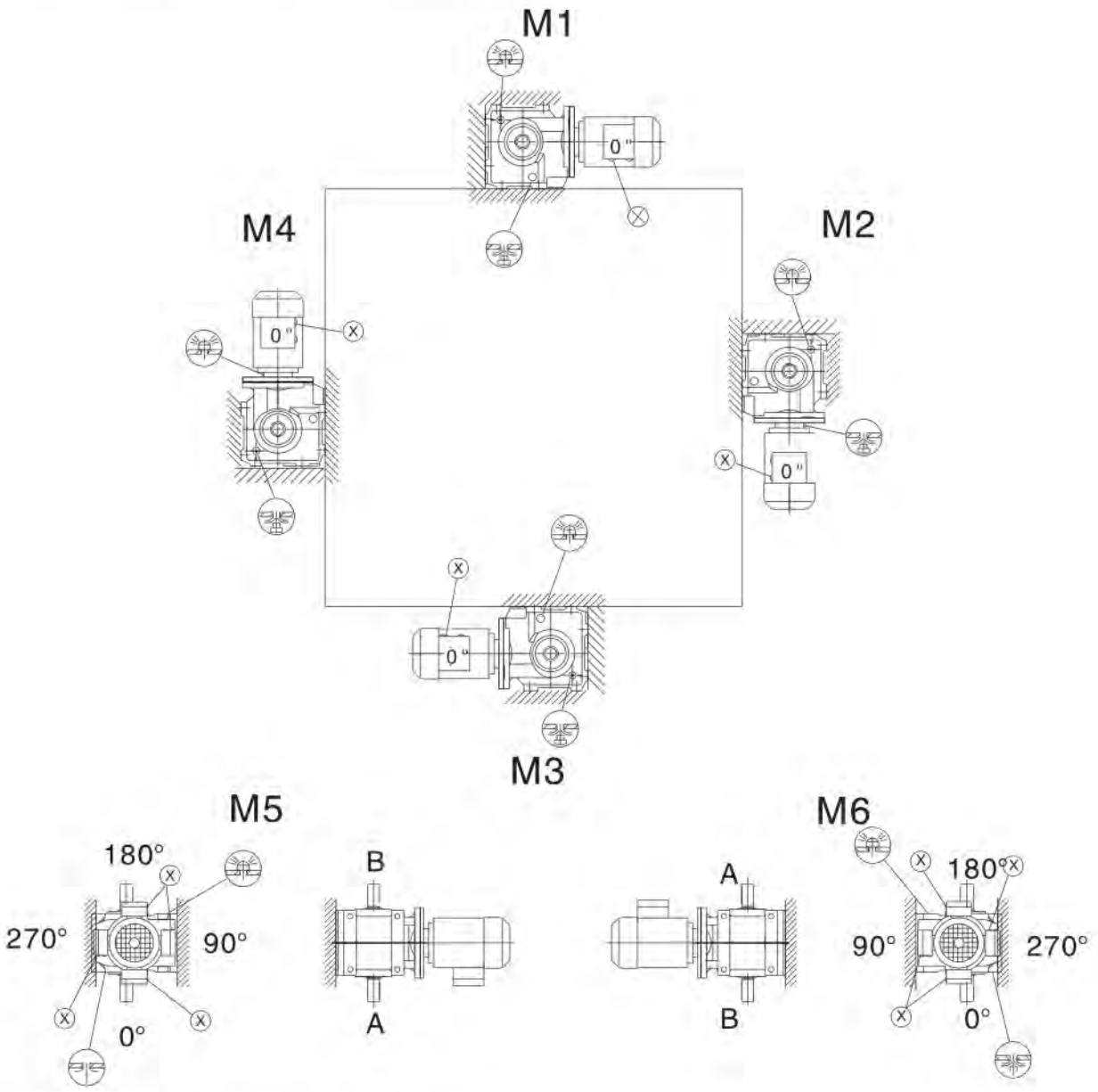




10.5 Mounting position of Helical-worm Gear motor

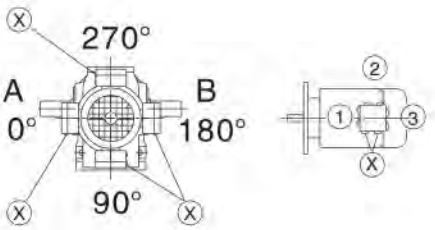
SHS37

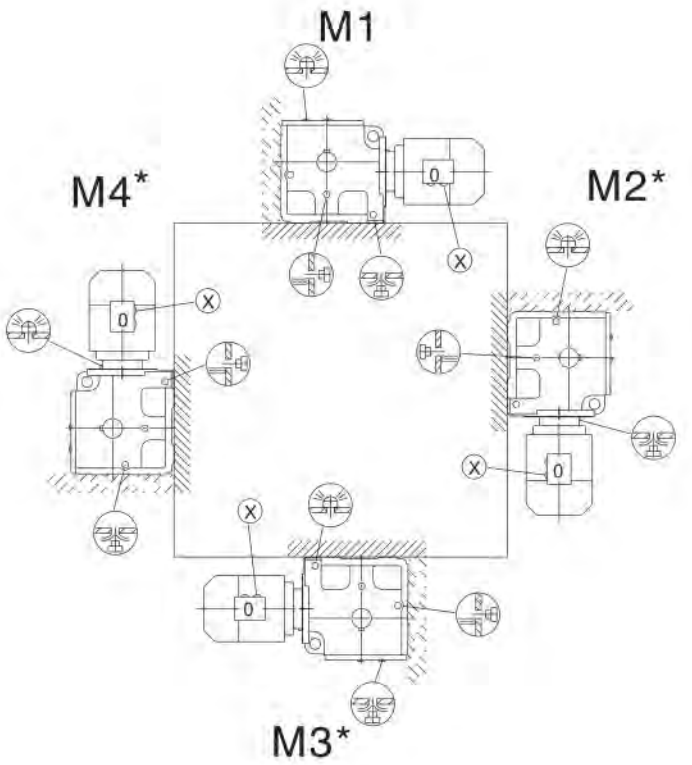


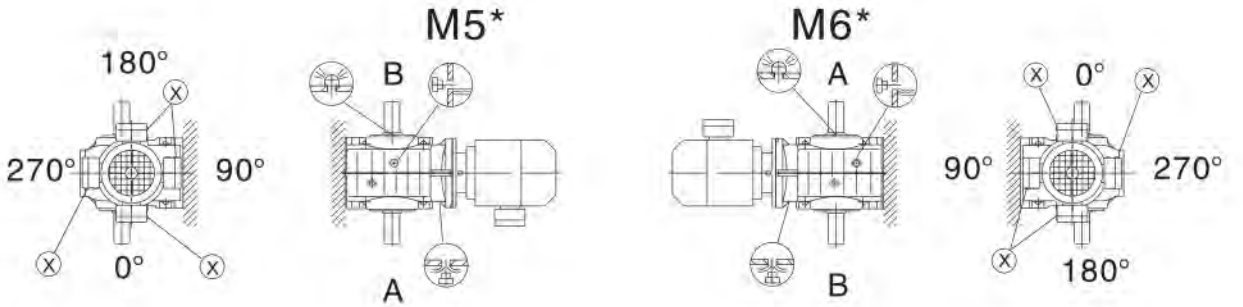


Important:Please refer to the information in the "Geared Motors"catalog.Optional Planning for Gear units Ouerhung and axial loads part"(P21)

SHS47-SHS97

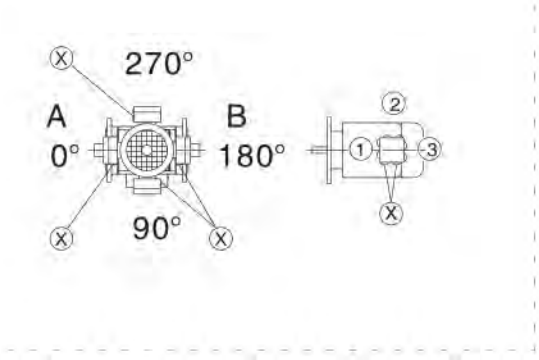


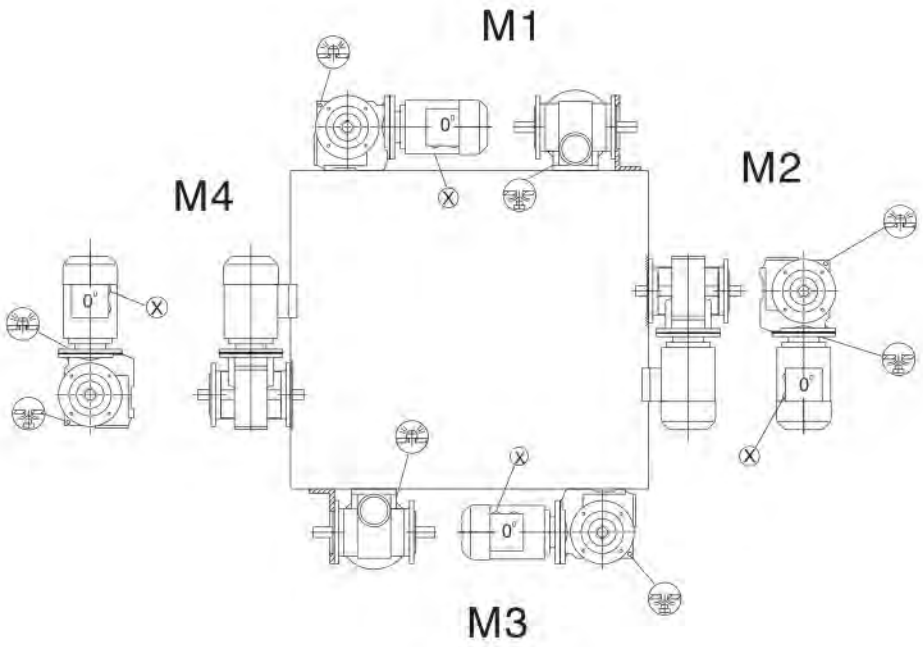


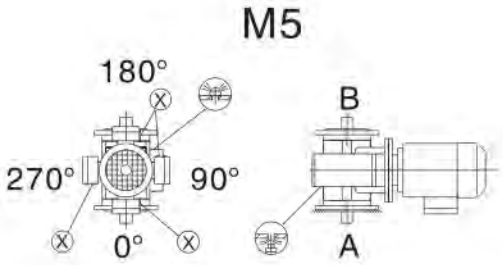


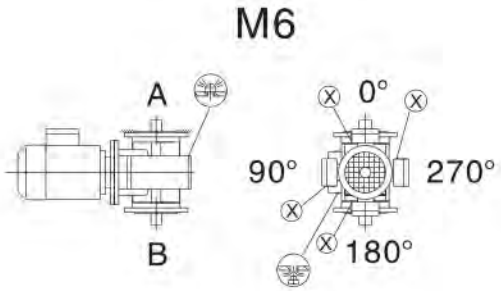
Important:Please refer to the information in the "Geared Motors"catalog.Optional Planning for Gear units Ouerhung and axial loads part"(P21)

SHSF/SAF/SHF37

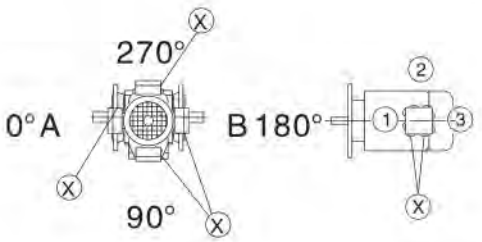


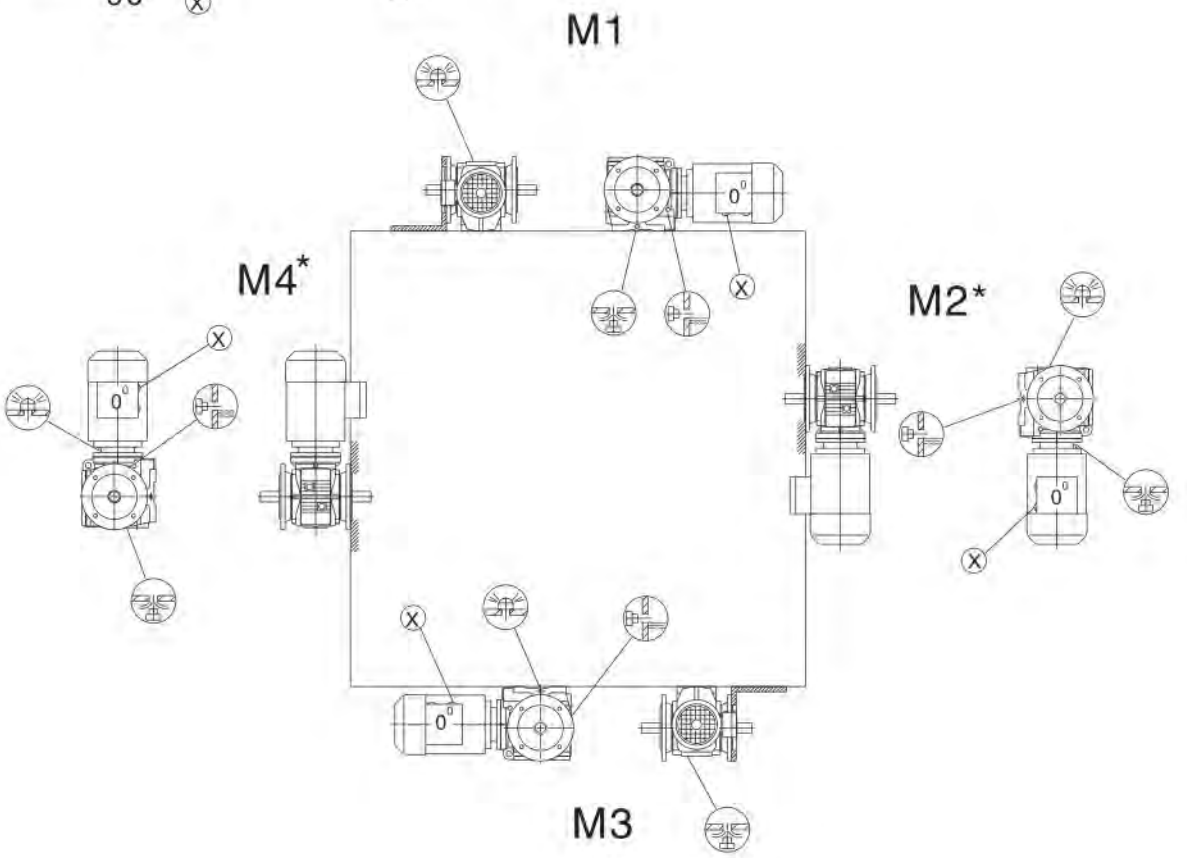


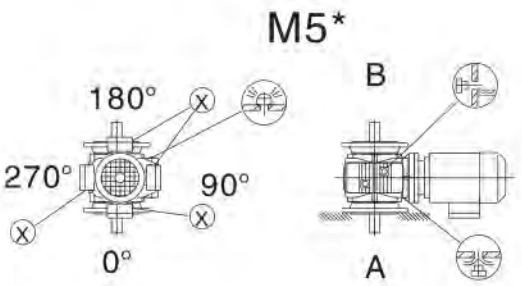


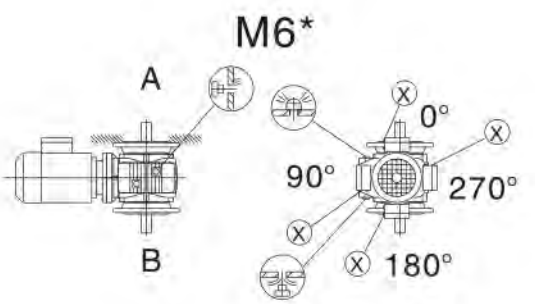


SHSF/SAF/SHF/SAZ/SHZ47..-97..

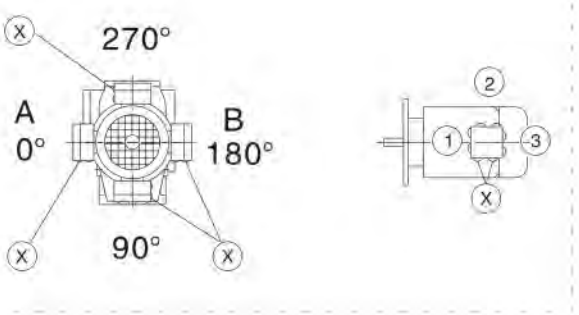


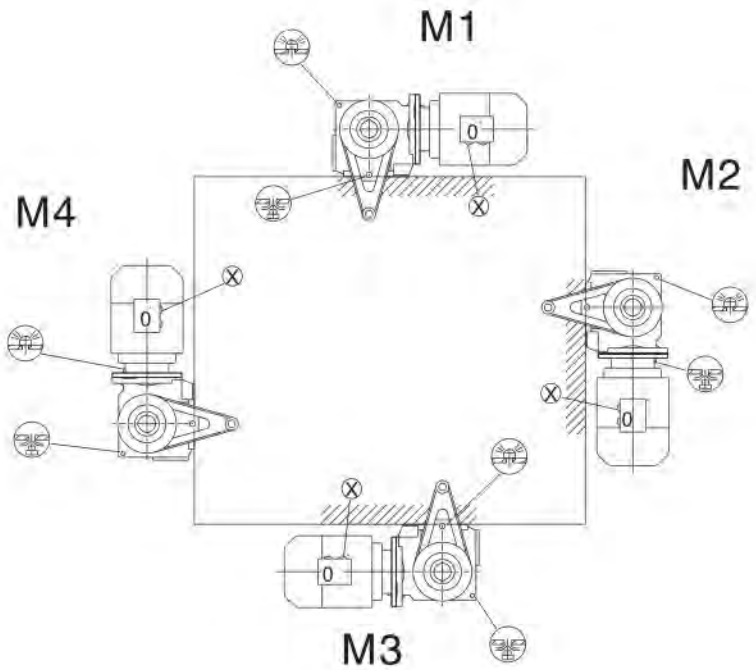


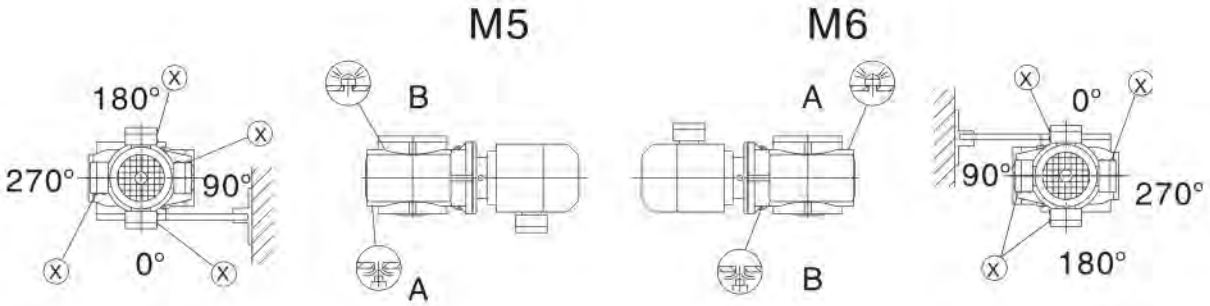




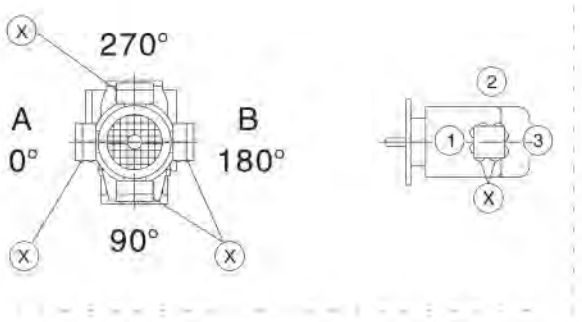
SHSA/SH37/T..

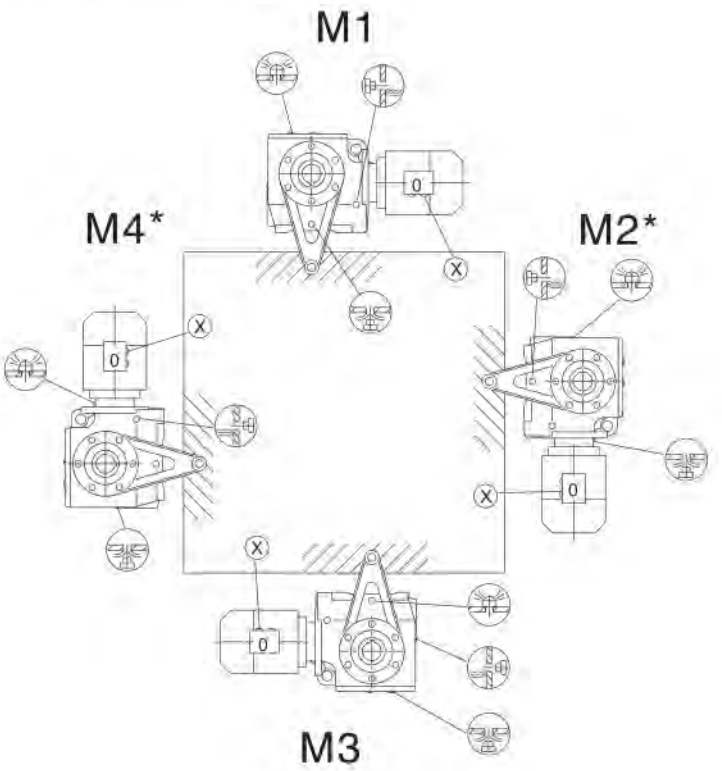


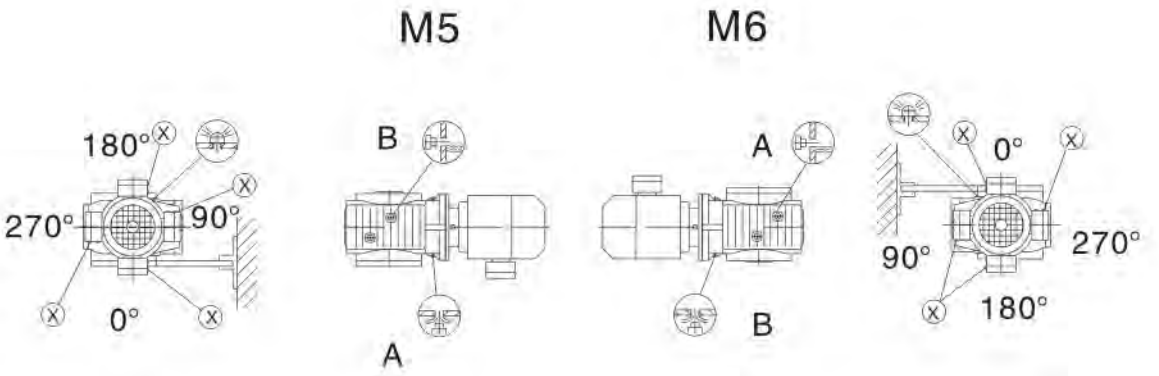




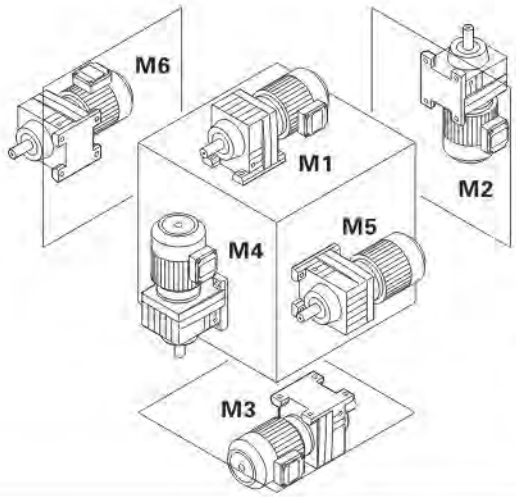
SHSA/SH47..-97..



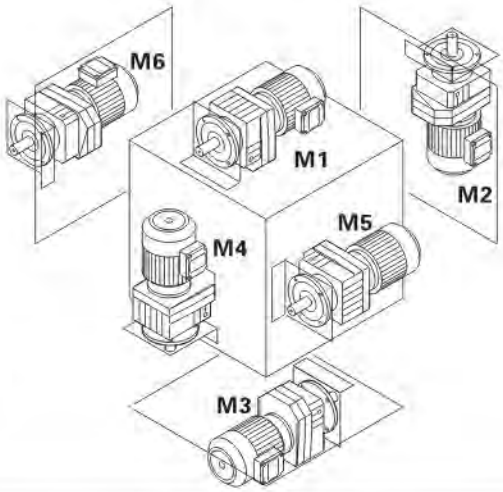


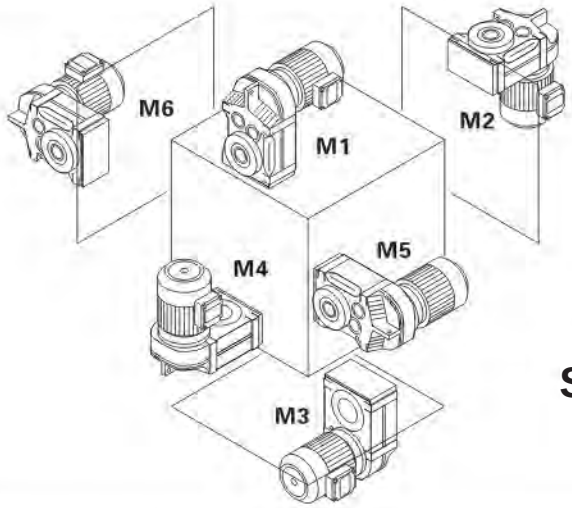


Schematic diagram of the installation location

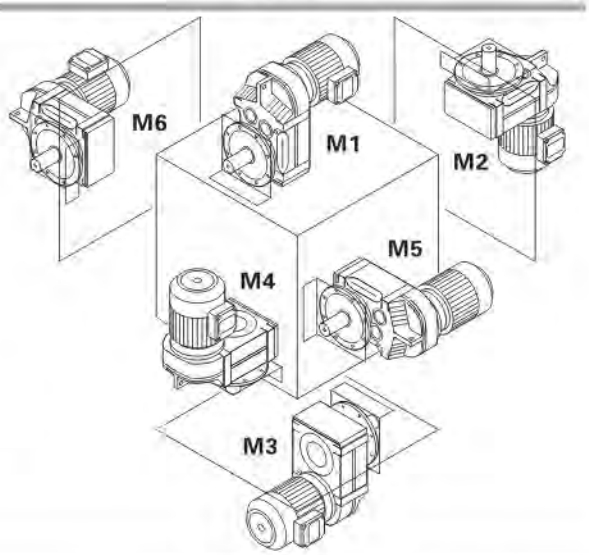


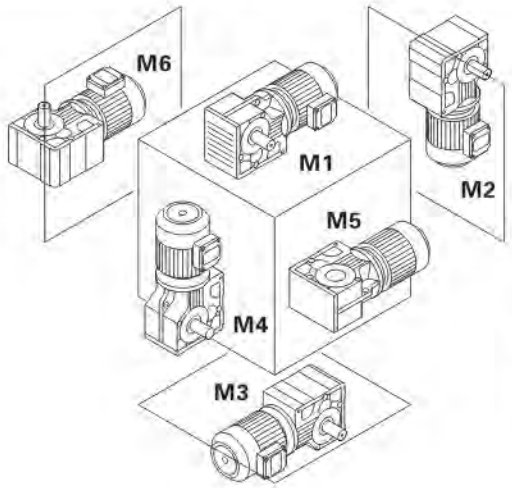
SHR..



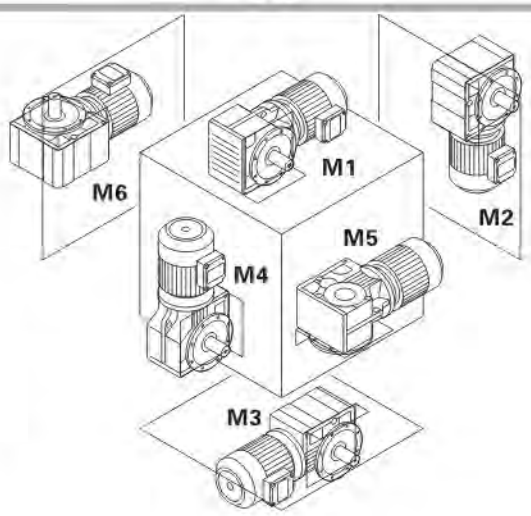


SHF..





SHK..
SHS..



11.
Dimension information

Shaft heights tolerances

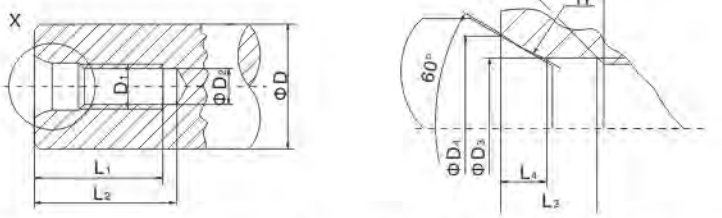
h ≤250mm →-0.5mm
h >250 →-1mm

Foot-mounted gear units:The motor may project below the mounting surface when fitted, please check.

Shaft tolerance

Diameter tolerance
Φ ≤50mm →ISOk6
Φ >50 →ISOm6

Center hole in accordance with DIN332, shape DR



Diameter of Output shaft	D1	D2	D3	D4	R	L1 +2	L2 min	L1	L4 ≈
ΦD=7-10mm	M3	2.5	3.2	5.3	4.0	9.0	12.0	2.6	1.8
ΦD>10-13mm	M4	3.3	4.3	6.7	5.0	10.0	14.0	3.2	2.1
ΦD>13-16mm	M5	4.2	5.3	8.1	6.3	12.5	17.0	4.0	2.4
ΦD>16-21mm	M6	5.0	6.4	9.6	8.0	16.0	21.0	5.0	2.8
ΦD>21-24mm	M8	6.8	8.4	12.2	10.0	19.0	25.0	6.0	3.3
ΦD>24-30mm	M10	8.5	10.5	14.9	16.0	22.0	30.0	7.5	3.8
ΦD>30-38mm	M12	10.2	13.0	18.1	20.0	28.0	37.0	9.5	4.4
ΦD>38-50mm	M16	14.0	17.0	23.0	25.0	36.0	45.0	12.0	5.2
ΦD>50-85mm	M20	17.5	21.0	28.4	31.5	42.0	53.0	15.0	6.4
ΦD>85-130mm	M24	21.0	25.0	34.2	40.0	50.0	63.0	18.0	8.0
ΦD>130mm	M30	26.5	31.0	42.6	50.0	63.0	85.0	20.0	10.0

Hollow shaft

Keys: In accordance with DIN6885(domed type)

Diameter tolerance

ISOH7 measured with plug gauge

Mulitiple-spine shafts

Dm Measuring roller diameter
Me Inspection size

Flange

Centering shoulder tolerance

Φ ≤230mm (flange size A 120–A300) →ISOj6
Φ >230mm (flange size A 350–A660) →ISOh6

Up to three different flange dimensions are available for each size of helical gear units AC (brake) motor and explosion–proof AC (brake) motor.The possible flanges per size are indicted in the relevant dimension sheets.

Lifting eyebolts,suspension eye lugs

SHR17...SHR27 helical gear units, motors up to DV100 and Spiroplan geared motoes are delivered without special reansport fixtures. Otherwise, the gear units and motors are equipped with cast–on suspension eye lugs, screw–on suspension eye lugs or sceew–on lifting eyebolts.

Gear unit/motor type	Screw–on lifting eyebolts /suspension eye lugs	Cast–on suspension eye lugs
SHR/RF37-57,SHRX/RXF57-67	•	—
⩾SHR67	•	—
SHF37-157	—	•
SHK37-157	—	•
SHK167-187	•	—
SHS37-47	•	—
SHS57-97	—	•
⩾D112	•	—

Breather valves

The gear unit dimension drawings are always shown with screw plugs. The corresponding sc –rew plug is replaced by an breather valve at the factory depending on with mounting position M1–M6 is ordered. Theis means the contour dimensions may be slightly different.

Shrink disk connevtion

Hollow shaft gear unit with shrink disk connection: If required, please request a detailed data sheet on shrink disks form company, data sheet no.33 753..95.

Splined hollow shaft

Hollow shaft gear units SHFV.. in sizes 37–107 and SHFV.. In sizes 37–107 are supplied with a splined hollow shaft to ISO4762.

Rubber buffer for SHFA/SHFH/SHFV

f stands for the compressed dimension of Rubber buffer in the Manax torque.

brake motors

In brake motors, dimensions G1B apply instead of G1 and KB instead of K

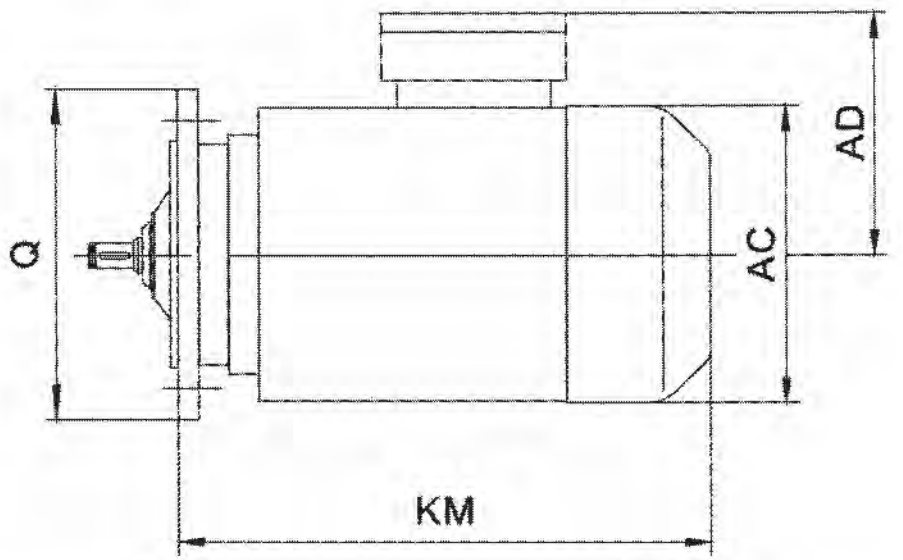
Motor accessory

The motor dimensions may different as a result of motor accessory. Please refer to the dimensions of the motor accessory.

Special versions

The dimensions of the terminal box on special versions such as KS or CSA may different form the standard dimensions.

11.
Size of motor



	Q mm	KM mm	L1 mm	L2 mm	L3 mm	AD mm	AC mm
D63	120	221	259	281	319	96	138
	160	216	254	276	314		
	200	210	248	270	308		
D71	120	239	281	299	341	103	158
	160	234	276	294	336		
	200	228	270	288	330		
D80	120	271	320	330	379	108	168
	160	265	314	324	373		
	200	259	308	318	367		
	250	254	303	313	362		
D90	120	314	370	369	425	139	195
	160	309	365	364	420		

	Q mm	KM mm	L1 mm	L2 mm	L3 mm	AD mm	AC mm
D132ML	400	385	468	423	506	168	275
	450	377	460	415	498		
	550	369	452	407	490		
D160M	200	509	607	544	642	261	330
	250	504	602	539	637		
	300	499	597	534	632		
	350	493	591	528	626		
	400	486	584	521	619		
	450	478	576	513	611		
	550	470	568	505	603		
D160L	250	548	646	583	681	261	330
	300	543	641	578	676		

	Q mm	KM mm	L1 mm	L2 mm	L3 mm	AD mm	AC mm
D90	200	301	357	356	412	139	195
	250	297	353	352	408		
	300	291	347	346	402		
D100	120	334	399	389	454	131	218
	160	326	391	381	446		
	200	318	383	373	438		
	250	314	379	369	434		
	300	308	373	363	428		
	350	302	367	357	422		
D112	160	382	459	427	504	151	240
	200	373	450	418	495		
	250	368	445	413	490		
	300	363	440	408	485		
	350	357	434	402	479		
D132S	160	420	503	458	541	168	275
	200	408	491	446	529		
	250	403	486	441	524		
	300	398	481	436	519		
	350	392	475	430	513		
	400	385	468	423	506		
D132M	200	408	491	446	529	168	275
	250	403	486	441	524		
	300	398	481	436	519		
	350	392	475	430	513		
	400	385	468	423	506		
	450	377	460	415	498		
D132ML	200	408	491	446	529	168	275
	250	403	486	441	524		
	300	398	481	436	519		
	350	392	475	430	513		

	Q mm	KM mm	L1 mm	L2 mm	L3 mm	AD mm	AC mm
D160L	350	537	635	572	670	261	330
	400	530	628	565	663		
	450	522	620	557	655		
	550	514	612	549	647		
D180	250	575	689	600	714	280	380
	300	570	684	595	709		
	350	564	678	589	703		
	400	557	671	582	696		
	450	549	663	574	688		
	550	541	655	566	680		
D200	300	700	824	740	864	314	420
	350	694	818	734	858		
	400	687	811	727	851		
	450	679	803	719	843		
	550	671	795	711	835		
D225S	300	716	858	756	898	335	470
	350	710	852	750	892		
	400	703	845	743	885		
	450	695	837	735	877		
	550	687	829	727	869		
D225M	300	741	883	781	923	335	470
	350	735	877	775	917		
	400	728	870	768	910		
	450	720	862	760	903		
	550	712	854	752	894		
D250M	400	793	946	839	992	370	510
	450	785	938	831	984		
	550	777	930	823	976		
D280	400	898	1054	943	1099	408	580
	450	890	1046	935	1091		
	550	882	1038	927	1083		
D315	660	1130	1286	1175	1331	530	635

Notes:
L1 is the KM vatue for motor with thrake.
L2 is the KM vatue for asynchronous motor with frequency.
L3 is the KM vatue for asynchronous motor with frequency and brake.
If you have any special requirements please contact us.

Gear motor weights

Gear Reducer size	Kg
SHRX57	9
SHRXF57	11
SHRX67	12
SHRXF67	16
SHRX77	20
SHRXF77	24
SHRX87	35
SHRXF87	40
SHRX97	59
SHRXF97	66
SHRX107	88
SHRXF107	103

Gear Reducer size	Kg
SHR..27	4
SHR..27F	4
SHR..37	10
SHR..37F	12
SHR..47	14
SHR..47F	14
SHR..57	20
SHR..57F	24
SHR..67	25
SHR..67F	29
SHR..77	30
SHR..77F	36

Gear reducer size	Kg
SHR..87	55
SHR..87F	63
SHR..97	100
SHR..97F	118
SHR..107	130
SHR..137	235
SHR..147	360
SHR..167	605
SHR..177	980
SHR..187	1400

Gear reducer size	Kg
SHF27	6.5
SHFA27	6
SHFF27	8
SHFAF27	7
SHF37	13
SHFA37	12
SHFF37	15
SHFAF37	14
SHF47	18
SHFA47	17
SHFF47	21
SHFAF47	20

Gear reducer size	Kg
SHF57	25
SHFA57	24
SHFF57	31
SHFAF57	30
SHF67	31
SHFA67	27
SHFF67	37
SHFAF67	35
SHF77	55
SHFA77	50
SHFF77	66
SHFAF77	58

Gear reducer size	Kg
SHF87	96
SHFA87	90
SHFF87	112
SHFAF87	105
SHF97	157
SHFA97	150
SHFF97	190
SHFAF97	171
SHF107	241
SHFA107	225
SHFF107	269
SHFAF107	245

Gear reducer size	Kg
SHF127	401
SHFA127	365
SHFF127	447
SHFAF127	401
SHF157	632
SHFA157	610
SHFF157	740
SHFAF157	670
SHF167	1040
SHFA167	990
SHF177	1520
SHFA177	1460

Gear reducer size	Kg
SHK37	12
SHKF37	15
SHKA37	11.5
SHKAF37	15
SHK47	19
SHKF47	22.5
SHKA47	18
SHKAF47	21
SHK57	24
SHKF57	29
SHKA57	22
SHKAF57	28

Gear reducer size	Kg
SHK67	30
SHKF67	36
SHKA67	37
SHKAF67	34
SHK77	54
SHKF77	62
SHKA77	46
SHKAF77	55
SHK87	90
SHKF87	100
SHKA87	78
SHKAF87	91

Gear reducer size	Kg
SHK97	150
SHKF97	171
SHKA97	130
SHKAF97	156
SHK107	260
SHKF107	271
SHKA107	231
SHKAF107	265
SHK127	410
SHKF127	452
SHKA127	381
SHKAF127	419

Gear motor weights

Gear reducer size	Kg
SHK157	635
SHKF157	715
SHKA157	603
SHKAF157	660
SHK167	1035
SHKH167	1000
SHK187	1615
SHKH187	1550

Gear reducer size	Kg
SHS37	6
SHSF37	8
SHSA37	6
SHSAF37	7.5
SHS47	10
SHSF47	14
SHSA47	11
SHSAF47	13
SHS57	14
SHSF57	18
SHSA57	14
SHSAF57	17

Gear reducer size	Kg
SHS67	25
SHSF67	32
SHSA67	26
SHSAF67	31
SHS77	45
SHSF77	55
SHSA77	45
SHSAF77	52
SHS87	80
SHSF87	101
SHSA87	76
SHSAF87	94

Gear reducer size	Kg
SHS97	140
SHSF97	171
SHSA97	135
SHSAF97	160

Motor size	Kg
D63S2	9
D63M2	10
D63L2	10
D71D2	14
D80K2	18
D80N2	20
D90S2	20
D90L2	23
D100M2	30
D100L2	32
D112M2	37
D132S2	57

Motor size	Kg
D132M2	60
D160M2	114
D160L2	131
D180M2	168
D200L2	236
D225S2	255
D225M2	288
D250M2	382
D280S2	494
D280M2	550
D63S4	10
D63M4	11

Motor size	Kg
D63L4	11
D71D4	12
D80K4	14
D80N4	15
D90S4	19
D90L4	23
D100M4	32
D100L4	35
D112M4	52
D132S4	60
D132M4	72
D130M4	109

Motor size	Kg
D160L4	130
D180M4	166
D180L4	182
D200L4	232
D225S4	280
D225M4	309
D250M4	400
D280S4	515
D280M4	601
D71D6	12
D80K6	14
D80N6	17

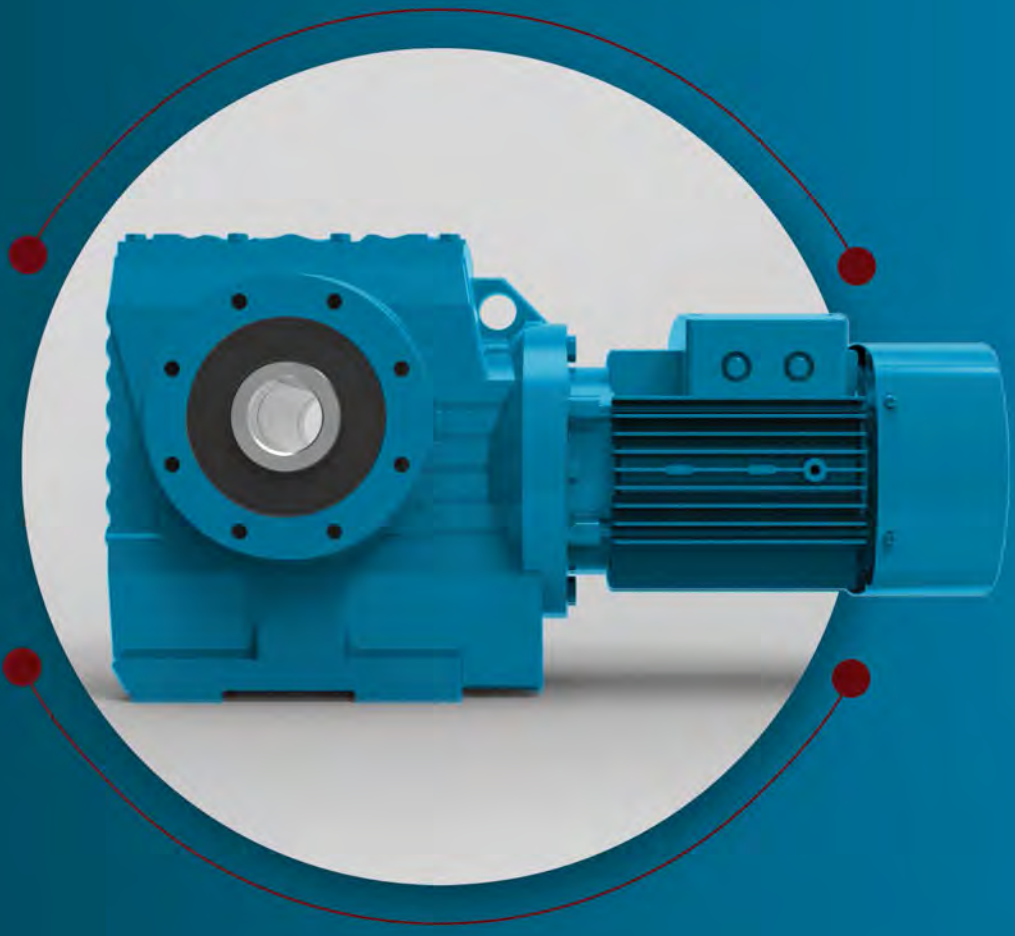
Motor size	Kg
D90S6	20
D90L6	20
D100M6	28
D100L6	31
D112M6	37
D132S6	64
D132M6	73
D160M6	104
D160L6	126
D180M6	169
D200L6	225
D225S6	266

Motor size	Kg
D225M6	281
D250M6	378
D280S6	475
D280M6	541

Notes: The weight of reducers in the table is the average weight for each ratio.
If you need exact weight for certain ratio or input output modules. please consult our company.

Isfahan Shakerin Gearbox

شاکرین گیربکس اصفهان



شرکت شاکرین گیربکس اصفهان

طراح و سازنده گیربکس‌های خورشیدی

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www.SHAKERIN-GEARBOX.com

www.SHAKERIN-GEARBOX.ir

info@SHAKERIN-GEARBOX.com

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