# RGB MOUNTON GEAR BOX

# 1 Introduction

## 1.1 The REMI group of companies

Since the last 50 years at Remi Elektrotechnik Ltd. of REMI group, we have been manufacturing all types electric and geared motors, with well over 1.5 million motors approved in the market.

In 1970, the promoters of Remi Elektrotechnik Ltd. went to Germany and obtained a license from 'VEM Kombinat Electromaschinenbau' to manufacture single-phase, three-phase and flame-proof motors. A few years later we extended our relationship with them by introducing a geared motor range manufactured in India. As time progressed and in order to expand our product range we had collaboration with another German party called 'Stephan-Werke GmbH'. With these collaborations, extensive production has been going on over the years. Many of the models have developed and engineered to be more efficient at a lower price by our in house research and development team. In early 2007, to cope with overwhelming demand for our products, which could not be met due to space constraints, our factory was relocated in Vasai the outskirts of Mumbai.

## 1.2 Products and system from REMI

The products and systems from REMI are divided into eight products groups. These eight products groups are:

**1** Standard motors.
**2** Industrial gear units.
**3** Agitators.
**4** Blood Banking Equipments.
**5** Fans.
**6** Laboratory Instruments.
**7** Process machinery.
**8** Stainless Steel Seamless and Welded Pipes / Tubes.

REMI always stands firm in its commitment to provide real value of money to its customers. With a huge manufacturing base and an extensive distribution network, REMI is capable of technically supporting and lending its expertise to customers located anywhere in the Indian sub-continent. REMI products are now exported to more than 40 countries across the world.

# 2 General Information

**RGB** series helical gear units is a new generation product, which designed based on Din Standard
It can be connected respectively with motors of IEC frame B5 hanged standard or brake motor.
This kind of product is widely used in drive fields such as textile, foodstuff, beverage, chemical industry, car parking, packing and so on.

## 2.1 Construction features

Gear box housing and cover are of high quality grade cast iron and have sturdy internal ribs. Controlled dimensions of gear wheels, shaft and ball bearings ensure long life of gear box. The gear wheels are made of wear-resistant special alloy. They are case hardened by modern hardening process ensuring practically zero distortion during heat treatment. Gear lapping ensures finer high spot removal..

REMI has in-house gear manufacturing, heat treatment facility backed by full fledged machine shop, with state of art CNC machining centers, assembly, testing line in house. Electrical motor manufacturing.

## 2.2 Product features

- Modularity
- High efficiency
- Low noise
- Universal Mounting
- C.I housing, structures in product
- Case hardened gears

| Symbols | Units | Description |
|---|---|---|
| $A_{N\ 1,2}$ | [ N ] | Permissible axial force |
| $f_s$ | - | Service factor |
| $f_T$ | - | Thermal factor |
| $f_{TP}$ | - | Temperature factor |
| i | - | Gear ratio |
| I | - | Cyclic duration factor |
| $J_C$ | [ $Kgm^2$ ] | Mass moment of inertia to be driven |
| $J_M$ | [ $Kgm^2$ ] | Motor mass moment of intertia |
| $J_R$ | [ $Kgm^2$ ] | Mass moment of inertia for the gear unit |
| K | - | Mass acceleration factor |
| $K_r$ | - | Transmission element factor |
| $M_{1,2}$ | [ Nm ] | Torque |
| $M_{c\ 1,2}$ | [ Nm ] | Calculated torque |
| $M_{n\ 1,2}$ | [ Nm ] | Rated torque |
| $M_{r\ 1,2}$ | [ Nm ] | Torque demand |
| $n_{1,2}$ | [ $min^{-1}$ ] | Rotational speed |
| $P_{1,2}$ | [ kW ] | Power |
| $P_{N\ 1,2}$ | [ kW ] | Rated power |
| $P_{R\ 1,2}$ | [ kW ] | Power demand |
| $R_{C\ 1,2}$ | [ N ] | Calculated radial force |
| $R_{N\ 1,2}$ | [ N ] | Permissible overhang load |
| S | - | Safety factor |
| $t_a$ | [ °C ] | Ambient temperature |
| $t_f$ | [ min ] | Work time at constant load |
| $t_r$ | [ min ] | Rest time |
| $\eta_d$ | - | Dynamic efficiency |
| $\eta_s$ | - | Static efficiency |

## 2.3 Torque

**Rated Torque $M_{n2}$ [ Nm ]**

Torque transmissible through ouput shaft, under uniform loading and based on service factor $f_s$ = 1 Rating refers to specific $n_1$ input speeds.

**Required torque $M_{r2}$ [ Nm ]**

Torque corresponding to application requirements. It must always be equal to or less than rated output torque $M_{n2}$ for the gearbox under study

**Calculated torque $M_{c2}$ [ Nm ]**

Torque value to be used when selecting the gearbox, considering required torque $M_{r2}$ and service factor $f_s$ and is obtained through the equation.

$$M_{c2} = M_{r2} * f_s \leq M_{n2} \qquad (1)$$

## 2.4 Power

**Input rated power $P_{n1}$ [ kW ]**

In the gearbox selection charts this is the power applicable to input shaft, based on input speed $n_1$ and corresponding to service factor $f_s$ = 1.

## 2.5 Thermal capacity

**$P_t$ [ kW ]**

$P_t$ is the power that can be transmitted through the gear unit, under a continuous duty and an ambient temperature of 20°c without resulting into damage of the inner parts or degradation of the lubricant properties. Refer to chart ( A1) for specific kW rating.
In case of intermittent duty, or an operating ambient temperature other than the rated 20°c the pt value should be adjusted through the factor $f_t$ obtained from chart ( A2 ) as p[er the following equation $p_t' = p_t \times f_t$

**( A1 )**

| Pt (kW) 20°C | |
|---|---|
| | $n_1$ = 1400 min $^{-1}$ |
| RGB110 | 6.0 |
| RGB130 | 7.8 |

**( A2 )**

| $f_t$ | | | | | |
|---|---|---|---|---|---|
| $t_a$ [ °C ] | Continuous duty | Intermittent duty | | | |
| | | Degree of intermittence | | | |
| | | ( I ) | | | |
| | | 80% | 60% | 40% | 20% |
| 40 | 0.80 | 1.1 | 1.3 | 1.5 | 1.6 |
| 30 | 0.85 | 1.3 | 1.5 | 1.6 | 1.8 |
| 20 | 1.0 | 1.5 | 1.6 | 1.8 | 2.0 |
| 10 | 1.15 | 1.6 | 1.8 | 2.0 | 2.3 |

Where cyclic duration factor ( i ) % is the relationship of operating time under load tr and total time ( $t_f + t_r$ ) expressed as a percentage

$$I = \frac{t_f}{t_f + t_r} \cdot 100 \qquad (2)$$

The condition to verify is :

$$P_{r1} \leq p_t \times f_t \qquad (3)$$

## 2.6 Efficiency << η >>

Obtained from the relationship of output power $p_2$ to input power $p_1$ according to the following equation.

$$\eta = \frac{p2}{P1} \cdot 100 \ [\%] \qquad (4)$$

**( A3 )**

| | 2 x | 3 x |
|---|---|---|
| η | 95 % | 93 % |

## 2.7 Gear ratio << i >>

The value for the gear ratio is referred to with the letter [ i ] and calculated through the relationship of the input speed $n_1$ to the output speed $n_2$.

$$i = \frac{n_1}{n_2} \qquad (5)$$

The gear ratio is usually a decimal fraction which in this catalogue is truncated at one digit after the comma ( no decimals for i > 1000 ).
If interested in knowing the complete figure please consult Remi's technical service.

## 2.8 Angular velocity

**Input speed**
**n1 [ min $^{-1}$ ]**

Speed is related to the prime mover selected. Catalogue values refer to speed of either single of double speed motors that are common in the industry.
If the gearbox is driven by an external transmission. It is recommended to operate it with a speed of 1400 min $^{-1}$ or lower in order to optimise operating conditions and lifetime.
Higher input speeds are permitted. However in this case consider that torque rating $M_{n2}$ is effected adversely .
Please consult a Remi Representative.

## 2.9 Output speed

**$n_2$ [ $min^{-1}$ ]**

The output speed n2 is calculated from the relationship of input speed n1 to the gear ratio i, as per the following equation

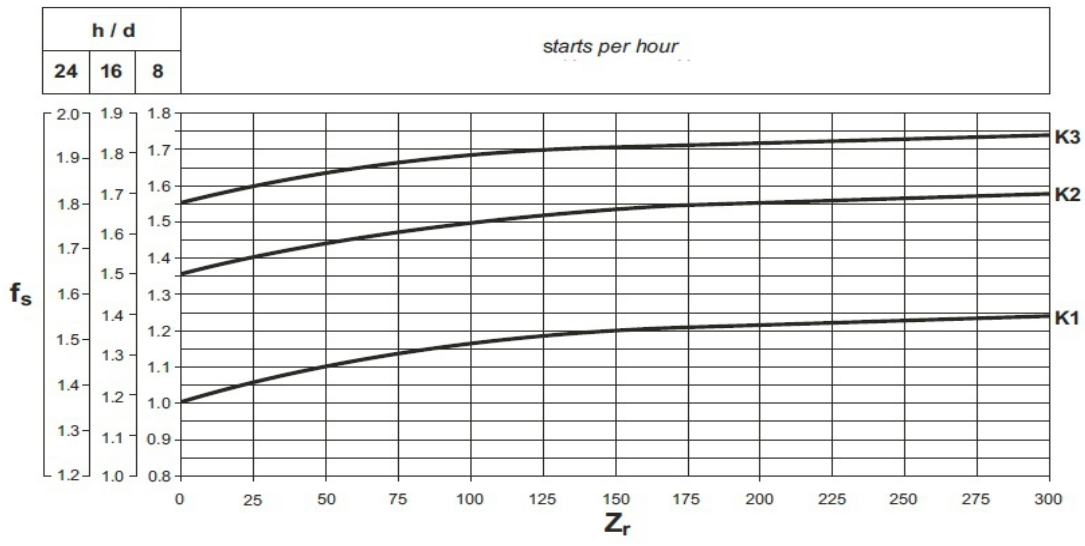
$$n2 = \frac{n_1}{i} \qquad (6)$$

## 2.10 Service factor

**<< $f_s$ >>**

This factor is the numeric value describing reducer service duty. It takes into consideration with unavoidable approximation daily operating conditions, load variations and overloads connected with reducer application. In diagram ( A4 ) here below, after selecting proper “daily working hours” column, the service factor is given by intersecting the number of starts per hour and one of the K1, K2 or k3 curves.
K_ curves are linked with the service nature ( approximately uniform, medium and heavy ) through the acceleration factor of masses K, connected to the ratio between driven masses and motor intertia values.
Regardless of the value given for the service factor, we would like remind That in same applications which for example involve lifting of parts failure of the reducer may expose the operators to the risk of injuries. If in doubt, please contact our technical service.

**( A4 )**



## 2.11 Acceleration factor of masses, K

This parameter serves for selecting the right curve for the type of load, The value is given by the following ratio.

$$K = \frac{J_c}{J_m} \qquad (7)$$

**Where :**

$J_c$ = moment of inertia of driven messes referred to motor driving shaft.

$J_m$ = moment of inertia of motor

**K** ≤ 0.25 - curve K1
uniform load

**0.25** < K ≤ 3 - curve K2
moderate shock load

**3** < K ≤ 10 - curve K3
heavy shock load

or K values > 10, please contact our technical service.

## 2.12 Maintenance

Life lubricated gearboxes do not require any periodical oil changes.
For other types of gearboxes the first oil change must take place after about 300 hours of operation., carefully flushing the gear unit using suitable detergents.

## 2.13 Selection

Some fundamental data are necessary to assist the correct selection of a gearbox or gearmotor. The table below (A5) briefly sums up this information. To simplify selection fill in the table and send a copy to our technical service which will select the most suitable drive unit for your application.

**( A5 )**

| Symbols | Type Of Application |
|---|---|
| $P_{r2}$ | Output power at $n_2$ max.....kW |
| $P_{r2}$ ' | Output power at $n_2$ min.....kW |
| $M_{r2}$ | Output torque at $n_2$ max.....Nm |
| $n_2$ | Max. output speed.....$min^{-1}$ |
| $n_2$ ' | Min. output speed.....$min^{-1}$ |
| $n_1$ | Max. input speed.....$min^{-1}$ |
| $n_2$ ' | Min. input speed.....$min^{-1}$ |
| $R_{c2}$ | Radial load on output shaft.....N |
| $X_2$ | Load application distance ( * ).....mm |
| | Load orientation at output.....  |
| | Output shaft rotation direction ( CW-CCW ) ( ** )..... |
| Rc1 | Radial load on input shaft.....N |
| $x_1$ | Load application distance ( * ).....mm |
| | Load orientation at input.....  |
| | Input shaft rotation direction ( CW-CCW ) ( ** ).....$A_{c2}$ |
| $A_{c1}$ | Thrust load on output shaft ( +/- ) ( *** ).....N |
| $A_{c1}$ | Thrust load on input shaft ( +/- ) ( *** ).....N |
| $J_c$ | Moment of intertie of the load.....$Kgm^2$ |
| $t_a$ | Ambient temperature.....C° |
| | Altitude above sea level.....m |
| | Duty type to IEC norms.....S../..% |
| Z | Starting frequency.....1/h |
| | Motor voltage.....V |
| | Brake voltage.....V |
| | Frequency.....Hz |
| $M_b$ | Brake torque.....Nm |
| | Motor Protection degree.....IP |
| | Insulation class..... |

( * ) Distance X1-2 is between force application point and shoulder ( if not indicated the force acting at mid-point of the shaft extension will be considered)

( ** ) CW = Clockwise;
CCW = counterclockwise;

( *** ) + = push
- = pull

## Selecting a gearmotor

**a)** Determine service factor $f_s$ according to type of duty ( factor K ), number of starts per hour Z, and hours of operation.

**b)** From values of torque $M_{r2}$ speed $n_2$ and efficiency η the required input power can be calculated from the equation:

$$P_{r1} = \frac{M_{r2}.n_2}{9550.\,\eta}\ [\text{Kw}] \qquad (8)$$

Values of η for the captioned worm gear can be sorted out from paragraph 5

**c)** Consult the gearmotor selection charts and locate the table corresponding to normalized power $P_n'$

$$P_n \geq P_{r1} \qquad (9)$$

Unless otherwise specified, power $P_n$ of motors indicated in the catalogue refers to continuous duty S1.
For motors used in conditions other than S1, the type of duty required by reference to CEI 2-3/IEC 60034-1 Standards must be mentioned.
For duties from S2 to S8 in particular and for motor frame 132 of smaller, extra power output can be obtained with respect to vontinuous duty.
Accordingly the following condition must be satisfied:

$$P_n \geq \frac{P_{r1}}{f_m} \qquad (10)$$

The adjusting factor $f_m$ can be obtained from table ( A6 ).

## Intermittence ratio

$$I = \frac{t_f}{tf + tr}\ .\ 100 \qquad (11)$$

tf = work time at constant load
tr = rest time

**( A6 )**

| | SERVICE | | | | | | |
|---|---|---|---|---|---|---|---|
| | S2 | | | S3* | | | S4 – S8 |
| | Cycle duration [ min ] | | | Cyclic duration factor ( I ) | | | Please contact us |
| | 10 | 30 | 60 | 25% | 40% | 60% | |
| fm | 1.35 | 1.15 | 1.05 | 1.25 | 1.15 | 1.1 | |

*Cycle duration, in any event, must be 10minutes or less. If it is longer, please contact our Technical Service.

Next, refer to the appropriate $P_n$ section within the gearmotor selection charts and locate the unit that features the desired output speed $n_2$, or closest to, along with a safety factor S that meets or exceeds the applicable service factor $f_s$.

The safety factor is so defined:

$$S = \frac{Mn_2}{M_2} = \frac{Pn1}{P_1} \qquad (12)$$

As standard, gear and motor combinations are implemented combinations are implemented with 2, 4 and 6 pole motors, 50 Hz supplied.
Should the drive speed be different from 2800, 1400 or 900 min-1, base the selection on the gear unit normal rating.

## Selection a speed reducer or a gear unit with IEC motor adapter

**a)** Determine service factor $f_s$

**b)** Assuming the required output torque for the application Mr2 is known, the calculation torque can be then defined as:

$$M_{c2} = M_{r2} * f_s \qquad (13)$$

**c)** The gear ratio is calculated according to required \ output speed $n_2$ and input speed n1'.

$$i = \frac{n_1}{n_2} \qquad (14)$$

Once values for $M_{c2}$ and I are known consult the rating charts under the appropriate input speed n1 and locate the gear unit that features the gear ratio closest to [ I ] and at same time offers a rated torque value $M_{n2}$ so that:

$$M_{n2} \geq M_{c2} \qquad (15)$$

If a IEC normalized motor must be fitted check geometrical compatibility with the gear unit at paragraph 24 – Motor availability.

## 2.14 Verification

After selection is complete it may be worth checking on the following:

a) **Thermal capacity**
Make sure that the thermal capacity of the gearbox is equal to or greater than the power required by the application.

b) **Maximum torque**
The maximum torque ( intended as momentary peak load ) application to the gearbox must mot, in general, exceed 200% of rated torque $M_{n2}$. Therefore, check that this limit is not exceeded, using suitable torque limiting devices, if necessary.
For three-phase double speed motors, it is important to pay attention to the switching torque which is generated when switching from high to low speed, because it could be significantly higher than maximum torque.
A simple, economical way to minimize overloading is to power only two phases of the motor during switch-over ( power-up time on two phases can be controlled with a time-relay ):

**$M_{g2} = 0.5 * M_{g3}$**
**$M_{g2}$ =** Switching torque with two phase power-up
**$M_{g3}$ =** Switching torque with three-phase power-up

We advise you, in any event, to contact our Technical Service.

**c) Radial loads**
Make sure that radial forces applying on input and / or output shaft are within permitted catalogue values.
If they were higher consider designing a different bearing arrangement before switching to a larger gear unit.
Catalogue values for rated overhang loads refer to mid-point of shaft under study.
Should application point of the overhang load be localised further out the revised loading capability must be adjusted as per instructions given in this manual. See paragraph 22.

**d) Thrust loads**
Actual thrust load must be found within 20% of the equivalent overhang load capacity. Should an extremely high, or a combination of radial and axial load apply, consult REMI Technical Service.

**e) Starts per hour**
For duties featuring a high number of switches the actual starting capability in loaded condition [ Z ] must be calculated. Actual number of starts per hour must be lower than value so calculated.

## 2.15 Installation

The following installing instructions must be observed:

**a) Starts per hour**
Make sure that the gearbox is correctly secured to avoid vibrations. If shocks or overloads are expected, install hydraulic coupling, clutches, torque limiters, etc.

**b)** Before being paint coated, the machined surfaces and the outer face of the oil seals must be protected to prevent point drying out the rubber and jeopardising the sealing properties.

**c)** Parts filled on the gearbox output shaft must be machined to ISO H7 tolerance to prevent interface fits that could damage the gearbox itself. Fauther, to mount or remove such parts, use suitable pullers or extraction devices using the tapped hole located at the top of the shaft extension.

**d)** Mating surfaces must be cleaned and treated with suitable protective products before mounting to avoid oxidation and, as a result, seizure of parts.

**e)** Prior to putting the gear unit into operation make sure that the equipment that incorporates the same complies with the current revision of the machines directive 89/392.

**f)** Before stating up the machine, make sure that oil level conforms to the mounting position specified for the gear unit.

**g)** For outdoor installation provide adequate guards in order to protect the drive from rainfalls as well as direct sun radiation.

## 2.16 Storage

Observe the following instructions to ensure correct storage of the products:

**a)** Do not store outdoors, in areas exposed to weather or excessive humidity.

**b)** Always place wooden boards or other material underneath th product, to avoid the direct contact with the floor.

**c)** In case of long-term storage all machined surfaces such as flanges, shafts and coupling must be coated with a suitable rust inhibiting product.
Furthermore gear units must be placed with the fill plug in the highest position and filled up with oil.
Before putting the units into operation the appropriate quantity, and type, of oil must be restored.

## 2.17 Conditions of supply

Gear units are supplied as follows:

**a)** Configured for installation in the mounting position specified when ordering.

**b)** Tested to factory specifications.

**c)** Mating machined surfaces unpainted.

**d)** Nuts and bolts for mounting motors are provided.

**e)** Shafts are protected.

**f)** Supplied with lifting lug ( where applicable ).

## 2.18 Paint specifications

All the gearboxes and electrical motors are painted RAL 5005.
Gearboxes and motors are cast iron.

## 2.19 Lubrication

Gears are splash lubricated by oil. It may be noted that **Geared Box are delivered without oil and before starting oil must be filled up to oil level indicator.**
The approximate quantity to be filled in the reducer, according to its mounting position. Correct level is at mid height of the sight glass.
First oil change must be done after operating 400 hours. Consequent oil changes after every 5000 hours of operation are recommended.

| **RECOMMENDED OIL GRADES BASED ON AMBEIENT TEMPERATURE OF 10-45°C** | | | |
|---|---|---|---|
| Oil Grade | Indian Oil | Hindustan Petroleum | Bharat Petroleum |
| ISO VG 460 | SERVOMESH SP 460 | PARTHAN EP 460 | AMOCAM 460 |

# 3 Overview of Unit Designation

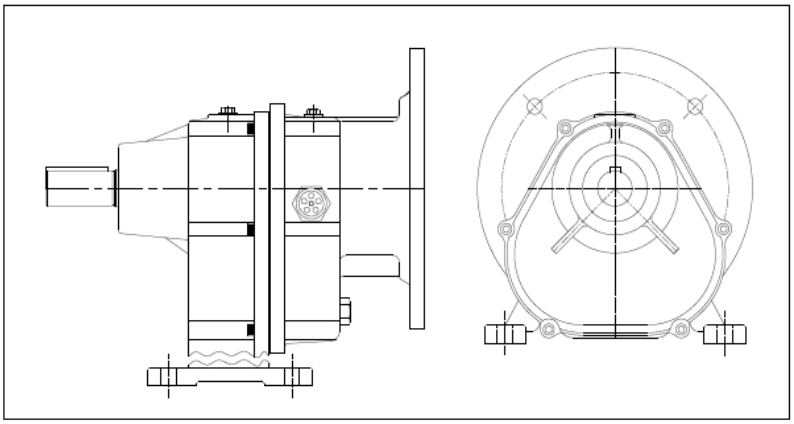
## Design variants and options – H , F gear units

The unit designations for the H, F gear units and their options are listed below.

### Helical gear units

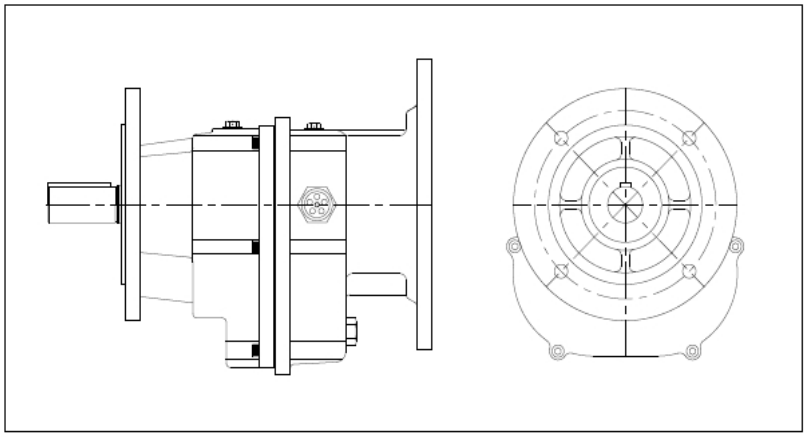
| Designation | |
|---|---|
| H | Foot-mounted design |
| F | Flange-mounted design |

**H**



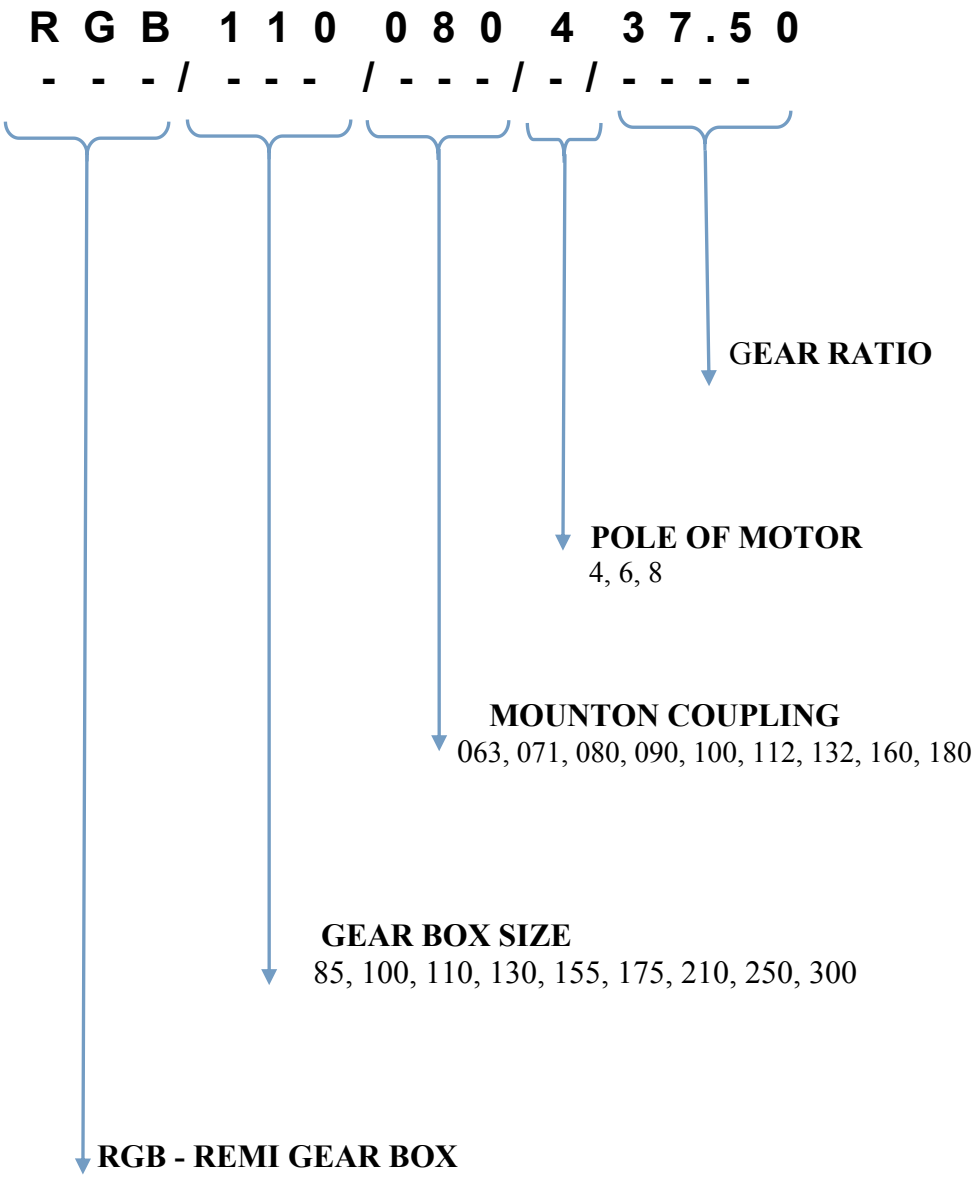
**RGB 110...**
**RGB 130...**

**F**



**RGB 110...**
**RGB 130...**

## 4 Coding for RGB system



## 5 Permissible loads at the output shaft

The permissible radial and axial loads for gear boxes on their output shaft are given in table No. 5. The figures are based on bearing life of 8000 hrs. At their corresponding speeds and under the provision that radial load are applied at half the length of the output shaft. Where only radial or only axial loads are transmitted. The shafts can be subjected to the full amount of Fr or Fa given in the table.

For Gear Wheels and sprocket wheels.

$$Dmin = \frac{2000*M}{Fr}$$

For V-Belt Pulleys

$$Dmin = \frac{4000*M}{Fr}$$

Where :
Dmin = Min. Permissible diam…(mm)
M = Torque to be transmitted…(Nm)
Fr = Permissible radial load at the output shaft…(N)

For shafts subjected to radial and axial loads at the same time, radial load is to be reduced by the amount of the thrust load.

With the load figures of the table and following formula. It is possible to find the minium permissible diameter of gear wheels.Sockets wheels or belt pulleys.

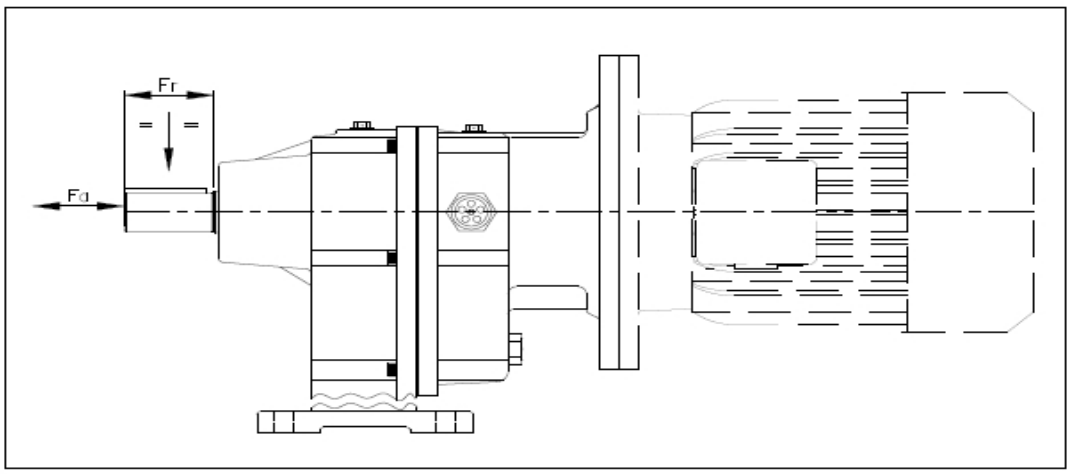
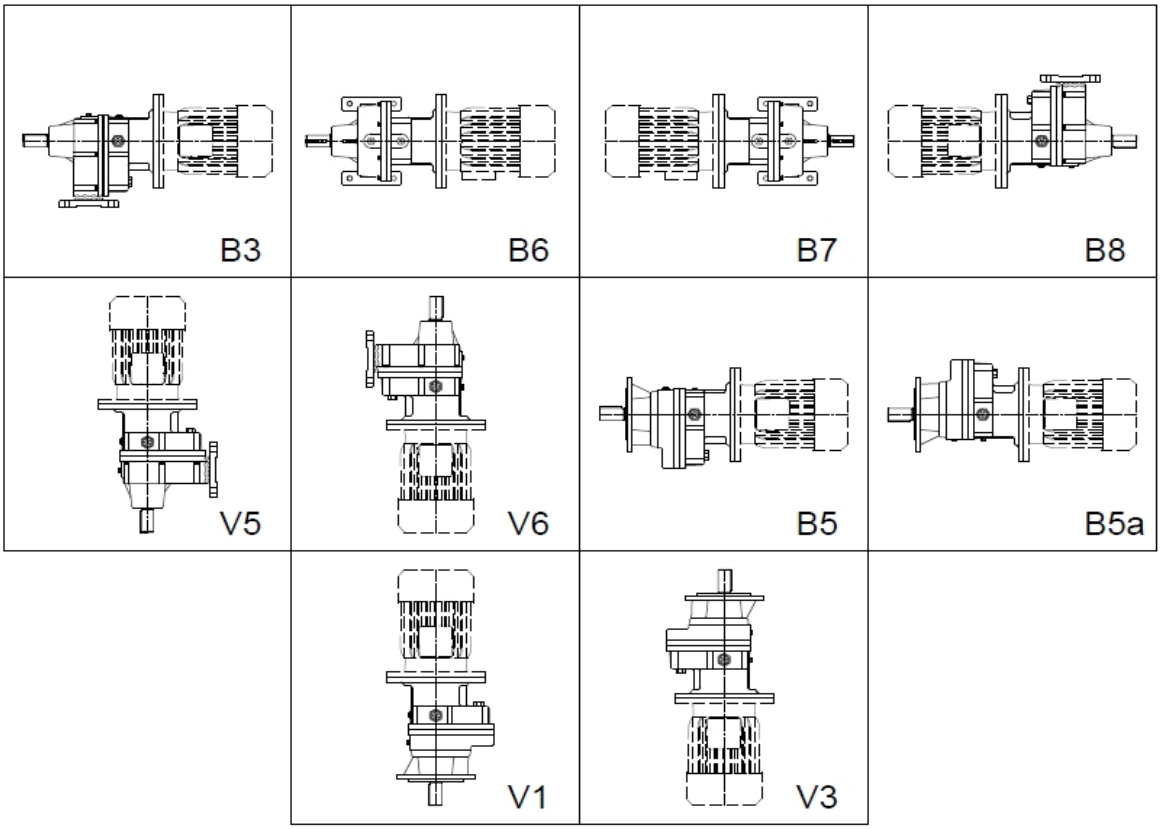


**Table no. 5 Permissible Radial (Fr) and Axial (Fa) Loads on Output Shaft**

| Gear Box | Speed | Fr | Fa |
|---|---|---|---|
| RGB 110 | < 14 | 3062.5 | 1062.5 |
| | 15 - 19 | 3000 | 1037.5 |
| | 20 - 30 | 2875 | 1.25 |
| | 31 - 53 | 2812.5 | 1012.5 |
| | 54 - 80 | 2275 | 812.5 |
| | 85 - 125 | 1875 | 675 |
| | > 130 | 975 | 387.5 |
| RGB 130 | < 18 | 6562.5 | 2375 |
| | 19 - 25 | 6437.5 | 2325 |
| | 26 - 39 | 6375 | 2287.5 |
| | 40 - 52 | 6250 | 2250 |
| | 63 - 85 | 4750 | 1700 |
| | 90 - 132 | 4000 | 1437.5 |
| | > 140 | 3375 | 1212.5 |

## 6 Gear unit Mounting Positions

Position of Oil level indicator, Breathing Plug and Drain plug changed depending on mounting position. It is therefore very important to specify mounting position as per chart given below at the time of ordering. In absence of any indication at the time of ordering. It will be presumed that mounting is B3 for foot mounting and B5 for flange mounted.



## 7 Gear Box With Motor Selection Charts

| Motor Kw (H.P.) | Output R.P.M | Gear Box Frame Size | Output Torque (Nm) | Service Factor | | |
|---|---|---|---|---|---|---|
| | | | | I | II | III |
| 0.12 (0.16) | 16 | RGB110 80A/8RF | 67.0 | - | - | 2.75 |
| | 20 | RGB110 71A/6 | 52.0 | - | - | 3.625 |
| | 26 | RGB110 71A/6 | 39.5 | - | - | 4.75 |
| | | | | | | |
| 0.18 (0.25) | 17 | RGB110 80A/8R | 92.4 | - | 2.25 | - |
| | 20 | RGB110 71B/6R | 80.7 | - | - | 2.5 |
| | 26 | RGB110 71/6R | 61.8 | - | - | 3.25 |
| | 30 | RGB110 63B/4R | 51.8 | - | - | 3.75 |
| | 35 | RGB110 63B/4R | 45.1 | - | - | 4.25 |
| | 40 | RGB110 63B/4R | 39.5 | - | - | 4.375 |
| | 45 | RGB110 63B/4R | 34.3 | - | - | 4.625 |
| | 50 | RGB110 63B/4R | 31.0 | - | - | 5.5 |
| | 53 | RGB110 63B/4R | 29.1 | - | - | 5.875 |
| | | | | | | |
| 0.25 (0.33) | 17 | RGB110 80A/8Q | 132.0 | 1.625 | - | - |
| | 20 | RGB110 80A/6Q | 112.0 | - | 1.875 | - |
| | 26 | RGB110 80A/6Q | 87.0 | - | - | 2.5 |
| | 31 | RGB110 71A/4 | 72.0 | - | - | 2.875 |
| | 35 | RGB110 71A/4 | 62.0 | - | - | 3.125 |
| | 40 | RGB110 71A/4 | 55.0 | - | - | 3.375 |
| | 45 | RGB110 71A/4 | 49.0 | - | - | 3.625 |
| | 50 | RGB110 71A/4 | 44.0 | - | - | 4.0 |
| | 54 | RGB110 71A/4 | 41.4 | - | - | 4.25 |
| | 61 | RGB110 71A/4 | 36.6 | - | - | 4.375 |
| | 68 | RGB110 71A/4 | 32.9 | - | - | 4.5 |
| | 76 | RGB110 71A/4 | 29.3 | - | - | 4.75 |
| | 86 | RGB110 71A/4 | 25.6 | - | - | 5.375 |
| | | | | | | |
| 0.37 (0.50) | 17 | RGB110 90SA/8T | 196.0 | 1.25 | - | - |
| | 20 | RGB110 80A/6R | 167.0 | 1.25 | - | - |
| | 26 | RGB110 80A/6R | 128.0 | 1.625 | - | - |
| | 31 | RGB110 71C/4T | 106.0 | - | 2.0 | - |
| | 35 | RGB110 71C/4T | 94.0 | - | 2.125 | - |
| | 40 | RGB110 71C/4T | 82.0 | - | 2.25 | - |
| | 45 | RGB110 71C/4T | 73.0 | - | 2.375 | - |
| | 51 | RGB110 71C/4T | 65.0 | - | - | 2.75 |
| | 54 | RGB110 71C/4T | 61.0 | - | - | 2.875 |
| | 61 | RGB110 71C/4T | 54.0 | - | - | 3.0 |

| Motor Kw (H.P.) | Output R.P.M | Gear Box Frame Size | Output Torque (Nm) | Service Factor | | |
|---|---|---|---|---|---|---|
| | | | | I | II | III |
| 0.37 (0.50) | 68 | RGB110 71C/4T | 48.5 | - | - | 3.125 |
| | 76 | RGB110 71C/4T | 43.8 | - | - | 3.25 |
| | 87 | RGB110 71C/4T | 38.2 | - | - | 3.25 |
| | 97 | RGB110 71C/4T | 34.2 | - | - | 3.75 |
| | 108 | RGB110 71C/4T | 30.9 | - | - | 4.0 |
| | 119 | RGB110 71C/4T | 28.0 | - | - | 4.25 |
| | | | | | | |
| 0.55 (0.75) | 26 | RGB110 80B/6T | 202.0 | 1.25 | - | - |
| | 26 | RGB130 80B/6T | 202.0 | - | 1.75 | - |
| | 31 | RGB110 80A/4 | 169.0 | 1.25 | - | - |
| | 36 | RGB110 80A/4 | 146.0 | 1.5 | - | - |
| | 41 | RGB110 80A/4 | 127.0 | 1.625 | - | - |
| | 41 | RGB130 80A/4 | 127.0 | - | 2.375 | - |
| | 46 | RGB110 80A/4 | 114.0 | 1.625 | - | - |
| | 47 | RGB130 80A/4 | 112.0 | - | - | 2.625 |
| | 52 | RGB110 80A/4 | 101.0 | - | 1.75 | - |
| | 53 | RGB130 80A/4 | 99.0 | - | - | 2.875 |
| | 55 | RGB110 80A/4 | 95.6 | - | 2.0 | - |
| | 60 | RGB130 80A/4 | 87.5 | - | - | 3.0 |
| | 62 | RGB110 80A/4 | 85.0 | - | 2.0 | - |
| | 63 | RGB130 80A/4 | 83.3 | - | - | 3.125 |
| | 70 | RGB110 80A/4 | 75.0 | - | 2.125 | - |
| | 72 | RGB130 80A/4 | 73.0 | - | - | 3.25 |
| | 78 | RGB110 80A/4 | 64.5 | - | 2.25 | - |
| | 81 | RGB130 80A/4 | 65.0 | - | - | 3.5 |
| | 89 | RGB110 80A/4 | 59.1 | - | 2.375 | - |
| | 92 | RGB130 80A/4 | 57.2 | - | - | 3.875 |
| | 99 | RGB110 80A/4 | 53.0 | - | - | 2.625 |
| | 110 | RGB110 80A/4 | 47.7 | - | - | 2.625 |
| | 121 | RGB110 80A/4 | 43.4 | - | - | 2.875 |
| | 141 | RGB110 80A/4 | 37.2 | - | - | 3.5 |
| | 157 | RGB110 80A/4 | 33.4 | - | - | 3.625 |
| | 174 | RGB110 80A/4 | 30.2 | - | - | 3.75 |
| | 193 | RGB110 80A/4 | 27.0 | - | - | 3.875 |
| | 216 | RGB110 80A/4 | 24.3 | - | - | 4.375 |
| | 256 | RGB110 80A/4 | 20.5 | - | - | 4.375 |
| | 306 | RGB110 80A/4 | 17.1 | - | - | 4.75 |
| | 360 | RGB110 80A/4 | 14.5 | - | - | 5.0 |
| | 428 | RGB110 80A/4 | 12.2 | - | - | 5.25 |

| Motor Kw (H.P.) | Output R.P.M | Gear Box Frame Size | Output Torque (Nm) | Service Factor | | |
|---|---|---|---|---|---|---|
| | | | | I | II | III |
| 0.75 (1.0) | 27 | RGB130 90SB/6 | 269.0 | 1.25 | - | - |
| | 31 | RGB110 80B/4T | 231.0 | 1.25 | - | - |
| | 36 | RGB110 80B/4T | 199.0 | 1.25 | - | - |
| | 41 | RGB110 80B/4T | 174.0 | 1.25 | - | - |
| | 41 | RGB130 80B/4T | 174.0 | - | 1.75 | - |
| | 46 | RGB110 80B/4T | 156.0 | 1.25 | - | - |
| | 47 | RGB130 80B/4T | 152.0 | - | 1.75 | - |
| | 51 | RGB110 80B/4T | 140.0 | 1.25 | - | - |
| | 53 | RGB130 80B/4T | 134.0 | - | 1.875 | - |
| | 60 | RGB130 80B/4T | 118.0 | - | 2.0 | - |
| | 62 | RGB110 80B/4T | 115.0 | 1.375 | - | - |
| | 63 | RGB130 80B/4T | 113.0 | - | 2.125 | - |
| | 69 | RGB110 80B/4T | 100.0 | 1.5 | - | - |
| | 72 | RGB130 80B/4T | 99.0 | - | 2.25 | - |
| | 77 | RGB110 80B/4T | 93.0 | 1.5 | - | - |
| | 81 | RGB130 80B/4T | 88.0 | - | 2.375 | - |
| | 88 | RGB110 80B/4T | 81.0 | - | 1.75 | - |
| | 92 | RGB130 80B/4T | 78.0 | - | - | 2.625 |
| | 99 | RGB110 80B/4T | 72.0 | - | 1.75 | - |
| | 103 | RGB130 80B/4T | 69.0 | - | - | 2.75 |
| | 109 | RGB110 80B/4T | 64.0 | - | 1.75 | - |
| | 115 | RGB130 80B/4T | 62.0 | - | - | 2.875 |
| | 121 | RGB110 80B/4T | 59.0 | - | 2.0 | - |
| | 127 | RGB130 80B/4T | 56.0 | - | - | 3.0 |
| | 140 | RGB110 80B/4T | 51.0 | - | 2.375 | - |
| | 143 | RGB130 80B/4T | 50.0 | - | - | 3.75 |
| | 155 | RGB110 80B/4T | 46.0 | - | 2.375 | - |
| | 162 | RGB130 80B/4T | 44.0 | - | - | 4.0 |
| | 173 | RGB110 80B/4T | 41.0 | - | - | 2.625 |
| | 192 | RGB110 80B/4T | 37.0 | - | - | 2.625 |
| | 214 | RGB110 80B/4T | 33.4 | - | - | 3.0 |
| | 255 | RGB110 80B/4T | 28.0 | - | - | 3.0 |
| | 305 | RGB110 80B/4T | 23.4 | - | - | 3.25 |
| | 358 | RGB110 80B/4T | 20.0 | - | - | 3.375 |
| | 425 | RGB110 80B/4T | 16.8 | - | - | 3.625 |

| Motor Kw (H.P.) | Output R.P.M | Gear Box Frame Size | Output Torque (Nm) | Service Factor | | |
|---|---|---|---|---|---|---|
| | | | | I | II | III |
| 1.1 (1.5) | 41 | RGB110 90SB/4 | 256..0 | 1.25 | - | - |
| | 47 | RGB130 90SB/4 | 223.0 | 1.25 | - | - |
| | 53 | RGB130 90SB/4 | 198.0 | 1.375 | - | - |
| | 60 | RGB130 90S/B4 | 174.0 | 1.5 | - | - |
| | 64 | RGB130 90SB/4 | 164.0 | 1.625 | - | - |
| | 70 | RGB110 90SB/4 | 150.0 | 1.25 | - | - |
| | 72 | RGB130 90SB/4 | 145.0 | - | 1.75 | - |
| | 78 | RGB110 90SB/4 | 134.0 | 1.25 | - | - |
| | 81 | RGB130 90SB/4 | 129.0 | - | 1.875 | - |
| | 89 | RGB110 90SB/4 | 127.0 | 1.25 | - | - |
| | 92 | RGB130 90SB/4 | 115.0 | - | 2.0 | - |
| | 99 | RGB110 90SB/4 | 106.0 | 1.25 | - | - |
| | 110 | RGB110 90SB/4 | 95.0 | 1.375 | - | - |
| | 104 | RGB130 90SB/4 | 101.0 | - | 2.125 | - |
| | 121 | RGB110 90SB/4 | 87.0 | 1.375 | - | - |
| | 116 | RGB130 90SB/4 | 90.0 | - | 2.125 | - |
| | 128 | RGB130 90SB/4 | 82.0 | - | 2.25 | - |
| | 141 | RGB110 90SB/4 | 76.0 | - | 1.75 | - |
| | 144 | RGB130 90SB/4 | 73.0 | - | - | 2.75 |
| | 157 | RGB110 90SB/4 | 67.0 | - | 1.875 | - |
| | 163 | RGB130 90SB/4 | 64.0 | - | - | 2.875 |
| | 174 | RGB110 90SB/4 | 60.0 | - | 1.875 | - |
| | 193 | RGB110 90SB/4 | 54.5 | - | 2.0 | - |
| | 183 | RGB130 90SB/4 | 57.5 | - | - | 3.0 |
| | 215 | RGB110 90SB/4 | 48.8 | - | 2.25 | - |
| | 204 | RGB130 90SB/4 | 51.6 | - | - | 3.125 |
| | 228 | RGB130 90SB/4 | 46.0 | - | - | 3.25 |
| | 256 | RGB110 90SB/4 | 41.0 | - | 2.25 | - |
| | 252 | RGB130 90SB/4 | 41.8 | - | - | 3.375 |
| | 306 | RGB110 90SB/4 | 34.3 | - | 2.375 | - |
| | 303 | RGB130 90SB/4 | 34.7 | - | - | 3.625 |
| | 360 | RGB110 90SB/4 | 29.2 | - | - | 2.5 |
| | 366 | RGB130 90SB/4 | 28.7 | - | - | 3.75 |
| | 420 | RGB130 90SB/4 | 25.0 | - | - | 3.875 |
| | 428 | RGB110 90SB/4 | 24.5 | 1.25 | - | - |
| | 435 | RGB130 90SB/4 | 24.1 | - | - | 4.125 |

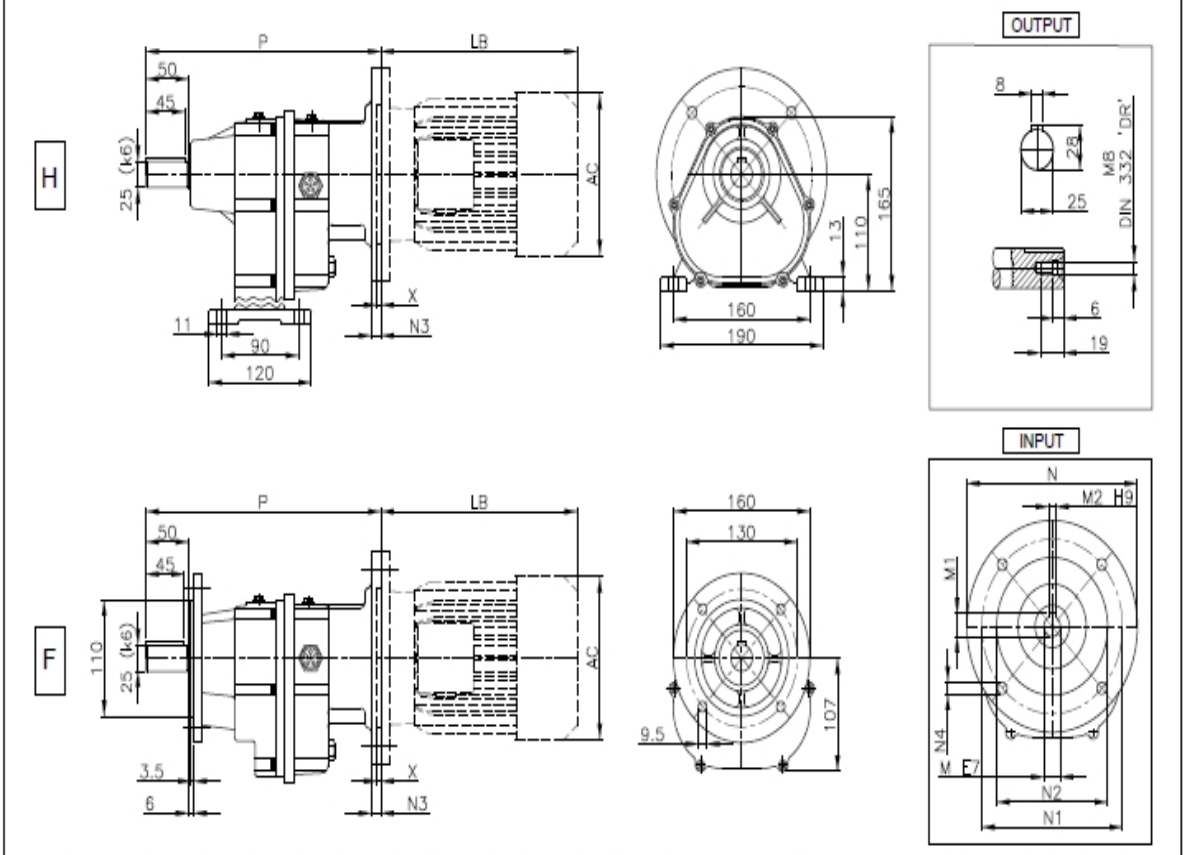
| Motor Kw (H.P.) | Output R.P.M | Gear Box Frame Size | Output Torque (Nm) | Service Factor | | |
|---|---|---|---|---|---|---|
| | | | | I | II | III |
| 1.5 (2.0) | 53 | RGB130 90LC/4 | 270 | 1.25 | - | - |
| | 60 | RGB130 90LC/4 | 238 | 1.25 | - | - |
| | 64 | RGB130 90LC/4 | 223 | 1.25 | - | - |
| | 72 | RGB130 90LC/4 | 199 | 1.375 | - | - |
| | 81 | RGB130 90LC/4 | 176 | 1.5 | - | - |
| | 92 | RGB130 90LC/4 | 156 | 1.5 | - | - |
| | 99 | RGB110 90LC/4 | 144 | 1.25 | - | - |
| | 110 | RGB110 90LC/4 | 130 | 1.25 | - | - |
| | 104 | RGB130 90LC/4 | 137 | - | 1.75 | - |
| | 121 | RGB110 90LC/4 | 118 | 1.25 | - | - |
| | 116 | RGB130 90LC/4 | 123 | - | 1.75 | - |
| | 128 | RGB130 90LC/4 | 111 | - | 1.875 | - |
| | 141 | RGB110 90LC/4 | 101 | 1.25 | - | - |
| | 144 | RGB130 90LC/4 | 99 | - | 2.0 | - |
| | 157 | RGB110 90LC/4 | 91.0 | 1.375 | - | - |
| | 163 | RGB130 90LC/4 | 87.0 | - | 2.125 | - |
| | 174 | RGB110 90LC/4 | 82.0 | 1.375 | - | - |
| | 193 | RGB110 90LC/4 | 73.0 | 1.5 | - | - |
| | 183 | RGB130 90LC/4 | 87.0 | - | 2.25 | - |
| | 215 | RGB110 90LC/4 | 66.0 | 1.5 | - | - |
| | 204 | RGB130 90LC/4 | 70.0 | - | 2.375 | - |
| | 228 | RGB130 90LC/4 | 62.0 | - | 2.375 | - |
| | 256 | RGB110 90LC/4 | 56.0 | 1.625 | - | - |
| | 252 | RGB130 90LC/4 | 57.0 | - | - | 2.5 |
| | 306 | RGB110 90LC/4 | 46.8 | - | 1.75 | - |
| | 303 | RGB130 90LC/4 | 47.2 | - | - | 2.75 |
| | 360 | RGB110 90LC/4 | 39.7 | - | 1.875 | - |
| | 366 | RGB130 90LC/4 | 39.1 | - | - | 2.875 |
| | 428 | RGB110 90LC/4 | 33.4 | - | - | 2.875 |
| | 435 | RGB130 90LC/4 | 32.9 | - | - | 3.125 |

| Motor Kw (H.P.) | Output R.P.M | Gear Box Frame Size | Output Torque (Nm) | Service Factor | | |
|---|---|---|---|---|---|---|
| | | | | I | II | III |
| 2.2 (3.0) | 82 | RGB130 100LC/4 | 256 | 1.25 | - | - |
| | 105 | RGB130 100LC/4 | 200 | 1.25 | - | - |
| | 117 | RGB130 100LC/4 | 179 | 1.375 | - | - |
| | 130 | RGB130 100LC/4 | 161 | 1.5 | - | - |
| | 146 | RGB130 100LC/4 | 144 | 1.5 | - | - |
| | 165 | RGB130 100LC/4 | 127 | 1.625 | - | - |
| | 186 | RGB130 100LC/4 | 112 | 1.625 | - | - |
| | 207 | RGB 130 100LC/4 | 101 | - | 1.75 | - |
| | 231 | RGB130 100LC/4 | 91.0 | - | 1.75 | - |
| | 255 | RGB130 100LC/4 | 82.0 | - | 1.875 | - |
| | 308 | RGB130 100LC/4 | 68.0 | - | 2.0 | - |
| | 370 | RGB130 100LC/4 | 56.9 | - | 2.125 | - |
| | 441 | RGB130 100LC/4 | 47.6 | - | 2.25 | - |

# 8 Dimension Sheet

## 8.1 RGB 110...

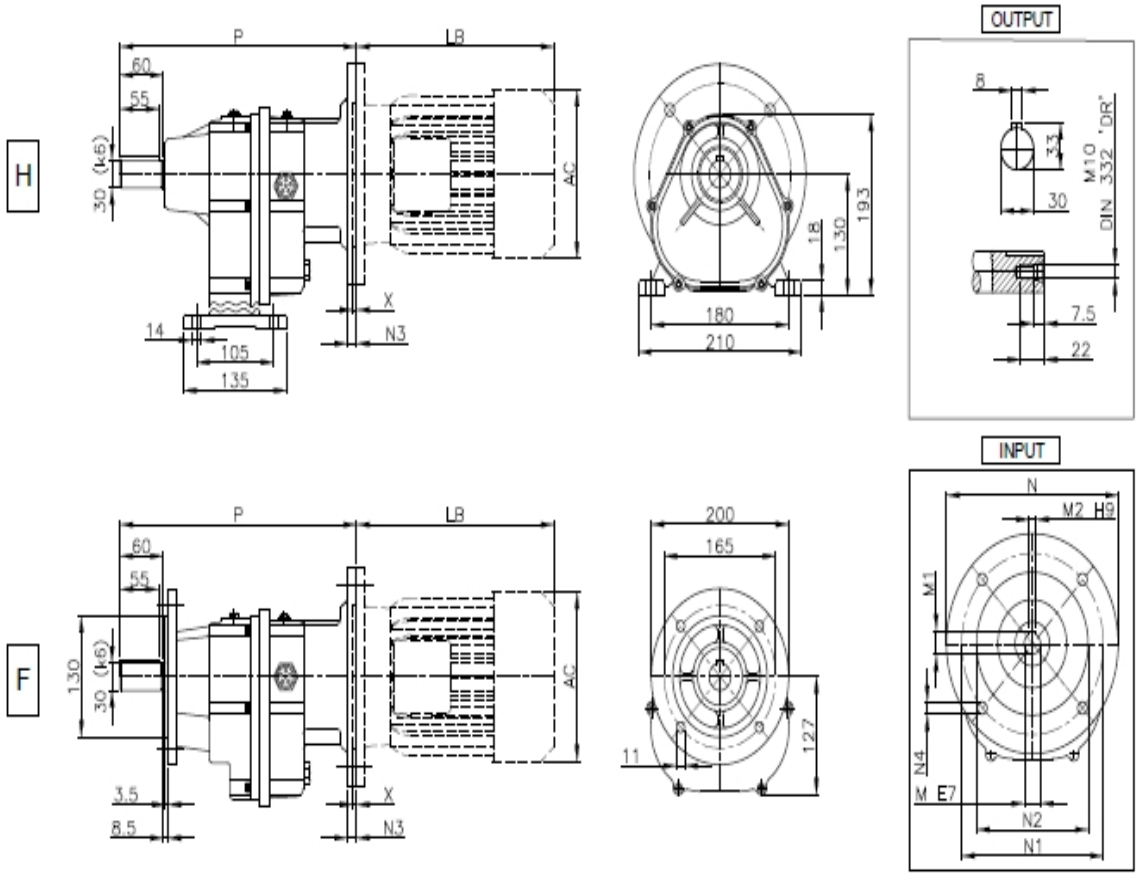
RGB 110... (IEC)




| GEAR BOX | M | M1 | M2 | N | N1 | N2 | N3 | N4 | X | P | kg | RATIO RANGE | SERVICE FACTOR RANGE | MOTOR | LB MIN | LB MAX | AC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RGB110 / 71 | 14 | 16.3 | 5 | 160 | 130 | 110 | 11 | 10 | 4.5 | 276 | 14 | 3.30 | 1.0 | 71 | 190 | 210 | 138 |
| RGB110 / 80 | 19 | 21.8 | 6 | 200 | 165 | 130 | 11 | 12 | 4.5 | 276 | 14 | TO | TO | 80 | 235 | 255 | 155 |
| RGB110 / 90 | 24 | 27.3 | 8 | 200 | 165 | 130 | 11 | 12 | 4.5 | 276 | 14 | 45.10 | 4.3 | 90 | 285 | 300 | 174 |

## 8.2 RGB 130...

RGB 130... (IEC)




| GEAR BOX | M | M1 | M2 | N | N1 | N2 | N3 | N4 | X | P | kg | RATIO RANGE | SERVICE FACTOR RANGE | MOTOR | LB MIN | LB MAX | AC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RGB130 / 71 | 14 | 16.3 | 5 | 160 | 130 | 110 | 11 | 10 | 4.5 | 321 | 23 | 3.24 TO 34.12 | 1.25 TO 4.0 | 71 | 190 | 210 | 138 |
| RGB130 / 80 | 19 | 21.8 | 6 | 200 | 165 | 130 | 11 | 12 | 4.5 | 321 | 23 | | | 80 | 235 | 255 | 155 |
| RGB130 / 90 | 24 | 27.3 | 8 | 200 | 165 | 130 | 11 | 12 | 4.5 | 321 | 23 | | | 90 | 285 | 300 | 174 |
| RGB130 / 100 | 28 | 31.3 | 8 | 250 | 215 | 180 | 11 | 15 | 5.5 | 321 | 23 | | | 100 | 315 | 350 | 194 |