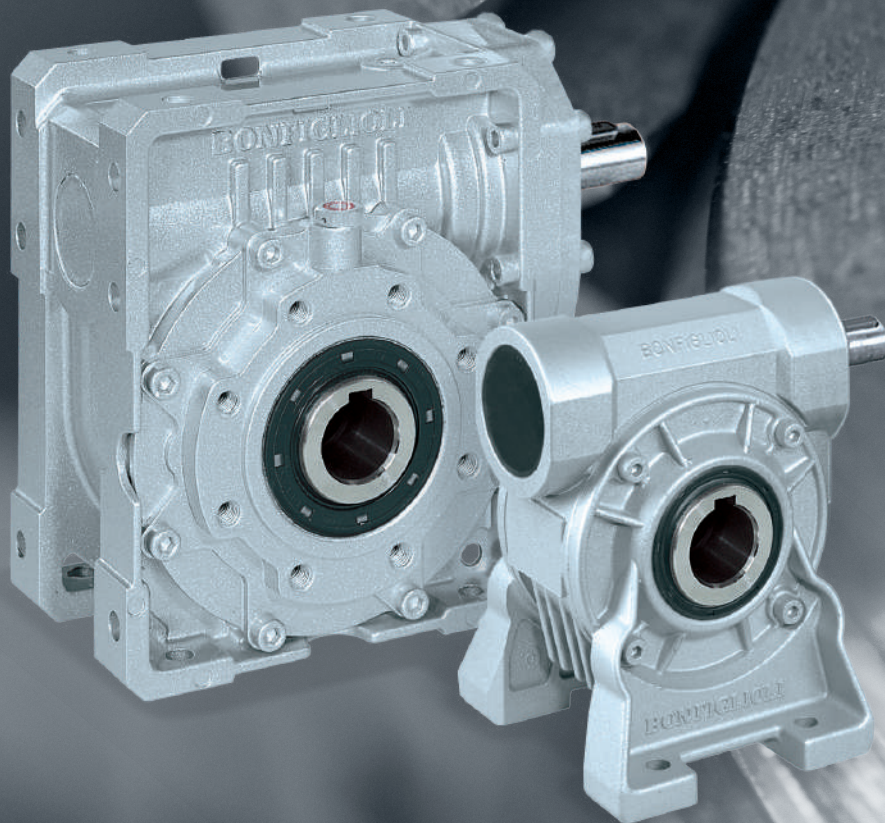


Bonfiglioli Riduttori

VF-W series

Wormgears



PRODUCT

 **Bonfiglioli**
Forever Forward



SUMMARY

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Revisions

Refer to page 42 for the catalogue revision index. Visit www.bonfiglioli.com to search for catalogues with up-to-date revisions.



1 GENERAL INFORMATION

1.1 SYMBOLS AND UNITS OF MEASURE

- An** [N] The **admissible thrust load** represents the force which can be applied axially to the gear unit's shaft, along with the rated radial load.
- f_s** - The **service factor** is a coefficient representing the severity of the duty for the operating cycle.
- f_{TP}** - The **adjusting factor** takes into account the influence of the ambient temperature in calculating the computational torque. This factor is relevant for worm gear units.
- i** - The **gear ratio** is expressed as the relationship of the input shaft speed to the output shaft speed.

$$i = \frac{n_1}{n_2}$$

- I** - The **intermittence** is defined as follows:

$$I = \frac{t_f}{t_f + t_r} \cdot 100$$

J_c [Kgm²] **Moment of inertia of the driven load.**

J_m [Kgm²] **Moment of inertia of the motor.**

J_R [Kgm²] **Moment of inertia of the gear unit.**

- K** - The load **acceleration factor** is used to calculate the service factor, and is defined as follows:

$$K = \frac{J_c}{J_m}$$

- K_R** - The **transmission factor** is a computational parameter, proportional to the tension generated by an external transmission keyed to the gear unit shaft.

M₂ [Nm] **Net output torque**

Mn₂ [Nm] The **rated torque** at the output shaft.
The catalogue value is calculated for a service factor f_s = 1.

Mr₂ [Nm] The application's **required torque** .
This should always be less than or equal to the gear unit's rated torque Mn₂.

Mc₂ [Nm] **Computational torque.** This is a virtual parameter used to select the gear unit, by means of the equation:

$$M_{c2} = M_{r2} \cdot f_s$$

n [min⁻¹] **Shaft speed.**

Pn₁ [kW] **Rated power** at the input shaft, calculated for a service factor f_s = 1.



P_R [kW] The application's **required power** .

R_C [N] The **computational radial load** is generated by an external transmission and, for the input and output shafts respectively, can be calculated from the following equations:

$$R_{c1}[N] = \frac{2000 \cdot M_1 [Nm] \cdot K_r}{d [mm]} \quad ; \quad R_{c2}[N] = \frac{2000 \cdot M_2 [Nm] \cdot K_r}{d [mm]}$$

R_N [N] The **admissible radial load** should always be more than or equal to the computational radial load. The point value is given in the catalogue for each unit's gear frame size and transmission ratio, and refers to the shaft's centre line.

S - The **safety factor** is defined as follows:

$$S = \frac{Mn_2}{M_2} = \frac{Pn_1}{P_1}$$

t_a [°C] **Ambient temperature.**

t_f [min] The **operating time** is the total duration of the work cycle phases.

t_r [min] The **rest time** is the interval of no work between two phases.

Z_r - **Number** of starts per hour.

η_d - The **dynamic efficiency** is expressed as the ratio between the power measured at the output shaft and that applied to the input shaft:

$$\eta_d = \frac{P_2}{P_1} \cdot 100 \quad [\%]$$

[]₁ This value refers to the input shaft.

[]₂ This value refers to the output shaft.



Danger. May cause slight injury to persons.



1.2 INTRODUCTION TO THE ATEX DIRECTIVES

1.2.1 EXPLOSIVE ATMOSPHERE

Under the provisions of Directive 2014/34/EU, an explosive atmosphere is defined as a mixture:

- a. of **flammable substances**, in the form of gases, vapours, mists or dusts;
- b. with **air**;
- c. under **atmospheric conditions**;
- d. in which, after ignition, the combustion spreads to the entire unburned mixture (it has to be noted that sometimes, mainly with dust, not always the whole quantity of the combustible material is consumed by the combustion).

An atmosphere which may potentially be transformed into an explosive atmosphere due to operating and/or ambient conditions is defined as a **potentially explosive atmosphere**. The products governed by Directive 2014/34/EU are intended for use only in a potentially explosive atmosphere defined in this way.

1.2.2 EUROPEAN HARMONISED ATEX STANDARDS

Directive ATEX 2014/34/EU stipulates the minimum safety requirements for products intended for use in explosion risk areas within the member countries of the European Union. The directive also assigns such equipment to **categories**, which are defined by the directive itself.

The following table describes the **zones** into which the user of a plant, in which an explosive atmosphere may occur, is required to divide the equipment application areas.

| Zones | | Formation frequency of a potentially explosive atmosphere | Type of danger |
|--------------------------------|------------------------------|---|----------------|
| Gaseous atmosphere G | Dusty atmosphere D | | |
| 0 | 20 | Present continuously or for long periods | Permanent |
| 1 | 21 | Likely to occur in normal operation occasionally | Potential |
| 2 | 22 | Not likely to occur in normal operation but if it does occur will persist for short period only | Minimal |

BONFIGLIOLI RIDUTTORI gear units selected in this catalogue are suitable for installation in zones 1, 21, 2 and 22, as highlighted in grey in the above table.

As from 20 April 2016 the ATEX directives 2014/34/EU come into force throughout the entire European Union, and replace existing conflicting national and European laws on explosive atmospheres and the previous directives 94/9/EC. It should be emphasised that, for the first time, the directives also govern mechanical, hydraulic and pneumatic equipment, and not only electrical equipment as has been the case so far.

With regard to the Machinery Directive 2006/42/EC it should be noted that directive 2014/34/EU is a set of extremely specific requirements dedicated to the dangers deriving from potentially explosive atmospheres, whereas the Machinery Directive contains only very general explosion safety requirements (Annex I).

Consequently, as regards protection against explosion in potentially explosive atmospheres, Directive 2014/34/EU takes precedence over the Machinery Directive. The requirements of the Machinery Directive apply to all other risks regarding machinery.

1.2.3 LEVELS OF PROTECTION FOR THE VARIOUS CATEGORIES OF EQUIPMENT

The various categories of equipment must be able to operate in conformity with the Manufacturer's operational specifications, at certain defined levels of protection.

| Protection level | Category | | Type of protection | Operating conditions |
|------------------|----------|----------|---|--|
| | Group I | Group II | | |
| Very high | M1 | | Two independent means of protection or safety capable of operating even when two independent faults occur | The equipment remains powered and operational even in the presence of an explosive atmosphere |
| Very high | | 1 | Two independent means of protection or safety capable of operating even when two independent faults occur | The equipment remains powered and operational in zones 0, 1, 2 (G) and/or zones 20, 21, 22 (D) |
| High | M2 | | Protection suitable for normal operation and heavy duty conditions | Power to the equipment is shut off in the presence of a potentially explosive atmosphere |
| High | | 2 | Protection suitable for normal operation and frequent faults or equipment in which malfunction is normal. | The equipment remains powered and operational in zones 1, 2 (G) and/or zones 21, 22 (D) |
| Normal | | 3 | Protection suitable for normal operation | The equipment remains powered and operational in zones 2 (G) and/or 22 (D) |

1.2.4 DEFINITION OF GROUPS (EN 1127-1)

Group I Applies to equipment intended for use underground in parts of mines and those parts of surface installations of such mines, liable to be endangered by firedamp and/or combustible dust.

Group II Applies to equipment intended for use in other places liable to be endangered by explosive atmospheres.

BONFIGLIOLI RIDUTTORI products may not therefore be installed in mines, classified in **Group I** and in **Group II**, category 1.

To summarise, the classification of equipment into groups, categories and zones is illustrated in the table below, whereby the availability of BONFIGLIOLI RIDUTTORI products is highlighted in grey.

| Group | I | | II | | | | | |
|------------------------------|-----------------|----|---|----|------|-----------------|------|-------------------------|
| | mines, firedamp | | other potentially explosive areas (gas, dust) | | | | | |
| Category | M1 | M2 | 1 | | 2 | | 3 | |
| Atmosphere ⁽¹⁾ | | | G | D | G | D | G | D |
| Zone | | | 0 | 20 | 1 | 21 | 2 | 22 |
| Type of protection gear unit | | | | | c, k | c, k | c, k | c, k |
| Type of protection motor | | | | | d, e | IP6X + temp.max | n(A) | IP5X o IP6X + temp. max |

⁽¹⁾ G = gas D = dust

This catalogue describes BONFIGLIOLI RIDUTTORI gear units, intended for use in potentially explosive atmospheres, with limitation to categories 2 and 3.

The products described herein conform to the minimum safety requirements of European Directive 94/9/EC, which is part of the directives known as ATEX (ATmosphères EXplosibles).



1.2.5 DECLARATION OF CONFORMITY

The Declaration of Conformity, is the document which attests to the conformity of the product to Directive 2014/34/EU. The validity of the Declaration is bound to observance of the instructions given in the User, Installation and Service Manual for safe use of the product throughout its service life.

This can be downloaded from www.bonfiglioli.com where the manual is available in PDF format in a number of languages.

The instructions regarding ambient conditions are of particular importance inasmuch as failure to observe them during operation of the product renders the certificate null and void.

In case of doubt regarding the validity of the certificate of conformity, contact the BONFIGLIOLI RIDUTTORI technical department.

1.3 USE, INSTALLATION AND MAINTENANCE

The instructions for safe storage, handling and use of the product are given in the unit's User, Installation and Service Manual.



This can be downloaded from www.bonfiglioli.com where the manual is available in PDF format in a number of languages.

This document must be kept in a suitable place, in the vicinity of the installed gear unit, as a reference for all persons authorised to work with or on the product throughout its service life.

The Manufacturer reserves the right to modify, supplement or improve the Manual, in the interests of the User.

1.4 SELECTING THE TYPE OF EQUIPMENT

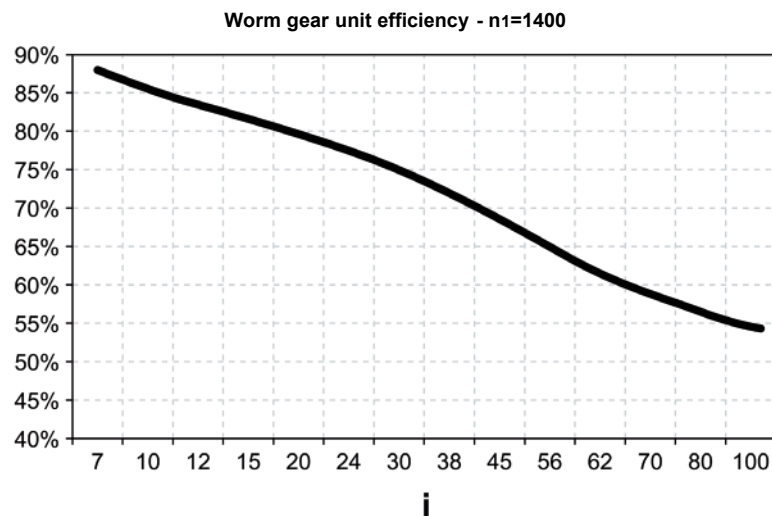
1.4.1 SELECTION PROCEDURE:

Determine the application service factor f_s in relation to the type of load (K factor), number of starts per hour Z_r and hours of operation per day.

Now determine the power required at the motor shaft:

$$P_{r1} = \frac{M_{r2} \cdot n_2}{9550 \cdot \eta_d} \quad [\text{kW}]$$

The efficiency value « η_d » can be determined as follows (approximately):



The selection procedure now depends on the type of gear unit, as follows:

- a. gear unit equipped with IEC motor fitting
- b. gear unit equipped with solid input shaft.

Proceed as follows:

1.4.2 SELECTING A GEAR UNIT WITH IEC MOTOR FITTING

- a. Determine service factor f_s as formerly specified.
- b. with reference to the rating charts, identify the gear unit which, for the required speed n_2 , provides a rated power P_{n1} such that:

$$P_{n1} \geq P_{r1} \times f_s$$

- c. Select an electric motor rated:

$$P_1 \geq P_{r1}$$

- d. Finally, check that the motor/gear unit combination generates a safety factor equal to or greater than the service factor for the application in question, in other words:

$$S = \frac{P_{n1}}{P_1} \geq f_s$$



1.4.3 SELECTING A SPEED REDUCER WITH SOLID INPUT SHAFT

- Calculate the value of the computational torque:

$$M_{c2} = M_{r2} \times f_s \times f_{tp}$$

| Helical gear units C, A, F, S | f_{tp} | | | |
|-------------------------------|-------------------------------|--------------------------|------|------|
| | Worm gear units VF, W | | | |
| $f_{tp} = 1$ | Type of load | Ambient temperature [°C] | | |
| | | 20° | 30° | 40° |
| | K1 uniform load | 1.00 | 1.00 | 1.06 |
| | K2 moderate shock load | 1.00 | 1.02 | 1.12 |
| | K3 heavy shock load | 1.00 | 1.04 | 1.17 |

- for the speed n_2 closest to that required, select the gear unit with a rated torque M_{n2} equal to or greater than the computational torque M_{c2} , in other words:

$$M_{n2} \geq M_{c2}$$

1.4.4 POST-SELECTION CHECKS

Once the gear unit or the gear unit with IEC motor fitting has been selected, we recommend checking the selection as follows:

- Momentary peak torque**
 The momentary peak torque is of the order of 200% of the rated torque M_{n2} . Check that the point value of the peak torque satisfies this condition and equip the installation with a torque limiter if necessary.
- Radial load**
 The catalogue gives the values of the maximum admissible radial load for both the input shaft « R_{n1} » and the output shaft « R_{n2} ». These values refer to a load applied at the shafts' centre lines and must always be greater than the actually applied load. See paragraph: Radial loads.
- Thrust load**
 Check that the thrust component of the load does not exceed the maximum admissible value as given in the paragraph: Thrust loads.

1.4.5 OPERATING CONDITIONS FOR ATEX-SPECIFIED EQUIPMENT

- Ambient temperature $-20^{\circ}\text{C} < t < +40^{\circ}\text{C}$.
- The gear unit must be installed in the mounting position specified in the order and given on the nameplate. Any deviation from this requirement must be approved in advance by BONFIGLIOLI RIDUTTORI.
- Do not under any circumstances install the gear unit with its shaft in an inclined orientation, unless previously authorised to do so by the BONFIGLIOLI RIDUTTORI Technical Service Department.
- The speed of the motor mounted to the gear unit must not exceed $n = 1500 \text{ min}^{-1}$.
- Should the gearbox be connected to an inverter driven motor the latter must be explicitly suitable for the purpose and used in full compliance with the instructions set forth by the manufacturer. Under no circumstances the setting of the inverter shall allow the motor to exceed the maximum speed permitted (1500 min^{-1}) or overload the gearbox itself.
- All the instructions in the User Manual (www.bonfiglioli.com) regarding installation, use and routine maintenance of the unit must be followed in full.

1.4.6 SERVICE FACTOR - [f_s]

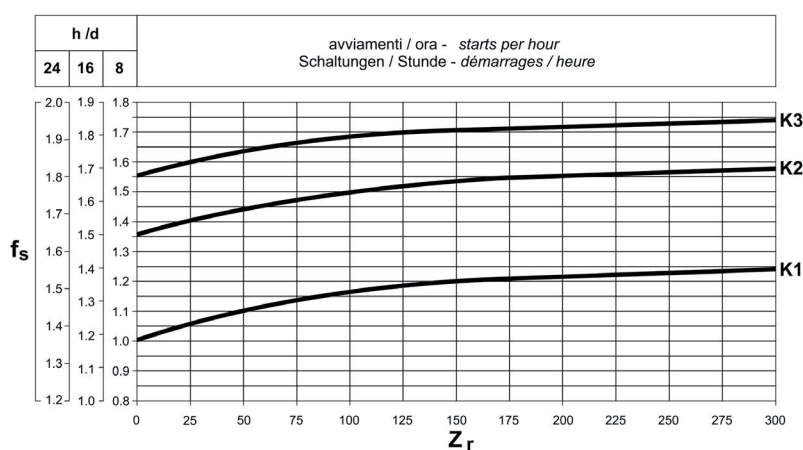
This factor is the numeric value describing reducer service duty. It takes into consideration, with unavoidable approximation, daily operating conditions, load variations and overloads connected with reducer application.

In the graph 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 inertia values.

Regardless of the value given for the service factor, we would like to remind that in some 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 Department.



Acceleration factor of masses - [K]

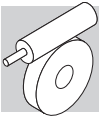
This parameter serves for selecting the right curve for the type of load. The value is given by the following ratio:

$$K = \frac{J_c}{J_m}$$

where:

J_c moment of inertia of driven masses referred to motor shaft

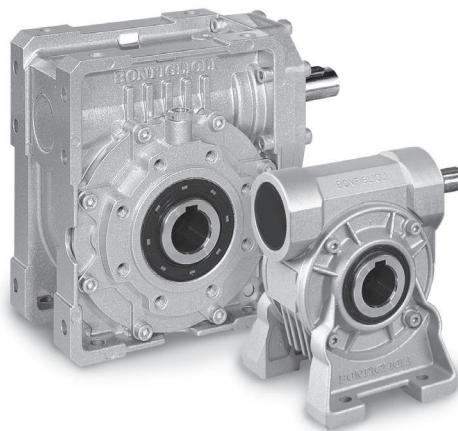
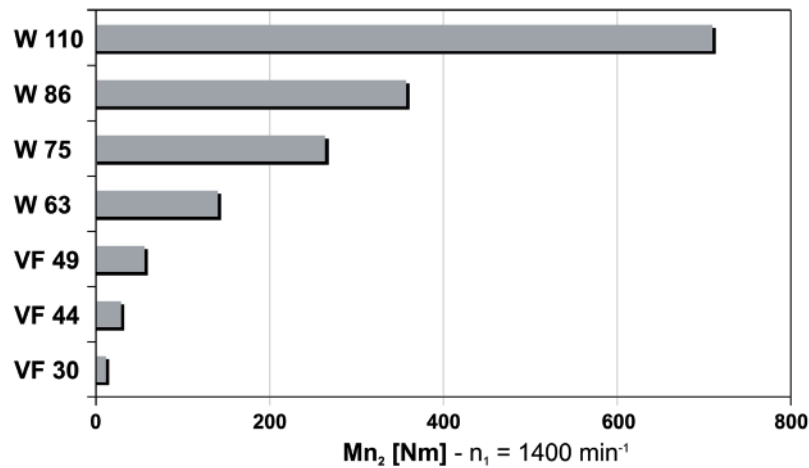
J_m moment of inertia of motor



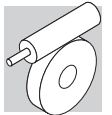
2 WORM GEAR UNITS FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

2.1 CONSTRUCTION OF ATEX-SPECIFIED EQUIPMENT

- Equipped with service plugs for periodic lubricant level checks.
- Factory-charged with lubricant, depending on the mounting position specified in the order. (*)
- Fluoro elastomer seal rings as standard.
- Side surfaces machined and tapped provide for extra mounting flexibility.
- No plastic component parts.
- Nameplate indication of the product category and type of protection.

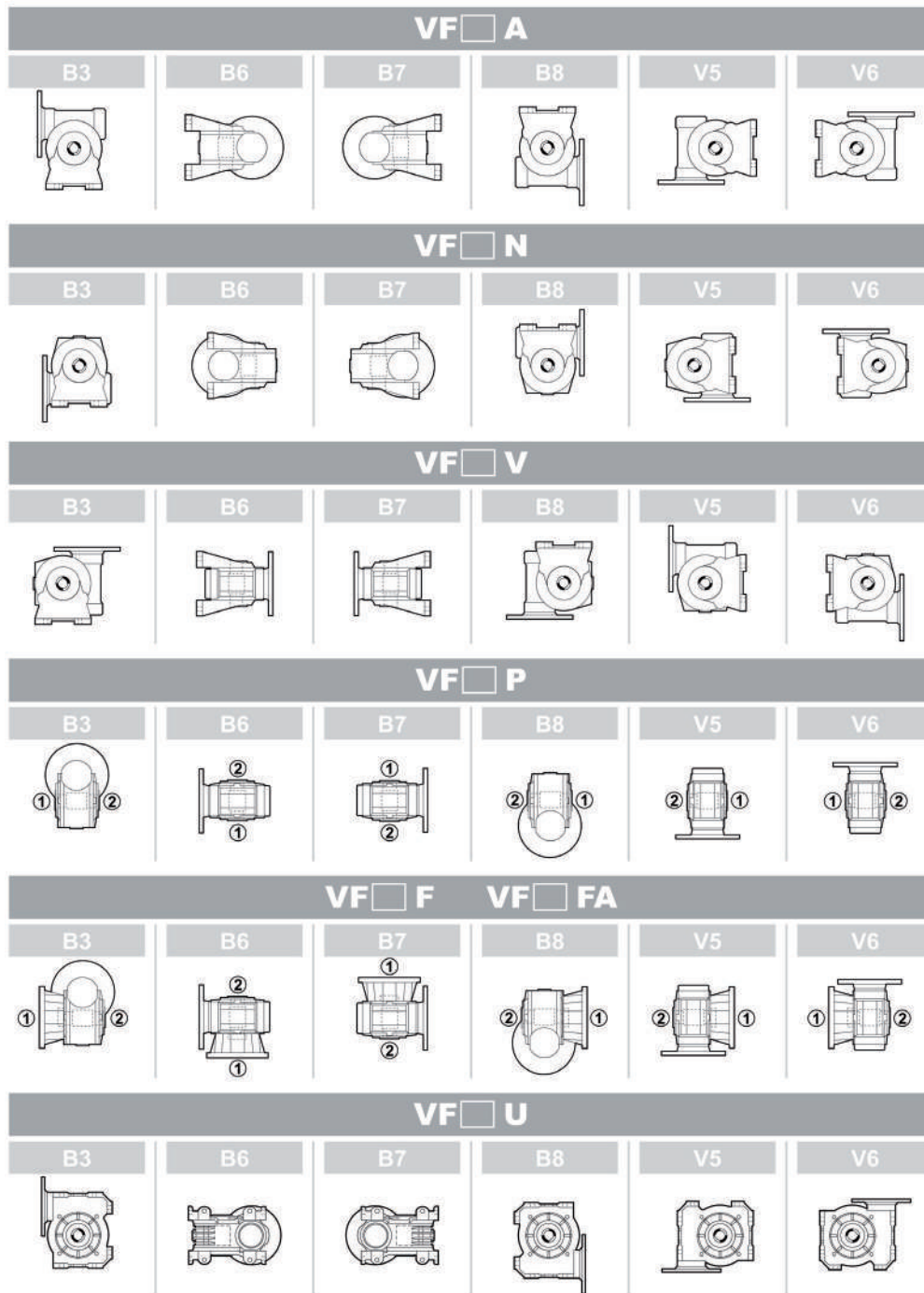


- (*) With the exception of gear units **W110**:
- in the mounting positions **V5** and **V6**
 - in the version with motor flange type **B14**

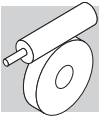


2.2 VERSIONS AND MOUNTING POSITIONS

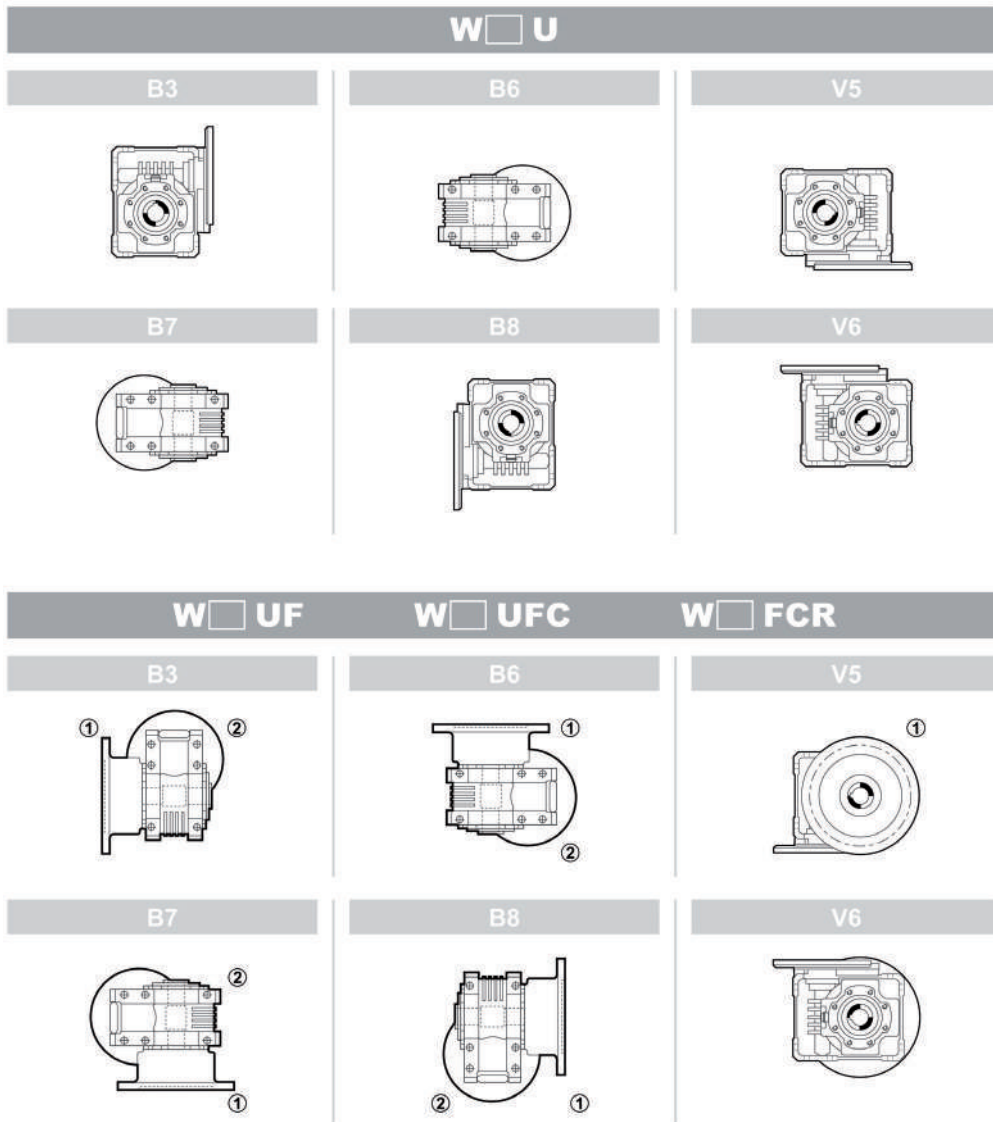
2.2.1 VF SERIES



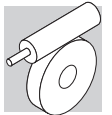
1 - 2 Flange location



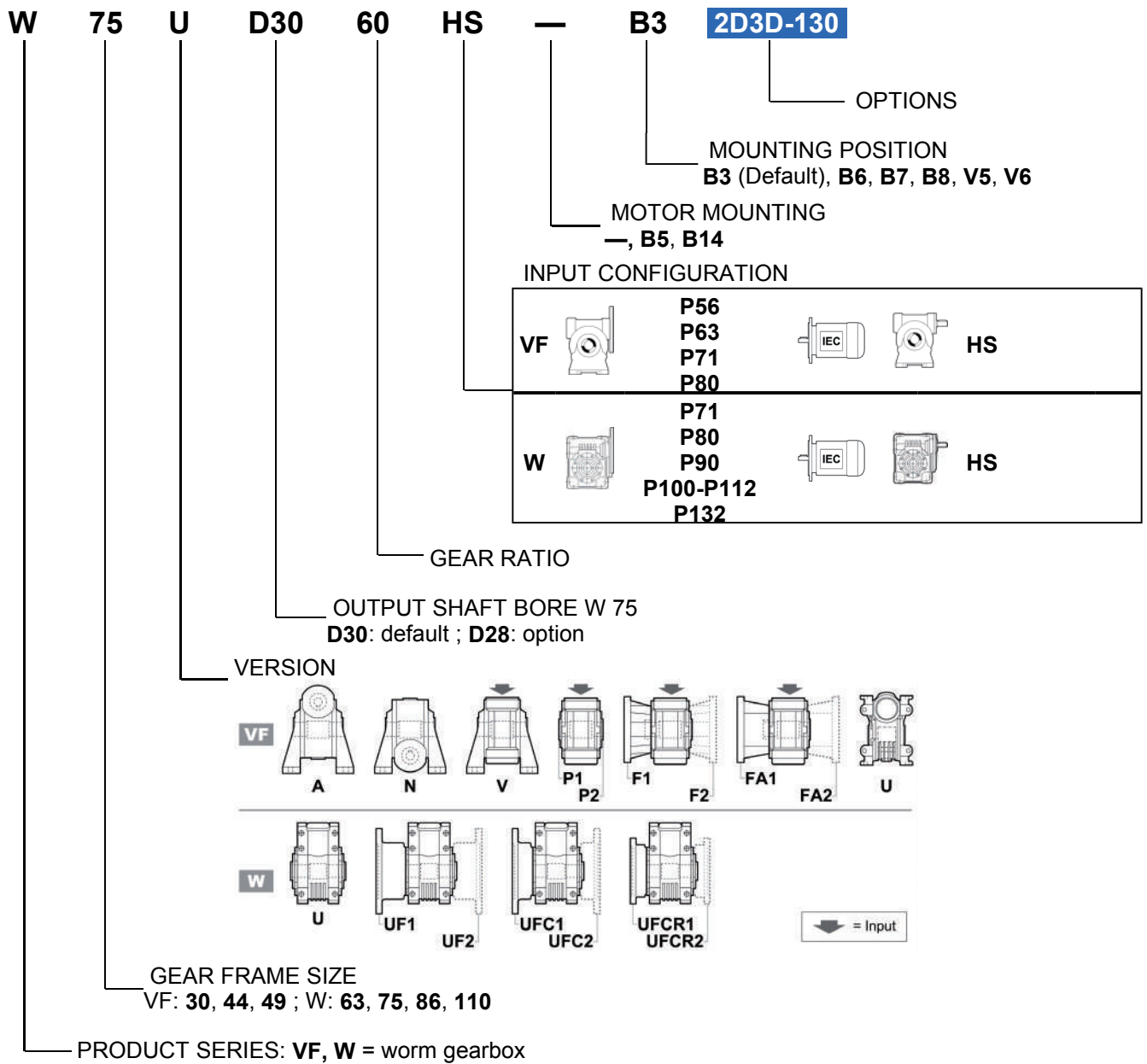
2.2.2 W SERIES



1 - 2 Flange location



2.3 ORDERING NUMBERS



2.3.1 OPTIONS

The applicability of the various options is indicated in the technical data tables according to the specific configuration and gear ratio.

2D3D-160

The gear unit can be installed in zones 21 and 22 (categories 2D and 3D).
The unit's surface temperature is less than 160°C.

2D3D-130

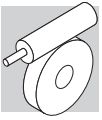
The gear unit can be installed in zones 21 and 22 (categories 2D and 3D).
The unit's surface temperature is less than 130°C.

2G3G-T3

The gear unit can be installed in zones 1 and 2 (categories 2G and 3G).
The temperature class is T3 (max. 200 °C).

2G3G-T4

The gear unit can be installed in zones 1 and 2 (categories 2G and 3G).
The temperature class is T4 (max. 135 °C).



2.4 LUBRICATION

With the exception of gear units W110 reported below, the gear units are factory-charged with long-life synthetic lubricant in the quantity suitable for the mounting position specified in the order.

For transportation purposes these units are equipped with closed filler plugs. A vented plug, which the User must replace before putting the unit into service, is supplied along with each unit.

For a preliminary oil level check, insert a dipstick in the yellow filler plug opening as specified in the unit's User Manual.

| Lubricant charge [litres] for VF gear units: | | | | | | |
|--|-------|-------|-------|-------|-------|-------|
| | B3 | B6 | B7 | B8 | V5 | V6 |
| VF 30 | 0.045 | 0.045 | 0.045 | 0.045 | 0.045 | 0.045 |
| VF 44 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| VF 49 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |



SHELL OMALA S4 WE 320

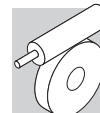
| Lubricant charge [litres] for W gear unit | | | | | | | |
|---|-------------------------------------|------|------|------|------|------|------|
| | i = | B3 | B6 | B7 | B8 | V5 | V6 |
| W63 | 7, 10, 12, 15 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| | 19, 24, 30, 38, 45, 64 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| W75 | 7, 10, 15 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| | 30, 40 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 |
| | 20, 25, 50, 60, 80, 100 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 |
| W86 | 7, 10, 15 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| | 30 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| | 20, 23, 40, 46, 56, 64, 80, 100 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| W110* | 7, 10, 15 | 1.6 | 1.7 | 1.7 | 1.9 | 1.9 | 1.8 |
| | 20, 23, 30, 40, 46, 56, 64, 80, 100 | 2.8 | 1.7 | 1.7 | 1.9 | 1.9 | 1.8 |




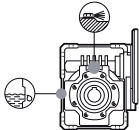
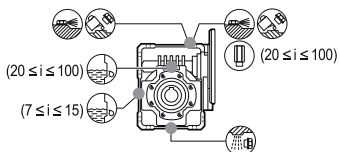
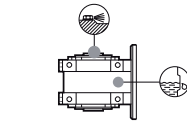
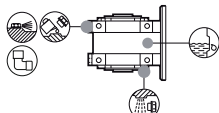
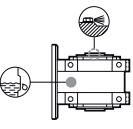
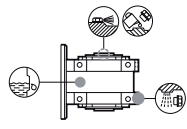
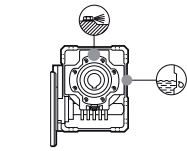
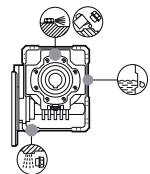
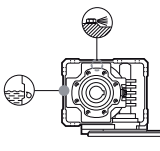
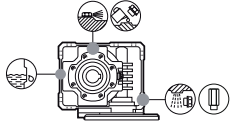
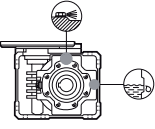
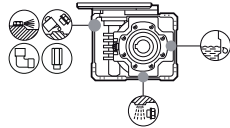
* Worm gears type W110 will be supplied unlubricated:

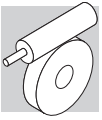
- in the mounting positions V5 and V6
- in the version with motor flange type B14



SHELL OMALA S4 WE 320



|  Filling/breather plug  Level plug  Drain plug | W 63, W 75, W 86 | W 110 |
|---|---|---|
| B3 |  |  $(20 \leq i \leq 100)$ $(7 \leq i \leq 15)$ |
| B6 |  |  |
| B7 |  |  |
| B8 |  |  |
| V5 |  |  |
| V6 |  |  |



2.5 ADMISSIBLE OVERHUNG LOADS

2.5.1 RADIAL LOADS

2.5.1.1 CALCULATING THE RESULTING OVERHUNG LOAD

External transmissions keyed onto input and/or output shaft generate loads that act radially onto same shaft.

Resulting shaft loading must be compatible with both the bearing and the shaft capacity.

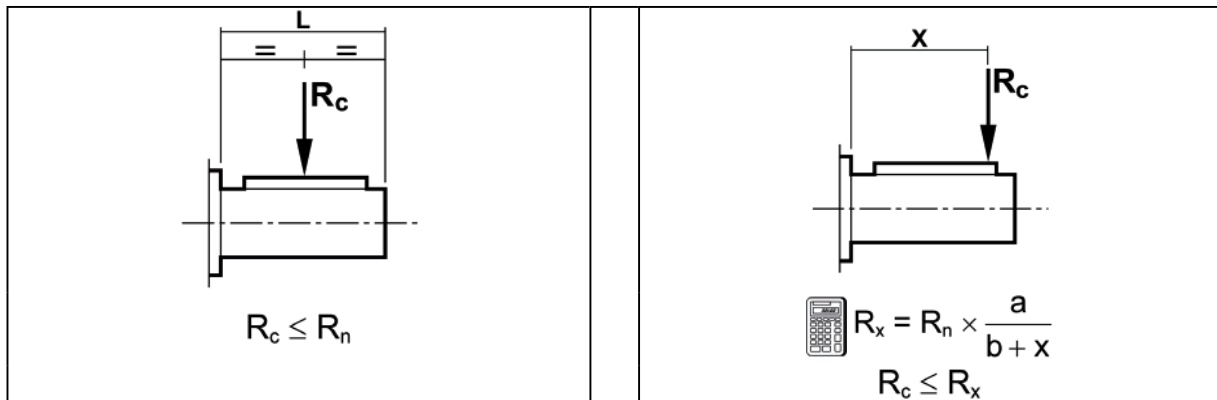
Namely shaft loading (R_{c1} for input shaft, R_{c2} for output shaft), must be equal or lower than admissible overhung load capacity for shaft under study (R_{n1} for input shaft, R_{n2} for output shaft). OHL capability listed in the rating chart section.

In the formulas given below, index (1) applies to parameters relating to input shaft, whereas index (2) refers to output shaft.

The load generated by an external transmission can be calculated with close approximation by the following equation:

| $R_c = \frac{2000 \times M \times K_r}{d}$ | |
|--|--|
| $K_r = 1$ | |
| $K_r = 1.25$ | |
| $K_r = 1.5 - 2.0$ | |
| M [Nm] | |
| d [mm] | |

2.5.1.2 OVERHUNG LOADING VERIFICATION



2.5.1.3 LOAD LOCATION FACTOR

| | a | b | c |
|-------|-----|-----|---|
| VF 30 | 60 | 45 | 1 |
| VF 44 | 71 | 51 | 1 |
| VF 49 | 99 | 69 | 1 |
| W 63 | 132 | 102 | 1 |
| W 75 | 139 | 109 | 1 |
| W 86 | 149 | 119 | 1 |
| W 100 | 173 | 136 | 1 |

2.5.2 THRUST LOADS A_{n1} , A_{n2}

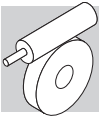
Permissible thrust loads on input [A_{n1}] and output [A_{n2}] shafts are obtained from the radial loading for the shaft under consideration [R_{n1}] and [R_{n2}] through the following equation:

$$A_{n1} = R_{n1} \cdot 0,2$$

$$A_{n2} = R_{n2} \cdot 0,2$$

The thrust loads calculated through these formulas apply to thrust forces occurring at the same time as rated radial loads. In the only case that no overhung load acts on the shaft the value of the admissible thrust load [A_n] amounts to 50% of rated OHL [R_n] on same shaft.

Where thrust loads exceed permissible value or largely prevail over radial loads, contact Bonfiglioli Riduttori for an in-depth analysis of the application.



2.6 GEARBOX RATING CHARTS

Selection example

| | n_2 min-1 | η_s % | η_d % | IEC | $n_1 = 1400 \text{ min}^{-1}$ | | | $n_1 = 1400 \text{ min}^{-1}$ | | | |
|------------------|----------------|---------------|---------------|-----|-------------------------------|----------|----------|-------------------------------|----------|----------|----------|
| | | | | | M_{n2} | P_{n1} | R_{n2} | M_{n2} | P_{n1} | R_{n1} | R_{n2} |
| | | | | | Nm | kW | N | Nm | kW | N | N |
| W 63_7 | 200 | 70 | 88 | | 115 | 2.7 | 1380 | 115 | 2.7 | 480 | 1380 |
| W 63_10 ① | 140 | 66 | 86 | | 120 | 2.0 | 1780 | 120 | 2.0 | 480 | 1780 |
| W 63_12 | 117 | 63 | 85 | | 120 | 1.7 | 1990 | 120 | 1.7 | 480 | 1990 |
| W 63_15 | 93 | 59 | 83 | | 120 | 1.4 | 2260 | 120 | 1.4 | 480 | 2260 |
| W 63_19 | 74 | 55 | 81 | | 120 | 1.1 | 2550 | 120 | 1.1 | 480 | 2550 |
| W 63_24 | 58 | 52 | 78 | | 120 | 0.94 | 2850 | 120 | 0.94 | 480 | 2850 |
| W 63_30 ② | 47 | 44 | 74 | | 120 | 0.79 | 3140 | 120 | 0.79 | 480 | 3140 |
| W 63_38 | 36.8 | 40 | 70 | | 120 | 0.66 | 3480 | 120 | 0.66 | 480 | 3480 |
| W 63_45 | 31.1 | 37 | 67 | | 120 | 0.58 | 3740 | 120 | 0.58 | 480 | 3740 |
| W 63_64 | 21.1 | 33 | 63 | | 120 | 0.5 | 4320 | 120 | 0.5 | 480 | 4320 |

①

The gear unit can be installed

In zones 21 and 22 with surface temperature limit of 160°C

In zones 1 and 2 with temperature class limit T3 (200°C)

②

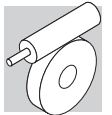
The gear unit can be installed

In zones 21 and 22 with surface temperature limit of 130°C

In zones 1 and 2 with temperature class limit T4 (135°C)





In zones 21 and 22 with surface temperature limit of 160°C

In zones 1 and 2 with temperature class limit T3 (200°C)







VF 30

11 Nm

| | n ₂ min ⁻¹ | η _s % | η _d % |  IEC | n ₁ = 1400 min ⁻¹ | | |  | n ₁ = 1400 min ⁻¹ | | | |  |
|----------|-------------------------------------|---------------------|---------------------|---|---|-----------------------|----------------------|--|---|---|----------------------|----------------------|---|
| | | | | | M _{n2} Nm | P _{n1} kW | R _{n2} N | | M _{n2} Nm | P _{n1} kW | R _{n1} N | R _{n2} N | |
| VF 30_7 | 200 | 69 | 84 | | 2D3D-130—2G3G-T4 | 2D3D-160—2G3G-T3 | 10 | 0.25 | 630 |  | 34 | | |
| VF 30_10 | 140 | 64 | 81 | | | | 10 | 0.18 | 770 | | | | |
| VF 30_15 | 93 | 56 | 76 | 10 | 0.13 | 910 | | | | | | | |
| VF 30_20 | 70 | 51 | 73 | 10 | 0.10 | 1030 | | | | | | | |
| VF 30_30 | 47 | 41 | 65 | 10 | 0.08 | 1200 | | | | | | | |
| VF 30_40 | 35 | 36 | 60 | 10 | 0.06 | 1340 | | | | | | | |
| VF 30_60 | 23 | 29 | 51 | 11 | 0.05 | 1540 | | | | | | | |
| VF 30_70 | 20.0 | 26 | 48 | 11 | 0.05 | 1600 | | | | | | | |





VF 44

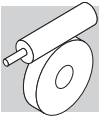
30 Nm

| | n ₂ min ⁻¹ | η _s % | η _d % |  IEC | n ₁ = 1400 min ⁻¹ | | |  | n ₁ = 1400 min ⁻¹ | | | |  | | |
|----------|-------------------------------------|---------------------|---------------------|--|---|-----------------------|----------------------|---|---|---|----------------------|----------------------|--|-----|------|
| | | | | | M _{n2} Nm | P _{n1} kW | R _{n2} N | | M _{n2} Nm | P _{n1} kW | R _{n1} N | R _{n2} N | | | |
| VF 44_7 | 200 | 71 | 86 | | 2D3D-160—2G3G-T3 | 2D3D-160—2G3G-T3 | 29 | 0.71 | 1070 |  | 34 | | | | |
| VF 44_10 | 140 | 66 | 84 | | | | 29 | 0.51 | 1310 | | | 29 | 0.51 | 220 | 1310 |
| VF 44_14 | 100 | 60 | 81 | | | | 29 | 0.37 | 1540 | | | 29 | 0.37 | 220 | 1540 |
| VF 44_20 | 70 | 55 | 77 | 2D3D-130—2G3G-T4 | 2D3D-160—2G3G-T4 | 2D3D-160—2G3G-T3 | 30 | 0.29 | 1760 | | | 30 | 0.29 | 220 | 1760 |
| VF 44_28 | 50 | 45 | 71 | | | | 30 | 0.22 | 2030 | | | 30 | 0.22 | 220 | 2030 |
| VF 44_35 | 40 | 42 | 68 | | | | 30 | 0.18 | 2200 | | | 30 | 0.18 | 220 | 2200 |
| VF 44_46 | 30 | 37 | 63 | | | | 30 | 0.15 | 2300 | | | 30 | 0.15 | 220 | 2300 |
| VF 44_60 | 23.3 | 32 | 58 | | | | 30 | 0.13 | 2300 | | | 30 | 0.13 | 220 | 2300 |
| VF 44_70 | 20.0 | 30 | 55 | | | | 29 | 0.11 | 2300 | | | 29 | 0.11 | 220 | 2300 |

VF 49








48 Nm

| | n ₂ min ⁻¹ | η _s % | η _d % |  IEC | n ₁ = 1400 min ⁻¹ | | |  | n ₁ = 1400 min ⁻¹ | | | |  | | |
|----------|-------------------------------------|---------------------|---------------------|---|---|-----------------------|----------------------|--|---|---|----------------------|----------------------|---|-----|------|
| | | | | | M _{n2} Nm | P _{n1} kW | R _{n2} N | | M _{n2} Nm | P _{n1} kW | R _{n1} N | R _{n2} N | | | |
| VF 49_7 | 200 | 70 | 86 | | 2D3D-160—2G3G-T3 | 2D3D-160—2G3G-T3 | 41 | 1.00 | 1140 |  | 34 | | | | |
| VF 49_10 | 140 | 65 | 84 | | | | 42 | 0.73 | 1390 | | | 42 | 0.73 | 400 | 1390 |
| VF 49_14 | 100 | 59 | 81 | | | | 42 | 0.54 | 1630 | | | 42 | 0.54 | 400 | 1630 |
| VF 49_18 | 78 | 55 | 78 | 2D3D-130—2G3G-T4 | 2D3D-160—2G3G-T4 | 2D3D-160—2G3G-T3 | 43 | 0.45 | 1810 | | | 43 | 0.45 | 400 | 1810 |
| VF 49_24 | 58 | 50 | 75 | | | | 44 | 0.36 | 2050 | | | 44 | 0.36 | 400 | 2050 |
| VF 49_28 | 50 | 43 | 71 | | | | 42 | 0.31 | 2170 | | | 42 | 0.31 | 400 | 2170 |
| VF 49_36 | 39 | 39 | 67 | | | | 43 | 0.26 | 2400 | | | 43 | 0.26 | 400 | 2400 |
| VF 49_45 | 31 | 35 | 63 | | | | 44 | 0.23 | 2620 | | | 44 | 0.23 | 400 | 2620 |
| VF 49_60 | 23.3 | 30 | 58 | | | | 45 | 0.19 | 2920 | | | 45 | 0.19 | 400 | 2920 |
| VF 49_70 | 20.0 | 28 | 54 | | | | 48 | 0.19 | 3090 | | | 48 | 0.19 | 400 | 3090 |










W 63

125 Nm

| | n ₂ min ⁻¹ | η _s % | η _d % |  IEC | n ₁ = 1400 min ⁻¹ | | |  | n ₁ = 1400 min ⁻¹ | | | |  | | |
|----------|-------------------------------------|---------------------|---------------------|---|---|-----------------------|----------------------|--|--|---|----------------------|----------------------|---|------|----|
| | | | | | M _{n2} Nm | P _{n1} kW | R _{n2} N | | M _{n2} Nm | P _{n1} kW | R _{n1} N | R _{n2} N | | | |
| W 63_7 | 200 | 70 | 88 |  |  | 115 | 2.7 | 1380 |  |  | 115 | 2.7 | 480 | 1380 | 34 |
| W 63_10 | 140 | 66 | 86 | | | 120 | 2.0 | 1780 | | | 120 | 2.0 | 480 | 1780 | |
| W 63_12 | 117 | 63 | 85 | | | 120 | 1.7 | 1990 | | | 120 | 1.7 | 480 | 1990 | |
| W 63_15 | 93 | 59 | 83 | | | 120 | 1.4 | 2260 | | | 120 | 1.4 | 480 | 2260 | |
| W 63_19 | 74 | 55 | 81 | | | 120 | 1.1 | 2550 | | | 120 | 1.1 | 480 | 2550 | |
| W 63_24 | 58 | 52 | 78 | | | 120 | 0.94 | 2850 | | | 120 | 0.94 | 480 | 2850 | |
| W 63_30 | 47 | 44 | 74 | | | 120 | 0.79 | 3140 | | | 120 | 0.79 | 480 | 3140 | |
| W 63_38 | 36.8 | 40 | 70 | | | 120 | 0.66 | 3480 | | | 120 | 0.66 | 480 | 3480 | |
| W 63_45 | 31.1 | 37 | 67 | | | 120 | 0.58 | 3740 | | | 120 | 0.58 | 480 | 3740 | |
| W 63_64 | 21.9 | 31 | 61 | | | 125 | 0.47 | 4320 | | | 125 | 0.47 | 480 | 4320 | |
| W 63_80 | 17.5 | 27 | 56 | | | 95 | 0.31 | 4870 | | | 95 | 0.31 | 480 | 4870 | |
| W 63_100 | 14.0 | 23 | 51 | | | 55 | 0.16 | 5000 | | | 55 | 0.16 | 480 | 5000 | |






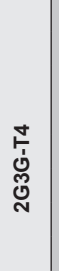

W 75

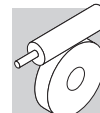
270 Nm

| | n ₂ min ⁻¹ | η _s % | η _d % |  IEC | n ₁ = 1400 min ⁻¹ | | |  | n ₁ = 1400 min ⁻¹ | | | |  | | |
|----------|-------------------------------------|---------------------|---------------------|--|---|-----------------------|----------------------|---|--|---|----------------------|----------------------|--|------|----|
| | | | | | M _{n2} Nm | P _{n1} kW | R _{n2} N | | M _{n2} Nm | P _{n1} kW | R _{n1} N | R _{n2} N | | | |
| W 75_7 | 200 | 71 | 90 |  |  | 190 | 4.4 | 1080 |  |  | 190 | 4.4 | 750 | 1080 | 34 |
| W 75_10 | 140 | 67 | 88 | | | 230 | 3.8 | 1960 | | | 230 | 3.8 | 750 | 1960 | |
| W 75_15 | 93 | 60 | 85 | | | 250 | 2.9 | 2550 | | | 250 | 2.9 | 750 | 2550 | |
| W 75_20 | 70 | 56 | 83 | | | 250 | 2.2 | 3050 | | | 250 | 2.2 | 750 | 3050 | |
| W 75_25 | 56 | 52 | 80 | | | 250 | 1.8 | 3520 | | | 250 | 1.8 | 750 | 3520 | |
| W 75_30 | 47 | 45 | 77 | | | 270 | 1.7 | 3680 | | | 270 | 1.7 | 750 | 3680 | |
| W 75_40 | 35 | 40 | 72 | | | 255 | 1.3 | 4320 | | | 255 | 1.3 | 750 | 4320 | |
| W 75_50 | 28.0 | 36 | 68 | | | 220 | 0.95 | 4930 | | | 220 | 0.95 | 750 | 4930 | |
| W 75_60 | 23.3 | 33 | 65 | | | 200 | 0.75 | 5450 | | | 200 | 0.75 | 750 | 5450 | |
| W 75_80 | 17.5 | 28 | 59 | | | 180 | 0.56 | 6200 | | | 180 | 0.56 | 750 | 6200 | |
| W 75_100 | 14.0 | 25 | 55 | | | 125 | 0.33 | 6200 | | | 125 | 0.33 | 750 | 6200 | |

W 86




350 Nm

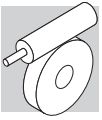
| | n ₂ min ⁻¹ | η _s % | η _d % |  IEC | n ₁ = 1400 min ⁻¹ | | |  | n ₁ = 1400 min ⁻¹ | | | |  | | |
|----------|-------------------------------------|---------------------|---------------------|---|---|-----------------------|----------------------|--|--|---|----------------------|----------------------|---|------|----|
| | | | | | M _{n2} Nm | P _{n1} kW | R _{n2} N | | M _{n2} Nm | P _{n1} kW | R _{n1} N | R _{n2} N | | | |
| W 86_7 | 200 | 71 | 89 |  |  | 250 | 5.9 | 3510 |  |  | 250 | 5.9 | 850 | 3510 | 34 |
| W 86_10 | 140 | 67 | 88 | | | 290 | 4.8 | 4160 | | | 290 | 4.8 | 850 | 4160 | |
| W 86_15 | 93 | 60 | 85 | | | 330 | 3.8 | 4980 | | | 330 | 3.8 | 850 | 4980 | |
| W 86_20 | 70 | 60 | 84 | | | 320 | 2.8 | 5790 | | | 320 | 2.8 | 850 | 5790 | |
| W 86_23 | 61 | 58 | 82 | | | 320 | 2.5 | 6190 | | | 320 | 2.5 | 850 | 6190 | |
| W 86_30 | 47 | 45 | 76 | | | 355 | 2.3 | 6790 | | | 355 | 2.3 | 850 | 6790 | |
| W 86_40 | 35.0 | 45 | 75 | | | 330 | 1.6 | 7000 | | | 330 | 1.6 | 850 | 7000 | |
| W 86_46 | 30.4 | 43 | 73 | | | 340 | 1.5 | 7000 | | | 340 | 1.5 | 850 | 7000 | |
| W 86_56 | 25.0 | 39 | 70 | | | 300 | 1.1 | 7000 | | | 300 | 1.1 | 850 | 7000 | |
| W 86_64 | 21.9 | 37 | 68 | | | 280 | 0.94 | 7000 | | | 280 | 0.94 | 850 | 7000 | |
| W 86_80 | 17.5 | 33 | 64 | | | 255 | 0.73 | 7000 | | | 255 | 0.73 | 850 | 7000 | |
| W 86_100 | 14.0 | 29 | 59 | | | 210 | 0.52 | 7000 | | | 210 | 0.52 | 850 | 7000 | |



W 110

670 Nm

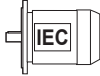

| | n ₂ min-1 | η _s % | η _d % |  IEC | n ₁ = 1400 min-1 | | |  | n ₁ = 1400 min-1 | | | |  |
|------------------|-------------------------|---------------------|---------------------|---|-----------------------------|-----------------------|----------------------|--|-----------------------------|-----------------------|----------------------|----------------------|---|
| | | | | | M _{n2} Nm | P _{n1} kW | R _{n2} N | | M _{n2} Nm | P _{n1} kW | R _{n1} N | R _{n2} N | |
| W 110_7 | 200 | 71 | 89 | 2D3D-160—2G3G-T3 | 500 | 11.8 | 4440 | 2G3G-T3 | 500 | 11.8 | 1200 | 4440 | 34 |
| W 110_10 | 140 | 67 | 87 | | 550 | 9.3 | 5540 | | 550 | 9.3 | 1200 | 5540 | |
| W 110_15 | 93 | 60 | 84 | | 600 | 7.0 | 6840 | | 600 | 7.0 | 1200 | 6840 | |
| W 110_20 | 70 | 61 | 84 | | 570 | 5.0 | 8000 | | 570 | 5.0 | 1200 | 8000 | |
| W 110_23 | 61 | 59 | 83 | | 540 | 4.1 | 8000 | | 540 | 4.1 | 1200 | 8000 | |
| W 110_30 | 47 | 45 | 77 | | 700 | 4.4 | 8000 | | 700 | 4.4 | 1200 | 8000 | |
| W 110_40 | 35 | 46 | 76 | | 670 | 3.2 | 8000 | | 670 | 3.2 | 1200 | 8000 | |
| W 110_46 | 30 | 44 | 74 | | 600 | 2.6 | 8000 | | 600 | 2.6 | 1200 | 8000 | |
| W 110_56 | 25.0 | 41 | 72 | | 600 | 2.2 | 8000 | | 600 | 2.2 | 1200 | 8000 | |
| W 110_64 | 21.9 | 38 | 70 | | 530 | 1.7 | 8000 | | 530 | 1.7 | 1200 | 8000 | |
| W 110_80 | 17.5 | 34 | 66 | | 470 | 1.3 | 8000 | | 470 | 1.3 | 1200 | 8000 | |
| W 110_100 | 14.0 | 30 | 62 | | 445 | 1.1 | 8000 | | 445 | 1.1 | 1201 | 8000 | |



2.7 MOTOR AVAILABILITY

Please be aware that motor-gearbox availability resulting from chart below are purely based on geometrical compatibility.

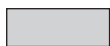
When selecting a gearbox with IEC motor adapter, refer to procedure specified at chapter 1.4.

| | |  (IM B5) (IM B14) - $n_1 = 1400 \text{ min}^{-1}$ | | | | | | | | |
|--------------|------------|---|---------|---------|---------|--------|---------|-------|-------|--------|
| | | P_{n1} (*) | 0.09 kW | 0.25 kW | 0.55 kW | 1.1 kW | 1.85 kW | 3 kW | 4 kW | 9.2 kW |
| | |  | P56 | P63 | P71 | P80 | P90 | P100 | P112 | P132 |
| VF 30 | i = | | 7_70 | 7_60 | | | | | | |
| VF 44 | | | | 7_70 | 7_35 | | | | | |
| VF 49 | | | | 7_70 | 7_60 | 7_28 | | | | |
| W 63 | | | | | 7_64 | 7_64 | 7_30 | | | |
| W 75 | | | | | 7_100 | 7_100 | 7_100 | 7_100 | 7_100 | |
| W 86 | | | | | 7_100 | 7_100 | 7_100 | 7_100 | 7_100 | |
| W 110 | | | | | | 7_100 | 7_100 | 7_100 | 7_100 | 7_100 |

(*) P_{n1} = maximum installable power on the input P_{n1}



Combinations are generally available with both **IM B5** and **IM B14** flanged motors.

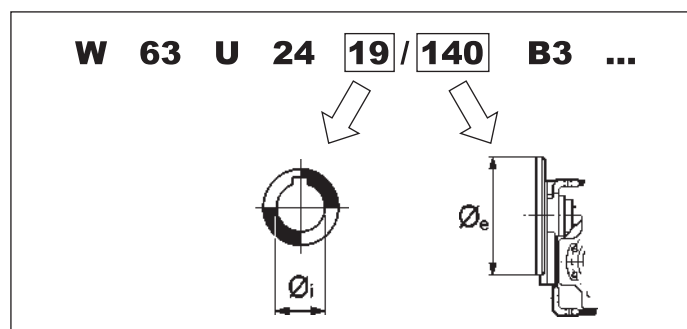


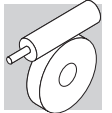
Combinations marked in greyboxes can only be achieved through **IM B5** flanged motors.

2.7.1 MOTORS NOT TO IEC STANDARD

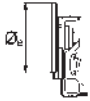

For coupling with non-normalized electric motors, the motor coupling end of VF and W speed reducers may be configured with hybrid (i.e., non IEC) input shaft and flange combinations.

Shaft and flange combinations are illustrated below. The table shows the diameters in millimetres for each selection.





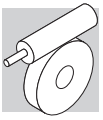
The following table lists available configurations, as well as their limited ranges of gear ratios.

| | |  | | | | | | |
|---|-----------|---|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
|  | | 80 | 90 | 105 | 120 | 140 | 160 | 200 |
| VF 30 | 9 | | $7 \leq i \leq 70$ | ⊖ | | $7 \leq i \leq 70$ | ⊖ | ⊖ |
| | 11 | $7 \leq i \leq 60$ | | ⊖ | $7 \leq i \leq 60$ | | ⊖ | ⊖ |
| VF 44 | HS | ⊖ | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ | ⊖ | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ | ⊖ |
| | 11 | ⊖ | | $7 \leq i \leq 70$ | ⊖ | | $7 \leq i \leq 70$ | ⊖ |
| | 14 | ⊖ | $7 \leq i \leq 35$ | | ⊖ | $7 \leq i \leq 35$ | | ⊖ |
| VF 49 | HS | ⊖ | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ |
| | 11 | ⊖ | | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ | | $7 \leq i \leq 70$ | $7 \leq i \leq 70$ |
| | 14 | ⊖ | $7 \leq i \leq 60$ | | $7 \leq i \leq 60$ | $7 \leq i \leq 60$ | | $7 \leq i \leq 60$ |
| | 19 | ⊖ | $7 \leq i \leq 28$ | $7 \leq i \leq 28$ | | $7 \leq i \leq 28$ | $7 \leq i \leq 28$ | |
| W 63 | 19 | ⊖ | ⊖ | ⊖ | ⊖ | $7 \leq i \leq 64$ | ⊖ | |
| W 75 | 14 | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | | $7 \leq i \leq 100$ |
| | 19 | ⊖ | ⊖ | ⊖ | | $7 \leq i \leq 100$ | $7 \leq i \leq 100$ | |
| | 24 | ⊖ | ⊖ | ⊖ | $7 \leq i \leq 100$ | | $7 \leq i \leq 100$ | |
| W 86 | 14 | ⊖ | ⊖ | ⊖ | ⊖ | ⊖ | | $7 \leq i \leq 100$ |
| | 19 | ⊖ | ⊖ | ⊖ | | $7 \leq i \leq 100$ | $7 \leq i \leq 100$ | |
| | 24 | ⊖ | ⊖ | ⊖ | $7 \leq i \leq 100$ | | $7 \leq i \leq 100$ | |
| W 110 | 19 | ⊖ | ⊖ | ⊖ | | $7 \leq i \leq 100$ | ⊖ | ⊖ |
| | 24 | ⊖ | ⊖ | ⊖ | $7 \leq i \leq 100$ | | ⊖ | ⊖ |

 *Standard arrangement*

The table above report possible configurations strictly based on geometric criteria. To determine the compatibility of a motor-gear unit assembly in terms of mechanical factors, double-check the selected configuration against the rating charts for power/speed.

Be sure to avoid those combinations that yield a safety factor $S < 0.9$.



2.8 MOMENT OF INERTIA

The following charts indicate moment of inertia values J_r [kgm^2] referred to the gear unit high speed shaft. A key to the symbols used follows:






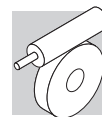
Values under this symbol refer to gearboxes with IEC motor adaptor (IEC size...).





This symbol refers to gearbox values.

VF 30



| | | i | J ($\cdot 10^{-4}$) [Kgm^2] | | | | | |
|--------------|----------|----|--|------|---|---|---|------|
| | | | P56 | P63 |  |  |  | HS |
| VF 30 | VF 30_7 | 7 | 0.08 | 0.07 | — | — | — | 0.04 |
| | VF 30_10 | 10 | 0.07 | 0.06 | — | — | — | 0.03 |
| | VF 30_15 | 15 | 0.07 | 0.06 | — | — | — | 0.03 |
| | VF 30_20 | 20 | 0.06 | 0.06 | — | — | — | 0.03 |
| | VF 30_30 | 30 | 0.06 | 0.06 | — | — | — | 0.03 |
| | VF 30_40 | 40 | 0.06 | 0.06 | — | — | — | 0.03 |
| | VF 30_60 | 60 | 0.06 | 0.05 | — | — | — | 0.02 |
| | VF 30_70 | 70 | 0.06 | — | — | — | — | 0.02 |

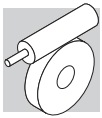


VF 44

| | | i | J ($\cdot 10^{-4}$) [Kgm ²] | | | | |
|--------------|-----------|-----|---|------|---|---|------|
| | | |  | | |  | |
| | | | P63 | P71 | | | HS |
| VF 44 | VF 44_7 | 7 | 0.29 | 0.27 | — | — | 0.18 |
| | VF 44_10 | 10 | 0.24 | 0.22 | — | — | 0.14 |
| | VF 44_14 | 14 | 0.23 | 0.21 | — | — | 0.12 |
| | VF 44_20 | 20 | 0.19 | 0.18 | — | — | 0.09 |
| | VF 44_28 | 28 | 0.21 | 0.19 | — | — | 0.11 |
| | VF 44_35 | 35 | 0.19 | 0.18 | — | — | 0.09 |
| | VF 44_46 | 46 | 0.18 | — | — | — | 0.08 |
| | VF 44_60 | 60 | 0.17 | — | — | — | 0.07 |
| | VF 44_70 | 70 | 0.17 | — | — | — | 0.07 |
| | VF 44_100 | 100 | 0.17 | — | — | — | 0.07 |

VF 49

| | | i | J ($\cdot 10^{-4}$) [Kgm ²] | | | | |
|--------------|-----------|-----|---|------|------|---|------|
| | | |  | | |  | |
| | | | P63 | P71 | P80 | | HS |
| VF 49 | VF 49_7 | 7 | 0.69 | 0.67 | 0.61 | — | 0.42 |
| | VF 49_10 | 10 | 0.61 | 0.60 | 0.53 | — | 0.34 |
| | VF 49_14 | 14 | 0.58 | 0.57 | 0.5 | — | 0.31 |
| | VF 49_18 | 18 | 0.54 | 0.53 | 0.46 | — | 0.27 |
| | VF 49_24 | 24 | 0.52 | 0.5 | 0.44 | — | 0.24 |
| | VF 49_28 | 28 | 0.56 | 0.54 | 0.48 | — | 0.28 |
| | VF 49_36 | 36 | 0.53 | 0.51 | — | — | 0.25 |
| | VF 49_45 | 45 | 0.51 | 0.49 | — | — | 0.24 |
| | VF 49_60 | 60 | 0.50 | 0.48 | — | — | 0.23 |
| | VF 49_70 | 70 | 0.50 | — | — | — | 0.22 |
| | VF 49_80 | 80 | 0.49 | — | — | — | 0.22 |
| | VF 49_100 | 100 | 0.49 | — | — | — | 0.22 |

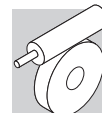


W 63







| | | i | J ($\cdot 10^{-4}$) [Kgm ²] | | | | | | HS |
|-------------|----------|-----|---|-----|-----|-----|---|---|-----|
| | | | P63 | P71 | P80 | P90 | | | |
| W 63 | W 63_7 | 7 | — | 3.5 | 3.5 | 3.5 | — | — | 3.6 |
| | W 63_10 | 10 | — | 3.2 | 3.3 | 3.2 | — | — | 3.3 |
| | W 63_12 | 12 | — | 3.1 | 3.2 | 3.1 | — | — | 3.3 |
| | W 63_15 | 15 | — | 3.0 | 3.1 | 3.0 | — | — | 3.2 |
| | W 63_19 | 19 | — | 2.9 | 3.0 | 2.9 | — | — | 3.1 |
| | W 63_24 | 24 | — | 2.9 | 3.0 | 2.9 | — | — | 3.0 |
| | W 63_30 | 30 | — | 2.9 | 3.0 | 2.9 | — | — | 3.1 |
| | W 63_38 | 38 | — | 2.9 | 3.0 | 2.9 | — | — | 3.0 |
| | W 63_45 | 45 | — | 2.9 | 2.9 | 2.9 | — | — | 3.0 |
| | W 63_64 | 64 | — | 2.8 | 2.9 | 2.8 | — | — | 3.0 |
| | W 63_80 | 80 | — | 2.8 | 2.9 | 2.8 | — | — | 3.0 |
| | W 63_100 | 100 | — | 2.8 | 2.9 | 2.8 | — | — | 2.9 |

W 75








| | | i | J ($\cdot 10^{-4}$) [Kgm ²] | | | | | | HS |
|-------------|----------|-----|---|-----|-----|-----|------|------|-----|
| | | | P63 | P71 | P80 | P90 | P100 | P112 | |
| W 75 | W 75_7 | 7 | — | 6.9 | 7.0 | 6.9 | 6.9 | 6.9 | 7.3 |
| | W 75_10 | 10 | — | 6.4 | 6.4 | 6.3 | 5.7 | 5.7 | 6.8 |
| | W 75_15 | 15 | — | 6.1 | 6.1 | 6.0 | 5.3 | 5.3 | 6.5 |
| | W 75_20 | 20 | — | 5.9 | 5.9 | 5.9 | 5.2 | 5.2 | 6.3 |
| | W 75_25 | 25 | — | 6.0 | 6.0 | 5.9 | 5.2 | 5.2 | 6.3 |
| | W 75_30 | 30 | — | 5.9 | 5.9 | 5.9 | 5.2 | 5.2 | 6.3 |
| | W 75_40 | 40 | — | 5.9 | 5.9 | 5.8 | 5.2 | 5.2 | 6.3 |
| | W 75_50 | 50 | — | 5.9 | 5.9 | 5.8 | 5.1 | 5.1 | 6.2 |
| | W 75_60 | 60 | — | 5.8 | 5.9 | 5.8 | 5.1 | 5.1 | 6.2 |
| | W 75_80 | 80 | — | 5.8 | 5.8 | 5.8 | 5.1 | 5.1 | 6.2 |
| | W 75_100 | 100 | — | 5.8 | 5.8 | 5.7 | 5.0 | 5.0 | 6.2 |

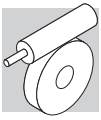


W 86

| | | i | J ($\cdot 10^{-4}$) [Kgm ²] | | | | | | HS |
|-------------|----------|-----|---|---|---|---|---|---|-----|
| | | |  |  |  |  |  |  | |
| | | | P63 | P71 | P80 | P90 | P100 | P112 | |
| W 86 | W 86_7 | 7 | — | 9.7 | 9.7 | 9.6 | 9.6 | 9.6 | 10 |
| | W 86_10 | 10 | — | 8.4 | 8.4 | 8.3 | 7.7 | 7.7 | 8.9 |
| | W 86_15 | 15 | — | 7.7 | 7.7 | 7.7 | 7.0 | 7.0 | 8.2 |
| | W 86_20 | 20 | — | 6.9 | 7.0 | 6.9 | 6.2 | 6.2 | 7.4 |
| | W 86_23 | 23 | — | 6.8 | 6.9 | 6.8 | 6.1 | 6.1 | 7.3 |
| | W 86_30 | 30 | — | 7.3 | 7.3 | 7.3 | 6.6 | 6.6 | 7.8 |
| | W 86_40 | 40 | — | 6.7 | 6.7 | 6.6 | 6.0 | 6.0 | 7.2 |
| | W 86_46 | 46 | — | 6.7 | 6.7 | 6.6 | 5.9 | 5.9 | 7.1 |
| | W 86_56 | 56 | — | 6.6 | 6.7 | 6.6 | 5.9 | 5.9 | 7.1 |
| | W 86_64 | 64 | — | 6.6 | 6.6 | 6.5 | 5.9 | 5.9 | 7.1 |
| | W 86_80 | 80 | — | 6.6 | 6.6 | 6.5 | 5.9 | 5.9 | 7.1 |
| | W 86_100 | 100 | — | 6.4 | 6.5 | 6.4 | 5.7 | 5.7 | 6.9 |

W 110

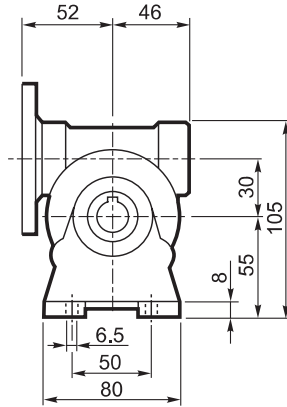
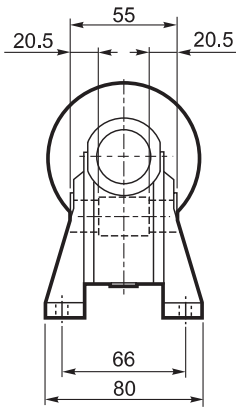
| | | i | J ($\cdot 10^{-4}$) [Kgm ²] | | | | | | HS | |
|--------------|-----------|-----|---|---|---|---|---|---|------|---|
| | | |  |  |  |  |  |  | |  |
| | | | P63 | P71 | P80 | P90 | P100 | P112 | P132 | |
| W 110 | W 110_7 | 7 | — | — | 23 | 23 | 23 | 23 | 28 | 23 |
| | W 110_10 | 10 | — | — | 19 | 19 | 24 | 24 | 24 | 20 |
| | W 110_15 | 15 | — | — | 17 | 17 | 22 | 22 | 22 | 17 |
| | W 110_20 | 20 | — | — | 14 | 14 | 19 | 19 | 19 | 15 |
| | W 110_23 | 23 | — | — | 14 | 14 | 19 | 19 | 19 | 15 |
| | W 110_30 | 30 | — | — | 16 | 16 | 20 | 20 | 20 | 16 |
| | W 110_40 | 40 | — | — | 14 | 14 | 19 | 19 | 19 | 14 |
| | W 110_46 | 46 | — | — | 13 | 13 | 18 | 18 | 18 | 14 |
| | W 110_56 | 56 | — | — | 13 | 13 | 18 | 18 | 18 | 14 |
| | W 110_64 | 64 | — | — | 13 | 13 | 18 | 18 | 18 | 14 |
| | W 110_80 | 80 | — | — | 13 | 13 | 18 | 18 | 18 | 14 |
| | W 110_100 | 100 | — | — | 13 | 13 | 18 | 18 | 18 | 14 |



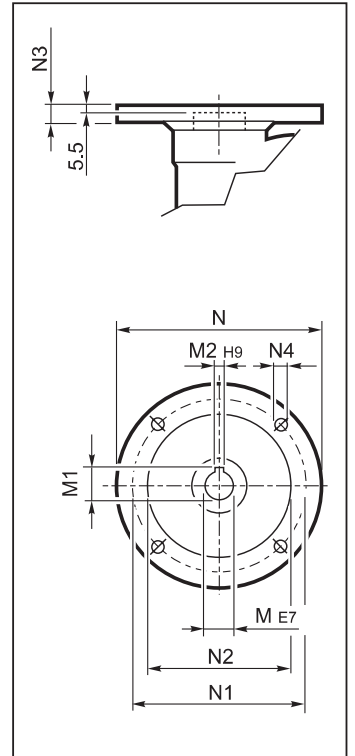
2.9 DIMENSIONS

VF 30...P(IEC)

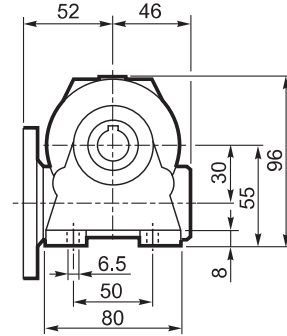
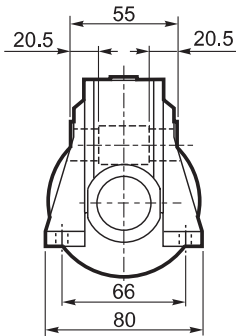
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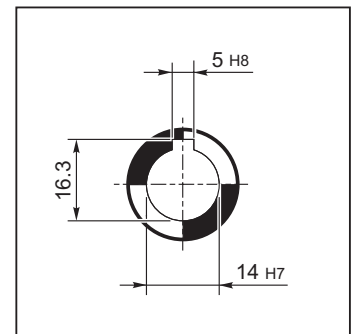
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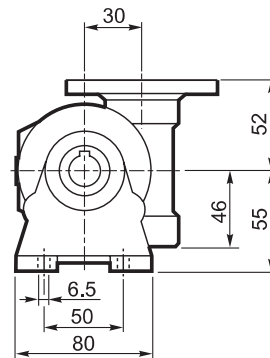
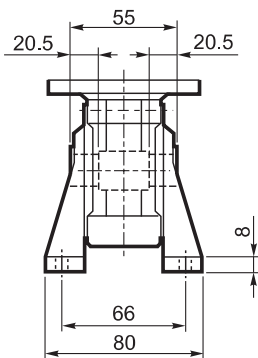
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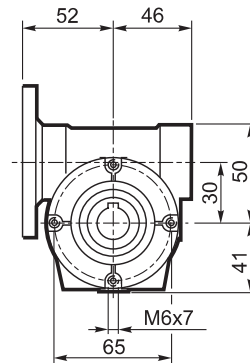
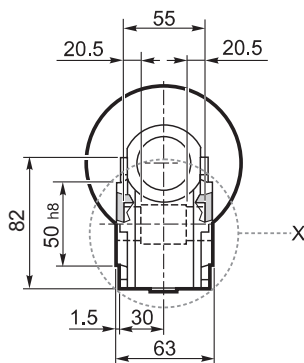
OUTPUT



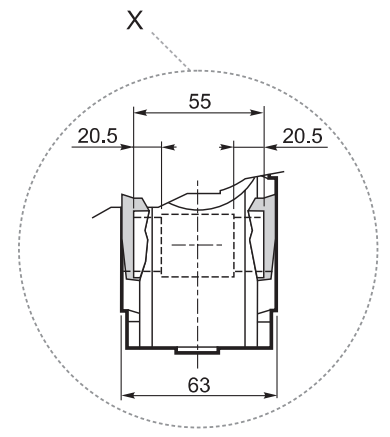
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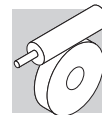


P



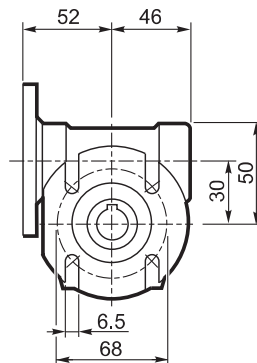
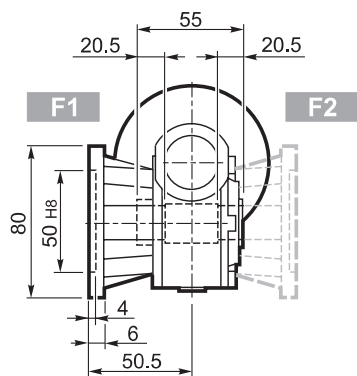
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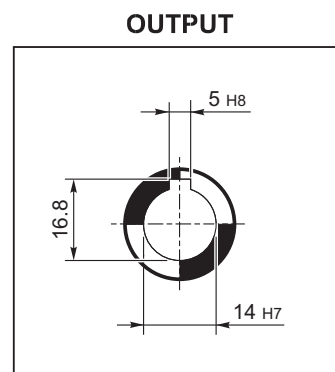
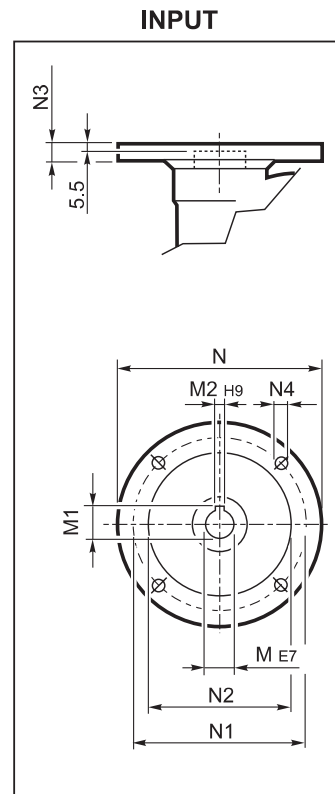
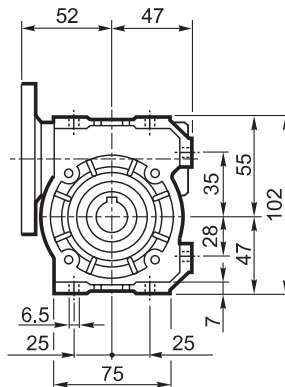
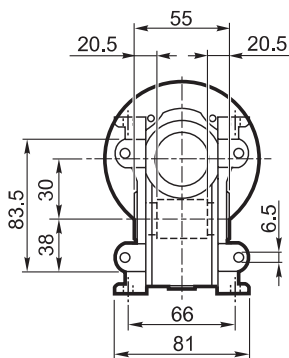


VF 30...P(IEC)

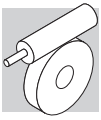
F



U

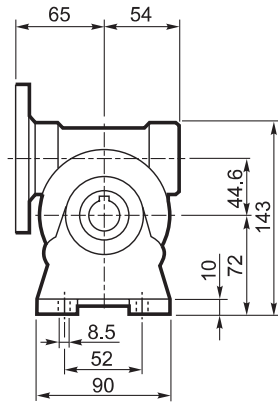
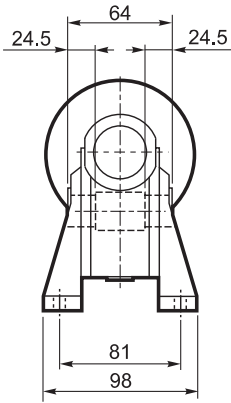


| VF 30 | | | | | | | | | | |
|-------|---------|----|------|----|-----|-----|----|----|-----|-----|
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | |
| VF 30 | P56 B5 | 9 | 10.4 | 3 | 120 | 100 | 80 | 7 | 7 | 1.1 |
| VF 30 | P56 B14 | 9 | 10.4 | 3 | 80 | 65 | 50 | 7 | 5.5 | |
| VF 30 | P63 B5 | 11 | 12.8 | 4 | 140 | 115 | 95 | 8 | 9.5 | |
| VF 30 | P63 B14 | 11 | 12.8 | 4 | 90 | 75 | 60 | 6 | 5.5 | |

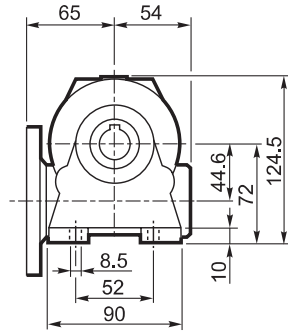
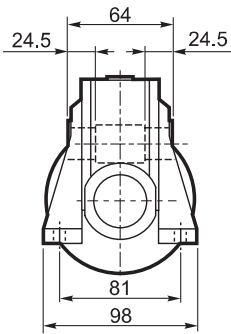


VF 44...P(IEC)

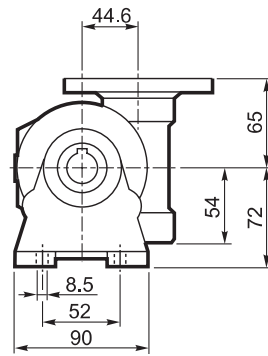
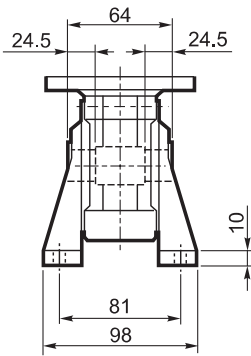
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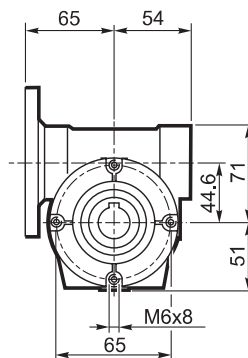
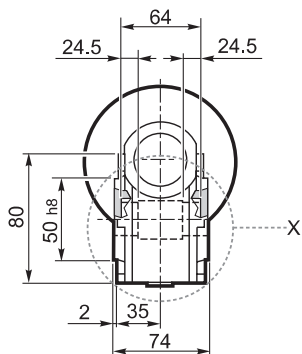
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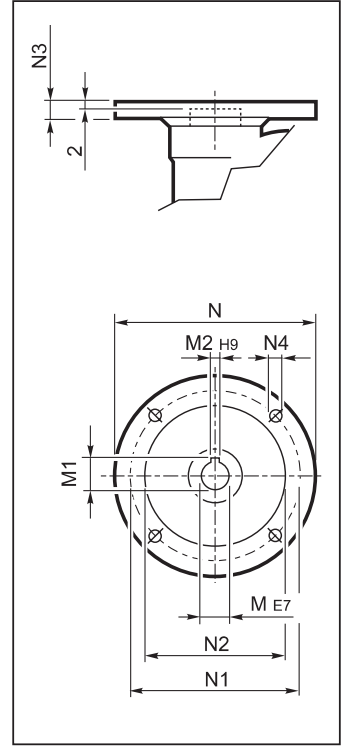
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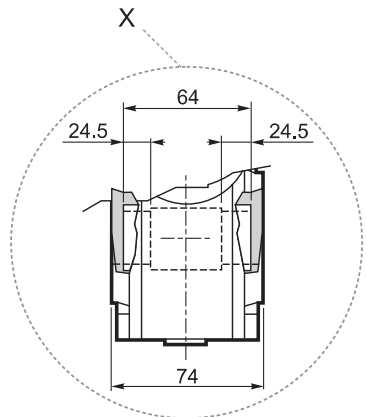
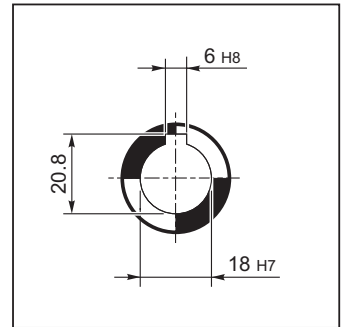
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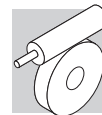


INPUT



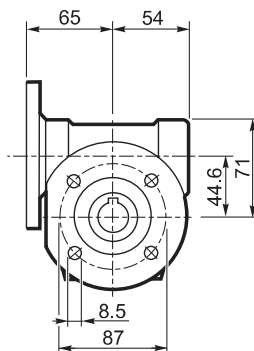
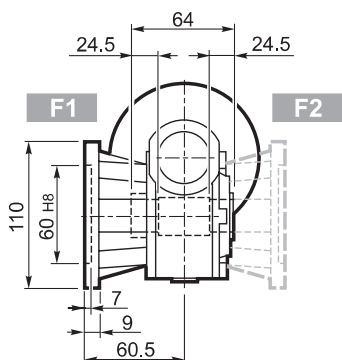
OUTPUT



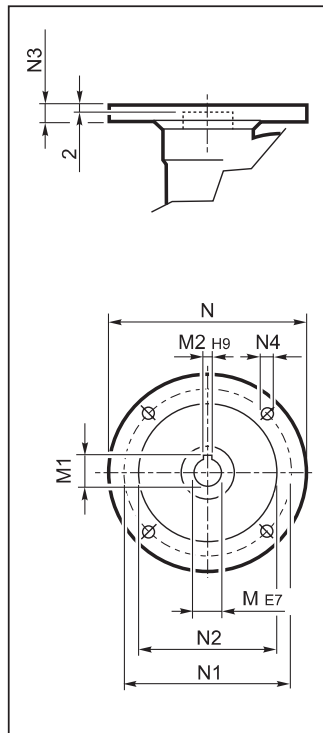


VF 44...P(IEC)

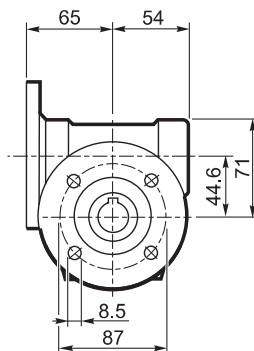
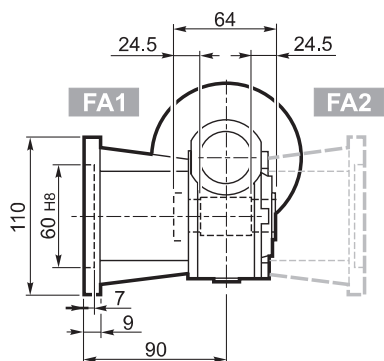
F_



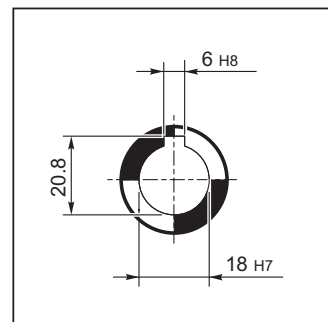
INPUT



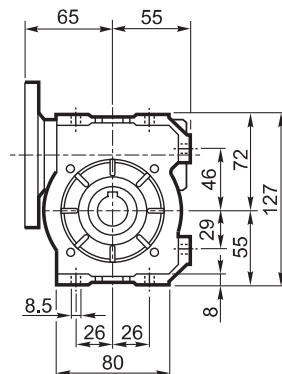
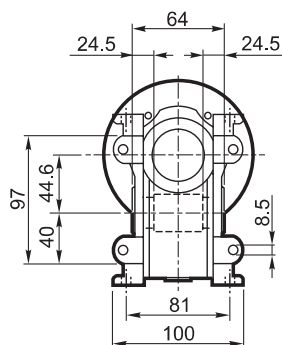
FA_



OUTPUT

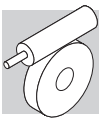


U



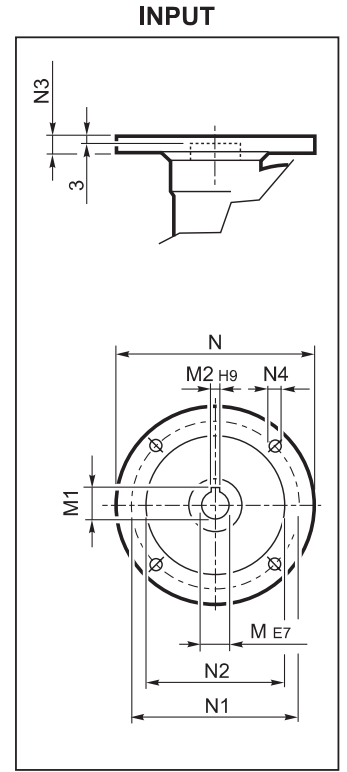
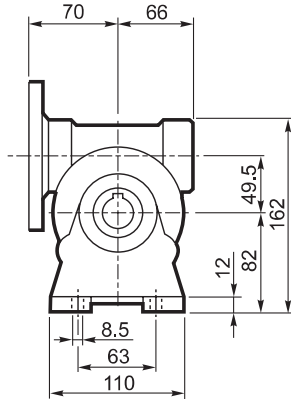
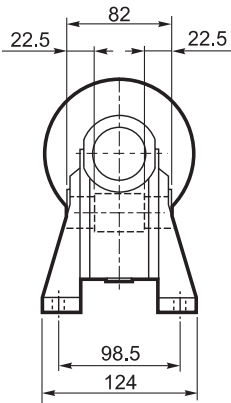
VF 44

| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | Kg |
|-------|---------|----|------|----|-----|-----|-----|----|-----|-----|
| | | | | | | | | | | |
| VF 44 | P63 B5 | 11 | 12.8 | 4 | 140 | 115 | 95 | 10 | 9.5 | 2.0 |
| VF 44 | P71 B5 | 14 | 16.3 | 5 | 160 | 130 | 110 | 10 | 9.5 | |
| VF 44 | P63 B14 | 11 | 12.8 | 4 | 90 | 75 | 60 | 8 | 5.5 | |
| VF 44 | P71 B14 | 14 | 16.3 | 5 | 105 | 85 | 70 | 10 | 7 | |

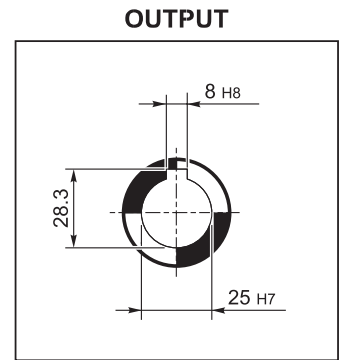
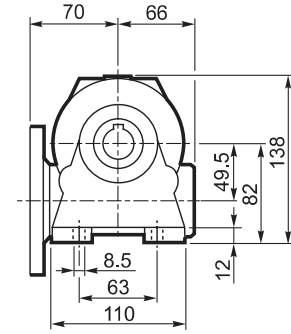
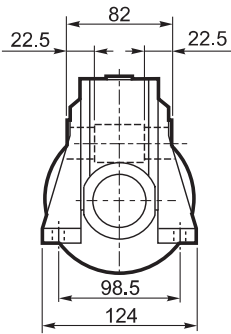


VF 49...P(IEC)

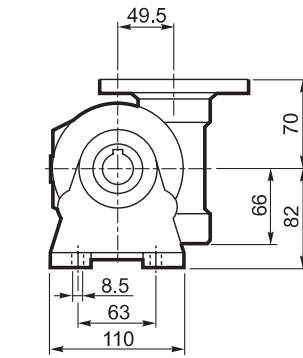
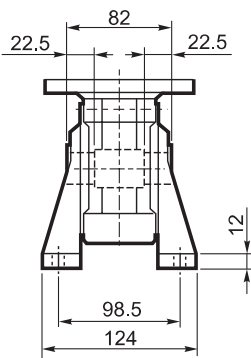
A



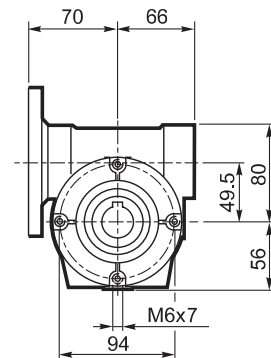
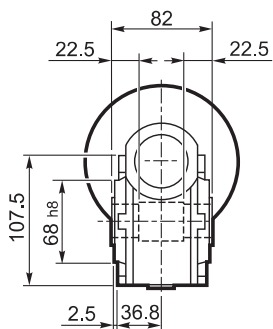
N

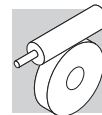


V



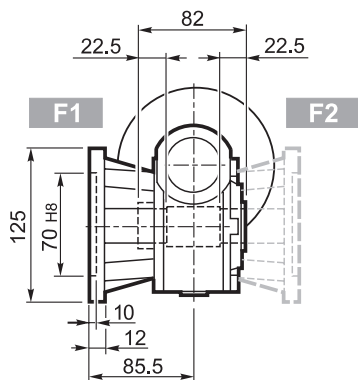
P



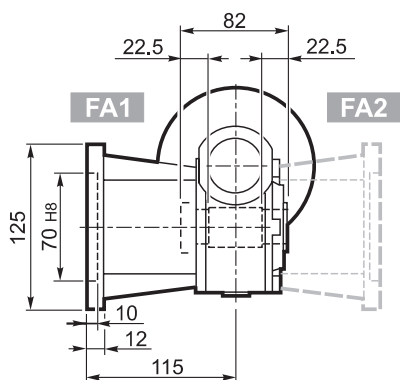


VF 49...P(IEC)

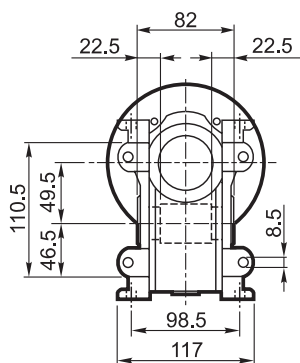
F_



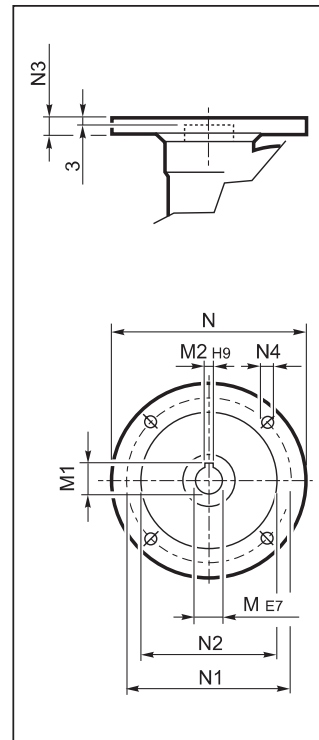
FA_



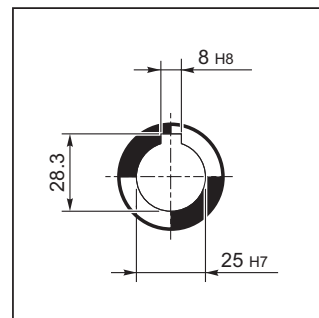
U



INPUT

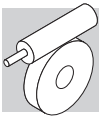


OUTPUT



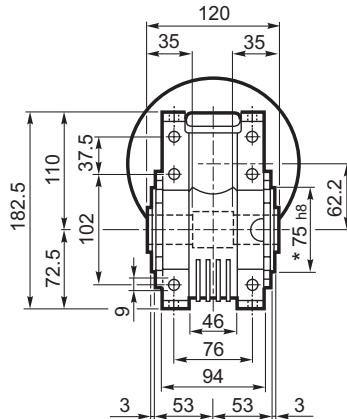
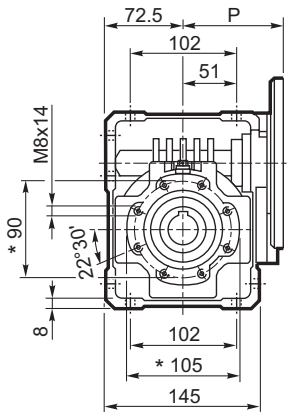
VF 49

| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | Kg |
|-------|---------|----|------|----|-----|-----|-----|------|------|-----|
| | | | | | | | | | | |
| VF 49 | P63 B5 | 11 | 12.8 | 4 | 140 | 115 | 95 | 10.5 | 9.5 | 3.0 |
| VF 49 | P71 B5 | 14 | 16.3 | 5 | 160 | 130 | 110 | 10.5 | 9.5 | |
| VF 49 | P80 B5 | 19 | 21.8 | 6 | 200 | 165 | 130 | 10 | 11.5 | |
| VF 49 | P63 B14 | 11 | 12.8 | 4 | 90 | 75 | 60 | 7 | 6 | |
| VF 49 | P71 B14 | 14 | 16.3 | 5 | 105 | 85 | 70 | 10.5 | 6.5 | |
| VF 49 | P80 B14 | 19 | 21.8 | 6 | 120 | 100 | 80 | 10 | 7 | |

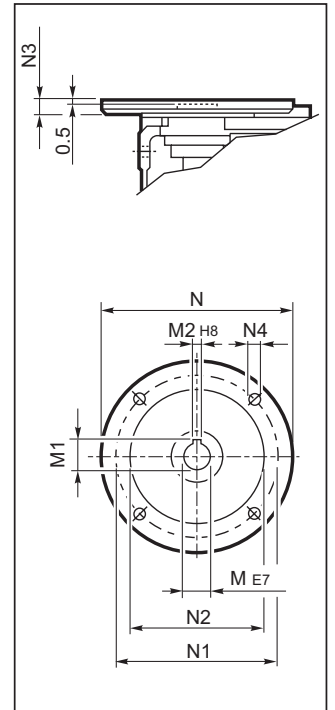


W 63...P(IEC)

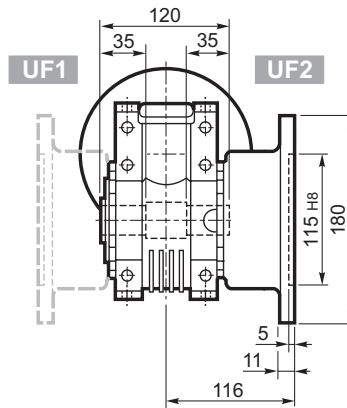
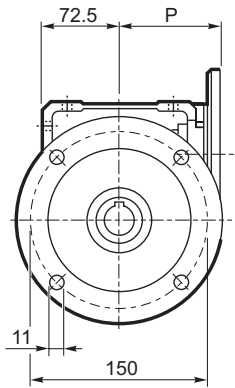
U



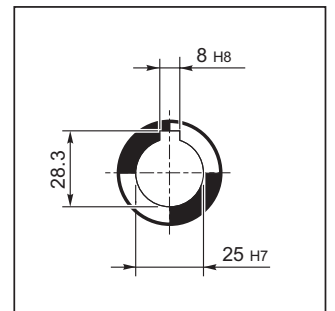
INPUT



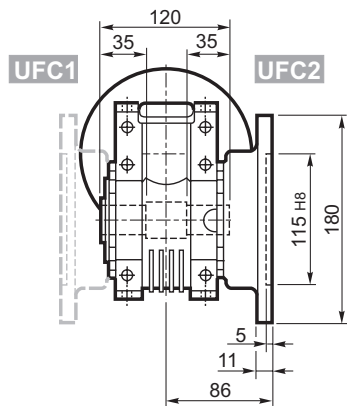
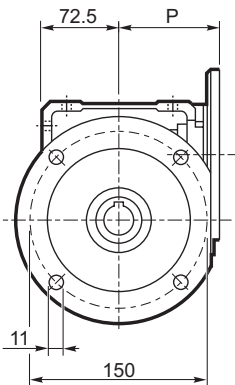
UF



OUTPUT

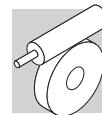


UFC



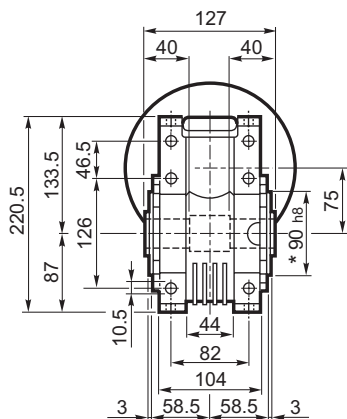
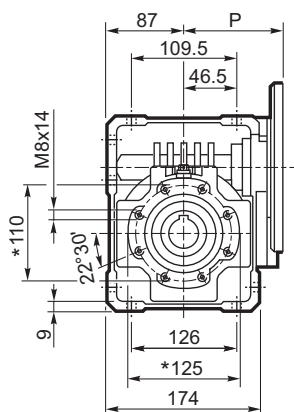
W 63

| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | P | Kg |
|------|---------|----|------|----|-----|-----|-----|----|------|-----|-----|
| | | | | | | | | | | | |
| W 63 | P71 B5 | 14 | 16.3 | 5 | 160 | 130 | 110 | 11 | 9 | 95 | 6.3 |
| W 63 | P80 B5 | 19 | 21.8 | 6 | 200 | 165 | 130 | 12 | 11.5 | 102 | 6.5 |
| W 63 | P90 B5 | 24 | 27.3 | 8 | 200 | 165 | 130 | 12 | 11.5 | 102 | 6.4 |
| W 63 | P71 B14 | 14 | 16.3 | 5 | 105 | 85 | 70 | 11 | 6.5 | 95 | 6.1 |
| W 63 | P80 B14 | 19 | 21.8 | 6 | 120 | 100 | 80 | 11 | 6.5 | 102 | 6.3 |
| W 63 | P90 B14 | 24 | 27.3 | 8 | 140 | 115 | 95 | 11 | 8.5 | 102 | 6.3 |

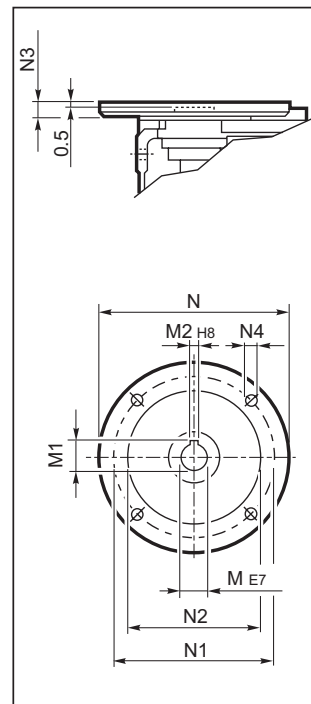


W 75...P(IEC)

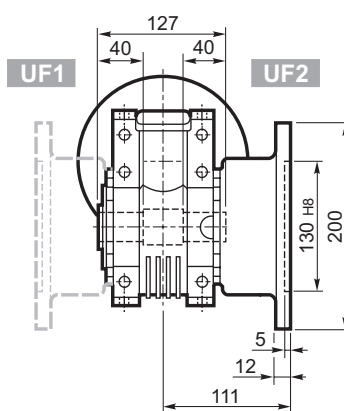
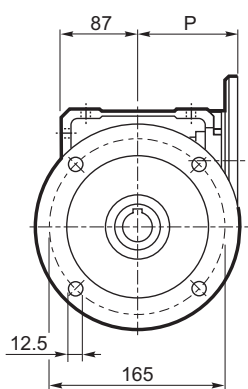
U



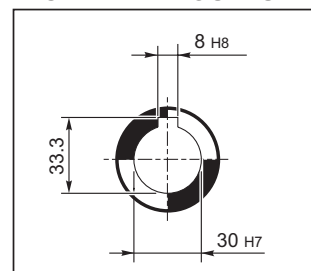
INPUT



UF

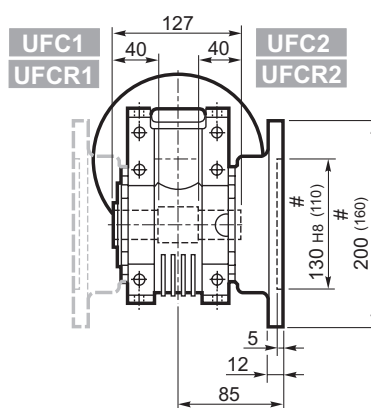
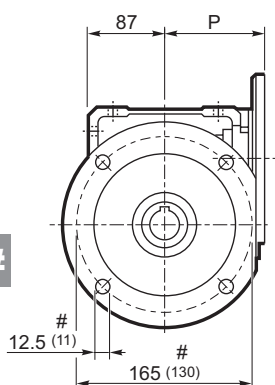


STANDARD OUTPUT

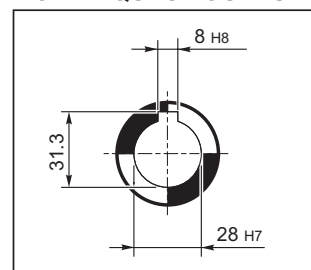


UFC

UFCR #



ON REQUEST OUTPUT

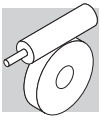


W 75

| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | P | Kg |
|------|----------|----|------|----|-----|-----|-----|-----|------|-----|-----|
| | | | | | | | | | | | |
| W 75 | P71 B5 | 14 | 16.3 | 5 | 160 | 130 | 110 | 11 | 9 | 112 | 9.5 |
| W 75 | P80 B5 | 19 | 21.8 | 6 | 200 | 165 | 130 | 12 | 11.5 | 112 | 9.7 |
| W 75 | P90 B5 | 24 | 27.3 | 8 | 200 | 165 | 130 | 12 | 11.5 | 112 | 9.6 |
| W 75 | P100 B5 | 28 | 31.3 | 8 | 250 | 215 | 180 | 13 | 12.5 | 120 | 9.7 |
| W 75 | P112 B5 | 28 | 31.3 | 8 | 250 | 215 | 180 | 13 | 12.5 | 120 | 9.7 |
| W 75 | P80 B14 | 19 | 21.8 | 6 | 120 | 100 | 80 | 7.5 | 6.5 | 112 | 9.4 |
| W 75 | P90 B14 | 24 | 27.3 | 8 | 140 | 115 | 95 | 7.5 | 8.5 | 112 | 9.4 |
| W 75 | P100 B14 | 28 | 31.3 | 8 | 160 | 130 | 110 | 10 | 8.5 | 120 | 9.5 |
| W 75 | P112 B14 | 28 | 31.3 | 8 | 160 | 130 | 110 | 10 | 8.5 | 120 | 9.5 |

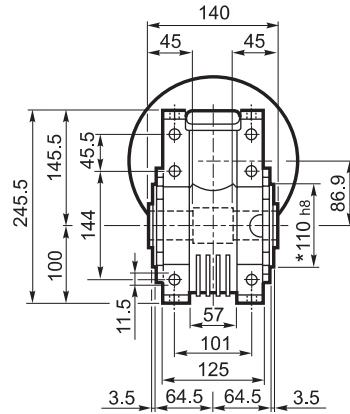
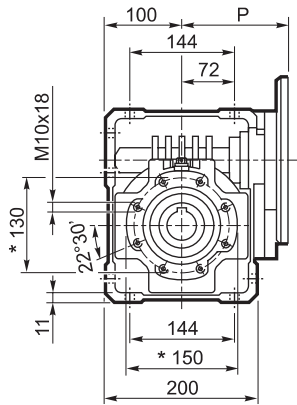
* On both sides

Reduced flange

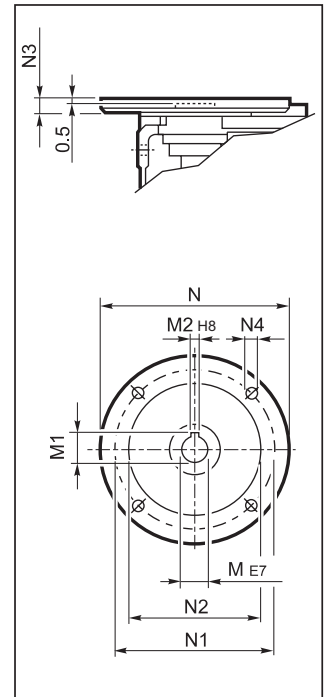


W 86...P(IEC)

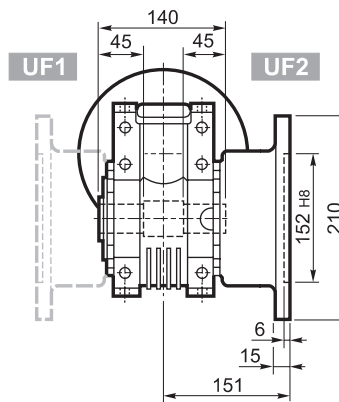
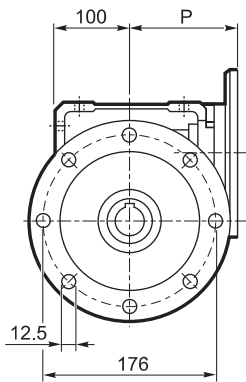
U



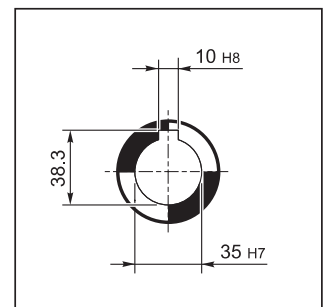
INPUT



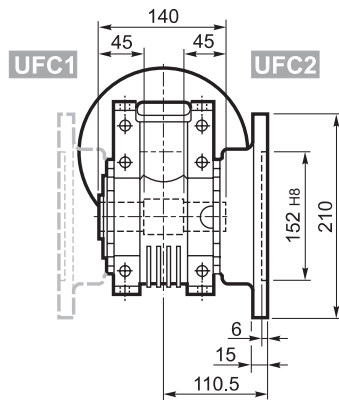
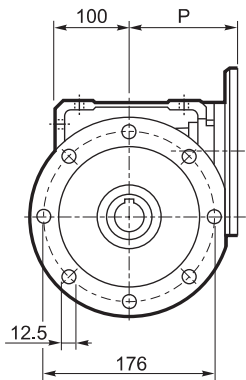
UF



OUTPUT



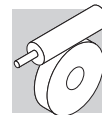
UFC



W 86

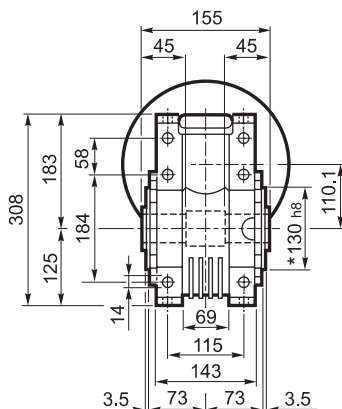
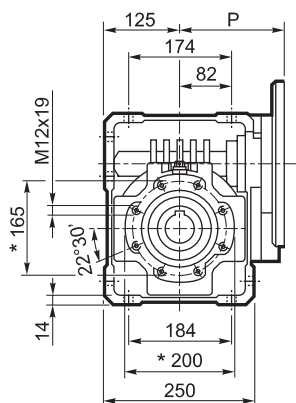
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | P | Kg |
|------|----------|----|------|----|-----|-----|-----|-----|------|-----|------|
| | | | | | | | | | | | |
| W 86 | P71 B5 | 14 | 16.3 | 5 | 160 | 130 | 110 | 11 | 9 | 128 | 13.6 |
| W 86 | P80 B5 | 19 | 21.8 | 6 | 200 | 165 | 130 | 12 | 11.5 | 128 | 13.8 |
| W 86 | P90 B5 | 24 | 27.3 | 8 | 200 | 165 | 130 | 12 | 11.5 | 128 | 13.7 |
| W 86 | P100 B5 | 28 | 31.3 | 8 | 250 | 215 | 180 | 13 | 12.5 | 136 | 13.8 |
| W 86 | P112 B5 | 28 | 31.3 | 8 | 250 | 215 | 180 | 13 | 12.5 | 136 | 13.8 |
| W 86 | P80 B14 | 19 | 21.8 | 6 | 120 | 100 | 80 | 7.5 | 6.5 | 128 | 13.5 |
| W 86 | P90 B14 | 24 | 27.3 | 8 | 140 | 115 | 95 | 7.5 | 8.5 | 128 | 13.5 |
| W 86 | P100 B14 | 28 | 31.3 | 8 | 160 | 130 | 110 | 10 | 8.5 | 136 | 13.6 |
| W 86 | P112 B14 | 28 | 31.3 | 8 | 160 | 130 | 110 | 10 | 8.5 | 136 | 13.6 |

* On both sides

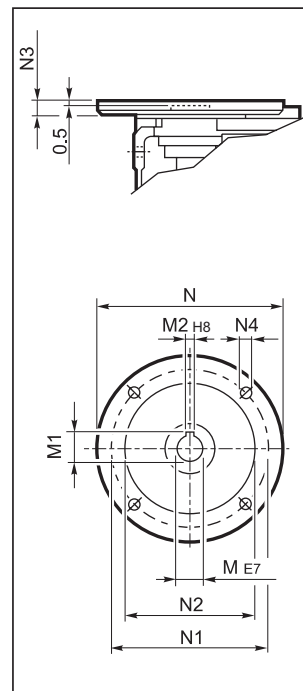


W 110...P(IEC)

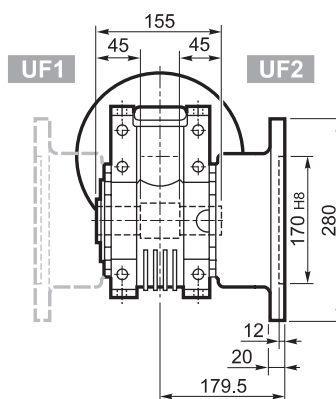
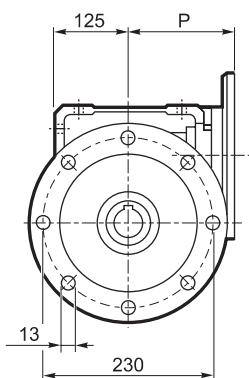
U



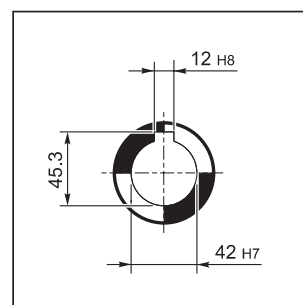
INPUT



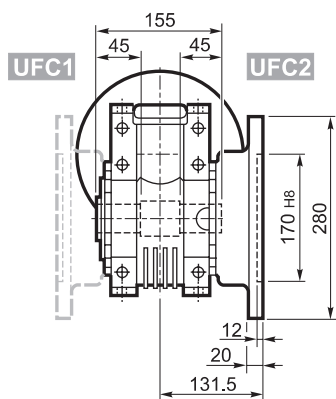
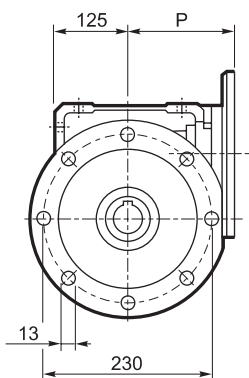
UF_



OUTPUT



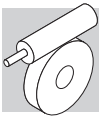
UFC_



W 110

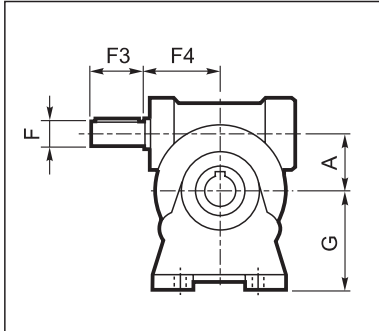
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | P | Kg |
|-------|----------|----|------|----|-----|-----|-----|-----|--------|-----|------|
| | | | | | | | | | | | |
| W 110 | P80 B5 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 143 | 28 |
| W 110 | P90 B5 | 24 | 27.3 | 8 | 200 | 165 | 130 | — | M10x12 | 143 | 28 |
| W 110 | P100 B5 | 28 | 31.3 | 8 | 250 | 215 | 180 | 13 | 13 | 151 | 29 |
| W 110 | P112 B5 | 28 | 31.3 | 8 | 250 | 215 | 180 | 13 | 13 | 151 | 29 |
| W 110 | P132 B5 | 38 | 41.3 | 10 | 300 | 265 | 230 | 16 | 14 | 226 | 31 |
| W 110 | P80 B14 | 19 | 21.8 | 6 | 120 | 100 | 80 | 7.5 | 7 | 143 | 27.5 |
| W 110 | P90 B14 | 24 | 27.3 | 8 | 140 | 115 | 95 | 6.5 | 9 | 143 | 27.5 |
| W 110 | P100 B14 | 28 | 31.3 | 8 | 160 | 130 | 110 | 13 | 9 | 151 | 27 |
| W 110 | P112 B14 | 28 | 31.3 | 8 | 160 | 130 | 110 | 13 | 9 | 151 | 27 |

* On both sides

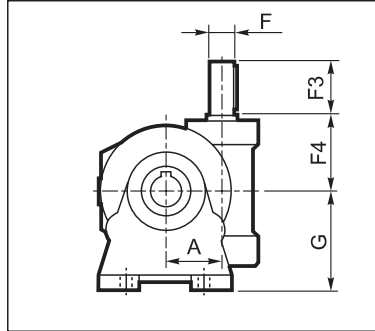


VF...HS - W...HS

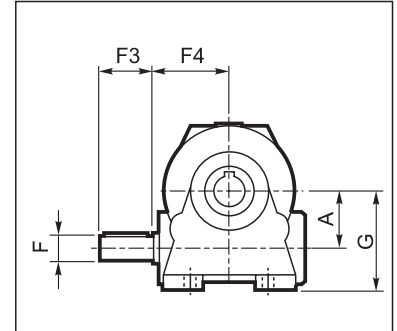
VF_A...HS



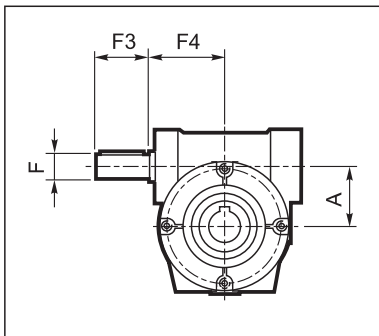
VF_V...HS



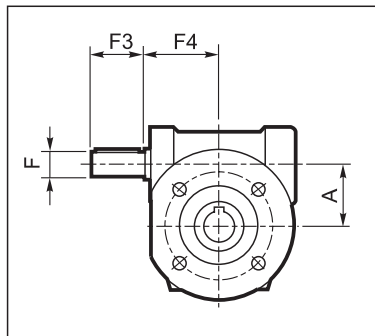
VF_N...HS



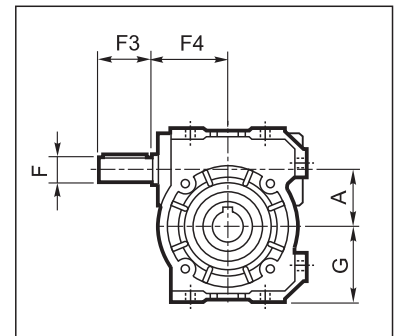
VF_P...HS



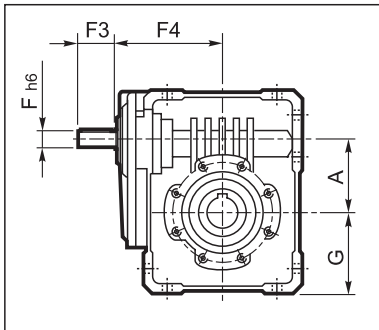
VF_F/FA...HS



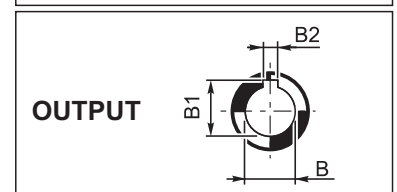
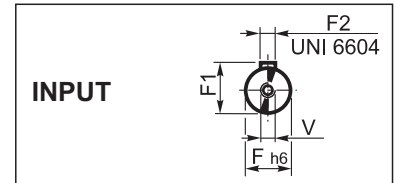
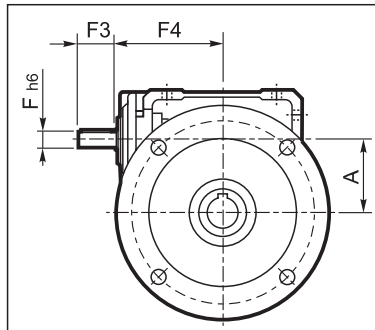
VF_U...HS



W_U...HS



W_UF/UFC/UFCR...HS

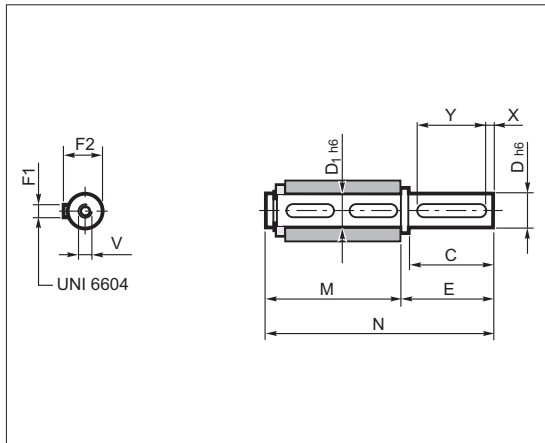


| | A | B | B1 | B2 | F | F1 | F2 | F3 | F4 | G | V | Kg |
|-------------------|-------|-----------|------------|----|----|------|----|----|-------|------|-------|------|
| VF 44_HS | 44.6 | 18 H7 | 20.8 | 6 | 11 | 12.5 | 4 | 30 | 54 | 72 | — | 2.0 |
| VF 44 U HS | | | | | | | | | | 55 | | |
| VF 49_HS | 49.5 | 25 H7 | 28.3 | 8 | 16 | 18 | 5 | 40 | 65 | 82 | M6x16 | 3.0 |
| VF 49 U HS | | | | | | | | | | 64.5 | | |
| W 63_HS | 62.17 | 25 H7 | 28.3 | 8 | 18 | 20.5 | 6 | 40 | 110.5 | 72.5 | M6x16 | 6.4 |
| W 75_HS | 75 | 30(28) H7 | 33.3(31.3) | 8 | 19 | 21.5 | 6 | 40 | 128 | 87 | M6x16 | 10.0 |
| W 86_HS | 86.9 | 35 H7 | 38.3 | 10 | 25 | 28 | 8 | 50 | 144 | 100 | M8x19 | 14.1 |
| W 110_HS | 110.1 | 42 H7 | 45.3 | 12 | 25 | 28 | 8 | 60 | 168 | 125 | M8x19 | 27 |

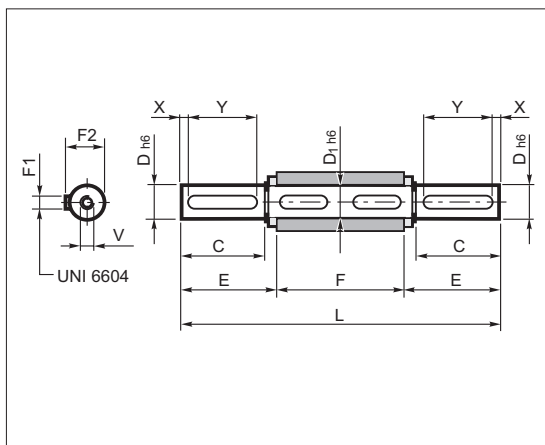
Dimensions common to the other configurations can be found from page 28 to 37.

2.10 ACCESSORIES

2.10.1 Plug-in output shaft

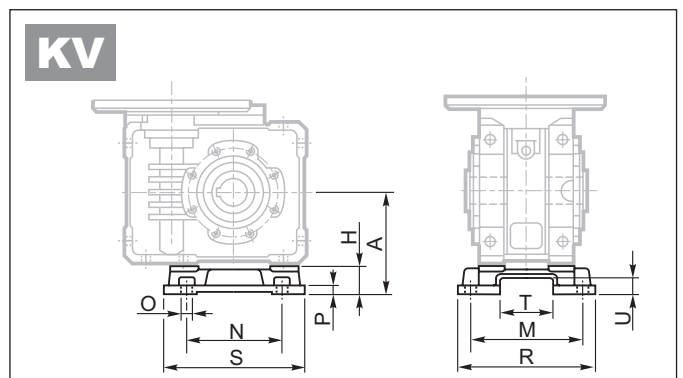
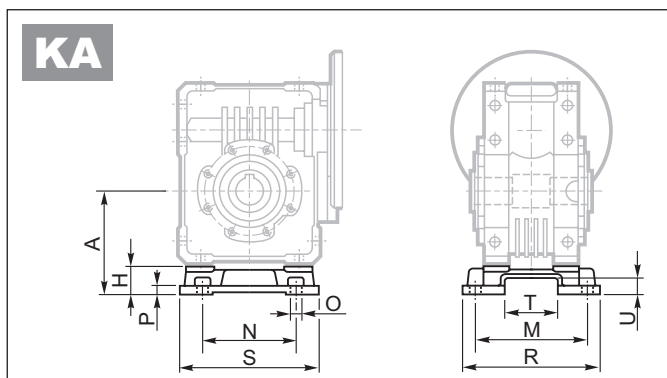


| | C | D | D1 | E | F1 | F2 | M | N | V | X | Y | |
|-----|--------|----|----|----|----|----|------|-----|--------|--------|----|----|
| VF | 30 | 30 | 14 | 14 | 35 | 5 | 16 | 61 | 96 | M5x13 | 5 | 20 |
| | 44 | 40 | 18 | 18 | 45 | 6 | 20.5 | 70 | 115 | M6x16 | 5 | 30 |
| | 49 | 60 | 25 | 25 | 65 | 8 | 28 | 89 | 154 | M8x19 | 5 | 50 |
| W | 63 | 60 | 25 | 25 | 65 | 8 | 28 | 127 | 192 | M8x19 | 5 | 50 |
| | 75_D28 | 60 | 28 | 30 | 65 | 8 | 31 | 134 | 199 | M8x20 | 5 | 50 |
| | 75_D30 | 60 | 30 | 30 | 65 | 8 | 33 | 134 | 199 | M10x22 | 5 | 50 |
| | 86 | 60 | 35 | 35 | 65 | 10 | 38 | 149 | 214 | M10x22 | 5 | 50 |
| 110 | 75 | 42 | 42 | 80 | 12 | 45 | 164 | 244 | M12x28 | 7.5 | 60 | |

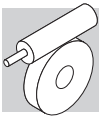


| | C | D | D1 | E | F | F1 | F2 | L | V | X | Y | |
|-----|--------|----|----|------|------|-----|----|-------|--------|--------|----|----|
| VF | 30 | 30 | 14 | 14 | 32.5 | 55 | 5 | 16 | 120 | M5x13 | 5 | 20 |
| | 44 | 40 | 18 | 18 | 42.7 | 64 | 6 | 20.5 | 149.4 | M6x16 | 5 | 30 |
| | 49 | 60 | 25 | 25 | 63.2 | 82 | 8 | 28 | 208.4 | M8x19 | 5 | 50 |
| W | 63 | 60 | 25 | 25 | 63.2 | 120 | 8 | 28 | 246.4 | M8x19 | 5 | 50 |
| | 75_D28 | 60 | 28 | 30 | 64 | 127 | 8 | 31 | 255 | M8x20 | 5 | 50 |
| | 75_D30 | 60 | 30 | 30 | 64 | 127 | 8 | 33 | 255 | M10x22 | 5 | 50 |
| | 86 | 60 | 35 | 35 | 64 | 140 | 10 | 38 | 268 | M10x22 | 5 | 50 |
| 110 | 75 | 42 | 42 | 79.3 | 155 | 12 | 45 | 313.5 | M12x28 | 7.5 | 60 | |

2.10.2 VF-interchangeable foot kits KA, KV



| | A | H | M | N | O | P | R | S | T | U |
|-------|-----|------|-----|-----|----|----|-----|-----|------|------|
| W 63 | 100 | 27.5 | 111 | 95 | 11 | 8 | 135 | 145 | 56.5 | 15.5 |
| W 75 | 115 | 28 | 115 | 120 | 11 | 9 | 139 | 174 | 56.5 | 15.5 |
| W 86 | 142 | 42 | 146 | 140 | 11 | 11 | 170 | 200 | 69 | 20 |
| W 110 | 170 | 45 | 181 | 200 | 13 | 14 | 210 | 250 | 69 | 20 |

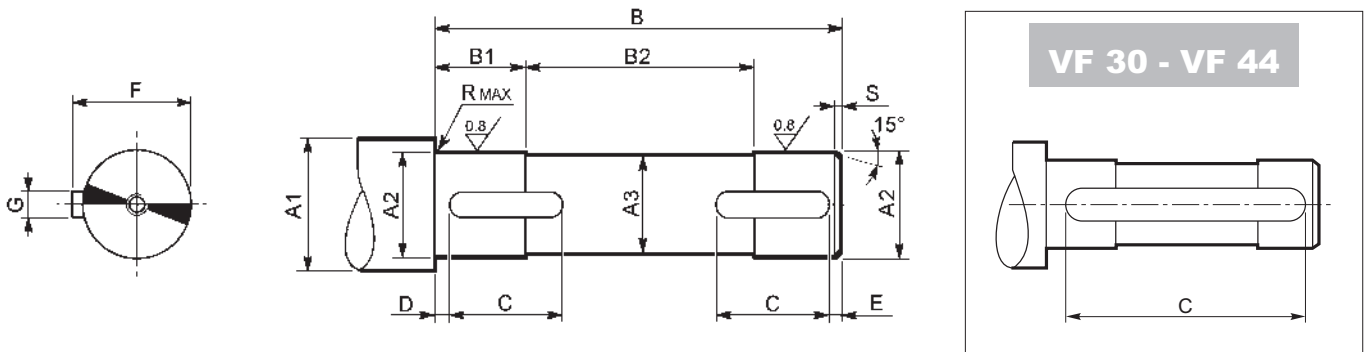



2.11 CUSTOMER'S SHAFT

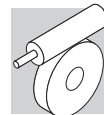
2.11.1 Manufacturing instructions

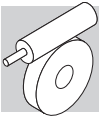
Pivot of driven equipment should be made from high grade alloy steel. Table below shows recommended dimensions for the Customer to consider when designing mating shaft. A device retaining the shaft axially is also recommended (not shown).

The number and size of relative tapped holes at shaft end depend on application requirements.




| | A1 | A2 | A3 | B | B1 | B2 | C | D | E | F | G | R | S |  UNI 6604 |
|--------------|------|-------|----|-----|------|----|----|-----|-----|------|-------|-----|-----|---|
| VF 30 | ≥ 19 | 14 f7 | 13 | 53 | 18.5 | 16 | 40 | 6.5 | 6.5 | 16 | 5 h9 | 0.5 | 1.5 | 5x5x40 A |
| VF 44 | ≥ 23 | 18 f7 | 17 | 62 | 22.5 | 17 | 50 | 6 | 6 | 20.5 | 6 h9 | 0.5 | 1.5 | 6x6x50 A |
| VF 49 | ≥ 30 | 25 f7 | 24 | 80 | 20.5 | 39 | 20 | 2 | 2 | 28 | 8 h9 | 1 | 1.5 | 8x7x20 A |
| W 63 | ≥ 30 | 25 f7 | 24 | 118 | 38 | 42 | 35 | 2 | 2 | 28 | 8 h9 | 1 | 1.5 | 8x7x35 A |
| W 75 | ≥ 35 | 28 f7 | 27 | 125 | 38 | 49 | 40 | 2 | 2 | 31 | 8 h9 | 1 | 1.5 | 8x7x40 A |
| | ≥ 35 | 30 f7 | 29 | 125 | 38 | 49 | 40 | 2 | 2 | 33 | 8 h9 | 1 | 1.5 | 8x7x40 A |
| W 86 | ≥ 42 | 35 f7 | 34 | 138 | 43 | 52 | 40 | 2 | 2 | 38 | 10 h9 | 1.5 | 1.5 | 10x8x40 A |
| W 110 | ≥ 48 | 42 f7 | 41 | 153 | 43 | 67 | 50 | 2 | 2 | 45 | 12 h9 | 1.5 | 2 | 12x8x50 A |





INDEX OF REVISIONS (R)

| BR_CAT_VF-W_ATX_ENG_R00_2 | |
|---|--|
|  | Description |
| 10 14 | Updated information about lubrication for gearbox W 110. |
| 20 | Updated technical data for gearbox W 63. |

2017 09 30

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We have a relentless commitment to excellence, innovation and sustainability. Our team creates, distributes and services world-class power transmission and drive solutions to keep the world in motion.



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