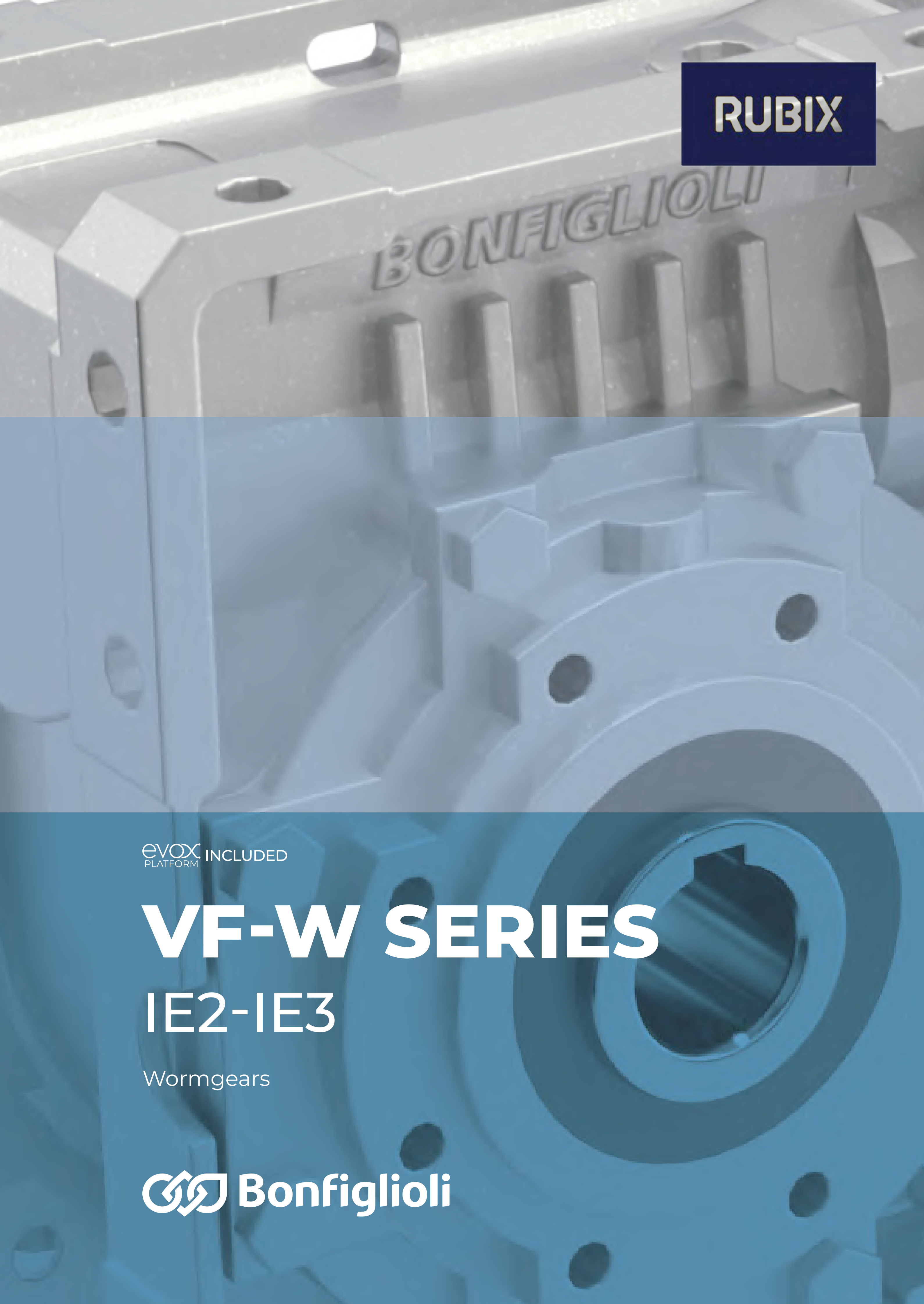


RUBIX

evox PLATFORM INCLUDED

VF-W SERIES

IE2-IE3

Wormgears

Bonfiglioli

Revisions

Refer to page 348 for the catalogue revision index. Visit www.bonfiglioli.com to search for catalogues with up-to-date revisions.

GENERAL INFORMATION

1 SYMBOLS AND UNITS OF MEASUREMENT

Symbols	Units of Measure	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	[Kgm²]	Mass moment of inertia to be driven
J_M	[Kgm²]	Motor mass moment of inertia
J_R	[Kgm²]	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

Symbols	Units of Measure	Description
$n_{1,2}$	[min^{-1}]	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 overhung load
S	–	Safety factor
t_a	[°C]	Ambient temperature
t_s	[°C]	Surface temperature
t_o	[°C]	Oil temperature
t_f	[min]	Work time under constant load
t_r	[min]	Rest time
η_d	–	Dynamic efficiency
η_s	–	Static efficiency

$_1$ value applies to input shaft

$_2$ value applies to output shaft

(i)	This symbol indicates important technical information.
(!)	This symbol indicates situations of danger which, if ignored, may result in risks to personal health and safety.
	The symbol shows the page the information can be sorted from.
0° 90° 270° 180°	This symbol refers to the angle the overhung load applies (viewing from drive end).
kg	Symbol refers to weight of gearmotors and speed reducers. Figure for gearmotors incorporates the weight of the 4-pole motor and for life lubricated units, where applicable, the weight of the oil.

2 DEFINITIONS

2.1 TORQUE

Rated torque M_{n2} [Nm]
The torque that can be transmitted continuously through the output shaft, with the gear unit operated under a service factor f_s = 1.
Rating is speed sensitive.

Required torque M_{r2} [Nm]
The torque demand based on application requirement. It is recommended to be equal to or less than torque $\mathbf{M_{n2}}$ the gearbox under study is rated for.

Calculated torque M_{c2} [Nm]
Computational torque value to be used when selecting the gearbox.
It is calculated considering the required torque $\mathbf{M_{r2}}$ and service factor $\mathbf{f_s}$, as per the relationship here after:

$$M_{c2} = M_{r2} \times f_s \leq M_{n2} \quad (1)$$

2.2 POWER

Rated input power P_{n1} [kW]
The parameter can be found in the gearbox rating charts and represents the kW that can be safely transmitted to the gearbox, based on input speed $\mathbf{n_1}$ and service factor f_s= 1.

2.3 EFFICIENCY

Dynamic efficiency [η_d]

The dynamic efficiency is the relationship of power delivered at output shaft P_2 to power applied at input shaft P_1:

$$\eta_d = \frac{P_2}{P_1} \qquad (2)$$

It may be worth highlighting that values of rated torque M_{n2} given in the catalogue take the dynamic efficiency into consideration. Values of ηd are calculated for gearboxes after a sufficiently long running-in period.

After the running-in period the surface temperature in operation reduces and finally stabilises.

The operating temperature is affected by both the duty and the ambient temperature, refer to chapter "ALLOWED TEMPERATURE LIMITS" for information about the permitted values. If however, surface temperatures are to be expected near the upper limit, it is recommended that oil seals in Fluoro elastomer compound are specified at the time of order through option **PV**.

Static efficiency [η_S]

Efficiency applicable at start-up of the gearbox. Although this is generally not a significant factor for helical gears, it may be instead critical when selecting worm gearmotors operating under intermittent duty (e.g. Hoisting).

2.4 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:

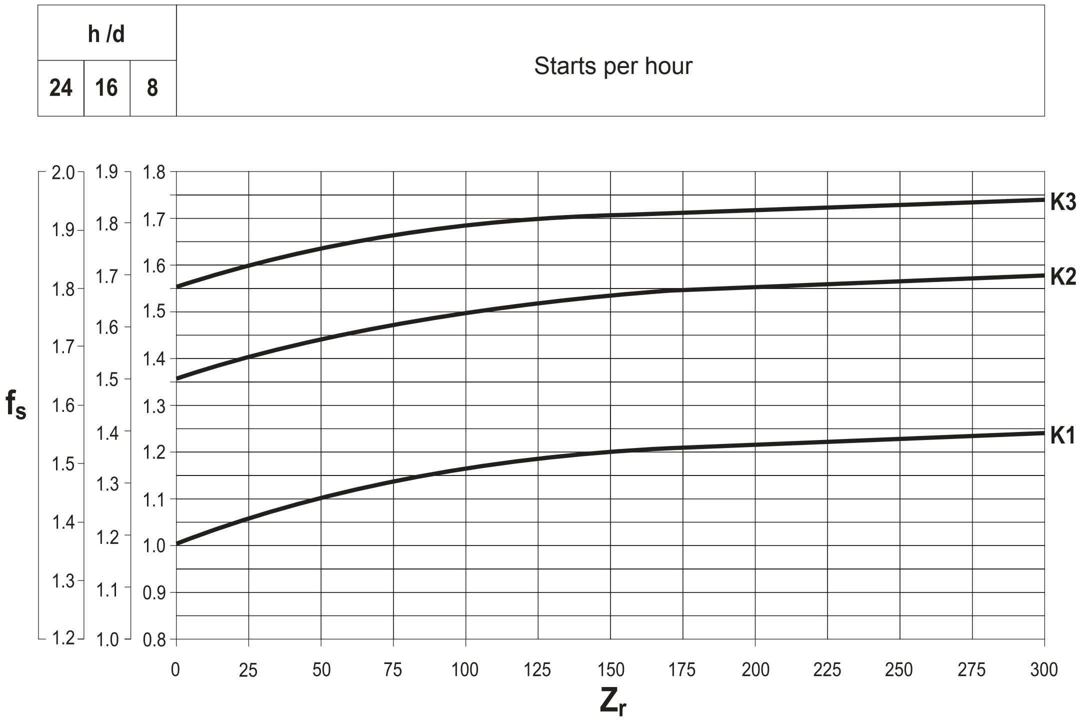
$$i = \frac{n_1}{n_2} \qquad (3)$$

2.5 MOMENT OF INERTIA J_r [kgm^2]

Moments of inertia specified in the catalogue refer to the input shaft of the gear unit and, as such, they can be simply added to the inertia of the motor, when this is combined.

2.6 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 to 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 Bonfiglioli’s Technical Service.



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:

$$K = \frac{J_c}{J_m} \quad (4)$$

$K = \frac{J_c}{J_m}$	→	J_c =	Moment of inertia of driven masses referred to motor drive shaft
		J_m =	Motor moment of inertia

K ≤ 0,25	→	**K1**	Uniform load
0.25 < K ≤ 3	→	**K2**	Moderate shock load
3 < K ≤ 10	→	**K3**	Heavy shock load
K > 10	→		please contact Bonfiglioli’s Technical Service

3 ALLOWED TEMPERATURE LIMITS

Symbols	Description / Condition	Value (*)	
		Synthetic Oil	Mineral Oil
t_a	Ambient temperature		
$t_{au\ min}$	Minimum operating ambient temperature	**-30°C**	**-10°C**
$t_{au\ Max}$	Maximum operating ambient temperature	**+50°C**	**+40°C**
$t_{as\ min}$	Minimum storage ambient temperature	**-40°C**	**-10°C**
$t_{as\ Max}$	Maximum storage ambient temperature	**+50°C**	**+50°C**
t_s	Surface temperature		
$t_{s\ min}$	Minimum gearbox surface temperature starting with partial load (#)	**-25°C**	**-10°C**
$t_{sc\ min}$	Minimum gearbox surface temperature starting with full load	**-10°C**	**-5°C**
$t_{s\ Max}$	Maximum casing surface temperature during continuous operation (measured next to the gearbox input)	**+100°C**	**+100°C** (@)
t_o	Oil temperature		
$t_{o\ Max}$	Maximum oil temperature during continuous operation	**+95°C**	**+95°C** (@)

(*) = Refer to the table "Selection of the optimal oil viscosity" for further information about minimum and maximum values of different oil viscosity. For values of t_a < -20°C and t_s, t_o > 80 °C, choose (as permitted in the product configuration stage) the sealing type of the most suitable material to the type of application. If needed contact Bonfiglioli Technical Service.

(@) = Continuous operation it is not advised if t_s and t_o range is 80°C to 95 °C.

(#) = For full load start-up it is recommended to ramp-up and provide for greater absorption of the motor. If needed, contact Bonfiglioli Technical Service.

4 SELECTION

4.1 Selecting a gearmotor

a) Determine service factor $\mathbf{f_s}$ as formerly specified.

b) Determine power required at gearbox input shaft:

$$P_{r1} = \frac{M_{r2} \times n_2}{9550 \times \eta_d} \quad [kW] \qquad (5)$$

c) Consult the gearmotor rating charts and locate the table corresponding to normalised power $\mathbf{P_n}$:

$$P_n \geq P_{r1} \qquad (6)$$

Unless otherwise specified, power $\mathbf{P_n}$ 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 34-1 Standards must be mentioned. For duties from S2 to S8 in particular and for motor frame 132 or smaller, extra power output can be obtained with respect to continuous duty.
Accordingly the following condition must be satisfied:

$$P_n \geq \frac{P_{r1}}{f_m} \qquad (7)$$

The adjusting factor $\mathbf{f_m}$ can be obtained from table here after.

Intermittence ratio

$$I = \frac{t_f}{t_f + t_r} \times 100 \qquad (8)$$

t_f = work time at constant load

t_r = rest time

	DUTY						
	S2			**S3***			**S4 - S8**
	Cycle duration [min]			Cyclic duration factor (I)			Please contact us
	10	**30**	**60**	**25%**	**40%**	**70%**	
f_m	1.35	1.15	1.05	1.25	1.15	1.1	

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

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

$$S \geq f_s \qquad (9)$$

The safety factor is so defined:

$$S = \frac{M_{n2}}{M_2} = \frac{P_{n1}}{P_1} \qquad (10)$$

As standard, gear and motor 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 nominal rating.

4.2 Selecting a speed reducer

a) Determine service factor $\mathbf{f_s}$.

b) Determine the computational torque $\mathbf{M_{c2}}$:

$$M_{c2} = M_{r2} \times f_s \qquad (11)$$

c) Determine the required gear ratio:

$$i = \frac{n_1}{n_2} \qquad (12)$$

d) Consult the «Speed reducer rating charts» and locate the frame size that, for drive speed **n1** and gear ratio closest to **[i]** features a rated torque M_{n2} that satisfies the following condition:

$$M_{n2} \geq M_{c2} \qquad (13)$$

Check applicability of the electric motor selected at chapter: «Motor availability».

5 VERIFICATION

After the selection of the speed reducer, or gearmotor, is complete it is recommended that the following verifications are Conducted:

a) Maximum torque
The maximum torque (intended as instantaneous peak load) applicable to the gearbox must not, in general, exceed 150% of rated torque $\mathbf{M_{n2}}$. Upon evaluation and approval of Bonfiglioli Technical Service peak values up to 300% may be admitted.
For three-phase switch-pole motors, it is recommended 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):

Switching torque $\mathbf{Mg_2 = 0.5 \times Mg_3}$	
$\mathbf{Mg_2}$	Switching torque with two phase power-up
$\mathbf{Mg_3}$	Switching torque with three-phase power-up

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

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

d) 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.

6 INSTALLATION

6.1 General instructions

a) Make sure that the gearbox is securely bolted to avoid vibrations in operation. If shocks or overloads are expected, fit hydraulic couplings, clutches, torque limiters, etc.

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

c) Parts fitted on the gearbox output shaft must be machined to ISO H7 tolerance to prevent interference fits that could damage the gearbox itself. Further, 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.

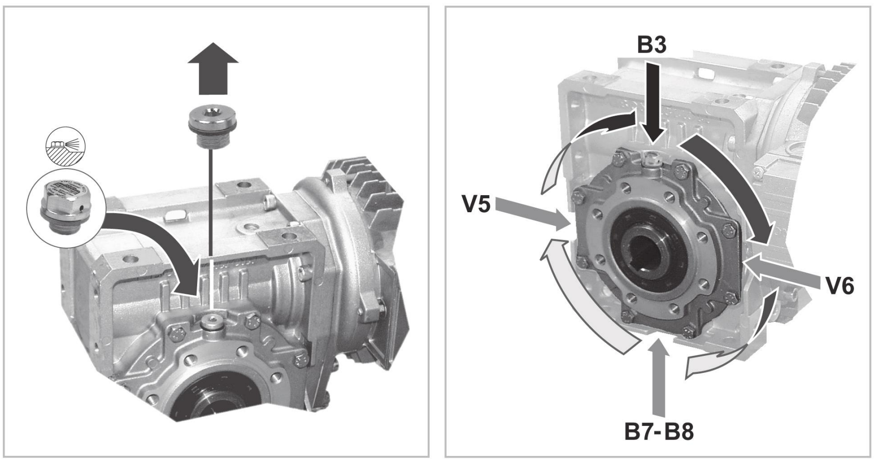
e) Prior to putting the gear unit into operation make sure that the equipment that incorporates the same complies with the current revision of the Machines Directive 2006/42/CE.

f) Before starting up the machine, make sure that oil level is suitable for the mounting position specified for the gear unit and the viscosity is adequate.

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

6.2 Commissioning of W gear units

Gear units type W63, W75 and W86 feature a side cover carrying a blank plug for transportation purposes.
Prior to putting the gearbox into service the blank plug must be replaced by the breather plug that is supplied with each unit.
See figure below:



Note that the blind plug MUST BE LEFT IN PLACE when the reducer is fitted in mounting position B6.

7 LUBRICATION

Life lubricated gearboxes do not require any periodical oil changes.
Refer to the User's Manual available at www.bonfiglioli.com for indications about checking the oil level and its replacement for other types of gearboxes.
Do not mix mineral oils with synthetic oils and/or different brands.
However, oil level should be checked at regular intervals and topped up as required.
Check monthly if unit operates under intermittent duty, more frequently if duty is continuous.

7.1 Selection of the optimal oil viscosity (data relating to Shell Oils)

Splash lubrication			Operating ambient temperature [C°]																	
			-40	-35	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50
			suitabililty seals check				standard seals provided in the catalog													
	Synthetic oil (PAG)	150 VG			*	*															
		220 VG				*	*														
		320 VG [1]					*														
		460 VG [2]						*													

Recommended operating limits

Allowed operating limits.

Forbidden operating limits.

* = It is recommended to ramp-up and to provide for greater absorption of the motor.
If needed and in the event of impulse loads, contact Bonfiglioli Technical Service.

[1] For the VF - VFR - VF_EP - W - WR - W_EP reducers we suggest viscosity 320.
For different needs, contact the Bonfiglioli technical service.

[2] For VFL - WL reducers the use of viscosity 460 is mandatory.

7.2 Lubrication for W and VF

Frame sizes VF 27 ... VF 49, W 63 ... W 86 are supplied by the factory, or by authorized dealers, already filled with "long life" synthetic oil. On request, these units can be supplied unlubricated, in which case, the option **SO** must be specified on the order. The applicability of the option is described in the chapter "GEARBOX OPTIONS". Unless otherwise specified, units type VF 130 ... VF 250 and W 110 are generally supplied unlubricated at it is the customer' responsibility to fill them with oil prior to putting them into operation. By requesting the **LUBRICATION** option at the time of order, these units will be factory filled with different types of synthetic lubricant (PAG or for food use) in the quantity relevant to the mounting position that was specified in the purchase order. The applicability of the option is described in the chapter "GEARBOX OPTIONS".
Double worm gears type VF/VF, VF/W and W/VF consist of two separate units, independently lubricated.
For the reference charts of oil plugs placement and quantity of lubricant, refer to the Installation, Operation and Maintenance Manual (available on www.bonfiglioli.com).
In the absence of contamination, the "long life" synthetic lubricant supplied by the factory (OMALA S4 WE 320), does not require periodical changes throughout the lifetime of the gear unit.

8 STORAGE

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

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

b) Always place boards, wood or other material between the products and the floor.
The gearboxes should not have direct contact with the floor.

c) In case of long-term storage all machined surfaces such as flanges, shafts and couplings must be coated with a suitable rust inhibiting product (Mobilarma 248 or equivalent).
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.

9 CONDITIONS OF SUPPLY

Gear units are supplied as follows:

a) configured for installation in the mounting position specified at the time of order;

b) tested to manufacturer specifications;

c) mating machined surfaces come unpainted;

d) nuts and bolts for mounting motors are provided;

e) shafts are protected during transportation by plastic caps;

f) supplied with lifting lug (where applicable).

10 DESIGN FEATURES

10.1 Key features common to all Bonfiglioli worm gears

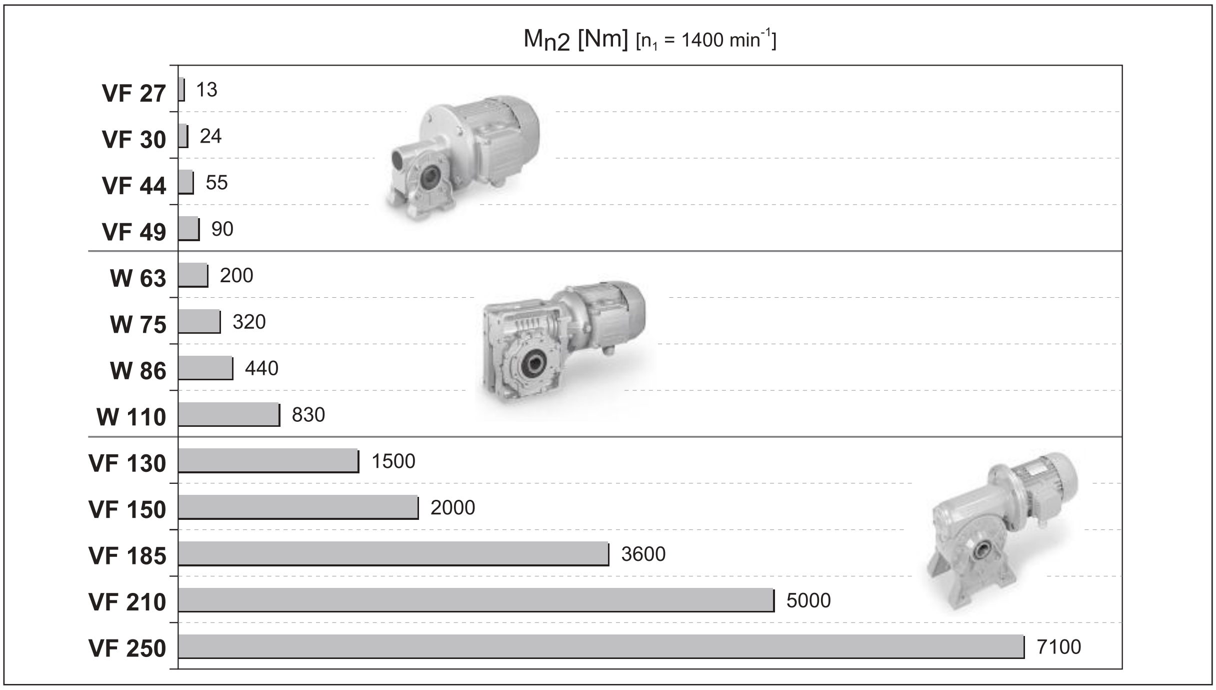
− Symmetrical hollow output shaft for facilitated mounting of the gear unit and plug-in shafts (after-sales kit only) on either side.
− Ground finished wormshafts and precise machining lend optimal efficiency and extremely low noise in operation.
− Numerous product configurations allow for foot, flange or shaft mounting. Torque arm is available as an option.
− Extensive customisation possible through the range of standard options available.

10.2 Key features of VF-style worm gears

− Die cast aluminium gear cases for VF27, VF30, VF44 and VF49. Sturdy cast iron for VF130 through VF250. The latter group is paint coated with thermo setting epoxy powder.

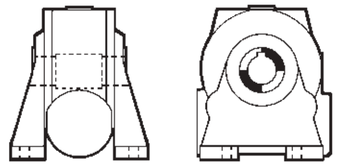
10.3 Key features of W-style worm gears

− Rigid monobloc gear case made from Aluminium.
− The cubic shape of the gear case and machining of all sides lend extreme flexibility for the installation of the gearbox and ancillary devices.
− The integral gearmotor configuration is lightweight, compact and price effective.
− Input shaft oil seal of W63, W75 and W86 units is located internally, and made from a Fluoro elastomer compound for improved durability and extended lifetime.



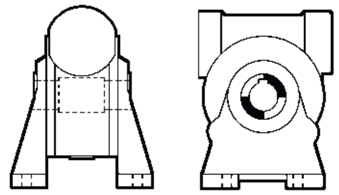
11 VERSIONS

VF_



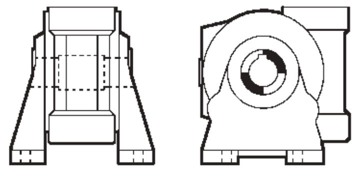
N **VF 27 ... VF 250**

Foot mounted, underdriven



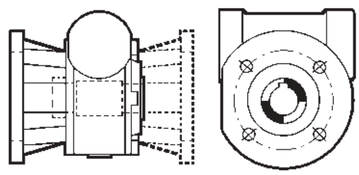
A **VF 27 ... VF 250**

Foot mounted, overdriven



V **VF 27 ... VF 250**

Foot mounted,
wormshaft vertical



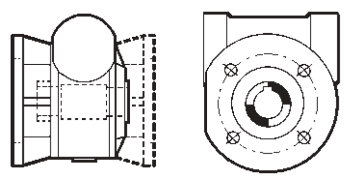
F 1 F 2
FA 1 FA 2

F **VF 27 ... VF 185**

Standard flange

FA **VF 44 ... VF 49**

Extended output flange



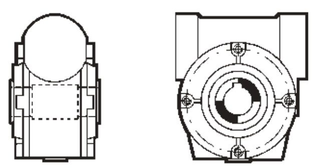
FC 1 FC 2
FR 1 FR 2

FC **VF 130 ... VF 185**

Short flange

FR **VF 130 ... VF 185**

Short flange and reinforced bearings

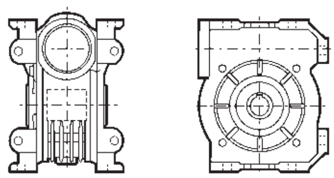


P 1 (VF 30...VF 250) P 2 (VF 130...VF 185)

P **VF 30 ... VF 250**

Side cover for shaft mounting

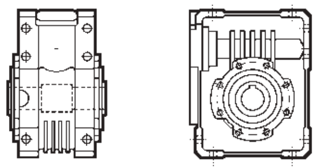
P1 = P2	VF 30 ... VF 49 VF 210, VF 250



U **VF 30 ... VF 49**

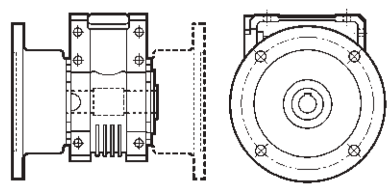
Foot mount

W_



U **W 63 ... W 110**

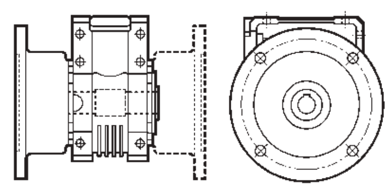
Universal gear case



UF 1 UF 2

UF **W 63 ... W 110**

Standard mounting flange



UFC 1 UFC 2
UFCR 1 UFCR 2

UFC **W 63 ... W 110**

Mounting flange reduced in length

UFCR **W 75**

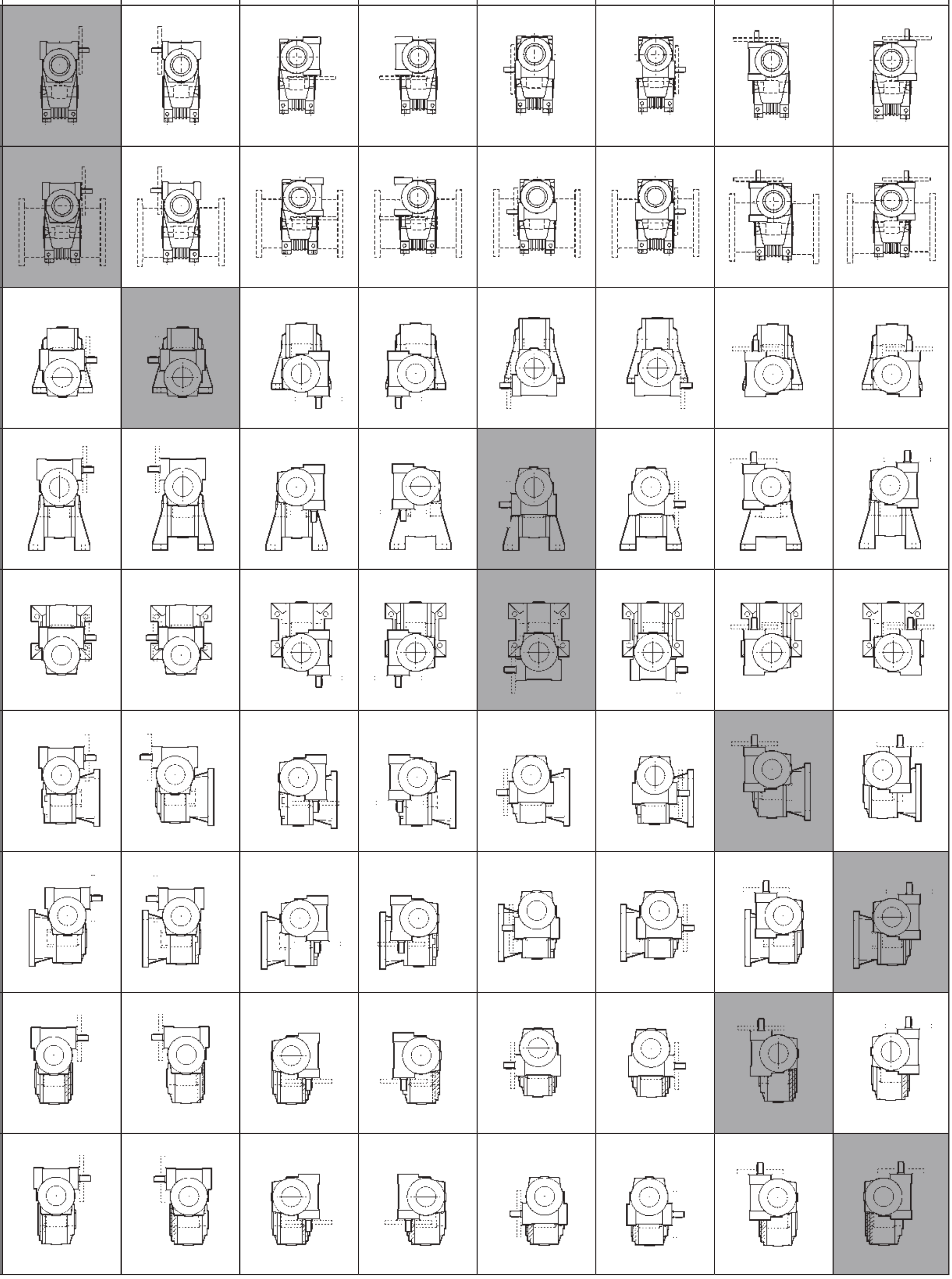
Mounting flange reduced in length and diameter

For combined gearboxes VF/VF, VF/W and W/VF, the versions refer to the second gearbox (machine side).

12 ARRANGEMENTS

For combined worm gear units, unless otherwise specified at the time of ordering, the arrangements highlighted in grey in the diagrams below will be configured at the factory.

	CW1	CCW1	CW2	CCW2	CW3	CCW3	CW4	CCW4
U								
UF_ UFC_ UFRC_								
N								
A								
V								
F1 FA1 FC1 FR1								
F2 FA2 FC2 FR2								
P1								
P2								



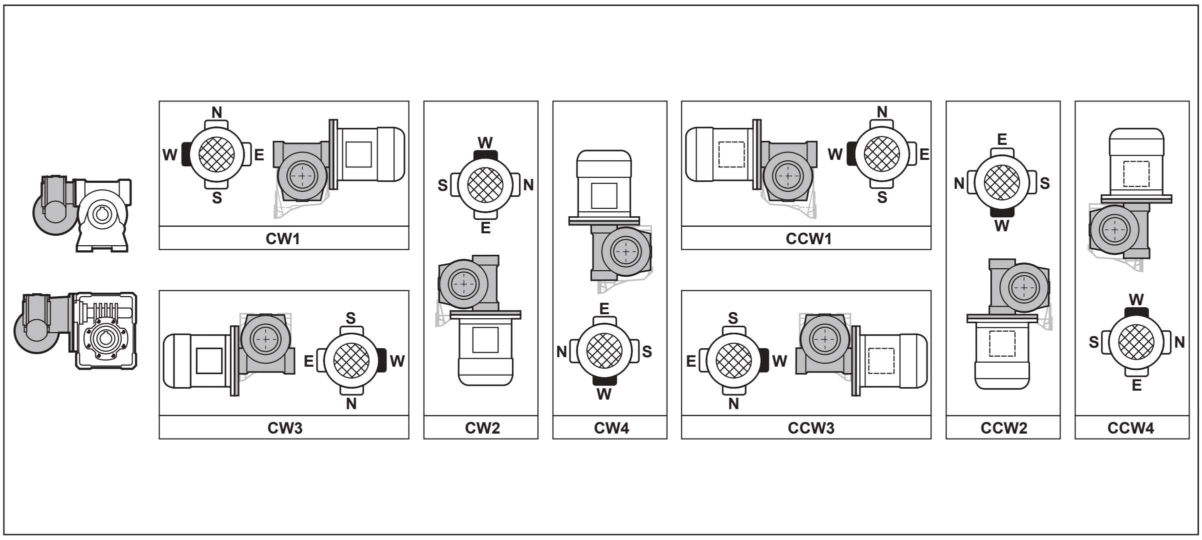
Shaft-mount cover

For units with the HS input (free shaft), all the mounting options shown are available.
For units with the P (IEC), certain mounting options can be obtained only by using IEC flanges (B5 or B14) of the same size or smaller than those shown in following table.

<table>
<tr><th></th><th></th><th>CW1
CCW1</th><th>CW2
CCW2</th><th>CW3</th><th>CCW3</th><th>CW4
CCW4</th></tr>
<tr><td>VF/VF30/44</td><td>A, N, V, P1
F-FA,U</td><td>63B14</td><td>63B14</td><td>63B14</td><td>63B14</td><td>63B14</td></tr>
<tr><td>VF/VF30/49</td><td>A, N, V, P1,
F-FA,U</td><td>63B14</td><td>63B14</td><td>63B14</td><td>63B14</td><td>63B14</td></tr>
<tr><td>VF/W30/63</td><td>U,
UF-UFC</td><td>63B5-63B14</td><td>63B5-63B14</td><td>63B5-63B14</td><td>63B5-63B14</td><td>63B5-63B14</td></tr>
<tr><td>VF/W44/75</td><td>U,
UF-UFC-UFCR</td><td>71B5-71B14</td><td>71B5-71B14</td><td>71B5-71B14</td><td>71B5-71B14</td><td>71B5-71B14</td></tr>
<tr><td>VF/W44/86</td><td>U,
UF-UFC</td><td>71B5-71B14</td><td>71B5-71B14</td><td>71B5-71B14</td><td>71B5-71B14</td><td>71B5-71B14</td></tr>
<tr><td>VF/W49/110</td><td>U,
UF-UFC</td><td>80B5-80B14</td><td>80B5-80B14</td><td>80B5-80B14</td><td>80B5-80B14</td><td>80B5-80B14</td></tr>
<tr><td rowspan="9">W/VF63/130</td><td>N</td><td>71B5-90B14</td><td>90B5-90B14</td><td>71B5-90B14</td><td>71B5-90B14</td><td>71B5-90B14</td></tr>
<tr><td>A</td><td rowspan="2">90B5-90B14</td><td>71B5-90B14</td><td rowspan="2">90B5-90B14</td><td rowspan="2">90B5-90B14</td><td>90B5-90B14</td></tr>
<tr><td>V</td><td>90B5-90B14</td><td>—</td></tr>
<tr><td>F1</td><td rowspan="3">90B5-90B14</td><td rowspan="3">71B5-90B14</td><td rowspan="3">90B5-90B14</td><td rowspan="2">71B5-90B14</td><td rowspan="3">90B5-90B14</td></tr>
<tr><td>FC1-FR1</td></tr>
<tr><td>P1</td><td>90B5-90B14</td></tr>
<tr><td>F2</td><td rowspan="3">90B5-90B14</td><td rowspan="3">71B5-90B14</td><td rowspan="2">71B5-90B14</td><td rowspan="3">90B5-90B14</td><td rowspan="3">90B5-90B14</td></tr>
<tr><td>FC2-FR2</td></tr>
<tr><td>P2</td><td>90B5-90B14</td></tr>
<tr><td rowspan="9">W/VF86/150</td><td>N</td><td>112B5-112B14</td><td>112B5-112B14</td><td>71B5-112B14</td><td>71B5-112B14</td><td>71B5-112B14</td></tr>
<tr><td>A</td><td>112B5-112B14</td><td>90B5-112B14</td><td rowspan="2">112B5-112B14</td><td rowspan="2">112B5-112B14</td><td>112B5-112B14</td></tr>
<tr><td>V</td><td>112B5-90B14</td><td>112B5-90B14</td><td>71B5-112B14</td></tr>
<tr><td>F1</td><td rowspan="3">112B5-112B14</td><td rowspan="2">71B5-90B14</td><td rowspan="3">112B5-112B14</td><td rowspan="2">71B5-90B14</td><td rowspan="3">112B5-112B14</td></tr>
<tr><td>FC1-FR1</td></tr>
<tr><td>P1</td><td>90B5-112B14</td><td>112B5-112B14</td></tr>
<tr><td>F2</td><td rowspan="3">112B5-112B14</td><td rowspan="2">71B5-90B14</td><td rowspan="2">71B5-90B14</td><td rowspan="3">112B5-112B14</td><td rowspan="3">112B5-112B14</td></tr>
<tr><td>FC2-FR2</td></tr>
<tr><td>P2</td><td>90B5-112B14</td><td>112B5-112B14</td></tr>
<tr><td rowspan="9">W/VF86/185</td><td>N</td><td>112B5-112B14</td><td rowspan="2">112B5-112B14</td><td>90B5-112B14</td><td>90B5-112B14</td><td>90B5-112B14</td></tr>
<tr><td>A</td><td>90B5-112B14</td><td rowspan="2">112B5-112B14</td><td rowspan="2">112B5-112B14</td><td>112B5-112B14</td></tr>
<tr><td>V</td><td>112B5-90B14</td><td>90B5-112B14</td><td>90B5-112B14</td></tr>
<tr><td>F1</td><td rowspan="3">112B5-112B14</td><td rowspan="3">90B5-112B14</td><td rowspan="3">112B5-112B14</td><td rowspan="2">90B5-112B14</td><td rowspan="3">112B5-112B14</td></tr>
<tr><td>FC1-FR1</td></tr>
<tr><td>P1</td><td>112B5-112B14</td></tr>
<tr><td>F2</td><td rowspan="3">112B5-112B14</td><td rowspan="3">90B5-112B14</td><td rowspan="2">90B5-112B14</td><td rowspan="3">112B5-112B14</td><td rowspan="3">112B5-112B14</td></tr>
<tr><td>FC2-FR2</td></tr>
<tr><td>P2</td><td>112B5-112B14</td></tr>
<tr><td rowspan="4">VF/VF130/210</td><td>N</td><td>#</td><td>132B5</td><td>#</td><td>#</td><td>#</td></tr>
<tr><td>A</td><td rowspan="3">132B5</td><td rowspan="3">#</td><td rowspan="3">132B5</td><td rowspan="3">132B5</td><td rowspan="3">132B5</td></tr>
<tr><td>V</td></tr>
<tr><td>P</td></tr>
<tr><td rowspan="4">VF/VF130/250</td><td>N</td><td>#</td><td>132B5</td><td>#</td><td>#</td><td>#</td></tr>
<tr><td>A</td><td rowspan="3">132B5</td><td>#</td><td rowspan="3">132B5</td><td rowspan="3">132B5</td><td rowspan="3">132B5</td></tr>
<tr><td>V</td><td>132B5</td></tr>
<tr><td>P</td><td>#</td></tr>
</table>

Consult our Technical Service

12.1 Terminal box position



13 DESIGNATION

GEAR UNIT

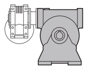
W 63 L1 UF1 — 24 S2 — B3 ....

OPTIONS

MOUNTING ARRANGEMENT

VF/VF, VF/W, W/VF	**CW (1, 2, 3, 4)** **CCW (1, 2, 3, 4)**

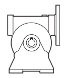
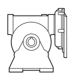
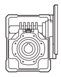
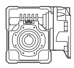
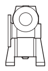
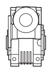
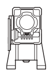
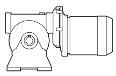
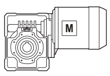
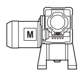
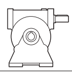
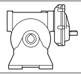
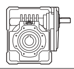
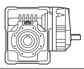
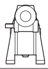
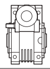
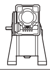
MOUNTING POSITION

VF 27...VF 49 VFR 44, VFR 49	**B3**
W, WR VF 130...VF 250 VFR 130...VFR 250	**B3** (default), **B6**, **B7**, **B8**, **V5**, **V6**
VF/VF VF/W W/VF 	**B3** (default), **B6**, **B7**, **B8**, **V5**, **V6**

MOTOR MOUNTING

B5	(VF 30...VF 250, VFR 49...VFR 250, W, WR)
B14	(VF 30…VF 49, W)

INPUT CONFIGURATION

	VF	VFR	W	WR	VF/VF	VF/W	W/VF
P(IEC)	 P27 (VF 27 only), P56...P225	 P63, P80...P160	 P71...P132	 P63...P112	 P56, P63, P90...P132	 P56...P80	 P71...P112
S_	⊖	 S44 (VFR 44 only)	 S1...S3 S10...S30	⊖	⊖	⊖	 S1...S3 S10...S30
HS							

GEAR RATIO

SHAFT BORE

W 75 VF/W 44/75	**D30** (default), **D28** (on request)

VERSION

TORQUE LIMITER

VF, VFR W, WR	**L1**, **L2**	VF/VF	**LF**

GEAR FRAME SIZE

VF	**27**, **30**, **44**, **49**, **130**, **150**, **185**, **210**, **250**
VFR	**44**, **49**, **130**, **150**, **185**, **210**, **250**
W, WR	**63**, **75**, **86**, **110**

VF/VF	**30/44**, **30/49**, **130/210**, **130/250**
VF/W	**30/63**, **44/75**, **44/86**, **49/110**
W/VF	**63/130**, **86/150**, **86/185**

GEAR TYP

VF, **W**	Worm gearbox
VFR, **WR**	Helical-worm gear unit
VF/VF, **VF/W**, **W/VF**	Combined gearbox

MOTOR | BRAKE

BN 63A 4 230/400-50 IP54 CLF ..... **W** **FD** 3.5 R SB 220 SA .....

OPTIONS

BRAKE SUPPLY

RECTIFIER TYPE AC/DC
NB, **SB**, **NBR**, **SBR**

BRAKE HAND RELEASE
R, **RM**

BRAKE TORQUE

BRAKE TYPE
FD (d.c. brake)
FA (a.c. brake)

TERMINAL BOX POSITION
W (default), **N**, **E**, **S**

MOTOR MOUNTING
— (compact motor)
B5, B14 (IEC - motor)

INSULATION CLASS
CL F standard
CL H option

DEGREE OF PROTECTION
IP55 standard (IP54 - brake motor)

VOLTAGE - FREQUENCY

POLE NUMBER
2, **4**, **6**, **2/4**, **2/6**, **2/8**, **2/12**, **4/6**, **4/8**

MOTOR SIZE
1SC ... 3LB (compact motor)
56A ... 180L (IEC motor) BN 27, BN 44 (special motors)

MOTOR TYPE

MX - MXN = compact 3-phase, class IE3	**ME** = compact 3-phase, class IE2	**M** = compact 3-phase, class IE1
BX - BXN = IEC 3-phase, class IE3	**BE** = IEC 3-phase, class IE2	**BN** = IEC 3-phase, class IE1

14 GEARBOX OPTIONS

LUBRICATION

Gearboxes VF 27, VF 30, VF 44, VF 49 and W 63, W 75, W 86 are usually factory filled with oil in the standard version. Gearboxes VF 130, VF 150, VF 185, VF 210, VF 250 and W 110 are usually supplied unlubricated in the standard version.
However, for all sizes of gearbox factory filled with oil, it is possible to request the supply with more types of oil, selectable according to what is defined in the table (LUB. 01).
The applicability of the LUBRICATION option is described in the table (LUB. 02).

(LUB. 01)

LUBRICATION	Type	Designation	Producer
LH	Polyglicole (PAG)	OMALA S4 WE 150	Shell
LS	Polyglicole (PAG)	OMALA S4 WE 220	
LO* [1]	Polyglicole (PAG)	OMALA S4 WE 320	
LK* [2]	Polyglicole (PAG)	OMALA S4 WE 460	
LA	Food grade	KLUBERSYNTH UH1 6-150	KLÜBER LUBRICATION
LB	Food grade	KLUBERSYNTH UH1 6-220	
LC [1]	Food grade	KLUBERSYNTH UH1 6-320	
LD [1]	Food grade	KLUBERSYNTH UH1 6-460	

* unless otherwise specified, the gearboxes VF 27, VF 30, VF 44 e VF 49 supplied with lubricant use OMALA S4 WE 320 oil.

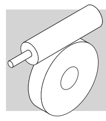
[1] Suggested use for type gearboxes VF, VFR, VF_EP, W, WR, W_EP.
[2] Mandatory duty for gearboxes type VFL, WL.

(LUB. 02)

	LUBRICATION					
	Mounting position					
	B3	**B6**	**B7**	**B8**	**V5**	**V6**
W 110 U-UF-UFC	X	X	X	X	⊖	⊖
VF 130 A-N-P-F-FC	X	X	X	X	⊖	⊖
VF 130 V	⊖	X	X	⊖	X	X
VF 130 FR	X	⊖	⊖	X	⊖	⊖
VF 150 A-N-P-F-FC	X	X	X	X	⊖	⊖
VF 150 V	⊖	X	X	⊖	X	X
VF 150 FR	X	⊖	⊖	X	⊖	⊖
VF 185 A-N-P-F-FC	X	X	X	X	⊖	⊖
VF 185 V	⊖	X	X	⊖	X	X
VF 185 FR	X	⊖	⊖	X	⊖	⊖
VF 210 A-N-P	X	⊖	⊖	X	⊖	⊖
VF 210 V	⊖	⊖	⊖	⊖	X	X
VF 250 A-N-P	X	⊖	⊖	X	⊖	⊖
VF 250 V	⊖	⊖	⊖	⊖	X	X

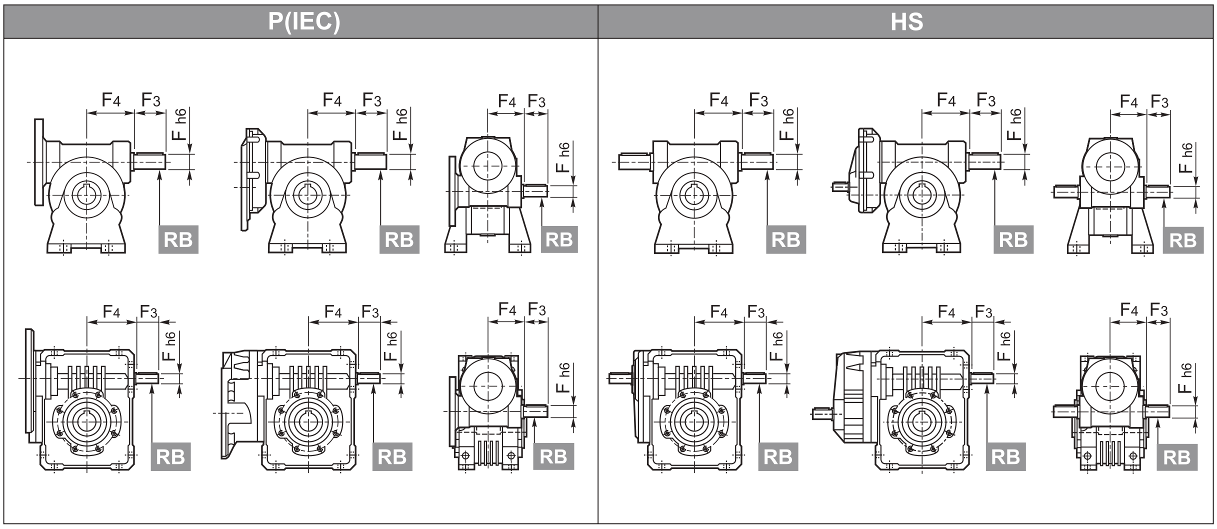
SO

Gear units VF 27 ... VF 49, W 63 ... W 86, usually factory filled with oil, are, in this case, supplied unlubricated.



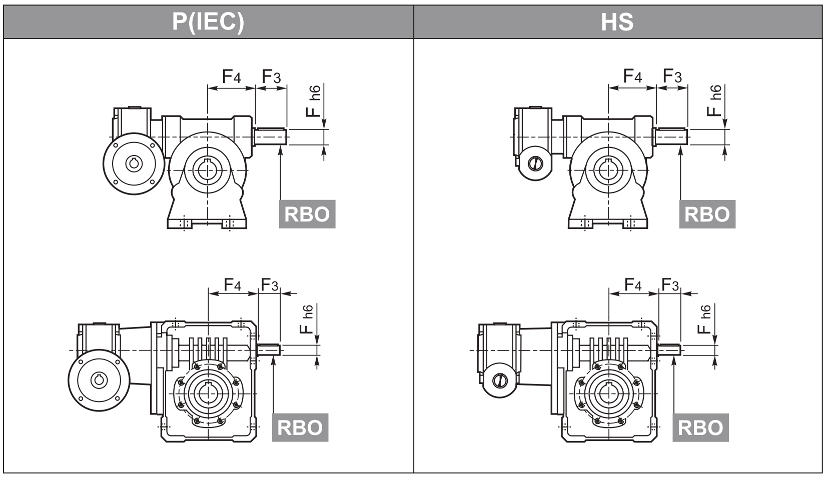
RB

Double-ended input shaft at non-drive- end (with the exception of VF 27).

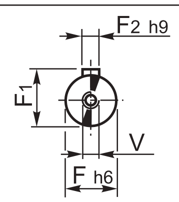


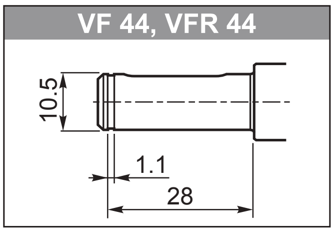
RBO

Double-ended input shaft at N.D.E. of 2nd gearbox (combined execution only)



Extended input shaft dimensions (options RB and RBO)





		F	F_1	F_2	F_3	F_4	V
VF VFR VF/VF	**30**	9	10.2	3	20	50	—
	44	11	12.5	4	30	56	—
	49	16	18	5	40	65	M6
W WR VF/W	**63**	18	20.5	6	40	74	M6
	75	19	21.5	6	40	88.5	M6
	86	25	28	8	50	101.5	M8
	110	25	28	8	60	127.5	M8
VF VFR W/VF	**130**	30	33	8	60	160	M8
	150	35	38	10	65	185	M8
	185	40	43	12	70	214.5	M8
	210	48	51.5	14	82	185	M16x40
	250	55	59	16	82	228	M16x40

A and **P** versions of VF 210 and VF 250 feature the fan cooling as a standard, however forced ventilation is not feasible should the **RB** option be specified.

VV

Fluoro elastomer oil seal on input shaft. The option is available for W110 and for units of the VF series, barring all VF 30's c/w option RB and VF 30_HS.

PV

Oil seals from Fluoro elastomer compound on both the input and the output shaft, barring all VF 30's c/w option RB and VF 30_HS.

KA

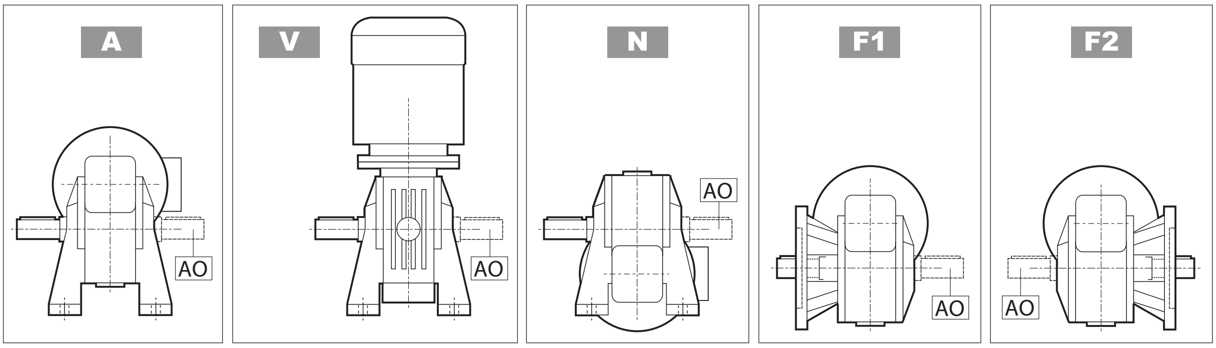
VF_A interchangeability kit. Option is available for units W 63 to W 110.

KV

VF_V interchangeability kit (barring W + option RB and W 110 in B6 mounting position). Option is available for units W 63 to W 110.

AO

Output shaft on side opposite to standard (VF 27).



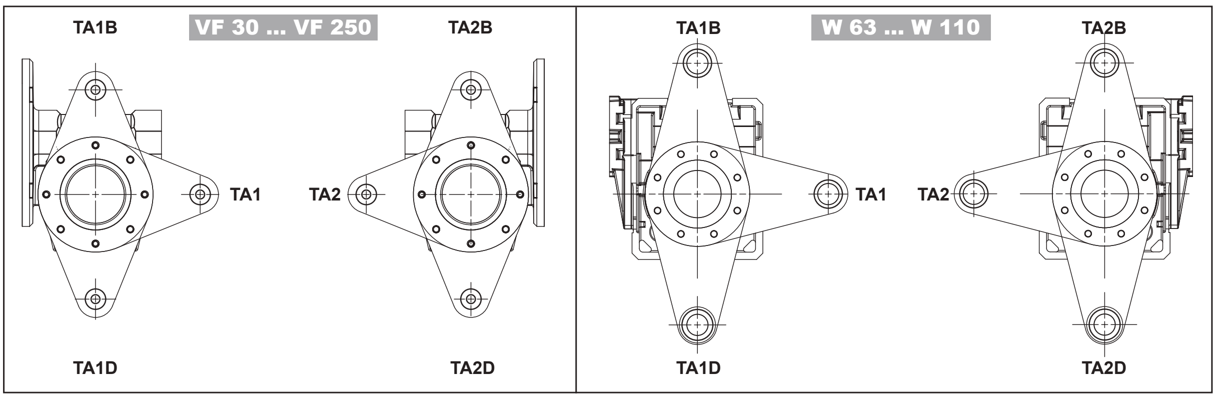
BP

Gearboxes, usually supplied with open breather plug, are supplied with a valve breather plug. The calibration of the valve can vary from 0,10 to 0,15 bar depending on the plug type. The valve opens at intervals and allows venting of internal pressure keeping out foreign bodies.
For option availability see chapter "Mounting positions and service plugs" of the Installation, Operation and Maintenance Manual (available at: www.bonfiglioli.com).

If needed contact Bonfiglioli Technical Service.

TORQUE ARM

Gearboxes VF 30...VF 250 and W 63...W 110 are supplied with the torque arm assembled
It is possible to request the torque arm mounted at several position as shown (TA1, TA2, TA1B, TA2B, TA1D, TA2D).



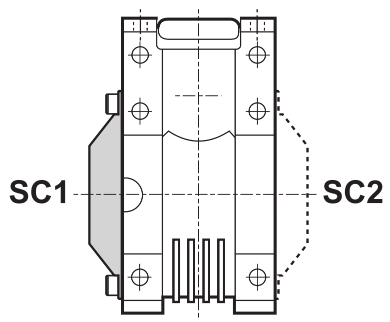
The applicability of the option TORQUE ARM is described in the following table.

		TORQUE ARM	
		TA1 - TA1B - TA1D	TA2 - TA2B - TA2D
VF VFR VF/VF W/VF	VF 30 ... VF 49 F1	⊖	X
	VF 30 ... VF 49 F2	X	⊖
	VF 44 - VF 49 FA1	⊖	X
	VF 44 - VF 49 FA2	X	⊖
	VF 30 ... VF 49 P1 VF 210 - VF 250 P1	X	X
	VF 130 ... VF 185 P1	X	⊖
	VF 130 ... VF 185 P2	⊖	X
W WR VF/W	W 63 ... W 110 U	X	X
	W 63 ... W 110 UF1 - UFC1	⊖	X
	W 63 ... W 110 UF2 - UFC2	X	⊖
	W 75 UFCR1	⊖	X
	W 75 UFCR2	X	⊖

The option cannot be assembled on gearboxes VFL - WL on the side where the torque limiter is provided.
The option is not compatibile with the PROTECTION CAP if provided on the same side.

PROTECTION CAP

Gearboxes W-WR 63-75-86-110 are supplied with a protection cap for the output axis (in plastic material).
It is possible to request the torque arm mounted at several position as shown (SC1, SC2).



The applicability of the option PROTECTION CAP is described in the following table.

		PROTECTION CAP	
		SC1	SC2
W WR VF/W	W 63 ... W 110 U	X	X
	W 63 ... W 110 UF1 - UFC1	⊖	X
	W 63 ... W 110 UF2 - UFC2	X	⊖
	W 75 UFCR1	⊖	X
	W 75 UFCR2	X	⊖

The option cannot be assembled on gearboxes VFL - WL on the side where the torque limiter is provided.
The option is not compatibile with the TORQUE ARM if provided on the same side.

SURFACE PROTECTION

When no specific protection class is requested, the painted (ferrous) surfaces of gearboxes are protected to at least corrosivity class C2 (UNI EN ISO 12944-2). For improved resistance to atmospheric corrosion, gearboxes can be delivered with **C3** and **C4** surface protection, obtained by painting the complete gearbox.

SURFACE PROTECTION	Typical environments	Maximum surface temperature	Corrosivity class according to UNI EN ISO 12944-2
C3	Urban and industrial environments with up to 100% relative humidity (medium air pollution)	120°C	C3
C4	Industrial areas, coastal areas, chemical plant, with up to 100% relative humidity (high air pollution)	120°C	C4

Gearboxes with optional protection to class **C3** or **C4** are available in a choice of colours.
If no specific colour is requested (see the “PAINTING” option) gearboxes are finished in RAL 7042.
Gearboxes can also be supplied with surface protection for corrosivity class **C5** according to UNI EN ISO 12944-2. Contact our Technical Service for further details.

PAINTING

Gearboxes with optional protection to class C3 or C4 are available in the colours listed in the following table.

PAINTING	Colour	RAL number
RAL7042*	Traffik Grey A	7042
RAL5010	Gentian Blue	5010
RAL9005	Jet Black	9005
RAL9006	White Aluminium	9006
RAL9010	Pure White	9010
RAL7035	Light Grey	7035
RAL7001	Silver Grey	7001
RAL5015	Sky Blue	5015
RAL7037	Dusty Grey	7037
RAL5024	Pastel Blue	5024

* Gearboxes are supplied in this standard colour if no other colour is specified.

NOTE – “PAINTING” options can only be specified in conjunction with “SURFACE PROTECTION” options.

CERTIFICATES

AC - Certificate of compliance
The document certifies the compliance of the product with the purchase order and the construction in conformity with the applicable procedures of the Bonfiglioli Quality System.

CC - Inspection certificate
The document entails checking on order compliance, the visual inspection of external conditions and of mating dimensions. Checking on main functional parameters in unloaded conditions is also performed along with oil seal proofing, both in static and in running conditions. Units inspected are sampled within the shipping batch and marked individually.

Motor options
For more detailed information please consult the Electric Motor section in this book.

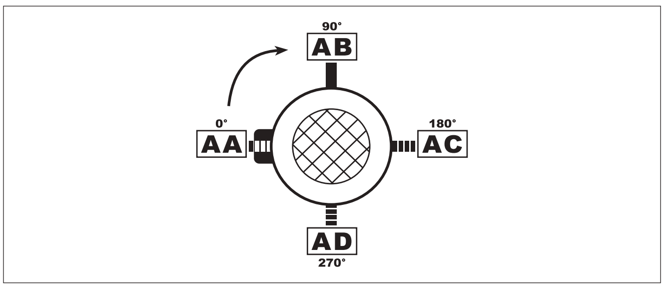
15 MOUNTING POSITION AND TERMINAL BOX ANGULAR LOCATION

Location of motor terminal box can be specified by viewing the motor from the fan side; standard location is shown in black (W).

The terminal box positions indicated do not apply to VFR 44. Please refer to page 21 and pages 112-113 for designation and identification of design version.

Angular location of the brake release lever.

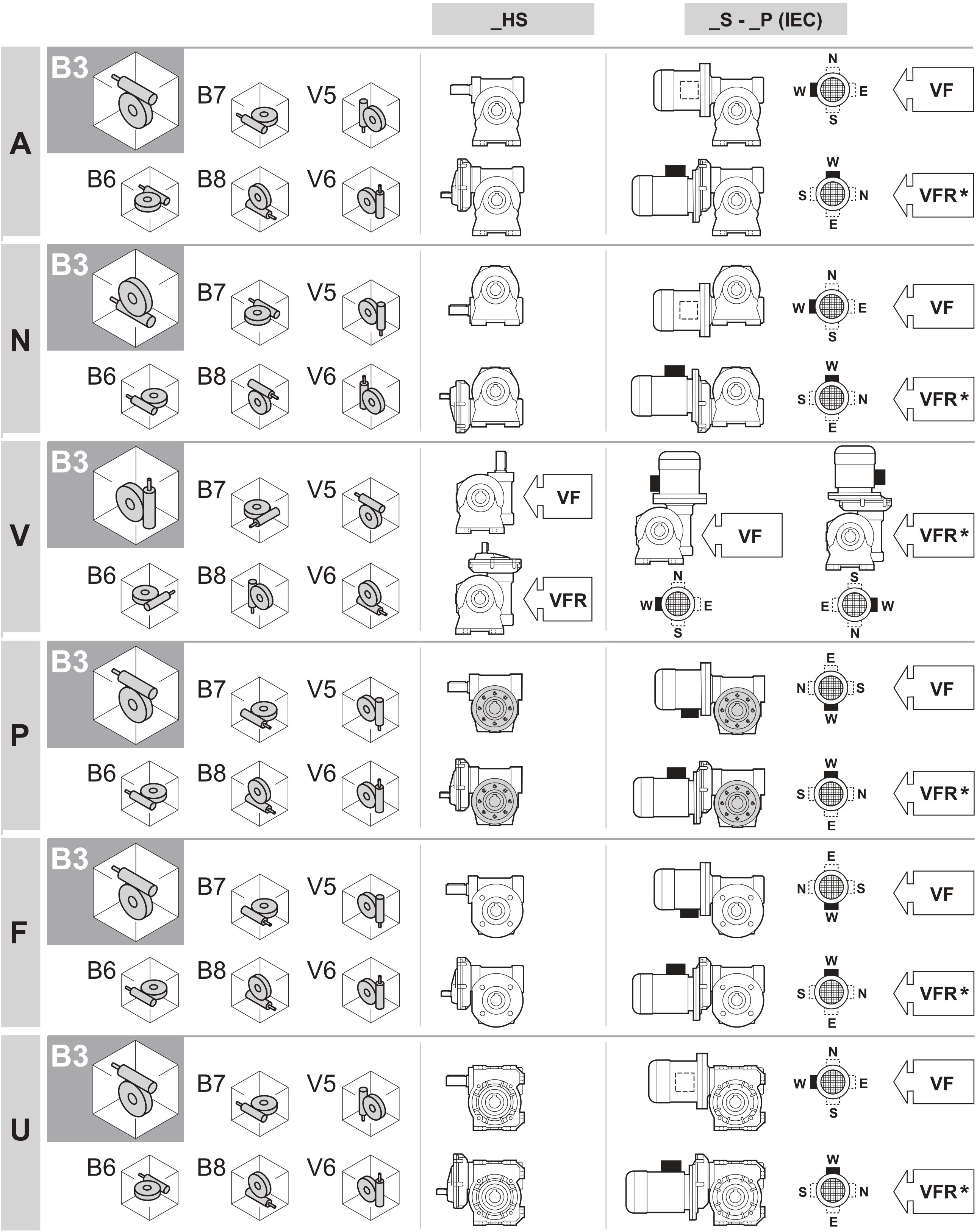
Unless otherwise specified, brake motors have the manual device side located, 90° apart from terminal box.
Different angles can be specified through the relevant options available.



The following pages describe the mounting positions of VF and W series gearboxes.

In the case of VF/VF, VF/W and W/VF gearbox combinations, mounting positions refer to the second (machine side) gearbox. Refer to the “Mounting version” chapter for details of the first (input side) gearbox.

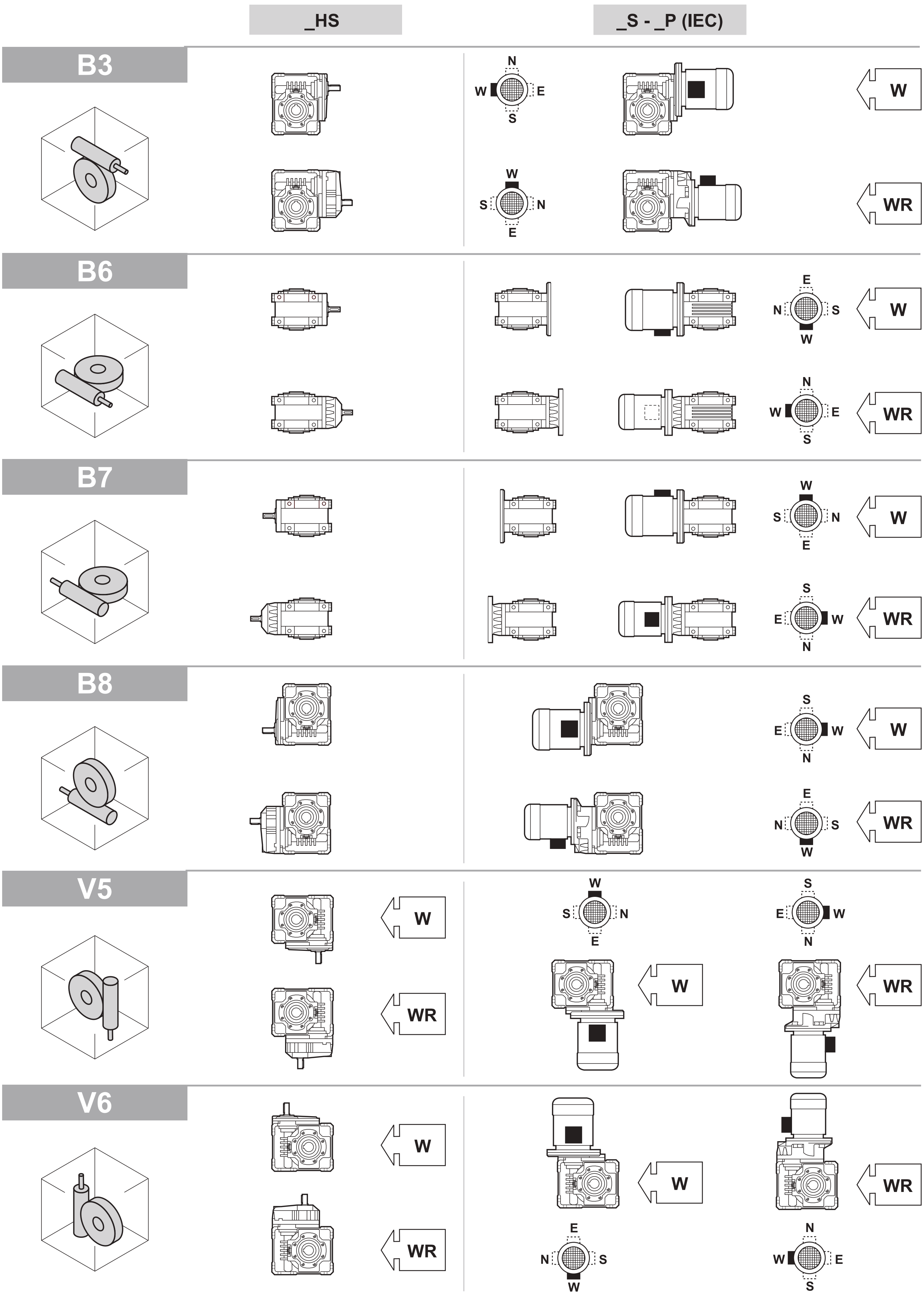
VF 27 _ ... VF 49 _ VFR 44 _ , VFR 49 _



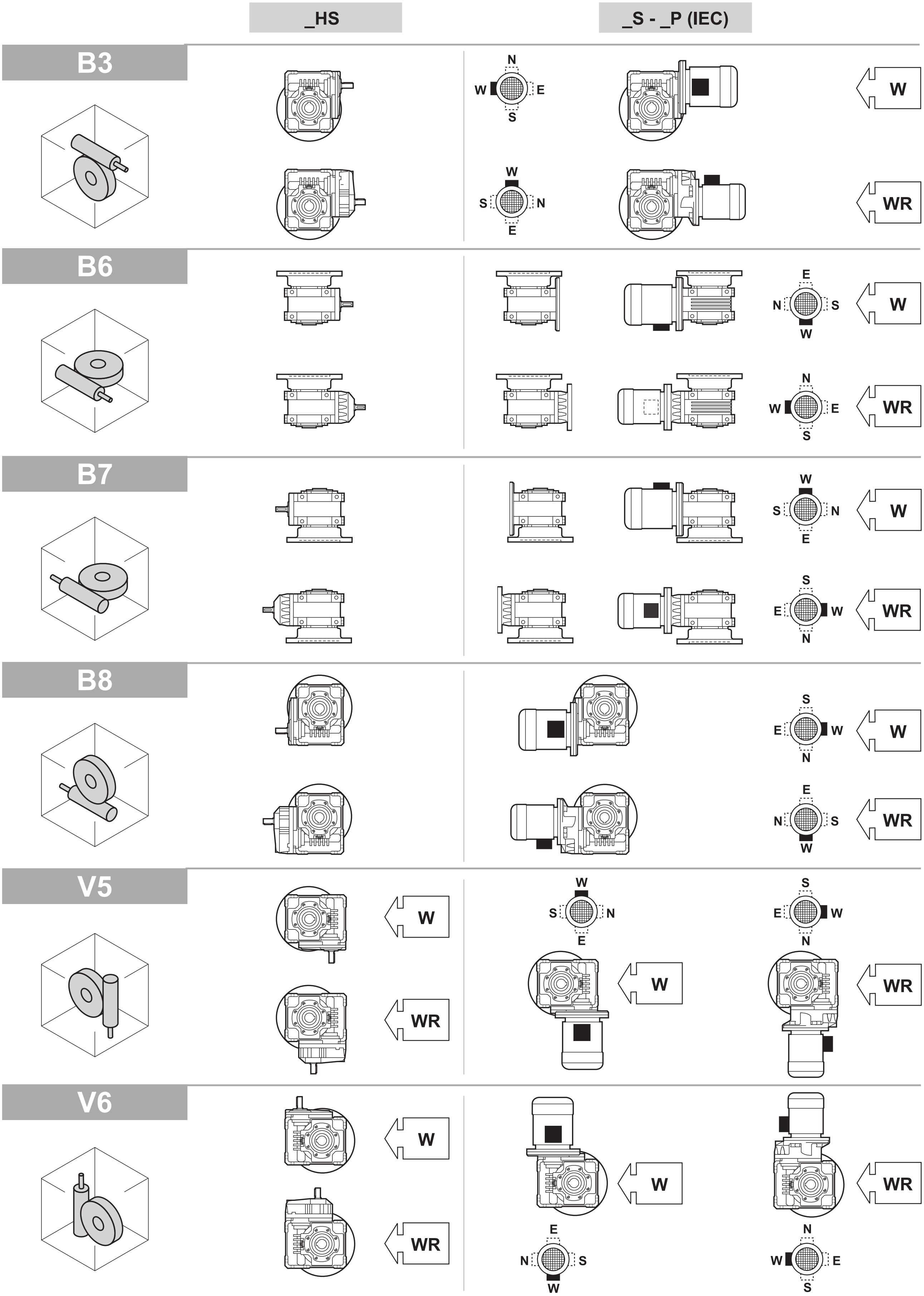
Base mounting position.
Gearboxes are plated only for base mounting position (B3). They can nevertheless also be installed in any of the derived positions (B6, B7, B8, V5, V6). Mounting position may not be changed after installation.

*** The terminal box positions indicated do not apply to VFR 44. Please refer to page 21 and pages 112-113 for designation and identification of design version.**

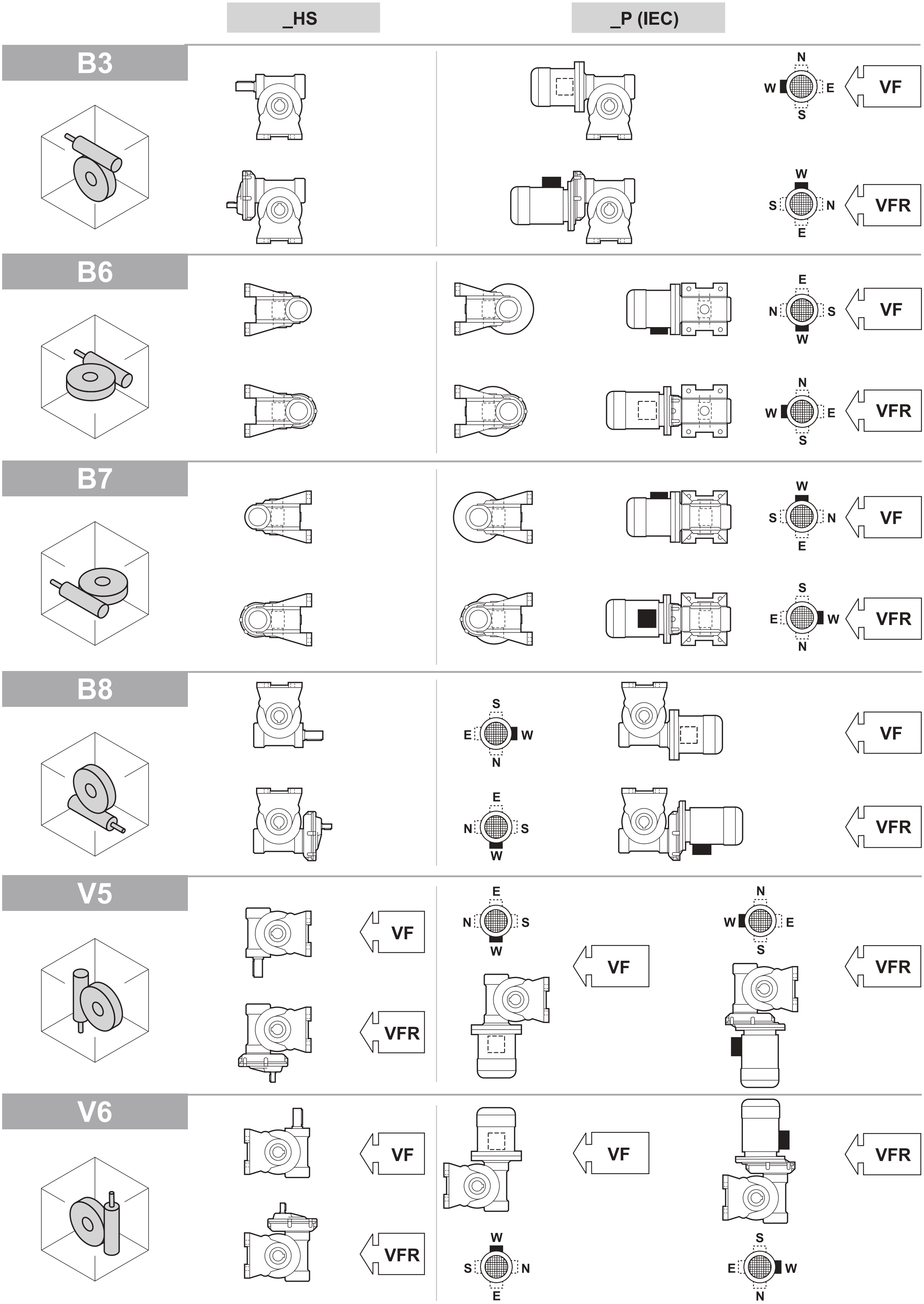
W 63 U ... W 110 U   WR 63 U ... WR 110 U



W 63 UF/UFC ... W 110 UF/UFC   WR 63 UF/UFC ... WR 110 UF/UFC



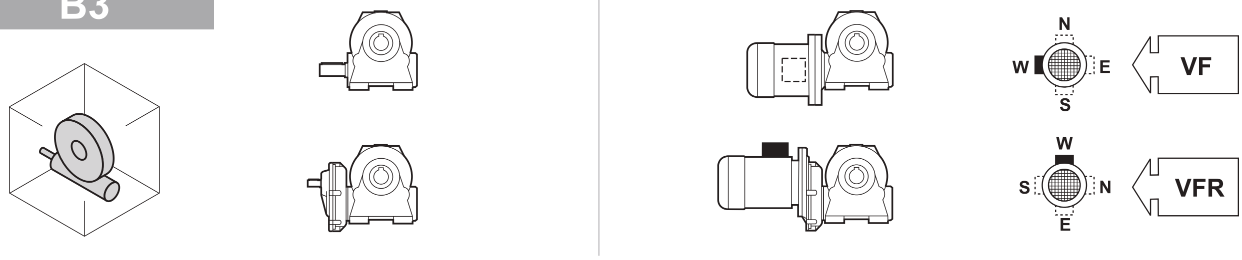
VF 130 A ... VF 250 A   VFR 130 A ... VFR 250 A



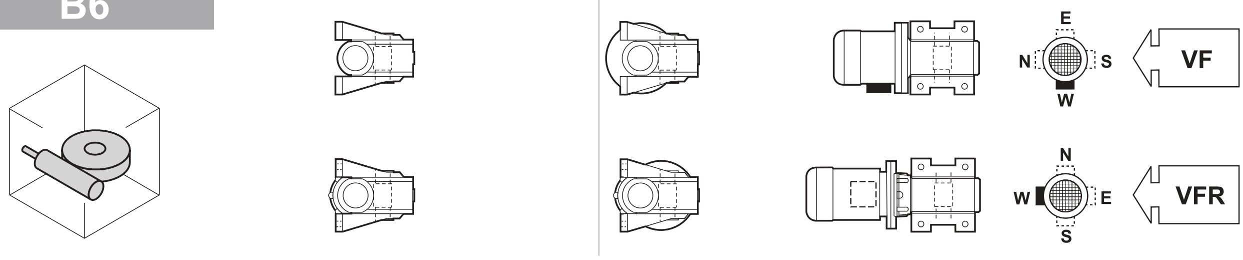
VF 130 N ... VF 250 N VFR 130 N ... VFR 250 N

_HS	_P (IEC)

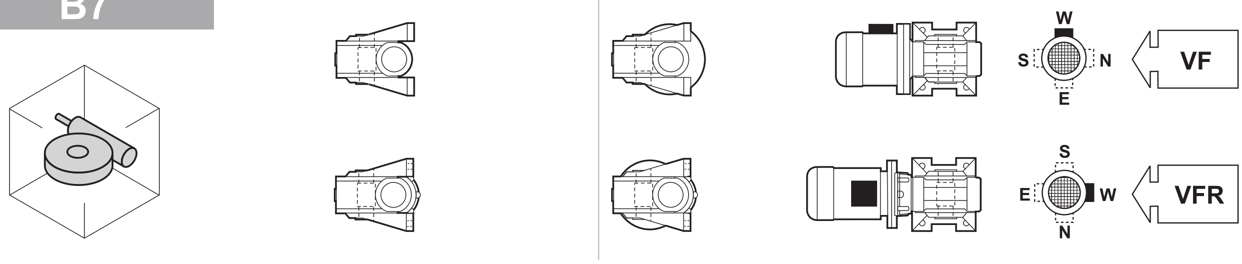
B3



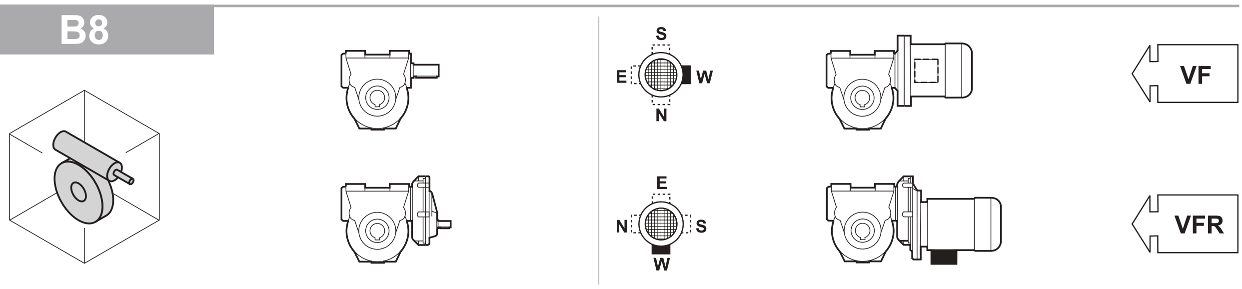
B6



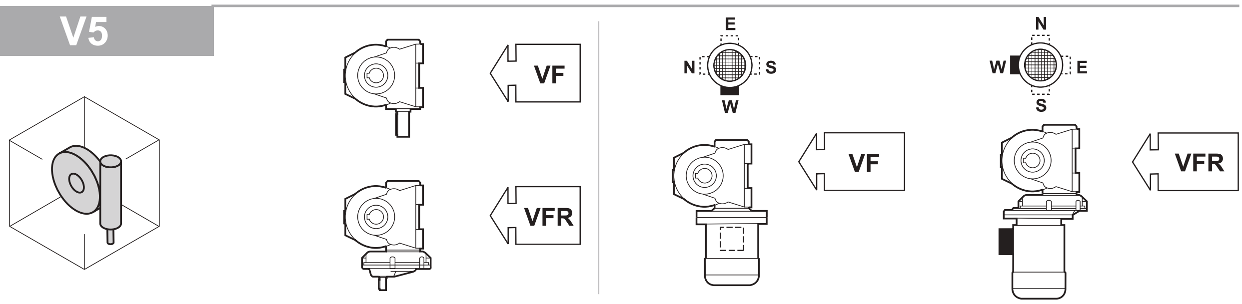
B7



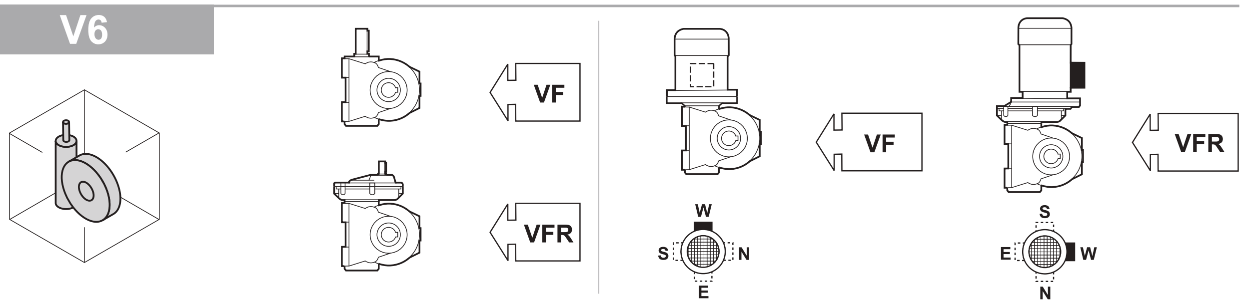
B8



V5



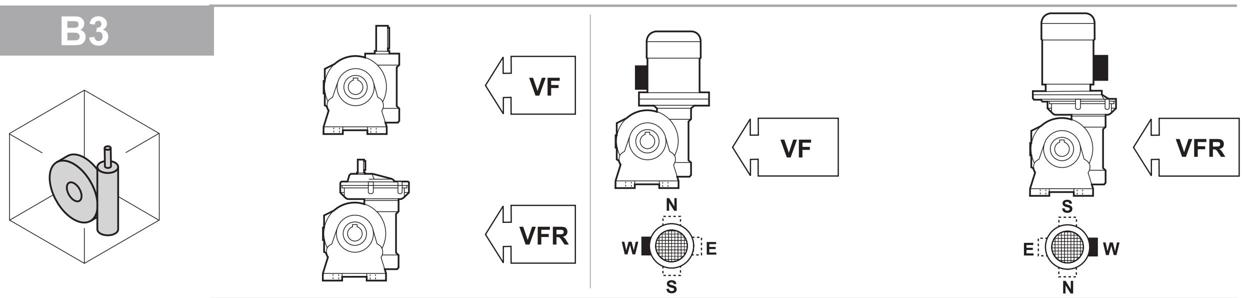
V6



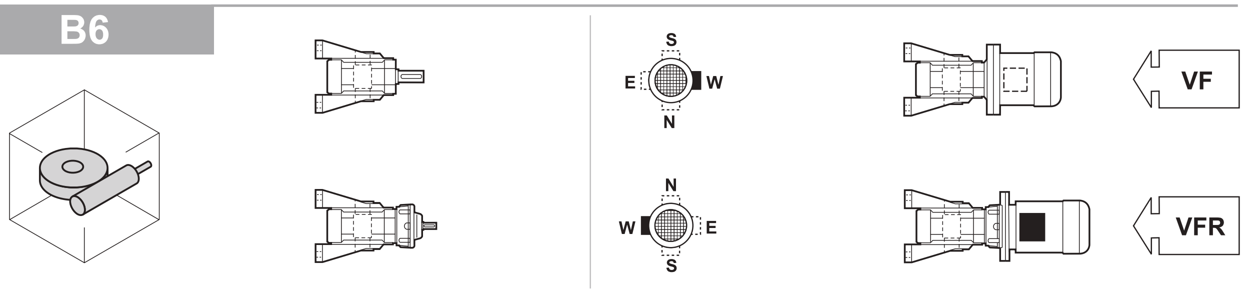
VF 130 V ... VF 250 V   VFR 130 V ... VFR 250 V

	_HS	_P (IEC)

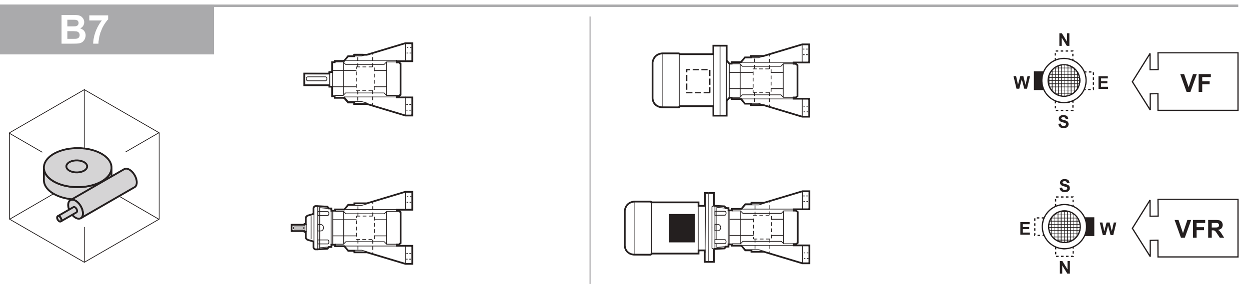
B3



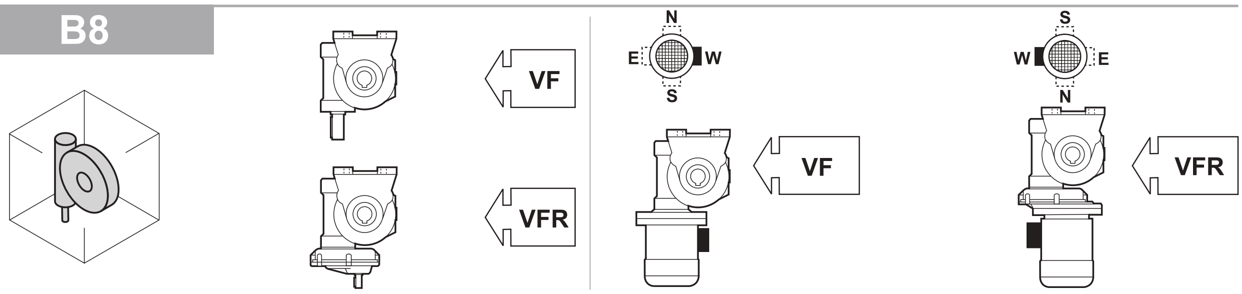
B6



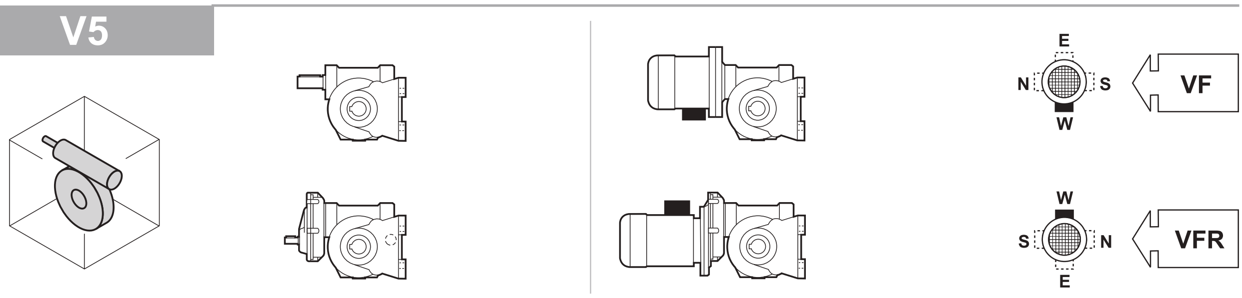
B7



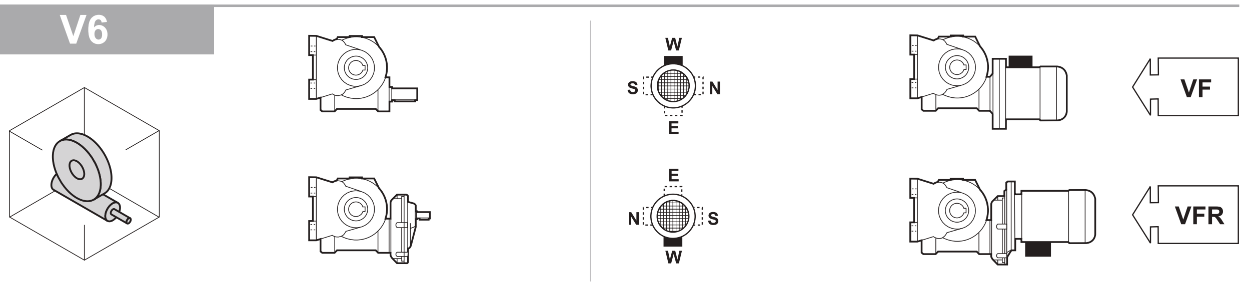
B8



V5



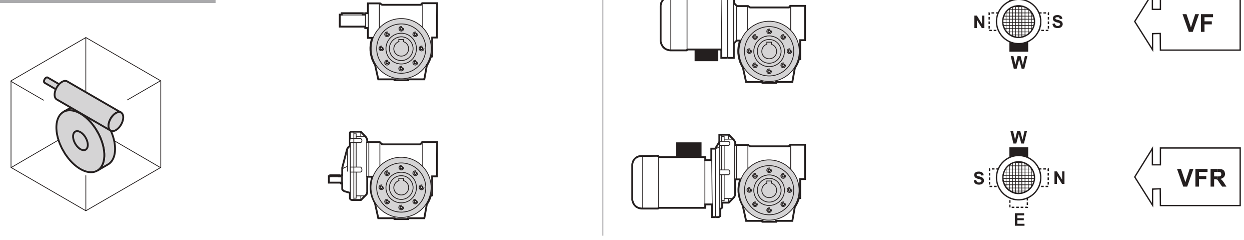
V6



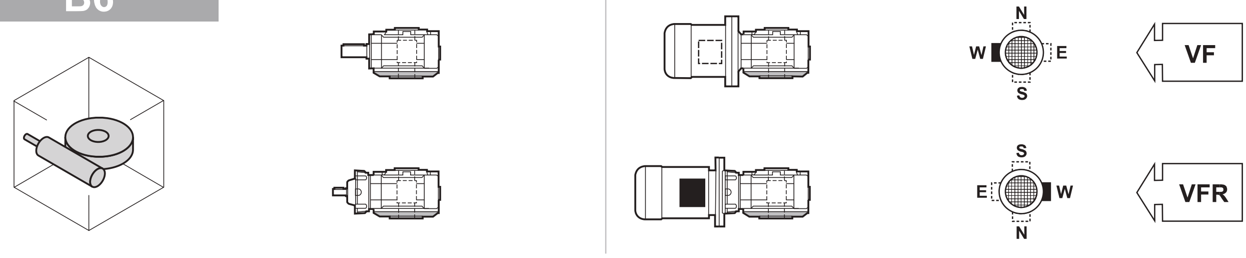
VF 130 P ... VF 250 P VFR 130 P ... VFR 250 P

_HS	_P (IEC)

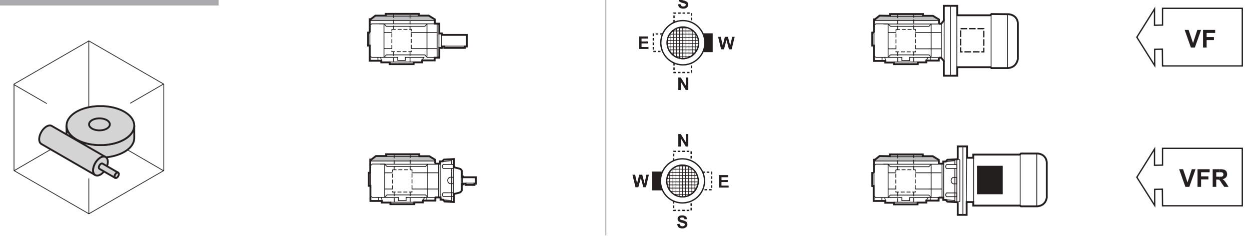
B3



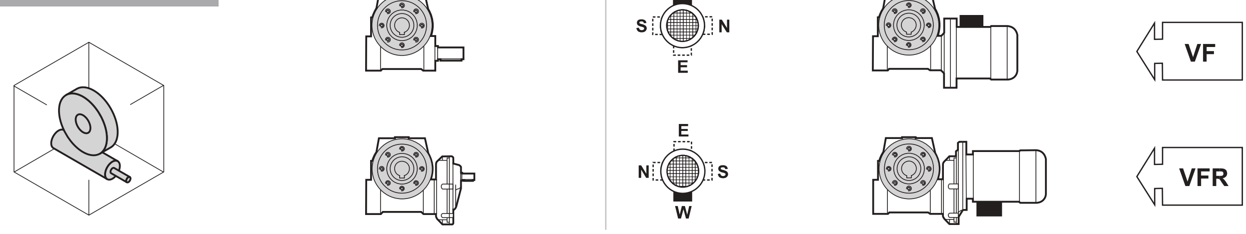
B6



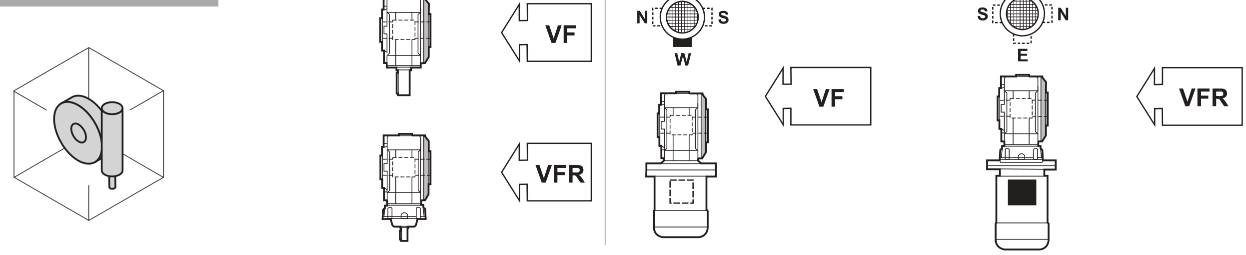
B7



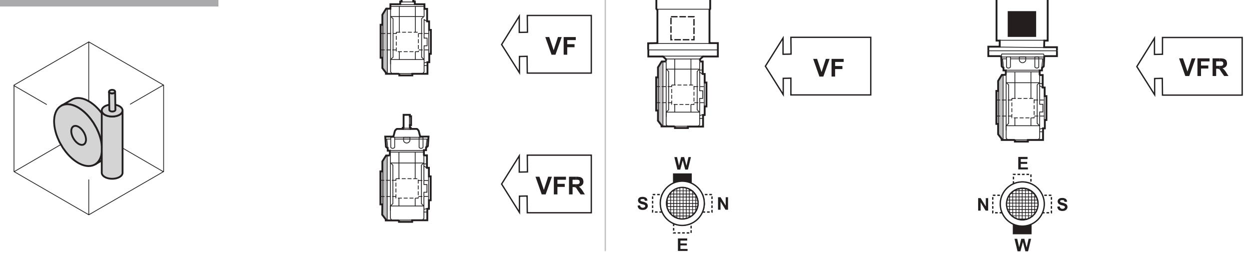
B8



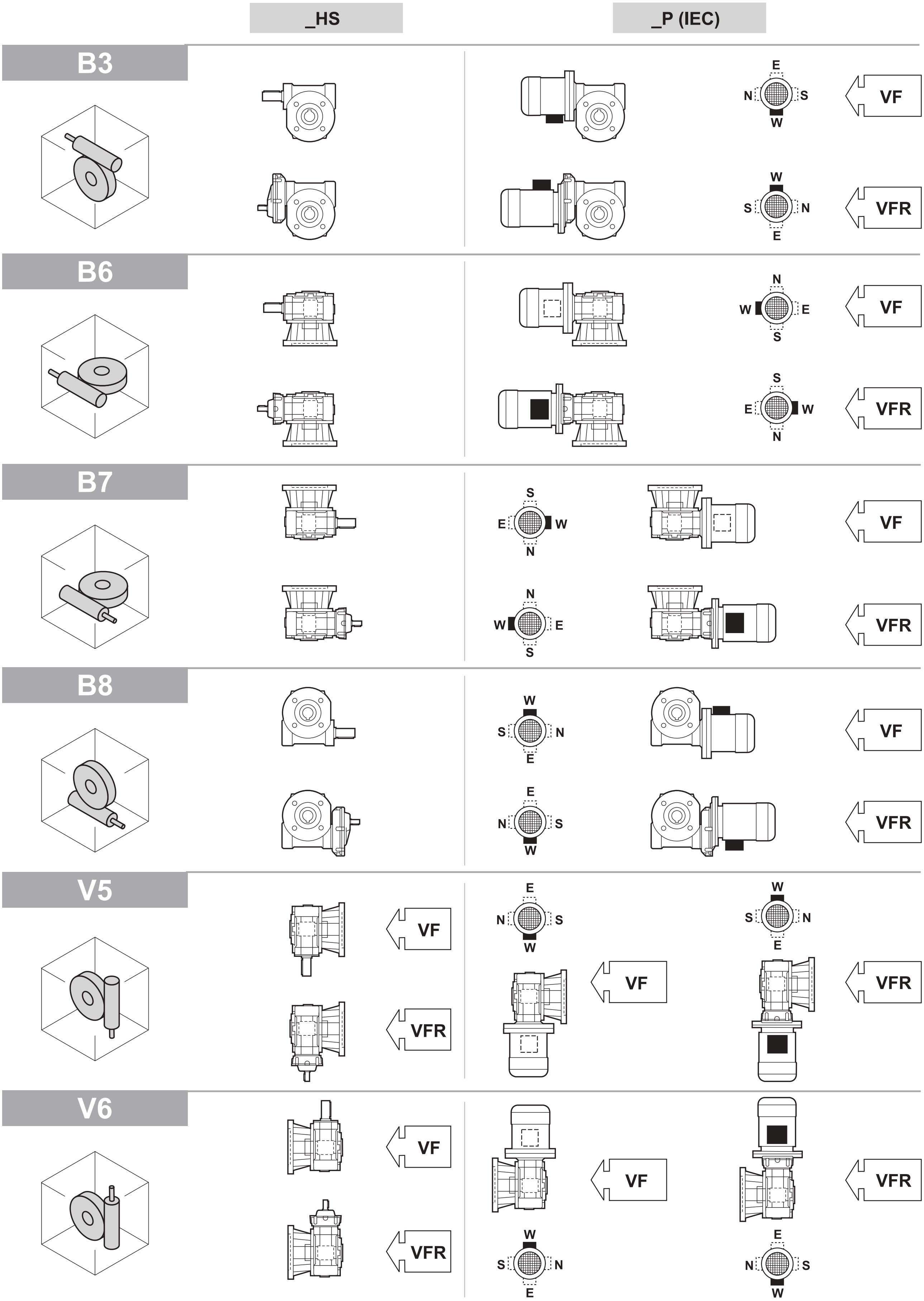
V5



V6



VF 130 F ... VF 250 F VFR 130 F ... VFR 250 F

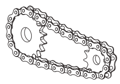
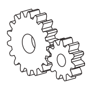
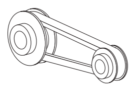


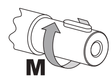
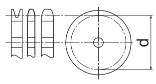
16 OVERHUNG LOADS

16.1 Calculating the resulting overhung load

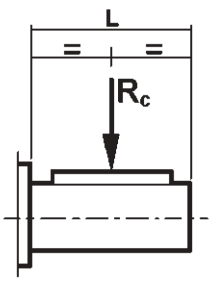
External transmissions keyed onto input and/or output shaft generate loads that act radially onto same shaft.
Resulting shaft loading must be compatible with both the bearing and the shaft capacity.
Namely shaft loading (R_{c1} for input shaft, R_{c2} for output shaft), must be equal or lower than admissible 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:

$$R_c = \frac{2000 \times M \times K_r}{d}$$

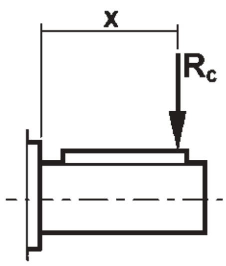
$K_r = 1$	
$K_r = 1.25$	
$K_r = 1.5 - 2.0$	

M [Nm]	
d [mm]	

16.2 Overhung loading verification



$$R_c \leq R_n$$



$$R_x = R_n \times \frac{a}{b + x}$$

$$R_c \leq R_x$$

16.3 Load location factor

	Output shaft		R_{n2} max [N]
	a	**b**	
VF 27	56	44	600
VF 30	60	45	1700
VF 44 - VFR 44 - VF/VF 30/44	71	51	2500
VF 49 - VFR 49 - VF/VF 30/49	99	69	3450
W 63 - WR 63 - VF/W 30/63	132	102	5000
W 75 - WR 75 - VF/W 44/75	139	109	6200
W 86 - WR 86 - VF/W 44/86	149	119	7000
W 110 - WR 110 - VF/W 49/110	173	136	8000
VF 130 - VFR 130 - W/VF 63/130	182	142	13800
VF 150 - VFR 150 - W/VF 86/150	198	155	16000
VF 185 - VFR 185 - W/VF 86/185	220	170	19500
VF 210 - VFR 210 - W/VF 130/210	268	203	34500
VF 250 - VFR 250 - W/VF 130/250	334	252	52000

17 THRUST LOADS

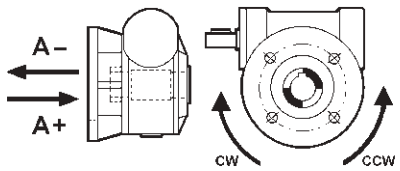
Permissible thrust loads on input [An1] and output [An2] shafts are obtained from the radial loading for the shaft under consideration [Rn1] and [Rn2] through the following equation:

$$A_{n1} = R_{n1} \times 0{,}2$$
$$A_{n2} = R_{n2} \times 0{,}2 \qquad (14)$$

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.

17.1 Maximum axial loading for FR version

The FR version is designed to meet the requirements of applications entailing very high axial loads. It is available for units size 130, 150 and 185.
This version, within the same external dimensions as the FC version, is capable of bearing axial loads (well above those of the standard versions) indicated in the table below referred to the output shaft, gear ratio [i] and +/- direction of rotation.

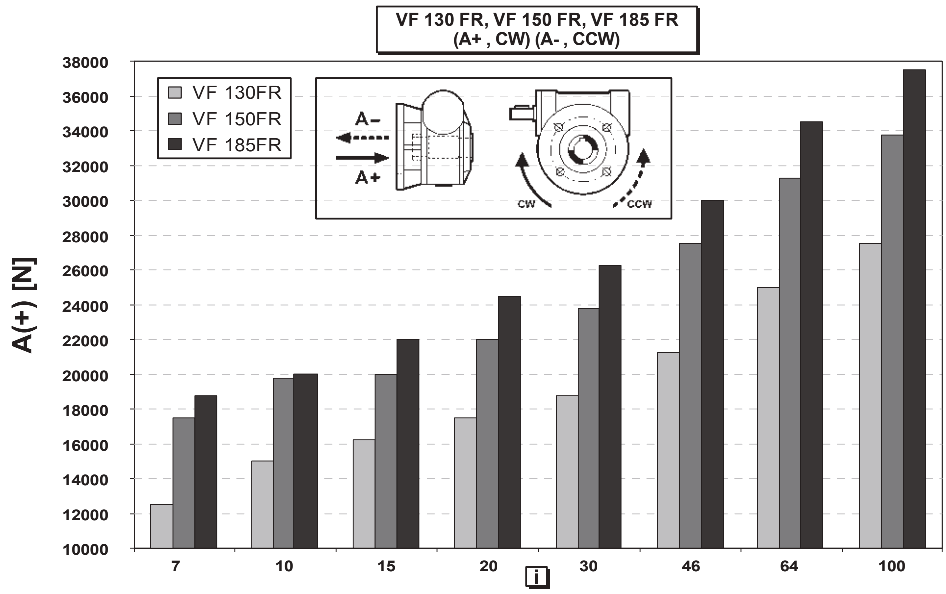


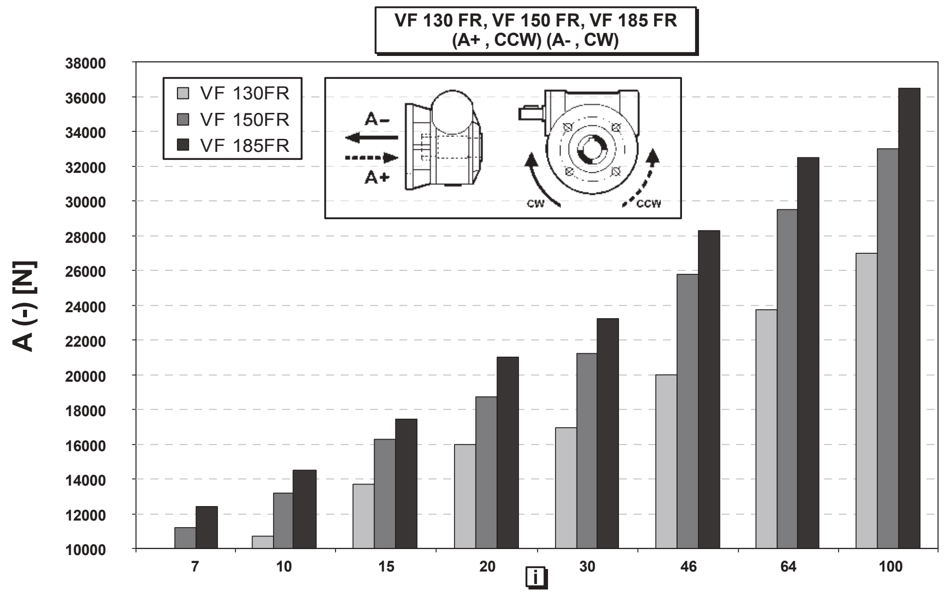
A+ = Compressive load

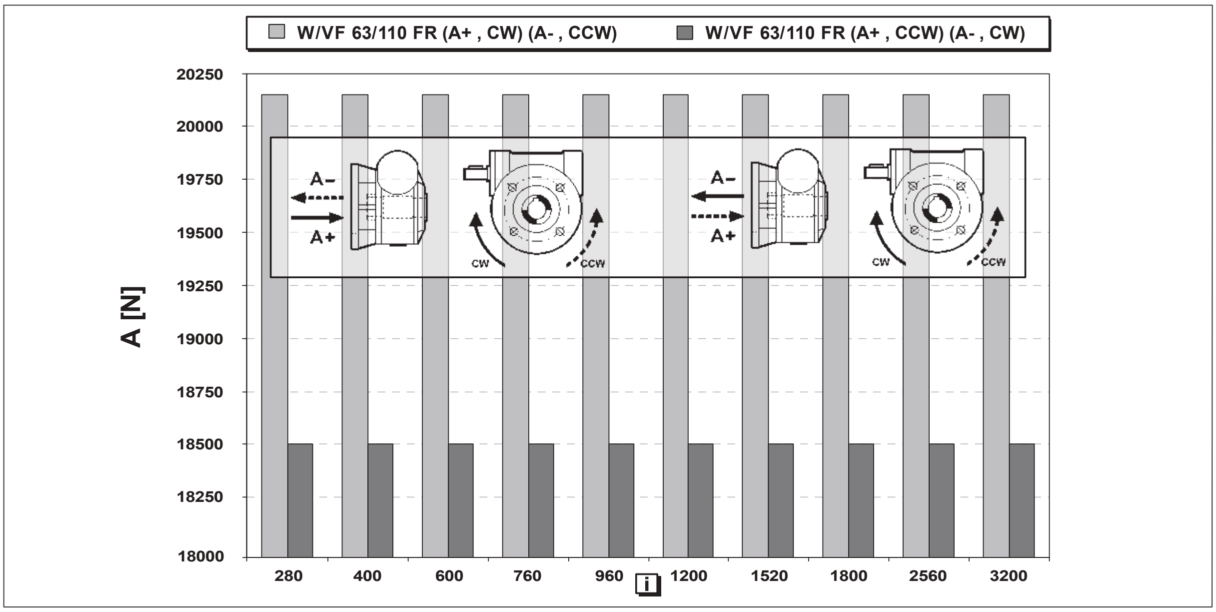
A- = Pull load

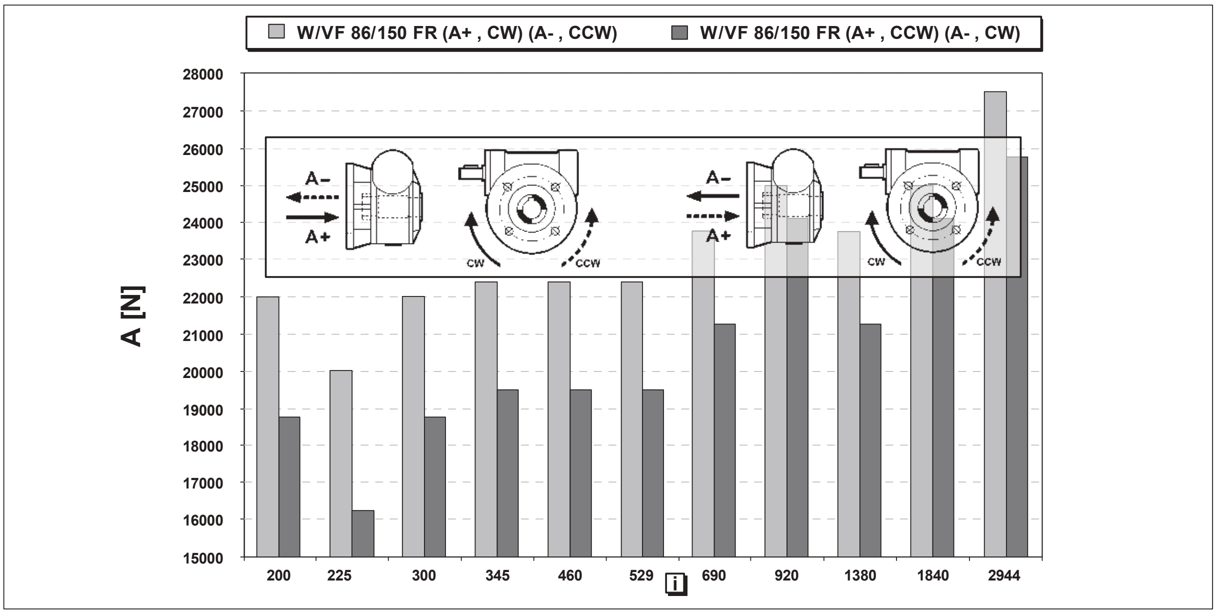
CW = Clockwise rotation

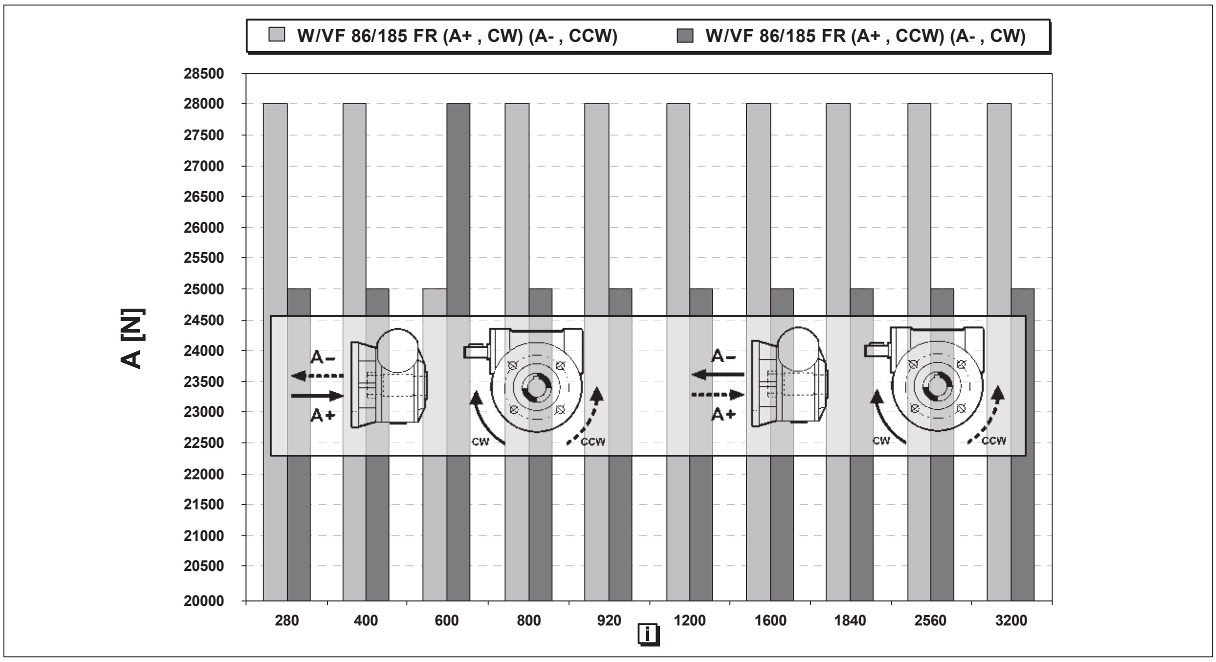
CCW = Counterclockwise rotation






W/VF 63/110 FR (A+ , CW) (A- , CCW)
W/VF 63/110 FR (A+ , CCW) (A- , CW)
A [N]
20250
20000
19750
19500
19250
19000
18750
18500
18250
18000
A–
A+
CW
CCW
280
400
600
760
960
1200
1520
1800
2560
3200
i

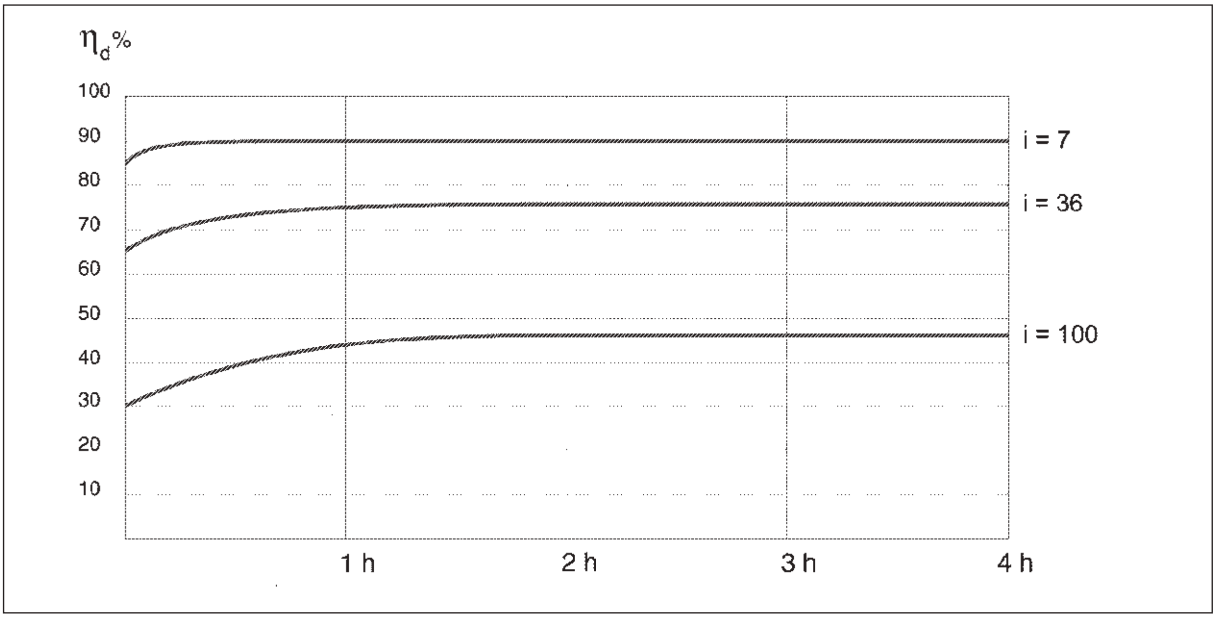

W/VF 86/150 FR (A+ , CW) (A- , CCW)
W/VF 86/150 FR (A+ , CCW) (A- , CW)
A [N]
28000
27000
26000
25000
24000
23000
22000
21000
20000
19000
18000
17000
16000
15000
A–
A+
CW
CCW
200
225
300
345
460
529
690
920
1380
1840
2944
i


W/VF 86/185 FR (A+ , CW) (A- , CCW)
W/VF 86/185 FR (A+ , CCW) (A- , CW)
A [N]
28500
28000
27500
27000
26500
26000
25500
25000
24500
24000
23500
23000
22500
22000
21500
21000
20500
20000
A–
A+
CW
CCW
280
400
600
800
920
1200
1600
1840
2560
3200
i

18 EFFICIENCY

Efficiency [η] depends on the following parameters:
- helix angle of gearing
- driving speed
- running-in of gearing

In this connection, remember that the optimum value is reached after several hours of running-in and is reached later on in steady-state operating gearboxes as shown in the table below.
Therefore, in applications calling for intermittent duty (e.g. hoisting, drives, etc.), motor power must be adequately increased to compensate for the gearbox's low efficiency at start-up.
Torque values $\mathbf{M_{n2}}$ indicated in the catalogue are calculated by considering the steady-state performance of the gearboxes.
The diagram shows indicatively the time required to reach the maximum value of dynamic efficiency.



19 NON-REVERSING

Some applications may require occasionally the gearbox to be back-driven by the load through the output shaft, some others instead require the gearbox to lock and hold the load when electric power switches off.
The factor affecting reversibility of worm gears the most is the efficiency with more precisely static efficiency $\boldsymbol{\eta_s}$ affecting static reversibility and dynamic efficiency $\boldsymbol{\eta_d}$ affecting dynamic reversibility.
Generally only gear ratios i=64 and higher offer locking properties with the grater ratios being totally non reversible.

19.1 Static non-reversing

In this condition the gear units cannot be driven back from the output shaft, however slow running-back may still occur if the worm gears are subject to vibrations.
The theoretical condition for the static non-reversing to occur is:

$$\eta_s < 0.4 - 0.5 \qquad (15)$$

the η_s value for each worm gear can be found in the respective rating chart.
The opposite situation, i.e. static reversibility applies, theoretically when:

$$\eta_s > 0.5 \qquad (16)$$

19.2 Dynamic non-reversing

The load-holding capability is dependent on drive speed, dynamic efficiency and, if any, vibrations.
The result of non-reversibility is the locking of the output shaft is no longer driven. Partial or total non reversibility should be taken into consideration particularly when high inertia loads are driven, because of the considerable overloads that may apply to the gearbox.

$$\eta_d < 0.5 \qquad (17)$$

Where η_d is the value for the dynamic efficiency of the gear unit in the actual operating conditions.
Value can be found in the speed reducer rating chart.
The opposite condition, i.e. dynamic reversing is physically possible when:

$$\eta_d > 0.5 \qquad (18)$$

Table below is a guideline to the various degrees of reversibility for each drive size and gear ratio (data refer to the worm gearing only).
Values for reversibility are indicative as this may be affected by vibrations, operating temperature, lubricating conditions, gear wear, etc.

As it is virtually impossible to provide and guarantee total non reversing, we recommend the use of an external brake with sufficient capability to prevent vibrations induced starting, where these circumstances are required.

Backdriving														
		VF				**W**				**VF**				
Static reversing	Dynamic reversing	**27**	**30**	**44**	**49**	**63**	**75**	**86**	**110**	**130**	**150**	**185**	**210**	**250**
yes	**yes**	—	—	7	7	7	7	7	7	7	7	7	7	7
yes	**yes**	7 10	7 10	10 14	10 14	10 12 15	10 15	10 15 20 23	10 15 20 23	10 15 20 23	10 15 20 23	10 15 20	10 15 20	10 15 20
uncertain	**yes**	15 20 30	15 20 30	20 28 35	18 24 28 36	19 24 30 38	20 25 30 40	30 40 46 56	30 40 46 56	30 40 46 56 64	30 40 46 56 64	30 40 50 60	30 40 50	30 40 50 60
no	**low**	40 60	40 60	46 60 70	45 60 70	45 64 80	50 60 80	64 80 100	64 80 100	80 100	80 100	80 100	60 80 100	80 100
no	**no**	70	70	100	80 100	100	100	—	—	—	—	—	—	—

20 ANGULAR BACKLASH

The following chart shows indicative values for the angular backlash at output shaft of W gear units (input blocked).
Measurement is taken with 5 Nm torque applying to output shaft.

Angular backlash (input shaft locked)		
	Δγ [’]	**Δγ [rad]**
VF 30	33’ ± 10’	0.00873 ± 0.00291
VF 44	25’ ± 7’	0.00728 ± 0.00145
VFR 44	30’ ± 10’	0.00873 ± 0.00291
VF 49	22’ ± 7’	0.00728 ± 0.00145
VFR 49	30’ ± 10’	0.00873 ± 0.00291
W 63	20’ ± 4’	0.00582 ± 0.00145
WR 63	25’ ± 5’	0.00728 ± 0.00145
W 75	18’ ± 4’	0.00582 ± 0.00145
WR 75	22’ ± 5’	0.00640 ± 0.00145
W 86	15’ ± 4’	0.00436 ± 0.00145
WR 86	20’ ± 5’	0.00582 ± 0.00145
W 110	9’ ± 2’	0.00436 ± 0.00145
WR 110	18’ ± 5’	0.00524 ± 0.00145
VF 130	12’ ± 3’	0.00349 ± 0.00087
VFR 130	15’ ± 3’	0.00436 ± 0.00087
VF 150	12’ ± 3’	0.00349 ± 0.00087
VFR 150	15’ ± 3’	0.00436 ± 0.00087
VF 185	10’ ± 3’	0.00291 ± 0.00087
VFR 185	13’ ± 3’	0.00378 ± 0.00087
VF 210	Consult factory	
VFR 210		
VF 250		
VFR 250		

VF 27

13 Nm

VF 27	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	Page
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
VF 27_7	7	67	400	7	0.34	—	330	86	200	9	0.23	35	410	83	187
VF 27_10	10	62	280	7	0.24	—	400	84	140	9	0.16	30	500	80	
VF 27_15	15	54	187	7	0.17	—	480	79	93	9	0.12	—	600	75	
VF 27_20	20	49	140	7	0.14	—	540	76	70	9	0.09	—	600	71	
VF 27_30	30	38	93	7	0.10	—	600	69	47	9	0.07	—	600	62	
VF 27_40	40	33	70	7	0.08	—	600	64	35	9	0.06	—	600	57	
VF 27_60	60	26	47	7	0.06	—	600	56	23.3	9	0.04	—	600	49	
VF 27_70	70	24	40	7	0.06	—	600	53	20.0	9	0.04	—	600	45	

VF 27	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	Page
			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
VF 27_7	7	67	129	10	0.17	90	480	81	71	11	0.11	90	600	79	187
VF 27_10	10	62	90	11	0.13	20	570	78	50	12	0.08	90	600	76	
VF 27_15	15	54	60	11	0.09	—	600	72	33	12	0.06	90	600	69	
VF 27_20	20	49	45	11	0.08	—	600	68	25.0	12	0.05	90	600	65	
VF 27_30	30	38	30.0	11	0.06	—	600	59	16.7	13	0.04	—	600	55	
VF 27_40	40	33	22.5	11	0.05	—	600	54	12.5	13	0.04	—	600	50	
VF 27_60	60	26	15.0	11	0.04	—	600	45	8.3	12	0.02	—	600	41	
VF 27_70	70	24	12.9	10	0.03	—	600	42	7.1	11	0.02	—	600	38	

VF 30

24 Nm

VF 30	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	Page
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
VF 30_7	7	69	400	12	0.58	120	510	87	200	16	0.41	140	630	84	188
VF 30_10	10	64	280	12	0.41	70	620	85	140	16	0.30	80	770	81	
VF 30_15	15	56	187	14	0.34	—	720	81	93	18	0.24	—	910	76	
VF 30_20	20	51	140	14	0.26	—	820	78	70	18	0.19	—	1030	73	
VF 30_30	30	41	93	15	0.21	—	960	71	47	20	0.15	—	1200	65	
VF 30_40	40	36	70	14	0.16	—	1090	66	35	19	0.12	—	1360	60	
VF 30_60	60	29	47	14	0.12	—	1270	59	23.3	19	0.09	—	1590	51	
VF 30_70	70	26	40	11	0.08	—	1380	55	20.0	15	0.07	—	1600	48	

VF 30	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	Page
			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
VF 30_7	7	69	129	18	0.30	150	730	82	71	20	0.19	150	920	81	188
VF 30_10	10	64	90	18	0.22	150	900	79	50	20	0.14	150	1120	77	
VF 30_15	15	56	60	20	0.17	—	1060	74	33	22	0.11	150	1320	71	
VF 30_20	20	51	45	20	0.14	—	1200	70	25.0	22	0.09	150	1490	67	
VF 30_30	30	41	30	22	0.12	—	1400	61	16.7	24	0.07	—	1700	58	
VF 30_40	40	36	23	20	0.09	—	1590	56	12.5	22	0.06	—	1700	53	
VF 30_60	60	29	15	20	0.07	—	1650	48	8.3	22	0.05	—	1700	44	
VF 30_70	70	26	13	17	0.05	—	1700	45	7.0	19	0.04	—	1700	41	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

VF 44 - VF/VF 30/44

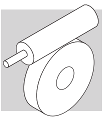
55 Nm

	i	η_s %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min⁻¹						n_1 = 1400 min⁻¹						
VF 44															
VF 44_7	7	71	400	22	1.1	220	950	88	200	29	0.71	220	1180	86	188
VF 44_10	10	66	280	22	0.74	220	1150	87	140	29	0.51	220	1430	84	
VF 44_14	14	60	200	22	0.55	220	1340	84	100	29	0.37	220	1680	81	
VF 44_20	20	55	140	29	0.52	220	1490	81	70	39	0.37	220	1860	77	
VF 44_28	28	45	100	29	0.40	220	1710	76	50	39	0.29	220	2140	71	
VF 44_35	35	42	80	29	0.33	220	1870	73	40	39	0.25	220	2300	68	
VF 44_46	46	37	61	29	0.27	220	2080	69	30.0	39	0.19	220	2300	63	
VF 44_60	60	32	47	29	0.22	220	2290	65	23.3	39	0.16	220	2300	58	
VF 44_70	70	30	40	22	0.15	220	2300	62	20.0	29	0.11	220	2300	55	
VF 44_100	100	24	28	21	0.11	220	2300	55	14.0	28	0.09	220	2300	47	
			n_1 = 900 min⁻¹						n_1 = 500 min⁻¹						
VF 44_7	7	71	129	39	0.63	220	1300	85	71	45	0.41	220	1610	83	188
VF 44_10	10	66	90	39	0.45	220	1610	82	50	45	0.29	220	1980	80	
VF 44_14	14	60	64	39	0.34	220	1890	78	36	50	0.25	220	2280	76	
VF 44_20	20	55	45	45	0.29	220	2160	74	25.0	50	0.18	220	2500	72	
VF 44_28	28	45	32	49	0.24	220	2300	67	17.9	55	0.16	220	2500	64	
VF 44_35	35	42	25.7	49	0.20	220	2300	64	14.3	55	0.14	220	2500	60	
VF 44_46	46	37	19.6	49	0.17	220	2300	59	10.9	50	0.10	220	2500	55	
VF 44_60	60	32	15.0	45	0.13	200	2300	54	8.3	50	0.09	220	2500	50	
VF 44_70	70	30	12.9	39	0.10	220	2300	51	7.1	45	0.07	220	2500	47	
VF 44_100	100	24	9.0	30	0.06	220	2300	43	5.0	32	0.04	220	2500	39	

70 Nm

	i	η_s %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 1400 min⁻¹						n_1 = 900 min⁻¹						
VF/VF 30/44															
VF/VF 30/44 _245	245	29	5.7	60	0.09	140	2500	40	3.7	70	0.07	150	2500	38	190
VF/VF 30/44 _350	350	27	4.0	60	0.07	80	2500	36	2.6	70	0.05	150	2500	38	
VF/VF 30/44 _420	420	25	3.3	60	0.06	—	2500	35	2.1	70	0.04	—	2500	39	
VF/VF 30/44 _560	560	23	2.5	60	0.05	—	2500	31	1.6	70	0.04	—	2500	29	
VF/VF 30/44 _700	700	21	2.0	60	0.04	—	2500	31	1.3	70	0.03	—	2500	31	
VF/VF 30/44 _840	840	18	1.7	60	0.04	—	2500	26	1.1	70	0.03	—	2500	26	
VF/VF 30/44 _1120	1120	16	1.3	60	0.03	—	2500	26	0.80	70	0.02	—	2500	29	
VF/VF 30/44 _1680	1680	13	0.83	60	0.02	—	2500	26	0.54	70	0.02	—	2500	20	
VF/VF 30/44 _2100	2100	12	0.67	60	0.02	—	2500	21	0.43	70	0.02	—	2500	16	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)



VF 49 - VFR 49

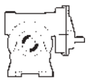
88 Nm

VF 49 — n_1 = 2800 min-1 / n_1 = 1400 min-1

	i	η_s %	n_2 min-1	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min-1	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	Page
			n_1 = 2800 min-1						n_1 = 1400 min-1						
VF 49_7	7	70	400	41	2.0	400	950	88	200	54	1.3	400	1170	86	188
VF 49_10	10	65	280	44	1.5	400	1140	86	140	59	1.0	400	1410	84	
VF 49_14	14	59	200	49	1.2	400	1310	84	100	65	0.90	400	1630	81	
VF 49_18	18	55	156	44	0.87	400	1520	82	78	59	0.60	400	1890	78	
VF 49_24	24	50	117	47	0.73	400	1670	79	58	63	0.50	400	2110	75	
VF 49_28	28	43	100	56	0.78	400	1740	75	50	74	0.55	400	2170	71	
VF 49_36	36	39	78	52	0.59	400	1970	72	39	69	0.42	400	2460	67	
VF 49_45	45	35	62	49	0.46	400	2180	69	31	65	0.33	400	2725	63	
VF 49_60	60	30	47	44	0.34	400	2480	64	23.3	59	0.25	400	3100	58	
VF 49_70	70	28	40	41	0.28	400	2650	61	20.0	55	0.21	400	3150	54	
VF 49_80	80	25	35	41	0.25	400	2780	59	17.5	54	0.19	400	3150	52	
VF 49_100	100	22	28.0	37	0.20	400	3050	54	14.0	49	0.13	400	3150	47	
			n_1 = 900 min-1						n_1 = 500 min-1						
VF 49_7	7	70	129	61	0.97	400	1370	85	71	74	0.67	400	1670	83	188
VF 49_10	10	65	90	64	0.75	400	1670	82	50	74	0.49	400	2060	80	
VF 49_14	14	59	64	71	0.61	400	1920	78	36	78	0.39	400	2400	75	
VF 49_18	18	55	50	68	0.47	400	2190	75	27.8	74	0.30	400	2730	72	
VF 49_24	24	50	38	68	0.36	400	2480	71	20.8	74	0.24	400	3090	68	
VF 49_28	28	43	32	82	0.41	400	2540	67	17.9	88	0.26	400	3180	63	
VF 49_36	36	39	25.0	75	0.31	400	2880	63	13.9	80	0.20	400	3450	59	
VF 49_45	45	35	20.0	71	0.25	400	3190	59	11.1	78	0.17	400	3450	55	
VF 49_60	60	30	15.0	64	0.19	400	3300	53	8.3	69	0.12	400	3450	49	
VF 49_70	70	28	12.9	60	0.16	400	3300	50	7.1	69	0.11	400	3450	46	
VF 49_80	80	25	11.3	58	0.14	400	3300	47	6.3	59	0.09	400	3450	43	
VF 49_100	100	22	9.0	52	0.11	400	3300	42	5.0	59	0.08	400	3450	38	

95 Nm

VFR 49

	i	η_s %	n_2 min-1	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min-1	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	Page
			n_1 = 2800 min-1						n_1 = 1400 min-1						
VFR 49 _42	42	58	67	71	0.65	230	1920	76	33	78	0.37	230	2500	74	189
VFR 49 _54	54	54	52	68	0.50	230	2180	74	25.9	74	0.28	230	2830	71	
VFR 49 _72	72	49	39	68	0.40	230	2470	70	19.4	74	0.22	230	3190	67	
VFR 49 _84	84	42	33	82	0.44	230	2520	66	16.6	88	0.25	230	3290	62	
VFR 49 _108	108	38	25.9	75	0.33	230	2860	62	12.9	80	0.19	230	3450	58	
VFR 49 _135	135	34	20.7	71	0.27	230	3160	58	10.3	88	0.18	230	3450	54	
VFR 49 _180	180	29	15.6	64	0.20	230	3300	52	7.7	69	0.12	230	3450	48	
VFR 49 _210	210	27	13.3	60	0.17	230	3300	49	6.6	69	0.11	230	3450	45	
VFR 49 _240	240	25	11.7	58	0.15	230	3300	46	5.8	59	0.09	230	3450	42	
VFR 49 _300	300	22	9.3	52	0.12	230	3300	41	4.7	59	0.08	230	3450	37	
			n_1 = 900 min-1						n_1 = 500 min-1						
VFR 49 _42	42	58	21.4	82	0.26	230	2960	72	11.9	90	0.16	230	3450	70	189
VFR 49 _54	54	54	16.7	79	0.20	230	3330	69	9.3	83	0.12	230	3450	67	
VFR 49 _72	72	49	12.5	79	0.16	230	3450	64	6.9	83	0.10	230	3450	62	
VFR 49 _84	84	42	10.7	91	0.17	230	3450	59	6.0	95	0.10	230	3450	57	
VFR 49 _108	108	38	8.3	84	0.13	230	3450	55	4.6	90	0.08	230	3450	52	
VFR 49 _135	135	34	6.7	82	0.11	230	3450	50	3.7	90	0.07	230	3450	48	
VFR 49 _180	180	29	5.0	75	0.09	230	3450	45	2.8	78	0.05	230	3450	42	
VFR 49 _210	210	27	4.3	75	0.08	230	3450	41	2.4	78	0.05	230	3450	39	
VFR 49 _240	240	25	3.8	64	0.06	230	3450	39	2.1	68	0.04	230	3450	36	
VFR 49 _300	300	22	3.0	63	0.06	230	3450	34	1.7	65	0.04	230	3450	32	

VF/VF 30/49

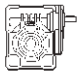
100 Nm

VF/VF 30/49	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 1400 min^{-1}						n_1 = 900 min^{-1}						
VF/VF 30/49_240	240	32	5.8	95	0.13	80	3450	45	3.8	100	0.09	150	3450	44	190
VF/VF 30/49_315	315	24	4.4	95	0.11	140	3450	40	2.9	100	0.07	150	3450	43	
VF/VF 30/49_420	420	24	3.3	95	0.08	—	3450	41	2.1	100	0.06	—	3450	37	
VF/VF 30/49_540	540	22	2.6	95	0.07	—	3450	37	1.7	100	0.05	—	3450	35	
VF/VF 30/49_720	720	20	1.9	95	0.05	—	3450	39	1.3	100	0.04	—	3450	33	
VF/VF 30/49_900	900	18	1.6	95	0.05	—	3450	31	1.0	100	0.04	—	3450	26	
VF/VF 30/49_1120	1120	15	1.3	95	0.04	—	3450	31	0.80	100	0.03	—	3450	28	
VF/VF 30/49_1440	1440	14	0.97	95	0.04	—	3450	24	0.63	100	0.03	—	3450	22	
VF/VF 30/49_2160	2160	11	0.65	95	0.03	—	3450	21	0.42	100	0.02	—	3450	22	
VF/VF 30/49_2700	2700	10	0.52	95	0.03	—	3450	17	0.33	100	0.02	—	3450	17	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

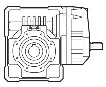
W 63 - WR 63

190 Nm

	i	ηs %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
W 63_7	7	70	400	105	4.9	480	1010	90	200	120	2.9	480	1550	88	188
W 63_10	10	66	280	125	4.2	370	1360	88	140	140	2.4	480	1840	86	
W 63_12	12	63	233	125	3.5	435	1540	87	117	140	2.0	480	2070	85	
W 63_15	15	59	187	125	2.8	410	1770	86	93	150	1.8	480	2280	83	
W 63_19	19	55	147	130	2.4	310	1990	84	74	150	1.4	480	2600	81	
W 63_24	24	52	117	130	1.9	370	2250	82	58	155	1.2	480	2890	78	
W 63_30	30	44	93	125	1.6	440	2540	78	47	160	1.1	460	3170	74	
W 63_38	38	40	74	130	1.3	330	2800	75	37	155	0.85	480	3580	70	
W 63_45	45	37	62	130	1.2	380	3020	73	31	145	0.71	480	3920	67	
W 63_64	64	31	44	110	0.75	480	3650	67	21.9	125	0.47	480	4680	61	
W 63_80	80	27	35	100	0.59	480	4050	62	17.5	115	0.38	480	5000	56	
W 63_100	100	23	28	100	0.51	480	4420	58	14.0	115	0.33	480	5000	51	
			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
W 63_7	7	70	129	130	2.0	480	1870	87	71	140	1.2	480	2420	84	188
W 63_10	10	66	90	150	1.7	480	2220	84	50	165	1.1	480	2830	81	
W 63_12	12	63	75	150	1.4	480	2480	82	42	165	0.92	480	3140	79	
W 63_15	15	59	60	160	1.3	480	2740	80	33	180	0.83	480	3430	76	
W 63_19	19	55	47	160	1.0	480	3100	78	26.3	180	0.68	480	3860	73	
W 63_24	24	52	38	165	0.86	480	3440	75	20.8	185	0.58	480	4280	70	
W 63_30	30	44	30	170	0.76	480	3770	70	16.7	190	0.52	480	4690	64	
W 63_38	38	40	23.7	165	0.62	480	4240	66	13.2	185	0.42	480	5000	61	
W 63_45	45	37	20.0	155	0.52	480	4630	63	11.1	170	0.34	480	5000	58	
W 63_64	64	31	14.1	135	0.35	480	5000	56	7.8	150	0.24	480	5000	51	
W 63_80	80	27	11.3	125	0.28	480	5000	52	6.3	135	0.19	480	5000	46	
W 63_100	100	23	9.0	120	0.25	480	5000	46	5.0	130	0.17	480	5000	41	

W 63

220 Nm

	i	ηs %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
WR 63_21	21	69	133	130	2.1	180	1840	87	67	140	1.2	320	2510	84	189
WR 63_30	30	65	93	150	1.7	300	2180	84	47	165	1.0	320	2920	81	
WR 63_36	36	62	78	150	1.5	320	2430	82	39	165	0.85	320	3240	79	
WR 63_45	45	58	62	160	1.3	320	2690	80	31	180	0.77	320	3540	76	
WR 63_57	57	54	49	160	1.1	320	3050	78	24.6	180	0.63	320	3980	73	
WR 63_72	72	51	39	165	0.90	320	3390	75	19.4	185	0.54	320	4410	70	
WR 63_90	90	44	31	170	0.79	320	3710	70	15.6	190	0.48	320	4830	64	
WR 63_114	114	39	24.6	165	0.62	320	4170	68	12.3	185	0.39	320	5000	61	
WR 63_135	135	36	20.7	155	0.53	320	4560	63	10.4	170	0.32	320	5000	58	
WR 63_192	192	30	14.6	135	0.37	320	5000	56	7.3	150	0.22	320	5000	51	
WR 63_240	240	26	11.7	125	0.29	320	5000	52	5.8	135	0.18	320	5000	46	
WR 63_300	300	22	9.3	120	0.25	320	5000	46	4.7	130	0.15	320	5000	41	
			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
WR 63_21	21	69	43	155	0.85	320	2960	82	23.8	170	0.53	320	3750	80	189
WR 63_30	30	65	30	180	0.72	320	3470	79	16.7	200	0.45	320	4360	77	
WR 63_36	36	62	25.0	180	0.61	320	3830	77	14.0	200	0.40	320	4790	74	
WR 63_45	45	58	20.0	190	0.54	320	4230	74	11.1	200	0.33	320	5000	71	
WR 63_57	57	54	15.8	190	0.44	320	4740	71	8.8	200	0.27	320	5000	68	
WR 63_72	72	51	12.5	190	0.37	320	5000	68	6.9	190	0.22	320	5000	64	
WR 63_90	90	44	10.0	205	0.35	320	5000	62	5.6	220	0.22	320	5000	58	
WR 63_114	114	39	7.9	200	0.29	320	5000	58	4.4	210	0.18	320	5000	54	
WR 63_135	135	36	6.7	180	0.23	320	5000	54	3.7	190	0.15	320	5000	50	
WR 63_192	192	30	4.7	150	0.16	320	5000	47	2.6	150	0.10	320	5000	43	
WR 63_240	240	26	3.8	140	0.13	320	5000	43	2.1	140	0.08	320	5000	39	
WR 63_300	300	22	3.0	130	0.11	320	5000	38	1.7	130	0.07	320	5000	34	

WR 63

VF/W 30/63

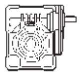
230 Nm

		i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
				n_1 = 1400 min^{-1}						n_1 = 900 min^{-1}						
VF/W 30/63	**VF/W 30/63_240**	240	33	5.8	210	0.27	80	5000	47	3.8	230	0.20	150	5000	45	190
	VF/W 30/63_315	315	26	4.4	210	0.23	140	5000	42	2.9	230	0.17	150	5000	41	
	VF/W 30/63_450	450	25	3.1	210	0.17	—	5000	41	2.0	230	0.11	—	5000	42	
	VF/W 30/63_570	570	22	2.5	210	0.14	—	5000	40	1.6	230	0.11	—	5000	36	
	VF/W 30/63_720	720	21	1.9	210	0.12	—	5000	37	1.3	230	0.09	—	5000	32	
	VF/W 30/63_900	900	18	1.6	210	0.11	—	5000	30	1.0	230	0.08	—	5000	29	
	VF/W 30/63_1200	1200	16	1.2	210	0.11	—	5000	24	0.75	230	0.07	—	5000	25	
	VF/W 30/63_1520	1520	14	0.92	210	0.08	—	5000	24	0.59	230	0.06	—	5000	23	
	VF/W 30/63_2280	2280	12	0.61	210	0.06	—	5000	21	0.39	230	0.04	—	5000	23	
	VF/W 30/63_2700	2700	11	0.52	210	0.05	—	5000	22	0.33	230	0.04	—	5000	19	

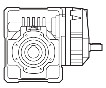
(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

W 75 - WR 75

320 Nm

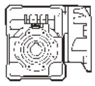
	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
W 75_7	7	71	400	170	7.8	750	700	91	200	190	4.4	750	1530	90	188
W 75_10	10	67	280	205	6.7	750	1610	90	140	230	3.8	750	2240	88	
W 75_15	15	60	187	225	5.0	750	2120	88	93	250	2.9	750	2870	85	
W 75_20	20	56	140	225	3.8	750	2550	86	70	250	2.2	750	3410	83	
W 75_25	25	52	112	225	3.2	750	2900	83	56	250	1.8	750	3840	80	
W 75_30	30	45	93	240	2.9	750	3100	81	47	270	1.7	750	4090	77	
W 75_40	40	40	70	225	2.1	750	3660	77	35	255	1.3	750	4770	72	
W 75_50	50	36	56	195	1.6	750	4180	73	28.0	220	0.95	750	5410	68	
W 75_60	60	33	47	180	1.3	750	4610	70	23.3	200	0.75	750	5960	65	
W 75_80	80	28	35	160	0.90	750	5310	65	17.5	180	0.56	750	6200	59	
W 75_100	100	25	28.0	135	0.65	750	5960	61	14.0	150	0.40	750	6200	55	
W 75			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
W 75_7	7	71	129	205	3.1	750	2120	88	71	225	2.0	750	2940	86	188
W 75_10	10	67	90	250	2.7	750	2700	86	50	275	1.7	750	3480	84	
W 75_15	15	60	60	270	2.0	750	3440	83	33	295	1.3	750	4380	80	
W 75_20	20	56	45	270	1.6	750	4050	80	25.0	295	1.0	750	5120	77	
W 75_25	25	52	36	270	1.3	750	4550	77	20.0	295	0.85	750	5720	73	
W 75_30	30	45	30	290	1.2	750	4860	74	16.7	320	0.81	750	6080	69	
W 75_40	40	40	22.5	275	1.0	750	5630	68	12.5	305	0.63	750	6200	63	
W 75_50	50	36	18.0	235	0.70	750	6200	63	10.0	260	0.47	750	6200	58	
W 75_60	60	33	15.0	215	0.56	750	6200	60	8.3	235	0.37	750	6200	55	
W 75_80	80	28	11.3	195	0.43	750	6200	54	6.3	215	0.29	750	6200	49	
W 75_100	100	25	9.0	160	0.30	750	6200	50	5.0	180	0.21	750	6200	44	

420 Nm

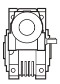
	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
WR 75_21	21	70	133	205	3.3	500	2030	88	67	225	1.8	500	3060	86	189
WR 75_30	30	66	93	250	2.8	500	2640	86	47	275	1.6	500	3610	84	
WR 75_45	45	59	62	270	2.1	500	3380	83	31	295	1.2	500	4530	80	
WR 75_60	60	55	47	270	1.6	500	3980	80	23.3	295	0.94	500	5280	77	
WR 75_75	75	51	37	270	1.4	500	4480	77	18.7	295	0.79	500	5890	73	
WR 75_90	90	44	31	290	1.3	500	4780	74	15.6	320	0.76	500	6200	69	
WR 75_120	120	39	23.3	275	1.0	500	5540	68	11.7	305	0.59	500	6200	63	
WR 75_150	150	35	18.7	235	0.73	500	6200	63	9.3	260	0.44	500	6200	58	
WR 75_180	180	32	15.6	215	0.58	500	6200	60	7.8	235	0.35	500	6200	55	
WR 75_240	240	27	11.7	195	0.44	500	6200	54	5.8	215	0.27	500	6200	49	
WR 75_300	300	24	9.3	160	0.31	500	6200	50	4.7	180	0.20	500	6200	44	
WR 75			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
WR 75_21	21	70	43	245	1.3	500	3660	85	23.8	270	0.82	500	4660	82	189
WR 75_30	30	66	30	330	1.3	500	4070	82	16.7	370	0.81	500	5160	80	
WR 75_45	45	59	20.0	350	0.94	500	5180	78	11.1	400	0.62	500	6200	75	
WR 75_60	60	55	15.0	330	0.69	500	6180	75	8.3	370	0.45	500	6200	71	
WR 75_75	75	51	12.0	330	0.59	500	6200	70	6.7	350	0.37	500	6200	66	
WR 75_90	90	44	10.0	370	0.58	500	6200	67	5.6	420	0.39	500	6200	63	
WR 75_120	120	39	7.5	330	0.43	500	6200	60	4.2	380	0.30	500	6200	56	
WR 75_150	150	35	6.0	310	0.35	500	6200	55	3.3	350	0.24	500	6200	51	
WR 75_180	180	32	5.0	280	0.29	500	6200	51	2.8	320	0.20	500	6200	47	
WR 75_240	240	27	3.8	220	0.19	500	6200	45	2.1	280	0.15	500	6200	41	
WR 75_300	300	24	3.0	200	0.15	500	6200	41	1.7	260	0.12	500	6200	37	

WR 75 - VF/W 44/75

370 Nm

	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
WR 75_P90 B5															
WR 75_15	15	66	187	220	4.9	—	1960	89	93	250	2.9	—	2640	86	189
WR 75_22.5	22.5	59	124	240	3.7	—	2530	86	62	270	2.1	—	3380	83	
WR 75_30	30	55	93	240	2.8	—	3020	84	47	270	1.7	—	3980	80	
WR 75_37.5	37.5	51	75	240	2.3	—	3410	81	37	270	1.4	—	4480	77	
WR 75_45	45	44	62	255	2.1	—	3660	79	31	290	1.3	—	4780	74	
WR 75_60	60	39	47	240	1.6	—	4290	74	23.3	275	1.0	—	5540	68	
WR 75_75	75	35	37	210	1.2	—	4860	70	18.7	235	0.74	—	6200	63	
WR 75_90	90	32	31	190	0.93	—	4460	67	15.6	215	0.59	—	6200	60	
WR 75_120	120	27	23.3	170	0.69	—	4960	61	11.7	195	0.44	—	6200	54	
WR 75_150	150	24	18.7	145	0.49	—	5150	58	9.3	160	0.32	—	6200	50	
			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
WR 75_15	15	66	60	275	2.1	—	3150	84	33	330	1.4	—	3850	82	189
WR 75_22.5	22.5	59	40	295	1.6	—	4010	80	22.2	350	1.0	—	4920	78	
WR 75_30	30	55	30	295	1.2	—	4710	77	16.7	330	0.77	—	5890	75	
WR 75_37.5	37.5	51	24	295	1.0	—	5280	73	13.3	330	0.66	—	6200	70	
WR 75_45	45	44	20	320	0.98	—	5610	69	11.1	370	0.64	—	6200	67	
WR 75_60	60	39	15	305	0.77	—	6200	63	8.3	330	0.48	—	6200	60	
WR 75_75	75	35	12	260	0.57	—	6200	58	6.7	310	0.39	—	6200	55	
WR 75_90	90	32	10	235	0.45	—	6200	55	5.6	280	0.32	—	6200	52	
WR 75_120	120	27	7.5	215	0.35	—	6200	49	4.2	220	0.21	—	6200	46	
WR 75_150	150	24	6.0	180	0.26	—	6200	44	3.3	200	0.17	—	6200	41	

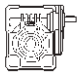
400 Nm

	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 1400 min^{-1}						n_1 = 900 min^{-1}						
VF/W 44/75															
VF/W 44/75_250	250	34	5.6	370	0.38	220	4560	57	3.6	400	0.29	220	4660	52	190
VF/W 44/75_300	300	30	4.7	370	0.35	220	5160	51	3.0	400	0.27	220	5150	46	
VF/W 44/75_400	400	26	3.5	370	0.29	220	6200	46	2.3	400	0.22	220	6200	42	
VF/W 44/75_525	525	25	2.7	370	0.23	220	6200	44	1.7	400	0.18	220	6200	41	
VF/W 44/75_700	700	24	2.0	370	0.18	220	6200	42	1.3	400	0.14	220	6200	39	
VF/W 44/75_920	920	21	1.5	370	0.15	—	6200	40	1.0	400	0.11	60	6200	36	
VF/W 44/75_1200	1200	18	1.2	370	0.12	—	6200	37	0.75	400	0.10	220	6200	31	
VF/W 44/75_1500	1500	17	0.93	370	0.10	220	6200	37	0.60	400	0.09	220	6200	29	
VF/W 44/75_2100	2100	14	0.67	370	0.09	220	6200	30	0.43	400	0.07	220	6200	24	
VF/W 44/75_2800	2800	12	0.50	370	0.07	220	6200	26	0.32	400	0.06	220	6200	22	

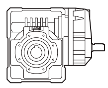
(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

W 86 - WR 86

440 Nm

	i	ηs %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min⁻¹						n_1 = 1400 min⁻¹						
W 86_7	7	71	400	225	10.4	850	2930	91	200	250	5.9	850	3920	89	188
W 86_10	10	67	280	260	8.5	850	3490	90	140	290	4.8	850	4620	88	
W 86_15	15	60	187	295	6.6	850	4200	87	93	330	3.8	850	5510	85	
W 86_20	20	60	140	285	4.9	850	4900	86	70	320	2.8	850	6380	84	
W 86_23	23	58	122	285	4.3	850	5250	85	61	320	2.5	850	6800	82	
W 86_30	30	45	93	320	3.9	850	5740	81	47	370	2.4	850	7000	76	
W 86_40	40	45	70	295	2.7	850	6670	79	35	330	1.6	850	7000	75	
W 86_46	46	43	61	305	2.5	850	7000	77	30	340	1.5	850	7000	73	
W 86_56	56	39	50	265	1.8	850	7000	75	25.0	300	1.1	850	7000	70	
W 86_64	64	37	44	250	1.6	850	7000	73	21.9	280	0.94	850	7000	68	
W 86_80	80	33	35	225	1.2	850	7000	69	17.5	255	0.73	850	7000	64	
W 86_100	100	29	28.0	205	0.92	850	7000	65	14.0	230	0.57	850	7000	59	
W 86			n_1 = 900 min⁻¹						n_1 = 500 min⁻¹						
W 86_7	7	71	129	270	4.1	850	4670	88	71	295	2.6	850	5890	85	188
W 86_10	10	67	90	310	3.4	850	5500	86	50	345	2.2	850	6860	82	
W 86_15	15	60	60	355	2.7	850	6520	82	33	390	1.7	850	7000	78	
W 86_20	20	60	45	345	2.0	850	7000	81	25.0	380	1.3	850	7000	77	
W 86_23	23	58	39	345	1.8	850	7000	80	21.7	380	1.2	850	7000	75	
W 86_30	30	45	30	400	1.7	850	7000	73	16.7	440	1.1	850	7000	67	
W 86_40	40	45	22.5	355	1.2	850	7000	71	12.5	390	0.77	850	7000	66	
W 86_46	46	43	19.6	365	1.1	850	7000	69	10.9	405	0.73	850	7000	63	
W 86_56	56	39	16.1	325	0.83	850	7000	66	8.9	355	0.55	850	7000	60	
W 86_64	64	37	14.1	300	0.70	850	7000	63	7.8	330	0.47	850	7000	58	
W 86_80	80	33	11.3	275	0.55	850	7000	59	6.3	305	0.38	850	7000	53	
W 86_100	100	29	9.0	250	0.43	850	7000	55	5.0	275	0.29	850	7000	49	

550 Nm

	i	ηs %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min⁻¹						n_1 = 1400 min⁻¹						
WR 86_21	21	70	133	270	4.3	500	4590	88	67	295	2.4	500	6070	85	189
WR 86_30	30	66	93	310	3.5	500	5410	86	47	345	2.1	500	7000	82	
WR 86_45	45	59	62	355	2.8	500	6420	82	31	390	1.6	500	7000	78	
WR 86_60	60	59	47	345	2.1	500	7000	81	23.3	380	1.2	500	7000	77	
WR 86_69	69	57	41	345	1.8	500	7000	80	20.3	380	1.1	500	7000	75	
WR 86_90	90	44	31	400	1.8	500	7000	73	15.6	440	1.1	500	7000	67	
WR 86_120	120	44	23.3	355	1.2	500	7000	71	11.7	390	0.72	500	7000	66	
WR 86_138	138	42	20.3	365	1.1	500	7000	69	10.1	405	0.68	500	7000	63	
WR 86_168	168	38	16.7	325	0.86	500	7000	66	8.3	355	0.52	500	7000	60	
WR 86_192	192	36	14.6	300	0.73	500	7000	63	7.3	330	0.43	500	7000	58	
WR 86_240	240	32	11.7	275	0.57	500	7000	59	5.8	305	0.35	500	7000	53	
WR 86_300	300	28	9.3	250	0.44	500	7000	55	4.7	275	0.27	500	7000	49	
WR 86			n_1 = 900 min⁻¹						n_1 = 500 min⁻¹						
WR 86_21	21	70	43	325	1.8	500	7000	83	23.8	355	1.1	500	7000	81	189
WR 86_30	30	66	30	375	1.5	500	7000	81	16.7	415	0.93	500	7000	78	
WR 86_45	45	59	20.0	450	1.2	500	7000	76	11.1	500	0.80	500	7000	73	
WR 86_60	60	59	15.0	430	0.90	500	7000	75	8.3	440	0.53	500	7000	72	
WR 86_69	69	57	13.0	390	0.73	500	7000	73	7.2	400	0.43	500	7000	70	
WR 86_90	90	44	10.0	500	0.82	500	7000	64	5.6	550	0.53	500	7000	60	
WR 86_120	120	44	7.5	440	0.55	500	7000	63	4.2	470	0.35	500	7000	59	
WR 86_138	138	42	6.5	430	0.48	500	7000	61	3.6	440	0.30	500	7000	56	
WR 86_168	168	38	5.4	390	0.38	500	7000	57	3.0	410	0.24	500	7000	53	
WR 86_192	192	36	4.7	390	0.35	500	7000	55	2.6	410	0.22	500	7000	50	
WR 86_240	240	32	3.8	310	0.24	500	7000	50	2.1	320	0.15	500	7000	46	
WR 86_300	300	28	3.0	310	0.22	500	7000	45	1.7	320	0.14	500	7000	41	

WR 86 - VF/W 44/86

500 Nm

WR 86_P90 B5

	i	ηs %	n2 min-1	Mn2 Nm	Pn1 kW	Rn1 N	Rn2 N	ηd %	n2 min-1	Mn2 Nm	Pn1 kW	Rn1 N	Rn2 N	ηd %	
			n_1 = 2800 min-1						n_1 = 1400 min-1						
WR 86_15	15	66	187	275	6.1	—	4130	88	93	310	3.5	—	5410	86	189
WR 86_22.5	22.5	59	124	315	4.8	—	4920	86	62	355	2.8	—	6420	82	
WR 86_30	30	59	93	305	3.5	—	5720	85	47	345	2.1	—	7000	81	
WR 86_34.5	34.5	57	81	305	3.1	—	6110	84	41	345	1.8	—	7000	80	
WR 86_45	45	44	62	350	3.0	—	6640	77	31	400	1.8	—	7000	73	
WR 86_60	60	44	47	315	2.0	—	7000	77	23.3	355	1.2	—	7000	71	
WR 86_69	69	42	41	325	1.8	—	7000	75	20.3	365	1.1	—	7000	69	
WR 86_84	84	38	33	285	1.4	—	7000	72	16.7	325	0.86	—	7000	66	
WR 86_96	96	36	29.2	265	1.2	—	7000	70	14.6	300	0.73	—	7000	63	
WR 86_120	120	32	23.3	240	0.88	—	7000	67	11.7	275	0.57	—	7000	59	
WR 86_150	150	28	18.7	220	0.69	—	7000	62	9.3	250	0.44	—	7000	55	
			n_1 = 900 min-1						n_1 = 500 min-1						
WR 86_15	15	66	60	345	2.6	—	6330	82	33	375	1.6	—	7000	81	189
WR 86_22.5	22.5	59	40	390	2.1	—	7000	78	22.2	450	1.4	—	7000	76	
WR 86_30	30	59	30	380	1.6	—	7000	77	16.7	430	1.0	—	7000	75	
WR 86_34.5	34.5	57	26.1	380	1.4	—	7000	75	14.5	390	0.81	—	7000	73	
WR 86_45	45	44	20.0	440	1.4	—	7000	67	11.1	500	0.91	—	7000	64	
WR 86_60	60	44	15.0	390	0.93	—	7000	66	8.3	440	0.61	—	7000	63	
WR 86_69	69	42	13.0	405	0.88	—	7000	63	7.2	430	0.53	—	7000	61	
WR 86_84	84	38	10.7	355	0.66	—	7000	60	6.0	390	0.43	—	7000	57	
WR 86_96	96	36	9.4	330	0.56	—	7000	58	5.2	390	0.39	—	7000	55	
WR 86_120	120	32	7.5	305	0.45	—	7000	53	4.2	310	0.27	—	7000	50	
WR 86_150	150	28	6.0	275	0.35	—	7000	49	3.3	310	0.24	—	7000	46	

550 Nm

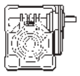
VF/W 44/86

	i	ηs %	n2 min-1	Mn2 Nm	Pn1 kW	Rn1 N	Rn2 N	ηd %	n2 min-1	Mn2 Nm	Pn1 kW	Rn1 N	Rn2 N	ηd %	
			n_1 = 1400 min-1						n_1 = 900 min-1						
VF/W 44/86_230	230	38	6.1	500	0.59	220	7000	54	3.9	550	0.43	220	7000	53	190
VF/W 44/86_300	300	30	4.7	500	0.54	220	7000	45	3.0	550	0.41	220	7000	42	
VF/W 44/86_400	400	30	3.5	500	0.45	220	7000	41	2.3	550	0.32	220	7000	41	
VF/W 44/86_525	525	25	2.7	500	0.33	220	7000	42	1.7	550	0.25	220	7000	39	
VF/W 44/86_700	700	25	2.0	500	0.27	220	7000	39	1.3	550	0.20	220	7000	37	
VF/W 44/86_920	920	22	1.5	500	0.20	220	7000	40	1.0	550	0.15	—	7000	37	
VF/W 44/86_1380	1380	17	1.0	500	0.17	220	7000	32	0.65	550	0.13	—	7000	28	
VF/W 44/86_1840	1840	17	0.76	500	0.13	220	7000	30	0.49	550	0.10	—	7000	28	
VF/W 44/86_2116	2116	16	0.66	500	0.12	220	7000	28	0.43	550	0.09	220	7000	28	
VF/W 44/86_2760	2760	14	0.51	500	0.11	—	7000	24	0.33	550	0.08	220	7000	24	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

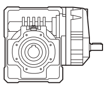
W 110 - WR 110

830 Nm



W 110	i	ηs %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	Page
			n_1 = 2800 min⁻¹						n_1 = 1400 min⁻¹						
W 110_7	7	71	400	445	20.7	1200	3710	90	200	500	11.8	1200	5020	89	188
W 110_10	10	67	280	490	16.1	1200	4650	89	140	550	9.3	1200	6190	87	
W 110_15	15	60	187	535	12.0	1200	5770	87	93	600	7.0	1200	7590	84	
W 110_20	20	61	140	510	8.7	1200	6790	86	70	570	5.0	1200	8000	84	
W 110_23	23	59	122	480	7.1	1200	7430	86	61	540	4.1	1200	8000	83	
W 110_30	30	45	93	625	7.5	1200	7780	81	47	700	4.4	1200	8000	77	
W 110_40	40	46	70	595	5.5	1200	8000	80	35	670	3.2	1200	8000	76	
W 110_46	46	44	61	535	4.3	1200	8000	79	30	600	2.6	1200	8000	74	
W 110_56	56	41	50	535	3.7	1200	8000	76	25.0	600	2.2	1200	8000	72	
W 110_64	64	38	44	470	2.9	1200	8000	74	21.9	530	1.7	1200	8000	70	
W 110_80	80	34	35	420	2.2	1200	8000	71	17.5	470	1.3	1200	8000	66	
W 110_100	100	30	28.0	410	1.8	1200	8000	67	14.0	460	1.1	1200	8000	62	
			n_1 = 900 min⁻¹						n_1 = 500 min⁻¹						
W 110_7	7	71	129	540	8.3	1200	6040	88	71	595	5.2	1200	7680	86	188
W 110_10	10	67	90	590	6.5	1200	7410	86	50	655	4.1	1200	8000	84	
W 110_15	15	60	60	645	4.9	1200	8000	83	33	710	3.1	1200	8000	80	
W 110_20	20	61	45	615	3.5	1200	8000	82	25.0	675	2.2	1200	8000	79	
W 110_23	23	59	39	580	2.9	1200	8000	81	21.7	640	1.9	1200	8000	77	
W 110_30	30	45	30	755	3.2	1200	8000	74	16.7	830	2.1	1200	8000	70	
W 110_40	40	46	22.5	720	2.3	1200	8000	73	12.5	795	1.5	1200	8000	68	
W 110_46	46	44	19.6	645	1.9	1200	8000	71	10.9	710	1.2	1200	8000	66	
W 110_56	56	41	16.1	645	1.6	1200	8000	68	8.9	710	1.1	1200	8000	63	
W 110_64	64	38	14.1	570	1.3	1200	8000	65	7.8	630	0.86	1200	8000	60	
W 110_80	80	34	11.3	505	0.98	1200	8000	61	6.3	560	0.65	1200	8000	56	
W 110_100	100	30	9.0	495	0.82	1200	8000	57	5.0	545	0.56	1200	8000	51	

1000 Nm



WR 110	i	ηs %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	Page
			n_1 = 2800 min⁻¹						n_1 = 1400 min⁻¹						
WR 110_21	21	70	133	540	8.6	700	5930	88	67	595	4.8	700	7950	86	189
WR 110_30	30	66	93	590	6.7	700	7280	86	47	655	3.8	700	8000	84	
WR 110_45	45	59	62	645	5.1	700	8000	83	31	710	2.9	700	8000	80	
WR 110_60	60	60	47	615	3.7	700	8000	82	23.3	675	2.1	700	8000	79	
WR 110_69	69	58	41	580	3.0	700	8000	81	20.3	640	1.8	700	8000	77	
WR 110_90	90	44	31	755	3.3	700	8000	74	15.6	830	1.9	700	8000	70	
WR 110_120	120	45	23.3	720	2.4	700	8000	73	11.7	795	1.4	700	8000	68	
WR 110_138	138	43	20.3	645	1.9	700	8000	71	10.1	710	1.1	700	8000	66	
WR 110_168	168	40	16.7	645	1.7	700	8000	68	8.3	710	0.98	700	8000	63	
WR 110_192	192	37	14.6	570	1.3	700	8000	65	7.3	630	0.80	700	8000	60	
WR 110_240	240	33	11.7	505	1.0	700	8000	61	5.8	560	0.61	700	8000	56	
WR 110_300	300	29	9.3	495	0.85	700	8000	57	4.7	545	0.52	700	8000	51	
			n_1 = 900 min⁻¹						n_1 = 500 min⁻¹						
WR 110_21	21	70	43	645	3.4	700	8000	84	23.8	715	2.2	700	8000	82	189
WR 110_30	30	66	30	710	2.8	700	8000	81	16.7	785	1.7	700	8000	79	
WR 110_45	45	59	20.0	870	2.4	700	8000	77	11.1	950	1.5	700	8000	75	
WR 110_60	60	60	15.0	800	1.6	700	8000	77	8.3	850	1.0	700	8000	74	
WR 110_69	69	58	13.0	750	1.4	700	8000	75	7.2	820	0.86	700	8000	72	
WR 110_90	90	44	10.0	900	1.4	700	8000	66	5.6	1000	0.94	700	8000	62	
WR 110_120	120	45	7.5	870	1.1	700	8000	65	4.2	950	0.68	700	8000	61	
WR 110_138	138	43	6.5	800	0.87	700	8000	63	3.6	900	0.58	700	8000	59	
WR 110_168	168	40	5.4	775	0.72	700	8000	60	3.0	800	0.45	700	8000	55	
WR 110_192	192	37	4.7	685	0.59	700	8000	57	2.6	720	0.37	700	8000	53	
WR 110_240	240	33	3.8	590	0.44	700	8000	53	2.1	620	0.28	700	8000	48	
WR 110_300	300	29	3.0	570	0.37	700	8000	48	1.7	600	0.24	700	8000	44	

VF/W 49/110

1050 Nm

	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 1400 min^{-1}						**n_1 = 900 min^{-1}**						
VF/W 49/110_230	230	38	6.1	1000	1.2	400	8000	52	3.9	1050	0.84	400	8000	51	190
VF/W 49/110_300	300	29	4.7	1000	1.0	400	8000	48	3.0	1050	0.70	400	8000	47	
VF/W 49/110_400	400	30	3.5	1000	0.81	400	8000	45	2.3	1050	0.55	400	8000	45	
VF/W 49/110_540	540	25	2.6	1000	0.66	400	8000	41	1.7	1050	0.48	400	8000	38	
VF/W 49/110_720	720	24	1.9	1000	0.51	400	8000	40	1.3	1050	0.36	400	8000	38	
VF/W 49/110_1080	1080	18	1.3	1000	0.44	400	8000	31	0.83	1050	0.28	400	8000	30	
VF/W 49/110_1350	1350	16	1.0	1000	0.36	400	8000	30	0.67	1050	0.26	400	8000	28	
VF/W 49/110_1656	1656	17	0.85	1000	0.30	400	8000	30	0.54	1050	0.20	400	8000	30	
VF/W 49/110_2070	2070	15	0.68	1000	0.25	400	8000	28	0.43	1050	0.19	400	8000	25	
VF/W 49/110_2800	2800	13	0.50	1000	0.22	400	8000	24	0.32	1050	0.17	400	8000	21	

VF/W 49/110

VF 130 - VFR 130

1500 Nm

VF 130

	i	ηs %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min⁻¹						**n_1 = 1400 min⁻¹**						
VF 130_7	7	71	400	555	25	1500	4930	91	200	740	17.4	1500	5990	89	188
VF 130_10	10	67	280	593	19.3	1500	6210	90	140	790	13.3	1500	7620	88	
VF 130_15	15	63	187	690	15.3	1500	7390	88	93	920	10.6	1500	9100	86	
VF 130_20	20	59	140	675	11.4	1500	8670	87	70	900	8.0	1500	10700	84	
VF 130_23	23	57	122	668	9.9	1500	9300	86	61	890	6.9	1500	11500	83	
VF 130_30	30	49	93	788	9.3	1040	10100	83	47	1050	6.6	—	12500	79	
VF 130_40	40	44	70	825	7.6	—	11400	80	35	1100	5.4	—	12600	76	
VF 130_46	46	45	61	788	6.3	1290	12200	80	30.0	1050	4.5	—	12600	76	
VF 130_56	56	42	50	720	4.8	1500	12600	78	25.0	960	3.4	940	12600	73	
VF 130_64	64	39	44	698	4.2	1500	12600	76	21.9	930	3.0	1220	12600	71	
VF 130_80	80	35	35	660	3.3	1500	12600	73	17.5	880	2.4	1500	12600	68	
VF 130_100	100	31	28	585	2.5	1500	12600	70	14.0	780	1.8	1500	12600	64	
			n_1 = 900 min⁻¹						**n_1 = 500 min⁻¹**						
VF 130_7	7	71	129	850	13.0	1500	6980	88	71	1000	8.8	1500	8670	86	188
VF 130_10	10	67	90	900	9.9	1500	8900	87	50	1100	6.9	1500	10800	84	
VF 130_15	15	63	60	1080	8.1	1500	10490	84	33	1350	5.9	1500	12600	81	
VF 130_20	20	59	45	1050	6.1	1500	12400	82	25.0	1350	4.6	1500	13800	79	
VF 130_23	23	57	39	1050	5.4	1500	13200	81	21.7	1300	3.9	1500	13800	77	
VF 130_30	30	49	30.0	1250	5.2	—	13200	77	16.7	1500	3.7	—	13800	72	
VF 130_40	40	44	22.5	1200	3.9	—	13200	73	12.5	1400	2.8	—	13800	68	
VF 130_46	46	45	19.6	1150	3.3	490	13200	73	10.9	1350	2.3	1270	13800	68	
VF 130_56	56	42	16.1	1080	2.7	1500	13200	70	8.9	1200	1.8	1500	13800	65	
VF 130_64	64	39	14.1	1050	2.4	1500	13200	68	7.8	1200	1.6	1500	13800	62	
VF 130_80	80	35	11.3	950	1.8	1500	13200	64	6.3	1150	1.3	1500	13800	58	
VF 130_100	100	31	9.0	800	1.3	1500	13200	59	5.0	900	0.91	1500	13800	54	

1800 Nm

VFR 130

	i	ηs %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min⁻¹						**n_1 = 1400 min⁻¹**						
VFR 130 _60	60	58	47	1050	6.4	1000	12400	81	23.3	1350	4.3	1000	13800	78	189
VFR 130 _69	69	56	41	1050	5.6	1000	13200	80	20.3	1300	3.7	1000	13800	76	
VFR 130 _90	90	48	31	1250	5.4	1000	13200	76	15.6	1500	3.5	1000	13800	71	
VFR 130 _120	120	43	23.3	1200	4.1	1000	13200	72	11.7	1400	2.6	1000	13800	67	
VFR 130 _138	138	44	20.3	1150	3.4	1000	13200	72	10.1	1350	2.2	1000	13800	67	
VFR 130 _168	168	41	16.7	1080	2.7	1000	13200	69	8.3	1200	1.6	1000	13800	64	
VFR 130 _192	192	38	14.6	1050	2.4	1000	13200	67	7.3	1200	1.5	1000	13800	61	
VFR 130 _240	240	34	11.7	950	1.9	1000	13200	63	5.8	1150	1.2	1000	13800	57	
VFR 130 _300	300	30	9.3	800	1.4	1000	13200	58	4.7	900	0.83	1000	13800	53	
			n_1 = 900 min⁻¹						**n_1 = 500 min⁻¹**						
VFR 130 _60	60	58	15.0	1450	3.1	1000	13800	75	8.3	1600	1.9	1000	13800	74	189
VFR 130 _69	69	56	13.0	1450	2.7	1000	13800	74	7.2	1550	1.6	1000	13800	72	
VFR 130 _90	90	48	10.0	1600	2.5	1000	13800	68	5.6	1800	1.6	1000	13800	66	
VFR 130 _120	120	43	7.5	1600	2.0	1000	13800	63	4.2	1800	1.3	1000	13800	61	
VFR 130 _138	138	44	6.5	1500	1.6	1000	13800	64	3.6	1600	1.0	1000	13800	61	
VFR 130 _168	168	41	5.4	1350	1.3	1000	13800	60	3.0	1450	0.78	1000	13800	58	
VFR 130 _192	192	38	4.7	1300	1.1	1000	13800	58	2.6	1400	0.70	1000	13800	55	
VFR 130 _240	240	34	3.8	1200	0.87	1000	13800	54	2.1	1250	0.54	1000	13800	51	
VFR 130 _300	300	30	3.0	1000	0.64	1000	13800	49	1.7	1100	0.41	1000	13800	47	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

W/VF 63/130

1850 Nm

	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 1400 min^{-1}						n_1 = 900 min^{-1}						
W/VF 63/130_280	280	31	5.0	1800	1.9	480	13800	50	3.2	1850	1.3	480	13800	48	190
W/VF 63/130_400	400	29	3.5	1800	1.5	480	13800	44	2.3	1850	0.99	480	13800	44	
W/VF 63/130_600	600	26	2.3	1800	1.1	480	13800	40	1.5	1850	0.73	480	13800	40	
W/VF 63/130_760	760	24	1.8	1800	0.89	480	13800	39	1.2	1850	0.62	480	13800	37	
W/VF 63/130_960	960	23	1.5	1800	0.74	480	13800	37	0.94	1850	0.52	480	13800	35	
W/VF 63/130_1200	1200	19	1.2	1800	0.65	—	13800	34	0.75	1850	0.45	—	13800	32	
W/VF 63/130_1520	1520	18	0.92	1800	0.55	—	13800	32	0.59	1850	0.38	—	13800	30	
W/VF 63/130_1800	1800	16	0.78	1800	0.52	—	13800	28	0.50	1850	0.37	—	13800	26	
W/VF 63/130_2560	2560	14	0.55	1800	0.45	—	13800	23	0.35	1850	0.32	—	13800	21	
W/VF 63/130_3200	3200	12	0.44	1800	0.49	—	13800	17	0.28	1850	0.34	480	13800	16	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

VF 150 - VFR 150

2000 Nm

		i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
				n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
VF 150	VF 150_7	7	72	400	750	35	2200	5010	91	200	1000	24	2200	6040	90	188
	VF 150_10	10	68	280	788	25	2200	6630	90	140	1050	17.5	2200	8120	88	
	VF 150_15	15	64	187	863	19.0	2200	8110	89	93	1150	13.1	2200	9990	87	
	VF 150_20	20	59	140	975	16.4	2200	9170	87	70	1300	11.3	2200	11300	84	
	VF 150_23	23	57	122	953	14.1	2200	9940	86	61	1270	9.8	2200	12300	83	
	VF 150_30	30	48	93	1028	12.1	2200	11100	83	47	1370	8.5	2200	13700	80	
	VF 150_40	40	44	70	1155	10.5	2200	12300	81	35	1540	7.4	830	14700	77	
	VF 150_46	46	45	61	1163	9.2	2200	13100	81	30.0	1550	6.5	1400	14700	77	
	VF 150_56	56	42	50	1028	6.8	2200	14600	79	25.0	1370	4.9	2200	14700	74	
	VF 150_64	64	39	44	998	5.9	2200	14700	77	21.9	1330	4.2	2200	14700	72	
	VF 150_80	80	35	35	938	4.6	2200	14700	74	17.5	1250	3.4	2200	14700	69	
	VF 150_100	100	31	28	863	3.6	2200	14700	71	14.0	1150	2.6	2200	14700	65	
				n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
	VF 150_7	7	72	129	1150	17.6	2200	7040	89	71	1400	12.2	2200	8560	87	188
	VF 150_10	10	68	90	1200	13.0	2200	9480	87	50	1500	9.4	2200	11400	85	
	VF 150_15	15	64	60	1350	10.0	2200	11500	85	33	1700	7.3	2200	13800	83	
	VF 150_20	20	59	45	1500	8.6	2200	13100	83	25.0	1900	6.4	2200	15700	80	
	VF 150_23	23	57	39	1500	7.6	2200	14200	82	21.7	1850	5.5	2200	16000	78	
	VF 150_30	30	48	30.0	1600	6.5	2200	15500	77	16.7	1950	4.8	2200	16000	73	
	VF 150_40	40	44	22.5	1750	5.6	1150	15500	74	12.5	2000	3.9	2200	16000	69	
	VF 150_46	46	45	19.6	1750	4.9	2100	15500	74	10.9	2000	3.4	2200	16000	69	
	VF 150_56	56	42	16.1	1500	3.7	2200	15500	71	8.9	1750	2.6	2200	16000	66	
	VF 150_64	64	39	14.1	1450	3.2	2200	15500	69	7.8	1700	2.3	2200	16000	63	
	VF 150_80	80	35	11.3	1350	2.5	2200	15500	65	6.3	1550	1.8	2200	16000	59	
	VF 150_100	100	31	9.0	1150	1.8	2200	15500	61	5.0	1300	1.3	2200	16000	55	

2600 Nm

		i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
				n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
VFR 150	VFR 150 _45	45	63	62	1350	10.6	1500	11600	84	31	1700	6.8	1500	14600	82	189
	VFR 150 _60	60	58	47	1500	9.0	1500	13100	82	23.3	1900	5.9	1500	16000	79	
	VFR 150 _69	69	56	41	1500	7.9	1500	14100	81	20.3	1850	5.1	1500	16000	77	
	VFR 150 _90	90	47	31	1600	6.9	1500	15500	76	15.6	1950	4.4	1500	16000	72	
	VFR 150 _120	120	43	23.3	1750	5.9	1500	15500	73	11.7	2000	3.6	1500	16000	68	
	VFR 150 _138	138	44	20.3	1750	5.1	1500	15500	73	10.1	2000	3.1	1500	16000	68	
	VFR 150 _168	168	41	16.7	1500	3.8	1500	15500	70	8.3	1750	2.4	1500	16000	65	
	VFR 150 _192	192	38	14.6	1450	3.3	1500	15500	68	7.3	1700	2.1	1500	16000	62	
	VFR 150 _240	240	34	11.7	1350	2.6	1500	15500	64	5.8	1550	1.6	1500	16000	58	
	VFR 150 _300	300	30	9.3	1150	1.9	1500	15500	60	4.7	1300	1.2	1500	16000	54	
				n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
	VFR 150 _45	45	63	20.0	1950	5.2	1500	16000	79	11.1	2100	3.2	1500	16000	78	189
	VFR 150 _60	60	58	15.0	2100	4.4	1500	16000	76	8.3	2300	2.7	1500	16000	74	
	VFR 150 _69	69	56	13.0	2050	3.8	1500	16000	74	7.2	2200	2.3	1500	16000	72	
	VFR 150 _90	90	47	10.0	2200	3.4	1500	16000	69	5.6	2400	2.1	1500	16000	66	
	VFR 150 _120	120	43	7.5	2300	2.8	1500	16000	64	4.2	2600	1.8	1500	16000	62	
	VFR 150 _138	138	44	6.5	2200	2.4	1500	16000	64	3.6	2400	1.5	1500	16000	62	
	VFR 150 _168	168	41	5.4	1950	1.8	1500	16000	61	3.0	2100	1.1	1500	16000	59	
	VFR 150 _192	192	38	4.7	1900	1.6	1500	16000	59	2.6	2000	1.0	1500	16000	56	
	VFR 150 _240	240	34	3.8	1700	1.2	1500	16000	54	2.1	1800	0.76	1500	16000	52	
	VFR 150 _300	300	30	3.0	1350	0.85	1500	16000	50	1.7	1450	0.54	1500	16000	47	

W/VF 86/150

2700 Nm

		η_s	n_2	M_{n2}	P_{n1}	R_{n1}	R_{n2}	η_d	n_2	M_{n2}	P_{n1}	R_{n1}	R_{n2}	η_d	
	i	%	min^{-1}	Nm	kW	N	N	%	min^{-1}	Nm	kW	N	N	%	
			$n_1 = 1400\ min^{-1}$						$n_1 = 900\ min^{-1}$						
W/VF 86/150_200	200	29	7.0	2600	3.0	850	16000	64	4.5	2700	2.1	850	16000	61	190
W/VF 86/150_225	225	26	6.2	2600	2.7	850	16000	63	4.0	2700	1.9	850	16000	60	
W/VF 86/150_300	300	26	4.7	2600	2.2	850	16000	58	3.0	2700	1.5	850	16000	57	
W/VF 86/150_345	345	26	4.1	2600	1.9	850	16000	58	2.6	2700	1.3	850	16000	57	
W/VF 86/150_460	460	26	3.0	2600	1.5	850	16000	55	2.0	2700	1.0	850	16000	55	
W/VF 86/150_529	529	26	2.6	2600	1.3	850	16000	55	1.7	2700	0.93	850	16000	52	
W/VF 86/150_690	690	26	2.0	2600	1.1	850	16000	50	1.3	2700	0.78	850	16000	47	
W/VF 86/150_920	920	26	1.5	2600	0.92	850	16000	45	0.98	2700	0.64	850	16000	43	
W/VF 86/150_1380	1380	19	1.0	2600	0.66	850	16000	42	0.65	2700	0.46	850	16000	40	
W/VF 86/150_1840	1840	19	0.76	2600	0.55	850	16000	38	0.49	2700	0.38	850	16000	36	
W/VF 86/150_2944	2944	16	0.48	2600	0.48	850	16000	27	0.31	2700	0.35	850	16000	25	

W/VF 86/150

VF 185 - VFR 185

3600 Nm

VF 185	i	ηs %	n_2 min-1	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min-1	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min-1						n_1 = 1400 min-1						
VF 185_7	7	72	400	1313	60	2800	4670	91	200	1750	41	2800	5570	90	188
VF 185_10	10	68	280	1365	44	2800	7390	90	140	1820	30	2800	8960	89	
VF 185_15	15	66	187	1388	30	2800	9460	89	93	1850	21	2800	11600	88	
VF 185_20	20	59	140	1703	28	2800	10500	88	70	2270	19.6	2800	12900	85	
VF 185_30	30	54	93	1485	16.9	2800	13700	86	47	1980	11.8	2800	16900	83	
VF 185_40	40	44	70	1973	17.6	—	14500	82	35	2630	12.4	—	17900	78	
VF 185_50	50	41	56	1875	13.7	—	16300	80	28.0	2500	9.8	—	18000	76	
VF 185_60	60	39	47	1703	10.7	2800	18000	78	23.3	2270	7.6	770	18000	74	
VF 185_80	80	33	35	1590	7.8	2800	18000	75	17.5	2120	5.6	1140	18000	69	
VF 185_100	100	30	28.0	1425	5.8	2800	18000	72	14.0	1900	4.3	2800	18000	65	
			n_1 = 900 min-1						n_1 = 500 min-1						
VF 185_7	7	72	129	2000	30	2800	7120	89	71	2450	21	2800	8730	88	188
VF 185_10	10	68	90	2150	23	2800	10200	88	50	2600	16.0	2800	12500	86	
VF 185_15	15	66	60	2250	16.4	2800	13100	86	33	2800	11.8	2800	15700	84	
VF 185_20	20	59	45	2750	15.6	2800	14600	84	25.0	3300	10.9	2800	17900	81	
VF 185_30	30	54	30.0	2400	9.4	2800	19000	81	16.7	2800	6.5	2800	19500	77	
VF 185_40	40	44	22.5	3100	9.7	—	19000	76	12.5	3600	6.8	—	19500	71	
VF 185_50	50	41	18.0	2900	7.6	—	19000	73	10.0	3300	5.2	—	19500	68	
VF 185_60	60	39	15.0	2600	5.8	700	19000	71	8.3	3000	4.2	2800	19500	66	
VF 185_80	80	33	11.3	2400	4.3	1770	19000	66	6.3	2800	3.2	2800	19500	60	
VF 185_100	100	30	9.0	2000	3.0	2800	19000	62	5.0	2300	2.1	2800	19500	56	

4200 Nm

VFR 185	i	ηs %	n_2 min-1	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min-1	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min-1						n_1 = 1400 min-1						
VFR 185 _90	90	53	31	2400	9.9	1700	19000	80	15.6	2800	6.0	1700	19500	76	189
VFR 185 _120	120	43	23.3	3100	10.2	1700	19000	75	11.7	3600	6.3	1700	19500	70	
VFR 185 _150	150	40	18.7	2900	7.9	1700	19000	72	9.3	3300	4.8	1700	19500	67	
VFR 185 _180	180	38	15.6	2600	6.1	1700	19000	70	7.8	3000	3.8	1700	19500	65	
VFR 185 _240	240	32	11.7	2400	4.5	1700	19000	65	5.8	2800	2.9	1700	19500	59	
VFR 185 _300	300	29	9.3	2000	3.2	1700	19000	61	4.7	2300	2.0	1700	19500	55	
			n_1 = 900 min-1						n_1 = 500 min-1						
VFR 185 _90	90	53	10.0	3200	4.6	1700	19500	73	5.6	3500	2.9	1700	19500	71	189
VFR 185 _120	120	43	7.5	3800	4.5	1700	19500	66	4.2	4200	2.9	1700	19500	63	
VFR 185 _150	150	40	6.0	3400	3.4	1700	19500	63	3.3	3700	2.2	1700	19500	60	
VFR 185 _180	180	38	5.0	3300	2.9	1700	19500	60	2.8	3600	1.8	1700	19500	57	
VFR 185 _240	240	32	3.8	2800	2.0	1700	19500	54	2.1	2900	1.2	1700	19500	53	
VFR 185 _300	300	29	3.0	2400	1.5	1700	19500	50	1.7	2500	0.91	1700	19500	48	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

W/VF 86/185

4400 Nm

		i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
				n_1 = 1400 min^{-1}						n_1 = 900 min^{-1}						
W/VF 86/185	**W/VF 86/185_280**	280	31	5.0	4200	4.2	850	19500	52	3.2	4400	3.0	850	19500	49	190
	W/VF 86/185_400	400	29	3.5	4200	3.2	850	19500	48	2.3	4400	2.3	850	19500	45	
	W/VF 86/185_600	600	26	2.3	4200	2.3	850	19500	45	1.5	4400	1.6	850	19500	43	
	W/VF 86/185_800	800	26	1.8	4200	1.8	850	19500	43	1.1	4400	1.3	850	19500	40	
	W/VF 86/185_920	920	26	1.5	4200	1.6	850	19500	42	1.0	4400	1.2	850	19500	38	
	W/VF 86/185_1200	1200	20	1.2	4200	1.5	850	19500	34	0.75	4400	0.99	850	19500	35	
	W/VF 86/185_1600	1600	20	0.88	4200	1.1	850	19500	35	0.56	4400	0.79	850	19500	33	
	W/VF 86/185_1840	1840	19	0.76	4200	0.98	850	19500	34	0.49	4400	0.70	850	19500	32	
	W/VF 86/185_2560	2560	16	0.55	4200	0.83	850	19500	29	0.35	4400	0.60	850	19500	27	
	W/VF 86/185_3200	3200	15	0.44	4200	0.80	850	19500	24	0.28	4400	0.59	850	19500	22	

VF 210 - VFR 210

5000 Nm

VF 210	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
VF 210_7	7	71	400	1725	79	5300	14000	91	200	2300	54	5300	16700	90	188
VF 210_10	10	69	280	1988	65	5300	16300	90	140	2650	44	5300	19500	89	
VF 210_15	15	63	187	2138	47	5300	19700	89	93	2850	32	5300	23700	88	
VF 210_20	20	57	140	2325	39	4970	22000	87	70	3100	27	1100	26600	85	
VF 210_30	30	51	93	2288	26	5300	25900	85	47	3050	18.5	1760	31500	83	
VF 210_40	40	42	70	2625	23	—	28300	81	35	3500	17.0	—	31500	78	
VF 210_50	50	39	56	2475	18.4	—	31000	79	28.0	3300	13.0	—	31500	76	
VF 210_60	60	36	47	2363	15.0	—	31500	77	23.3	3015	10.0	—	31500	73	
VF 210_80	80	31	35	2175	10.9	—	31500	73	17.5	2900	7.7	—	31500	69	
VF 210_100	100	27	28	2025	8.5	950	31500	70	14.0	2700	6.0	—	31500	65	
			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
VF 210_7	7	71	129	2700	41	5300	18800	89	71	3400	29	5300	21800	88	188
VF 210_10	10	69	90	3150	34	5300	21900	88	50	3800	23	5300	26000	87	
VF 210_15	15	63	60	3300	24	5300	27000	86	33	4100	17.2	5300	31800	84	
VF 210_20	20	57	45	3800	22	—	29900	83	25.0	4700	15.4	—	34500	81	
VF 210_30	30	51	30.0	3400	13.4	3750	33000	80	16.7	4000	9.3	5300	34500	77	
VF 210_40	40	42	22.5	4300	13.5	—	33000	75	12.5	5000	9.4	—	34500	71	
VF 210_50	50	39	18.0	4000	10.5	—	33000	72	10.0	4500	7.1	—	34500	68	
VF 210_60	60	36	15.0	3720	8.5	—	33000	70	8.3	4300	6.0	—	34500	65	
VF 210_80	80	31	11.3	3300	6.0	—	33000	65	6.3	3900	4.4	—	34500	60	
VF 210_100	100	27	9.0	3000	4.6	—	33000	61	5.0	3400	3.4	1470	34500	56	

6300 Nm

VFR 210	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 2800 min^{-1}						n_1 = 1400 min^{-1}						
VFR 210 _30	30	68	93	3150	36	1800	22100	87	47	3800	21.8	2200	27400	86	189
VFR 210 _45	45	62	62	3300	25	1800	27000	85	31	4100	16.2	2200	33200	83	
VFR 210 _60	60	56	47	3800	22	1800	29900	82	23.0	4700	14.5	2200	34500	80	
VFR 210 _90	90	50	31	3400	14.1	1800	33000	79	15.6	4000	8.6	2200	34500	76	
VFR 210 _120	120	41	23.3	4300	14.3	1800	33000	74	11.7	5000	8.8	2200	34500	70	
VFR 210 _150	150	38	18.7	4000	11.1	1800	33000	71	9.3	4500	6.6	2200	34500	67	
VFR 210 _180	180	35	15.6	3720	8.8	1800	33000	69	7.8	4300	5.5	2200	34500	64	
VFR 210 _240	240	30	11.7	3300	6.3	1800	33000	64	5.8	3900	4.1	2200	34500	59	
VFR 210 _300	300	26	9.3	3000	4.9	1800	33000	60	4.7	3400	3.0	2200	34500	55	
			n_1 = 900 min^{-1}						n_1 = 500 min^{-1}						
VFR 210 _30	30	68	30.0	4800	18.1	2300	30100	84	16.7	5500	11.8	2650	34500	82	189
VFR 210 _45	45	62	20.0	4900	12.9	2300	34500	80	11.1	5600	8.4	2650	34500	78	
VFR 210 _60	60	56	15.0	5400	11.1	2300	34500	77	8.3	6000	7.1	2650	34500	74	
VFR 210 _90	90	50	10.0	4600	6.7	2300	34500	72	5.6	5150	4.3	2650	34500	70	
VFR 210 _120	120	41	7.5	5900	7.1	2300	34500	66	4.2	6300	4.4	2650	34500	63	
VFR 210 _150	150	38	6.0	5300	5.4	2300	34500	62	3.3	5900	3.5	2650	34500	59	
VFR 210 _180	180	35	5.0	4900	4.4	2300	34500	59	2.8	5400	2.8	2650	34500	56	
VFR 210 _240	240	30	3.8	4400	3.2	2300	34500	54	2.1	4800	2.1	2650	34500	50	
VFR 210 _300	300	26	3.0	3600	2.3	2300	34500	49	1.7	4000	1.5	2650	34500	46	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

VF/VF 130/210

6500 Nm

		i	ηs %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	ηd %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	ηd %	
				n_1 = 1400 min⁻¹						n_1 = 900 min⁻¹						
VF/VF 130/210	**VF/VF 130/210_280**	280	30	5.0	6300	6.3	1500	34500	52	3.2	6500	4.4	1500	34500	50	190
	VF/VF 130/210_400	400	28	3.5	6300	4.6	1500	34500	50	2.3	6500	3.2	1500	34500	48	
	VF/VF 130/210_600	600	26	2.3	6300	3.6	1500	34500	43	1.5	6500	2.4	1500	34500	43	
	VF/VF 130/210_800	800	25	1.8	6300	2.8	1500	34500	41	1.1	6500	2.0	1500	34500	38	
	VF/VF 130/210_920	920	24	1.5	6300	2.7	1500	34500	37	1.0	6500	1.9	1500	34500	35	
	VF/VF 130/210_1200	1200	21	1.2	6300	2.2	—	34500	35	0.75	6500	1.5	—	34500	34	
	VF/VF 130/210_1600	1600	18	0.88	6300	1.8	—	34500	32	0.56	6500	1.2	—	34500	32	
	VF/VF 130/210_1840	1840	19	0.76	6300	1.7	—	34500	30	0.49	6500	1.2	490	34500	28	
	VF/VF 130/210_2560	2560	16	0.55	6300	1.5	1220	34500	24	0.35	6500	1.0	1500	34500	24	
	VF/VF 130/210_3200	3200	15	0.44	6300	1.3	1500	34500	22	0.28	6500	0.96	1500	34500	20	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

VF 250 - VFR 250

7100 Nm

	i	η_s %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
VF 250			n_1 = 2800 min⁻¹						n_1 = 1400 min⁻¹						
VF 250_7	7	71	400	2400	109	7000	18300	92	200	3200	75	7000	21900	91	188
VF 250_10	10	69	280	2775	89	7000	21100	91	140	3700	61	7000	25300	90	
VF 250_15	15	64	187	3000	65	7000	25100	90	93	4000	45	7000	30300	88	
VF 250_20	20	59	140	3338	56	7000	28000	88	70	4450	38	7000	33900	86	
VF 250_30	30	53	93	3000	34	7000	33400	86	47	4000	23	7000	40600	84	
VF 250_40	40	41	70	3600	32	4680	36200	82	35	4800	22	—	44000	79	
VF 250_50	50	36	56	3375	25	6370	39500	79	28.0	4500	17.0	—	47000	76	
VF 250_60	60	38	47	3375	20.6	7000	42100	80	23.3	4500	15.0	—	47000	76	
VF 250_80	80	32	35	2925	14.1	7000	47000	76	17.5	3900	10.0	—	47000	71	
VF 250_100	100	29	28	2738	11.0	7000	47000	73	14.0	3650	7.8	3010	47000	68	
			n_1 = 900 min⁻¹						n_1 = 500 min⁻¹						
VF 250_7	7	71	129	4150	63	7000	23700	90	71	5200	44	7000	27600	88	188
VF 250_10	10	69	90	4800	51	7000	27600	89	50	6000	36	7000	32300	87	
VF 250_15	15	64	60	5300	39	7000	33200	87	33	6400	27	7000	39500	85	
VF 250_20	20	59	45	5950	33	1640	37200	85	25.0	7100	24	1910	44400	82	
VF 250_30	30	53	30.0	5500	21	7000	44900	81	16.7	6000	14.7	7000	52000	79	
VF 250_40	40	41	22.5	6500	20.0	—	48800	76	12.5	7000	13.6	—	52000	72	
VF 250_50	50	36	18.0	6200	16.2	—	50000	73	10.0	6500	11.1	—	52000	68	
VF 250_60	60	38	15.0	5600	12.2	—	50000	72	8.3	6300	8.6	4350	52000	68	
VF 250_80	80	32	11.3	5200	9.3	—	50000	67	6.3	5400	6.8	7000	52000	62	
VF 250_100	100	29	9.0	4800	7.2	3010	50000	63	5.0	5000	5.3	4160	52000	58	

9000 Nm

	i	η_s %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min⁻¹	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
VFR 250			n_1 = 2800 min⁻¹						n_1 = 1400 min⁻¹						
VFR 250 _30	30	68	93	4800	54	2800	27800	89	47	6000	34	3500	34000	86	189
VFR 250 _45	45	63	62	5300	41	2800	33300	87	31	6400	25	3500	41300	84	
VFR 250 _60	60	58	47	5950	35	2800	37200	85	23.0	7100	21	3500	46100	81	
VFR 250 _90	90	52	31	5500	22	2800	44700	81	15.6	6000	12.6	3500	52000	78	
VFR 250 _120	120	40	23.3	6500	21.3	2800	48500	76	11.7	7000	12.1	3500	52000	71	
VFR 250 _150	150	35	18.7	6200	16.9	2800	50000	73	9.3	6500	9.5	3500	52000	67	
VFR 250 _180	180	37	15.6	5600	12.9	2800	50000	72	7.8	6300	7.7	3500	52000	67	
VFR 250 _240	240	31	11.7	5200	9.7	2800	50000	67	5.8	5400	5.4	3500	52000	61	
VFR 250 _300	300	28	9.3	4800	7.6	2800	50000	63	4.7	5000	4.3	3500	52000	57	
			n_1 = 900 min⁻¹						n_1 = 500 min⁻¹						
VFR 250 _30	30	68	30.0	6500	24	3700	39600	84	16.7	7600	16.1	4200	47600	83	189
VFR 250 _45	45	63	20.0	6800	17.5	3700	48000	82	11.1	7900	11.6	3500	52000	80	
VFR 250 _60	60	58	15.0	7600	15.2	3700	52000	79	8.3	8600	9.9	3500	52000	76	
VFR 250 _90	90	52	10.0	6500	9.3	3700	52000	74	5.6	7400	6.1	3500	52000	71	
VFR 250 _120	120	40	7.5	7500	8.8	3700	52000	67	4.2	9000	6.2	3500	52000	64	
VFR 250 _150	150	35	6.0	7000	7.0	3700	52000	63	3.3	8600	5.1	3500	52000	59	
VFR 250 _180	180	37	5.0	6700	5.7	3700	52000	62	2.8	7600	3.8	3500	52000	59	
VFR 250 _240	240	31	3.8	5800	4.1	3700	52000	56	2.1	6500	2.7	3500	52000	52	
VFR 250 _300	300	28	3.0	5300	3.2	3700	52000	52	1.7	6000	2.2	3500	52000	48	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

VF/VF 130/250

9200 Nm

	i	η_s %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	n_2 min^{-1}	M_{n2} Nm	P_{n1} kW	R_{n1} N	R_{n2} N	η_d %	
			n_1 = 1400 min^{-1}						n_1 = 900 min^{-1}						
VF/VF 130/250_280	280	29	5.0	9000	8.9	1500	52000	53	3.2	9200	6.1	1500	52000	51	190
VF/VF 130/250_400	400	27	3.5	9000	6.7	1500	52000	49	2.3	9200	4.6	1500	52000	47	
VF/VF 130/250_600	600	26	2.3	9000	5.0	1500	52000	44	1.5	9200	3.4	1500	52000	43	
VF/VF 130/250_800	800	24	1.8	9000	3.9	1500	52000	42	1.1	9200	2.7	1500	52000	40	
VF/VF 130/250_920	920	23	1.5	9000	3.9	1500	52000	37	0.98	9200	2.7	1500	52000	35	
VF/VF 130/250_1200	1200	20	1.2	9000	3.1	—	52000	35	0.75	9200	2.2	—	52000	33	
VF/VF 130/250_1600	1600	18	0.88	9000	2.6	—	52000	32	0.56	9200	1.8	—	52000	30	
VF/VF 130/250_1840	1840	18	0.76	9000	2.3	—	52000	31	0.49	9200	1.6	490	52000	29	
VF/VF 130/250_2560	2560	16	0.55	9000	2.1	1500	52000	25	0.35	9200	1.5	1500	52000	23	
VF/VF 130/250_3200	3200	14	0.44	9000	2.0	1500	52000	21	0.28	9200	1.4	1500	52000	19	

(–) Contact our technical service department advising radial load data (rotation direction, load angle, offset)

23 RATIO DISTRIBUTION FOR VF/VF, VF/W, W/VF SERIES GEARBOXES

	Ratios											i max
VF/VF 30/44	**245**	**350**	**420**	**560**	**700**	**840**	**1120**	**1680**	**2100**			**6000**
VF 30	7	10	15	20	20	30	40	60	60			60
VF 44	35	35	28	28	35	28	28	28	35			100
VF/VF 30/49	**240**	**315**	**420**	**540**	**720**	**900**	**1120**	**1440**	**2160**	**2700**		**6000**
VF 30	10	7	15	15	20	20	40	40	60	60		60
VF 49	24	45	28	36	36	45	28	36	36	45		100
VF/W 30/63	**240**	**315**	**450**	**570**	**720**	**900**	**1200**	**1520**	**2280**	**2700**		**7000**
VF 30	10	7	15	15	30	30	40	40	60	60		70
W 63	24	45	30	38	24	30	30	38	38	45		100
VF/W 44/75	**250**	**300**	**400**	**525**	**700**	**920**	**1200**	**1500**	**2100**	**2800**		**10000**
VF 44	10	10	10	35	35	46	60	60	70	70		100
W 75	25	30	40	15	20	20	20	25	30	40		100
VF/W 44/86	**230**	**300**	**400**	**525**	**700**	**920**	**1380**	**1840**	**2116**	**2760**		**10000**
VF 44	10	10	10	35	35	46	46	46	46	60		100
W 86	23	30	40	15	20	20	30	40	46	46		100
VF/W 49/110	**230**	**300**	**400**	**540**	**720**	**1080**	**1350**	**1656**	**2070**	**2800**		**10000**
VF 49	10	10	10	18	36	36	45	36	45	70		100
W 110	23	30	40	30	20	30	30	46	46	40		100
W/VF 63/130	**280**	**400**	**600**	**760**	**960**	**1200**	**1520**	**1800**	**2560**	**3200**		**10000**
W 63	7	10	15	19	24	30	38	45	64	80		100
VF 130	40	40	40	40	40	40	40	40	40	40		100
W/VF 86/150	**200**	**225**	**300**	**345**	**460**	**529**	**690**	**920**	**1380**	**1840**	**2944**	**10000**
W 86	10	15	15	15	20	23	23	23	46	46	64	100
VF 150	20	15	20	23	23	23	30	40	30	40	46	100
W/VF 86/185	**280**	**400**	**600**	**800**	**920**	**1200**	**1600**	**1840**	**2560**	**3200**		**10000**
W 86	7	10	15	20	23	30	40	46	64	80		100
VF 185	40	40	40	40	40	40	40	40	40	40		100
VF/VF 130/210	**280**	**400**	**600**	**800**	**920**	**1200**	**1600**	**1840**	**2560**	**3200**		**10000**
VF 130	7	10	15	20	23	30	40	46	64	80		100
VF 210	40	40	40	40	40	40	40	40	40	40		100
VF/VF 130/250	**280**	**400**	**600**	**800**	**920**	**1200**	**1600**	**1840**	**2560**	**3200**		**10000**
VF 130	7	10	15	20	23	30	40	46	64	80		100
VF 250	40	40	40	40	40	40	40	40	40	40		100

The ratio combinations that are listed in the chart are those recommended by the manufacturer.

If requested, the Bonfiglioli Technical Service will consider feasibility of combinations that are not listed, as long as these are lower in value than maximum ratio listed in the chart.

24 MOTOR AVAILABILITY

24.1 Motors to IEC standard

Motor-gearbox combinations resulting from charts are purely based on geometrical compatibility.
When selecting a gearmotor, refer to procedure specified at para: “Selection” and observe particularly the condition S ≥ f_s.

IEC		VF 27	VF 30	VF 44	VF 49	W 63	W 75	W 86	W 110	VF 130	VF 150	VF 185	VF 210	VF 250
P27	—	7...70	—	—	—	—	—	—	—	—	—	—	—	—
P56	B5 / B14	—	7...70	—	—	—	—	—	—	—	—	—	—	—
P63	B5 / B14	—	7...60	7...100	7...100	—	—	—	—	—	—	—	—	—
P71	B5 / B14	—	—	7...35	7...60	7...100	7...100 / —	7...100 / —	—	—	—	—	—	—
P80	B5 / B14	—	—	—	7...28	7...100	7...100	7...100	7...100	—	—	—	—	—
P90	B5 / B14	—	—	—	—	7...30	7...100	7...100	7...100	46...100 / —	—	—	—	—
P100	B5 / B14	—	—	—	—	—	7...100	7...100	7...100	7...80 / —	23...100 / —	50...100 / —	—	—
P112	B5 / B14	—	—	—	—	—	7...100	7...100	7...100	7...80 / —	23...100 / —	50...100 / —	—	—
P132	B5	—	—	—	—	—	—	—	7...100	7...40 #	7...46	30...80	7...100	7...100
P160	B5	—	—	—	—	—	—	—	—	—	7...20 #	15...40	7...100	7...100
P180	B5	—	—	—	—	—	—	—	—	—	—	7...20 #	7...100	7...100
P200	B5	—	—	—	—	—	—	—	—	—	—	—	7...100	7...100
P225	B5	—	—	—	—	—	—	—	—	—	—	—	7...100	7...100

IEC		VFR 44	VFR 49	WR 63	WR 75	WR 86	WR 110	VFR 130	VFR 150	VFR 185	VFR 210	VFR 250
S44	—	70...500	—	—	—	—	—	—	—	—	—	—
P63	B5	—	30...300	21...300	21...300	21...300	—	—	—	—	—	—
P71	B5	—	—	21...300	21...300	21...300	21...300	—	—	—	—	—
P80	B5	—	—	—	21...300	21...300	21...300	30...300	—	—	—	—
P90	B5	—	—	—	15...150	15...150	21...300	30...300	30...300 ⊖ (37.5;50)	30...300 ⊖ (37.5;50) (75;100)	—	—
P100	B5	—	—	—	—	—	21...300	30...300 #	30...300 ⊖ (37.5;50)	30...300 ⊖ (37.5;50) (75;100)	30...300	30...300
P112	B5	—	—	—	—	—	21...300	30...300 #	30...300 ⊖ (37.5;50)	30...300 ⊖ (37.5;50) (75;100)	30...300	30...300
P132	B5	—	—	—	—	—	—	—	25...50 # ⊖ (30;45)	25...100 # ⊖ (30;45) (60;90)	30...300	30...300
P160	B5	—	—	—	—	—	—	—	—	—	30...300 #	30...300 #

Gear ratio of the helical pre-stage i = 1.5 (shaded cells)

Motor-gearbox combinations marked with [#] feature a lowered key, supplied with the gearbox.

IEC		VF/VF 30/44	VF/VF 30/49	VF/W 30/63	VF/W 44/75	VF/W 44/86	VF/W 49/110	W/VF 63/130	W/VF 86/150	W/VF 86/185	VF/VF 130/210	VF/VF 130/250
P56	B5	—	—	240...2700	—	—	—	—	—	—	—	—
	B14	245...2100	240...2700	240...2700	—	—	—	—	—	—	—	—
P63	B5	—	—	240...2700	—	—	—	—	—	—	—	—
	B14	245...2100	240...2700	240...2700	250...2800	230...2760	230...2800	—	—	—	—	—
P71	B5	—	—	—	250...700	230...700	230...2400	280...3200	200...2944	280...3200	—	—
	B14								—	—		
P80	B5	—	—	—	—	—	230...540	280...3200	200...2944	280...3200	—	—
	B14											
P90	B5	—	—	—	—	—	—	280...1200	200...2944	280...3200	280...3200	280...3200
	B14										—	—
P100	B5	—	—	—	—	—	—	—	200...2944	280...3200	280...3200	280...3200
	B14										—	—
P112	B5	—	—	—	—	—	—	—	200...2944	280...3200	280...3200	280...3200
	B14										—	—
P132	B5	—	—	—	—	—	—	—	—	—	280...1600 #	280...1600 #

Motor-gearbox combinations marked with [#] feature a lowered key, supplied with the reducer.

24.2 Compact motor

	M1 - ME1 MXN10	M2 - ME2 MX2 - MXN20	ME3 MX3
W 63	7 ... 100	7 ... 100	⊖
W 75	7 ... 100	7 ... 100	7 ... 100
W 86	7 ... 100	7 ... 100	7 ... 100
W 110	⊖	7 ... 100	7 ... 100

	M1 - ME1 MXN10	M2 - ME2 MX2 - MXN20	ME3 MX3
W/VF 63/130	280 ... 3200	280 ... 3200	⊖
W/VF 86/150	200 ... 2944	200 ... 2944	200 ... 2944
W/VF 86/185	280 ... 3200	280 ... 3200	280 ... 3200

24.3 Maximum installable power on input P_

IEC_ BN BE BX BXN (IM B5) (IM B14)

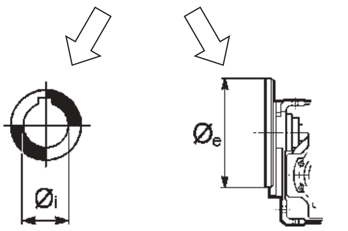
		P63			P71			P80				P90				P100			P112		
		BN	BE	BXN	BN	BE	BXN	BN	BE	BX	BXN	BN	BE	BX	BXN	BN	BE	BX	BN	BE	BX
[kW]	2p	0.37	—	—	0.75	—	—	1.5	1.1	—	—	2.2	2.2	—	—	4	3	—	4	4	—
	4p	0.25	0.18	0.18	0.55	0.37	0.37	1.1	0.75	0.75	0.75	1.85	1.5	1.5	1.5	3	3	3	4	4	4
	6p	0.12	—	—	0.37	—	—	0.75	—	—	—	1.1	0.75	—	—	1.85	1.5	—	2.2	2.2	—

		P132			P160			P180			P200	P225
		BN	BE	BX	BN	BE	BX	BN	BE	BX	BN	IEC
[kW]	2p	9.2	9.2	—	18.5	18.5	—	22	—	—	30	45
	4p	9.2	9.2	7.5	15	15	15	22	22	22	30	45
	6p	5.5	4	—	11	7.5	—	15	—	—	18.5	30

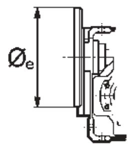
24.4 Motors not to IEC standard

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.

W 63 U 24 19 / 140 B3 ...

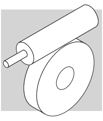


The following table lists available configurations, as well as their limited ranges of gear ratios.

								
		**80**	**90**	**105**	**120**	**140**	**160**	**200**
VF 30	**9**		7 ≤ i ≤ 70	⊖		7 ≤ i ≤ 70	⊖	⊖
	11	7 ≤ i ≤ 60		⊖	7 ≤ i ≤ 60		⊖	⊖
VF 44	**HS**	⊖	7 ≤ i ≤ 100	7 ≤ i ≤ 100	⊖	7 ≤ i ≤ 100	7 ≤ i ≤ 100	⊖
	11	⊖		7 ≤ i ≤ 100	⊖		7 ≤ i ≤ 100	⊖
	14	⊖	7 ≤ i ≤ 35		⊖	7 ≤ i ≤ 35		⊖
VF 49	**HS**	⊖	7 ≤ i ≤ 100	7 ≤ i ≤ 100	7 ≤ i ≤ 100	7 ≤ i ≤ 100	7 ≤ i ≤ 100	7 ≤ i ≤ 100
	11	⊖		7 ≤ i ≤ 100	7 ≤ i ≤ 100		7 ≤ i ≤ 100	7 ≤ i ≤ 100
	14	⊖	7 ≤ i ≤ 60		7 ≤ i ≤ 60	7 ≤ i ≤ 60		7 ≤ i ≤ 60
	19	⊖	7 ≤ i ≤ 28	7 ≤ i ≤ 28		7 ≤ i ≤ 28	7 ≤ i ≤ 28	
W 63	**19**	⊖	⊖	⊖	⊖	7 ≤ i ≤ 100	⊖	
W 75	**14**	⊖	⊖	⊖	⊖	⊖		7 ≤ i ≤ 100
	19	⊖	⊖	⊖		7 ≤ i ≤ 100	7 ≤ i ≤ 100	
	24	⊖	⊖	⊖	7 ≤ i ≤ 100		7 ≤ i ≤ 100	
W 86	**14**	⊖	⊖	⊖	⊖	⊖		7 ≤ i ≤ 100
	19	⊖	⊖	⊖		7 ≤ i ≤ 100	7 ≤ i ≤ 100	
	24	⊖	⊖	⊖	7 ≤ i ≤ 100		7 ≤ i ≤ 100	
W 110	**19**	⊖	⊖	⊖		7 ≤ i ≤ 100	⊖	⊖
	24	⊖	⊖	⊖	7 ≤ i ≤ 100		⊖	⊖

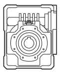
Standard arrangement

Some hybrid shaft/flange combinations are also possible for VF reduction units with center distance greater than 130 mm. Please contact Bonfiglioli Technical Service.
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.

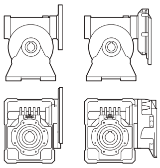


25 MOMENT OF INERTIA

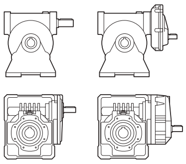
The following charts indicate the mass moment of inertia J_r [Kgm²] referred to gear unit with high speed solid shaft. A key to the symbols used follows:



Values of the moment of inertia refer to compact gearmotors, less the motor inertia. To obtain the overall moment of inertia for the gearmotor just add the value of the inertia for the specific compact motor, given in the relevant rating chart.

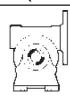
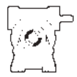


Values refer to gearmotors, IEC style, less the motor.

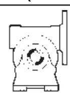


Values refer to speed reducers (solid input shaft).

VF 27

		i	J (•10⁻⁴) [kgm²] 					
			P27					HS
VF 27	VF 27_7	7	0.02	—	—	—	—	0.02
	VF 27_10	10	0.01	—	—	—	—	0.01
	VF 27_15	15	0.01	—	—	—	—	0.01
	VF 27_20	20	0.01	—	—	—	—	0.01
	VF 27_30	30	0.01	—	—	—	—	0.01
	VF 27_40	40	0.01	—	—	—	—	0.01
	VF 27_60	60	0.01	—	—	—	—	0.01
	VF 27_70	70	0.01	—	—	—	—	0.01

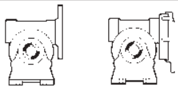
VF 30

		i	J (•10⁻⁴) [kgm²] 					
			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 - VFR 44

		i	J (•10⁻⁴) [kgm²]					
			S44	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
VFR 44	VFR 44_70	70	0.21	—	—	—	—	—
	VFR 44_100	100	0.20	—	—	—	—	—
	VFR 44_140	140	0.20	—	—	—	—	—
	VFR 44_175	175	0.20	—	—	—	—	—
	VFR 44_230	230	0.20	—	—	—	—	—
	VFR 44_300	300	0.20	—	—	—	—	—
	VFR 44_350	350	0.20	—	—	—	—	—
	VFR 44_500	500	0.20	—	—	—	—	—

VF 49 - VFR 49

		i	J (•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
VFR 49	**VFR 49_30**	30	0.74	—	—	—	—	0.94
	VFR 49_42	42	0.73	—	—	—	—	0.93
	VFR 49_54	54	0.73	—	—	—	—	0.93
	VFR 49_72	72	0.73	—	—	—	—	0.93
	VFR 49_84	84	0.73	—	—	—	—	0.93
	VFR 49_108	108	0.73	—	—	—	—	0.93
	VFR 49_135	135	0.73	—	—	—	—	0.93
	VFR 49_180	180	0.73	—	—	—	—	0.93
	VFR 49_210	210	0.72	—	—	—	—	0.92
	VFR 49_240	240	0.72	—	—	—	—	0.92
	VFR 49_300	300	0.72	—	—	—	—	0.92

W 63 - WR 63

		i	J (•10-4) [kgm2]									
			S1	S2	S3	P63	P71	P80	P90			HS
W 63	W 63_7	7	3.4	3.6	—	—	3.5	3.5	3.5	—	—	3.6
	W 63_10	10	3.1	3.3	—	—	3.2	3.3	3.2	—	—	3.3
	W 63_12	12	3.1	3.3	—	—	3.1	3.2	3.1	—	—	3.3
	W 63_15	15	3.0	3.2	—	—	3.0	3.1	3.0	—	—	3.2
	W 63_19	19	2.9	3.1	—	—	2.9	3.0	2.9	—	—	3.1
	W 63_24	24	2.8	3.1	—	—	2.9	3.0	2.9	—	—	3.0
	W 63_30	30	2.9	3.1	—	—	2.9	3.0	2.9	—	—	3.1
	W 63_38	38	2.8	3.1	—	—	2.9	3.0	2.9	—	—	3.0
	W 63_45	45	2.8	3.0	—	—	2.9	2.9	2.9	—	—	3.0
	W 63_64	64	2.8	3.0	—	—	2.8	2.9	2.8	—	—	3.0
	W 63_80	80	2.8	3.0	—	—	2.8	2.9	2.8	—	—	3.0
	W 63_100	100	2.8	3.0	—	—	2.8	2.9	2.8	—	—	2.9
WR 63	WR 63_21	21	—	—	—	0.84	0.83	—	—	—	—	0.81
	WR 63_30	30	—	—	—	0.81	0.80	—	—	—	—	0.78
	WR 63_36	36	—	—	—	0.81	0.80	—	—	—	—	0.77
	WR 63_45	45	—	—	—	0.80	0.79	—	—	—	—	0.76
	WR 63_57	57	—	—	—	0.79	0.78	—	—	—	—	0.75
	WR 63_72	72	—	—	—	0.78	0.77	—	—	—	—	0.74
	WR 63_90	90	—	—	—	0.79	0.78	—	—	—	—	0.75
	WR 63_114	114	—	—	—	0.78	0.77	—	—	—	—	0.74
	WR 63_135	135	—	—	—	0.78	0.77	—	—	—	—	0.74
	WR 63_192	192	—	—	—	0.77	0.76	—	—	—	—	0.74
	WR 63_240	240	—	—	—	0.77	0.76	—	—	—	—	0.74
	WR 63_300	300	—	—	—	0.77	0.76	—	—	—	—	0.73

W 75 - WR 75

		i	J (•10-4) [kgm2]									
			S1	S2	S3	P63	P71	P80	P90	P100	P112	HS
W 75	**W 75_7**	7	6.9	6.6	6.6	—	6.9	7.0	6.9	6.9	6.9	7.3
	W 75_10	10	6.4	6.1	6.1	—	6.4	6.4	6.3	5.7	5.7	6.8
	W 75_15	15	6.1	5.8	5.8	—	6.1	6.1	6.0	5.3	5.3	6.5
	W 75_20	20	5.9	5.6	5.6	—	5.9	5.9	5.9	5.2	5.2	6.3
	W 75_25	25	5.9	5.6	5.6	—	6.0	6.0	5.9	5.2	5.2	6.3
	W 75_30	30	5.9	5.6	5.6	—	5.9	5.9	5.9	5.2	5.2	6.3
	W 75_40	40	5.9	5.6	5.6	—	5.9	5.9	5.8	5.2	5.2	6.3
	W 75_50	50	5.9	5.6	5.6	—	5.9	5.9	5.8	5.1	5.1	6.2
	W 75_60	60	5.8	5.5	5.5	—	5.8	5.9	5.8	5.1	5.1	6.2
	W 75_80	80	5.8	5.5	5.5	—	5.8	5.8	5.8	5.1	5.1	6.2
	W 75_100	100	5.8	5.5	5.5	—	5.8	5.8	5.7	5.0	5.0	6.2
WR 75	**WR 75_21**	21	—	—	—	1.2	1.2	2.1	—	—	—	1.9
	WR 75_30	30	—	—	—	1.1	1.1	2.1	—	—	—	1.1
	WR 75_45	45	—	—	—	1.1	1.1	2.0	—	—	—	1.1
	WR 75_60	60	—	—	—	1.1	1.1	2.0	—	—	—	1.0
	WR 75_75	75	—	—	—	1.1	1.1	2.0	—	—	—	1.0
	WR 75_90	90	—	—	—	1.1	1.1	2.0	—	—	—	1.0
	WR 75_120	120	—	—	—	1.1	1.1	2.0	—	—	—	1.0
	WR 75_150	150	—	—	—	1.1	1.1	2.0	—	—	—	1.0
	WR 75_180	180	—	—	—	1.1	1.1	2.0	—	—	—	1.0
	WR 75_240	240	—	—	—	1.1	1.1	2.0	—	—	—	1.0
	WR 75_300	300	—	—	—	1.1	1.1	2.0	—	—	—	1.0

		i	J (•10-4) [kgm2]
			P90
WR 75_P90 B5	**WR 75_15**	15	6.0
	WR 75_22.5	22.5	5.9
	WR 75_30	30	5.8
	WR 75_37.5	37.5	5.8
	WR 75_45	45	5.8
	WR 75_60	60	5.8
	WR 75_75	75	5.8
	WR 75_90	90	5.7
	WR 75_120	120	5.7
	WR 75_150	150	5.7

W 86 - WR 86

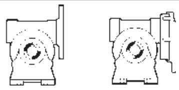
		i	J (•10-4) [kgm2]									
			S1	S2	S3	P63	P71	P80	P90	P100		HS
W 86	W 86_7	7	9.7	9.4	9.4	—	9.7	9.7	9.6	9.6	—	10.1
	W 86_10	10	8.4	8.1	8.1	—	8.4	8.4	8.3	7.7	—	8.9
	W 86_15	15	7.7	7.4	7.4	—	7.7	7.7	7.7	7.0	—	8.2
	W 86_20	20	6.9	6.6	6.6	—	6.9	7.0	6.9	6.2	—	7.4
	W 86_23	23	6.8	6.5	6.5	—	6.8	6.9	6.8	6.1	—	7.3
	W 86_30	30	7.3	7.0	7.0	—	7.3	7.3	7.3	6.6	—	7.8
	W 86_40	40	6.7	6.4	6.4	—	6.7	6.7	6.6	6.0	—	7.2
	W 86_46	46	6.7	6.4	6.4	—	6.7	6.7	6.6	5.9	—	7.1
	W 86_56	56	6.6	6.3	6.3	—	6.6	6.7	6.6	5.9	—	7.1
	W 86_64	64	6.6	6.3	6.3	—	6.6	6.6	6.5	5.9	—	7.1
	W 86_80	80	6.6	6.3	6.3	—	6.6	6.6	6.5	5.9	—	7.1
	W 86_100	100	6.4	6.1	6.1	—	6.4	6.5	6.4	5.7	—	6.9
WR 86	WR 86_21	21	—	—	—	1.5	1.5	2.4	—	—	—	2.2
	WR 86_30	30	—	—	—	1.4	1.3	2.3	—	—	—	1.3
	WR 86_45	45	—	—	—	1.3	1.3	2.2	—	—	—	1.2
	WR 86_60	60	—	—	—	1.2	1.2	2.1	—	—	—	1.2
	WR 86_69	69	—	—	—	1.2	1.2	2.1	—	—	—	1.1
	WR 86_90	90	—	—	—	1.2	1.2	2.2	—	—	—	1.2
	WR 86_120	120	—	—	—	1.2	1.2	2.1	—	—	—	1.1
	WR 86_138	138	—	—	—	1.2	1.2	2.1	—	—	—	1.1
	WR 86_168	168	—	—	—	1.2	1.2	2.1	—	—	—	1.1
	WR 86_192	192	—	—	—	1.2	1.1	2.1	—	—	—	1.1
	WR 86_240	240	—	—	—	1.2	1.1	2.1	—	—	—	1.1
	WR 86_300	300	—	—	—	1.1	1.1	2.1	—	—	—	1.1

		i	J (•10-4) [kgm2]
			P90
WR 86_P90 B5	WR 86_15	15	6.9
	WR 86_22.5	22.5	6.6
	WR 86_30	30	6.3
	WR 86_34.5	34.5	6.2
	WR 86_45	45	6.4
	WR 86_60	60	6.2
	WR 86_69	69	6.1
	WR 86_84	84	6.1
	WR 86_96	96	6.0
	WR 86_120	120	6.0
	WR 86_150	150	5.9

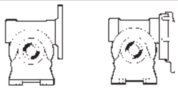
W 110 - WR 110

		i	J (•10⁻⁴) [kgm²]									
			S1	S2	S3	P63	P71	P80	P90	P100	P132	HS
W 110												
	W 110_7	7	—	22	22	—	—	23	23	23	28	23
	W 110_10	10	—	19	19	—	—	19	19	24	24	20
	W 110_15	15	—	17	17	—	—	17	17	22	22	17
	W 110_20	20	—	14	14	—	—	14	14	19	19	15
	W 110_23	23	—	14	14	—	—	14	14	19	19	15
	W 110_30	30	—	15	15	—	—	16	16	20	20	16
	W 110_40	40	—	13	13	—	—	14	14	19	19	14
	W 110_46	46	—	13	13	—	—	13	13	18	18	14
	W 110_56	56	—	13	13	—	—	13	13	18	18	14
	W 110_64	64	—	13	13	—	—	13	13	18	18	14
	W 110_80	80	—	13	13	—	—	13	13	18	18	14
	W 110_100	100	—	13	13	—	—	13	13	18	18	14
WR 110												
	WR 110_21	21	—	—	—	—	3.0	9.0	8.8	8.9	—	9.2
	WR 110_30	30	—	—	—	—	2.5	8.6	8.4	8.4	—	8.8
	WR 110_45	45	—	—	—	—	2.3	8.3	8.2	8.2	—	8.5
	WR 110_60	60	—	—	—	—	2.0	8.1	7.9	7.9	—	8.3
	WR 110_69	69	—	—	—	—	2.0	8.0	7.9	7.9	—	8.2
	WR 110_90	90	—	—	—	—	2.2	8.2	8.1	8.1	—	8.4
	WR 110_120	120	—	—	—	—	1.9	8.0	7.8	7.9	—	8.2
	WR 110_138	138	—	—	—	—	1.9	8.0	7.8	7.8	—	8.2
	WR 110_168	168	—	—	—	—	1.9	8.0	7.8	7.8	—	8.1
	WR 110_192	192	—	—	—	—	1.9	7.9	7.8	7.8	—	8.1
	WR 110_240	240	—	—	—	—	1.9	7.9	7.8	7.8	—	8.1
	WR 110_300	300	—	—	—	—	1.9	7.9	7.8	7.8	—	8.1

VF 130 - VFR 130

		i	J (•10^{-4}) [kgm^2]					
								
			P80	P90	P100	P112	P132	HS
VF 130	VF 130_7	7	—	—	36	36	35	31
	VF 130_10	10	—	—	27	27	25	22
	VF 130_15	15	—	—	20	20	18	15
	VF 130_20	20	—	—	17	17	15	11
	VF 130_23	23	—	—	16	16	14	11
	VF 130_30	30	—	—	17	17	15	12
	VF 130_40	40	—	—	15	15	14	9.9
	VF 130_46	46	—	14	14	14	—	8.2
	VF 130_56	56	—	13	13	13	—	7.8
	VF 130_64	64	—	13	13	13	—	7.4
	VF 130_80	80	—	13	12	12	—	7.0
	VF 130_100	100	—	13	—	—	—	8.9
VFR 130	VFR 130_30	30	5.3	5.3	5.2	5.2	—	5.7
	VFR 130_45	45	4.5	4.5	4.4	4.4	—	4.9
	VFR 130_60	60	4.2	4.1	4.1	4.1	—	4.6
	VFR 130_69	69	4.1	4.0	4.0	4.0	—	4.5
	VFR 130_90	90	4.2	4.1	4.1	4.1	—	4.6
	VFR 130_120	120	4.0	3.9	4.0	4.0	—	4.4
	VFR 130_138	138	3.8	3.8	3.7	3.7	—	4.2
	VFR 130_168	168	3.8	3.7	3.7	3.7	—	4.1
	VFR 130_192	192	3.7	3.7	3.6	3.6	—	4.1
	VFR 130_240	240	3.7	3.6	3.6	3.6	—	4.1
	VFR 130_300	300	3.9	3.8	3.8	3.8	—	4.3

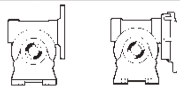
VF 150 - VFR 150

		i	J (•10⁻⁴) [kgm²]				
							
			P90	P100	P112	P132	HS
VF 150	VF 150_7	7	—	—	—	58	50
	VF 150_10	10	—	—	—	44	35
	VF 150_15	15	—	—	—	29	21
	VF 150_20	20	—	—	—	27	19
	VF 150_23	23	—	28	28	26	17
	VF 150_30	30	—	31	31	29	21
	VF 150_40	40	—	26	26	24	16
	VF 150_46	46	—	24	24	22	13
	VF 150_56	56	25	24	24	—	13
	VF 150_64	64	24	23	23	—	12
	VF 150_80	80	23	22	22	—	11
	VF 150_100	100	23	22	22	—	11
VFR 150	VFR 150_25	25	—	—	—	15	—
	VFR 150_30	30	10	10	10	—	11
	VFR 150_37.5	37.5	—	—	—	13	—
	VFR 150_45	45	8.8	8.8	8.8	—	9.7
	VFR 150_50	50	—	—	—	12	—
	VFR 150_60	60	8.3	8.3	8.3	—	9.2
	VFR 150_69	69	8.4	8.4	8.4	—	9.3
	VFR 150_90	90	8.7	8.7	8.7	—	9.7
	VFR 150_120	120	8.2	8.2	8.2	—	9.2
	VFR 150_138	138	7.9	7.9	7.9	—	8.9
	VFR 150_168	168	7.9	7.9	7.9	—	8.9
	VFR 150_192	192	7.8	7.8	7.8	—	8.8
	VFR 150_240	240	7.7	7.7	7.7	—	8.6
	VFR 150_300	300	7.7	7.7	7.7	—	8.6

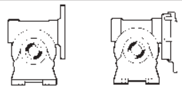
VF 185 - VFR 185

		i	J (•10⁻⁴) [kgm²]						
			P90	P100	P112	P132	P160	P180	HS
VF 185	VF 185_7	7	—	—	—	—	—	146	128
	VF 185_10	10	—	—	—	—	—	108	91
	VF 185_15	15	—	—	—	—	70	88	50
	VF 185_20	20	—	—	—	—	69	66	48
	VF 185_30	30	—	—	—	58	54	—	34
	VF 185_40	40	—	—	—	63	61	—	41
	VF 185_50	50	—	59	59	58	—	—	35
	VF 185_60	60	—	55	55	53	—	—	31
	VF 185_80	80	—	52	52	51	—	—	28
	VF 185_100	100	—	51	51	—	—	—	27
VFR 185	VFR 185_25	25	—	—	—	24	—	—	—
	VFR 185_30	30	17	17	17	—	—	—	18
	VFR 185_37.5	37.5	—	—	—	17	—	—	—
	VFR 185_45	45	12	12	12	—	—	—	13
	VFR 185_50	50	—	—	—	17	—	—	—
	VFR 185_60	60	12	12	12	—	—	—	13
	VFR 185_75	75	—	—	—	15	—	—	—
	VFR 185_90	90	10	10	10	—	—	—	11
	VFR 185_100	100	—	—	—	16	—	—	—
	VFR 185_120	120	11	11	11	—	—	—	12
	VFR 185_150	150	10	10	10	—	—	—	11
	VFR 185_180	180	9.9	9.9	9.9	—	—	—	11
	VFR 185_240	240	9.6	9.6	9.6	—	—	—	11
	VFR 185_300	300	9.5	9.4	9.4	—	—	—	10

VF 210 - VFR 210

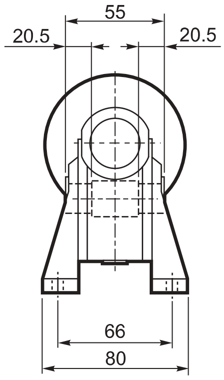
		i	J (•10^{-4}) [kgm^2] 							
			P100	P112	P132	P160	P180	P200	P225	HS
VF 210	**VF 210_7**	7	—	—	286	286	286	286	286	286
	VF 210_10	10	—	—	177	177	177	177	177	177
	VF 210_15	15	—	—	120	120	120	120	120	120
	VF 210_20	20	—	—	116	116	116	116	116	116
	VF 210_30	30	—	—	81	81	81	81	81	81
	VF 210_40	40	—	—	98	98	98	98	98	98
	VF 210_50	50	—	—	84	84	84	84	84	84
	VF 210_60	60	—	—	75	75	75	75	75	75
	VF 210_80	80	—	—	68	68	68	68	68	68
	VF 210_100	100	—	—	63	63	63	63	63	63
VFR 210	**VFR 210_30**	30	48	48	47	47	—	—	—	51
	VFR 210_45	45	41	41	41	41	—	—	—	45
	VFR 210_60	60	41	41	41	40	—	—	—	45
	VFR 210_90	90	37	37	37	36	—	—	—	41
	VFR 210_120	120	39	39	39	38	—	—	—	43
	VFR 210_150	150	37	37	37	37	—	—	—	41
	VFR 210_180	180	36	36	36	36	—	—	—	40
	VFR 210_240	240	36	36	36	35	—	—	—	39
	VFR 210_300	300	35	35	35	34	—	—	—	39

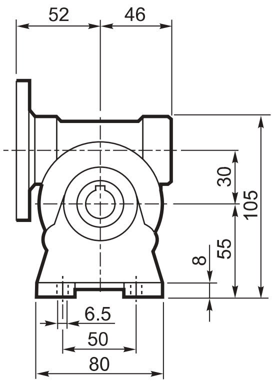
VF 250 - VFR 250

		i	J (•10^{-4}) [kgm^2]							
										
			P100	P112	P132	P160	P180	P200	P225	HS
VF 250	**VF 250_7**	7	—	—	620	620	620	620	620	620
	VF 250_10	10	—	—	387	387	387	387	387	387
	VF 250_15	15	—	—	266	266	266	266	266	266
	VF 250_20	20	—	—	242	242	242	242	242	242
	VF 250_30	30	—	—	184	184	184	184	184	184
	VF 250_40	40	—	—	241	241	241	241	241	241
	VF 250_50	50	—	—	240	240	240	240	240	240
	VF 250_60	60	—	—	158	158	158	158	158	158
	VF 250_80	80	—	—	160	160	160	160	160	160
	VF 250_100	100	—	—	149	149	149	149	149	149
VFR 250	**VFR 250_30**	30	71	71	71	70	—	—	—	75
	VFR 250_45	45	58	58	57	57	—	—	—	61
	VFR 250_60	60	55	55	55	54	—	—	—	58
	VFR 250_90	90	48	48	48	48	—	—	—	52
	VFR 250_120	120	55	55	54	54	—	—	—	58
	VFR 250_150	150	55	55	54	54	—	—	—	58
	VFR 250_180	180	46	46	45	45	—	—	—	49
	VFR 250_240	240	46	46	45	45	—	—	—	49
	VFR 250_300	300	45	45	44	44	—	—	—	48

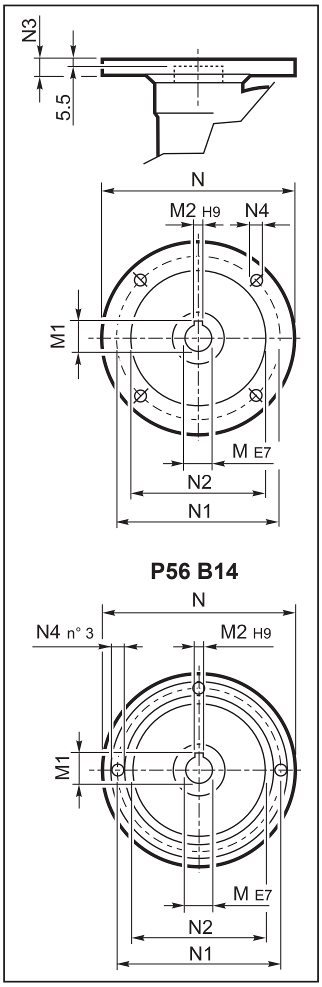
VF 30...P (IEC)

A

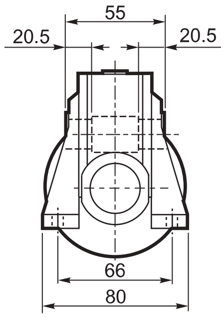


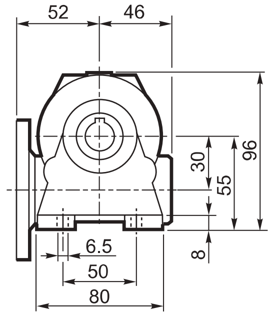


INPUT

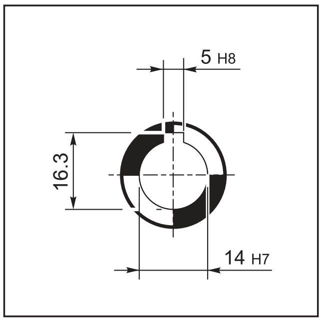


N

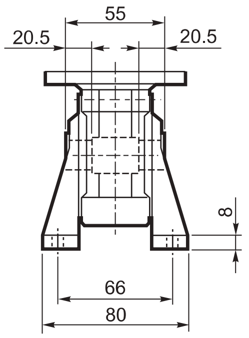


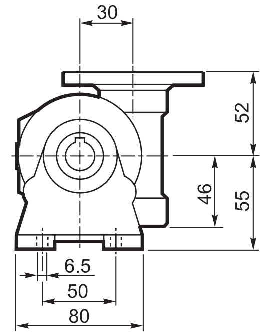


OUTPUT

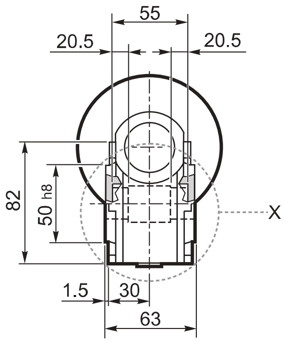


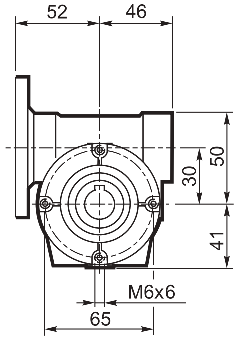
V

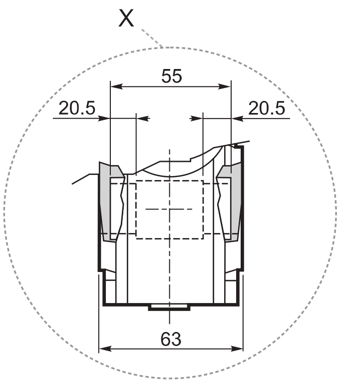




P

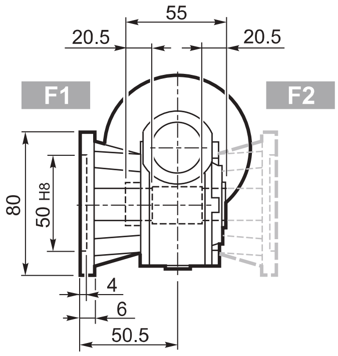


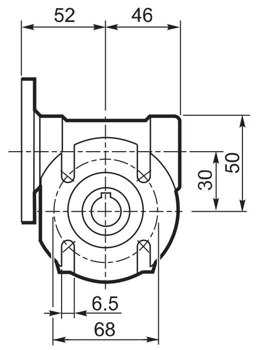




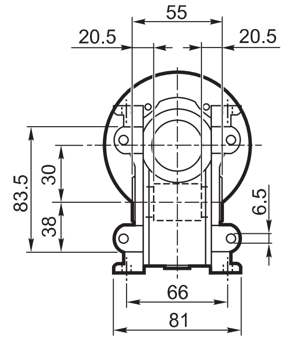
VF 30...P (IEC)

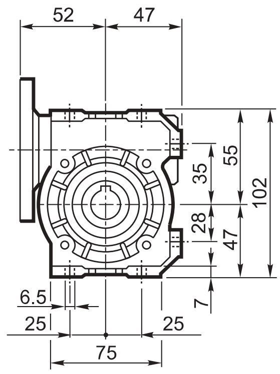
F_



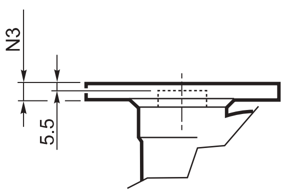


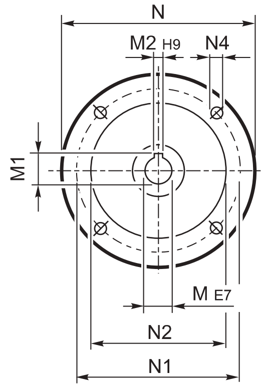
U



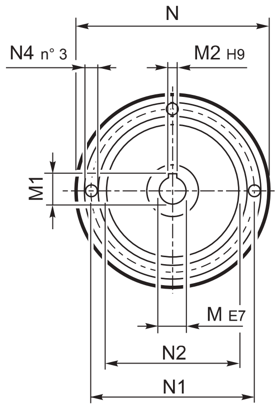


INPUT

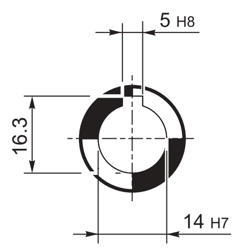




P56 B14



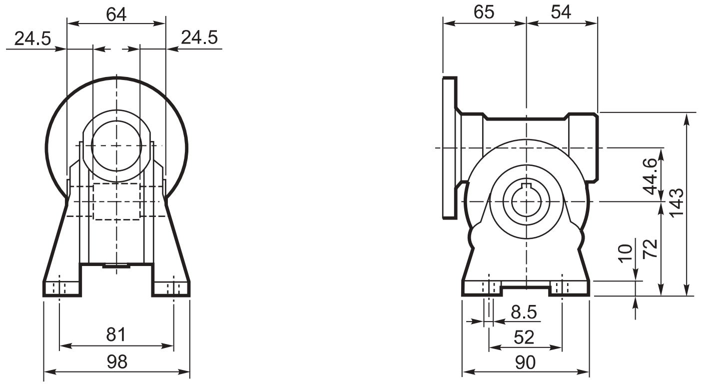
OUTPUT



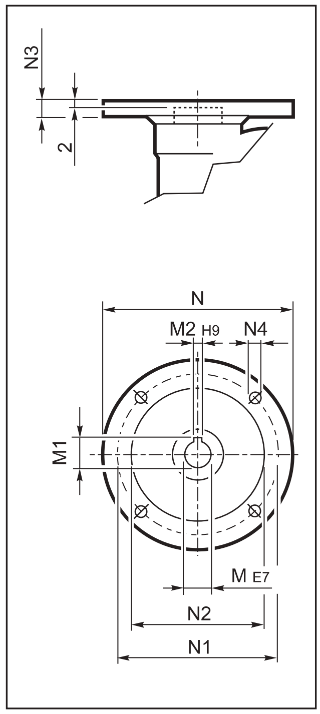
		M	M1	M2	N	N1	N2	N3	N4	Kg
VF 30	P56 B5	9	10.4	3	120	100	80	7	7	1.1
VF 30	P56 B14	9	10.4	3	80	65	50	7	5.5	
VF 30	P63 B5	11	12.8	4	140	115	95	8	9.5	
VF 30	P63 B14	11	12.8	4	90	75	60	6	5.5	

VF 44...P (IEC)

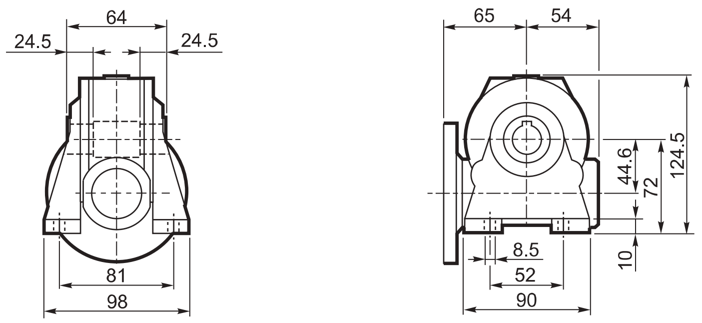
A



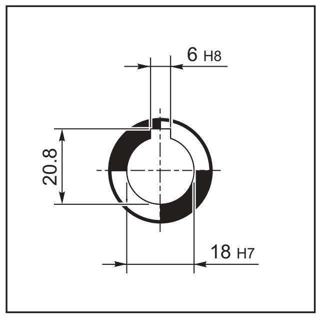
INPUT



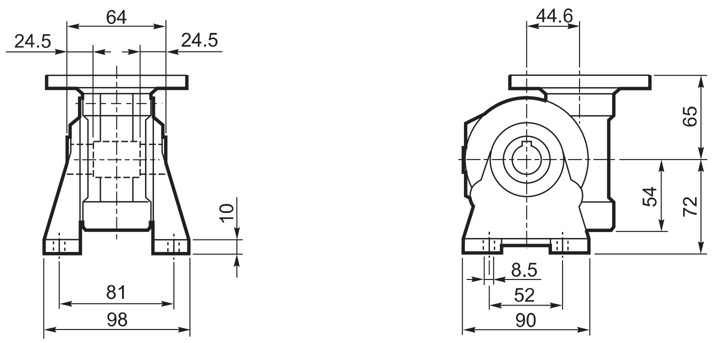
N



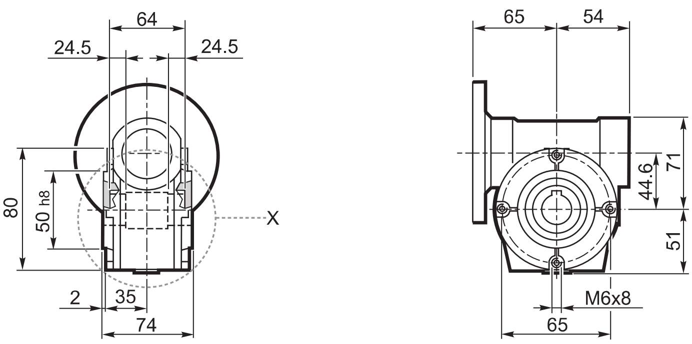
OUTPUT

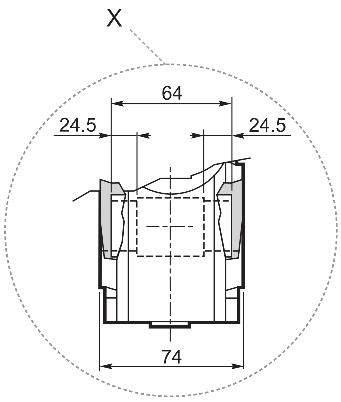


V



P

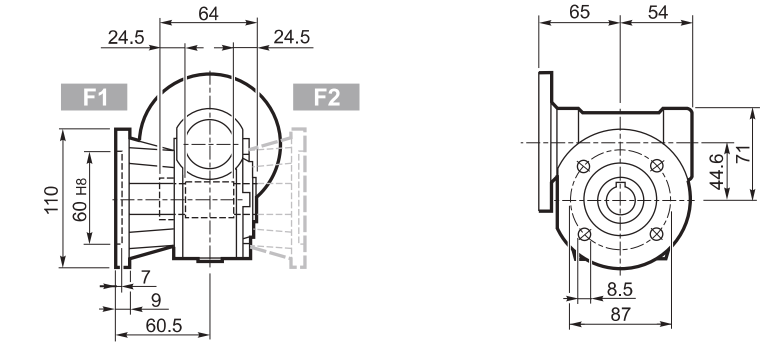




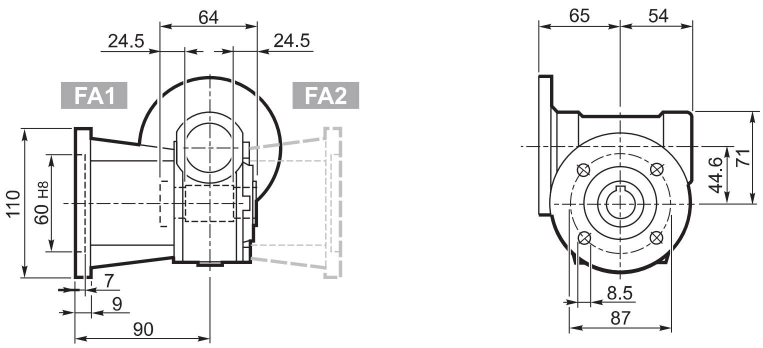
Bonfiglioli Riduttori

VF 44...P (IEC)

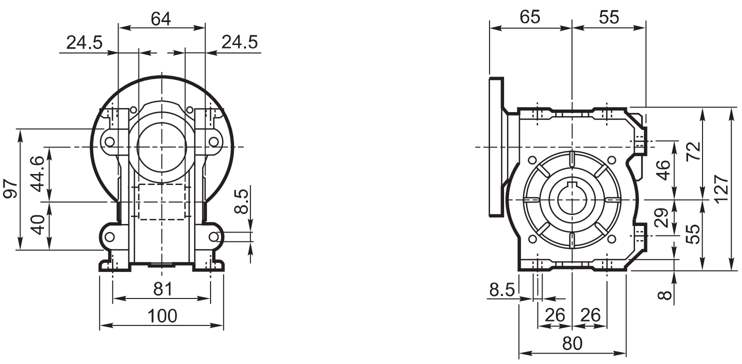
F_



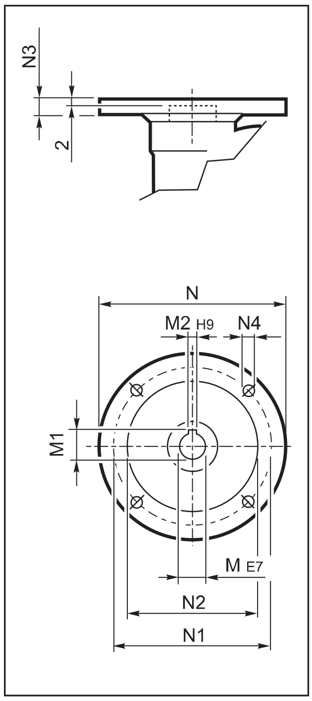
FA_



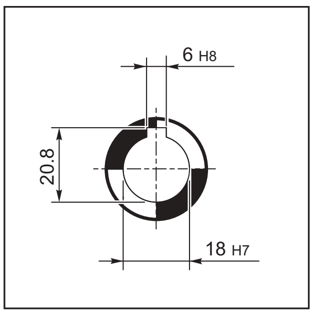
U



INPUT



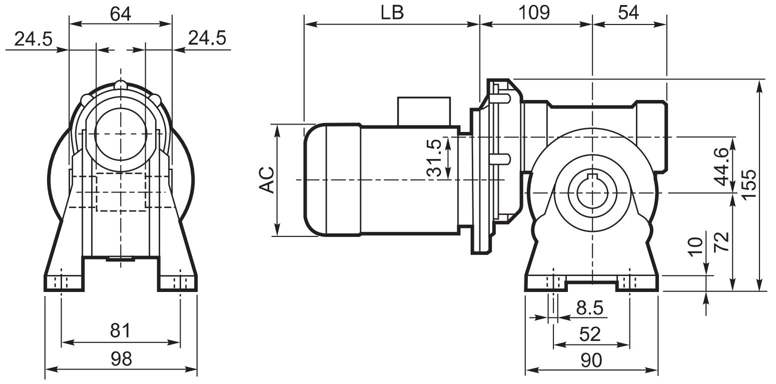
OUTPUT

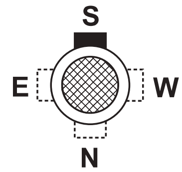


		M	M1	M2	N	N1	N2	N3	N4	Kg
VF 44	**P63 B5**	11	12.8	4	140	115	95	10	9.5	2.0
VF 44	**P71 B5**	14	16.3	5	160	130	110	10	9.5	
VF 44	**P63 B14**	11	12.8	4	90	75	60	8	5.5	
VF 44	**P71 B14**	14	16.3	5	105	85	70	10	7	

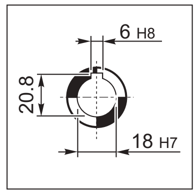
VFR 44...BN 44

A

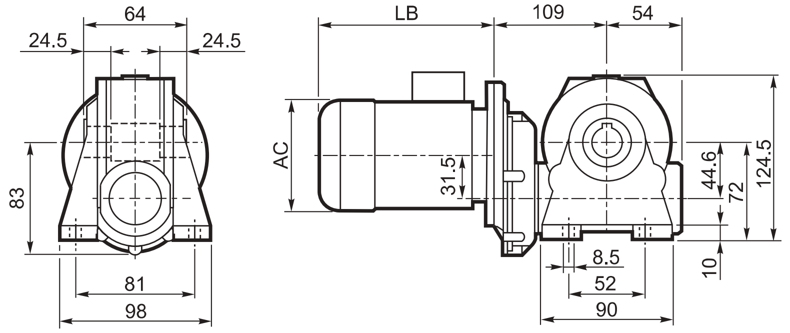


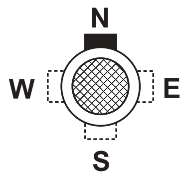


OUTPUT

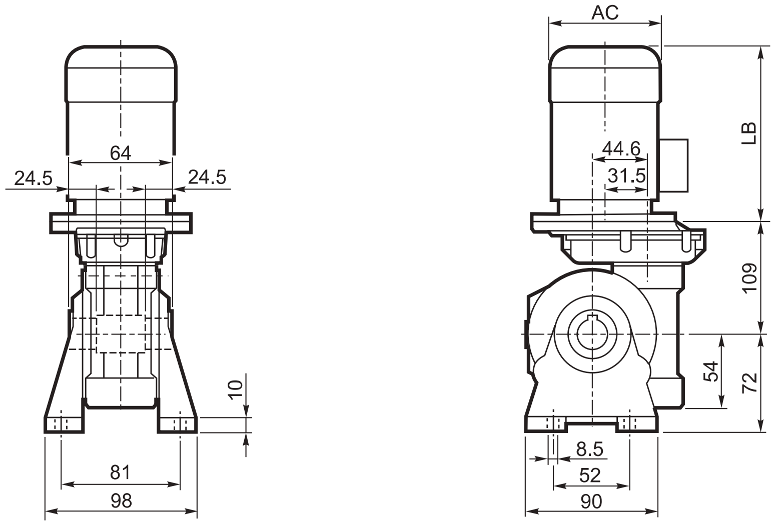


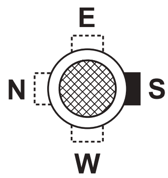
N

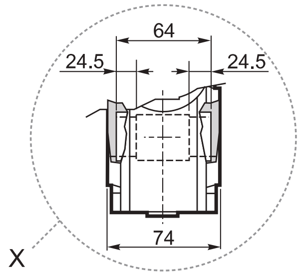




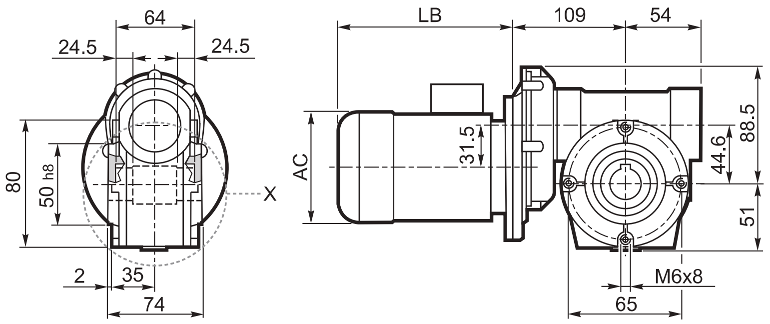
V

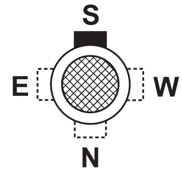






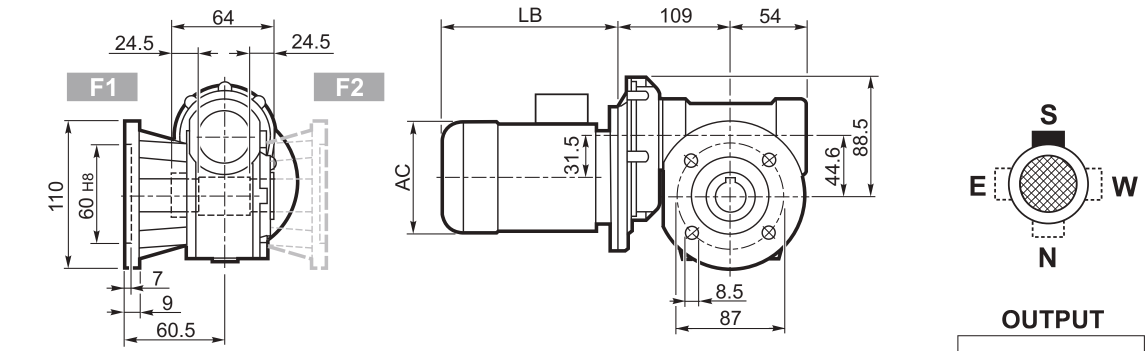
P



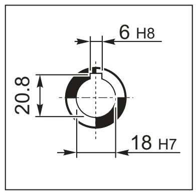


VFR 44...BN 44

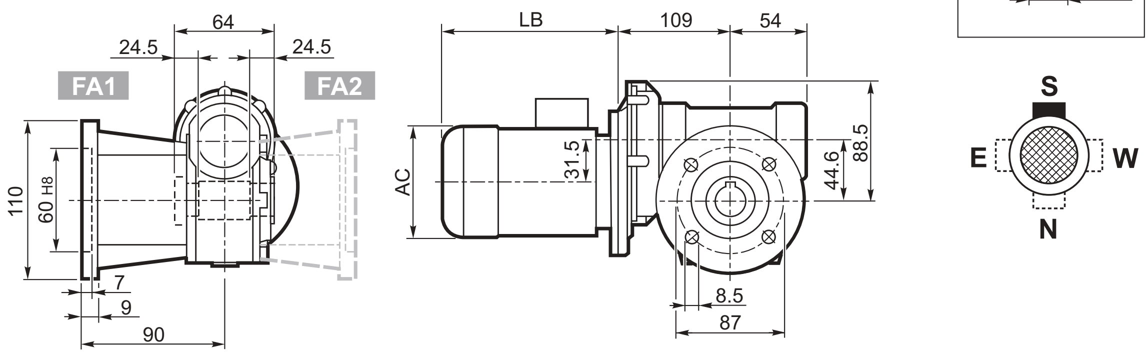
F_



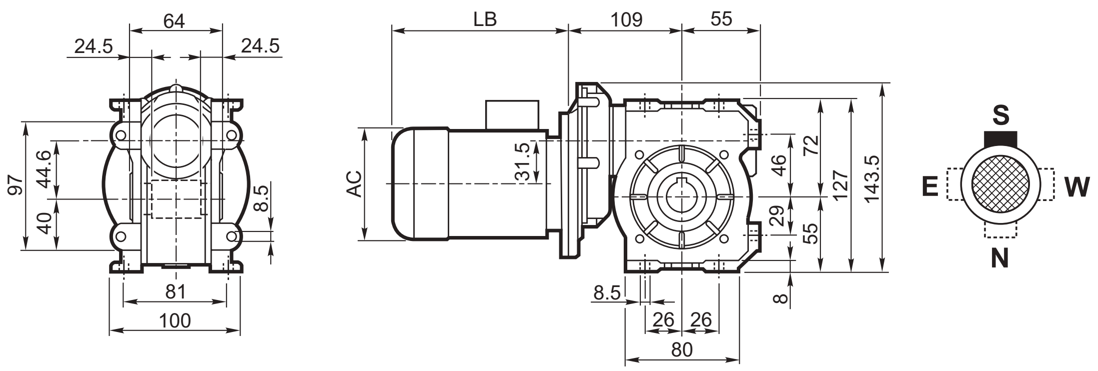
OUTPUT



FA_

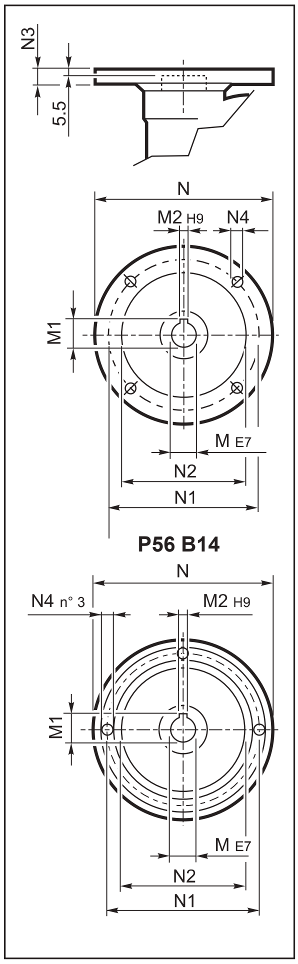


U

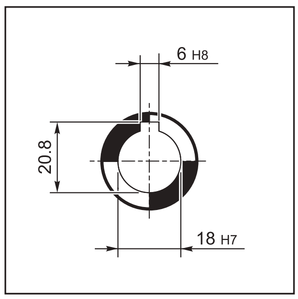


	P_n kW	n min^{-1}	M_n Nm	η %	COSφ	In A (400V)	Is/In	Ms/Mn	Ma/Mn	Jm (·10^{-4}) kgm^2	Kg	LB	AC	AD
BN 44B4	0.06	1380	0.42	40	0.58	0.38	2.4	2.3	1.9	1.22	4.7	168	112	94
BN 44C4	0.09	1380	0.63	46	0.65	0.43	2.8	2.3	2	1.49	4.6	168	112	94

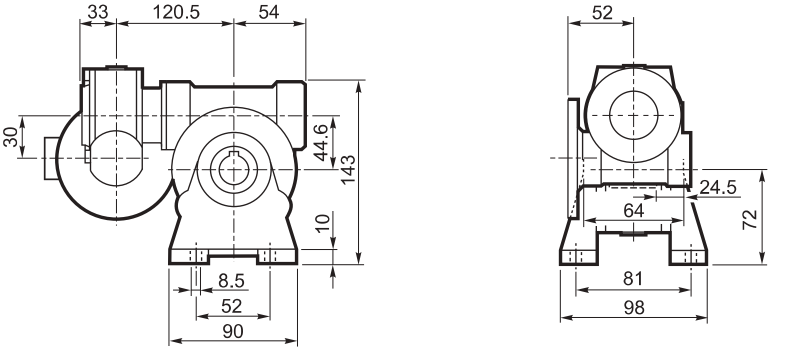
INPUT



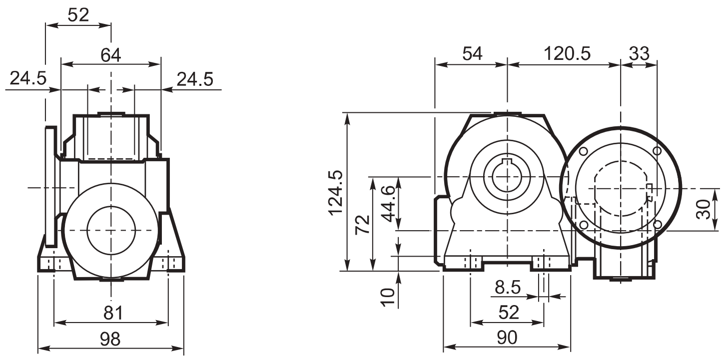
OUTPUT



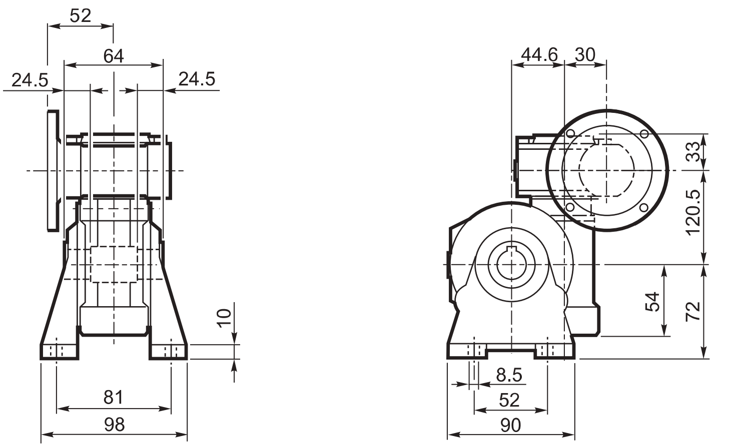
A



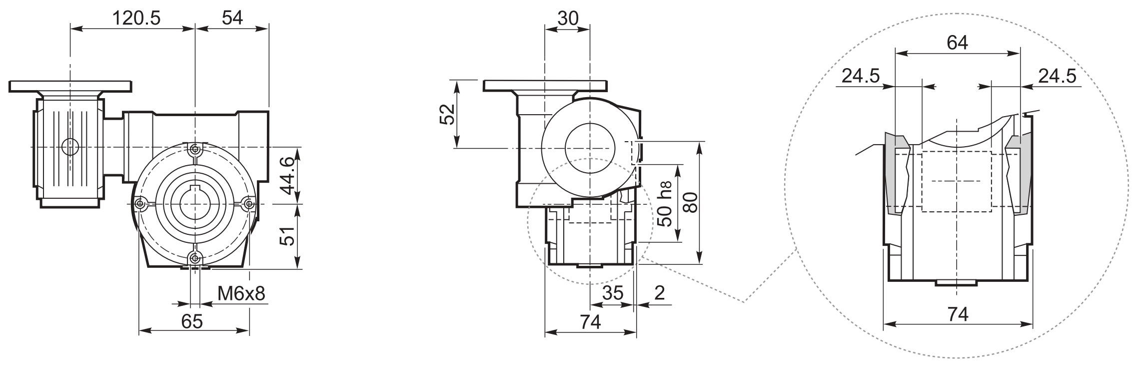
N



V



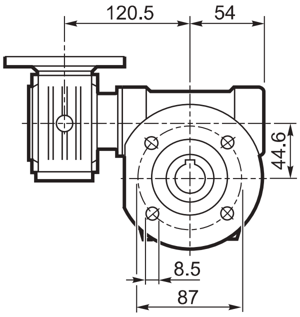
P

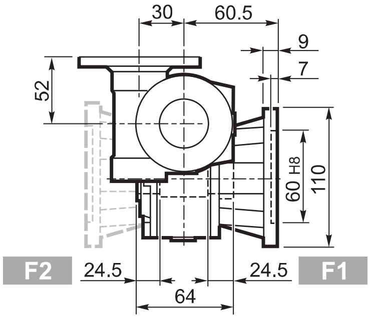


Bonfiglioli
Riduttori

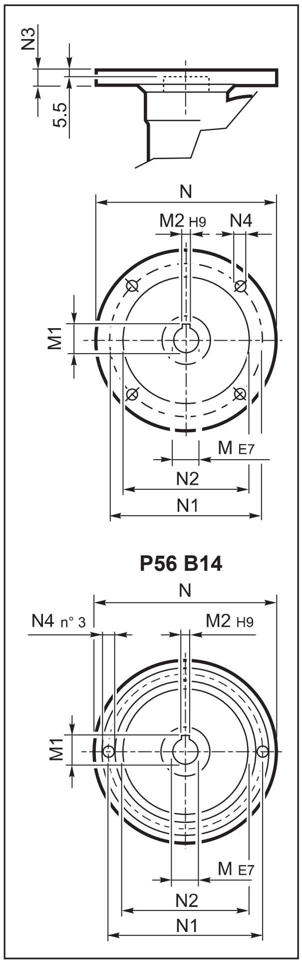
VF/VF 30/44...P (IEC)

F_

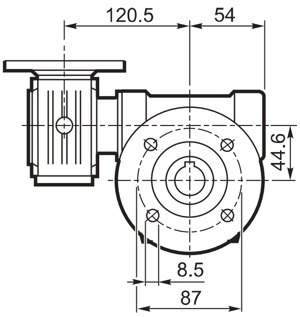


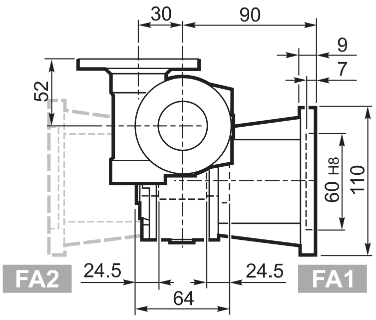


INPUT

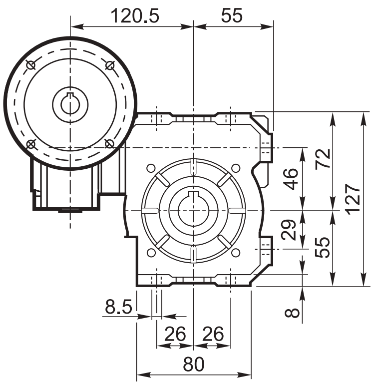


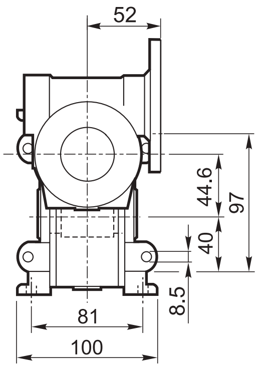
FA_



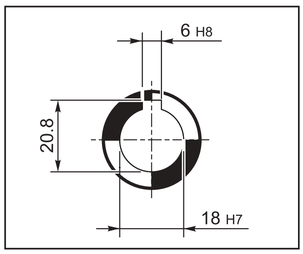


U





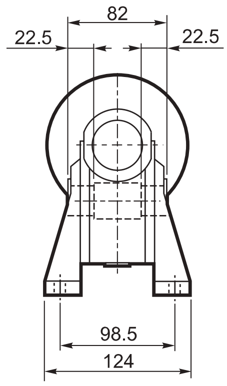
OUTPUT

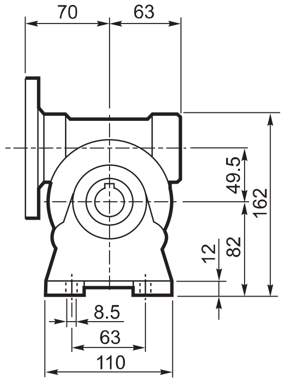


		M	M1	M2	N	N1	N2	N3	N4	Kg
VF/VF 30/44	P56 B14	9	10.4	3	80	65	50	7	5.5	3.5
VF/VF 30/44	P63 B14	11	12.8	4	90	75	60	6	5.5	

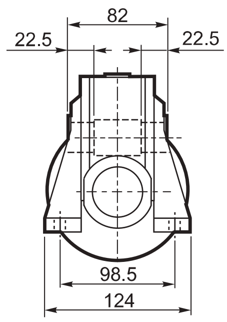
VF 49...P (IEC)

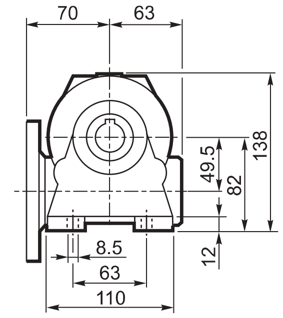
A



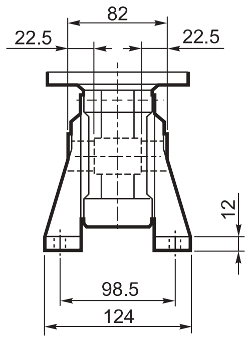


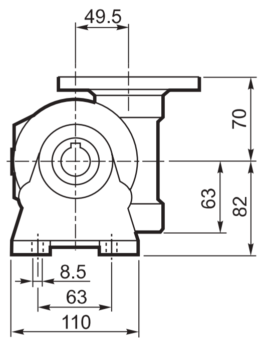
N



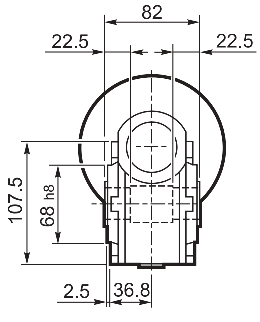


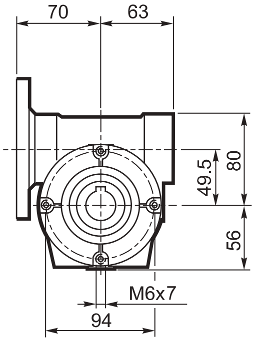
V



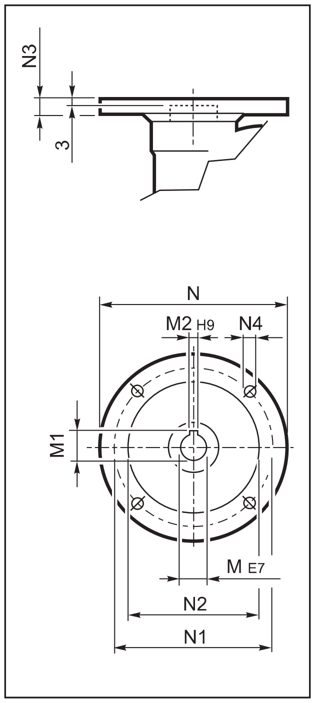


P

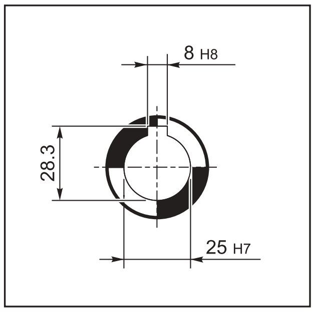




INPUT

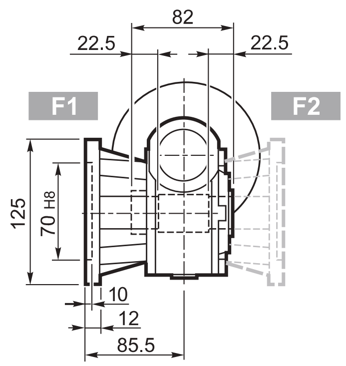


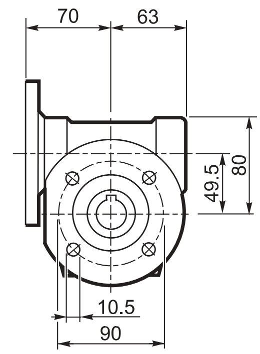
OUTPUT



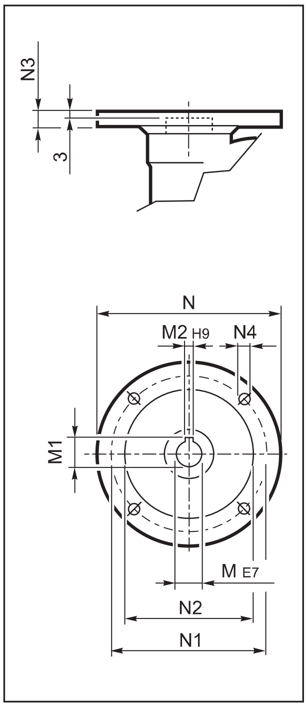
VF 49...P (IEC)

F_

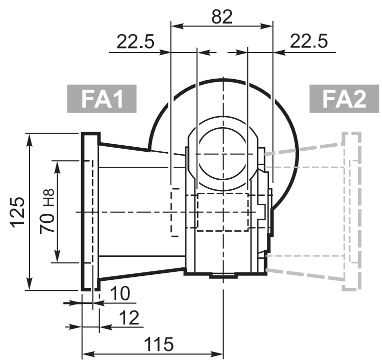


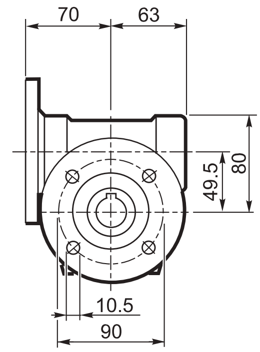


INPUT

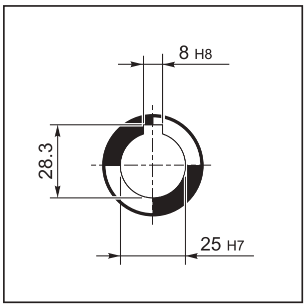


FA_

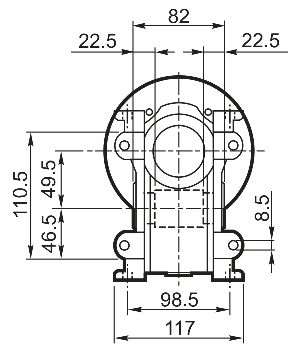


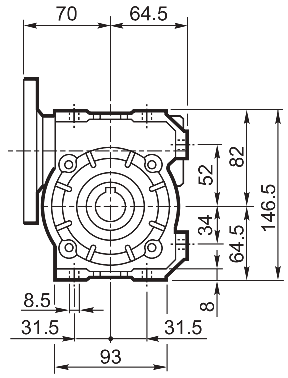


OUTPUT



U

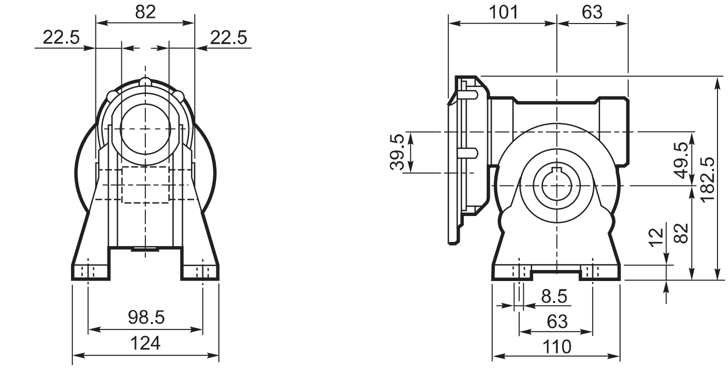




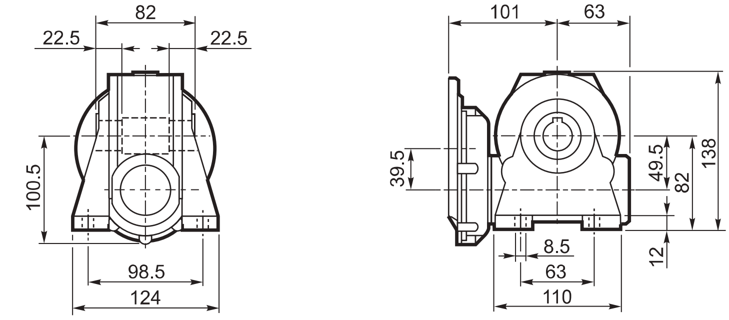
		M	M1	M2	N	N1	N2	N3	N4	Kg
VF 49	**P63 B5**	11	12.8	4	140	115	95	10.5	9.5	3.0
VF 49	**P71 B5**	14	16.3	5	160	130	110	10.5	9.5	
VF 49	**P80 B5**	19	21.8	6	200	165	130	10	11.5	
VF 49	**P63 B14**	11	12.8	4	90	75	60	7	6	
VF 49	**P71 B14**	14	16.3	5	105	85	70	10.5	6.5	
VF 49	**P80 B14**	19	21.8	6	120	100	80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

VFR 49...P (IEC)

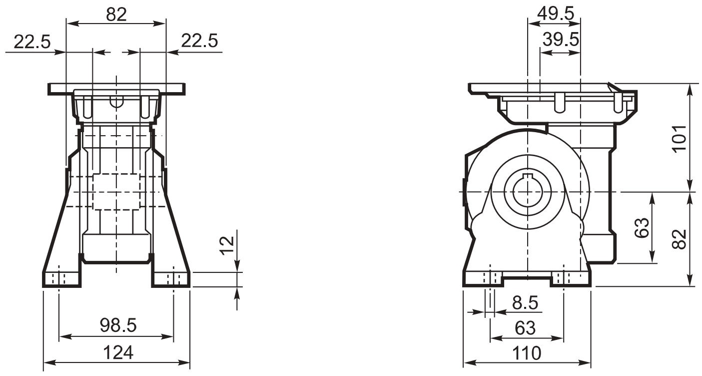
A



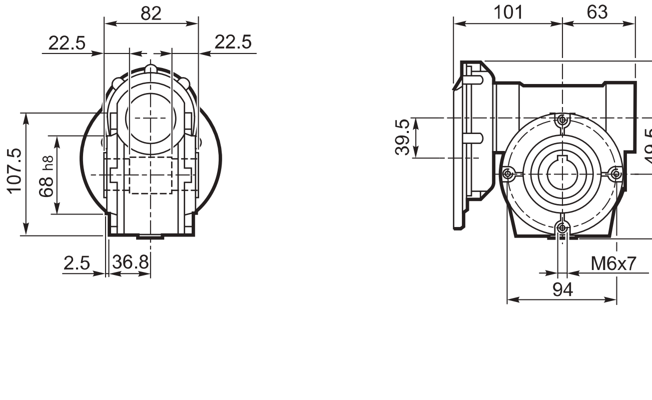
N



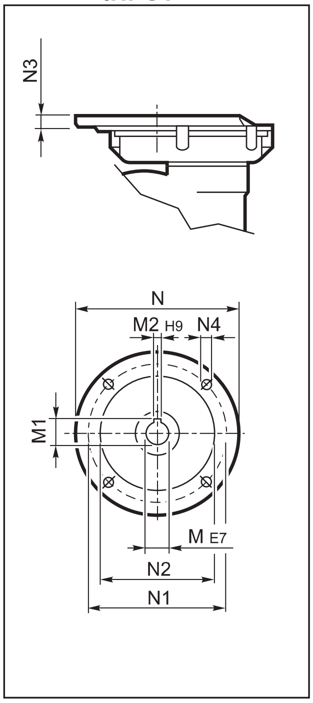
V



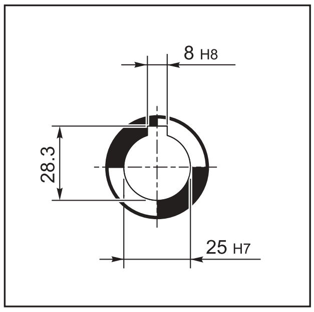
P



INPUT

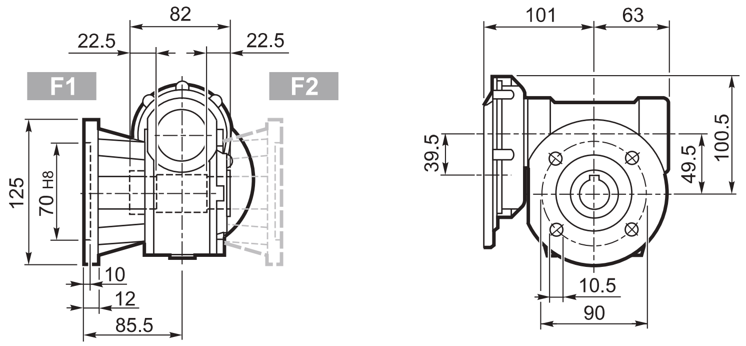


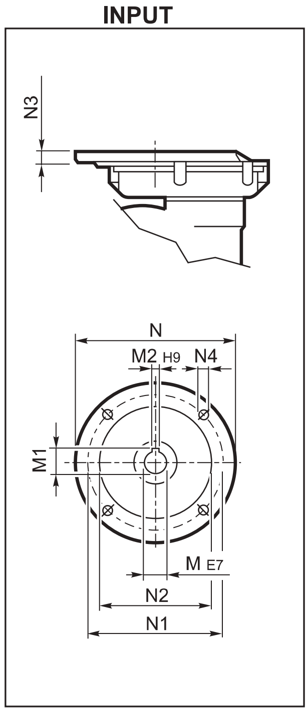
OUTPUT



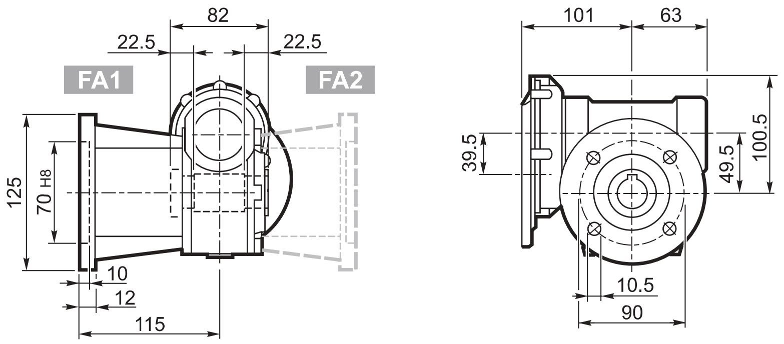
VFR 49...P (IEC)

F_

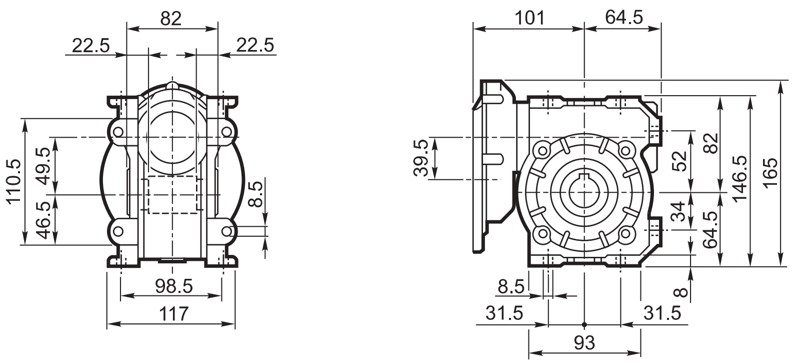


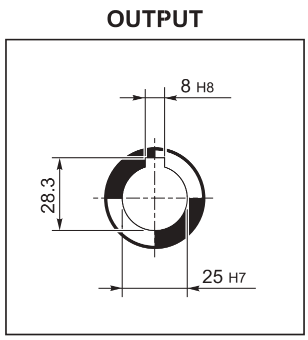


FA_



U

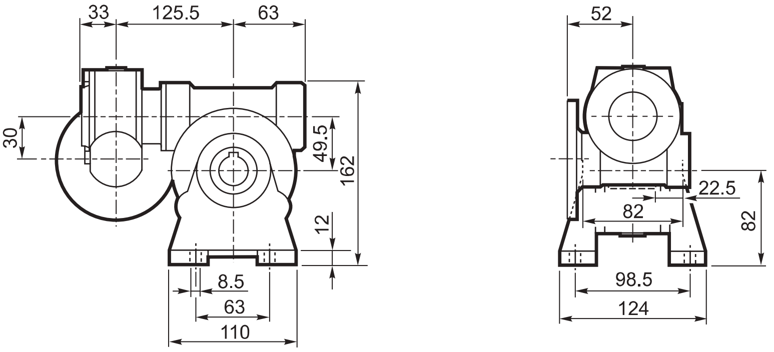




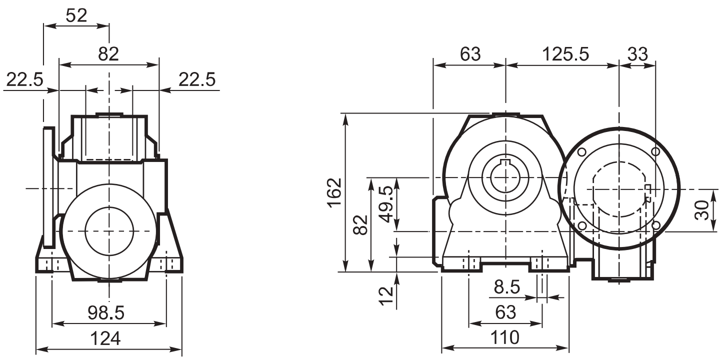
		M	M1	M2	N	N1	N2	N3	N4	Kg
VFR 49	P63 B5	11	12.8	4	140	115	95	11	M8 x 19	5.0

VF/VF 30/49...P (IEC)

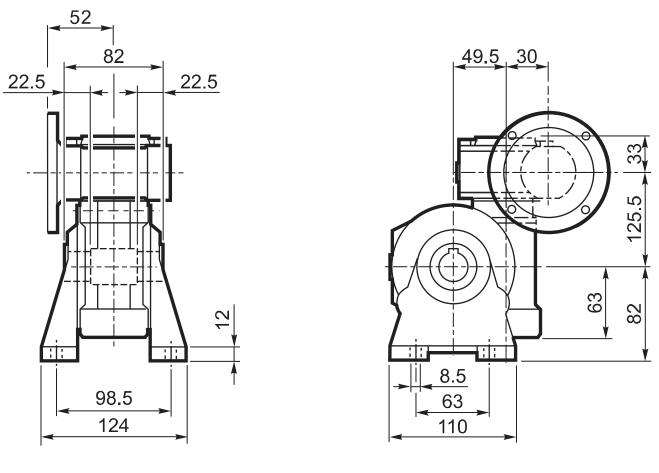
A



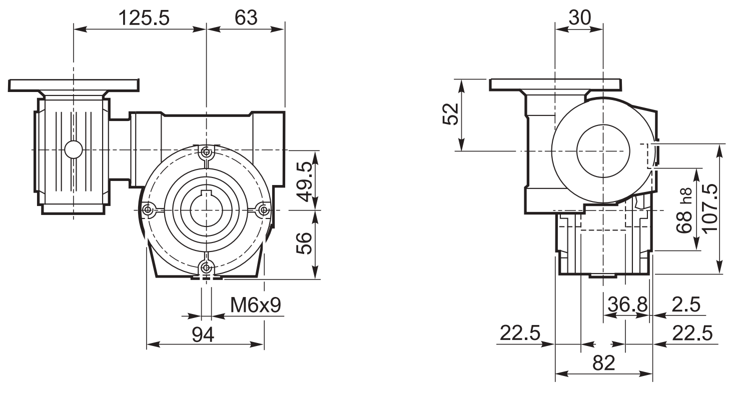
N



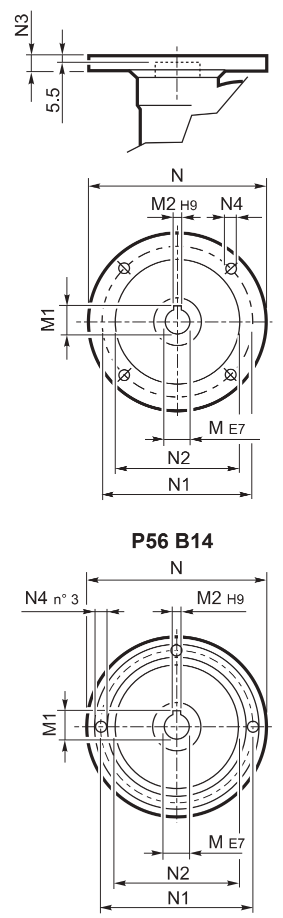
V



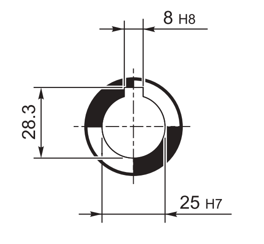
P



INPUT



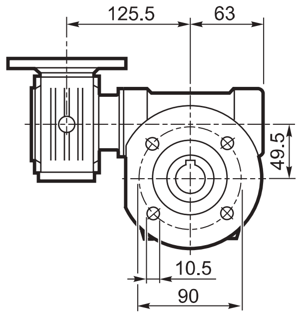
OUTPUT

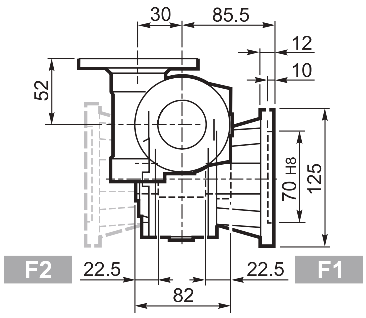


Bonfiglioli Riduttori

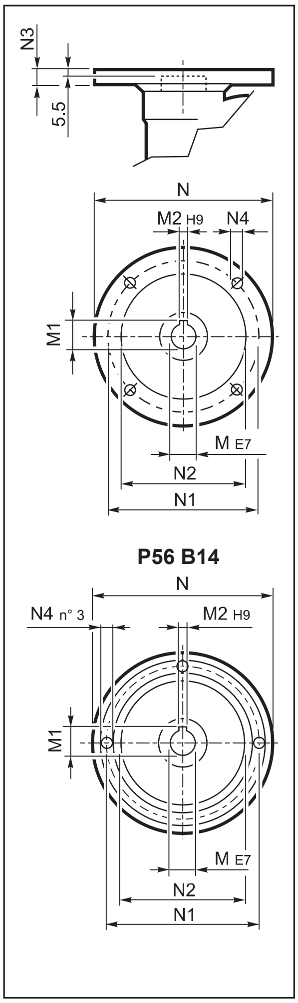
VF/VF 30/49...P (IEC)

F_

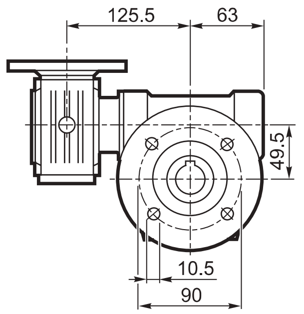


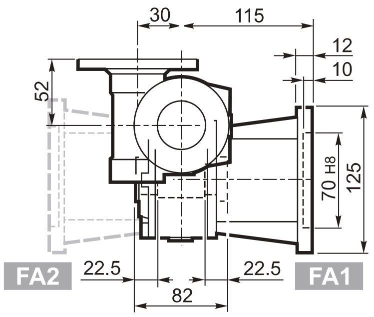


INPUT

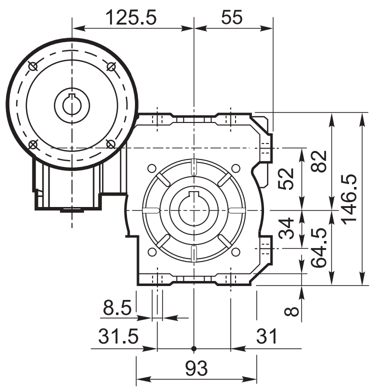


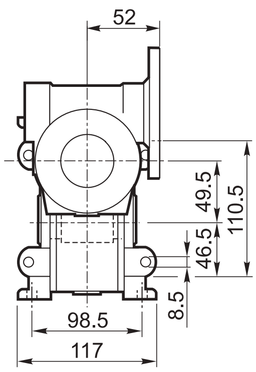
FA_



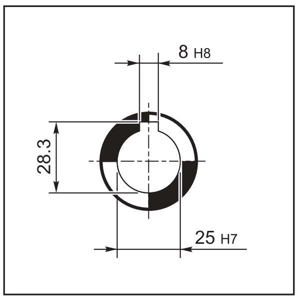


U

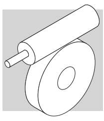




OUTPUT

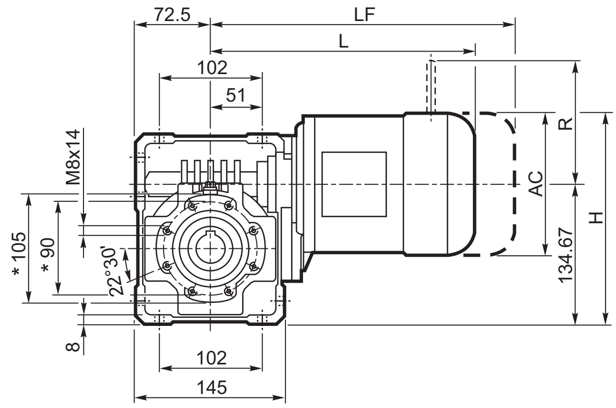


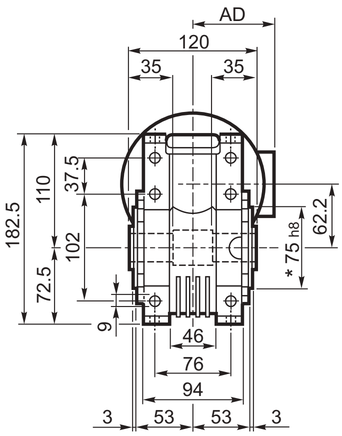
		M	M1	M2	N	N1	N2	N3	N4	Kg
VF/VF 30/49	P56 B14	9	10.4	3	80	65	50	7	5.5	4.5
VF/VF 30/49	P63 B14	11	12.8	4	90	75	60	6	5.5	



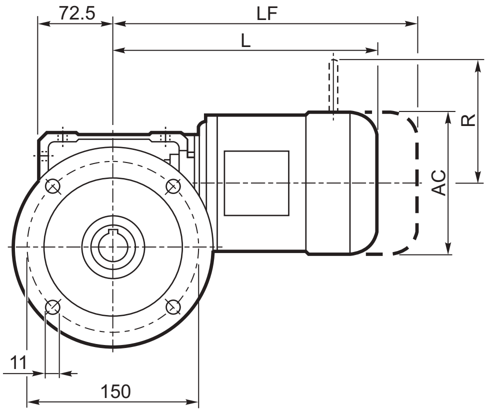
W 63...M/ME/MX/MXN

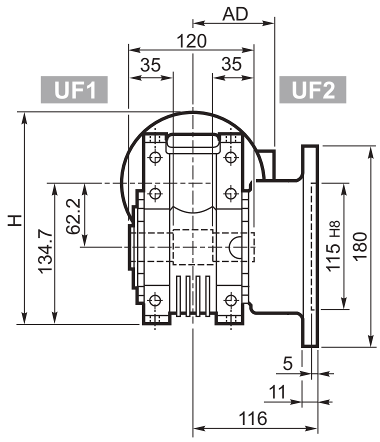
U



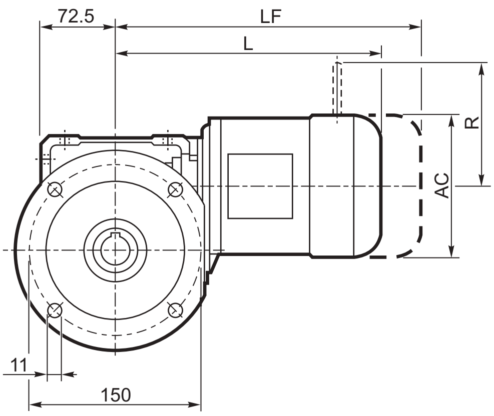


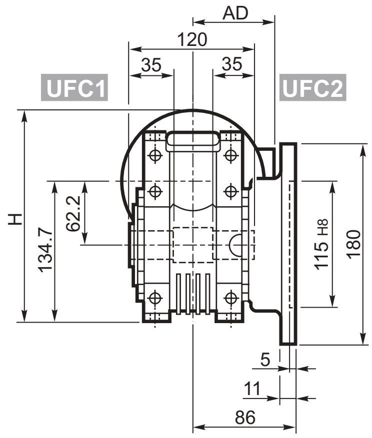
UF_





UFC_

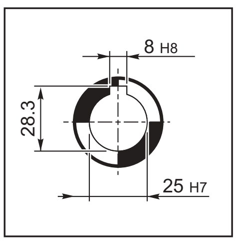




			M/ME/MX/MXN					M...FD M...FA		M...FD		M...FA	
			AC	H	L	AD	Kg	LF	Kg	R	AD	R	AD
W 63	S1	M1	138	204	289	108	13	350	15	103	135	124	108
W 63	S1	ME1	138	204	289	108	13	411	15	103	135	124	135
W 63	S10	MXN10	138	204	318	138	15.4	409	17.4	103	138	1214	138
W 63	S2	M2S	156	213	317	119	17	393	20	129	146	134	119
W 63	S2	ME2S	156	213	317	119	18.6	463	21.6	129	143	134	143
W 63	S2	MX2S	156	213	361	119	22.4	465	25.4	129	143	134	143
W 63	S20	MXN20	158	214	370.5	146	24.6	464	27.6	129	148	131	148

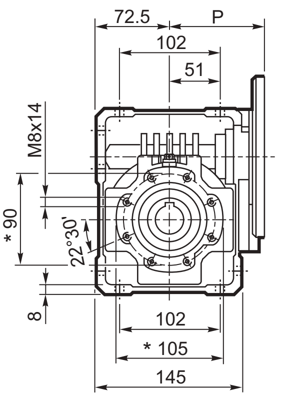
* On both sides

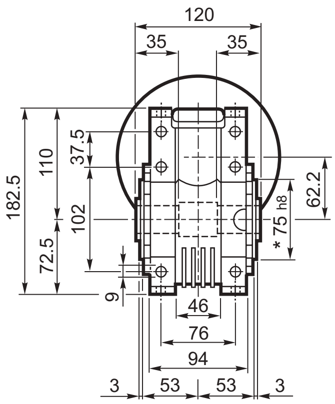
OUTPUT



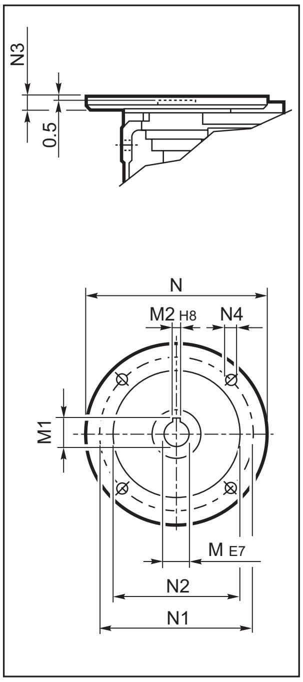
W 63...P (IEC)

U

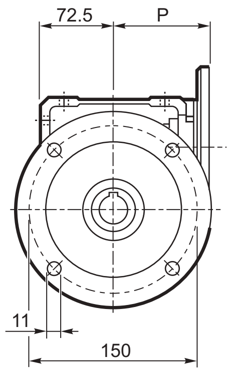


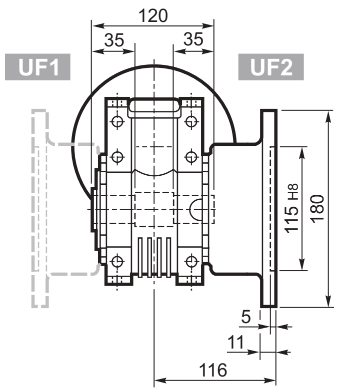


INPUT

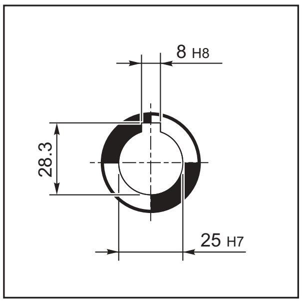


UF_

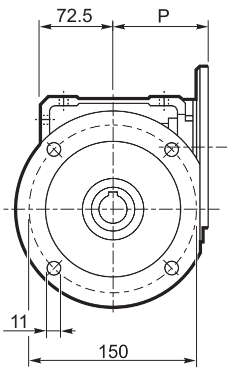


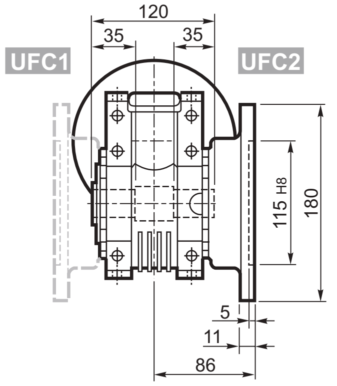


OUTPUT



UFC_

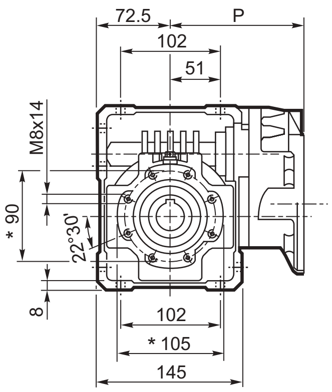


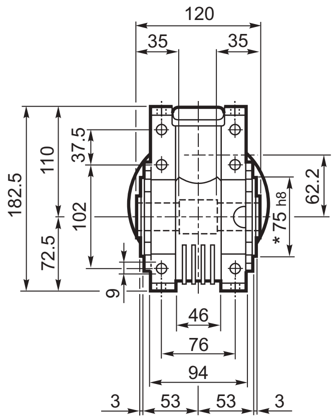


		M	M1	M2	N	N1	N2	N3	N4	P	Kg
W 63	**P71 B5**	14	16.3	5	160	130	110	11	9	95	6.3
W 63	**P80 B5**	19	21.8	6	200	165	130	12	11.5	102	6.5
W 63	**P90 B5**	24	27.3	8	200	165	130	12	11.5	102	6.4
W 63	**P71 B14**	14	16.3	5	105	85	70	11	6.5	95	6.1
W 63	**P80 B14**	19	21.8	6	120	100	80	11	6.5	102	6.3
W 63	**P90 B14**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

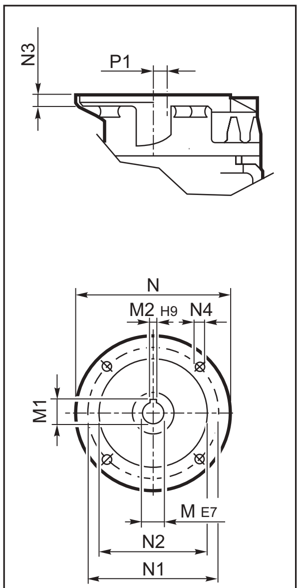
WR 63...P (IEC)

U

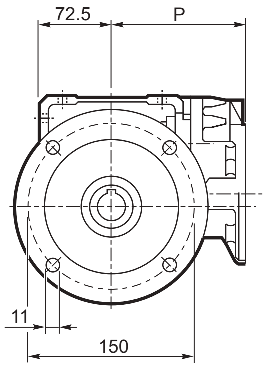


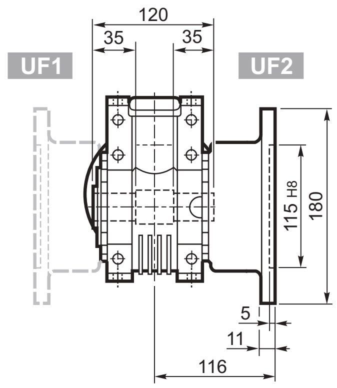


INPUT

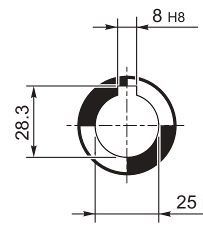


UF_

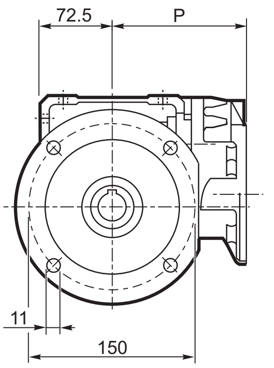


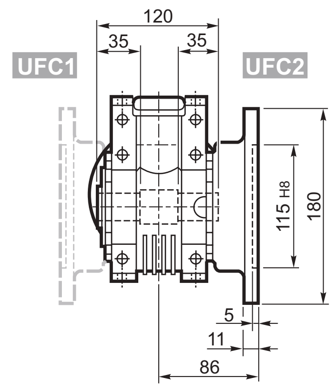


OUTPUT



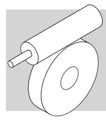
UFC_





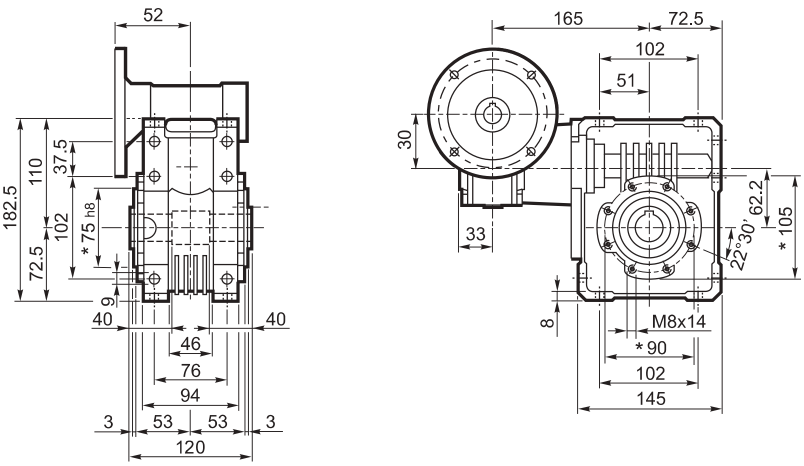
		M	M1	M2	N	N1	N2	N3	N4	P	P1	Kg
WR 63	**P63 B5**	11	12.8	4	140	115	95	10	M8x10	133.5	11.42	7.1
WR 63	**P71 B5**	14	16.3	5	160	130	110	10	M8x10	133.5	11.42	

* On both sides

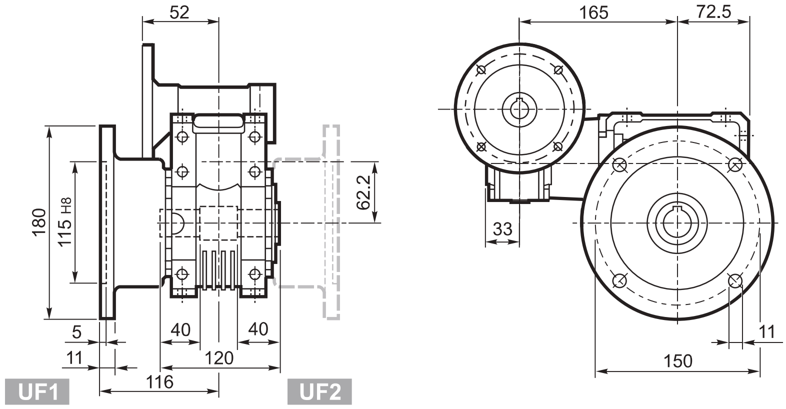


VF/W 30/63...P (IEC)

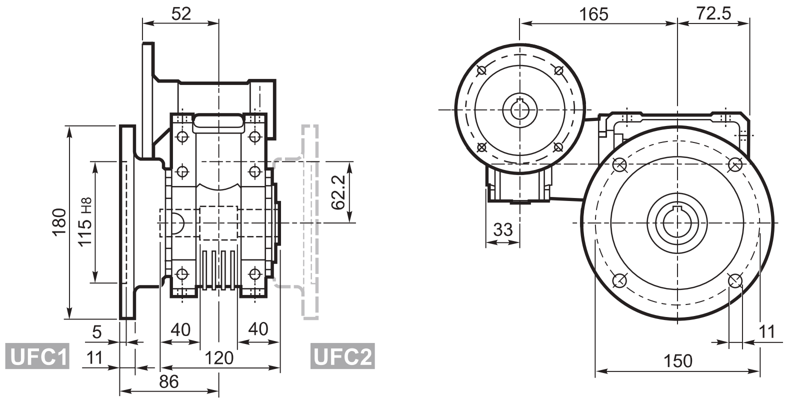
U



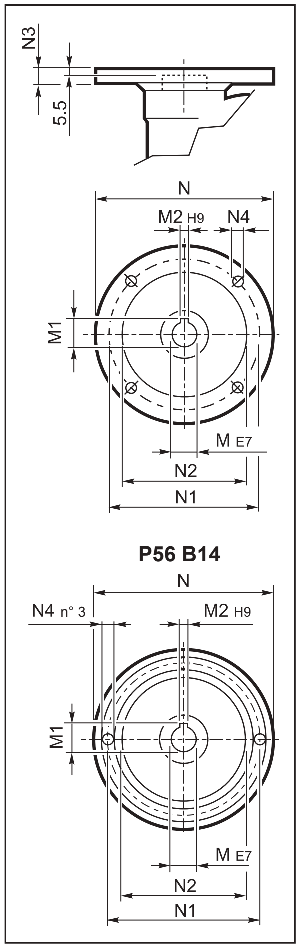
UF_



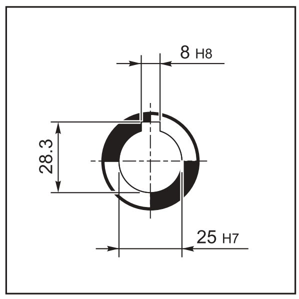
UFC_



INPUT



OUTPUT

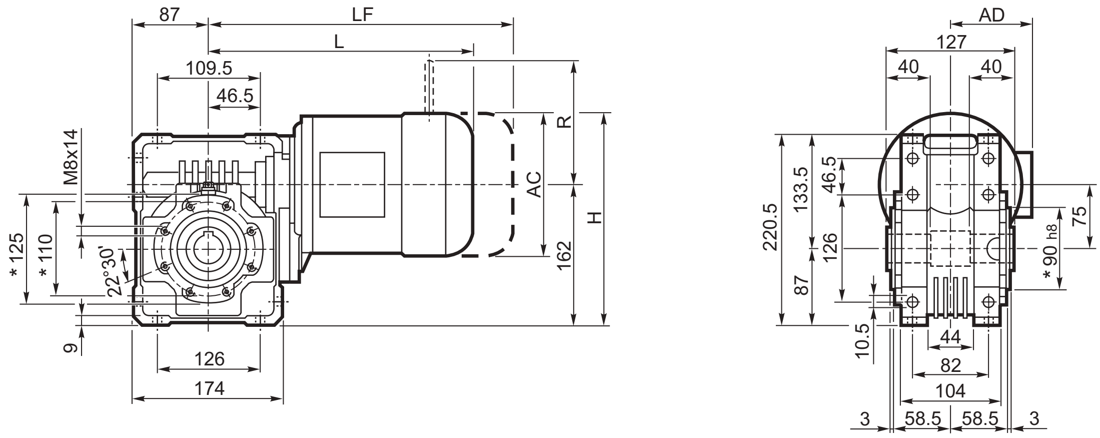


		M	M1	M2	N	N1	N2	N3	N4	Kg
VF/W 30/63	P56 B5	9	10.4	3	120	100	80	7	7	8.0
VF/W 30/63	P63 B5	11	12.8	4	140	115	95	8	9.5	
VF/W 30/63	P56 B14	9	10.4	3	80	65	50	7	5.5	
VF/W 30/63	P63 B14	11	12.8	4	90	75	60	6	5.5	

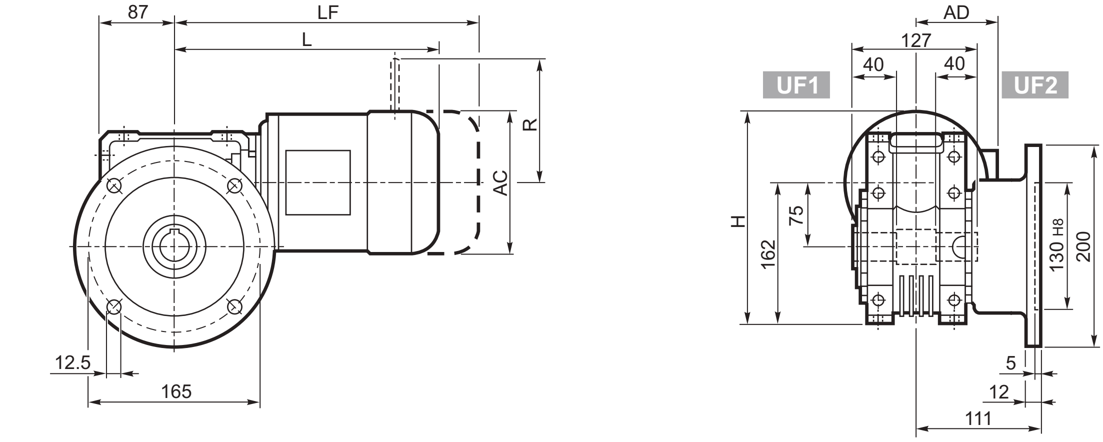
* On both sides

W 75...M/ME/MX/MXN

U

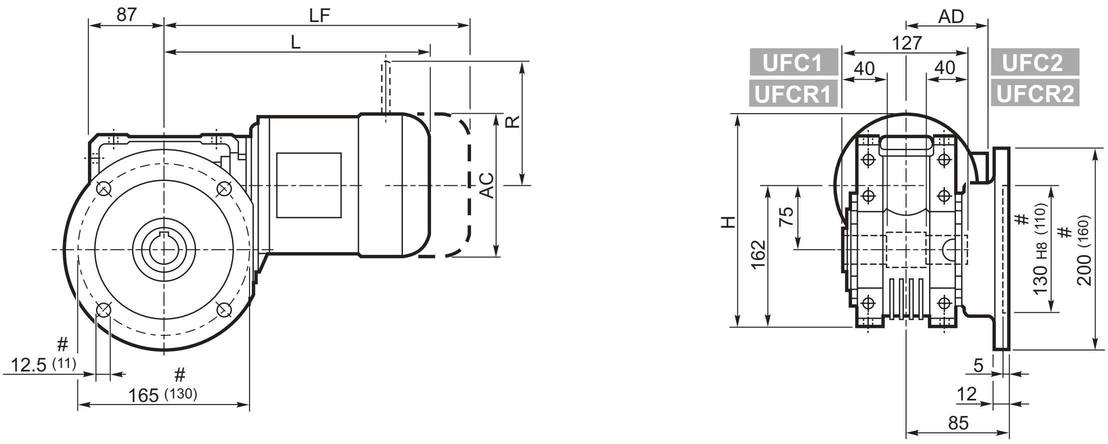


UF_



UFC_

UFCR_#

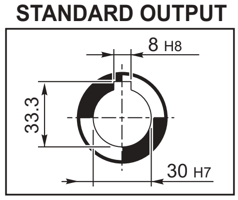


			M/ME/MX/MXN					M...FD M...FA		M...FD		M...FA	
			AC	H	L	AD	Kg	LF	Kg	R	AD	R	AD
W 75	S1	M1	138	231	308	108	16.0	369	18.2	103	135	124	108
W 75	S1	ME1	138	231	308	108	16.0	369	18.2	103	135	124	135
W 75	S10	MXN10	138	231	337	137	18.4	396	20.8	103	138	121	138
W 75	S2	ME2S	156	240	333	119	18.5	393	20.1	129	143	134	143
W 75	S2	MX2S	156	240	377	119	23.6	465	27.4	129	143	134	143
W 75	S20	MXN20	158	241	386.5	146	25.8	457.5	28	129	148	131	148
W 75	S3	ME3S	195	258.5	376	142	27.1	447	33.1	160	155	160	155
W 75	S3	MX3S	195	258.5	408	142	31.1	476	38.1	160	155	160	155
W 75	S3	ME3L	195	258.5	408	142	32.6	474	38.6	160	155	160	155
W 75	S3	MX3L	195	258.5	452	142	38.6	518	45.6	160	155	160	155

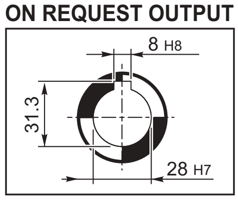
* On both sides

\# Reduced flange

STANDARD OUTPUT

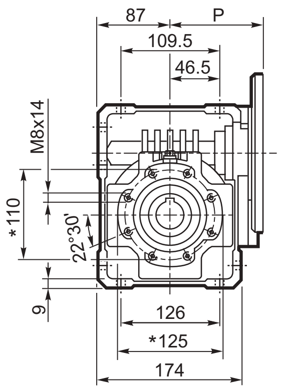


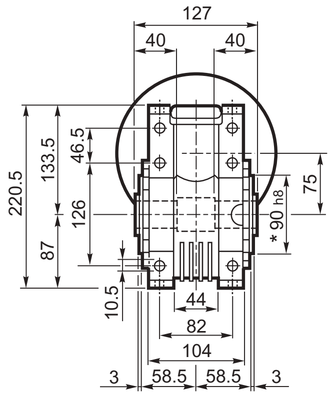
ON REQUEST OUTPUT



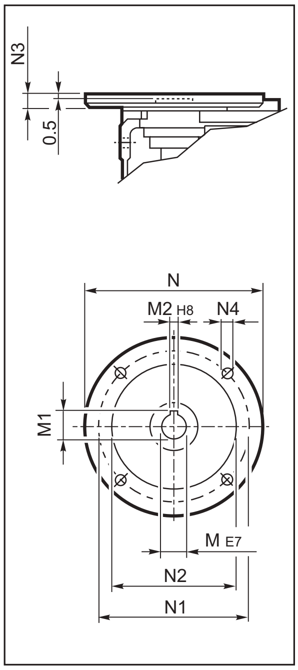
W 75...P (IEC)

U

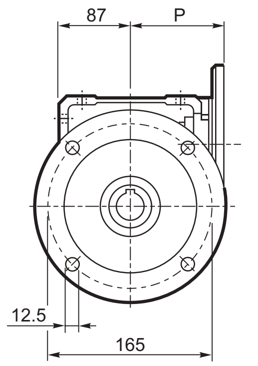


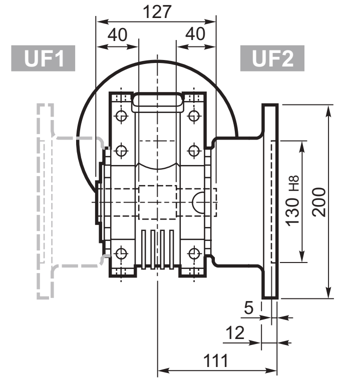


INPUT

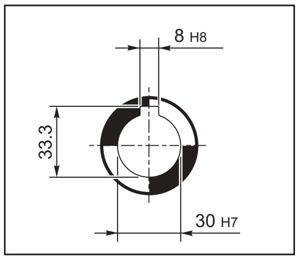


UF_

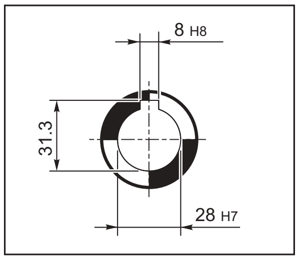




STANDARD OUTPUT

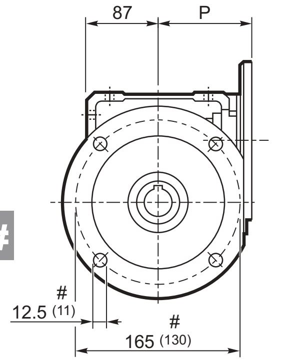


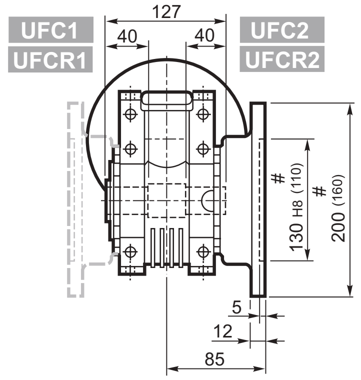
ON REQUEST OUTPUT



UFC_

UFCR_#





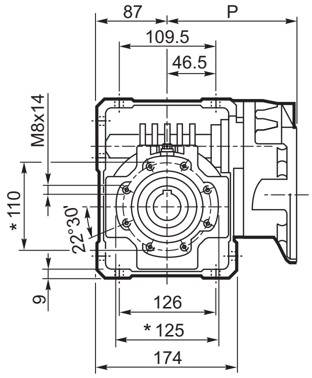
		M	M1	M2	N	N1	N2	N3	N4	P	Kg
W 75	P71 B5	14	16.3	5	160	130	110	11	9	112	9.5
W 75	P80 B5	19	21.8	6	200	165	130	12	11.5	112	9.7
W 75	P90 B5	24	27.3	8	200	165	130	12	11.5	112	9.6
W 75	P100 B5	28	31.3	8	250	215	180	13	12.5	120	9.7
W 75	P112 B5	28	31.3	8	250	215	180	13	12.5	120	9.7
W 75	P80 B14	19	21.8	6	120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

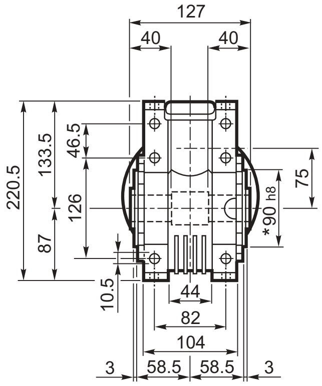
* On both sides

\# Reduced flange

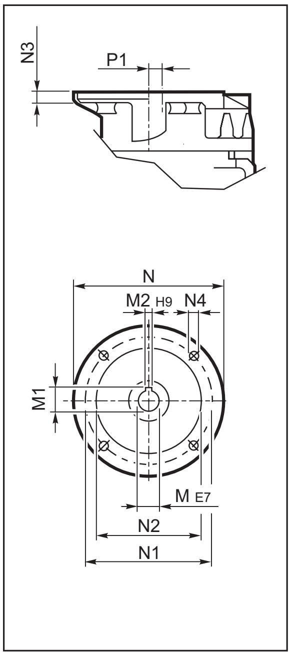
WR 75...P (IEC)

U

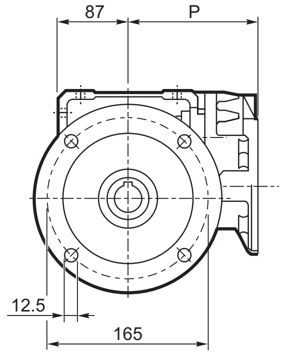


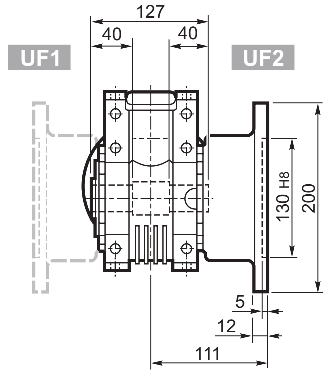


INPUT

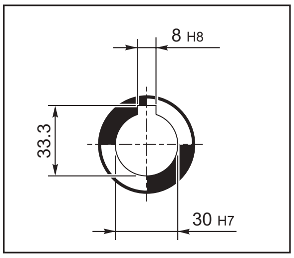


UF_



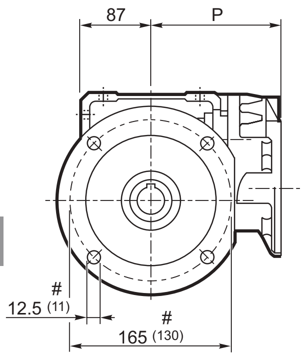


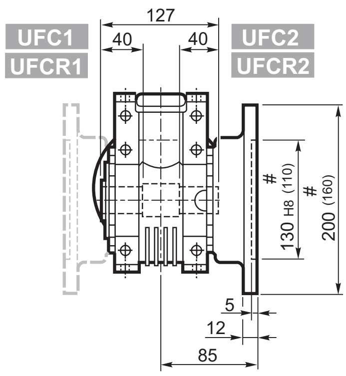
STANDARD OUTPUT



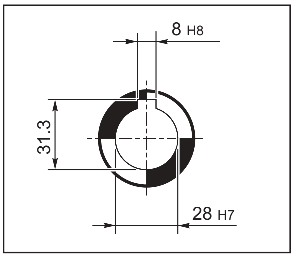
UFC_

UFCR_#





ON REQUEST OUTPUT



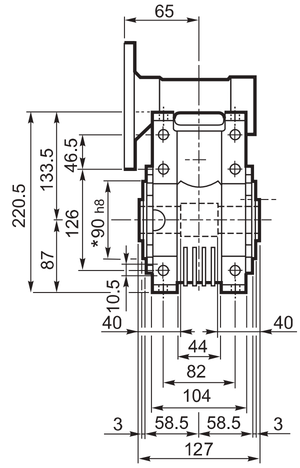
		M	M1	M2	N	N1	N2	N3	N4	P	P1	Kg
WR 75	**P63 B5**	11	12.8	4	140	115	95	10	M8x10	152	23.53	10.6
WR 75	**P71 B5**	14	16.3	5	160	130	110	10	M8x10	152	23.53	10.7
WR 75	**P80 B5**	19	21.8	6	200	165	130	12	M10x13	163.5	11	11.5
WR 75	**P90 B5**	24	27.3	8	200	165	130	12	M10x13	163.5	11	11.6

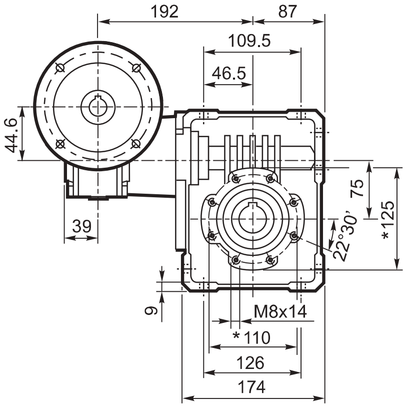
* On both sides

Reduced flange

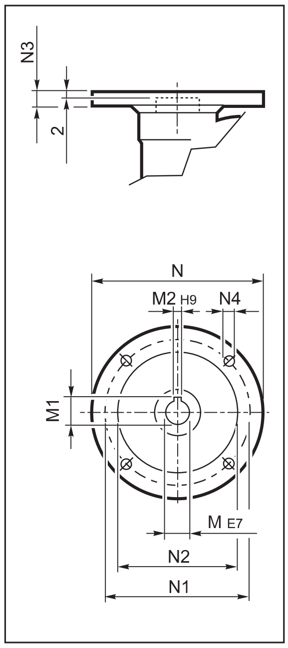
VF/W 44/75...P (IEC)

U

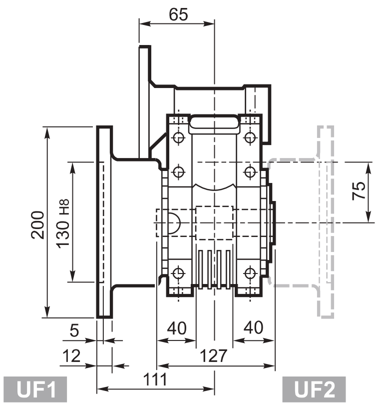


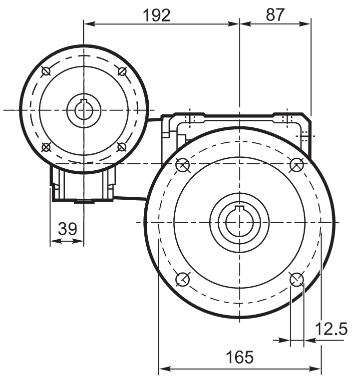


INPUT

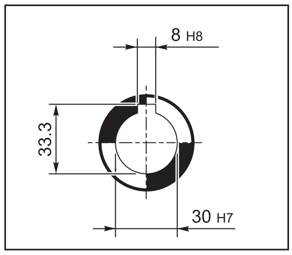


UF_



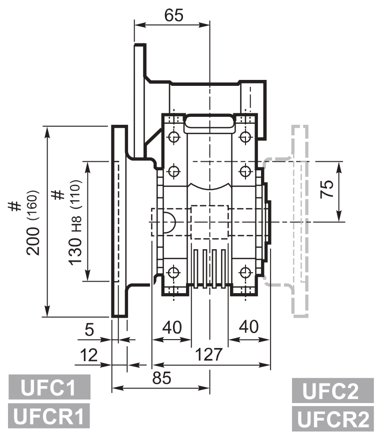


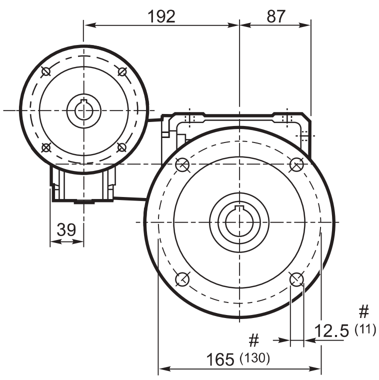
STANDARD OUTPUT



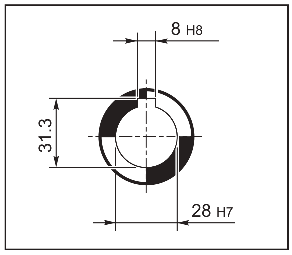
UFC_

UFCR_#





ON REQUEST OUTPUT



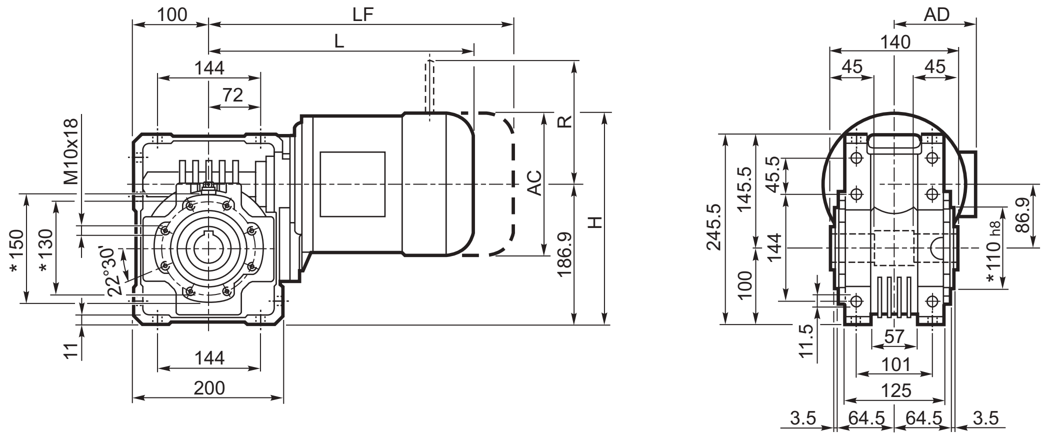
		M	M1	M2	N	N1	N2	N3	N4	Kg
VF/W 44/75	P63 B5	11	12.8	4	140	115	95	10	9.5	12.5
VF/W 44/75	P71 B5	14	16.3	5	160	130	110	10	9.5	
VF/W 44/75	P63 B14	11	12.8	4	90	75	60	8	5.5	
VF/W 44/75	P71 B14	14	16.3	5	105	85	70	10	7	

* On both sides

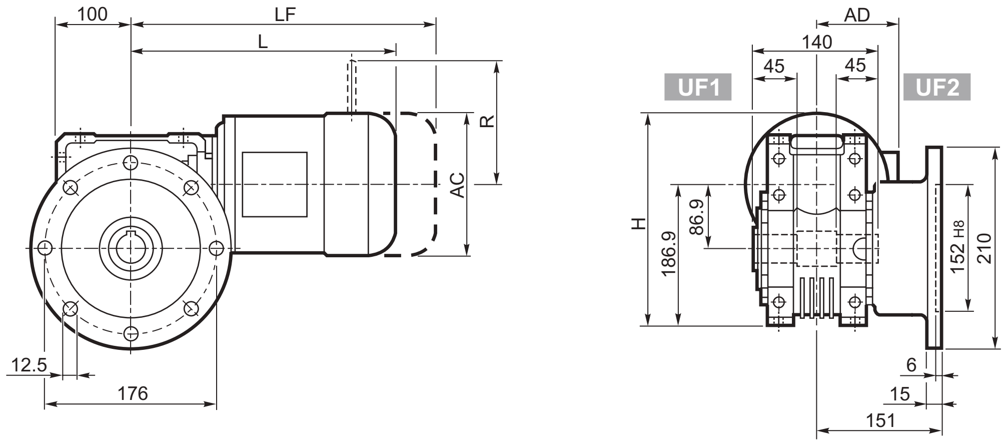
\# Reduced flange

W 86...M/ME/MX/MXN

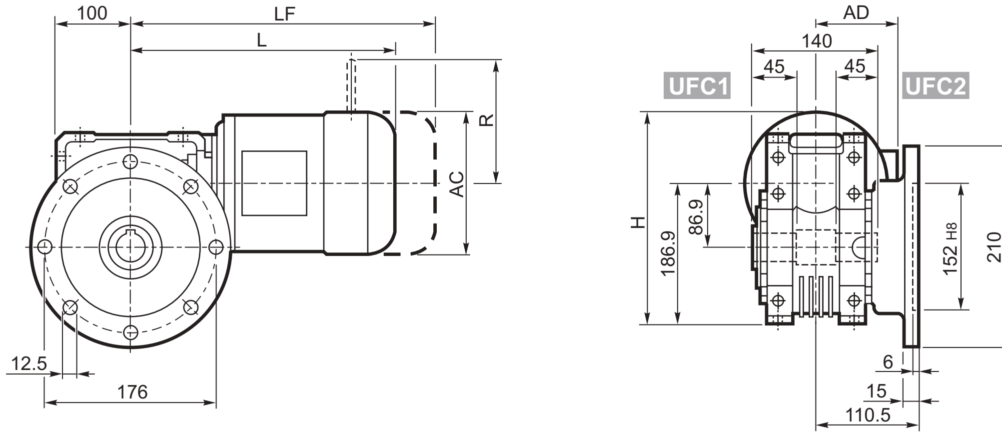
U



UF_



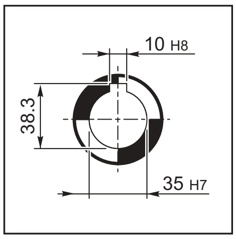
UFC_



			M/ME/MX/MXN					M...FD M...FA		M...FD		M...FA	
			AC	H	L	AD	Kg	LF	Kg	R	AD	R	AD
W 86	S1	M1	138	256	324	108	20.1	385	22.3	103	135	124	108
W 86	S1	ME1	138	256	324	108	20.1	385	22.3	103	135	124	135
W 86	S10	MXN10	138	256	353	137	22.5	412	25.2	103	138	121	138
W 86	S2	M2S	156	265	349	119	22.6	425	25.7	129	146	134	119
W 86	S2	ME2S	156	265	349	119	24.2	410	25.8	129	143	134	143
W 86	S2	MX2S	156	265	393	119	27.7	465	31.5	129	143	134	143
W 86	S20	MXN20	158	266	402.5	146	29.9	473.5	33.8	129	148	131	148
W 86	S3	ME3S	195	283.5	392	142	31.2	488	37.8	160	155	160	155
W 86	S3	MX3S	195	283.5	424	142	34.2	514	41.2	160	155	160	155
W 86	S3	ME3L	195	283.5	424	142	36.7	515	42.7	160	155	160	155
W 86	S3	MX3L	195	283.5	468	142	42.7	560	49.7	160	155	160	155

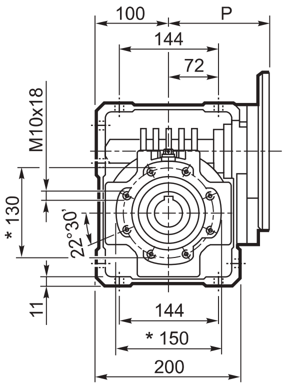
* On both sides

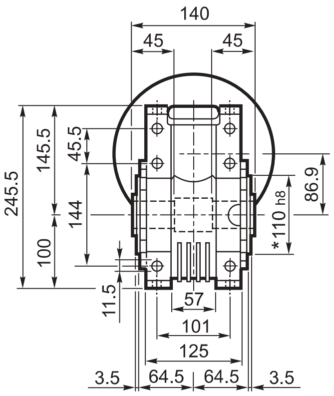
OUTPUT

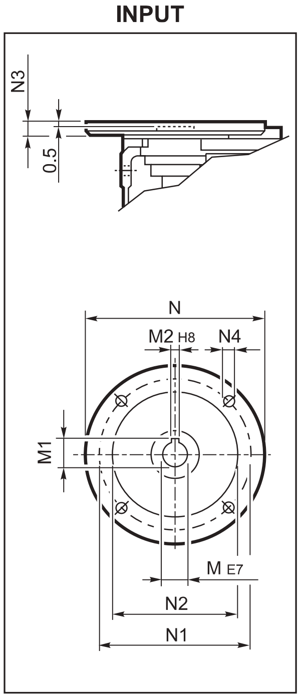


W 86...P (IEC)

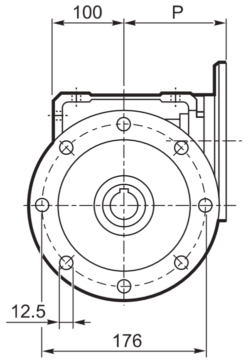
U

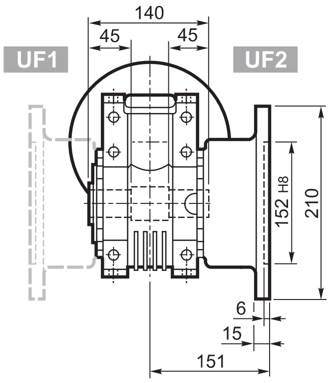


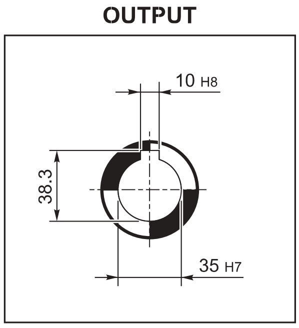




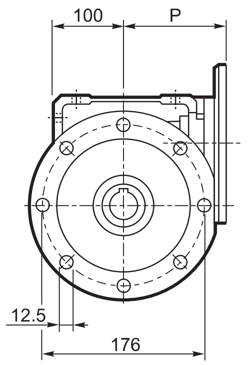
UF_

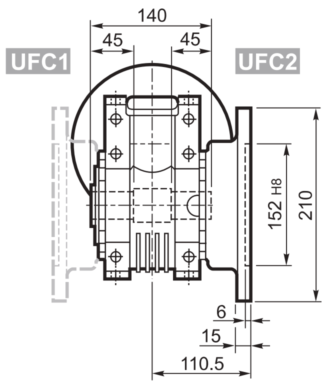






UFC_



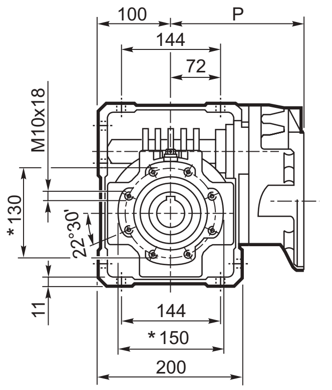


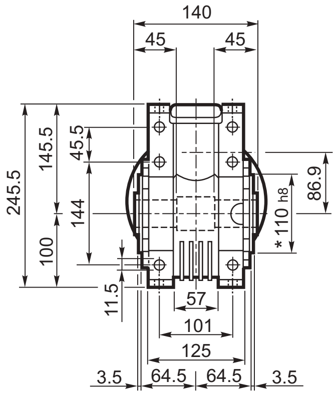
		M	M1	M2	N	N1	N2	N3	N4	P	Kg
W 86	P71 B5	14	16.3	5	160	130	110	11	9	128	13.6
W 86	P80 B5	19	21.8	6	200	165	130	12	11.5	128	13.8
W 86	P90 B5	24	27.3	8	200	165	130	12	11.5	128	13.7
W 86	P100 B5	28	31.3	8	250	215	180	13	12.5	136	13.8
W 86	P112 B5	28	31.3	8	250	215	180	13	12.5	136	13.8
W 86	P80 B14	19	21.8	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

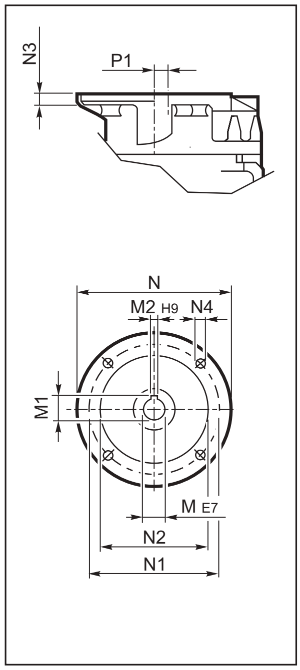
WR 86...P (IEC)

U

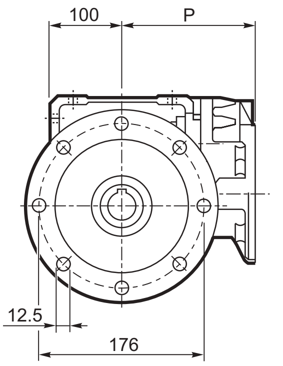


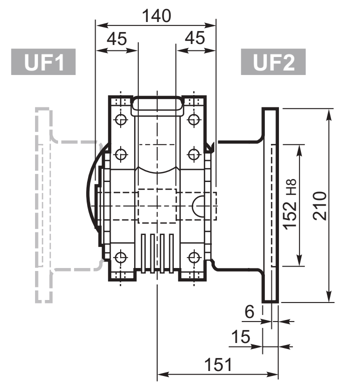


INPUT

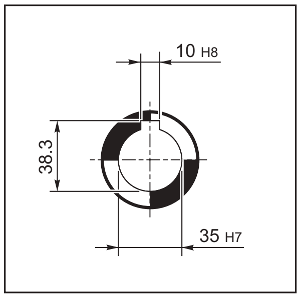


UF_

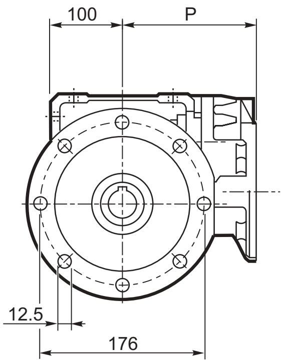


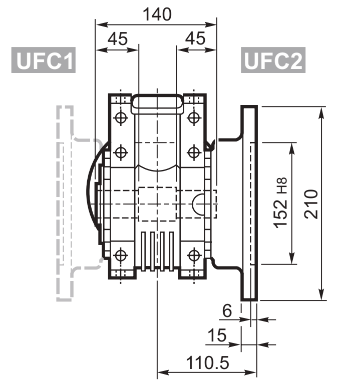


OUTPUT



UFC_



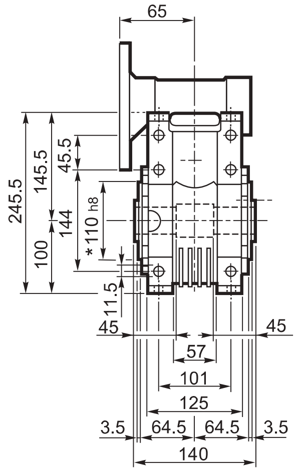


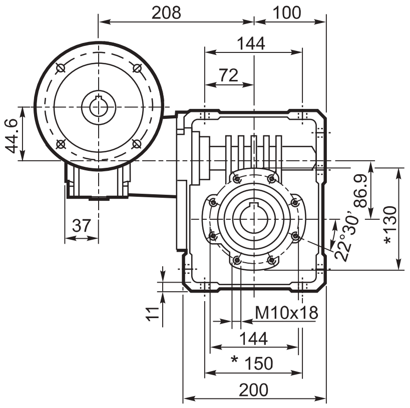
		M	M1	M2	N	N1	N2	N3	N4	P	P1	Kg
WR 86	**P63 B5**	11	12.8	4	140	115	95	10	M8x10	168	35.4	14.3
WR 86	**P71 B5**	14	16.3	5	160	130	110	10	M8x10	168	35.4	14.4
WR 86	**P80 B5**	19	21.8	6	200	165	130	12	M10x13	179.5	22.9	15.2
WR 86	**P90 B5**	24	27.3	8	200	165	130	12	M10x13	179.5	22.9	15.3

* On both sides

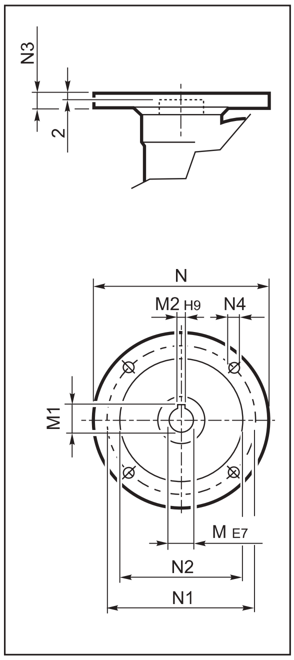
VF/W 44/86... P (IEC)

U

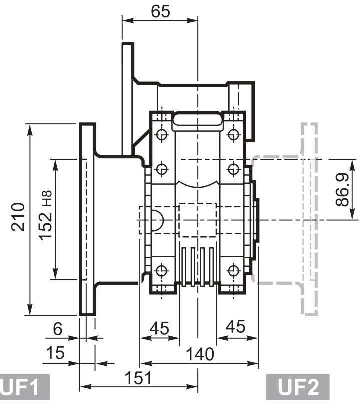


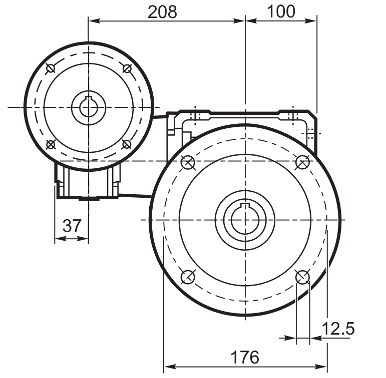


INPUT

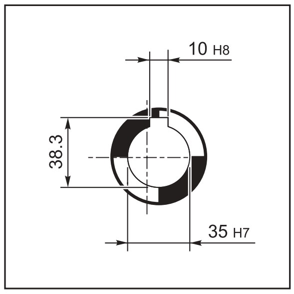


UF_

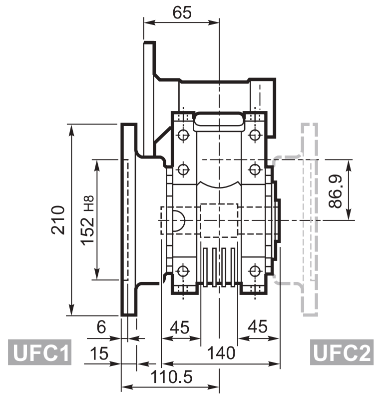


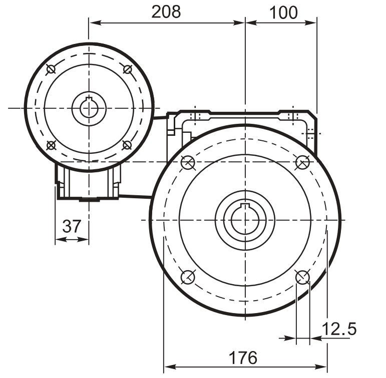


OUTPUT



UFC_



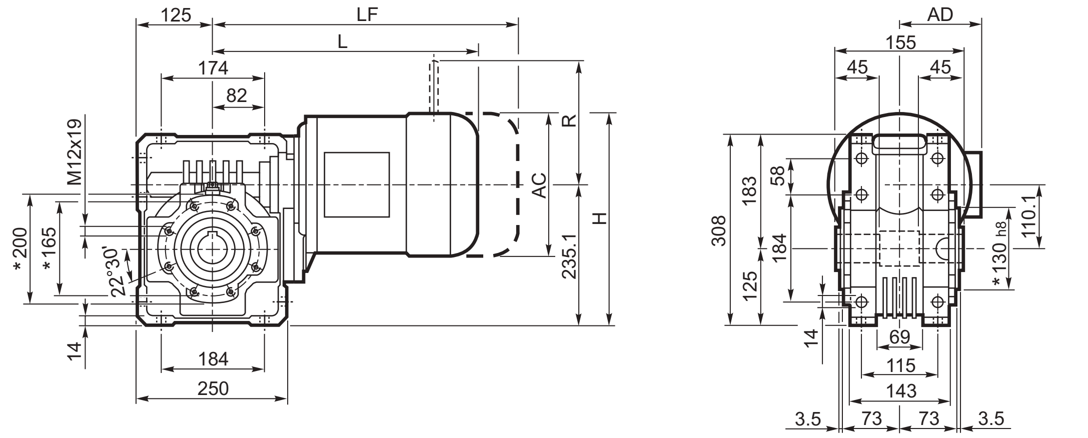


		M	M1	M2	N	N1	N2	N3	N4	Kg
VF/W 44/86	**P63 B5**	11	12.8	4	140	115	95	10	9.5	16.6
VF/W 44/86	**P71 B5**	14	16.3	5	160	130	110	10	9.5	
VF/W 44/86	**P63 B14**	11	12.8	4	90	75	60	8	5.5	
VF/W 44/86	**P71 B14**	14	16.3	5	105	85	70	10	7	

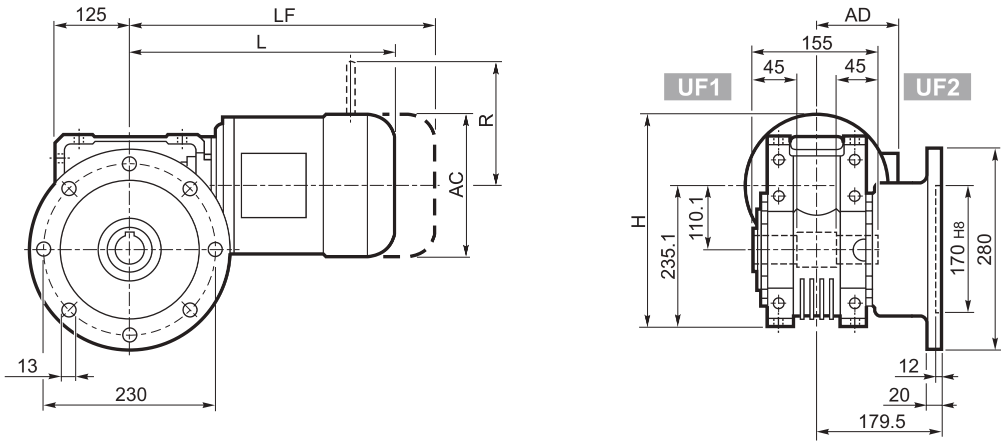
* On both sides

W 110...M/ME/MX

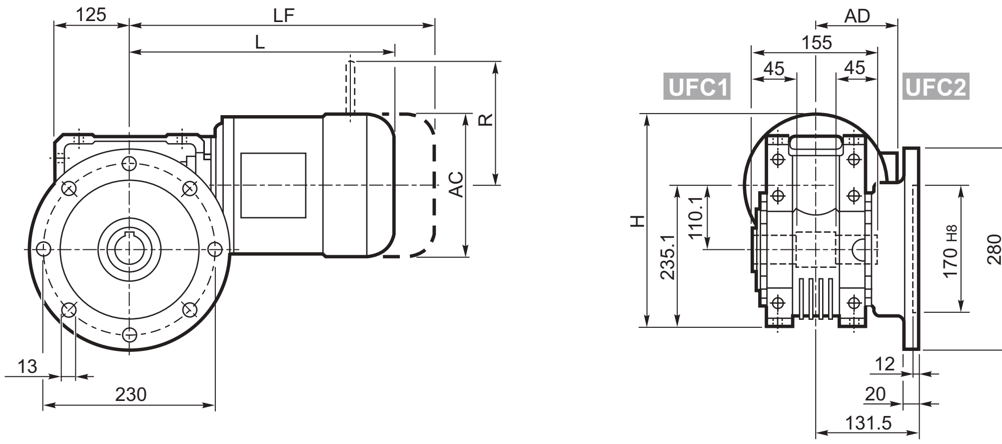
U



UF_



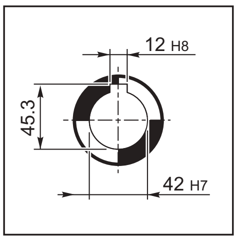
UFC_



			M/ME/MX					M...FD M...FA		M...FD		M...FA	
			AC	H	L	AD	Kg	LF	Kg	R	AD	R	AD
W 110	S2	M2S	156	313	364	119	38	440	41	129	146	134	119
W 110	S2	ME2S	156	313	364	119	38	440	39.6	129	143	134	143
W 110	S2	MX2S	156	313	408	119	43.1	480	46.9	129	143	134	143
W 110	S3	ME3S	195	332	407	142	47.5	503	53.5	160	155	160	155
W 110	S3	MX3S	195	332	440	142	50.5	530	57.5	160	155	160	155
W 110	S3	ME3L	195	332	439	142	53	530	59	160	155	160	155
W 110	S3	MX3L	195	332	483	142	59	575	66	160	155	160	155

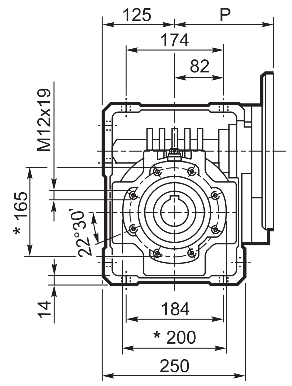
* On both sides

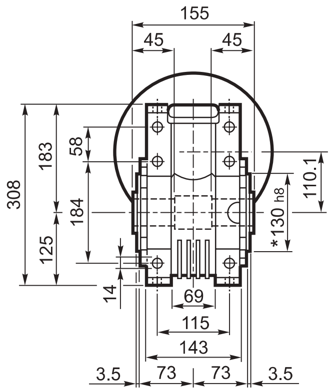
OUTPUT



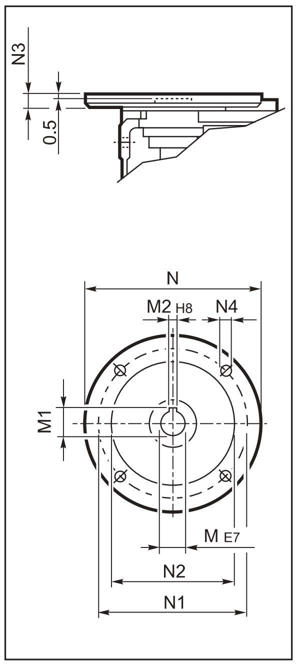
W 110...P (IEC)

U

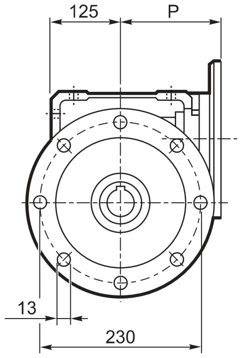


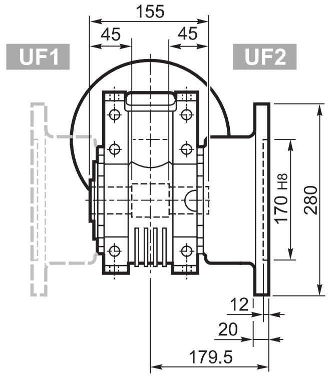


INPUT

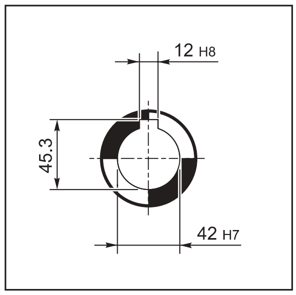


UF_

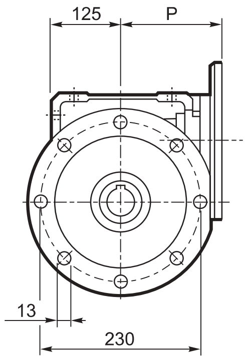


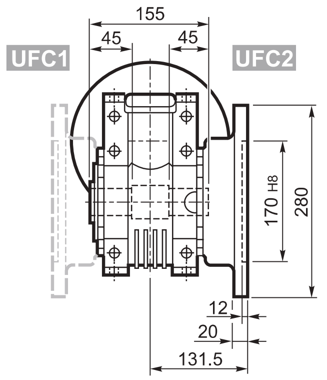


OUTPUT



UFC_



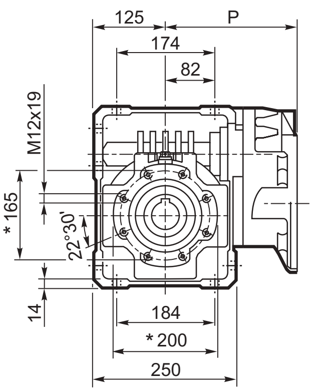


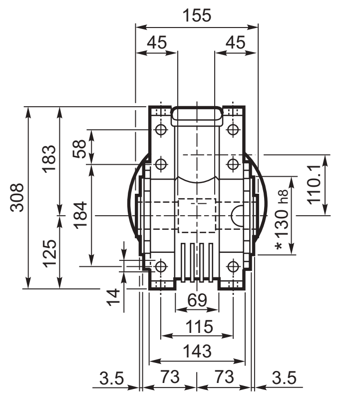
		M	M1	M2	N	N1	N2	N3	N4	P	Kg
W 110	**P80 B5**	19	21.8	6	200	165	130	—	M10x12	143	28
W 110	**P90 B5**	24	27.3	8	200	165	130	—	M10x12	143	28
W 110	**P100 B5**	28	31.3	8	250	215	180	13	13	151	29
W 110	**P112 B5**	28	31.3	8	250	215	180	13	13	151	29
W 110	**P132 B5**	38	41.3	10	300	265	230	16	14	226	31
W 110	**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

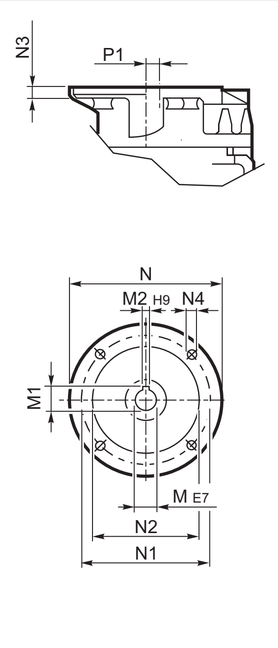
WR 110...P (IEC)

U

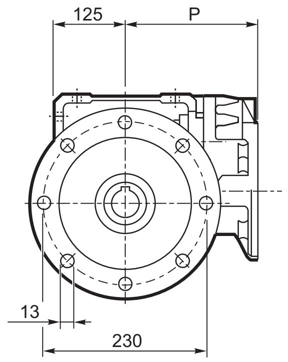


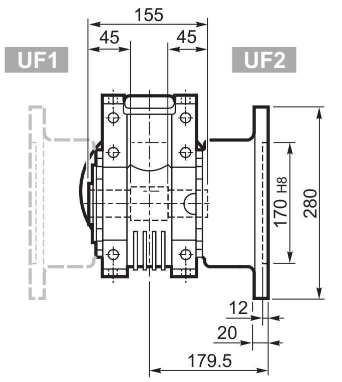


INPUT

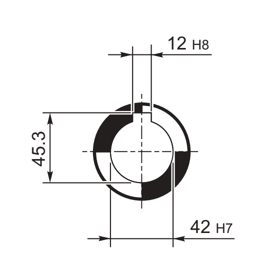


UF_

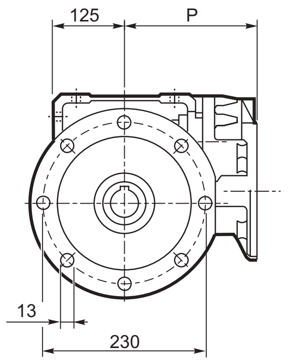


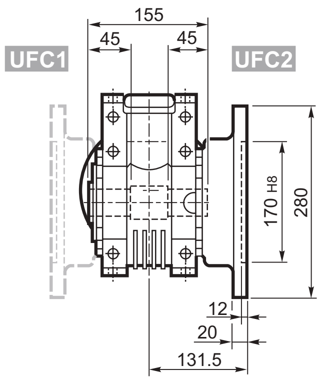


OUTPUT



UFC_



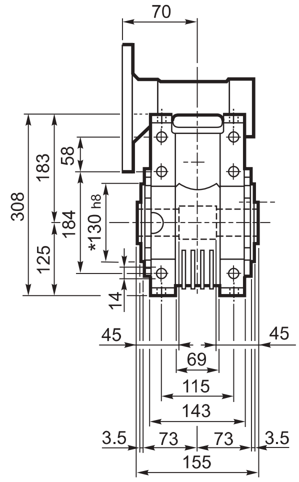


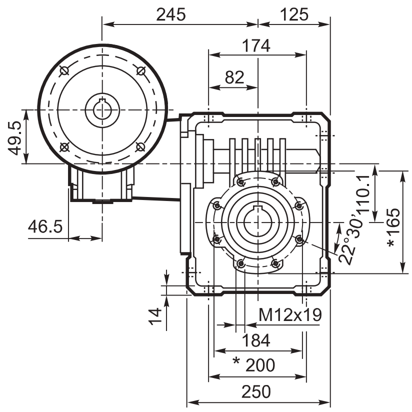
		M	M1	M2	N	N1	N2	N3	N4	P	P1	Kg
WR 110	**P71 B5**	14	16.3	5	160	130	110	10	M8x14	185	58.6	30.5
WR 110	**P80 B5**	19	21.8	6	200	165	130	14	M10x15	204	21.1	31
WR 110	**P90 B5**	24	27.3	8	200	165	130	14	M10x15	204	21.1	31
WR 110	**P100 B5**	28	31.3	8	250	215	180	14	M12x13	213	21.1	32
WR 110	**P112 B5**	28	31.3	8	250	215	180	14	M12x13	213	21.1	32

* On both sides

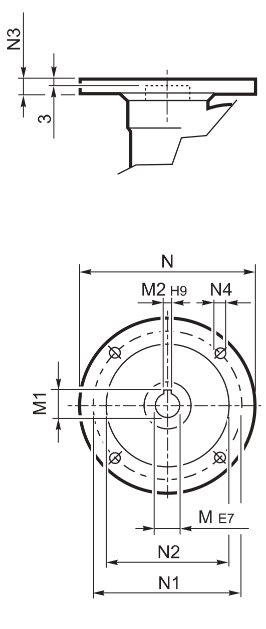
VF/W 49/110...P (IEC)

U

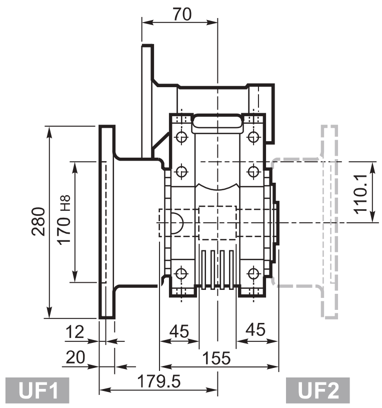


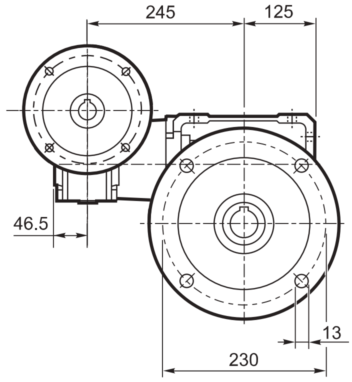


INPUT

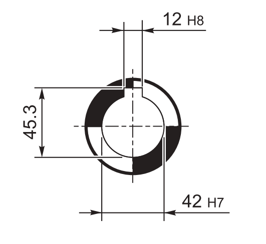


UF_

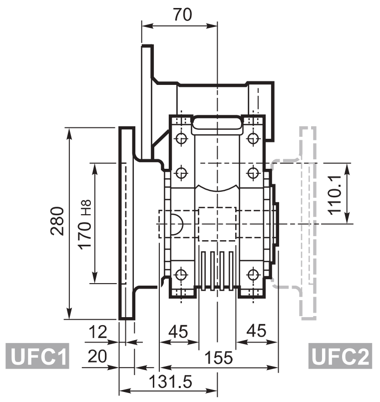


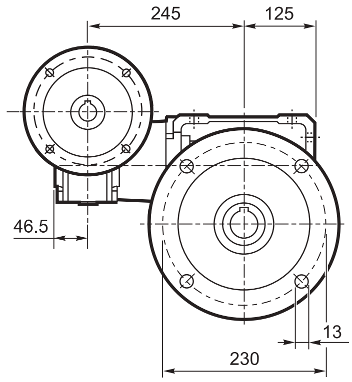


OUTPUT



UFC_



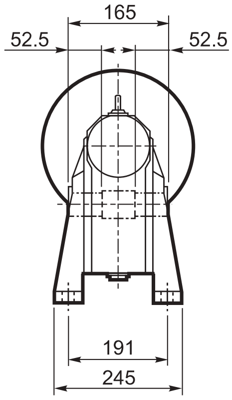


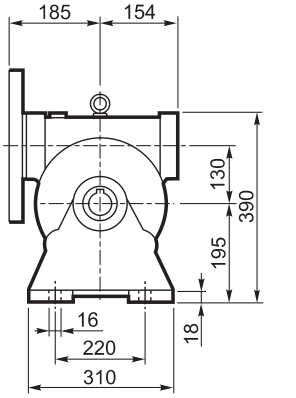
		M	M1	M2	N	N1	N2	N3	N4	Kg
VF/W 49/110	P63 B5	11	12.8	4	140	115	95	10.5	9.5	33
VF/W 49/110	P71 B5	14	16.3	5	160	130	110	10.5	9.5	
VF/W 49/110	P80 B5	19	21.8	6	200	165	130	10	11.5	
VF/W 49/110	P63 B14	11	12.8	4	90	75	60	7	6	
VF/W 49/110	P71 B14	14	16.3	5	105	85	70	10.5	6.5	
VF/W 49/110	P80 B14	19	21.8	6	120	100	80	10	7	

* On both sides

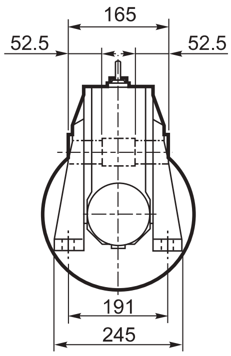
VF 130...P (IEC)

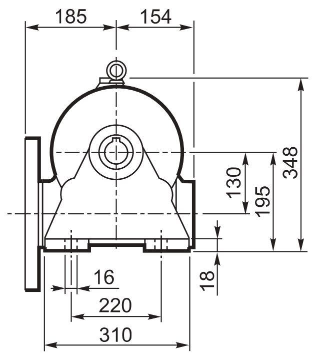
A



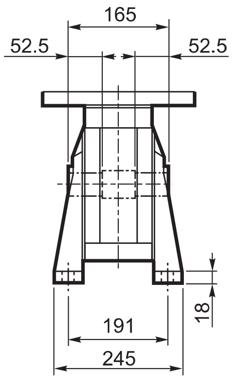


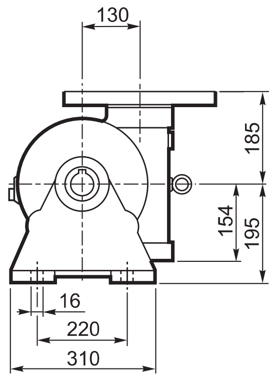
N



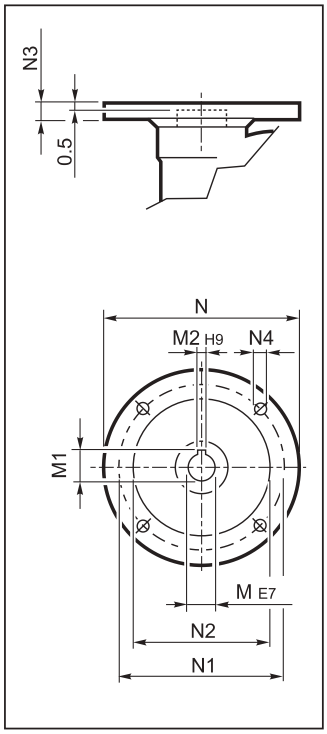


V

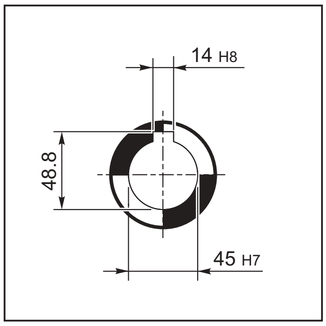




INPUT



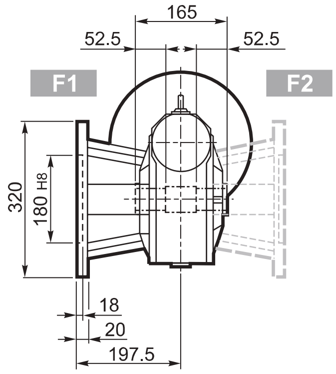
OUTPUT

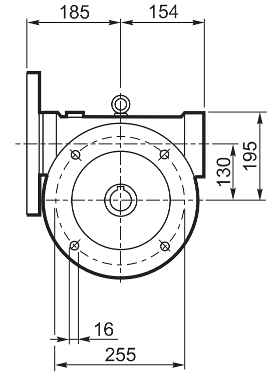


Bonfiglioli Riduttori

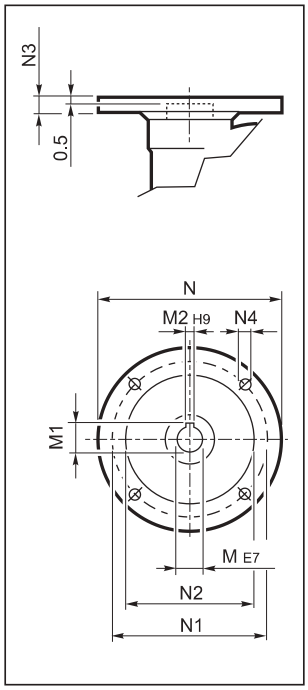
VF 130...P (IEC)

F_



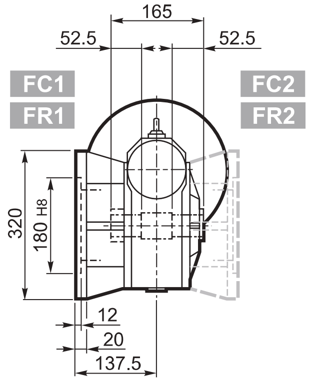


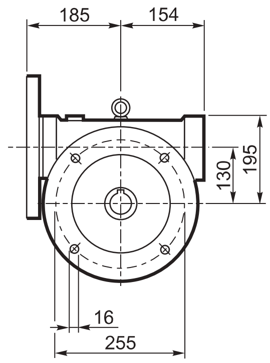
INPUT



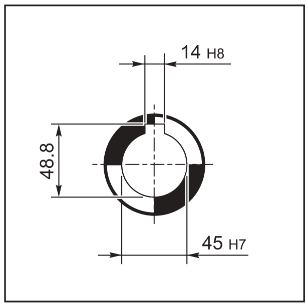
FC_

FR_

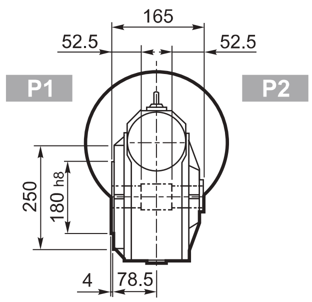


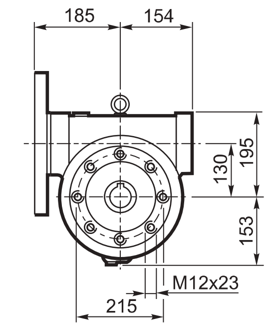


OUTPUT



P_



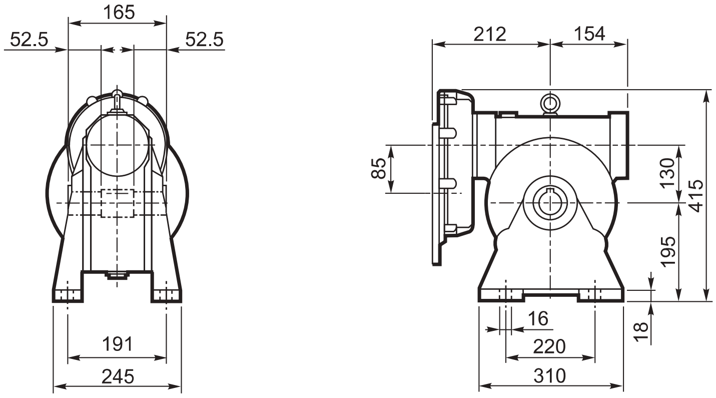


		M	M1	M2	N	N1	N2	N3	N4	Kg
VF130	**P90 B5**	24	27.3	8	200	165	130	17	11	49
VF130	**P100 B5**	28	31.3	8	250	215	180	17	13	
VF130	**P112 B5**	28	31.3	8	250	215	180	17	13	
VF130	**P132 B5**	38	40.1#	10	300	265	230	17	13	

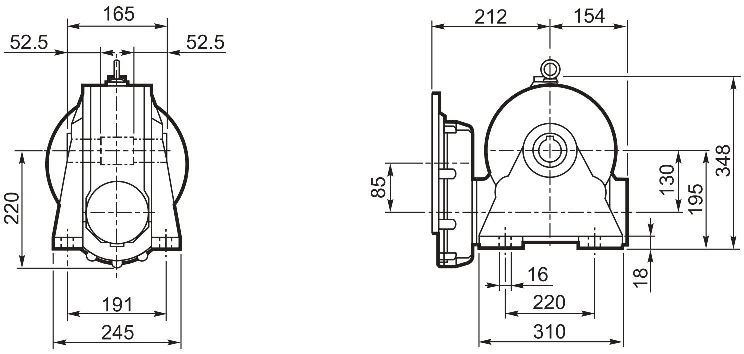
Lowered key

VFR 130...P (IEC)

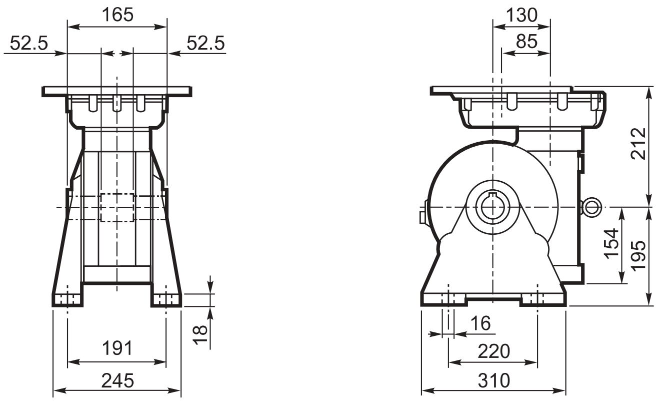
A



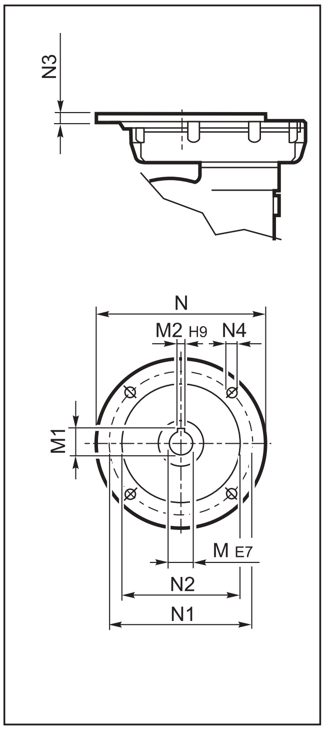
N



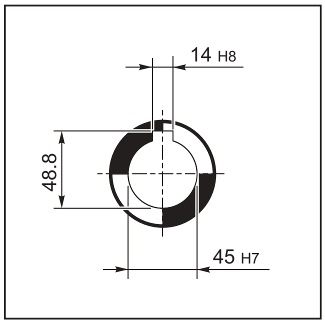
V



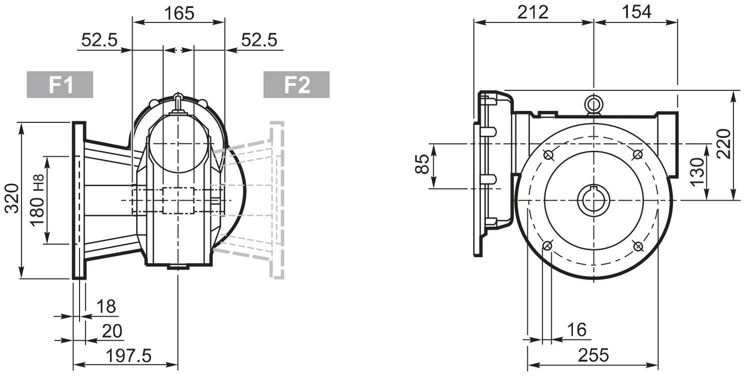
INPUT



OUTPUT

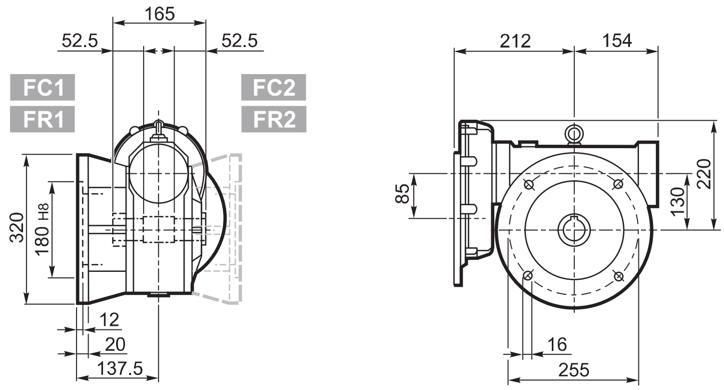


F_

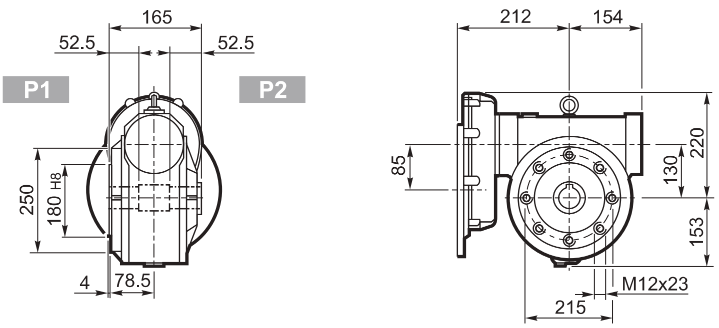


FC_

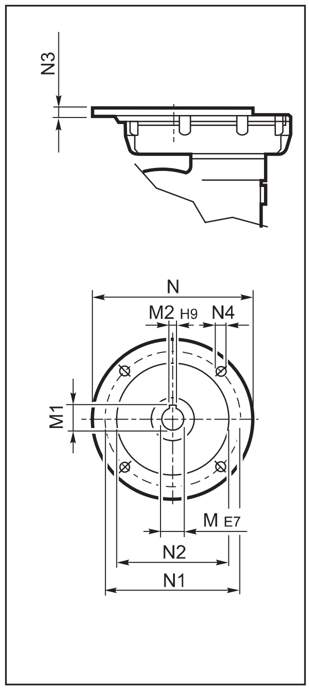
FR_



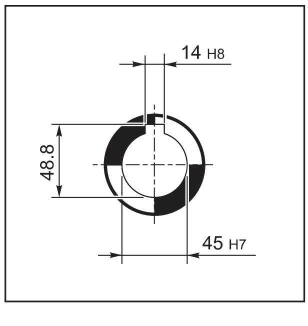
P_



INPUT



OUTPUT

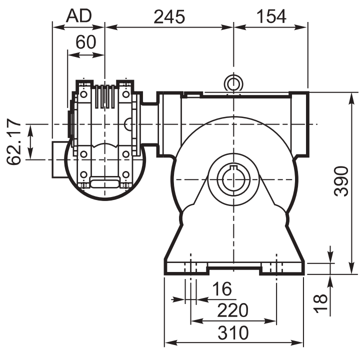


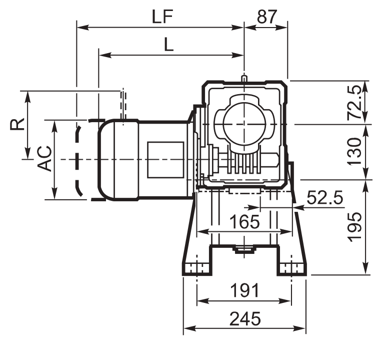
		M	M1	M2	N	N1	N2	N3	N4	Kg
VFR 130	**P80 B5**	19 K6	21.8	6	200	165	130	12	M10x25	57
VFR 130	**P90 B5**	24 K6	27.3	8	200	165	130	12	M10x25	
VRF 130	**P100 B5**	28 J6	29.1#	8	250	215	180	13	M12x35	
VRF 130	**P112 B5**	28 J6	29.1#	8	250	215	180	13	M12x35	

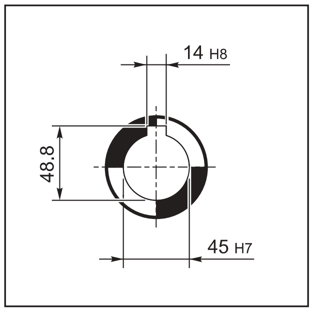
Lowered key

W/VF 63/130...M/ME/MX/MXN

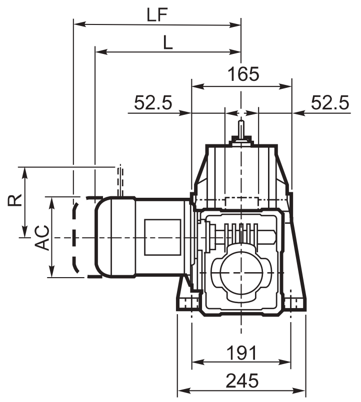
A

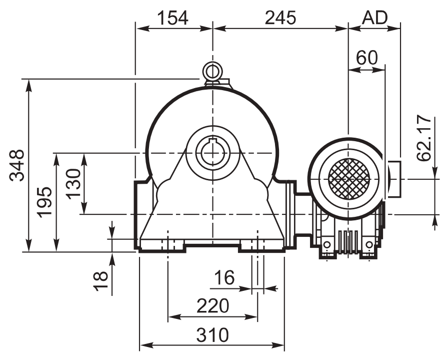




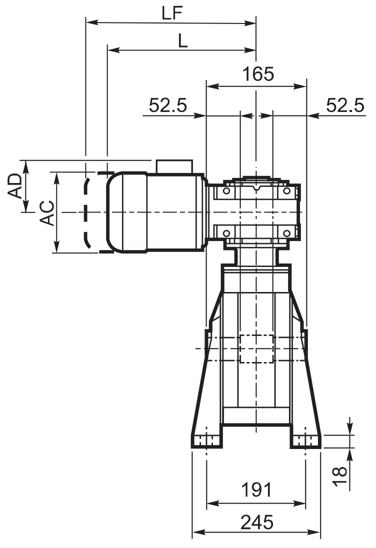


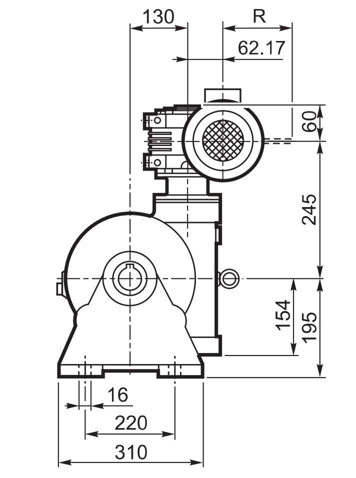
N





V



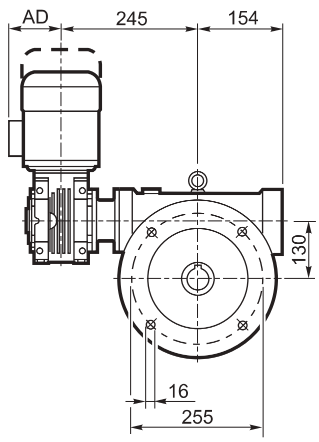


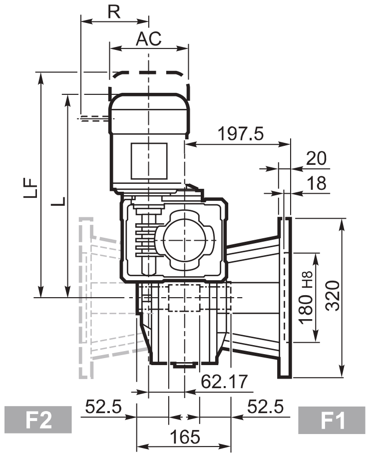
W/VF 63/130...M/ME/MX/MXN

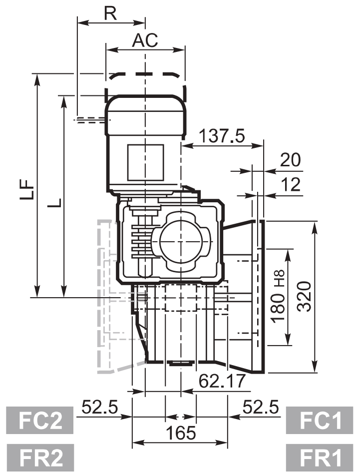
F_

FC_

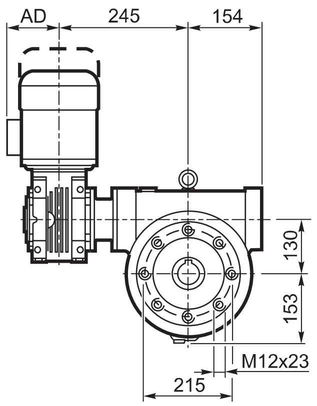
FR_

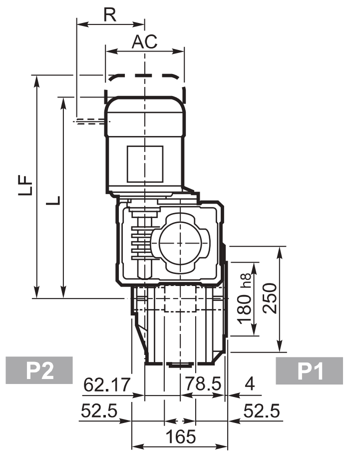




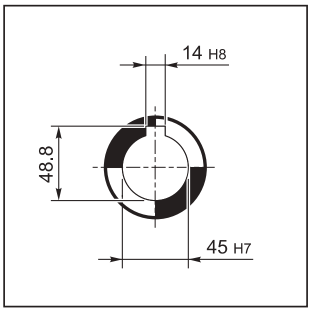


P_





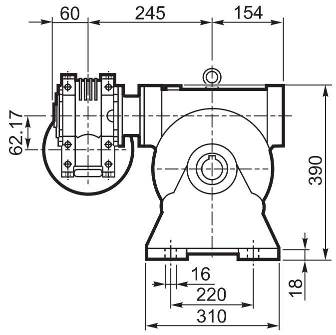
OUTPUT

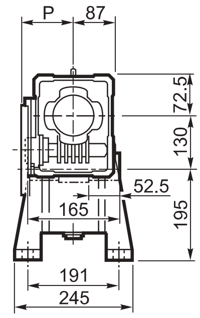


			M/ME/MX/MXN				M...FD M...FA		M...FD		M...FA	
			AC	L	AD	Kg	LF	Kg	R	AD	R	AD
W/VF 63/130	S1	M1	138	419	108	63	480	65	103	135	124	108
W/VF 63/130	S1	ME1	138	419	108	63	480	65	103	135	124	108
W/VF 63/130	S10	MXN10	138	448	137	65.4	507	67.7	103	138	121	138
W/VF 63/130	S2	ME2S	156	447	119	68	517	69.6	129	143	134	143
W/VF 63/130	S2	MX2S	156	491	119	73.1	563	76.9	129	143	134	143
W/VF 63/130	S20	MXN20	158	500.5	146	73.1	571.5	77	129	148	131	148

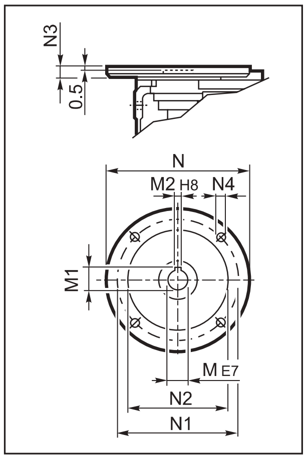
W/VF 63/130...P (IEC)

A

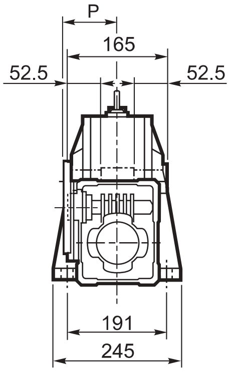


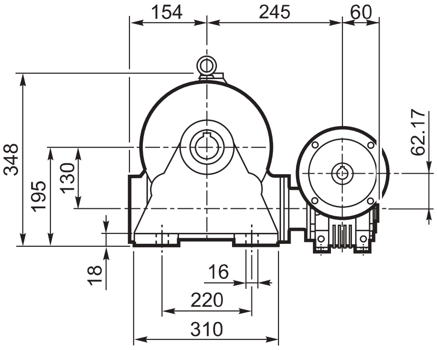


INPUT

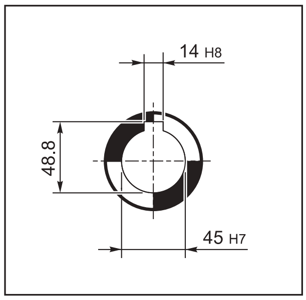


N

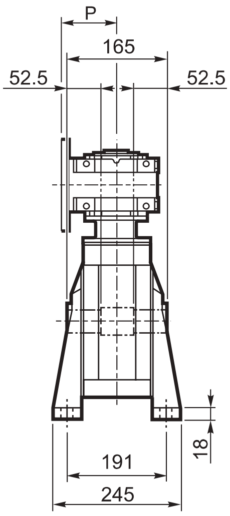


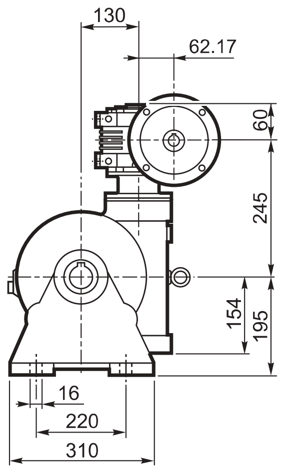


OUTPUT



V



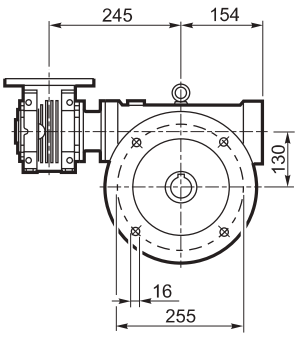


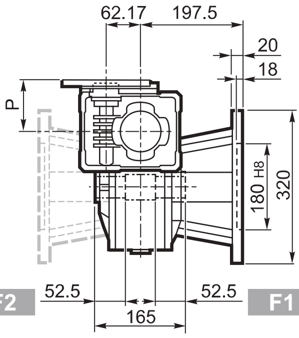
W/VF 63/130...P (IEC)

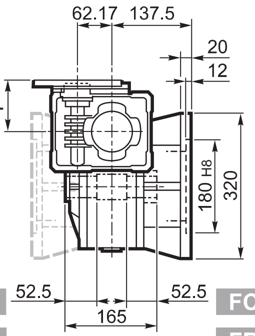
F_

FC_

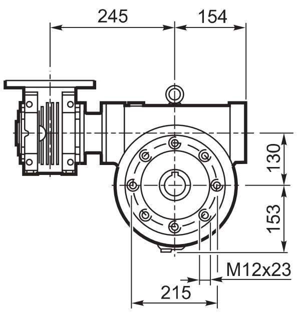
FR_

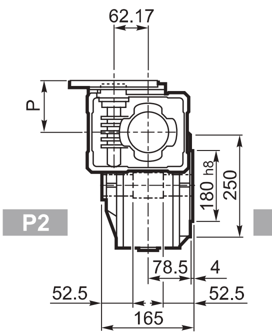




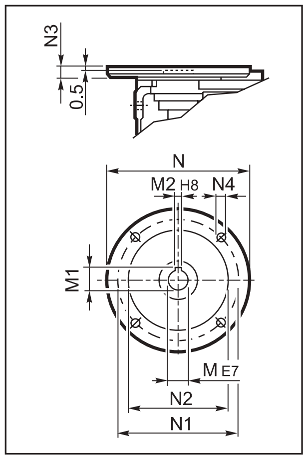


P_

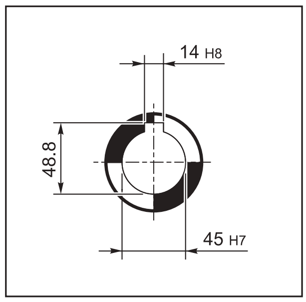




INPUT



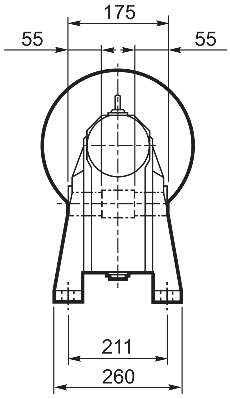
OUTPUT

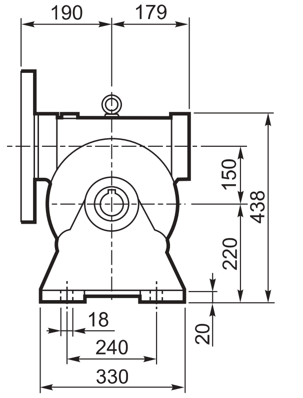


		M	M1	M2	N	N1	N2	N3	N4	P	Kg
W/VF 63/130	**P71 B5**	14	16.3	5	160	130	110	11	9	95	
W/VF 63/130	**P80 B5**	19	21.8	6	200	165	130	12	11.5	102	
W/VF 63/130	**P90 B5**	24	27.3	8	200	165	130	12	11.5	102	57
W/VF 63/130	**P71 B14**	14	16.3	5	105	85	70	11	6.5	95	
W/VF 63/130	**P80 B14**	19	21.8	6	120	100	80	11	6.5	102	
W/VF 63/130	**P90 B14**	24	27.3	8	140	115	95	11	8.5	102	

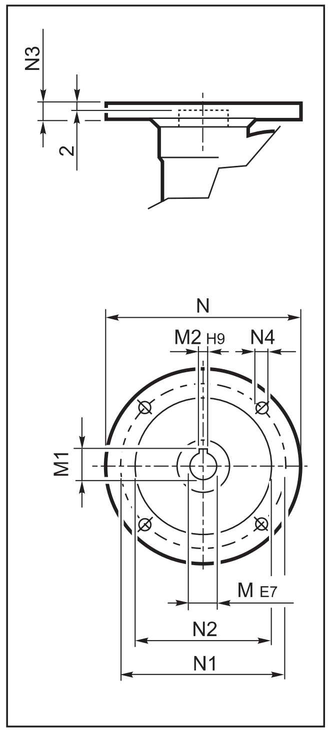
VF 150...P (IEC)

A

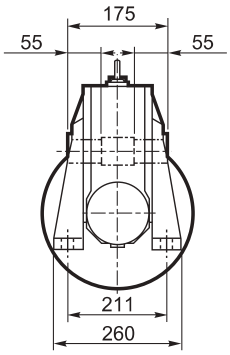


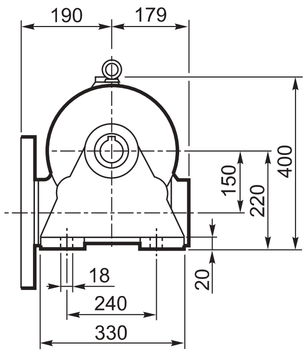


INPUT

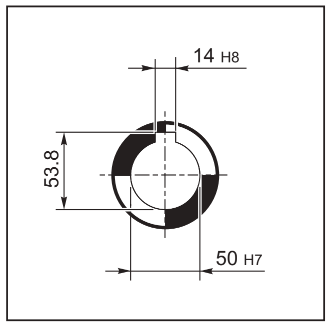


N

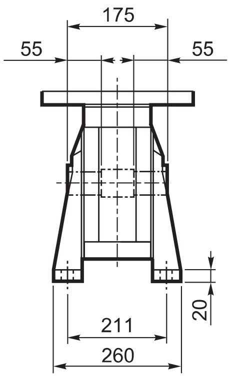


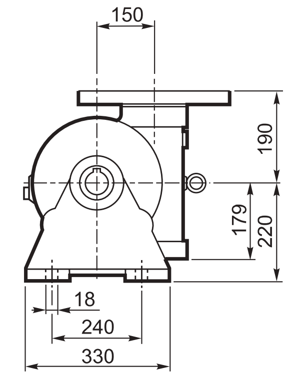


OUTPUT



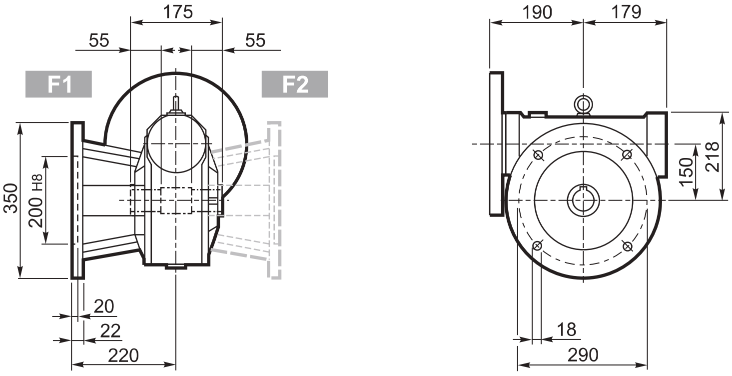
V





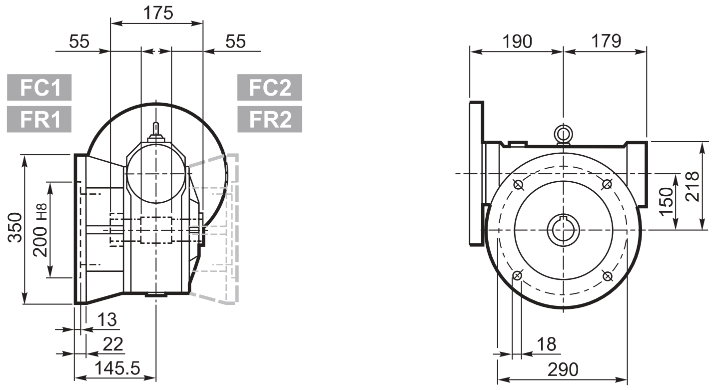
VF 150...P (IEC)

F_

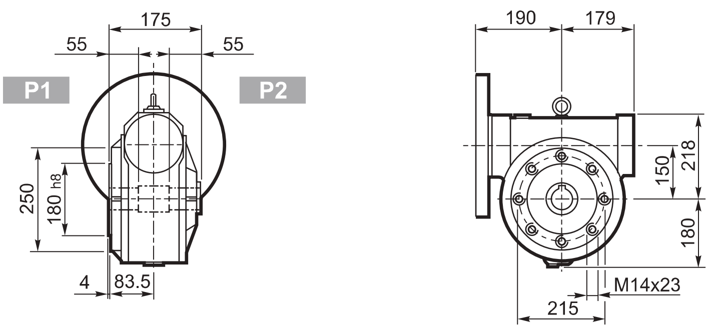


FC_

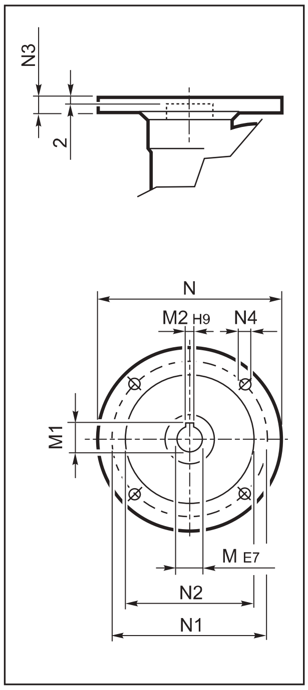
FR_



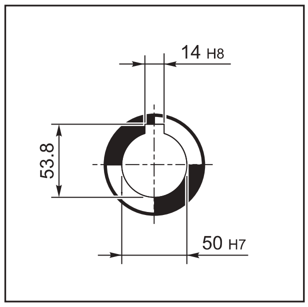
P_



INPUT



OUTPUT

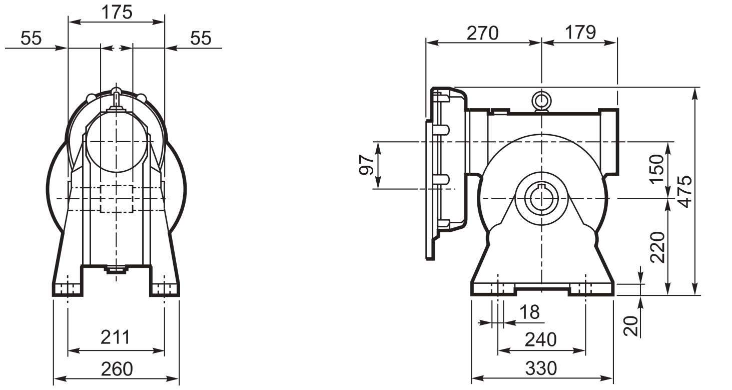


		M	M1	M2	N	N1	N2	N3	N4	Kg
VF 150	P100 B5	28	31.3	8	250	215	180	11	13	60
VF 150	P112 B5	28	31.3	8	250	215	180	11	13	
VF 150	P132 B5	38	41.3	10	300	265	230	16	13	
VF 150	P160 B5	42	44.6#	12	350	300	250	18	18	

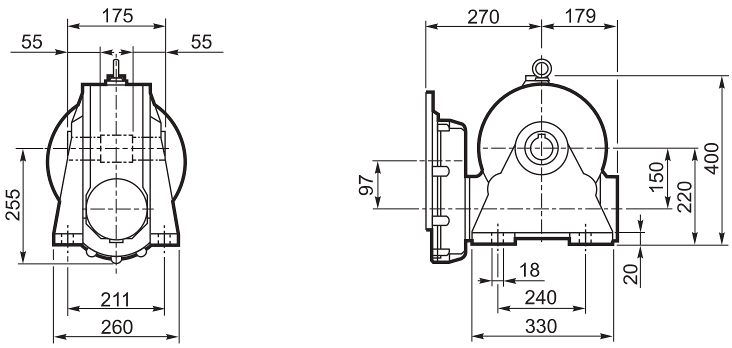
Lowered key

VFR 150...P (IEC)

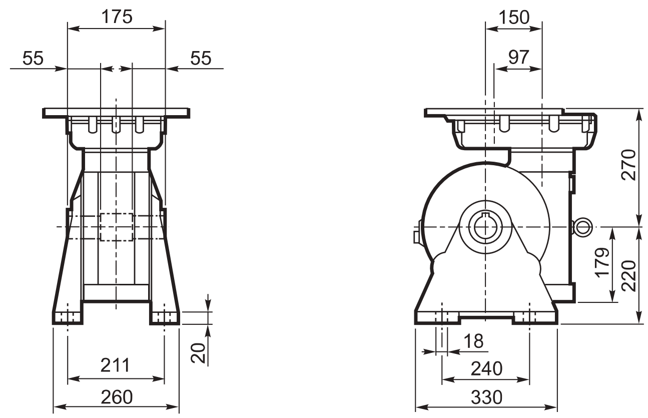
A



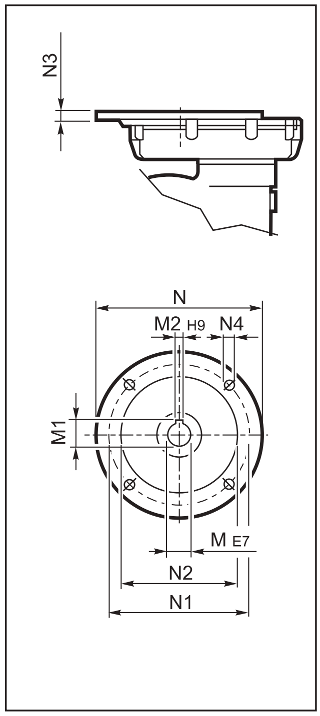
N



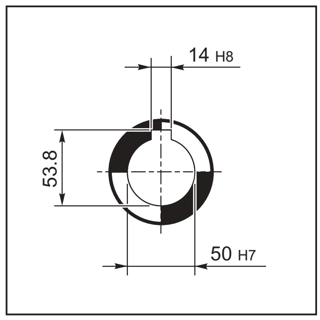
V



INPUT

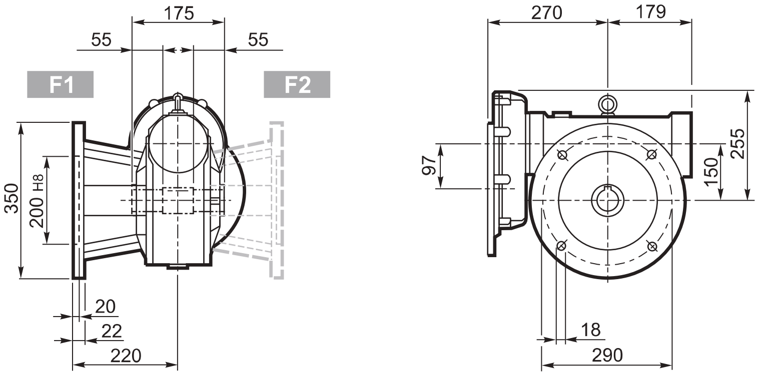


OUTPUT



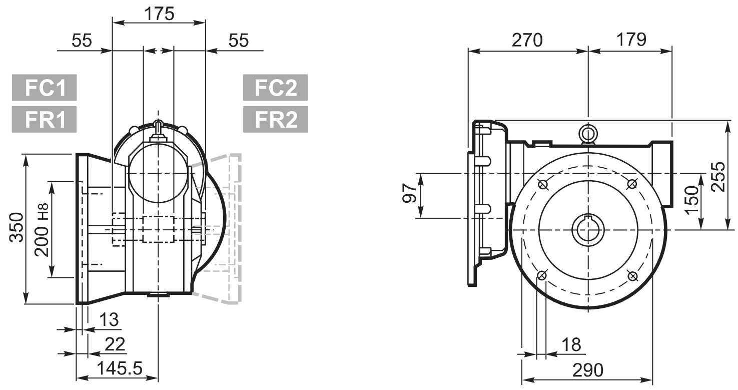
VFR 150...P (IEC)

F_

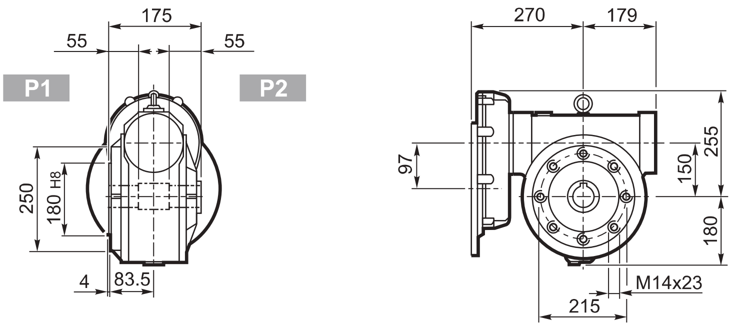


FC_

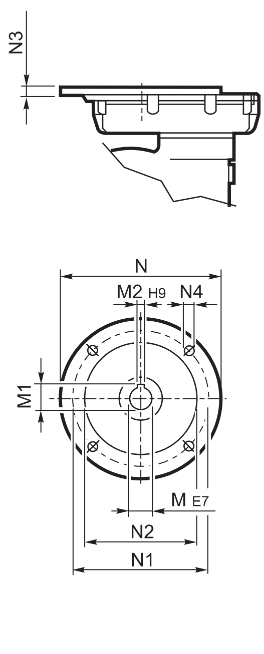
FR_



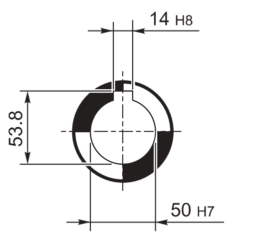
P_



INPUT



OUTPUT

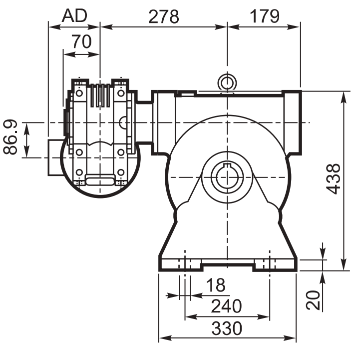


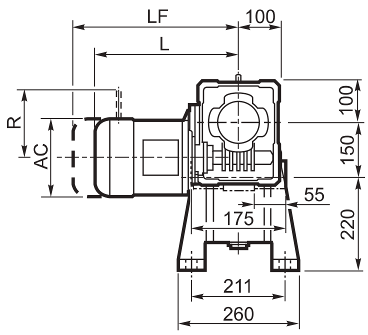
		M	M1	M2	N	N1	N2	N3	N4	Kg
VFR 150	P90 B5	24 K6	27.3	8	200	165	130	13	M10x25	71
VRF 150	P100 B5	28 K6	31.3	8	250	215	180	13	M12x35	
VRF 150	P112 B5	28 J6	31.3	8	250	215	180	13	M12x35	
VFR 150	P132 B5	38 J6	39.6#	10	300	265	230	13	M12x35	

Lowered key

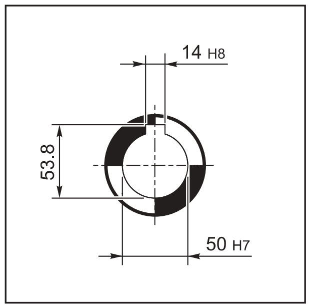
W/VF 86/150...M/ME/MX/MXN

A

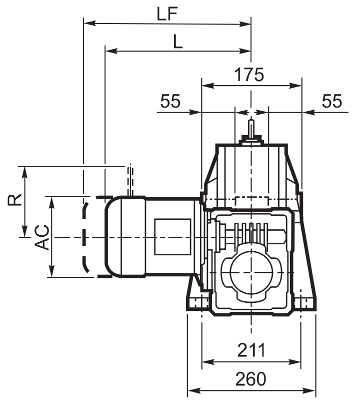


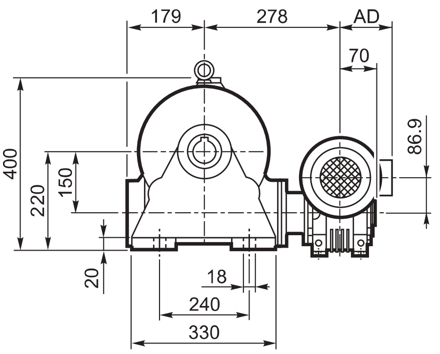


OUTPUT

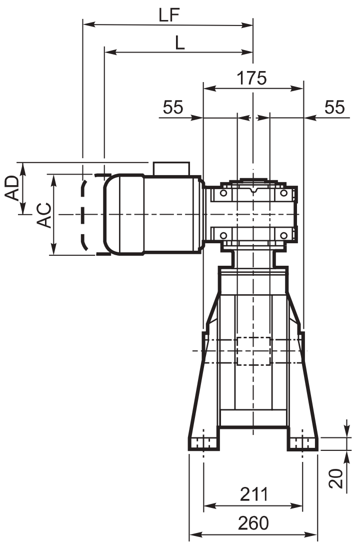


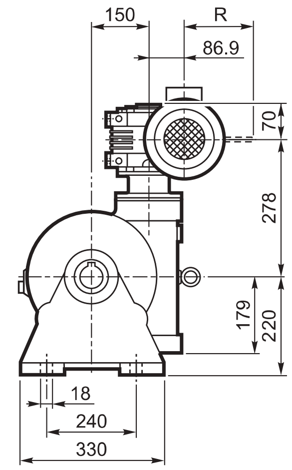
N





V



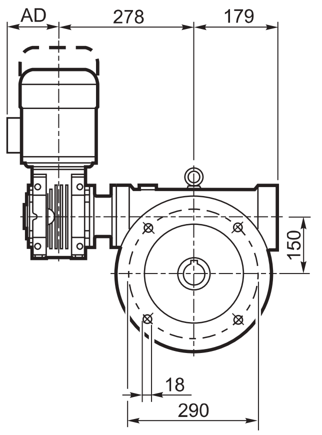


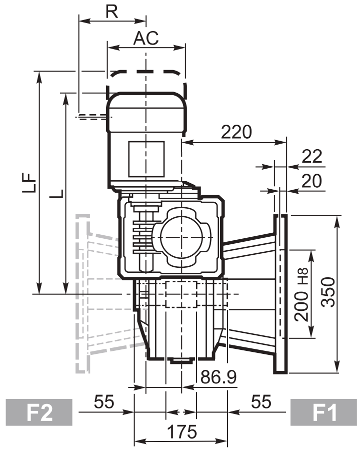
W/VF 86/150...M/ME/MX/MXN

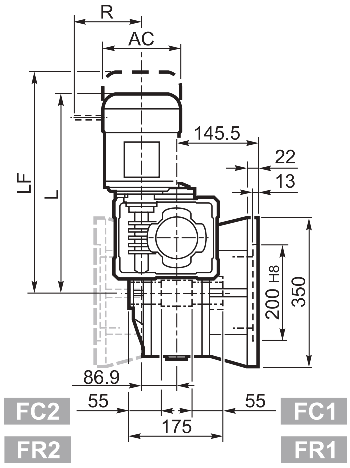
F_

FC_

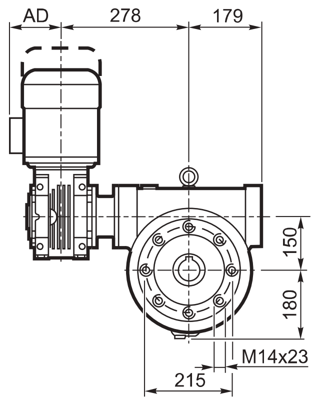
FR_

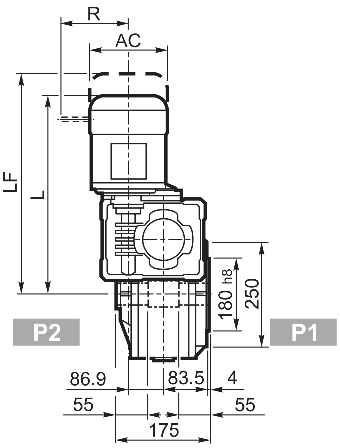


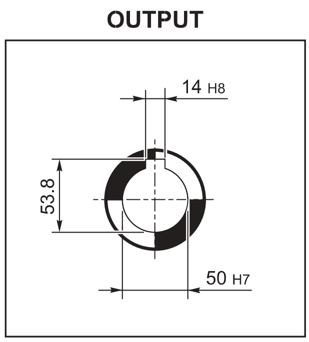




P_



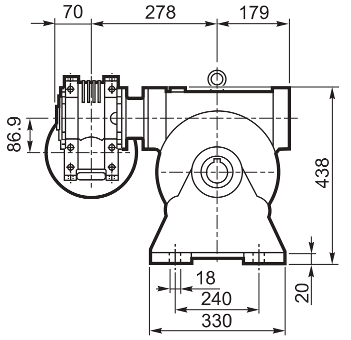


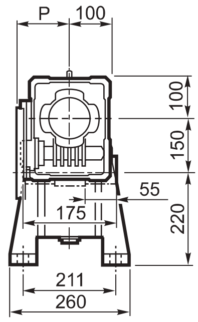


			M/ME/MX/MXN				M...FD M...FA		M...FD		M...FA	
			AC	L	AD	Kg	LF	Kg	R	AD	R	AD
W/VF 86/150	**S1**	**M1**	138	474	108	82	385	84	103	135	124	108
W/VF 86/150	**S1**	**ME1**	138	474	108	82	534	84	103	135	124	135
W/VF 86/150	**S10**	**MXN10**	138	503	137	84.4	562	86.8	103	138	121	138
W/VF 86/150	**S2**	**ME2S**	156	499	119	86	569	87.6	129	143	134	143
W/VF 86/150	**S2**	**MX2S**	156	543	119	91.1	615	94.9	129	143	134	143
W/VF 86/150	**S20**	**MXN20**	158	596.5	146	91.1	667.5	95	129	148	131	148
W/VF 86/150	**S3**	**ME3S**	195	542	142	92.5	638	98.5	160	155	160	155
W/VF 86/150	**S3**	**MX3S**	195	574	142	95.5	664	102.5	160	155	160	155
W/VF 86/150	**S3**	**ME3L**	195	574	142	98	665	104	160	155	160	155
W/VF 86/150	**S3**	**MX3L**	195	618	142	104	710	111	160	155	160	155

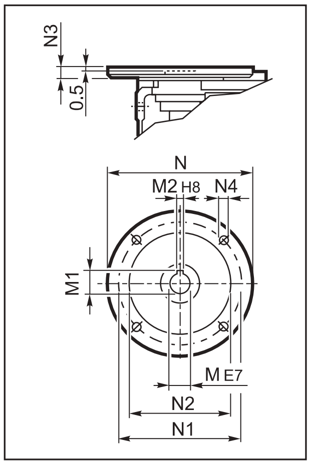
W/VF 86/150...P (IEC)

A

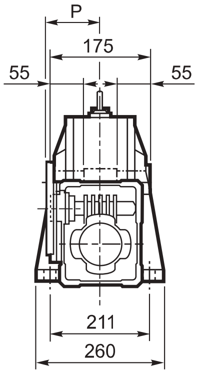


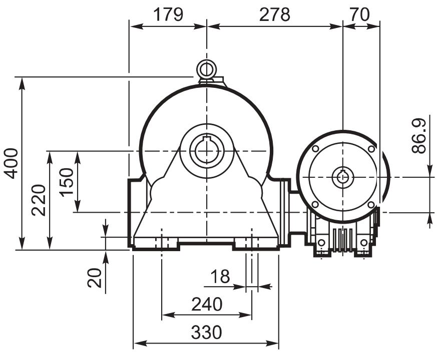


INPUT

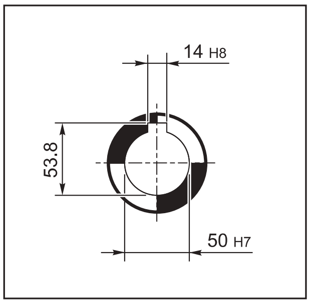


N

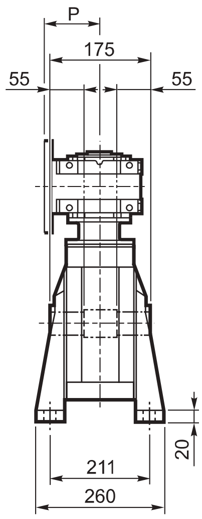


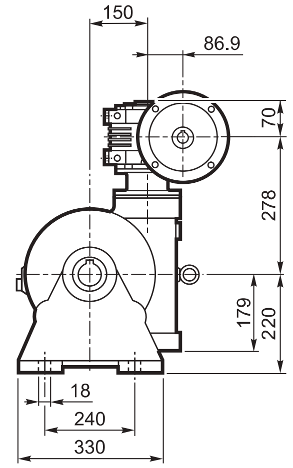


OUTPUT



V



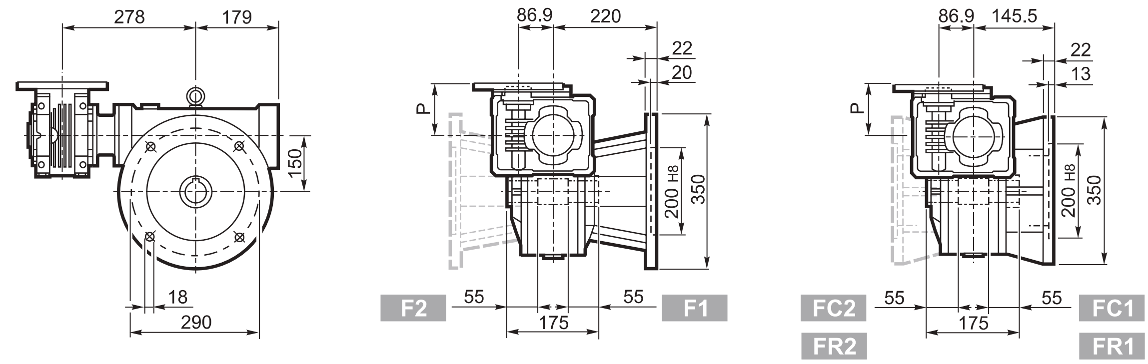


W/VF 86/150...P (IEC)

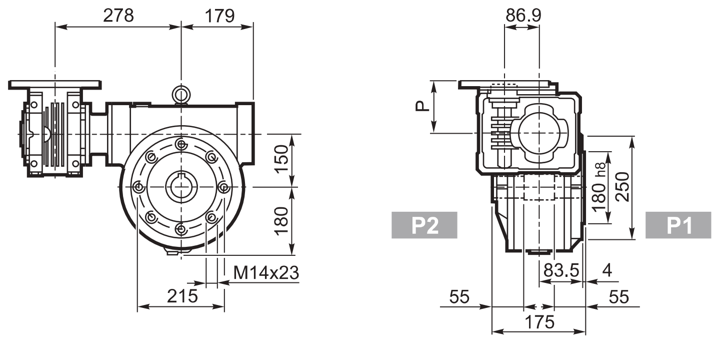
F_

FC_

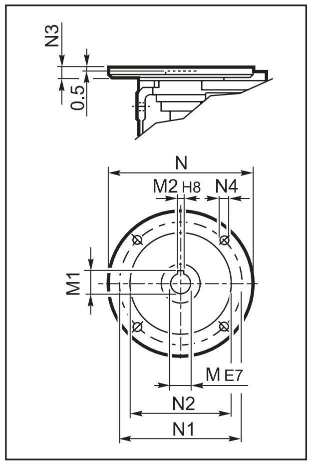
FR_



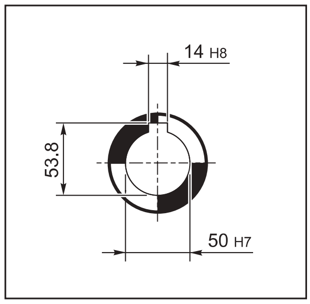
P_



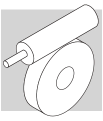
INPUT



OUTPUT

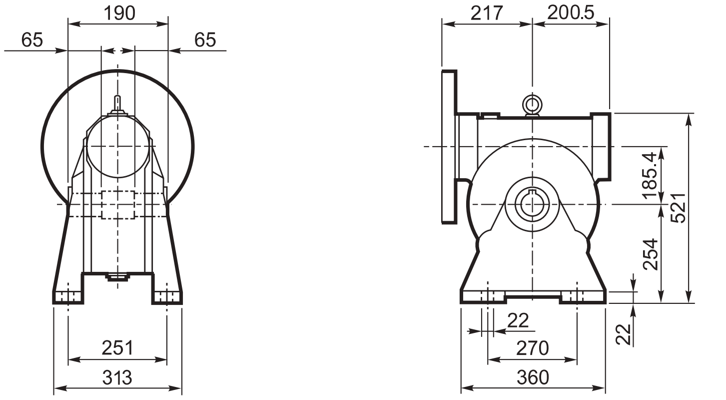


		M	M1	M2	N	N1	N2	N3	N4	P	Kg
W/VF 86/150	P71 B5	14	16.3	5	160	130	110	11	9	128	75
W/VF 86/150	P80 B5	19	21.8	6	200	165	130	12	11.5	128	
W/VF 86/150	P90 B5	24	27.3	8	200	165	130	12	11.5	128	
W/VF 86/150	P100 B5	28	31.3	8	250	215	180	13	12.5	136	
W/VF 86/150	P112 B5	28	31.3	8	250	215	180	13	12.5	136	
W/VF 86/150	P80 B14	19	21.8	6	120	100	80	7.5	6.5	128	
W/VF 86/150	P90 B14	24	27.3	8	140	115	95	7.5	8.5	128	
W/VF 86/150	P100 B14	28	31.3	8	160	130	110	10	8.5	136	
W/VF 86/150	P112 B14	28	31.3	8	160	130	110	10	8.5	136	

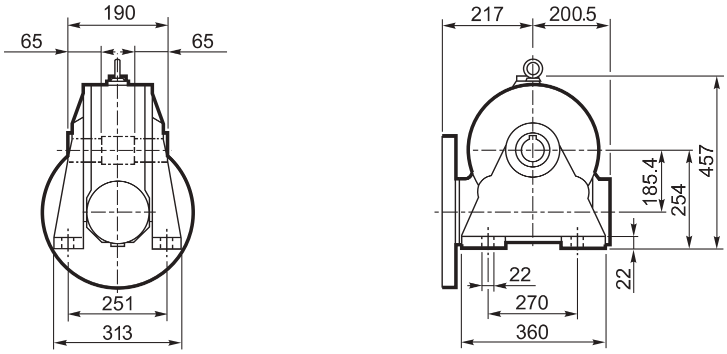


VF 185...P (IEC)

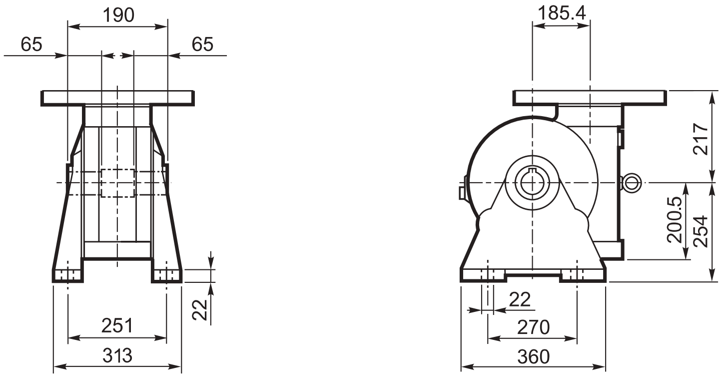
A



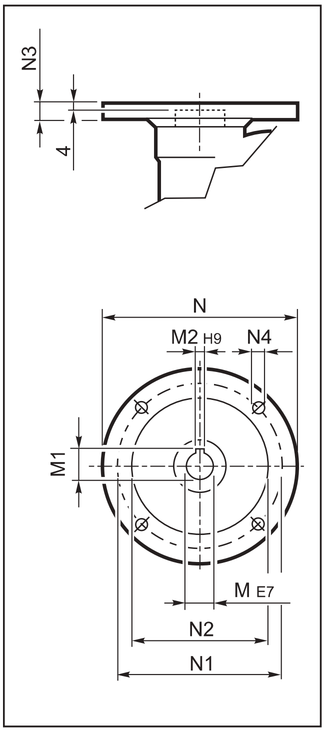
N



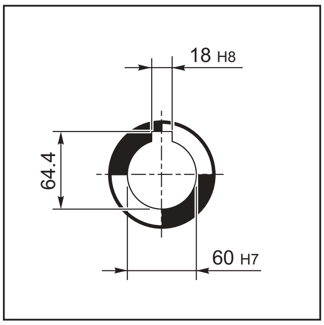
V



INPUT

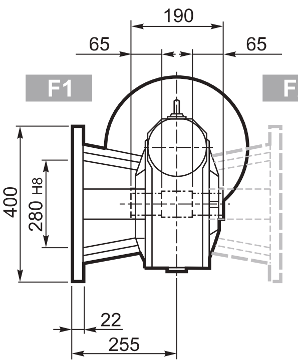


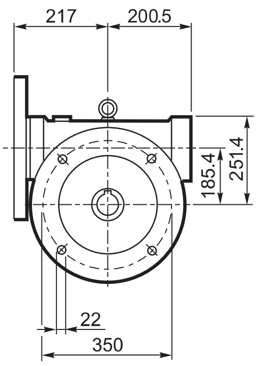
OUTPUT



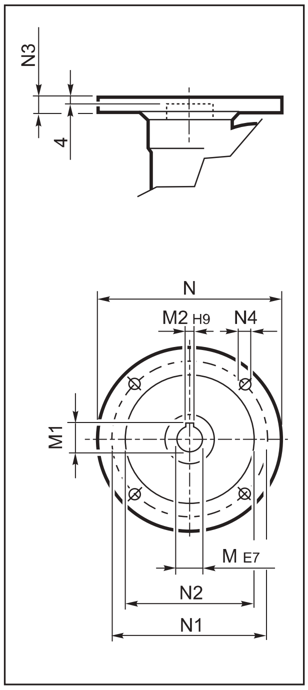
VF 185...P (IEC)

F_



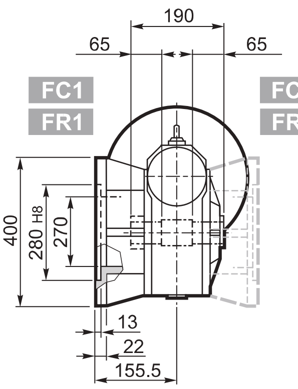


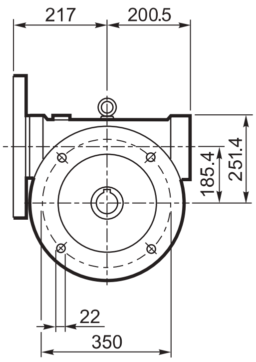
INPUT



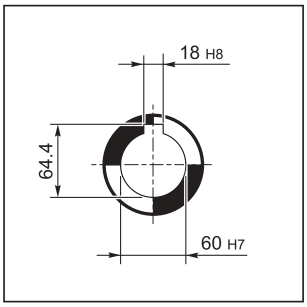
FC_

FR_

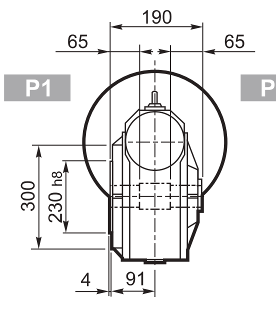


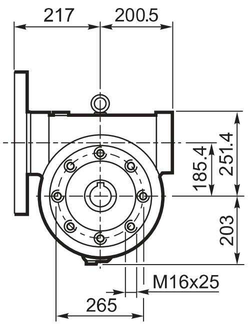


OUTPUT



P_



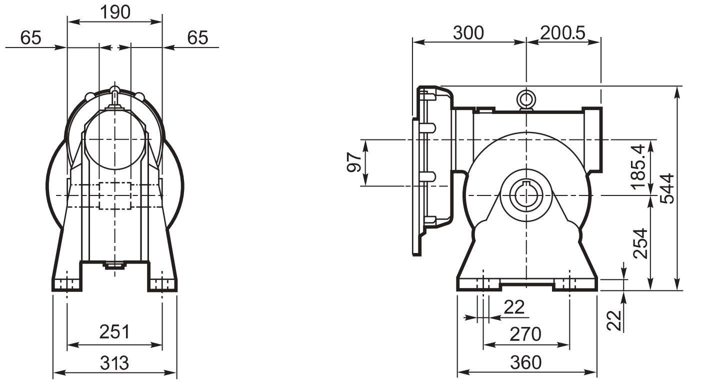


		M	M1	M2	N	N1	N2	N3	N4	Kg
VF 185	P100 B5	28	31.3	8	250	215	180	16	13	94
VF 185	P112 B5	28	31.3	8	250	215	180	16	13	
VF 185	P132 B5	38	41.3	10	300	265	230	16	13	
VF 185	P160 B5	42	45.3	12	350	300	250	18	18	
VF 185	P180 B5	48	51.2#	14	350	300	250	18	18	

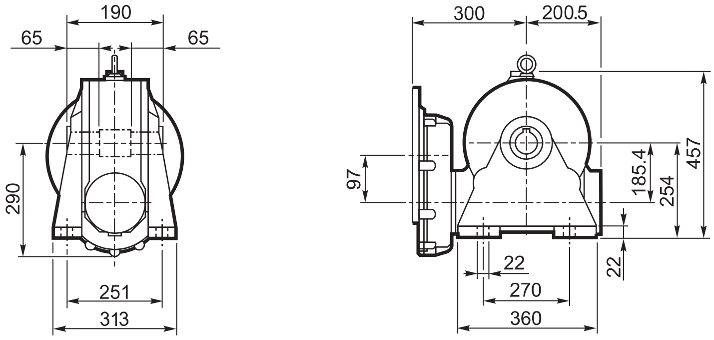
Lowered key

VFR 185...P (IEC)

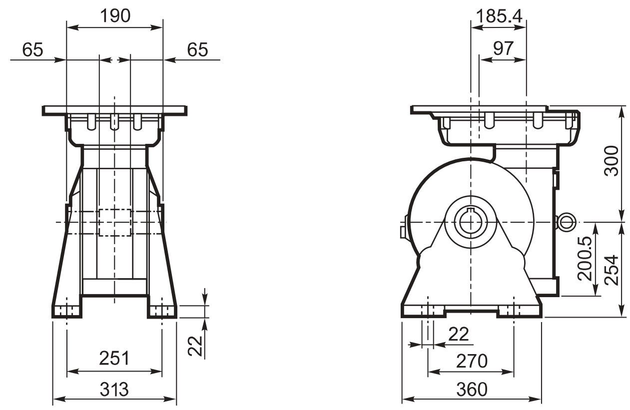
A



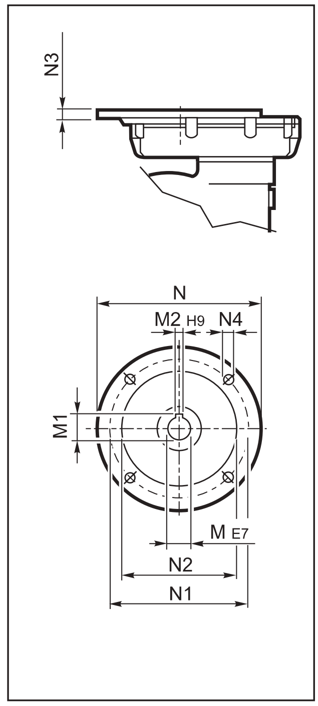
N



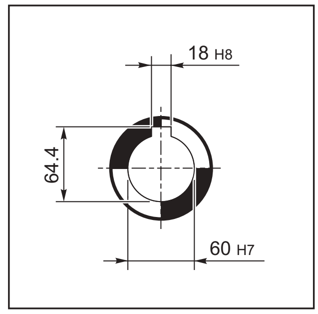
V



INPUT

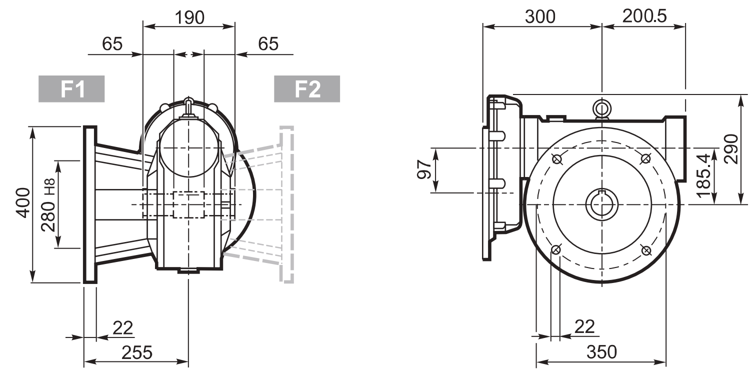


OUTPUT

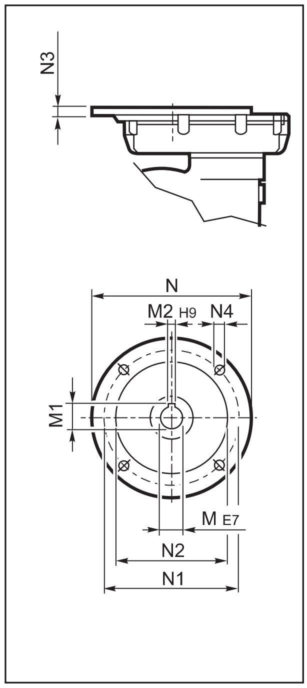


VFR 185...P (IEC)

F_

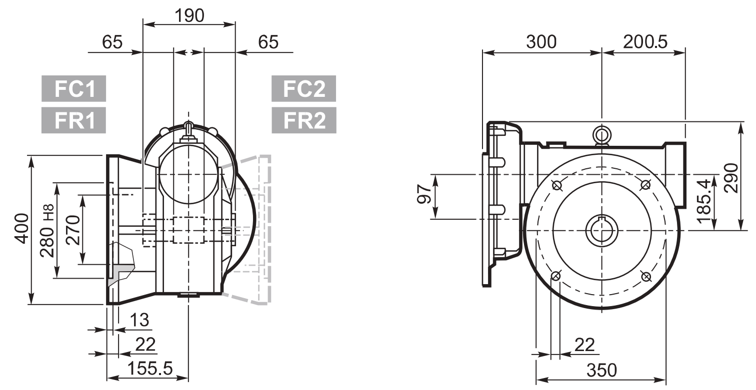


INPUT

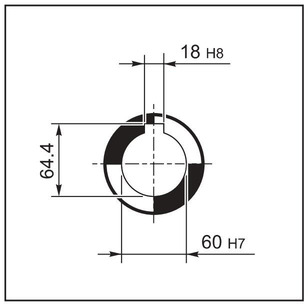


FC_

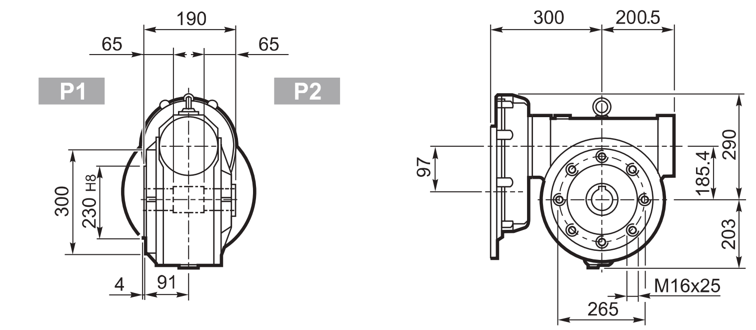
FR_



OUTPUT



P_

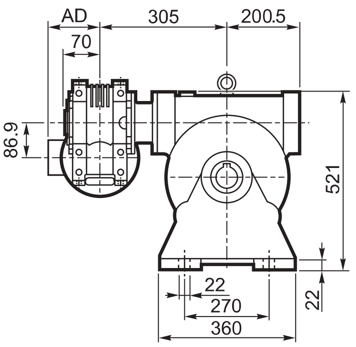


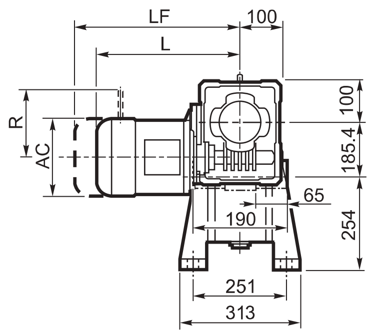
		M	M1	M2	N	N1	N2	N3	N4	Kg
VFR 185	**P90 B5**	24 K6	27.3	8	200	165	130	13	M10x25	110
VRF 185	**P100 B5**	28 K6	31.3	8	250	215	180	13	M12x35	
VRF 185	**P112 B5**	28 K6	31.3	8	250	215	180	13	M12x35	
VFR 185	**P132 B5**	38 J6	39.6#	10	300	265	230	13	M12x35	

Lowered key

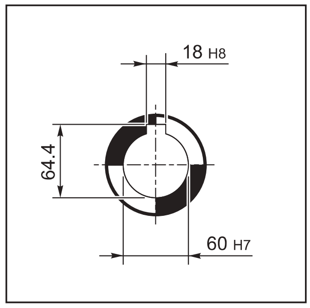
W/VF 86/185...M/ME/MX/MXN

A

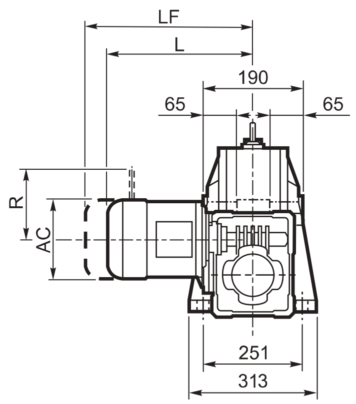


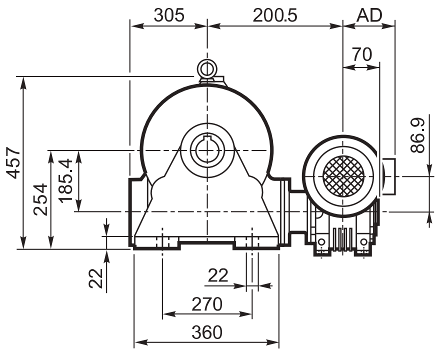


OUTPUT

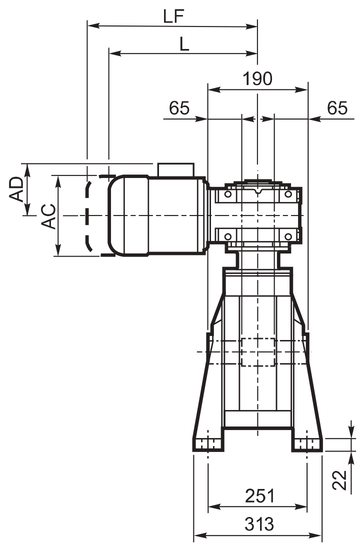


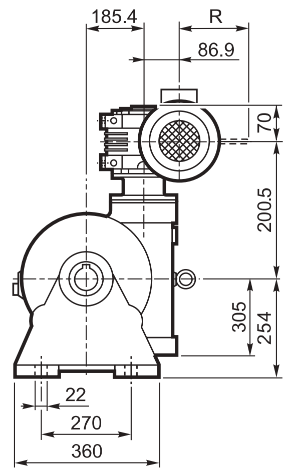
N





V



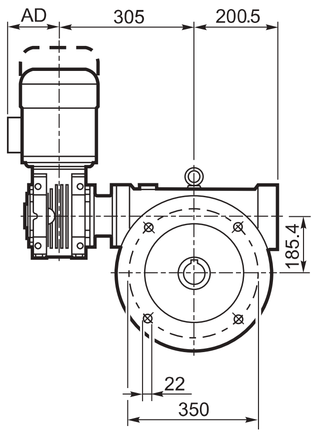


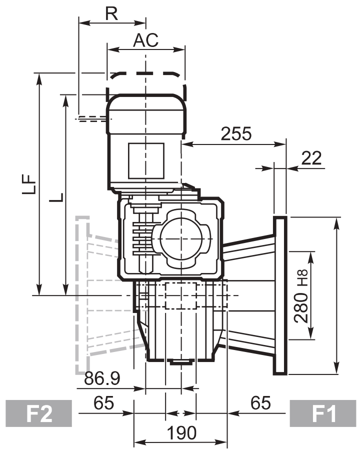
W/VF 86/185...M/ME/MX/MXN

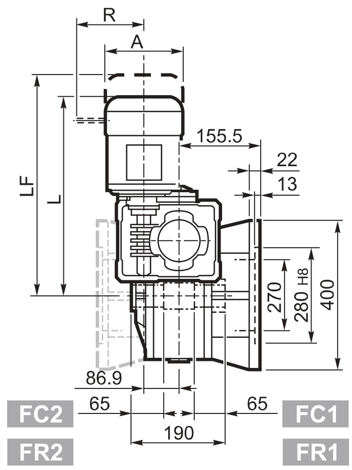
F_

FC_

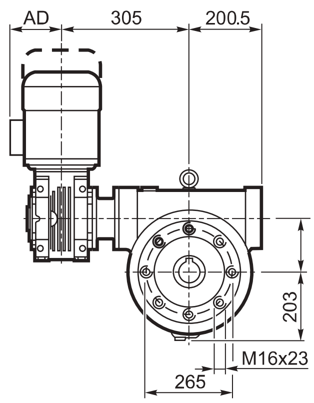
FR_

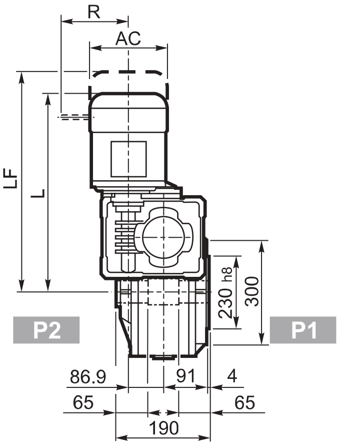




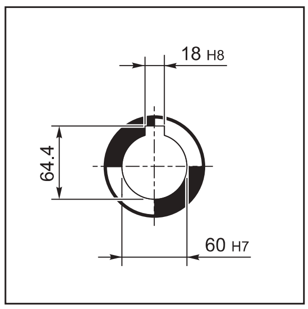


P_





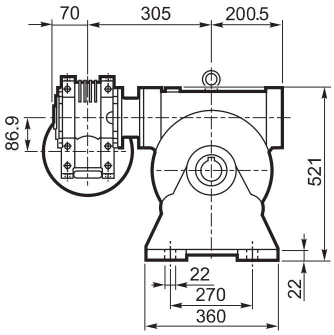
OUTPUT

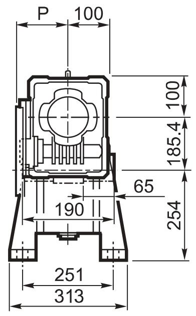


			M/ME/MX/MXN				M...FD M...FA		M...FD		M...FA	
			AC	L	AD	Kg	LF	Kg	R	AD	R	AD
W/VF 86/185	S1	M1	138	509	108	116	570	118	103	135	124	108
W/VF 86/185	S1	ME1	138	509	108	116	599	118	103	135	124	135
W/VF 86/185	S10	MXN10	138	538	137	118.4	597	120.8	103	138	121	138
W/VF 86/185	S2	ME2S	156	534	119	120	604	121.6	129	143	134	143
W/VF 86/185	S2	MX2S	156	578	119	125.1	650	128.9	129	143	134	143
W/VF 86/185	S20	MXN20	158	631.5	146	125.1	702.5	127.3	129	148	131	148
W/VF 86/185	S3	ME3S	195	577	142	126.5	673	132.5	160	155	160	155
W/VF 86/185	S3	MX3S	195	609	142	129.5	699	136.5	160	155	160	155
W/VF 86/185	S3	ME3L	195	609	142	132	700	138	160	155	160	155
W/VF 86/185	S3	MX3L	195	653	142	138	745	145	160	155	160	155

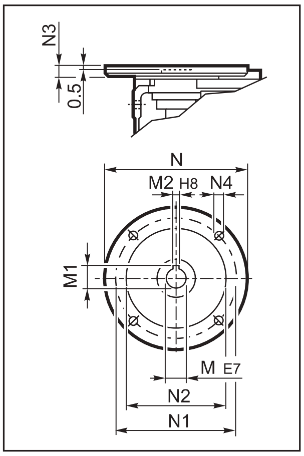
W/VF 86/185...P (IEC)

A

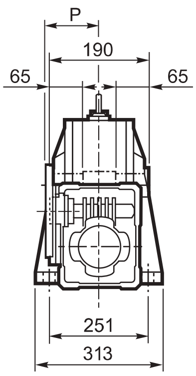


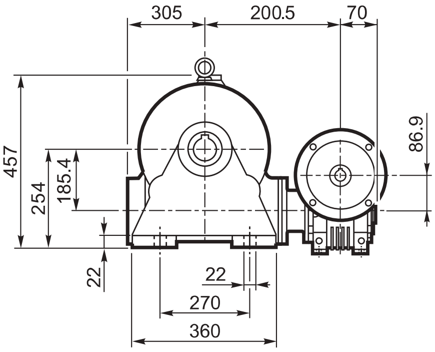


INPUT

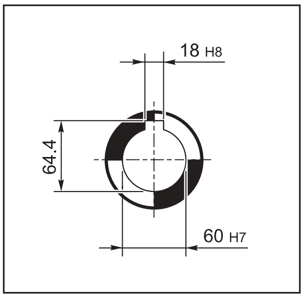


N

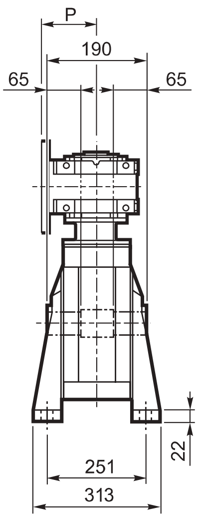


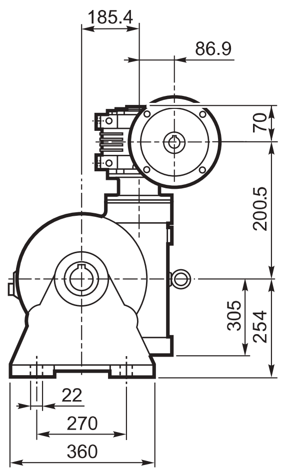


OUTPUT



V



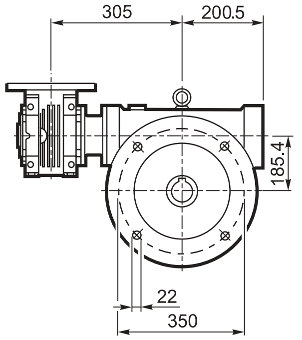


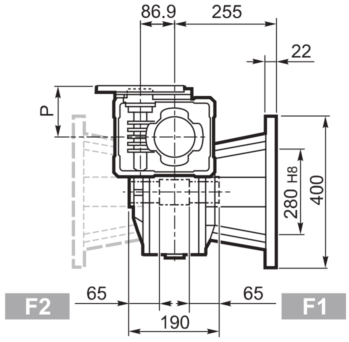
W/VF 86/185...P (IEC)

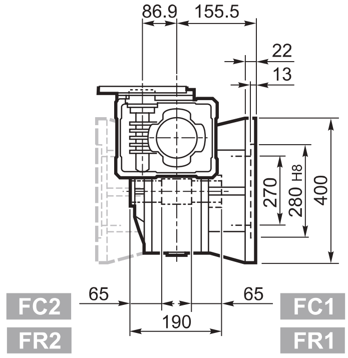
F_

FC_

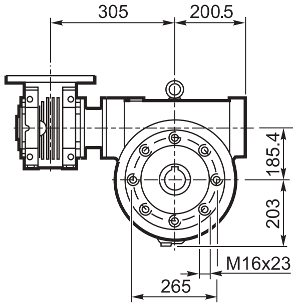
FR_

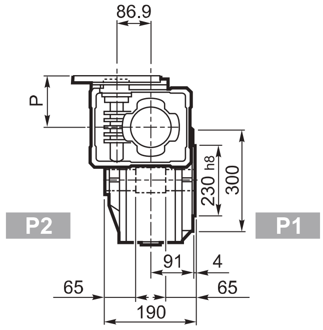




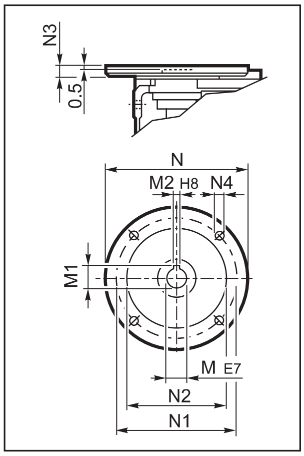


P_

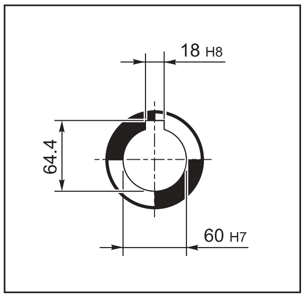




INPUT



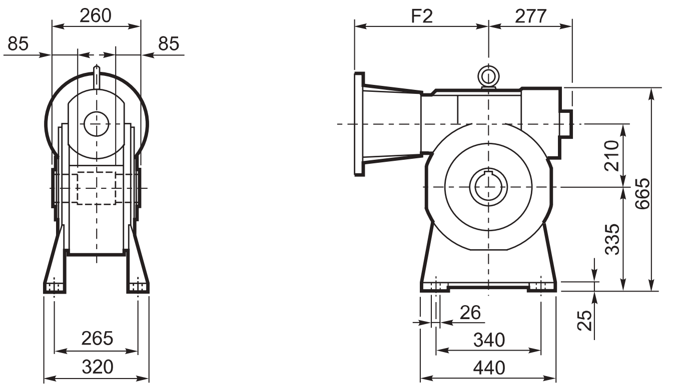
OUTPUT



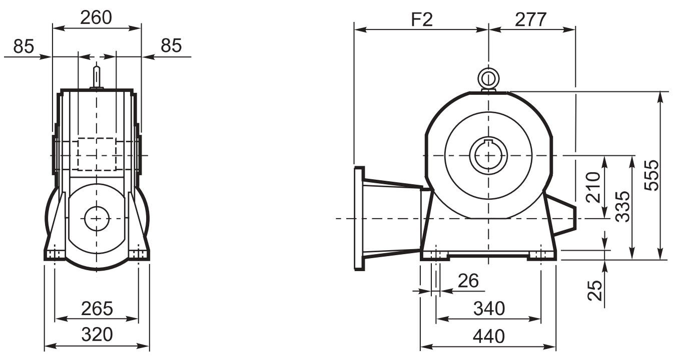
		M	M1	M2	N	N1	N2	N3	N4	P	Kg
W/VF 86/185	P71 B5	14	16.3	5	160	130	110	11	9	128	109
W/VF 86/185	P80 B5	19	21.8	6	200	165	130	12	11.5	128	
W/VF 86/185	P90 B5	24	27.3	8	200	165	130	12	11.5	128	
W/VF 86/185	P100 B5	28	31.3	8	250	215	180	13	12.5	136	
W/VF 86/185	P112 B5	28	31.3	8	250	215	180	13	12.5	136	
W/VF 86/185	P80 B14	19	21.8	6	120	100	80	7.5	6.5	128	
W/VF 86/185	P90 B14	24	27.3	8	140	115	95	7.5	8.5	128	
W/VF 86/185	P100 B14	28	31.3	8	160	130	110	10	8.5	136	
W/VF 86/185	P112 B14	28	31.3	8	160	130	110	10	8.5	136	

VF 210...P (IEC)

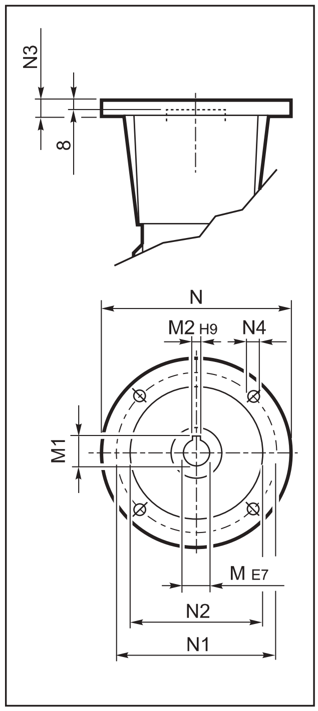
A



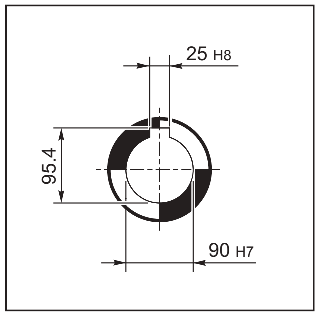
N



INPUT

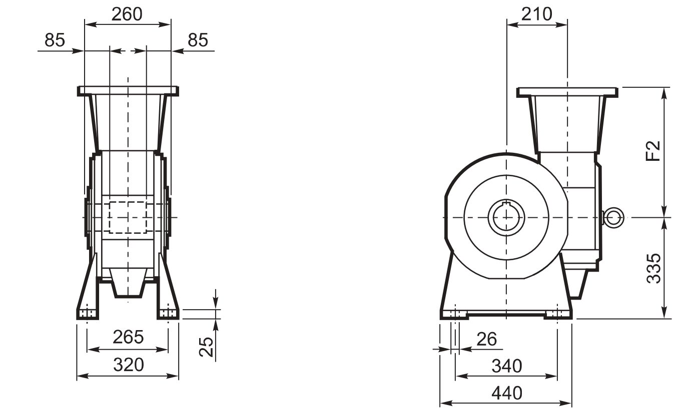


OUTPUT

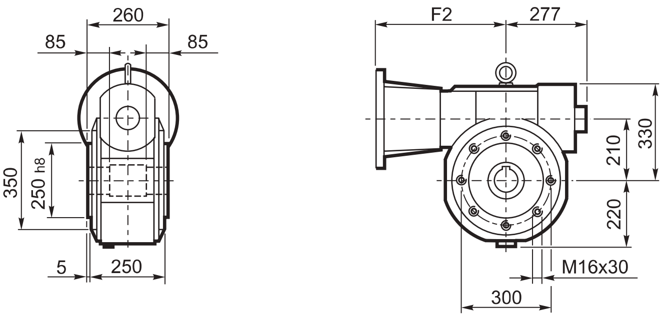


VF 210...P (IEC)

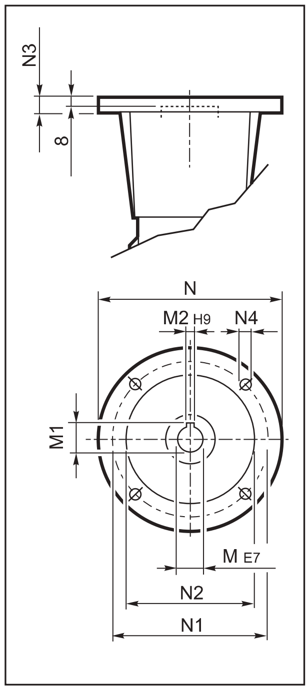
V



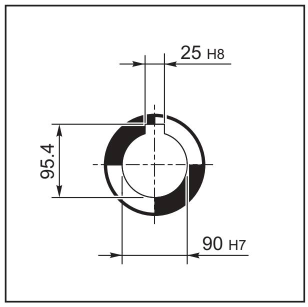
P



INPUT



OUTPUT



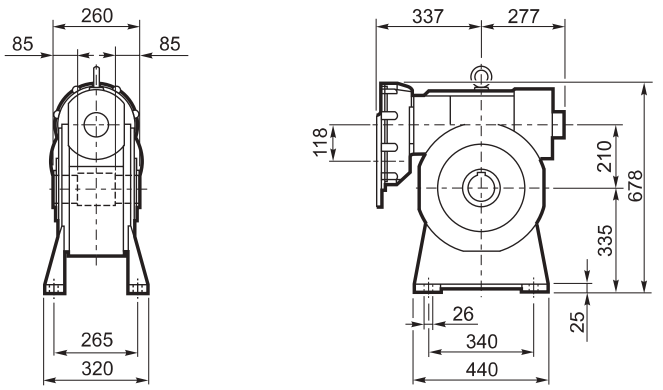
Fan cooling as standard on versions A and P.
P(IEC) arrangements come complete with gear coupling enclosed in the bell housing.

		F2	M	M1	M2	N	N1	N2	N3	N4	Kg
VF 210	**P132 B5**	485	38	41.3	10	300	265	230	25	M12	210
VF 210	**P160 B5**	460	42	45.3	12	350	300	250	22	18	
VF 210	**P180 B5**	460	48	51.8	14	350	300	250	22	18	
VF 210	**P200 B5**	485	55	59.3	16	400	350	300	25	M16	
VF 210	**P225 B5**	490	60	64.4	18	450	400	350	22	18 #	

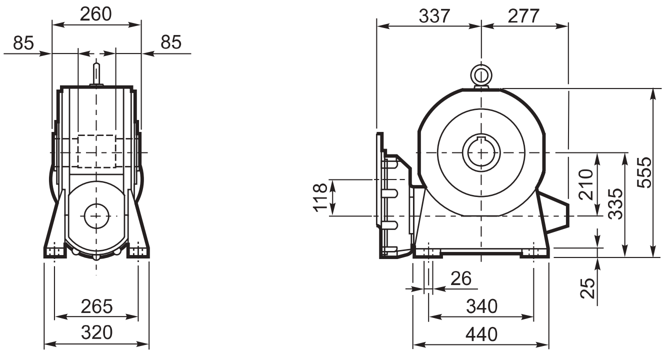
N° 8 holes at 45°

VFR 210...P (IEC)

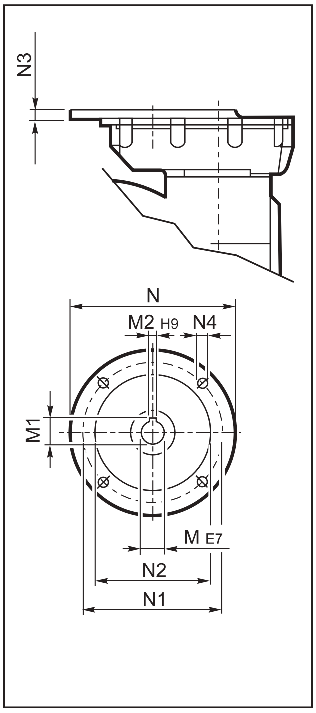
A



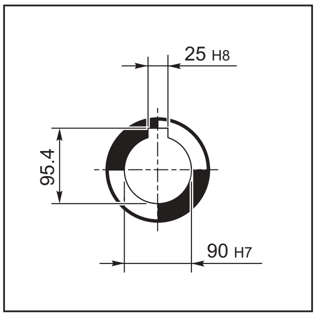
N



INPUT

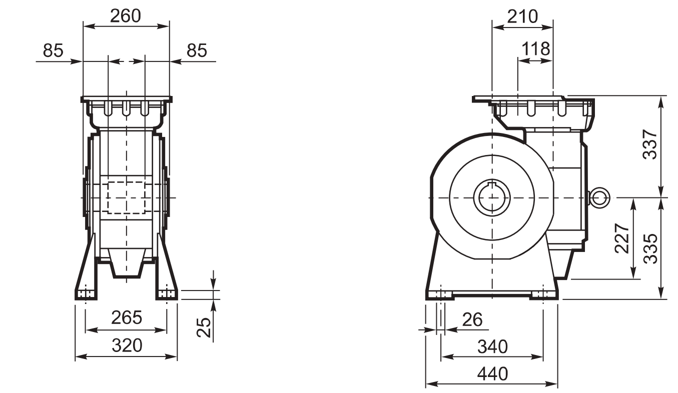


OUTPUT

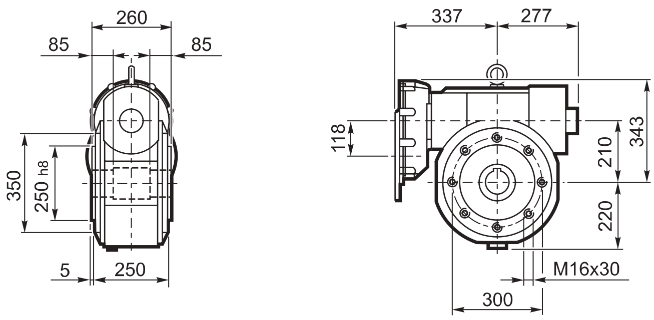


VFR 210...P (IEC)

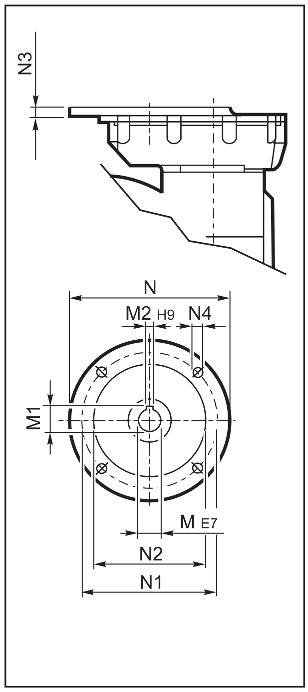
V



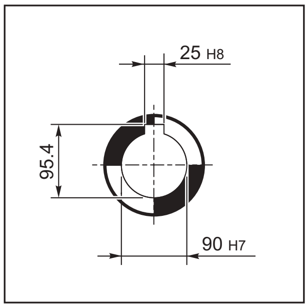
P



INPUT



OUTPUT



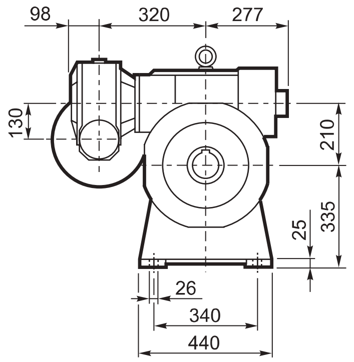
Fan cooling as standard on versions A and P.

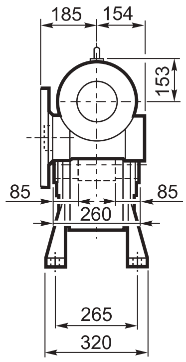
		M	M1	M2	N	N1	N2	N3	N4	Kg
VRF 210	**P100 B5**	28 K6	31.3	8	250	215	180	13	M12x35	185
VRF 210	**P112 B5**	28 K6	31.3	8	250	215	180	13	M12x35	
VFR 210	**P132 B5**	38 J6	41.3	10	300	265	230	13	M12x35	
VFR 210	**P160 B5**	42 J6	44.3#	12	350	300	250	18	M16x60	

Lowered key

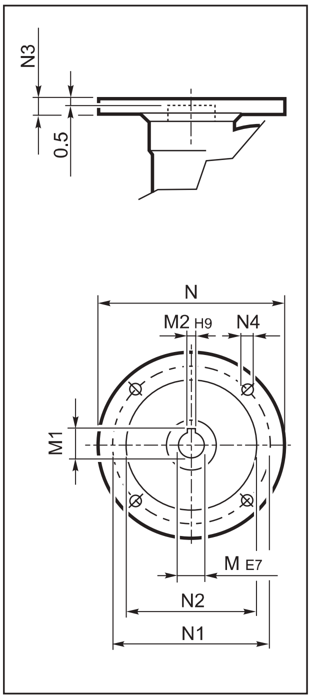
VF/VF 130/210...P (IEC)

A

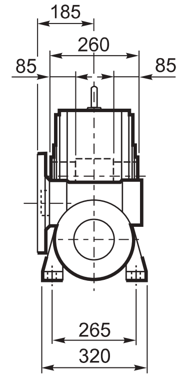


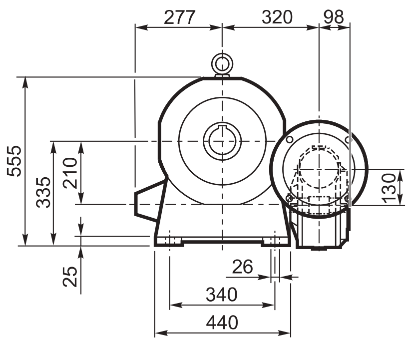


INPUT

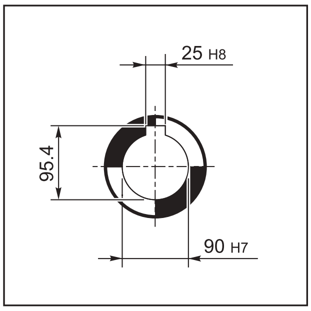


N

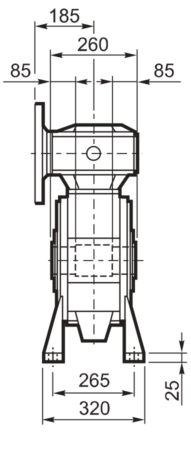


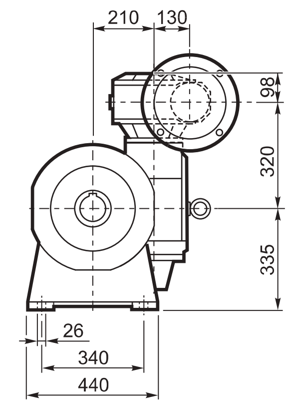


OUTPUT

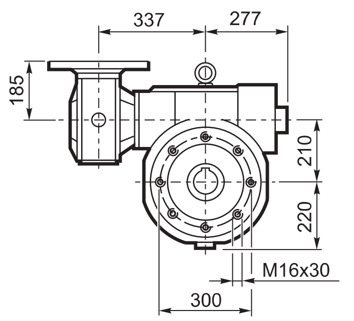


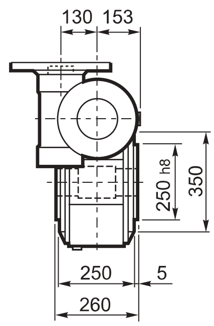
V





P





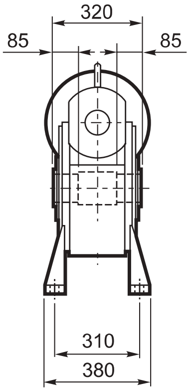
Fan cooling as standard on versions A and P.

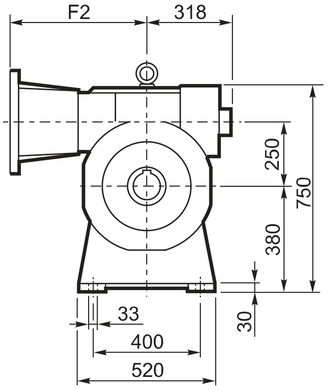
		M	M1	M2	N	N1	N2	N3	N4	Kg
VF/VF 130/210	**P90 B5**	24	27.3	8	200	165	130	17	11	225
VF/VF 130/210	**P100 B5**	28	31.3	8	250	215	180	17	13	
VF/VF 130/210	**P112 B5**	28	31.3	8	250	215	180	17	13	
VF/VF 130/210	**P132 B5**	38	40.1#	10	300	265	230	17	13	

Lowered key

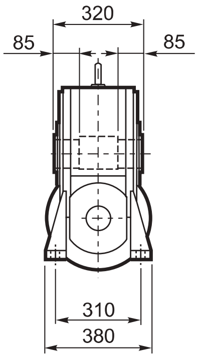
VF 250...P (IEC)

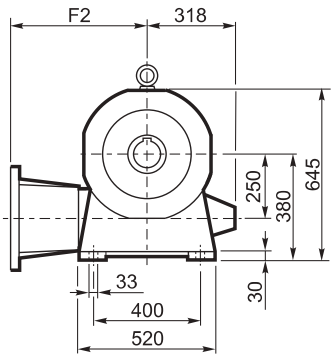
A



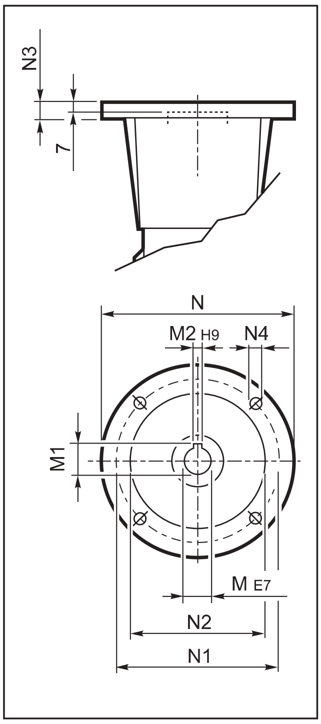


N

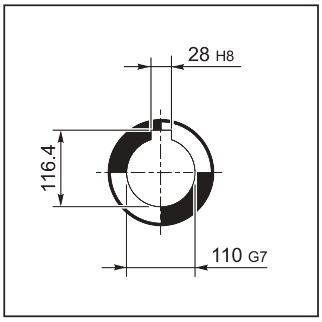




INPUT

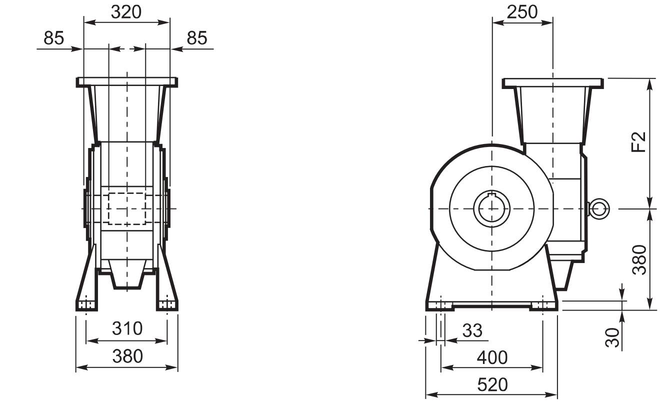


OUTPUT

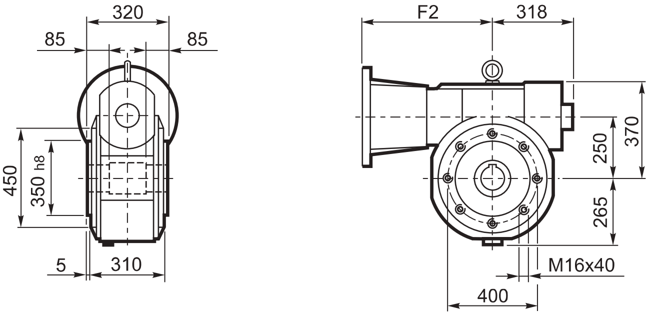


VF 250...P (IEC)

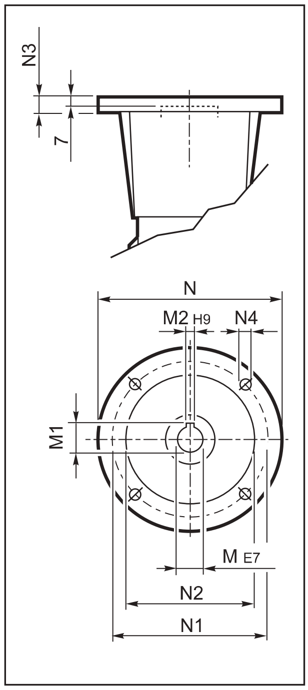
V



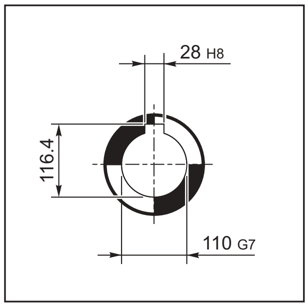
P



INPUT



OUTPUT



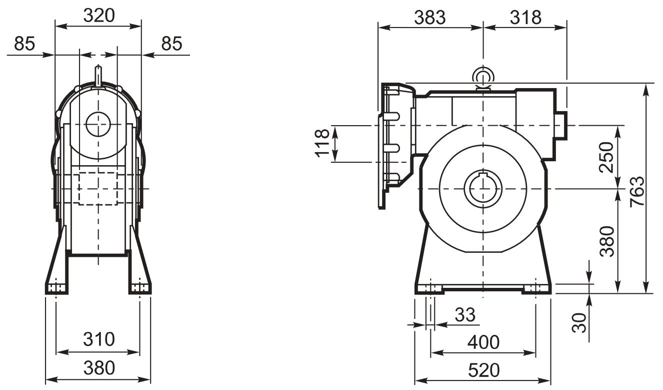
Fan cooling as standard on versions A and P.
P(IEC) arrangements come complete with gear coupling enclosed in the bell housing.

		F2	M	M1	M2	N	N1	N2	N3	N4	Kg
VF 250	**P132 B5**	531	38	41.3	10	300	265	230	25	M12	310
VF 250	**P160 B5**	506	42	45.3	12	350	300	250	22	18	
VF 250	**P180 B5**	506	48	51.8	14	350	300	250	22	18	
VF 250	**P200 B5**	531	55	59.3	16	400	350	300	25	M16	
VF 250	**P225 B5**	536	60	64.4	18	450	400	350	22	18#	

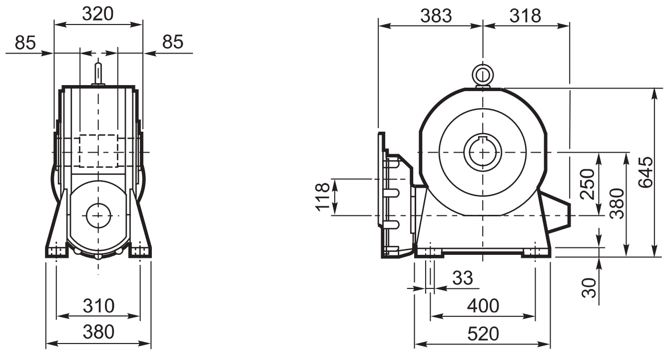
N° 8 holes at 45°

VFR 250...P (IEC)

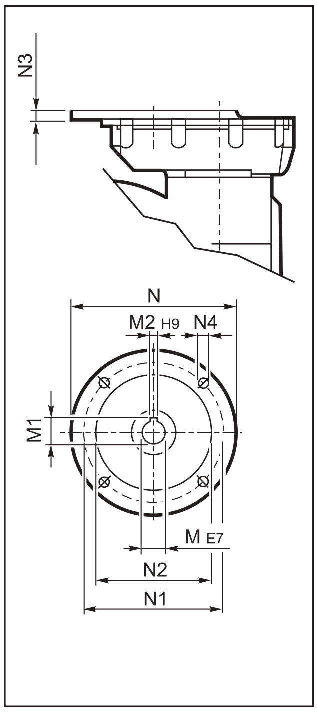
A



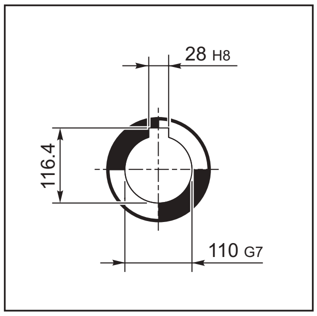
N



INPUT

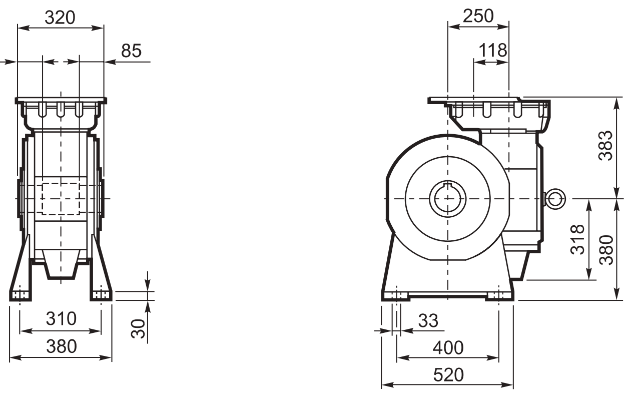


OUTPUT

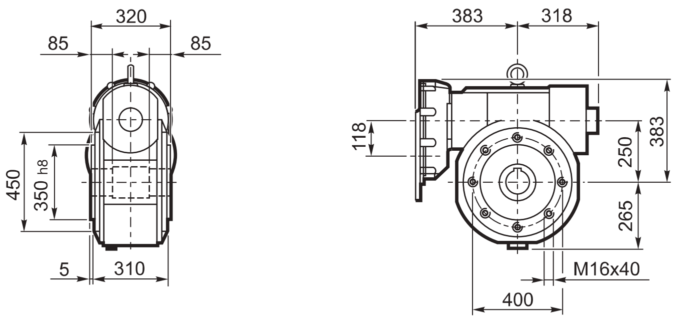


VFR 250...P (IEC)

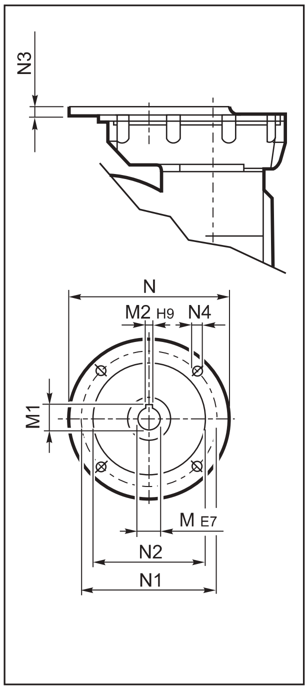
V



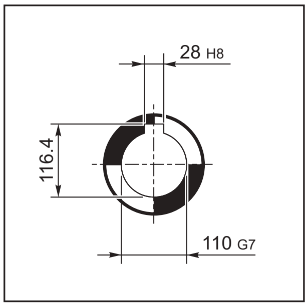
P



INPUT



OUTPUT



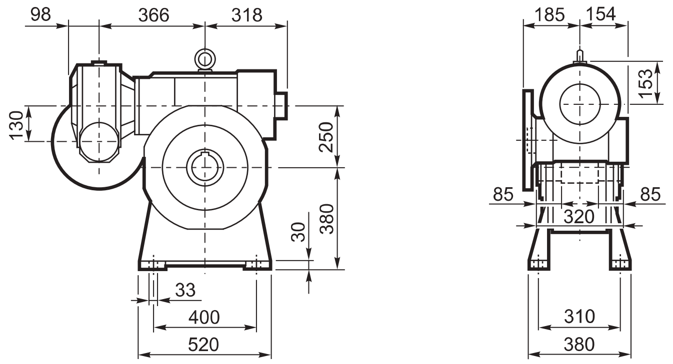
Fan cooling as standard on versions A and P.

		M	M1	M2	N	N1	N2	N3	N4	Kg
VRF 250	**P100 B5**	28 K6	31.3	8	250	215	180	13	M12x35	295
VRF 250	**P112 B5**	28 K6	31.3	8	250	215	180	13	M12x35	
VFR 250	**P132 B5**	38 J6	41.3	10	300	265	230	13	M12x35	
VFR 250	**P160 B5**	42 J6	44.3#	12	350	300	250	18	M16x60	

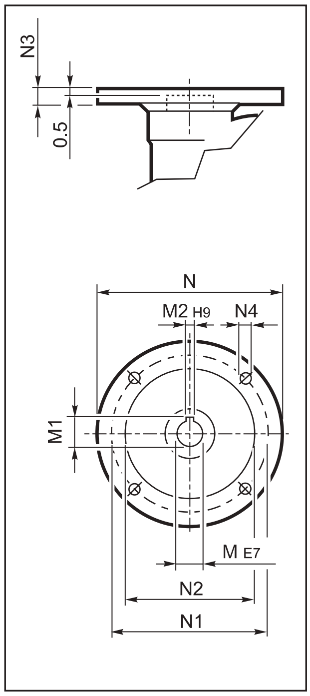
Lowered key

VF/VF 130/250...P (IEC)

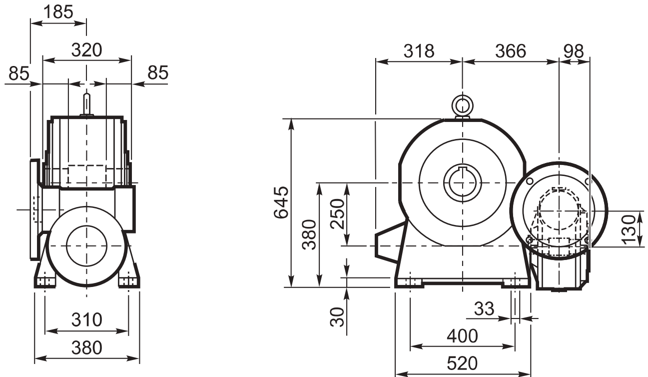
A



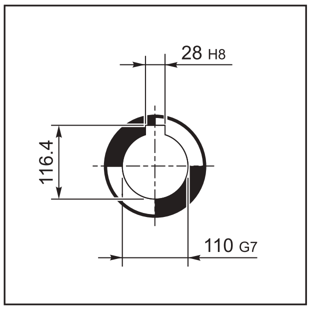
INPUT



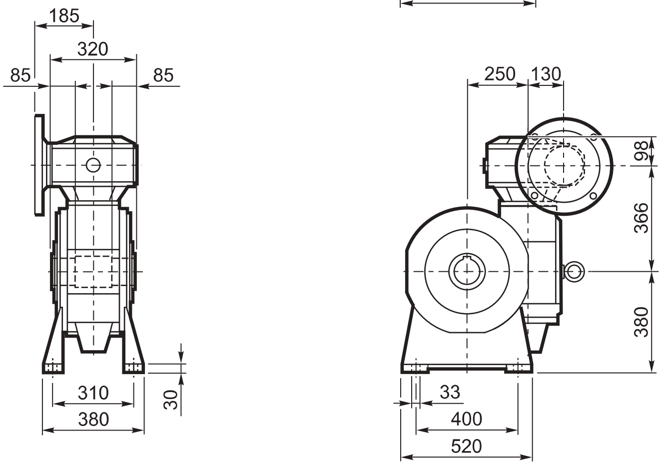
N



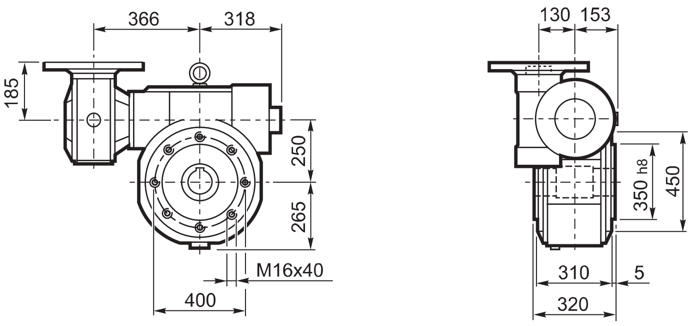
OUTPUT



V



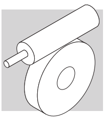
P



Fan cooling as standard on versions A and P.

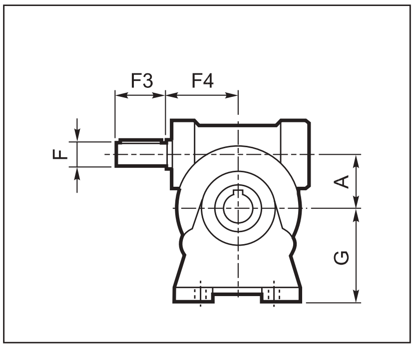
		M	M1	M2	N	N1	N2	N3	N4	Kg
VF/VF 130/250	P 90 B5	24	27.3	8	200	165	130	17	11	325
VF/VF 130/250	P100 B5	28	31.3	8	250	215	180	17	13	
VF/VF 130/250	P112 B5	28	31.3	8	250	215	180	17	13	
VF/VF 130/250	P132 B5	38	40.1#	10	300	265	230	17	13	

Lowered key

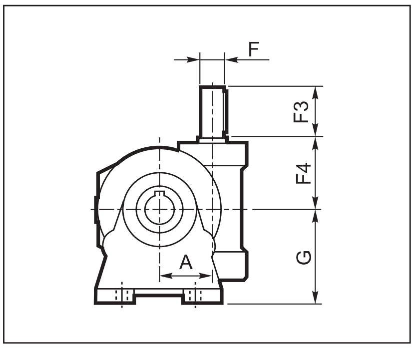


VF...HS - W..HS

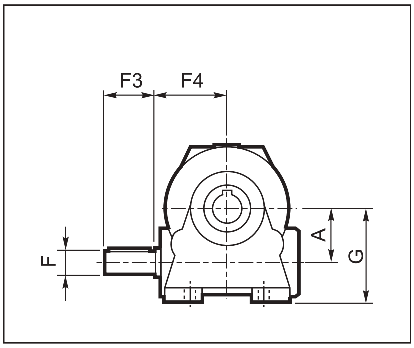
VF_A..HS



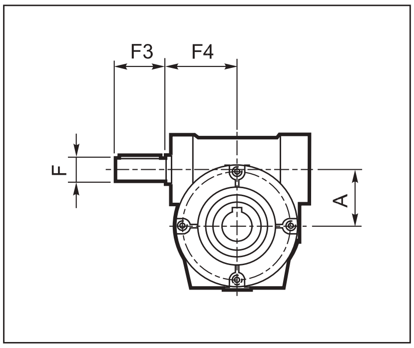
VF_V..HS



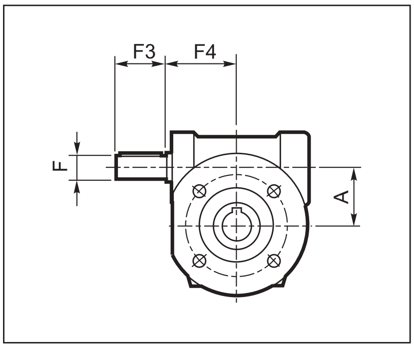
VF_N..HS



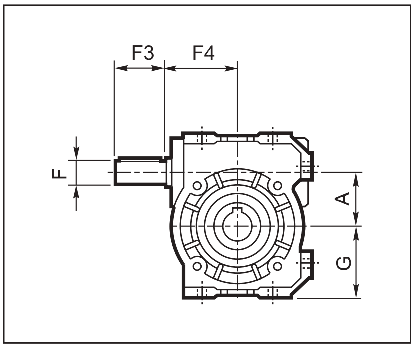
VF_P..HS



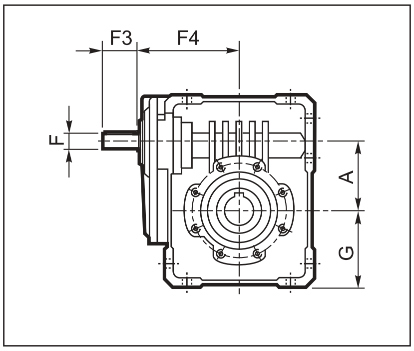
VF_FA/FC/FR/F..HS



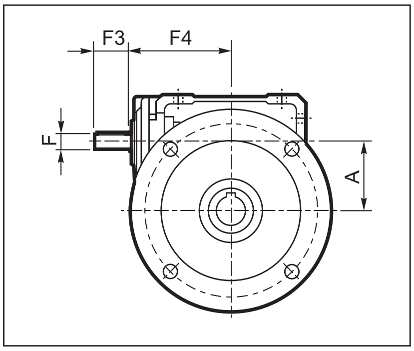
VF_U..HS

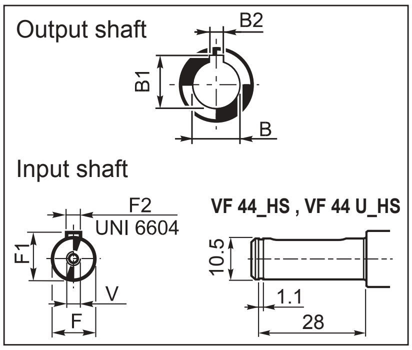


W_U..HS



W_UF/UFC/UFCR..HS



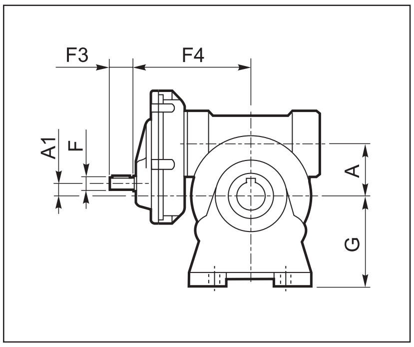


	A	B	B1	B2	F	F1	F2	F3	F4	G	V	Kg
VF 30_HS	30	14 H7	16.3	5 H8	9 h6	10.2	3	20	50	55	—	1.1
VF 30 U HS										47		
VF 44_HS	44.6	18 H7	20.8	6 H8	11 h6	12.5	4	30	54	72	—	2.0
VF 44 U HS										55		
VF 49_HS	49.5	25 H7	28.3	8 H8	16 h6	18	5	40	65	82	M6x16	3.0
VF 49 U HS										64.5		
W 63_HS	62.17	25 H7	28.3	8 H8	18 h6	20.5	6	40	110.5	72.5	M6x16	6.4
W 75_HS	75	30(28) H7	33.3(31.3)	8 H8	19 h6	21.5	6	40	128	87	M6x16	10.0
W 86_HS	86.9	35 H7	38.3	10 H8	25 h6	28	8	50	144	100	M8x19	14.1
W 110_HS	110.1	42 H7	45.3	12 H8	25 h6	28	8	60	168	125	M8x19	27
VF 130_HS	130	45 H7	48.8	14 H8	30 h6	33	8	60	160	195	M8x20	49
VF 150_HS	150	50 H7	53.8	14 H8	35 h6	38	10	65	185	220	M8x20	60
VF 185_HS	185.4	60 H7	64.4	18 H8	40 h6	43	12	70	214.5	254	M8x20	94
VF 210_HS	210	90 H7	95.4	25 H8	48 h6	51.5	14	110	230	335	M16x40	175
VF 250_HS	250	110 G7	116.4	28 H8	55 h6	59	16	110	275.5	380	M16x40	275

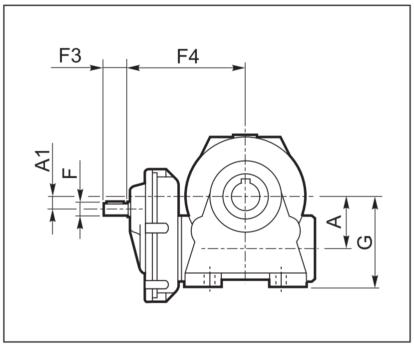
Dimensions common to the other configurations can be found from page 122 to 183.

VFR...HS - WR...HS

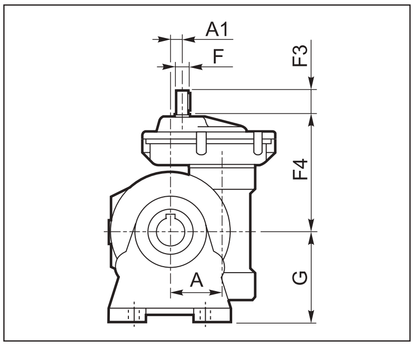
VFR_A..HS



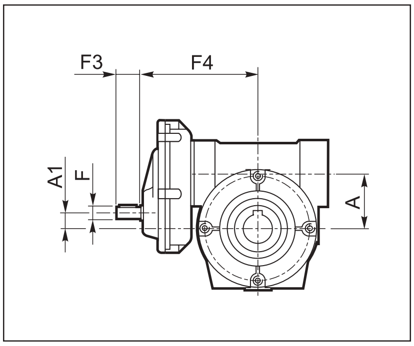
VFR_N..HS



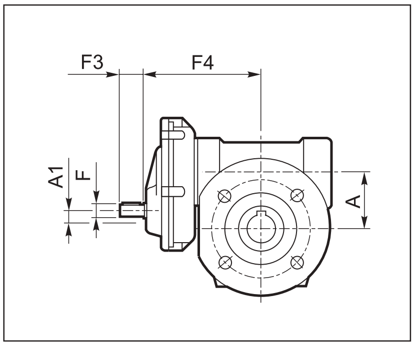
VFR_V..HS



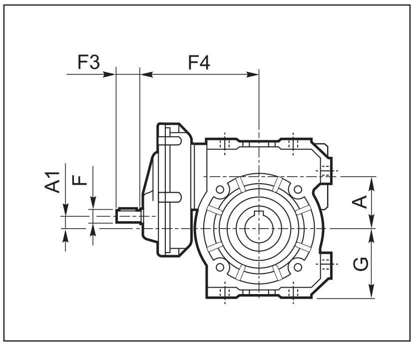
VFR_P..HS



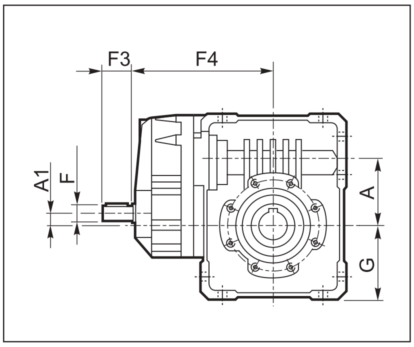
VFR_FA/FC/FR/F..HS



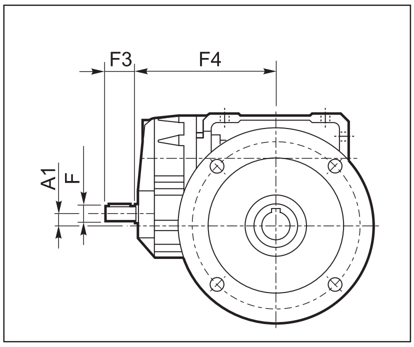
VFR_U..HS

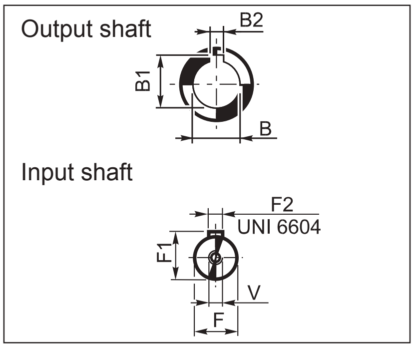


WR_U..HS



WR_UF/UFC/UFCR..HS



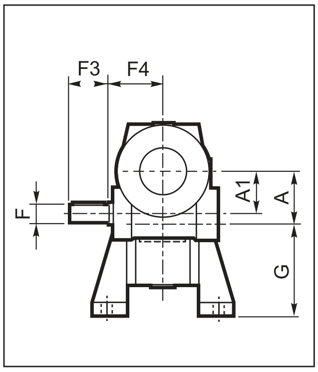


	A	A1	B	B1	B2	F	F1	F2	F3	F4	G	V	Kg
VFR 49_HS	49.5	10	25 H7	28.3	8 H8	11 h6	12.5	4	23	110	82	M4x10	5
VFR 49 U HS											64.5		
WR 63_HS	62.17	11.42	25 H7	28.3	8 H8	14 h6	16	5	30	138	72.5	M5x12.5	7.1
WR 75_HS	75	11	30(28) H7	33.3(31.3)	8 H8	19 h6	21.5	6	40	162	87	M6x16	11.1
WR 86_HS	86.9	22.9	35 H7	38.3	10 H8	19 h6	21.5	6	40	178	100	M6x16	14.7
WR 110_HS	110.1	21.1	42 H7	45.3	12 H8	24 h6	27	8	50	201	125	M8x19	34
VFR 130_HS	130	45	45 H7	48.8	14 H8	24 h6	27	8	50	228	195	M8x20	57
VFR 150_HS	150	53	50 H7	53.8	14 H8	28 h6	31	8	60	280	220	M8x20	71
VFR 185_HS	185.4	88.4	60 H7	64.4	18 H8	28 h6	31	8	60	310	254	M8x20	110
VFR 210_HS	210	92	90 H7	95.4	25 H8	38 h6	41	10	80	335	335	M10x25	185
VFR 250_HS	250	132	110 G7	116.4	28 H8	38 h6	41	10	80	383	380	M10x25	295

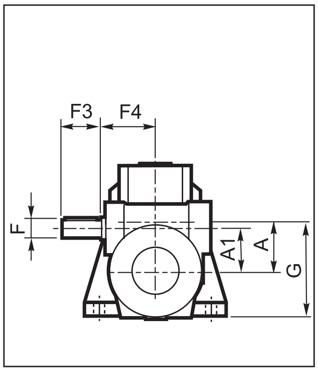
Dimensions common to the other configurations can be found from page 132 to 185.

VF/VF...HS - VF/W...HS - W/VF...HS

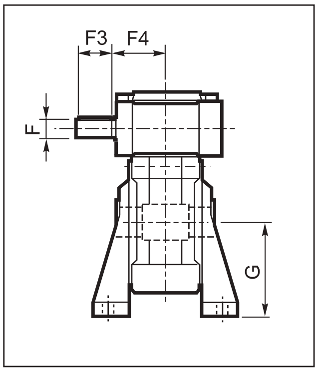
VF/VF_A..HS
W/VF_A..HS



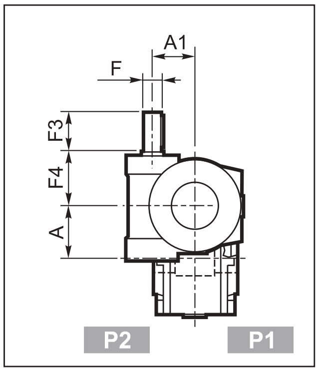
VF/VF_N..HS
W/VF_N..HS



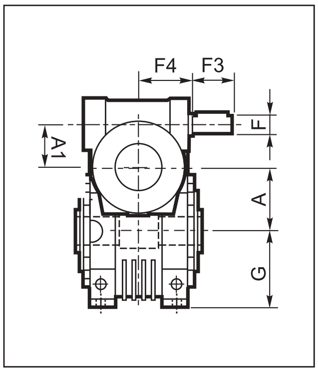
VF/VF_V..HS
W/VF_V..HS



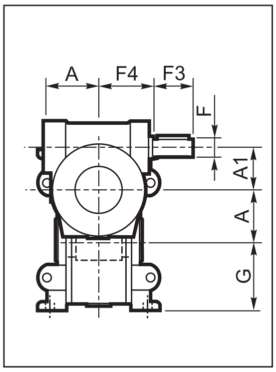
VF/VF_P..HS
W/VF_P..HS



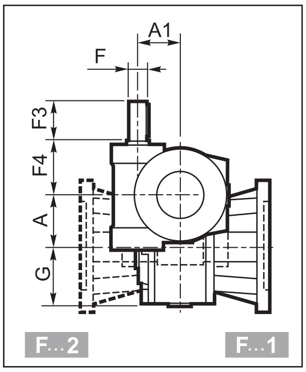
VF/W_U..HS



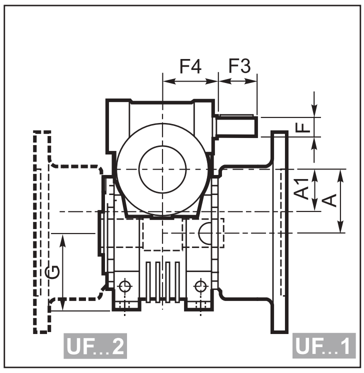
VF/VF_U..HS



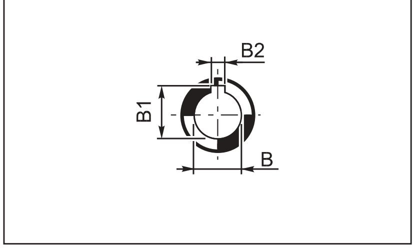
VF/VF_F/FA/FC/FR..HS
W/VF_F/FA/FC/FR..HS



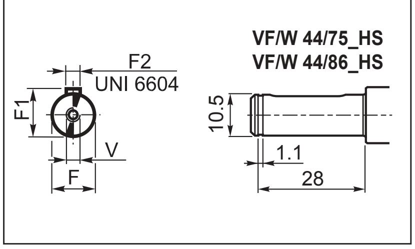
VF/W_UF/UFC/UFCR..HS



Output shaft



Input shaft

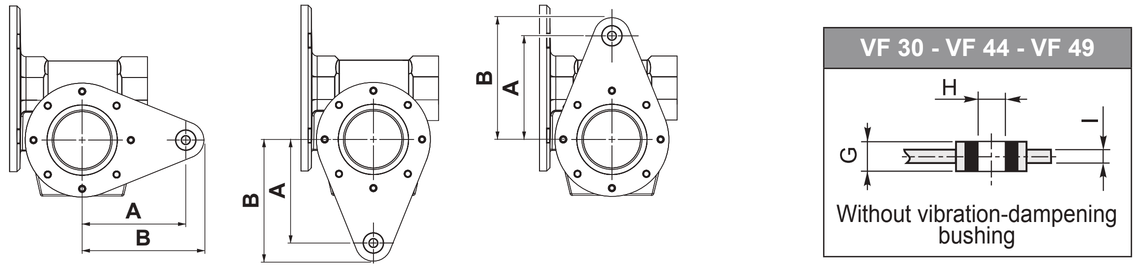


	A	A1	B	B1	B2	F	F1	F2	F3	F4	G	V	Kg
VF/VF 30/44_HS	44.6	30	18 H7	20.8	6 H8	9 h6	10.2	3	20	50	72	—	3.5
VF/VF 30/44 U HS											55		
VF/VF 30/49_HS	49.5	30	25 H7	28.3	8 H8	9 h6	10.2	3	20	50	82	—	4.5
VF/VF 30/49 U HS											64.5		
VF/W 30/63_HS	62.17	30	25 H7	28.3	8 H8	9 h6	10.2	3	20	50	100	—	7.5
VF/W 44/75_HS	75	44.6	30 (28) H7	33.3 (31.3)	8 H8	11 h6	12.5	4	30	54	115	—	16.1
VF/W 44/86_HS	86.9	44.6	35 H7	38.3	10 H8	11 h6	12.5	4	30	54	142	—	42
VF/W 49/110_HS	110.0	49.5	42 H7	45.3	12 H8	16 h6	18	5	40	65	170	M6x16	46
W/VF 63/130_HS	130	62.17	45 H7	48.8	14 H8	18 h6	20.5	6	40	110.5	72.5	M6x16	74
W/VF 86/150_HS	150	86.9	50 H7	53.8	14 H8	25 h6	28	8	50	144	100	M8x19	108
W/VF 86/185_HS	185.4	86.9	60 H7	64.4	18 H8	25 h6	28	8	50	144	100	M8x19	109
VF/VF 130/210_HS	210	130	90 H7	95.4	25 H8	30 h6	33	8	60	160	335	M8	225
VF/VF 130/250_HS	250	130	110 G7	116.4	28 H8	30 h6	33	8	60	160	380	M8	325

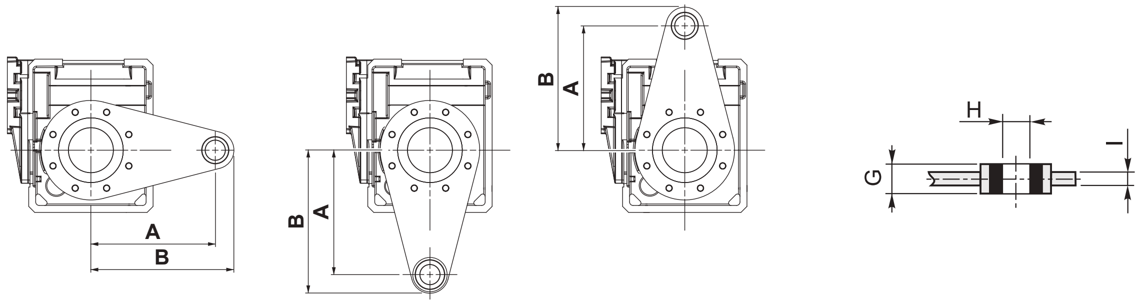
Dimensions common to the other configurations can be found from page 128 to 186.

28 DIMENSIONS FOR GEAR UNITS WITH TORQUE ARM

VF - VFR - VF/VF - W/VF



W - WR - VF/W

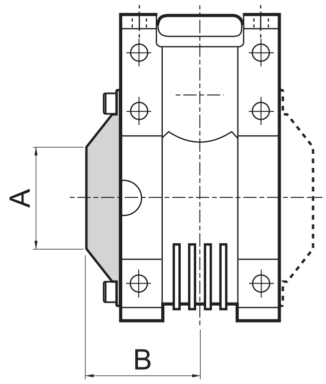


		A	B	G	H	I
VF VFR VF/VF	**30**	100	117.5	14	8	4
	44	100	117.5	14	8	4
	49	100	117.5	14	8	4
W WR VF/W	**63**	150	178	20	10	6
	75	200	237	25	20	6
	86	200	238	25	20	6
	110	250	288	25	20	6
VF VFR W/VF	**130**	300	345	30	25	6
	150	300	345	30	25	6
	185	350	395	30	25	6
	210	350	450	60	50	8
	250	400	500	60	50	10

Dimensions common to the other configurations can be found from page 122 to 185.

29 DIMENSIONS FOR GEAR UNITS WITH PROTECTION CAP

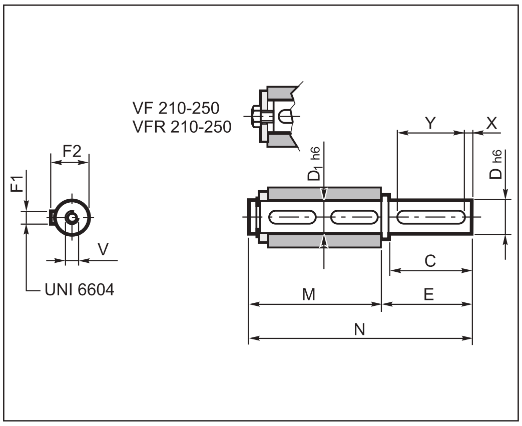
W - WR - VF/W



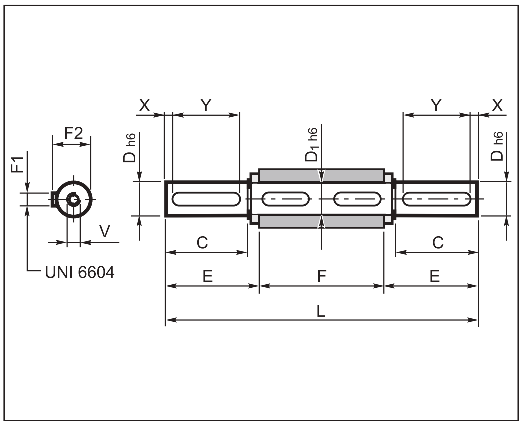
		A	B
W WR VF/W	**63**	Ø 35	82
	75	Ø 54	85.5
	86	Ø 71	93.5
	110	Ø 89	103

Dimensions common to the other configurations can be found from page 136 to 150.

30.1 Plug-in output shaft

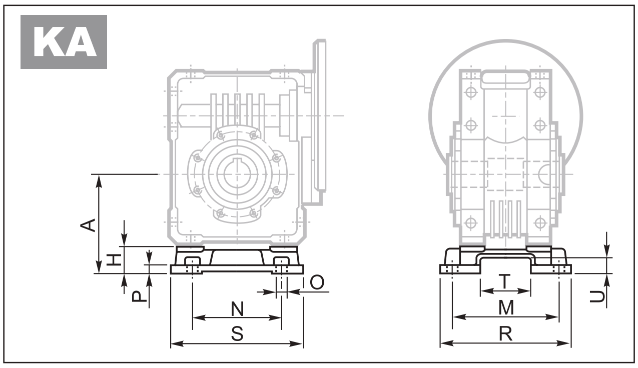


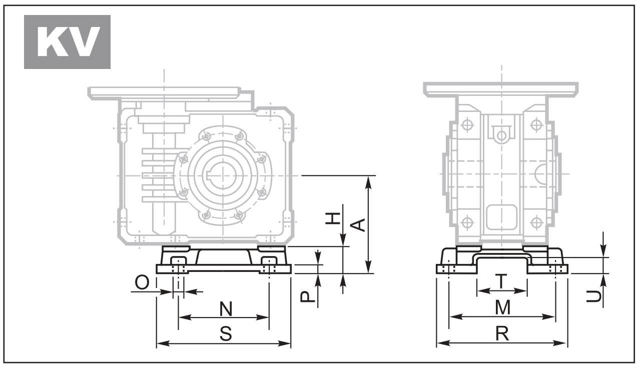
		C	D	D1	E	F1	F2	M	N	V	X	Y
VF	30	30	14	14	35	5	16	61	96	M5x13	5	20
VFR	44	40	18	18	45	6	20.5	70	115	M6x16	5	30
VF/VF	49	60	25	25	65	8	28	89	154	M8x19	5	50
	63	60	25	25	65	8	28	127	192	M8x19	5	50
W	75_D28	60	28	30	65	8	31	134	199	M8x20	5	50
WR	75_D30	60	30	30	65	8	33	134	199	M10x22	5	50
VF/W	86	60	35	35	65	10	38	149	214	M10x22	5	50
	110	75	42	42	80	12	45	164	244	M12x28	7.5	60
	130	80	45	45	85	14	48.5	176	261	M12x32	5	70
VF	150	85	50	50	93	14	53.5	185	278	M16x40	7.5	70
VFR	185	100	60	60	110	18	64	200	310	M16x40	10	80
W/VF	210	130	90	90	140	25	95	255	395	M20x50	5	120
	250	165	110	110	175	28	116	315	490	M24x64	15	140



		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
VFR	44	40	18	18	42.7	64	6	20.5	149.4	M6x16	5	30
VF/VF	49	60	25	25	63.2	82	8	28	208.4	M8x19	5	50
	63	60	25	25	63.2	120	8	28	246.4	M8x19	5	50
W	75_D28	60	28	30	64	127	8	31	255	M8x20	5	50
WR	75_D30	60	30	30	64	127	8	33	255	M10x22	5	50
VF/W	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
	130	80	45	45	84.7	165	14	48.5	334.5	M12x32	5	70
VF	150	85	50	50	90	175	14	53.5	355	M16x40	7.5	70
VFR	185	100	60	60	105	190	18	64	400	M16x40	10	80
W/VF	210	130	90	90	140	260	25	95	540	M20x50	5	120
	250	165	110	110	175	320	28	116	670	M24x64	15	140

30.2 VF-interchangeable foot kits KA, KV

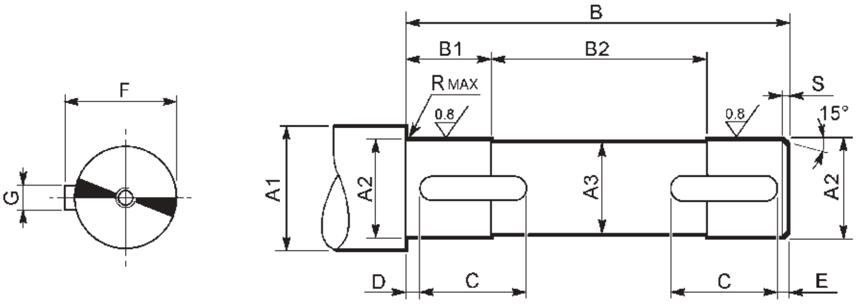


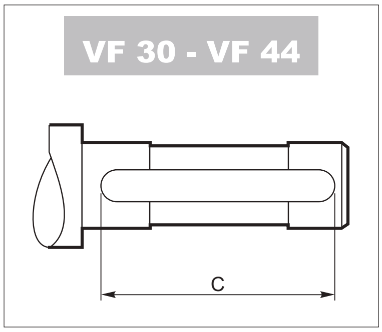


	A	H	M	N	O	P	R	S	T	U
W 63 - WR 63	100	27.5	111	95	11	8	135	145	56.5	15.5
W 75 - WR 75	115	28	115	120	11	9	139	174	56.5	15.5
W 86 - WR 86	142	42	146	140	11	11	170	200	69	20
W 110 - WR 110	170	45	181	200	13	14	210	250	69	20

31 CUSTOMER'S SHAFT

Make the driven shaft to be coupled to the gear unit's output shaft from a good quality steel, respecting the dimensions given in the table.
A device such as that illustrated below should also be installed to secure the shaft axially. Take care to verify and dimension the various components to suit the needs of the application.





	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
VF 130	≥ 52	45 f7	44	163	50.5	62	60	2.5	2.5	48.5	14 h9	2.5	2	14x9x60 A
VF 150	≥ 57	50 f7	49	173	53	67	70	2.5	2.5	53.5	14 h9	2.5	2	14x9x70 A
VF 185	≥ 68	60 f7	59	188	63	62	80	2.5	2.5	64	18 h9	2.5	2	18x11x80 A
VF 210	≥ 99	90 f7	89	258	83	92	80	3	3	95	25 h9	2.5	2.5	25x14x80 A
VF 250	≥ 121	110 h7	109	318	83	152	80	3	3	116	28 h9	2.5	2.5	28x16x80 A

32 TORQUE LIMITER

32.1 Description

The friction-based torque limiter, available for wormgears type **VF44 - VF49** and **W63…W110**, is designed to protect the transmission from accidental overloads which could damage the drive elements. Against conventional external torque limiters, this versatile solution lends the following advantages:

• unchanged external dimensions against standard same model standard units
• maintenance-free, as the system is permanently lubed
• slip torque can be easily adjusted by means of a simple manual operation from the outside of the gearbox
• slipping, even if continuous, does not create any damage or wear to the mechanical parts, since slipping parts are constantly separated by an oil film.

We advise against installing this device to lifting equipment.

32.2 Operating principle

The torque limiter basically consists of a double tapered clutch with active surfaces machined on (bronze) worm wheel and hub of output shaft (nodular cast iron GS400/12). Bore of output shaft allows shaft mounting of gear unit onto driven machine.
Active surfaces of the torque limiter are pressed against each other by thrust generated by adequately proportioned spring washers. Transmissible torque is proportional to axial force applied by the springs and adjustment of torque setting is easily conducted manually through an external ring nut.

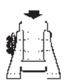
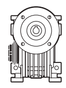
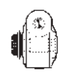
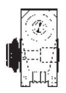
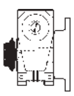
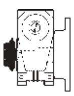
32.3 Protection of the machine from overloads

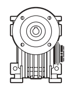
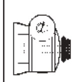
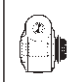
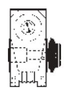
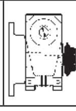
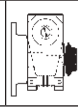
The torque limiter, properly adjusted in function of the torque necessary for the driven equipment, protects all mechanical components of the transmission avoiding any damage due to overloads.

32.4 Reversing of a self-locking unit

In some applications it may be desired to rotate the output shaft while machine is not operating. Such a situation is not always possible with high-ratio self-locking worm gears. Using the torque limiter it is possible to conduct such operation untightening the ring nut.

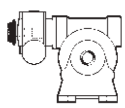
32.5 VF…L, W…L

L1							
	N	A	V	U	F1 FC1 FR1 FA1	F2 FC2 FR2 FA2**	P1 P2
VF VF/VF*						 ** ⊖ VF 49	
	U	UF1 UFC1	UF2 UFC2	UFCR1	UFCR2		
W VF/W*			⊖		⊖		

L2							
	N	A	V	U	F1 FC1 FR1 FA1**	F2 FC2 FR2 FA2	P1 P2
VF VF/VF*					 ** ⊖ VF 49		
	U	UF1 UFC1	UF2 UFC2	UFCR1	UFCR2		
W VF/W*		⊖		⊖			

* On double worm gear units the torque limiter is fitted on 2nd reducer (larger size) for the L1 or L2 configurations. Same is fitted on 1st reducer (smaller) when the LF configuration is specified.

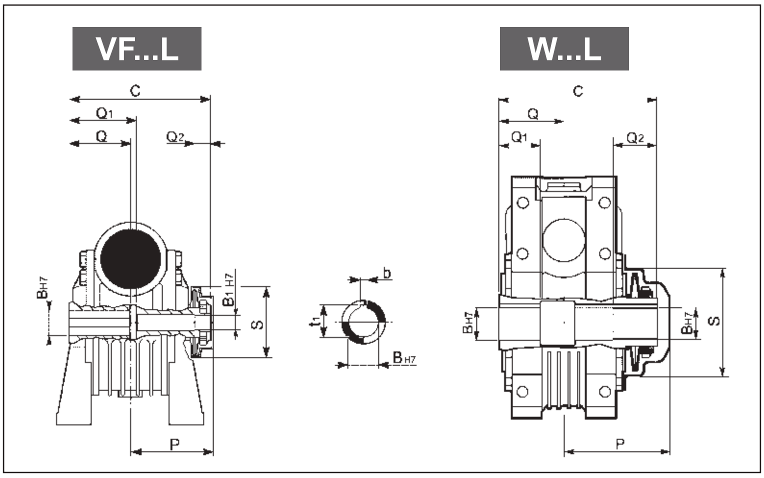
LF

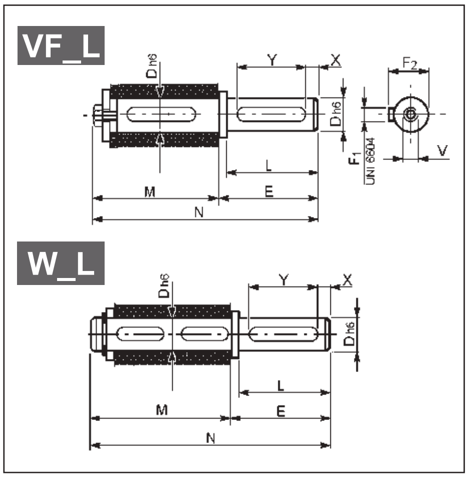


VF/W	44/75	44/86	49/110
W/VF	63/130	86/150	86/185

Unless otherwise specified VF…L gear units are supplied with ring nut on the left hand side (L1), viewing from the electric motor and gearbox in the B3 mounting position.

32.6 Dimensions





	Torque limiter										Single output shaft										
	C	Q	Q1	Q2	P	S	B H7	B1 H7	t1	b	L	D h6	E	F1	F2	M	N	V	X	Y
VF 44L	79	27	32	12	48	42.5	18	11	20.8	6	40	18	45	6	20.5	86	131	M6x16	5	30
VF 49L	105	47	51	15	63.5	66.5	25	14	28.3	8	60	25	65	8	28	114.5	179.5	M8x19	5	40
W 63L	145	60	40	40	100	77	25	-	28.3	8	60	25	65	8	28	152	217	M8x19	5	50
W 75L_D30	154.5	63.5	40	40	104	100	30	-	33.3	8	60	30	65	8	33	161.5	226.5	M10x22	5	50
W 86L	170	70	50	45	113	119	35	-	38.3	10	60	35	65	10	38	179	244	M10x22	5	50
W 110L	191	77.5	55	45	133	134	42	-	45.3	12	75	42	80	12	45	200	280	M12x28	7.5	60

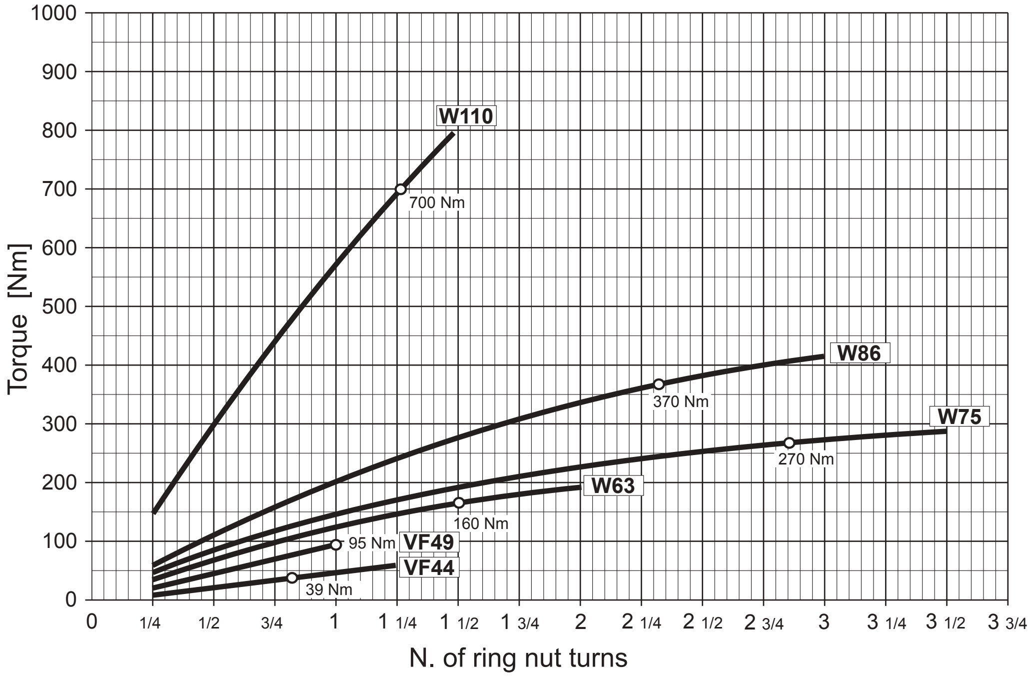
32.7 Slip torque setting

A preliminary slip torque setting is conducted at the factory. Reference is made to torque rating Mn_2 [n_1=1400] of the captioned VF or W gear unit.
Here below the operations performed at the factory for the initial adjustment are listed.
Same steps, with the exception of step (2), must be followed when a different torque setting is required.

1. Ring nut is tightened until spring washers are sufficiently loaded that manual rotation is hardly possible.

2. By means of an engraver marks are made, in identical (angular) position, on both the ring nut and the hollow shaft.
Setting will then be referred to as the zero-point for the consequent slip torque adjustment, through turning of the ring nut.

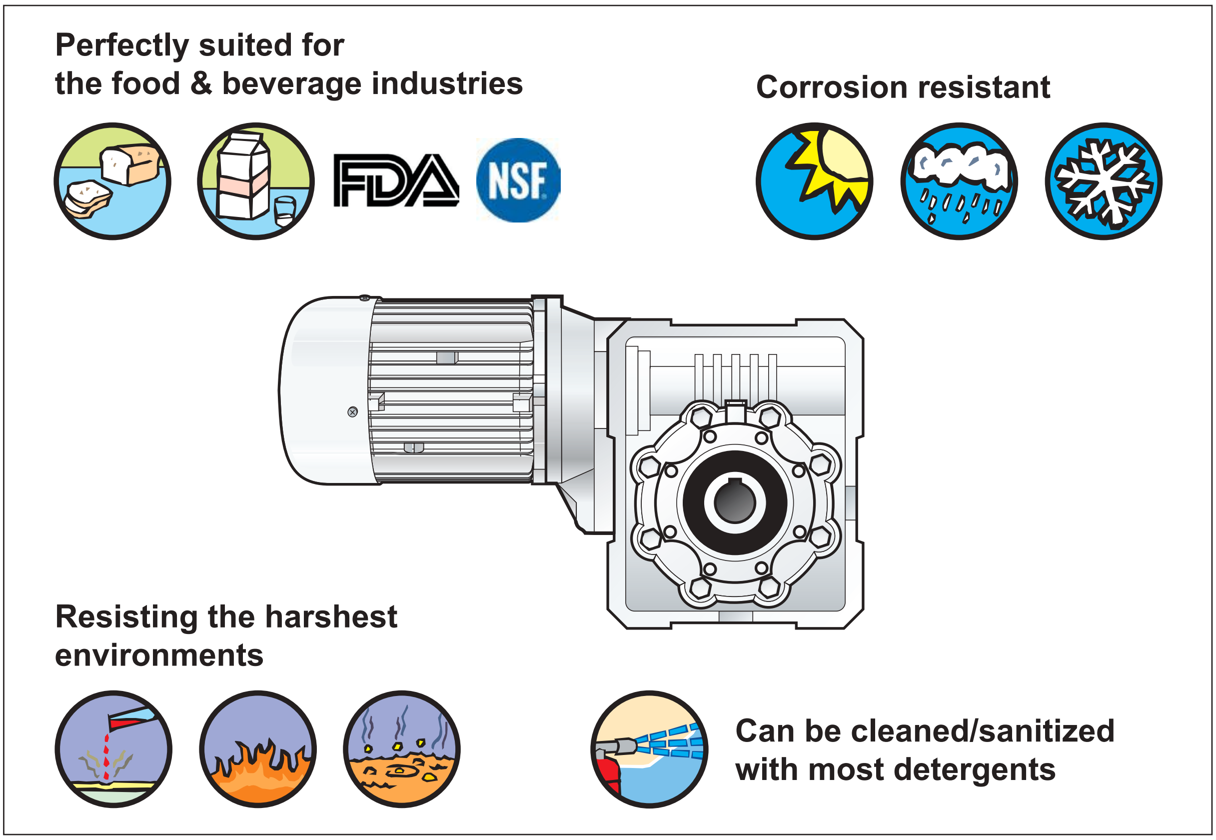
3. Ring nut is then turned of the number of turns, or fraction of, corresponding to nominal torque rating Mn_2 of the captioned gear unit. In this case the diagram shown here under refers as to the proportion between number of turns and transmissible torque. Same diagram comes handy for customised torque adjustments, should these be required with time.



VF-EP / W-EP - GEARBOXES AND GEARMOTORS FOR CORROSIVE AND ASEPTIC ENVIRONMENTS

33 MAIN BENEFITS OF THE EP (Enhanced Protection) SERIES

All companies involved in food and beverage, chemical and pharma industries can now rely on a newly designed range of gearmotors tailored to effectively operate in the extremely hygienic and harsh environments characterizing these sectors.



MAIN FEATURES

Standard:
- Stainless steel hollow shaft, mounting hardware and tag
- Completely sealed gearbox (unvented)
- Unused tapped holes closed with button plugs
- Specific vents for water draining
- Motor protection IP56
- C5 Corrosion protection or FDA&NSF approved food grade paintings

Main Options:
- Wash down duty oil seals
- NSF (H1) and FDA approved food grade lubricant

MAIN BENEFITS OF THE EP VERSION

Thanks to the completely sealed gearbox housing, surface paintings and protection, gearmotors of the EP series ensures risk free operation in harsh and hygienic environments and facilitate the gearmotor sanitizing processes.
The whole gearmotor, indeed, is protected through a high performances multi-layered epoxy coating with elevated resistance to corrosion and abrasion.
Two different finishing coatings can be selected:

• The first one guarantee C5 corrosion protection class according to ISO 9223 and it is available as standard in RAL9006
• The second one is specifically dedicated to the food&beverage industry and registered by NSF and FDA as compatible for the utilization in incidental food contact areas as well as for drinking water contact. Furthermore, besides an improved corrosion resistance, this painting is also resistant to most of the detergents commonly used in food&beverage industries.
NOTE: This finishing is automatically selected when the specified colors for the gearmotor is Light Blue*(PLB) or White*(PWH).

*Note: No RAL color can be specified as panting is organic based.

Finally, the EP Gearmotor can be further tailored to specific requirements through various options and mounting accessories.

Frame sizes available in EP version: 44 (excepted VFR), 49, 63, 75, 86.
Available EP motors: 0,12 to 4 kW, both compact type and IEC, 2, 4 and 6 poles.

ARRANGEMENT FOR THE GEAR UNIT

① The speed reducer is fully sealed to minimise contamination of the environment.

② Stainless steel output shaft - AISI 316.

③ Stainless steel nameplate and bolts.

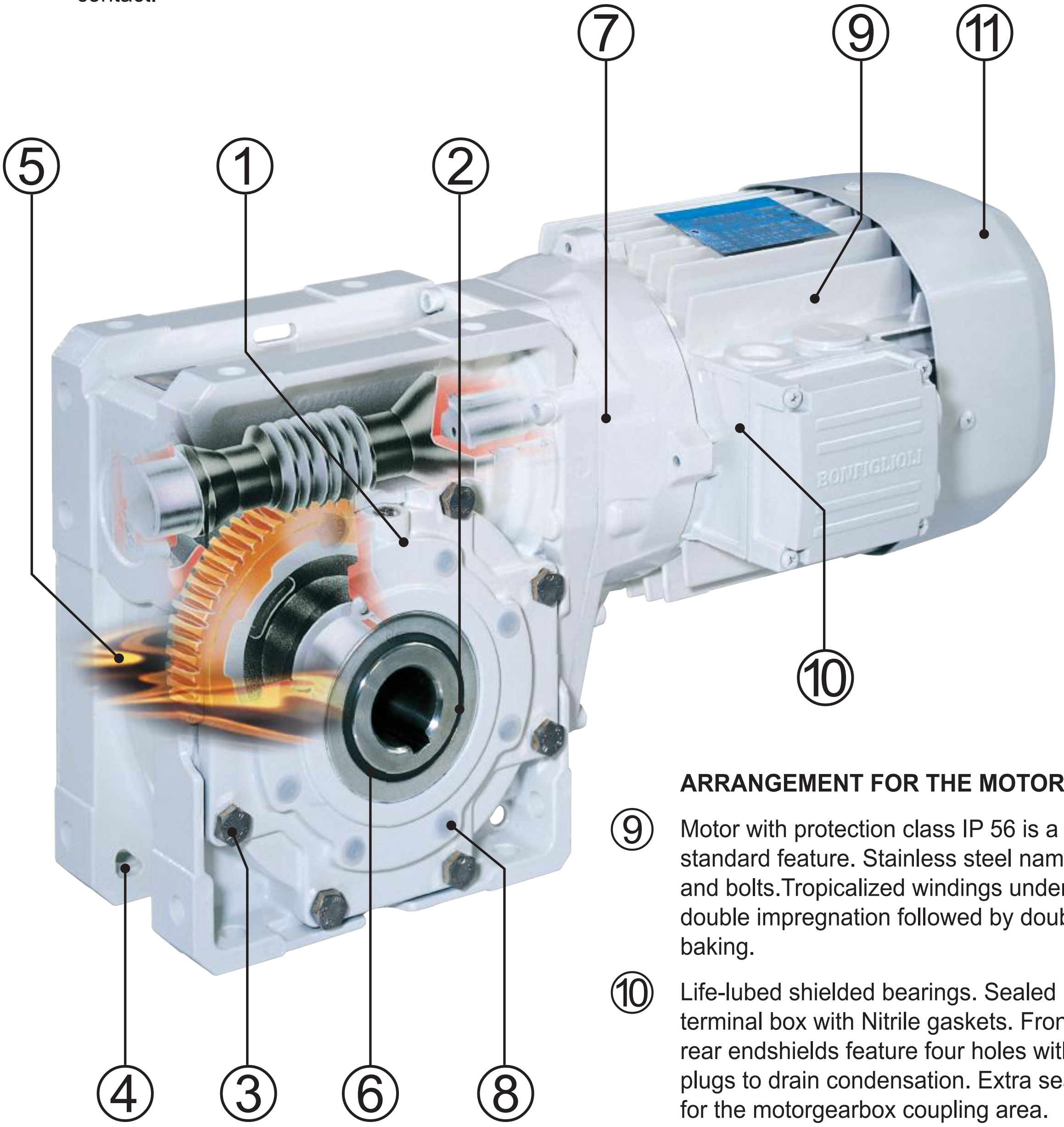
④ Dedicated housing design to facilitate water draining

⑤ In option is available lubricant H1-class synthetic oil registred by NSF for the food-processing and pharmaceutical industries . In compliance with FDA for incidental food contact.

⑥ Availabilty of washdown duty double lip oil seals with stainless steel frame.

⑦ Exterior surfaces are primed and paint finished with a two-part epoxy coating, FDA and NSF approved (depending on color choice) for incidental food contact.

⑧ Button plugs for unused mounting holes.



ARRANGEMENT FOR THE MOTOR

⑨ Motor with protection class IP 56 is a standard feature. Stainless steel nameplate and bolts.Tropicalized windings undergo double impregnation followed by double baking.

⑩ Life-lubed shielded bearings. Sealed terminal box with Nitrile gaskets. Front and rear endshields feature four holes with screw plugs to drain condensation. Extra sealing for the motorgearbox coupling area.

⑪ Chemically inert fan.

34 DESIGNATION

GEAR UNIT

W-EP — 63 U 30 P90 B14 B3 PWH ....

OPTIONS

PAINTING

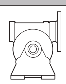
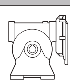
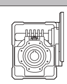
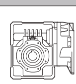
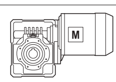
NP* unpainted	
PWH (FDA & NSF Compliant)	white
PLB (FDA & NSF Compliant)	blue
RAL9006 (Highly corrosion resistant C5)	grey

MOUNTING POSITION

VF-EP 44 VF-EP 49	**B3**
W-EP 63 W-EP 75 W-EP 86	**B3** (default), **B6**, **B7**, **B8**, **V5**, **V6**

MOTOR MOUNTING
B5, B14 (IEC standard)

INPUT CONFIGURATION

	VF-EP	VF-EP R	W-EP	W-EP R
P(IEC)	 P63...P80	 P63	 P71...P112	 P63...P90
S_	⊖	⊖	 S1...S3	⊖

GEAR RATIO

VERSION

GEAR FRAME SIZE
VF-EP: **44, 49**
W-EP: **63, 75, 86**

— (blank)
R (helical-worm gear unit ⊖ VF-EP 44)

GEAR TYPE
VF-EP
W-EP

* Note: If the gearbox is requested in NP (Unpainted) version with torque arm, the latter is provided coated with a light grey primer completely over-paintable.

MOTOR

BE-EP 80B 4 B14 230/400-50 CLF .... **PWH** ....

OPTIONS

PAINTING

NP* unpainted	
PWH (FDA & NSF Compliant)	white
PLB (FDA & NSF Compliant)	blue
RAL9006 (Highly corrosion resistant C5)	grey

TERMINAL BOX POSITION
W (default), **N**, **E**, **S**

INSUGULATION CLASS
CL F standard
CL H option

VOLTAGE-FREQUENCY

VERSION
— (integral motor)
B5, B14 (IEC motor)

POLE NUMBER
2, **4**, **6**,

MOTOR SIZE
1SC ... 3LC (integral motors)
63 ... 112 (IEC motors)

MOTOR TYPE
M-EP = 3-phase integral
BN-EP = 3-phase IEC
ME-EP = 3-phase integral, class IE2
BE-EP = 3-phase IEC, class IE2

35 GEARBOX OPTIONS

PX
Wash down duty oil seals for the output shaft. The particular oil seals, offered as an option, make the gearmotor suitable for arduous environments where frequent washdowns occur, often with high-pressure hot water, together with sanitizing agents. The stainless steel screen and the low friction PTFE double lip design provide an extended life and improved sealing function even under extreme conditions with the presence of aggressive media.

PV
Fluoro elastomer rings on output shaft. Stainless steel loading spring.

UH1
Food grade synthetic lubricant. The gearbox is factory filled with “long life” lubricant, approved for incidental food contact and registered as H1 by the NSF for the food and pharma industry, it also satisfy the FDA 21 CFR Sec. 178.3570 norms.
It’s polyglycol-based synthetic nature, not only extends the application range from temperatures of –25 °C to +150 °C, but does not require periodical oil change thus, with the absence of contamination, the gearbox is virtually maintenance-free.

CERTIFICATES

AC - Certificate of compliance
The document certifies the compliance of the product with the purchase order and the construction in conformity with the applicable procedures of the Bonfiglioli Quality System.

CC - Inspection certificate
The document entails checking on order compliance, the visual inspection of external conditions and of mating dimensions. Checking on main functional parameters in unloaded conditions is also performed along with oil seal proofing, both in static and in running conditions. Units inspected are sampled within the shipping batch and marked individually.

36 MOTOR OPTIONS

The available options for for all EP motors are: D3, E3, K1, H1, NH1, RC, RV, ACM, CC, CUS, S2, S3, S9.

For more detailed information please consult the Electric Motor section in this book.

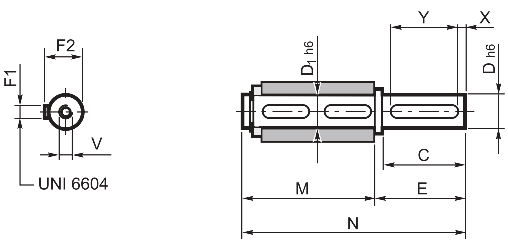
37 OTHERS INFORMATION ABOUT GEARBOX AND GEARMOTOR

Mounting positions, technical data, motor availability,moments of inertia and dimensions of **VF-EP** e **W-EP** series don't change among equivalent **VF** and **W** product series. In the same way, information about all **EP** motors don't change among equivalent series motors. All of these information can be obtained in the related chapters of this catalogue.

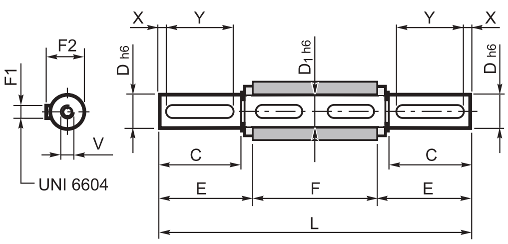
38 THE ACCESSORIES FOR THE _EP SERIES

Depending on the mounting pattern, the gearbox can be complemented with the following pieces of equipment:
- AISI 316 stainless steel plug-in solid shaft, both single and double projection
- epoxy paint coated torque arm (specify the acronym among those shown in the related figure)
- safety cover for the unused hollow shaft area – plastic type for W63, W75 and W86 units, metal type nitrile coated for VF 44 and VF 49, with stainless steel fasteners. IP 56 protection achieved after assembling.

38,1 Plug-in output shaft



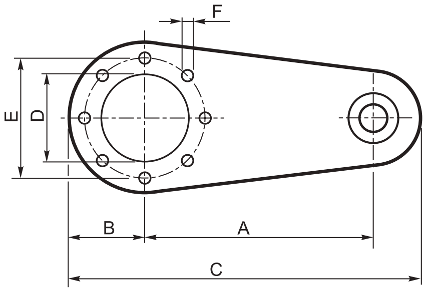
	C	D	D1	E	F1	F2	M	N	V	X	Y
VF-EP 44	40	18	18	45	6	20.5	70	115	M6x16	5	30
VF-EP 49 **VF-EP R 49**	60	25	25	65	8	28	89	154	M8x19	5	50
W-EP 63 **W-EP R 63**	60	25	25	65	8	28	127	192	M8x19	5	50
W-EP 75 **W-EP R 75**	60	30	30	65	8	33	134	199	M10x22	5	50
W-EP 86 **W-EP R 86**	60	35	35	65	10	38	149	214	M10x22	5	50



	C	D	D1	E	F	F1	F2	L	V	X	Y
VF-EP 44	40	18	18	42.7	64	6	20.5	149.4	M6x16	5	30
VF-EP 49 **VF-EP R 49**	60	25	25	63.2	82	8	28	208.4	M8x19	5	50
W-EP 63 **W-EP R 63**	60	25	25	63.2	120	8	28	246.4	M8x19	5	50
W-EP 75 **W-EP R 75**	60	30	30	64	127	8	33	255	M10x22	5	50
W-EP 86 **W-EP R 86**	60	35	35	64	140	10	38	268	M10x22	5	50

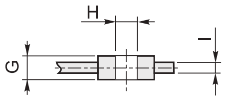
38,2 Torque arm

VF-EP 44 ; VF-EP 49

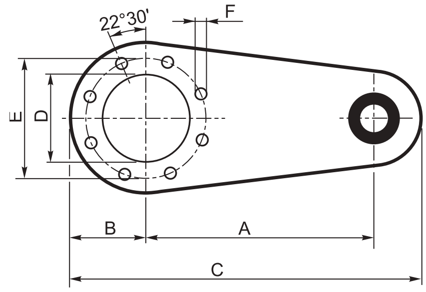


Painting:
NP (unpainted)
PWH
PLB
RAL 9006

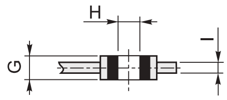
Without vibration-dampening bushing



W-EP 63 ; W-EP 75 ; W-EP 86



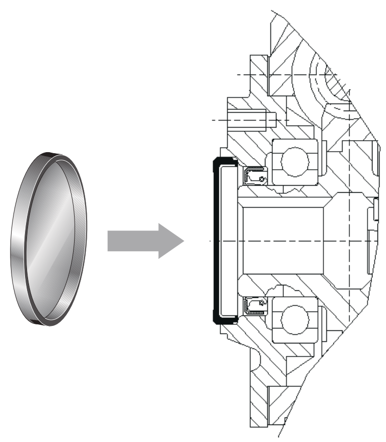
Painting:
NP (unpainted)
PWH
PLB
RAL 9006



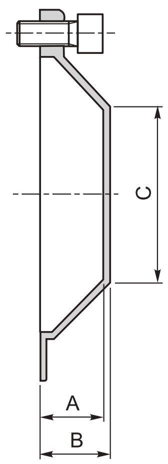
	A	B	C	D	E	F	G	H	I
VF-EP 44	100	40	157.5	50	65	7	14	8	4
VF-EP 49 **VF-EP R 49**	100	55	172.5	68	94	7	14	8	4
W-EP 63 **W-EP R 63**	150	55	233	75	90	9	20	10	6
W-EP 75 **W-EP R 75**	200	63	300	90	110	9	25	20	6
W-EP 86 **W-EP R 86**	200	80	318	110	130	11	25	20	6

38.3 Safety cover

VF-EP 44 ; VF-EP 49



W-EP 63 ; W-EP 75 ; W-EP 86



	A	B	C
W-EP 63 P	26.5	29	Ø35
W-EP 75 P	24.5	27	Ø54
W-EP 86 P	26.5	29	Ø71

RVS LIMIT-STOP DEVICE

39 GENERAL INFORMATION

The limit-stop device type RVS has been designed to fit Bonfiglioli Riduttori worm gearmotors to operate:

- Green house windows and shades
- Remote-controlled gates
- Hopper frame windows
- Dosing devices for the livestock farming industry
- Butterfly valves

Worm gearmotors equipped with the RVS limit switch device are suitable for linear and rotary intermittent duty applications requiring accurate and repetitive positioning.
For the applications listed above, typically light duty, worm gear-motors should only be selected from relevant selection charts, given at paragraph 40.
The drive selection will then comply with both the application duty and the max. peripheral speed constraints of the limit-switch device.
The configuration is complete when the limit-switch device RVS is flanged onto the gearmotor through the relevant assembly kit (see next page).
Configuration kits are available for worm gears type VF 49, W 63, W 75, and W 86 only.
Please note that **RVS** devices will only fit F-flanged VF 49 and FC-flanged W worm gears.
RVS mounting side is opposite to flange.

39.1 Technical features

The working principle of the limit-stop device is based on the differential movement of two pairs of wheels – each equipped with a cam – and the relative operation of precision micro-switches that stop and reverse motion through relays (to be fitted by the installer).
Travel end positions, normally the open and closed positions of application frame, are easily set using a common Allen key after gearmotor installation.
Once adjusted, the unit will retain its settings over time for guaranteed motion repeatability.
In its basic version, the **RVS** limit-stop unit comes with a pair of approx. 1-m long cables. Internal wiring is made at the factory.
The RVS unit is available in the following variants:

RVS ME: the limit switch features a 6-stud terminal box for external wiring of cables wiring of cables to main relais.

RVS DM: features a double set of micro-switches, connected in series, for absolute reliability where applicable regional standards or regulations call for a redundant design.

RVS ME DM: features the combination of the two options described above.

Regardless to the variant the RVS limit switch device offers the following features:
- Extremely quite operation
- Space efficiency
- Ease of installation and setting
- Overall protection IP55
- Adjustment range within a maximum of 43 revolutions of drive shaft.

40 ORDERING CODES

Determine which device or variant best suits the specific application and locate the part number in the table below:

RVS	RVS ME	RVS DM	RVS ME DM
 cod. 193312025	 cod. 193312026	 cod. 193312027	 cod. 193312028

Select also the part number of the specific configuration kit for the speed reducer the limit-stop device is to be installed to:

cod. 192860001	cod. 192860002	cod. 192860003	cod. 192860004
 VF 49 F - VFR 49 F	 W 63 UFC - WR 63 UFC	 W 75 UFC - WR 75 UFC	 W 86 UFC - WR 86 UFC

41 DESIGNATION

Ordering code for RVS acceptable **VF** and **W** gear units.

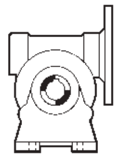
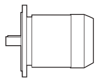
W R 75 UFC1 D30 240 P71 B5 B3 ....

OPTIONS

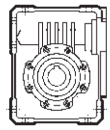
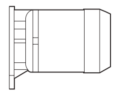
MOUNTING POSITION
B3 (default), **B6, B7, B8, V5, V6**

IEC MOTOR MOUNTING
B5
B14

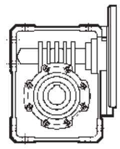
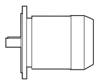
INPUT TYPE
VF: **P** (IEC)
W: **S_**, **P** (IEC)

P63, P71	**BN - BE** **BX - BXN**

S1 ... S3 **S10 ... S20**	**M - ME -** **MX - MXN**

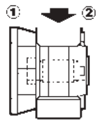



P63 ... P90	**BN - BE** **BX - BXN**

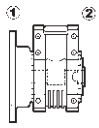
GEAR RATIO

SHAFT BORE
D30 (W75 alone)

VERSION
VF: **F**
W: **UFC**



F (1, 2)

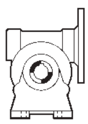


UFC (1, 2)

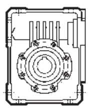
FRAME SIZE
VF: **49**
W: **63, 75, 86**

HELICAL REDUCTION
/
R

GEAR TYPE



VF



W

42 GEARMOTOR SELECTION

0.12 kW

n2 min-1	M2 Nm	i		IEC	IE1	IE2	IE3	IE1	IE2	IE3
4.7	98	300	**VFR 49_300**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			
5.8	89	240	**VFR 49_240**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			
6.7	83	210	**VFR 49_210**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			
7.8	76	180	**VFR 49_180**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			
10.4	64	135	**VFR 49_135**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			
14.0	41	100	**VF 49_100**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			
17.5	37	80	**VF 49_80**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			
20.0	34	70	**VF 49_70**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			
23.3	31	60	**VF 49_60**	**P63**	**BN63A4**	**BE63A4**	**BXN63MA4**			

0.18 kW

n2 min-1	M2 Nm	i		IEC	IE1	IE2	IE3	IE1	IE2	IE3
7.8	112	180	**VFR 49_180**	**P63**	**BN63B4**	**BE63B4**	**BXN63MB4**			
10.4	95	135	**VFR 49_135**	**P63**	**BN63B4**	**BE63B4**	**BXN63MB4**			
14.0	61	100	**VF 49_100**	**P63**	**BN63B4**	**BE63B4**	**BXN63MB4**			
17.5	54	80	**VF 49_80**	**P63**	**BN63B4**	**BE63B4**	**BXN63MB4**			
20.0	49	70	**VF 49_70**	**P63**	**BN63B4**	**BE63B4**	**BXN63MB4**			
23.3	45	60	**VF 49_60**	**P63**	**BN63B4**	**BE63B4**	**BXN63MB4**			

0.25 kW

n2 min-1	M2 Nm	i		IEC	IE1	IE2	IE3	IE1	IE2	IE3
4.7	214	300	**WR 63_300**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			
5.8	192	240	**WR 63_240**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			
7.3	170	192	**WR 63_192**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			
10.4	136	135	**WR 63_135**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			
12.3	121	114	**WR 63_114**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			
14.0	82	100	**VF 49_100**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			
17.5	72	80	**VF 49_80**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			
20.0	66	70	**VF 49_70**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			
23.3	61	60	**VF 49_60**	**P71**	**BN71A4**	**BE71A4**	**BXN71MA4**			

0.37 kW

n2 min-1	M2 Nm	i		IEC	IE1	IE2	IE3	IE1	IE2	IE3
4.7	382	300	**WR 86_300**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
5.8	306	240	**WR 75_240**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
7.3	290	192	**WR 86_192**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
7.8	257	180	**WR 75_180**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
9.3	226	150	**WR 75_150**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
10.4	204	135	**WR 63_135**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
12.3	181	114	**WR 63_114**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
14.0	133	100	**W 63_100**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**	**S1 M1SD4**	**S1 ME1SB4**	**S10 MXN10MB4**
17.5	108	80	**VF 49_80**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
20.0	98.3	70	**VF 49_70**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			
23.3	90.5	60	**VF 49_60**	**P71**	**BN71B4**	**BE71B4**	**BXN71MB4**			

0.55 kW

n_2 min^{-1}	M_2 Nm	i			IEC IE1	IE2	IE3	IE1	IE2	IE3
4.7	559	300	**WR 86_300**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**			
5.8	483	240	**WR 86_240**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**			
7.3	423	192	**WR 86_192**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**			
7.8	376	180	**WR 75_180**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**			
8.3	383	168	**WR 86_168**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**			
9.3	331	150	**WR 75_150**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**			
10.1	330	138	**WR 86_138**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**			
11.7	287	120	**WR 75_120**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**			
14.0	194	100	**W 63_100**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**	**S1 M1LA4**	**S2 ME2SA4**	**S20 MXN20MA4**
17.5	170	80	**W 63_80**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**	**S1 M1LA4**	**S2 ME2SA4**	**S20 MXN20MA4**
21.9	148	64	**W 63_64**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**	**S1 M1LA4**	**S2 ME2SA4**	**S20 MXN20MA4**
23.3	148	60	**W 75_60**	**P80**	**BN80A4**	**BE80A4**	**BXN80MA4**	**S1 M1LA4**	**S2 ME2SA4**	**S20 MXN20MA4**

0.75 kW

n_2 min^{-1}	M_2 Nm	i			IEC IE2	IE3	IE3	IE2	IE3	IE3
7.4	557	192	**WR 86_192**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**			
8.5	504	168	**WR 86_168**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**			
9.5	435	150	**WR 75_150**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**			
10.3	436	138	**WR 86_138**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**			
11.9	378	120	**WR 75_120**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**			
14.3	275	100	**W 75_100**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**	**S2 ME2SB4**	**S2 MX2SB4**	**S20 MXN20MB4**
17.9	236	80	**W 75_80**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**	**S2 ME2SB4**	**S2 MX2SB4**	**S20 MXN20MB4**
22.3	195	64	**W 63_64**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**	**S2 ME2SB4**	**S2 MX2SB4**	**S20 MXN20MB4**
23.8	196	60	**W 75_60**	**P80**	**BE80B4**	**BX90SR4**	**BXN80MB4**	**S2 ME2SB4**	**S2 MX2SB4**	**S20 MXN20MB4**

1.1 kW

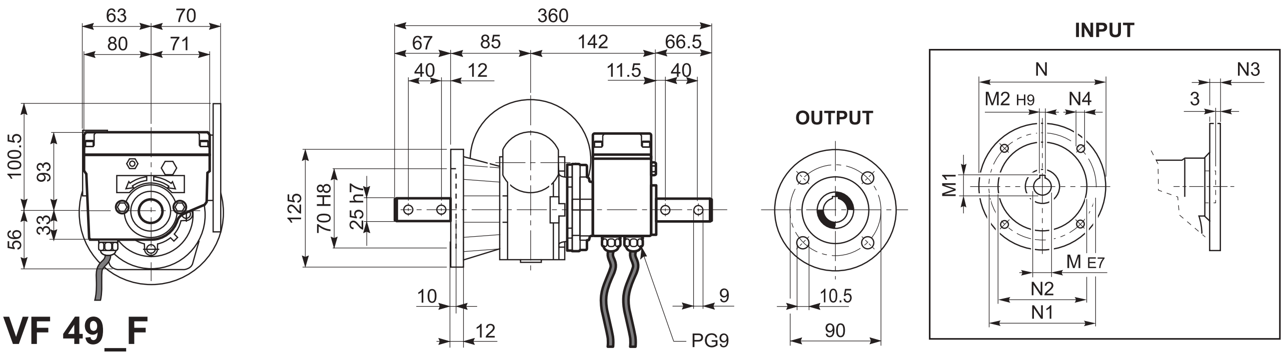
n_2 min^{-1}	M_2 Nm	i			IEC IE2	IE3	IE3	IE2	IE3	IE3
10.4	643	138	**WR 86_138**	**P90**	**BE90S4**	**BX90S4**	**BXN90S4**			
11.9	586	120	**WR 86_120**	**P90**	**BE90S4**	**BX90S4**	**BXN90S4**			
14.3	437	100	**W 86_100**	**P90**	**BE90S4**	**BX90S4**	**BXN90S4**	**S3 ME2SA4**	**S3 MX3SA4**	
17.9	379	80	**W 86_80**	**P90**	**BE90S4**	**BX90S4**	**BXN90S4**	**S3 ME3SA4**	**S3 MX3SA4**	
22.3	322	64	**W 86_64**	**P90**	**BE90S4**	**BX90S4**	**BXN90S4**	**S3 ME3SA4**	**S3 MX3SA4**	

1.5 kW

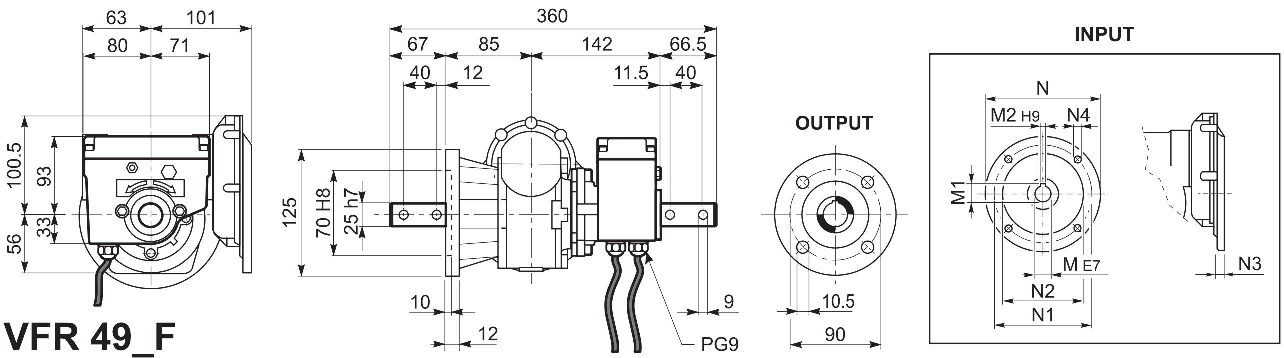
n_2 min^{-1}	M_2 Nm	i			IEC IE2	IE3	IE3	IE2	IE3	IE3
11.9	792	120	**WR 86_120**	**P90**		**BX90LA4**				
17.9	512	80	**W 86_80**	**P90**		**BX90LA4**			**S3 MX3SB4**	
22.3	435	64	**W 86_64**	**P90**		**BX90LA4**			**S3 MX3SB4**	

43 DIMENSIONS

VF 49_F - VFR 49_F



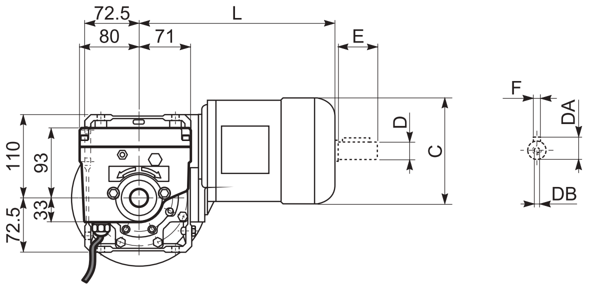
VF 49_F

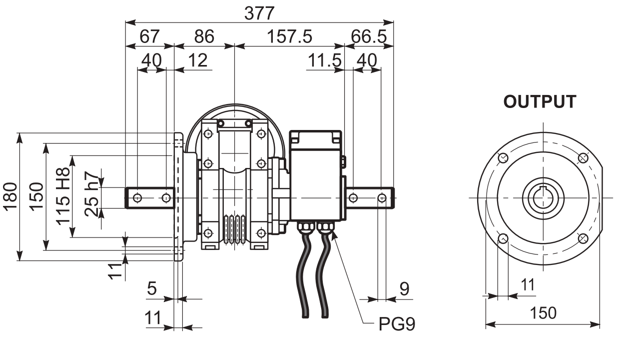


VFR 49_F

	M	M1	M2	N	N1	N2	N3	N4
VF 49_P 63	11	12.8	4	140	115	95	10.5	9.5
VF 49_P 71	14	16.3	5	160	130	110	10.5	9.5
VFR 49_P 63	11	12.8	4	140	115	95	11	M8x19

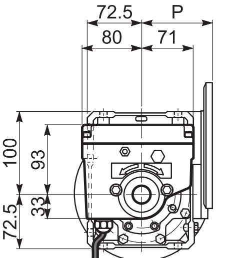
W 63 UFC_M/ME - W 63 UFC - WR 63 UFC

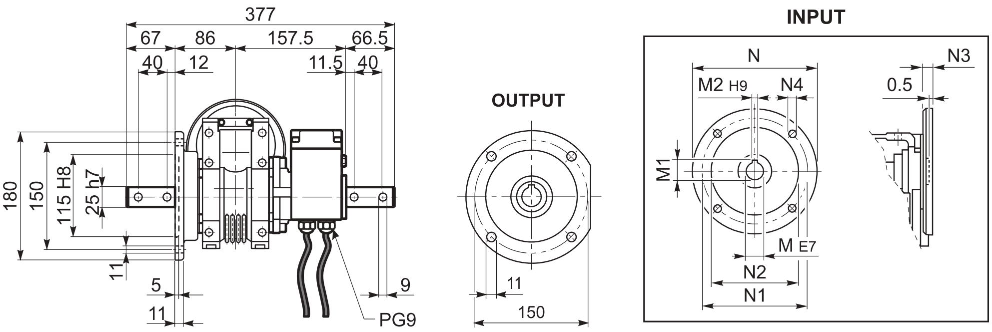




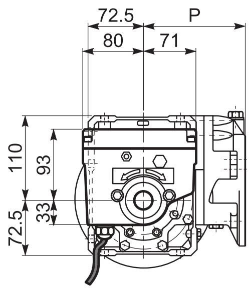
W 63 UFC_M/ME

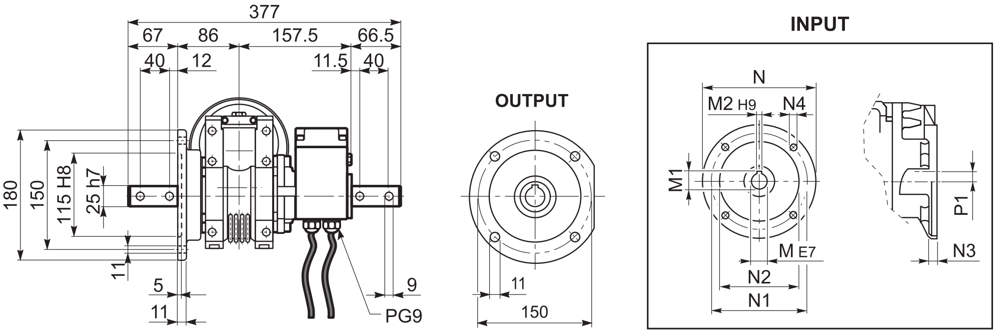
	C	D	DA	DB	E	F	L
W 63_S1 M1L	138	14	16	M5	30	5	289
W 63_S2 ME2S	156	19	21.5	M6	40	6	317





W 63 UFC

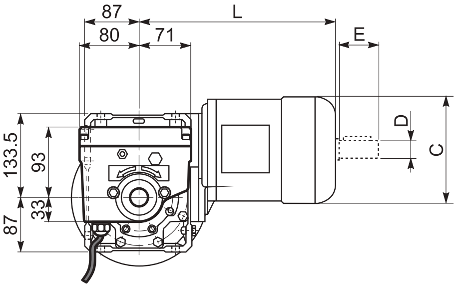


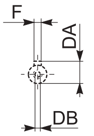


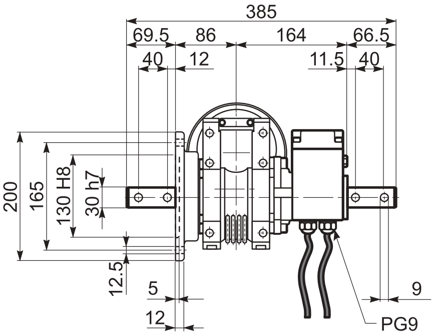
WR 63 UFC

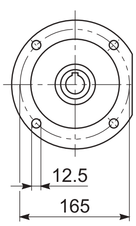
	M	M1	M2	N	N1	N2	N3	N4	P	P1
W 63_P 71	14	16.3	5	160	130	110	11	9	95	-
W 63_P 80	19	21.8	6	200	165	130	12	11.5	102	-
W 63_P 90	24	27.3	8	200	165	130	12	11.5	102	-
WR 63_P 63	11	12.8	4	140	115	95	10	M8x10	133.5	11.42
WR 63_P 71	14	16.3	5	160	130	110	10	M8x10	133.5	11.42

W 75 UFC_M/ME - W 75 UFC - WR 75 UFC



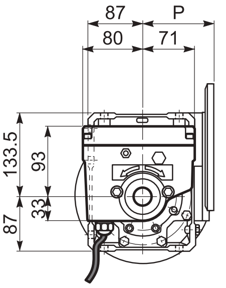


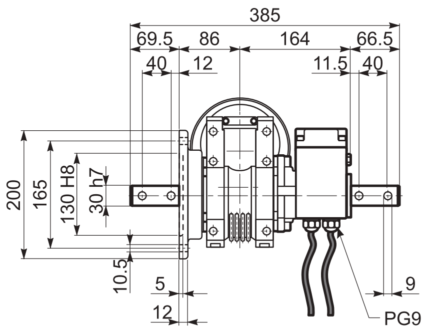




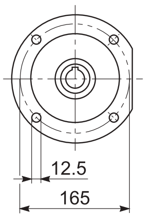
W 75 UFC_M/ME

	C	D	DA	DB	E	F	L
W 75_S1 M1L	138	14	16	M5	30	5	308
W 75_S2 ME2S	156	19	21.5	M6	40	6	333
W 75_S3 ME3S	193	28	31	M10	60	8	376
W 75_S3 ME3L	193	28	31	M10	60	8	408

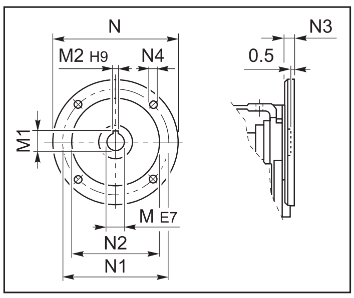




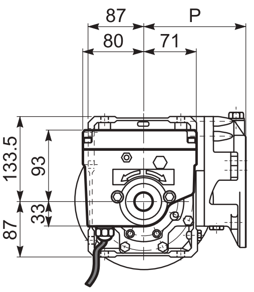
OUTPUT

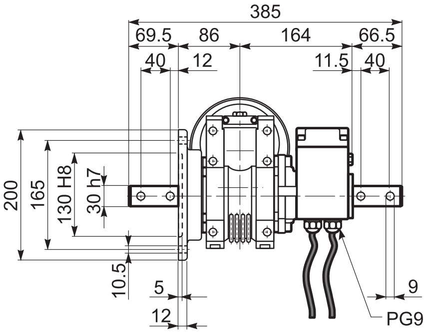


INPUT

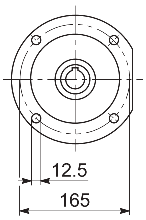


W 75 UFC

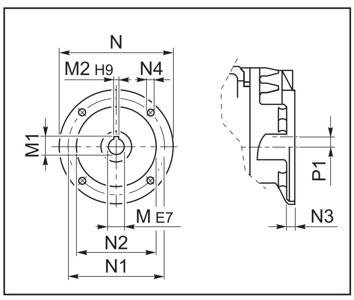




OUTPUT



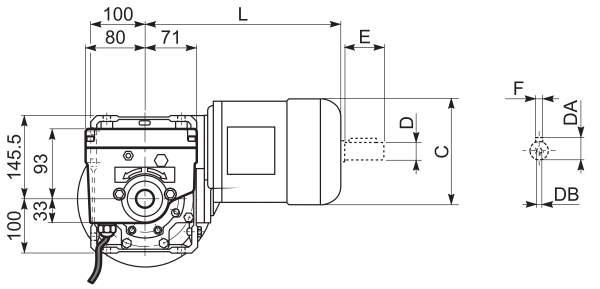
INPUT

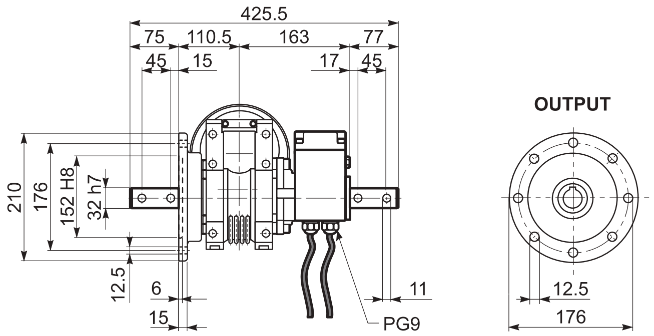


WR 75 UFC

	M	M1	M2	N	N1	N2	N3	N4	P	P1
W 75_P 71	14	16.3	5	160	130	110	11	9	112	-
W 75_P 80	19	21.8	6	200	165	130	12	11.5	112	-
W 75_P 90	24	27.3	8	200	165	130	12	11.5	112	-
WR 75_P 63	11	12.8	4	140	115	95	10	M8x10	152	23.53
WR 75_P 71	14	16.3	5	160	130	110	10	M8x10	152	23.53
WR 75_P 80	19	21.8	6	200	165	130	12	M10x13	163.5	11
WR 75_P 90	24	27.3	8	200	165	130	12	M10x13	163.5	11

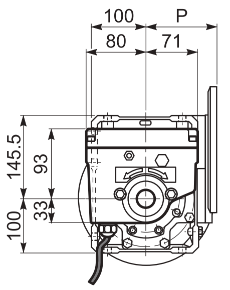
W 86 UFC_M/ME - W 86 UFC - WR 86 UFC

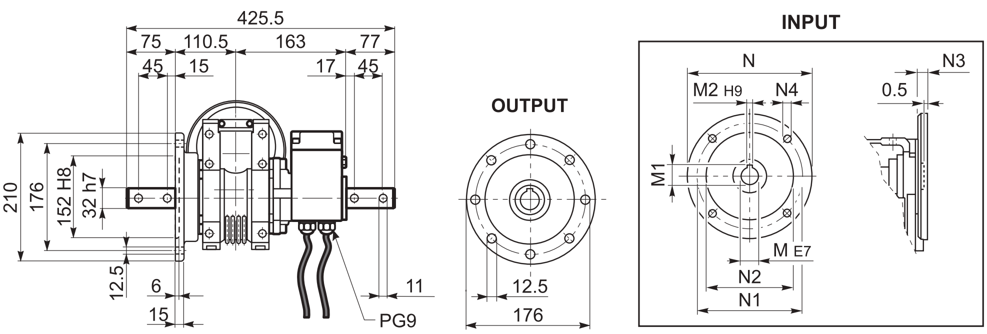




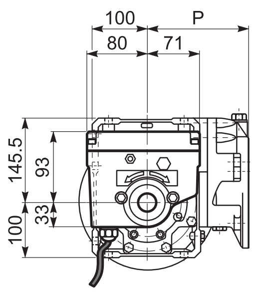
W 86 UFC_M/ME

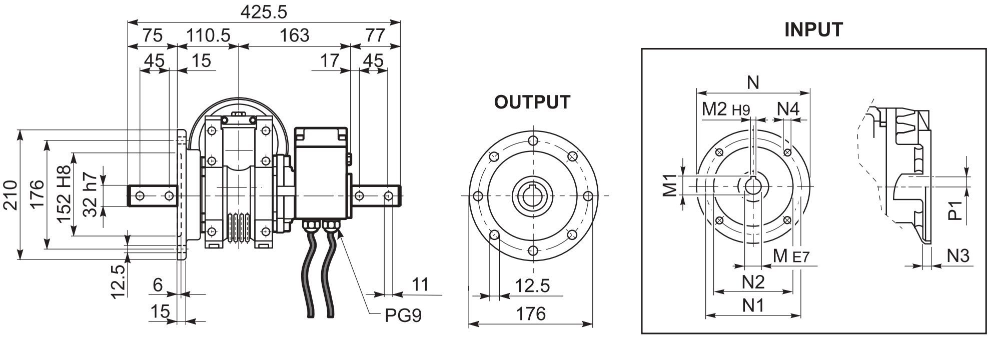
	C	D	DA	DB	E	F	L
W 86_S1 M1L	138	14	16	M5	30	5	324
W 86_S2 ME2S	156	19	21.5	M6	40	6	349
W 86_S3 ME3S	193	28	31	M10	60	8	392
W 86_S3 ME3L	193	28	31	M10	60	8	424





W 86 UFC





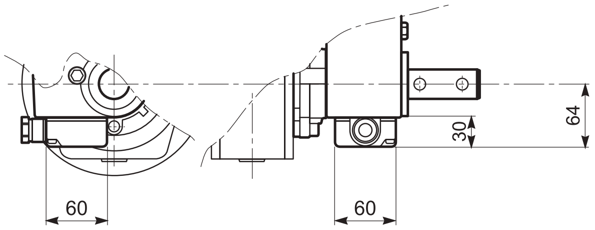
WR 86 UFC

	M	M1	M2	N	N1	N2	N3	N4	P	P1
W 86_P 71	14	16.3	5	160	130	110	11	9	128	-
W 86_P 80	19	21.8	6	200	165	130	12	11.5	128	-
W 86_P 90	24	27.3	8	200	165	130	12	11.5	128	-
WR 86_P 63	11	12.8	4	140	115	95	10	M8x10	168	35.4
WR 86_P 71	14	16.3	5	160	130	110	10	M8x10	168	35.4
WR 86_P 80	19	21.8	6	200	165	130	12	M10x13	179.5	22.9
WR 86_P 90	24	27.3	8	200	165	130	12	M10x13	179.5	22.9

44 OPTIONS

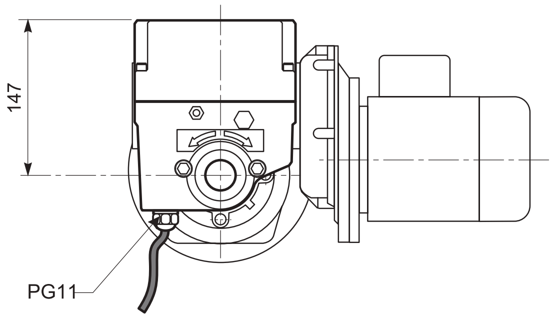
Limit switch modifications

ME



Version with terminal box

DM



Four microswitch version

Bonfiglioli

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

HEADQUARTERS

Bonfiglioli S.p.A
Registered office: Via Cav. Clementino Bonfiglioli, 1
40012 Calderara di Reno - Bologna (Italy)
Tel. +39 051 6473111

Head office: Via Isonzo, 65/67/69
40033 Casalecchio di Reno - Bologna (Italy)