



JMRV

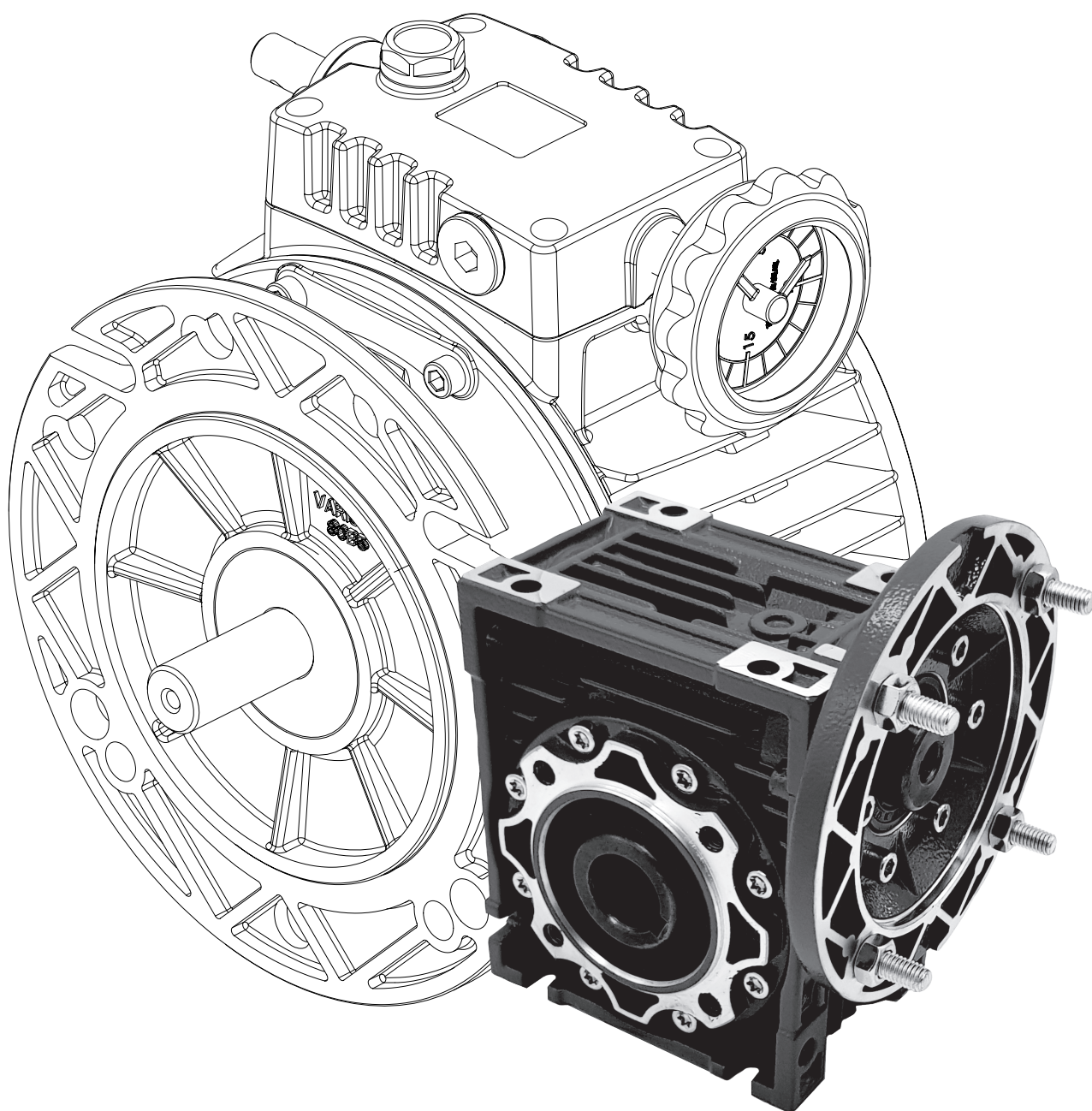
/ Series /

Warm gear units

UDL

/ Series /

Planetary cone-disk
step-less speed variator



GENERAL INFORMATION

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UDL/TXF SERIES PLANETARY CONE & DISK STEP-LESS SPEED VARIATOR

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Symbols	Units	Description
P	[kW]	Power
P₁	[kW]	Transmitted power at input shaft
P₂	[kW]	Transmitted power at output shaft
P_{n1}	[kW]	Rated input power
M₂	Nm	Transmitted torque at output shaft
M_{c2}	Nm	Calculated torque at output shaft
M_{n2}	Nm	Rated torque at output shaft
M_{r2}	Nm	Required torque at output shaft
n₁	min ⁻¹	Angular input speed
n₂	min ⁻¹	Angular output speed
i	-	Ratio
η_d	-	Dynamic efficiency
η_s	-	Static efficiency
Z₁	-	Number of worm thread
M_x	-	Axial modulus
f_s	-	Service factor
J_e	kgm ²	Moment of the external inertia reduced at the drive shaft
J_m	kgm ²	Moment of inertia of motor
F_{r1}	N	Input shaft radial load
F_{r2}	N	Output shaft radial load



Symbol referring to weight



Columns marked with this symbol indicate the reference page showing the dimensions of the selected unit.



IEC motor

GENERAL INFORMATION

The following headings contain information on essential elements for selection and correct use of gearbox.

For specific data on the gearbox range, see the relevant chapters.

2.0 OUTPUT TORQUE

2.1 *Rated output torque*

M_{n2} [Nm]

The torque that can be transmitted continuously through the output shaft, with the gear unit operated under a service factor $f_s = 1$.

2.2 *Required torque*

M_{r2} [Nm]

The torque demand based on application requirement. It is recommended to be equal to or less than torque M_{n2} the gearbox under study is rated for.

2.3 *Calculated torque*

M_{c2} [Nm]

Computational torque value to be used when selecting the gearbox. It is calculated considering the required torque M_{r2} and service factor f_s , as per the relationship here after:

$$\mathbf{M_{c2} = M_{r2} \cdot f_s \leq M_{n2}}$$

3.0 POWER

3.1 *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 n1 and service factor $f_s = 1$.

3.2 *Rated output power*

P_{n2} [kW]

This value is the power transmitted at gearbox output. it can be calculated with the following formulas:

$$\mathbf{P_{n2} = P_{n1} \cdot \eta_d}$$

$$\mathbf{P_{n2} = \frac{M_{n2} \cdot n_2}{9550}}$$

4.0 EFFICIENCY

Efficiency is a parameter which has a major influence on the sizing of certain applications, and basically depends on gear pair design elements. The mesh data table on page 21 shows dynamic efficiency ($\eta_1=1400$) and static efficiency values.

Remember that these values are only achieved after the unit has been run in and is at the working temperature.

4.1 *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 :

$$\eta_d = \frac{P_2}{P_1}$$

4.2 *Static efficiency* [η_s]

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

5.0 **SERVICE FACTOR** [f_s]

The service factor (f_s) depends on the operating conditions the gearbox is subjected to the parameters that need to be taken into consideration to select the most adequate service factor correctly comprise:

1. type of load of the operated machine : **A - B - C**
2. length of daily operating time: **hours/day(Δ)**
3. start-up frequency: **starts/hour (*)**

TYPE OF LOAD: **A** - uniform, $f_a \leq 0.3$
B - moderate shocks, $f_a \leq 3$
C - heavy shocks, $f_a \leq 10$

$$f_a = J_e / J_m$$

-- J_e (kgm^2) moment of the external inertia reduced at the drive shaft

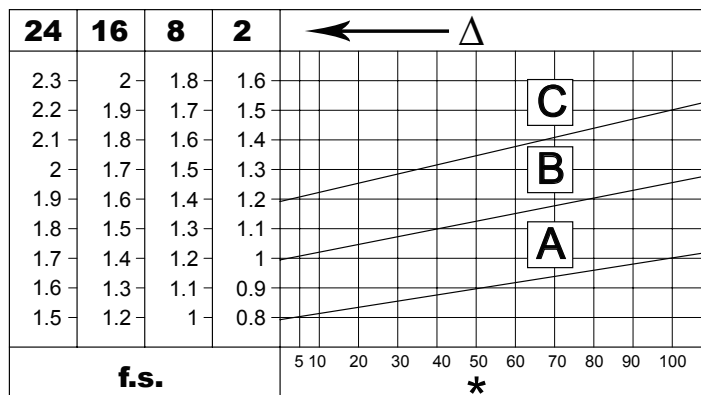
-- J_m (kgm^2) moment of inertia of motor

--If $f_a > 10$ please contact our Technical Service

A -Screw feeders for light materials, fans, assembly lines, conveyor belts for light materials, small mixers, lifts, cleaning machines, fillers, control machines.

B -Winding devices, woodworking machine feeders, goods lifts, balancers, threading machines, medium mixers, conveyor belts for heavy materials, winches, sliding doors, fertilizer scrapers, packing machines, concrete mixers, crane mechanisms, milling cutters, folding machines, gear pumps.

C -Mixers for heavy materials, shears, presses, centrifuges, rotating supports, winches and lifts for heavy materials, grinding lathes, stone mills, bucket elevators, drilling machines, hammer mills, cam presses, folding machines, turntables, tumbling barrels, vibrators, shredders.



6.0 Critical applications

The performance given in the catalogue correspond to mounting position B3 or similar, ie. when the first stage is not entirely immersed in oil. For other mounting positions and/or particular input speeds, refer to the tables that highlight different critical situations for each size of gear unit.

It is also necessary to take due consideration of and carefully assess the following applications by calling our Technical Service.

1. As a speed increasing
2. Application that could be hazardous for people if the reduction unit fails
3. Applications with especially high inertia
4. Application as a lifting winch
5. Application with an high dynamic strain on the case of the gear unit
6. In places with temperatures under -5°C or over 40°C
7. Use in chemically aggressives environments
8. Use in salty environment
9. Mounting position is not envisaged in the catalogue
10. Use in radioactive environment
11. Use in environments pressure other than atmospheric pressure

Avoid applications where even partial immersion of the reduction unit is required.

The maximum torque (*) that the gear reducer can support must not exceed two times the nominal torque (f.s. =1) stated in the performance tables.

(*) Intended for momentary overloads due to starting at full load, braking, shocks or other causes, particularly those that are dynamic.

JMRV	025	030	040	050	063	075	090	105/110	130	150
V5: 1500<n1<3000	-	-	-	-	-	B	B	B	B	B
n1>3000	B	B	B	B	B	A	A	A	A	A
V6	B	B	B	B	B	B	B	B	B	B

A: Application not recommended

B: Check the application and/or call our technical service

7.0 INSTALLATION

To install the reduction unit it is necessary to note the following recommendations:

1. The mounting on the machine must be stable to avoid any vibration.
2. Check the correct direction of rotation of the reduction unit output shaft before fitting the unit to the machine.
3. In the case of particularly lengthy periods of storage (4/6 months), if the oil seal is not immersed in the lubricant inside the unit, it is recommended to change it since the rubber could stick to the shaft or may even have lost the elasticity it needs to function properly.
4. For a shaft mounting, for reduction units with a hollow output shaft, use the torque arms we can supply. If this is not possible, make sure that the constraint is axially free and with such play as to ensure free movement for the reduction unit.
5. Whenever possible, protect the reduction unit against solar radiation and bad weather.
6. Ensure the motor cools correctly by assuring good passage of air from the fan side.
7. In the case of ambient temperatures $< -5^{\circ}\text{C}$ or $> +40^{\circ}\text{C}$ call the Technical Service.
8. The various parts (pulleys, gear wheels, couplings, shafts, etc.) must be mounted on the solid or hollow shafts using special threaded holes or other systems that anyhow ensure correct operation without risking damage to the bearings or external parts of the units. Lubricate the surfaces in contact to avoid seizure or oxidation.
9. Painting must definitely not go over rubber parts and the holes on the breather plugs, if any.
10. For units equipped with oil plugs, replace the closed plug used for shipping with the special breather plug.
11. Check the correct level of the lubricant through the indicator, if there is one.
12. Starting must take place gradually, without immediately applying the maximum load.
13. When there are parts, objects or materials under the motor drive that can be damaged by even limited spillage of oil, special protection should be fitted.

8.0 MOTOR MOUNTING WITH PAM FLANGE

When the unit is supplied without motor, it is necessary to follow these recommendation to ensure the correct assembly of the electric motor.

1. Check that the tolerances for the motor shaft and flange correspond to the standard.
2. Carefully clean the shaft, couplings and surfaces of the flange removing traces of paint and dirt, and confirm the key is fitted correctly.
3. Fit the half coupling to the motor shaft taking care to ensure the motor shaft and bearings are not damaged by avoiding excessive force and where necessary using assembly equipment.
4. Complete the assembly using the fixing bolts. Key-ways with tightened tolerances.
5. Lubricate the surfaces in contact to avoid seizure or oxidation.

9.0 OPERATION & MAINTENANCE OF SPEED VARIATOR

1. The mechanical stepless speed variator is not used in such an occasion where overload or running-blockage happen to occur.
2. Speed-regulation should be effected in running. Do not turn the hand wheel of speed-regulation when the machine stops!
3. The limit screws of speed-regulation on two ends under the operating box are well adjusted, Please don't touch them!
4. This set is not suited to work in the environment over 40°C , especially no more than 50°C when the temperature rises.
5. The machine is filled with lubricating oil before leaving factory. When it starts to work up to 1000 hours for the first time, its lubricating oil should be replaced, changing the lubricating oil every 5000 hours later.
6. The lubricating oil level inside the speed variator should be kept at the height of two-third in the oil scale. Users should usually check the height of oil level. It is strictly prohibited to operate it when short of lubricating oil.
7. The air screw nut on the operating box is screwed up for preventing from oil leakage in moving before leaving factory. It should be loosed when it starts to run. It is strictly forbidden to use it before loosening!

10.0 LUBRICATION

10.1 Specifications of lubricants

In cases of ambient temperatures not envisaged in the table, call our Technical Service. In the case of temperatures under -30°C or over 60°C it is necessary to use oil seals with special properties.

For operating ranges with temperatures under 0°C it is necessary to consider the following:

1. The motors need to be suitable for operation at the envisaged ambient temperature.
2. The power of the electric motor needs to be adequate for exceeding the higher starting torques required.
3. In the case of reduction units with a cast-iron case, pay attention to impact loads since cast iron may have problems of fragility at temperatures under -15°C.
4. During the early stages of service, problems of lubrication may arise due to the high level of viscosity taken on by the oil and so it is wise to have a few minutes of rotation under no load. The oil needs to be changed after approximately 10,000 hours. This period depends on the type of service and the environment where the reduction unit works. For units supplied without oil plugs, lubrication is permanent and so they need no servicing.

10.2 Specifications of lubricants recommended

	JMRV 110-150		JMRV 025-105 PC 063-090	UDL 002-100 TXF 005-010
	Mineral oil 矿物油		Synthetic oil 合成油	Mineral oil 矿物油
T°C	(-5) - (+40)	(-15) - (+25)	(-25) - (+50)	(-25) - (+50)
ISO	ISO VG460	ISO VG220	ISO VG320	VG32
广研润滑	CKE460	CKE320		UB-3
AGIP	BLASIA 460	BLASIA 220	TELIUM VSF320	A.T.F. DEXRON
SHELL	OMALA OIL460	OMALA OIL220	TIVELA OIL SC320	A.T.F. DEXRON
ESSO	SPARTAN EP460	SPARTAN EP220	S220	A.T.F. DEXRON
MOBIL	MOBILGEAR 634	MOBILGEAR 630	GLYGOYLE 30	A.T.F. 220
CASTROL	ALPHA MAX 460	ALPHA MAX 220	ALPHASYN PG320	TQ DEXRON II
BP	ENERGOL GR-XP460	ENERGOL GR-XP220	ENERGOL SG-XP320	AUTRAN DX

For the quantity of oil, please refer to the pages relating

10.3 Q.ty of oil in litres

JMRV	025	030	040	050	063	075	090	105	110	130	150
B3	0.02	0.04	0.08	0.15	0.3	0.55	1	1.6	3	4.5	7
B8									2.2	3.3	5.1
B6-B7									2.5	3.5	5.4
V5									3	4.5	7
V6									2.2	3.3	5.1

PC	063	071	080	090
	0.05	0.07	0.15	0.16

UDL/TXF	UDL002	UDL005	UDL010	UD020	UD030/050	UD100	TXF005	TXF010
B3	0.13	0.15	0.33	1.2	2	3.5	0.13	0.4
B8								
B6-B7								
V1	0.2	0.25	0.45	1.5	2.5	4	0.33	0.75
V3								

- The reduction units size 025-030-040-050-063-075-090-105 are supplied complete with lubricant for life, synthetic oil, and can therefore be mounted in any position envisaged in the catalogue. The only exceptions are 075,090,105 in pos. V5/V6 for which you should call our Technical Service to assess the conditions of use.

- The reduction units size 110-130 and 150 are supplied complete with lubricant, mineral oil.

- For sizes 110-130 and 150 it is necessary to specify the position, otherwise the reduction units are supplied with the quantity of oil relating to pos. B3.

- Only reduction units 110-130 and 150 are fitted with breather, level and oil drainage plugs. It is necessary, after installation, to replace the closed plug used for transportation with the breather plug supplied with the unit.

- The pre-stage helical modules are supplied complete with life-long lubricant, synthetic oil, AGIP TELIUM VSF, and can therefore be mounted in all the positions. Lubrication is separated from that of the worm reduction unit.

The speed variator are supplied complete with lubricant, mineral oil, GUANGYAN UB-3.

11.0 Design features (PC)

The PC construction is modular and therefore it can be supplied as separate unit to be mounted on any type of fitted geared motor (PAM). In this connection, the various possibilities of flange/output shafts can be found on page 17.

Fitting the pre-stage helical module on the main reduction unit is easily done as for any motor of type B14.

The pre-stage unit cannot be used by itself, but only coupled with another reduction unit.

Materials

Case in aluminium alloy.

Gears in case hardened, tempered steel 20CrMnTi accurately ground on the involute.



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JMRV SERIES WORM GEAR UNITS

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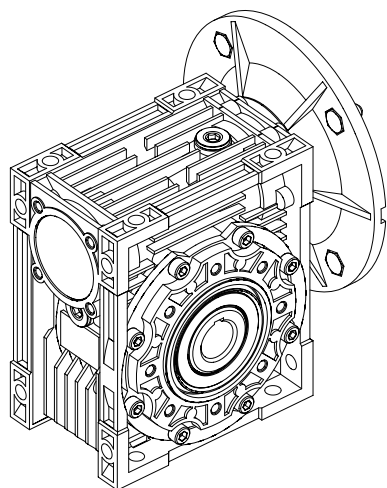
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UDL/TXF SERIES PLANETARY CONE & DISK STEP-LESS SPEED VARIATOR

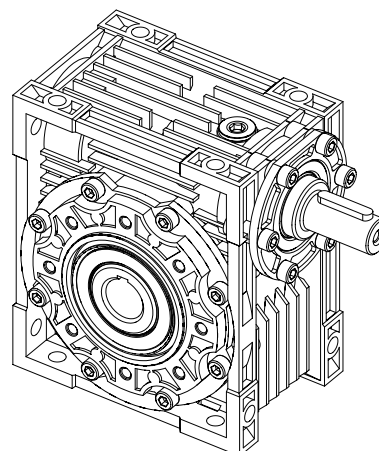
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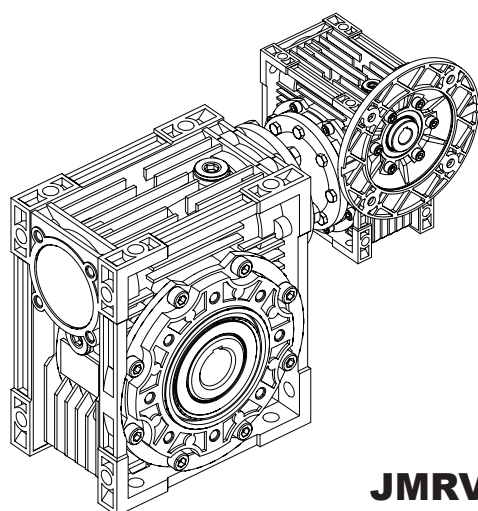
JMRV SERIES WORM GEAR UNITS



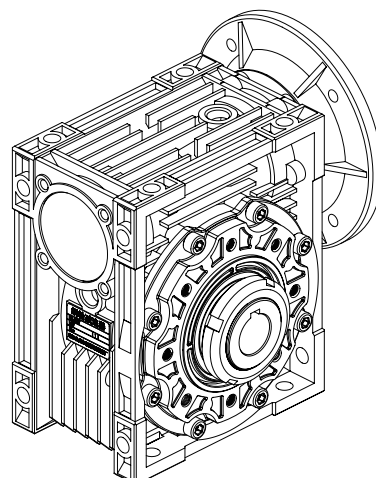
JMRV



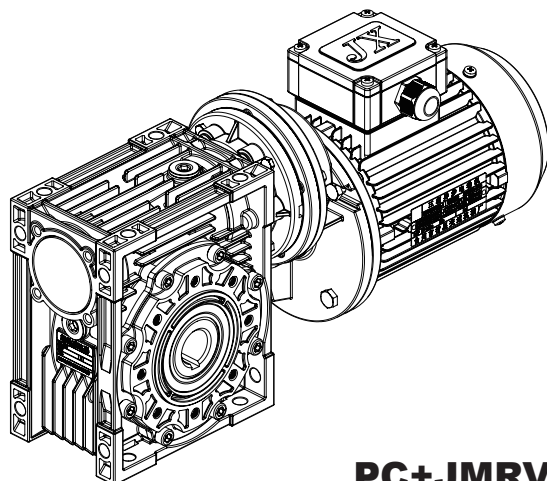
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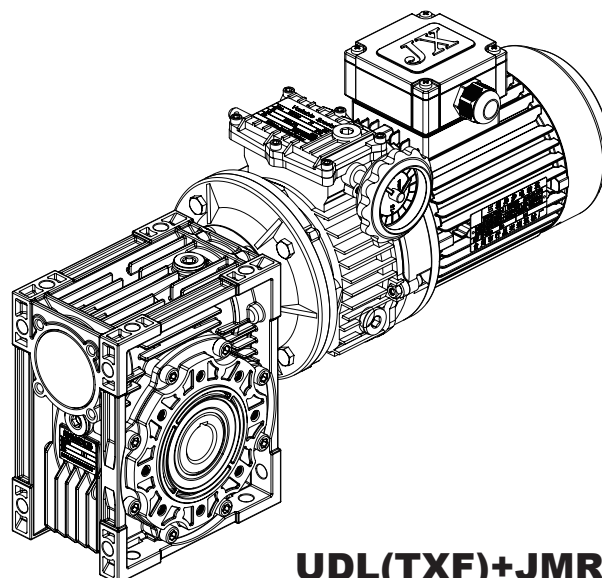
JMRV+JMRV



JMRL



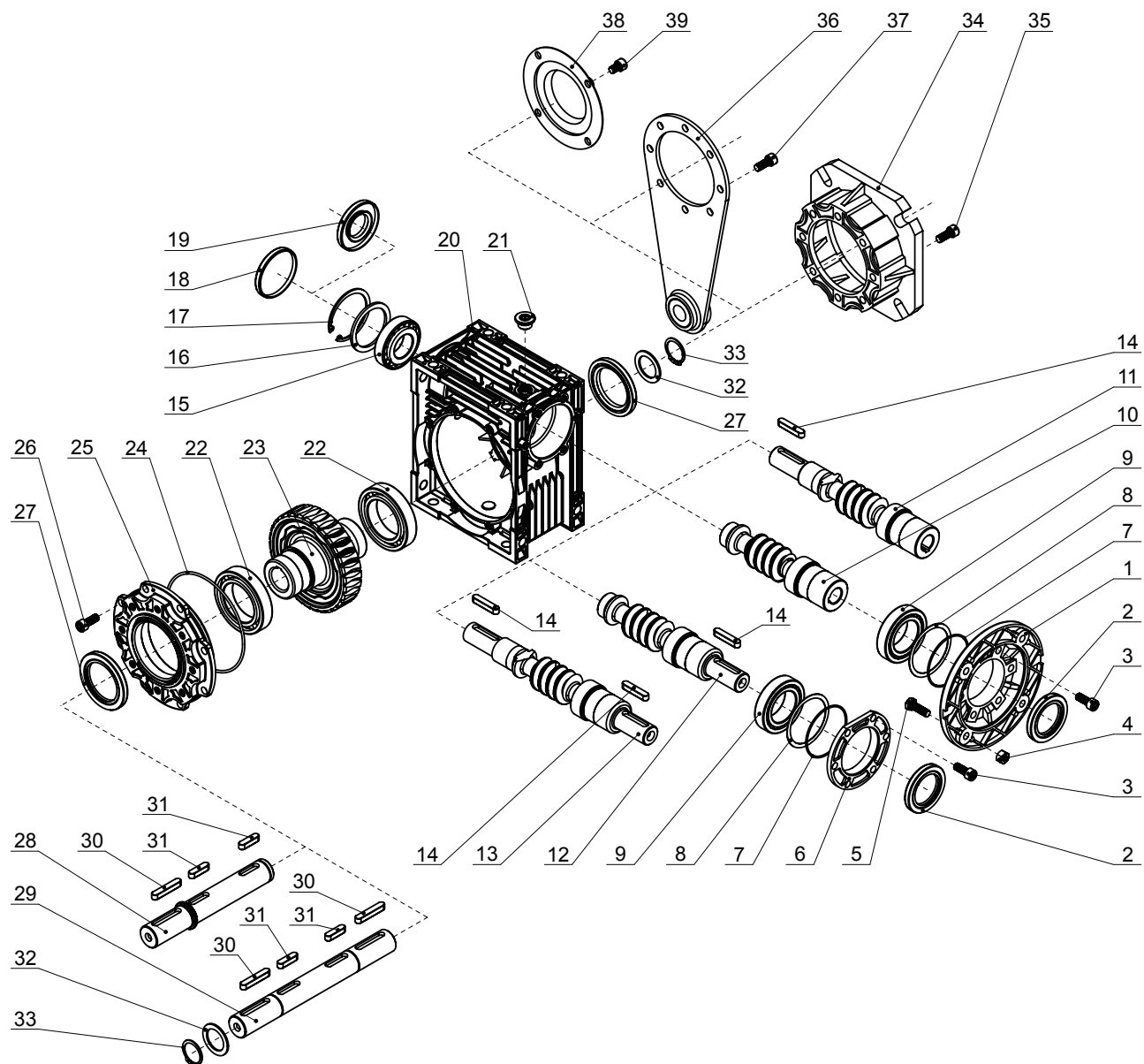
PC+JMRV



UDL(TXF)+JMRV

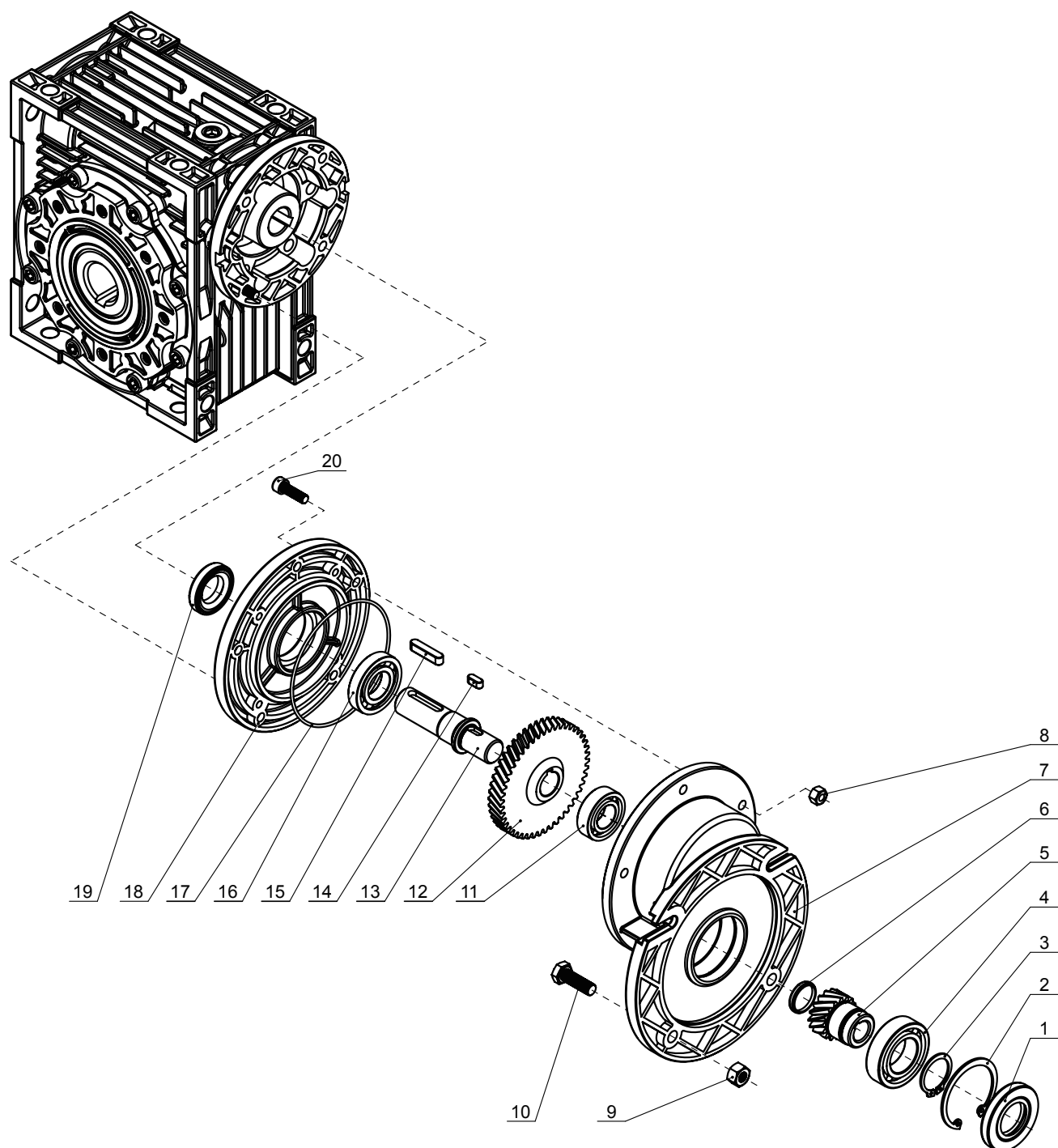
1.0 EXPLODED VIEW AND VERSIONS

1.1 JMRV Exploded view



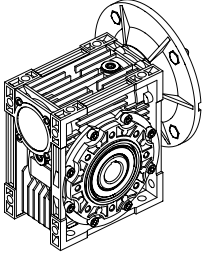
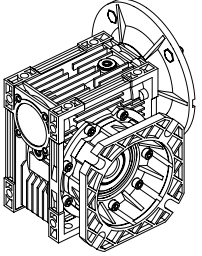
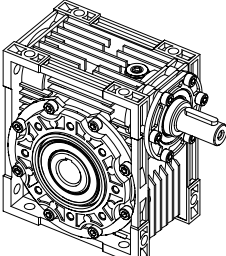
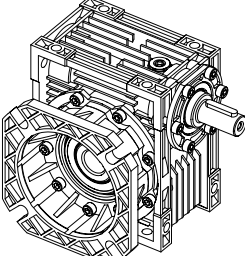
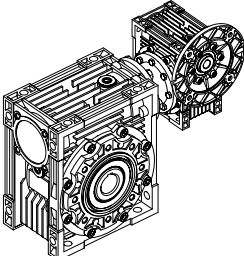
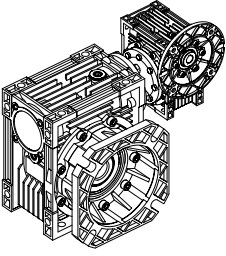
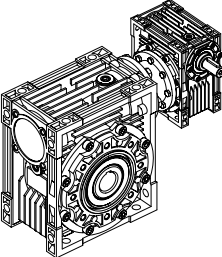
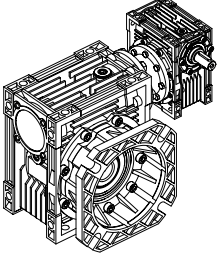
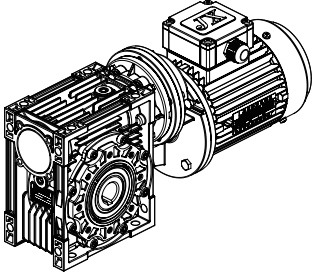
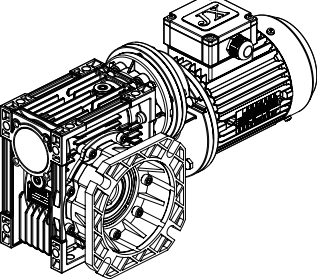
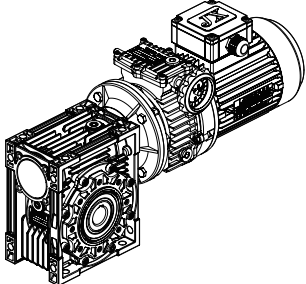
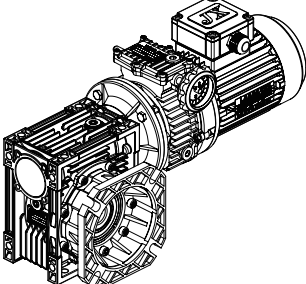
1	Flange PAM	11	Double ext. PAM worm	21	Oli plug	31	Parallel key
2	Oli seal	12	RV worm	22	Bearing	32	Washer
3	Hexagon socket head cap screw	13	Double ext. RV worm	23	Worm wheel	33	Circlip for shaft
4	Hexagon nuts	14	Parallel key	24	O-ring	34	Output flange
5	Hexagon bolt	15	Bearing	25	Bearing support cover	35	Hexagon socket head cap screw
6	Gear unit cover	16	Washer	26	Hexagon socket head cap screw	36	Torque arm
7	O-ring	17	Circlip for hole	27	Oli seal	37	Hexagon socket head cap screw
8	Spacer shim	18	Cap	28	Single output Shaft	38	Protection cap
9	Bearing	19	Oli seal	29	Double output Shaft	39	Hexagon socket head cap screw
10	PAM worm	20	Case	30	Parallel key		

1.2 PC Exploded view



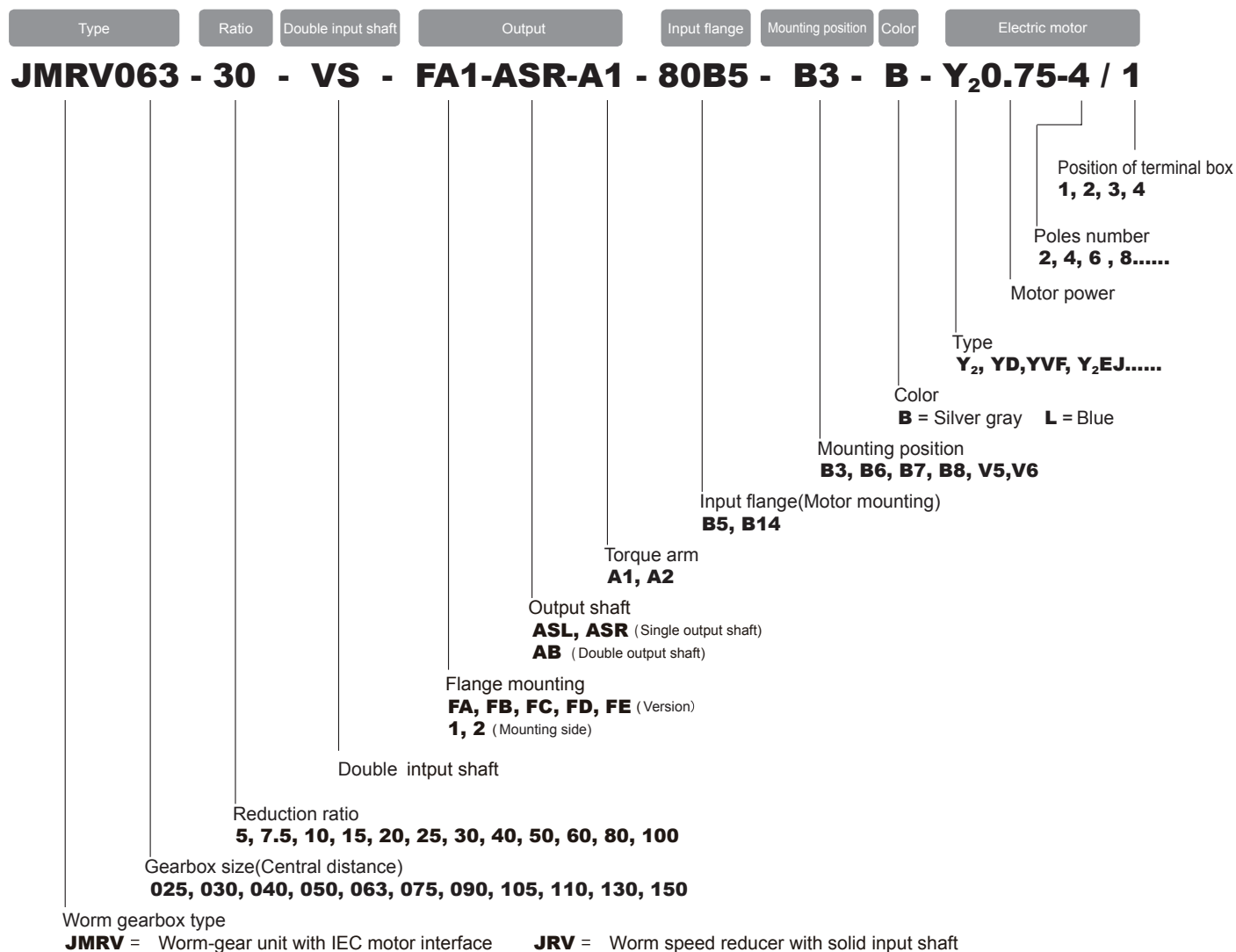
1	Oli seal	6	Cap	11	Bearing	16	Bearing
2	Circlip for hole	7	Pre-stage unit case	12	Gear	17	O-ring
3	Circlip for shaft	8	Hexagon nuts	13	Low speed shaft	18	Output cover
4	Bearing	9	Hexagon nuts	14	Parallel key	19	Oli seal
5	Hollow pinion	10	Hexagon bolt	15	Parallel key	20	Hexagon socket head cap screw

1.3 Versions

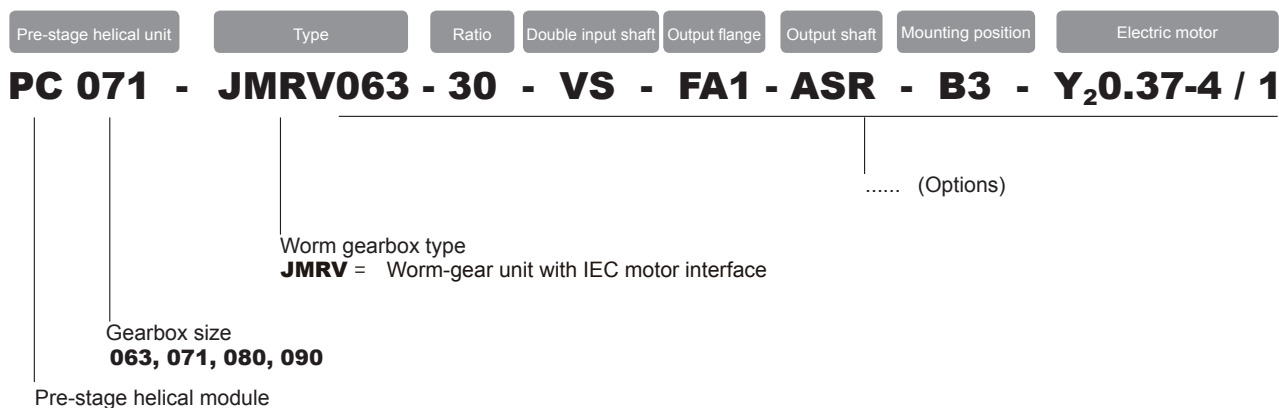
	JMRV 025 - 150	JMRV 025 - 150 F	
	JRV 025 - 150	JRV 025 - 150 F	
	JMRV-JMRV 025/030 - 063/150	JMRV-JMRV 025/030 - 063/150 F	
	JRV-JMRV 025/030 - 063/150	JRV-JMRV 025/030 - 063/150 F	
	PC-JMRV 063/040 - 090/130	PC-JMRV 063/040 - 090/130 F	
	UDL(TXF)-JMRV 002/040 - 050/130	UDL(TXF)-JMRV 002/040 - 050/130 F	

2.0 DESIGNATION

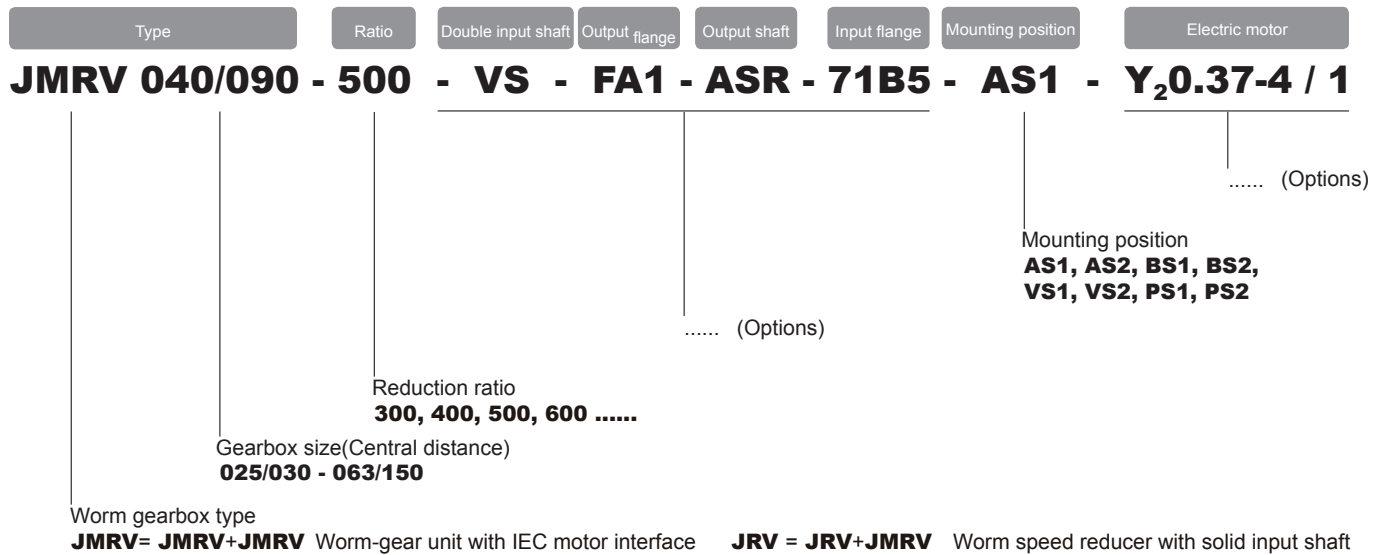
2.1 **JMRV-JRV** *Worm speed reduction unit*



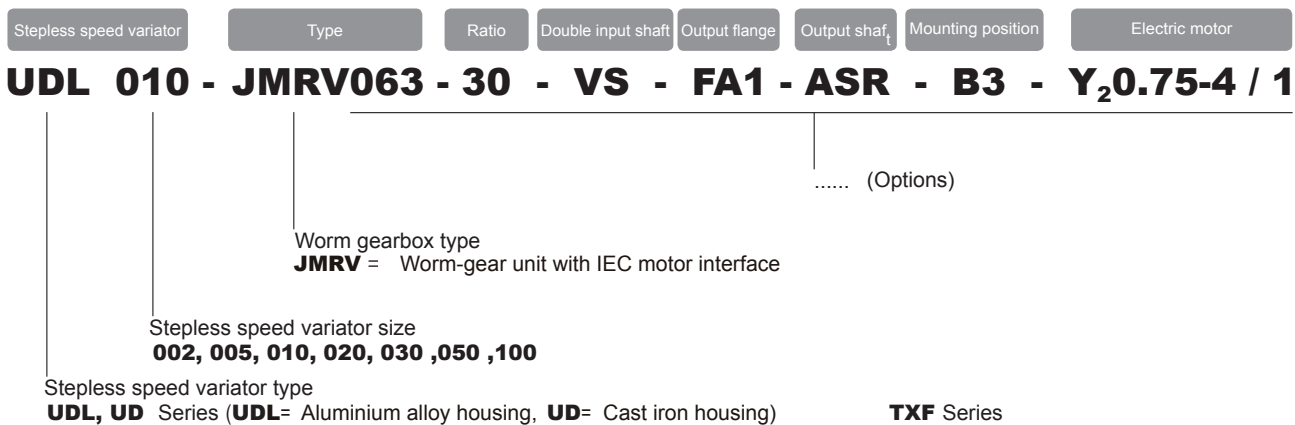
2.2 **PC+JMRV** *Worm geared motors with Pre-stage helical unit*



2.3 **JMRV+JMRV - JRV+JMRV**
Combination worm-gear unit

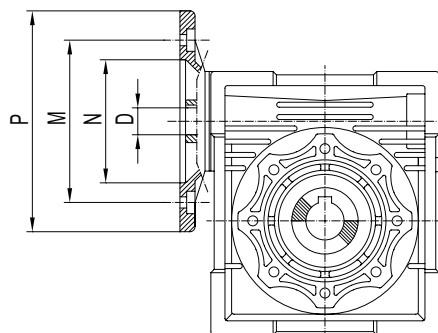


2.4 **UDL+JMRV**
Combination of Stepless speed variator and Worm-gear unit



3.0 DISPOSITION AND COMBINATIONS

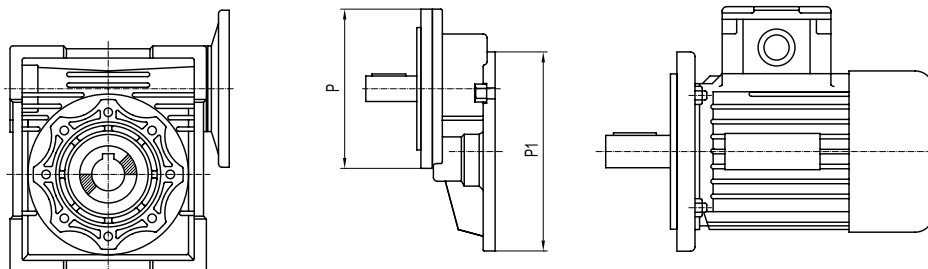
3.1 JMRV Pre-disposition



JMRV	PAM IEC	N	M	P	D											
					5	7.5	10	15	20	25	30	40	50	60	80	100
025	56B14	50	65	80	9	9	9	9	9	-	9	9	9	9	-	-
030	63B5	95	115	140	11	11	11	11	11	11	11	11	11	-	-	-
	63B14	60	75	90												
	56B5	80	100	120	9	9	9	9	9	9	9	9	9	9	9	-
	56B14	50	65	80												
040	71B5	110	130	160	14	14	14	14	14	14	14	14	-	-	-	-
	71B14	70	85	105												
	63B5	95	115	140	11	11	11	11	11	11	11	11	11	11	11	11
	63B14	60	75	90												
	56B5	80	100	120	-	-	-	-	-	-	-	-	9	9	9	9
050	80B5	130	165	200	19	19	19	19	19	19	19	-	-	-	-	-
	80B14	80	100	120												
	71B5	110	130	160	14	14	14	14	14	14	14	14	14	14	14	-
	71B14	70	85	105												
	63B5	95	115	140	-	-	-	-	-	-	-	11	11	11	11	11
063	90B5	130	165	200	-	24	24	24	24	24	24	-	-	-	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	19	19	19	19	19	19	19	19	19	-	-
	80B14	80	100	120												
	71B5	110	130	160	-	-	-	-	-	-	-	14	14	14	14	14
	71B14	70	85	105												
075	100/112B5	180	215	250	-	28	28	28	-	-	-	-	-	-	-	-
	100/112B14	110	130	160												
	90B5	130	165	200	-	24	24	24	24	24	24	24	-	-	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	-	-	-	19	19	19	19	19	19	19	19
	80B14	80	100	120												
090	100/112B5	180	215	250	-	28	28	28	28	28	28	-	-	-	-	-
	100/112B14	110	130	160												
	90B5	130	165	200	-	24	24	24	24	24	24	24	24	24	-	-
	90B14	95	115	140												
	80B5	130	165	200	-	-	-	-	-	-	-	19	19	19	19	19
	80B14	80	100	120												
105 110	132B5	230	265	300	-	38	38	38	38	-	-	-	-	-	-	-
	100/112B5	180	215	250	-	28	28	28	28	28	28	28	28	28	-	-
	90B5	130	165	200	-	-	-	-	-	24	24	24	24	24	24	24
	80B5	130	165	200	-	-	-	-	-	-	-	-	-	-	19	19
130	132B5	230	265	300	-	38	38	38	38	38	38	38	-	-	-	-
	100/112B5	180	215	250	-	-	-	-	-	28	28	28	28	28	28	28
	90B5	130	165	200	-	-	-	-	-	-	-	-	-	-	24	24
150	160B5	250	300	350	-	42	42	42	42	42	-	-	-	-	-	-
	132B5	230	265	300	-	-	-	-	38	38	38	38	38	38	-	-
	100/112B5	180	215	250	-	-	-	-	-	-	-	-	28	28	28	28

3.2 PC+JMRV Possible combinations

JMRV	PC063			PC071		PC080			PC090		
	IEC	105/11	105/14	120/14	120/19	160/19	160/24	160/28	160/19	160/24	160/28
	i	i=2.93	i=2.93	i=2.94	i=2.94	i=3	i=3	i=3	i=2.45	i=2.45	i=2.45
040	25										
	30										
	40										
	50										
	60										
	80										
	100										
050	25										
	30										
	40										
	50										
	60										
	80										
	100										
063	25										
	30										
	40										
	50										
	60										
	80										
	100										
075	25										
	30										
	40										
	50										
	60										
	80										
	100										
090	25										
	30										
	40										
	50										
	60										
	80										
	100										
105 110	25										
	30										
	40										
	50										
	60										
	80										
	100										
130	25										
	30										
	40										
	50										
	60										
	80										
	100										



	P1	P	(P)
PC 063	63B5-140/11	105/11	(105/14)
PC 071	71B5-160/14	120/14	(120/19)
PC 080	80B5-200/19	160/19	(160/24)
			(160/28)
PC 090	90B5-200/24	160/24	(160/19)
			(160/28)

(. .) Only on request

3.3 JMRV+JMRV Possible combinations

	i	n ₂	IEC motor	i ₁	i ₂
JMRV 025/030	100	14	56	10	10
	150	9.3		10	15
	200	7		10	20
	250	5.6		10	25
	300	4.7		10	30
	400	3.5		20	20
	500	2.8		20	25
	600	2.3		20	30
	750	1.9		30	25
	900	1.6		30	30
	1200	1.2		40	30
	1500	0.93		50	30
	1800	0.78		60	30
	2400	0.58		60	40
	3000	0.47		60	50
JMRV 025/040	300	4.7	56	10	30
	400	3.5		10	40
	500	2.8		20	25
	600	2.3		20	30
	750	1.9		30	25
	900	1.6		30	30
	1200	1.2		40	30
	1500	0.93		50	30
	1800	0.78		60	30
	2400	0.58		60	40
	3000	0.47		60	50
	4000	0.35		50	80
	5000	0.28		50	100
JMRV 030/040	300	4.7	56	10	30
	400	3.5		10	40
	500	2.8		20	25
	600	2.3		20	30
	750	1.9		25	30
	900	1.6		30	30
	1200	1.2		30	40
	1500	0.93		50	30
	1800	0.78		60	30
	2400	0.58		60	40
	3200	0.44		80	40
	4000	0.35		50	80
	5000	0.28		50	100
JMRV 030/050	300	4.7	56 63	10	30
	400	3.5		10	40
	500	2.8		10	50
	600	2.3		20	30
	750	1.9		25	30
	900	1.6		30	30
	1200	1.2		30	40
	1500	0.93		50	30
	1800	0.78		60	30
	2400	0.58		60	40
	3000	0.47		60	50
	4000	0.35		50	80
	4800	0.29		60	80
JMRV 030/063	300	4.7	56 63	7.5	40
	400	3.5		10	40
	500	2.8		10	50
	600	2.3		15	40
	750	1.9		15	50
	900	1.6		15	60
	1200	1.2		30	40
	1500	0.93		30	50
	1800	0.78		30	60
	2400	0.58		60	40
	3000	0.47		60	50
	4000	0.35		50	80
	5000	0.28		50	100
JMRV 040/075	300	4.7	56 63 71	10	30
	400	3.5		10	40
	500	2.8		10	50
	600	2.3		20	30
	750	1.9		25	30
	900	1.6		30	30
	1200	1.2		30	40
	1500	0.93		50	30
	1800	0.78		60	30
	2400	0.58		60	40
	3000	0.47		60	50
	4000	0.35		50	80
	5000	0.28		50	100
JMRV 040/090	300	4.7	56 63 71	7.5	40
	400	3.5		10	40
	500	2.8		10	50
	600	2.3		15	40
	750	1.9		15	50
	900	1.6		15	60
	1200	1.2		30	40
	1500	0.93		30	50
	1800	0.78		30	60
	2400	0.58		60	40
	3000	0.47		60	50
	4000	0.35		50	80
	5000	0.28		50	100
JMRV 050/105 050/110	300	4.7	63 71 80	10	30
	400	3.5		10	40
	500	2.8		10	50
	600	2.3		15	40
	750	1.9		25	30
	900	1.6		30	30
	1200	1.2		30	40
	1500	0.93		50	30
	1800	0.78		60	30
	2400	0.58		60	40
	3000	0.47		60	50
	4000	0.35		50	80
	5000	0.28		50	100
JMRV 063/130	300	4.7	71 80 90	10	30
	400	3.5		10	40
	500	2.8		10	50
	600	2.3		15	40
	750	1.9		25	30
	900	1.6		30	30
	1200	1.2		30	40
	1500	0.93		50	30
	1800	0.78		60	30
	2400	0.58		60	40
	3000	0.47		60	50
	4000	0.35		50	80
	5000	0.28		50	100
JMRV 063/150	150	9.3	71 80 90	10	15
	200	7.1		10	20
	250	5.6		10	25
	300	4.7		10	30
	400	3.5		10	40
	500	2.8		10	50
	600	2.3		15	40
	750	1.9		25	30
	900	1.6		30	30
	1200	1.2		30	40
	1800	0.78		60	30
	2400	0.58		60	40
	3000	0.47		60	50
	4000	0.35		50	80
	5000	0.28		50	100

3.4 **UDL+JMRV / TXF+JMRV**
Possible combinations

JMRV		UDL002	UDL005 TXF005	UDL010 TXF010	UD020	UD030	UD050
	IEC	63B5	71B5	80B5	90B5	100B5	112B5
	i	i=1.6-8.2	UDL : i=1.4-7 TXF : i=1.4-8.2	UDL : i=1.4-7 TXF : i=1.4-8.2	i=1.4-8.2	i=1.4-7	i=1.4-7
040	7.5						
	10						
	15						
	20						
	25						
	30						
	40						
050	50						
	7.5						
	10						
	15						
	20						
	25						
	30						
	40						
	50						
	60						
063	80						
	100						
	7.5						
	10						
	15						
	20						
	25						
	30						
	40						
	50						
075	60						
	80						
	100						
	7.5						
	10						
	15						
	20						
	25						
	30						
	40						
090	50						
	60						
	80						
	100						
	7.5						
	10						
	15						
	20						
	25						
	30						
105 110	40						
	50						
	60						
	80						
	100						
	7.5						
	10						
	15						
	20						
	25						
130	30						
	40						
	50						
	60						
	80						
	100						
	7.5						
	10						
	15						
	20						

4.0 IRREVERSIBILITY

4.1 *Dynamic irreversibility*

Dynamic irreversibility is achieved when the output shaft stops instantly when drive is no longer transmitted through the worm shaft .this condition requires a dynamic efficiency of $\eta_d < 0.5$ (see table on page 21) .

4.2 *Static irreversibility*

Static irreversibility is achieved when, with the gear reducer at a standstill, the application of a load to the output shaft does not set in motion the worm shaft .this condition requires a static efficiency of $\eta_s < 0.5$ (see table on page 21) .

η_d	DYNAMIC IRREVERSIBILITY
> 0.6	dynamic reversibility
0.5 - 0.6	low dynamic reversibility
0.4 - 0.5	good dynamic irreversibility
< 0.4	dynamic irreversibility

η_s	STATIC IRREVERSIBILITY
> 0.55	Static reversibility
0.5 - 0.55	low Static reversibility
< 0.5	Static irreversibility

The table shows approximate irreversibility classes.

Vibrations and shocks can affect a gear reducer's irreversibility.

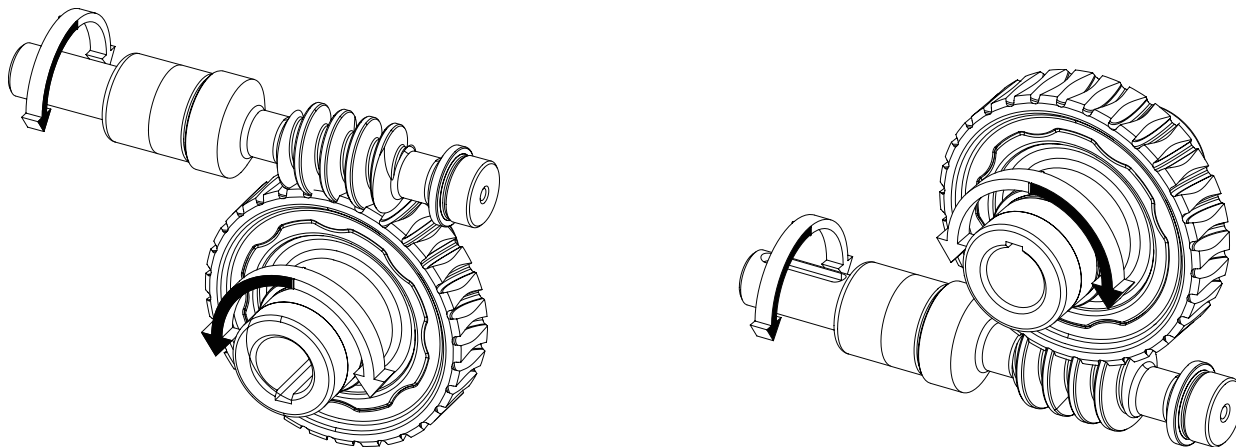
For the irreversibility conditions of a combined geared unit one must consider that the efficiency of the group is given by the product of the efficiency of each single reducer, i.e.: $\eta_{tot} = \eta_1 * \eta_2$.

5.0 MESH DATA

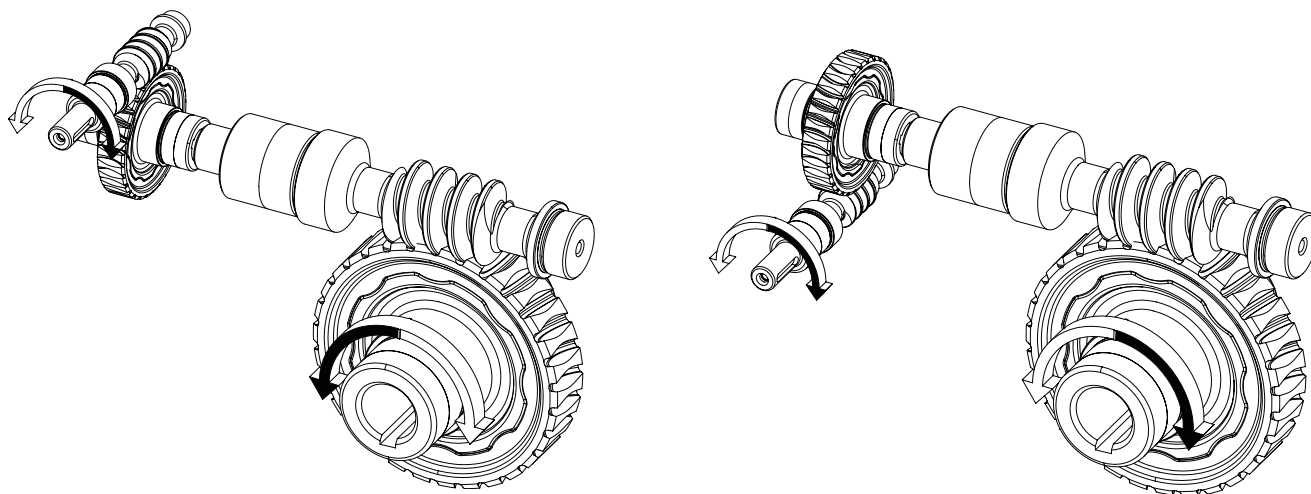
5.1 Worm thread, worm wheel tooth and efficiency data

JMRV	i	5	7.5	10	15	20	25	30	40	50	60	80	100
025	Z ₁	4	4	3	2	2		1	1	1	1		
	γ	30°57'	25°18'	19°31'	13°18'	10°53'		6°44'	5°29'	4°34'	3°56'		
	M _x	1.8	1.3	1.3	1.3	1		1.3	1	0.8	0.67		
	η _d	0.86	0.84	0.82	0.78	0.74		0.66	0.61	0.57	0.54		
	η _s	0.71	0.70	0.67	0.60	0.55		0.46	0.41	0.36	0.34		
030	Z ₁	4	4	3	2	2	1	1	1	1	1	1	
	γ	21°48'	18°50'	14°21'	9°40'	7°44'	5°34'	4°52'	3°53'	3°11'	2°46'	2°07'	
	M _x	2	1.44	1.44	1.44	1.1	1.7	1.44	1.1	0.88	0.75	0.56	
	η _d	0.86	0.84	0.81	0.76	0.72	0.67	0.64	0.58	0.54	0.50	0.44	
	η _s	0.71	0.66	0.62	0.54	0.50	0.43	0.39	0.35	0.31	0.27	0.23	
040	Z ₁	4	4	4	2	2	2	1	1	1	1	1	1
	γ	27°24'	21°48'	17°31'	11°18'	8°58'	7°41'	5°42'	4°30'	3°51'	3°17'	2°32'	2°05'
	M _x	2.8	2	1.5	2	1.5	1.25	2	1.5	1.25	1.04	0.78	0.63
	η _d	0.88	0.86	0.85	0.81	0.77	0.74	0.69	0.64	0.61	0.57	0.51	0.47
	η _s	0.72	0.69	0.65	0.58	0.53	0.5	0.44	0.4	0.36	0.32	0.28	0.24
050	Z ₁	4	4	4	2	2	2	1	1	1	1	1	1
	γ	23°49'	21°48'	17°42'	11°18'	9°04'	7°36'	5°42'	4°33'	3°49'	3°17'	2°33'	2°04'
	M _x	3.4	2.5	1.9	2.5	1.9	1.54	2.5	1.9	1.54	1.3	0.98	0.78
	η _d	0.87	0.86	0.84	0.8	0.77	0.74	0.7	0.65	0.61	0.57	0.51	0.49
	η _s	0.73	0.69	0.65	0.58	0.54	0.5	0.44	0.39	0.35	0.32	0.27	0.23
063	Z ₁		4	4	2	2	2	1	1	1	1	1	1
	γ		24°31'	20°19'	12°50'	10°29'	8°44'	6°30'	5°17'	4°23'	3°47'	2°59'	2°25'
	M _x		3.25	2.5	3.25	2.5	2	3.25	2.5	2	1.68	1.28	1.02
	η _d		0.87	0.86	0.82	0.8	0.77	0.73	0.69	0.65	0.61	0.56	0.5
	η _s		0.7	0.65	0.59	0.54	0.5	0.45	0.4	0.36	0.33	0.28	0.24
075	Z ₁		4	4	2	2	2	1	1	1	1	1	1
	γ		26°33'	21°48'	14°02'	11°18'	9°37'	7°07'	5°42'	4°50'	4°05'	3°15'	2°40'
	M _x		4	3	4	3	2.45	4	3	2.45	2	1.54	1.24
	η _d		0.88	0.87	0.84	0.81	0.79	0.75	0.71	0.68	0.64	0.59	0.54
	η _s		0.7	0.67	0.6	0.57	0.52	0.46	0.42	0.38	0.35	0.29	0.26
090	Z ₁		4	4	2	2	2	1	1	1	1	1	1
	γ		28°20'	23°26'	15°05'	12°14'	10°37'	7°40'	6°11'	5°21'	4°36'	3°36'	2°57'
	M _x		4.8	3.6	4.8	3.6	3	4.8	3.6	3	2.5	1.88	1.5
	η _d		0.89	0.88	0.85	0.83	0.81	0.77	0.74	0.71	0.68	0.62	0.58
	η _s		0.72	0.69	0.63	0.59	0.55	0.49	0.45	0.41	0.38	0.32	0.28
105 110	Z ₁		4	4	2	2	2	1	1	1	1	1	1
	γ		28°17'	27°35'	15°03'	14°38'	12°37'	7°39'	7°26'	6°23'	5°31'	4°23'	3°38'
	M _x		5.89	4.6	5.89	4.6	3.75	5.89	4.6	3.75	3.12	2.36	1.9
	η _d		0.89	0.88	0.85	0.84	0.83	0.78	0.77	0.74	0.71	0.66	0.62
	η _s		0.71	0.68	0.62	0.61	0.58	0.48	0.48	0.44	0.41	0.36	0.32
130	Z ₁		4	4	2	2	2	1	1	1	1	1	1
	γ		28°46'	26°15'	15°21'	13°51'	11°49'	7°48'	7°01'	5°58'	5°12'	4°05'	3°25'
	M _x		7	5.4	7	5.4	4.37	7	5.4	4.37	3.68	2.75	2.24
	η _d		0.9	0.88	0.86	0.85	0.83	0.79	0.77	0.74	0.71	0.67	0.63
	η _s		0.71	0.68	0.62	0.6	0.57	0.49	0.46	0.43	0.39	0.34	0.3
150	Z ₁		6	4	3	2	2	2	1	1	1	1	1
	γ		32°09'	24°35'	17°27'	12°53'	11°19'	9°50'	6°32'	5°43'	4°57'	3°55'	3°14'
	M _x		5.5	6.155	5.5	6.155	5	4.193	6.155	5	4.193	3.17	2.55
	η _d		0.91	0.9	0.88	0.86	0.84	0.83	0.78	0.76	0.73	0.68	0.64
	η _s		0.73	0.71	0.66	0.6	0.57	0.54	0.45	0.42	0.39	0.33	0.29

JMRV - JRV



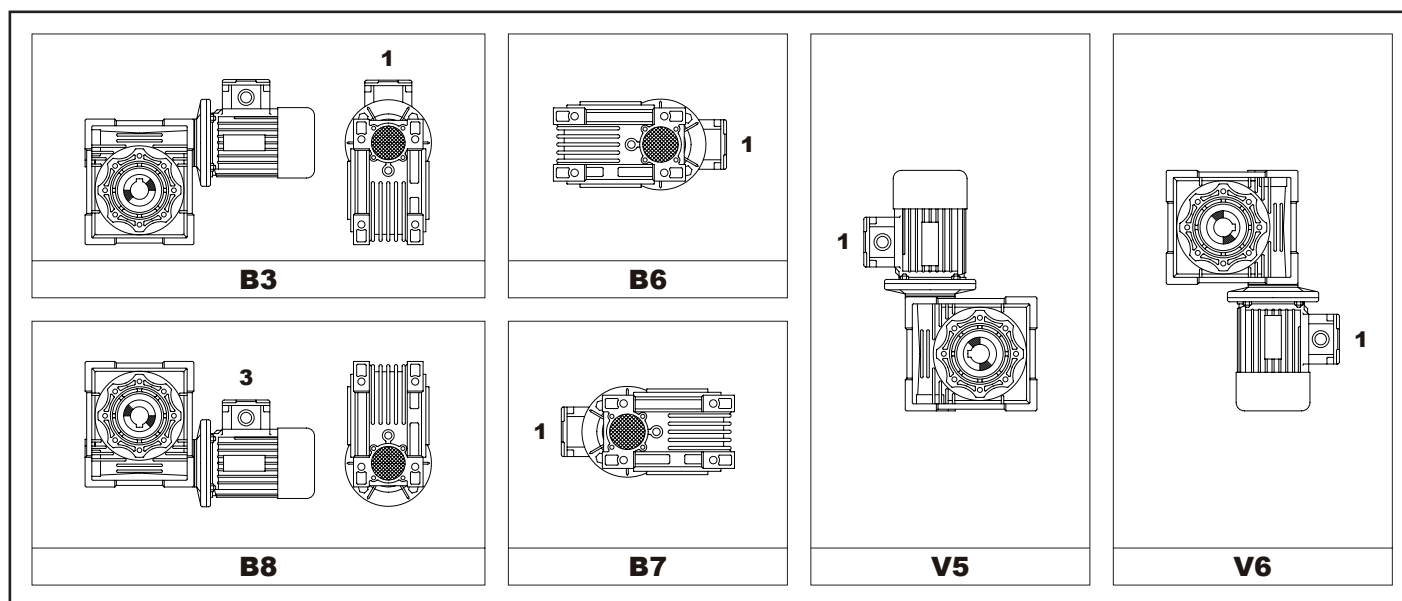
JMRV+JMRV - JRV+JMRV



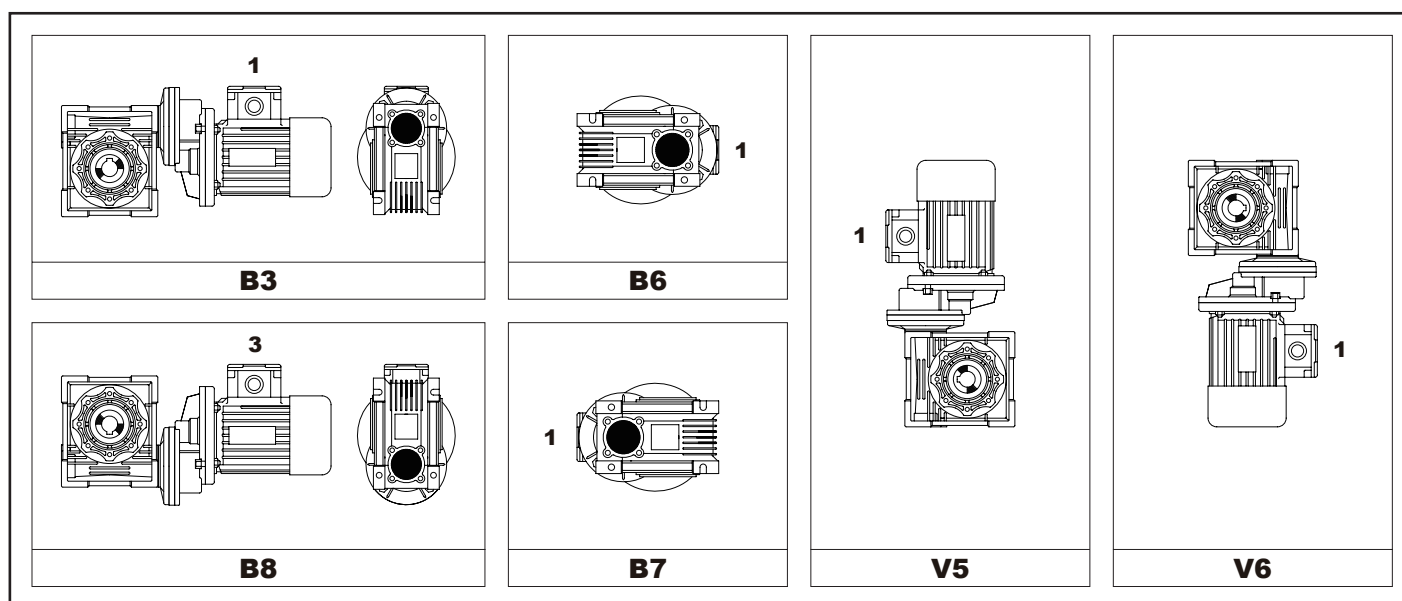
The helix is right-handed

6.0 MOUNTING POSITIONS

6.1 JMRV - JRV Mounting positions

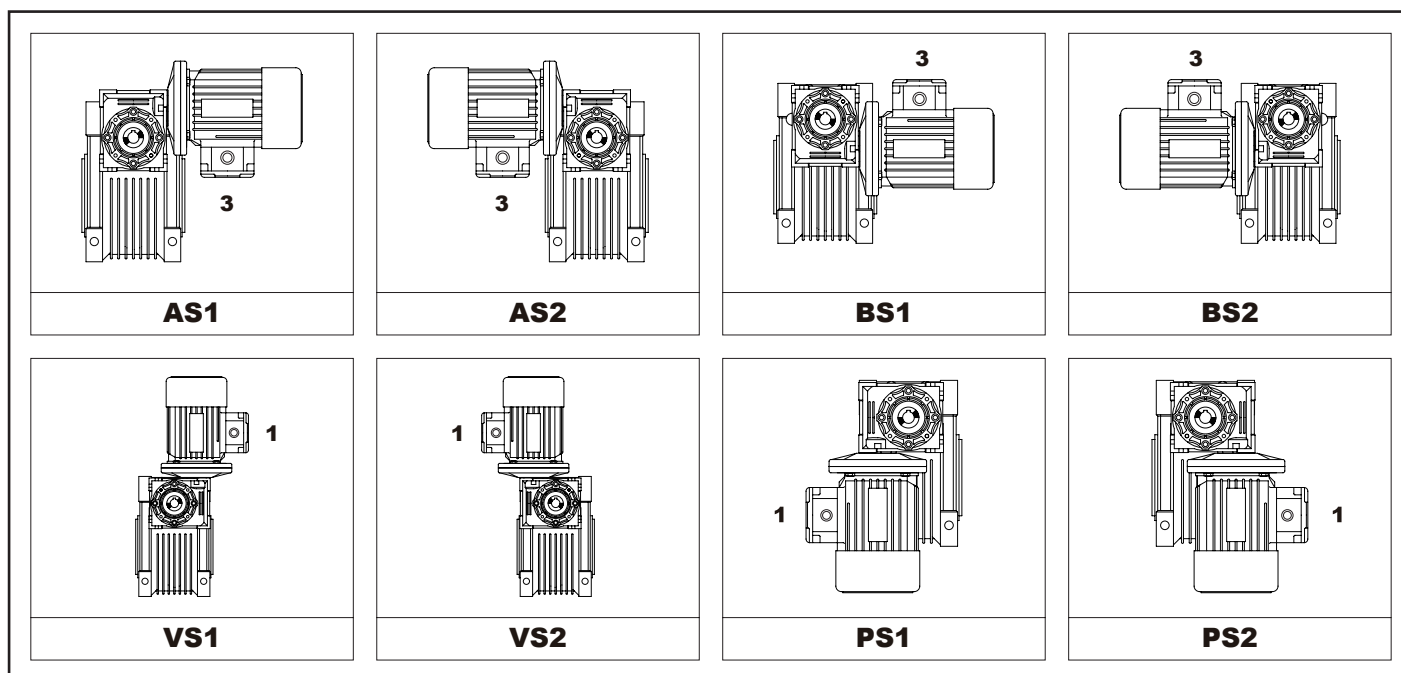


6.2 PC+JMRV Mounting positions



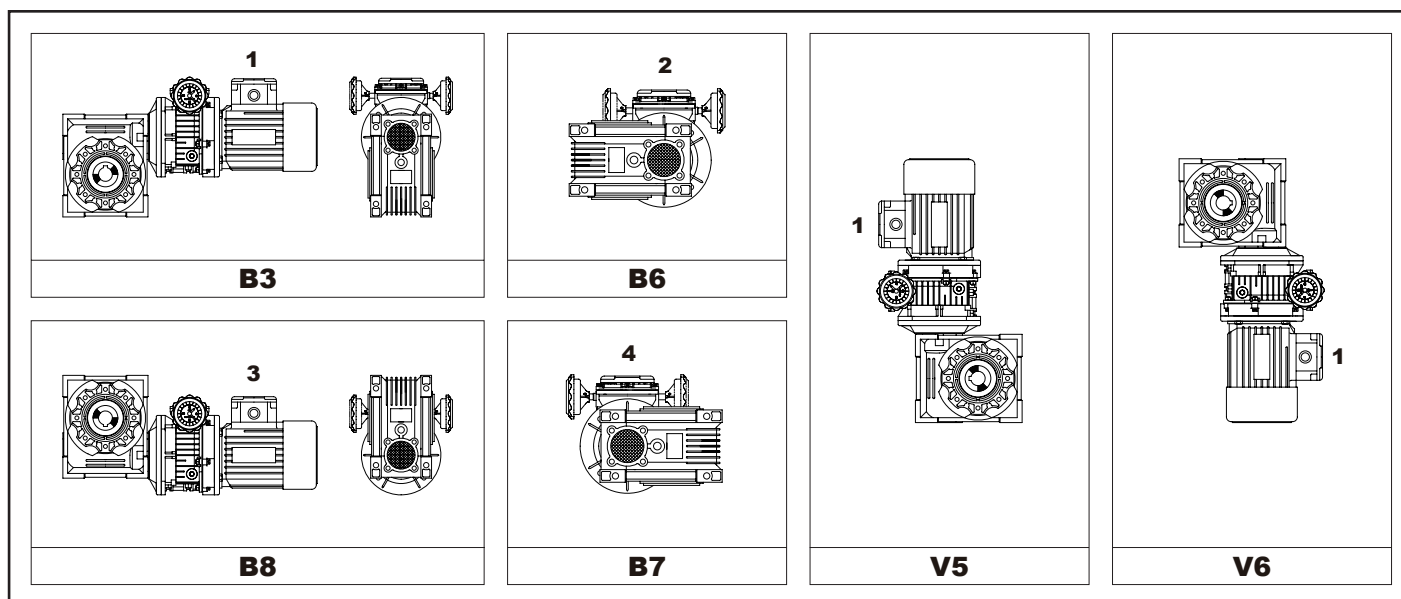
For vertical positions, check with page 5.
Unless specified otherwise, the standard positions are B3.
For positions not envisaged, it is necessary to call our technical service.

6.3 JMRV+JMRV - JRV+JMRV Execution



The position of the 1st reducer with respect to the 2nd gear reducer on the version. Unless otherwise specified at the time of the order, combination groups are supplied in version BS2. The specified mounting position refers to the 2nd gear reducer. See page 23 for the possible mounting positions.

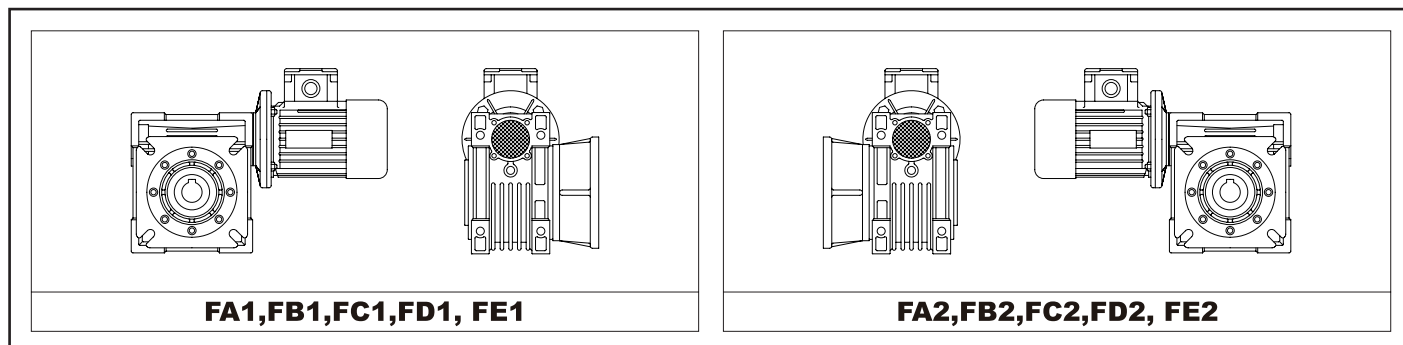
6.4 UDL(TXF)+JMRV Mounting positions



For vertical positions, check with page 5.
Unless specified otherwise, the standard positions are B3.
For positions not envisaged, it is necessary to call our technical service.

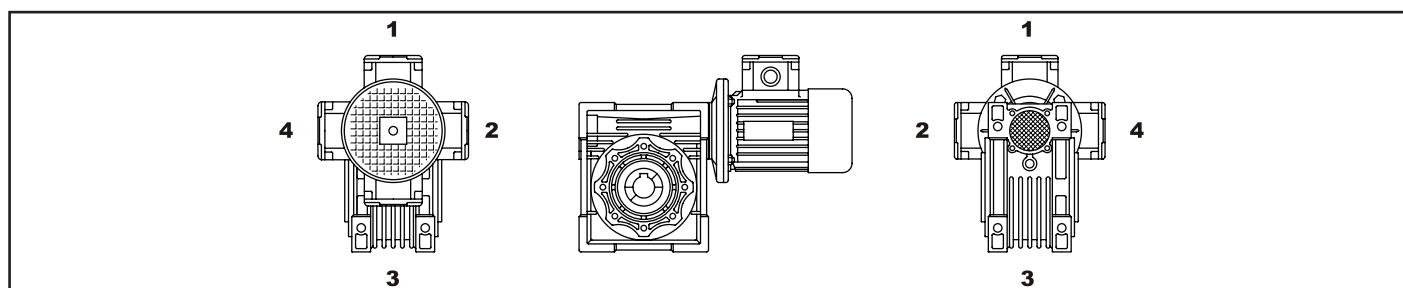
7.0 ACCESSORIES POSITIONS DIAGRAM

7.1 Flange mounting side



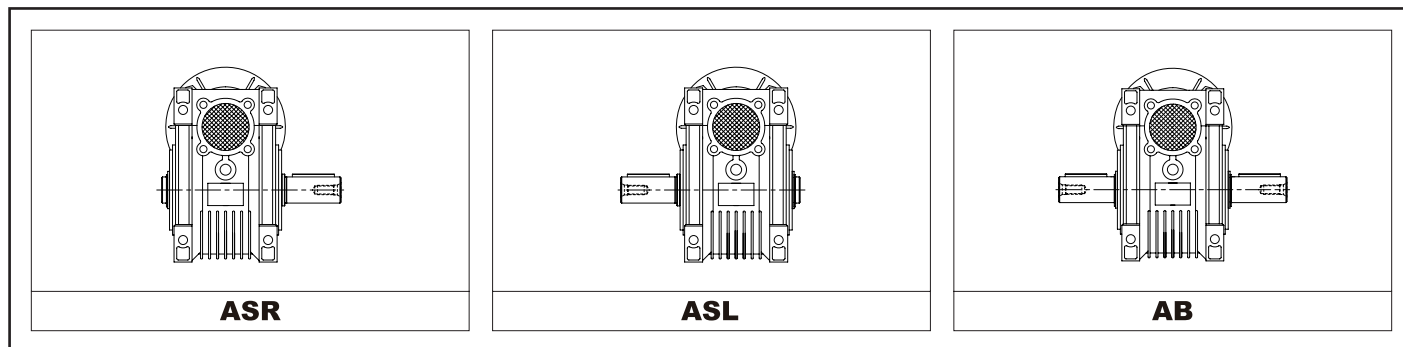
Unless specified otherwise, the reduction unit is supplied with the flange in pos. F...1 referred to position B3.

7.2 POS. of terminal box



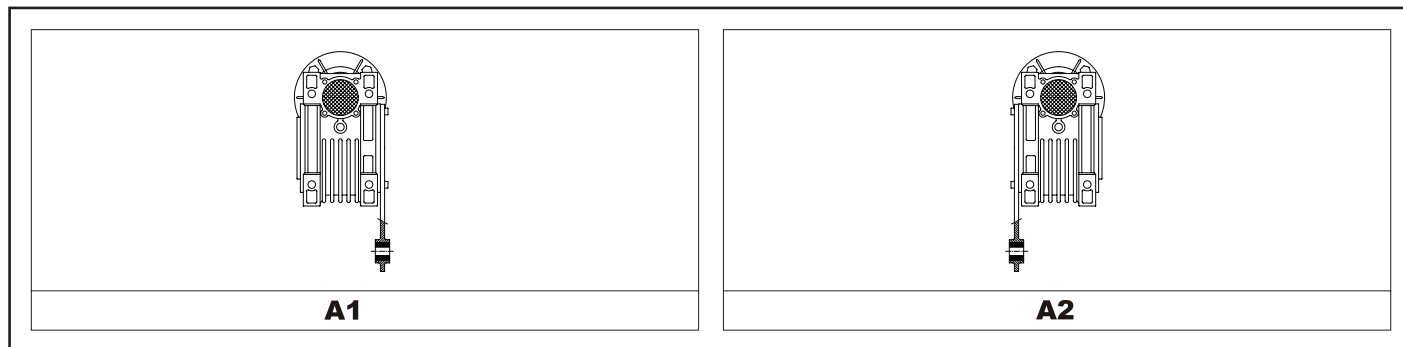
In the case of specific requirements, when ordering, specify the position of the terminal box as show in the diagram.

7.3 POS. of output shaft



Unless specified otherwise, the reduction unit is supplied with the flange in pos. ASR referred to position B3.

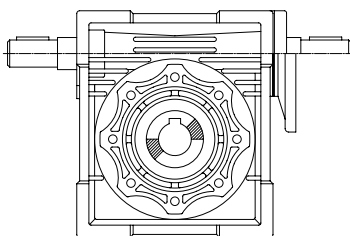
7.4 POS. of torque arm



Unless specified otherwise, the reduction unit is supplied with the flange in pos. A1 referred to position B3.

7.5 Double extension worm shaft

VS



8.0 RADIAL LOAD

8.1 Radial load

The radial load on the shaft is calculated with the following formula:

$$F_{re} = \frac{2000 \cdot M \cdot f_z}{D} \leq F_{r1} \text{ o } F_{r2}$$

F_{re} (N) Resulting radial load

M (Nm) Torque on the shaft

D (mm) Diameter of the transmission member mounted on the shaft

F_r (N) Value of the maximum admitted radial load (see relative tables)

f_z = 1,1 gear pinion

1,4 chain wheel

1,7 v-pulley

2,5 flat pulley

When the resulting radial load is not applied on the centre line of the shaft, it is necessary to calculate the effective load with the following formula:

$$F_{re} \leq \frac{F_r \cdot a}{(b+x)} \leq F_{r1} \text{ max o } F_{r2} \text{ max}$$

a , b , x = values given in the tables on page 27

8.2 Radial load-Technical descriptions

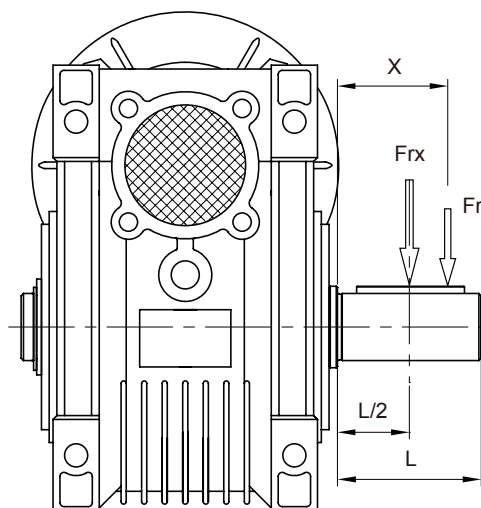
The value of the admissible radial load (N) is given in the tables relating to the performance of the reduction unit at issue. It is related to the load applied on the centre line of the shaft and in the most unfavourable conditions of angle of application and direction of rotation.

The maximum admissible axial loads are 1/5 of the value of the given radial load when they are applied in combination with the radial load. The tables relating to the output shafts give the maximum admissible value.

This value must never be exceeded since it relates to the strength of the case. Particular conditions of radial load higher than the limits of the catalogue may occur. In this case, call our Technical Service and provide details on the application: direction of the load, direction of rotation of the shaft, type.



8.3 Output shaft Radial load

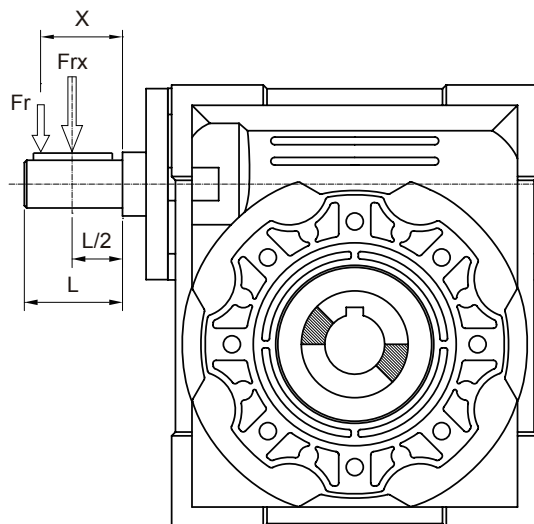


JMRV	025	030	040	050	063	075	090	105	110	130	150
a	50	65	84	101	120	131	162	176	176	188	215
b	38	50	64	76	95	101	122	136	136	148	174
F_{r2} max	1350	1830	3490	4840	6270	7380	8180	10320	12000	13500	18000

(*) Maximum axial load values admissible in only one direction with the use of a thrust bearing (on request).

The values of the admissible radial loads are given on the pages relating to performance (F_{r2})

8.4 Input shaft radial load



JRV	030	040	050	063	075	090	105/110	130	150
a	86	106	129	159	192	227	266	314	350
b	76	94.5	114	139	167	202	236	274	310
F_{r1} max	210	350	490	700	980	1270	1700	2100	2800

The values of the admissible radial loads are given on the pages relating to performance (F_{r1})

9.0 WORM-GEAR UNIT SELECTION CHARTS



9.1 **JMRV, JMRV+JMRV, PC+JMRV** Performance

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.06	280.0	1.8	6.2	5	JMRV025	561-4	439	61
	186.7	2.6	4.2	7.5			503	
	140	3.4	3.5	10			553	
	93.3	4.9	2.5	15			633	
	70	6.1	2	20			697	
	46.7	8.2	1.6	30			798	
	35	10	1.3	40			878	
	28	12	0.9	50			946	
	23.3	14	0.7	60			1006	
	180	2.7	4.8	5	JMRV025	562-6	509	61
	120	4	3.2	7.5			583	
	90	5.2	2.7	10			641	
	60	7.4	1.9	15			734	
	45	9.3	1.4	20			808	
	30	12	1.2	30			925	
	22.5	15	0.9	40			1018	
	18	18	0.7	50			1096	
	280	1.8	10.1	5	JMRV030	561-4	597	62
	186.7	2.6	6.9	7.5			683	
	140	3.4	5.4	10			752	
	93.3	4.7	3.8	15			861	
	70	6	3	20			948	
	56	7	3	25			1021	
	46.7	8	2.5	30			1085	
	35	9.7	1.9	40			1194	
	28	11	1.5	50			1286	
	23.3	13	1.3	60			1367	
	17.5	14	0.9	80			1504	
	15	18	0.9	60	JMRV030	562-6	1583	62
	14	25	1.3	100	JMRV025/030	561-4	1620	76
	9.3	32	0.9	150			1830	
	7	41	0.7	200			1830	
	5.6	44	0.8	250			1830	
	18	18	2.3	50	JMRV040	562-6	2868	63
	15	21	1.9	60			3047	
	11.3	24	1.4	80			3354	
	9	27	1.2	100			3490	
	4.7	59	1.2	300	JMRV025/040	561-4	3490	76
	3.5	71	0.9	400			3490	
	2.8	82	0.7	500			3490	
	2.3	101	0.6	600			3490	
	1.9	116	0.5	750			3490	
	1.6	143	0.5	900			3490	
	1.2	171	0.4	1200			3490	
	0.9	197	0.3	1500			3490	
	0.8	217	0.3	1800			3490	
	0.6	268	0.2	2400			3490	
	0.5	324	0.2	3000			3490	
	0.4	294	0.1	4000			3490	
	0.3	356	0.1	5000			3490	
	4.7	57	1.3	300	JMRV030/040	561-4	3490	77
	3.5	70	0.9	400			3490	
	2.8	96	0.6	500			3490	
	2.3	104	0.7	600			3490	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.06	1.9	121	0.6	750	<i>JMRV030/040</i>	<i>561-4</i>	3490	77
	1.6	139	0.5	900			3490	
	1.2	166	0.4	1200			3490	
	0.9	196	0.4	1500			3490	
	0.8	218	0.3	1800			3490	
	0.58	261	0.2	2400			3490	
	0.4	300	0.2	3200			3490	
	0.4	279	0.1	4000			3490	
	0.28	338	0.1	5000			3490	
	1.6	141	1	900	<i>JMRV030/050</i>	<i>561-4</i>	4840	77
	1.2	169	0.7	1200			4840	
	0.93	199	0.7	1500			4840	
	0.78	222	0.7	1800			4840	
	0.6	266	0.5	2400			4840	
	0.5	307	0.4	3000			4840	
	0.35	288	0.3	4000			4840	
	0.29	311	0.3	4800			4840	
	0.9	204	1.1	1500	<i>JMRV030/063</i>	<i>561-4</i>	6270	77
	0.78	225	0.9	1800			6270	
	0.58	276	0.8	2400			6270	
	0.47	319	0.7	3000			6270	
	0.35	306	0.6	4000			6270	
	0.28	360	0.4	5000			6270	
	0.6	330	1.1	2400	<i>JMRV040/075</i>	<i>561-4</i>	7380	78
	0.47	377	0.8	3000			7380	
	0.35	355	0.7	4000			7380	
	0.28	419	0.5	5000			7380	
	0.5	406	1.4	3000	<i>JMRV040/090</i>	<i>561-4</i>	8180	78
	0.35	365	1.3	4000			8180	
	0.28	431	1	5000			8180	
0.09	280	2.7	4.1	5	<i>JMRV025</i>	<i>562-4</i>	439	61
	186.7	3.9	2.8	7.5			503	
	140	5.1	2.4	10			553	
	93.3	7.3	1.6	15			633	
	70	9.2	1.3	20			697	
	46.7	12	1.1	30			798	
	35	15	0.9	40			878	
	280	2.7	6.7	5	<i>JMRV030</i>	<i>562-4</i>	597	62
	186.7	3.9	4.6	7.5			683	
	140	5	3.6	10			752	
	93.3	7.1	2.5	15			861	
	70	9	2	20			948	
	56	10	2	25			1021	
	46.7	12	1.7	30			1085	
	35	14	1.2	40			1194	
	28	17	1	50			1286	
	23.3	19	0.9	60			1367	
	180	4.1	4.9	5	<i>JMRV030</i>	<i>631-6</i>	692	62
	120	5.9	3.4	7.5			792	
	90	7.6	2.6	10			871	
	60	11	1.9	15			997	
	45	13	1.5	20			1098	
	36	15	1.5	25			1183	
	30	17	1.2	30			1257	
	22.5	21	1	40			1383	
	18	24	0.7	50			1490	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.09	14	38	0.8	100	<i>JMRV025/030</i>	<i>562-4</i>	1620	76
	9.3	49	0.6	150			1830	
	7	62	0.5	200			1830	
	5.6	66	0.5	250			1830	
	4.7	75	0.4	300			1830	
	3.5	107	0.3	400			1830	
	2.8	115	0.3	500			1830	
	2.3	135	0.2	600			1830	
	1.9	151	0.2	750			1830	
	1.6	178	0.2	900			1830	
	1.2	212	0.1	1200			1830	
	0.9	247	0.1	1500			1830	
	0.78	304	0.1	1800			1830	
	0.58	340	0.1	2400			1830	
	0.47	405	0.1	3000			1830	
28	19	2	50	<i>JMRV040</i>	<i>562-4</i>	2475	63	
23.3	21	1.7	60			2630		
17.5	26	1.3	80			2895		
14	29	1	100			3118		
30	19	2.6	30	<i>JMRV040</i>	<i>631-6</i>	2419	63	
22.5	24	1.9	40			2662		
18	27	1.5	50			2868		
15	31	1.3	60			3047		
11.3	37	1	80			3354		
9	41	0.8	100			3490		
12.3	47	1.3	73.3	<i>PC063+JMRV040</i>	<i>631-6</i>	3283	72	
10.2	51	1.4	88			3488		
7.7	62	1.1	117.3			3490		
6.1	72	0.8	146.7			3490		
5.1	79	0.7	176			3490		
4.7	88	0.8	300	<i>JMRV030/040</i>	<i>562-4</i>	3490	77	
15	32	2.3	60	<i>JMRV050</i>	<i>631-6</i>	4183	64	
11.3	37	1.8	80			4604		
9	42	1.3	100			4840		
6.1	73	1.6	146.7	<i>PC063+JMRV050</i>	<i>631-6</i>	4840	72	
5.1	81	1.3	176			4840		
3.8	94	0.9	234.6			4840		
3	106	0.7	293.3			4840		
3.5	107	1.2	400	<i>JMRV030/050</i>	<i>562-4</i>	4840	77	
2.8	123	1	500			4840		
2.3	159	0.9	600			4840		
1.9	185	0.8	750			4840		
1.6	212	0.7	900			4840		
3.8	99	1.7	234.6	<i>PC063+JMRV063</i>	<i>631-6</i>	6270	72	
3	109	1.4	293.3			6270		
1.6	200	1	900	<i>JMRV030/063</i>	<i>562-4</i>	6270	77	
1.2	263	0.9	1200			6270		
0.93	305	0.7	1500			6270		
0.9	360	1.1	1500	<i>JMRV040/075</i>	<i>562-4</i>	7380	78	
0.78	404	1	1800			7380		
0.58	496	0.7	2400			7380		
0.5	609	0.9	3000	<i>JMRV040/090</i>	<i>562-4</i>	8180	78	
0.35	548	0.8	4000			8180		

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.12	280	3.6	5.1	5	<i>JMRV030</i>	<i>631-4</i>	597	62
	186.7	5.2	3.4	7.5			683	
	140	6.7	2.7	10			752	
	93.3	9.5	1.9	15			861	
	70	12	1.5	20			948	
	56	14	1.5	25			1021	
	46.7	16	1.3	30			1085	
	35	19	0.9	40			1194	
	28	23	0.8	50			1286	
	180	5.4	3.7	5	<i>JMRV030</i>	<i>632-6</i>	692	62
	120	7.9	2.5	7.5			792	
	90	10	2	10			871	
	60	14	1.4	15			997	
	45	18	1.1	20			1098	
	36	20	1.1	25			1183	
	30	23	0.9	30			1257	
	46.7	17	2.6	30	<i>JMRV040</i>	<i>631-4</i>	2087	63
	35	21	1.9	40			2298	
	28	25	1.5	50			2475	
	23.3	28	1.3	60			2630	
	17.5	34	1	80			2895	
	14	38	0.8	100			3118	
	30	25	1.9	30	<i>JMRV040</i>	<i>632-6</i>	2419	63
	22.5	32	1.4	40			2662	
	18	36	1.2	50			2868	
	15	41	0.9	60			3047	
	19.1	42	1.2	73.3	<i>PC063+JMRV040</i>	<i>631-4</i>	2833	72
	15.9	46	1.2	88			3011	
	11.9	57	0.9	117.3			3314	
	9.5	66	0.7	146.7			3490	
	7.9	74	0.6	176			3490	
	12.3	62	1	73.3	<i>PC063+JMRV040</i>	<i>632-6</i>	3283	72
	10.2	68	1.1	88			3488	
	7.7	83	0.8	117.3			3490	
	23.3	29	2.3	60	<i>JMRV050</i>	<i>631-4</i>	3610	64
	17.5	35	1.9	80			3973	
	14	40	1.4	100			4280	
	22.5	32	2.6	40	<i>JMRV050</i>	<i>632-6</i>	3654	64
	18	38	2	50			3936	
	15	42	1.7	60			4183	
	11.3	50	1.4	80			4604	
	9	56	1	100			4840	
	9.5	68	1.3	146.7	<i>PC063+JMRV050</i>	<i>631-4</i>	4840	72
	8	75	1.1	176			4840	
	5.8	88	0.8	234.6			4840	
	4.8	98	0.7	293.3			4840	
	12.3	63	1.7	73.3	<i>PC063+JMRV050</i>	<i>632-6</i>	4506	72
	10.2	70	2.1	88			4788	
	7.7	84	1.5	117.3			4840	
	6.1	97	1.2	146.7			4840	
	5.1	108	1	176			4840	
	3.8	125	0.7	234.6			4840	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.12	4.7	119	1.2	300	<i>JMRV030/050</i>	631-4	4840	77
	3.5	142	0.9	400			4840	
	2.8	164	0.7	500			4840	
	6	92	1.5	234.6	<i>PC063+JMRV063</i>	631-4	6270	72
	4.8	103	1.2	293.3			6270	
	6.1	101	2.1	146.7	<i>PC063+JMRV063</i>	632-6	6270	72
	5.1	112	1.8	176			6270	
	3.8	131	1.3	234.6			6270	
	3.1	145	1	293.3			6270	
	2.8	171	1.3	500	<i>JMRV030/063</i>	631-4	6270	77
	2.3	208	1.1	600			6270	
	1.9	241	0.9	750			6270	
	1.6	325	1.2	900	<i>JMRV040/075</i>	631-4	7380	78
	1.2	399	0.9	1200			7380	
	0.8	547	0.9	1800	<i>JMRV040/090</i>	631-4	8180	78
	0.58	695	0.9	2400			8180	
	0.5	884	1.1	3000	<i>JMRV050/105</i>	631-4	10320	78
	0.35	784	1.0	4000			10320	
	0.28	928	0.76	5000			10320	
	0.5	884	1.2	3000	<i>JMRV050/110</i>	631-4	10320	79
	0.35	784	1	4000			10320	
	0.28	928	0.8	5000			10320	
0.18	280	5.3	3.4	5	<i>JMRV030</i>	632-4	597	62
	186.7	7.8	2.3	7.5			683	
	140	10	1.8	10			752	
	93.3	14	1.3	15			861	
	70	18	1	20			948	
	56	21	1	25			1021	
	46.7	24	0.8	30			1085	
	70	19	2	20	<i>JMRV040</i>	632-4	1824	63
	56	23	1.7	25			1964	
	46.7	26	1.7	30			2087	
	35	32	1.3	40			2298	
	28	38	1	50			2475	
	23.3	43	0.8	60			2630	
	45	29	1.5	20	<i>JMRV040</i>	711-6	2113	63
	36	34	1.3	25			2276	
	30	38	1.3	30			2419	
	22.5	47	1	40			2662	
	19.1	64	0.8	73.3	<i>PC063+JMRV040</i>	632-4	2833	72
	15.9	70	0.8	88			3011	
	11.9	85	0.6	117.3			3314	
	35	33	2.3	40	<i>JMRV050</i>	632-4	3153	64
	28	39	1.9	50			3397	
	23.3	43	1.6	60			3610	
	17.5	52	1.2	80			3973	
	14	60	0.9	100			4280	
	18	56	1.4	50	<i>JMRV050</i>	711-6	3936	64
	15	63	1.1	60			4183	
	11.3	75	0.9	80			4604	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.18	19.1	64	1.4	73.3	<i>PC063+JMRV050</i>	<i>632-4</i>	3889	72
	15.9	71	1.5	88			4132	
	11.9	87	1.1	117.3			4548	
	9.5	101	0.9	146.7			4840	
	7.9	113	0.7	176			4840	
	5.8	133	0.6	234.6			4840	
	12.2	95	1.2	73.5	<i>PC071+JMRV050</i>	<i>711-6</i>	4506	73
	10.2	105	1.4	88.2			4788	
	7.7	126	1	117.6			4840	
	15	66	2.1	60	<i>JMRV063</i>	<i>711-6</i>	5467	65
	11.3	79	1.6	80			6018	
	9	90	1.4	100			6270	
	9.5	103	1.7	146.7	<i>PC063+JMRV063</i>	<i>632-4</i>	6270	72
	8	117	1.4	176			6270	
	5.8	139	1	234.6			6270	
	4.8	155	0.8	293.3			6270	
	12.4	97	2.2	73.5	<i>PC071+JMRV063</i>	<i>711-6</i>	5889	73
	10.2	107	2.4	88.2			6259	
	7.7	131	1.8	117.6			6270	
	6.1	152	1.4	147			6270	
	5.1	168	1.2	176.4			6270	
	3.8	197	0.9	235.2			6270	
	3.1	218	0.7	294			6270	
	3.5	222	1	400	<i>JMRV030/063</i>	<i>632-4</i>	6270	77
	2.8	257	0.8	500			6270	
	5.1	179	1.7	176.4	<i>PC071+JMRV075</i>	<i>711-6</i>	7380	73
	3.8	211	1.2	235.2			7380	
	3.1	235	1	294			7380	
	2.3	362	1.1	600	<i>JMRV040/075</i>	<i>632-4</i>	7380	78
	1.9	435	0.9	750			7380	
	1.6	487	0.8	900			7380	
	1.2	629	1	1200	<i>JMRV040/090</i>	<i>632-4</i>	8180	78
	0.93	735	0.8	1500			8180	
	0.8	861	1.3	1800	<i>JMRV050/105</i>	<i>632-4</i>	10320	78
	0.58	1113	0.9	2400			10320	
	0.8	861	1.5	1800	<i>JMRV050/110</i>	<i>632-4</i>	10320	79
	0.58	1113	1.1	2400			10320	
0.25	280	8	4.5	5	<i>JMRV040</i>	<i>711-4</i>	1149	63
	186.7	11	3.6	7.5			1315	
	140	14	2.8	10			1447	
	93.3	21	1.9	15			1657	
	70	27	1.5	20			1824	
	56	32	1.2	25			1964	
	46.7	36	1.3	30			2087	
	35	44	0.9	40			2298	
	180	12	3.5	5	<i>JMRV040</i>	<i>712-6</i>	1331	63
	120	17	2.6	7.5			1524	
	90	22	2	10			1677	
	60	31	1.4	15			1920	
	45	40	1.1	20			2113	
	36	48	0.9	25			2276	
	30	53	0.9	30			2419	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.25	70	27	2.7	20	<i>JMRV050</i>	<i>711-4</i>	2503	64
	56	32	2.2	25			2696	
	46.7	37	2.3	30			2865	
	35	46	1.7	40			3153	
	28	54	1.4	50			3397	
	23.3	60	1.1	60			3610	
	17.5	72	0.9	80			3973	
	45	40	1.9	20	<i>JMRV050</i>	<i>712-6</i>	2900	64
	36	48	1.5	25			3124	
	30	54	1.7	30			3320	
	22.5	67	1.2	40			3654	
	18	78	1	50			3936	
	15	88	0.8	60			4183	
	19	88	1	73.5	<i>PC071+JMRV050</i>	<i>711-4</i>	3889	73
	15.9	98	1.1	88.2			4132	
	11.9	121	0.8	117.6			4548	
	28	56	2.4	50	<i>JMRV063</i>	<i>711-4</i>	4440	65
	23.3	63	2	60			4719	
	17.5	78	1.6	80			5193	
	14	87	1.4	100			5595	
	18	81	1.8	50	<i>JMRV063</i>	<i>712-6</i>	5145	65
	15	92	1.5	60			5467	
	11.3	110	1.2	80			6018	
	9	125	1	100			6270	
	19	91	1.8	73.5	<i>PC071+JMRV063</i>	<i>711-4</i>	5083	73
	15.9	100	2	88.2			5401	
	11.9	125	1.5	117.6			5945	
	9.5	143	1.2	147			6270	
	7.9	163	1	176.4			6270	
	6	192	0.7	235.2			6270	
	4.8	215	0.6	294			6270	
	12.4	135	1.6	73.5	<i>PC071+JMRV063</i>	<i>712-6</i>	5889	73
	10.2	148	1.8	88.2			6259	
	7.7	181	1.3	117.6			6270	
	6.1	211	1	147			6270	
	17.5	82	2.3	80	<i>JMRV075</i>	<i>711-4</i>	6130	66
	14	94	1.9	100			6603	
	11.3	117	1.7	80	<i>JMRV075</i>	<i>712-6</i>	7103	66
	9	133	1.4	100			7380	
	9.5	151	1.7	147	<i>PC071+JMRV075</i>	<i>711-4</i>	7380	73
	7.9	172	1.4	176.4			7380	
	6	201	1.1	235.2			7380	
	4.8	230	0.9	294			7380	
	12.4	139	2.4	73.5	<i>PC071+JMRV075</i>	<i>712-6</i>	6952	73
	10.2	155	2.5	88.2			7380	
	7.7	191	1.9	117.6			7380	
	6.1	219	1.5	147			7380	
	5.1	248	1.2	176.4			7380	
	3.5	336	1.1	400	<i>JMRV040/075</i>	<i>711-4</i>	7380	78
	2.8	384	0.8	500			7380	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.25	5.1	263	1.9	176.4	<i>PC071+JMRV090</i>	<i>712-6</i>	8180	74
	3.8	318	1.4	235.2			8180	
	3.1	358	1.1	294			8180	
	2.3	512	1.2	600	<i>JMRV040/090</i>	<i>711-4</i>	8180	78
	1.9	598	0.9	750			8180	
	1.6	667	0.8	900			8180	
	1.2	943	1.1	1200	<i>JMRV050/105</i>	<i>711-4</i>	10320	78
	0.93	1064	1	1500			10320	
	0.78	1195	0.9	1800			10320	
	1.2	943	1.3	1200	<i>JMRV050/110</i>	<i>711-4</i>	10320	79
	0.93	1064	1.2	1500			10320	
	0.78	1195	1.1	1800			10320	
	0.6	1624	1	2400	<i>JMRV063/130</i>	<i>711-4</i>	13500	79
	0.47	1935	0.8	3000			13500	
	0.35	2046	0.6	4000			13500	
	0.28	2430	0.5	5000			13500	
	0.8	1199	1.8	1800	<i>JMRV063/150</i>	<i>711-4</i>	18000	79
	0.6	1446	1.8	2400			18000	
	0.5	1713	1.4	3000			18000	
	0.4	2026	0.9	4000			18000	
	0.3	2251	0.7	5000			18000	
0.37	280	11	3	5	<i>JMRV040</i>	<i>712-4</i>	1149	63
	186.7	16	2.4	7.5			1315	
	140	21	1.9	10			1447	
	93.3	31	1.3	15			1657	
	70	39	1	20			1824	
	56	47	0.8	25			1964	
	46.7	53	0.8	30			2087	
	140	22	3.3	10	<i>JMRV050</i>	<i>712-4</i>	1987	64
	93.3	31	2.4	15			2274	
	70	40	1.8	20			2503	
	56	48	1.5	25			2696	
	46.7	55	1.5	30			2865	
	35	68	1.1	40			3153	
	28	80	0.9	50			3397	
	23.3	89	0.8	60			3610	
	180	17	4.3	5	<i>JMRV050</i>	<i>801-6</i>	1827	64
	120	25	3.3	7.5			2091	
	90	33	2.5	10			2302	
	60	47	1.8	15			2635	
	45	60	1.3	20			2900	
	36	72	1	25			3124	
	30	80	1.1	30			3320	
	35	71	2.1	40	<i>JMRV063</i>	<i>712-4</i>	4122	65
	28	83	1.6	50			4440	
	23.3	94	1.4	60			4719	
	17.5	115	1.1	80			5193	
	14	129	0.9	100			5595	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.37	45	60	2.4	20	<i>JMRV063</i>	<i>801-6</i>	3791	65
	36	74	1.9	25			4084	
	30	82	2.1	30			4339	
	22.5	102	1.6	40			4776	
	18	120	1.2	50			5145	
	15	137	1	60			5467	
	19	134	1.2	73.5	<i>PC071+JMRV063</i>	<i>712-4</i>	5083	73
	15.9	148	1.4	88.2			5401	
	11.9	185	1	117.6			5945	
	9.5	212	0.8	147			6270	
	23.3	98	2	60	<i>JMRV075</i>	<i>712-4</i>	5569	66
	17.5	121	1.6	80			6130	
	14	139	1.3	100			6603	
	18	126	1.8	50	<i>JMRV075</i>	<i>801-6</i>	6073	66
	15	144	1.5	60			6453	
	11.3	173	1.2	80			7103	
	9	196	1	100			7380	
	19	138	1.8	73.5	<i>PC071+JMRV075</i>	<i>712-4</i>	6000	73
	15.9	154	1.9	88.2			6375	
	11.9	191	1.5	117.6			7017	
	9.5	223	1.1	147			7380	
	7.9	254	0.9	176.4			7380	
	12	206	1.6	75	<i>PC080+JMRV075</i>	<i>801-6</i>	6952	74
	10	230	1.7	90			7380	
	7.5	283	1.3	120			7380	
	6	324	1	150			7380	
	4.7	405	1	300	<i>JMRV040/075</i>	<i>712-4</i>	7380	78
	3.5	498	0.7	400			7380	
	11.3	185	1.7	80	<i>JMRV090</i>	<i>801-6</i>	7859	67
	9	212	1.3	100			8180	
	7.9	268	1.5	176.4	<i>PC071+JMRV090</i>	<i>712-4</i>	8180	74
	6	321	1.1	235.2			8180	
	4.8	371	0.9	294			8180	
	6	347	1.6	150	<i>PC080+JMRV090</i>	<i>801-6</i>	8180	74
	5	389	1.3	180			8180	
	3.8	471	1	240			8180	
	4.7	402	1.5	300	<i>JMRV040/090</i>	<i>712-4</i>	8180	78
	3.5	523	1.2	400			8180	
	2.8	611	0.9	500			8180	
	2.3	757	0.8	600			8180	
	3.8	509	1.5	240	<i>PC080+JMRV105</i>	<i>801-6</i>	10320	75
	3	577	1.2	300			10320	
	1.9	950	1.2	750	<i>JMRV050/105</i>	<i>712-4</i>	10320	78
	1.6	1079	1	900			10320	
	1.2	1396	0.7	1200			10320	
	3.8	509	1.6	240	<i>PC080+JMRV110</i>	<i>801-6</i>	10320	75
	3	577	1.3	300			10320	
	1.9	950	1.3	750	<i>JMRV050/110</i>	<i>712-4</i>	10320	79
	1.6	1079	1.2	900			10320	
	1.2	1396	0.8	1200			10320	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.37	0.9	1674	1.1	1500	<i>JMRV063/130</i>	<i>712-4</i>	13500	79
	0.78	1887	0.9	1800			13500	
	0.8	1775	1.2	1800	<i>JMRV063/150</i>	<i>712-4</i>	18000	
	0.6	2141	1.2	2400			18000	
	0.5	2535	0.9	3000			18000	
0.55	280	17	3.7	5	<i>JMRV050</i>	<i>801-4</i>	1577	64
	186.7	25	2.9	7.5			1805	
	140	32	2.2	10			1987	
	93.3	46	1.6	15			2274	
	70	59	1.2	20			2503	
	56	71	1	25			2696	
	46.7	81	1	30			2865	
	120	38	2.2	7.5	<i>JMRV050</i>	<i>802-6</i>	2091	64
	90	49	1.7	10			2302	
	60	69	1.2	15			2635	
	45	89	0.9	20			2900	
	70	61	2.2	20	<i>JMRV063</i>	<i>801-4</i>	3272	65
	56	73	1.8	25			3524	
	46.7	83	1.9	30			3745	
	35	105	1.4	40			4122	
	28	124	1.1	50			4440	
	23.3	140	0.9	60			4719	
	60	71	2.2	15	<i>JMRV063</i>	<i>802-6</i>	3444	65
	45	90	1.6	20			3791	
	36	109	1.3	25			4084	
	30	123	1.4	30			4339	
	22.5	152	1.1	40			4776	
	35	108	2	40	<i>JMRV075</i>	<i>801-4</i>	4865	66
	28	129	1.6	50			5241	
	23.3	146	1.4	60			5569	
	17.5	180	1.1	80			6130	
	14	206	0.9	100			6603	
	30	128	2	30	<i>JMRV075</i>	<i>802-6</i>	5122	66
	22.5	159	1.5	40			5637	
	18	187	1.2	50			6073	
	15	214	1	60			6453	
	18.7	205	1.2	75	<i>PC080+JMRV075</i>	<i>801-4</i>	6000	74
	15.6	230	1.3	90			6375	
	11.7	284	1	120			7017	
	9.3	332	0.8	150			7380	
	12	306	1.1	75	<i>PC080+JMRV075</i>	<i>802-6</i>	6952	74
	10	341	1.1	90			7380	
	17.5	189	1.5	80	<i>JMRV090</i>	<i>801-4</i>	6783	67
	14	221	1.2	100			7306	
	18	198	2	50	<i>JMRV090</i>	<i>802-6</i>	6719	67
	15	224	1.6	60			7140	
	11.3	275	1.1	80			7859	
	9	315	0.9	100			8180	
	15.6	240	2.3	90	<i>PC080+JMRV090</i>	<i>801-4</i>	7054	74
	11.7	297	1.6	120			7764	
	9.3	355	1.3	150			8180	
	7.8	398	1	180			8180	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.55	10	357	2	90	<i>PC080+JMRV090</i>	802-6	8174	74
	7.5	441	1.4	120			8180	
	6	516	1.1	150			8180	
	5	578	0.9	180			8180	
	17.5	201	2.4	80	<i>JMRV105</i>	801-4	8571	68
	14	236	1.9	100			9232	
	11.3	294	1.8	80	<i>JMRV105</i>	802-6	9931	68
	9	338	1.4	100			10320	
	7.8	425	1.7	180	<i>PC080+JMRV105</i>	801-4	10320	75
	5.8	513	1.2	240			10320	
	4.7	597	1	300			10320	
	7.5	462	2.2	120	<i>PC080+JMRV105</i>	802-6	10320	75
	6	552	1.8	150			10320	
	5	620	1.5	180			10320	
	3.8	756	1	240			10320	
	4.7	639	1.7	300	<i>JMRV050/105</i>	801-4	10320	78
	3.5	826	1.2	400			10320	
	2.8	984	1	500			10320	
	2.3	1181	0.9	600			10320	
	1.9	1411	0.8	750			10320	
	17.5	201	2.6	80	<i>JMRV110</i>	801-4	8571	69
	14	236	2	100			9232	
	11.3	294	1.9	80	<i>JMRV110</i>	802-6	9931	69
	9	338	1.5	100			10320	
	7.8	425	1.8	180	<i>PC080+JMRV110</i>	801-4	10320	75
	5.8	513	1.3	240			10320	
	4.7	597	1	300			10320	
	7.5	462	2.6	120	<i>PC080+JMRV110</i>	802-6	10320	75
	6	552	2	150			10320	
	5	620	1.6	180			10320	
	3.8	756	1.1	240			10320	
	4.7	639	2	300	<i>JMRV050/110</i>	801-4	10320	79
	3.5	826	1.4	400			10320	
	2.8	984	1.1	500			10320	
	2.3	1181	1	600			10320	
	1.9	1411	0.9	750			10320	
	3.8	756	1.6	240	<i>PC080+JMRV130</i>	802-6	13500	75
	3	858	1.3	300			13500	
	2.8	996	1.6	500	<i>JMRV063/130</i>	801-4	13500	79
	1.9	1471	1.2	750			13500	
	1.2	2132	0.8	1200			13500	
	0.8	2638	0.8	1800	<i>JMRV063/150</i>	801-4	18000	79
	0.6	3182	0.8	2400			18000	
0.75	280	23	2.7	5	<i>JMRV050</i>	802-4	1577	64
	186.7	34	2.1	7.5			1805	
	140	44	1.6	10			1987	
	93.3	63	1.2	15			2274	
	70	81	0.9	20			2503	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.75	93.3	64	2.2	15	<i>JMRV063</i>	<i>802-4</i>	2973	65
	70	83	1.6	20			3272	
	56	100	1.3	25			3524	
	46.7	114	1.4	30			3745	
	35	143	1	40			4122	
	120	52	2.9	7.5	<i>JMRV063</i>	<i>90S-6</i>	2734	65
	90	68	2.3	10			3009	
	60	97	1.6	15			3444	
	45	123	1.2	20			3791	
	36	149	0.9	25			4084	
	30	167	1	30			4339	
	56	102	2	25	<i>JMRV075</i>	<i>802-4</i>	4160	66
	46.7	117	2	30			4421	
	35	147	1.5	40			4865	
	28	177	1.2	50			5241	
	23.3	200	1	60			5569	
	60	98	2.4	15	<i>JMRV075</i>	<i>90S-6</i>	4065	66
	45	126	1.9	20			4474	
	36	153	1.4	25			4820	
	30	174	1.5	30			5122	
	22.5	216	1.1	40			5637	
	18.7	280	0.9	75	<i>PC080+JMRV075</i>	<i>802-4</i>	6000	74
	15.6	313	1	90			6375	
	28	184	1.8	50	<i>JMRV090</i>	<i>802-4</i>	5799	67
	23.3	212	1.5	60			6163	
	17.5	258	1.1	80			6783	
	14	302	0.9	100			7306	
	30	179	2.6	30	<i>JMRV090</i>	<i>90S-6</i>	5667	67
	22.5	226	1.8	40			6238	
	18	271	1.4	50			6719	
	15	306	1.1	60			7140	
	15.6	327	1.7	90	<i>PC080+JMRV090</i>	<i>802-4</i>	7054	74
	11.7	405	1.2	120			7764	
	9.3	483	0.9	150			8180	
	7.8	543	0.7	180			8180	
	17.5	274	1.8	80	<i>JMRV105</i>	<i>802-4</i>	8571	68
	14	322	1.4	100			9232	
	15	325	1.9	60	<i>JMRV105</i>	<i>90S-6</i>	9023	68
	11.3	401	1.3	80			9931	
	9	462	1.1	100			10320	
	11.7	430	1.9	120	<i>PC080+JMRV105</i>	<i>802-4</i>	9811	75
	9.3	506	1.6	150			10320	
	7.8	580	1.2	180			10320	
	5.8	700	0.9	240			10320	
	12.2	393	2.8	73.5	<i>PC090+JMRV105</i>	<i>90S-6</i>	9614	75
	9.2	508	2	98			10320	
	7.3	607	1.6	122.5			10320	
	6.1	682	1.3	147			10320	
	4.6	832	0.9	196			10320	
	4.7	871	1.3	300	<i>JMRV050/105</i>	<i>802-4</i>	10320	78
	3.5	1126	0.9	400			10320	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
0.75	17.5	274	1.9	80	<i>JMRV110</i>	<i>802-4</i>	8571	69
	14	322	1.5	100			9232	
	15	325	2.1	60	<i>JMRV110</i>	<i>90S-6</i>	9023	69
	11.3	401	1.4	80			9931	
	9	462	1.1	100			10320	
	11.7	430	2.2	120	<i>PC080+JMRV110</i>	<i>802-4</i>	9811	75
	9.3	506	1.7	150			10320	
	7.8	580	1.3	180			10320	
	5.8	700	0.9	240			10320	
	12.2	393	3.2	73.5	<i>PC090+JMRV110</i>	<i>90S-6</i>	9614	75
	9.2	508	2.3	98			10320	
	7.3	607	1.8	122.5			10320	
	6.1	682	1.5	147			10320	
	4.6	832	1	196			10320	
	4.7	871	1.5	300	<i>JMRV050/110</i>	<i>802-4</i>	10320	79
	3.5	1126	1.1	400			10320	
	11.3	407	2.1	80	<i>JMRV130</i>	<i>90S-6</i>	12989	70
	9	470	1.7	100			13500	
	5.8	712	1.4	240	<i>PC080+JMRV130</i>	<i>802-4</i>	13500	75
	4.7	813	1.1	300			13500	
	12.2	399	4.4	73.5	<i>PC090+JMRV130</i>	<i>90S-6</i>	12575	75
	9.2	508	3.2	98			13500	
	7.3	607	2.6	122.5			13500	
	6.1	682	2.1	147			13500	
	4.6	832	1.5	196			13500	
	3.7	944	1.2	245			13500	
	2.8	1358	1.1	500	<i>JMRV063/130</i>	<i>802-4</i>	13500	79
	2.3	1631	1	600			13500	
	1.9	2005	0.9	750			13500	
	1.6	2283	0.8	900			13500	
	2.8	1291	1.8	500	<i>JMRV063/150</i>	<i>802-4</i>	18000	79
	2.3	1529	1.7	600			18000	
	1.9	1783	1.3	750			18000	
	1.6	2215	0.9	900			18000	
	1.2	2680	1	1200			18000	
1.10	120	76	2	7.5	<i>JMRV063</i>	<i>90L-6</i>	2734	65
	90	99	1.5	10			3009	
	60	142	1.1	15			3444	
	45	180	0.8	20			3791	
	186.7	50	2.6	7.5	<i>JMRV063</i>	<i>90S-4</i>	2359	65
	140	65	2	10			2597	
	93.3	93	1.5	15			2973	
	70	122	1.1	20			3272	
	56	146	0.9	25			3524	
	46.7	167	1	30			3745	
	90	100	2.3	10	<i>JMRV075</i>	<i>90L-6</i>	3551	66
	60	144	1.6	15			4065	
	45	184	1.3	20			4474	
	36	225	1	25			4820	
	30	256	1	30			5122	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
1.10	93.3	96	2.1	15	<i>JMRV075</i>	<i>90S-4</i>	3509	66
	70	123	1.7	20			3862	
	56	150	1.3	25			4160	
	46.7	171	1.3	30			4421	
	35	216	1	40			4865	
	36	231	1.6	25	<i>JMRV090</i>	<i>90L-6</i>	5333	67
	30	263	1.8	30			5667	
	22.5	331	1.2	40			6238	
	18	397	1	50			6719	
	15	448	0.8	60			7140	
	35	225	1.6	40	<i>JMRV090</i>	<i>90S-4</i>	5383	67
	28	270	1.3	50			5799	
	23.3	311	1	60			6163	
	22.5	345	2	40	<i>JMRV105</i>	<i>90L-6</i>	7882	68
	18	414	1.6	50			8491	
	15	476	1.3	60			9023	
	11.3	588	0.9	80			9931	
	28	281	2.1	50	<i>JMRV105</i>	<i>90S-4</i>	7328	68
	23.3	324	1.7	60			7787	
	17.5	402	1.2	80			8571	
	14	473	1	100			9232	
	12.2	576	1.9	73.5	<i>PC090+JMRV105</i>	<i>90L-6</i>	9614	75
	9.2	746	1.4	98			10320	
	7.3	890	1.1	122.5			10320	
	6.1	1000	0.9	147			10320	
	19	392	2.2	73.5	<i>PC090+JMRV105</i>	<i>90S-4</i>	8298	75
	14.3	508	1.6	98			9133	
	11.4	599	1.3	122.5			9838	
	9.5	686	1	147			10320	
	7.1	828	0.8	196			10320	
	22.5	345	2.3	40	<i>JMRV110</i>	<i>90L-6</i>	7882	69
	18	414	1.8	50			8491	
	15	476	1.4	60			9023	
	11.3	588	1	80			9931	
	28	281	2.3	50	<i>JMRV110</i>	<i>90S-4</i>	7328	69
	23.3	324	1.9	60			7787	
	17.5	402	1.3	80			8571	
	14	473	1	100			9232	
	12.2	576	2.2	73.5	<i>PC090+JMRV110</i>	<i>90L-6</i>	9614	75
	9.2	746	1.6	98			10320	
	7.3	890	1.2	122.5			10320	
	6.1	1000	1	147			10320	
	19	392	2.5	73.5	<i>PC090+JMRV110</i>	<i>90S-4</i>	8298	75
	14.3	508	1.8	98			9133	
	11.4	599	1.5	122.5			9838	
	9.5	686	1.1	147			10320	
	7.1	828	0.8	196			10320	
	11.3	598	1.4	80	<i>JMRV130</i>	<i>90L-6</i>	12989	70
	9	689	1.1	100			13500	
	17.5	408	2.1	80	<i>JMRV130</i>	<i>90S-4</i>	11210	70
	14	480	1.5	100			12076	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
1.10	12.2	585	3	73.5	<i>PC090+JMRV130</i>	<i>90L-6</i>	12575	75
	9.2	746	2.2	98			13500	
	7.3	890	1.7	122.5			13500	
	6.1	1000	1.4	147			13500	
	4.6	1220	1	196			13500	
	19	398	3.5	73.5	<i>PC090+JMRV130</i>	<i>90S-4</i>	10853	75
	14.3	508	2.6	98			11945	
	11.4	608	2	122.5			12868	
	9.5	686	1.6	147			13500	
	7.1	843	1.2	196			13500	
	5.7	962	0.9	245			13500	
	4.7	1312	1.3	300	<i>JMRV063/130</i>	<i>90S-4</i>	13500	79
	3.5	1671	1	400			13500	
	2.8	1991	0.8	500			13500	
	9.3	753	3.1	150	<i>JMRV063/150</i>	<i>90S-4</i>	18000	79
	7	966	2.4	200			18000	
	5.6	1175	1.7	250			18000	
	4.7	1364	1.7	300			18000	
	3.5	1619	1.6	400			18000	
	2.8	1893	1.2	500			18000	
	2.3	2242	1.2	600			18000	
	1.9	2616	0.9	750			18000	
1.50	186.7	68	1.9	7.5	<i>JMRV063</i>	<i>90L-4</i>	2359	65
	140	89	1.5	10			2597	
	93.3	127	1.1	15			2973	
	70	166	0.8	20			3272	
	120	105	2	7.5	<i>JMRV075</i>	<i>100L-6</i>	3227	66
	90	137	1.7	10			3551	
	60	196	1.2	15			4065	
	140	90	2.2	10	<i>JMRV075</i>	<i>90L-4</i>	3065	66
	93.3	130	1.5	15			3509	
	70	168	1.3	20			3862	
	56	205	1	25			4160	
	46.7	233	1	30			4421	
	90	138	2.7	10	<i>JMRV090</i>	<i>100L-6</i>	3929	67
	60	201	2.1	15			4498	
	45	258	1.5	20			4951	
	36	314	1.2	25			5333	
	30	358	1.3	30			5667	
	70	172	2.1	20	<i>JMRV090</i>	<i>90L-4</i>	4273	67
	56	210	1.6	25			4603	
	46.7	239	1.7	30			4891	
	35	307	1.2	40			5383	
	28	368	0.9	50			5799	
	23.3	424	0.8	60			6163	
	45	264	2.4	20	<i>JMRV105</i>	<i>100L-6</i>	6256	68
	36	322	2	25			6739	
	30	363	2	30			7161	
	22.5	471	1.5	40			7882	
	18	565	1.2	50			8491	
	15	649	1	60			9023	
	35	319	1.9	40	<i>JMRV105</i>	<i>90L-4</i>	6803	68
	28	384	1.6	50			7328	
	23.3	442	1.3	60			7787	
	17.5	548	0.9	80			8571	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
1.50	19.3	535	1.6	73	<i>PC090+JMRV105</i>	<i>90L-4</i>	8298	
	14.5	693	1.2	96.8			9133	
	11.6	817	1	121			9838	
	9.6	936	0.8	145.2			10320	
	45	264	2.7	20	<i>JMRV110</i>	<i>100L-6</i>	6256	
	36	322	2.4	25			6739	
	30	363	2.3	30			7161	
	22.5	471	1.7	40			7882	
	18	565	1.3	50			8491	
	15	649	1.1	60			9023	
	35	319	2.2	40	<i>JMRV110</i>	<i>90L-4</i>	6803	
	28	384	1.7	50			7328	
	23.3	442	1.4	60			7787	
	17.5	548	0.9	80			8571	
	19	535	1.9	73.5	<i>PC090+JMRV110</i>	<i>90L-4</i>	8298	
	14.3	693	1.3	98			9133	
	11.4	817	1.1	122.5			9838	
	9.5	936	0.8	147			10320	
	22.5	478	2.3	40	<i>JMRV130</i>	<i>100L-6</i>	10309	
	18	573	1.8	50			11105	
	15	659	1.4	60			11801	
	11.3	815	1.1	80			12989	
	17.5	557	1.5	80	<i>JMRV130</i>	<i>90L-4</i>	11210	
	14	655	1.1	100			12076	
	19	542	2.6	73.5	<i>PC090+JMRV130</i>	<i>90L-4</i>	10853	
	14.3	693	1.9	98			11945	
	11.4	830	1.5	122.5			12868	
	9.5	936	1.1	147			13500	
	7.1	1149	0.8	196			13500	
	4.7	1789	1	300	<i>JMRV063/130</i>	<i>90L-4</i>	13500	
	3.5	2279	0.7	400			13500	
	9.3	1026	2.3	150	<i>JMRV063/150</i>	<i>90L-4</i>	18000	
	7	1317	1.8	200			18000	
	5.6	1602	1.3	250			18000	
	4.7	1860	1.3	300			18000	
	3.5	2208	1.2	400			18000	
	2.8	2582	0.9	500			18000	
	2.3	3057	0.9	600			18000	
2.20	186.7	100	1.8	7.5	<i>JMRV075</i>	<i>100L1-4</i>	2785	
	140	132	1.5	10			3065	
	93.3	191	1	15			3509	
	186.7	101	2.9	7.5	<i>JMRV090</i>	<i>100L1-4</i>	3081	
	140	134	2.3	10			3391	
	93.3	194	1.9	15			3882	
	70	252	1.4	20			4273	
	56	308	1.1	25			4603	
	46.7	351	1.2	30			4891	
	120	156	2.2	7.5	<i>JMRV090</i>	<i>112M-6</i>	3570	
	90	203	1.8	10			3929	
	60	294	1.4	15			4498	
	45	378	1	20			4951	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
2.20	70	255	2.2	20	<i>JMRV105</i>	<i>100L1-4</i>	5399	68
	56	315	1.9	25			5816	
	46.7	356	1.8	30			6181	
	35	468	1.3	40			6803	
	28	563	1.1	50			7328	
	23.3	648	0.9	60			7787	
	90	205	3	10	<i>JMRV105</i>	<i>112M-6</i>	4965	68
	60	298	2.2	15			5684	
	45	388	1.6	20			6256	
	36	473	1.4	25			6739	
	30	532	1.4	30			7161	
	70	255	2.5	20	<i>JMRV110</i>	<i>100L1-4</i>	5399	69
	56	315	2.2	25			5816	
	46.7	356	2	30			6181	
	35	468	1.5	40			6803	
	28	563	1.2	50			7328	
	23.3	648	1	60			7787	
	90	205	3.5	10	<i>JMRV110</i>	<i>112M-6</i>	4965	69
	60	298	2.6	15			5684	
	45	388	1.9	20			6256	
	36	473	1.6	25			6739	
	30	532	1.6	30			7161	
	35	468	2.2	40	<i>JMRV130</i>	<i>100L1-4</i>	8897	70
	28	563	1.7	50			9584	
	23.3	648	1.4	60			10185	
	17.5	816	1	80			11210	
	36	479	2.2	25	<i>JMRV130</i>	<i>112M-6</i>	8814	70
	30	546	2.1	30			9366	
	22.5	700	1.6	40			10309	
	18	840	1.2	50			11105	
	15	966	1	60			11801	
	28	570	2.5	50	<i>JMRV150</i>	<i>100L1-4</i>	13103	71
	23.3	657	1.9	60			13924	
	17.5	816	1.4	80			15325	
	14	960	1	100			16508	
3.00	186.7	137	1.4	7.5	<i>JMRV075</i>	<i>100L2-4</i>	2785	66
	140	180	1.1	10			3065	
	93.3	261	0.8	15			3509	
	186.7	138	2.1	7.5	<i>JMRV090</i>	<i>100L2-4</i>	3081	67
	140	182	1.7	10			3391	
	93.3	264	1.4	15			3882	
	70	344	1	20			4273	
	56	420	0.8	25			4603	
	46.7	479	0.9	30			4891	
	93.3	264	2.2	15	<i>JMRV105</i>	<i>100L2-4</i>	4905	68
	70	348	1.6	20			5399	
	56	430	1.4	25			5816	
	46.7	485	1.3	30			6181	
	35	638	1	40			6803	
	28	767	0.8	50			7328	
	120	212	2.7	7.5	<i>JMRV105</i>	<i>132S-6</i>	4511	68
	90	280	2.2	10			4965	
	60	406	1.6	15			5684	
	45	528	1.2	20			6256	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
3.00	93.3	264	2.5	15	<i>JMRV110</i>	<i>100L2-4</i>	4905	69
	70	348	1.9	20			5399	
	56	430	1.6	25			5816	
	46.7	485	1.5	30			6181	
	35	638	1.1	40			6803	
	28	767	0.9	50			7328	
	120	212	3.1	7.5	<i>JMRV110</i>	<i>132S-6</i>	4511	69
	90	280	2.5	10			4965	
	60	406	1.9	15			5684	
	45	528	1.4	20			6256	
	56	430	2.2	25	<i>JMRV130</i>	<i>100L2-4</i>	7607	70
	46.7	491	2.1	30			8084	
	35	638	1.6	40			8897	
	28	767	1.3	50			9584	
	23.3	884	1	60			10185	
	17.5	1113	0.8	80			11210	
	90	280	3.4	10	<i>JMRV130</i>	<i>132S-6</i>	6494	70
	60	406	2.6	15			7434	
	45	535	1.9	20			8182	
	36	653	1.6	25			8814	
	30	745	1.6	30			9366	
	22.5	955	1.2	40			10309	
	28	778	1.8	50	<i>JMRV150</i>	<i>100L2-4</i>	13103	71
	23.3	896	1.4	60			13924	
	17.5	1113	1	80			15325	
	14	1310	0.8	100			16508	
4.00	186.7	182	1	7.5	<i>JMRV075</i>	<i>112M-4</i>	2785	66
	140	240	0.8	10			3065	
	186.7	184	1.6	7.5	<i>JMRV090</i>	<i>112M-4</i>	3081	67
	140	243	1.3	10			3391	
	93.3	352	1	15			3882	
	70	458	0.8	20			4273	
	140	243	2.1	10	<i>JMRV105</i>	<i>112M-4</i>	4285	68
	93.3	352	1.6	15			4905	
	70	464	1.2	20			5399	
	56	573	1	25			5816	
	46.7	647	1	30			6181	
	120	283	2	7.5	<i>JMRV105</i>	<i>132M1-6</i>	4511	68
	90	374	1.7	10			4965	
	60	541	1.2	15			5684	
	140	243	2.5	10	<i>JMRV110</i>	<i>112M-4</i>	4285	69
	93.3	352	1.9	15			4905	
	70	464	1.4	20			5399	
	56	573	1.2	25			5816	
	46.7	647	1.1	30			6181	
	120	283	2.3	7.5	<i>JMRV110</i>	<i>132M1-6</i>	4511	69
	90	374	1.9	10			4965	
	60	541	1.4	15			5684	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
4.00	56	573	1.6	25	<i>JMRV130</i>	<i>112M-4</i>	7607	70
	46.7	655	1.6	30			8084	
	35	851	1.2	40			8897	
	28	1023	1	50			9584	
	23.3	1179	0.8	60			10185	
	120	287	3.1	7.5	<i>JMRV130</i>	<i>132M1-6</i>	5901	70
	90	374	2.6	10			6494	
	60	541	2	15			7434	
	45	713	1.5	20			8182	
	36	870	1.2	25			8814	
	28	1037	1.4	50	<i>JMRV150</i>	<i>112M-4</i>	13103	71
	23.3	1195	1.1	60			13924	
	17.5	1484	0.8	80			15325	
5.50	186.7	253	1.9	7.5	<i>JMRV105</i>	<i>132S-4</i>	3893	68
	140	334	1.6	10			4285	
	93.3	484	1.2	15			4905	
	70	638	0.9	20			5399	
	186.7	253	2.2	7.5	<i>JMRV110</i>	<i>132S-4</i>	3893	69
	140	334	1.8	10			4285	
	93.3	484	1.4	15			4905	
	70	638	1	20			5399	
	140	334	2.5	10	<i>JMRV130</i>	<i>132S-4</i>	5605	70
	93.3	490	1.9	15			6416	
	70	645	1.4	20			7062	
	56	788	1.2	25			7607	
	46.7	900	1.2	30			8084	
	35	1171	0.9	40			8897	
	70	645	2	20	<i>JMRV150</i>	<i>132S-4</i>	9654	71
	56	788	1.5	25			10400	
	46.7	934	1.3	30			11051	
	35	1171	1.3	40			12163	
	28	1426	1	50			13103	
	23.3	1643	0.8	60			13924	
7.50	186.7	345	1.4	7.5	<i>JMRV105</i>	<i>132M-4</i>	3893	68
	140	455	1.1	10			4285	
	93.3	660	0.9	15			4905	
	186.7	345	1.6	7.5	<i>JMRV110</i>	<i>132M-4</i>	3893	69
	140	455	1.3	10			4285	
	93.3	660	1	15			4905	
	186.7	349	2.1	7.5	<i>JMRV130</i>	<i>132M-4</i>	5092	70
	140	455	1.8	10			5605	
	93.3	668	1.4	15			6416	
	70	880	1	20			7062	
	56	1074	0.9	25			7607	
	46.7	1228	0.8	30			8084	
	35	1596	0.7	40			8897	
	70	880	1.5	20	<i>JMRV150</i>	<i>132M-4</i>	9654	71
	56	1074	1.1	25			10400	
	46.7	1274	0.9	30			11051	
	35	1596	1	40			12163	

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	f.s.	i	Type		Fr₂ (N)	
11.00	186.7	512	2.3	7.5	<i>JMRV150</i>	<i>160M-4</i>	6962	71
	140	675	1.8	10			7663	
	93.3	990	1.3	15			8771	
	70	1291	1	20			9654	
	56	1576	0.8	25			10400	
15.00	186.7	698	1.7	7.5	<i>JMRV150</i>	<i>160L-4</i>	6962	71
	140	921	1.3	10			7663	
	93.3	1351	0.9	15			8771	
	70	1760	0.7	20			9654	

9.2 **JRV Performance**
 $n_1=1400$

M₂ (Nm)	i	P₁ (kW)	n₂ (min ⁻¹)	Type	Fr₂ (N)	Fr₁ (N)	
18	5	0.61	280.0	JRV030	597	150	81
18	7.5	0.41	186.7		683	150	
18	10	0.32	140.0		752	169	
18	15	0.23	93.3		861	169	
18	20	0.18	70.0		948	190	
21	25	0.18	56.0		1021	210	
20	30	0.15	46.7		1085	210	
18	40	0.11	35.0		1194	210	
17	50	0.09	28.0		1286	210	
16	60	0.08	23.3		1367	210	
13	80	0.05	17.5		1504	210	
34	5	1.1	280.0	JRV040	1149	250	81
40	7.5	0.90	186.7		1315	294	
40	10	0.69	140.0		1447	331	
40	15	0.48	93.3		1657	331	
39	20	0.37	70.0		1824	350	
38	25	0.30	56.0		1964	350	
45	30	0.31	46.7		2087	350	
41	40	0.23	35.0		2298	350	
39	50	0.18	28.0		2475	350	
36	60	0.15	23.3		2630	350	
33	80	0.12	17.5		2895	350	
29	100	0.09	14.0		3118	350	
62	5	2.0	280.0	JRV050	1577	350	81
71	7.5	1.6	186.7		1805	401	
72	10	1.2	140.0		1987	490	
74	15	0.88	93.3		2274	490	
73	20	0.68	70.0		2503	490	
70	25	0.54	56.0		2696	490	
84	30	0.57	46.7		2865	490	
76	40	0.42	35.0		3153	490	
73	50	0.34	28.0		3397	490	
68	60	0.28	23.3		3610	490	
65	80	0.22	17.5		3973	490	
55	100	0.16	14.0		4280	490	
128	7.5	2.8	186.7	JRV063	2359	500	81
130	10	2.2	140.0		2597	571	
140	15	1.6	93.3		2973	615	
135	20	1.2	70.0		3272	667	
130	25	1.0	56.0		3524	700	
160	30	1.1	46.7		3745	700	
145	40	0.76	35.0		4122	700	
135	50	0.60	28.0		4440	700	
130	60	0.51	23.3		4719	700	
122	80	0.39	17.5		5193	700	
118	100	0.34	14.0		5595	700	
185	7.5	4.1	186.7	JRV075	2785	700	81
195	10	3.2	140.0		3065	830	
200	15	2.3	93.3		3509	851	
210	20	1.9	70.0		3862	980	
200	25	1.5	56.0		4160	980	
230	30	1.5	46.7		4421	980	
220	40	1.1	35.0		4865	980	
210	50	0.89	28.0		5241	980	
200	60	0.75	23.3		5569	980	
190	80	0.58	17.5		6130	980	
180	100	0.48	14.0		6603	980	

n₁=1400

M₂ (Nm)	i	P₁ (kW)	n₂ (min ⁻¹)	Type	Fr₂ (N)	Fr₁ (N)	
290	7.5	6.3	186.7	JRV090	3081	900	81
310	10	5.1	140.0		3391	1082	
360	15	4.1	93.3		3882	1257	
355	20	3.1	70.0		4273	1270	
340	25	2.4	56.0		4603	1270	
410	30	2.6	46.7		4891	1270	
360	40	1.8	35.0		5383	1270	
340	50	1.4	28.0		5799	1270	
320	60	1.1	23.3		6163	1270	
285	80	0.83	17.5		6783	1270	
270	100	0.67	14.0		7306	1270	
480	7.5	10.4	186.7	JRV105	3893	1200	81
520	10	8.6	140.0		4285	1463	
570	15	6.5	93.3		4905	1603	
560	20	4.8	70.0		5399	1700	
590	25	4.1	56.0		5816	1700	
630	30	3.9	46.7		6181	1700	
610	40	2.9	35.0		6803	1700	
600	50	2.3	28.0		7328	1700	
560	60	1.9	23.3		7787	1700	
490	80	1.3	17.5		8571	1700	
460	100	1.1	14.0		9232	1700	
552	7.5	12.0	186.7	JRV110	3893	1200	81
598	10	9.8	140.0		4285	1463	
656	15	7.5	93.3		4905	1604	
644	20	5.6	70.0		5399	1700	
679	25	4.7	56.0		5816	1700	
725	30	4.5	46.7		6181	1700	
702	40	3.3	35.0		6803	1700	
660	50	2.6	28.0		7328	1700	
616	60	2.1	23.3		7787	1700	
515	80	1.4	17.5		8571	1700	
483	100	1.1	14.0		9232	1700	
750	7.5	16.1	186.7	JRV130	5092	1500	81
820	10	13.5	140.0		5605	1845	
920	15	10.3	93.3		6416	2070	
910	20	7.8	70.0		7062	2100	
930	25	6.5	56.0		7607	2100	
1040	30	6.4	46.7		8084	2100	
1050	40	4.9	35.0		8897	2100	
980	50	3.8	28.0		9584	2100	
900	60	3.1	23.3		10185	2100	
840	80	2.3	17.5		11210	2100	
740	100	1.7	14.0		12076	2100	
1200	7.5	25.8	186.7	JRV150	6962	1950	81
1240	10	20.2	140.0		7663	2267	
1250	15	13.9	93.3		8771	2285	
1300	20	11.1	70.0		9654	2674	
1200	25	8.4	56.0		10400	2800	
1200	30	7.1	46.7		11051	2800	
1550	40	7.3	35.0		12163	2800	
1400	50	5.4	28.0		13103	2800	
1260	60	4.2	23.3		13924	2800	
1150	80	3.1	17.5		15325	2800	
1000	100	2.3	14.0		16508	2800	

n₁=900

M₂ (Nm)	i	P₁ (kW)	n₂ (min ⁻¹)	Type	Fr₂ (N)	Fr₁ (N)	
20	5	0.44	180.0	JRV030	692	175	81
20	7.5	0.30	120.0		792	175	
20	10	0.24	90.0		871	197	
20	15	0.17	60.0		997	197	
20	20	0.13	45.0		1098	210	
23	25	0.14	36.0		1183	210	
21	30	0.11	30.0		1257	210	
20	40	0.09	22.5		1383	210	
18	50	0.07	18.0		1490	210	
17	60	0.06	15.0		1583	210	
15	80	0.04	11.3		1743	210	
40	5	0.87	180.0	JRV040	1331	290	81
44	7.5	0.65	120.0		1524	319	
44	10	0.50	90.0		1677	350	
45	15	0.36	60.0		1920	350	
44	20	0.28	45.0		2113	350	
43	25	0.23	36.0		2276	350	
49	30	0.23	30.0		2419	350	
45	40	0.17	22.5		2662	350	
42	50	0.14	18.0		2868	350	
39	60	0.11	15.0		3047	350	
35	80	0.09	11.3		3354	350	
32	100	0.07	9.0		3490	350	
75	5	1.6	180.0	JRV050	1827	400	81
84	7.5	1.2	120.0		2091	448	
84	10	0.94	90.0		2302	490	
84	15	0.67	60.0		2635	490	
77	20	0.48	45.0		2900	490	
75	25	0.39	36.0		3124	490	
90	30	0.42	30.0		3320	490	
82	40	0.31	22.5		3654	490	
77	50	0.25	18.0		3936	490	
72	60	0.21	15.0		4183	490	
68	80	0.16	11.3		4604	490	
56	100	0.12	9.0		4840	490	
151	7.5	2.2	120.0	JRV063	2734	580	81
153	10	1.7	90.0		3009	661	
155	15	1.2	60.0		3444	670	
148	20	0.91	45.0		3791	700	
137	25	0.69	36.0		4084	700	
175	30	0.79	30.0		4339	700	
160	40	0.58	22.5		4776	700	
145	50	0.45	18.0		5145	700	
138	60	0.37	15.0		5467	700	
128	80	0.29	11.3		6018	700	
124	100	0.25	9.0		6270	700	
215	7.5	3.1	120.0	JRV075	3227	810	81
230	10	2.5	90.0		3551	975	
235	15	1.8	60.0		4065	980	
235	20	1.4	45.0		4474	980	
215	25	1.1	36.0		4820	980	
260	30	1.1	30.0		5122	980	
240	40	0.83	22.5		5637	980	
220	50	0.65	18.0		6073	980	
210	60	0.54	15.0		6453	980	
200	80	0.43	11.3		7103	980	
190	100	0.36	9.0		7380	980	

n₁=900

M₂ (Nm)	i	P₁ (kW)	n₂ (min ⁻¹)	Type	Fr₂ (N)	Fr₁ (N)	
340	7.5	4.8	120.0	JRV090	3570	1040	81
370	10	4.0	90.0		3929	1270	
420	15	3.1	60.0		4498	1270	
390	20	2.3	45.0		4951	1270	
370	25	1.8	36.0		5333	1270	
460	30	1.9	30.0		5667	1270	
410	40	1.4	22.5		6238	1270	
390	50	1.1	18.0		6719	1270	
350	60	0.86	15.0		7140	1270	
315	80	0.63	11.3		7859	1270	
280	100	0.49	9.0		8180	1270	
565	7.5	8.0	120.0	JRV105	4511	1390	81
620	10	6.6	90.0		4965	1700	
660	15	4.9	60.0		5684	1700	
630	20	3.6	45.0		6256	1700	
660	25	3.1	36.0		6739	1700	
730	30	3.0	30.0		7161	1700	
690	40	2.2	22.5		7882	1700	
680	50	1.8	18.0		8491	1700	
620	60	1.4	15.0		9023	1700	
540	80	1.0	11.3		9931	1700	
490	100	0.80	9.0		10320	1700	
650	7.5	9.2	120.0	JRV110	4511	1390	81
713	10	7.6	90.0		4965	1700	
759	15	5.6	60.0		5684	1700	
725	20	4.1	45.0		6256	1700	
759	25	3.5	36.0		6739	1700	
840	30	3.5	30.0		7161	1700	
794	40	2.5	22.5		7882	1700	
748	50	2.0	18.0		8491	1700	
682	60	1.6	15.0		9023	1700	
567	80	1.1	11.3		9931	1700	
515	100	0.84	9.0		10320	1700	
880	7.5	12.3	120.0	JRV130	5901	1740	81
960	10	10.3	90.0		6494	2100	
1060	15	7.8	60.0		7434	2100	
1040	20	5.8	45.0		8182	2100	
1050	25	4.8	36.0		8814	2100	
1170	30	4.7	30.0		9366	2100	
1100	40	3.5	22.5		10309	2100	
1050	50	2.7	18.0		11105	2100	
940	60	2.1	15.0		11801	2100	
860	80	1.6	11.3		12989	2100	
780	100	1.2	9.0		13500	2100	
1400	7.5	19.5	120.0	JRV150	8067	2270	81
1480	10	15.7	90.0		8878	2700	
1450	15	10.5	60.0		10163	2645	
1500	20	8.4	45.0		11186	2800	
1380	25	6.3	36.0		12050	2800	
1400	30	5.4	30.0		12805	2800	
1800	40	5.7	22.5		14094	2800	
1600	50	4.1	18.0		15182	2800	
1440	60	3.2	15.0		16133	2800	
1300	80	2.4	11.3		17757	2800	
1150	100	1.8	9.0		18000	2800	

n₁=500

M₂ (Nm)	i	P₁ (kW)	n₂ (min ⁻¹)	Type	Fr₂ (N)	Fr₁ (N)	
24	5	0.30	100.0	JRV030	841	210	81
24	7.5	0.21	66.7		963	210	
24	10	0.16	50.0		1060	210	
24	15	0.12	33.3		1213	210	
23	20	0.09	25.0		1336	210	
29	25	0.10	20.0		1439	210	
26	30	0.08	16.7		1529	210	
23	40	0.06	12.5		1683	210	
21	50	0.05	10.0		1813	210	
19	60	0.04	8.3		1830	210	
17	80	0.03	6.3		1830	210	
49	5	0.60	100.0	JRV040	1619	350	81
54	7.5	0.45	66.7		1853	350	
54	10	0.35	50.0		2040	350	
55	15	0.26	33.3		2335	350	
52	20	0.19	25.0		2570	350	
49	25	0.15	20.0		2769	350	
58	30	0.16	16.7		2942	350	
53	40	0.12	12.5		3238	350	
49	50	0.10	10.0		3488	350	
46	60	0.08	8.3		3490	350	
40	80	0.06	6.3		3490	350	
36	100	0.05	5.0		3490	350	
92	5	1.1	100.0	JRV050	2222	490	81
103	7.5	0.86	66.7		2544	490	
103	10	0.67	50.0		2800	490	
103	15	0.47	33.3		3205	490	
93	20	0.33	25.0		3528	490	
91	25	0.28	20.0		3800	490	
108	30	0.29	16.7		4038	490	
98	40	0.22	12.5		4445	490	
91	50	0.17	10.0		4788	490	
83	60	0.14	8.3		4840	490	
75	80	0.11	6.3		4840	490	
65	100	0.09	5.0		4840	490	
184	7.5	1.5	66.7	JRV063	3325	700	81
185	10	1.2	50.0		3660	700	
187	15	0.85	33.3		4190	700	
178	20	0.63	25.0		4611	700	
164	25	0.48	20.0		4967	700	
200	30	0.54	16.7		5279	700	
185	40	0.40	12.5		5810	700	
173	50	0.32	10.0		6259	700	
160	60	0.26	8.3		6270	700	
137	80	0.19	6.3		6270	700	
128	100	0.16	5.0		6270	700	
260	7.5	2.1	66.7	JRV075	3925	980	81
270	10	1.7	50.0		4320	980	
280	15	1.2	33.3		4945	980	
285	20	0.98	25.0		5443	980	
255	25	0.73	20.0		5863	980	
300	30	0.77	16.7		6231	980	
280	40	0.58	12.5		6858	980	
250	50	0.44	10.0		7380	980	
240	60	0.37	8.3		7380	980	
215	80	0.29	6.3		7380	980	
210	100	0.24	5.0		7380	980	

n₁=500

M₂ (Nm)	i	P₁ (kW)	n₂ (min ⁻¹)	Type	Fr₂ (N)	Fr₁ (N)	
410	7.5	3.3	66.7	JRV090	4343	1270	81
435	10	2.7	50.0		4780	1270	
490	15	2.1	33.3		5472	1270	
470	20	1.6	25.0		6022	1270	
440	25	1.2	20.0		6487	1270	
550	30	1.4	16.7		6894	1270	
480	40	0.95	12.5		7588	1270	
450	50	0.75	10.0		8174	1270	
400	60	0.59	8.3		8180	1270	
365	80	0.45	6.3		8180	1270	
330	100	0.35	5.0		8180	1270	
690	7.5	5.5	66.7	JRV105	5488	1700	81
740	10	4.6	50.0		6040	1700	
790	15	3.4	33.3		6914	1700	
750	20	2.5	25.0		7610	1700	
790	25	2.1	20.0		8198	1700	
870	30	2.1	16.7		8711	1700	
810	40	1.5	12.5		9588	1700	
800	50	1.3	10.0		10320	1700	
710	60	0.98	8.3		10320	1700	
630	80	0.72	6.3		10320	1700	
570	100	0.56	5.0		10320	1700	
794	7.5	6.4	66.7	JRV110	5488	1700	81
851	10	5.2	50.0		6040	1700	
909	15	3.9	33.3		6914	1700	
863	20	2.8	25.0		7610	1700	
909	25	2.4	20.0		8198	1700	
1000	30	2.4	16.7		8711	1700	
932	40	1.7	12.5		9588	1700	
880	50	1.4	10.0		10320	1700	
781	60	1.1	8.3		10320	1700	
662	80	0.76	6.3		10320	1700	
599	100	0.59	5.0		10320	1700	
1080	7.5	8.6	66.7	JRV130	7178	2100	81
1160	10	7.1	50.0		7900	2100	
1300	15	5.5	33.3		9043	2100	
1230	20	4.0	25.0		9953	2100	
1200	25	3.2	20.0		10722	2100	
1400	30	3.3	16.7		11394	2100	
1300	40	2.4	12.5		12540	2100	
1220	50	1.9	10.0		13500	2100	
1070	60	1.5	8.3		13500	2100	
970	80	1.1	6.3		13500	2100	
860	100	0.85	5.0		13500	2100	
1700	7.5	13.5	66.7	JRV150	9812	2800	81
1780	10	10.7	50.0		10800	2800	
1730	15	7.2	33.3		12363	2800	
1820	20	5.9	25.0		13607	2800	
1630	25	4.3	20.0		14658	2800	
1670	30	3.8	16.7		15576	2800	
2120	40	3.9	12.5		17144	2800	
1870	50	2.9	10.0		18000	2800	
1680	60	2.3	8.3		18000	2800	
1530	80	1.7	6.3		18000	2800	
1350	100	1.3	5.0		18000	2800	

9.3 **JRV+JMRV Performance**
 $n_1=1400$

M₂ (Nm)	i	P₁ (kW)	n₂ (min ⁻¹)	Type	Fr₂ (N)	Fr₁ (N)	
73	300	0.08	4.7	JRV030/040	3490	210	81
65	400	0.06	3.5		3490	210	
61	500	0.04	2.8		3490	210	
73	600	0.04	2.3		3490	210	
73	750	0.04	1.9		3490	210	
73	900	0.03	1.6		3490	210	
65	1200	0.02	1.2		3490	210	
73	1500	0.02	0.9		3490	210	
73	1800	0.02	0.8		3490	210	
65	2400	0.01	0.58		3490	210	
65	3200	0.01	0.4		3490	210	
33	4000	0.01	0.4		3490	210	
29	5000	0.01	0.28		3490	210	
145	300	0.15	4.7	JRV030/050	4840	210	81
124	400	0.10	3.5		4840	210	
120	500	0.09	2.8		4840	210	
145	600	0.08	2.3		4840	210	
145	750	0.07	1.9		4840	210	
145	900	0.06	1.6		4840	210	
124	1200	0.04	1.2		4840	210	
145	1500	0.04	0.93		4840	210	
145	1800	0.04	0.78		4840	210	
124	2400	0.03	0.6		4840	210	
120	3000	0.02	0.5		4840	210	
82	4000	0.02	0.35		4840	210	
82	4800	0.02	0.29		4840	210	
230	300	0.24	4.7	JRV030/063	6270	210	81
230	400	0.19	3.5		6270	210	
216	500	0.15	2.8		6270	210	
230	600	0.13	2.3		6270	210	
216	750	0.11	1.9		6270	210	
198	900	0.09	1.6		6270	210	
230	1200	0.08	1.2		6270	210	
216	1500	0.06	0.93		6270	210	
198	1800	0.05	0.78		6270	210	
230	2400	0.05	0.58		6270	210	
216	3000	0.04	0.47		6270	210	
172	4000	0.03	0.35		6270	210	
150	5000	0.02	0.28		6270	210	
390	300	0.36	4.7	JRV040/075	7380	350	81
360	400	0.27	3.5		7380	350	
320	500	0.21	2.8		7380	350	
390	600	0.19	2.3		7380	350	
390	750	0.16	1.9		7380	350	
390	900	0.14	1.6		7380	350	
360	1200	0.11	1.2		7380	350	
390	1500	0.10	0.93		7380	350	
390	1800	0.09	0.78		7380	350	
360	2400	0.07	0.58		7380	350	
320	3000	0.05	0.47		7380	350	
250	4000	0.04	0.35		7380	350	
230	5000	0.03	0.28		7380	350	
610	300	0.56	4.7	JRV040/090	8180	350	81
610	400	0.43	3.5		8180	350	
560	500	0.34	2.8		8180	350	
610	600	0.30	2.3		8180	350	
560	750	0.23	1.9		8180	350	
505	900	0.19	1.6		8180	350	
610	1200	0.17	1.2		8180	350	
560	1500	0.14	0.93		8180	350	

n₁=1400

M₂ (Nm)	i	P₁ (kW)	n₂ (min ⁻¹)	Type	Fr₂ (N)	Fr₁ (N)	
505	1800	0.11	0.78	JRV040/090	8180	350	81
610	2400	0.11	0.58		8180	350	
560	3000	0.08	0.47		8180	350	
460	4000	0.08	0.35		8180	350	
410	5000	0.06	0.28		8180	350	
1100	300	0.95	4.7	JRV050/105	10320	490	81
1030	400	0.69	3.5		10320	490	
1000	500	0.56	2.8		10320	490	
1030	600	0.48	2.3		10320	490	
1100	750	0.43	1.9		10320	490	
1100	900	0.38	1.6		10320	490	
1030	1200	0.27	1.2		10320	490	
1100	1500	0.26	0.93		10320	490	
1100	1800	0.23	0.78		10320	490	
1030	2400	0.17	0.58		10320	490	
1000	3000	0.14	0.47		10320	490	
780	4000	0.12	0.35		10320	490	
710	5000	0.09	0.28		10320	490	
1265	300	1.1	4.7	JRV050/110	10320	490	81
1185	400	0.79	3.5		10320	490	
1100	500	0.61	2.8		10320	490	
1185	600	0.55	2.3		10320	490	
1265	750	0.49	1.9		10320	490	
1265	900	0.43	1.6		10320	490	
1185	1200	0.31	1.2		10320	490	
1265	1500	0.30	0.93		10320	490	
1265	1800	0.26	0.78		10320	490	
1185	2400	0.19	0.58		10320	490	
1100	3000	0.15	0.47		10320	490	
819	4000	0.13	0.35		10320	490	
746	5000	0.10	0.28		10320	490	
1760	300	1.5	4.7	JRV063/130	13500	700	81
1650	400	1.1	3.5		13500	700	
1550	500	0.86	2.8		13500	700	
1650	600	0.76	2.3		13500	700	
1760	750	0.66	1.9		13500	700	
1760	900	0.58	1.6		13500	700	
1650	1200	0.43	1.2		13500	700	
1760	1500	0.39	0.93		13500	700	
1760	1800	0.35	0.78		13500	700	
1650	2400	0.25	0.58		13500	700	
1550	3000	0.20	0.47		13500	700	
1220	4000	0.15	0.35		13500	700	
1100	5000	0.11	0.28		13500	700	
2340	150	3.4	9.3	JRV063/150	18000	700	81
2340	200	2.7	7.0		18000	700	
2050	250	1.9	5.6		18000	700	
2340	300	1.9	4.7		18000	700	
2670	400	1.8	3.5		18000	700	
2330	500	1.4	2.8		18000	700	
2670	600	1.3	2.3		18000	700	
2330	750	0.98	1.9		18000	700	
2100	900	0.71	1.6		18000	700	
2670	1200	0.75	1.2		18000	700	
2100	1800	0.44	0.8		18000	700	
2670	2400	0.46	0.6		18000	700	
2330	3000	0.34	0.5		18000	700	
1880	4000	0.23	0.4		18000	700	
1650	5000	0.18	0.3		18000	700	

9.4 UDL(TXF)+JMRV Performance

P_1 (kW)	n_2 (min ⁻¹)	M_2 (Nm)	i	Type		
0.18	117~22.5	9~18	12~61.5	UDL002-JMRV040	632-4	80
	88~17	12~23	16~82			
	58.7~11.3	17~32	24~123			
	44~8.5	22~40	32~164			
	35.2~6.8	27~47	40~205			
	29.3~5.7	30~51	48~246			
	22~4.3	37~62	64~328			
	17.6~3.4	43~60	80~410			
	22~4.3	38~63	64~328	UDL002-JMRV050	632-4	80
	17.6~3.4	44~73	80~410			
	14.7~2.8	50~80	96~492			
	11~2.1	59~82	128~656			
	8.8~1.7	66~79	160~820			
0.25	133~26.7	13~30	10.5~52.5	UDL005-JMRV040 TXF005-JMRV040	711-4	80
	100~20	16~38	14~70			
	66.7~13.3	24~53	21~105			
	50~10	32~68	28~140			
	40~8	38~80	35~175			
	33.3~6.7	43~89	42~210			
	25~5	48~96	56~280			
	25~5	54~112	56~280	UDL005-JMRV050 TXF005-JMRV050	711-4	80
	20~4	59~122	70~350			
	16.7~3.3	66~135	84~420			
	12.5~2.5	72~120	112~560			
0.37	133~26.7	19~36	10.5~52.5	UDL005-JMRV050 TXF005-JMRV050	712-4	80
	100~20	25~47	14~70			
	66.7~13.3	36~65	21~105			
	50~10	46~82	28~140			
	40~8	55~97	35~175			
	33.3~6.7	61~107	42~210			
	25~5	76~124	56~280			
	20~4	89~120	70~350			
	25~5	79~134	56~280	UDL005-JMRV063 TXF005-JMRV063	712-4	80
	20~4	92~155	70~350			
	16.7~3.3	104~173	84~420			
	12.5~2.5	125~173	112~560			
	10~2	139~150	140~700			
0.55	133~26.7	26~49	10.5~52.5	UDL010-JMRV063 TXF010-JMRV063	801-4	80
	100~20	34~63	14~70			
	66.7~13.3	48~88	21~105			
	50~10	62~112	28~140			
	40~8	75~133	35~175			
	33.3~6.7	81~146	42~210			
	25~5	105~179	56~280			
	20~4	123~207	70~350			
	20~4	129~216	70~350	UDL010-JMRV075 TXF010-JMRV075	801-4	80
	16.7~3.3	146~242	84~420			
	12.5~2.5	176~250	112~560			
	12.5~2.5	189~309	112~560	UDL010-JMRV090 TXF010-JMRV090	801-4	80
	10~2	218~350	140~700			

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	i	Type		
0.75	133~26.7	39~73	10.5~52.5	UDL010-JMRV063	802-4	80
	100~20	51~94	14~70	TXF010-JMRV063		
	66.7~13.3	72~132	21~105			
	50~10	92~168	28~140			
	40~8	112~199	35~175			
	33.3~6.7	126~219	42~210			
	25~5	156~232	56~280			
	20~4	185~310	70~350			
	20~4	192~320	70~350	UDL010-JMRV075		
	16.7~3.3	219~300	84~420	TXF010-JMRV075		
	16.7~3.3	230~389	84~420	UDL010-JMRV090		
	12.5~2.5	265~428	112~560	TXF010-JMRV090		
	10~2	303~410	140~700			
	12.5~2.5	302~503	112~560	UDL010-JMRV105		
	10~2	348~575	140~700	TXF010-JMRV105		
	12.5~2.5	302~503	112~560	UDL010-JMRV110		
	10~2	348~575	140~700	TXF010-JMRV110		
1.1	133~26.7	59~111	10.5~52.5	UD020-JMRV075	90S-4	80
	100~20	77~144	14~70			
	66.7~13.3	110~203	21~105			
	50~10	142~258	28~140			
	40~8	172~308	35~175			
	33.3~6.7	195~340	42~210			
	25~5	245~360	56~280			
	100~20	78~146	14~70	UD020-JMRV090		
	66.7~13.3	113~208	21~105			
	50~10	146~266	28~140			
	40~8	177~320	35~175			
	33.3~6.7	202~356	42~210			
	25~5	256~442	56~280			
	20~4	304~517	70~350			
	20~4	320~550	70~350	UD020-JMRV105		
	16.7~3.3	368~625	84~420			
	12.5~2.5	455~754	112~560			
	10~2	522~710	140~700			
	20~4	320~550	70~350	UD020-JMRV110		
	16.7~3.3	368~625	84~420			
	12.5~2.5	455~754	112~560			
	10~2	522~710	140~700			
	16.7~3.3	373~623	84~420	UD020-JMRV130		
	12.5~2.5	460~749	112~560			
	10~2	531~868	140~700			

P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	i	Type		
1.5	133~26.7	78~148	10.5~52.5	UD020-JMRV075	90L-4	80
	100~20	102~192	14~70			
	66.7~13.3	147~270	21~105			
	50~10	190~344	28~140			
	40~8	229~330	35~175			
	33.3~6.7	260~390	42~210			
	25~5	327~360	56~280			
	133~26.7	77~150	10.5~52.5	UD020-JMRV090	90L-4	80
	100~20	104~195	14~70			
	66.7~13.3	150~277	21~105			
	50~10	194~355	28~140			
	40~8	236~427	35~175			
	33.3~6.7	270~474	42~210			
	25~5	341~589	56~280			
	20~4	406~560	70~350			
	20~4	426~733	70~350	UD020-JMRV105	90L-4	80
	16.7~3.3	490~833	84~420			
	20~4	426~733	70~350	UD020-JMRV110	90L-4	80
	16.7~3.3	490~833	84~420			
	16.7~3.3	498~831	84~420	UD020-JMRV130	90L-4	80
	12.5~2.5	614~999	112~560			
	10~2	696~1100	140~700			
2.2	133~26.7	120~226	10.5~52.5	UD030-JMRV105	100L1-4	80
	100~20	157~294	14~70			
	66.7~13.3	228~418	21~105			
	50~10	298~549	28~140			
	40~8	364~664	35~175			
	33.3~6.7	413~717	42~210			
	25~5	533~931	56~280			
	133~26.7	120~226	10.5~52.5	UD030-JMRV110	100L1-4	80
	100~20	157~294	14~70			
	66.7~13.3	228~418	21~105			
	50~10	298~549	28~140			
	40~8	364~664	35~175			
	33.3~6.7	413~717	42~210			
	25~5	533~931	56~280			
	25~5	542~932	56~280	UD030-JMRV130	100L1-4	80
	20~4	648~1097	70~350			
	16.7~3.3	746~1246	84~420			
	12.5~2.5	921~1499	112~560			
	10~2	1040~1690	140~700			

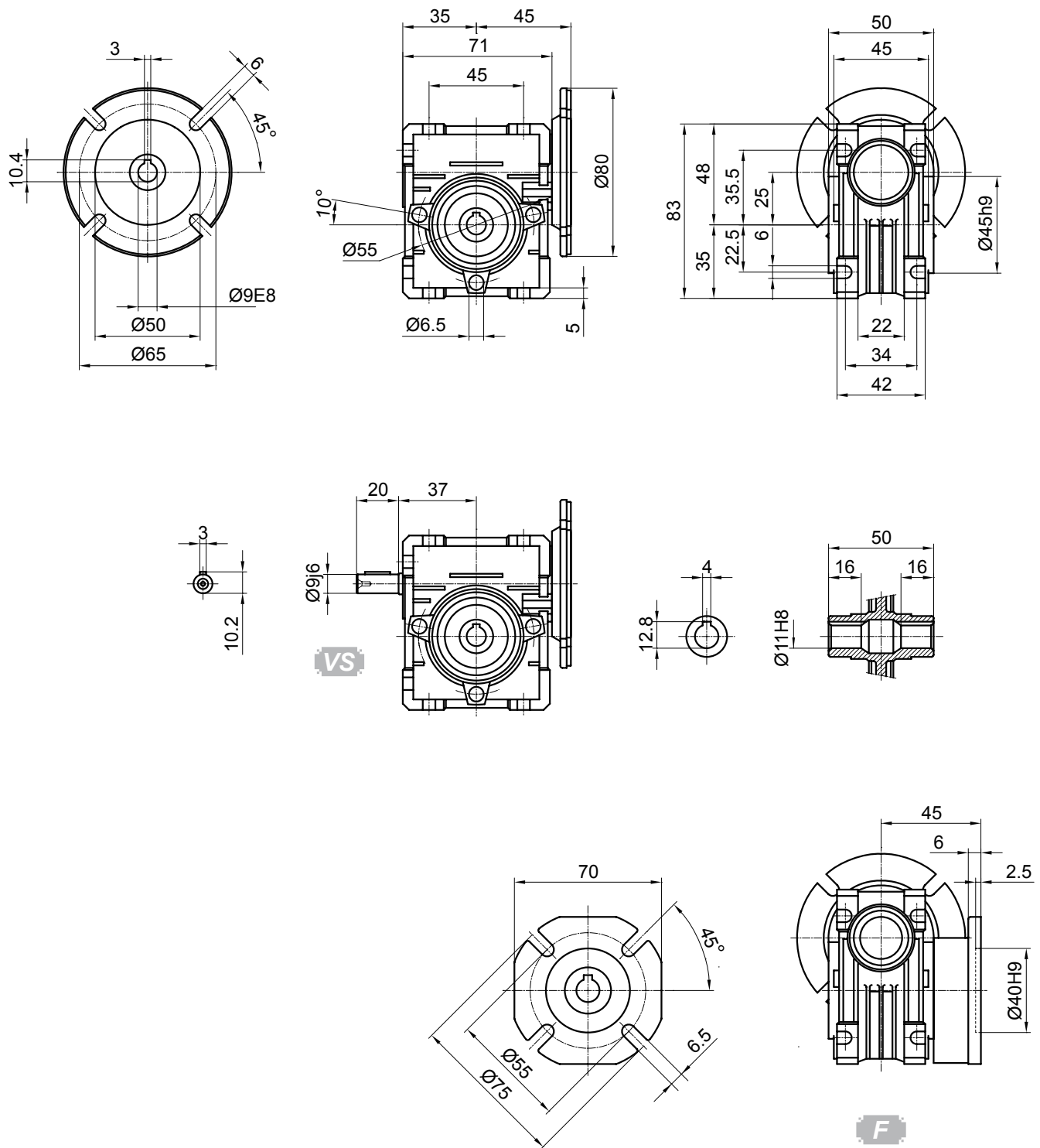
P₁ (kW)	n₂ (min ⁻¹)	M₂ (Nm)	i	Type		
3.0	133~26.7	160~302	10.5~52.5	UD030-JMRV105	100L2-4	80
	100~20	210~392	14~70			
	66.7~13.3	304~558	21~105			
	50~10	398~732	28~140			
	40~8	485~885	35~175			
	33.3~6.7	547~956	42~210			
	25~5	711~1030	56~280			
	133~26.7	160~302	10.5~52.5	UD030-JMRV110	100L2-4	80
	100~20	210~392	14~70			
	66.7~13.3	304~558	21~105			
	50~10	398~732	28~140			
	40~8	485~885	35~175			
	33.3~6.7	547~956	42~210			
	25~5	711~1030	56~280			
	133~26.7	160~301	10.5~52.5	UD030-JMRV130	100L2-4	80
	100~20	211~395	14~70			
	66.7~13.3	307~563	21~105			
	50~10	402~733	28~140			
	40~8	490~885	35~175			
	33.3~6.7	562~973	42~210			
	25~5	720~1242	56~280			
	20~4	864~1463	70~350			
4.0	133~26.7	213~402	10.5~52.5	UD050-JMRV105	112M4	80
	100~20	279~523	14~70			
	66.7~13.3	405~744	21~105			
	50~10	530~975	28~140			
	40~8	647~1020	35~175			
	133~26.7	213~402	10.5~52.5	UD050-JMRV110	112M4	80
	100~20	279~523	14~70			
	66.7~13.3	405~744	21~105			
	50~10	530~975	28~140			
	40~8	647~1020	35~175			
	133~26.7	214~401	10.5~52.5	UD050-JMRV130	112M4	80
	100~20	281~527	14~70			
	66.7~13.3	410~751	21~105			
	50~10	536~978	28~140			
	40~8	653~1180	35~175			
	33.3~6.7	749~1298	42~210			
	25~5	960~1650	56~280			

10.0

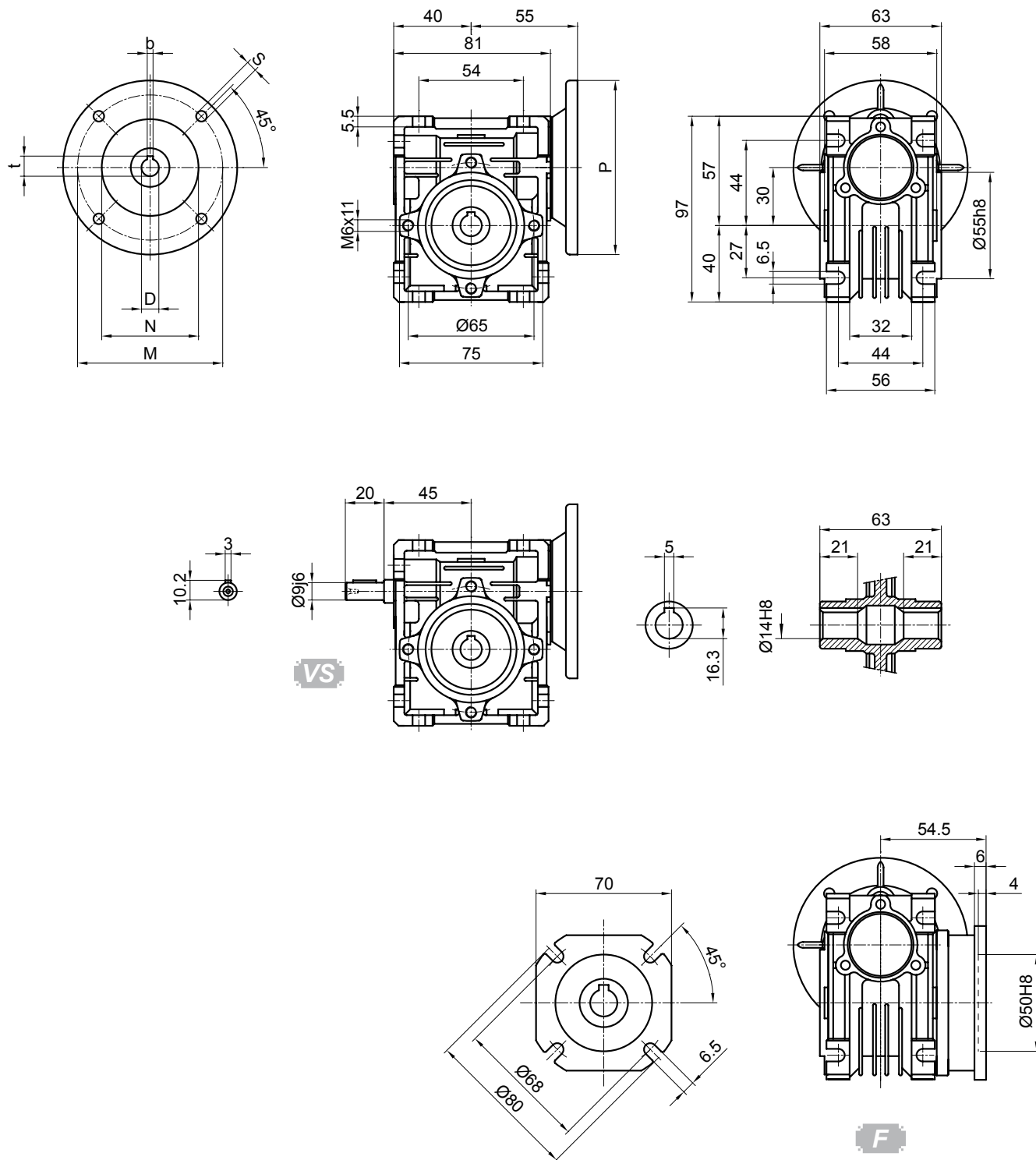
SPEED REDUCER UNIT DIMENSIONS CHARTS



JMRV025

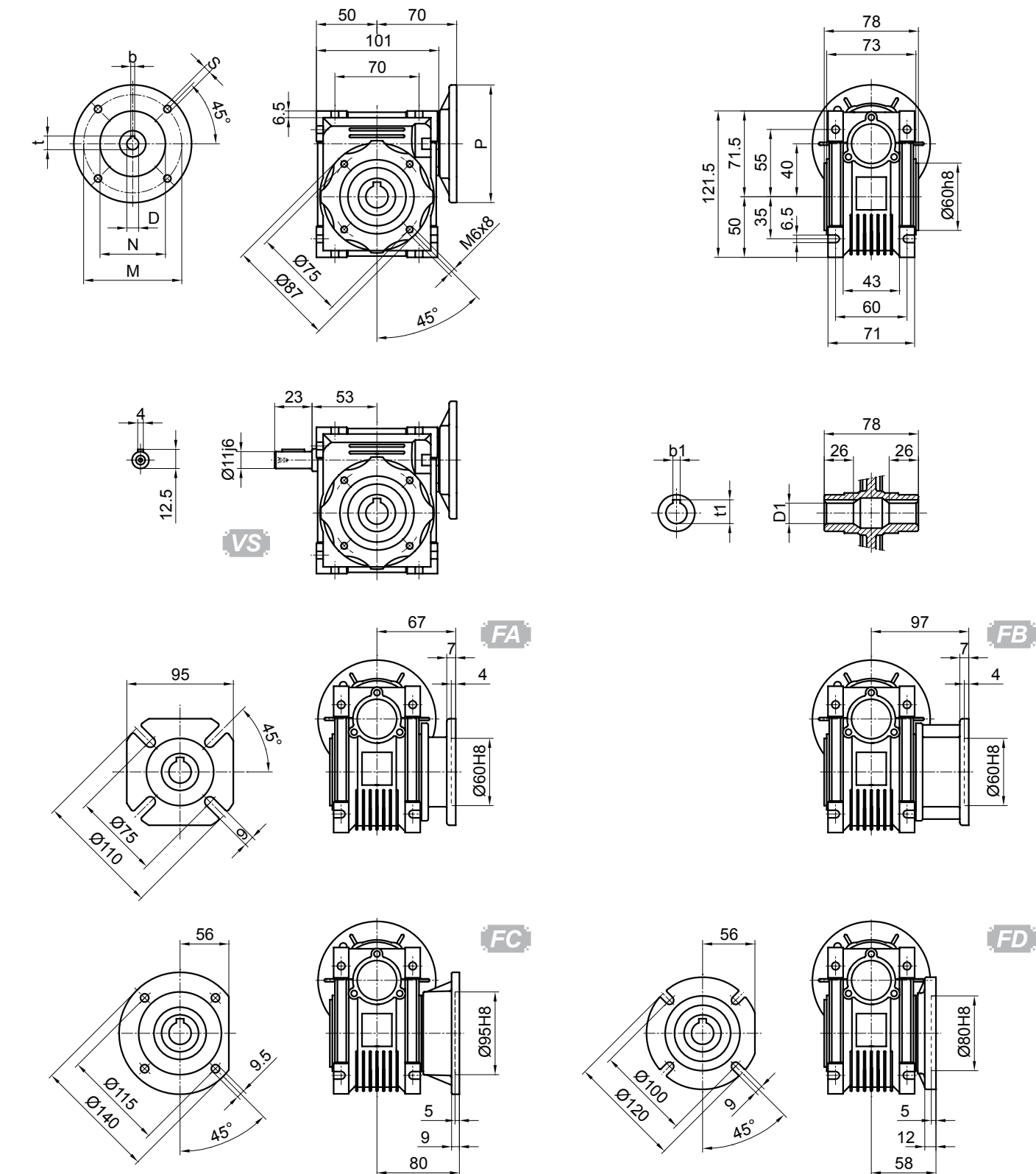


*Weight without motor $\approx 0.7\text{kg}$



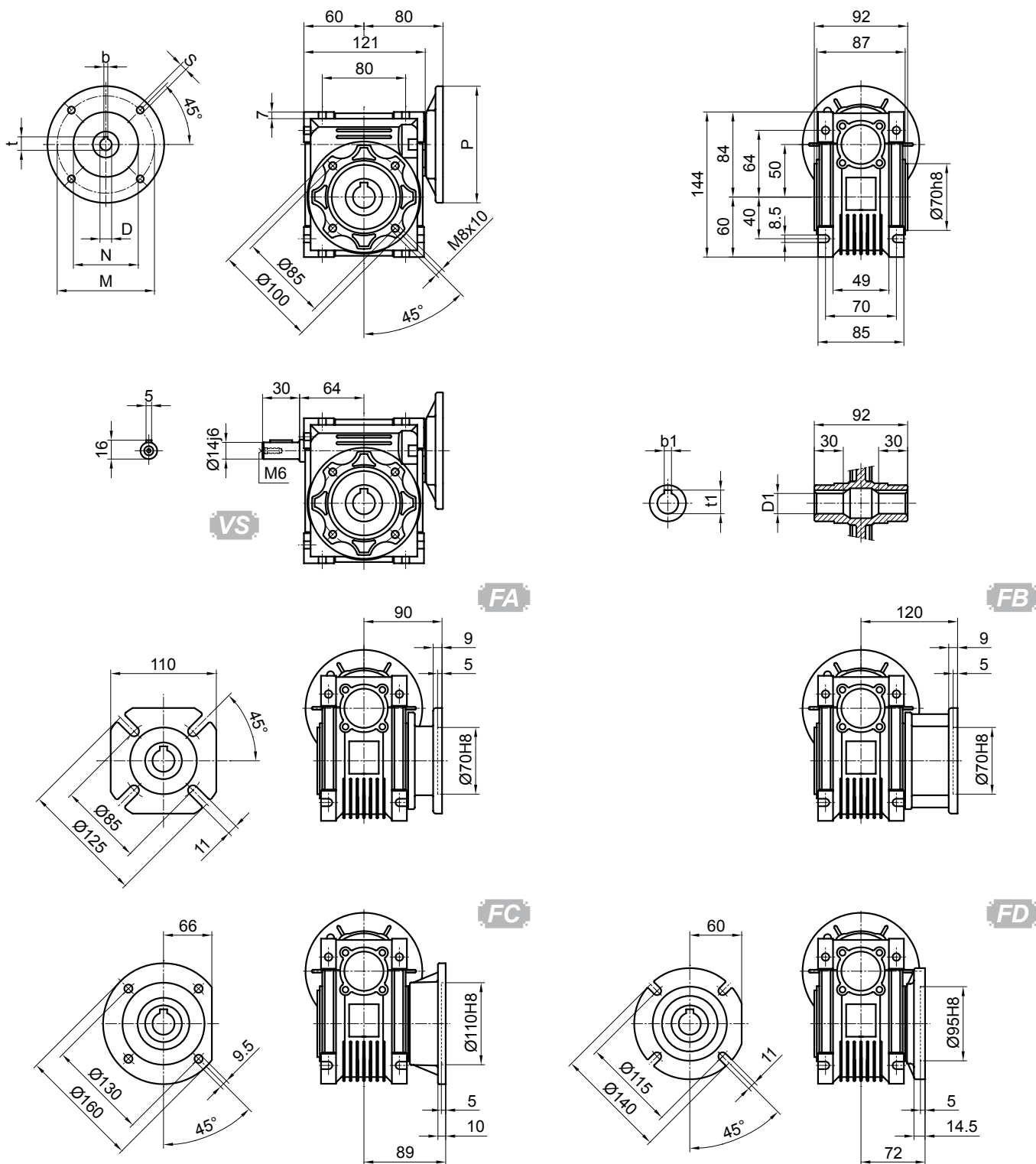
PAM IEC	D _{E8}	b	t	P	M	N	S
63B5	11	4	12.8	140	115	95	9
63B14	11	4	12.8	90	75	60	5.5
56B5	9	3	10.4	120	100	80	6.5
56B14	9	3	10.4	80	65	50	5.5

*Weight without motor $\approx 1.2\text{kg}$



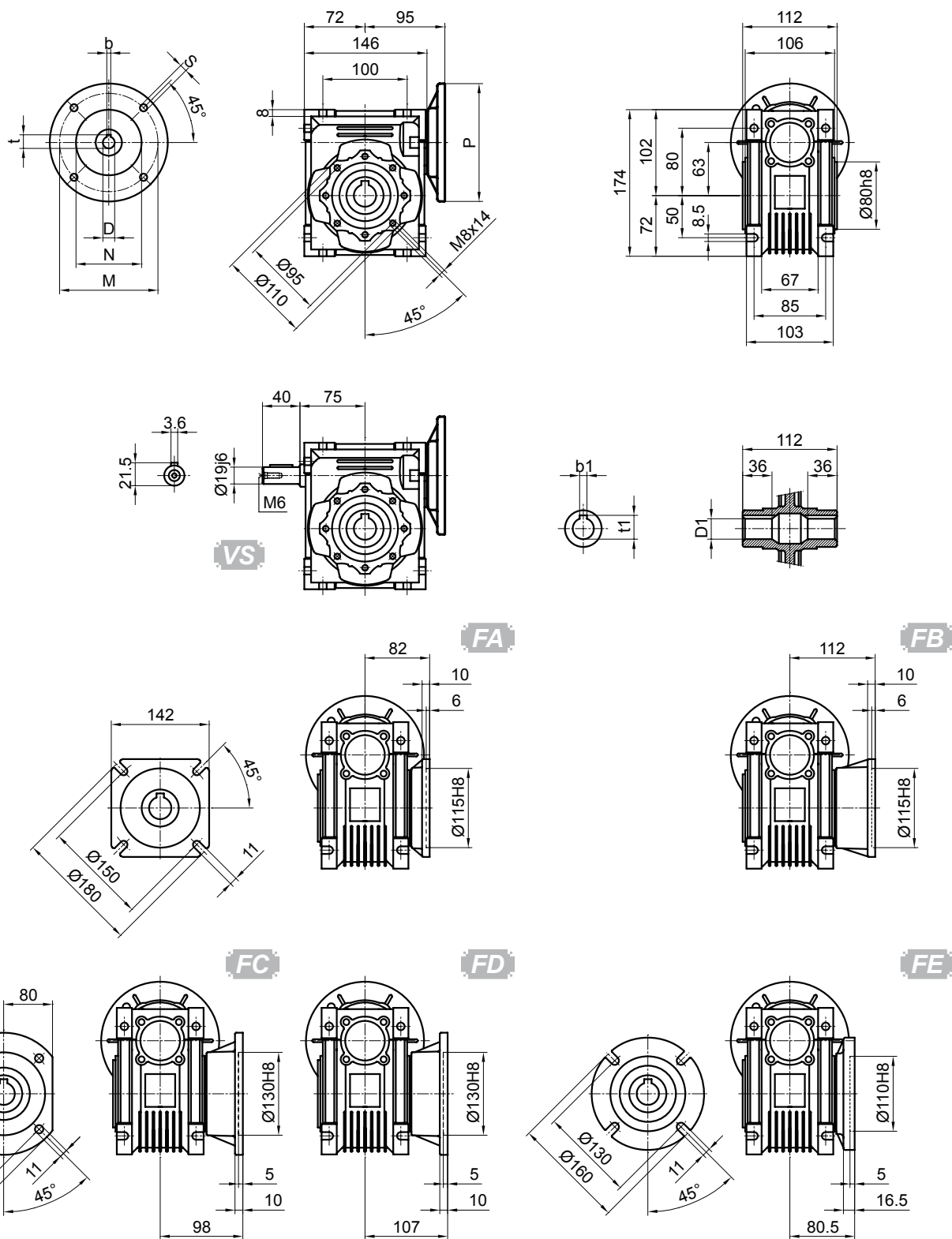
PAM IEC	D_{ES}	b	t	P	M	N	S	Output	D1_{H8}	b1	t1
71B5	14	5	16.3	160	130	110	8.5		18	6	20.8
71B14	14	5	16.3	105	85	70	6.5		(19)	(6)	(21.8)
63B5	11	4	12.8	140	115	95	9				
63B14	11	4	12.8	90	75	60	6				
56B5	9	3	10.4	120	100	80	6.5				
									(..) Only on request		

*Weight without motor $\approx 2.3\text{kg}$



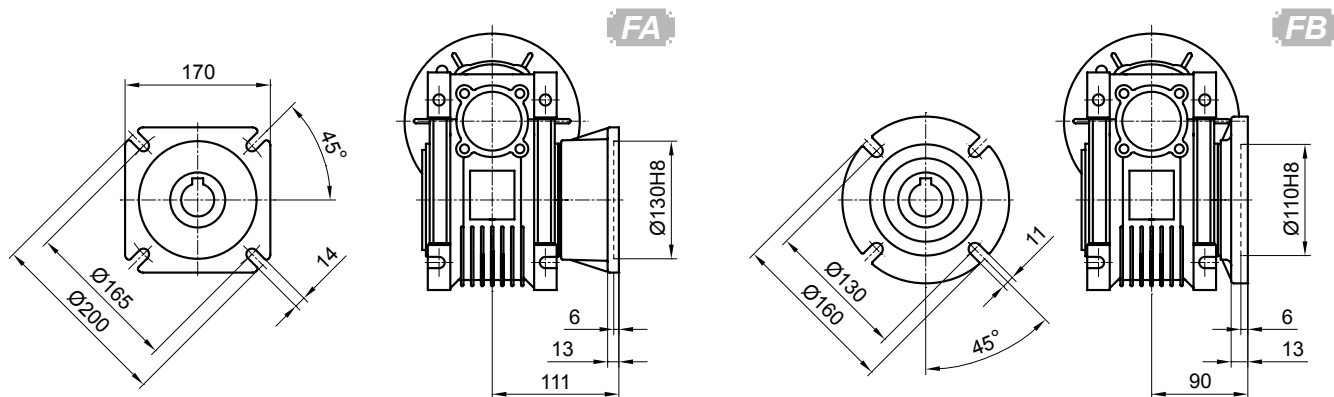
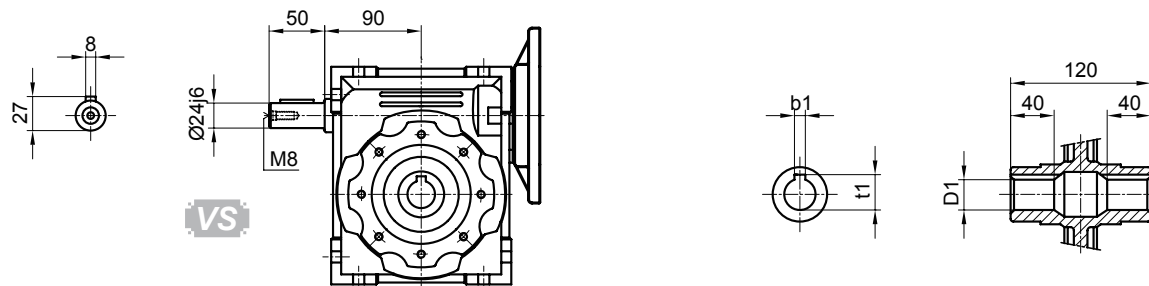
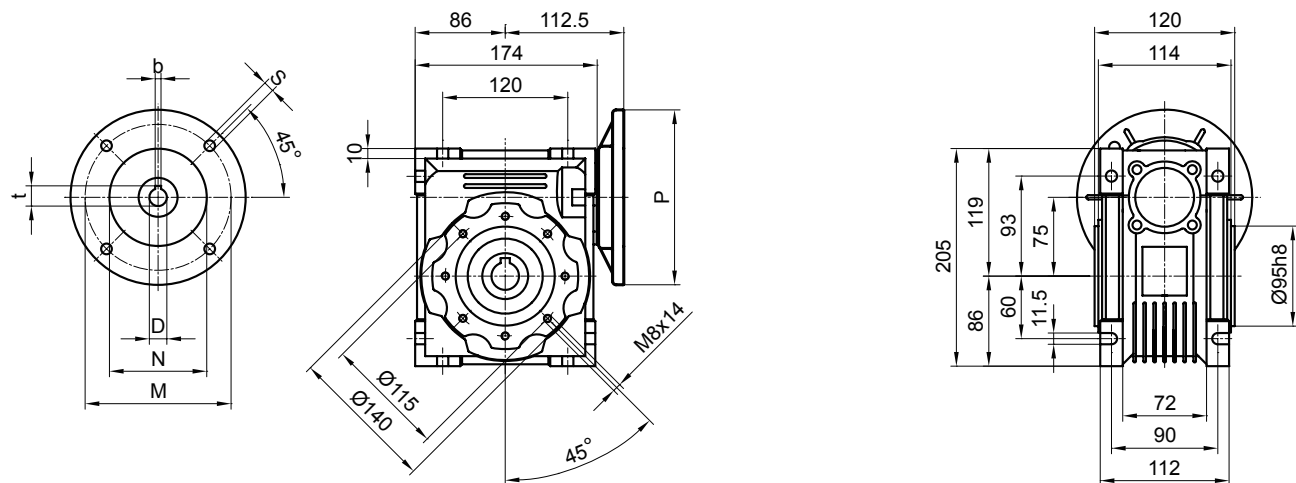
PAM IEC	D _{ES}	b	t	P	M	N	S	Output	D _{1H8}	b1	t1
80B5	19	6	21.8	200	165	130	11		25	8	28.3
80B14	19	6	21.8	120	100	80	6.5		(24)	(8)	(27.3)
71B5	14	5	16.3	160	130	110	8.5		(...) Only on request		
71B14	14	5	16.3	105	85	70	7				
63B5	11	4	12.8	140	115	95	8.5				

*Weight without motor ≈3.5kg



PAM IEC	D_{ES}	b	t	P	M	N	S	Output	D1_{H8}	b1	t1
90B5	24	8	27.3	200	165	130	11		25	8	28.3
90B14	24	8	27.3	140	115	95	9		(28)	(8)	(31.3)
80B5	19	6	21.8	200	165	130	11				
80B14	19	6	21.8	120	100	80	7				
71B5	14	5	16.3	160	130	110	8.5				
71B14	14	5	16.3	105	85	70	7				
									(..) Only on request		

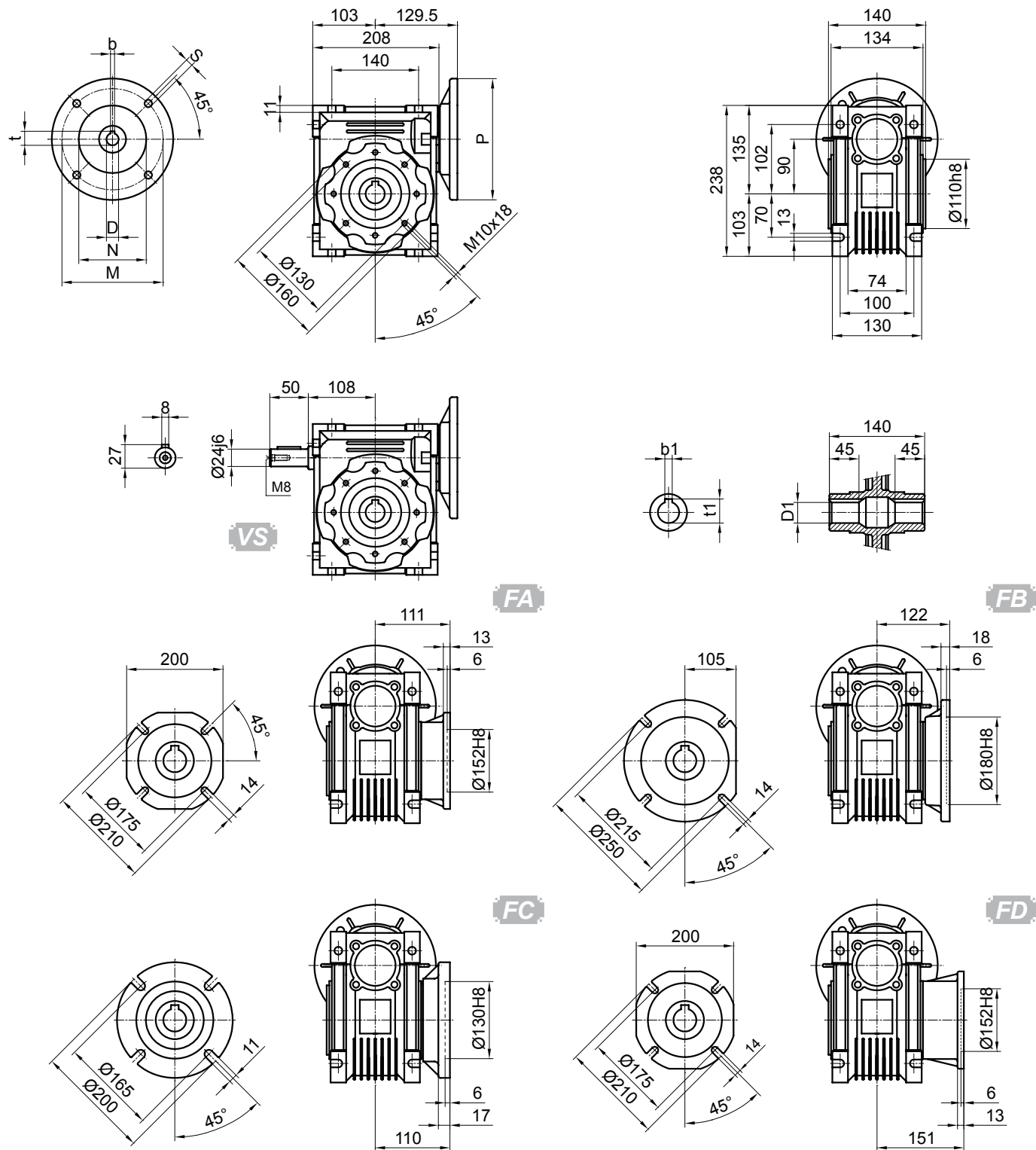
*Weight without motor ≈ 6.2kg



PAM IEC	D _{ES}	b	t	P	M	N	S	Output	D1 _{H8}	b1	t1
100/112B5	28	8	31.3	250	215	180	13		28	8	31.3
100/112B14	28	8	31.3	160	130	110	9		(35)	(10)	(38.3)
90B5	24	8	27.3	200	165	130	11		(..) Only on request		
90B14	24	8	27.3	140	115	95	9				
80B5	19	6	21.8	200	165	130	11				
80B14	19	6	21.8	120	100	80	6.5				
71B5	14	5	16.3	160	130	110	9				

*Weight without motor ≈9.0kg

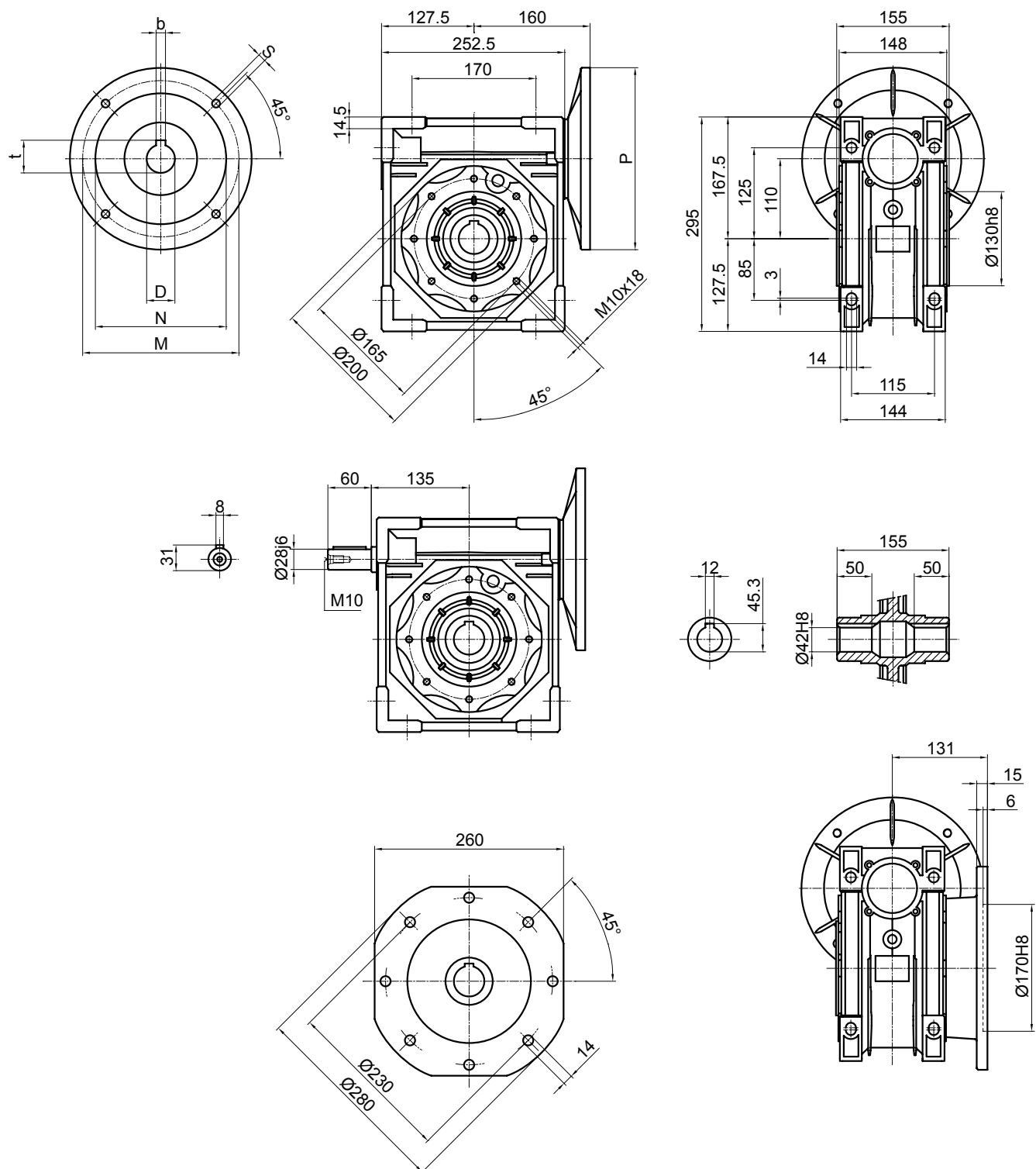
JMRV090



PAM IEC	D _{ES}	b	t	P	M	N	S	Output	D1 _{H8}	b1	t1
100/112B5	28	8	31.3	250	215	180	13		35	10	38.3
100/112B14	28	8	31.3	160	130	110	9		(38)	(10)	(41.3)
90B5	24	8	27.3	200	165	130	11		(...). Only on request		
90B14	24	8	27.3	140	115	95	9				
80B5	19	6	21.8	200	165	130	11				
80B14	19	6	21.8	120	100	80	6.5				

*Weight without motor ≈ 13kg

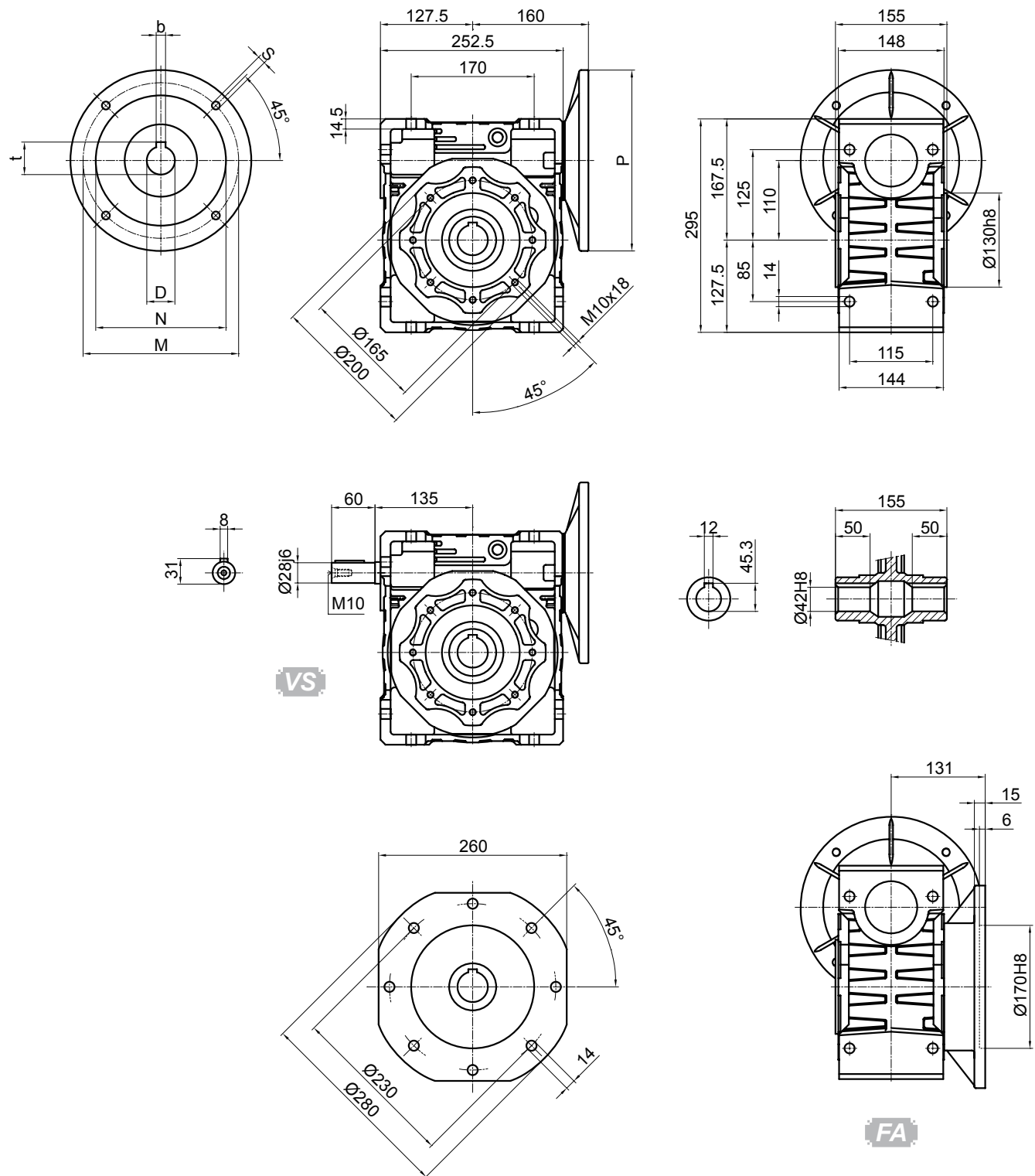
JMRV105



PAM IEC	D _{E8}	b	t	P	M	N	S
132B5	38	10	41.3	300	265	230	M12
100/112B5	28	8	31.3	250	215	180	13
90B5	24	8	27.3	200	165	130	11
80B5	19	6	21.8	200	165	130	11

*Weight without motor ≈21kg

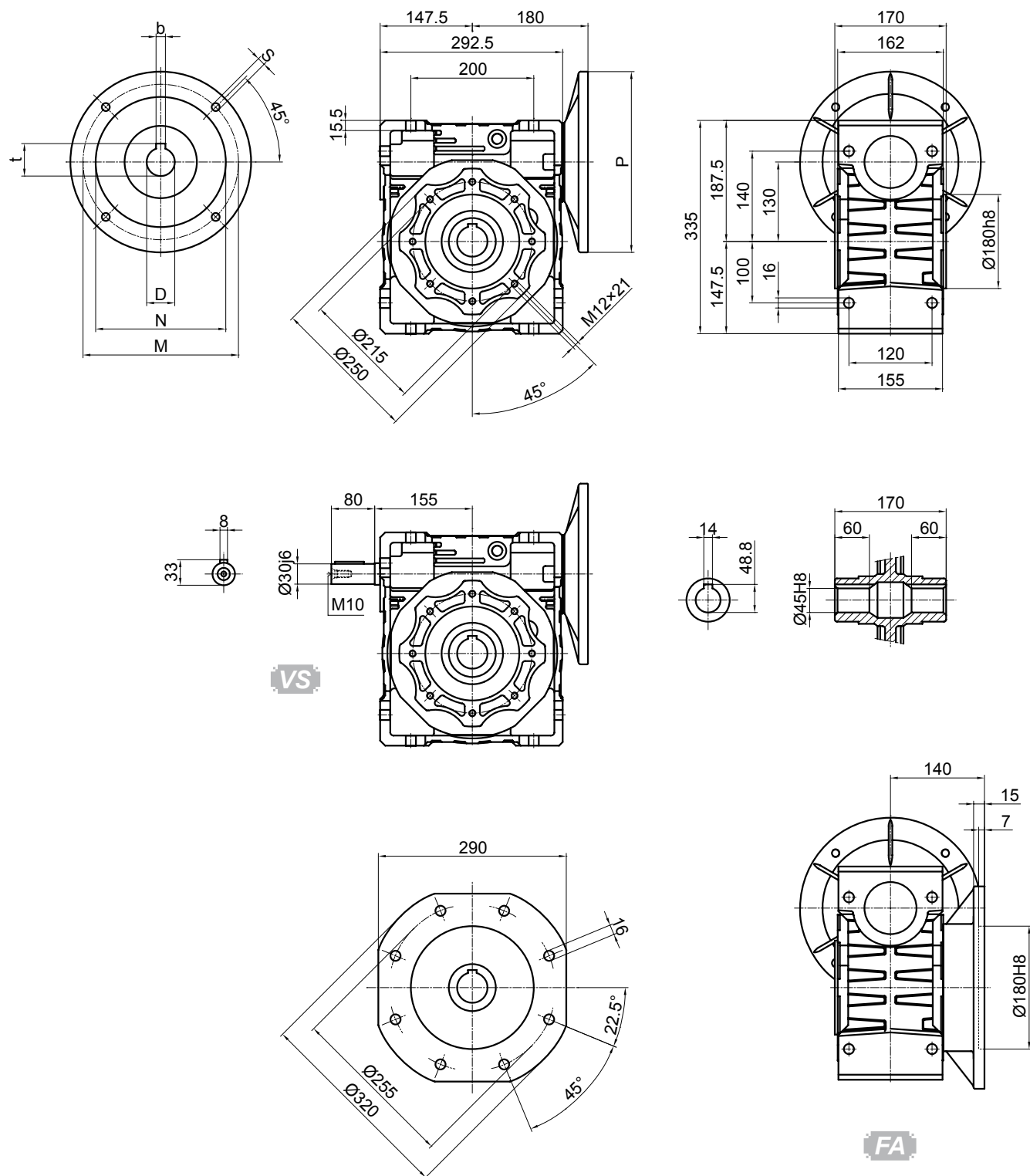
JMRV110



PAM IEC	D _{E8}	b	t	P	M	N	S
132B5	38	10	41.3	300	265	230	M12
100/112B5	28	8	31.3	250	215	180	13
90B5	24	8	27.3	200	165	130	11
80B5	19	6	21.8	200	165	130	11

*Weight without motor ≈35kg

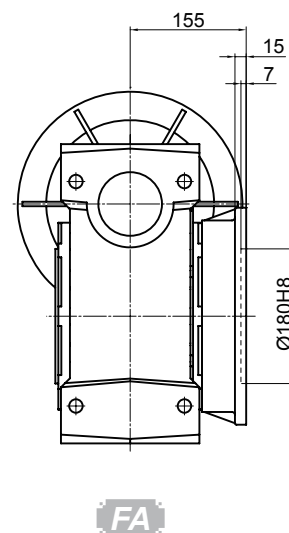
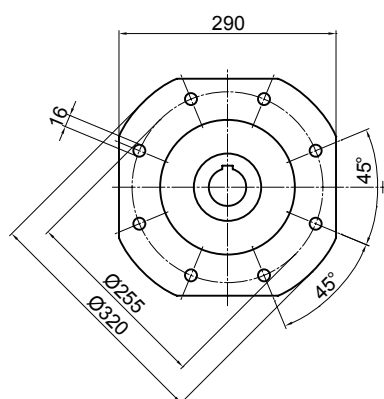
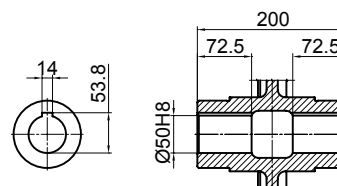
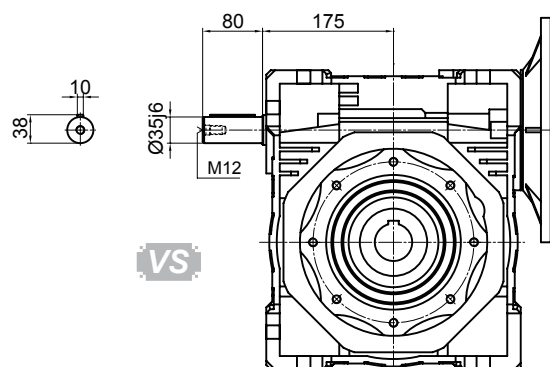
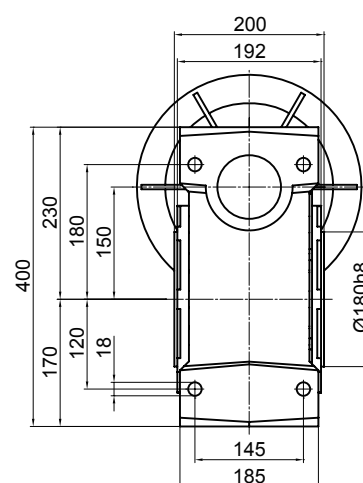
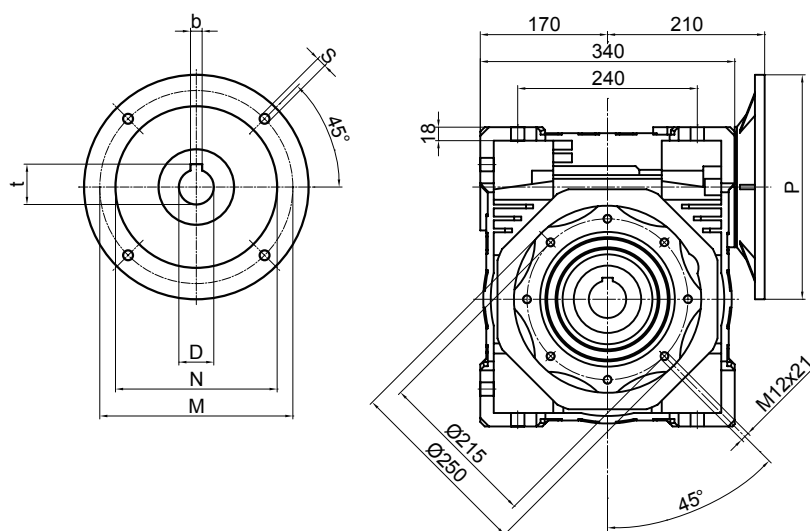
JMRV130



PAM IEC	D _{Es}	b	t	P	M	N	S
132B5	38	10	41.3	300	265	230	M12
100/112B5	28	8	31.3	250	215	180	13
90B5	24	8	27.3	200	165	130	11

*Weight without motor ≈48kg

JMRV150



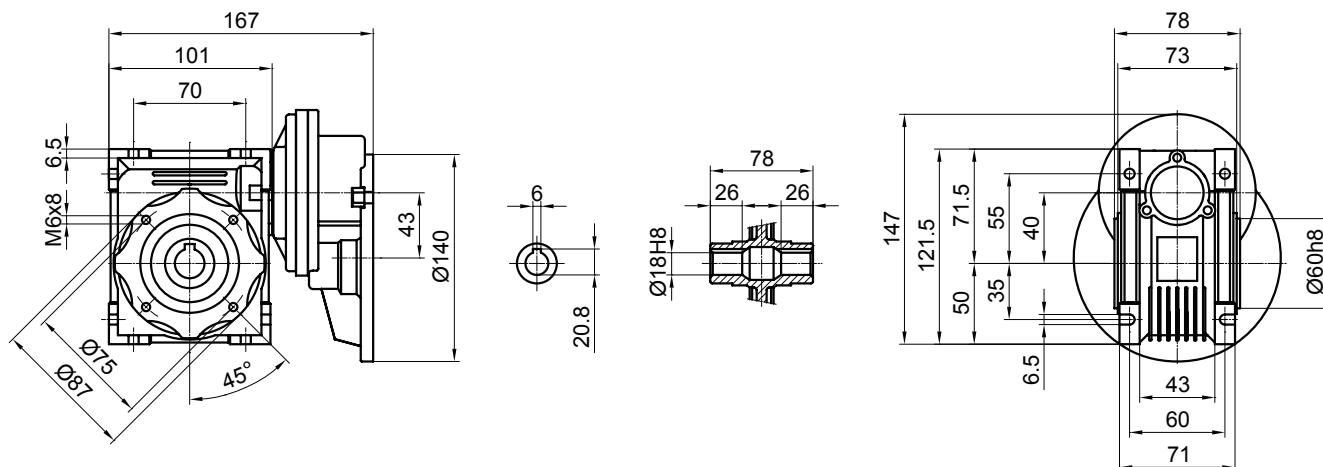
PAM IEC	D _{E8}	b	t	P	M	N	S
160B5	42	12	45.3	350	300	250	19
132B5	38	10	41.3	300	265	230	M12
100/112B5	28	8	31.3	250	215	180	M12

*Weight without motor ≈84kg

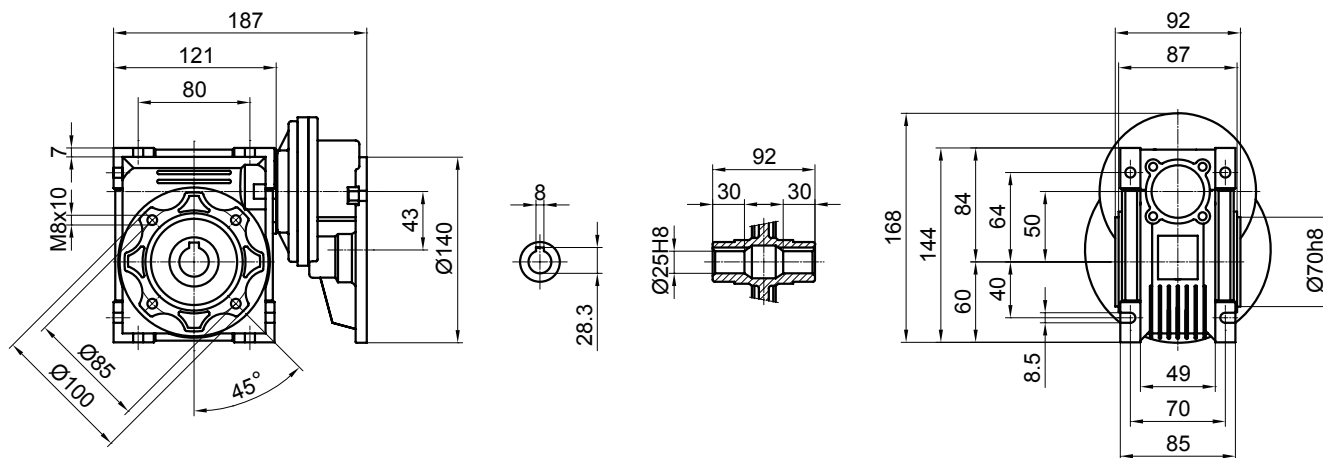
10.2 **PC+JMRV** Dimensions charts

- For the dimensions of the output flanges, please consider the drawing of relevant JMRV size.
- For the dimensions of the hollow shafts in option, please consider the drawing of relevant JMRV size.
- For the dimensions of the double extension worm shafts, please consider the drawing of relevant JMRV size

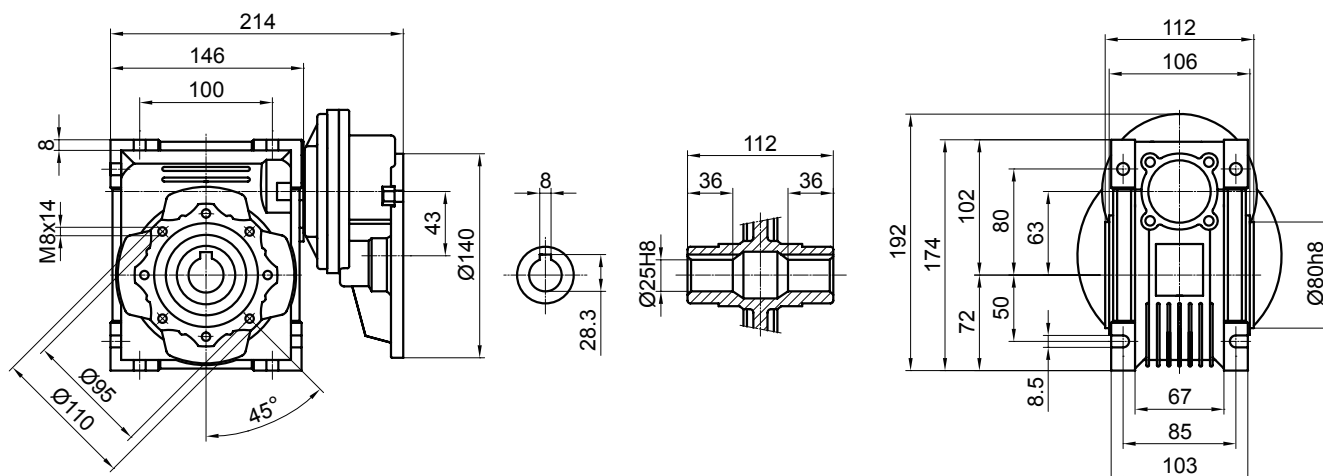
PC063 - JMRV040



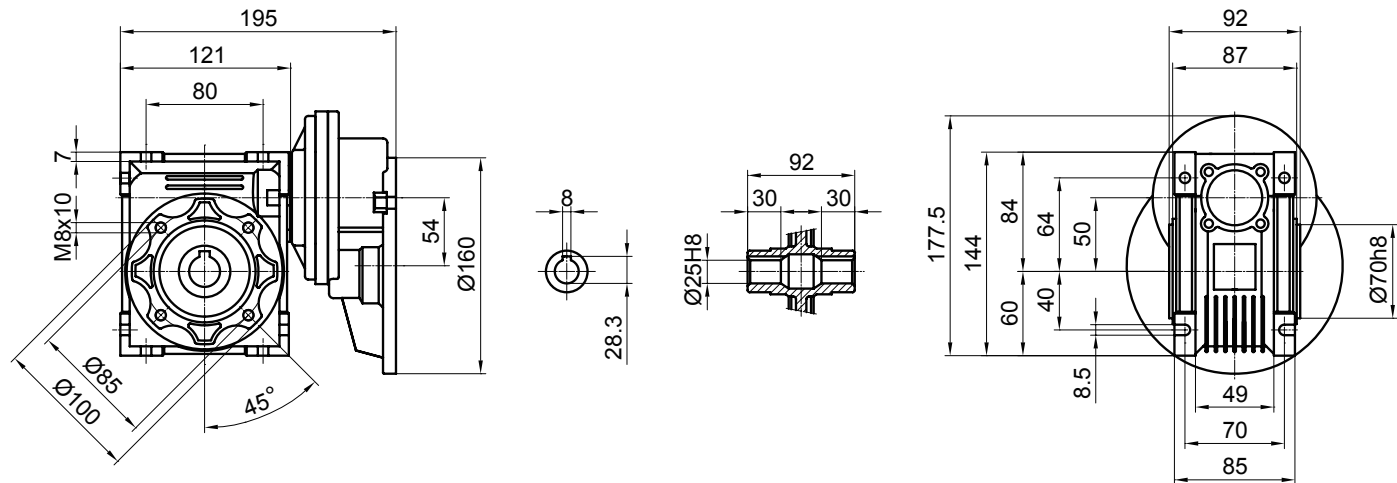
PC063 - JMRV050



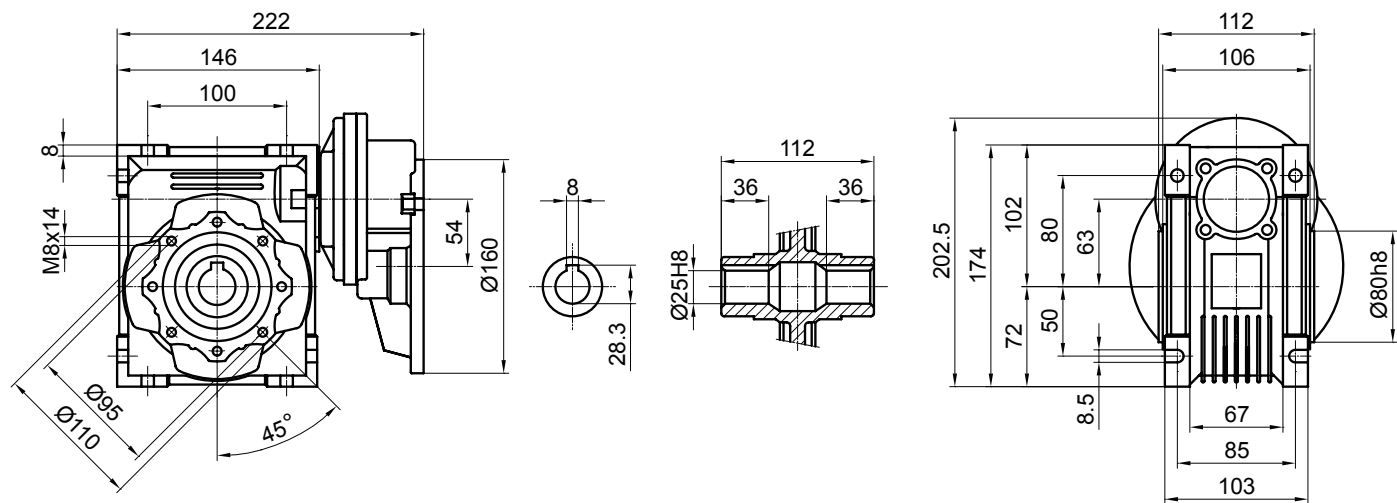
PC063 - JMRV063



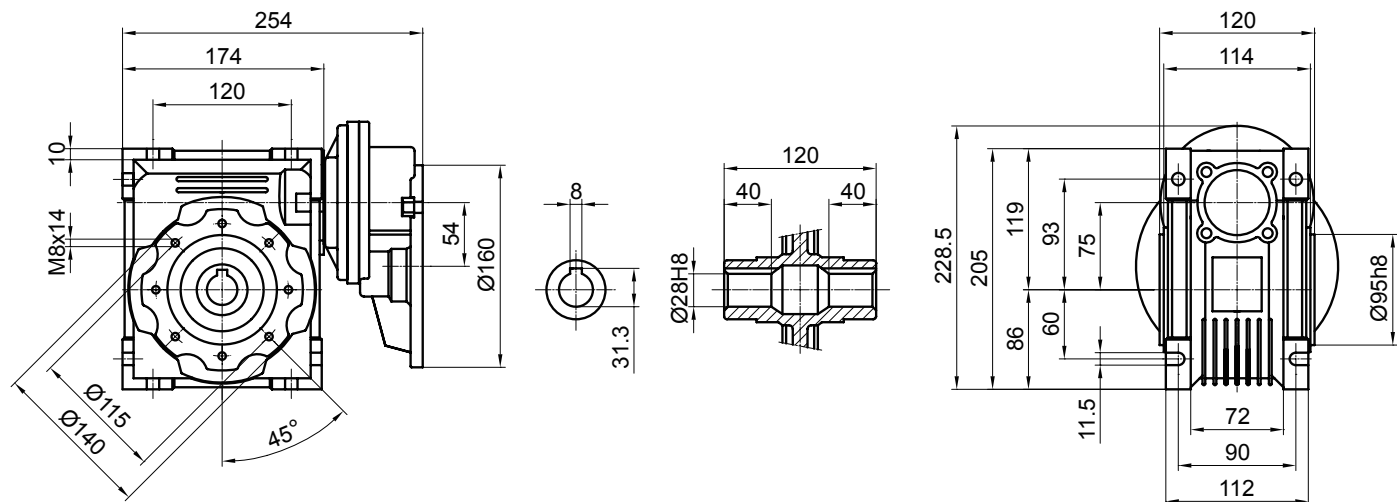
PC071 - JMRV050



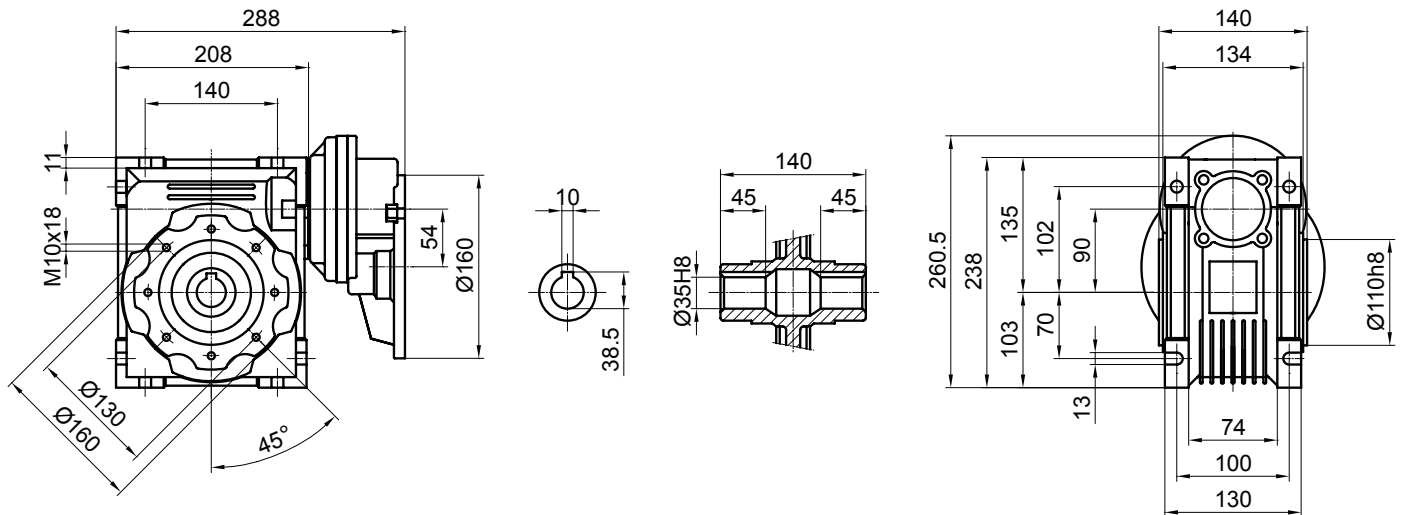
PC071 - JMRV063



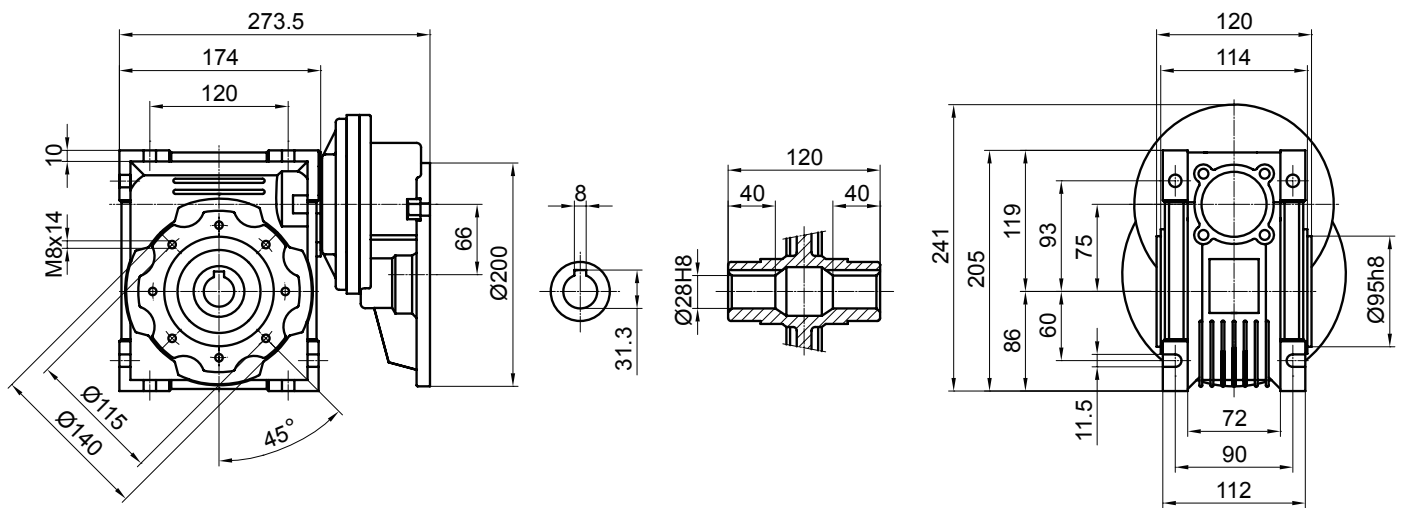
PC071 - JMRV075



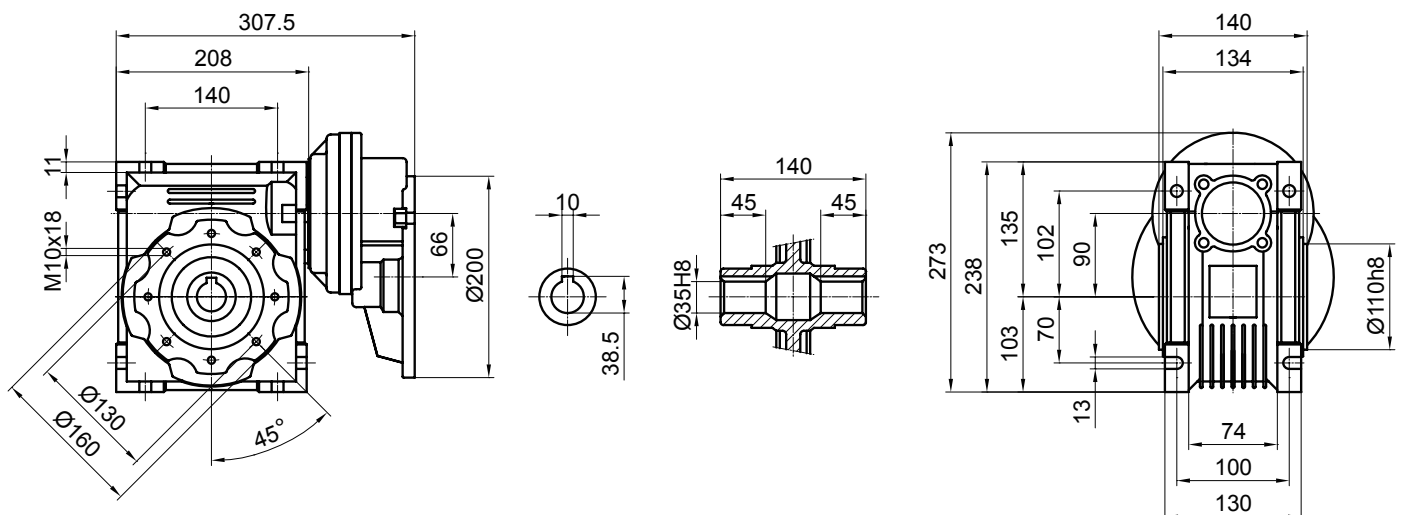
PC071 - JMRV090



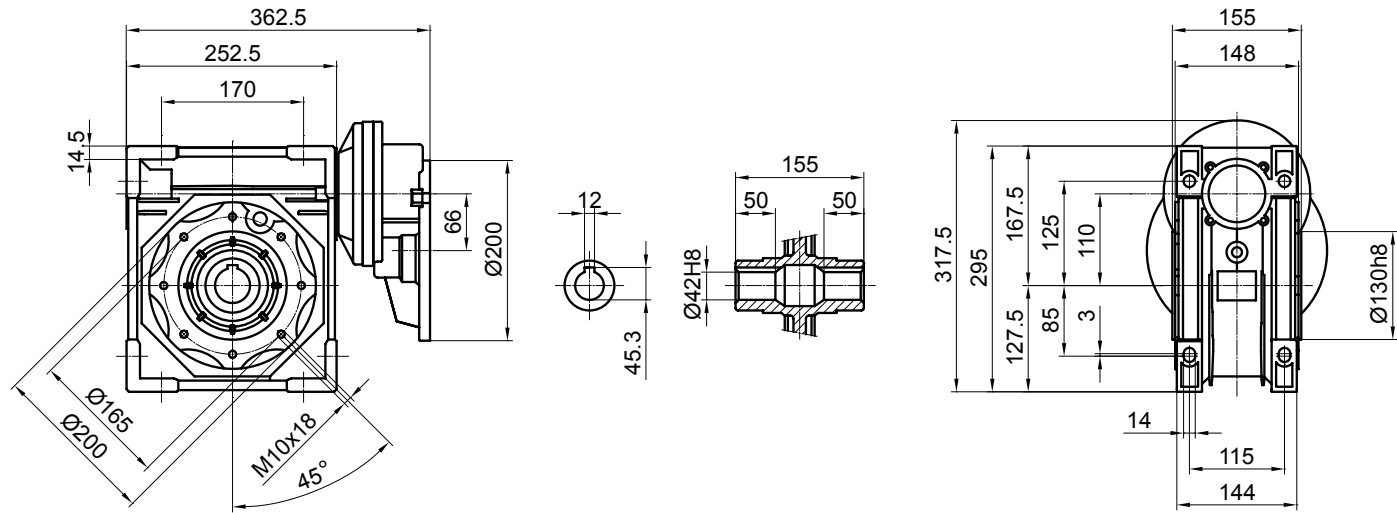
PC080 - JMRV075



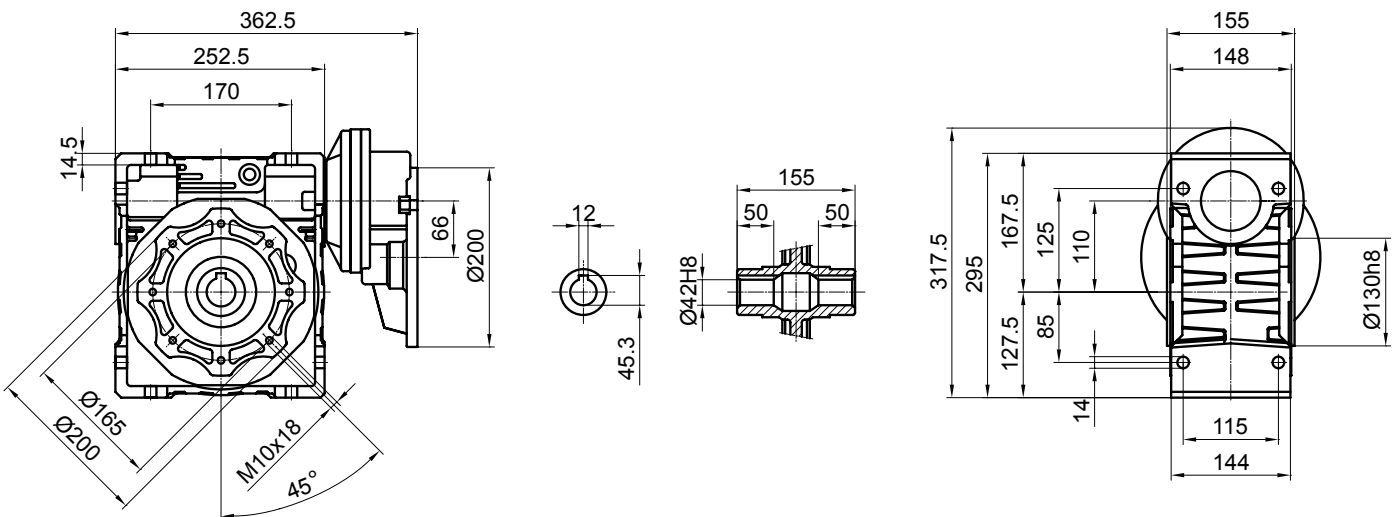
PC080 - JMRV090



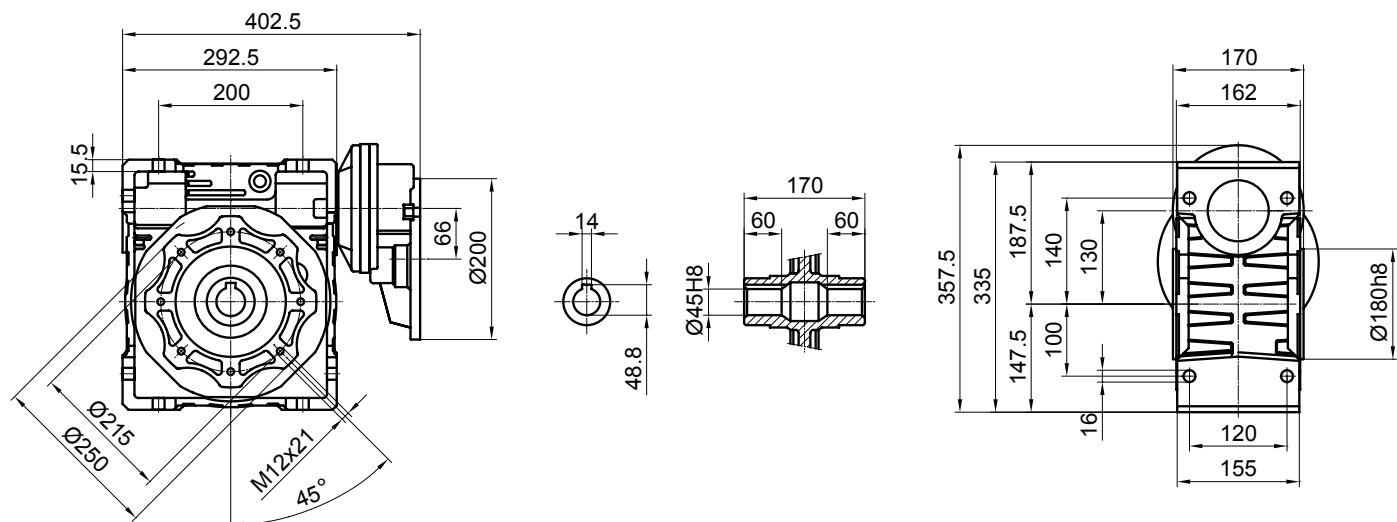
PC080(090) - JMRV105



PC080(090) - JMRV110



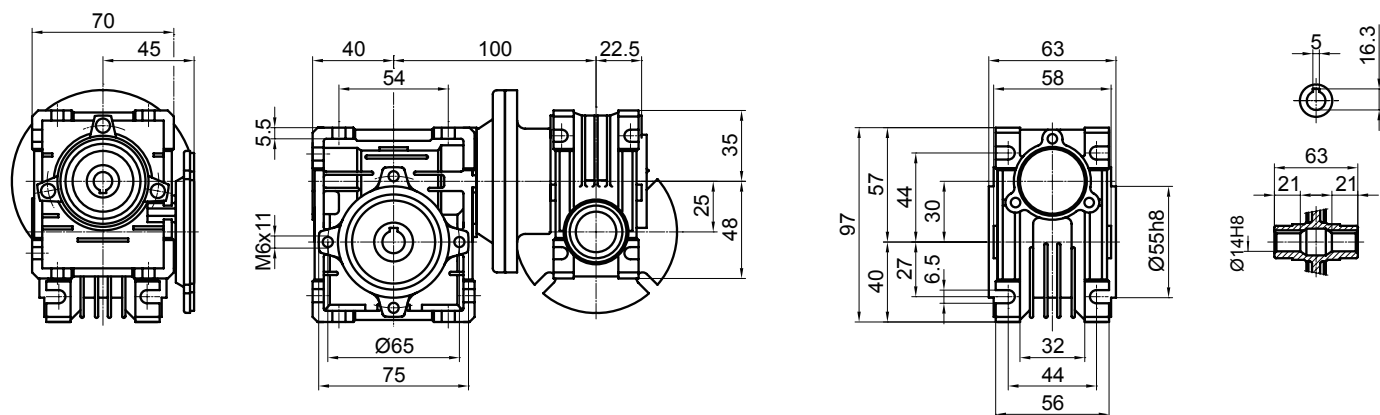
PC080(090) - JMRV130



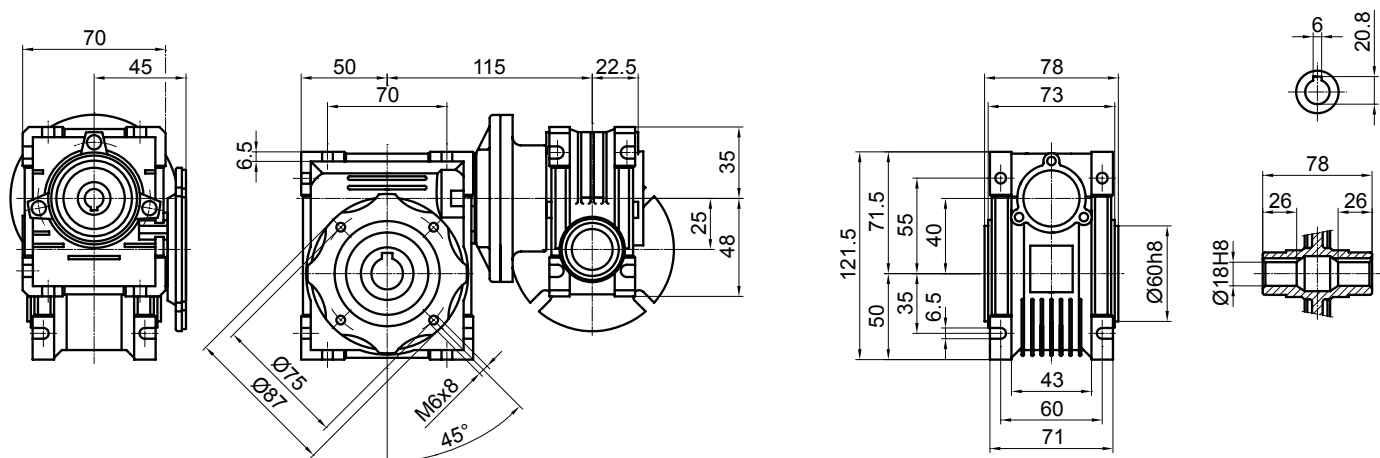
10.3 JMRV+JMRV Dimensions charts

- For the dimensions of the output flanges, please consider the drawing of relevant JMRV size.
- For the dimensions of the hollow shafts in option, please consider the drawing of relevant JMRV size.
- For the dimensions of the double extension worm shafts, please consider the drawing of relevant JMRV size

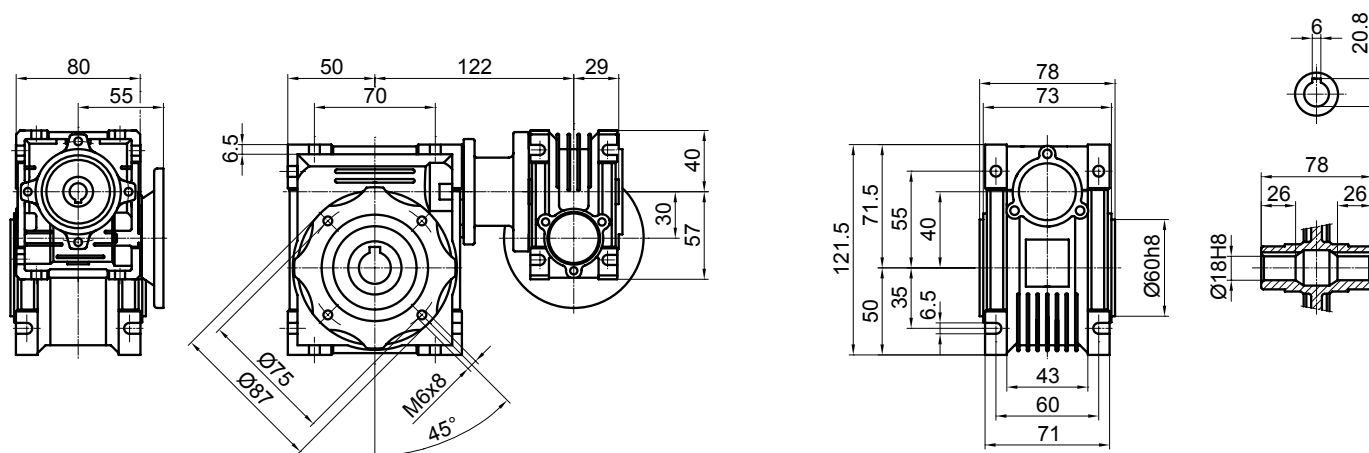
JMRV 025 - 030



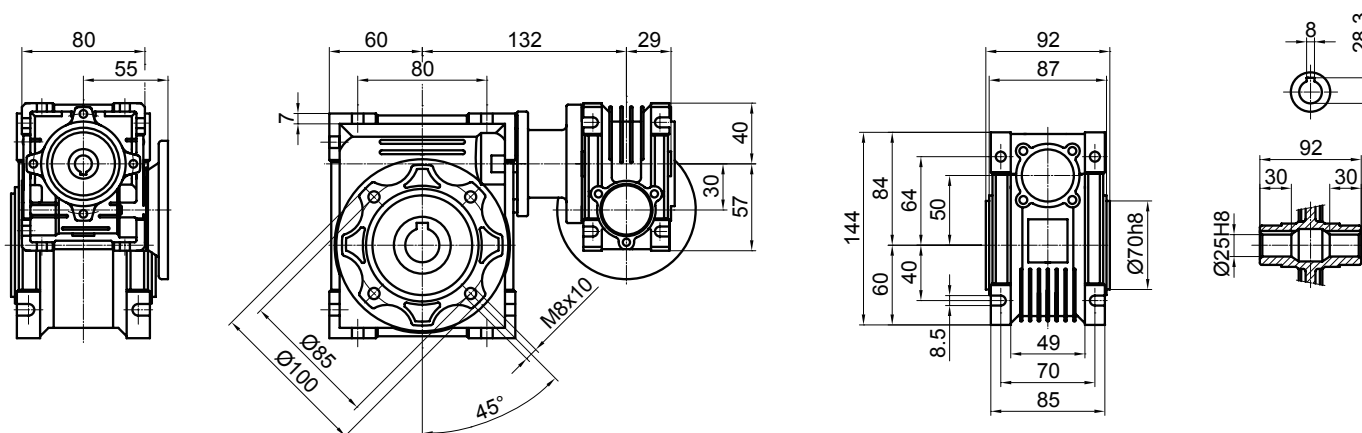
JMRV 025 - 040



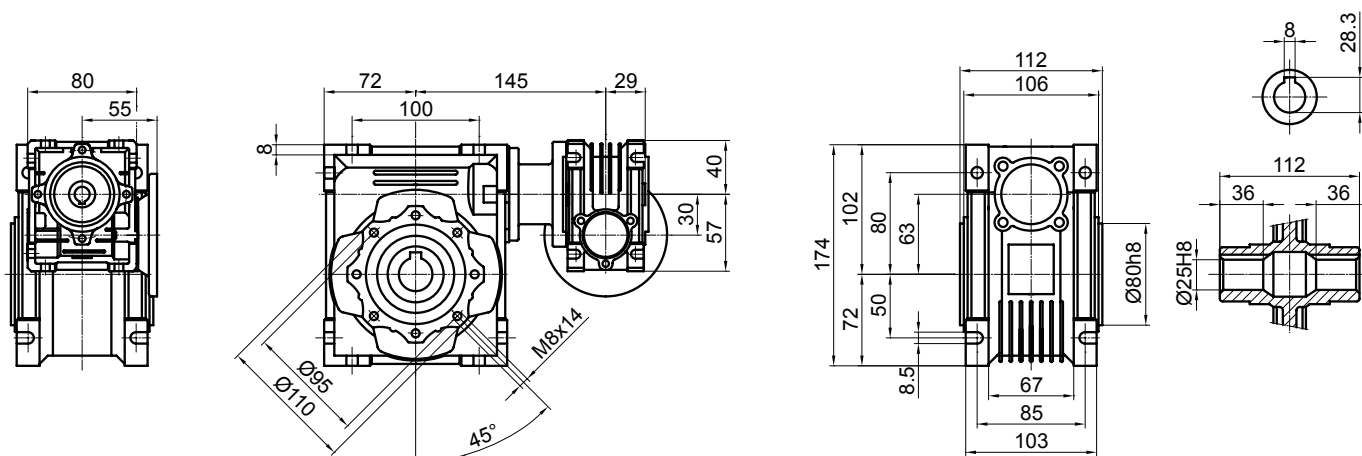
JMRV 030 - 040



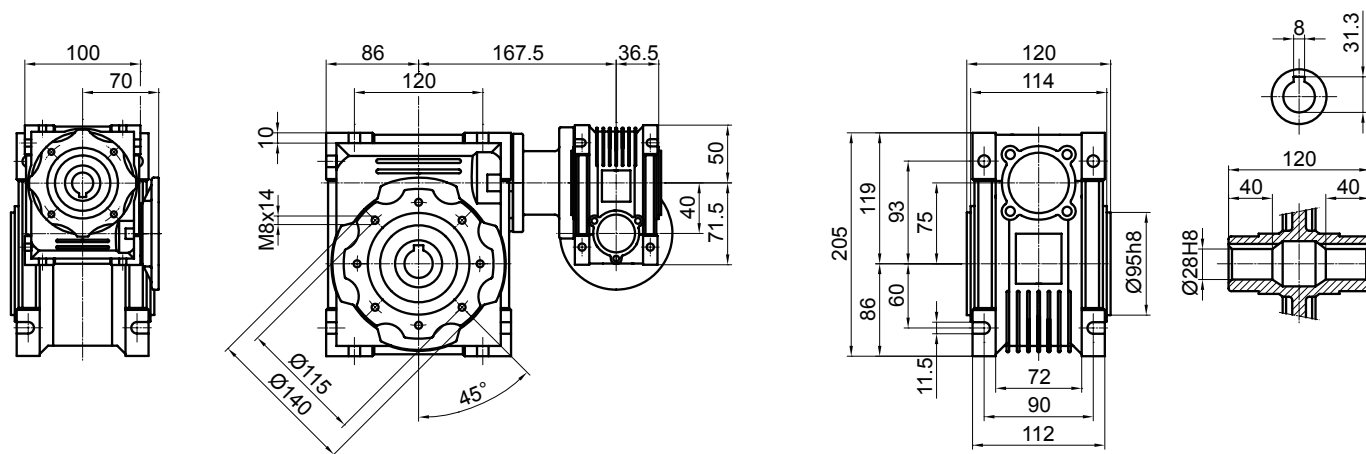
JMRV 030 - 050



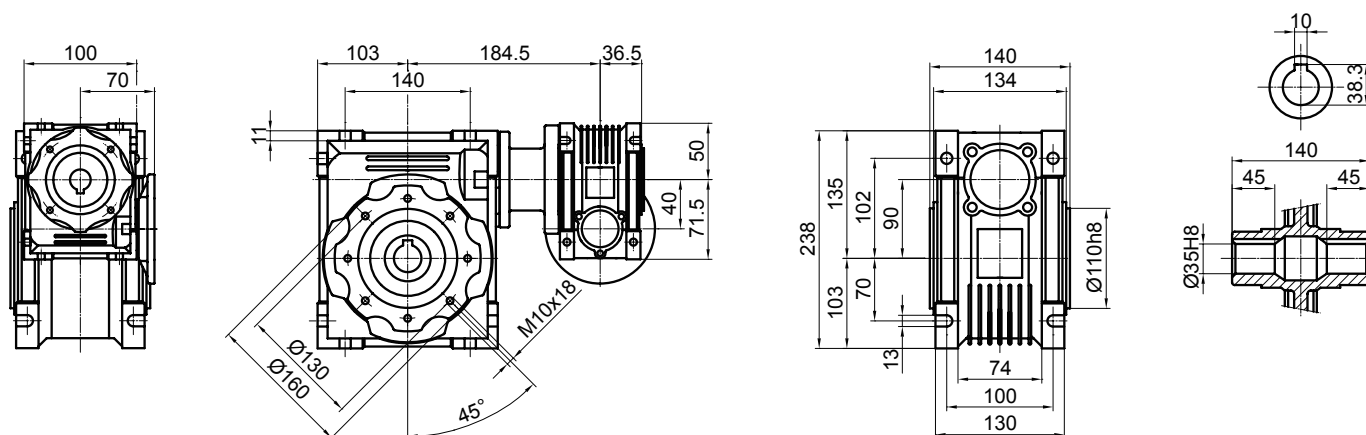
JMRV 030 - 063



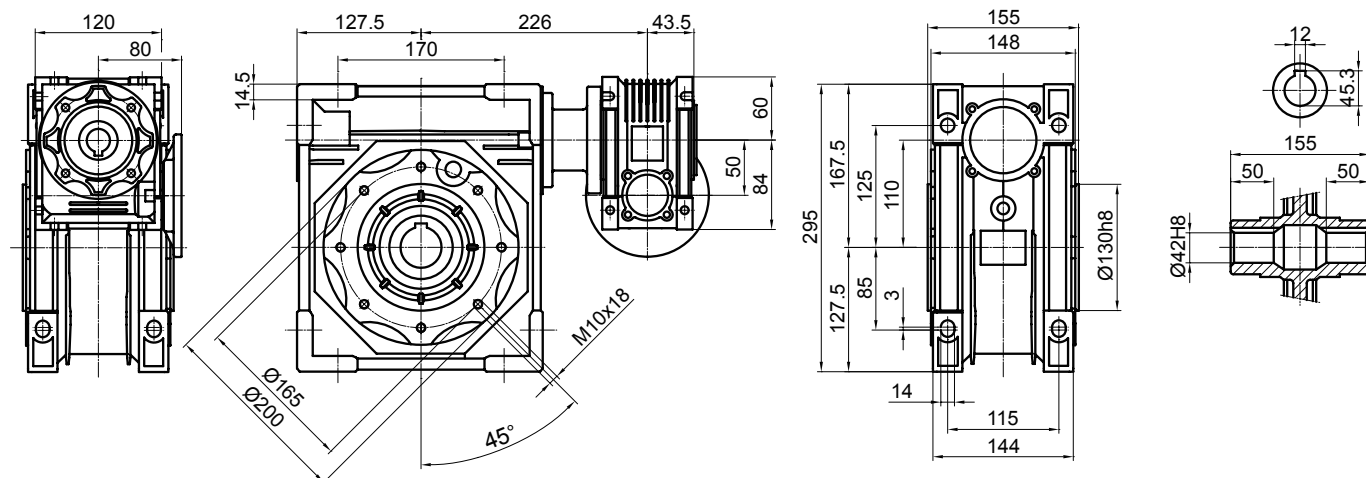
JMRV 040 - 075



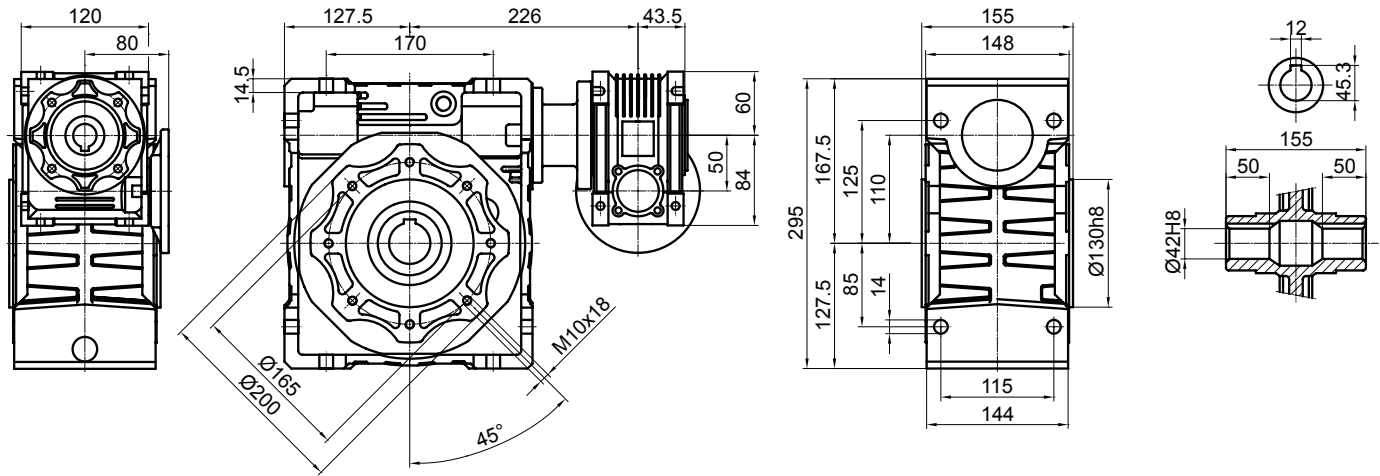
JMRV 040 - 090



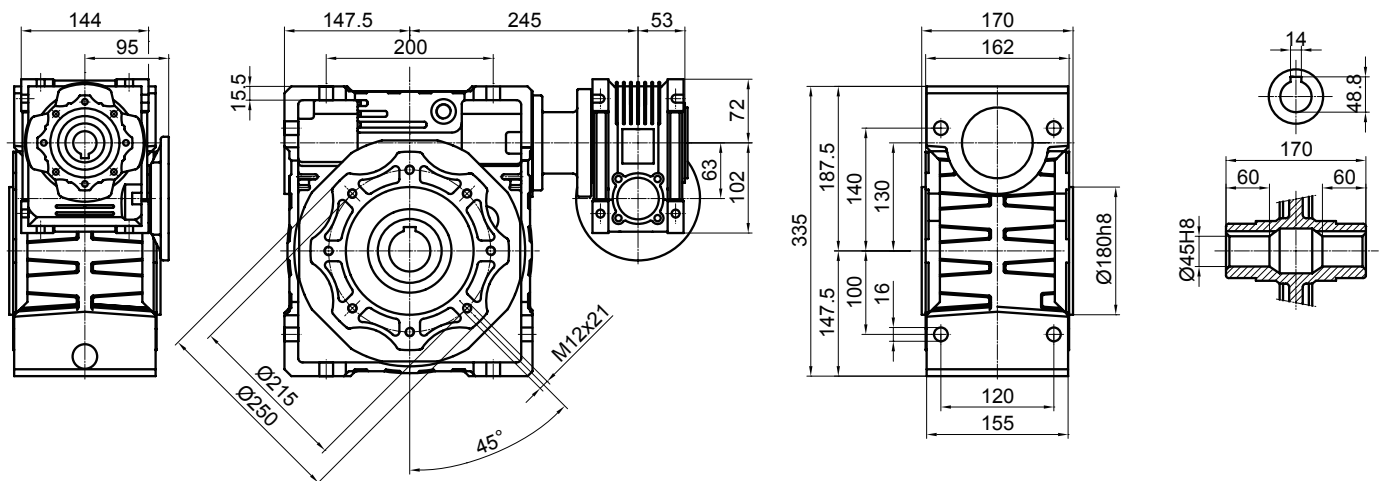
JMRV 050 - 105



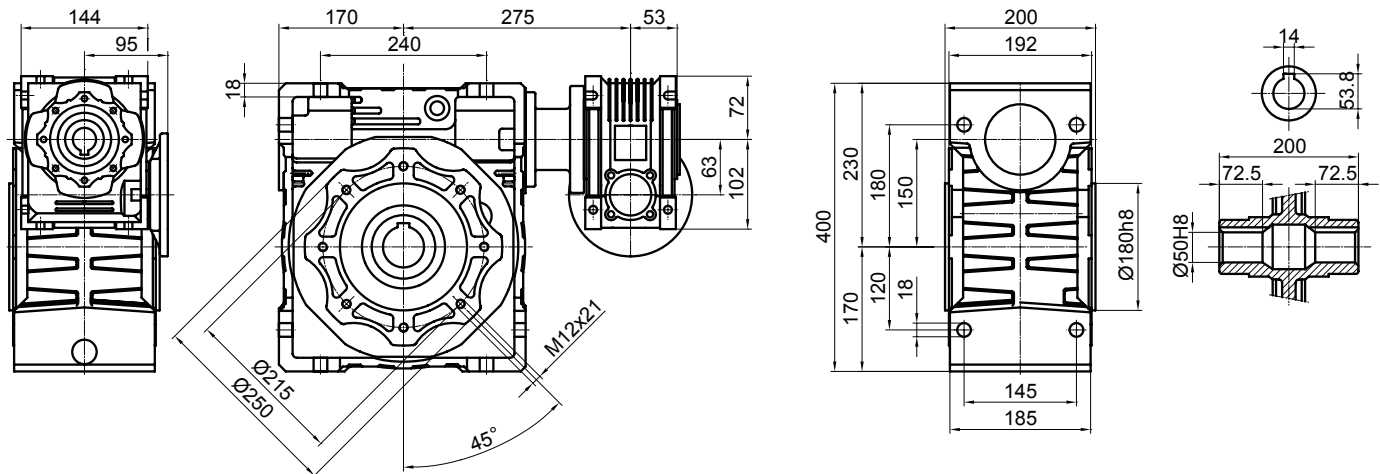
JMRV 050 - 110



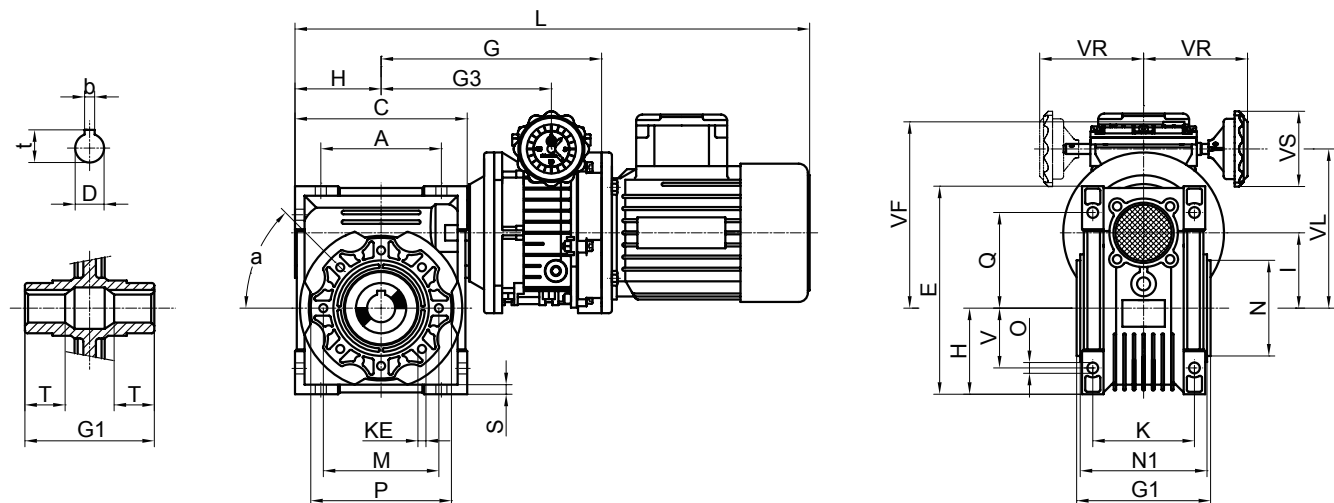
JMRV 063 - 130



JMRV 063 - 150

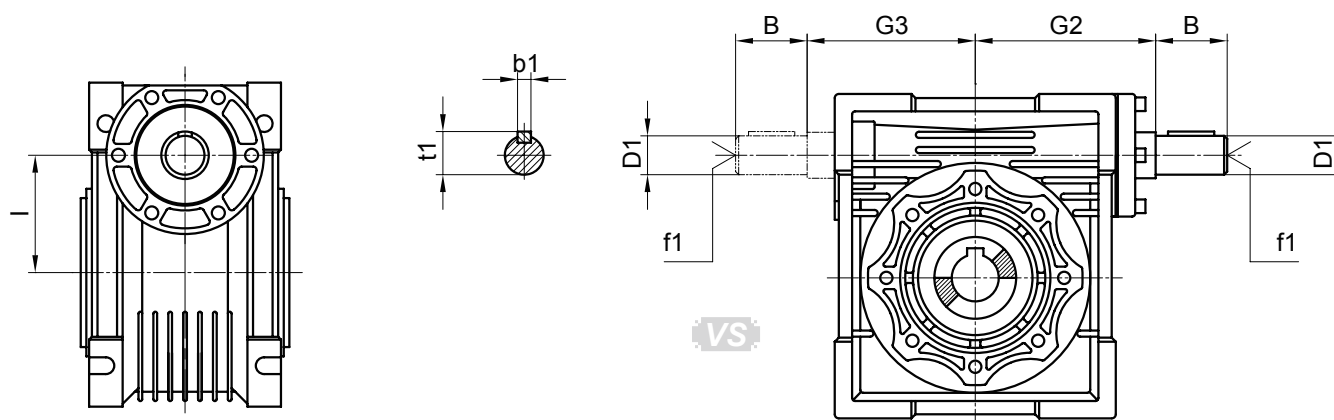


10.4 **UDL(TXF)+JMRV** Dimensions charts



	A	C	D _{H8}	b	t	E	G	G1	G3	H	I	L	M	N _{h8}	N1	O	P	Q	S	T	V	VF	VR	VS	VL	K	KE	a
UDL002-JMRV040	70	100	18	6	20.8	121.5	181.5	78	134	50	40	438.5	75	60	73	6.5	87	55	6.5	26	35	153	113	70	118	60	M6x8 (n=4)	45°
UDL005-JMRV040							178		141.5			453										165	113	70	131			
TXF005-JMRV040							177		127			452										152	115	70	123.5			
UDL002-JMRV050	80	120	25	8	28.3	144	191.5	92	144	60	50	458.5	85	70	87	8.5	100	64	7	30	40	163	113	70	128	70	M8x10 (n=8)	45°
UDL005-JMRV050							188		151.5			473										175	113	70	141			
TXF005-JMRV050							187		137			472										162	115	70	133.5			
UDL005-JMRV063	100	144	25	8	28.3	174	204	112	167.5	72	63	501	95	80	106	8.5	110	80	8	36	50	188	113	70	154	85	M8x14 (n=8)	45°
TXF005-JMRV063							203		153			500										175	115	70	146.5			
UDL010-JMRV063							239.5		183.5			566.5										205	120	85	170			
TXF010-JMRV063							227		164.5			554										197	126	85	166			
UDL010-JMRV075	120	172	28	8	31.3	205	256.5	120	200.5	86	75	597.5	115	95	114	11	140	93	10	40	60	217	120	85	182	90	M8x14 (n=8)	45°
TXF010-JMRV075							244		181.5			585										209	126	85	178			
UD020-JMRV075							287		219.5			668										223	140	85	202			
UDL010-JMRV090	140	206	35	10	38.3	238	273	140	217	103	90	631	130	110	134	13	160	102	11	45	70	232	120	85	197	110	M10x18 (n=8)	45°
TXF010-JMRV090							260.5		198			618.5										224	126	85	193			
UD020-JMRV090							304		236.5			702										238	140	85	217			
UDL010-JMRV105	170	252.5	42	12	45.3	295	303.5	155	247.5	127.5	110	686	165	130	148	14	200	125	14	50	85	252	120	85	217	115	M10x18 (n=8)	45°
UDL010-JMRV110																												
TXF010-JMRV105																						244	120	85	213			
TXF010-JMRV110							291		228.5			673.5																
UD020-JMRV105																						258	140	85	237			
UD020-JMRV110							334		266.5			756.5																
UD030-JMRV105																												
UD030-JMRV110												834.5																
UD050-JMRV105																												
UD050-JMRV110							382		291			849.5										291	150	120	268			
UD020-JMRV130	200	292.5	45	14	48.8	335	354	170	286.5	147.5	130	796.5	215	180	162	16	250	140	15	60	100	278	140	85	257	120	M12x21 (n=8)	45°
UD030-JMRV130							402		311			874.5										311	150	120	288			
UD050-JMRV130							402		311			889.5										311	150	120	288			

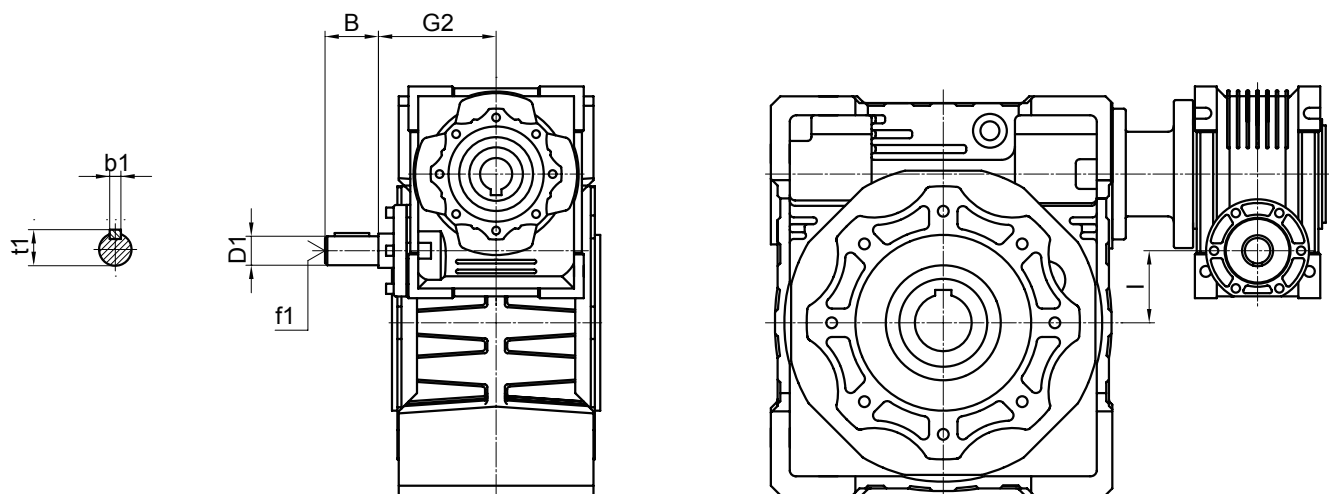
10.5 **JRV** Dimensions charts



JRV	025	030	040	050	063	075	090	105/110	130	150
B	20	20	23	30	40	50	50	60	80	80
D1	9 j6	9 j6	11 j6	14 j6	19 j6	24 j6	24 j6	28 j6	30 j6	35 j6
G2	38	51	60	74	90	105	125	142	162	195
G3	37	45	53	64	75	90	108	135	155	175
I	25	30	40	50	63	75	90	110	130	150
b1	3	3	4	5	6	8	8	8	8	10
f1	-	-	-	M6	M6	M8	M8	M10	M10	M12
t1	10.2	10.2	12.5	16	21.5	27	27	31	33	38

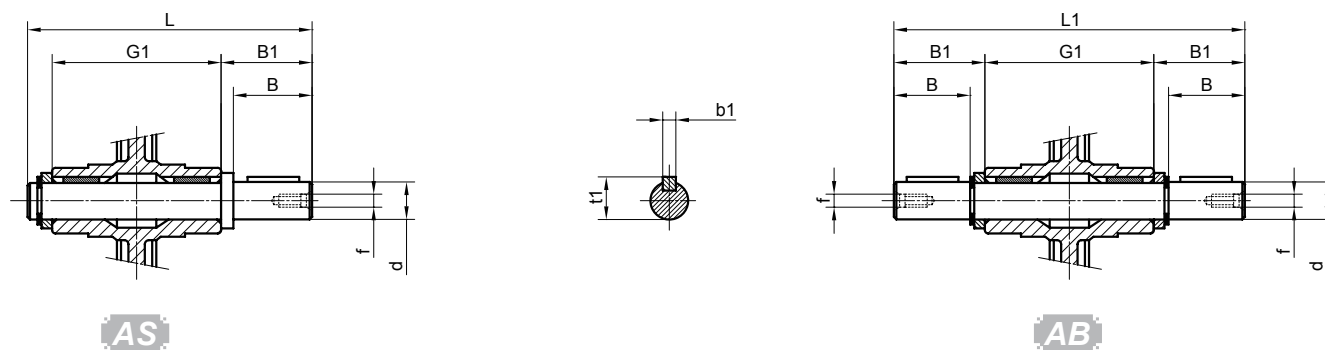
10.6 **JRV+JMRV** 尺寸图

10.6 **JRV+JMRV** Dimensions charts



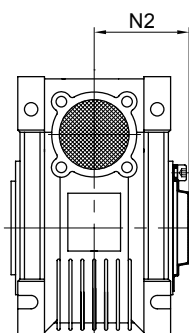
JRV-JMRV	030-040	030-050	030-063	040-075	040-090	050-105 050-110	063-130	063-150
B	20	20	20	23	23	30	40	40
D1	9 j6	9 j6	9 j6	11 j6	11 j6	14 j6	19 j6	19 j6
G2	51	51	51	60	60	74	90	90
I	10	20	33	35	50	50	67	87
b1	3	3	3	4	4	5	6	6
f1	-	-	-	-	-	M6	M6	M6
t1	10.2	10.2	10.2	12.5	12.5	16	21.5	21.5

10.7 Output shaft



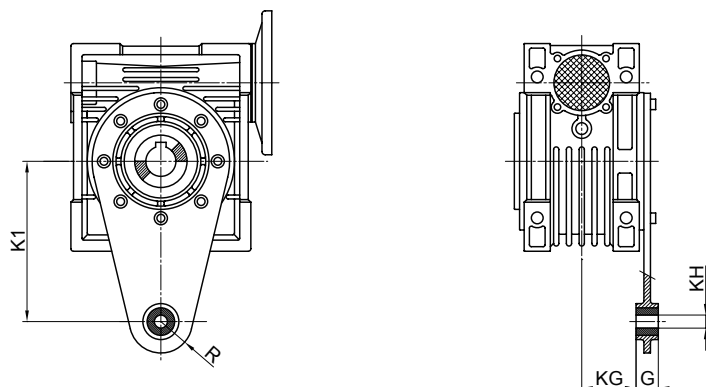
	d	B	B1	G1	L	L1	f	b1	t1
025	11 g6 (9)	23 (25)	25.5 (30)	50	81 (85.5)	101	-	4 (3)	12.5 (10.2)
030	14 g6	30	32.5	63	102	128	M6	5	16
040	18 h6	40	43	78	128	164	M6	6	20.5
050	25 h6	50	53.5	92	153	199	M10	8	28
063	25 h6	50	53.5	112	173	219	M10	8	28
075	28 h6	60	63.5	120	192	247	M10	8	31
090	35 h6	80	84.5	140	234	309	M12	10	38
105/110	42 h6	80	84.5	155	249	324	M16	12	45
130	45 h6	80	85	170	265	340	M16	14	48.5
150	50 h6	82	87	200	297	374	M16	14	53.5

10.8 Protective Cover



	N2
030	42
040	50
050	58
063	69
075	74
090	86
105/110	94
130	102
150	113

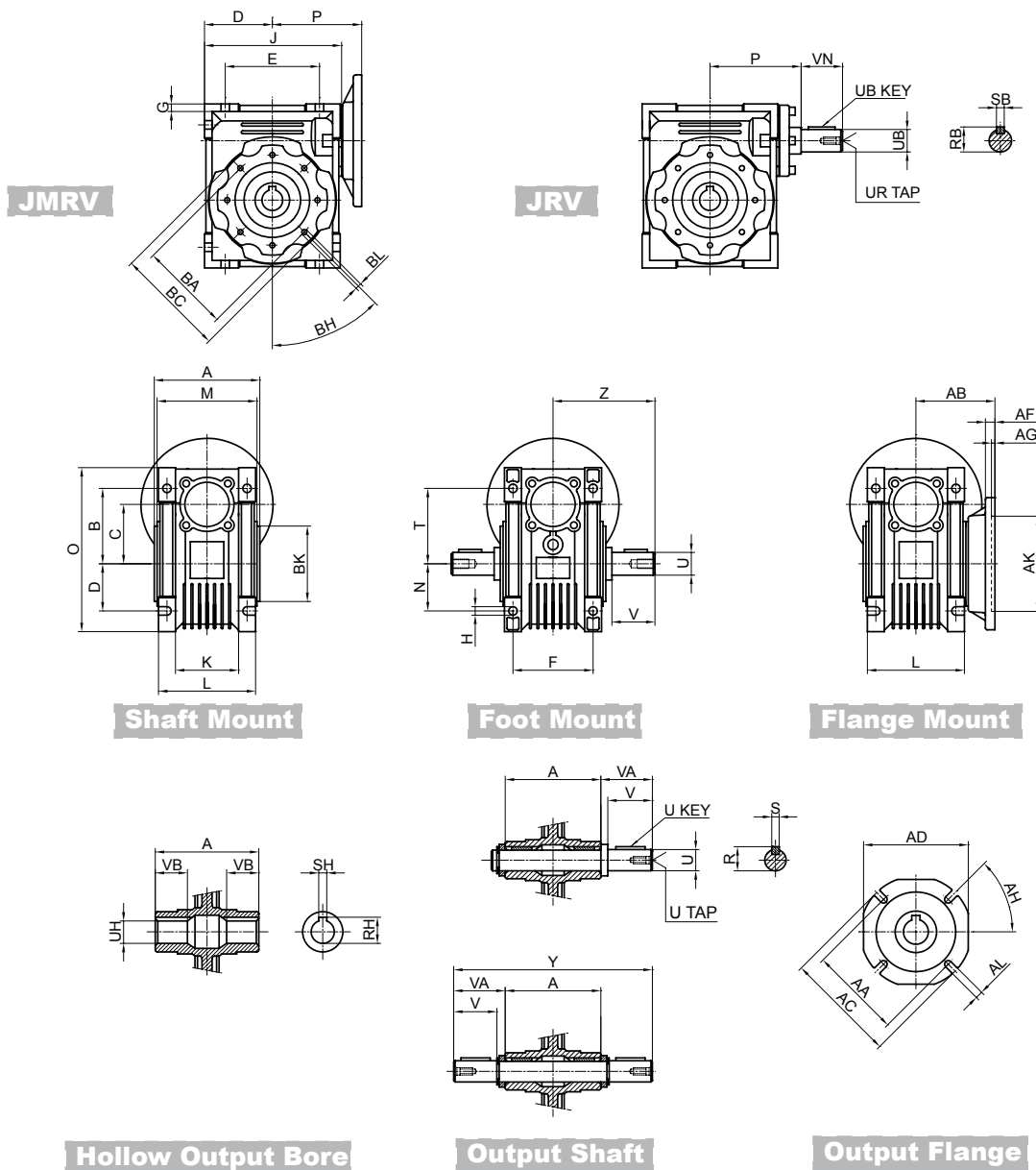
10.9 Torque arm



	K1	G	KG	KH	R
025	70	14	17.5	8	15
030	85	14	24	8	15
040	100	14	31.5	10	18
050	100	14	38.5	10	18
063	150	14	49	10	18
075	200	25	47.5	20	30
090	200	25	57.5	20	30
105/110	250	30	62	25	35
130	250	30	69	25	35
150	250	30	84	25	35

11.0 JMRV-INCH SERIES

11.1 Dimensions chart



Hollow Output Bore	030	040	050	063	075	090	105/110	130	150
RH	0.71	0.84	1.12	1.24	1.37	1.52	1.8	1.93	2.22
SH	0.1875	0.1875	0.25	0.25	0.25	0.3125	0.375	0.375	0.500
UH	$0.625^{+0.001}_0$	$0.75^{+0.001}_0$	$1.0^{+0.001}_0$	$1.125^{+0.001}_0$	$1.25^{+0.001}_0$	$1.375^{+0.001}_0$	$1.625^{+0.001}_0$	$1.75^{+0.001}_0$	$2.0^{+0.001}_0$
VB	0.83	1.14	1.28	1.42	1.56	1.77	1.97	2.24	2.85

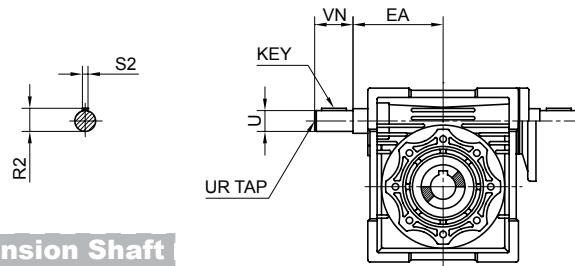
Output Shaft	030	040	050	063	075	090	105/110	130	150
R	0.7	0.83	1.11	1.23	1.36	1.51	1.79	1.92	2.22
S	0.1875	0.1875	0.25	0.25	0.25	0.3125	0.375	0.375	0.500
U	$0.625^{+0.001}_0$	$0.75^{+0.001}_0$	$1.0^{+0.001}_0$	$1.125^{+0.001}_0$	$1.25^{+0.001}_0$	$1.375^{+0.001}_0$	$1.625^{+0.001}_0$	$1.75^{+0.001}_0$	$2.0^{+0.001}_0$
U KEY	0.1875x1.125	0.1875x1.5	0.25x1.5	0.25x1.875	0.25x2.25	0.3125x2.5	0.375x2.75	0.375x2.75	0.50x3.50
U TAP	1/4-20	1/4-20	3/8-16	3/8-16	1/2-13	1/2-13	5/8-11	5/8-11	3/4-10
V	1.57	1.97	1.97	2.36	2.76	3.15	3.54	3.54	3.94
VA	1.67	2.09	2.11	2.5	2.89	3.33	3.72	3.74	4.13
Y	5.82	7.25	7.84	9.41	10.5	12.17	13.54	14.17	16.13

	030	040	050	063	075	090	105/110	130	150
A	2.48	3.07	3.62	4.41	4.72	5.51	6.1	6.69	7.87
B	2.24	2.81	3.31	4.02	4.69	5.31	6.59	7.38	9.06
BA	2.56	2.95	3.35	3.74	4.53	5.12	6.5	8.46	8.46
BC	2.95	3.43	3.94	4.33	5.51	6.3	7.87	9.84	9.84
BH	90°	45°	45°	45°	45°	45°	45°	45°	45°
BK	2.165 ⁰ _{-0.0018}	2.362 ⁰ _{-0.0018}	2.756 ⁰ _{-0.0018}	3.15 ⁰ _{-0.0021}	3.74 ⁰ _{-0.0021}	4.331 ⁰ _{-0.0021}	5.118 ⁰ _{-0.0025}	7.087 ⁰ _{-0.0025}	7.087 ⁰ _{-0.0025}
BL	M6x11	M6x10	M8x10	M8x14	M8x14	M10x18	M10x18	M12x21	M12x21
C	1.18	1.57	1.97	2.48	2.95	3.54	4.33	5.12	5.91
D	1.57	1.97	2.36	2.83	3.39	4.06	5.02	5.81	6.69
E	2.13	2.76	3.15	3.94	4.72	5.51	6.69	7.87	9.45
F	1.73	2.36	2.76	3.35	3.54	3.94	4.53	4.72	5.71
G	0.22	0.26	0.28	0.31	0.39	0.43	0.57	0.61	0.71
H	0.26	0.26	0.33	0.33	0.45	0.51	0.55	0.63	0.71
J	3.15	3.98	4.76	5.75	6.85	8.19	9.94	11.52	13.39
K	1.26	1.69	1.93	2.64	2.83	2.91	-	-	-
L	2.2	2.8	3.35	4.06	4.41	5.12	5.67	6.1	7.28
M	2.28	2.87	3.43	4.17	4.49	5.28	5.83	6.38	7.56
N	1.06	1.38	1.57	1.97	2.36	2.76	3.35	3.94	4.72
O	3.82	4.78	5.67	6.85	8.07	9.37	11.61	13.19	15.75
P	2.64	3.15	3.54	4.13	4.96	5.63	6.81	7.6	8.46
Q	0.83	2.36	2.91	3.54	4.13	4.92	5.59	6.38	7.68
T	1.73	2.17	2.52	3.15	3.66	4.02	4.92	5.51	7.09
Z	2.91	3.63	3.92	4.71	5.25	6.09	6.77	7.09	8.07

Output Flange		AA	AB	AC	AD	AF	AG	AH	AK	AL
030	FA	2.68	2.15	3.15	2.76	0.24	0.16	45°	1.969 ⁰ _{+0.0015}	0.26
	FB	2.95	2.64	4.33	3.74	0.28	0.16	45°	2.362 ⁰ _{+0.0018}	0.35
040	FB	2.95	3.82	4.33	3.74	0.28	0.16	45°	2.362 ⁰ _{+0.0018}	0.35
	FC	4.53	3.15	5.51	-	0.35	0.2	45°	3.740 ⁰ _{+0.0021}	0.37
050	FD	3.94	2.28	4.72	-	0.47	0.2	45°	3.150 ⁰ _{+0.0018}	0.35
	FA	3.35	3.54	4.92	4.33	0.35	0.2	45°	2.756 ⁰ _{+0.0018}	0.43
063	FB	3.35	4.72	4.92	4.33	0.35	0.2	45°	2.756 ⁰ _{+0.0018}	0.43
	FC	5.12	3.5	6.3	-	0.39	0.2	45°	4.331 ⁰ _{+0.0021}	0.37
075	FD	4.53	2.83	5.51	-	0.57	0.2	45°	3.543 ⁰ _{+0.0021}	0.43
	FA	4.13	3.23	7.09	5.59	0.39	0.24	45°	4.528 ⁰ _{+0.0021}	0.43
090	FB	5.91	4.41	7.09	5.59	0.39	0.24	45°	4.528 ⁰ _{+0.0021}	0.43
	FC	6.5	3.86	7.87	-	0.39	0.2	45°	5.118 ⁰ _{+0.0025}	0.43
105/110	FD	6.5	4.21	7.87	-	0.39	0.2	45°	5.118 ⁰ _{+0.0025}	0.43
	FE	5.12	3.17	6.3	-	0.65	0.2	45°	4.331 ⁰ _{+0.0021}	0.43
130	FA	6.5	4.37	7.87	6.69	0.51	0.24	45°	5.118 ⁰ _{+0.0025}	0.55
	FB	5.12	3.54	6.3	-	0.51	0.24	45°	4.331 ⁰ _{+0.0021}	0.55
150	FA	6.89	4.37	8.27	8.27	0.51	0.24	45°	5.984 ⁰ _{+0.0025}	0.55
	FB	8.46	4.8	9.84	-	0.71	0.24	45°	7.087 ⁰ _{+0.0025}	0.55
105/110	FC	6.5	4.33	7.87	-	0.67	0.24	45°	5.118 ⁰ _{+0.0025}	0.43
	FD	6.89	5.94	8.27	-	0.51	0.24	45°	5.984 ⁰ _{+0.0025}	0.55
130	FA	9.06	5.16	11.02	10.24	0.59	0.24	45°	6.693 ⁰ _{+0.0025}	0.55
	FB	9.06	7.09	11.02	10.24	0.59	0.24	45°	6.693 ⁰ _{+0.0025}	0.55
150	FA	10.04	5.51	12.6	11.42	0.59	0.24	22.5°	7.087 ⁰ _{+0.0025}	0.63
	FB	10.04	6.10	12.6	11.42	0.59	0.24	22.5°	7.087 ⁰ _{+0.0025}	0.63

Input Shaft		030	040	050	063	075	090	105/110	130	150
SB		0.094	0.125	0.1875	0.1875	0.1875	0.1875	0.25	0.25	0.3125
RB		0.42	0.55	0.7	0.83	0.96	0.96	1.24	1.36	1.51
UB		0.375 ⁰ _{-0.0005}	0.5 ⁰ _{-0.0005}	0.625 ⁰ _{-0.0005}	0.75 ⁰ _{-0.0005}	0.875 ⁰ _{-0.0005}	0.875 ⁰ _{-0.0005}	1.125 ⁰ _{-0.0005}	1.25 ⁰ _{-0.0005}	1.375 ⁰ _{-0.0005}
UB KEY		0.094x0.875	0.125x0.875	0.1875x1.125	0.1875x1.5	0.1875x1.875	0.1875x1.875	0.25x2.25	0.25x2.5	0.3175x2.875
UR TAP		-	1/4-20	1/4-20	1/4-20	1/4-20	1/4-20	3/8-16	1/2-13	1/2-13
VN		1.18	1.18	1.58	1.97	2.36	2.36	2.76	3.15	3.15

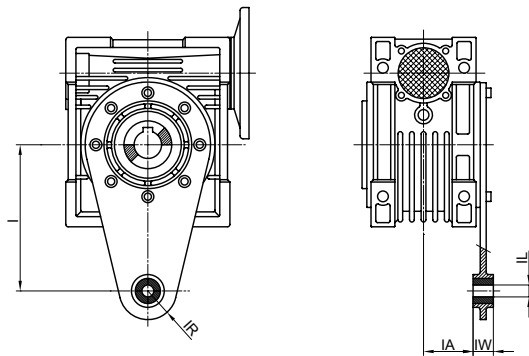
11.2 VS Dimensions charts



High Speed Extension Shaft

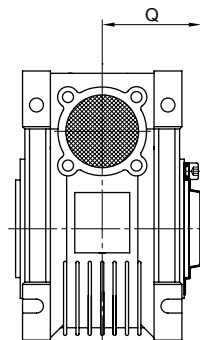
	EA	U	VN	UR	S2	R2	KEY	
							Length	Square
030	1.772	0.375 ⁰ _{-0.0005}	1.18	-	0.093	0.42	0.875	0.094
040	2.087	0.5 ⁰ _{-0.0005}	1.18	1/4-20	0.13	0.55	0.875	0.125
050	2.52	0.625 ⁰ _{-0.0005}	1.58	1/4-20	0.19	0.7	1.125	0.188
063	2.953	0.75 ⁰ _{-0.0005}	1.97	1/4-20	0.19	0.83	1.5	0.188
075	3.543	0.875 ⁰ _{-0.0005}	2.36	1/4-20	0.19	0.96	1.875	0.188
090	4.252	0.875 ⁰ _{-0.0005}	2.36	1/4-20	0.19	0.96	1.875	0.188
105/110	5.315	1.125 ⁰ _{-0.0005}	2.76	3/8-16	0.25	1.24	2.25	0.25
130	6.102	1.25 ⁰ _{-0.0005}	3.15	1/2-13	0.25	1.36	2.5	0.25
150	8.27	1.375 ⁰ _{-0.0005}	3.15	1/2-13	0.32	1.51	2.875	0.315

11.3 Torque Arm



	I	IA	IL	IR	IW
025	2.76	0.69	0.31	0.59	0.55
030	3.35	0.94	0.31	0.59	0.55
040	3.94	1.24	0.39	0.71	0.55
050	3.94	1.52	0.39	0.71	0.55
063	5.91	1.93	0.39	0.71	0.55
075	7.87	1.87	0.79	1.18	0.98
090	7.87	2.26	0.79	1.18	0.98
105/110	9.84	2.44	0.98	1.38	1.18
130	9.84	2.72	0.98	1.38	1.18
150	9.84	3.31	0.98	1.38	1.18

11.4 Protective Cover

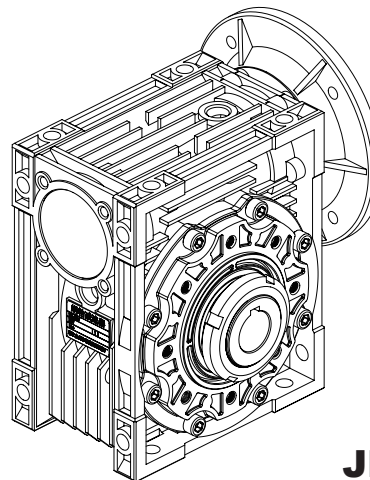


	Q
030	1.65
040	1.97
050	2.28
063	2.72
075	2.91
090	3.39
105/110	3.7
130	4.02
150	4.45

11.5 NEMA Flange Availability

	NEMA Flange	Input Bore Diameter	Available Ratios											
			5	7.5	10	15	20	25	30	40	50	60	80	100
030	48C	0.5	•	•	•	•	•	•	•	•	•	•	•	
040	56C	0.625	•	•	•	•	•	•	•	•	•	•	•	•
050	56C	0.625	•	•	•	•	•	•	•	•	•	•	•	•
063	56C	0.625					•	•	•	•	•	•	•	•
	140TC	0.875		•	•	•	•	•	•	•				
075	56C	0.625									•	•	•	•
	140TC	0.875				•	•	•	•	•				
	180TC	1.125		•	•	•								
090	56C	0.625											•	•
	140TC	0.875						•	•	•	•	•		
	180TC	1.125		•	•	•	•	•	•	•				
105 110	140TC	0.875									•	•	•	•
	180TC	1.125					•	•	•	•	•	•		
	210TC	1.375		•	•	•	•							
130	140TC	0.875											•	•
	180TC	1.125							•	•	•	•	•	
	210TC	1.375		•	•	•	•	•	•	•				
150	180TC	1.125							•	•	•	•	•	•
	210TC	1.375				•	•	•	•	•				
	250TC	1.625		•	•	•	•							

12.0 WORM GEAR UNITS WITH TORQUE LIMITER



JMRL

12.1 JMRL Features

The torque limiter, in oil bath, is designed for sizes 040-050-063-075-090. This device assures the protection of the transmission from accidental high overloads which could damage the gearbox and the power transmission components.

If necessary, it prevents reversing conditions of the worm gear unit by opportunely loosening the lock nut.

Features

- external dimensions are almost the same as the version without torque limiter.
- no difference of the mountings.
- no difference of the hollow output shaft diameter with respect to the standard gearbox.
- the slipping torque can be easily adjusted by means of an external ring nut.
- no maintenance required on slipping components.
- functional features are the same as standard version.

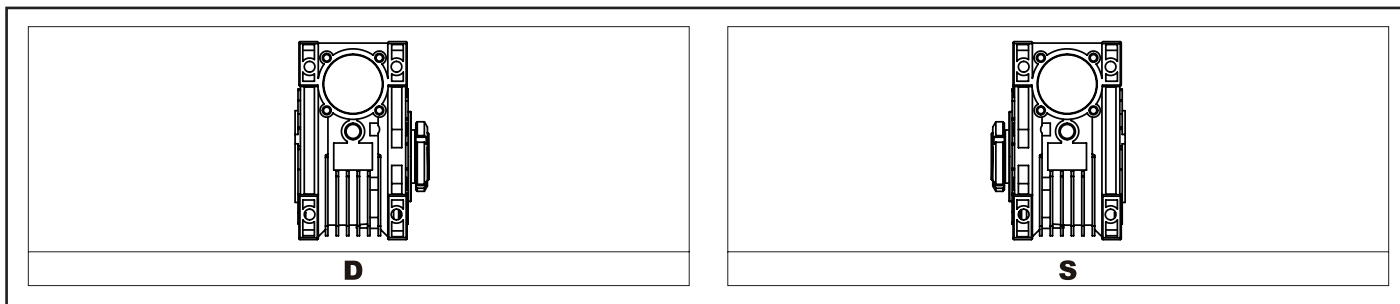
Torque adjustment

The adjustment is carried out during assembly at about 80% of the nominal torque reported in the catalogue.

This torque is transmitted by friction and so many factors could influence the adjustment value, like: temperature, running-in, vibrations, etc..

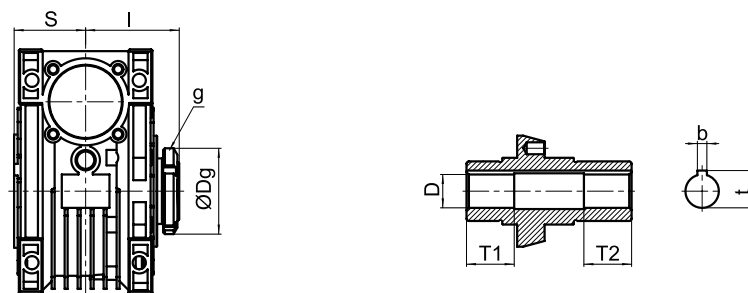
therefore it is advised to adjust the torque limit by means of the lock nut when installing the gearbox on the machine, in accordance to application requirements.

12.2 JMRL Versions



The torque limiter is supplied in D position, if not otherwise specified

12.3 JMRL Series dimensions charts



	040	050	063	075	090
I	55	63,5	74	78,5	89,5
S	39	46	56	60	70
Dg	45	56	62	68	80
g	M30×1.5	M40×1.5	M45×1.5	M50×1.5	M60×2
b	6	8	8	8	10
t	20.8	28.3	28.3	31.3	38.3
D	Φ18	Φ25	Φ25	Φ28	Φ35
T1	26	33	37	40	45
T2	26	33	37	40	45

For the missing dimensions, please consider the drawing of relevant JMRV size.



GENERAL INFORMATION

A

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JMRV SERIES WORM GEAR UNITS

B

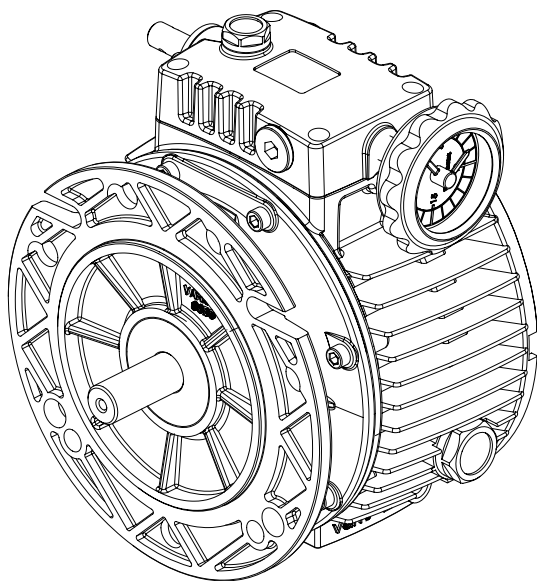
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UDL/TXF SERIES PLANETARY CONE & DISK STEP-LESS SPEED VARIATOR

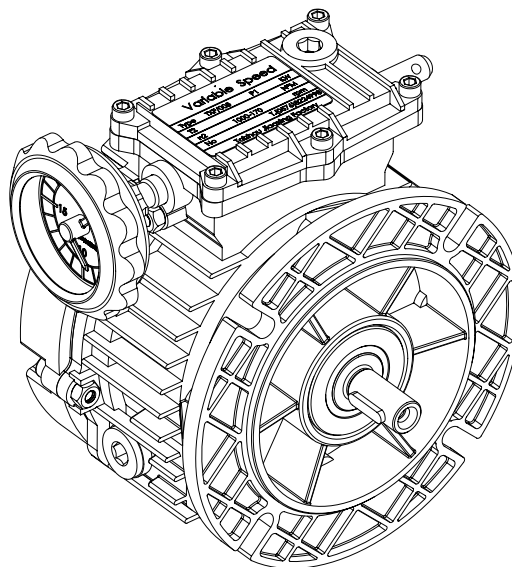
C

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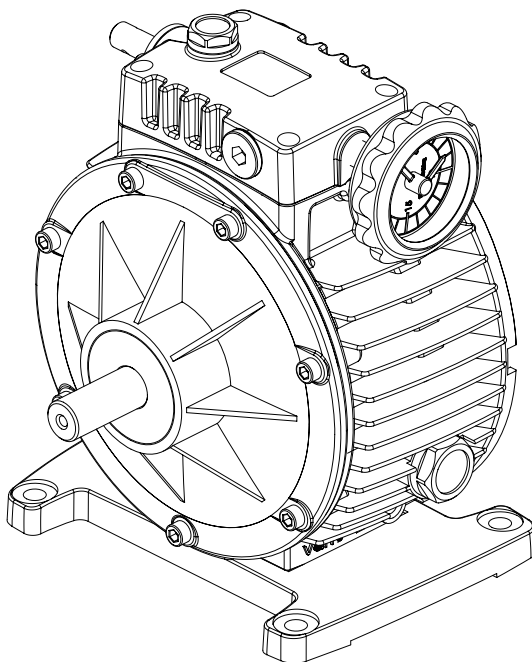
UDL/TXF SERIES PLANETARY CONE & DISK STEP-LESS SPEED VARIATOR



UDL..B5

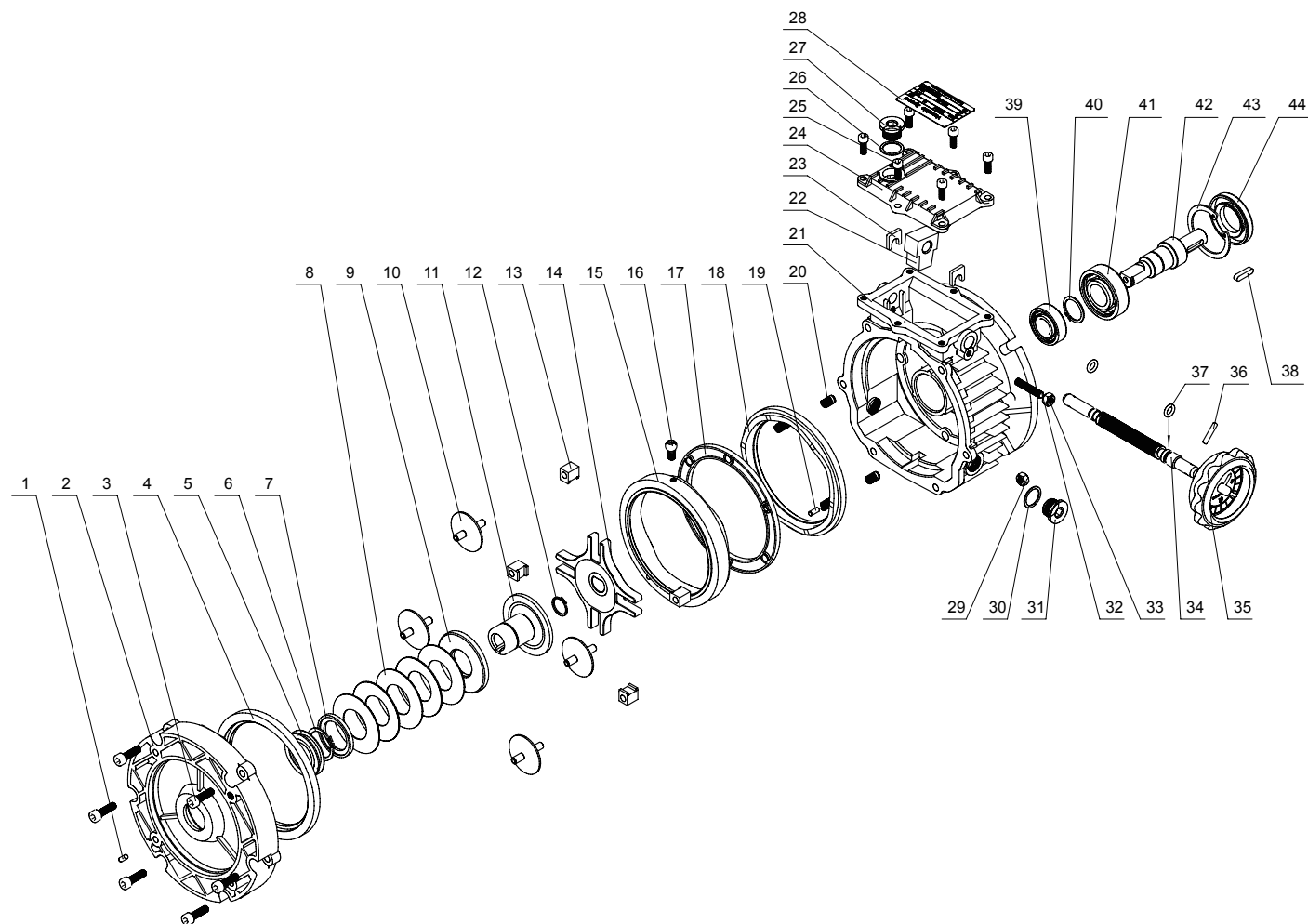


TXF



UDL..B3

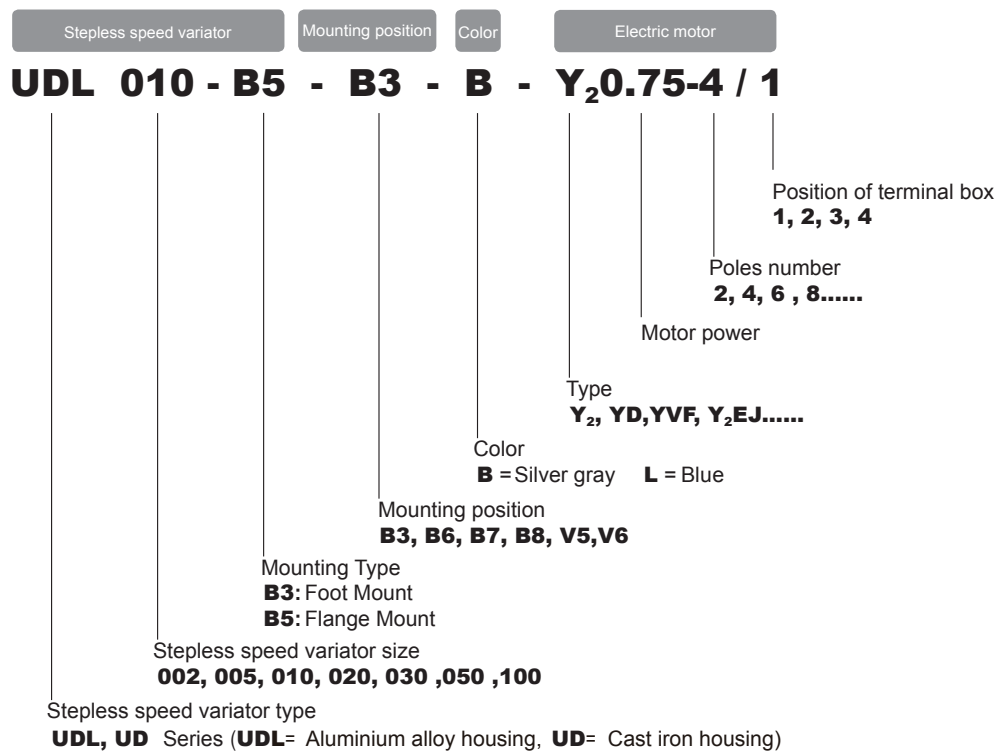
1.0 EXPLODED VIEW



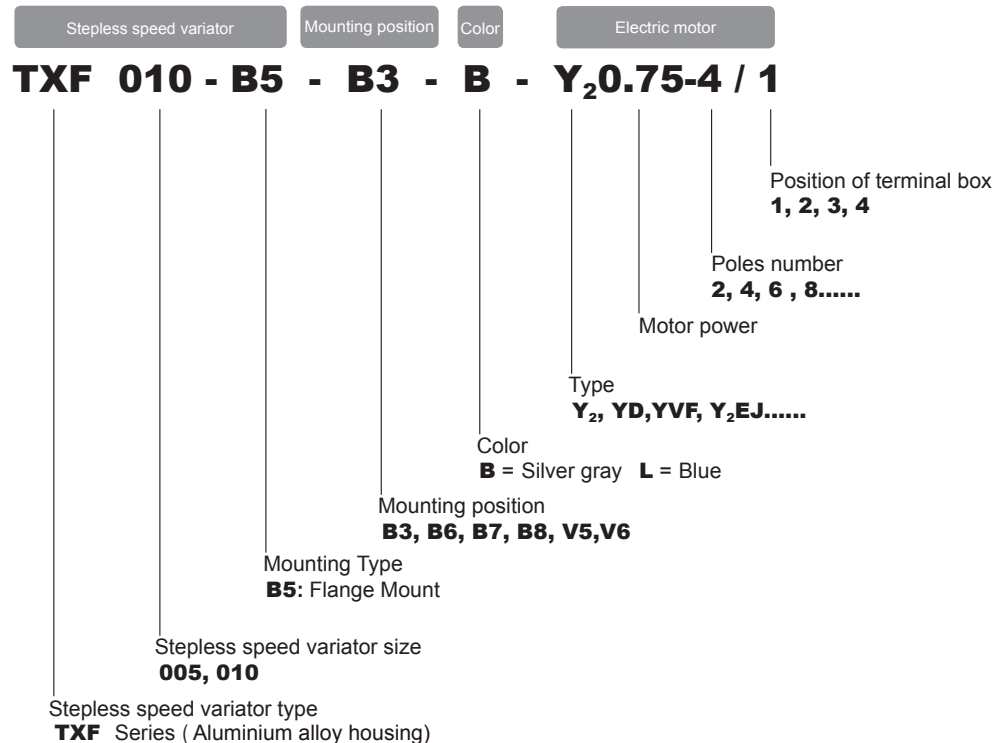
1	Straight pin	12	Circlip for shaft	23	Locating piece	34	Regulating screw rod
2	Input flange	13	Planet disc friction bearing	24	Cap	35	Handwheel
3	Hexagon socket head cap screw	14	Planet carrier	25	Hexagon socket head cap screw	36	Straight pin
4	Fixed annulus race	15	Adjustable annulus race	26	Rubber gasket	37	O-ring
5	Oli seal	16	Ball joint	27	Oil plug	38	Parallel key
6	Circlip for shaft	17	Ball ring	28	Nameplate	39	Bearing
7	Washer	18	Cam ring	29	Hexagon nuts	40	Circlip for hole
8	Belleville spring	19	Straight pin	30	Rubber insert	41	Bearing
9	Adjustable sun race	20	Spring	31	Oil level indicator	42	Low speed shaft
10	Planet disc	21	Case	32	Bolt	43	Circlip for hole
11	Fixed sun race	22	Regulating block	33	Hexagon nuts	44	Oli seal

2.0 DESIGNATION

2.1 UDL Series stepless speed variator



2.2 TXF Series stepless speed variator



3.0 STEPLESS SPEED VARIATOR SELECTION CHARTS

3.1 UDL Performance

$n_1=1400$

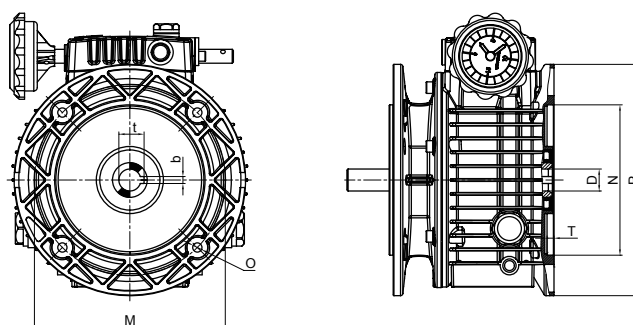
P₁ (kW)	i	TYPE	n₂ min⁻¹ max	n₂ min⁻¹ min	M₂ Nm min	M₂ Nm max	
0.18	1.6-8.2	UDL002	880	170	1.5	3	632-4
0.25	1.4-7	UDL005	1000	200	2	6	711-4
0.37	1.4-7	UDL005	1000	200	3	6	712-4
0.55	1.4-7	UDL010	1000	200	4.4	12	801-4
0.75	1.4-7	UDL010	1000	200	6	12	802-4
1.1	1.4-8.2	UD020	1000	170	9	18	90S-4
1.5	1.4-8.2	UD020	1000	170	12	24	90L-4
2.2	1.4-7	UD030	1000	200	18	36	100L1-4
3.0	1.4-7	UD030/050	1000	200	24	48	100L2-4
4.0	1.4-7	UD050	1000	200	32	64	112M-4
5.5	1.4-7	UD100	1000	200	45	90	132S-4
7.5	1.4-7	UD100	1000	200	59	118	132M-4

3.2 TXF Performance

$n_1=1400$

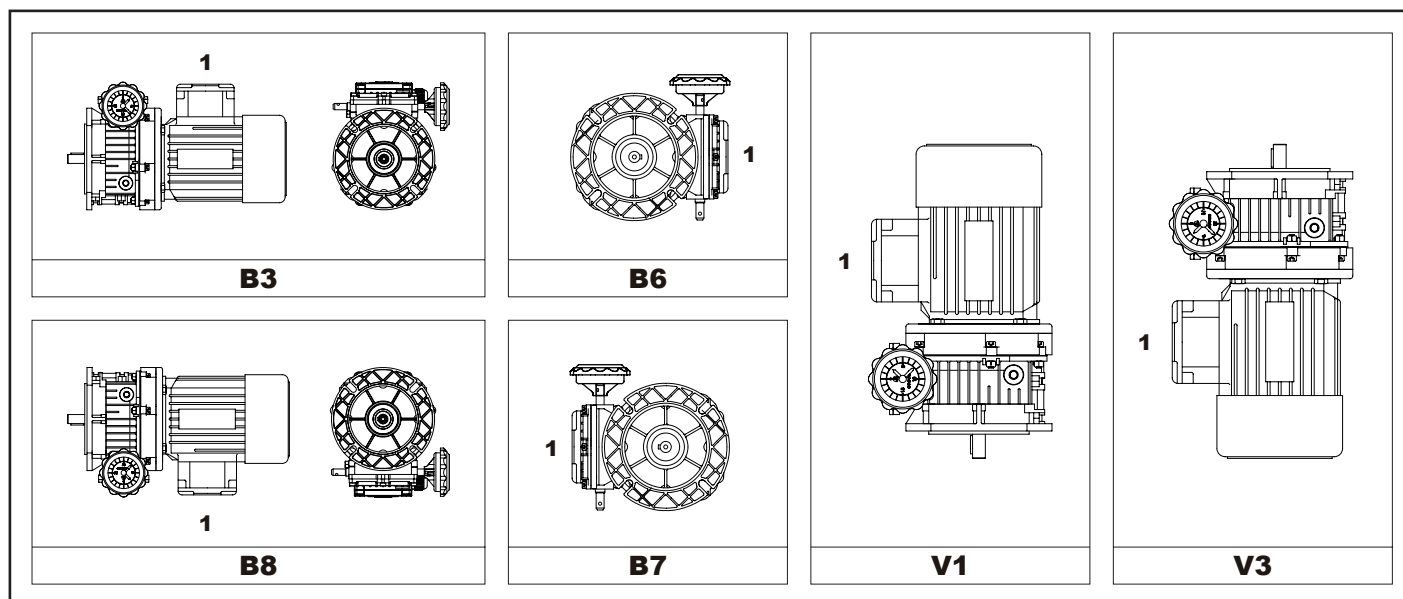
P₁ (kW)	i	TYPE	n₂ min⁻¹ max	n₂ min⁻¹ min	M₂ Nm min	M₂ Nm max	
0.25	1.4-8.2	TXF005	1000	170	2	6	711-4
0.37	1.4-8.2	TXF005	1000	170	3	6	712-4
0.55	1.4-8.2	TXF010	1000	170	4.4	12	801-4
0.75	1.4-8.2	TXF010	1000	170	6	12	802-4

4.0 IEC Motor interface



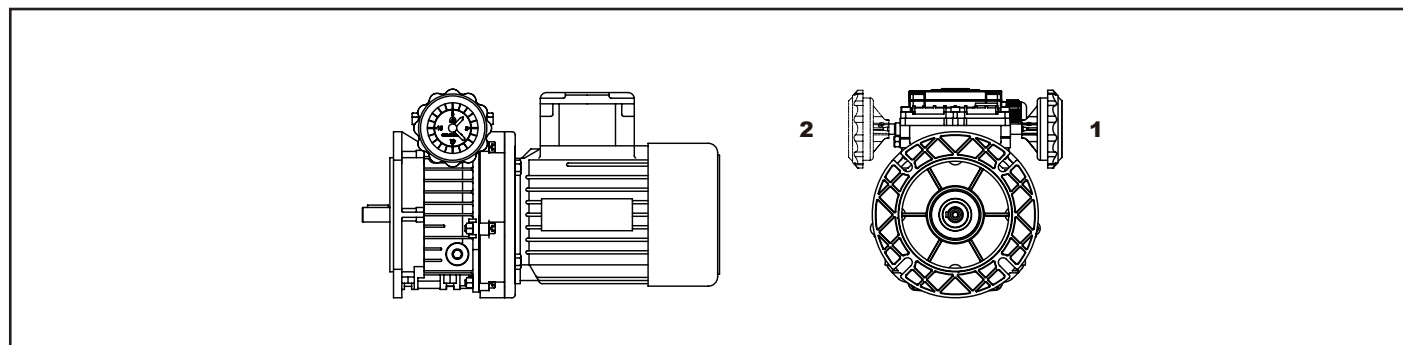
	PAM IEC	P	N_{H7}	M	O	D_{E7}	b	t	T
UDL002	63B5	140	95	115	M8	11	4	12.8	4
UDL005/TXF005	71B5	160	110	130	M8	14	5	16.3	5
UDL010/TXF010	80B5	200	130	165	M10	19	6	21.8	6
UD020	90B5	200	130	165	M10	24	8	27.3	6
UD030/050	100B5/112B5	250	180	215	M12	28	8	31.3	6
UD100	132B5	300	230	265	M12	38	10	41.3	6

5.0 MOUNTING POSITIONS



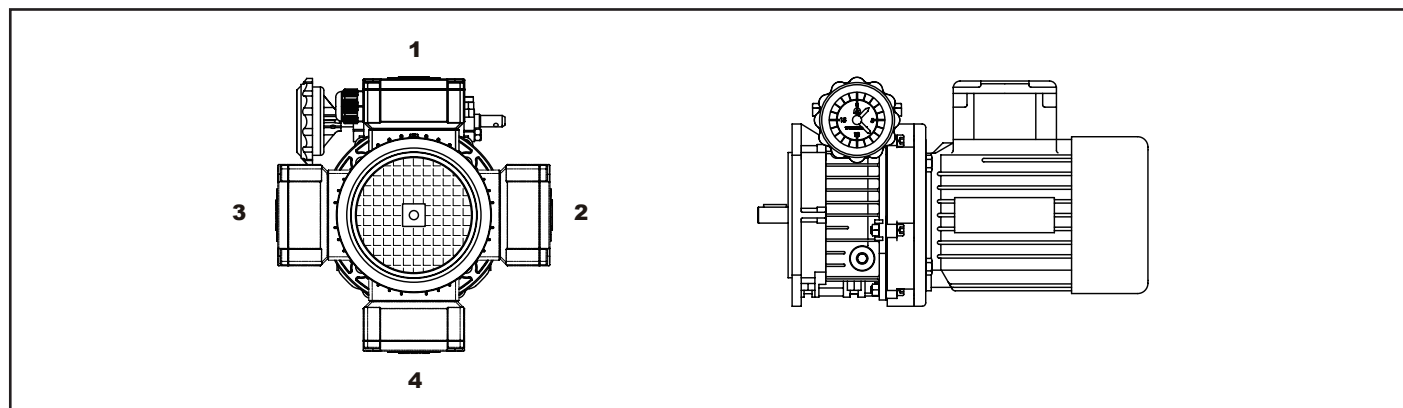
6.0 POSITIONS DIAGRAM

6.1 Hand-wheel position



Unless specified otherwise, the variator is supplied with the hand-wheel in pos. 1 referred to position B3.

6.2 POS. of terminal box

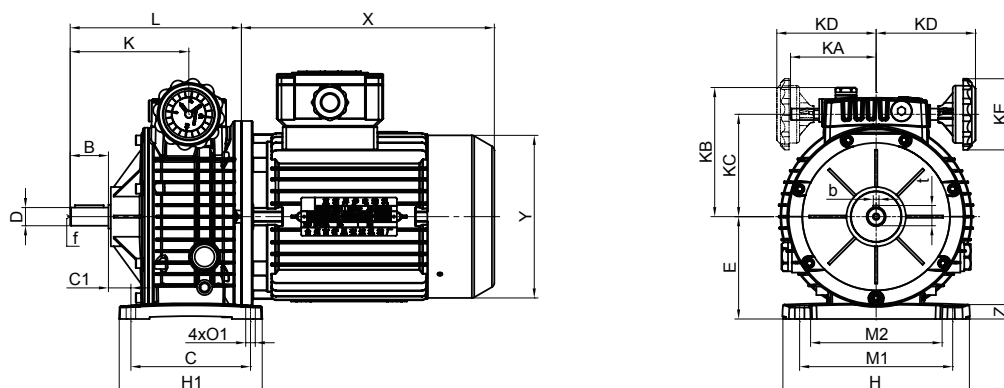


In the case of specific requirements, when ordering, specify the position of the terminal box as show in the diagram.

7.0 SPEED VARIATOR DIMENSIONS CHARTS

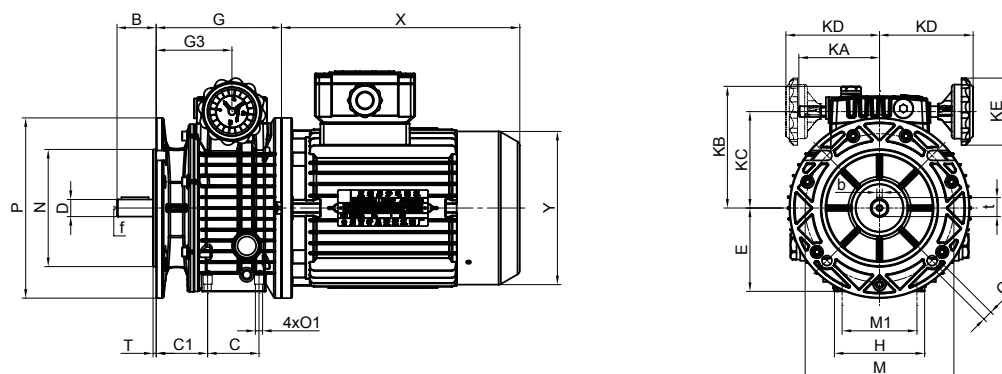
7.1 UDL Series dimensions charts

UDL - B3



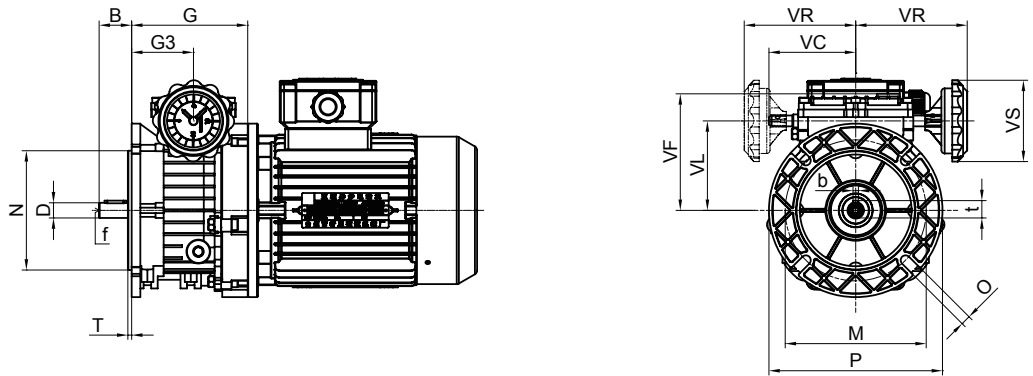
TYPE	B	Dj6	C	C1	E	H	H1	K	L	M1	M2	O1	KA	KB	KC	KD	KD1	KE	b	t	f	X	Y	Z
UDL002B3-0.18	23	11	105	17.5	80	145	120	87	134.5	110	71	9	71	113	78	113	113	70	4	12.5	M5	207	130	10
UDL005B3-0.25	30	14	104	19.5	93	149	125	102	138.5	120	96	9	71	125	91	113	113	70	5	16	M5	225	145	10
UDL005B3-0.37																								
UDL010B3-0.55	40	19	125	35	113	190	150	127.5	183.5	160	135	11	79	142	107	120	120	85	6	21.5	M6	255	175	15
UDL010B3-0.75																								
UD020B3-1.1	50	24	140	49	125	230	170	154	221.5	180	130	13	-	148	127	140	-	85	8	27	M8	270	195	18
UD020B3-1.5																						295	195	
UD030B3-2.2	60	28	230	25	150	300	270	191	282	245	190	14	-	181	158	150	-	120	8	31	M8	325	215	25
UD030/050B3-3.0																						340	240	
UD050B3-4.0																						390	275	
UD100B3-5.5	80	38	250	32	200	365	290	200	333	315	225	18	-	218	193	182	-	120	10	41	M10	430	275	30
UD100B3-7.5																						430	275	

UDL - B5



TYPE	B	Dj6	C	G	G3	E	H	M	M1	N	O	O1	P	T	C1	KA	KB	KC	KD	KD1	KE	b	t	f	X	Y
UDL002B5-0.18	23	11	50	111.5	64	70	72	115	60	95	9	M6	140	3.5	46	75	113	78	113	113	70	4	12.5	M5	207	130
UDL005B5-0.25	30	14	40	108	71.5	80	90	130	77	110	9	M8	160	3.5	51.5	75	125	91	113	113	70	5	16	M5	225	145
UDL005B5-0.37																										
UDL010B5-0.55	40	19	58	143.5	87.5	100	98	165	84	130	11	M8	200	3.5	62	82.5	142	107	120	120	85	6	21.5	M6	255	175
UDL010B5-0.75																										
UD020B5-1.1	50	24	-	174	106.5	111	230	165	-	130	11	-	200	3.5	-	108.5	148	127	140	-	85	8	27	M8	270	195
UD020B5-1.5																									295	195
UD030B5-2.2	60	28	-	222	131	136	265	215	-	180	15	-	250	4	-	131	181	158	150	-	120	8	31	M8	325	215
UD030/050B5-3.0																									340	240
UD050B5-4.0																									390	275
UD100B5-5.5	80	38	-	263	130	185	-	265	-	230	19	-	300	4	-	163	218	193	182	-	120	10	41	M10	430	275
UD100B5-7.5																									430	275

7.2 **TXF** Series dimensions charts



TYPE	B	Dk6	G	G3	M	Nh8	O	P	T	VC	VF	VL	VR	VS	b	f	t
TXF005	30(40)	14(19)	107	57	130	110	9	160	3.5	79.5	104.5	82	116.5	71	5(6)	M6	16(21.5)
TXF010	40(50)	19(24)	131	68.5	165	130	11	200	3.5	89.5	127	103	126.5	85	6(8)	M6(M8)	21.5(27)

