



Company Profile

Australian owned and operated, GWA Industries' broad product range offers our customers greater confidence in quality and profitability. Exceptional engineering and manufacturing capabilities enables GWA to offer our gearbox range across all industrial applications.



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1. SUMMARIZE

1.1 Products characteristics

TNRV series worm gear units is a new-generation of product developed by our company on the basis of perfecting WJ series products with a compromise of advanced technology both at home and abroad, its main features are as follows:

1. Made of high-quality aluminum alloy, light in weight and non-rusting.
2. Large in output torque.
3. Smooth in running and low in noise, can work long time in dreadful conditions.
4. High in radiating efficiency.
5. Good-looking in appearance, durable in service life and small in volume.
6. Suitable for omnibearing installation.

1.2 Main materials

1. Housing: die-cast aluminum alloy (frame size: 025 to 105); cast iron (frame size : 110 to 130).
2. worm: 20Cr, carbonize & quencher heat treatment make the hardness of gear's surface up to 56~62 HRC, retain carburization layer's thickness between 0.3 and 0.5mm after precise grinding.
3. worm wheel: wearable stannum bronze alloy.

1.3 Surface painting

Aluminum alloy housing:

1. Shot blasting and special antiseptic treatment on the aluminum alloy surface.
2. After phosphating, paint with RAL 5010 blue or silvery white paint.

Cast iron housing :

First paint with red antirust paint, then paint with RAL 5010 blue or silvery white paint.



TNRV025~130



TRV030~130



TNRV - TNRV..



TRV - TNRV..



PC - TNRV..



UDL - TNRV..

3. MODEL ILLUMINATE

3.1 TNRV / TRV Worm geared motos and worm gear units

Gear unit								Motor	
TNRV	063	- 40 -	E	FA1	SS1	71B5	B3	- 7124 /or 0.37 - 4 / 1	
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

No	Comments
1	Model code 1). TNRV : Hole input with flange 2). TRV : Shaft input without flange
2	Central distance of worm gear units (spec)
3	Speed ratio of reducer (i = 7.5; 10; 15; 20; 25; 30; 40; 50; 60; 80; 100)
4	1). No mark means single extension worm shaft 2). E : Double extension worm shaft
5	1). No mark means without output flange 2). FA,FB,FC,FD,FE(1/2) : output Flange and position
6	1). No mark means hole output 2). SS(1/2) : Single output shaft and position 3). DS : Double output shaft
7	Normalized form of input flange (without motor)
8	Installation position code
9	1). No mark means without motor 2). Model motos (poles of power)
10	Position diagram for motor terminal box default position 1 not to write out is ok

3.2 PC-TNRV Worm gears with pre-stage helical units

PC	071	-	TNRV	063	- 40	E	FA1	SS1	B3
①	②		③	④	⑤	⑥	⑦	⑧	⑨

No	Comments
1	Helical Pre-stage unit
2	Motor frame size
3	Model code 1). TNRV : Hole input with flange 2). TRV : Shaft input without flange
4	Central distance of worm gear units (spec)
5	Speed ratio of reducer (i = 7.5; 10; 15; 20; 25; 30; 40; 50; 60; 80; 100)
6	1). No mark means single extension worm shaft 2). E : Double extension worm shaft
7	1). No mark means without output flange 2). FA,FB,FC,FD,FE(1/2) : output Flange and position
8	1). No mark means hole output 2). SS(1/2) : Single output shaft and position 3). DS : Double output shaft
9	Installation position code

When ordering, you should show whether the reducers are equipped with motors, otherwise reducers aren't supplied with motors.

3.3 TNRV-TNRV / TRV-TNRV Combination worm gear units

TNRV 050/110 - 900 - E FA1 SS1 71B5 B3
1
2
3
4
5
6
7
8

No	Comments
1	Model code 1). TNRV: Hole input with flange 2). TRV: Shaft input without flange
2	Central distance of worm gear units (spec)
3	Speed ratio of reducer
4	1). No mark means single extension worm shaft 2). E: Double extension worm shaft
5	1). No mark means without output flange 2). FA,FB,FC,FD,FE(1/2): output Flange and position
6	1). No mark means hole output 2). SS(1/2): Single output shaft and position 3). DS: Double output shaft
7	Normalized form of input flange
8	Installation position code

3.4 UDL-TNRV Combination of stepless speed variator and worm gear units

UD L 0.75 - TNRV 063 - 40 E FA1 SS1 B3
1
2
3
4
5
6
7
8
9
10

No	Comments
1	Code of stepless speed variator
2	Aluminium alloy housing, and no mark means cast iron casing
3	Relevant motor power
4	Code of worm gear units
5	Central distance of worm gear units (spec)
6	Speed ratio of worm gear units
7	1). No mark means single extension worm shaft 2). E: Double extension worm shaft
8	1). No mark means without output flange 2). FA,FB,FC,FD,FE(1/2): Output Flange and position
9	1). No mark means hole output 2). SS(1/2): Single output shaft and position 3). DS: Double output shaft
10	Installation position code

When ordering, you should show whether the reducers are equipped with motors, otherwise reducers aren't supplied with motors.

4. RELEVANT PARAMETER

4.1 Power P

$$P_1 = \frac{P_2}{\eta} \text{ [kW]}$$

$$P_{1n} \geq P_1 \cdot f_s \text{ [kW]}$$

P_1	Input power
P_2	Output power
P_{1n}	Rated input motor power
f_s	Service factor
η	Transmission efficiency

The parameter can be found in the TRV gearbox rating charts and represents the kW that can be safely transmitted to the gearbox, based on input speed n_1 and service factor $f_s=1$.

Values of η_d are calculated for gearboxes after a sufficiently long running-in period. After the running-in period the surface temperature in operation reduces and finally stabilises. It may be worth highlighting that values of rated torque M_{2n} given in the catalogue take the transmission efficiency η_d into consideration.

4.2 Rotation speed n

n_1	Gear units input speed
n_2	Gear units output speed

If driven by the external gearing, 1400r/min or lower rotation speed is suggested so as to optimize the working conditions and prolong the service life.

4.3 Transmission ratio i

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

4.4 Torque M

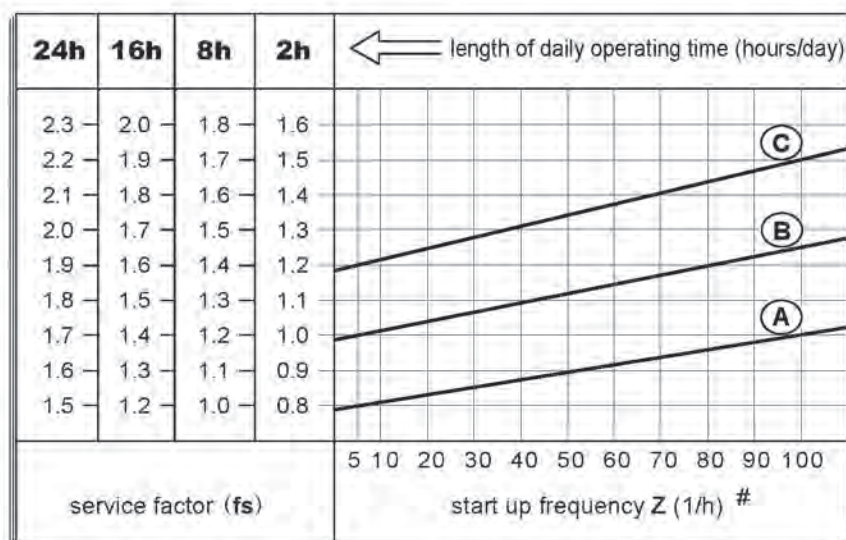
$$M_2 = \frac{9550 \cdot P_1 \cdot \eta}{n_2} \text{ [Nm]}$$

$$M_{2n} \geq M_2 \cdot f_s \text{ [Nm]}$$

M_2	Output torque
M_{2n}	Rated output torque
P_1	Input power
η	Transmission efficiency
f_s	Service factor

4.5 Service factor f_s

The effect of the driven machine on the gear unit is taken into account to a sufficient level of accuracy using the service factor f_s . The service factor is determined according to the daily operating time and the starting frequency Z . Three load classifications are considered depending on the mass acceleration factor. You can read off the service factor applicable to your application in following figure. The service factor selected using this diagram must be less than or equal to the service factor as given in the performance parameter table.



Starting frequency Z : The cycles include all starting and braking procedures as well as change overs from low to high speed.

4.5.1 Load classifications

Type of load:

- (A) Uniform, permitted mass acceleration factor $f_a \leq 0.3$
- (B) Moderate shock load, permitted mass acceleration factor $f_a \leq 3$
- (C) Heavy shock load, permitted mass acceleration factor $f_a \leq 10$

load classifications:

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

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.

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.

4.5.2 Mass acceleration factor

The mass acceleration factor is calculated as follows:

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

f_a Mass acceleration factor

J_c All external mass moments of inertia [kgm²]

J_m Mass moment of inertia on the motor end [kgm²]

If mass acceleration factors **f_a** > 10, please call our Technical Service.

Service factor f_s should be adjusted as followings:

- 1). ambient temperature is 30 ~ 40°C: $f_s \times (1.1 \sim 1.2)$
- 2). ambient temperature is 40 ~ 50°C: $f_s \times (1.3 \sim 1.4)$
- 3). ambient temperature is 50 ~ 60°C: $f_s \times (1.5 \sim 1.6)$
- 4). ambient temperature > 60°C, please call our Technical Service.

To keep the service-life of gear units, the use factor **f_s** selected from the catalogue must be equal or slightly higher than the calculated use factor **f_s**.

4.6 Radial loads Fr

When determining the resulting radial loads, the type of transmission elements, mounted on the shaft end must be considered. Various transmission elements are corresponding with following transmission element factors **f_z**:

Transmission element	Transmission element factor F_z	Comments
Gears	1.00	≥ 17 teeth
	1.15	< 17 teeth
Chain sprockets	1.00	≥ 20 teeth
	1.25	< 20 teeth
	1.40	< 13 teeth
Narrow V-belt pulleys	1.75	Influence of the tensile force
Flat belt pulleys	2.50	Influence of the tensile force
Toothed belt pulleys	2.50	Influence of the tensile force

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

$$F_r = \frac{M \cdot 2000 \cdot f_z}{d_0} \text{ [N]}$$

F_r Resulting radial load [N]

M Torque on the shaft [Nm]

d₀ Mean diameter of the mounted transmission element in [mm]

f_z Transmission element factor

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

$$F_{xL} \leq \frac{Fr_2 \cdot a}{(b+x)} [N]$$

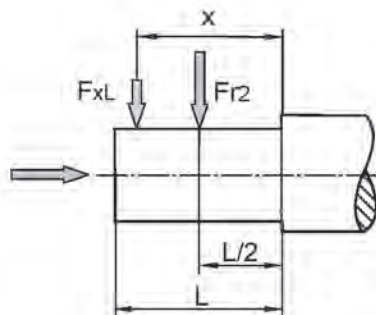
Fr₂ Permitted overhung load ($x = L/2$) for foot-mounted gear units according to the selection tables in [N]

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

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

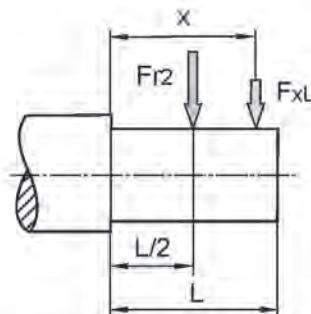
The values of a , b , Fr₂ are given in the following tables:

Output shafts radial loads



TNRV	025	030	040	050	063	075	090	105	110	130
a	50	65	84	101	120	131	162	176	176	188
b	38	50	64	76	95	101	122	136	136	148
Fr ₂ max	1350	1830	3490	4840	6270	7380	8180	12000	12000	13500

Input shafts radial loads



TRV	030	040	050	063	075	090	105	110	130
a	86	106	129	159	192	227	266	266	314
b	76	94.5	114	139	167	202	236	236	274
Fr ₂ max	210	350	490	700	980	1270	1700	1700	2100

4.7 Selection tables comments

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	M_{2n} [Nm]	f_s			Page
P_{1n}	Rated power driving motor [kW];							
n_2	Output speed [r/min];							
M_{2n}	Rated output torque [Nm];							
$M_{2\max}$	Permissible output torque [Nm];							
i	Gear unit ratio;							
f_s	Service factor;							
	Gear unit type;							
	Motor type;							
page	Dimension sheet page no.							

5. SELECTION EXAMPLE

5.1 Gear motor

Example: The input power of driver machine is 0.5KW, $n_1=1400\text{r/min}$, uniform, start up frequency 20(1/h), continuous running for 24 hours, the ambient temperature is $+32^\circ\text{C}$, $n_2=93.3\text{r/min}$, B3 mounted SO:

$$i = \frac{n_1}{n_2} = \frac{1400}{93.3} = 15$$

Check mash table on P14, estimate when the $i=15$, $\eta_d \approx 0.82$

Check and adjust the service factor ,will get $f_s = 1.53 \times 1.12 = 1.714$

$$P_{1n} \geq \frac{P_2}{\eta_d} \cdot f_s = \frac{0.5}{0.82} \times 1.714 = 1.045 \text{ [kW]}$$

Choose type:

TNRV075 - 15 - B3 - 1.1 - 4

Count output torque:

$$M_2 = \frac{9550 \cdot P_2}{n_2} = \frac{9550 \times 0.5}{93.3} = 51.18 \text{ [Nm]}$$

$$M_{2n} = 95 \geq M_2 \cdot f_s = 51.18 \times 1.714 = 87.72 \text{ [Nm]}$$

5.2 Gear units

Example: Required torque 300Nm on driven machine, continuous running for 8 hours, uniform loda, the ambient temperature is 30°C , then choose the service factor $f_s=1.2 \times 1.1=1.32$, $n_1=900\text{r/min}$, $n_2=22.5\text{r/min}$.

$$M_{2n} \geq M_2 \cdot f_s = 300 \times 1.32 = 396 \text{ [Nm]}$$

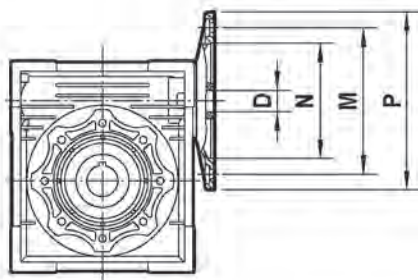
$$i = \frac{n_1}{n_2} = \frac{900}{22.5} = 40$$

Choose type:

TRV090 - 40

6. RELEVANT DATA

6.1 Ratio and IEC motor adapters

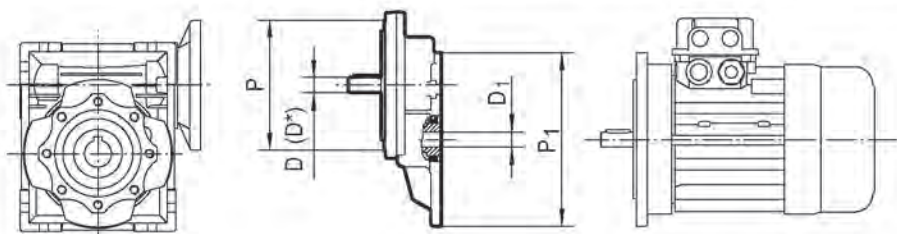


(*) If you want special key , please call our Technical Service

	IEC IEC motor adapters				D The hole diameter of input shaft										
	IEC	P	M	N	i Transmission ratio										
					7.5	10	15	20	25	30	40	50	60	80	100
TNRV025	56B14	80	65	50	9	9	9	9	9	9	9	9	9		
TNRV030	56B5	120	100	80	9	9	9	9	9	9	9	9	9	9	
	56B14	80	65	50											
	63B5	140	115	95	11	11	11	11	11	11	11	11			
	63B14	90	75	60											
TNRV040	56B5	120	100	80								9	9	9	9
	63B5	140	115	95	11	11	11	11	11	11	11	11	11	11	11
	63B14	90	75	60											
	71B5	160	130	110	14	14	14	14	14	14	14				
	71B14	105	85	70											
TNRV050	63B5	140	115	95								11	11	11	11
	71B5	160	130	110	14	14	14	14	14	14	14	14	14	14	
	71B14	105	85	70											
	80B5	200	165	130	19	19	19	19	19	19					
	80B14	120	100	80											
TNRV063	71B5	160	130	110							14	14	14	14	14
	71B14	105	85	70											
	80B5	200	165	130	19	19	19	19	19	19	19	19	19	19	
	80B14	120	100	80											
	90B5	200	165	130	24	24	24	24	24	24	24				
	90B14	140	115	95											
TNRV075	71B5	160	130	110								14	14	14	14
	80B5	200	165	130				19	19	19	19	19	19	19	19
	80B14	120	100	80											
	90B5	200	165	130	24	24	24	24	24	24	24				
	90B14	140	115	95											
	100 / 112B5	250	215	180	28	28	28								
TNRV090	100 / 112B14	160	130	110											
	80B5	200	165	130							19	19	19	19	19
	80B14	120	100	80											
	90B5	200	165	130	24	24	24	24	24	24	24	24	24		
	90B14	140	115	95											
	100 / 112B5	250	215	180	28	28	28	28	28	28					
TNRV105	100 / 112B14	160	130	110											
	80B5	200	165	130										19	19
	90B5	200	165	130					24	24	24	24	24	24	24
	100 / 112B5	250	215	180	28	28	28	28	28	28	28	28	28		
	132B5	300	265	230	38*	38*	38*	38*							
TNRV110	80B5	200	165	130										19	19
	90B5	200	165	130					24	24	24	24	24	24	24
	100 / 112B5	250	215	180	28	28	28	28	28	28	28	28	28		
	132B5	300	265	230	38*	38*	38*	38*							
TNRV130	90B5	200	165	130										24	24
	100 / 112B5	250	215	180					28	28	28	28	28	28	28
	132B5	300	265	230	38*	38*	38*	38*	38*	38*	38*				

6.2 PC-TNRV PC-TNRV Combinations

	i	PC 063		PC 071		PC 080			PC 090		
		105 / 11 i = 3	105 / 14 i = 3	120 / 14 i = 3	120 / 19 i = 3	160 / 19 i = 3	160 / 24 i = 3	160 / 28 i = 3	160 / 19 i = 2.42	160 / 24 i = 2.42	160 / 28 i = 2.42
TNRV040	25										
	30										
	40										
	50										
	60										
	80										
TNRV050	100										
	25										
	30										
	40										
	50										
	60										
TNRV063	80										
	100										
	25										
	30										
	40										
	50										
TNRV075	60										
	80										
	100										
	25										
	30										
	40										
TNRV090	50										
	60										
	80										
	100										
	25										
	30										
TNRV105	40										
	50										
	60										
	80										
	100										
	25										
TNRV110	30										
	40										
	50										
	60										
	80										
	100										
TNRV130	25										
	30										
	40										
	50										
	60										
	80										



	P	D	D*	P ₁	D ₁
PC 063	105	11	14	140 (63B5)	11
PC 071	120	14	19	160 (71B5)	14
PC 080	160	19	24 28	200 (80B5)	19
PC 090	160	24	19 28	200 (90B5)	24

* Only on request

6.3 TNRV - TNRV / TRV - TNRV Assignment Table Of Combination Ratio

n ₁ =1400r/min		TNRV025/030			TNRV025/040			TNRV030/040			TNRV030/050			TNRV030/063		
i	n ₂	P ₁ [kW]	i ₀₂₅	i ₀₃₀	P ₁ [kW]	i ₀₂₅	i ₀₄₀	P ₁ [kW]	i ₀₃₀	i ₀₄₀	P ₁ [kW]	i ₀₃₀	i ₀₅₀	P ₁ [kW]	i ₀₃₀	i ₀₆₃
100	14	0.09	10	10	—	—	—	—	—	—	—	—	—	—	—	—
150	9.3	0.06	10	15	—	—	—	—	—	—	—	—	—	—	—	—
200	7	0.06	10	20	—	—	—	—	—	—	—	—	—	—	—	—
250	5.6	0.06	10	25	—	—	—	—	—	—	—	—	—	—	—	—
300	4.7	0.06	10	30	0.06	10	30	0.09	10	30	0.18	10	30	0.22	10	30
400	3.5	0.06	20	20	0.06	10	40	0.06	10	40	0.12	10	40	0.18	10	40
500	2.8	0.06	20	25	0.06	20	25	0.06	20	25	0.09	10	50	0.18	10	50
600	2.3	0.06	20	30	0.06	20	30	0.06	20	30	0.09	20	30	0.12	20	30
750	1.9	0.06	30	25	0.06	25	30	0.06	25	30	0.09	25	30	0.12	25	30
900	1.6	0.06	30	30	0.06	30	30	0.06	30	30	0.06	30	30	0.09	30	30
1200	1.2	0.06	40	30	0.06	40	30	0.06	40	30	0.06	40	30	0.09	40	30
1500	0.93	0.06	50	30	0.06	50	30	0.06	50	30	0.06	50	30	0.06	50	30
1800	0.78	0.06	60	30	0.06	60	30	0.06	60	30	0.06	60	30	0.06	60	30
2400	0.58	0.06	60	40	0.06	60	40	0.06	60	40	0.06	60	40	0.06	60	40
3000	0.47	0.06	60	50	0.06	60	50	0.06	—	—	0.06	60	50	0.06	60	50
3200	0.44	—	—	—	—	—	—	—	80	40	—	—	—	—	—	—
4000	0.35	—	—	—	0.06	50	80	0.06	80	50	0.06	80	50	0.06	80	50
4800	0.29	—	—	—	—	—	—	—	—	—	0.06	80	60	—	—	—
5000	0.28	—	—	—	0.06	50	100	0.06	50	100	—	—	—	0.06	100	50

n ₁ =1400r/min		TNRV040/075			TNRV040/090			TNRV050/105			TNRV050/110			TNRV063/130		
i	n ₂	P ₁ [kW]	i ₀₄₀	i ₀₇₅	P ₁ [kW]	i ₀₄₀	i ₀₉₀	P ₁ [kW]	i ₀₅₀	i ₁₀₅	P ₁ [kW]	i ₀₅₀	i ₁₁₀	P ₁ [kW]	i ₀₆₃	i ₁₃₀
300	4.7	0.37	10	30	0.37	10	30	0.75	10	30	0.75	10	30	1.5	10	30
400	3.5	0.25	10	40	0.37	10	40	0.75	10	40	0.75	10	40	1	10	40
500	2.8	0.25	10	50	0.37	10	50	0.55	20	25	0.55	20	25	1	10	50
600	2.3	0.18	20	30	0.37	20	30	0.55	20	30	0.55	20	30	0.75	15	40
750	1.9	0.18	25	30	0.25	25	30	0.55	25	30	0.55	25	30	0.75	25	30
900	1.6	0.12	30	30	0.25	30	30	0.37	30	30	0.37	30	30	0.75	30	30
1200	1.2	0.12	40	30	0.18	40	30	0.25	40	30	0.25	40	30	0.55	40	30
1500	0.93	0.09	50	30	0.18	50	30	0.25	50	30	0.25	50	30	0.37	50	30
1800	0.78	0.09	60	30	0.12	60	30	0.25	60	30	0.25	60	30	0.37	60	30
2400	0.58	0.06	60	40	0.12	60	40	0.18	60	40	0.18	60	40	0.25	60	40
3000	0.47	0.06	60	50	0.09	60	50	0.12	60	50	0.12	60	50	0.25	60	50
4000	0.35	0.06	80	50	0.06	80	50	0.12	80	50	0.12	80	50	0.25	80	50
5000	0.28	0.06	100	50	0.06	100	50	0.12	100	50	0.12	100	50	0.25	100	50

You can choose 025, 030, 040, 050, 063, 075, 090, 105, 110, 130 as combination unit to combine according to the fact your special needs.

6.4 Efficiency & Irreversibility Character

Efficiency is an important parameter of reducer, Efficiency η depends on the following parameters: 1) helix angle of gearing, 2) driving speed, 3) running-in of gearing, 4) The performance of oil, oil seal and bearing. The mesh data table on page 15 shows dynamic efficiency ($\eta_1=1400$) and static efficiency values. Remember that these values are only achieved after the unit has been run in. Torque values M_{n2} indicated in the catalogue are calculated by considering the steady-state performance of the gearboxes. The actual values mentioned above may be have deflection.

6.4.1 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 $\eta_d < 0.4$ (see table on page 14).

6.4.2 Static irreversibility

Static irreversibility is achieved when the gear reducer at a standstill, the application of a load to the output shaft can't drive the worm shaft. This condition requires a static efficiency of $\eta_s < 0.5$ (see table on page 14).

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

η_s	>0.55	0.5 ~ 0.55	<0.5
STATIC IRREVERSIBILITY	Static reversibility	low static reversibility	static irreversibility



The table shows approximate irreversibility classes. Vibrations and shocks can affect a gear reducer's irreversibility. As it is virtually impossible to provide and guarantee total non reversing, we recommend the use of an external brake with sufficient capability to prevent vibrations in duced starting, where these circumstances are required. 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 efficiencies of each single reducer, i.e.: $\eta_{tot} = \eta_1 \times \eta_2$.

6.4.3 Mesh Data

	i	7.5	10	15	20	25	30	40	50	60	80	100
TNRV025	z_f	4	3	2	2	2	1	1	1	1		
	m_n	1.18	1.23	1.27	0.98	0.79	1.29	0.99	0.80	0.67		
	γ	25°18'	19°31'	13°18'	11°2'	9°5'	6°44'	5°34'	4°34'	3°55'		
	$\eta_d (n=1400 \text{ r/min})$	0.85	0.83	0.79	0.76	0.73	0.68	0.64	0.59	0.56		
	η_s	0.71	0.67	0.60	0.56	0.52	0.45	0.41	0.36	0.33		
TNRV030	z_f	4	3	2	2	1	1	1	1	1	1	
	m_n	1.36	1.39	1.42	1.09	1.69	1.43	1.10	0.89	0.74	0.56	
	γ	18°55'	14°25'	9°44'	7°50'	5°33'	4°54'	3°56'	3°17'	2°43'	2°7'	
	$\eta_d (n=1400 \text{ r/min})$	0.84	0.81	0.76	0.72	0.66	0.64	0.59	0.54	0.50	0.44	
	η_s	0.66	0.62	0.54	0.49	0.41	0.38	0.33	0.29	0.26	0.21	
TNRV040	z_f	4	3	2	2	2	1	1	1	1	1	1
	m_n	1.87	1.95	2.00	1.54	1.26	2.04	1.55	1.27	1.06	0.80	0.65
	γ	23°54'	18°23'	12°30'	10°3'	8°45'	6°19'	5°4'	4°24'	3°42'	2°52'	2°29'
	$\eta_d (n=1400 \text{ r/min})$	0.86	0.84	0.80	0.77	0.74	0.69	0.65	0.61	0.57	0.51	0.47
	η_s	0.70	0.66	0.59	0.54	0.51	0.44	0.39	0.36	0.32	0.27	0.24
TNRV050	z_f	4	3	2	2	2	1	1	1	1	1	1
	m_n	2.34	2.43	2.50	1.92	1.56	2.54	1.94	1.58	1.32	1.00	0.80
	γ	23°49'	18°19'	12°27'	10°3'	8°33'	6°18'	5°4'	4°18'	3°38'	2°52'	2°17'
	$\eta_d (n=1400 \text{ r/min})$	0.87	0.85	0.81	0.78	0.75	0.71	0.67	0.63	0.59	0.53	0.48
	η_s	0.70	0.66	0.59	0.54	0.51	0.44	0.39	0.36	0.32	0.27	0.24
TNRV063	z_f	4	3	2	2	2	1	1	1	1	1	1
	m_n	2.96	3.08	3.17	2.44	1.98	3.23	2.47	1.99	1.68	1.27	1.02
	γ	24°31'	18°53'	12°51'	10°29'	8°45'	6°30'	5°17'	4°24'	3°49'	2°59'	2°26'
	$\eta_d (n=1400 \text{ r/min})$	0.88	0.86	0.82	0.80	0.77	0.73	0.69	0.65	0.62	0.56	0.51
	η_s	0.70	0.66	0.59	0.55	0.51	0.44	0.40	0.36	0.33	0.28	0.24
TNRV075	z_f	4	3	2	2	2	1	1	1	1	1	1
	m_n	3.53	3.70	3.83	2.94	2.39	3.92	2.99	2.41	2.02	1.54	1.24
	γ	26°38'	20°37'	14°5'	11°19'	9°29'	7°9'	5°43'	4°46'	4°1'	3°17'	2°44'
	$\eta_d (n=1400 \text{ r/min})$	0.88	0.87	0.84	0.81	0.79	0.76	0.72	0.68	0.64	0.59	0.55
	η_s	0.71	0.68	0.61	0.57	0.53	0.47	0.41	0.37	0.34	0.29	0.26
TNRV090	z_f	4	3	2	2	2	1	1	1	1	1	1
	m_n	4.23	4.47	4.66	3.60	2.93	4.79	3.67	2.97	2.49	1.89	1.52
	γ	29°5'	22°39'	15°33'	12°50'	10°53'	7°55'	6°30'	5°29'	4°46'	3°45'	3°6'
	$\eta_d (n=1400 \text{ r/min})$	0.89	0.88	0.85	0.83	0.81	0.78	0.74	0.71	0.68	0.63	0.59
	η_s	0.72	0.69	0.63	0.59	0.56	0.49	0.44	0.41	0.37	0.32	0.28
TNRV105	z_f	4	3	2	2	2	1	1	1	1	1	1
	m_n	5.18	5.45	5.67	4.47	3.64	5.82	4.58	3.71	3.12	2.36	1.91
	γ	28°15'	21°57'	15°2'	14°42'	12°33'	7°39'	7°29'	6°21'	5°33'	4°27'	3°46'
	$\eta_d (n=1400 \text{ r/min})$	0.89	0.88	0.86	0.85	0.83	0.79	0.77	0.74	0.72	0.67	0.63
	η_s	0.72	0.69	0.62	0.62	0.59	0.48	0.48	0.44	0.41	0.36	0.32
TNRV110	z_f	4	3	2	2	2	1	1	1	1	1	1
	m_n	5.18	5.45	5.67	4.47	3.64	5.82	4.58	3.71	3.12	2.36	1.91
	γ	28°15'	21°57'	15°2'	14°42'	12°33'	7°39'	7°29'	6°21'	5°33'	4°27'	3°46'
	$\eta_d (n=1400 \text{ r/min})$	0.89	0.88	0.86	0.85	0.83	0.79	0.77	0.74	0.72	0.67	0.63
	η_s	0.72	0.69	0.62	0.62	0.59	0.48	0.48	0.44	0.41	0.36	0.32
TNRV130	z_f	4	3	2	2	2	1	1	1	1	1	1
	m_n	6.11	6.45	6.72	5.24	4.28	6.91	5.36	4.35	3.65	2.76	2.23
	γ	28°43'	22°20'	15°19'	13°47'	11°54'	7°48'	6°60'	6°1'	5°16'	4°8'	3°27'
	$\eta_d (n=1400 \text{ r/min})$	0.90	0.89	0.87	0.85	0.84	0.80	0.78	0.75	0.73	0.68	0.64
	η_s	0.72	0.69	0.63	0.61	0.58	0.49	0.46	0.43	0.40	0.34	0.30

6.5 Prestage helical geared units (PC)

The PC construction is modular and therefore it can be as a separate unit mounted on any type of fitted geared motor (PAM), whose the various possibilities of flange/output shafts can be found on page 11.

Fitting the pre-stage helical module on the main reduction unit is easily done as for any motor of type B14. The prestage unit cannot be used by itself, but only coupled with another reduction unit.

6.5.1 Materials

Case in aluminium alloy.

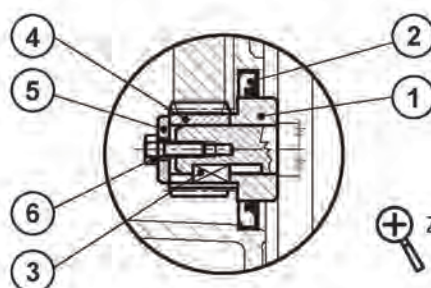
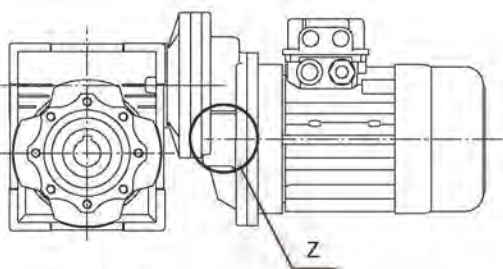
Gears : 20CrMo, machined accurately base on the accurate involute.

6.5.2 Coupling to electric motor

Correctly fitting the pinion on the electric motor shaft requires you keep to the following instructions:

- a). Thoroughly clean the electric motor shaft.
- b). Remove the motor key from its seat.
- c). Fit the bush ① to the drive shaft as shown in the diagram. To make this easier, you can heat the bush to approximately 70/80°C.
- d). Fit the new key ③ provided in place of the one removed beforehand.
- e). Fit the pinion ④ taking the same precautions as described in point c).
- f). Fit the washer ⑤ and tighten with the screw ⑥.
- g). Remove the rubber cap mounted on the seat of the oil seal, taking care since the pre-stage unit is already complete with lubricant.
- h). Fit the oil seal ② and then the motor assembly, taking care not to damage the lip of the oil seal.

N.B. For correct operation, with no vibration or noise, it is recommended to use good quality motors.



7. GEAR UNIT SELECTION TABLES

7.1 TNRV..(IEC).. Performance parameter

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page	
0.06	186.7	2.6	7.5	503	4.2	TNRV025	56B14	5614	55
	140	3.4	10	553	3.5				
	93.3	4.9	15	633	2.5				
	70	6.2	20	697	1.9				
	56	7.5	25	751	1.7				
	46.7	8.3	30	798	1.6				
	35	10	40	878	1.2				
	28	12	50	946	0.9				
	23.3	14	60	1006	0.7				
	186.7	2.6	7.5	683	7.0	TNRV030	56B5/B14	5614	56
	140	3.3	10	752	5.4				
	93.3	4.7	15	861	3.9				
	70	5.9	20	948	3.1				
	56	6.8	25	1021	3.1				
	46.7	7.9	30	1085	2.5				
	35	9.7	40	1194	1.9				
	28	11	50	1286	1.5				
	23.3	12	60	1367	1.3				
	17.5	14	80	1504	0.9				
0.09	373.3	2.0	7.5	399	3.9	TNRV025	56B14	5612	55
	280	2.6	10	439	3.4				
	186.7	3.8	15	503	2.4				
	140	4.9	20	553	1.8				
	112	5.9	25	590	1.5				
	93.3	6.7	30	633	1.3				
	70	8.5	40	697	1.1				
	56	10	50	751	0.9				
	186.7	3.9	7.5	503	2.8	TNRV025	56B14	5624	55
	140	5.1	10	553	2.4				
	93.3	7.3	15	633	1.6				
	70	9.3	20	697	1.3				
	56	11	25	751	1.2				
	46.7	13	30	798	1.0				
	35	16	40	878	0.8				
	373.3	2.0	7.5	542	6.5	TNRV030	56B5/B14	5612	56
	280	2.6	10	597	5.0				
	186.7	3.7	15	683	3.5				
	140	4.7	20	752	2.5				
	112	5.5	25	810	2.9				
	93.3	6.4	30	861	2.3				
	70	8.0	40	948	1.8				
	56	9.4	50	1021	1.4				
	46.7	10	60	1085	1.1				
	35	13	80	1194	0.9				

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page	
0.09	186.7	3.9	7.5	683	4.7	TNRV030	56B5/B14	5624	56
	140	5.0	10	752	3.6				
	93.3	7.0	15	861	2.6				
	70	8.8	20	948	2.0				
	56	10	25	1021	2.1				
	46.7	12	30	1085	1.7				
	35	14	40	1194	1.2				
	28	17	50	1286	1.0				
	23.3	18	60	1367	0.9				
	28	19	50	2475	2.1	TNRV040	56B5	5624	57
	23.3	21	60	2630	1.7				
	17.5	25	80	2895	1.3				
	14	29	100	3118	1.0				
0.12	373.3	2.7	7.5	399	3.0	TNRV025	56B14	5622	55
	280	3.5	10	439	2.6				
	186.7	5.1	15	503	1.8				
	140	6.5	20	553	1.4				
	112	7.9	25	590	1.1				
	93.3	9.0	30	633	1.0				
	70	11	40	697	0.8				
	186.7	5.2	7.5	683	3.5	TNRV030	63B5/B14	6314	56
	140	6.6	10	752	2.7				
	93.3	9.3	15	861	1.9				
	70	12	20	948	1.5				
	56	14	25	1021	1.6				
	46.7	16	30	1085	1.3				
	35	19	40	1194	0.9				
	28	22	50	1286	0.8				
	46.7	17	30	2087	2.7	TNRV040	63B5/B14	6314	57
	35	21	40	2298	1.9				
	28	25	50	2475	1.6				
	23.3	28	60	2630	1.3				
	17.5	33	80	2895	1.0				
	14	38	100	3118	0.8				
	23.3	29	60	3610	2.3	TNRV050	63B5	6314	58
	17.5	35	80	3973	1.9				
	14	39	100	4280	1.4				
0.18	373.3	4.0	7.5	542	3.2	TNRV030	63B5/B14	6312	56
	280	5.2	10	597	2.5				
	186.7	7.4	15	683	1.8				
	140	9.5	20	752	1.3				
	112	11	25	810	1.4				
	93.3	13	30	861	1.2				
	70	16	40	948	0.9				
	186.7	7.7	7.5	683	2.3	TNRV030	63B5/B14	6324	56
	140	10	10	752	1.8				
	93.3	14	15	861	1.3				
	70	18	20	948	1.0				
	56	20	25	1021	1.0				
	46.7	24	30	1085	0.8				

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	F _{r2} [N]	f _s			Page	
0.18	93.3	14	30	1657	2.5	TNRV040	63B5/B14	6312	57
	70	17	40	1824	1.8				
	56	21	50	1964	1.4				
	70	19	20	1824	2.1	TNRV040	63B5/B14	6324	57
	56	23	25	1964	1.7				
	46.7	25	30	2087	1.8				
	35	32	40	2298	1.3				
	28	37	50	2475	1.0				
	23.3	42	60	2630	0.9				
	45	28	20	2113	1.6	TNRV040	71B5/B14	7116	57
	36	34	25	2276	1.3				
	30	38	30	2419	1.3				
	22.5	47	40	2662	1.0				
	46.7	24	60	2865	2.1	TNRV050	63B5	6312	58
	35	30	80	3153	1.5				
	28	34	100	3397	1.2				
	35	33	40	3153	2.3	TNRV050	63B5	6324	58
	28	39	50	3397	1.9				
	23.3	43	60	3610	1.6				
	17.5	52	80	3973	1.2				
	14	59	100	4280	0.9				
	18	56	50	3936	1.4	TNRV050	71B5/B14	7116	58
	15	63	60	4183	1.1				
	11.3	75	80	4604	0.9				
	15	66	60	5467	2.1	TNRV063	71B5/B14	7116	59
	11.3	79	80	6018	1.6				
	9	90	100	6270	1.4				
0.25	373.3	5.6	7.5	542	2.3	TNRV030	63B5/B14	6322	56
	280	7.2	10	597	1.8				
	186.7	10	15	683	1.3				
	140	13	20	752	0.9				
	112	15	25	810	1.0				
	93.3	18	30	861	0.8				
	186.7	11	7.5	1315	3.6	TNRV040	71B5/B14	7114	57
	140	14	10	1447	2.8				
	93.3	20	15	1657	2.0				
	70	26	20	1824	1.5				
	56	32	25	1964	1.2				
	46.7	35	30	2087	1.3				
	35	44	40	2298	0.9				
	120	17	7.5	1524	2.6	TNRV040	71B5/B14	7126	57
	90	22	10	1677	2.0				
	60	31	15	1920	1.4				
	45	39	20	2113	1.1				
	36	48	25	2276	0.9				
	30	53	30	2419	0.9				

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page	
0.25	35	42	80	3153	1.1	TNRV050	63B5/B14	6322	58
	28	48	100	3397	0.8				
	70	27	20	2503	2.7	TNRV050	71B5/B14	7114	58
	56	32	25	2696	2.2				
	46.7	36	30	2865	2.3				
	35	46	40	3153	1.7				
	28	54	50	3397	1.4				
	23.3	60	60	3610	1.1				
	17.5	72	80	3973	0.9				
	45	40	20	2900	1.9	TNRV050	71B5/B14	7126	58
	36	48	25	3124	1.5				
	30	54	30	3320	1.7				
	22.5	67	40	3654	1.2				
	18	78	50	3936	1.0				
	15	88	60	4183	0.8				
	28	55	50	4440	2.4	TNRV063	71B5/B14	7114	59
	23.3	63	60	4719	2.0				
	17.5	76	80	5193	1.6				
	14	87	100	5595	1.4				
	18	81	50	5145	1.8	TNRV063	71B5/B14	7126	59
	15	92	60	5467	1.5				
	11.3	110	80	6018	1.2				
	9	125	100	6270	1.0				
	17.5	80	80	6130	2.4	TNRV075	71B5	7114	60
	14	94	100	6603	1.9				
	11.3	117	80	7103	1.7	TNRV075	71B5	7126	60
	9	133	100	7380	1.4				
0.37	373.3	8.3	7.5	1044	3.4	TNRV040	71B5/B14	7112	57
	280	11	10	1149	2.6				
	186.7	16	15	1315	1.9				
	140	20	20	1447	1.4				
	112	25	25	1559	1.1				
	186.7	16	7.5	1315	2.5	TNRV040	71B5/B14	7124	57
	140	21	10	1447	1.9				
	93.3	30	15	1657	1.3				
	70	39	20	1824	1.0				
	56	47	25	1964	0.8				
	46.7	52	30	2087	0.9				
	112	25	25	2140	2.0	TNRV050	71B5/B14	7112	58
	93.3	29	30	2274	2.2				
	70	37	40	2503	1.6				
	56	44	50	2696	1.2				
	46.7	50	60	2865	1.0				
	35	62	80	3153	0.7				
	140	21	10	1987	3.4	TNRV050	71B5/B14	7124	58
	93.3	31	15	2274	2.4				
	70	39	20	2503	1.9				

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page	
0.37	56	47	25	2696	1.5	TNRV050	71B5/B14	7124	58
	46.7	54	30	2865	1.6				
	35	68	40	3153	1.1				
	28	80	50	3397	0.9				
	23.3	89	60	3610	0.8				
	120	25	7.5	2091	3.4	TNRV050	80B5/B14	8016	58
	90	33	10	2302	2.6				
	60	47	15	2635	1.8				
	45	59	20	2900	1.3				
	36	72	25	3124	1.0				
	30	80	30	3320	1.1				
	35	70	40	4122	2.1	TNRV063	71B5/B14	7124	59
	28	82	50	4440	1.6				
	23.3	94	60	4719	1.4				
	17.5	113	80	5193	1.1				
	14	129	100	5595	0.9				
	45	60	20	3791	2.4	TNRV063	80B5/B14	8016	59
	36	73	25	4084	1.9				
	30	82	30	4339	2.1				
	22.5	102	40	4776	1.6				
	18	120	50	5145	1.2				
	15	137	60	5467	1.0				
	23.3	97	60	5569	2.1	TNRV075	71B5	7124	60
	17.5	119	80	6130	1.6				
	14	139	100	6603	1.3				
	18	124	50	6073	1.8	TNRV075	80B5/B14	8016	60
	15	141	60	6453	1.5				
	11.3	173	80	7103	1.2				
	9	196	100	7380	1.0				
	11.3	185	80	7859	1.7	TNRV090	80B5/B14	8016	61
	9	212	100	8180	1.3				
0.55	373.3	12	7.5	1044	2.3	TNRV040	71B5/B14	7122	57
	280	16	10	1149	1.8				
	186.7	24	15	1315	1.3				
	140	30	20	1447	1.0				
	112	37	25	1559	0.8				
	140	31	20	1987	1.7	TNRV050	71B5/B14	7122	58
	112	38	25	2140	1.4				
	93.3	43	30	2274	1.5				
	70	55	40	2503	1.1				
	56	65	50	2696	0.8				
	46.7	74	60	2865	0.7				
	186.7	24	7.5	1805	2.9	TNRV050	80B5/B14	8014	58
	140	32	10	1987	2.3				
	93.3	46	15	2274	1.6				
	70	59	20	2503	1.2				
	56	70	25	2696	1.0				
	46.7	80	30	2865	1.1				

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page	
0.55	120	37	7.5	2091	2.3	TNRV050	80B5/B14	8026	58
	90	48	10	2302	1.7				
	60	69	15	2635	1.2				
	45	88	20	2900	0.9				
	70	56	40	3272	1.9	TNRV063	71B5/B14	7122	59
	56	68	50	3524	1.5				
	46.7	78	60	3745	1.2				
	35	96	80	4122	0.9				
	28	111	100	4440	0.7				
	70	60	20	3272	2.2	TNRV063	80B5/B14	8014	59
	56	72	25	3524	1.8				
	46.7	82	30	3745	1.9				
	35	104	40	4122	1.4				
	28	122	50	4440	1.1				
	23.3	140	60	4719	0.9				
	60	70	15	3444	2.2	TNRV063	80B5/B14	8026	59
	45	90	20	3791	1.6				
	36	108	25	4084	1.3				
	30	123	30	4339	1.4				
	22.5	152	40	4776	1.1				
	35	99	80	4865	1.3	TNRV075	71B5	7122	60
	28	116	100	5241	1.0				
	35	108	40	4865	2.0	TNRV075	80B5/B14	8014	60
	28	128	50	5241	1.6				
	23.3	144	60	5569	1.4				
	17.5	177	80	6130	1.1				
	14	206	100	6603	0.9				
	30	124	30	5122	2.1	TNRV075	80B5/B14	8026	60
	22.5	156	40	5637	1.5				
	18	184	50	6073	1.2				
	15	210	60	6453	1.0				
	17.5	189	80	6783	1.5	TNRV090	80B5/B14	8014	61
	14	221	100	7306	1.2				
	18	196	50	6719	2.0	TNRV090	80B5/B14	8026	61
	15	224	60	7140	1.6				
	11.3	275	80	7859	1.1				
	9	315	100	8180	0.9				
	17.5	201	80	8571	2.4	TNRV105	80B5	8014	62
	14	236	100	9232	1.9				
	11.3	294	80	9931	1.8	TNRV105	80B5	8026	62
	9	344	100	10320	1.4				
	17.5	201	80	8571	2.6	TNRV110	80B5	8014	63
	14	236	100	9232	2.0				
	11.3	294	80	9931	1.9	TNRV110	80B5	8026	63
	9	344	100	10320	1.5				

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	F _{r2} [N]	f _s				Page
0.75	373.3	17	7.5	1433	3.0	TNRV050	80B5/B14	8012	58
	280	22	10	1577	2.4				
	186.7	31	15	1805	1.7				
	140	41	20	1987	1.3				
	112	49	25	2140	1.0				
	93.3	56	30	2274	1.1				
	186.7	33	7.5	1805	2.1	TNRV050	80B5/B14	8024	58
	140	43	10	1987	1.7				
	93.3	62	15	2274	1.2				
	70	80	20	2503	0.9				
	140	43	20	2597	2.3	TNRV063	80B5/B14	8012	59
	112	52	25	2797	1.8				
	93.3	60	30	2973	2.0				
	70	77	40	3272	1.4				
	56	92	50	3524	1.1				
	46.7	106	60	3745	0.9				
	93.3	63	15	2973	2.2	TNRV063	80B5/B14	8024	59
	70	82	20	3272	1.6				
	56	98	25	3524	1.3				
	46.7	112	30	3745	1.4				
	35	141	40	4122	1.0				
	120	51	7.5	2734	2.9	TNRV063	90B5/B14	90S6	59
	90	67	10	3009	2.3				
	60	96	15	3444	1.6				
	45	123	20	3791	1.2				
	36	147	25	4084	0.9				
	30	167	30	4339	1.0				
	46.7	107	60	4421	1.3	TNRV075	80B5/B14	8012	60
	35	135	80	4865	1.0				
	28	159	100	5241	0.8				
	56	101	25	4160	2.0	TNRV075	80B5/B14	8024	60
	46.7	117	30	4421	2.0				
	35	147	40	4865	1.5				
	28	174	50	5241	1.2				
	23.3	196	60	5569	1.0				
	60	97	15	4065	2.4				
	45	124	20	4474	1.9	TNRV075	90B5/B14	90S6	60
	36	149	25	4820	1.4				
	30	170	30	5122	1.5				
	22.5	213	40	5637	1.1				
	35	143	80	5383	1.6	TNRV090	80B5/B14	8012	61
	28	169	100	5799	1.2				
	28	182	50	5799	1.9	TNRV090	80B5/B14	8024	61
	23.3	209	60	6163	1.5				
	17.5	258	80	6783	1.1				
	14	302	100	7306	0.9				

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{12} [N]	f_s				Page
0.75	30	179	30	5667	2.6	TNRV090	90B5/B14	90S6	61
	22.5	226	40	6238	1.8				
	18	267	50	6719	1.5				
	15	306	60	7140	1.1				
	17.5	274	80	8571	1.8	TNRV105	80B5	8024	62
	14	322	100	9232	1.4				
	15	325	60	9023	1.9	TNRV105	90B5	90S6	62
	11.3	401	80	9931	1.3				
	9	470	100	10320	1.0				
	17.5	274	80	8571	1.9	TNRV110	80B5	8024	63
	14	322	100	9232	1.5				
	15	325	60	9023	2.1	TNRV110	90B5	90S6	63
	11.3	401	80	9931	1.4				
	9	470	100	10320	1.1				
	11.3	401	80	12989	2.1	TNRV130	90B5	90S6	64
	9	470	100	13500	1.7				
1.1	373.3	25	7.5	1433	2.1	TNRV050	80B5/B14	8022	58
	280	33	10	1577	1.7				
	186.7	48	15	1805	1.2				
	140	62	20	1987	0.9				
	186.7	46	15	2359	2.1	TNRV063	80B5/B14	8022	59
	140	60	20	2597	1.6				
	112	72	25	2797	1.2				
	93.3	82	30	2973	1.4				
	70	104	40	3272	1.0	TNRV063	90B5/B14	90L6	59
	120	75	7.5	2734	2.0				
	90	98	10	3009	1.6				
	60	140	15	3444	1.1				
	45	180	20	3791	0.8	TNRV063	90B5/B14	90S4	59
	186.7	50	7.5	2359	2.6				
	140	65	10	2597	2.0				
	93.3	92	15	2973	1.5				
	70	120	20	3272	1.1	TNRV063	90B5/B14	90S4	59
	56	144	25	3524	0.9				
	46.7	164	30	3745	1.0				
	112	77	25	3302	2.0	TNRV075	80B5/B14	8022	60
	93.3	89	30	3509	1.9				
	70	114	40	3862	1.4				
	56	137	50	4160	1.1				
	46.7	158	60	4421	0.9	TNRV075	90B5/B14	90L6	60
	90	98	10	3551	2.3				
	60	142	15	4065	1.7				
	45	182	20	4474	1.3				
	36	219	25	4820	1.0				
	30	249	30	5122	1.0				

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	F _{r2} [N]	f _s			Page	
1.1	93.3	95	15	3509	2.1	TNRV075	90B5/B14	90S4	60
	70	122	20	3862	1.7				
	56	148	25	4160	1.3				
	46.7	171	30	4421	1.3				
	35	216	40	4865	1.0				
	35	210	80	5383	1.1	TNRV090	80B5/B14	8022	61
	28	248	100	5799	0.8				
	36	228	25	5333	1.6	TNRV090	90B5/B14	90L6	61
	30	263	30	5667	1.8				
	22.5	331	40	6238	1.2				
	18	391	50	6719	1.0				
	15	448	60	7140	0.8				
	35	222	40	5383	1.6	TNRV090	90B5/B14	90S4	61
	28	266	50	5799	1.3				
	23.3	306	60	6163	1.0				
	22.5	345	40	7882	2.0	TNRV105	90B5	90L6	62
	18	414	50	8491	1.6				
	15	476	60	9023	1.3				
	11.3	588	80	9931	0.9				
	28	278	50	7328	2.2	TNRV105	90B5	90S4	62
	23.3	324	60	7787	1.7				
	17.5	402	80	8571	1.2				
	14	473	100	9232	1.0				
	22.5	345	40	7882	2.3	TNRV110	90B5	90L6	63
	18	414	50	8491	1.8				
	15	476	60	9023	1.4				
	11.3	588	80	9931	1.0				
	28	278	50	7328	2.4	TNRV110	90B5	90S4	63
	23.3	324	60	7787	1.9				
	17.5	402	80	8571	1.3				
	14	473	100	9232	1.0				
	11.3	588	80	12989	1.5	TNRV130	90B5	90L6	64
	9	689	100	13500	1.1				
	17.5	408	80	11210	2.1	TNRV130	90B5	90S4	64
	14	480	100	12076	1.5				
1.5	373.3	34	7.5	1433	1.5	TNRV050	80B5/B14	80C2	58
	280	45	10	1577	1.2				
	186.7	65	15	1805	0.9				
	186.7	68	7.5	2359	1.9	TNRV063	90B5/B14	90L4	59
	140	88	10	2597	1.5				
	93.3	126	15	2973	1.1				
	70	164	20	3272	0.8				
	373.3	35	7.5	1873	2.7	TNRV063	90B5/B14	90S2	59
	280	45	10	2061	2.2				

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page	
1.5	186.7	66	15	2359	1.6	TNRV063	90B5/B14	90S2	59
	140	86	20	2597	1.2				
	112	105	25	2797	0.9				
	93.3	120	30	2973	1.0				
	120	103	7.5	3227	2.1	TNRV075	100B5/B14	100L6	60
	90	134	10	3551	1.7				
	60	193	15	4065	1.2				
	56	187	50	4160	1.3	TNRV075	90B5/B14	90S2	60
	46.7	215	60	4421	1.1				
	140	89	10	3065	2.2	TNRV075	90B5/B14	90L4	60
	93.3	129	15	3509	1.6				
	70	166	20	3862	1.3				
	56	202	25	4160	1.0				
	46.7	233	30	4421	1.0				
	280	45	10	2433	3.2	TNRV075	90B5/B14	90S2	60
	186.7	66	15	2785	2.3				
	140	86	20	3065	1.9				
	112	105	25	3302	1.4				
	93.3	121	30	3509	1.4				
	70	156	40	3862	1.1				
	90	137	10	3929	2.7	TNRV090	100B5/B14	100L6	61
	60	198	15	4498	2.1				
	45	258	20	4951	1.5				
	36	310	25	5333	1.2				
	30	358	30	5667	1.3				
	70	170	20	4273	2.1	TNRV090	90B5/B14	90L4	61
	56	207	25	4603	1.6				
	46.7	239	30	4891	1.7				
	35	303	40	5383	1.2				
	28	363	50	5799	0.9				
	23.3	417	60	6163	0.8				
	56	197	50	4603	1.3	TNRV090	90B5/B14	90S2	61
	46.7	227	60	4891	1.1				
	45	264	20	6256	2.4	TNRV105	100B5	100L6	62
	36	322	25	6739	2.0				
	30	363	30	7161	2.0				
	22.5	471	40	7882	1.5				
	18	565	50	8491	1.2				
	15	649	60	9023	1.0				
	35	315	40	6803	1.9	TNRV105	90B5	90L4	62
	28	379	50	7328	1.6				
	23.3	442	60	7787	1.3				
	17.5	548	80	8571	0.9				
	46.7	236	60	6181	1.8	TNRV105	90B5	90S2	62
	35	299	80	6803	1.3				
	28	358	100	7328	1.0				

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	F _{r2} [N]	f _s			Page	
1.5	45	264	20	6256	2.7	TNRV110	100B5	100L6	63
	36	322	25	6739	2.4				
	30	363	30	7161	2.3				
	22.5	471	40	7882	1.7				
	18	565	50	8491	1.3				
	15	649	60	9023	1.1				
	35	315	40	6803	2.2	TNRV110	90B5	90L4	63
	28	379	50	7328	1.7				
	23.3	442	60	7787	1.4				
	17.5	548	80	8571	0.9				
	46.7	236	60	6181	2.0	TNRV110	90B5	90S2	63
	35	299	80	6803	1.3				
	28	358	100	7328	1.0				
	22.5	471	40	10309	2.3	TNRV130	100B5	100L6	64
	18	565	50	11105	1.9				
	15	659	60	11801	1.4				
	11.3	802	80	12989	1.1				
	17.5	557	80	11210	1.5	TNRV130	90B5	90L4	64
	14	655	100	12076	1.1				
2.2	373.3	51	7.5	1873	1.8	TNRV063	90B5/B14	90L2	59
	280	66	10	2061	1.5				
	186.7	97	15	2359	1.1				
	186.7	99	7.5	2785	1.9	TNRV075	100B5/B14	100LA4	60
	140	131	10	3065	1.5				
	93.3	189	15	3509	1.1				
	373.3	50	7.5	2210	2.6	TNRV075	90B5/B14	90L2	60
	280	66	10	2433	2.2				
	186.7	97	15	2785	1.5				
	140	126	20	3065	1.3				
	112	154	25	3302	1.0				
	93.3	178	30	3509	1.0				
	186.7	100	7.5	3081	2.9	TNRV090	100B5/B14	100LA4	61
	140	132	10	3391	2.3				
	93.3	191	15	3882	1.9				
	70	249	20	4273	1.4				
	56	304	25	4603	1.1				
	46.7	351	30	4891	1.2				
	120	154	7.5	3570	2.2	TNRV090	112B5/B14	112M6	61
	90	201	10	3929	1.8				
	60	291	15	4498	1.4				
	45	378	20	4951	1.0				
	140	129	20	3391	2.0	TNRV090	90B5/B14	90L2	61
	112	159	25	3653	1.6				
	93.3	185	30	3882	1.7				
	70	237	40	4273	1.2				
	56	289	50	4603	0.9				

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{12} [N]	f_s			Page
2.2	70	255	20	5399	2.2	TNRV105 100B5	100LA4	62
	56	311	25	5816	1.9			
	46.7	356	30	6181	1.8			
	35	462	40	6803	1.3			
	28	555	50	7328	1.1			
	23.3	648	60	7787	0.9			
	90	203	10	4965	3.1	TNRV105 112B5	112M6	62
	60	294	15	5684	2.2			
	45	388	20	6256	1.6			
	36	473	25	6739	1.4			
	30	532	30	7161	1.4			
	112	161	25	4616	2.7	TNRV105 90B5	90L2	62
	93.3	187	30	4905	2.6			
	70	243	40	5399	1.9			
	56	296	50	5816	1.5			
	46.7	347	60	6181	1.2			
	70	255	20	5399	2.5	TNRV110 100B5	100LA4	63
	56	311	25	5816	2.2			
	46.7	356	30	6181	2.0			
	35	462	40	6803	1.5			
	28	555	50	7328	1.2			
	23.3	648	60	7787	1.0			
	90	203	10	4965	3.5	TNRV110 112B5	112M6	63
	60	294	15	5684	2.6			
	45	388	20	6256	1.9			
	36	473	25	6739	1.6			
	30	532	30	7161	1.6			
	112	161	25	4616	3.1	TNRV110 90B5	90L2	63
	93.3	187	30	4905	3.0			
	70	243	40	5399	2.2			
	56	296	50	5816	1.7			
	46.7	347	60	6181	1.4			
	35	468	40	8897	2.2	TNRV130 100B5	100LA4	64
	28	563	50	9584	1.7			
	23.3	657	60	10185	1.4			
	17.5	816	80	11210	1.0			
	36	473	25	8814	2.2	TNRV130 112B5	112M6	64
	30	539	30	9366	2.2			
	22.5	691	40	10309	1.6			
	18	829	50	11105	1.3			
	15	966	60	11801	1.0			
	35	444	80	8897	1.3	TNRV130 90B5	90L2	64
	28	525	100	9584	1.0			

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	F _{r2} [N]	f _s			Page	
3.0	373.3	68	7.5	2210	1.9	TNRV075	100B5/B14	100L2	60
	280	90	10	2433	1.6				
	186.7	135	7.5	2785	1.4	TNRV075	100B5/B14	100LB4	60
	140	178	10	3065	1.1				
	93.3	258	15	3509	0.8				
	373.3	70	7.5	2446	3.0	TNRV090	100B5/B14	100L2	61
	280	92	10	2692	2.6				
	186.7	137	7.5	3081	2.1	TNRV090	100B5/B14	100LB4	61
	140	180	10	3391	1.7				
	93.3	261	15	3882	1.4				
	70	340	20	4273	1.0				
	56	414	25	4603	0.8				
	46.7	479	30	4891	0.9				
	93.3	264	15	4905	2.2	TNRV105	100B5	100LB4	62
	70	348	20	5399	1.6				
	56	425	25	5816	1.4				
	46.7	485	30	6181	1.3				
	35	630	40	6803	1.0				
	28	757	50	7328	0.8				
	120	210	7.5	4511	2.7	TNRV105	132B5	132S6	62
	90	277	10	4965	2.2				
	60	401	15	5684	1.6				
	45	528	20	6256	1.2				
	93.3	264	15	4905	2.5	TNRV110	100B5	100LB4	63
	70	348	20	5399	1.9				
	56	425	25	5816	1.6				
	46.7	485	30	6181	1.5				
	35	630	40	6803	1.1				
	28	757	50	7328	0.9				
	120	210	7.5	4511	3.1	TNRV110	132B5	132S6	63
	90	277	10	4965	2.6				
	60	401	15	5684	1.9				
	45	528	20	6256	1.4				
	56	430	25	7607	2.2	TNRV130	100B5	100LB4	64
	46.7	491	30	8084	2.1				
	35	638	40	8897	1.6				
	28	767	50	9584	1.3				
	23.3	896	60	10185	1.0				
	17.5	1113	80	11210	0.8				
	90	277	10	6494	3.5	TNRV130	132B5	132S6	64
	60	406	15	7434	2.6				
	45	528	20	8182	2.0				
	36	645	25	8814	1.6				
	30	735	30	9366	1.6				
	22.5	942	40	10309	1.2				

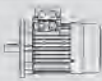
P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page		
4.0	373.3 280	91 120	7.5 10	2210 2433	1.4 1.2	TNRV075	112B5/B14	112M2	60	
	186.7 140	180 237	7.5 10	2785 3065	1.0 0.8	TNRV075	112B5/B14	112M4	60	
	373.3 280	93 123	7.5 10	2446 2692	2.3 1.9	TNRV090	112B5/B14	112M2	61	
	186.7 140 93.3 70	182 240 348 453	7.5 10 15 20	3081 3391 3882 4273	1.6 1.3 1.0 0.8	TNRV090	112B5	112M4	61	
	140 93.3 70 56 46.7	240 352 464 566 647	10 15 20 25 30	4285 4905 5399 5816 6181	2.2 1.6 1.2 1.0 1.0	TNRV105	112B5	112M4	62	
	120 90 60	280 369 535	7.5 10 15	4511 4965 5684	2.0 1.7 1.2	TNRV105	132B5	132MA6	62	
	140 93.3 70 56 46.7	240 352 464 566 647	10 15 20 25 30	4285 4905 5399 5816 6181	2.5 1.9 1.4 1.2 1.1	TNRV110	112B5	112M4	63	
	120 90 60	280 369 535	7.5 10 15	4511 4965 5684	2.3 1.9 1.4	TNRV110	132B5	132MA6	63	
	56 46.7 35 28 23.3	573 655 851 1023 1195	25 30 40 50 60	7607 8084 8897 9584 10185	1.6 1.6 1.2 1.0 0.8	TNRV130	112B5	112M4	64	
	120 90 60 45 36	283 369 541 705 860	7.5 10 15 20 25	5901 6494 7434 8182 8814	3.1 2.6 2.0 1.5 1.2	TNRV130	132B5	132MA6	64	
	5.5	186.7 140 93.3 70	250 330 484 638	7.5 10 15 20	3893 4285 4905 5399	1.9 1.6 1.2 0.9	TNRV105	132B5	132S4	62
		186.7 140 93.3 70	250 330 484 638	7.5 10 15 20	3893 4285 4905 5399	2.2 1.8 1.4 1.0	TNRV110	132B5	132S4	63

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s				Page
5.5	140	334	10	5605	2.5	TNRV130	132B5	132S4	64
	93.3	490	15	6416	1.9				
	70	638	20	7062	1.4				
	56	788	25	7607	1.2				
	46.7	900	30	8084	1.2				
	35	1171	40	8897	0.9				
7.5	186.7	341	7.5	3893	1.4	TNRV105	132B5	132M4	62
	140	450	10	4285	1.2				
	93.3	660	15	4905	0.9				
	186.7	341	7.5	3893	1.6	TNRV110	132B5	132M4	63
	140	450	10	4285	1.3				
	93.3	660	15	4905	1.0				
	186.7	345	7.5	5092	2.2	TNRV130	132B5	132M4	64
	140	455	10	5605	1.8				
	93.3	668	15	6416	1.4				
	70	870	20	7062	1.0				
	56	1074	25	7607	0.9				
	46.7	1228	30	8084	0.8				
	35	1596	40	8897	0.7				

7.2 PC .. - TNRV.. PERFORMANCE PARAMETER

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page
0.12	18.7	42	75	2833	1.2	PC063 - TNRV040	6314	66
	15.6	46	90	3011	1.2			
	11.7	57	120	3314	0.9			
	9.3	66	150	3490	0.7			
	7.8	74	180	3490	0.6			
	9.3	68	150	4840	1.3	PC063 - TNRV050	6314	66
	7.8	75	180	4840	1.1			
	5.8	88	240	4840	0.8			
	4.7	98	300	4840	0.7			
	5.8	92	240	6270	1.5	PC063 - TNRV063	6314	66
	4.7	103	300	6270	1.2			
0.18	18.7	64	75	2833	0.8	PC063 - TNRV040	6324	66
	15.6	70	90	3011	0.8			
	11.7	85	120	3314	0.6			
	18.7	64	75	3889	1.4	PC063 - TNRV050	6324	66
	15.6	71	90	4132	1.5			
	11.7	87	120	4548	1.1			
	9.3	101	150	4840	0.9			
	7.8	113	180	4840	0.7			
	5.8	133	240	4840	0.6			
	9.3	103	150	6270	1.7	PC063 - TNRV063	6324	66
	7.8	117	180	6270	1.4			
	5.8	139	240	6270	1.0			
	4.7	155	300	6270	0.8			
	12.0	95	75	4506	1.2	PC071 - TNRV050	7116	67
	10.0	105	90	4788	1.4			
	7.5	126	120	4840	1.0			
	12.0	97	75	5889	2.2	PC071 - TNRV063	7116	67
	10.0	107	90	6259	2.4			
	7.5	131	120	6270	1.8			
	6.0	152	150	6270	1.4			
	5.0	168	180	6270	1.2			
	3.8	197	240	6270	0.9			
	3.0	218	300	6270	0.7			
	5.0	179	180	7380	1.7	PC071 - TNRV075	7116	67
	3.8	211	240	7380	1.2			
	3.0	235	300	7380	1.0			
0.25	18.7	88	75	3889	1.0	PC071 - TNRV050	7114	67
	15.6	98	90	4132	1.1			
	11.7	121	120	4548	0.8			
	18.7	91	75	5083	1.8	PC071 - TNRV063	7114	67
	15.6	100	90	5401	2.0			
	11.7	125	120	5945	1.5			
	9.3	143	150	6270	1.2			

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	F _{r2} [N]	f _s			Page
0.25	7.8	163	180	6270	1.0	PC071 - TNRV063	7114	67
	5.8	192	240	6270	0.7			
	4.7	215	300	6270	0.6			
	12.0	135	75	5889	1.6	PC071 - TNRV063	7126	67
	10.0	148	90	6259	1.8			
	7.5	181	120	6270	1.3			
	6.0	211	150	6270	1.0			
	9.3	151	150	7380	1.7	PC071 - TNRV075	7114	67
	7.8	172	180	7380	1.4			
	5.8	201	240	7380	1.1			
	4.7	230	300	7380	0.9			
	12.0	139	75	6952	2.4	PC071 - TNRV075	7126	67
	10.0	155	90	7380	2.5			
	7.5	191	120	7380	1.9			
	6.0	219	150	7380	1.5			
	5.0	248	180	7380	1.2			
	5.0	263	180	8180	1.9	PC071 - TNRV090	7126	68
	3.8	318	240	8180	1.4			
	3.0	358	300	8180	1.1			
0.37	18.7	134	75	5083	1.2	PC071 - TNRV063	7124	67
	15.6	148	90	5401	1.4			
	11.7	185	120	5945	1.0			
	9.3	212	150	6270	0.8			
	18.7	138	75	6000	1.8	PC071 - TNRV075	7124	67
	15.6	154	90	6375	1.9			
	11.7	191	120	7017	1.5			
	9.3	223	150	7380	1.1			
	7.8	254	180	7380	0.9			
	12.0	206	75	6952	1.6	PC080 - TNRV075	8016	68
	10.0	230	90	7380	1.7			
	7.5	283	120	7380	1.3			
	6.0	324	150	7380	1.0			
	7.8	268	180	8180	1.5	PC071 - TNRV090	7124	68
	5.8	321	240	8180	1.1			
	4.7	371	300	8180	0.9			
	6.0	347	150	8180	1.6	PC080 - TNRV090	8016	68
	5.0	389	180	8180	1.3			
	3.8	471	240	8180	1.0			
	3.8	509	240	10320	1.5	PC080 - TNRV105	8016	69
	3.0	577	300	10320	1.2			
	3.8	509	240	10320	1.6	PC080 - TNRV110	8016	69
	3.0	577	300	10320	1.3			
0.55	18.7	205	75	6000	1.2	PC080 - TNRV075	8014	68
	15.6	230	90	6375	1.3			
	11.7	284	120	7017	1.0			
	9.3	332	150	7380	0.8			

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page
0.55	12.0	306	75	6952	1.1	PC080 - TNRV075	8026	68
	10.0	341	90	7380	1.1			
	15.6	240	90	7054	2.3	PC080 - TNRV090	8014	68
	11.7	297	120	7764	1.6			
	9.3	355	150	8180	1.3			
	7.8	398	180	8180	1.0			
	10.0	357	90	8174	2.0	PC080 - TNRV090	8026	68
	7.5	441	120	8180	1.4			
	6.0	516	150	8180	1.1			
	5.0	578	180	8180	0.9			
	7.8	425	180	10320	1.7	PC080 - TNRV105	8014	69
	5.8	513	240	10320	1.2			
	4.7	597	300	10320	1.0			
	7.5	462	120	10320	2.2	PC080 - TNRV105	8026	69
	6.0	552	150	10320	1.8			
	5.0	620	180	10320	1.5			
	3.8	756	240	10320	1.0			
	7.8	425	180	10320	1.8	PC080 - TNRV110	8014	69
	5.8	513	240	10320	1.3			
	4.7	597	300	10320	1.0			
	7.5	462	120	10320	2.6	PC080 - TNRV110	8026	69
	6.0	552	150	10320	2.0			
	5.0	620	180	10320	1.6			
	3.8	756	240	10320	1.1			
	3.8	756	240	13500	1.6	PC080 - TNRV130	8026	69
	3.0	858	300	13500	1.3			
0.75	18.7	280	75	6000	0.9	PC080 - TNRV075	8024	68
	15.6	313	90	6375	1.0			
	15.6	327	90	7054	1.7	PC080 - TNRV090	8024	68
	11.7	405	120	7764	1.2			
	9.3	483	150	8180	0.9			
	7.8	543	180	8180	0.7			
	11.7	430	120	9811	1.9	PC080 - TNRV105	8024	69
	9.3	506	150	10320	1.6			
	7.8	580	180	10320	1.2			
	5.8	700	240	10320	0.9			
	12.4	393	73	9614	2.8	PC090 - TNRV105	90S6	69
	9.3	508	96.8	10320	2.0			
	7.4	607	121	10320	1.6			
	6.2	682	145.2	10320	1.3			
	4.6	832	193.6	10320	0.9			
	11.7	430	120	9811	2.2	PC080 - TNRV110	8024	69
	9.3	506	150	10320	1.7			
	7.8	580	180	10320	1.3			
	5.8	700	240	10320	0.9			

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	F _{R2} [N]	f _s			Page
0.75	12.4	393	73	9614	3.2	PC090 - TNRV110	90S6	69
	9.3	508	96.8	10320	2.3			
	7.4	607	121	10320	1.8			
	6.2	682	145.2	10320	1.5			
	4.6	832	193.6	10320	1.0			
	5.8	712	240	13500	1.4	PC080 - TNRV130	8024	69
	4.7	813	300	13500	1.1			
	12.4	399	73	12575	4.4	PC090 - TNRV130	90S6	69
	9.3	508	96.8	13500	3.2			
	7.4	607	121	13500	2.6			
	6.2	682	145.2	13500	2.1			
	4.6	832	193.6	13500	1.5			
	3.7	944	242	13500	1.2			
1.1	12.4	576	73	9614	1.9	PC090 - TNRV105	90L6	69
	9.3	746	96.8	10320	1.4			
	7.4	890	121	10320	1.1			
	6.2	1000	145.2	10320	0.9			
	19.3	392	73	8298	2.2	PC090 - TNRV105	90S4	69
	14.5	508	96.8	9133	1.6			
	11.6	599	121	9838	1.3			
	9.6	686	145.2	10320	1.0			
	7.2	828	193.6	10320	0.8			
	12.4	576	73	9614	2.2	PC090 - TNRV110	90L6	69
	9.3	746	96.8	10320	1.6			
	7.4	890	121	10320	1.2			
	6.2	1000	145.2	10320	1.0			
	19.3	392	73	8298	2.5	PC090 - TNRV110	90S4	69
	14.5	508	96.8	9133	1.8			
	11.6	599	121	9838	1.5	PC090 - TNRV110	90S4	69
	9.6	686	145.2	10320	1.1			
	7.2	828	193.6	10320	0.8			
	12.4	585	73	12575	3.0	PC090 - TNRV130	90L6	69
	9.3	746	96.8	13500	2.2			
	7.4	890	121	13500	1.7			
	6.2	1000	145.2	13500	1.4			
	4.6	1220	193.6	13500	1.0			
	19.3	398	73	10853	3.5			
	14.5	508	96.8	11945	2.6	PC090 - TNRV130	90S4	69
	11.6	608	121	12868	2.0			
	9.6	686	145.2	13500	1.6			
	7.2	843	193.6	13500	1.2			
	5.8	962	242	13500	0.9			
1.5	19.3	535	73	8298	1.6	PC090 - TNRV105	90L4	69
	14.5	693	96.8	9133	1.2			
	11.6	817	121	9838	1.0			
	9.6	936	145.2	10320	0.8			

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page
1.5	19.3	535	73	8298	1.9	PC090 - TNRV110	90L4	69
	14.5	693	96,8	9133	1.3			
	11.6	817	121	9838	1.1			
	9.6	936	145.2	10320	0.8			
	19.3	542	73	10853	2.6	PC090 - TNRV130	90L4	69
	14.5	693	96,8	11945	1.9			
	11.6	830	121	12868	1.5			
	9.6	936	145.2	13500	1.1			
	7.2	1149	194	13500	0.8			
	38.6	398	73	6586	1.8	PC090 - TNRV105	90L2	69
	28.9	516	96,8	7249	1.3			
	23.1	617	121	7809	1.1			
2.2	38.6	398	73	6586	2.1	PC090 - TNRV110	90L2	69
	28.9	516	96,8	7249	1.5			
	23.1	617	121	7809	1.2			
	38.6	409	73	8614	2.9	PC090 - TNRV130	90L2	69
	28.9	545	96,8	9481	2.0			
	23.1	654	121	10213	1.6			
	19.3	752	145.2	10853	1.3			

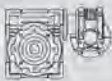
7.3 TNRV .. / TNRV.. PERFORMANCE PARAMETER

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	l	F _{r2} [N]	f _s			Page
0.06	14.0	25	100	1620	1.3	TNRV025/030	5614	70
	9.3	33	150	1830	0.9			
	7.0	41	200	1830	0.7			
	5.6	45	250	1830	0.8			
	4.7	56	300	3490	1.2	TNRV025/040	5614	70
	3.5	69	400	3490	0.9			
	2.8	94	500	3490	0.7			
	2.3	100	600	3490	0.6			
	1.9	115	750	3490	0.5			
	1.6	125	900	3490	0.5			
	1.2	153	1200	3490	0.4			
	0.9	185	1500	3490	0.3			
	0.8	198	1800	3490	0.3			
	0.6	247	2400	3490	0.2			
	0.5	280	3000	3490	0.2			
	0.4	295	4000	3490	0.1			
	0.3	348	5000	3490	0.1			
	4.7	55	300	3490	1.3	TNRV030/040	5614	70
	3.5	67	400	3490	0.9			
	2.8	88	500	3490	0.6			
	2.3	95	600	3490	0.7			
	1.9	103	750	3490	0.6			
	1.6	118	900	3490	0.5			
	1.2	143	1200	3490	0.4			
	0.9	166	1500	3490	0.4			
	0.8	184	1800	3490	0.3			
	0.6	217	2400	3490	0.2			
	0.4	247	3200	3490	0.2			
	0.4	278	4000	3490	0.1			
	0.3	327	5000	3490	0.1			
	1.6	118	900	4840	1.0	TNRV030/050	5614	71
	1.2	143	1200	4840	0.7			
	0.9	166	1500	4840	0.7			
	0.8	184	1800	4840	0.7			
	0.6	227	2400	4840	0.5			
	0.5	256	3000	4840	0.4			
	0.4	278	4000	4840	0.3			
	0.3	316	4800	4840	0.3			
	0.9	173	1500	6270	1.1	TNRV030/063	5614	71
	0.8	191	1800	6270	0.9			
	0.6	227	2400	6270	0.8			
	0.5	256	3000	6270	0.7			
	0.4	295	4000	6270	0.6			
	0.3	327	5000	6270	0.4			
	0.6	267	2400	7380	1.1	TNRV040/075	5614	71
	0.5	305	3000	7380	0.8			
	0.4	360	4000	7380	0.7			
	0.3	409	5000	7380	0.5			
	0.5	329	3000	8180	1.4	TNRV040/090	5614	72
	0.4	393	4000	8180	1.3			
	0.3	430	5000	8180	1.0			

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page
0.09	28.0	18	100	1286	1.6	TNRV025/030	5612	70
	18.7	25	150	1472	1.1			
	14.0	31	200	1620	0.9			
0.09	14.0	37	100	1620	0.8	TNRV025/030	5624	70
	9.3	50	150	1830	0.6			
	7.0	61	200	1830	0.5			
	5.6	68	250	1830	0.5			
	4.7	77	300	1830	0.4			
	3.5	106	400	1830	0.3			
	2.8	117	500	1830	0.3			
	2.3	135	600	1830	0.2			
	1.9	149	750	1830	0.2			
	1.6	167	900	1830	0.2			
	1.2	201	1200	1830	0.1			
	0.9	231	1500	1830	0.1			
	0.8	264	1800	1830	0.1			
	0.6	311	2400	1830	0.1			
	0.5	347	3000	1830	0.1			
0.09	9.3	43	300	3490	1.6	TNRV025/040	5612	70
	7.0	52	400	3490	1.2			
	5.6	71	500	3490	0.8			
0.09	4.7	82	300	3490	0.8	TNRV030/040	5624	70
	3.5	103	400	4840	1.2			
	2.8	120	500	4840	1.0			
0.09	2.3	146	600	4840	0.9	TNRV030/050	5624	71
	1.9	158	750	4840	0.8			
	1.6	177	900	4840	0.7			
	1.6	188	900	6270	1.0			
	1.2	222	1200	6270	0.9			
0.09	0.9	259	1500	6270	0.7	TNRV030/063	5624	71
	0.9	305	1500	7380	1.1			
	0.8	331	1800	7380	1.0			
0.09	0.6	400	2400	7380	0.7	TNRV040/075	5624	71
	0.5	494	3000	8180	0.9			
	0.4	589	4000	8180	0.8			
0.12	4.7	112	300	4840	1.2	TNRV030/050	6314	71
	3.5	138	400	4840	0.9			
	2.8	160	500	4840	0.7			
0.12	2.8	168	500	6270	1.3	TNRV030/063	6314	71
	2.3	199	600	6270	1.1			
	1.9	217	750	6270	0.9			
	1.6	279	900	7380	1.2			
0.12	1.2	344	1200	7380	0.9	TNRV040/075	6314	71
	0.8	470	1800	8180	0.9			
	0.6	593	2400	8180	0.9			
0.12	0.8	470	1800	8180	0.9	TNRV040/090	6314	72
	0.6	593	2400	8180	0.9			

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	F _{r2} [N]	f _s			Page
0.12	0.5	731	3000	10320	1.1	TNRV050/105	6314	72
	0.4	884	4000	10320	1.0			
	0.3	1023	5000	10320	0.8			
	0.5	731	3000	10320	1.2	TNRV050/110	6314	72
	0.4	884	4000	10320	1.0			
	0.3	1023	5000	10320	0.8			
0.18	3.5	216	400	6270	1.0	TNRV030/063	6324	71
	2.8	252	500	6270	0.8			
	2.3	336	600	7380	1.1	TNRV040/075	6324	71
	1.9	371	750	7380	0.9			
	1.6	419	900	7380	0.8			
	1.2	544	1200	8180	1.0	TNRV040/090	6324	72
	0.9	647	1500	8180	0.8			
	0.8	727	1800	10320	1.3	TNRV050/105	6324	72
	0.6	948	2400	10320	0.9			
	0.8	727	1800	10320	1.5	TNRV050/110	6324	72
	0.6	948	2400	10320	1.1			
	7.0	150	400	6270	1.4	TNRV030/063	6322	71
	5.6	175	500	6270	1.2			
	3.5	321	400	7380	1.1	TNRV040/075	7114	71
	2.8	375	500	7380	0.8			
	2.3	488	600	8180	1.2	TNRV040/090	7114	72
	1.9	553	750	8180	0.9			
	1.6	612	900	8180	0.8			
	1.2	776	1200	10320	1.1	TNRV050/105	7114	72
	0.9	924	1500	10320	1.0			
	0.8	1010	1800	10320	0.9			
	1.2	776	1200	10320	1.3	TNRV050/110	7114	72
	0.9	924	1500	10320	1.2			
	0.8	1010	1800	10320	1.1			
	0.6	1358	2400	13500	1.0	TNRV063/130	7114	73
	0.5	1626	3000	13500	0.8			
	0.4	1910	4000	13500	0.6			
	0.3	2132	5000	13500	0.5			
0.37	9.3	182	300	6270	1.3	TNRV030/063	7112	71
	7.0	222	400	6270	1.0			
	4.7	383	300	7380	1.0	TNRV040/075	7124	71
	3.5	474	400	7380	0.7			
	4.7	406	300	8180	1.5	TNRV040/090	7124	72
	3.5	505	400	8180	1.2			
	2.8	593	500	8180	0.9			
	2.3	722	600	8180	0.8			

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page
0.37	1.9	837	750	10320	1.2	TNRV050/105	7124	72
	1.6	928	900	10320	1.0			
	1.2	1148	1200	10320	0.7			
	1.9	837	750	10320	1.3	TNRV050/110	7124	72
	1.6	928	900	10320	1.2			
	1.2	1148	1200	10320	0.8			
	0.9	1444	1500	13500	1.1	TNRV063/130	7124	73
	0.8	1586	1800	13500	0.9			
0.55	9.3	305	300	8180	2.0	TNRV040/090	7122	72
	7.0	375	400	8180	1.5			
	5.6	441	500	8180	1.2			
	4.7	615	300	10320	1.7	TNRV050/105	8014	72
	3.5	810	400	10320	1.2			
	2.8	938	500	10320	1.0			
	2.3	1096	600	10320	0.9			
	1.9	1244	750	10320	0.8			
	4.7	615	300	10320	2.0	TNRV050/110	8014	72
	3.5	810	400	10320	1.4			
	2.8	938	500	10320	1.1			
	2.3	1096	600	10320	1.0			
	1.9	1244	750	10320	0.9			
	2.8	957	500	13500	1.6	TNRV063/130	8014	73
	1.9	1382	750	13500	1.2			
	1.2	2057	1200	13500	0.8			
0.75	9.3	424	300	10320	2.5	TNRV050/105	8012	72
	7.0	553	400	10320	1.8			
	5.6	640	500	10320	1.5			
	4.7	838	300	10320	1.3	TNRV050/105	8024	72
	3.5	1105	400	10320	0.9			
	9.3	424	300	10320	2.8	TNRV050/110	8012	72
	7.0	553	400	10320	2.1			
	5.6	640	500	10320	1.6			
	4.7	838	300	10320	1.5	TNRV050/110	8024	72
	3.5	1105	400	10320	1.1			
	2.8	1305	500	13500	1.1	TNRV063/130	8024	73
	2.3	1557	600	13500	1.0			
	1.9	1772	750	13500	0.9			
	1.6	2014	900	13500	0.8			

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	F_{r2} [N]	f_s			Page
1.1	9.3	621	300	10320	1.7	TNRV050/105	8022	72
	7.0	810	400	10320	1.2			
	5.6	938	500	10320	1.0			
	9.3	621	300	10320	1.9	TNRV050/110	8022	72
	7.0	810	400	10320	1.4			
	5.6	938	500	10320	1.1			
	4.7	1274	300	13500	1.3	TNRV063/130	90S4	73
	3.5	1621	400	13500	1.0			
	2.8	1913	500	13500	0.8			
1.5	9.3	878	300	13500	1.9	TNRV063/130	90S2	73
	7.0	1105	400	13500	1.4			
	5.6	1305	500	13500	1.1			
	4.7	1737	300	13500	1.0	TNRV063/130	90L4	73
	3.5	2210	400	13500	0.7			

7.4 TRV.. PERFORMANCE PARAMETER

M _{2n} [Nm]	n ₁ [r/min]	i	P _{1n} [kW]	n ₂ [r/min]	F _{r2} [N]	F _{r1} [N]		Page 
13	2800	7.5	0.58	373.3	542	125	TRV030	65
13	2800	10	0.45	280	597	140		
13	2800	15	0.32	186.7	683	140		
12	2800	20	0.23	140	752	146		
16	2800	25	0.26	112	810	210		
15	2800	30	0.21	93.3	861	210		
14	2800	40	0.16	70	948	127		
13	2800	50	0.12	56	1021	128		
12	2800	60	0.10	46.7	1085	126		
11	2800	80	0.08	35	1194	130		
28	2800	7.5	1.2	373.3	1044	233	TRV040	65
29	2800	10	1.0	280	1149	272		
31	2800	15	0.72	186.7	1315	291		
29	2800	20	0.52	140	1447	204		
28	2800	25	0.42	112	1559	236		
34	2800	30	0.44	93.3	1657	350		
31	2800	40	0.32	70	1824	350		
30	2800	50	0.26	56	1964	350		
28	2800	60	0.21	46.7	2087	350		
25	2800	80	0.16	35	2298	350		
23	2800	100	0.12	28	2475	350		
52	2800	7.5	2.3	373.3	1433	324	TRV050	65
54	2800	10	1.8	280	1577	378		
57	2800	15	1.3	186.7	1805	399		
53	2800	20	0.95	140	1987	417		
51	2800	25	0.75	112	2140	482		
64	2800	30	0.81	93.3	2274	490		
59	2800	40	0.59	70	2503	490		
53	2800	50	0.45	56	2696	490		
50	2800	60	0.37	46.7	2865	490		
45	2800	80	0.27	35	3153	490		
40	2800	100	0.21	28	3397	490		
93	2800	7.5	4.0	373.3	1873	395	TRV063	65
97	2800	10	3.2	280	2061	463		
103	2800	15	2.3	186.7	2359	492		
100	2800	20	1.7	140	2597	538		
92	2800	25	1.3	112	2797	593		
120	2800	30	1.5	93.3	2973	700		
108	2800	40	1.1	70	3272	700		
100	2800	50	0.81	56	3524	700		
95	2800	60	0.67	46.7	3745	700		
85	2800	80	0.49	35	4122	700		
74	2800	100	0.37	28	4440	700		
130	2800	7.5	5.7	373.3	2210	560	TRV075	65
145	2800	10	4.8	280	2433	703		
150	2800	15	3.4	186.7	2785	727		
160	2800	20	2.8	140	3065	872		
150	2800	25	2.1	112	3302	980		

M _{2n} [Nm]	n ₁ [r/min]	i	P _{1n} [kW]	n ₂ [r/min]	F _{r2} [N]	F _{r1} [N]		Page
170	2800	30	2.1	93.3	3509	980	TRV075	65
165	2800	40	1.6	70	3862	980		
150	2800	50	1.2	56	4160	980		
145	2800	60	1.0	46.7	4421	980		
130	2800	80	0.72	35	4865	980		
120	2800	100	0.57	28	5241	980		
210	2800	7.5	9.0	373.3	2446	715	TRV090	65
235	2800	10	7.7	280	2692	900		
270	2800	15	6.0	186.7	3081	1034		
260	2800	20	4.4	140	3391	1120		
250	2800	25	3.4	112	3653	1270		
310	2800	30	3.7	93.3	3882	1270		
275	2800	40	2.6	70	4273	1270		
265	2800	50	2.0	56	4603	1270		
245	2800	60	1.6	46.7	4891	1270		
225	2800	80	1.2	35	5383	1270		
200	2800	100	0.9	28	5799	1270		
340	2800	7.5	14.6	373.3	3090	950	TRV105	65
380	2800	10	12.4	280	3401	1194		
425	2800	15	9.4	186.7	3893	1337		
420	2800	20	7.1	140	4285	1485		
440	2800	25	6.0	112	4616	1700		
480	2800	30	5.6	93.3	4905	1700		
460	2800	40	4.2	70	5399	1700		
450	2800	50	3.3	56	5816	1700		
430	2800	60	2.7	46.7	6181	1700		
380	2800	80	1.9	35	6803	1700		
350	2800	100	1.5	28	7328	1700		
391	2800	7.5	16.8	373.3	3090	950	TRV110	65
437	2800	10	14.2	280	3401	1194		
489	2800	15	10.9	186.7	3893	1337		
483	2800	20	8.1	140	4285	1485		
506	2800	25	6.9	112	4616	1700		
552	2800	30	6.5	93.3	4905	1700		
529	2800	40	4.8	70	5399	1700		
495	2800	50	3.7	56	5816	1700		
473	2800	60	3.0	46.7	6181	1700		
399	2800	80	2.0	35	6803	1700		
368	2800	100	1.5	28	7328	1700		
520	2800	7.5	22.3	373.3	4042	1190	TRV130	65
580	2800	10	18.9	280	4449	1493		
670	2800	15	14.7	186.7	5092	1725		
660	2800	20	11.0	140	5605	1912		
670	2800	25	9.1	112	6038	2100		
770	2800	30	9.0	93.3	6416	2100		
730	2800	40	6.5	70	7062	2100		
700	2800	50	5.1	56	7607	2100		
640	2800	60	4.0	46.7	8084	2100		
590	2800	80	2.9	35	8897	2100		
520	2800	100	2.2	28	9584	2100		

M_{2n} [Nm]	n_1 [r/min]	i	P_{1n} [kW]	n_2 [r/min]	F_{r2} [N]	F_{r1} [N]		Page 
18	1400	7.5	0.4	186.7	683	150	TRV030	65
18	1400	10	0.3	140	752	169		
18	1400	15	0.2	93.3	861	169		
18	1400	20	0.2	70	948	190		
21	1400	25	0.2	56	1021	210		
20	1400	30	0.2	46.7	1085	210		
18	1400	40	0.1	35	1194	210		
17	1400	50	0.1	28	1286	210		
16	1400	60	0.1	23.3	1367	210		
13	1400	80	0.1	17.5	1504	210		
40	1400	7.5	0.9	186.7	1315	294	TRV040	65
40	1400	10	0.7	140	1447	331		
40	1400	15	0.5	93.3	1657	331		
39	1400	20	0.4	70	1824	350		
38	1400	25	0.3	56	1964	350		
45	1400	30	0.3	46.7	2087	350		
41	1400	40	0.2	35	2298	350		
39	1400	50	0.2	28	2475	350		
36	1400	60	0.2	23.3	2630	350		
33	1400	80	0.1	17.5	2895	350		
29	1400	100	0.1	14	3118	350		
71	1400	7.5	1.6	186.7	1805	401	TRV050	65
72	1400	10	1.2	140	1987	490		
74	1400	15	0.9	93.3	2274	490		
73	1400	20	0.7	70	2503	490		
70	1400	25	0.5	56	2696	490		
84	1400	30	0.6	46.7	2865	490		
76	1400	40	0.4	35	3153	490		
73	1400	50	0.3	28	3397	490		
68	1400	60	0.3	23.3	3610	490		
65	1400	80	0.2	17.5	3973	490		
55	1400	100	0.2	14	4280	490		
128	1400	7.5	2.8	186.7	2359	500	TRV063	65
130	1400	10	2.2	140	2597	571		
140	1400	15	1.7	93.3	2973	615		
135	1400	20	1.2	70	3272	667		
130	1400	25	1.0	56	3524	700		
160	1400	30	1.1	46.7	3745	700		
145	1400	40	0.8	35	4122	700		
135	1400	50	0.6	28	4440	700		
130	1400	60	0.5	23.3	4719	700		
122	1400	80	0.4	17.5	5193	700		
118	1400	100	0.3	14	5595	700		
185	1400	7.5	4.1	186.7	2785	700	TRV075	65
195	1400	10	3.3	140	3065	830		
200	1400	15	2.3	93.3	3509	851		
210	1400	20	1.9	70	3862	980		
200	1400	25	1.5	56	4160	980		
230	1400	30	1.5	46.7	4421	980		

M _{2n} [Nm]	n ₁ [r/min]	i	P _{1n} [kW]	n ₂ [r/min]	F _{r2} [N]	F _{r1} [N]		Page 65
220	1400	40	1.1	35	4865	980	TRV075	65
210	1400	50	0.9	28	5241	980		
200	1400	60	0.8	23.3	5569	980		
190	1400	80	0.6	17.5	6130	980		
180	1400	100	0.5	14	6603	980		
290	1400	7.5	6.4	186.7	3081	900	TRV090	65
310	1400	10	5.2	140	3391	1082		
360	1400	15	4.1	93.3	3882	1257		
355	1400	20	3.1	70	4273	1270		
340	1400	25	2.5	56	4603	1270		
410	1400	30	2.6	46.7	4891	1270		
360	1400	40	1.8	35	5383	1270		
340	1400	50	1.4	28	5799	1270		
320	1400	60	1.1	23.3	6163	1270		
285	1400	80	0.8	17.5	6783	1270		
270	1400	100	0.7	14	7306	1270		
480	1400	7.5	10.5	186.7	3893	1200	TRV105	65
520	1400	10	8.7	140	4285	1463		
570	1400	15	6.5	93.3	4905	1604		
560	1400	20	4.8	70	5399	1700		
590	1400	25	4.2	56	5816	1700		
630	1400	30	3.9	46.7	6181	1700		
610	1400	40	2.9	35	6803	1700		
600	1400	50	2.4	28	7328	1700		
560	1400	60	1.9	23.3	7787	1700		
490	1400	80	1.3	17.5	8571	1700		
460	1400	100	1.1	14	9232	1700		
552	1400	7.5	12.1	186.7	3893	1200	TRV110	65
598	1400	10	10.0	140	4285	1463		
656	1400	15	7.5	93.3	4905	1604		
644	1400	20	5.6	70	5399	1700		
679	1400	25	4.8	56	5816	1700		
725	1400	30	4.5	46.7	6181	1700		
702	1400	40	3.3	35	6803	1700		
660	1400	50	2.6	28	7328	1700		
616	1400	60	2.1	23.3	7787	1700		
515	1400	80	1.4	17.5	8571	1700		
483	1400	100	1.1	14	9232	1700		
750	1400	7.5	16.3	186.7	5092	1500	TRV130	65
820	1400	10	13.5	140	5605	1845		
920	1400	15	10.3	93.3	6416	2070		
910	1400	20	7.8	70	7062	2100		
930	1400	25	6.5	56	7607	2100		
1040	1400	30	6.4	46.7	8084	2100		
1050	1400	40	4.9	35	8897	2100		
980	1400	50	3.8	28	9584	2100		
900	1400	60	3.0	23.3	10185	2100		
840	1400	80	2.3	17.5	11210	2100		
740	1400	100	1.7	14	12076	2100		

M_{2n} [Nm]	n_1 [r/min]	i	P_{1n} [kW]	n_2 [r/min]	F_{r2} [N]	F_{r1} [N]		Page →
20	900	7.5	0.30	120	792	175	TRV030	65
20	900	10	0.24	90	871	197		
20	900	15	0.17	60	997	197		
20	900	20	0.13	45	1098	210		
23	900	25	0.14	36	1183	210		
21	900	30	0.11	30	1257	210		
20	900	40	0.09	22.5	1383	210		
18	900	50	0.07	18	1490	210		
17	900	60	0.06	15	1583	210		
15	900	80	0.04	11.3	1743	210		
44	900	7.5	0.66	120	1524	319	TRV040	65
44	900	10	0.51	90	1677	350		
45	900	15	0.36	60	1920	350		
44	900	20	0.28	45	2113	350		
43	900	25	0.23	36	2276	350		
49	900	30	0.23	30	2419	350		
45	900	40	0.17	22.5	2662	350		
42	900	50	0.14	18	2868	350		
39	900	60	0.11	15	3047	350		
35	900	80	0.09	11.3	3354	350		
32	900	100	0.07	9	3490	350		
84	900	7.5	1.2	120	2091	448	TRV050	65
84	900	10	0.95	90	2302	490		
84	900	15	0.67	60	2635	490		
77	900	20	0.48	45	2900	490		
75	900	25	0.39	36	3124	490		
90	900	30	0.42	30	3320	490		
82	900	40	0.31	22.5	3654	490		
77	900	50	0.25	18	3936	490		
72	900	60	0.21	15	4183	490		
68	900	80	0.16	11.3	4604	490		
56	900	100	0.12	9	4840	490		
151	900	7.5	2.2	120	2734	580	TRV063	65
153	900	10	1.7	90	3009	661		
155	900	15	1.2	60	3444	670		
148	900	20	0.91	45	3791	700		
137	900	25	0.70	36	4084	700		
175	900	30	0.79	30	4339	700		
160	900	40	0.58	22.5	4776	700		
145	900	50	0.45	18	5145	700		
138	900	60	0.37	15	5467	700		
128	900	80	0.29	11.3	6018	700		
124	900	100	0.25	9	6270	700		
215	900	7.5	3.1	120	3227	810	TRV075	65
230	900	10	2.6	90	3551	975		
235	900	15	1.8	60	4065	980		
235	900	20	1.4	45	4474	980		
215	900	25	1.1	36	4820	980		
260	900	30	1.2	30	5122	980		

M _{2n} [Nm]	n ₁ [r/min]	i	P _{1n} [kW]	n ₂ [r/min]	F _{r2} [N]	F _{r1} [N]		Page 65
240	900	40	0.84	22.5	5637	980	TRV075	65
220	900	50	0.66	18	6073	980		
210	900	60	0.55	15	6453	980		
200	900	80	0.43	11.3	7103	980		
190	900	100	0.36	9	7380	980		
340	900	7.5	4.9	120	3570	1040	TRV090	65
370	900	10	4.1	90	3929	1270		
420	900	15	3.2	60	4498	1270		
390	900	20	2.3	45	4951	1270		
370	900	25	1.8	36	5333	1270		
460	900	30	1.9	30	5667	1270		
410	900	40	1.4	22.5	6238	1270		
390	900	50	1.1	18	6719	1270		
350	900	60	0.86	15	7140	1270		
315	900	80	0.63	11.3	7859	1270		
280	900	100	0.49	9	8180	1270		
565	900	7.5	8.1	120	4511	1390	TRV105	65
620	900	10	6.7	90	4965	1700		
660	900	15	4.9	60	5684	1700		
630	900	20	3.6	45	6256	1700		
660	900	25	3.1	36	6739	1700		
730	900	30	3.0	30	7161	1700		
690	900	40	2.2	22.5	7882	1700		
680	900	50	1.8	18	8491	1700		
620	900	60	1.4	15	9023	1700		
540	900	80	1.0	11.3	9931	1700		
490	900	100	0.78	9	10320	1700		
650	900	7.5	9.3	120	4511	1390	TRV110	65
713	900	10	7.7	90	4965	1700		
759	900	15	5.7	60	5684	1700		
725	900	20	4.1	45	6256	1700		
759	900	25	3.5	36	6739	1700		
840	900	30	3.5	30	7161	1700		
794	900	40	2.5	22.5	7882	1700		
748	900	50	2.0	18	8491	1700		
682	900	60	1.6	15	9023	1700		
567	900	80	1.1	11.3	9931	1700		
515	900	100	0.82	9	10320	1700		
880	900	7.5	12.4	120	5901	1740	TRV130	65
960	900	10	10.4	90	6494	2100		
1060	900	15	7.8	60	7434	2100		
1040	900	20	5.9	45	8182	2100		
1050	900	25	4.9	36	8814	2100		
1170	900	30	4.8	30	9366	2100		
1100	900	40	3.5	22.5	10309	2100		
1050	900	50	2.8	18	11105	2100		
940	900	60	2.1	15	11801	2100		
860	900	80	1.6	11.3	12989	2100		
780	900	100	1.2	9	13500	2100		

M _{2n} [Nm]	n ₁ [r/min]	i	P _{1n} [kW]	n ₂ [r/min]	F _{r2} [N]	F _{r1} [N]		Page →
24	500	7.5	0.21	66.7	963	210	TRV030	65
24	500	10	0.16	50	1060	210		
24	500	15	0.12	33.3	1213	210		
23	500	20	0.09	25	1336	210		
29	500	25	0.10	20	1439	210		
26	500	30	0.08	16.7	1529	210		
23	500	40	0.06	12.5	1683	210		
21	500	50	0.05	10	1813	210		
19	500	60	0.04	8.3	1830	210		
17	500	80	0.03	6.3	1830	210		
54	500	7.5	0.45	66.7	1853	350	TRV040	65
54	500	10	0.35	50	2040	350		
55	500	15	0.26	33.3	2335	350		
52	500	20	0.19	25	2570	350		
49	500	25	0.15	20	2769	350		
58	500	30	0.16	16.7	2942	350		
53	500	40	0.12	12.5	3238	350		
49	500	50	0.10	10	3488	350		
46	500	60	0.08	8.3	3490	350		
40	500	80	0.06	6.3	3490	350		
36	500	100	0.05	5	3490	350		
103	500	7.5	0.87	66.7	2544	490	TRV050	65
103	500	10	0.67	50	2800	490		
103	500	15	0.47	33.3	3205	490		
93	500	20	0.33	25	3528	490		
91	500	25	0.27	20	3800	490		
108	500	30	0.30	16.7	4038	490		
98	500	40	0.22	12.5	4445	490		
91	500	50	0.17	10	4788	490		
83	500	60	0.14	8.3	4840	490		
75	500	80	0.11	6.3	4840	490		
65	500	100	0.09	5	4840	490		
184	500	7.5	1.5	66.7	3325	700	TRV063	65
185	500	10	1.2	50	3660	700		
187	500	15	0.85	33.3	4190	700		
178	500	20	0.63	25	4611	700		
164	500	25	0.48	20	4967	700		
200	500	30	0.53	16.7	5279	700		
185	500	40	0.40	12.5	5810	700		
173	500	50	0.32	10	6259	700		
160	500	60	0.26	8.3	6270	700		
137	500	80	0.19	6.3	6270	700		
128	500	100	0.16	5	6270	700		
260	500	7.5	2.2	66.7	3925	980	TRV075	65
270	500	10	1.7	50	4320	980		
280	500	15	1.3	33.3	4945	980		
285	500	20	0.99	25	5443	980		
255	500	25	0.74	20	5863	980		
300	500	30	0.77	16.7	6231	980		

M _{2n} [Nm]	n ₁ [r/min]	i	P _{1n} [kW]	n ₂ [r/min]	F _{r2} [N]	F _{r1} [N]		Page 65
280	500	40	0.58	12.5	6858	980	TRV075	65
250	500	50	0.44	10	7380	980		
240	500	60	0.38	8.3	7380	980		
215	500	80	0.28	6.3	7380	980		
210	500	100	0.24	5	7380	980		
410	500	7.5	3.3	66.7	4343	1270	TRV090	65
435	500	10	2.7	50	4780	1270		
490	500	15	2.1	33.3	5472	1270		
470	500	20	1.6	25	6022	1270		
440	500	25	1.2	20	6487	1270		
550	500	30	1.4	16.7	6894	1270		
480	500	40	0.94	12.5	7588	1270		
450	500	50	0.75	10	8174	1270		
400	500	60	0.58	8.3	8180	1270		
365	500	80	0.45	6.3	8180	1270		
330	500	100	0.35	5	8180	1270		
690	500	7.5	5.6	66.7	5488	1700	TRV105	65
740	500	10	4.6	50	6040	1700		
790	500	15	3.4	33.3	6914	1700		
750	500	20	2.5	25	7610	1700		
790	500	25	2.1	20	8198	1700		
870	500	30	2.1	16.7	8711	1700		
810	500	40	1.5	12.5	9588	1700		
800	500	50	1.3	10	10320	1700		
710	500	60	0.96	8.3	10320	1700		
630	500	80	0.72	6.3	10320	1700		
570	500	100	0.55	5	10320	1700		
794	500	7.5	6.4	66.7	5488	1700	TRV110	65
851	500	10	5.2	50	6040	1700		
909	500	15	3.9	33.3	6914	1700		
863	500	20	2.8	25	7610	1700		
909	500	25	2.4	20	8198	1700		
1000	500	30	2.4	16.7	8711	1700		
932	500	40	1.7	12.5	9588	1700		
880	500	50	1.4	10	10320	1700		
781	500	60	1.1	8.3	10320	1700		
662	500	80	0.75	6.3	10320	1700		
599	500	100	0.58	5	10320	1700		
1080	500	7.5	8.7	66.7	7178	2100	TRV130	65
1160	500	10	7.1	50	7900	2100		
1300	500	15	5.5	33.3	9043	2100		
1230	500	20	4.0	25	9953	2100		
1200	500	25	3.2	20	10722	2100		
1400	500	30	3.4	16.7	11394	2100		
1300	500	40	2.4	12.5	12540	2100		
1220	500	50	1.9	10	13500	2100		
1070	500	60	1.5	8.3	13500	2100		
970	500	80	1.1	6.3	13500	2100		
860	500	100	0.83	5	13500	2100		

7.5 TRV.. / TNRV.. Performance parameter

M _{2n} [Nm]	n ₁ [r/min]	i	P _{1n} [kW]	n ₂ [r/min]	F _{r2} [N]	F _{r1} [N]		Page
73	1400	300	0.08	4.7	3490	210	TRV030/040	73
65	1400	400	0.06	3.5	3490	210		
61	1400	500	0.04	2.8	3490	210		
73	1400	600	0.05	2.3	3490	210		
73	1400	750	0.04	1.9	3490	210		
73	1400	900	0.04	1.6	3490	210		
65	1400	1200	0.03	1.2	3490	210		
73	1400	1500	0.03	0.9	3490	210		
73	1400	1800	0.02	0.8	3490	210		
65	1400	2400	0.02	0.58	3490	210		
65	1400	3200	0.01	0.4	3490	210		
33	1400	4000	0.01	0.4	3490	210		
29	1400	5000	0.01	0.28	3490	210		
145	1400	300	0.16	4.7	4840	210	TRV030/050	73
124	1400	400	0.11	3.5	4840	210		
120	1400	500	0.09	2.8	4840	210		
145	1400	600	0.09	2.3	4840	210		
145	1400	750	0.08	1.9	4840	210		
145	1400	900	0.07	1.6	4840	210		
124	1400	1200	0.05	1.2	4840	210		
145	1400	1500	0.05	0.93	4840	210		
145	1400	1800	0.05	0.78	4840	210		
124	1400	2400	0.03	0.6	4840	210		
120	1400	3000	0.03	0.5	4840	210		
82	1400	4000	0.02	0.35	4840	210		
82	1400	4800	0.02	0.29	4840	210		
230	1400	300	0.24	4.7	6270	210	TRV030/063	73
230	1400	400	0.19	3.5	6270	210		
216	1400	500	0.15	2.8	6270	210		
230	1400	600	0.14	2.3	6270	210		
216	1400	750	0.12	1.9	6270	210		
198	1400	900	0.09	1.6	6270	210		
230	1400	1200	0.09	1.2	6270	210		
216	1400	1500	0.08	0.93	6270	210		
198	1400	1800	0.06	0.78	6270	210		
230	1400	2400	0.06	0.58	6270	210		
216	1400	3000	0.05	0.47	6270	210		
172	1400	4000	0.04	0.35	6270	210		
150	1400	5000	0.03	0.28	6270	210		
390	1400	300	0.38	4.7	7380	350	TRV040/075	73
360	1400	400	0.28	3.5	7380	350		
320	1400	500	0.21	2.8	7380	350		
390	1400	600	0.21	2.3	7380	350		
390	1400	750	0.19	1.9	7380	350		
390	1400	900	0.17	1.6	7380	350		
360	1400	1200	0.13	1.2	7380	350		
390	1400	1500	0.12	0.93	7380	350		
390	1400	1800	0.11	0.78	7380	350		
360	1400	2400	0.08	0.58	7380	350		
320	1400	3000	0.06	0.47	7380	350		
250	1400	4000	0.04	0.35	7380	350		
230	1400	5000	0.03	0.28	7380	350		

M _{2n} [Nm]	n ₁ [r/min]	i	P _{1n} [kW]	n ₂ [r/min]	F _{r2} [N]	F _{r1} [N]		Page
610	1400	300	0.56	4.7	8180	350	TRV040/090	73
610	1400	400	0.45	3.5	8180	350		
560	1400	500	0.35	2.8	8180	350		
610	1400	600	0.31	2.3	8180	350		
560	1400	750	0.25	1.9	8180	350		
505	1400	900	0.21	1.6	8180	350		
610	1400	1200	0.20	1.2	8180	350		
560	1400	1500	0.16	0.93	8180	350		
505	1400	1800	0.13	0.78	8180	350		
610	1400	2400	0.12	0.58	8180	350		
560	1400	3000	0.10	0.47	8180	350		
460	1400	4000	0.07	0.35	8180	350		
410	1400	5000	0.05	0.28	8180	350		
1100	1400	300	1.0	4.7	10320	490	TRV050/110	73
1030	1400	400	0.70	3.5	10320	490		
1000	1400	500	0.49	2.8	10320	490		
1030	1400	600	0.52	2.3	10320	490		
1100	1400	750	0.49	1.9	10320	490		
1100	1400	900	0.44	1.6	10320	490		
1030	1400	1200	0.33	1.2	10320	490		
1100	1400	1500	0.30	0.93	10320	490		
1100	1400	1800	0.27	0.78	10320	490		
1030	1400	2400	0.20	0.58	10320	490		
1000	1400	3000	0.16	0.47	10320	490		
780	1400	4000	0.11	0.35	10320	490		
710	1400	5000	0.09	0.28	10320	490		
1265	1400	300	1.1	4.7	10320	490	TRV050/110	73
1185	1400	400	0.80	3.5	10320	490		
1100	1400	500	0.54	2.8	10320	490		
1185	1400	600	0.59	2.3	10320	490		
1265	1400	750	0.56	1.9	10320	490		
1265	1400	900	0.50	1.6	10320	490		
1185	1400	1200	0.38	1.2	10320	490		
1265	1400	1500	0.34	0.93	10320	490		
1265	1400	1800	0.31	0.78	10320	490		
1185	1400	2400	0.22	0.58	10320	490		
1100	1400	3000	0.18	0.47	10320	490		
819	1400	4000	0.11	0.35	10320	490		
746	1400	5000	0.09	0.28	10320	490		
1760	1400	300	1.5	4.7	13500	700	TRV063/130	73
1650	1400	400	1.1	3.5	13500	700		
1550	1400	500	0.89	2.8	13500	700		
1650	1400	600	0.79	2.3	13500	700		
1760	1400	750	0.75	1.9	13500	700		
1760	1400	900	0.66	1.6	13500	700		
1650	1400	1200	0.51	1.2	13500	700		
1760	1400	1500	0.45	0.93	13500	700		
1760	1400	1800	0.41	0.78	13500	700		
1650	1400	2400	0.30	0.58	13500	700		
1550	1400	3000	0.24	0.47	13500	700		
1220	1400	4000	0.16	0.35	13500	700		
1100	1400	5000	0.13	0.28	13500	700		

7.6 UDL.. - TNRV.. (n1=1400r/min) PERFORMANCE PARAMETER

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i			Page 
0.18	117 ~ 22.5	9 ~ 18	12 ~ 61.5	UDL0.18-TNRV040	6324	57 & 74
	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	UDL0.18-TNRV050	6324	58 & 74
	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			
0.37	133 ~ 26.7	19 ~ 36	10.5 ~ 52.5	UDL0.37-TNRV050	7124	58 & 74
	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	UDL0.37-TNRV063	7124	59 & 74
	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	UDL0.55-TNRV063	8014	59 & 74
	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	UDL0.55-TNRV075	8014	60 & 74
	16.7 ~ 3.3	146 ~ 242	84 ~ 420			
	12.5 ~ 2.5	176 ~ 250	112 ~ 560			
	12.5 ~ 2.5	189 ~ 309	112 ~ 560	UDL0.55-TNRV090	8014	61 & 74
	10 ~ 2	218 ~ 350	140 ~ 700			

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i			Page
0.75	133 ~ 26.7	39 ~ 73	10.5 ~ 52.5	UDL0.75-TNRV063	8024	59 & 74
	100 ~ 20	51 ~ 94	14 ~ 70			
	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	UDL0.75-TNRV075	8024	60 & 74
	16.7 ~ 3.3	219 ~ 300	84 ~ 420			
	16.7 ~ 3.3	230 ~ 389	84 ~ 420	UDL0.75-TNRV090	8024	61 & 74
	12.5 ~ 2.5	265 ~ 428	112 ~ 560			
	10 ~ 2	303 ~ 410	140 ~ 700			
	12.5 ~ 2.5	302 ~ 503	112 ~ 560	UDL0.75-TNRV105	8024	62 & 74
	10 ~ 2	348 ~ 575	140 ~ 700			
	12.5 ~ 2.5	302 ~ 503	112 ~ 560	UDL0.75-TNRV110	8024	63 & 74
	10 ~ 2	348 ~ 575	140 ~ 700			
1.1	133 ~ 26.7	59 ~ 111	10.5 ~ 52.5	UD1.1-TNRV075	90S4	60 & 74
	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	UD1.1-TNRV090	90S4	61 & 74
	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	UD1.1-TNRV105	90S4	62 & 74
	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	UD1.1-TNRV110	90S4	63 & 74
	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	UD1.1-TNRV130	90S4	64 & 74
	12.5 ~ 2.5	460 ~ 749	112 ~ 560			
	10 ~ 2	531 ~ 868	140 ~ 700			

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i			Page
1.5	133 ~ 26.7	78 ~ 148	10.5 ~ 52.5	UD1.5-TNRV075	90L4	60 & 74
	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	UD1.5-TNRV090	90L4	61 & 74
	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	UD1.5-TNRV105	90L4	62 & 74
	16.7 ~ 3.3	490 ~ 833	84 ~ 420			
	20 ~ 4	426 ~ 733	70 ~ 350	UD1.5-TNRV110	90L4	63 & 74
	16.7 ~ 3.3	490 ~ 833	84 ~ 420			
	16.7 ~ 3.3	498 ~ 831	84 ~ 420	UD1.5-TNRV130	90L4	64 & 74
	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	UD2.2-TNRV105	100LA4	62 & 74
	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	UD2.2-TNRV110	100LA4	63 & 74
	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	UD2.2-TNRV130	100LA4	64 & 74
	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			

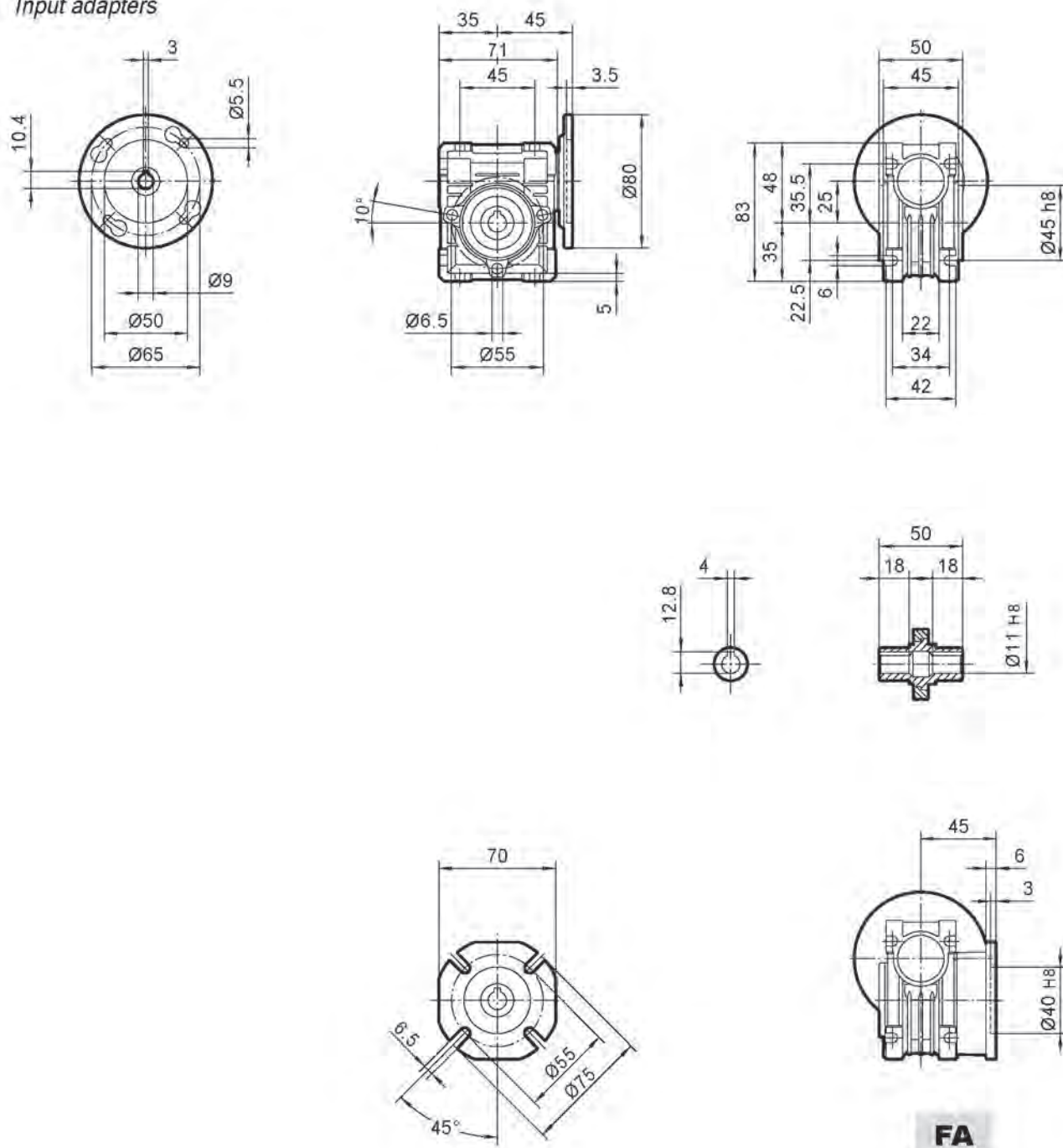
P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i			Page
3.0	133 ~ 26.7	160 ~ 302	10.5 ~ 52.5	UD3.0-TNRV105	100LB4	62 & 74
	100 ~ 20	210 ~ 392	14 ~ 70			
	66.7 ~ 13.3	304 ~ 558	21 ~ 105			
	50 ~ 10	398 ~ 732	28 ~ 140			
	40 ~ 8	485 ~ 885	35 ~ 175			
	33.3 ~ 6.7	547 ~ 956	42 ~ 210			
	25 ~ 5	711 ~ 1030	56 ~ 280			
	133 ~ 26.7	160 ~ 302	10.5 ~ 52.5	UD3.0-TNRV110	100LB4	63 & 74
	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	UD3.0-TNRV130	100LB4	64 & 74
	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	UD4.0-TNRV105	112M4	62 & 74
	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	UD4.0-TNRV110	112M4	63 & 74
	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	UD4.0-TNRV130	112M4	64 & 74
	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			

8. OUTLINE DIMENSION SHEET

8.1 TNRV.. Outline dimension

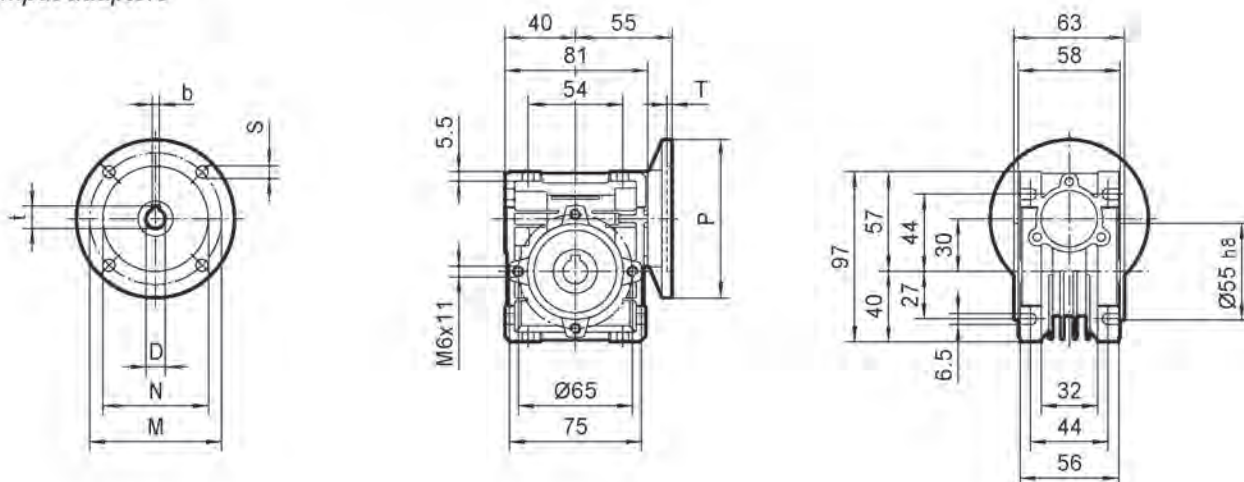
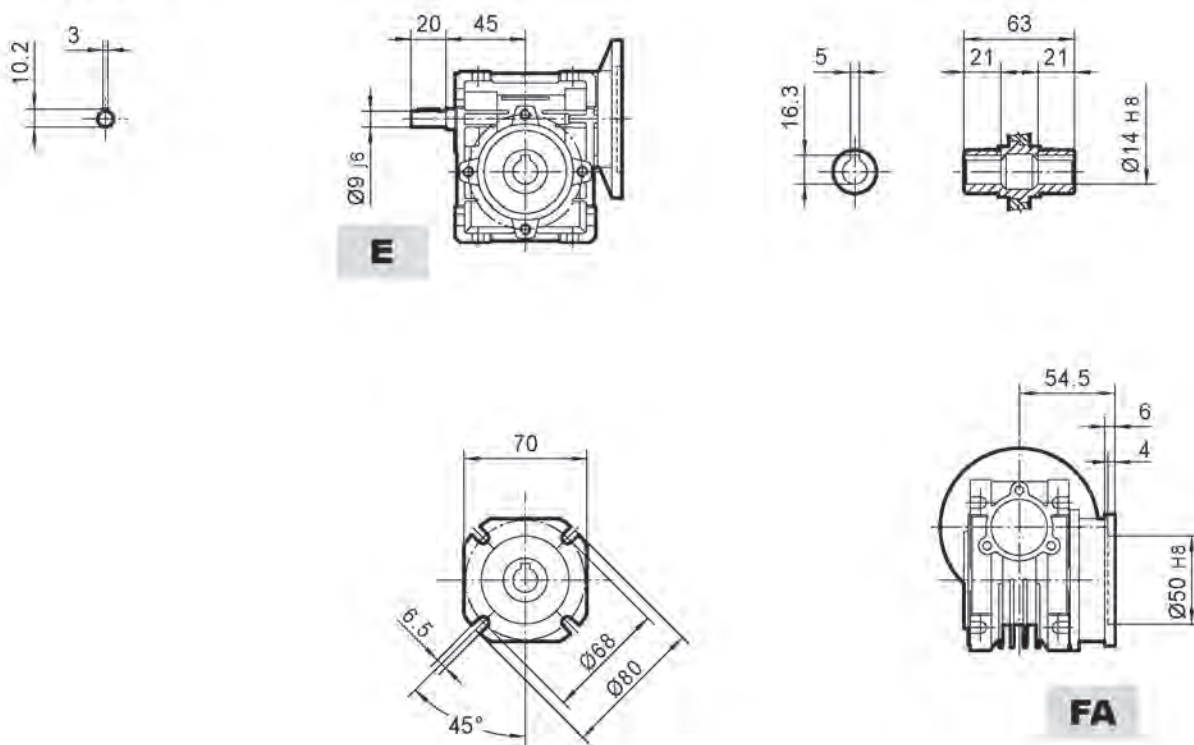
TNRV025..(IEC)

Input adapters



FA

Weight without motor ≈ 0.7 kg

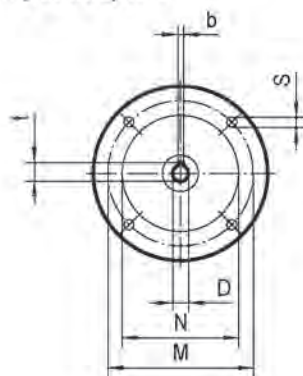
TNRV030..(IEC)
Input adapters

Worm output shaft


IEC	DE8	b	t	P	M	N	S	T
56B5	9	3	10.4	120	100	80	7	4
56B14	9	3	10.4	80	65	50	5.5	4
63B5	11	4	12.8	140	115	95	9	4
63B14	11	4	12.8	90	75	60	5.5	4

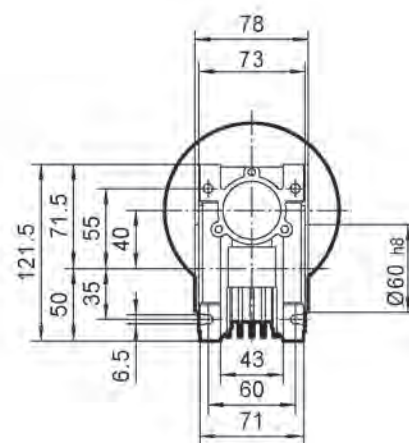
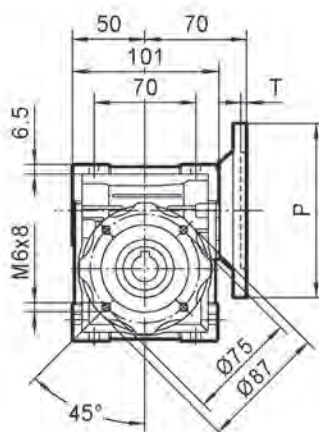
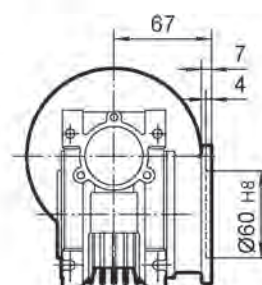
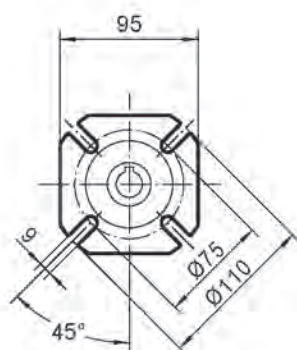
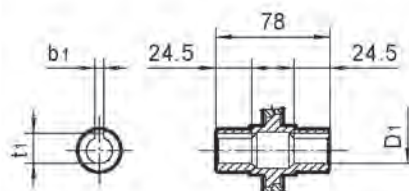
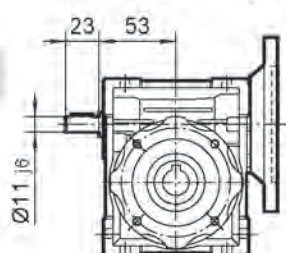
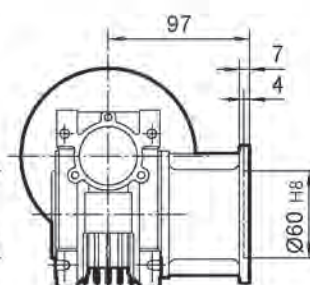
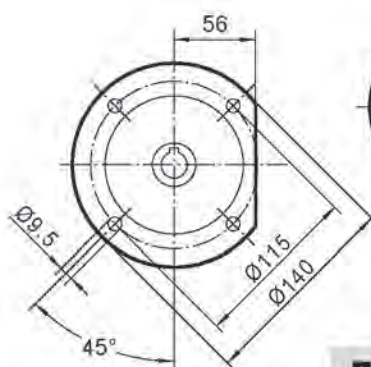
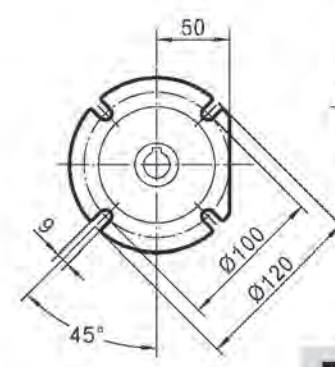
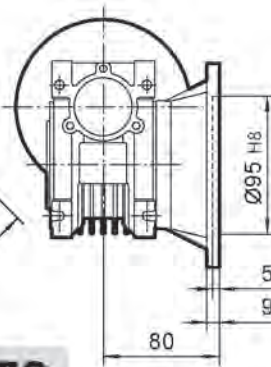
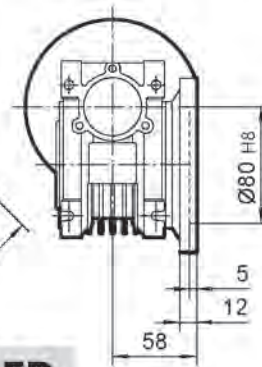
Weight without motor ≈ 1.2 kg

TNRV040..(IEC)

Input adapters



Worm output shaft

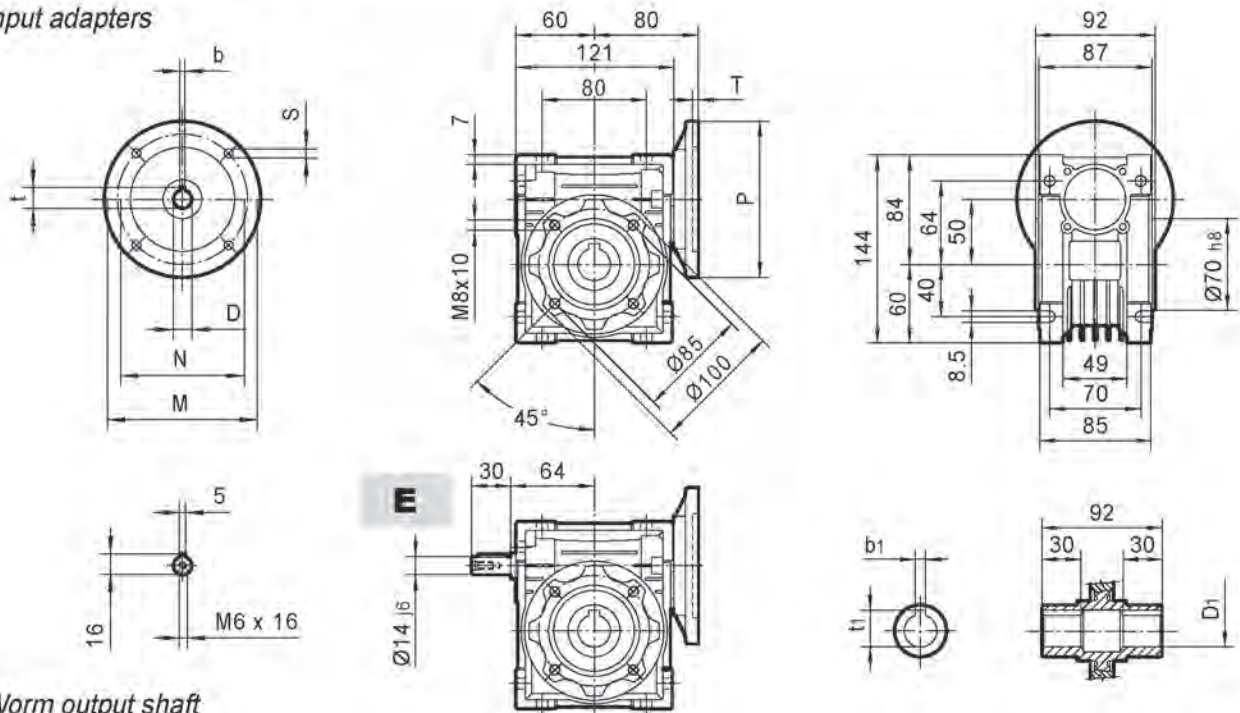

E

FA

FB

FC

FD


IEC	DE8	b	t	P	M	N	S	T	D1 H8	b1	t1
56B5	9	3	10.4	120	100	80	7	4	18	6	20.8
63B5	11	4	12.8	140	115	95	9	4	19*	6*	21.8*
63B14	11	4	12.8	90	75	60	5.5	4	* Only on request		
71B5	14	5	16.3	160	130	110	9	4			
71B14	14	5	16.3	105	85	70	7	4			

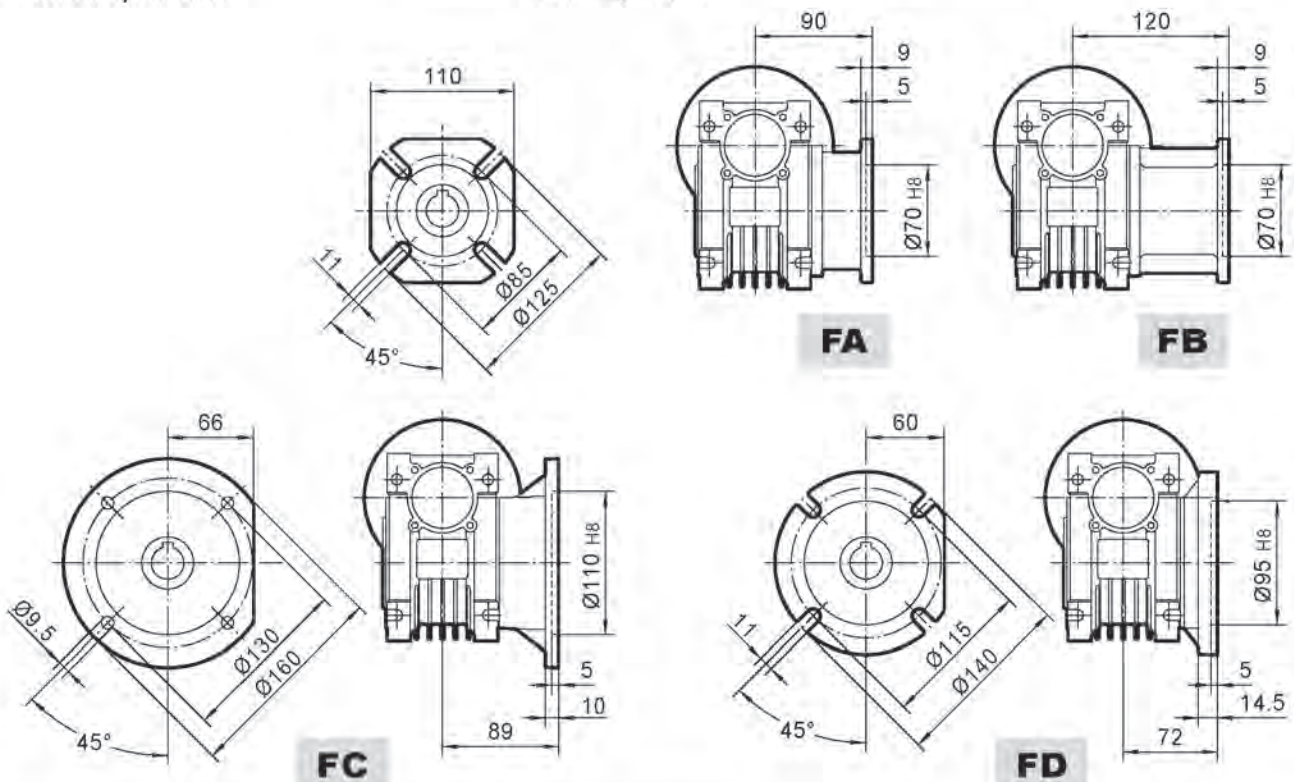
Weight without motor ≈ 2.3 kg

TNRV050..(IEC)

Input adapters



Worm output shaft

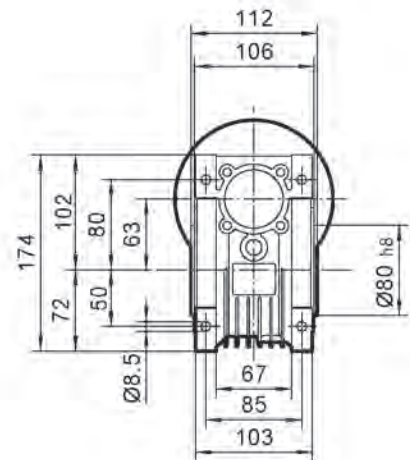
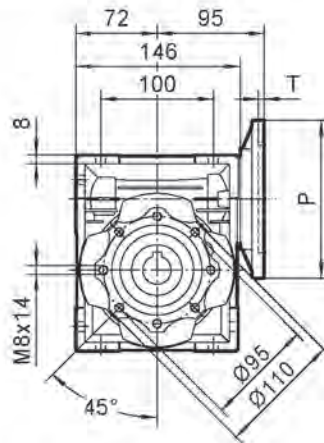
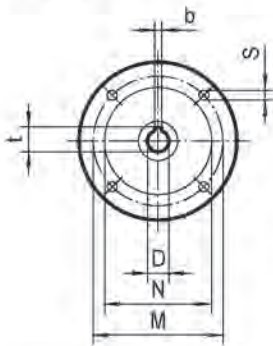


IEC	DE8	b	t	P	M	N	S	T	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	4	25	8	28.3
71B5	14	5	16.3	160	130	110	9	4	24*	8*	27.3*
71B14	14	5	16.3	105	85	70	7	4	* Only on request		
80B5	19	6	21.8	200	165	130	11	4			
80B14	19	6	21.8	120	100	80	7	4			

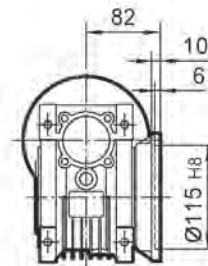
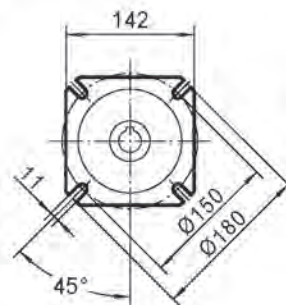
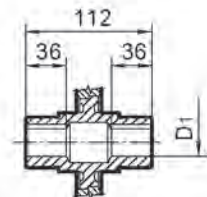
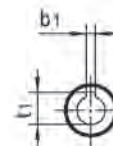
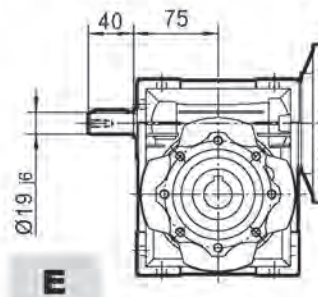
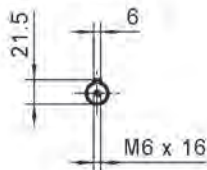
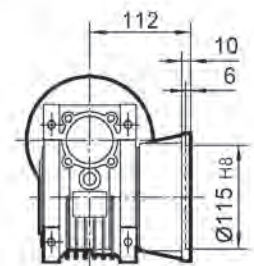
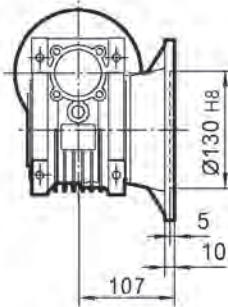
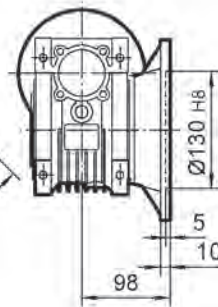
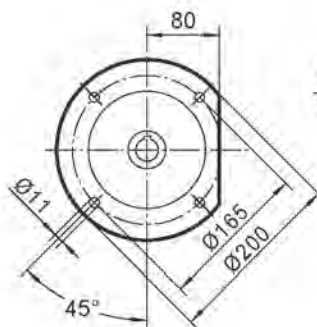
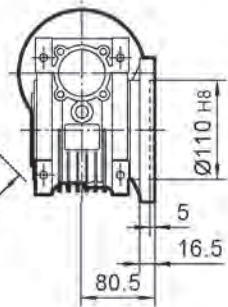
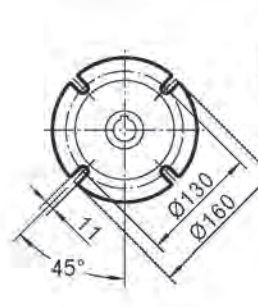
Weight without motor ≈ 3.5 kg

TNRV063..(IEC)

Input adapters

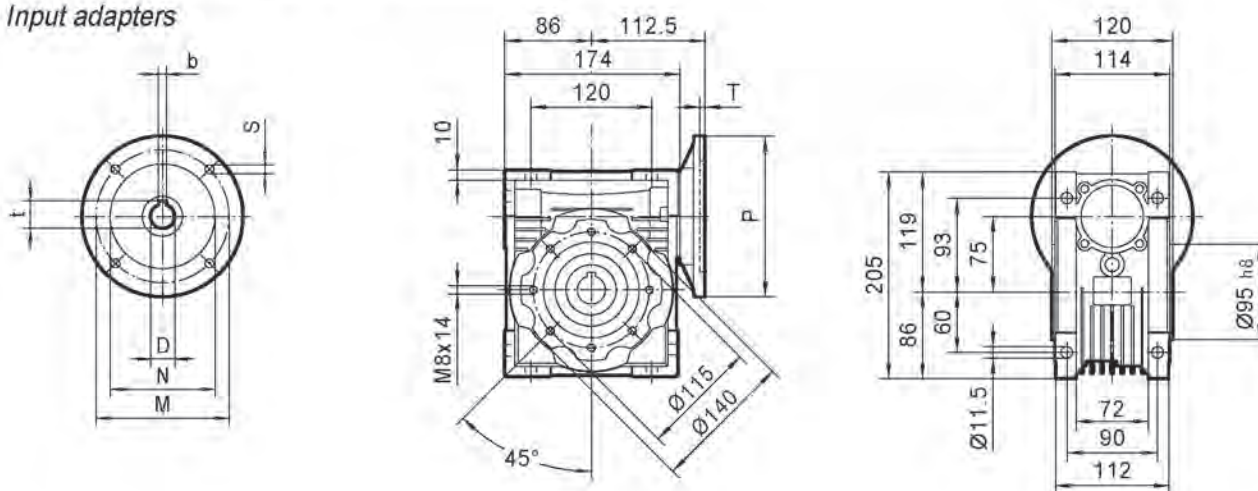
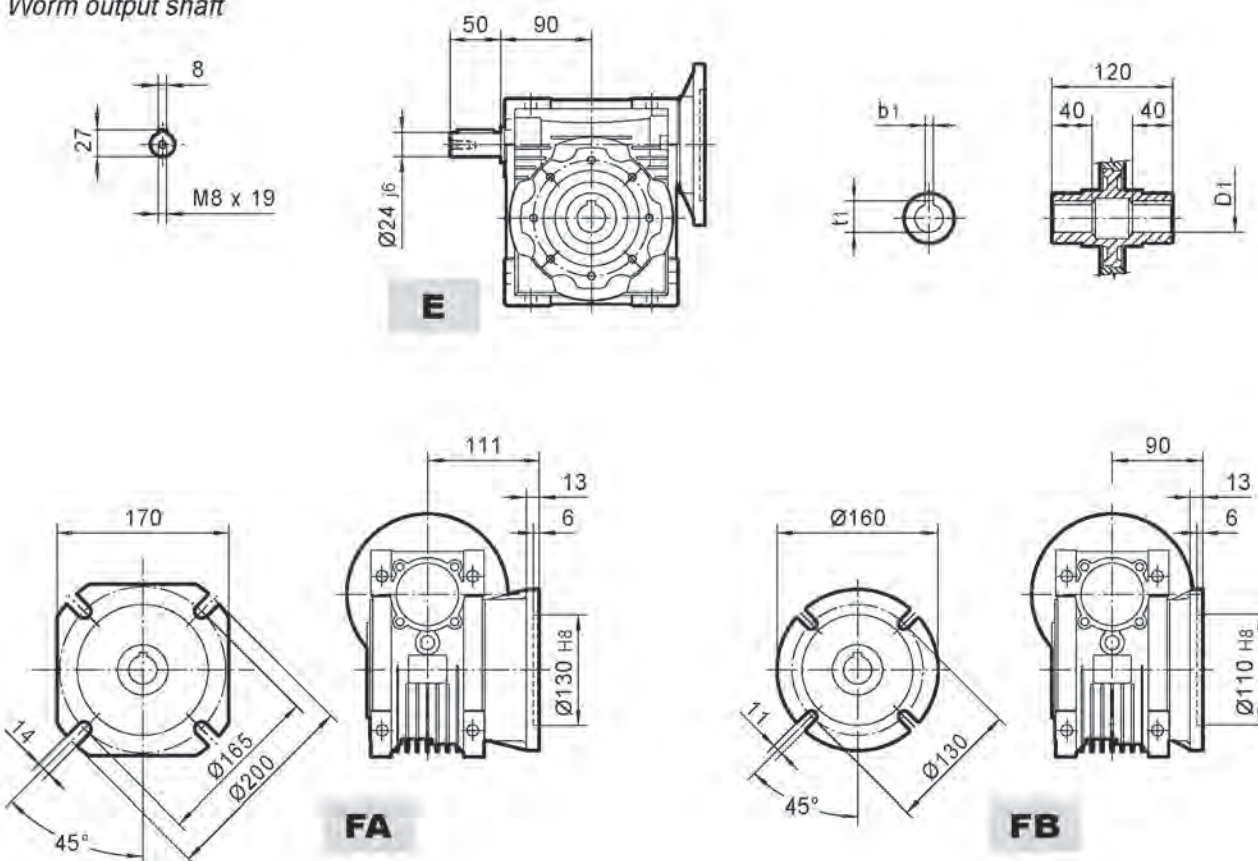


Worm output shaft


FA

FB

FC
FD

FE

IEC	DE8	b	t	P	M	N	S	T	D1 H8	b1	t1
71B5	14	5	16.3	160	130	110	9	4	25	8	28.3
71B14	14	5	16.3	105	85	70	7	4	28*	8*	31.3*
80B5	19	6	21.8	200	165	130	11	4	* Only on request		
80B14	19	6	21.8	120	100	80	7	4			
90B5	24	8	27.3	200	165	130	11	4			
90B14	24	8	27.3	140	115	95	9	4			

Weight without motor ≈ 6.2 kg

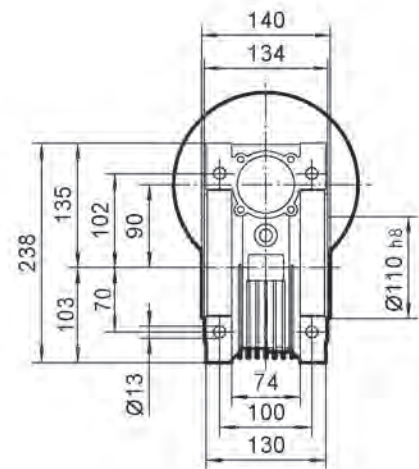
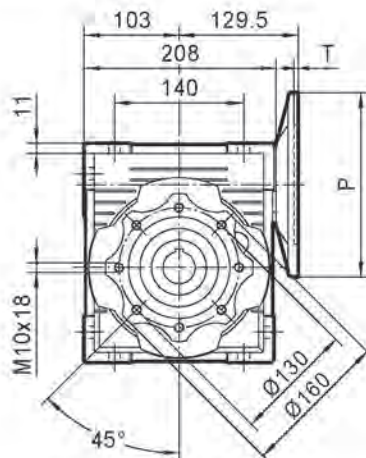
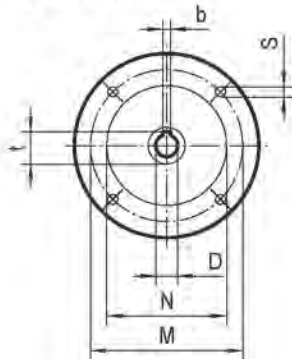
TNRV075..(IEC)
Input adapters

Worm output shaft


IEC	DE8	b	t	P	M	N	S	T	D1 H8	b1	t1
71B5	14	5	16.3	160	130	110	9	4	28	8	31.3
80B5	19	6	21.8	200	165	130	11	4	35*	10*	38.3*
80B14	19	6	21.8	120	100	80	7	4	* Only on request		
90B5	24	8	27.3	200	165	130	11	4			
90B14	24	8	27.3	140	115	95	9	4			
100/112B5	28	8	31.3	250	215	180	13.5	4.5			
100/112B14	28	8	31.3	160	130	110	9	4.5			

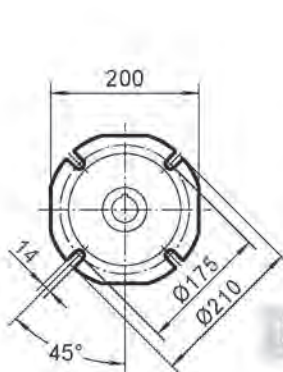
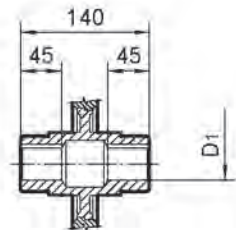
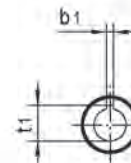
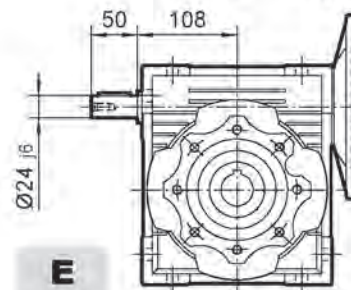
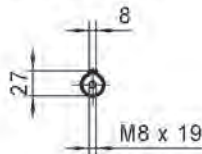
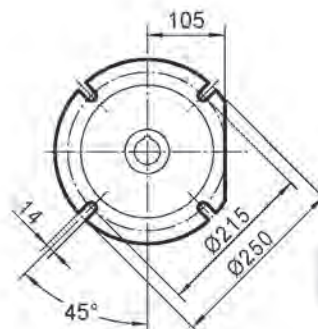
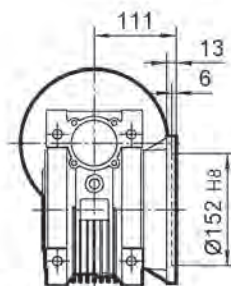
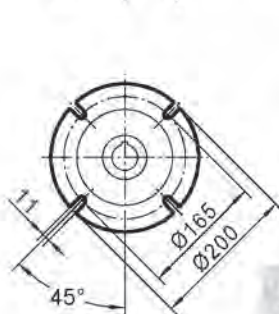
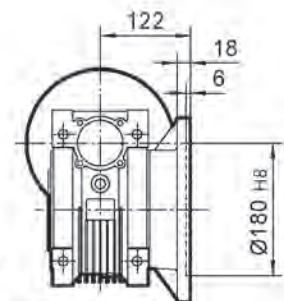
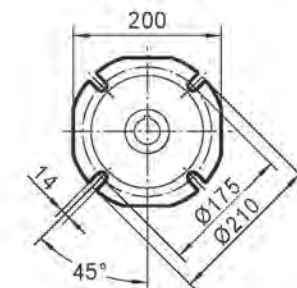
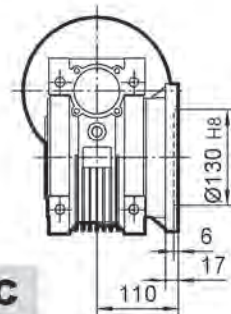
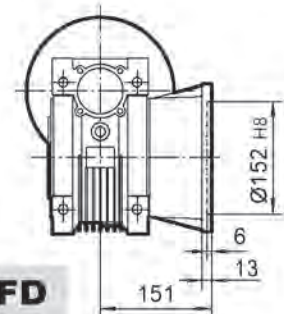
Weight without motor ≈ 9 kg

TNRV090..(IEC)

Input adapters

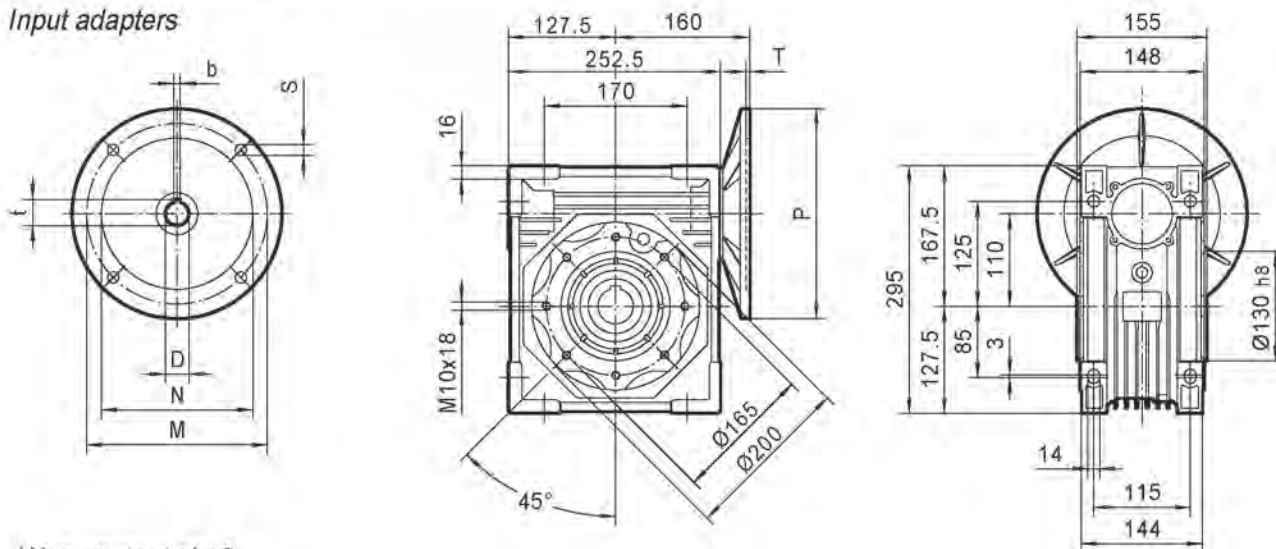
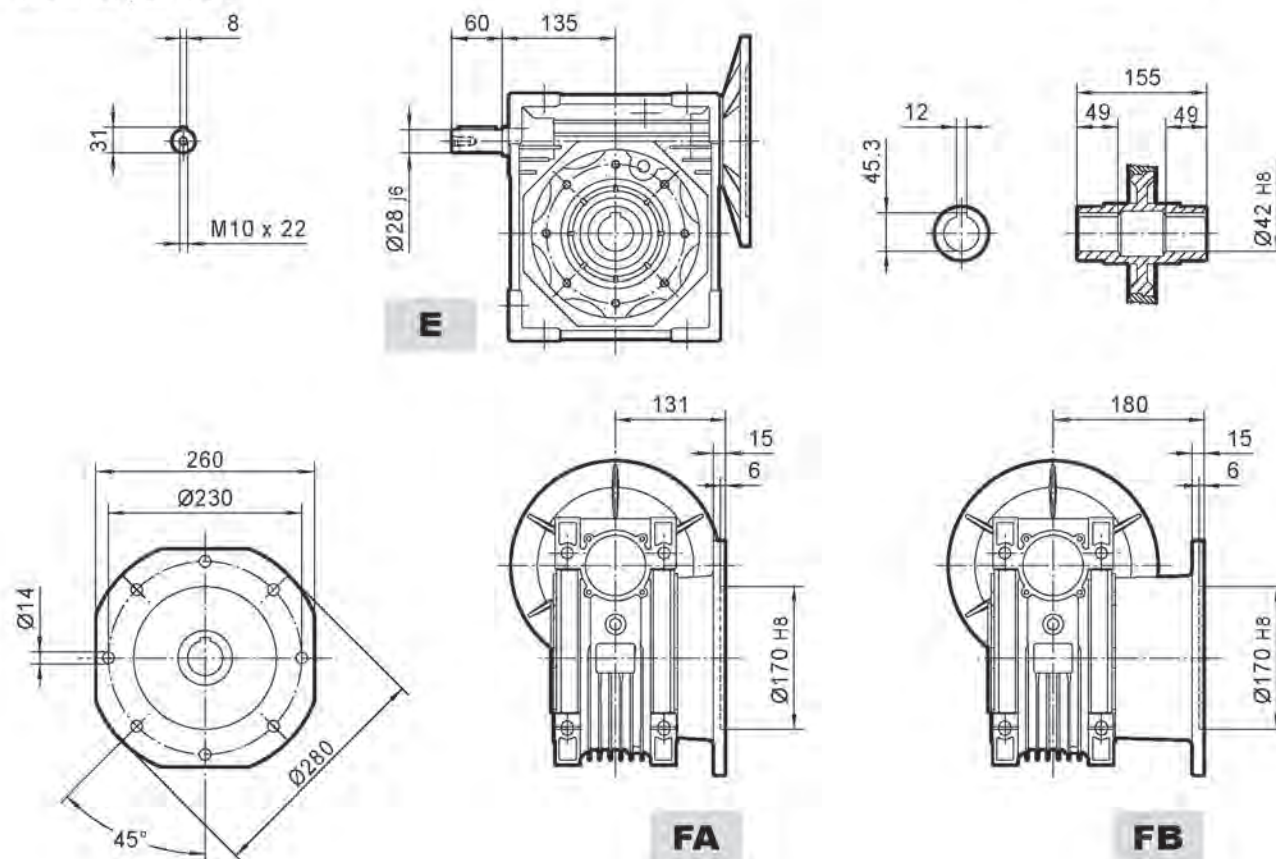


Worm output shaft


FA

FB

FC

FD


IEC	D _{E8}	b	t	P	M	N	S	T	D ₁ h8	b ₁	t ₁
80B5	19	6	21.8	200	165	130	11	4	35	10	38.3
80B14	19	6	21.8	120	100	80	7	4	38*	10*	41.3*
90B5	24	8	27.3	200	165	130	11	4	* Only on request		
90B14	24	8	27.3	140	115	95	9	4			
100/112B5	28	8	31.3	250	215	180	13.5	4.5			
100/112B14	28	8	31.3	160	130	110	9	4.5			

Weight without motor ≈ 13 kg

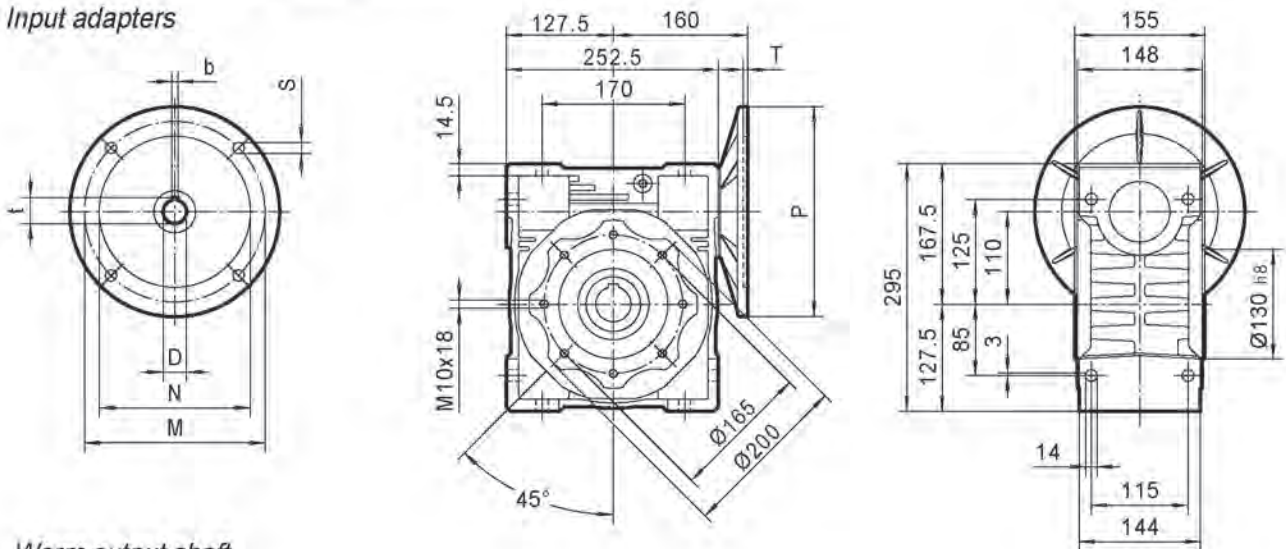
TNRV105..(IEC)
Input adapters

Worm output shaft


IEC	DE8	b	t	P	M	N	S	T
80B5	19	6	21.8	200	165	130	11	4
90B5	24	8	27.3	200	165	130	11	4
100B5	28	8	31.3	250	215	180	14	4.5
112B5	28	8	31.3	250	215	180	14	4.5
132B5	38	10	41.3	300	265	230	14	4.5

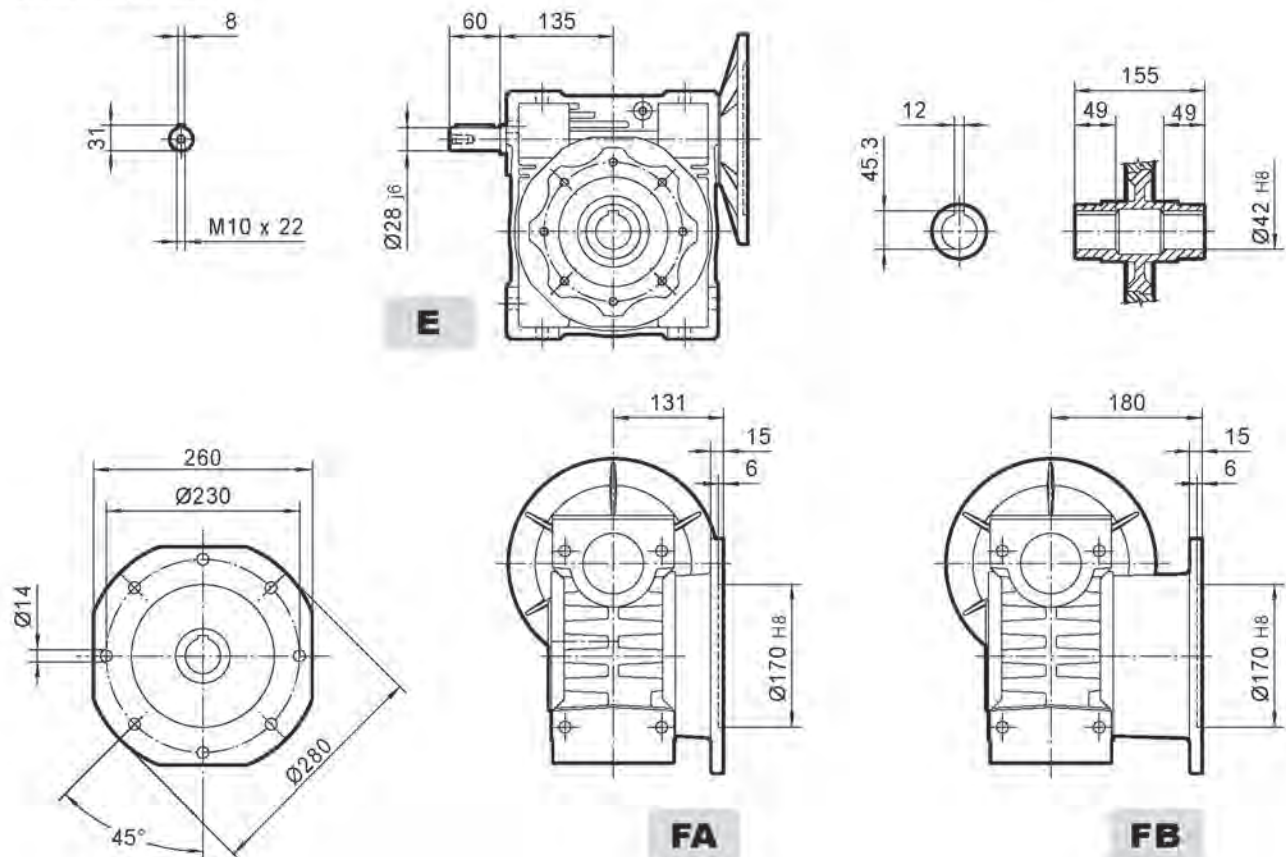
Weight without motor ≈ 21 kg

TNRV110..(IEC)

Input adapters



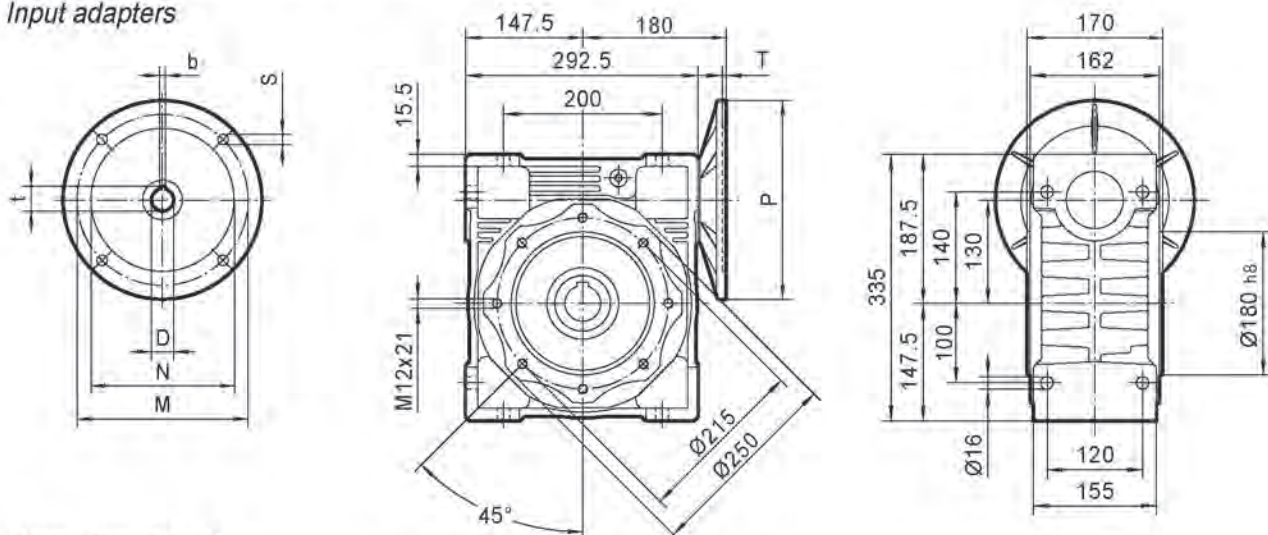
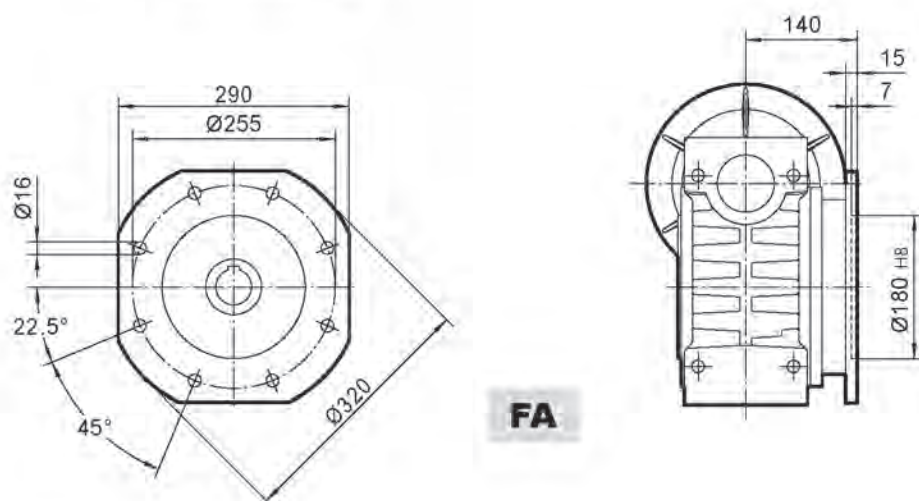
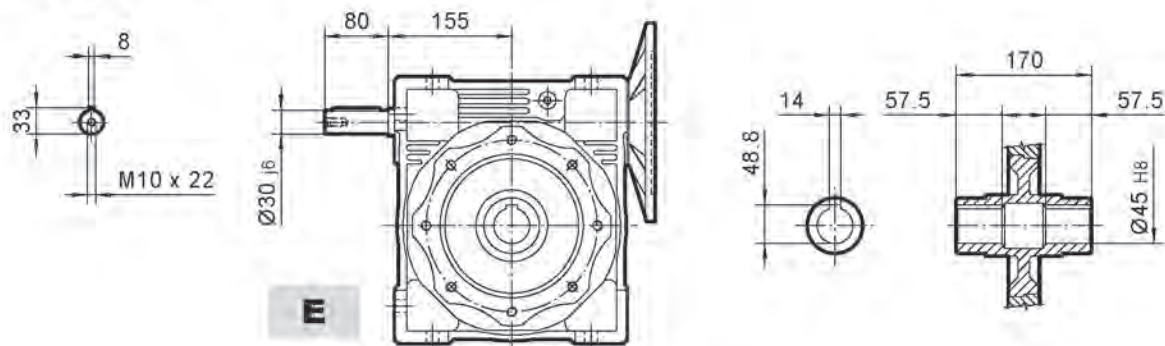
Worm output shaft



IEC	DE8	b	t	P	M	N	S	T
80B5	19	6	21.8	200	165	130	11	4
90B5	24	8	27.3	200	165	130	11	4
100B5	28	8	31.3	250	215	180	14	4.5
112B5	28	8	31.3	250	215	180	14	4.5
132B5	38	10	41.3	300	265	230	14	4.5

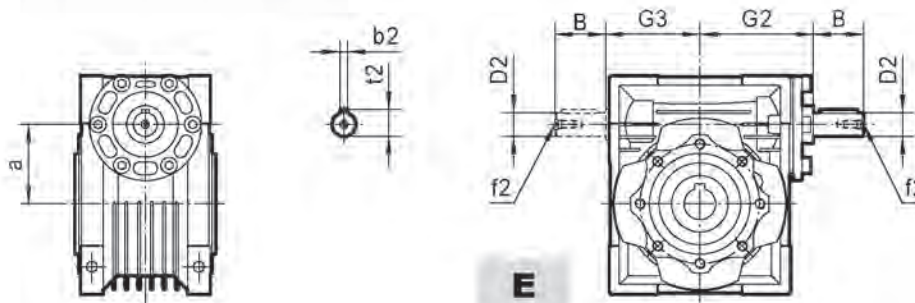
Weight without motor ≈ 35 kg

TNRV2009

TNRV130..(IEC)
Input adapters

Worm output shaft


IEC	DE8	b	t	P	M	N	S	T
90B5	24	8	27.3	200	165	130	11	4
100B5	28	8	31.3	250	215	180	14	4.5
112B5	28	8	31.3	250	215	180	14	4.5
132B5	38	10	41.3	300	265	230	14	4.5

Weight without motor ≈ 48 kg

8.2 TRV.. Outline dimension
TRV WORM GEAR UNITS


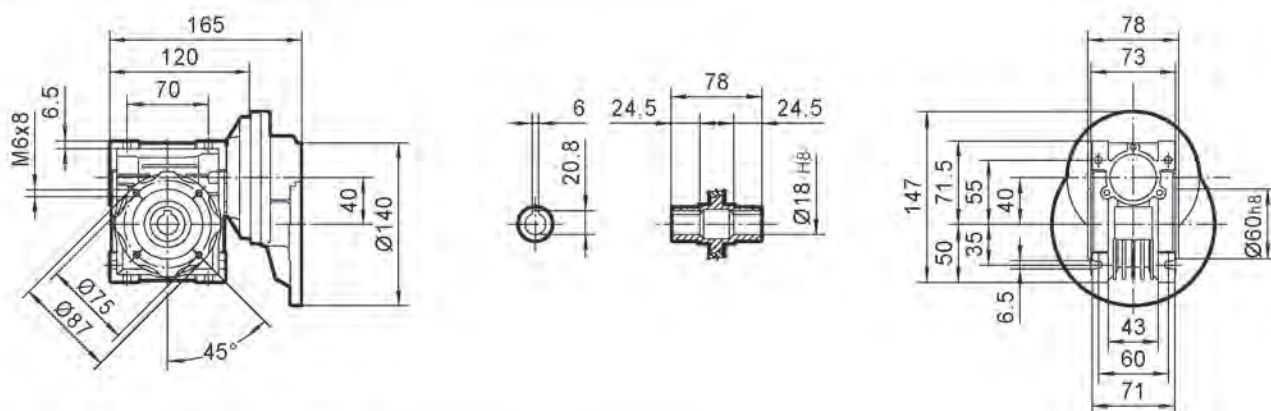
TRV	030	040	050	063	075	090	105	110	130
B	20	23	30	40	50	50	60	60	80
D2 j6	9	11	14	19	24	24	28	28	30
G2	51	60	74	90	105	125	142	142	162
G3	45	53	64	75	90	108	135	135	155
a	30	40	50	63	75	90	110	110	130
b2	3	4	5	6	8	8	8	8	8
f2	-	-	M6	M6	M8	M8	M10	M10	M10
t2	10.2	12.5	16	21.5	27	27	31	31	33

For the missing dimensions, please refer to page 55-64.

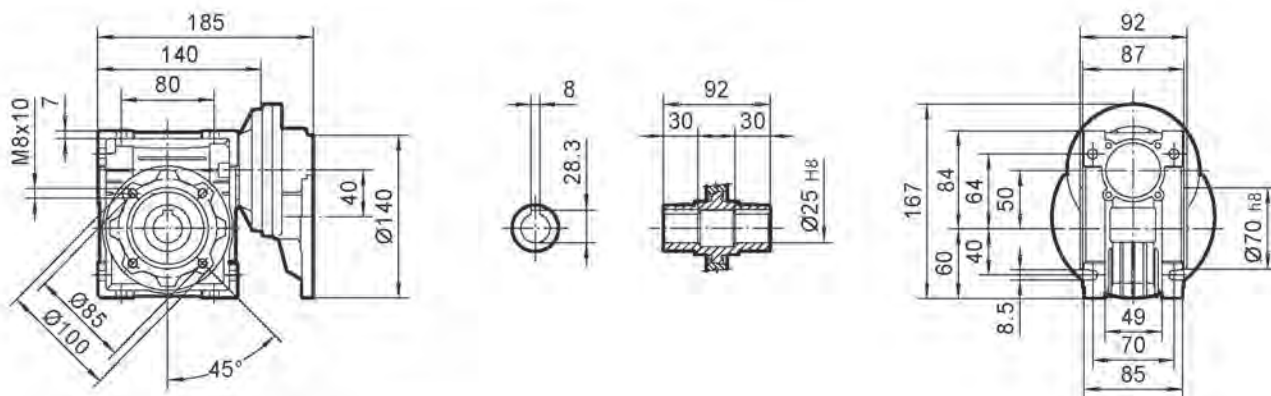
8.3 PC - TNRV.. Outline dimension

- For the dimensions of the output flanges, please refer to pages 55-64.
- For the dimensions of the hollow shafts , please refer to pages 55-64.
- For the dimensions of the double extension worm shafts, please refer to page 75.

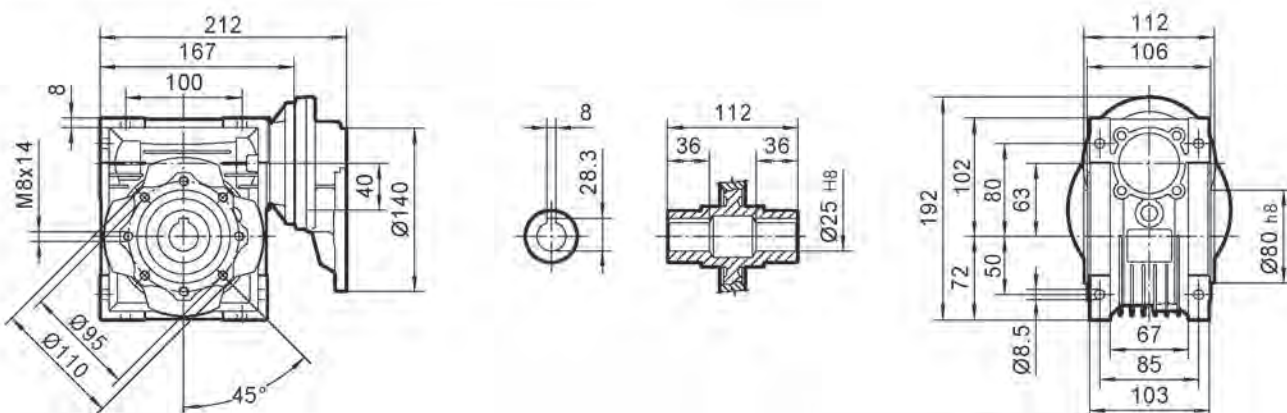
PC063 - TNRV040



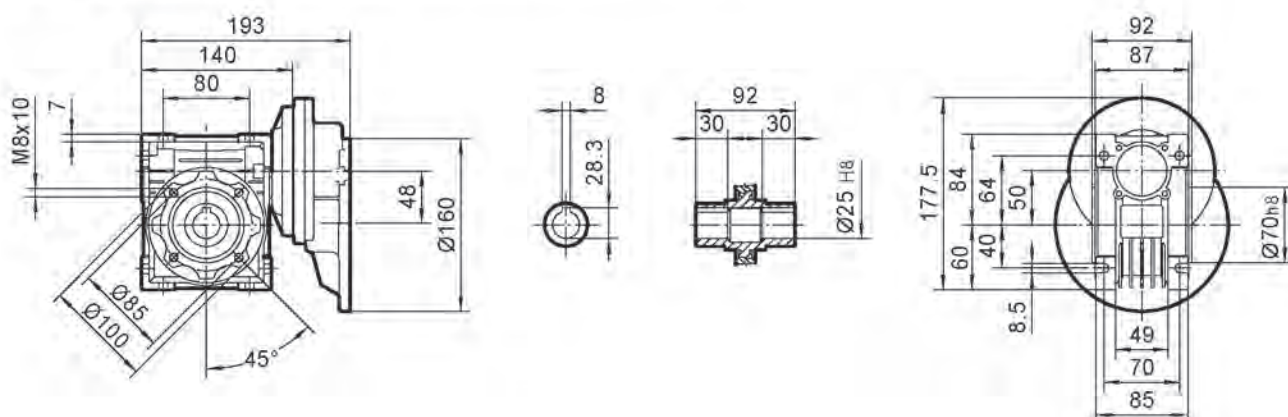
PC063 - TNRV050



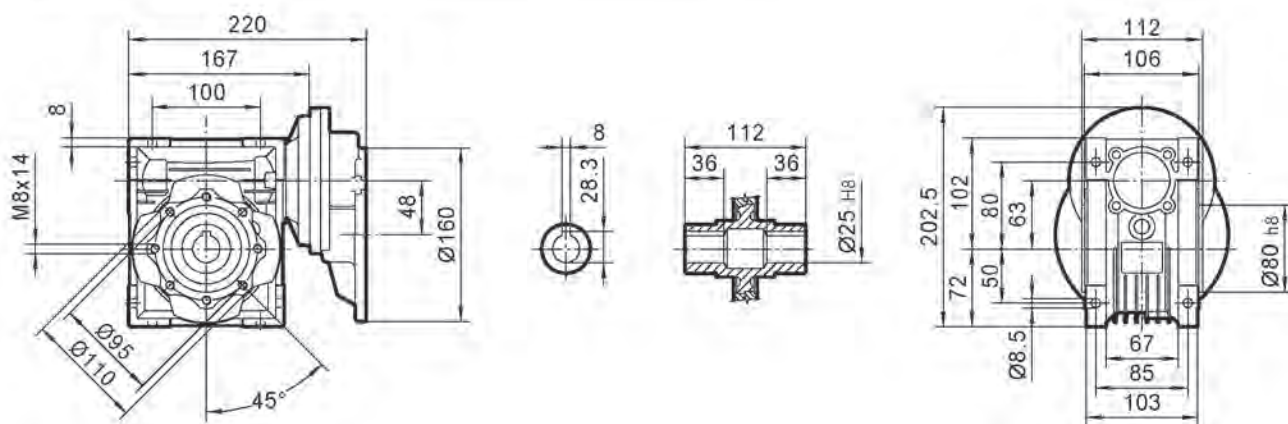
PC063 - TNRV063



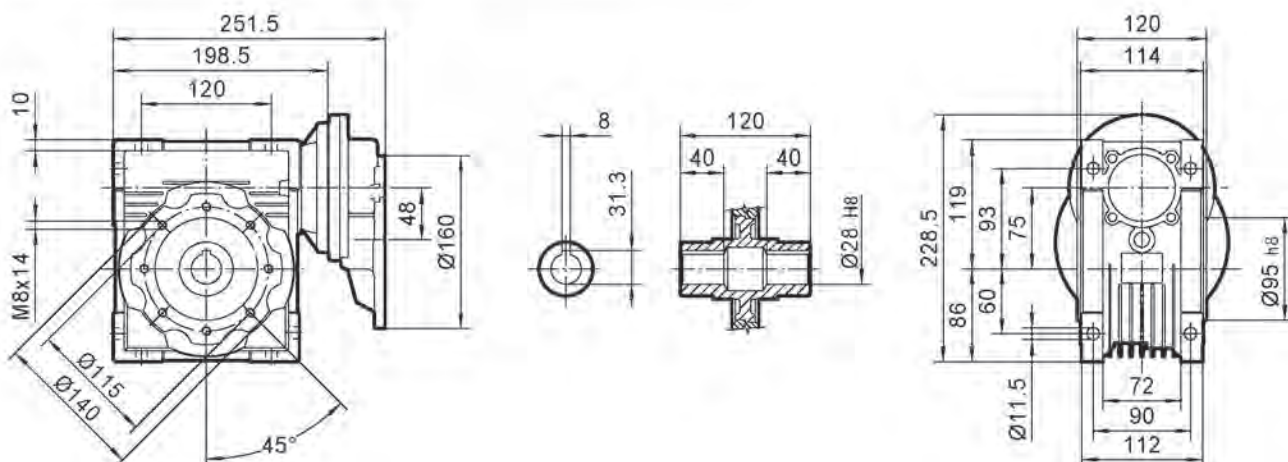
PC071 - TNRV050



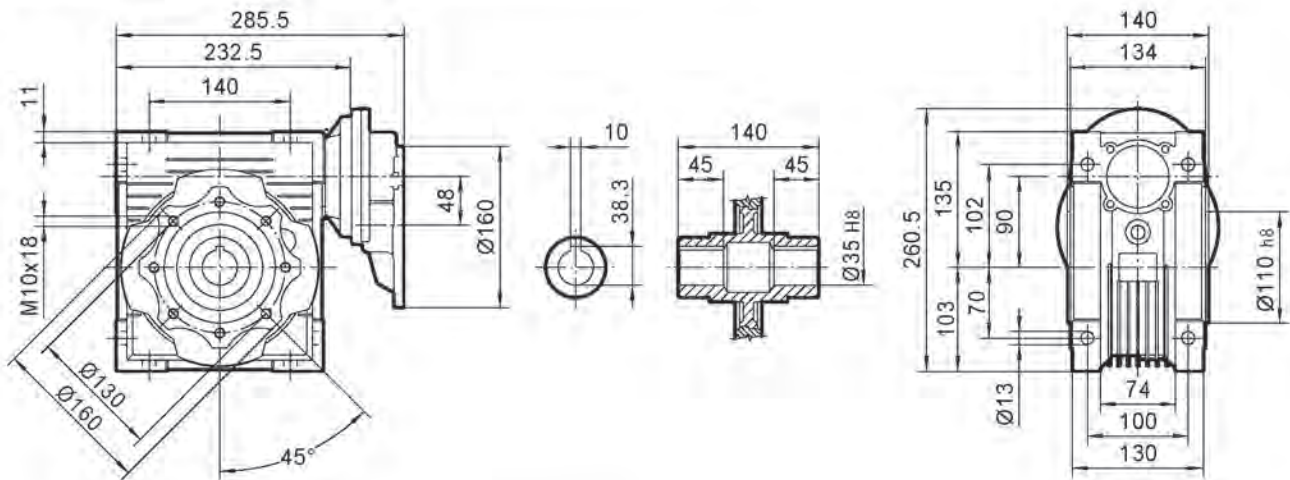
PC071 - TNRV063



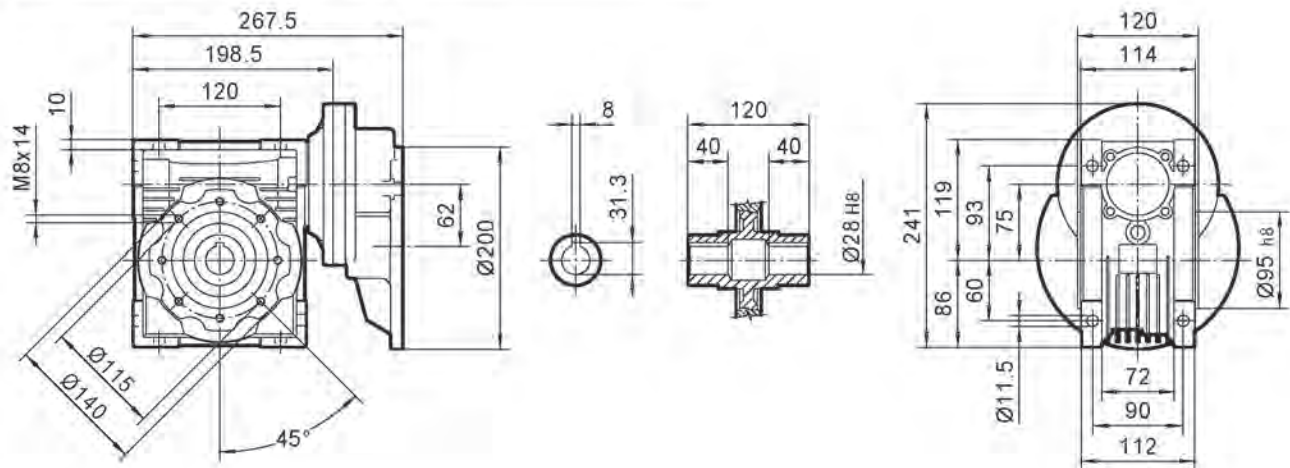
PC071 - TNRV075



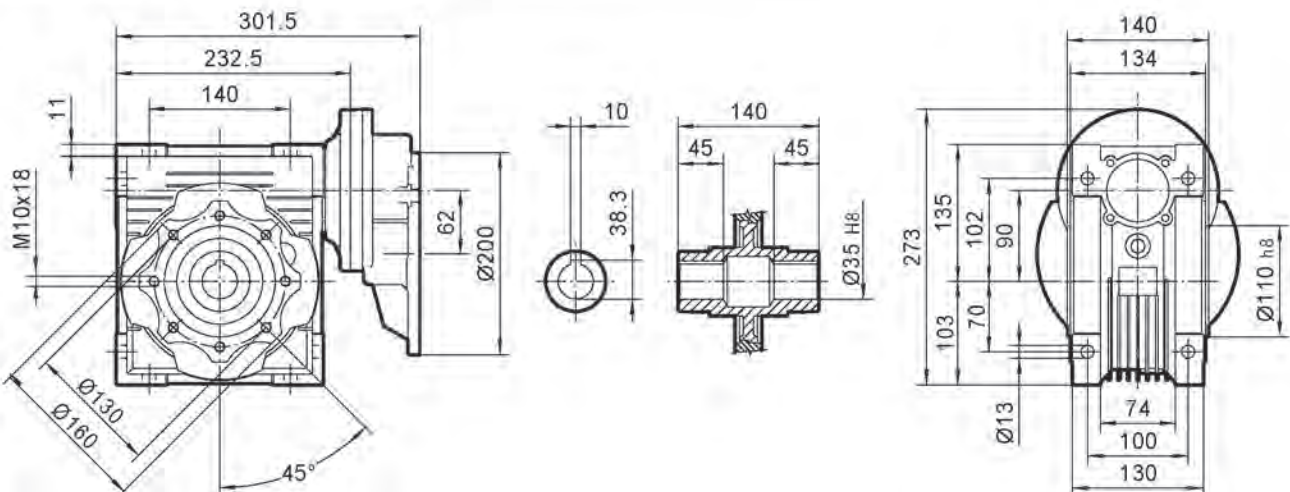
PC071 - TNRV090

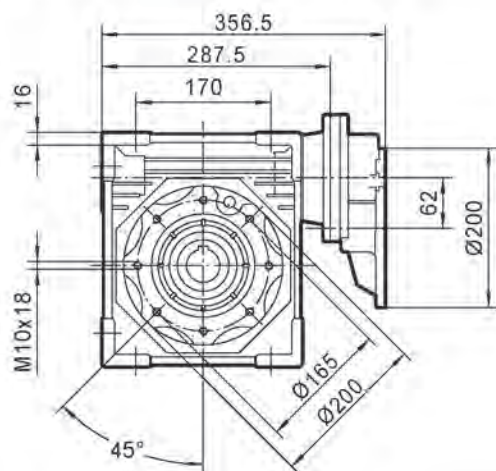
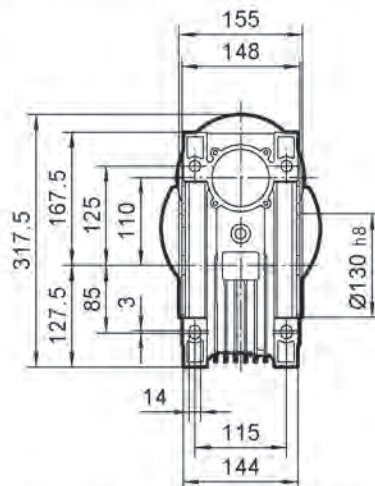
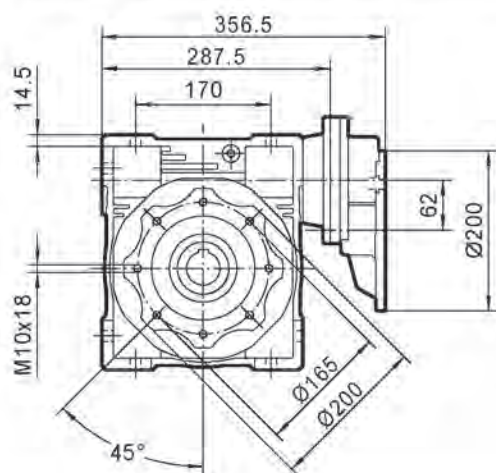
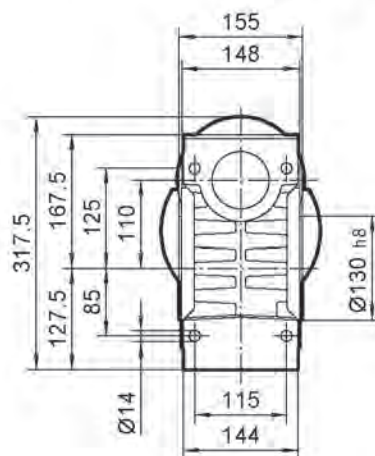
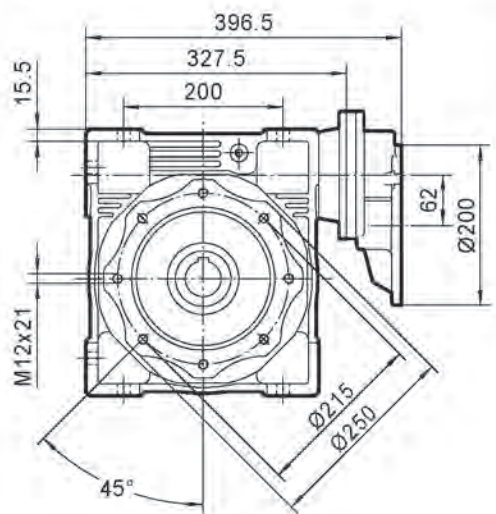
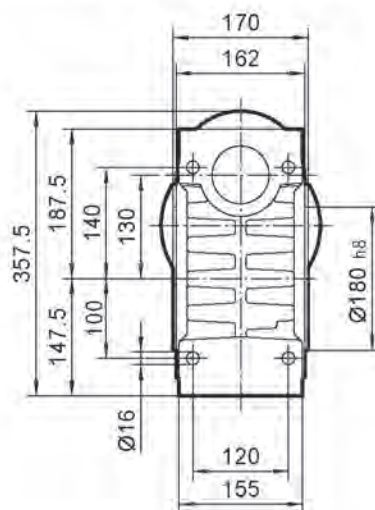


PC080 - TNRV075



PC080 - TNRV090

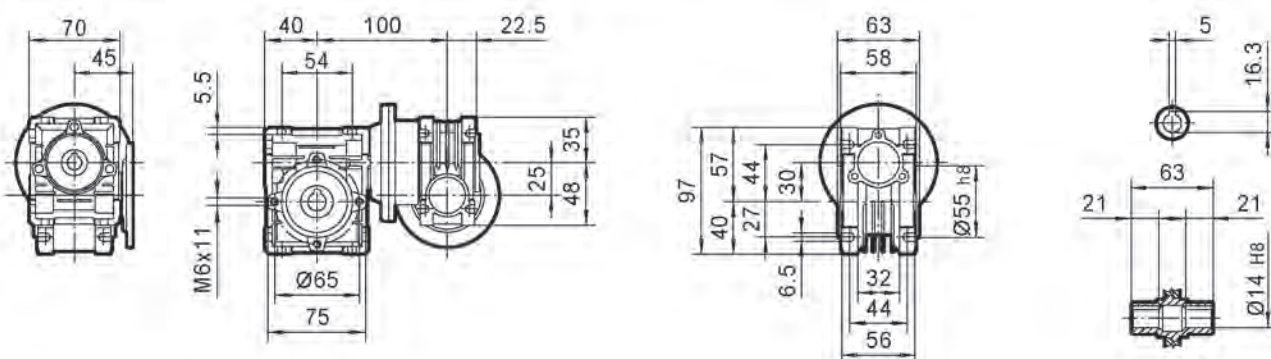


PC080- TNRV105

PC090- TNRV105

PC080 - TNRV110

PC090 - TNRV110

PC80- TNRV130

PC90- TNRV130


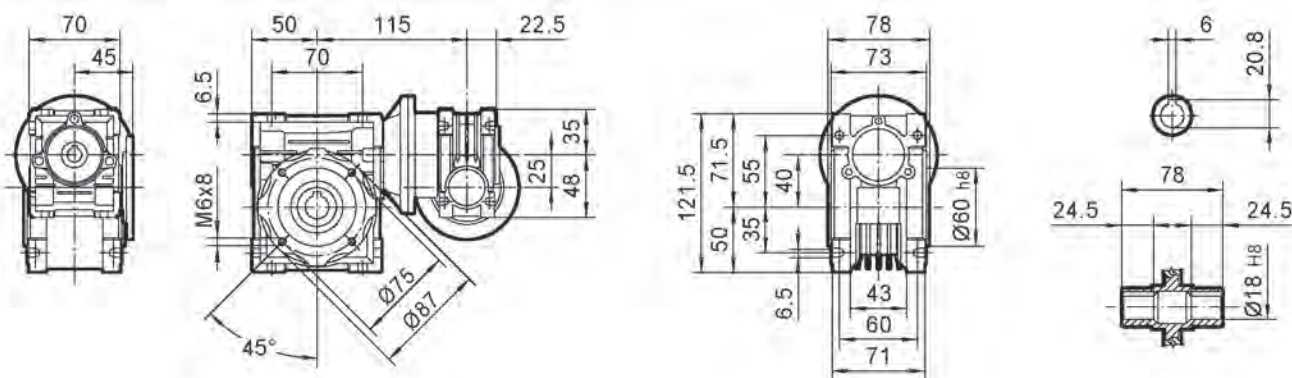
8.4 TNRV / TNRV.. Outline dimension

- For the dimensions of the output flanges, please refer to pages 55-64.
- For the dimensions of the hollow shafts, please refer to pages 55-64.
- For the dimensions of the double extension worm shafts, please refer to page 75.

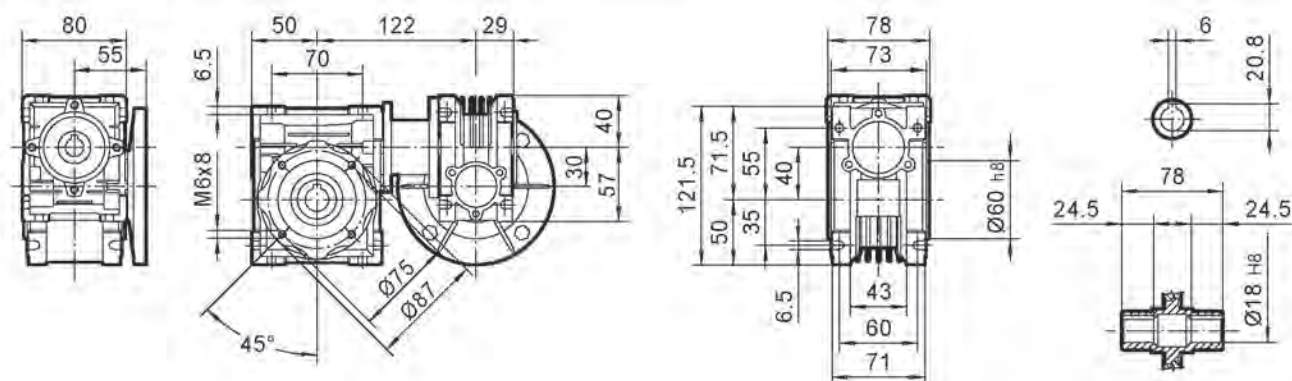
TNRV025 / 030

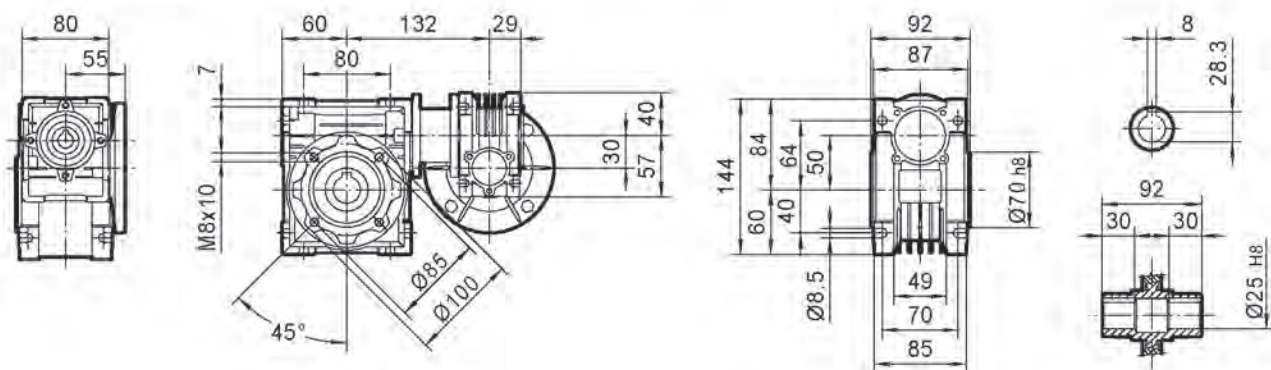
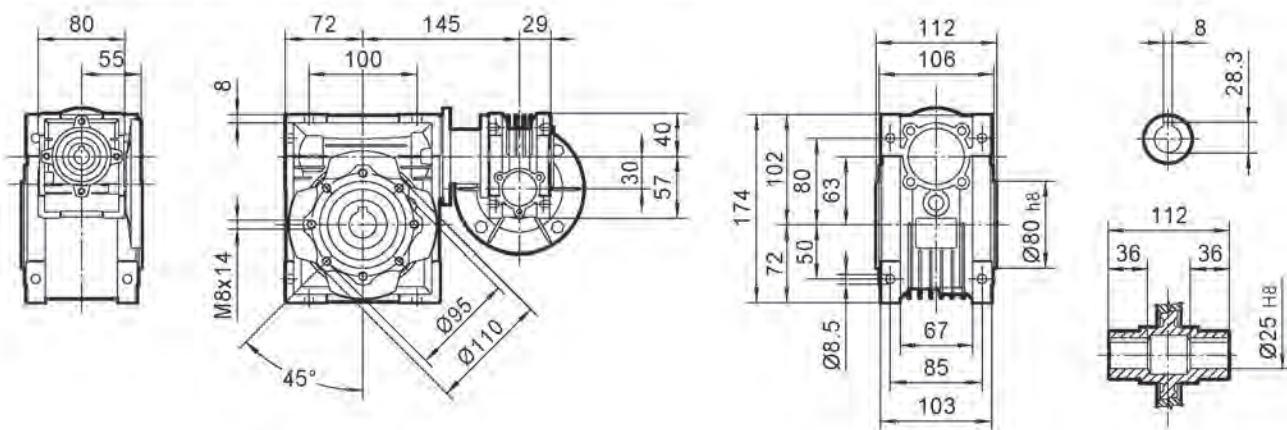
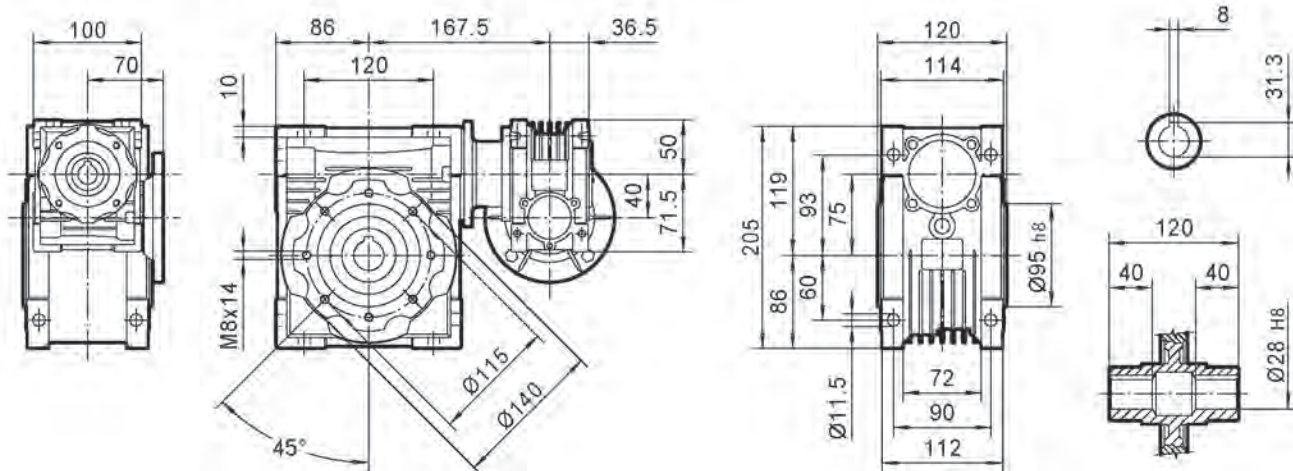


TNRV025 / 040

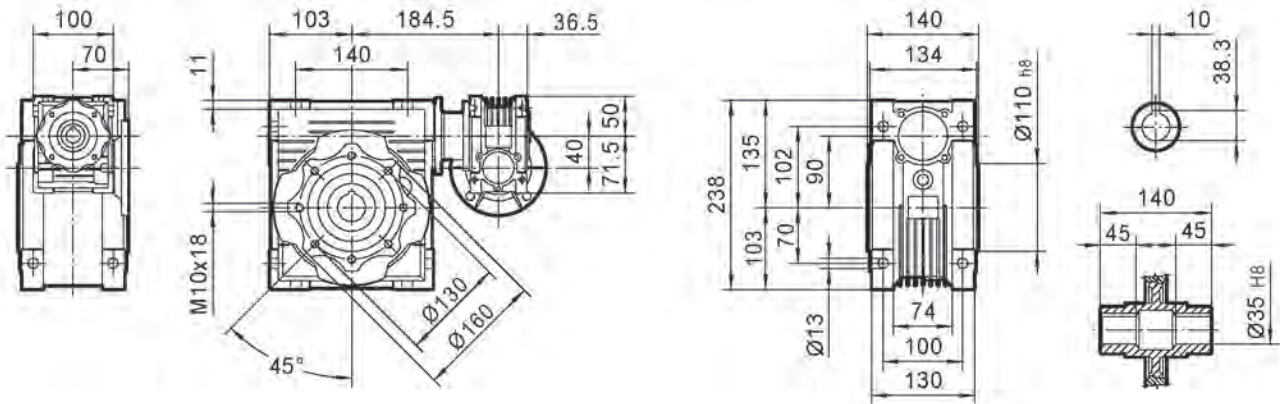


TNRV030 / 040

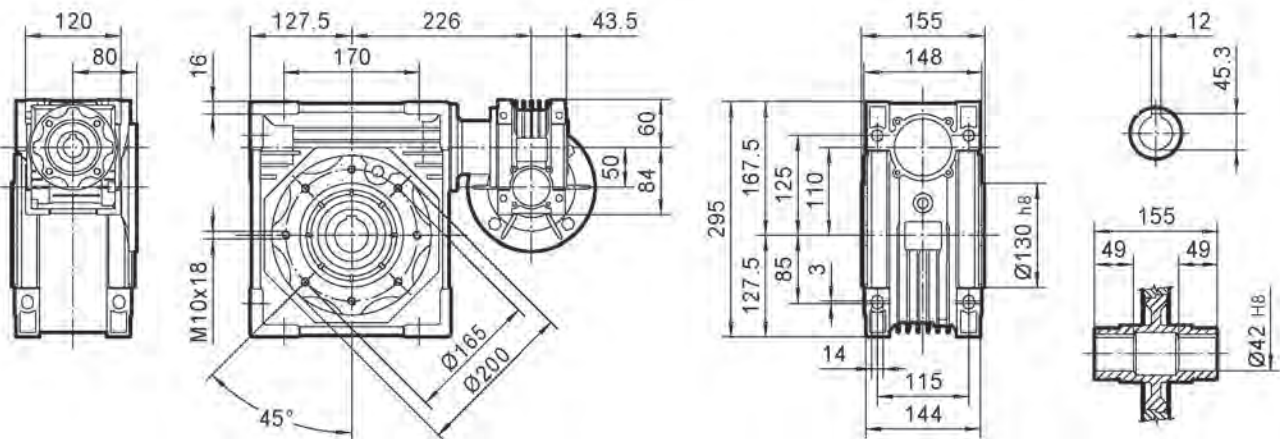


TNRV030 / 050

TNRV030 / 063

TNRV040 / 075


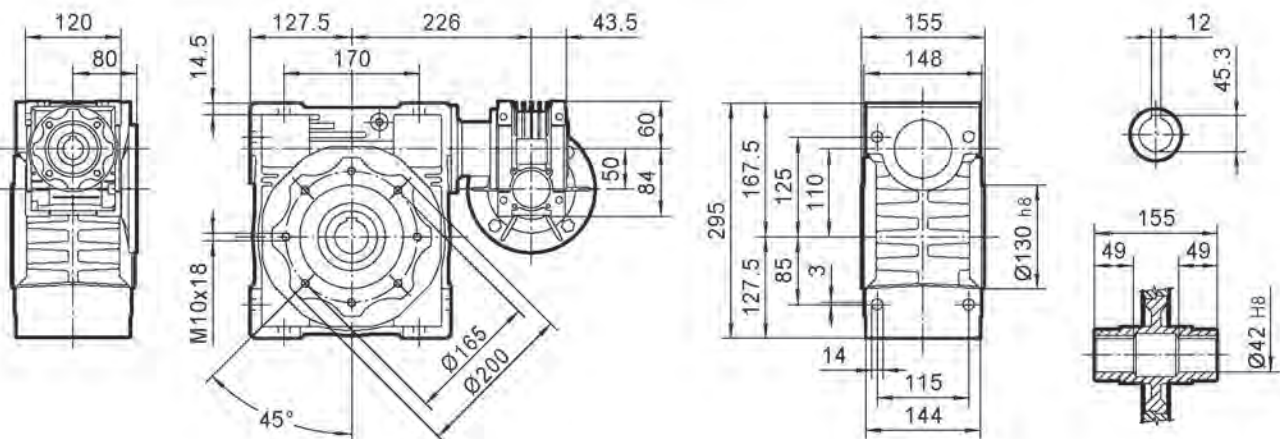
TNRV040 / 090

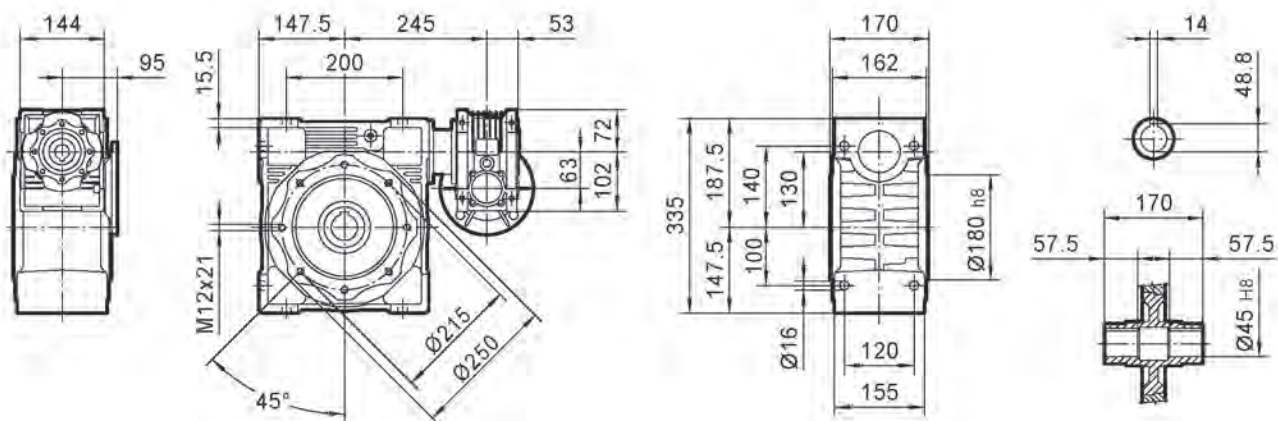
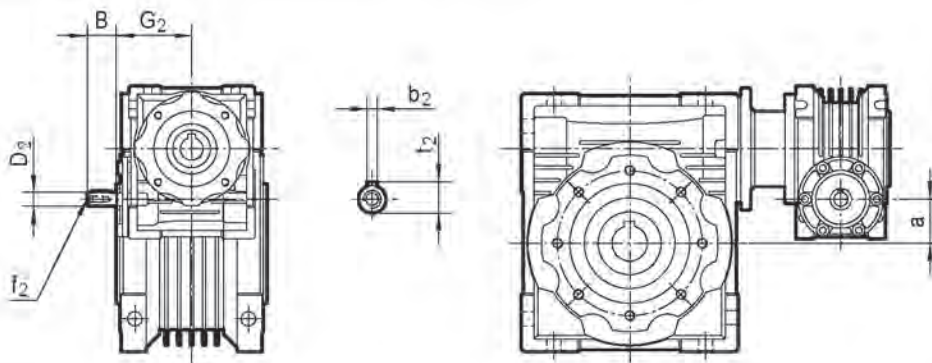


TNRV050 / 105



TNRV050 / 110



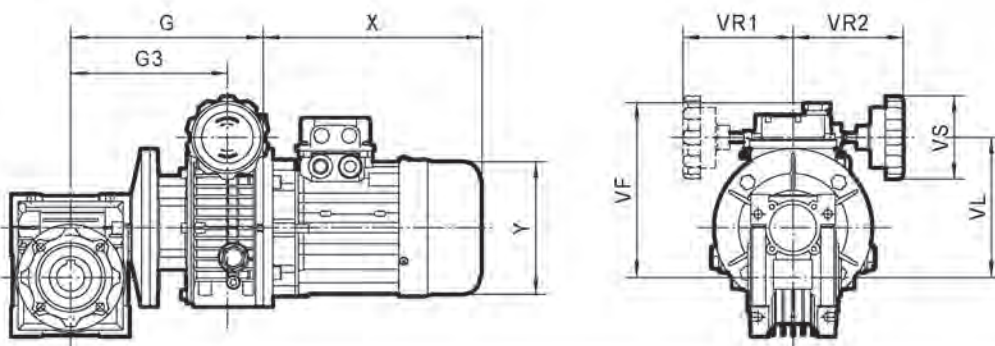
TNRV063 / 130

8.5 TRV / TNRV.. Outline dimension
TRV / TNRV COMBINATION WORM GEAR UNITS


TRV - TNRV	030 / 040	030 / 050	030 / 063	040 / 075	040 / 090	050 / 105	050 / 110	063 / 130
B	20	20	20	23	23	30	30	40
D₂ j6	9	9	9	11	11	14	14	19
G₂	51	51	51	60	60	74	74	90
a	10	20	33	35	50	60	60	67
b₂	3	3	3	4	4	5	5	6
f₂	-	-	-	-	-	M6	M6	M6
t₂	10.2	10.2	10.2	12.5	12.5	16	16	21.5

For the missing dimensions, please refer to page 55-64.

8.6 UDL-TNRV.. Outline dimension

UDL-TNRV COMBINATION OF SPEED VARIATOR AND WORM GEAR UNITS

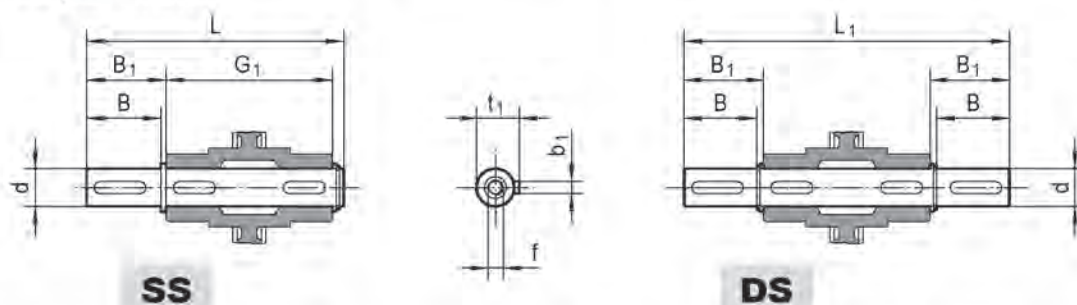


model	G	G3	VF	VL	VS	VR	VR1	base No. 4P n1=1400r/min	X	Y
UDL0.18-TNRV040	183	135	151	118	85	110	110	63	200	120
UDL0.18-TNRV050	193	145	161	128	85	110	110			
UDL0.37-TNRV050	190	154	173	140	85	110	110	71	227	141
UDL0.37-TNRV063	205	169	186	153	85	110	110			
UDL0.55-TNRV063	234	181	203	170	110	120	120	80	268	160
UDL0.75-TNRV063	234	181	203	170	110	120	120			
UDL0.37-TNRV075	223	187	198	165	85	110	110	71	227	141
UDL0.55-TNRV075	252	198	215	182	110	120	120			
UDL0.75-TNRV075	252	198	215	182	110	120	120	80	268	160
UD1.1-TNRV075	259.5	207.5	199	177	110	150	-	90S	265	195
UD1.5-TNRV075	300.5	227.5	219	197	110	150	-	90L	290	195
UDL0.55-TNRV090	269	215	230	197	110	120	120	80	268	160
UDL0.75-TNRV090	269	215	230	197	110	120	120			
UD1.1-TNRV090	276.5	224.5	214	192	110	150	-	90S	265	195
UD1.5-TNRV090	317.5	244.5	234	212	110	150	-	90L	290	195
UD1.1-TNRV105	307	255	234	212	110	120	-	90S	265	195
UD1.5-TNRV105	348	275	254	232	110	150	-	90L	290	195
UD2.2-TNRV105	368	291	298	260	110	160	-	100L	320	215
UD3.0-TNRV105	368	291	298	260	110	160	-			
UD4.0-TNRV105	368	291	298	260	110	160	-	112M	340	240
UD1.1-TNRV110	307	255	234	212	110	120	-	90S	265	195
UD1.5-TNRV110	348	275	254	232	110	150	-	90L	290	195
UD2.2-TNRV110	368	291	298	260	110	160	-	100L	320	215
UD3.0-TNRV110	368	291	298	260	110	160	-			
UD4.0-TNRV110	368	291	298	260	110	160	-	112M	340	240
UD1.5-TNRV130	368	295	274	252	110	150	-	90L	290	195
UD2.2-TNRV130	388	311	318	280	110	160	-	100L	320	215
UD3.0-TNRV130	388	311	318	280	110	160	-			
UD4.0-TNRV130	388	311	318	280	110	160	-	112M	340	240

For the missing dimensions, please refer to page 55-64.

9. ACCESSORIES OUTLINE DIMENSION SHEET

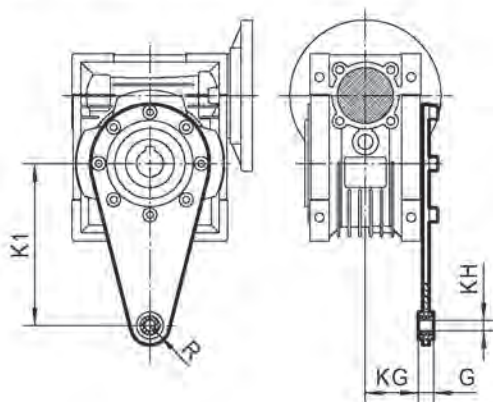
9.1 Output Shafts



	d h6	B	B ₁	G ₁	L	L ₁	f	b ₁	t ₁
TNRV025	11 g6	23	25.5	50	81	101	—	4	12.5
	9 *	25 *	30 *	50	85.5 *	101	—	3 *	10.2 *
TNRV030	14	30	32.5	63	102	128	M6	5	16
TNRV040	18	40	43	78	128	164	M6	6	20.5
TNRV050	25	50	53.5	92	153	199	M10	8	28
TNRV063	25	50	53.5	112	173	219	M10	8	28
TNRV075	28	60	63.5	120	192	247	M10	8	31
TNRV090	35	80	84.5	140	234	309	M12	10	38
TNRV105	42	80	84.5	155	249	324	M16	12	45
TNRV110	42	80	84.5	155	249	324	M16	12	45
TNRV130	45	80	85	170	265	340	M16	14	48.5

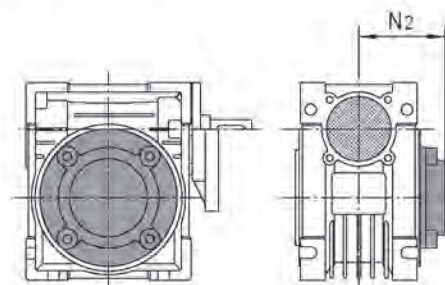
* Only on request

9.2 Torque Arm



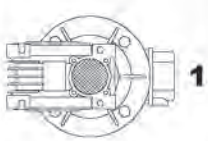
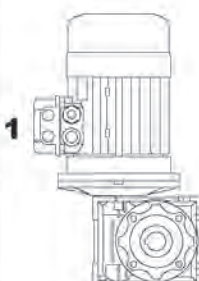
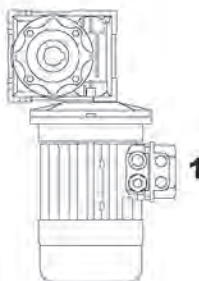
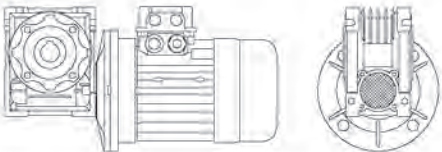
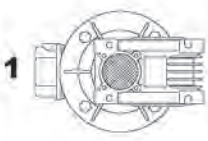
	K ₁	G	KG	KH	R
TNRV025	70	14	17.5	8	15
TNRV030	85	14	24	8	15
TNRV040	100	14	31.5	10	18
TNRV050	100	14	38.5	10	18
TNRV063	150	14	49	10	18
TNRV075	200	25	47.5	20	30
TNRV090	200	25	57.5	20	30
TNRV105	250	30	62	25	35
TNRV110	250	30	62	25	35
TNRV130	250	30	69	25	35

9.3 Cover

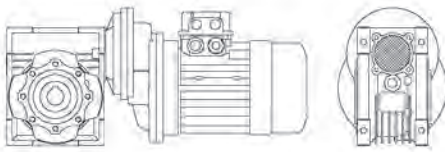
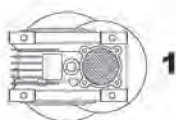
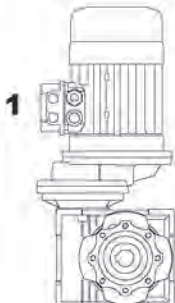
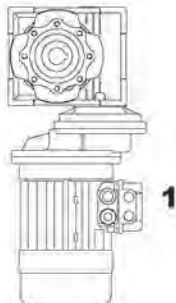
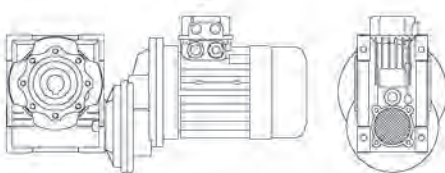


	N ₂		N ₂
TNRV030	47	TNRV090	94
TNRV040	55	TNRV105	102
TNRV050	63	TNRV110	102
TNRV063	73	TNRV130	117
TNRV075	79		

10. INSTALLATION POSITIONS DIAGRAM**10.1 TNRV.. OR TRV.. Mounting Positions**

TNRV...U - B3	B6	V5	V6
1 			
B8	B7		
3 			

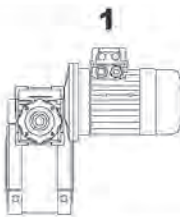
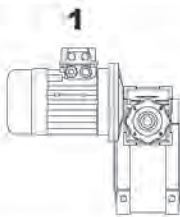
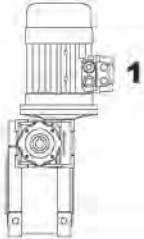
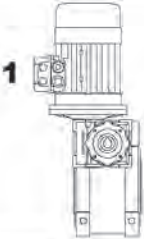
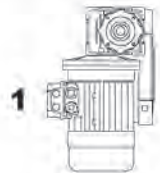
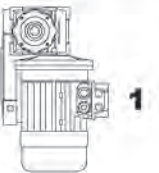
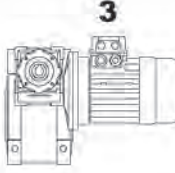
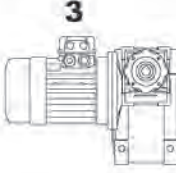
10.2 PC.. - TNRV.. Mounting Positions

PC.. - TNRV...U - B3	B6	V5	V6
1 			
B8	B7		
3 			

"U" version is related to sizes from **TNRV025-075** and **TRV030-063**. For these sizes it is not necessary to specify mounting position.

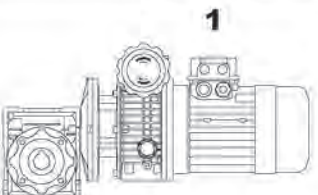
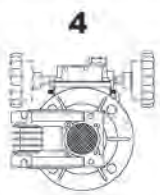
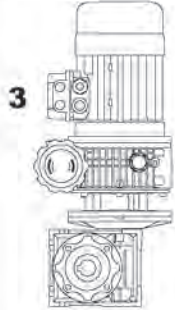
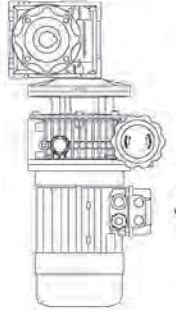
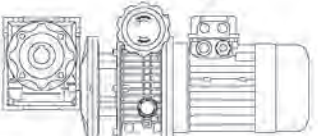
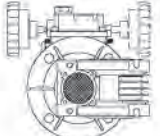
- For vertical positions, please refer to the table on page 80.
- Unless specified otherwise, the standard positions are **B3**.
- For positions not envisaged, it is necessary to call our Technical Service.

10.3 TNRV.. - TNRV.. / TRV.. - TNRV.. Mounting Positions

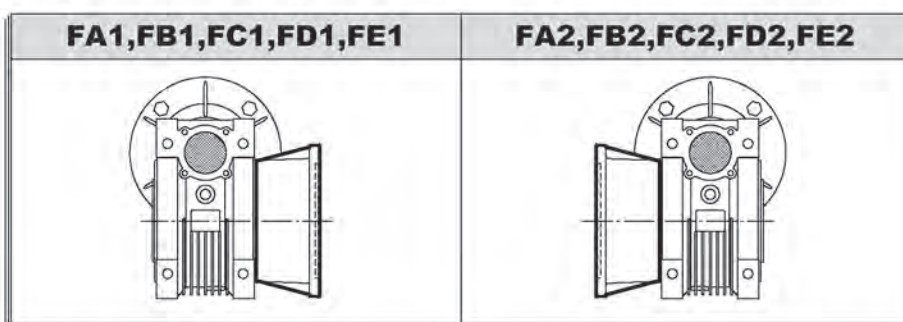
AS1	AS2	VS1	VS2
			
PS1	PS2	BS1	BS2
			

The position of the 1st reducer with respect to the 2nd gear reducer depends on the versions. Unless specified at the time of order, combination groups are supplied in version BS2. The specified mounting position refers to the 1st gear reducer, see page 76 for the possible mounting positions.

10.4 UDL.. - TNRV.. Mounting Positions

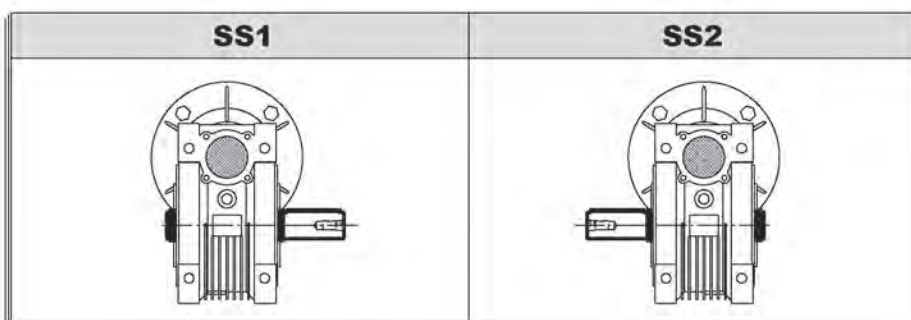
TNRV...U - B3	B6	V5	V6
			
B8	B7		
			

10.5 Position diagram for output flange

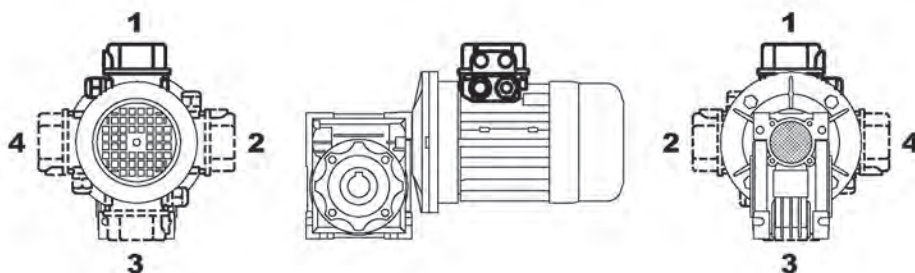


Unless specified otherwise, the reduction unit is supplied with the flange in pos. **F..1** referred to position B3.

10.6 Position diagram for single output shaft



10.7 Position of terminal box



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

10.8 Direction of rotation



TNRV



TNRV - TNRV



TRV



TRV - TNRV

11. INSTALLATION

11.1 Note recommendations

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

1. Check the correct direction of rotation of the reduction unit output shaft before fitting the unit to the machine.
2. Before mount with the prime mover and device, please check the reducer's every axial diameter, aperture, key and key slot, to be sure their dimensions are not deviation, and avoid assembling too tight or too loose, unless it will influence the reducer's performance.
3. The mounting on the machine must be stable to avoid any vibration.
4. Whenever possible, protect the reduction unit against solar radiation and bad weather.
5. 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.
6. Painting must definitely not go over rubber parts and the holes on the breather plugs, if any.
7. When connect with hollow or solid shaft, please grease the joint to avoid lock or oxidation.
8. Check the correct level of the lubricant through the indicator, if there is one.
9. Starting must take place gradually, without immediately applying the maximum load.
10. Supporting unit is required when using various of reducer matched with motor directly and the weight of motor is a little bigger than common.
11. Ensure the motor cools correctly by assuring good passage of air from the fan side.
12. In the case of ambient temperatures $< -5^{\circ}\text{C}$ or $> +40^{\circ}\text{C}$ call the Technical Service.

11.2 Critical applications

The performance given in the catalogue correspond to mounting position B3 or similar, 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 reduction 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. Applications with especially high inertia.
3. Use as a lifting winch.
4. Use in services that could be hazardous for people if the reduction unit fails.
5. Applications with high dynamic strain on the case of the reduction unit.
6. In places with T° under -5°C or over 40°C.
7. Use in chemically aggressive environments.
8. Use in a salty environment.
9. Use in radioactive environments.
10. Use in environments pressures other than atmospheric pressure.
11. Mounting positions not envisaged in the catalogue.

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 (fs =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.

TNRV	025	030	040	050	063	075	090	105	110	130
V5: 1500 < n ₁ < 3000	—	—	—	—	—	B	B	B	B	B
n ₁ > 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

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.