

# FW Series Worm Geared Motor



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## 1. SUMMARIZE

### 1.1 Products Features :

FW Series main design features are as follows;

- High durability - The Gear Box body made of high quality aluminum alloy, non-rusting.
- Superior efficiency & Low noise, because of precise machining.
- Worm shaft made of case hardened steel for high strength & efficiency, ground machining for excellent finishing.
- Flexible mounting, wide variety of mounting options.
- High reduction ratio.
- Efficient radiator.
- Elegant appearance.
- Lubricated for life and maintenance free operation.

### 1.2 Main materials

1. Housing: die-cast aluminum alloy (frame size: 30 to 90); cast iron (frame size: 110 to 150).
2. Worm Shaft: 20Cr, carbonize & quencher heat treatment make the hardness of gear's surface upto 56-62 HRC.
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, powder coated in silvery white.

Cast iron housing:

First paint with red antirust paint, then painted with silvery white paint.

## 2. PRODUCT STRUCTURE PICTURE



**FW**






**HL-FW**



**FW / FW**

### 3. MODEL DESIGNATION

#### WORM GEAR BOX DESIGNATION (FW)

FW	63	U	50	F90	B5	B3	Options
Gear box type (Worm)	Gear box Frame	U-Universal Mounting (Foot) (or)	i-Ratio	Gear box Input Frame Size	Motor Mounting	Gear box Mounting Position	<b>SSOS</b> (Single Solid Output Shaft); <b>DOS</b> (Double Output Shaft); <b>NDES</b> (Non Driven End Side Shaft); <b>TRA</b> (Torque Arm); <b>C</b> (Output Side Cover)
	30 (or) 40 (or) 50 (or) 63 (or) 75 (or) 90 (or) 110 (or) 130 (or) 150	UFA (or) UFB (or) UFD } Flange Mounting	7.5 (or) 10 (or) 15 (or) 20 (or) 25 (or) 30 (or) 40 (or) 50 (or) 60 (or) 80 (or) 100	F 63 (or) F 71 (or) F 80 (or) F 90 (or) F 100 (or) F 112 (or) F 132 (or) F 160 (or) ISS (Input Solid Shaft)  	B5-FW 30 to FW 150  (or) B14-FW 30 to FW 110  (or) NA 	B3 (or) B6 (or) B7 (or) B8 (or) V5 (or) V6	

#### HELI - WORM GEAR BOX DESIGNATION (HL-FW)

HL-FW	63	U	300	F71	B5	B3	Options
Gear box Type (Heli-Worm)	Gear box Frame	U-Universal Mounting (Foot) (or)	i-Ratio	Gear box Input Frame Size	Motor Mounting	Gear box Mounting Position	<b>SSOS</b> (Single Solid Output Shaft); <b>DOS</b> (Double Output Shaft); <b>NDES</b> (Non Driven End Side Shaft); <b>TRA</b> (Torque Arm); <b>C</b> (Output Side Cover)
		UFA (or) UFB (or) UFD } Flange Mounting		F 63 (or) F 71 (or) F 80 (or) F 90	Only B5	B3 (or) B6 (or) B7 (or) B8 (or) V5 (or) V6	



### Double (Combination) Worm Gear Box Designation (FW / FW)

FW / FW	30/50	U	200	F90	B5	AS2	Options
Gear box type (Double Worm)	Gear box Frame	U-Universal Mounting (Foot) (or) UFA (or) UFB (or) UFD } Flange Mounting	i-Ratio 150 (or) 200 (or) 250 (or) 300 (or) 400 (or) 500 (or) 600 (or) 750 (or) 900 (or) 1200 (or) 1500 (or) 1800 (or) 2400 (or) 3000 4000 (or) 5000	Gear box Input Frame Size F 63 (or) F 71 (or) F 80 (or) F 90 (or) ISS (Input Solid Shaft)	Motor Mounting B5-FW 30 to FW 150 (or) B14-FW 30 to FW 110  (or) NA	Gear box Mounting Position AS1 (or) AS2 (or) VS1 (or) VS2 (or) PS1 (or) PS2 (or) BS1 (or) BS2	<b>SSOS</b> (Single Solid Output Shaft); (or) <b>DOS</b> (Double Output Shaft); <b>NDES</b> (Non Driven End Side Shaft); (or) <b>TRA</b> (Torque Arm); (or) <b>C</b> (Output Side Cover)

## 4. RELEVANT PARAMETER

### 4.1 Power P

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

$$P_{1n} = P_1 * f_s \text{ [kW]}$$

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

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

Values of  $\eta_d$  are calculated for gear boxes 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  $\eta_d$  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, 1400 r/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

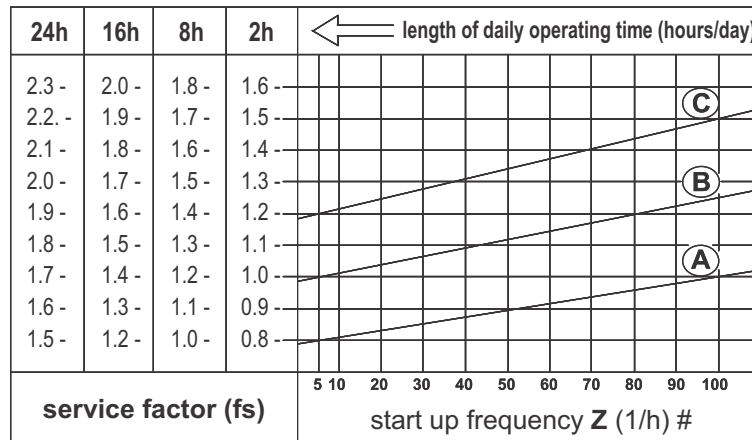
$$M_2 = \frac{9550 * P_1 * \eta}{n_2} \text{ [Nm]}$$

$$M_{2n} = M_2 * f_s \text{ [Nm]}$$

$P_2$	Output power
$M_2$	Output torque
$M_{2n}$	Rated output torque
$P_1$	Input power
$\eta$	Transmission efficiency
$f_s$	Service factor

### 4.5 Service factor

The effect of the driven machine on the gear unit is taken into account to a sufficient level of accuracy using the service factor. 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 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 breaking 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  $f_a = 0.25$
- (B) Moderate shock load, permitted mass acceleration factor  $f_a = 3$
- (C) Heavy shock load, permitted mass acceleration factor  $f_a = 10$

#### 4.5.2 Mass acceleration factor

The mass acceleration factor is calculated as follows:

$$f_a = \frac{Jc}{Jm}$$

$f_a$  Mass acceleration factor

$Jc$  All external mass moments of inertia [ $kgm^2$ ]

$Jm$  Mass moment of inertia on the motor end [ $kgm^2$ ]

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 ~ 40°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 is > 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 $F_r$

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 factor  $f_z$  :

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 :

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

- $F_r$  Resulting radial load [N]
- $M$  Torque on the shaft [Nm]
- $d_0$  Mean diameter of the mounted transmission element in [mm]
- $f_z$  Transmission element factor.

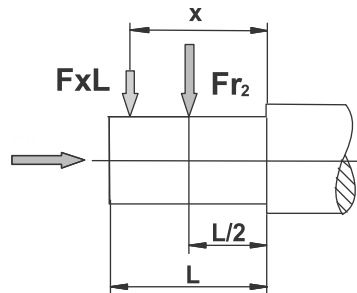
The allowed radial load force on the shaft is calculated with the following formula ;

$$F_x L = \frac{F_{r2} * a}{(b+x)} \text{ [N]}$$

- $F_{r2}$  Permitted overhung load ( $x = L/2$ ) for foot-mounted gear units according to the selection tables in [N]
- $a, b$  Gear unit constat for overhung load conversion [mm]
- $x$  Distance from the shaft shoulder to the force application point in (mm)

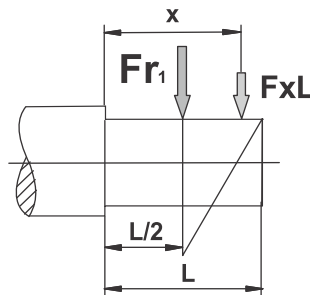
The value of  $a, b, F_{r2}$  are given in the following tables :

### Output shafts radial loads



FW	30	40	050	063	075	090	110	130	150
a	65	84	101	120	131	162	176	188	215
b	50	64	76	95	101	122	136	148	174
$F_{r2}$ max	1830	3490	4840	6270	7380	8180	12000	13500	18000

### Input shafts radial loads



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

## 4.7 Symbols and Units of Measure

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	i	$F_{r2}$ [N]	fs			
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$P_{1n}$  Rated power driving motor [kW];

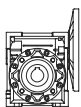
$n_2$  Output speed [r/min];

$M_{2n}$  Rated output torque [r/min];

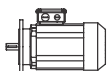
i Gear unit ratio;

$F_{r2}$  Output Shaft radial load

fs Service factor;



Gear unit type ;



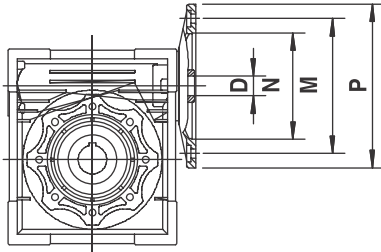
Motor type ;



Page Number - Dimension Details

## 5. RELEVANT DATA

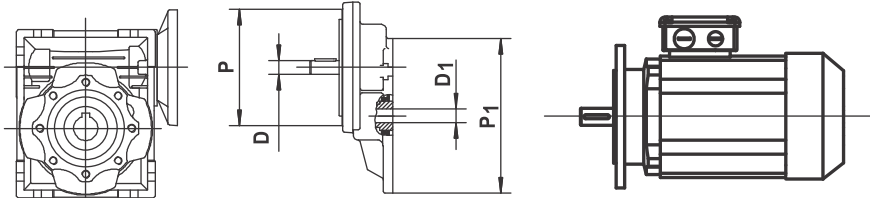
### 5.1 Ratio and IEC motor adapters



	IEC motor adapters				D Input Hollow Shaft Dia										
	IEC	P	M	N	i Transmission ratio										
					7.5	10	15	20	25	30	40	50	60	80	100
<b>FW30</b>	63B5	140	115	95	11	11	11	11	11	11	11	11	11		
	63B14	90	75	60											
<b>FW40</b>	63B5	140	115	95	11	11	11	11	11	11	11	11	11	11	11
	63B14	90	75	60											
<b>FW50</b>	71B5	160	130	110	14	14	14	14	14	14	14				
	71B14	105	85	70											
	63B5	140	115	95								11	11	11	11
	71B5	160	130	110	14	14	14	14	14	14	14	14	14	14	
<b>FW63</b>	71B14	105	85	70							14	14	14	14	14
	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				
<b>FW75</b>	90B14	140	115	95								14	14	14	14
	71B5	160	130	110											
	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	28	28	28								
<b>FW90</b>	100 / 112B5	250	215	180											
	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		
<b>FW110</b>	90B14	140	115	95	28	28	28	28	28	28					
	100 / 112B5	250	215	180											
	100 / 112B14	160	130	110											
	132B5	300	265	230	38	38	38	38							
	90B5	200	165	130										24	24
<b>FW130</b>	90B5	200	165	130											
	100 / 112B5	250	215	180					28	28	28	28	28	28	28
	132B5	300	265	230	38	38	38	38	38	38	38				
<b>FW150</b>	100 / 112B5	250	215	180								28	28	28	28
	132B5	300	265	230				38	38	38	38	38	38		
	160B5	350	300	250	42	42	42	42	42						

## 5.2 HL - FW Combinations

	i	HL 063	HL 071	HL 080	HL 090
		105 / 11 i = 3	120 / 14 i = 3	160 / 19 i = 3	160 / 24 i = 2.42
FW40	25				
	30				
	40				
	50				
	60				
	80				
FW50	100				
	25				
	30				
	40				
	50				
	60				
FW63	80				
	100				
	25				
	30				
	40				
	50				
FW75	60				
	80				
	100				
	25				
	30				
	40				
FW90	50				
	60				
	80				
	100				
	25				
	30				
FW110	40				
	50				
	60				
	80				
	100				
	25				
FW130	30				
	40				
	50				
	60				
	80				
	100				



	P	D	P1	D1
HL 063	105	11	140 (63B5)	11
HL 071	120	14	160 (71B5)	14
HL 080	160	19	200 (80B5)	19
HL 090	160	24	200 (90B5)	24

### 5.3 Efficiency & Irreversibility character

Efficiency is an important parameter of reducer, Efficiency  $\eta$  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 shows dynamic efficiency ( $\eta_1$ -1400) and static efficiency values. Remember that these value 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.

#### 5.3.1 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  $\eta_d < 0.4$

#### 5.3.2 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  $\eta_s < 0.5$

$\eta_d$	> 0.6	0~ 0.6	0.4 ~ 0.5	< 0.4
<b>DYNAMIC IRREVERSIBILITY</b>	dynamic reversibility	low dynamic reversibility	good dynamic irreversibility	dynamic irreversibility

$\eta_s$	> 0.55	0.5 ~ 0.55	< 0.5
<b>STATIC IRREVERSIBILITY</b>	Static irreversibility	low static irreversibility	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.:  $\eta_{tot} = \eta_1 \times \eta_2$

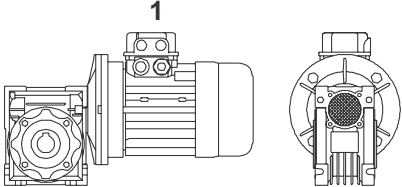
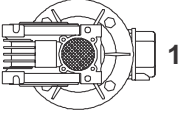
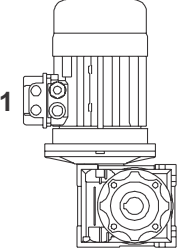
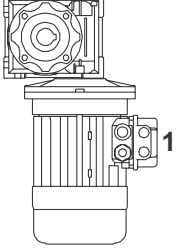
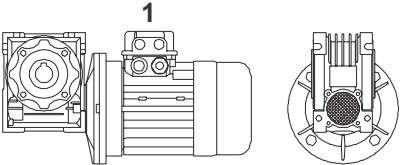
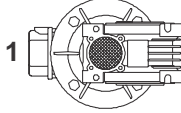


### 5.3.3 Mesh Data

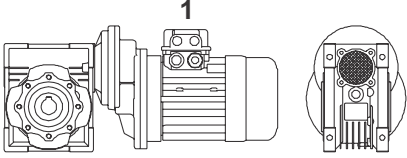
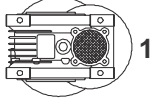
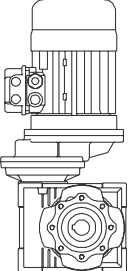
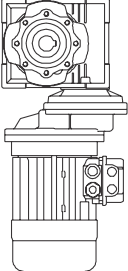
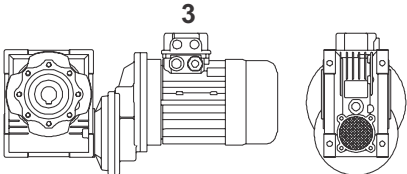
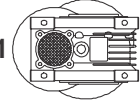
	<i>i</i>	7.5	10	15	20	25	30	40	50	60	80	100
<b>FW30</b>	$z_1$	4	3	2	2	1	1	1	1	1		
	$m_n$	1.36	1.39	1.42	1.09	1.69	1.43	1.10	0.89	0.74		
	$Y$	18°55'	14°25'	9°44'	7°50'	5°33'	4°54'	3°56'	3°17'	2°43'		
	$\eta_d$	0.84	0.81	0.76	0.72	0.66	0.64	0.59	0.54	0.50		
	$\eta_s$	0.66	0.62	0.54	0.49	0.41	0.38	0.33	0.29	0.26		
<b>FW40</b>	$z_1$	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
	$Y$	23°54'	18°23'	12°30'	10°3'	8°45'	6°19'	5°4'	4°24'	3°42'	2°52'	2°29'
	$\eta_d$	0.86	0.84	0.80	0.77	0.74	0.69	0.65	0.61	0.57	0.51	0.47
	$\eta_s$	0.70	0.66	0.59	0.54	0.51	0.44	0.39	0.36	0.32	0.27	0.24
<b>FW50</b>	$z_1$	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
	$Y$	23°49'	18°19'	12°27'	10°3'	8°33'	6°18'	5°4'	4°18'	3°38'	2°52'	2°17'
	$\eta_d$	0.87	0.85	0.81	0.78	0.75	0.71	0.67	0.63	0.59	0.53	0.48
	$\eta_s$	0.70	0.66	0.59	0.54	0.51	0.44	0.39	0.36	0.33	0.27	0.24
<b>FW63</b>	$z_1$	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
	$Y$	24°31'	18°53'	12°51'	10°29'	8°45'	6°30'	5°17'	4°24'	3°49'	2°59'	2°26'
	$\eta_d$	0.88	0.86	0.82	0.80	0.77	0.73	0.69	0.65	0.62	0.56	0.51
	$\eta_s$	0.70	0.66	0.59	0.55	0.51	0.44	0.40	0.36	0.33	0.28	0.24
<b>FW75</b>	$z_1$	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
	$Y$	26°38'	20°37'	14°5'	11°19'	9°29'	7°9'	5°43'	4°46'	4°1'	3°17'	2°44'
	$\eta_d$	0.88	0.87	0.84	0.81	0.79	0.76	0.72	0.68	0.64	0.59	0.55
	$\eta_s$	0.71	0.68	0.61	0.57	0.53	0.47	0.41	0.37	0.34	0.29	0.26
<b>FW90</b>	$z_1$	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
	$Y$	29°5'	22°39'	15°33'	12°50'	10°53'	7°55'	6°30'	5°29'	4°46'	3°45'	3°6'
	$\eta_d$	0.89	0.88	0.85	0.83	0.81	0.78	0.74	0.71	0.68	0.63	0.59
	$\eta_s$	0.72	0.69	0.63	0.59	0.56	0.49	0.44	0.41	0.37	0.32	0.28
<b>FW110</b>	$z_1$	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
	$Y$	28°15'	21°57'	15°2'	14°42'	12°33'	7°39'	7°29'	6°21'	5°33'	4°27'	3°46'
	$\eta_d$	0.89	0.88	0.86	0.85	0.83	0.79	0.77	0.74	0.72	0.67	0.63
	$\eta_s$	0.72	0.69	0.62	0.62	0.59	0.48	0.48	0.44	0.41	0.36	0.32
<b>FW130</b>	$z_1$	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	2.33
	$Y$	28°43'	22°20'	15°19'	13°47'	11°54'	7°48'	6°60'	6°1'	5°16'	4°8'	3°27'
	$\eta_d$	0.90	0.89	0.87	0.85	0.84	0.80	0.78	0.75	0.73	0.68	0.64
	$\eta_s$	0.72	0.69	0.63	0.61	0.58	0.49	0.46	0.43	0.40	0.34	0.30
<b>FW150</b>	$z_1$	6	4	2	2	2	2	1	1	1	1	1
	$m_n$	5.5	6.155	5.5	6.155	5	4.193	6.155	5	4.193	3.17	2.55
	$Y$	32°09'	24°35'	17°27'	12°53'	11°19'	9°50'	6°32'	5°43'	4°57'	3°55'	3°14'
	$\eta_d$	0.91	0.90	0.88	0.86	0.84	0.83	0.78	0.76	0.73	0.68	0.64
	$\eta_s$	0.73	0.71	0.66	0.60	0.57	0.54	0.45	0.42	0.39	0.33	0.29

## 6. MOUNTING POSITIONS

### 6.1 FW & FW.. ISS Mounting Positions

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

### 6.2 HL - FW .. Mounting Positions

HL - FW... U - B3	B6	V5	V6
			
B8		B7	
			

### 6.3 FW / FW & FW / FW.. ISS 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.

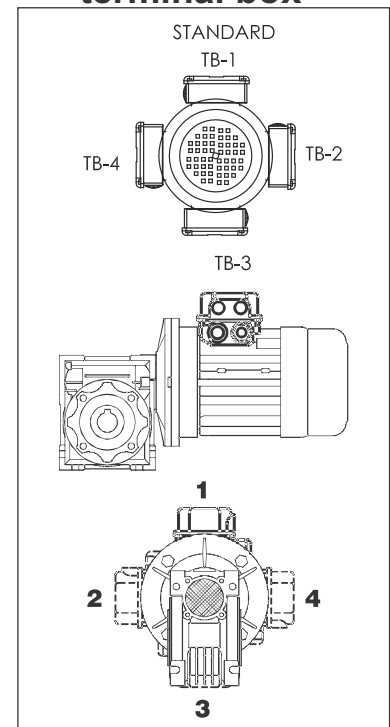
### 6.4 Position diagram for output flange

FA1, FB1, FD1	FA2, FB2, FD2

### 6.5 Position diagram for single output shaft

SSOS1	SSOS2

### 6.6 Position of terminal box



## 6.7 Direction of rotation



## 7. LUBRICATION

### 7.1 Lubricants detail


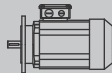

	°C	ISO	SHELL	AGIP	ESSO	MOBIL	CASTROL	BP	广研	
<b>FW30~90 HL63~90</b>	-25   +50	VG320	Tivela Oil S320	Telium VSF320	S220	Glygoyle 30	Alphasyn PG320	Energol SG-XP320		Synthetic Oil
<b>FW110~150</b>	-5   +40	VG460	Omala OIL460	Blasia 460	Spartan EP460	Mobilgear 634	Alpha MAX 460	Energol GR-XP460	CKE460	Mineral Oil
	-15   +25	VG220	Omala OIL220	Blasia 220	Spartan EP220	Mobilgear 630	Alpha MAX 220	Energol GR-XP220		


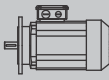

### 7.2 Quantity of Lubricant


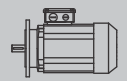

	B3	B6	B7	B8	V5	V6
<b>FW30</b>				0.05		
<b>FW40</b>				0.1		
<b>FW50</b>				0.15		
<b>FW63</b>				0.3		
<b>FW75</b>				0.5		
<b>FW90</b>				1		
<b>FW110</b>	3	2.5	2.5	2.2	3	2.2
<b>FW130</b>	4.5	3.5	3.5	3.3	4.5	3.3
<b>FW150</b>	7	5.4	5.4	5.1	7	5.1
<b>HL 63</b>				0.05		
<b>HL 71</b>				0.07		
<b>HL 80</b>				0.15		
<b>HL 90</b>				0.16		


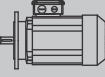

## 8. GEAR UNIT SELECTION TABLES

### 8.1 FW..(IEC).. Performance Parameter


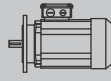

P <sub>1n</sub> [kW]	n <sub>2</sub> [r/min]	M <sub>2n</sub> [Nm]	i	Fr <sub>2</sub> [N]	f <sub>s</sub>			
<b>0.12</b>	186.7	5.2	7.5	683	3.5	FW30 63B5 / B14	FM 63 A4	46
	140	6.6	10	752	2.7			
	93.3	9.3	15	861	1.9			
	70	12	20	948	1.5			
	56	14	25	1021	1.6			
	46.7	16	30	1085	1.3			
	35	19	40	1194	0.9			
	28	22	50	1286	0.8			
	46.7	17	30	2087	2.7	FW40 63B5 / B14	FM 63 A4	47
	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	FW50 63B5 / B14	FM 63 A4	48	
17.5	35	80	3973	1.9				
14	39	100	4280	1.4				
<b>0.18</b>	373.3	4.0	7.5	542	3.2	FW30 63B5 / B14	FM 63 A2	46
	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	FW30 63B5 / B14	FM 63 B4	46
	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			
	93.3	14	30	1657	2.5	FW40 63B5 / B14	FM 63 A2	47
	70	17	40	1824	1.8			
	56	21	50	1964	1.4			
	70	19	20	1824	2.1	FW40 63B5 / B14	FM 63 B4	47
	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			
	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	FW50 63B5 / B14	FM 63 A2	48	
35	30	80	3153	1.5				
28	34	100	3397	1.2				


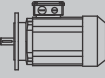

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$				
<b>0.18</b>	35	33	40	3153	2.3	FW50 63B5 / B14	FM 63 B4	48	
	28	39	50	3397	1.9				
	23.3	43	60	3610	1.6				
	17.5	52	80	3973	1.2				
	14	59	100	4280	0.9				
	18	56	50	3936	1.4	FW50 71B5 / B14	FM 71 A6	48	
	15	63	60	4183	1.1				
	11.3	75	80	4604	0.9				
	15	66	60	5467	2.1	FW63 71B5 / B14	FM 71 A6	49	
	11.3	79	80	6018	1.6				
	9	90	100	6270	1.4				
	<b>0.25</b>	373.3	5.6	7.5	542	2.3	FW30 63B5 / B14	FM 63 B2	46
		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	FW40 71B5 / B14	FM 71 A4	47	
140		14	10	1447	3.0				
93.3		21	15	1657	2.0				
70		27	20	1824	1.5				
56		32	25	1964	1.2				
46.7		36	30	2087	1.3				
35		45	40	2298	0.9				
120		17	7.5	1524	2.6	FW40 71B5 / B14	FM 71 B6	47	
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				
35		42	80	3153	1.1	FW50 63B5 / B14	FM 63 B2	48	
28		48	100	3397	0.8				
70		27	20	2503	2.7	FW50 71B5 / B14	FM 71 A4	48	
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	FW50 71B5 / B14	FM 71 B6	48	
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					


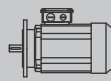

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>0.25</b>	28	55	50	4440	2.4	FW63 71B5 / B14	FM 71 A4	49
	23.3	63	60	4719	2.0			
	17.5	76	80	5193	1.6			
	14	87	100	5595	1.4			
	18	81	50	5145	1.8	FW63 71B5 / B14	FM 71 B6	49
	15	92	60	5467	1.5			
	11.3	110	80	6018	1.2			
	9	125	100	6270	1.0			
	17.5	80	80	6130	2.4	FW75 71B5 / B14	FM 71 A4	50
	14	94	100	6603	1.9			
	11.3	117	80	7103	1.7	FW75 71B5 / B14	FM 71 B6	50
	9	133	100	7380	1.4			
<b>0.37</b>	373.3	8.3	7.5	1044	3.4	FW40 71B5 / B14	FM 71 A2	47
	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	FW40 71B5 / B14	FM 71 B4	47
	140	21	10	1447	2.1			
	93.3	31	15	1657	1.4			
	70	40	20	1824	1.1			
	56	48	25	1964	0.8			
	46.7	54	30	2087	0.9			
	112	25	25	2140	2.0	FW50 71B5 / B14	FM 71 A2	48
	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	FW50 71B5 / B14	FM 71 B4	48
	93.3	31	15	2274	2.4			
	70	39	20	2503	1.9			
	56	47	25	2696	1.5			
	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	FW50 80B5 / B14	FM 80 A6	48
	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	FW63 71B5 / B14	FM 71 B4	49	
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				


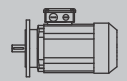

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>0.37</b>	45	60	20	3791	2.4	FW63 80B5 / B14	FM 80 A6	49
	36	73	25	4084	1.9			
	30	82	30	4339	2.1			
	22.5	102	40	4776	1.6			
	18	120	50	5145	1.2			
	15	137	60	5467	1.0			
	23.3	97	60	5569	2.1	FW75 71B5 / B14	FM 71 B4	50
	17.5	119	80	6130	1.6			
	14	139	100	6603	1.3			
	18	124	50	6073	1.8	FW75 80B5 / B14	FM 80 A6	50
	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	FW90 80B5 / B14	FM 80 A6	51
	9	212	100	8180	1.3			
<b>0.55</b>	373.3	12	7.5	1044	2.3	FW40 71B5 / B14	FM 71 B2	47
	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	FW50 71B5 / B14	FM 71 B2	48
	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	FW50 80B5 / B14	FM 80 A4	48
	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			
	120	37	7.5	2091	2.3	FW50 80B5 / B14	FM 80 B6	48
	90	48	10	2302	1.7			
	60	69	15	2635	1.2			
	45	88	20	2900	0.9			
	70	56	40	3272	1.9			
	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	FW63 80B5 / B14	FM 80 A4	49	
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				


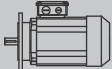




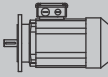

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>0.55</b>	60	70	15	3444	2.2	FW63 80B5 / B14	FM 80 B6	49
	45	90	20	3791	1.6			
	36	108	25	4084	1.3			
	30	123	30	4339	1.4	FW75 71B5 / B14	FM 71 B2	50
	22.5	152	40	4776	1.1			
	28	116	100	5241	1.0			
	35	108	40	4865	2.0	FW75 80B5 / B14	FM 80 A4	50
	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	FW75 80B5 / B14	FM 80 B6	50
	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	FW90 80B5 / B14	FM 80 A4	51
	14	221	100	7306	1.2			
	18	196	50	6719	2.0	FW90 80B5 / B14	FM 80 B6	51
15	224	60	7140	1.6				
11.3	275	80	7859	1.1				
9	315	100	8180	0.9				
17.5	201	80	8571	2.6	FW110 80B5 / B14	FM 80 A4	52	
14	236	100	9232	2.0				
11.3	294	80	9931	1.9	FW110 80B5 / B14	FM 80 B6	52	
9	344	100	10320	1.5				
<b>0.75</b>	373.3	17	7.5	1433	3.0	FW50 80B5 / B14	FM 80 A2	48
	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	FW50 80B5 / B14	FM 80 B4	48
	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	FW63 80B5 / B14	FM 80 A2	49
	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	FW63 80B5 / B14	FM 80 B4	49
	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				


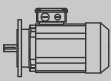

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>0.75</b>	120	51	7.5	2734	2.9	FW63 90B5 / B14	FM 90 S6	49
	90	67	10	3009	2.3			
	60	96	15	3444	1.6			
	45	123	20	3791	1.2			
	36	147	25	4084	0.9			
	30	167	30	4339	1.0			
	46.7	107	60	4421	1.3	FW75 80B5 / B14	FM 80 A2	50
	35	135	80	4865	1.0			
	28	159	100	5241	0.8			
	56	101	25	4160	2.0	FW75 80B5 / B14	FM 80 B4	50
	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	FW75 90B5 / B14	FM 90 S6	50
	45	124	20	4474	1.9			
	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	FW90 80B5 / B14	FM 80 A2	51
28	169	100	5799	1.2				
28	182	50	5799	1.9	FW90 80B5 / B14	FM 80 B4	51	
23.3	209	60	6163	1.5				
17.5	258	80	6783	1.1				
14	302	100	7306	0.9				
30	179	30	5667	2.6	FW90 90B5 / B14	FM 90 S6	51	
22.5	226	40	6238	1.8				
18	267	50	6719	1.5				
15	306	60	7140	1.1				
17.5	274	80	8571	1.9				
14	322	100	9232	1.5	FW110 80B5 / B14	FM 80 B4	52	
15	325	60	9023	2.1				
11.3	401	80	9931	1.4	FW110 90B5 / B14	FM 90 S6	52	
9	470	100	10320	1.1				
11.3	401	80	12989	2.1				
9	470	100	13500	1.7	FW130 90B5 / B14	FM 90 S6	53	
11.3	401	80	12989	2.1				
9	470	100	13500	1.7	FW50 80B5 / B14	FM 80 B2	48	
373.3	25	7.5	1433	2.1				
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	FW63 80B5 / B14	FM 80 B2	49	
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				


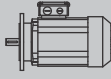

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>1.1</b>	120	75	7.5	2734	2.0	<b>FW63 90B5 / B14</b>	<b>FM 90 L6</b>	<b>49</b>
	90	98	10	3009	1.6			
	60	140	15	3444	1.1			
	45	180	20	3791	0.8			
	186.7	50	7.5	2359	2.6	<b>FW63 90B5 / B14</b>	<b>FM 90 B2</b>	<b>49</b>
	140	65	10	2597	2.0			
	93.3	92	15	2973	1.5			
	70	120	20	3272	1.1			
	56	144	25	3524	0.9			
	46.7	164	30	3745	1.0			
	112	77	25	3302	2.0	<b>FW75 80B5 / B14</b>	<b>FM 80 B2</b>	<b>50</b>
	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			
	90	98	10	3551	2.3	<b>FW75 90B5 / B14</b>	<b>FM 90 L6</b>	<b>50</b>
	60	142	15	4065	1.7			
	45	182	20	4474	1.3			
	36	219	25	4820	1.0			
	30	249	30	5122	1.0			
	93.3	95	15	3509	2.1			
	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	<b>FW90 80B5 / B14</b>	<b>FM 80 B2</b>	<b>51</b>
	28	248	100	5799	0.8			
	36	228	25	5333	1.6	<b>FW90 90B5 / B14</b>	<b>FM 90 L6</b>	<b>51</b>
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	<b>FW90 90B5 / B14</b>			
28	266	50	5799	1.3				
23.3	306	60	6163	1.0				
22.5	345	40	7882	2.3	<b>FW110 90B5 / B14</b>	<b>FM 90 L6</b>	<b>52</b>	
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				<b>FW110 90B5 / B14</b>
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	<b>FW130 90B5</b>	<b>FM 90 L6</b>	<b>53</b>	
9	689	100	13500	1.1				
17.5	408	80	11210	2.1	<b>FW130 90B5</b>	<b>FM 90 S4</b>	<b>53</b>	
14	480	100	12076	1.5				

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>1.5</b>	186.7	68	7.5	2359	1.9	<b>FW63 90B5 / B14</b>	<b>FM 90 L4</b>	<b>49</b>
	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	<b>FW63 90B5 / B14</b>	<b>FM 90 S2</b>	<b>49</b>
	280	45	10	2061	2.2			
	186.7	66	15	2359	1.6			
	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	<b>FW75 100B5 / B14</b>	<b>FM 100 L6</b>	<b>50</b>
	90	134	10	3551	1.7			
	60	193	15	4065	1.2			
	56	187	50	4160	1.3	<b>FW75 90B5 / B14</b>	<b>FM 90 S2</b>	<b>50</b>
	46.7	215	60	4421	1.1			
	140	89	10	3065	2.2	<b>FW75 90B5 / B14</b>	<b>FM 90 L4</b>	<b>50</b>
	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			
	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	<b>FW90 100B5 / B14</b>	<b>FM 100 L6</b>	<b>51</b>
	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			
	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	<b>FW90 90B5 / B14</b>	<b>FM 90 S2</b>	<b>51</b>	
46.7	227	60	4891	1.1				
45	264	20	6256	2.7	<b>FW110 100B5 / B14</b>	<b>FM 100 L6</b>	<b>52</b>	
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	<b>FW110 90B5 / B14</b>	<b>FM 90 L4</b>	<b>51</b>	
28	379	50	7328	1.7				
23.3	442	60	7787	1.4				
17.5	548	80	8571	0.9				

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$				
<b>1.5</b>	46.7	236	60	6181	2.0	FW110 90B5 / B14	FM 90 S2	52	
	35	299	80	6803	1.3				
	28	358	100	7328	1.0				
	22.5	471	40	10309	2.3	FW130 100B5 / B14	FM 100 L6	53	
		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	FW130 90B5 / B14	FM 90 L4	53	
		14	655	100	12076				1.1
	18	589	50	15182	2.7	FW150 100 / 112 B5	FM 100 L6	54	
		15	678	60	16133				2.1
		11.3	841	80	17757				1.5
		9	971	100	18000				1.2
	<b>2.2</b>	373.3	51	7.5	1873	1.8	FW63 90B5 / B14	FM 90 L2	49
		280	66	10	2061	1.5			
186.7		97	15	2359	1.1				
186.7		99	7.5	2785	1.9	FW75 100B5 / B14	FM 100 LA4	50	
		140	131	10	3065				1.5
		93.3	189	15	3509				1.1
373.3		50	7.5	2210	2.6	FW75 90B5 / B14	FM 90 L2	50	
		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	FW90 100B5 / B14	FM 100 LA4	51	
		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
90		201	10	3929	1.8				
60		291	15	4498	1.4				
45		378	20	4951	1.0				
140		129	20	3391	2.0	FW90 90B5 / B14	FM 90 L2	51	
		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
70		255	20	5399	2.5	FW110 100B5 / B14	FM 100 LA4	52	
		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				


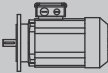

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>2.2</b>	90	203	10	4965	3.5	FW110 112B5 / B14	FM 112 M6	52
	60	294	15	5684	2.6			
	45	388	20	6256	1.9			
	36	473	25	6739	1.6			
	30	532	30	7161	1.6			
	112	161	25	4616	3.1	FW110 90B5 / B14	FM 90 L2	52
	93.3	187	30	4905	3.0			
	70	243	40	5399	2.2			
	56	296	50	5816	1.7			
	46.7	347	60	6181	1.4			
	35	468	40	8897	2.2	FW130 100B5	FM 100 LA4	
	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	FW130 112B5	FM 112 M6	52
	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	FW130 90B5 / B14	FM 90 L2	53
28	525	100	9584	1.0				
28	578	50	13103	2.4	FW150 100B5	FM 100 LA4	54	
23.3	667	60	13924	1.9				
17.5	829	80	15325	1.4				
14	976	100	16508	1.0				
18	864	50	15182	1.9	FW150 112B5	FM 112 M6	54	
15	995	60	16133	1.4				
11.3	1233	80	17757	1.1				
9	1425	100	18000	0.8				
<b>4.0</b>	373.3	91	7.5	2210	1.4	FW75 112B5 / B14	FM 112 M2	50
	280	120	10	2433	1.2			
	186.7	180	7.5	2785	1.0	FW75 112B5 / B14	FM 112 M4	50
	140	237	10	3065	0.8			
	373.3	93	7.5	2446	2.3	FW90 112B5 / B14	FM 112 M2	51
	280	123	10	2692	1.9			
	186.7	182	7.5	3081	1.6	FW90 112B5 / B14	FM 112 M4	51
	140	240	10	3391	1.3			
	93.3	348	15	3882	1.0			
	70	453	20	4273	0.8			
	140	240	10	4285	2.5	FW110 112B5 / B14	FM 112 M4	52
	93.3	352	15	4905	1.9			
	70	464	20	5399	1.4			
	56	566	25	5816	1.2			
	46.7	647	30	6181	1.1			


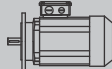

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>4.0</b>	120	280	7.5	4511	2.3	<b>FW110 132B5</b>	<b>FM 132 MA6</b>	<b>52</b>
	90	369	10	4965	1.9			
	60	535	15	5684	1.4			
	56	573	25	7607	1.6	<b>FW130 112B5</b>	<b>FM 112 M4</b>	<b>53</b>
	46.7	655	30	8084	1.6			
	35	851	40	8897	1.2			
	28	1023	50	9584	1.0			
	23.3	1195	60	10185	0.8			
	120	283	7.5	5901	3.1	<b>FW130 132B5</b>	<b>FM 132 MA6</b>	<b>53</b>
	90	369	10	6494	2.6			
	60	541	15	7434	2.0			
	45	705	20	8182	1.5			
	36	860	25	8814	1.2			
	28	1051	50	13103	1.3	<b>FW150 112B5</b>	<b>FM 112 M4</b>	<b>54</b>
	23.3	1212	60	13924	1.0			
	17.5	1507	80	15325	0.8			
	45	722	20	11186	2.1	<b>FW150 132B5</b>	<b>FM 132 MA6</b>	<b>54</b>
	36	892	25	12050	1.5			
30	1045	30	12805	1.3				
22.5	1291	40	14094	1.4				
18	1571	50	15182	1.0				
15	1809	60	16133	0.8				
<b>5.5</b>	186.7	250	7.5	3893	2.2	<b>FW110 132B5</b>	<b>FM 132 S4</b>	<b>52</b>
	140	330	10	4285	1.8			
	93.3	484	15	4905	1.4			
	70	638	20	5399	1.0			
	140	334	10	5605	2.5	<b>FW130 132B5</b>	<b>FM 132 S4</b>	<b>53</b>
	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			
	70	653	20	9654	2.0	<b>FW150 132B5</b>	<b>FM 132 S4</b>	<b>54</b>
	56	798	25	10400	1.5			
	46.7	946	30	11051	1.3			
	35	1186	40	12163	1.3			
	28	1445	50	13103	1.0			
23.3	1667	60	13924	0.8				
<b>7.5</b>	186.7	341	7.5	3893	1.6			
	140	450	10	4285	1.3			
	93.3	660	15	4905	1.0			
	186.7	345	7.5	5092	2.2	<b>FW130 132B5</b>	<b>FM 132 M4</b>	<b>53</b>
	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			




$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$Fr_2$ [N]	$f_s$			
<b>7.5</b>	70	891	20	9654	1.5	<b>FW150 132B5</b>	<b>FM 132 M4</b>	<b>54</b>
	56	1088	25	10400	1.1			
	46.7	1290	30	11051	0.9			
	35	1617	40	12163	1.0			
	28	1971	50	13103	0.7			
<b>11</b>	186.7	512	7.5	6962	2.3	<b>FW150 160B5</b>	<b>FM 160 M4</b>	<b>54</b>
	140	676	10	7663	1.8			
	93.3	991	15	8771	1.3			
	70	1306	20	9654	1.0			
	56	1595	25	10400	0.8			
<b>15</b>	186.7	699	7.5	6962	1.7	<b>FW150 160B5</b>	<b>FM 160 M4</b>	<b>54</b>
	140	921	10	7663	1.3			
	93.3	1351	15	8771	0.9			
	70	1781	20	9654	0.7			






## 8.2 HL-FW.. (IEC).. Performance Parameter


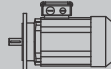

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$F_{R2}$ [N]	$f_s$			
<b>0.12</b>	18.7	42	75	2833	1.2	HL63 - FW40 63B5	FM 63 A4	56
	15.6	46	90	3011	1.2			
	11.7	57	120	3314	0.9			
	9.3	66	150	3490	0.7			
	7.8	74	180	3490	0.6			
	9.3	68	150	4840	1.3	HL63 - FW50 63B5	FM 63 A4	56
	7.8	75	180	4840	1.1			
	5.8	88	240	4840	0.8			
	4.7	98	300	4840	0.7			
	5.8	92	240	6270	1.5	HL63 - FW63 63B5	FM 63 A4	56
	4.7	103	300	6270	1.2			
	<b>0.18</b>	18.7	64	75	2833	0.8	HL63 - FW40 63B5	FM 63 B4
15.6		70	90	3011	0.8			
11.7		85	120	3314	0.6			
18.7		64	75	3889	1.4	HL63 - FW50 63B5	FM 63 B4	56
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	HL63 - FW63 63B5	FM 63 B4	56
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	HL71 - FW50 71B5	FM 71 A6	57
10.0		105	90	4788	1.4			
7.5		126	120	4840	1.0			
12.0		97	75	5889	2.2	HL71 - FW63 71B5	FM 71 A6	57
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	HL71 - FW75 71B5			
3.8	211	240	7380	1.2				
3.0	235	300	7380	1.0				
<b>0.25</b>	18.7	88	75	3889	1.0	HL71 - FW50 71B5	FM 71 A4	57
	15.6	98	90	4132	1.1			
	11.7	121	120	4548	0.8			
	18.7	91	75	5083	1.8	HL71 - FW63 71B5	FM 71 A4	57
	15.6	100	90	5401	2.0			
	11.7	125	120	5945	1.5			
	9.3	143	150	6270	1.2			

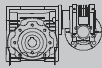
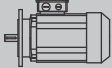

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$F_{r2}$ [N]	$f_s$							
<b>0.25</b>	7.8	163	180	6270	1.0	HL71 - FW63 71B5	FM 71 A4	57				
	5.8	192	240	6270	0.7							
	4.7	215	300	6270	0.6							
	12.0	135	75	5889	1.6	HL71 - FW63 71B5	FM 71 B6	57				
		10.0	148	90	6259				1.8			
		7.5	181	120	6270				1.3			
		6.0	211	150	6270				1.0			
		9.3	151	150	7380				1.7	HL71 - FW75 71B5	FM 71 A4	57
			7.8	172	180				7380			
	5.8		201	240	7380	1.1						
	4.7		230	300	7380	0.9						
	12.0	139	75	6952	2.4	HL71 - FW75 71B5	FM 71 B6	57				
		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	HL71 - FW90 71B5	FM 71 B6	58
	3.8		318	240	8180	1.4						
3.0	358		300	8180	1.1							
<b>0.37</b>	18.7	134	75	5083	1.2	HL71 - FW63 71B5	FM 71 B4	57				
	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	HL71 - FW75 71B5	FM 71 B4	57				
		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	HL80 - FW75 80B5	FM 80 A6	58
	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	HL71 - FW90 71B5	FM 71 B4	58				
		5.8	321	240	8180				1.1			
		4.7	371	300	8180				0.9			
	6.0	347	150	8180	1.6	HL80 - FW90 80B5	FM 80 A6	58				
		5.0	389	180	8180				1.3			
		3.8	471	240	8180				1.0			
	3.8	509	240	10320	1.6	HL80 - FW110 80B5	FM 80 A6	59				
		3.0	577	300	10320				1.3			
	<b>0.55</b>	18.7	205	75	6000	1.2	HL80 - FW75 80B5	FM 80 A4	58			
		15.6	230	90	6375	1.3						
		11.7	284	120	7017	1.0						
9.3		332	150	7380	0.8							
12.0		306	75	6952	1.1	HL80 - FW75 80B5	FM 80 B6	58				
		10.0	341	90	7380				1.1			


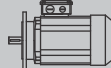

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$F_{r2}$ [N]	$f_s$			
<b>0.55</b>	15.6	240	90	7054	2.3	HL80 - FW90 80B5	FM 80 A4	58
	11.7	297	120	7764	1.6			
	9.3	355	150	8180	1.3			
	7.8	398	180	8180	1.0			
	10.0	357	90	8174	2.0	HL80 - FW90 80B5	FM 80 B6	58
	7.5	441	120	8180	1.4			
	6.0	516	150	8180	1.1			
	5.0	578	180	8180	0.9			
	7.8	425	180	10320	1.8	HL80 - FW110 80B5	FM 80 A4	59
	5.8	513	240	10320	1.3			
	4.7	597	300	10320	1.0			
	7.5	462	120	10320	2.6	HL80 - FW110 80B5	FM 80 B6	59
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	HL80 - FW130 80B5	FM 80 B6	59	
3.0	858	300	13500	1.3				
<b>0.75</b>	18.7	280	75	6000	0.9	HL80 - FW75 80B5	FM 80 B4	58
	15.6	313	90	6375	1.0			
	15.6	327	90	7054	1.7	HL80 - FW90 80B5	FM 80 B4	58
	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	2.2	HL80 - FW110 80B5	FM 80 B4	59
	9.3	506	150	10320	1.7			
	7.8	580	180	10320	1.3			
	5.8	700	240	10320	0.9			
	12.4	393	73	9614	3.2	HL90 - FW110 90B5	FM 90 S6	59
	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	HL80 - FW130 80B5	FM 80 B4	59
	4.7	813	300	13500	1.1			
	12.4	399	73	12575	4.4	HL90 - FW130 90B5	FM 90 S6	59
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				
12.4	399	73	12575	4.4	HL90 - FW130 90B5			
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				
<b>1.1</b>	12.4	576	73	9614	2.2	HL90 - FW110 90B5	FM 90 L6	59
	9.3	746	96.8	10320	1.6			
	7.4	890	121	10320	1.2			
	6.2	1000	145.2	10320	1.0			


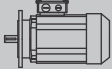

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$F_{r2}$ [N]	$f_s$			
<b>1.1</b>	19.3	392	73	8298	2.5	HL90 - FW110 90B5	FM 90 S4	59
	14.5	508	96.8	9133	1.8			
	11.6	599	121	9838	1.5	HL90 - FW110 90B5	FM 90 S4	59
	9.6	686	145.2	10320	1.1			
	7.2	828	193.6	10320	0.8			
	12.4	585	73	12575	3.0	HL90 - FW130 90B5	FM 90 L6	59
	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			
	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				
<b>1.5</b>	19.3	535	73	8298	1.9	HL90 - FW110 90B5	FM 90 L4	59
	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	HL90 - FW130 90B5	FM 90 L4	59
	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			
	<b>2.2</b>	38.6	398	73	6586			
28.9		516	96.8	7249	1.5			
23.1		617	121	7809	1.2			
38.6		409	73	8614	2.9	HL90 - FW130 90B5	FM 90 L2	59
28.9		545	96.8	9481	2.0			
23.1		654	121	10213	1.6			
19.3		752	145.2	10853	1.3			

### 8.3 FW / FW.. (IEC).. Performance Parameter

$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$F_{r2}$ [N]	$f_s$				
<b>0.12</b>	9.3	74	150	4350	1.8	FW/FW30/50 63B5/B14	FM 63 A4	60	
	7.0	94	200	4788	1.3				
	5.6	110	250	4840	1.0				
	4.7	112	300	4840	1.2				
	3.5	138	400	4840	0.9				
	2.8	160	500	4840	0.7				
	9.3	75	150	5686	2.8	FW/FW30/63 63B5/B14	FM 63 A4	60	
	7.0	95	200	6259	2.7				
	5.6	114	250	6270	2.0				
	4.7	117	300	6270	2.2				
	3.5	152	400	6270	1.7				
	2.8	168	500	6270	1.3				
	2.3	199	600	6270	1.1				
	1.9	217	750	6270	0.9				
	1.6	335	900	7380	1.2	FW/FW40/75 63B5/B14	FM 63 A4	61	
	1.2	411	1200	7380	0.9				
	0.8	470	1800	8180	0.9	FW/FW40/90 63B5/B14	FM 63 A4	61	
	0.6	593	2400	8180	0.9				
0.5	731	3000	10320	1.2	FW/FW50/110 63B5/B14	FM 63 A4	62		
0.4	884	4000	10320	1.0					
0.3	1023	5000	10320	0.8					
<b>0.18</b>	9.3	112	150	4350	1.2	FW/FW30/50 63B5/B14	FM 63 A4	60	
	7.0	141	200	4788	0.9				
	4.7	183	300	4840	0.8				
	9.3	113	150	5686	1.9	FW/FW30/63 63B5/B14	FM 63 A4	60	
	7.0	143	200	6259	1.8				
	5.6	171	250	6270	1.4				
	4.7	175	300	6270	1.5				
	3.5	216	400	6270	1.0				
	2.8	252	500	6270	0.8				
	2.3	336	600	7380	1.1	FW/FW40/75 63B5/B14	FM 63 B4	61	
	1.9	371	750	7380	0.9				
	1.6	419	900	7380	0.8				
	1.2	544	1200	8180	1.0	FW/FW40/90 63B5/B14	FM 63 B4	61	
	0.9	647	1500	8180	0.8				
	0.8	727	1800	10320	1.5	FW/FW50/110 63B5/B14	FM 63 B4	62	
	0.6	948	2400	10320	1.1				
	<b>0.25</b>	7.0	150	400	6270	1.4	FW/FW30/63 63B5/B14	FM 63 B2	60
		5.6	175	500	6270	1.2			



$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$F_{r2}$ [N]	$f_s$			
<b>0.25</b>	9.3	165	150	6712	2.6	FW/FW40/75 71B5/B14	FM 71 A4	61
	7.0	209	200	7380	2.0			
	5.6	250	250	7380	1.5			
	4.7	278	300	7380	1.6			
	3.5	321	400	7380	1.1			
	2.8	375	500	7380	0.8			
	2.3	488	600	8180	1.2	FW/FW40/90 71B5/B14	FM 71 A4	61
	1.9	553	750	8180	0.9			
	1.6	612	900	8180	0.8			
	1.2	776	1200	10320	1.3	FW/FW50/110 71B5/B14	FM 71 A4	62
	0.9	924	1500	10320	1.2			
	0.8	1010	1800	10320	1.1			
	0.6	1358	2400	13500	1.0	FW/FW63/130 71B5/B14	FM 71 A4	62
	0.5	1626	3000	13500	0.8			
	0.4	1910	4000	13500	0.6			
	0.3	2132	5000	13500	0.5			
	0.6	1702	2400	18000	1.6	FW/FW63/150 71B5/B14	FM 71 A4	63
	0.5	1998	3000	18000	1.2			
0.4	2453	4000	18000	0.9				
0.3	2749	5000	18000	0.8				
<b>0.37</b>	9.3	182	300	6270	1.3	FW/FW30/63 71B5/B14	FM 71 A2	60
	7.0	222	400	6270	1.0			
	9.3	245	150	6712	1.7	FW/FW40/75 71B5/B14	FM 71 B4	61
	7.0	309	200	7380	1.4			
	5.6	370	250	7380	1.0			
	4.7	383	300	7380	1.0			
	3.5	474	400	7380	0.7			
	4.7	406	300	8180	1.5	FW/FW40/90 71B5/B14	FM 71 B4	61
	3.5	505	400	8180	1.2			
	2.8	593	500	8180	0.9			
	2.3	722	600	8180	0.8			
	1.9	837	750	10320	1.3	FW/FW50/110 71B5/B14	FM 71 B4	62
	1.6	928	900	10320	1.1			
	1.2	1148	1200	10320	0.8			
	0.9	1699	1500	13500	1.0	FW/FW63/130 71B5/B14	FM 71 B4	62
	0.8	1918	1800	13500	0.9			
	0.6	2519	2400	18000	1.1	FW/FW63/150 71B5/B14	FM 71 B4	63
	0.5	2958	3000	18000	0.8			
<b>0.55</b>	9.3	305	300	8180	2.0	FW/FW40/90 71B5/B14	FM 71 B2	61
	7.0	375	400	8180	1.5			
	5.6	441	500	8180	1.2			
	9.3	382	150	7426	1.7	FW/FW50/90 80B5/B14	FM 80 A4	61
	7.0	490	200	8174	1.2			
	5.6	588	250	8180	1.0			
	4.7	656	300	8180	1.1			
	3.5	809	400	8180	0.8			



$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$F_{r2}$ [N]	$f_s$				
<b>0.55</b>	4.7	615	300	10320	1.9	FW/FW50/110 80B5/B14	FM 80 A4	62	
	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	FW/FW63/130 80B5/B14	FM 80 A4	62	
	1.9	1382	750	13500	1.2				
	1.2	2057	1200	13500	0.8				
	2.3	1248	600	18000	2.1	FW/FW63/150 80B5/B14	FM 80 A4	63	
	1.9	1465	750	18000	1.6				
	1.6	1849	900	18000	1.1				
	1.2	2229	1200	18000	1.2				
	0.6	3744	2400	18000	0.7				
	<b>0.75</b>	9.3	521	150	7426	1.3	FW/FW50/90 80B5/B14	FM 80 B4	61
		7.0	668	200	8174	0.9			
5.6		801	250	8180	0.7				
9.3		424	300	10320	2.8	FW/FW50/110 80B5/B14	FM 80 A2	62	
7.0		553	400	10320	2.1				
5.6		640	500	10320	1.6				
9.3		527	150	9384	1.8	FW/FW50/110 80B5/B14	FM 80 B4	62	
7.0		685	200	10320	1.7				
5.6		835	250	10320	1.4				
4.7		838	300	10320	1.3				
3.5		1105	400	10320	0.9				
9.3		527	150	9384	2.3	FW/FW63/110 80B5/B14	FM 80 B4	62	
7.0		685	200	10320	1.7				
5.6		835	250	10320	1.4				
4.7		895	300	10320	1.4				
3.5		1157	400	10320	1.0				
2.8		1573	500	10320	0.7				
2.3		1686	600	10320	0.8				
2.8		1305	500	13500	1.1	FW/FW63/130 80B5/B14	FM 80 B4	62	
2.3		1557	600	13500	1.0				
1.9		1772	750	13500	0.9				
1.6	2014	900	13500	0.8					
2.3	1702	600	18000	1.6	FW/FW63/150 80B5/B14	FM 80 B4	63		
1.9	1998	750	18000	1.2					
1.6	2521	900	18000	0.8					
1.2	3039	1200	18000	0.9					
<b>1.1</b>	9.3	621	300	10320	1.9	FW/FW50/110 80B5/B14	FM 80 B2	62	
	7.0	810	400	10320	1.4				
	5.6	938	500	10320	1.1				
	9.3	774	150	9384	1.5	FW/FW63/110 90B5/B14	FM 90 S4	62	
	7.0	1005	200	10320	1.1				
	5.6	1224	250	10320	1.0				
	4.7	1312	300	10320	1.0				



$P_{1n}$ [kW]	$n_2$ [r/min]	$M_{2n}$ [Nm]	$i$	$F_{r2}$ [N]	$f_s$							
<b>1.1</b>	4.7	1274	300	13500	1.3	FW/FW63/130 90B5/B14	FM 90 S4	62				
	3.5	1621	400	13500	1.0							
	2.8	1913	500	13500	0.8							
	<b>1.1</b>	9.3	771	150	18000	2.6	FW/FW63/150 90B5/B14	FM 90 S4	63			
		7.0	1005	200	18000	2.1						
		5.6	1224	250	18000	1.7						
		4.7	1456	300	18000	1.6						
		3.5	1723	400	18000	1.5						
		2.8	2024	500	18000	1.2						
		2.3	2496	600	18000	1.1						
1.9		2931	750	18000	0.8							
<b>1.5</b>		9.3	847	300	10320	1.4				FW/FW50/110 90B5/B14	FM 90 S2	62
		7.0	1105	400	10320	1.0						
	5.6	1279	500	10320	0.8							
	<b>1.5</b>	9.3	1055	150	9384	1.1	FW/FW63/110 90B5/B14	FM 90 L4	62			
		7.0	1371	200	10320	0.8						
		5.6	1669	250	10320	0.7						
		4.7	1789	300	10320	0.7						
	<b>1.5</b>	9.3	878	300	13500	1.9	FW/FW63/130 90B5/B14	FM 90 S2	62			
		7.0	1105	400	13500	1.4						
		5.6	1305	500	13500	1.1						
	<b>1.5</b>	9.3	1042	150	12274	1.5	FW/FW63/130 90B5/B14	FM 90 L4	62			
		7.0	1371	200	13500	1.2						
		5.6	1669	250	13500	0.9						
		4.7	1737	300	13500	1.0						
		3.5	2210	400	13500	0.7						
		3.5	2210	400	13500	0.7						
	<b>1.5</b>	9.3	1052	150	18000	1.9	FW/FW63/150 90B5/B14	FM 90 L4	63			
		7.0	1371	200	18000	1.5						
		5.6	1669	250	18000	1.2						
		4.7	1985	300	18000	1.2						
		3.5	2350	400	18000	1.1						
		2.8	2760	500	18000	0.8						
		2.3	3404	600	18000	0.8						
		2.3	3404	600	18000	0.8						







## 8.4 FW.. ISS Performance Parameter



$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{r2}$ [N]	$F_{r1}$ [N]		
<b>13</b>	2800	7.5	0.58	373.3	542	125	<b>FW 30 ISS</b>	<b>55</b>
<b>13</b>	2800	10	0.45	280	597	140		
<b>13</b>	2800	15	0.32	186.7	683	140		
<b>12</b>	2800	20	0.23	140	752	146		
<b>16</b>	2800	25	0.26	112	810	210		
<b>15</b>	2800	30	0.21	93.3	861	210		
<b>14</b>	2800	40	0.16	70	948	127		
<b>13</b>	2800	50	0.12	56	1021	128		
<b>12</b>	2800	60	0.10	46.7	1085	126		
<b>11</b>	2800	80	0.08	35	1194	130		
<b>28</b>	2800	7.5	1.2	373.3	1044	233	<b>FW 40 ISS</b>	<b>55</b>
<b>29</b>	2800	10	1.0	280	1149	272		
<b>31</b>	2800	15	0.72	186.7	1315	291		
<b>29</b>	2800	20	0.52	140	1447	204		
<b>28</b>	2800	25	0.42	112	1559	236		
<b>34</b>	2800	30	0.44	93.3	1657	350		
<b>31</b>	2800	40	0.32	70	1824	350		
<b>30</b>	2800	50	0.26	56	1964	350		
<b>28</b>	2800	60	0.21	46.7	2087	350		
<b>25</b>	2800	80	0.16	35	2298	350		
<b>23</b>	2800	100	0.12	28	2475	350		
<b>52</b>	2800	7.5	2.3	373.3	1433	324	<b>FW 50 ISS</b>	<b>55</b>
<b>54</b>	2800	10	1.8	280	1577	378		
<b>57</b>	2800	15	1.3	186.7	1805	399		
<b>53</b>	2800	20	0.95	140	1987	417		
<b>51</b>	2800	25	0.75	112	2140	482		
<b>64</b>	2800	30	0.81	93.3	2274	490		
<b>59</b>	2800	40	0.59	70	2503	490		
<b>53</b>	2800	50	0.45	56	2696	490		
<b>50</b>	2800	60	0.37	46.7	2865	490		
<b>45</b>	2800	80	0.27	35	3153	490		
<b>40</b>	2800	100	0.21	28	3397	490		
<b>93</b>	2800	7.5	4.0	373.3	1873	395		
<b>97</b>	2800	10	3.2	280	2061	463		
<b>103</b>	2800	15	2.3	186.7	2359	492		
<b>100</b>	2800	20	1.7	140	2597	538		
<b>92</b>	2800	25	1.3	112	2797	593		
<b>120</b>	2800	30	1.5	93.3	2973	700		
<b>108</b>	2800	40	1.1	70	3272	700		
<b>100</b>	2800	50	0.81	56	3524	700		
<b>95</b>	2800	60	0.67	46.7	3745	700		
<b>85</b>	2800	80	0.49	35	4122	700		
<b>74</b>	2800	100	0.37	28	4440	700		
<b>130</b>	2800	7.5	5.7	373.3	2210	560	<b>FW 75 ISS</b>	<b>55</b>
<b>145</b>	2800	10	4.8	280	2433	703		
<b>150</b>	2800	15	3.4	186.7	2785	727		
<b>160</b>	2800	20	2.8	140	3065	872		
<b>150</b>	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]				
<b>170</b>	2800	30	2.1	93.3	3509	980	<b>FW 75 ISS</b>	<b>55</b>		
<b>165</b>	2800	40	1.6	70	3862	980				
<b>150</b>	2800	50	1.2	56	4160	980				
<b>145</b>	2800	60	1.0	46.7	4421	980				
<b>130</b>	2800	80	0.72	35	4865	980				
<b>120</b>	2800	100	0.57	28	5241	980				
<b>210</b>	2800	7.5	9.0	373.3	2446	715	<b>FW 90 ISS</b>	<b>55</b>		
<b>235</b>	2800	10	7.7	280	2692	900				
<b>270</b>	2800	15	6.0	186.7	3081	1034				
<b>260</b>	2800	20	4.4	140	3391	1120				
<b>250</b>	2800	25	3.4	112	3653	1270				
<b>310</b>	2800	30	3.7	93.3	3882	1270				
<b>275</b>	2800	40	2.6	70	4273	1270				
<b>265</b>	2800	50	2.0	56	4603	1270				
<b>245</b>	2800	60	1.6	46.7	4891	1270				
<b>225</b>	2800	80	1.2	35	5383	1270				
<b>200</b>	2800	100	0.9	28	5799	1270				
<b>391</b>	2800	7.5	16.8	373.3	3090	950	<b>FW 110 ISS</b>	<b>55</b>		
<b>437</b>	2800	10	14.2	280	3401	1194				
<b>489</b>	2800	15	10.9	186.7	3893	1337				
<b>483</b>	2800	20	8.1	140	4285	1485				
<b>506</b>	2800	25	6.9	112	4616	1700				
<b>552</b>	2800	30	6.5	93.3	4905	1700				
<b>529</b>	2800	40	4.8	70	5399	1700				
<b>495</b>	2800	50	3.7	56	5816	1700				
<b>473</b>	2800	60	3.0	46.7	6181	1700				
<b>399</b>	2800	80	2.0	35	6803	1700				
<b>368</b>	2800	100	1.5	28	7328	1700				
<b>520</b>	2800	7.5	22.3	373.3	4042	1190			<b>FW 130 ISS</b>	<b>55</b>
<b>580</b>	2800	10	18.9	280	4449	1493				
<b>670</b>	2800	15	14.7	186.7	5092	1725				
<b>660</b>	2800	20	11.0	140	5605	1912				
<b>670</b>	2800	25	9.1	112	6038	2100				
<b>770</b>	2800	30	9.0	93.3	6416	2100				
<b>730</b>	2800	40	6.5	70	7062	2100				
<b>700</b>	2800	50	5.1	56	7607	2100				
<b>640</b>	2800	60	4.0	46.7	8084	2100				
<b>590</b>	2800	80	2.9	35	8897	2100				
<b>520</b>	2800	100	2.2	28	9584	2100				
<b>840</b>	2800	7.5	35.7	373.3	5526	1550	<b>FW 150 ISS</b>	<b>55</b>		
<b>890</b>	2800	10	28.4	280	6082	1848				
<b>910</b>	2800	15	19.8	186.7	6962	1889				
<b>980</b>	2800	20	16.0	140	7663	2289				
<b>890</b>	2800	25	11.9	112	8254	2494				
<b>920</b>	2800	30	10.3	93.3	8771	2800				
<b>1200</b>	2800	40	10.5	70	9654	2800				
<b>1100</b>	2800	50	8.0	56	10400	2800				
<b>990</b>	2800	60	6.1	46.7	11051	2800				
<b>920</b>	2800	80	4.5	35	12163	2800				
<b>810</b>	2800	100	3.3	28	13103	2800				



$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{R2}$ [N]	$F_{R1}$ [N]				
<b>18</b>	1400	7.5	0.4	186.7	683	150	<b>FW 30 ISS</b>	<b>55</b>		
<b>18</b>	1400	10	0.3	140	752	169				
<b>18</b>	1400	15	0.2	93.3	861	169				
<b>18</b>	1400	20	0.2	70	948	190				
<b>21</b>	1400	25	0.2	56	1021	210				
<b>20</b>	1400	30	0.2	46.7	1085	210				
<b>18</b>	1400	40	0.1	35	1194	210				
<b>17</b>	1400	50	0.1	28	1286	210				
<b>16</b>	1400	60	0.1	23.3	1367	210				
<b>13</b>	1400	80	0.1	17.5	1504	210				
<b>40</b>	1400	7.5	0.9	186.7	1315	294	<b>FW 40 ISS</b>	<b>55</b>		
<b>40</b>	1400	10	0.7	140	1447	331				
<b>40</b>	1400	15	0.5	93.3	1657	331				
<b>39</b>	1400	20	0.4	70	1824	350				
<b>38</b>	1400	25	0.3	56	1964	350				
<b>45</b>	1400	30	0.3	46.7	2087	350				
<b>41</b>	1400	40	0.2	35	2298	350				
<b>39</b>	1400	50	0.2	28	2475	350				
<b>36</b>	1400	60	0.2	23.3	2630	350				
<b>33</b>	1400	80	0.1	17.5	2895	350				
<b>29</b>	1400	100	0.1	14	3118	350				
<b>71</b>	1400	7.5	1.6	186.7	1805	401			<b>FW 50 ISS</b>	<b>55</b>
<b>72</b>	1400	10	1.2	140	1987	490				
<b>74</b>	1400	15	0.9	93.3	2274	490				
<b>73</b>	1400	20	0.7	70	2503	490				
<b>70</b>	1400	25	0.5	56	2696	490				
<b>84</b>	1400	30	0.6	46.7	2865	490				
<b>76</b>	1400	40	0.4	35	3153	490				
<b>73</b>	1400	50	0.3	28	3397	490				
<b>68</b>	1400	60	0.3	23.3	3610	490				
<b>65</b>	1400	80	0.2	17.5	3973	490				
<b>55</b>	1400	100	0.2	14	4280	490				
<b>128</b>	1400	7.5	2.8	186.7	2359	500	<b>FW 63 ISS</b>	<b>55</b>		
<b>130</b>	1400	10	2.2	140	2597	571				
<b>140</b>	1400	15	1.7	93.3	2973	615				
<b>135</b>	1400	20	1.2	70	3272	667				
<b>130</b>	1400	25	1.0	56	3524	700				
<b>160</b>	1400	30	1.1	46.7	3745	700				
<b>145</b>	1400	40	0.8	35	4122	700				
<b>135</b>	1400	50	0.6	28	4440	700				
<b>130</b>	1400	60	0.5	23.3	4719	700				
<b>122</b>	1400	80	0.4	17.5	5193	700				
<b>118</b>	1400	100	0.3	14	5595	700				
<b>185</b>	1400	7.5	4.1	186.7	2785	700			<b>FW 75 ISS</b>	<b>55</b>
<b>195</b>	1400	10	3.3	140	3065	830				
<b>200</b>	1400	15	2.3	93.3	3509	851				
<b>210</b>	1400	20	1.9	70	3862	980				
<b>200</b>	1400	25	1.5	56	4160	980				
<b>230</b>	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]		
<b>220</b>	1400	40	1.1	35	4865	980	<b>FW 75 ISS</b>	<b>55</b>
<b>210</b>	1400	50	0.9	28	5241	980		
<b>200</b>	1400	60	0.8	23.3	5569	980		
<b>190</b>	1400	80	0.6	17.5	6130	980		
<b>180</b>	1400	100	0.5	14	6603	980		
<b>290</b>	1400	7.5	6.4	186.7	3081	900	<b>FW 90 ISS</b>	<b>55</b>
<b>310</b>	1400	10	5.2	140	3391	1082		
<b>360</b>	1400	15	4.1	93.3	3882	1257		
<b>355</b>	1400	20	3.1	70	4273	1270		
<b>340</b>	1400	25	2.5	56	4603	1270		
<b>410</b>	1400	30	2.6	46.7	4891	1270		
<b>360</b>	1400	40	1.8	35	5383	1270		
<b>340</b>	1400	50	1.4	28	5799	1270		
<b>320</b>	1400	60	1.1	23.3	6163	1270		
<b>285</b>	1400	80	0.8	17.5	6783	1270		
<b>270</b>	1400	100	0.7	14	7306	1270		
<b>552</b>	1400	7.5	12.1	186.7	3893	1200		
<b>598</b>	1400	10	10.0	140	4285	1463		
<b>656</b>	1400	15	7.5	93.3	4905	1604		
<b>644</b>	1400	20	5.6	70	5399	1700		
<b>679</b>	1400	25	4.8	56	5816	1700		
<b>725</b>	1400	30	4.5	46.7	6181	1700		
<b>702</b>	1400	40	3.3	35	6803	1700		
<b>660</b>	1400	50	2.6	28	7328	1700		
<b>616</b>	1400	60	2.1	23.3	7787	1700		
<b>515</b>	1400	80	1.4	17.5	8571	1700		
<b>483</b>	1400	100	1.1	14	9232	1700		
<b>750</b>	1400	7.5	16.3	186.7	5092	1500	<b>FW 130 ISS</b>	<b>55</b>
<b>820</b>	1400	10	13.5	140	5605	1845		
<b>920</b>	1400	15	10.3	93.3	6416	2070		
<b>910</b>	1400	20	7.8	70	7062	2100		
<b>930</b>	1400	25	6.5	56	7607	2100		
<b>1040</b>	1400	30	6.4	46.7	8084	2100		
<b>1050</b>	1400	40	4.9	35	8897	2100		
<b>980</b>	1400	50	3.8	28	9584	2100		
<b>900</b>	1400	60	3.0	23.3	10185	2100		
<b>840</b>	1400	80	2.3	17.5	11210	2100		
<b>740</b>	1400	100	1.7	14	12076	2100		
<b>1200</b>	1400	7.5	25.8	186.7	6962	1950		
<b>1240</b>	1400	10	20.2	140	7663	2267		
<b>1250</b>	1400	15	13.9	93.3	8771	2285		
<b>1300</b>	1400	20	11.0	70	9654	2674		
<b>1200</b>	1400	25	8.3	56	10400	2800		
<b>1200</b>	1400	30	7.0	46.7	11051	2800		
<b>1550</b>	1400	40	7.2	35	12163	2800		
<b>1400</b>	1400	50	5.3	28	13103	2800		
<b>1260</b>	1400	60	4.2	23.3	13924	2800		
<b>1150</b>	1400	80	3.1	17.5	15325	2800		
<b>1000</b>	1400	100	2.3	14	16508	2800		

$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{R2}$ [N]	$F_{R1}$ [N]		
20	900	7.5	0.30	120	792	175	<b>FW 30 ISS</b>	<b>55</b>
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	<b>FW 40 ISS</b>	<b>55</b>
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		
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	<b>FW 63 ISS</b>	<b>55</b>
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		
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		

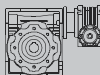

$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{R2}$ [N]	$F_{R1}$ [N]				
<b>240</b>	900	40	0.84	22.5	5637	980	<b>FW 75 ISS</b>	<b>55</b>		
<b>220</b>	900	50	0.66	18	6073	980				
<b>210</b>	900	60	0.55	15	6453	980				
<b>200</b>	900	80	0.43	11.3	7103	980				
<b>190</b>	900	100	0.36	9	7380	980				
<b>340</b>	900	7.5	4.9	120	3570	1040	<b>FW 90 ISS</b>	<b>55</b>		
<b>370</b>	900	10	4.1	90	3929	1270				
<b>420</b>	900	15	3.2	60	4498	1270				
<b>390</b>	900	20	2.3	45	4951	1270				
<b>370</b>	900	25	1.8	36	5333	1270				
<b>460</b>	900	30	1.9	30	5667	1270				
<b>410</b>	900	40	1.4	22.5	6238	1270				
<b>390</b>	900	50	1.1	18	6719	1270				
<b>350</b>	900	60	0.86	15	7140	1270				
<b>315</b>	900	80	0.63	11.3	7859	1270				
<b>280</b>	900	100	0.49	9	8180	1270				
<b>650</b>	900	7.5	9.3	120	4511	1390			<b>FW 110 ISS</b>	<b>55</b>
<b>713</b>	900	10	7.7	90	4965	1700				
<b>759</b>	900	15	5.7	60	5684	1700				
<b>725</b>	900	20	4.1	45	6256	1700				
<b>759</b>	900	25	3.5	36	6739	1700				
<b>840</b>	900	30	3.5	30	7161	1700				
<b>794</b>	900	40	2.5	22.5	7882	1700				
<b>748</b>	900	50	2.0	18	8491	1700				
<b>682</b>	900	60	1.6	15	9023	1700				
<b>567</b>	900	80	1.1	11.3	9931	1700				
<b>515</b>	900	100	0.82	9	10320	1700				
<b>880</b>	900	7.5	12.4	120	5901	1740	<b>FW 130 ISS</b>	<b>55</b>		
<b>960</b>	900	10	10.4	90	6494	2100				
<b>1060</b>	900	15	7.8	60	7434	2100				
<b>1040</b>	900	20	5.9	45	8182	2100				
<b>1050</b>	900	25	4.9	36	8814	2100				
<b>1170</b>	900	30	4.8	30	9366	2100				
<b>1100</b>	900	40	3.5	22.5	10309	2100				
<b>1050</b>	900	50	2.8	18	11105	2100				
<b>940</b>	900	60	2.1	15	11801	2100				
<b>860</b>	900	80	1.6	11.3	12989	2100				
<b>780</b>	900	100	1.2	9	13500	2100				
<b>1400</b>	900	7.5	19.6	120	8067	2270			<b>FW 150 ISS</b>	<b>55</b>
<b>1480</b>	900	10	15.7	90	8878	2700				
<b>1450</b>	900	15	10.5	60	10163	2645				
<b>1500</b>	900	20	8.3	45	11186	2800				
<b>1380</b>	900	25	6.2	36	12050	2800				
<b>1400</b>	900	30	5.4	30	12805	2800				
<b>1800</b>	900	40	5.6	22.5	14094	2800				
<b>1600</b>	900	50	4.1	18	15182	2800				
<b>1440</b>	900	60	3.2	15	16133	2800				
<b>1300</b>	900	80	2.3	11.3	17757	2800				
<b>1150</b>	900	100	1.8	9	18000	2800				

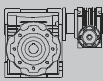

$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{R2}$ [N]	$F_{R1}$ [N]		
<b>24</b>	500	7.5	0.21	66.7	963	210	<b>FW 30 ISS</b>	<b>55</b>
<b>24</b>	500	10	0.16	50	1060	210		
<b>24</b>	500	15	0.12	33.3	1213	210		
<b>23</b>	500	20	0.09	25	1336	210		
<b>29</b>	500	25	0.10	20	1439	210		
<b>26</b>	500	30	0.08	16.7	1529	210		
<b>23</b>	500	40	0.06	12.5	1683	210		
<b>21</b>	500	50	0.05	10	1813	210		
<b>19</b>	500	60	0.04	8.3	1830	210		
<b>17</b>	500	80	0.03	6.3	1830	210		
<b>54</b>	500	7.5	0.45	66.7	1853	350	<b>FW 40 ISS</b>	<b>55</b>
<b>54</b>	500	10	0.35	50	2040	350		
<b>55</b>	500	15	0.26	33.3	2335	350		
<b>52</b>	500	20	0.19	25	2570	350		
<b>49</b>	500	25	0.15	20	2769	350		
<b>58</b>	500	30	0.16	16.7	2942	350		
<b>53</b>	500	40	0.12	12.5	3238	350		
<b>49</b>	500	50	0.10	10	3488	350		
<b>46</b>	500	60	0.08	8.3	3490	350		
<b>40</b>	500	80	0.06	6.3	3490	350		
<b>36</b>	500	100	0.05	5	3490	350		
<b>103</b>	500	7.5	0.87	66.7	2544	490		
<b>103</b>	500	10	0.67	50	2800	490		
<b>103</b>	500	15	0.47	33.3	3205	490		
<b>93</b>	500	20	0.33	25	3528	490		
<b>91</b>	500	25	0.27	20	3800	490		
<b>108</b>	500	30	0.30	16.7	4038	490		
<b>98</b>	500	40	0.22	12.5	4445	490		
<b>91</b>	500	50	0.17	10	4788	490		
<b>83</b>	500	60	0.14	8.3	4840	490		
<b>75</b>	500	80	0.11	6.3	4840	490		
<b>65</b>	500	100	0.09	5	4840	490		
<b>184</b>	500	7.5	1.5	66.7	3325	700	<b>FW 63 ISS</b>	<b>55</b>
<b>185</b>	500	10	1.2	50	3660	700		
<b>187</b>	500	15	0.85	33.3	4190	700		
<b>178</b>	500	20	0.63	25	4611	700		
<b>164</b>	500	25	0.48	20	4967	700		
<b>200</b>	500	30	0.53	16.7	5279	700		
<b>185</b>	500	40	0.40	12.5	5810	700		
<b>173</b>	500	50	0.32	10	6259	700		
<b>160</b>	500	60	0.26	8.3	6270	700		
<b>137</b>	500	80	0.19	6.3	6270	700		
<b>128</b>	500	100	0.16	5	6270	700		
<b>260</b>	500	7.5	2.2	66.7	3925	980		
<b>270</b>	500	10	1.7	50	4320	980		
<b>280</b>	500	15	1.3	33.3	4945	980		
<b>285</b>	500	20	0.99	25	5443	980		
<b>255</b>	500	25	0.74	20	5863	980		
<b>300</b>	500	30	0.77	16.7	6231	980		

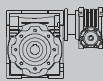

$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{R2}$ [N]	$F_{R1}$ [N]				
<b>280</b>	500	40	0.58	12.5	6858	980	<b>FW 75 ISS</b>	<b>55</b>		
<b>250</b>	500	50	0.44	10	7380	980				
<b>240</b>	500	60	0.38	8.3	7380	980				
<b>215</b>	500	80	0.28	6.3	7380	980				
<b>210</b>	500	100	0.24	5	7380	980				
<b>410</b>	500	7.5	3.3	66.7	4343	1270	<b>FW 90 ISS</b>	<b>55</b>		
<b>435</b>	500	10	2.7	50	4780	1270				
<b>490</b>	500	15	2.1	33.3	5472	1270				
<b>470</b>	500	20	1.6	25	6022	1270				
<b>440</b>	500	25	1.2	20	6487	1270				
<b>550</b>	500	30	1.4	16.7	6894	1270				
<b>480</b>	500	40	0.94	12.5	7588	1270				
<b>450</b>	500	50	0.75	10	8174	1270				
<b>400</b>	500	60	0.58	8.3	8180	1270				
<b>365</b>	500	80	0.45	6.3	8180	1270				
<b>330</b>	500	100	0.35	5	8180	1270				
<b>794</b>	500	7.5	6.4	66.7	5488	1700			<b>FW 110 ISS</b>	<b>55</b>
<b>851</b>	500	10	5.2	50	6040	1700				
<b>909</b>	500	15	3.9	33.3	6914	1700				
<b>863</b>	500	20	2.8	25	7610	1700				
<b>909</b>	500	25	2.4	20	8198	1700				
<b>1000</b>	500	30	2.4	16.7	8711	1700				
<b>932</b>	500	40	1.7	12.5	9588	1700				
<b>880</b>	500	50	1.4	10	10320	1700				
<b>781</b>	500	60	1.1	8.3	10320	1700				
<b>662</b>	500	80	0.75	6.3	10320	1700				
<b>599</b>	500	100	0.58	5	10320	1700				
<b>1080</b>	500	7.5	8.7	66.7	7178	2100	<b>FW 130 ISS</b>	<b>55</b>		
<b>1160</b>	500	10	7.1	50	7900	2100				
<b>1300</b>	500	15	5.5	33.3	9043	2100				
<b>1230</b>	500	20	4.0	25	9953	2100				
<b>1200</b>	500	25	3.2	20	10722	2100				
<b>1400</b>	500	30	3.4	16.7	11394	2100				
<b>1300</b>	500	40	2.4	12.5	12540	2100				
<b>1220</b>	500	50	1.9	10	13500	2100				
<b>1070</b>	500	60	1.5	8.3	13500	2100				
<b>970</b>	500	80	1.1	6.3	13500	2100				
<b>860</b>	500	100	0.83	5	13500	2100				
<b>1700</b>	500	7.5	13.5	66.7	9812	2800			<b>FW 150 ISS</b>	<b>55</b>
<b>1780</b>	500	10	10.7	50	10800	2800				
<b>1730</b>	500	15	7.2	33.3	12363	2800				
<b>1820</b>	500	20	5.8	25	13607	2800				
<b>1630</b>	500	25	4.3	20	14658	2800				
<b>1670</b>	500	30	3.7	16.7	15576	2800				
<b>2120</b>	500	40	3.4	12.5	17144	2800				
<b>1870</b>	500	50	2.8	10	18000	2800				
<b>1680</b>	500	60	2.3	8.3	18000	2800				
<b>1530</b>	500	80	1.7	6.3	18000	2800				
<b>1350</b>	500	100	1.29	5	18000	2800				



### 8.5 FW / FW.. ISS Performance Parameter

$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{r2}$ [N]	$F_{r1}$ [N]		
<b>73</b>	1400	300	0.07	4.7	3490	210	<b>FW/FW 30/40 ISS</b>	<b>63</b>
<b>65</b>	1400	400	0.06	3.5	3490	210		
<b>61</b>	1400	500	0.04	2.8	3490	210		
<b>73</b>	1400	600	0.05	2.3	3490	210		
<b>73</b>	1400	750	0.04	1.9	3490	210		
<b>73</b>	1400	900	0.04	1.6	3490	210		
<b>65</b>	1400	1200	0.03	1.2	3490	210		
<b>73</b>	1400	1500	0.03	0.9	3490	210		
<b>73</b>	1400	1800	0.02	0.8	3490	210		
<b>65</b>	1400	2400	0.02	0.58	3490	210		
<b>60</b>	1400	3200	0.01	0.43	3490	210		
<b>48</b>	1400	4000	0.01	0.35	3490	210		
<b>43</b>	1400	5000	0.01	0.28	3490	210		
<b>145</b>	1400	300	0.16	4.7	4840	210	<b>FW/FW 30/50 ISS</b>	<b>63</b>
<b>124</b>	1400	400	0.11	3.5	4840	210		
<b>120</b>	1400	500	0.09	2.8	4840	210		
<b>145</b>	1400	600	0.09	2.3	4840	210		
<b>145</b>	1400	750	0.08	1.9	4840	210		
<b>145</b>	1400	900	0.07	1.6	4840	210		
<b>145</b>	1400	1200	0.05	1.2	4840	210		
<b>145</b>	1400	1500	0.05	0.93	4840	210		
<b>145</b>	1400	1800	0.05	0.78	4840	210		
<b>124</b>	1400	2400	0.03	0.6	4840	210		
<b>120</b>	1400	3000	0.03	0.5	4840	210		
<b>82</b>	1400	4000	0.02	0.35	4840	210		
<b>79</b>	1400	5000	0.02	0.29	4840	210		
<b>255</b>	1400	300	0.24	4.7	6270	210	<b>FW/FW 30/63 ISS</b>	<b>63</b>
<b>230</b>	1400	400	0.19	3.5	6270	210		
<b>216</b>	1400	500	0.15	2.8	6270	210		
<b>230</b>	1400	600	0.14	2.3	6270	210		
<b>216</b>	1400	750	0.12	1.9	6270	210		
<b>198</b>	1400	900	0.09	1.6	6270	210		
<b>230</b>	1400	1200	0.09	1.2	6270	210		
<b>216</b>	1400	1500	0.08	0.93	6270	210		
<b>198</b>	1400	1800	0.06	0.78	6270	210		
<b>230</b>	1400	2400	0.06	0.58	6270	210		
<b>216</b>	1400	3000	0.05	0.47	6270	210		
<b>172</b>	1400	4000	0.04	0.35	6270	210		
<b>150</b>	1400	5000	0.03	0.28	6270	210		
<b>390</b>	1400	300	0.38	4.7	7380	350	<b>FW/FW 40/75 ISS</b>	<b>63</b>
<b>360</b>	1400	400	0.28	3.5	7380	350		
<b>320</b>	1400	500	0.21	2.8	7380	350		
<b>390</b>	1400	600	0.21	2.3	7380	350		
<b>390</b>	1400	750	0.19	1.9	7380	350		
<b>390</b>	1400	900	0.17	1.6	7380	350		
<b>360</b>	1400	1200	0.13	1.2	7380	350		
<b>390</b>	1400	1500	0.12	0.93	7380	350		
<b>390</b>	1400	1800	0.11	0.78	7380	350		
<b>360</b>	1400	2400	0.08	0.58	7380	350		
<b>320</b>	1400	3000	0.06	0.47	7380	350		
<b>250</b>	1400	4000	0.04	0.35	7380	350		
<b>230</b>	1400	5000	0.03	0.28	7380	350		

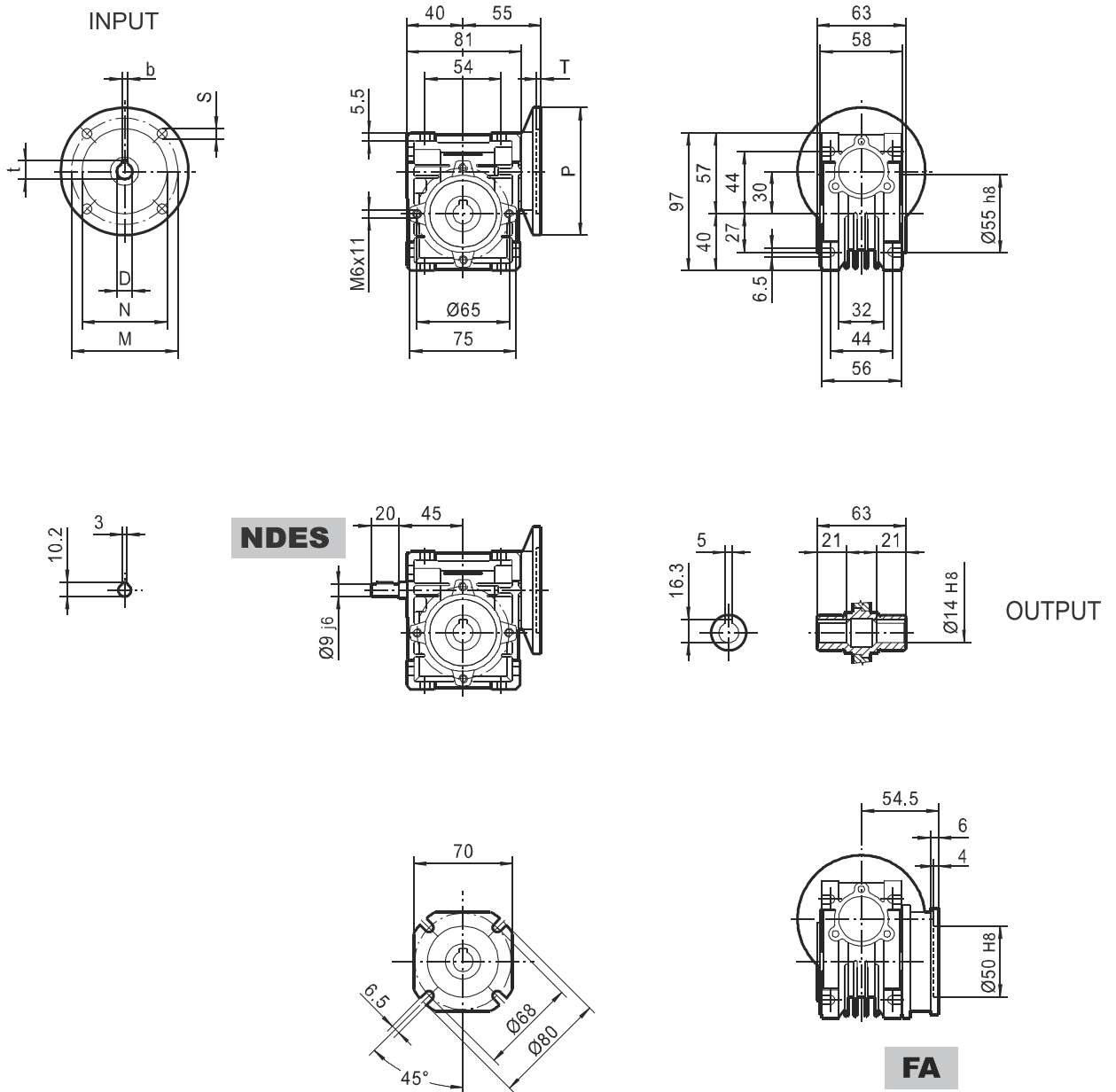
$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{R2}$ [N]	$F_{R1}$ [N]		
<b>610</b>	1400	300	0.56	4.7	8180	350	<b>FW/FW 40/90 ISS</b>	<b>63</b>
<b>610</b>	1400	400	0.45	3.5	8180	350		
<b>560</b>	1400	500	0.35	2.8	8180	350		
<b>610</b>	1400	600	0.31	2.3	8180	350		
<b>560</b>	1400	750	0.25	1.9	8180	350		
<b>505</b>	1400	900	0.21	1.6	8180	350		
<b>610</b>	1400	1200	0.20	1.2	8180	350		
<b>560</b>	1400	1500	0.16	0.93	8180	350		
<b>505</b>	1400	1800	0.13	0.78	8180	350		
<b>610</b>	1400	2400	0.12	0.58	8180	350		
<b>560</b>	1400	3000	0.10	0.47	8180	350		
<b>460</b>	1400	4000	0.07	0.35	8180	350		
<b>410</b>	1400	5000	0.05	0.28	8180	350		
<b>700</b>	1400	300	0.59	4.7	8180	490	<b>FW/FW 50/90 ISS</b>	<b>63</b>
<b>610</b>	1400	400	0.41	3.5	8180	490		
<b>570</b>	1400	500	0.29	2.8	8180	490		
<b>700</b>	1400	600	0.32	2.3	8180	490		
<b>700</b>	1400	750	0.27	1.9	8180	490		
<b>700</b>	1400	900	0.23	1.6	8180	490		
<b>700</b>	1400	1200	0.19	1.2	8180	490		
<b>700</b>	1400	1500	0.16	0.9	8180	490		
<b>700</b>	1400	1800	0.14	0.8	8180	490		
<b>610</b>	1400	2400	0.10	0.6	8180	490		
<b>560</b>	1400	3000	0.08	0.5	8180	490		
<b>560</b>	1400	4000	0.07	0.4	8180	490		
<b>560</b>	1400	5000	0.06	0.3	8180	490		
<b>1265</b>	1400	300	1.06	4.7	10320	490	<b>FW/FW 50/110 ISS</b>	<b>63</b>
<b>1185</b>	1400	400	0.77	3.5	10320	490		
<b>1173</b>	1400	500	0.60	2.8	10320	490		
<b>1265</b>	1400	600	0.54	2.3	10320	490		
<b>1265</b>	1400	750	0.48	1.9	10320	490		
<b>1265</b>	1400	900	0.42	1.6	10320	490		
<b>1265</b>	1400	1200	0.31	1.2	10320	490		
<b>1265</b>	1400	1500	0.29	0.93	10320	490		
<b>1265</b>	1400	1800	0.26	0.78	10320	490		
<b>1185</b>	1400	2400	0.19	0.58	10320	490		
<b>1100</b>	1400	3000	0.14	0.47	10320	490		
<b>1100</b>	1400	4000	0.12	0.35	10320	490		
<b>1100</b>	1400	5000	0.10	0.28	10320	490		
<b>1196</b>	1400	150	1.70	9.3	9384	595	<b>FW/FW 63/110 ISS</b>	<b>63</b>
<b>1139</b>	1400	200	1.25	7.0	10320	595		
<b>1173</b>	1400	250	1.05	5.6	10320	595		
<b>1265</b>	1400	300	1.06	4.7	10320	595		
<b>1185</b>	1400	400	0.77	3.5	10320	595		
<b>1173</b>	1400	500	0.56	2.8	10320	700		
<b>1265</b>	1400	600	0.56	2.3	10320	700		
<b>1265</b>	1400	750	0.47	1.9	10320	700		
<b>1265</b>	1400	900	0.41	1.6	10320	700		
<b>1265</b>	1400	1200	0.32	1.2	10320	700		
<b>1265</b>	1400	1500	0.28	0.9	10320	700		
<b>1265</b>	1400	1800	0.24	0.8	10320	700		
<b>1185</b>	1400	2400	0.18	0.6	10320	700		
<b>1100</b>	1400	3000	0.14	0.5	10320	700		
<b>1100</b>	1400	4000	0.11	0.4	10320	700		
<b>1100</b>	1400	5000	0.10	0.3	10320	700		

$M_{2n}$ [Nm]	$n_1$ [r/min]	$i$	$P_{1n}$ [kW]	$n_2$ [r/min]	$F_{r2}$ [N]	$F_{r1}$ [N]		
<b>1584</b>	1400	150	2.28	9.3	12274	700	<b>FW/FW 63/130 ISS</b>	<b>63</b>
<b>1600</b>	1400	200	1.75	7.0	13500	700		
<b>1530</b>	1400	250	1.37	5.6	13500	700		
<b>1760</b>	1400	300	1.5	4.7	13500	700		
<b>1650</b>	1400	400	1.1	3.5	13500	700		
<b>1550</b>	1400	500	0.89	2.8	13500	700		
<b>1650</b>	1400	600	0.79	2.3	13500	700		
<b>1760</b>	1400	750	0.75	1.9	13500	700		
<b>1760</b>	1400	900	0.66	1.6	13500	700		
<b>1650</b>	1400	1200	0.51	1.2	13500	700		
<b>1760</b>	1400	1500	0.45	0.93	13500	700		
<b>1760</b>	1400	1800	0.41	0.78	13500	700		
<b>1650</b>	1400	2400	0.30	0.58	13500	700		
<b>1550</b>	1400	3000	0.24	0.47	13500	700		
<b>1550</b>	1400	4000	0.16	0.35	13500	700		
<b>1550</b>	1400	5000	0.13	0.28	13500	700		
<b>1971</b>	1400	150	2.81	9.3	18000	500	<b>FW/FW 63/150 ISS</b>	<b>63</b>
<b>2084</b>	1400	200	2.28	7.0	18000	595		
<b>2050</b>	1400	250	1.84	5.6	18000	595		
<b>2312</b>	1400	300	1.75	4.7	18000	660		
<b>2670</b>	1400	400	1.70	3.5	18000	595		
<b>2330</b>	1400	500	1.27	2.8	18000	595		
<b>2670</b>	1400	600	1.18	2.3	18000	660		
<b>2330</b>	1400	750	0.87	1.9	18000	660		
<b>2100</b>	1400	900	0.62	1.6	18000	700		
<b>2670</b>	1400	1200	0.66	1.2	18000	700		
<b>2100</b>	1400	1800	0.37	0.8	18000	700		
<b>2670</b>	1400	2400	0.39	0.6	18000	700		
<b>2330</b>	1400	3000	0.29	0.5	18000	700		
<b>2330</b>	1400	4000	0.24	0.4	18000	700		
<b>2330</b>	1400	5000	0.21	0.3	18000	700		

## 9. OUTLINE DIMENSION

### 9.1 FW.. Outline dimension

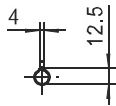
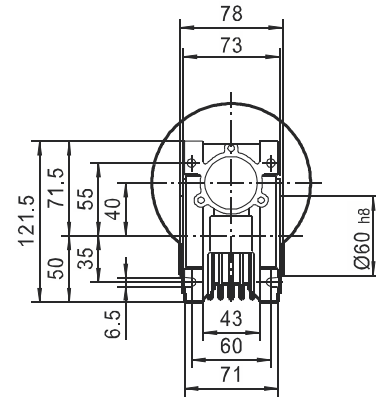
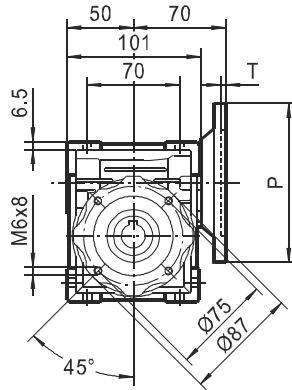
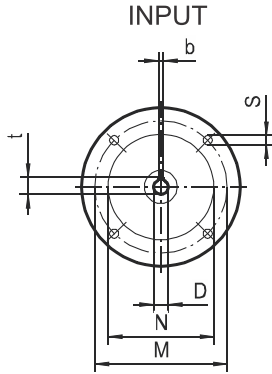
#### FW30..(IEC)



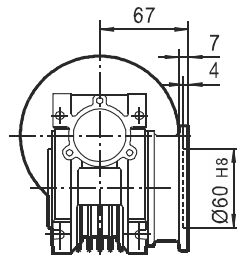
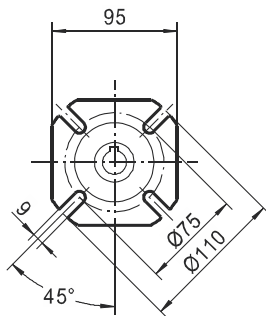
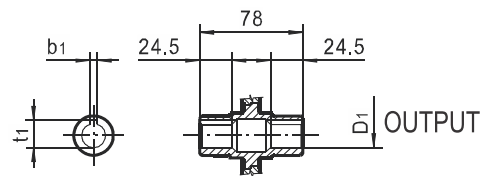
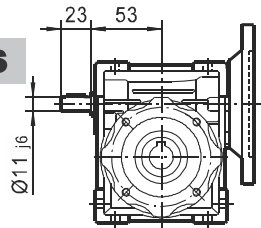
IEC	$D_{E8}$	$t$	$b$	$P$	$M$	$N$	$S$	$T$
63B5	11	12.8	4	140	115	95	9	5
63B14	11	12.8	4	90	75	60	5.5	4

FW30 Gear Box Weight  $\approx$  1.3 kg  
(Without Flange)

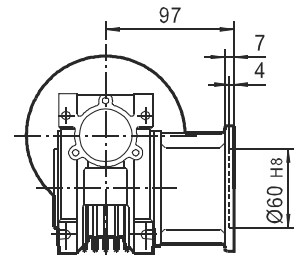
## FW40..(IEC)



**NDES**



**FA**

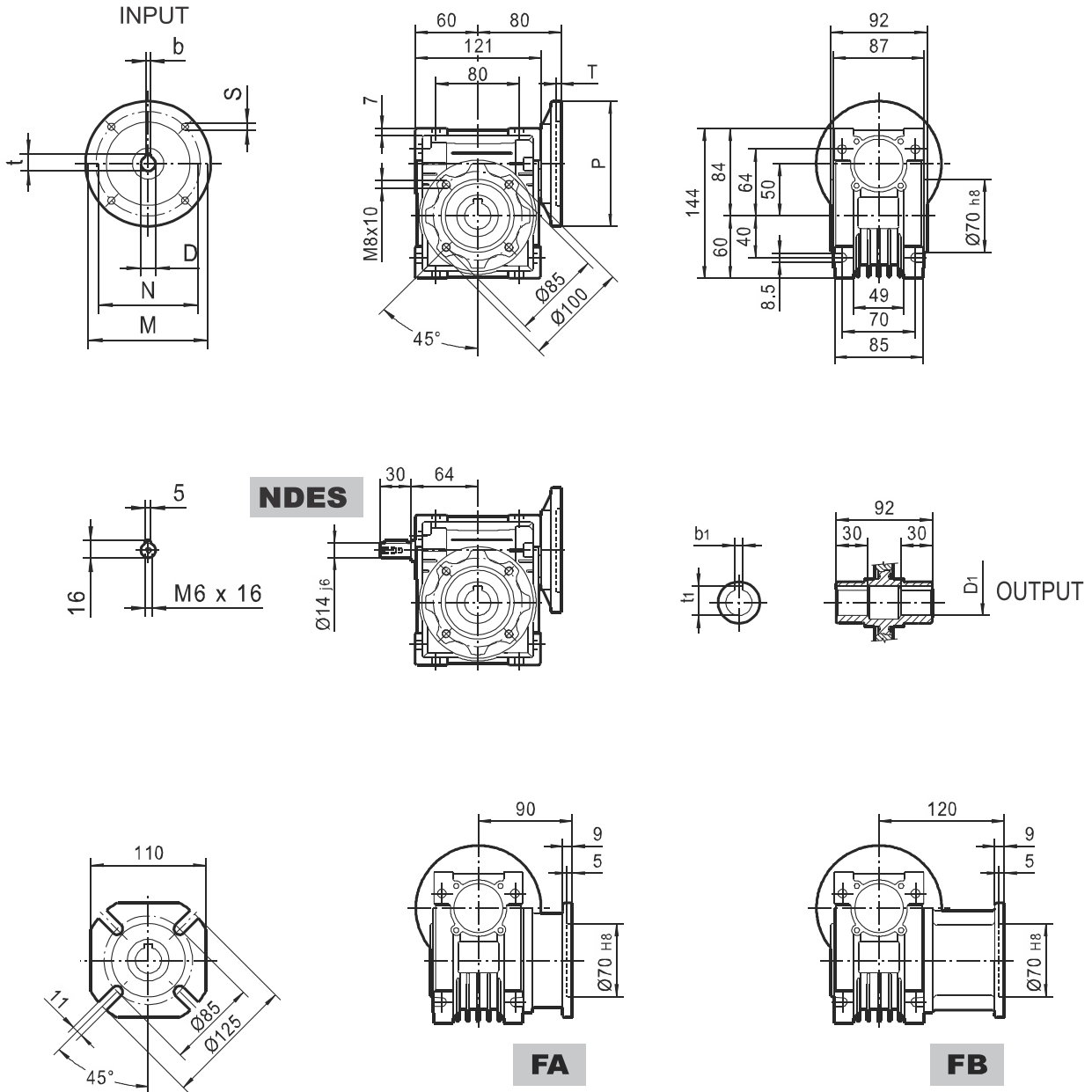


**FB**

IEC	DE8	t	b	P	M	N	S	T	D1 H8	b1	t1
63B5	11	12.8	4	140	115	95	9	5	18	6	20.8
63B14	11	12.8	4	90	75	60	5.5	4			
71B5	14	16.3	5	160	130	110	9	5			
71B14	14	16.3	5	105	85	70	7	5			

FW 40 Gear Box Weight ≈ 2.4 kg  
(Without Flange)

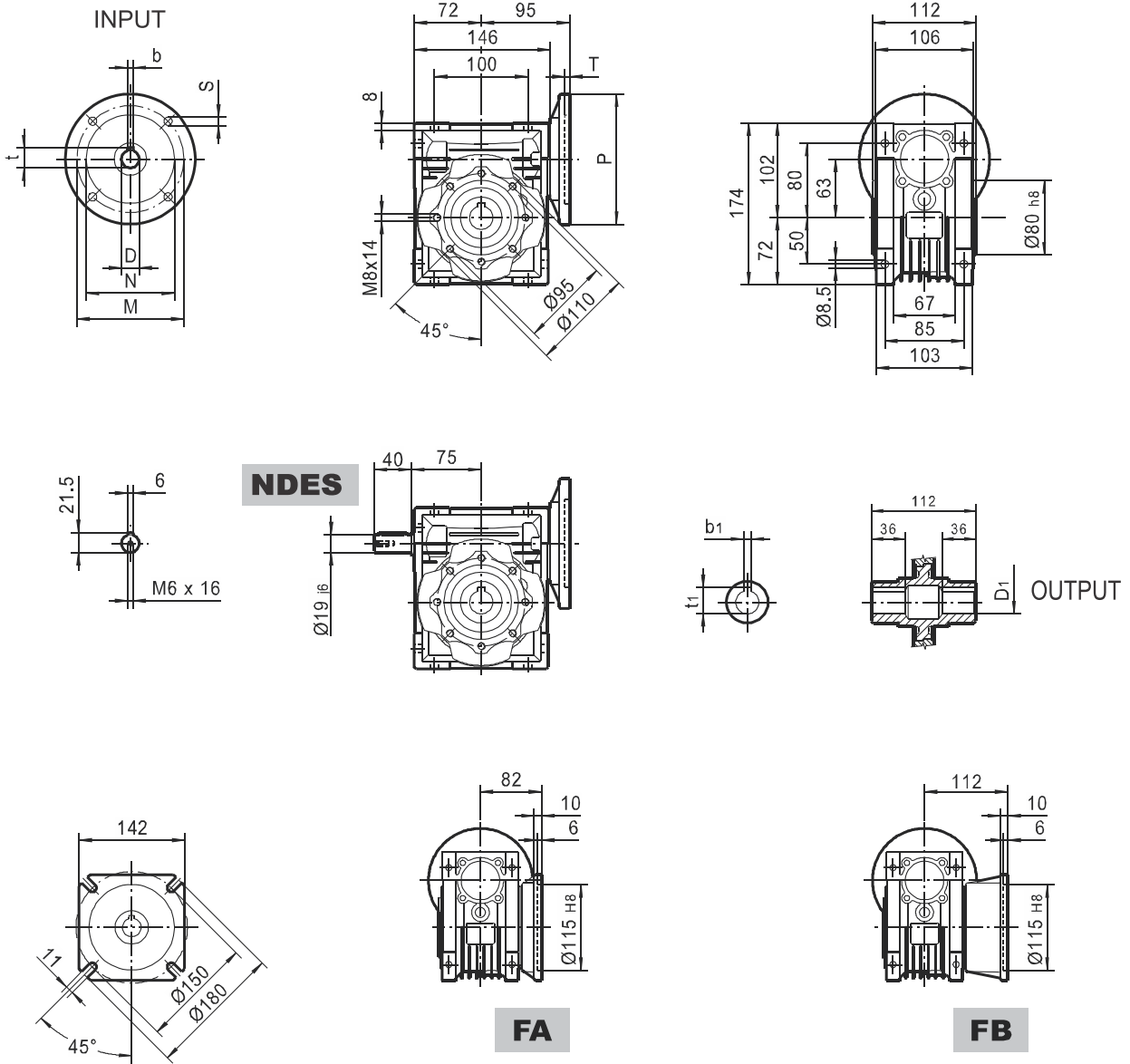
## FW50..(IEC)



IEC	$D_{E8}$	$t$	$b$	$P$	$M$	$N$	$S$	$T$	$D_1_{H8}$	$b_1$	$t_1$
63B5	11	12.8	4	140	115	95	9	5	25	8	28.3
71B5	14	16.3	5	160	130	110	9	5			
71B14	14	16.3	5	105	85	70	7	5			
80B5	19	21.8	6	200	165	130	11	5			
80B14	19	21.8	6	120	100	80	7	5			

FW 50 Gear Box Weight  $\approx$  3.75 kg  
(Without Flange)

## FW63..(IEC)



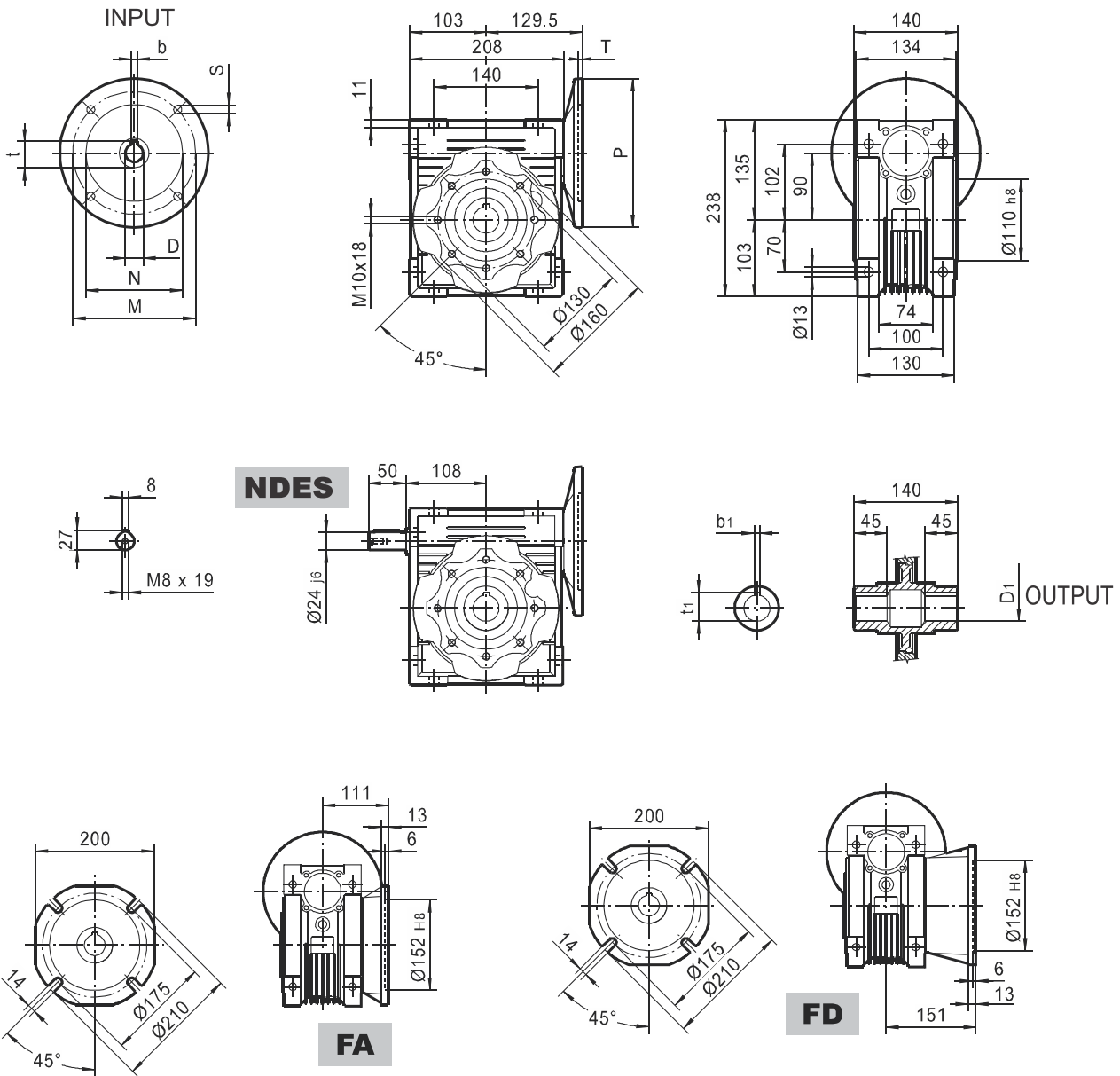
IEC	D <sub>E8</sub>	t	b	P	M	N	S	T	D <sub>1</sub> H <sub>8</sub>	b <sub>1</sub>	t <sub>1</sub>
71B5	14	16.3	5	160	130	110	9	5	25	8	28.3
71B14	14	16.3	5	105	85	70	7	5			
80B5	19	21.8	6	200	165	130	11	5			
80B14	19	21.8	6	120	100	80	7	5			
90B5	24	27.3	8	200	165	130	11	5			
90B14	24	27.3	8	140	115	95	9	5			

FW 63 Gear Box Weight ≈ 6.2 kg  
(Without Flange)





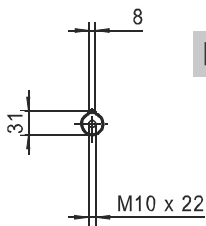
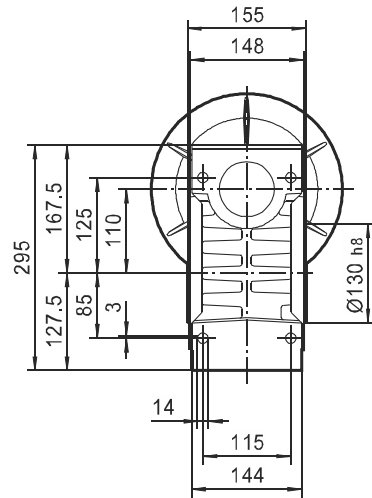
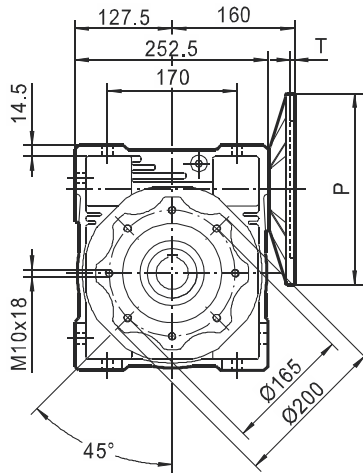
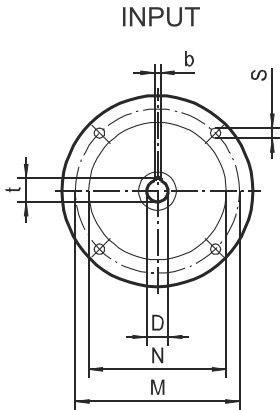
**FW90..(IEC)**



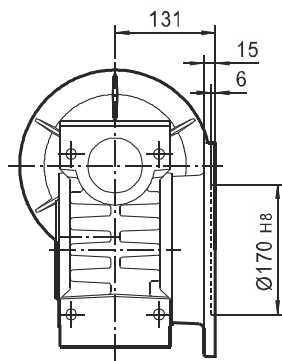
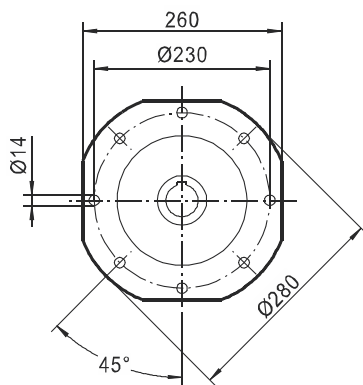
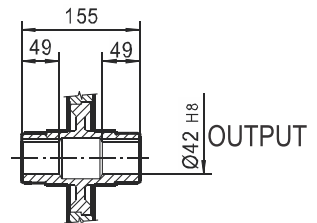
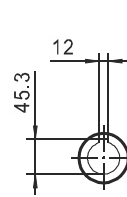
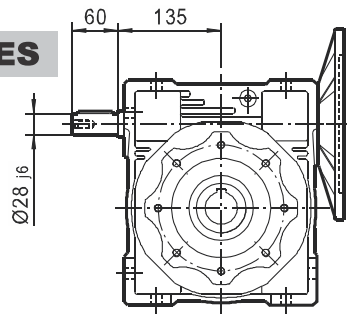
IEC	$D_{E8}$	$t$	$b$	$P$	$M$	$N$	$S$	$T$	$D_1 \text{ H8}$	$b_1$	$t_1$
80B5	19	21.8	6	200	165	130	11	5	35	10	38.3
80B14	19	21.8	6	120	100	80	7	5			
90B5	24	27.3	8	200	165	130	11	5			
90B14	24	27.3	8	140	115	95	9	5			
100/112B5	28	31.3	8	250	215	180	13.5	5			
100/112B14	28	31.3	8	160	130	110	9	5			

FW 90 Gear Box Weight  $\approx$  13.25 kg (Without Flange)

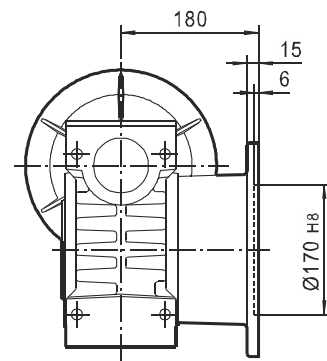
## FW110..(IEC)



**NDES**



**FA**

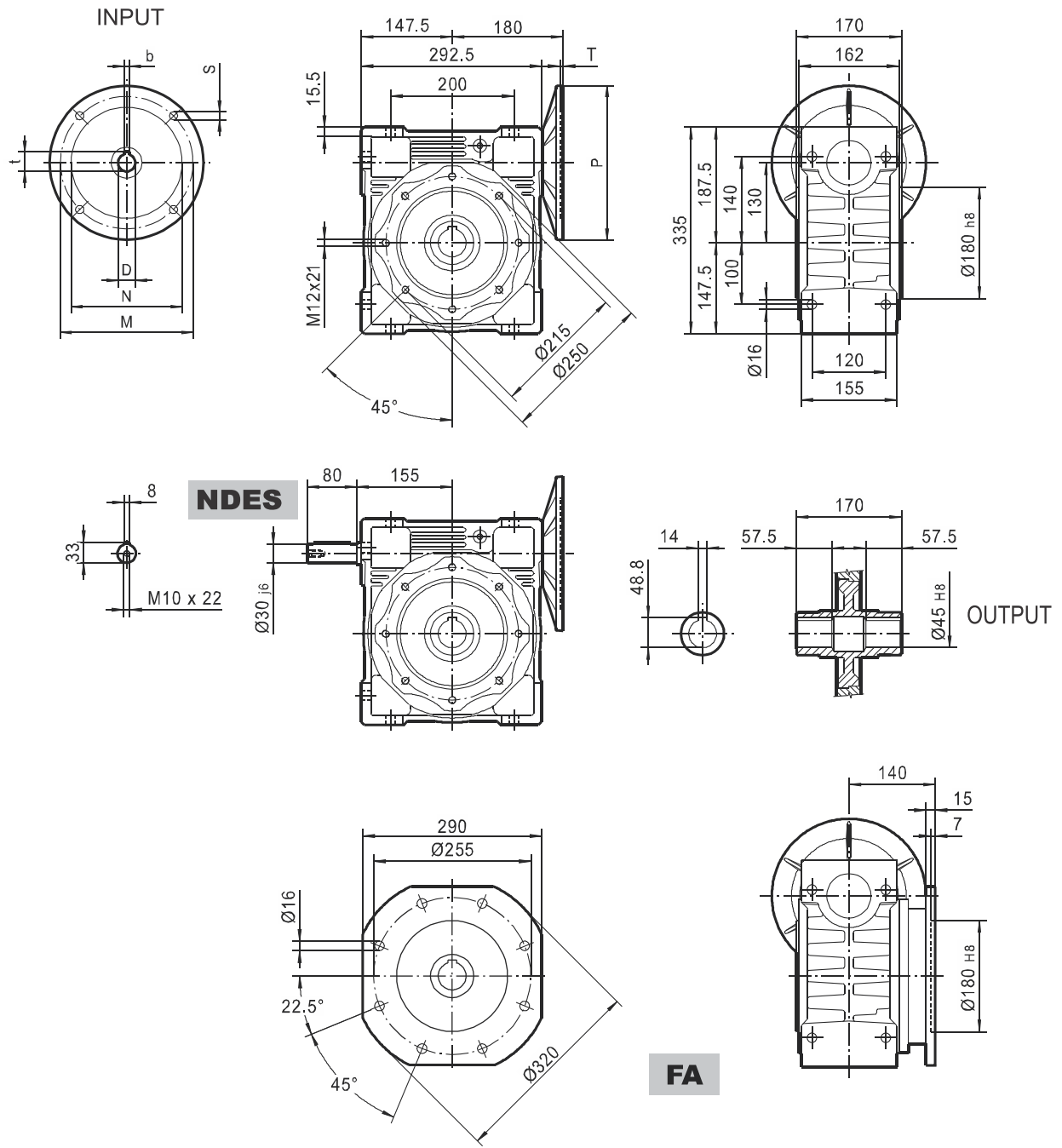


**FB**

IEC	D <sub>E8</sub>	t	b	P	M	N	S	T
80B5	19	21.8	6	200	165	130	11	5
80B14	19	21.8	6	120	100	80	7	5
90B5	24	27.3	8	200	165	130	11	5
90B14	24	27.3	8	140	115	95	9	5
100/112B5	28	31.3	8	250	215	180	13.5	7
100/112B14	28	31.3	8	160	130	110	9	7
132B5	38	41.3	10	300	265	230	14	7

FW 110 Gear Box Weight ≈ 35 kg  
(Without Flange)

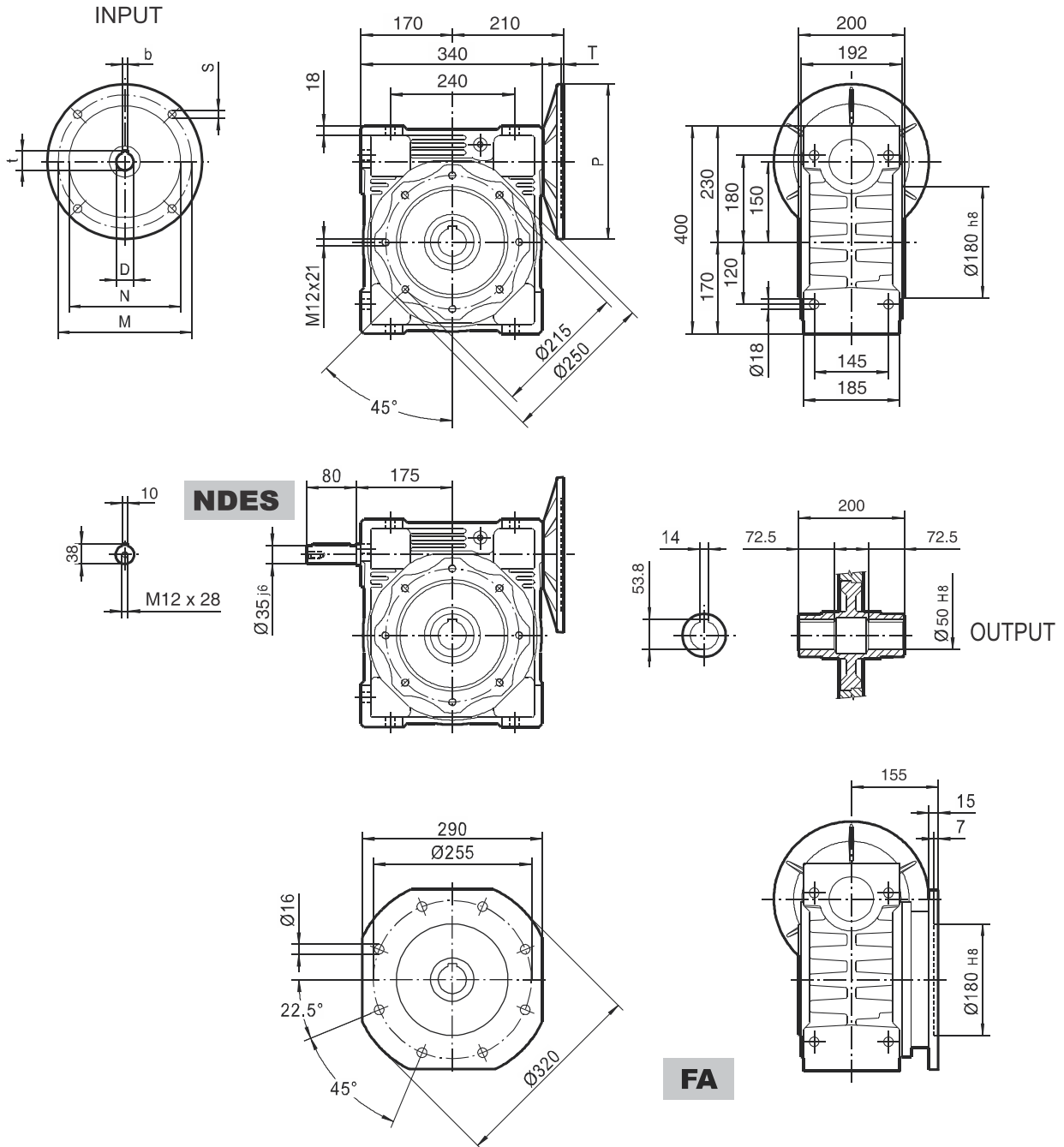
# FW130..(IEC)



IEC	D <sub>E8</sub>	t	b	P	M	N	S	T
90B5	24	27.3	8	200	165	130	11	5
100B5	28	31.3	8	250	215	180	14	7
112B5	28	31.3	8	250	215	180	14	7
132B5	38	41.3	10	300	265	230	14	7

FW 130 Gear Box Weight ≈ 48 kg  
(Without Flange)

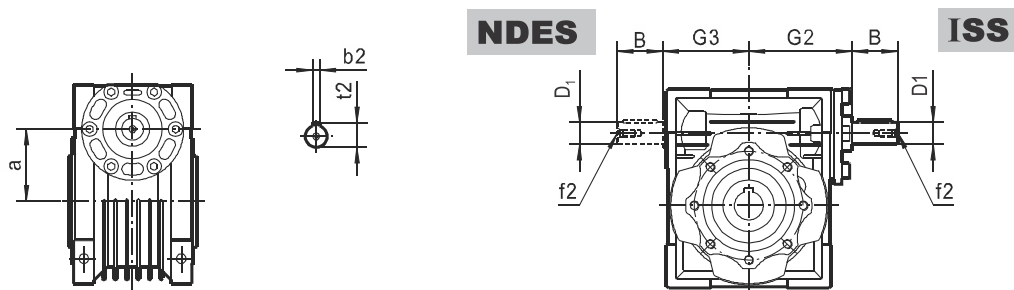
## FW150..(IEC)



IEC	D <sub>E8</sub>	t	b	P	M	N	S	T
100/112B5	28	31.3	8	250	215	180	14	7
132B5	38	41.3	10	300	265	230	14	7
160B5	42	45.3	12	350	300	250	19	7

FW 150 Gear Box Weight  $\approx$  84 kg  
(Without Flange)

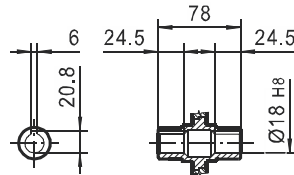
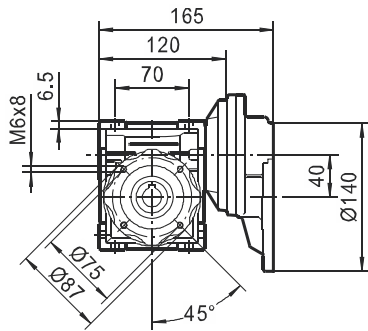
## 9.2 FW..ISS and NDES Outline Dimension



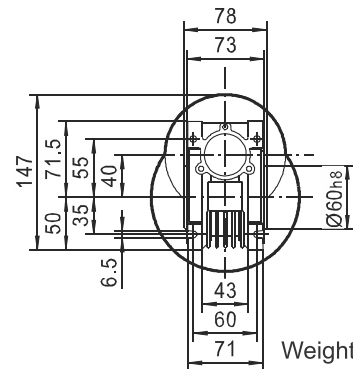
<b>FW..ISS &amp; NDES</b>	<b>030</b>	<b>040</b>	<b>050</b>	<b>063</b>	<b>075</b>	<b>090</b>	<b>110</b>	<b>130</b>	<b>150</b>
<b>B</b>	20	23	30	40	50	50	60	80	80
<b>D1 j6</b>	9	11	14	19	24	24	28	30	35
<b>G2</b>	51	60	74	90	105	125	142	162	195
<b>G3</b>	45	53	64	75	90	108	135	155	175
<b>a</b>	30	40	50	63	75	90	110	130	150
<b>b2</b>	3	4	5	6	8	8	8	8	10
<b>f2</b>	-	-	M6	M6	M8	M8	M10	M10	M12
<b>t2</b>	10.2	12.5	16	21.5	27	27	31	33	38

### 9.3 HL - FW .. Outline dimension

#### HL63 - FW40

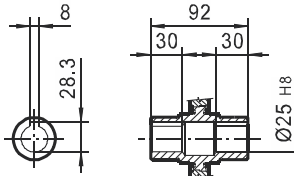
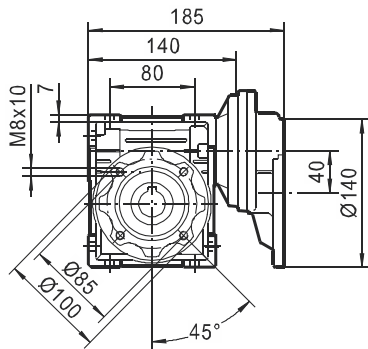


OUTPUT

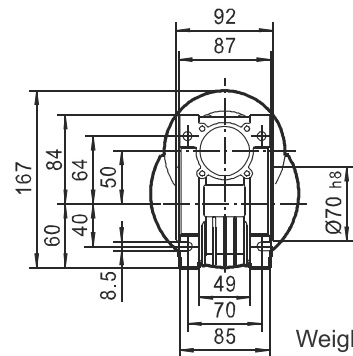


Weight ≈ 3.5 kg

#### HL63 - FW50

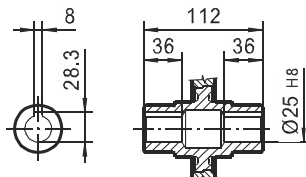
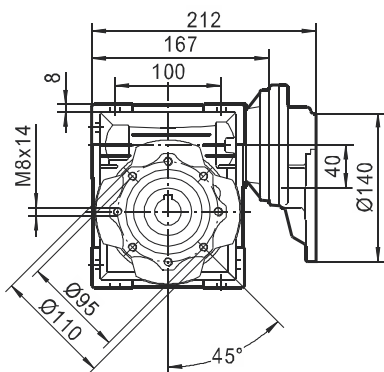


OUTPUT

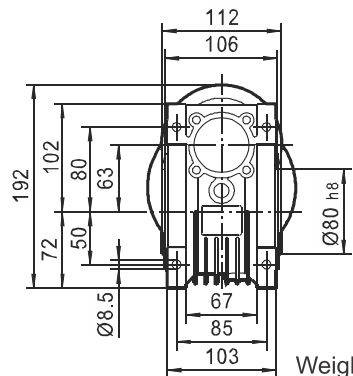


Weight ≈ 4.8 kg

#### HL63 - FW63

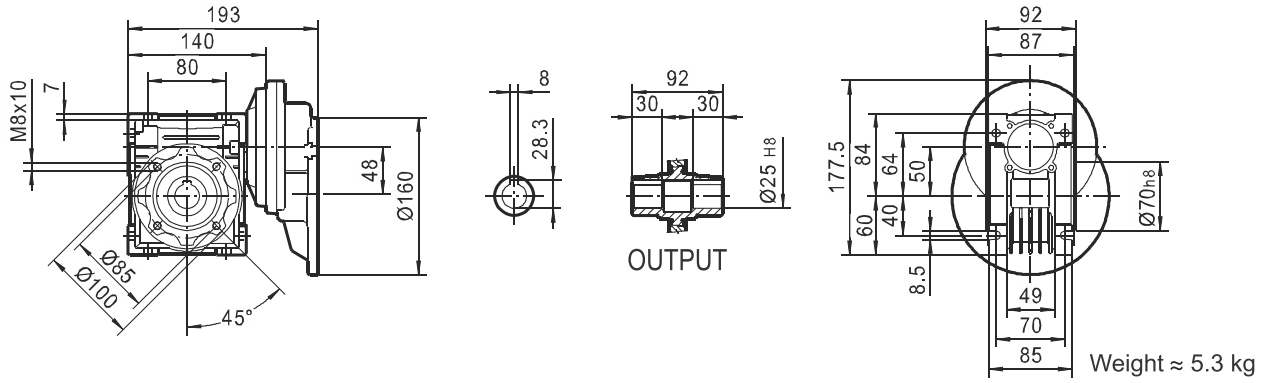


OUTPUT

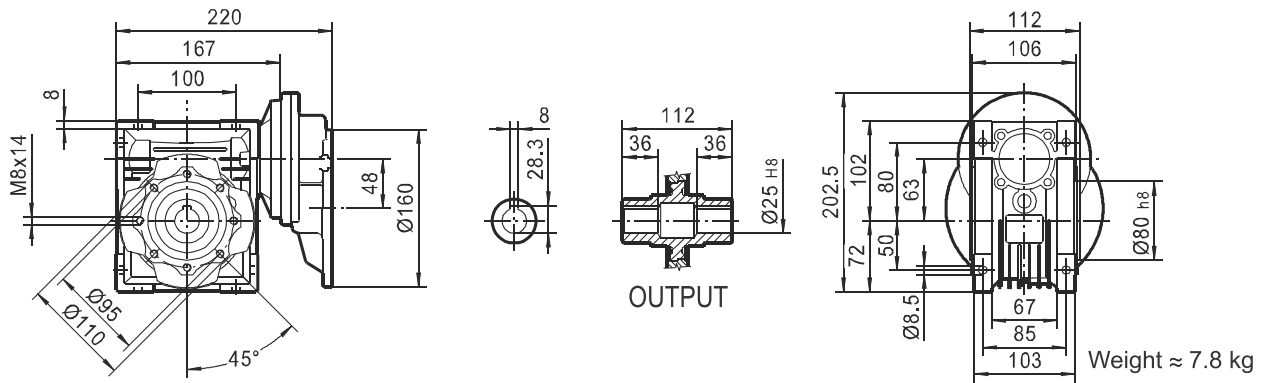


Weight ≈ 7.3 kg

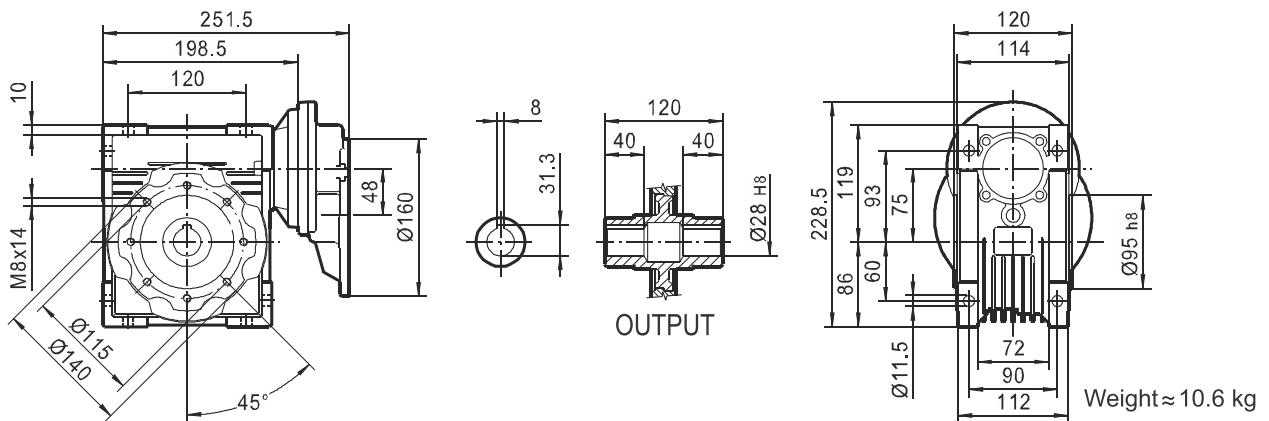
### HL71 - FW50



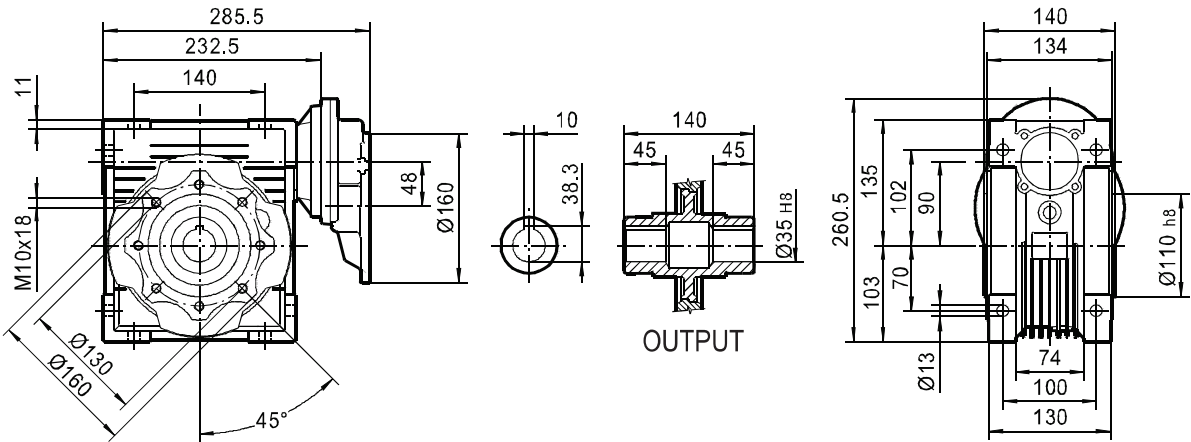
### HL71 - FW63



### HL71 - FW75

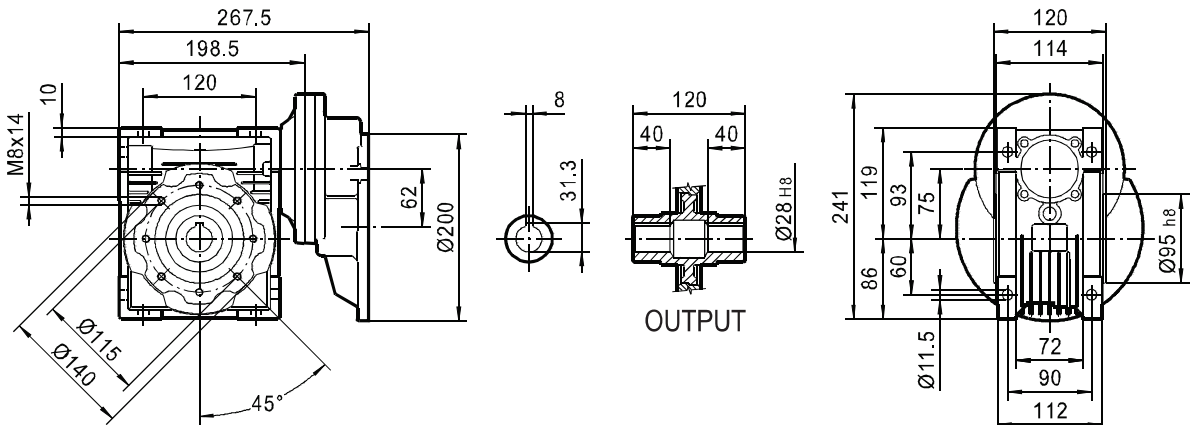


### HL71 - FW90



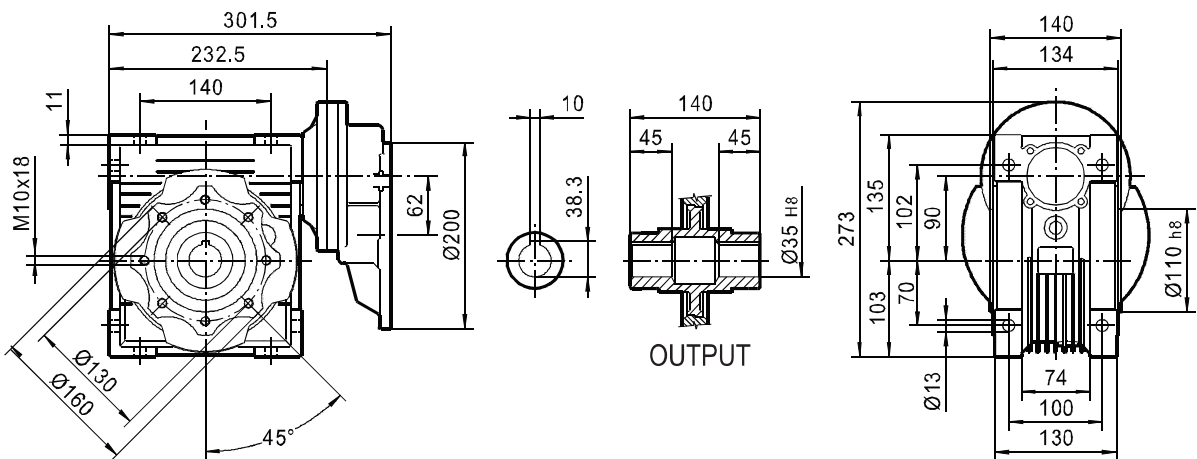
Weight ≈ 14.8 kg

### HL80 - FW75



Weight ≈ 12.4 kg

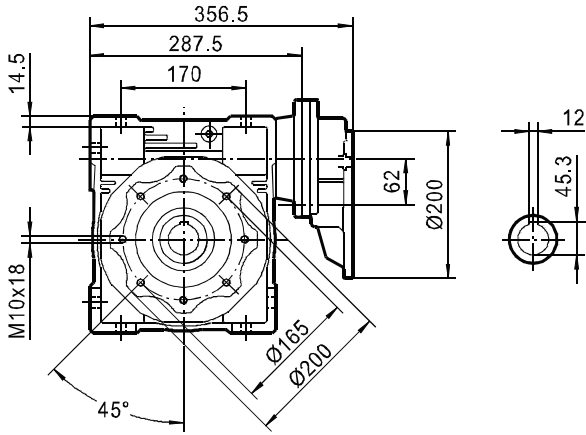
### HL80 - FW90



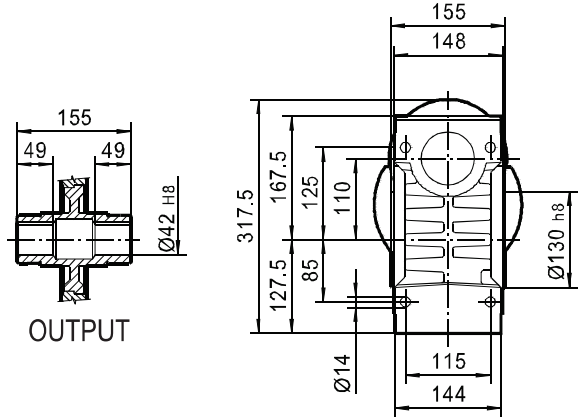
Weight ≈ 16.6 kg



### HL80 - FW110

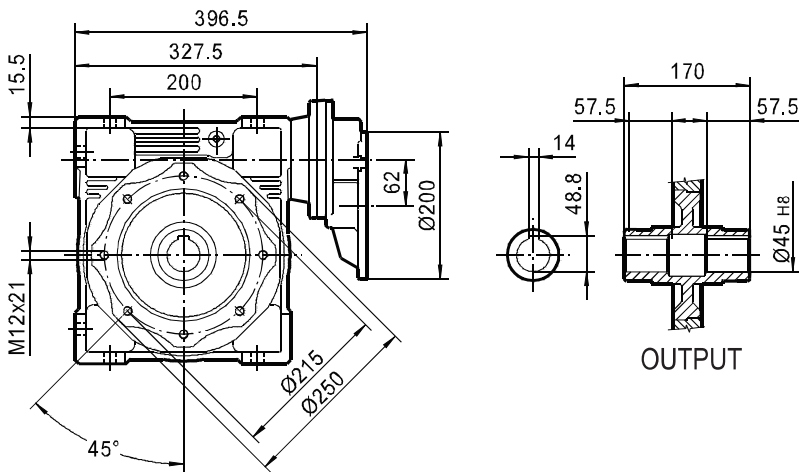


### HL90 - FW110

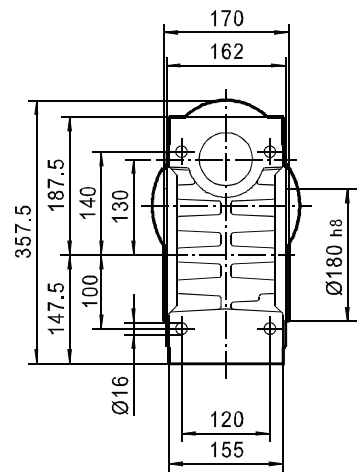


Weight  $\approx$  41.4 kg

### HL80 - FW130



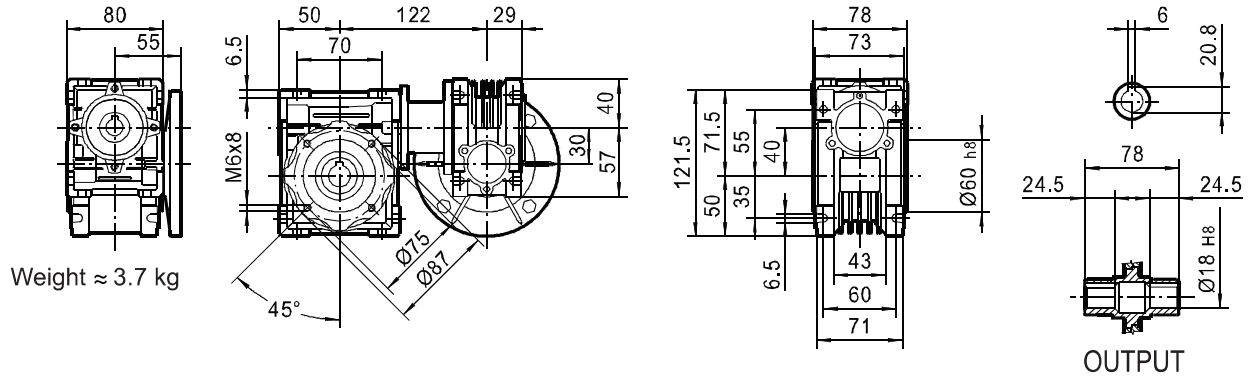
### HL90 - FW130



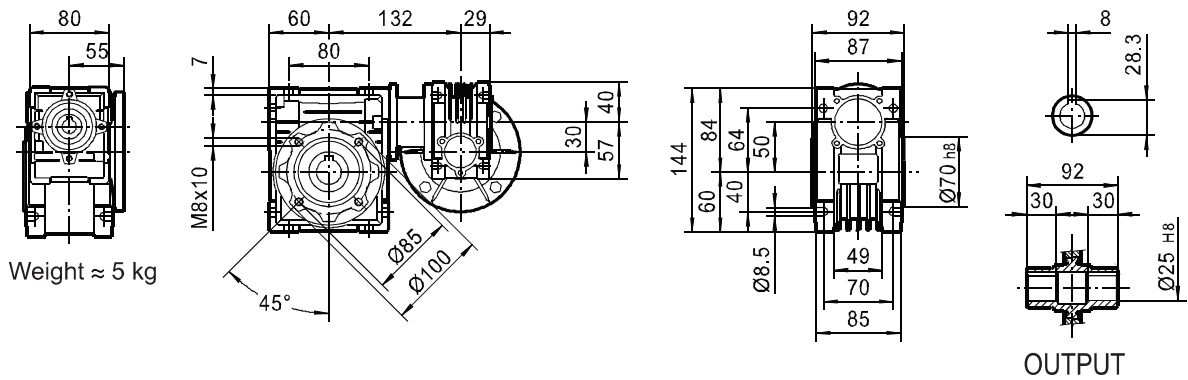
Weight  $\approx$  55.9kg

## 9.4 FW / FW .. Outline dimension

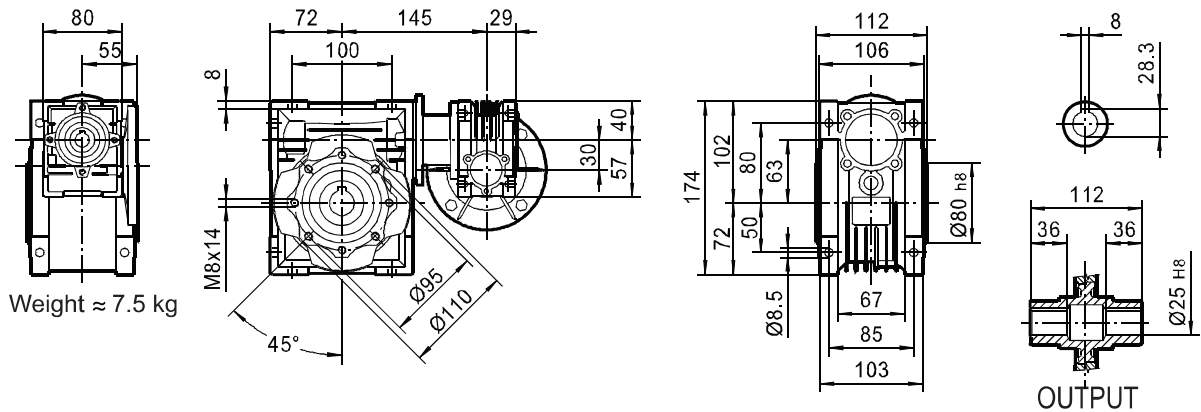
### FW30/40



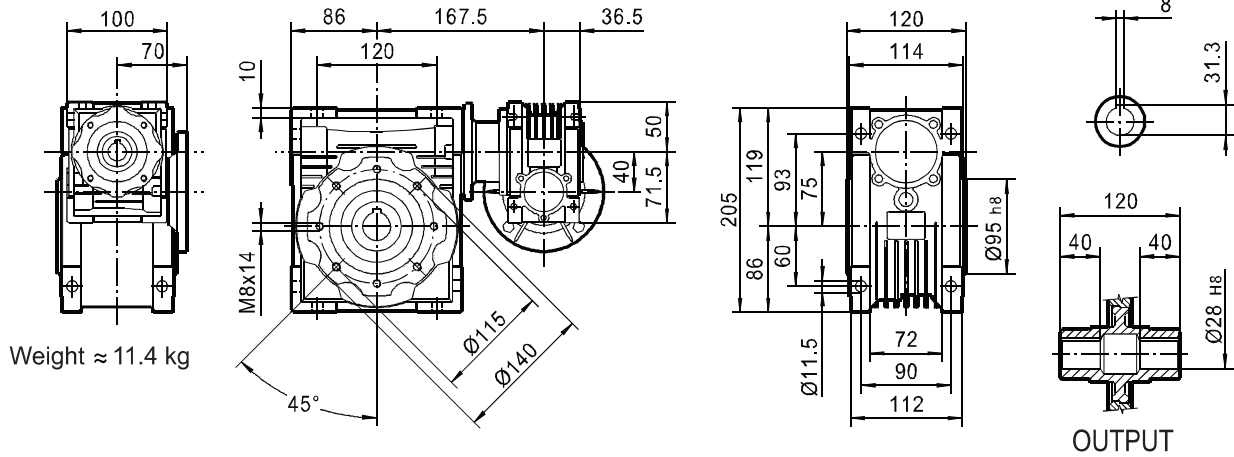
### FW30/50



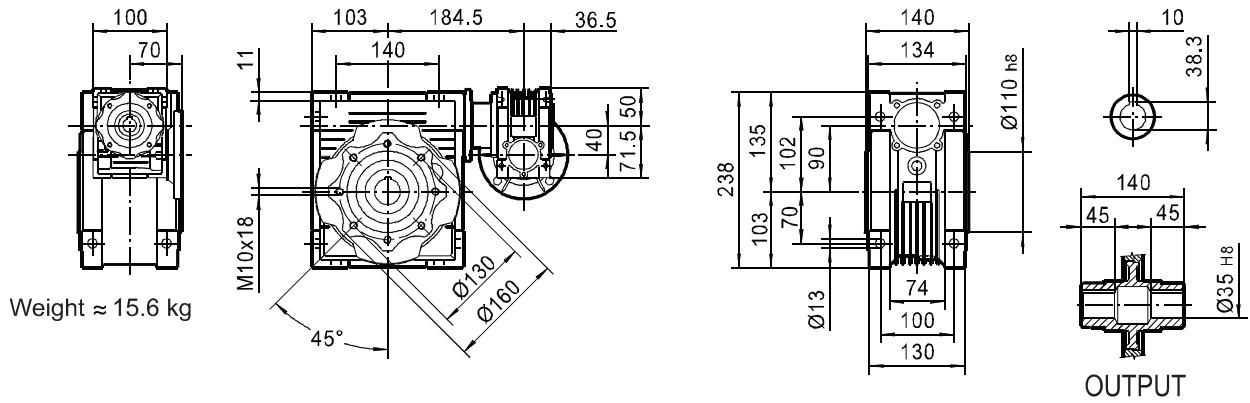
### FW30/63



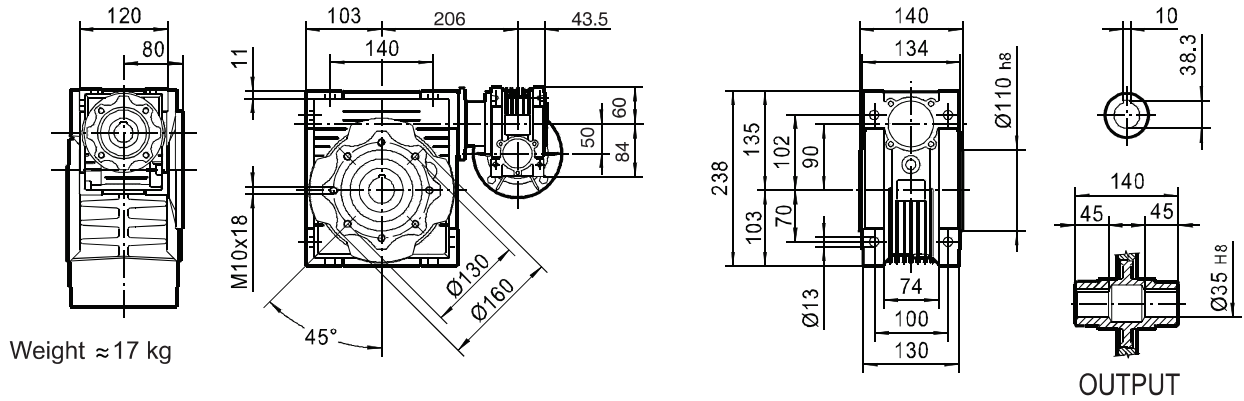
### FW40/75



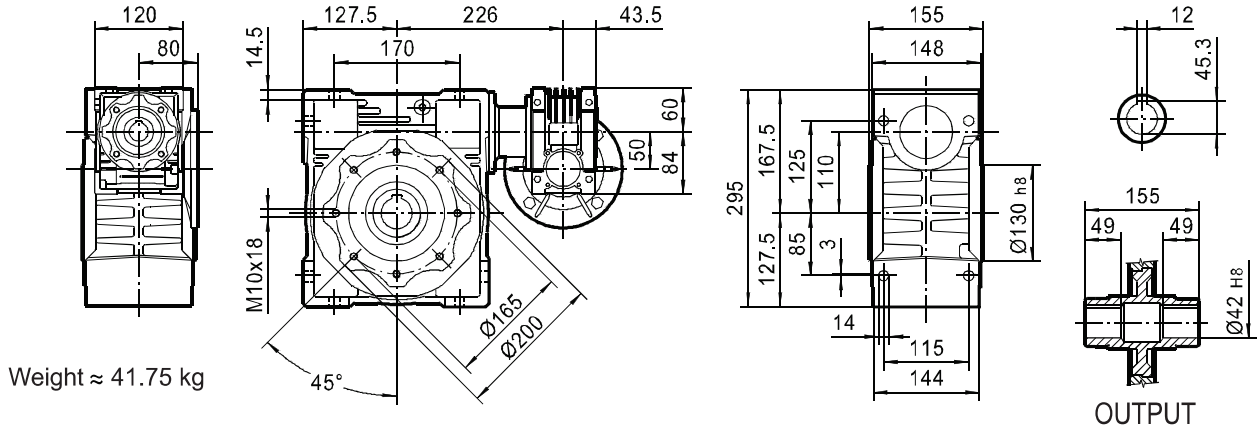
### FW40/90



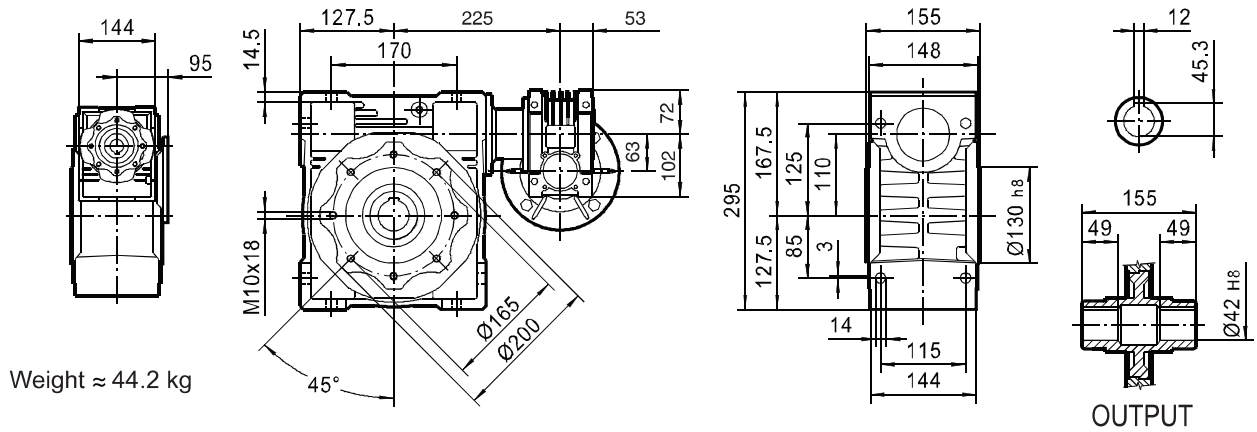
### FW50/90



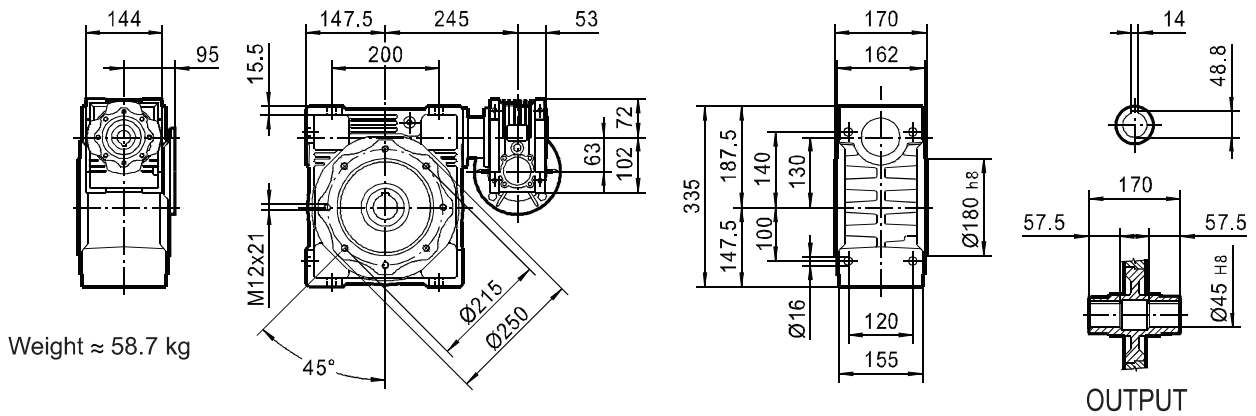
### FW50/110



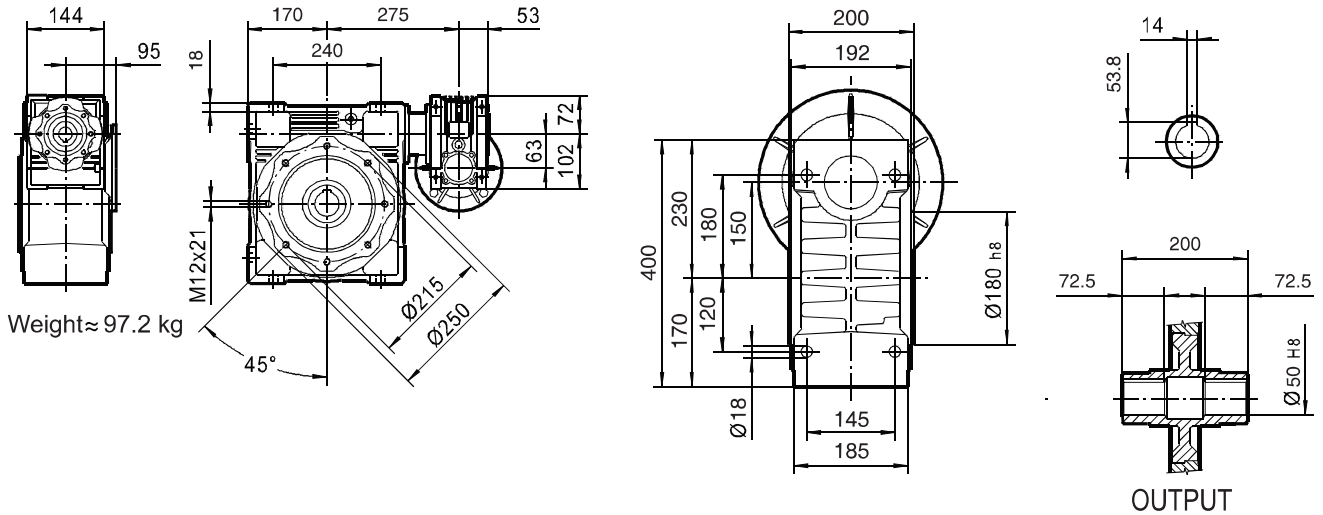
### FW63/110



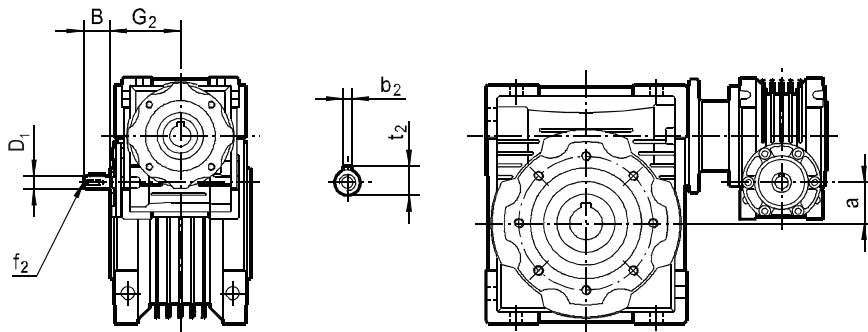
### FW63/130



## FW63/150



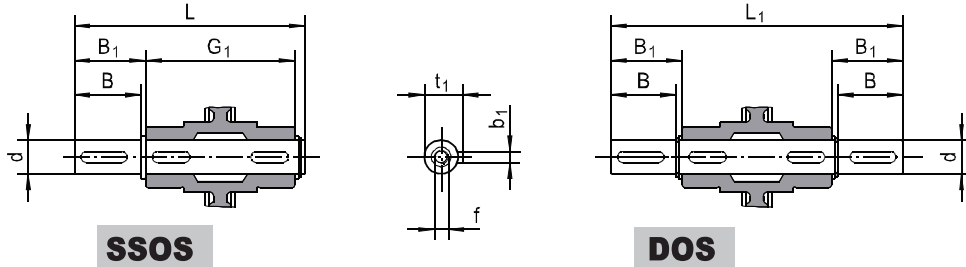
### 9.5 FW / FW .. ISS Outline Dimension



FW/FW..ISS	30 / 40	30 / 50	30 / 63	40 / 75	40 / 90	50 / 90	50 / 110	63 / 110	63 / 130	63/150
<b>B</b>	20	20	20	23	23	30	30	40	40	40
<b>D1 j6</b>	9	9	9	11	11	14	14	19	19	19
<b>G2</b>	51	51	51	60	60	74	74	90	90	90
<b>a</b>	10	20	33	35	50	40	60	47	67	87
<b>b2</b>	3	3	3	4	4	5	5	6	6	6
<b>f2</b>	-	-	-	-	-	M6	M6	M6	M6	M6
<b>t2</b>	10.2	10.2	10.2	12.5	12.5	16	16	21.5	21.5	21.5

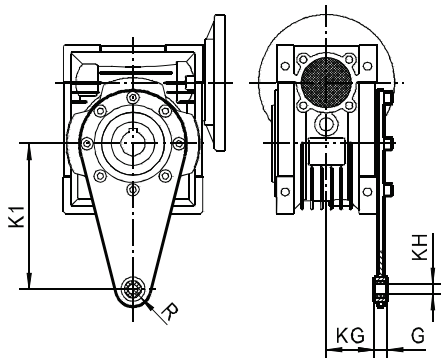
## 10. ACCESSORIES OUTLINE DIMENSION

### 10.1 Output Shafts



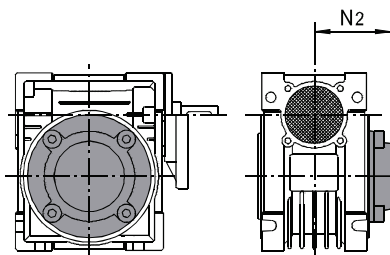
	<b>d</b> h6	<b>B</b>	<b>B<sub>1</sub></b>	<b>G<sub>1</sub></b>	<b>L</b>	<b>L<sub>1</sub></b>	<b>f</b>	<b>b<sub>1</sub></b>	<b>t<sub>1</sub></b>
<b>FW30</b>	14	30	32.5	63	102	128	M6	5	16
<b>FW40</b>	18	40	43	78	128	164	M6	6	20.5
<b>FW50</b>	25	50	53.5	92	153	199	M10	8	28
<b>FW63</b>	25	50	53.5	112	173	219	M10	8	28
<b>FW75</b>	28	60	63.5	120	192	247	M10	8	31
<b>FW90</b>	35	80	84.5	140	234	309	M12	10	38
<b>FW110</b>	42	80	84.5	155	249	324	M16	12	45
<b>FW130</b>	45	80	85	170	265	340	M16	14	48.5
<b>FW150</b>	50	82	87	200	297	374	M16	14	53.5

### 10.2 Torque Arm (TRA)



	<b>K<sub>1</sub></b>	<b>G</b>	<b>KG</b>	<b>KH</b>	<b>R</b>
<b>FW30</b>	85	14	24	8	15
<b>FW40</b>	100	14	31.5	10	18
<b>FW50</b>	100	14	38.5	10	18
<b>FW63</b>	150	14	49	10	18
<b>FW75</b>	200	25	47.5	20	30
<b>FW90</b>	200	25	57.5	20	30
<b>FW110</b>	250	30	62	25	35
<b>FW130</b>	250	30	69	25	35
<b>FW150</b>	250	30	84	25	35

### 10.3 Output side Cover (C)



	<b>N<sub>2</sub></b>		<b>N<sub>2</sub></b>
<b>FW30</b>	47	<b>FW90</b>	94
<b>FW40</b>	55	<b>FW110</b>	102
<b>FW50</b>	63	<b>FW130</b>	117
<b>FW63</b>	73	<b>FW150</b>	132
<b>FW75</b>	79		