

RS•RT CATALOGUE



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Experience at the service of innovation

EN

The Varvel Group has been designing and producing power transmission systems for numerous areas of industry since 1955. "Know-how to do it": Varvel has the know-how needed to satisfy customers' requests in the best way possible. Thanks to over sixty years of accumulated experience, Varvel can offer customers a vast range of standard solutions and customise products for specific needs. The entire product range is designed and made in Italy and sold worldwide through two subsidiaries (in the USA and India) and a global network of over 100 commercial partners.

UNI EN ISO 9001:2015
UNI EN ISO 14001:2015
BS OHSAS 18001:2007



EC DIRECTIVE 2014/34/EC (ATEX)



RS - RT

WORM GEARBOXES

single-stage, helical/worm, two-stages
aluminium / cast iron housing and covers
shaft-mount, foot and flange mounting



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RS-RT Worm Gearboxes

Product description



RS & RT - Single-stage worm gearboxes

The gearboxes are made as standard with input hub for various motor adapters and either side covers allow feet, output flanges and torque arm easy fitting.

On demand, input Viton oil seals allow trouble-free operation with 2-pole standard AC, DC and servo motors, and Silicone oil seals for low temperature running.

Gearboxes are delivered filled with synthetic long-life oil (ISO VG 320 Grade) as standard, for ambient temperature $+4$ / $+131$ °F (-20 / $+55$ °C), oil quantities as recommended on page 21, valid for all mounting positions.

No vent plug style and lubrication-for-life is factory filled.

Selection data are intended for service factor SF1.0, i.e. 8-10 running hours per day, uniform load, 10,000 working hours, less than 6 start/stops per hour and room temperature ranging from 60 to 95 °F (15 to 35 °C).

RA & TA - Helical/worm gearboxes

RA and TA gearboxes are made of an independent single-stage helical gearbox FXA fitted on a standard FRS or FRT gearbox input, allowing greater output torques and higher efficiency than the single-stage FRS and FRT gearbox with equivalent ratio.

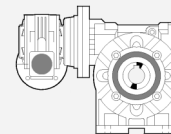
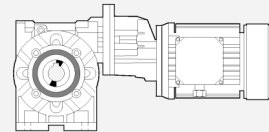
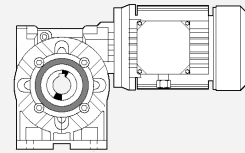
FXA input of sizes 63, 71 and 80 is metric, while the size FXA100 has NEMA and IEC adapters.

Both gearboxes are independently lubricated with synthetic long-life oil.

RS/RS & RT/RT - Two-stage worm gearboxes

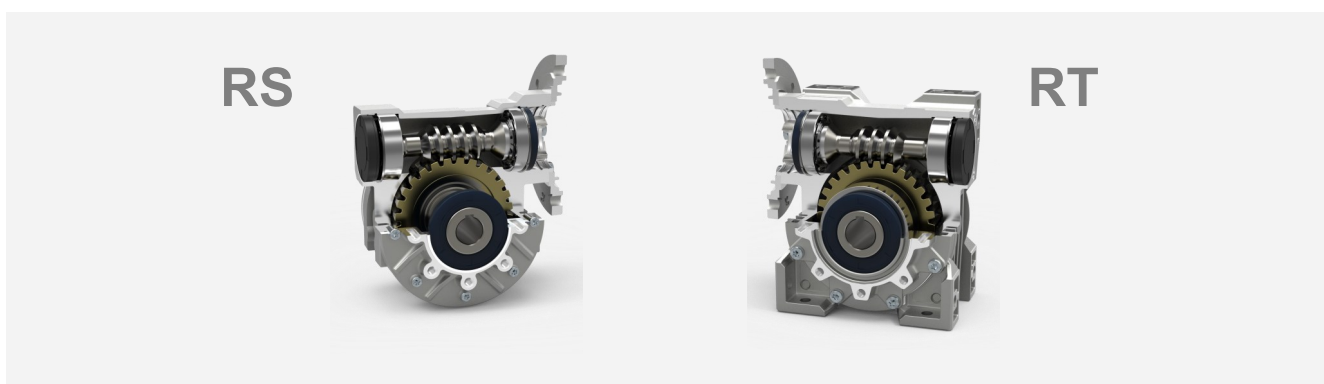
RS/RS and RT/RT gearboxes are made of two standard gearboxes RS or RT and offer a full selection of high reduction ratios to get even lower output speeds.

Both gearboxes are independently lubricated with synthetic long-life oil.



Worm Gearboxes - Series RS - RT

Product description



AS & AD - Output shafts

All gearboxes are manufactured with hollow output shaft as standard. Single AS or double AD solid output shafts can be supplied. on demand The ASC safety shield fitted on the opposite side of the AS extension, is available on demand.

BR & BRV - BT & BTV - Torque arms

The gearbox basic version works as shaft mounted unit. The torque arm, standard BR (for RS) and BT (for RT), or BRV (for RS) and BTV (for RT) with Vulkollan vibration-damping bushing, is made of white galvanized extra thick plate.

TLE & TLI - Torque limiter -

The torque limiter and safeguard device, TLI built-in inside the gearbox and TLE fitted into the hollow output shaft of a regular gearbox, allows easy torque adjustments, full gearbox safeguard against unexpected overload conditions, simple hand release, and manual operation in case of power supply failure.

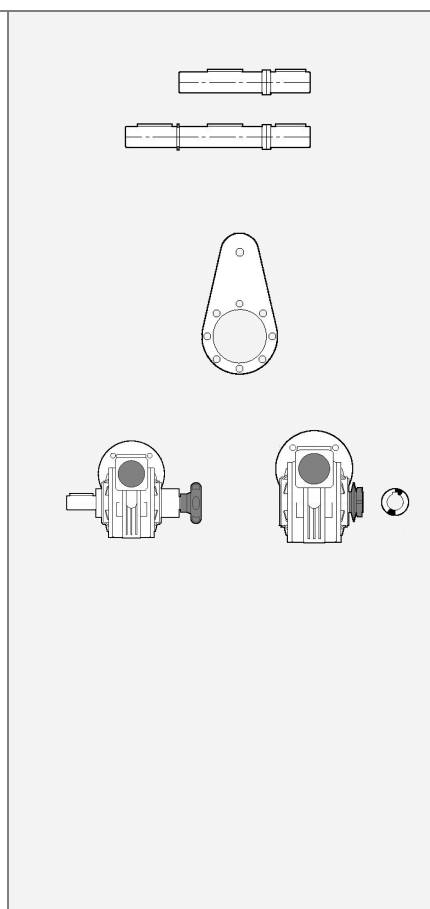
The torque limiter device can be rated for RA and TA helical/worm gear and for two-stage worm gears full capacity but torque limitation is possible at some low speeds to be however approved by our engineers.

The factory preset slipping torque can be adjusted from the maximum preset torque down to zero.

Shaft rotation restarts automatically as soon as torque value is lower than the preset value.

Dimensions

All dimensions and units of measurement are referred to the imperial system and metric is printed in green where applicable



.Directive ATEX

The European Directive 94/9/EC-ATEX does not relate to electric devices only but to all machines and driving units destined, alone or combined, to operate in potentially explosive environments within the European Community territory.

The VARVEL gearboxes are qualified for installation in potentially explosive atmospheres of:

- Zones of Group II,
- Category 2 (or 3),
- Explosion hazard with gas presence (Zone 1 or 2),
- Explosion hazard with combustible dust presence (Zone 21 or 22).

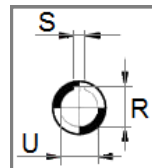
The units VARVEL-ATEX are identified by the additional marking:

⊕ II 2 GD ck IP66 c c T_{max}=135 °C

RS-RT Worm Gearboxes

Product description

GENERAL SPECIFICATIONS																																	
Range	Sizes: RS (9x), RT (7x) Reduction ratios: 55 Max. output torque: 27,400 in-lbs																																
Sizing	According to BS721 10,000 hrs average lifetime with service factor SF1																																
Housing, Covers	Pressure die cast aluminium up to size 85 and cast iron from size 110 up																																
Input:	Die cast aluminium coupling for sizes 3, 5, 6 and alloyed steel from size 8 Plug-in key/keyway version on demand																																
Gears	Worms of alloyed steel, case hardened and tooth profile ZI ground Wheels of bronze on cast iron hub																																
Shafts & Keys	Alloyed steel Shafts h6 - Bores E8 Keys according to DIN6885 B1																																
Bearings	Ball or roller types																																
Oil seals	NBR - Nitrile Butadiene Rubber type as standard FKM - Fluor elastomer Viton type on demand VMQ - Vinyl-methyl-silicone rubber type on demand with additional anti-dust lip, according to DIN 3760																																
Lubricant	Synthetic long-life oil Grade ISO VG 320																																
Tolerances																																	
	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2">Diameter</th> <th colspan="2">Tolerance</th> </tr> <tr> <th>[in]</th> <th>[mm]</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Solid shaft</td> <td>U $\varnothing 0.5 \dots \varnothing 1.5$</td> <td>0 / -0.0005</td> <td rowspan="2">ISO g6</td> </tr> <tr> <td>$\varnothing > 1.5 \dots \varnothing 2.75$</td> <td>0 / -0.0010</td> </tr> <tr> <td rowspan="5">Hollow shaft</td> <td>U $\varnothing 0.625$</td> <td>+0.0007 / 0</td> <td rowspan="4">ISO H7</td> </tr> <tr> <td>$\varnothing 0.75 \dots \varnothing 1.0$</td> <td>+0.0008 / 0</td> </tr> <tr> <td>$\varnothing 1.25 \dots \varnothing 1.625$</td> <td>+0.0010 / 0</td> </tr> <tr> <td>$\varnothing 2.0 \dots \varnothing 2.75$</td> <td>+0.0012 / 0</td> </tr> <tr> <td>R $\varnothing 0.625 \dots \varnothing 2.75$</td> <td>+0.0079 / 0</td> <td>+0.2 / 0</td> </tr> <tr> <td rowspan="3"></td> <td>S $\varnothing 0.625 \dots \varnothing 0.75$</td> <td>+0.0012 / 0</td> <td rowspan="3">ISO H9</td> </tr> <tr> <td>$\varnothing 1.0 \dots \varnothing 1.625$</td> <td>+0.0014 / 0</td> </tr> <tr> <td>$\varnothing 2.0 \dots \varnothing 2.75$</td> <td>+0.0017 / 0</td> </tr> </tbody> </table>		Diameter	Tolerance		[in]	[mm]	Solid shaft	U $\varnothing 0.5 \dots \varnothing 1.5$	0 / -0.0005	ISO g6	$\varnothing > 1.5 \dots \varnothing 2.75$	0 / -0.0010	Hollow shaft	U $\varnothing 0.625$	+0.0007 / 0	ISO H7	$\varnothing 0.75 \dots \varnothing 1.0$	+0.0008 / 0	$\varnothing 1.25 \dots \varnothing 1.625$	+0.0010 / 0	$\varnothing 2.0 \dots \varnothing 2.75$	+0.0012 / 0	R $\varnothing 0.625 \dots \varnothing 2.75$	+0.0079 / 0	+0.2 / 0		S $\varnothing 0.625 \dots \varnothing 0.75$	+0.0012 / 0	ISO H9	$\varnothing 1.0 \dots \varnothing 1.625$	+0.0014 / 0	$\varnothing 2.0 \dots \varnothing 2.75$
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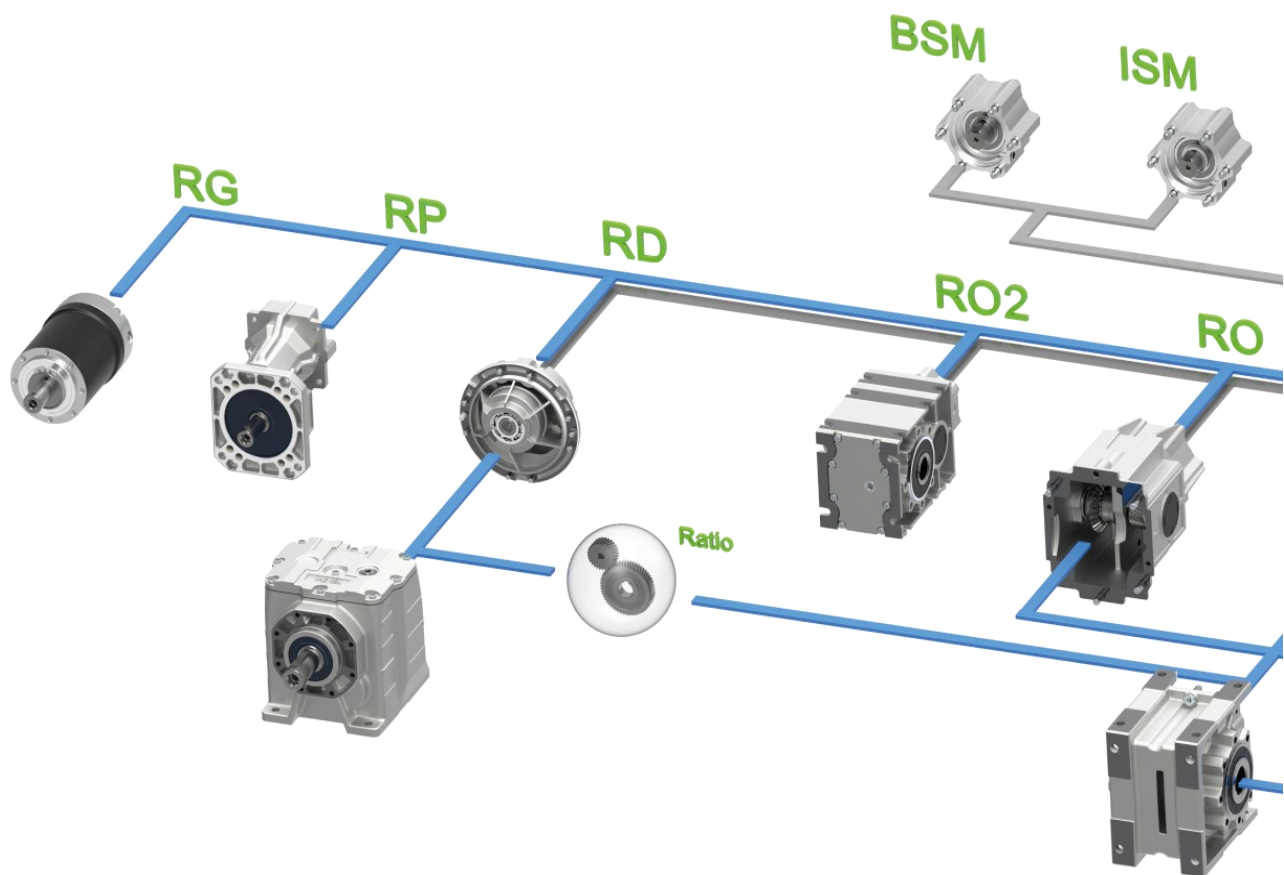
Worm Gearboxes - Series RS - RT

Symbols

Symbol	Description	Formula
F_r [lb]	Application overhung load (external OHL)	
F_{r1} [lb]	Catalogue input overhung load (gearbox input OHL)	
F_{r2} [lb]	Catalogue output overhung load (gearbox output OHL)	
SF	Service factor	$M_2 / M_{(app)}$
R	Reduction ratio of single stage units	
R_1, R_2	Reduction ratio of 1 st and 2 nd stage in multi-stage units	
Lub [qt]	Lubricant	
M_2 [in-lb]	Gearbox output torque	$63025 \times \text{HP} \times \text{eff.} / \text{rpm}$
$M_{(app)}$ [in-lb]	Application torque	
n_1 [rpm]	Input speed	
n_2 [rpm]	Output speed	
P_1 [HP]	Motor power @ 60Hz	$63025 \times \text{HP} \times \text{eff.} / \text{rpm}$
W [lb]	Average value for foot mounting & reduction ratio	
η	Efficiency	

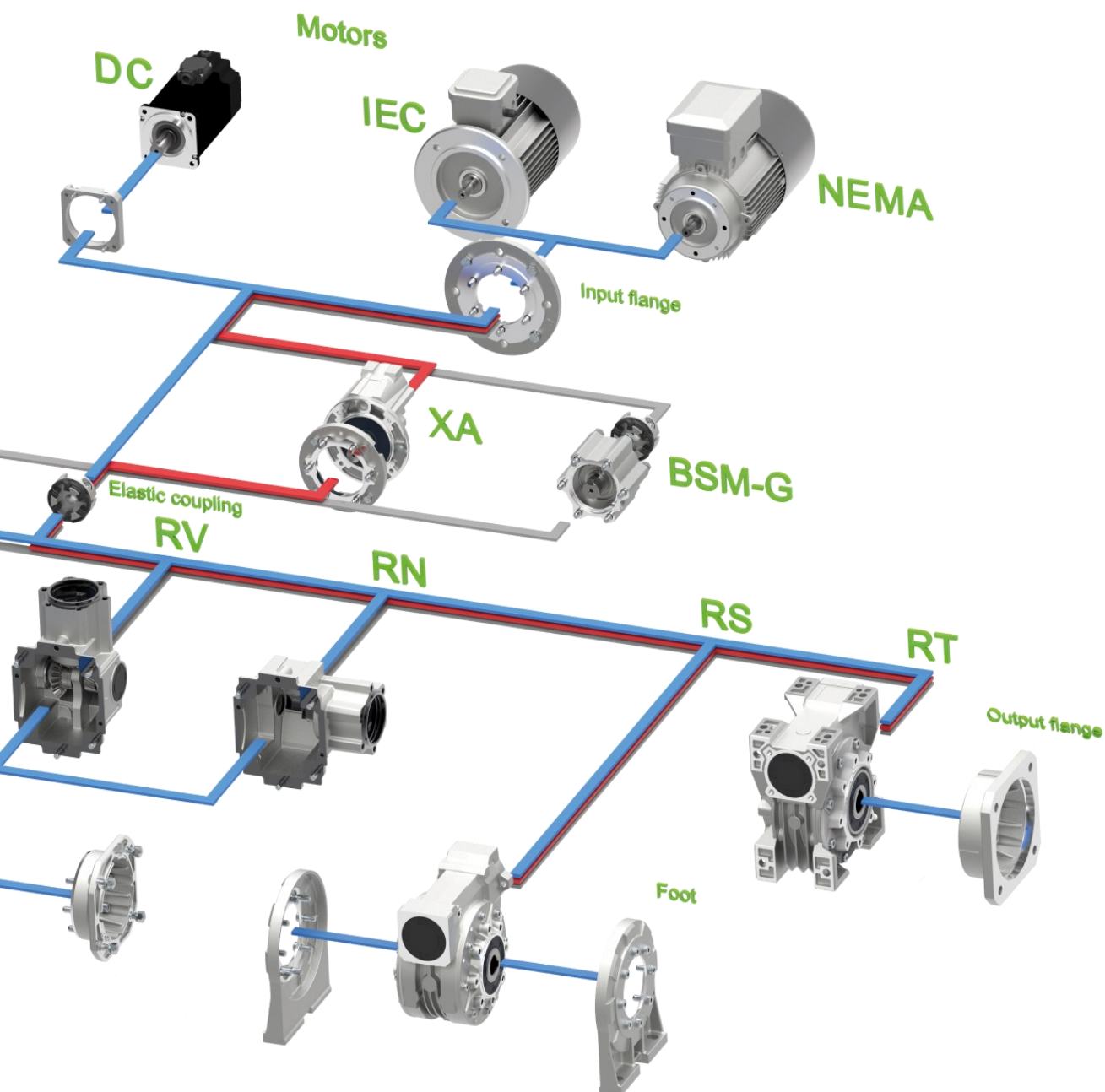
RS-RT Worm Gearboxes

Modular system



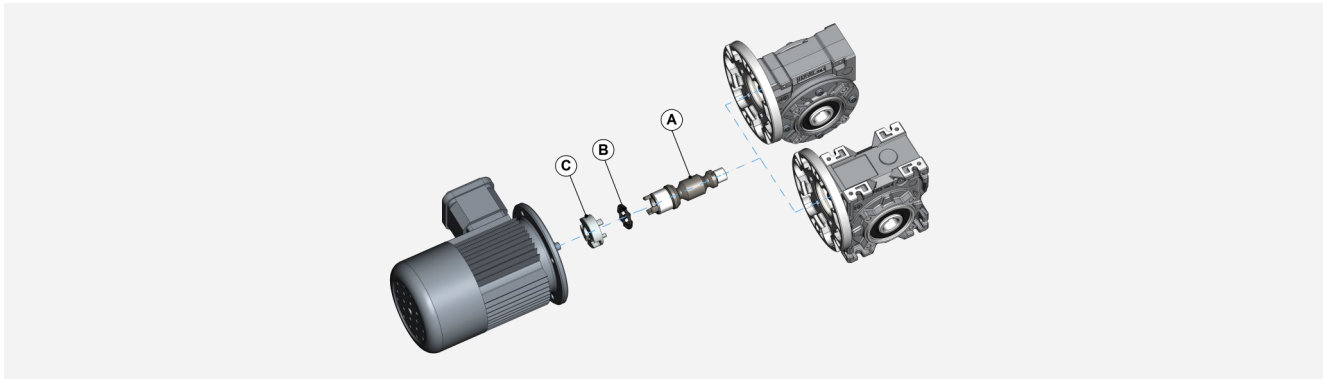
Worm Gearboxes RS-RT

Modular system



RS-RT Worm Gearboxes

Flexible coupling



Flexible coupling system

A) Gearbox-side coupling hub

- Material: steel
- One-piece machined with input pinion shaft
- Two bearing setting
- Not altered gearbox casing dimensions

B) Spider

- Material: Polyarylamide Thermo-plastic Elastomer
- External tooth connection
- Hardness 90 Shore D
- Temperature range -22/+275°F (-30/+135°C)

C) Motor-side coupling hub

- Material: Aluminium die cast (G3, G5, G6) Steel (GS3, GS5, GS6, GS8)
- Dynamic balancing
- Fitting: Clamp (G3, G5, G6) Key (GS3, GS5, GS6, GS8)

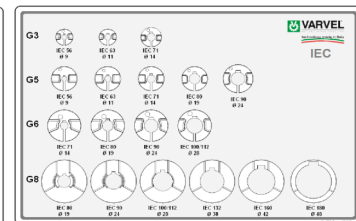
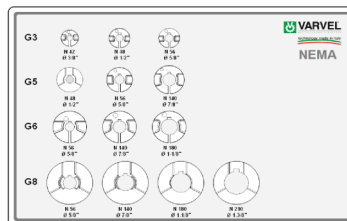
Modular input flange system

- Material Aluminium up to NEMA TC180 & IEC112 Cast iron from NEMA TC200 & IEC132
- Flanges according to NEMA C and TC IEC 72 / DIN42948 Square shape for brushless and DC motor mount

Advantages of unique integrated elastomer jaw coupling

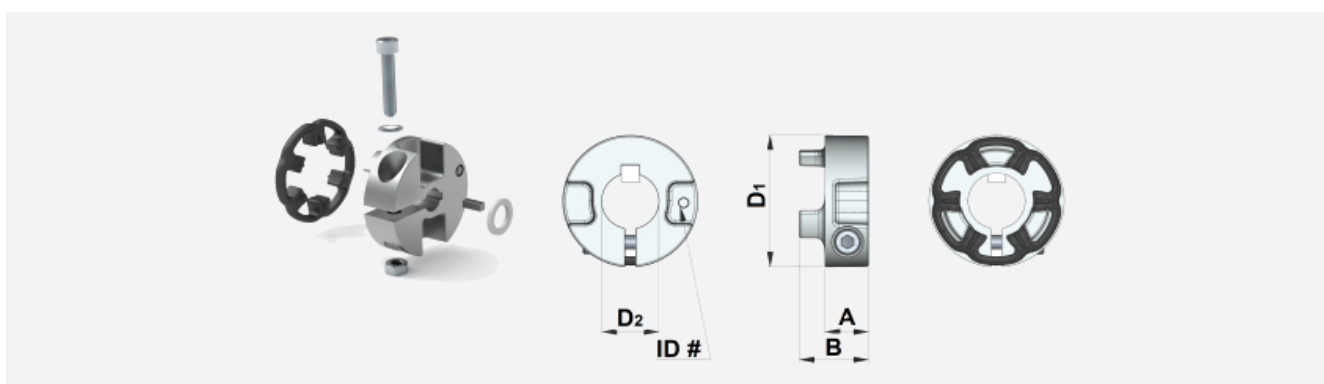
- One gearbox for multiple motor frame sizes and convertible into NEMA, IEC, Brushless, DC motor input with specific adapter/coupling kits and modular input flange system
- Greater flexibility and increased stock rotation
- Elimination of fretting corrosion common to quill mount
- Elimination of key/keyway wear in dynamic applications
- Zero backlash on motor-to-reducer connection
- Reduction of efficiency losses due to motor mounting misalignment
- High torsional rigidity
- High vibration damping

Flexible coupling program



Worm Gearboxes - Series RS - RT

Flexible coupling selection



Coupling Size	IEC NEMA	Kit Code	RS - RT Size	Mt [Nm]	Mt1 [Nm]	Mt2 [Nm]	A [mm]	B [mm]	D1 [mm]	D2 [mm/inch]	ID#
G3	NEMA	KG3.N42//X	28-40	4.5 - 6	16	8 - 10	11	19	30	3/8"	3N42
		KG3.N48/X	40	4.5 - 6	18	10 - 12			36	1/2"	3N48
		KG3.N56/X	40	7 - 8.5	30	20 - 24			36	5/8"	3N56
	IEC	KG3.009/X	28-40	4.5 - 6	15	8 - 10			30	9	309
		KG3.011/X	28-40	4.5 - 6	15	8 - 10			30	11	311
		KG3.014/X	40	7 - 8.5	28	18 - 2			36	14	314
G5	NEMA	KG5.N56/X	50-60	8.9 - 10	45	30 - 35	14.5	23	45	5/8"	5N56
		KG5.N140/X	60		60	40 - 45			52	7/8"	5N140
	IEC	KG5.011/X	50-60		15	8 - 10			45	11	511
		KG5.014/X	50-60		30	12 - 17			45	14	514
		KG5.019/X	50-60		40	20 - 25			45	19	519
		KG5.024/X	60		70	30 - 40			52	24	524
G6	NEMA	KG6.N56/X	70-85-110	15.3 - 18	50	---	19.5	31.5	58	5/8"	6N56
		KG6.N140/X	70-85-110		85	---				7/8"	6N140
		KG6.N180	70-85-110		200	---				1-1/8"	6N180
	IEC	KG6.014/X	70		60	30 - 40				14	614
		KG6.019/X	70-85-110		90	50 - 65				19	619
		KG6.024/X	70-85-110		130	85 - 100				24	624
KG6.028/X	70-85-110	180	100 - 120	28	628						

../X - Code of coupling with new IXEF black-spider

Mt - Tightening torque

Mt1 - Transmissible torque with key

Mt2 - Transmissible torque without key

RS-RT Worm Gearboxes

NEMA flanges and flexible couplings

RS - RT	Flange Size	NEMA Frame	Flange Kit Code	Coupling	
				Type	Kit Code
RS-RT 28	FM 28	42 C 48 C	K530.207.N048 K530.207.N048	G3 \varnothing 3/8" G3 \varnothing 1/2"	KG3.N042/X KG3.N048/X
RS-RT 40	FM 40	42 C 48 C 56 C	K531.227.N048 K531.227.N048 K531.227.N056	G3 \varnothing 3/8" G3 \varnothing 1/2" G3 \varnothing 5/8"	KG3.N042/X KG3.N048/X KG3.N056/X
RS-RT 50	FM 50	56 C	K532.227.N056	G5 \varnothing 5/8"	KG5.N056
RS-RT 60	FM 60	56 C 140 TC	K539.227.N056 K539.227.N056	G5 \varnothing 5/8" G5 \varnothing 7/8"	KG5.N056 KG5.N140
RS-RT 70	FM 70	56 C 140 TC 180 TC	K533.227.N056 K533.227.N056 K533.227.N180	G6 \varnothing 5/8" G6 \varnothing 7/8" G6 \varnothing 1-1/8"	KG6.N056/X KG6.N140/X KG6.N180/X
RS-RT 85	FM 85	56 C 140 TC 180 TC	K534.227.N056 K534.227.N056 K534.227.N180	G6 \varnothing 5/8" G6 \varnothing 7/8" G6 \varnothing 1-1/8"	KG6.N056/X KG6.N140/X KG6.N180/X
RS-RT 110	FM 110	56 C 140 TC 180 TC	K535.227.N056 K535.227.N056 K535.227.N180	G6 \varnothing 5/8" G6 \varnothing 7/8" G6 \varnothing 1-1/8"	KG6.N056/X KG6.N140/X KG6.N180/X
RS 130	FM 130	56 C 140 TC 180 TC	K536.227.N056 K536.227.N056 K536.227.N180	\varnothing 5/8" # \varnothing 7/8" # \varnothing 1-1/8" #	--- --- ---
RS 150	FM 130	56 C 140 TC 180 TC 210 TC	K537.227.N056 K537.227.N056 K537.227.N180 K537.227.N180	\varnothing 5/8" # \varnothing 7/8" # \varnothing 1-1/8" # \varnothing 1-3/8" #	--- --- --- ---
XA 63	FM 40	* IEC56 * IEC63	K531.206.120 K531.206.140	\varnothing 9 mm # \varnothing 11 mm #	--- ---
XA 71	FM 50	* IEC71	K532.206.160	\varnothing 14 mm #	---
XA 80	FM 70	* IEC80 * IEC90	K533.206.200 K533.206.200	\varnothing 19 mm # \varnothing 24 mm #	--- ---
XA 100	FM 85	56 C 140 TC 180 TC	K334.227.N056 K334.227.N056 K334.227.N180	G6 \varnothing 5/8" G6 \varnothing 7/8" G6 \varnothing 1-1/8"	KG6.N056/X KG6.N140/X KG6.N180/X

..X - Code of coupling with IXEF black-spider
- Key/keyway motor fitting
* - NEMA adapters not available, IEC input only

Worm Gearboxes - Series RS - RT

IEC flanges and flexible coupling

RS - RT - XA	Fange	IEC	Flange Kit-code		Coupling	
			Flange B5	Flange B14	Type	Kit Code
RS-RT 28	FM 28	IEC56 IEC63	K530.206.120 K530.206.140	K530.206.080 K530.206.090	G3 ø9 G3 ø11	KG3.009/X KG3.011/X
RS-RT 40	FM 40	IEC56 IEC63 IEC71	K531.206.120 K531.206.140 K531.206.160	K531.206.080 K531.206.090 K531.206.105	G3 ø9 G3 ø11 G3 ø14	KG3.009/X KG3.011/X KG3.014/X
RS-RT 50	FM 50	IEC63 IEC71 IEC80	K532.206.140 K532.206.160 K532.206.200	K532.206.090 K532.206.105 K532.206.120	G5 ø11 G5 ø14 G5 ø19	KG5.011/X KG5.014/X KG5.019/X
RS-RT 60	FM 60	IEC71 IEC80 IEC90	K539.206.160 K539.206.200 K539.206.200	K539.206.105 K539.206.120 K539.206.140	G5 ø14 G5 ø19 G5 ø24	KG5.014/X KG5.019/X KG5.024/X
RS-RT 70	FM 70	IEC71 IEC80 IEC90 IEC100	K533.206.160 K533.206.200 K533.206.200 K533.206.250	K533.206.105 K533.206.120 K533.206.140 K533.206.160	G6 ø14 G6 ø19 G6 ø24 G6 ø28	KG6.014/X KG6.019/X KG6.024/X KG6.028/X
RS-RT 85	FM 85	IEC80 IEC90 IEC100/112	K534.206.200 K534.206.200 K534.206.250	K534.206.120 K534.206.140 K534.206.160	G6 ø19 G6 ø24 G6 ø28	KG6.019/X KG6.024/X KG6.028/X
RS-RT 110	FM 110	IEC90 IEC100/112 IEC132	K535.206.200 K535.206.250 K535.206.300	--- K535.206.160 K535.206.200	G6 ø24 G6 ø28 ø38 #	KG6.024/X KG6.028/X ---
RS 130	FM 130	IEC100/112 IEC 132	K536.206.250 K537.206.300	--- K536.206.200	ø28 # ø38 #	--- ---
RS 150	FM 150	IEC100/112 IEC 132 IEC 160	K536.206.250 K537.206.300 K537.206.350	K536.206.200 K536.206.250 ---	ø28 # ø38 # ø42 #	--- --- ---
XA 63	FM 40	IEC56 IEC63	K531.206.120 K531.206.140	K531.206.080 K531.206.090	ø9 # ø11 #	--- ---
XA 71	FM 50	IEC71	K532.206.160	K532.206.105	ø14 #	---
XA 80	FM 70	IEC80 IEC90	K533.206.200 K533.206.200	K533.206.120 K533.206.140	ø19 # ø24 #	--- ---
XA 100	FM 85	IEC80 IEC90 IEC100/112	K534.206.200 K534.206.200 K534.206.250	K534.206.120 K534.206.140 K534.206.160	G6 ø19 G6 ø24 G6 ø28	KG6.019/X KG6.024/X KG6.028/X

/X - Code of coupling with IXEF black-spider
- Key/keyway motor fitting

RS-RT Worm Gearboxes

VARsize Electronic catalogue - 3D models



Modularity and flexibility

have been leading the design of VARVEL products since the years 2000: this way, the kit-concept gearbox was carried out allowing anyone to assemble the unit in few minutes with standard tooling.

This feature provides the highest flexibility to VARVEL's distributors and resellers who, thanks to a limited kit selection, are able to immediately configure the required product.

VARsize® selection program, available from our web-site

allows a friendly sizing of VARVEL product range.

2D/3D Drawings

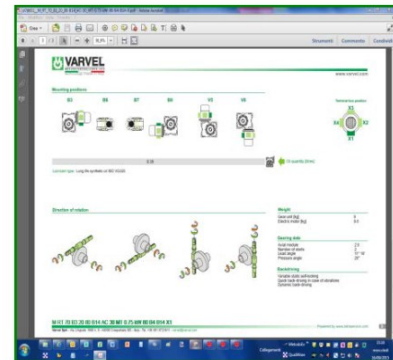
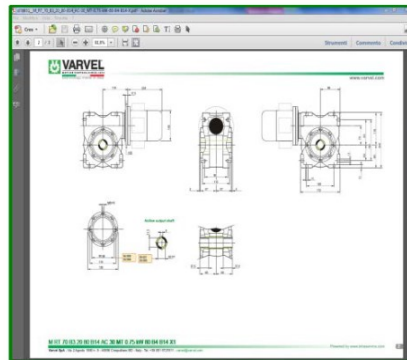
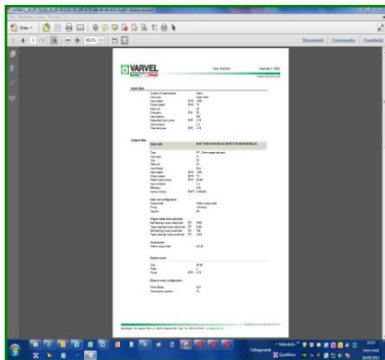
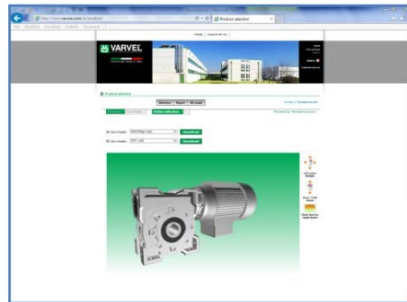
A guided selection lets 2D/3D models downloaded for the most popular CAD systems.

Guided selection

This option returns a list of applicable product configurations upon a given sequence of application parameters (power, output torque, rpm, service factor etc.).

A PDF data sheet featuring performance data and dimensional drawings is generated for each configuration, as well as the 3D model and 2D drawings.

- Pick a configuration identifying inch or metric units
- Enter your applications information or requirements
- The program selects a range of appropriate solutions
- Pick the one you want and download 2D/3D drawings
- Print out a technical data sheet with all specifications of the selected unit



Worm Gearboxes - Series RS - RT

Product designation

Example: **FRT-G50 B3 1:20 N56 AC1.0"**

F	RT-G	50	B3	1:20	N56	AC	1.0"					
↓	↓	↓	↓	↓	↓	↓	↓					
	TYPE (coupling input) RT-G - Universal Mount TA-G - Helical/worm RT/RT-G - Double worm RS-G - Original Mount RA-G - Helical/worm RS/RS - Double worm		MOUNTING POSITION RS - Pages 15, 16 RT - Page 17			OUTPUT SHAFT AC - Hollow AS - Solid single output AD - Solid dual output						
INPUT TYPE		SIZE			RATIO 1:			MOTOR ADAPTER		SHAFT DIMENSIONS		
		A)	B)	C)	A)	B)	C)	NEMA	IEC	Size	Dia. in	Dia. mm
M - Motorized unit		28	63/40	28/28	5	32	280	N42	56	28	0.625"	14
F - With motor flange		40	63/50	28/40	7	44	420	N48	63	40	0.75"	20 19 18
S - Without motor flange		50	63/60	28/50	10	63	560	N56	71	50	1.0"	25 24
nil - Solid input		60	71/50	28/60	15	95	784	N140	80	60	1.125"	25
		70	71/60	40/70	20	126	1120	N180	90	70	1.25"	30 28 25
		85	71/70	40/85	28	176	1586	N210	100/112	85	1.375"	35 32
		110	71/85	50/110	40	252	2240		132	110	1.625"	42
		130	80/60	60/130	56	309	2800		160	130	1.75"	48
		150	80/70	70/150	70	353	4000			150	2.0"	55
			80/85		80	441	5600					
			80/110		100	504	8000					
			100/110			630	10000					
			100/130									
			100/150									

A) - Single worm gearboxes
 B) - Helical/worm gearboxes
 C) - Double worm gearboxes

OPTIONS

AS/AD - Single / double sided solid output shaft BR/BRV - Plain / Vulkollan-bush torque arm CS - Non-standard output bearings F/FL - Additional output flange bolt on body side	GRM - Reduced end play LNS - Non-standard lubrication TLE/TLI - Internal / external torque limiter VB - NDE (not drive end) worm shaft extension
--	---

Unless otherwise requested, the fitting side of output flanges and optional items is on the right side of the gearbox when seen from input as standard.

RS-RT Worm Gearboxes

Input arrangements

FRS FRT	28	40	50	60	70	85	110	130	150
NEMA42	G3	G3	---	---	---	---	---	---	---
NEMA48	---	G3	---	---	---	---	---	---	---
NEMA56	---	G3	G5	G5	G6	G6	G6	---	---
NEMA140	---	---	---	G5	G6	G6	G6	■	■
NEMA180	---	---	---	---	G6	G6	G6	■	■
NEMA210	---	---	---	---	---	---	---	---	■
FXA	63	71	80	100					
NEMA56	---	---	---	G6					
NEMA140	---	---	---	G6					
NEMA180	---	---	---	G6					

FRS FRT	28	40	50	60	70	85	110	130	150
IEC56	G3	G3	---	---	---	---	---	---	---
IEC63	G3	G3	G5	---	---	---	---	---	---
IEC71	---	G3	G5	G5	G6	---	---	---	---
IEC80	---	---	G5	G5	G6	G6	---	---	---
IEC90	---	---	---	G5	G6	G6	G6	---	---
IEC100	---	---	---	---	G6	G6	G6	■	■
IEC112	---	---	---	---	---	G6	G6	■	■
IEC132	---	---	---	---	---	---	■	■	■
IEC160	---	---	---	---	---	---	---	---	■
FXA	63	71	80	100					
IEC56	■	---	---	---					
IEC63	■	---	---	---					
IEC71	---	■	---	---					
IEC80	---	---	■	G6					
IEC90	---	---	■	G6					
IEC100	---	---	---	G6					
IEC112	---	---	---	G6					

G3, G5, G6 - Aluminium coupling, standard

GS3, GS5, GS6, GS8 - Steel coupling, on demand

■ - IEC flange and metric quill input (key/keyway fitting) as standard. Other cases on demand

Worm Gearboxes - Series RS - RT

RS, RA. RS/RS

Mounting positions

Output configuration

same configurations for SA, IA, DA, FA, FB, PA, PB mountings: refer to page 38 for dimensions.

S (SA)	I (IA)	D (DA)	PC - PC	FL (FA,FB) & (PA,PB)	
B3 (std)	B3 (std)	B3 (std)	B5 (std)	B5 (std)	B5i
V5	V5	V5	B5	B5a	B5ai
B8	B8	B8	B5	B5b	B5bi
V6	V6	V6	B5	B5c	B5ci
B6	B6	B6	V1	V1	V1i
B7	B7	B7	V3	V3	V3i
Helical/Worm Input Configuration (RA)	10 (std)	11	12	13	

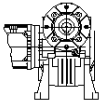
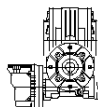
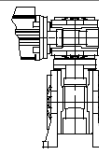
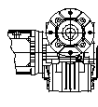
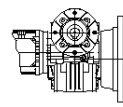
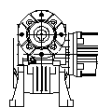
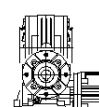
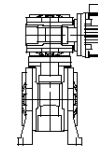
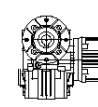
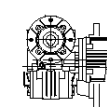
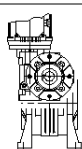
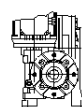
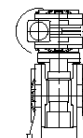
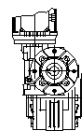
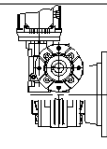
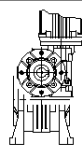
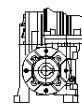
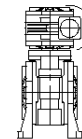
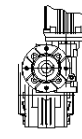
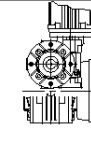
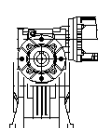
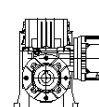
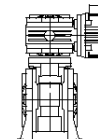
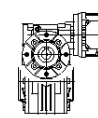
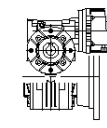
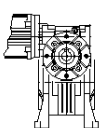
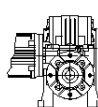
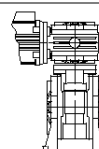
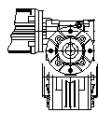
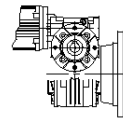
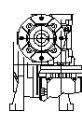
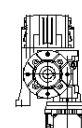
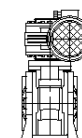
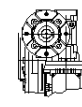
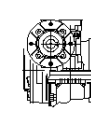
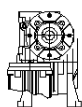
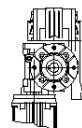
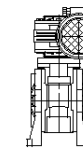

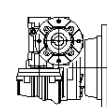
RS-RT Worm Gearboxes

Mounting positions

RS/RS

Two-stage input configuration

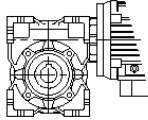
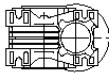
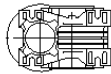
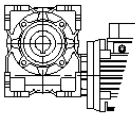
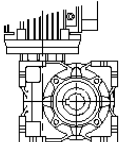
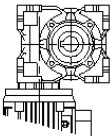
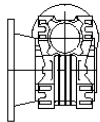
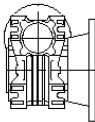
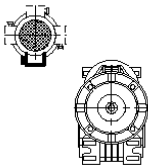
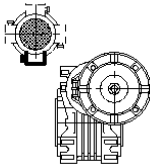
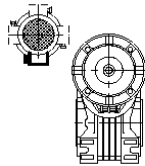
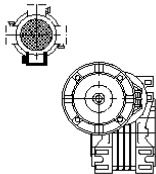
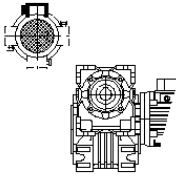
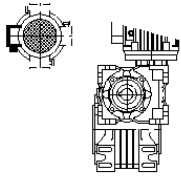
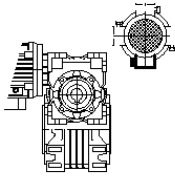
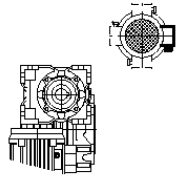
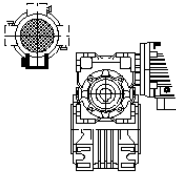
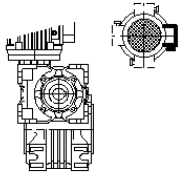
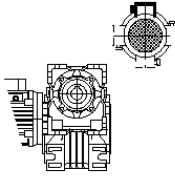
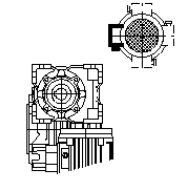
same configurations for SA, IA, DA, FA, FB, PA, PB mountings: refer to page 38 for dimensions.

	S (SA)	I (IA)	D (DA)	PC (PA, PB)	FL (FA, FB)
11					
12					
13					
14					
15					
16					
17					
18					

Worm Gearboxes - Series RS - RT

RT, TA, RT/RT

Mounting positions

Output configuration (RT, TA, RT / RT)	<p>B3 (std)</p> 	 <p>B6</p>	 <p>B7</p>	 <p>B8</p>
	 <p>V5</p>	 <p>V6</p>	 <p>F (std)</p>	 <p>Fi</p>
Helical/worm input configuration (TA)	 <p>10 (std)</p>	 <p>11</p>	 <p>12</p>	 <p>13</p>
Two-stage worm input configuration (RT/RT)	 <p>20 (std)</p>	 <p>21</p>	 <p>22</p>	 <p>23</p>
	 <p>24</p>	 <p>25</p>	 <p>26</p>	 <p>27</p>

RS-RT Worm Gearboxes

Service factors

GEARBOX SERVICE FACTOR

Service factor is the ratio between M_2 (gearbox maximum output torque) and $M_{(app)}$ (application torque), and it must be bigger than the related Application factor listed below.

Service factor SF1.0 is meant as typical of 16 hours/day operation, with uniform load, starts/ stops lower than 6 per hour and ambient temperature between 60 and 95 °F.

For max. ambient temperature exceeding 100 °F or below 32 °F, please ask Customer Service.

Application	Load duration (hrs/day)			Application	Load duration (hrs/day)		
	3 -	3 - 10	10 +		3 -	3 - 10	10 +
Agitators (mixers)				Elevators			
Pure liquids	1.00	1.00	1.25	Bucket	1.00	1.25	1.50
Liquids and solids	1.00	1.00	1.50	Centrifugal discharge	1.00	1.00	1.25
Liquids - variable density	1.00	1.25	1.50	Escalators	1.00	1.00	1.25
Blowers				Freight	1.00	1.25	1.50
Centrifugal	1.00	1.00	1.25	Gravity discharge	1.00	1.00	1.25
Lobe	1.00	1.25	1.50	Extruders			
Vane	1.00	1.25	1.50	General	1.50	1.50	1.50
Brewing and distilling				Plastics			
Bottling machinery	1.00	1.25	1.25	Variable speed drive	1.50	1.50	1.50
Brew kettles - continuous duty	1.25	1.25	1.25	Fixed speed drive	1.75	1.75	1.75
Cookers - continuous duty	1.25	1.25	1.25	Rubber			
Mash tubs - continuous duty	1.25	1.25	1.25	Continuous screw operation	1.75	1.75	1.75
Scale hopper - frequent starts	1.25	1.25	1.25	Intermittent screw operation	1.75	1.75	1.75
Can filling machine	1.00	1.00	1.25	Fans			
Car dumpers	1.50	1.75	2.00	Centrifugal	1.00	1.00	1.25
Car pullers	1.00	1.25	1.50	Cooling towers	2.00	2.00	2.00
Clarifiers	1.00	1.00	1.25	Forced draft	1.25	1.25	1.25
Classifiers	1.00	1.25	1.50	Induced draft	1.50	1.50	1.50
Clay working machinery				Industrial and mine	1.50	1.50	1.50
Brick press	1.50	1.75	2.00	Feeders			
Briquette machine	1.50	1.75	2.00	Apron	1.00	1.25	1.50
Pug mill	1.00	1.25	1.50	Belt	1.00	1.25	1.50
Compactors	2.00	2.00	2.00	Disc	1.00	1.00	1.25
Compressors				Reciprocating	1.50	1.75	2.00
Centrifugal	1.00	1.00	1.25	Screw	1.00	1.25	1.50
Lobe	1.00	1.25	1.50	Food industry			
Reciprocating, multi-cylinder	1.50	1.50	1.75	Cereal cooker	1.00	1.00	1.25
Reciprocating, single-cylinder	1.75	1.75	2.00	Dough mixer	1.25	1.25	1.50
Conveyors				Meat grinders	1.25	1.25	1.50
- General purpose				Slicers	1.25	1.25	1.50
Uniformly loaded or fed	1.00	1.00	1.25	Generators and exciters	1.00	1.00	1.25
- Heavy duty				Hammer mills	1.75	1.75	2.00
Not uniformly fed	1.00	1.25	1.50	Hoists			
- Reciprocating or shaker	1.50	1.75	2.00	Heavy duty	1.25	1.75	2.00
Crusher				Medium duty	1.25	1.25	1.50
Stone or ore	1.75	1.75	2.00	Skip hoist	1.25	1.25	1.50
Dredges				Laundry			
Cable reels .	1.25	1.25	1.50	Tumblers	1.25	1.25	1.50
Conveyors	1.25	1.25	1.50	Washers	1.50	1.50	2.00
Cutter head drives	2.00	2.00	2.00	Lumber industry			
Pumps	2.00	2.00	2.00	Barkers			
Screen drives	1.75	1.75	2.00	Spindle feed	1.25	1.25	1.50
Stackers	1.25	1.25	1.50	Main drive	1.75	1.75	1.75
Winches	1.25	1.25	1.50	Conveyors			
				Burner	1.25	1.25	1.50
				Main or heavy duty	1.50	1.50	1.50
				Main log	1.75	1.75	2.00
				Re-saw, merry-go-round	1.25	1.25	1.50

Worm Gearboxes - Series RS - RT

Service factors

Application	Load duration (hrs/day)			Application	Load duration (hrs/day)		
	3 -	3 - 10	10 +		3 -	3 - 10	10 +
Conveyors				Mixers			
Slab	1.75	1.75	2.00	Concrete	1.25	1.25	1.50
Transfer	1.25	1.25	1.50	Paper mills			
Chains				Agitator (mixer)	1.50	1.50	1.50
Floor	1.50	1.50	1.50	Agitator for pure liquors	1.25	1.25	1.25
Green	1.50	1.50	1.75	Barking drums	2.00	2.00	2.00
Cut-off saws				Barkers -mechanical	2.00	2.00	2.00
Chain	1.50	1.50	1.75	Beater	1.50	1.50	1.50
Drag	1.50	1.50	1.75	Breaker stack	1.25	1.25	1.25
Debarking drums	1.75	1.75	2.00	Calendar	1.25	1.25	1.25
Feeds				Chipper	2.00	2.00	2.00
Edger	1.25	1.25	1.50	Chip feeder	1.50	1.50	1.50
Gang	1.75	1.75	1.75	Coating rolls	1.25	1.25	1.25
Trimmer	1.25	1.25	1.50	Conveyors			
Log deck	1.75	1.75	1.75	Chip, bark, chemical	1.25	1.25	1.25
Log hauls - incline - well type	1.75	1.75	1.75	Log (including slab)	2.00	2.00	2.00
Log turning devices	1.75	1.75	1.75	Couch rolls	1.25	1.25	1.25
Planer feed	1.25	1.25	1.50	Cutter	2.00	2.00	2.00
Planer tilting hoists	1.50	1.50	1.50	Cylinder moulds	1.25	1.25	1.25
Rolls -live-off bearings - roll cases	1.75	1.75	1.75	Dryers			
Sorting table	1.25	1.25	1.50	Paper machine	1.25	1.25	1.25
Tipple hoist	1.25	1.25	1.50	Conveyor type	1.25	1.25	1.25
Transfers				Embosses	1.25	1.25	1.25
Chain	1.50	1.50	1.75	Extruder	1.50	1.50	1.50
Crane way	1.50	1.50	1.75	Fourdrinier rolls (includes lump breaker, dandy roll, wire turning, and return rolls)	1.25	1.25	1.25
Tray drives	1.25	1.25	1.50	Jordan	1.50	1.50	1.50
Veneer lathe drives	1.25	1.25	1.50	Kiln drive	1.50	1.25	1.50
Metal mills				Mt Hope roll	1.25	1.50	1.25
Draw bench carriage and main drive	1.25	1.25	1.50	Paper rolls	1.25	1.25	1.25
Runout table				Platter	1.50	1.50	1.50
Non-reversing				Presses - felt and suction	1.25	1.25	1.25
Group drives	1.50	1.50	1.50	Pulper	2.00	2.00	2.00
Individual drives	2.00	2.00	2.00	Pumps - vacuum	1.50	1.50	1.50
Reversing	2.00	2.00	2.00	Reel (surface type)	1.25	1.25	1.25
Slab pushers	1.50	1.50	1.50	Screens			
Shears	2.00	2.00	2.00	Chip	1.50	1.50	1.50
Wire drawing machine	1.25	1.25	1.50	Rotary	1.50	1.50	1.50
Wire winding machine	1.25	1.50	1.50	Vibrating	2.00	2.00	2.00
Metal strip processing machinery				Size press	1.25	1.25	1.25
Bridles	1.25	1.25	1.50	Super calendar	1.25	1.25	1.25
Coilers and uncoilers	1.00	1.00	1.25	Thickener (AC motor)	1.50	1.50	1.50
Edge trimmers	1.00	1.25	1.50	(DC motor)	1.25	1.25	1.25
Flatteners	1.25	1.25	1.50	Washer (AC motor)	1.50	1.50	1.50
Loopers (accumulators)	1.00	1.00	1.25	(DC motor)	1.25	1.25	1.25
Pinch rolls	1.25	1.25	1.50	Wind and unwind stand	1.00	1.00	1.25
Scrap choppers	1.25	1.25	1.50	Winders (surface type)	1.25	1.25	1.25
Shears	2.00	2.00	2.00	Yankee dryers	1.25	1.25	1.25
Slitters	1.00	1.25	1.50	Plastics industry			
Mills, rotary type				Primary processing			
Ball and rod	2.00	2.00	2.00	Intensive internal mixers			
Spur ring gear	2.00	2.00	2.00	Batch mixers	1.75	1.75	1.75
Helical ring gear	1.50	1.50	1.50	Continuous mixers	1.50	1.50	1.50
Direct connected	2.00	2.00	2.00	Batch drop mill - two smooth rolls	1.25	1.25	1.25
Cement kilns	1.50	1.50	1.50	Continuous feed, holding and blend mill	1.25	1.25	1.50
Dryers and coolers	1.50	1.50	1.50	Compounding mill	1.25	1.25	1.25
				Calendars	1.50	1.50	1.25

RS-RT Worm Gearboxes

Service factors

Application	Load duration (hrs/day)			Application	Load duration (hrs/day)		
	3 -	3 - 10	10 +		3 -	3 - 10	10 +
Plastics industry				Sand miller	1.25	1.25	1.50
Secondary processing				Sewage disposal equipment			
Blow moulders	1.50	1.50	1.50	Bar screens	1.25	1.25	1.25
Coating	1.25	1.25	1.25	Chemical feeders	1.25	1.25	1.25
Film	1.25	1.25	1.25	Dewatering screens	1.50	1.50	1.50
Pipe	1.25	1.25	1.25	Scum breakers	1.50	1.50	1.50
Pre-plasticizers	1.50	1.50	1.50	Slow or rapid mixers	1.50	1.50	1.50
Rods	1.25	1.25	1.25	Sludge collectors	1.25	1.25	1.25
Sheet	1.25	1.25	1.25	Thickeners	1.50	1.50	1.50
Tubing	1.25	1.25	1.50	Vacuum filters	1.50	1.50	1.50
Pullers - barge haul	1.25	1.25	1.50	Screens			
Pumps				Air washing	1.00	1.00	1.25
Centrifugal	1.00	1.00	1.25	Rotary - stone or gravel	1.25	1.25	1.50
Proportioning	1.25	1.25	1.00	Travelling water intake	1.00	1.00	1.25
Reciprocating				Sugar industry			
Single acting, three or more cylinders	1.25	1.25	1.50	Beet slicer	2.00	2.00	2.00
Double acting, two or more cylinders	1.25	1.25	1.50	Cane knives	1.50	1.50	1.50
Rotary				Crushers	1.50	1.50	1.50
Gear type	1.00	1.00	1.25	Mills (low speed end)	1.75	1.75	1.75
Lobe	1.00	1.00	1.25	Textile industry			
Vane	1.00	1.00	1.25	Batchers	1.25	1.25	1.50
Rubber industry				Calendars	1.25	1.25	1.50
Intensive internal mixers				Cards	1.25	1.25	1.50
Batch mixers	1.75	1.75	1.75	Dry cans	1.25	1.25	1.50
Continuous mixers	1.50	1.50	1.50	Dryers	1.25	1.25	1.50
Mixing mill - two smooth rolls (if corrugated rolls are used, then use the same selection factors that are used for a cracker warmer).	1.50	1.50	1.50	Dyeing machinery	1.25	1.25	1.50
Batch drop mill - two smooth rolls	1.50	1.50	1.50	Looms	1.25	1.25	1.50
Cracker warmer - two rolls; one corrugated roll	1.75	1.75	1.75	Mangles	1.25	1.25	1.50
Cracker - two corrugated rolls.	2.00	2.00	2.00	Nappers	1.25	1.25	1.50
Holding, feed and blend mill - two rolls	1.25	1.25	1.25	Pads	1.25	1.25	1.50
Refiner - two rolls	1.50	1.50	1.50	Slashers	1.25	1.25	1.50
Calendars	1.50	1.50	1.50	Soapers	1.25	1.25	1.50
				Spinners	1.25	1.25	1.50
				Tenter frames	1.25	1.25	1.50
				Washers	1.25	1.25	1.50
				Winders	1.25	1.25	1.50

This application guide is given by way of an example and therefore, may not include all the possible cases.

Should the application not be referable to any of the listed cases, the table below gives two service factors - F_1 referred to load type and work duration, and F_2 to starts and stops number of the duty cycle - of which the product is the needed gearbox oversizing coefficient in order to have a torque good enough to perform the required work.

Application: Conveyor 1000 in-lb @ 84 rpm - uniform load - 24 hrs/day is $F_1=1.4$; 6 start/stops per hour is $F_2=1.0$;

Required torque $1000 \times 1.4 \times 1.0 = 1400$ in-lb

Gearbox to select FRT70 1/20 (90 rpm) 1717 in-lb, i.e. the gearbox size with torque greater than 1400 in-lb

Gearbox service factor: $SF1.7 = 1717$ in-lb : 1000 in-lb

SERVICE FACTOR

$$SF = F_1 \times F_2$$

F_1 = Load & Operation factor

F_2 = Start/stop factor

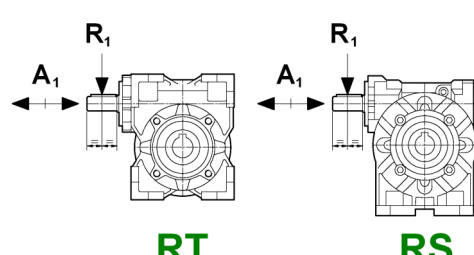
	F_1	Uniform load	Variable load	Shock load	Start/stops per hour	F_2
8 hrs		0.8	1.0	1.5	6	1.0
16 hrs		1.0	1.2	1.8	60	1.2
24 hrs		1.4	1.6	2.0	120	1.4

Worm Gearboxes - Series RS - RT

Weights - Oil quantity - Input loads

WEIGHTS [lb] & LUBRICANTS [US quarters / litres]										
RS - RT	Weight lb	Oil US qt	Oil litres	RA - TA	Weight lb	Oil US qt	Oil litres	RS / RS RT / RT	Weight lb	Oil US qt
28	2.43	0.03	0.03	63/40	8.82	0.04/0.08	0.04/0.08	28/28	5.51	0.06
40	5.51	0.08	0.08	63/50	11.68	0.04/0.14	0.04/0.13	28/40	8.60	0.11
50	8.38	0.14	0.13	63/60	17.64	0.04/0.26	0.04/0.25	28/50	11.46	0.17
60	14.33	0.26	0.25	71/50	14.55	0.06/0.14	0.06/0.13	28/60	17.42	0.29
70	19.84	0.37	0.35	71/60	20.50	0.06/0.25	0.06/0.25	40/70	26.46	0.45
85	29.76	0.63	0.60	71/70	26.01	0.06/0.37	0.06/0.35	40/85	36.38	0.71
110	85.98	1.59	1.50	71/85	35.93	0.06/0.63	0.06/0.60	50/110	99.21	1.73
130*	110.23	2.91	2.75	80/60	23.15	0.11/0.26	0.10/0.25	60/130*	125.66	3.17
150*	176.37	4.65	4.40	80/70	28.66	0.11/0.37	0.10/0.35	70/150*	198.41	5.02
				80/85	38.58	0.11/0.63	0.10/0.60			
				80/110	94.80	0.11/1.59	0.10/1.50			
				100/110	101.41	0.21/1.59	0.20/1.50			
				100/130*	141.09	0.21/2.91	0.20/2.75			
				100/150*	207.23	0.21/4.65	0.20/4.40			

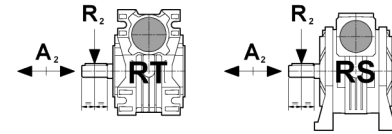
(*) - RS sizes only

INPUT LOADS [lb]							
RPM	3300	1800	1100	900	600	350	
RS-RT 28	11	15	17	19	22	26	 <p>Overhung load - R_1 [lb] Axial Load - $A_1 = 0.2 \times R_1$ [lb]</p>
RS-RT 40	24	32	35	37	39	43	
RS-RT 50	32	43	48	54	61	65	
RS-RT 60	50	65	71	76	80	87	
RS-RT 70	56	76	87	95	102	108	
RS-RT 85	74	97	112	125	134	151	
RS-RT 110	123	162	173	184	199	216	
RS 130	151	216	227	238	249	260	
RS 150	195	260	270	281	303	324	

RS-RT Worm Gearboxes

Output Loads

OUTPUT LOADS [lb]



$$A_2 = 0.2 \times R_2$$

STANDARD OUTPUT SHAFT BEARINGS

- OHL Overhung load R_2 [lb]

- Axial load $A_2 = 0.2 \times R_2$ [lb]

R	5	7	10	15	20	28	40	49	56	70	80	100	Bearing Type
rpm	336	240	168	112	84	60	42	35	30	24	22	17	
RS-RT28	108	97	108	119	130	134	151	162	173	195	205	216	16005
RS-RT40	216	216	238	260	292	324	346	368	389	411	433	497	16006
RS-RT50	314	270	314	368	411	433	497	519	562	606	627	692	16008
RS-RT60	487	519	541	627	714	779	843	930	995	1081	1146	1211	①
RS-RT70	562	584	627	779	843	908	973	1125	1189	1276	1363	1449	②
RS-RT85	714	714	800	952	1016	1168	1189	1363	1427	1536	1622	1795	③
RS-RT110	---	843	898	1125	1168	1276	1233	1622	1687	1730	1903	2119	④
RS130	---	1081	1265	1330	1406	1427	1687	1903	2055	2098	2271	2487	6015
RS150	---	1406	1665	1795	1903	1946	2379	2595	2703	2812	3028	3244	6216

① - RS: 6008 / RT: 6208

② - RS: 6009 / RT: 6209

③ - RS: 6010 / RT: 6210

④ - RS: 6012 / RT: 6212

HEAVY DUTY OUTPUT SHAFT BEARINGS

- OHL Overhung load R_2 [lb]

- Axial load $A_2 = 0.2 \times R_2$ [lb]

R	5	7	10	15	20	28	40	49	56	70	80	100	Bearing Type
rpm	336	240	168	112	84	60	42	35	30	24	22	17	
RS-RT28	162	141	162	177	195	201	227	242	260	281	281	281	6005
RS-RT40	303	324	335	357	411	454	487	519	541	562	562	562	32006
RS-RT50	433	378	433	519	562	649	735	779	843	908	908	908	32008
RS-RT60	627	649	692	800	908	1038	1103	1233	1319	1427	1427	1427	30208
RS-RT70	725	714	800	973	1116	1211	1319	1492	1579	1709	1709	1709	⑤
RS-RT85	887	908	995	1189	1363	1557	1579	1817	1882	2033	2033	2033	⑥
RS-RT110	---	1081	1168	1449	1622	1730	2011	2271	2401	2401	2401	2401	⑦
RS130	---	1514	1709	1860	2098	2141	2530	2790	3071	3136	3136	3136	32015
RS150	---	1946	2336	2509	2855	2920	3568	3893	4044	4217	4217	4217	30216

⑤ - RS:32009 / RT: 30209

⑥ - RS: 32010 / RT: 30210

⑦ - RS:32012 / RT: 30212

Worm Gearboxes - Series RS - RT

Output loads

OUTPUT RADIAL LOADS

OUTPUT RADIAL LOADS (OHL)

Overhung (radial) loads (F_r) should be checked according to output speed, mounting position (A) and type of the transmission element (B) fitted on the gearbox output shaft and rectified when applicable by the appropriate k_T rating factor.

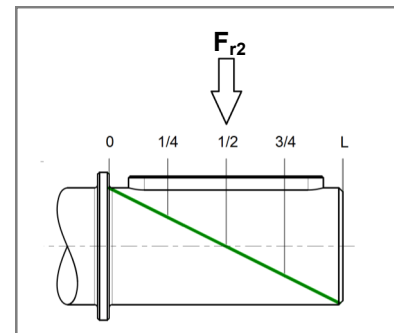
Application point of radial load

OHL is considered as applied at the output shaft mid-point.

Other positions origin loads to be adjusted with the appropriate factor k_L .

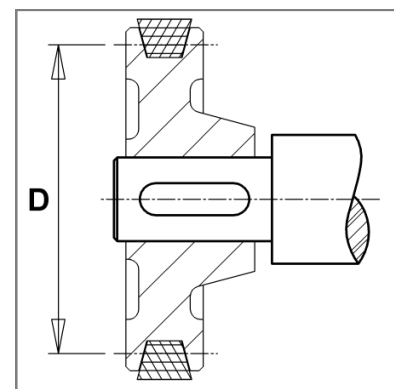
Examples of load distance from the shaft shoulder:

k_L	L
1.1	1/4 * L
1.0	1/2 * L
0.9	3/4 * L
0.8	L



Transmission element

k_T	Type of transmission element
1,15	Gear tooth No. < 17
1,40	Chain sprocket tooth No. < 13
1,25	tooth No. < 20
1,00	tooth No. > 20
2,50	Pulley for V-belt
1,25	toothed-belt



Overhung (radial) load - F_{r2}

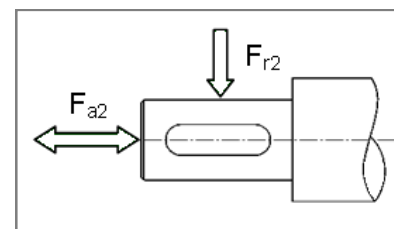
$$F_{r2} = \frac{2000 * M_2}{D} \times k_L \times k_T$$

OUTPUT AXIAL LOADS

Axial load - F_{a2}

$$F_{a2} = F_{r2} \times 0.2$$

Axial load value is included within the catalogue radial load figures and is valid on both tensile and compressive stress.



RS-RT Worm Gearboxes

RS-RT Selection

Single stage

2-poles - SF1.0

3600 rpm	Ratio	5	7	10	15	20	28	40	49	56	70	80	100
	output rpm	720	514	360	240	180	129	90	73	64	51	45	36
RS - RT 28 1.10" CD	HP	1.35	1.06	0.82	0.59	0.42	0.39	0.27	0.22	0.20	0.15	0.13	0.07
	in-lb	115	115	124	124	115	133	124	115	106	97	89	62
	eff.	0.86	0.86	0.83	0.79	0.77	0.69	0.64	0.61	0.54	0.49	0.49	0.46
RS - RT 40 1.57" CD	HP	3.52	2.51	2.01	1.37	0.94	0.82	0.60	0.50	0.44	0.35	0.32	0.25
	in-lb	283	274	301	301	266	301	283	274	266	257	248	230
	eff.	0.89	0.87	0.85	0.81	0.78	0.72	0.66	0.62	0.6	0.57	0.54	0.51
RS - RT 50 1.97" CD	HP	1.49	1.46	1.42	1.36	1.31	1.21	1.11	1.04	1.01	0.96	0.91	0.85
	in-lb	513	549	522	540	460	584	522	496	469	407	434	354
	eff.	0.9	0.88	0.86	0.82	0.8	0.75	0.69	0.66	0.64	0.58	0.58	0.52
RS - RT 60 2.36" CD	HP	9.72	7.38	5.87	4.36	3.18	2.68	1.84	1.21	1.22	1.01	0.87	0.57
	in-lb	797	823	920	974	956	1027	929	752	814	814	752	602
	eff.	0.9	0.88	0.87	0.84	0.82	0.76	0.73	0.71	0.66	0.64	0.6	0.58
RS - RT 70 2.76" CD	HP	13.58	9.55	7.21	5.36	4.02	3.69	2.51	2.01	1.68	1.34	1.16	0.91
	in-lb	1115	1080	1151	1230	1204	1425	1372	1257	1151	1062	1018	947
	eff.	0.91	0.89	0.88	0.85	0.83	0.78	0.74	0.7	0.68	0.63	0.61	0.58
RS - RT 85 3.35" CD	HP	21.79	16.09	12.57	8.88	7.21	5.20	4.02	3.35	2.85	2.18	1.84	1.56
	in-lb	1788	1814	1991	2071	2097	2080	2213	2142	2027	1859	1770	1682
	eff.	0.91	0.89	0.88	0.86	0.8	0.8	0.76	0.72	0.71	0.67	0.64	0.6
RS - RT 110 4.33" CD	HP	---	29.33	24.81	17.94	14.42	11.73	8.38	7.54	6.03	5.20	5.03	3.52
	in-lb	---	3319	3938	4160	4337	4691	4602	4823	4337	4646	4779	3983
	eff.	---	0.9	0.88	0.86	0.84	0.79	0.76	0.73	0.71	0.7	0.67	0.62
RS 130 5.12" CD	HP	---	44.09	36.21	26.48	20.45	15.76	12.91	10.06	8.88	6.54	5.53	4.02
	in-lb	---	5000	5797	6239	6328	6328	7213	6549	6903	5930	5487	4956
	eff.	---	0.9	0.89	0.87	0.86	0.8	0.78	0.74	0.77	0.72	0.68	0.68
RS 150 5.91" CD	HP	---	62.02	49.62	38.22	28.66	22.80	17.94	14.25	11.06	9.22	8.21	6.03
	in-lb	---	7036	7965	8983	8894	9425	10355	9647	8585	8408	8098	7478
	eff.	---	0.9	0.89	0.87	0.86	0.82	0.8	0.77	0.77	0.72	0.68	0.68

Worm Gearboxes - Series RS - RT

SF1.0 - 4 poles

Single stage

RS-RT Selection

1800 rpm	Ratio	5	7	10	15	20	28	40	49	56	70	80	100
	output rpm	360	257	180	120	90	64	45	37	32	26	23	18
RS - RT 28 1.10" CD	HP	1.09	0.75	0.55	0.39	0.27	0.27	0.17	0.15	0.13	0.10	0.08	0.05
	in-lb	159	159	159	159	142	177	150	150	133	106	106	71
	eff.	0.84	0.84	0.81	0.77	0.74	0.66	0.62	0.57	0.51	0.45	0.45	0.43
RS - RT 40 1.57" CD	HP	1.87	1.84	1.36	0.92	0.64	0.62	0.42	0.35	0.30	0.23	0.20	0.15
	in-lb	398	398	407	389	345	425	372	363	336	319	283	257
	eff.	0.87	0.85	0.83	0.78	0.75	0.68	0.61	0.58	0.56	0.52	0.50	0.46
RS - RT 50 1.97" CD	HP	4.53	3.02	2.18	1.56	1.06	1.06	0.69	0.62	0.52	0.42	0.34	0.22
	in-lb	717	664	664	655	575	752	637	673	628	558	513	381
	eff.	0.88	0.86	0.84	0.78	0.76	0.71	0.64	0.62	0.60	0.53	0.52	0.47
RS - RT 60 2.36" CD	HP	6.87	4.69	3.86	2.68	2.01	1.68	1.26	1.04	0.91	0.77	0.62	0.42
	in-lb	1106	1000	1177	1151	1080	1230	1195	1133	1089	1080	938	735
	eff.	0.89	0.86	0.84	0.81	0.77	0.71	0.66	0.62	0.60	0.55	0.53	0.49
RS - RT 70 2.76" CD	HP	9.55	6.71	5.20	3.69	3.02	2.51	2.01	1.41	1.24	0.97	0.84	0.62
	in-lb	1558	1469	1593	1664	1717	1912	2106	1673	1593	1443	1363	1151
	eff.	0.89	0.88	0.86	0.83	0.81	0.75	0.71	0.67	0.64	0.59	0.56	0.52
RS - RT 85 3.35" CD	HP	15.25	10.39	7.71	5.70	4.86	3.69	2.68	2.35	2.01	1.61	1.44	0.92
	in-lb	2469	2292	2372	2558	2850	2823	2876	2797	2699	2567	2478	1859
	eff.	0.90	0.88	0.86	0.83	0.82	0.76	0.72	0.67	0.68	0.63	0.60	0.56
RS - RT 110 4.33" CD	HP	---	20.95	15.09	10.90	9.55	7.38	5.87	4.53	3.69	3.35	2.51	1.84
	in-lb	---	4646	4708	4956	5726	5682	6115	5584	5266	5620	4646	4151
	eff.	---	0.88	0.87	0.84	0.83	0.76	0.73	0.71	0.70	0.67	0.66	0.61
RS 130 5.12" CD	HP	---	31.85	25.14	18.44	14.25	12.57	9.22	6.54	6.20	4.53	4.02	3.02
	in-lb	---	7142	7877	8496	8629	9735	10089	8408	8894	7655	7169	6638
	eff.	---	0.89	0.87	0.85	0.84	0.77	0.76	0.72	0.71	0.67	0.63	0.61
RS 150 5.91" CD	HP	---	41.74	35.20	26.82	20.95	15.92	13.41	9.89	8.55	6.37	5.53	4.36
	in-lb	---	9381	11151	12479	12656	12700	14868	12744	12567	10886	10355	9912
	eff.	---	0.89	0.88	0.86	0.84	0.79	0.77	0.73	0.73	0.68	0.65	0.63

RS-RT Worm Gearboxes

RS-RT Selection

Single stage

6 poles - SF1.0

1200 rpm	Ratio	5	7	10	15	20	28	40	49	56	70	80	100
	output rpm	240	171	120	80	60	43	30	24	21	17	15	12
RS - RT 28 1.10" CD	HP	0.79	0.60	0.40	0.30	0.22	0.20	0.13	0.12	0.10	0.07	0.05	0.03
	in-lb	195	195	177	186	168	195	177	168	142	115	97	71
	eff.	0.82	0.82	0.78	0.72	0.7	0.61	0.56	0.52	0.45	0.43	0.4	0.37
RS - RT 40 1.57" CD	HP	2.01	1.41	1.07	0.74	0.50	0.47	0.32	0.27	0.23	0.20	0.17	0.13
	in-lb	478	460	478	460	398	460	407	381	363	354	345	319
	eff.	0.86	0.83	0.8	0.74	0.7	0.63	0.56	0.52	0.49	0.46	0.44	0.42
RS - RT 50 1.97" CD	HP	3.52	2.51	1.84	1.26	0.87	0.85	0.59	0.47	0.42	0.32	0.28	0.20
	in-lb	850	841	841	805	699	876	752	717	708	593	593	487
	eff.	0.86	0.85	0.81	0.76	0.72	0.65	0.58	0.56	0.54	0.47	0.46	0.42
RS - RT 60 2.36" CD	HP	5.36	4.02	3.18	2.35	1.68	1.46	0.94	0.72	0.67	0.54	0.47	0.32
	in-lb	1328	1328	1443	1469	1425	1549	1345	1195	1151	1106	1018	832
	eff.	0.87	0.85	0.83	0.75	0.76	0.68	0.64	0.61	0.55	0.53	0.48	0.47
RS - RT 70 2.76" CD	HP	7.54	5.36	4.02	2.85	2.18	2.01	1.46	1.07	0.89	0.70	0.64	0.50
	in-lb	1876	1788	1867	1929	1832	2142	2124	1814	1655	1505	1416	1301
	eff.	0.88	0.86	0.83	0.79	0.77	0.7	0.654	0.62	0.59	0.54	0.5	0.46
RS - RT 85 3.35" CD	HP	12.07	8.38	6.54	5.03	3.52	3.02	2.51	1.68	1.39	1.22	1.07	0.85
	in-lb	2991	2832	3098	3345	3142	3301	3629	3098	2938	2655	2567	2301
	eff.	0.88	0.86	0.84	0.8	0.78	0.71	0.66	0.672	0.671	0.55	0.53	0.48
RS - RT 110 4.33" CD	HP	---	16.43	13.41	9.55	7.38	6.20	4.53	3.86	3.18	2.85	2.51	1.58
	in-lb	---	5620	6372	6593	6593	7036	6903	6903	6107	6770	6328	4425
	eff.	---	0.87	0.85	0.82	0.79	0.73	0.68	0.64	0.62	0.59	0.57	0.5
RS 130 5.12" CD	HP	---	24.98	19.61	14.08	10.90	8.55	6.87	5.20	4.69	3.52	3.02	2.18
	in-lb	---	8629	9470	9868	9868	10133	10753	9691	10133	8496	7877	7124
	eff.	---	0.88	0.86	0.83	0.81	0.75	0.7	0.67	0.68	0.63	0.58	0.57
RS 150 5.91" CD	HP	---	34.87	26.65	20.45	15.59	12.24	9.39	7.54	5.53	4.86	4.19	3.35
	in-lb	---	12036	13010	14470	14381	14691	15399	14160	12125	12302	11417	10886
	eff.	---	0.88	0.87	0.84	0.82	0.77	0.73	0.69	0.69	0.64	0.61	0.58

Worm Gearboxes - Series RS - RT

SF1.0 - 8 poles

Single stage

RS-RT Selection

900 rpm	Ratio	5	7	10	15	20	28	40	49	56	70	80	100
	output rpm	180	129	90	60	45	32	23	18	16	13	11	9
RS - RT 28 1.10" CD	HP	0.66	0.49	0.35	0.23	0.17	0.17	0.10	0.08	0.07	0.05	0.03	0.02
	in-lb	204	204	204	195	186	212	186	177	150	115	97	71
	eff.	0.81	0.81	0.77	0.71	0.69	0.6	0.55	0.51	0.44	0.4	0.39	0.36
RS - RT 40 1.57" CD	HP	1.68	1.24	0.91	0.65	0.44	0.40	0.28	0.23	0.20	0.17	0.15	0.12
	in-lb	522	513	513	513	434	487	434	407	398	381	363	336
	eff.	0.85	0.82	0.79	0.73	0.68	0.59	0.53	0.5	0.48	0.44	0.42	0.39
RS - RT 50 1.97" CD	HP	3.02	2.35	1.54	1.09	0.74	0.72	0.49	0.40	0.35	0.27	0.25	0.20
	in-lb	938	974	885	876	761	938	805	770	735	620	637	549
	eff.	0.86	0.83	0.8	0.75	0.71	0.64	0.57	0.542	0.52	0.45	0.44	0.39
RS - RT 60 2.36" CD	HP	4.69	3.35	2.68	1.84	1.46	1.22	0.82	0.59	0.57	0.44	0.40	0.28
	in-lb	1460	1451	1566	1575	1549	1655	1460	1239	1230	1133	1062	885
	eff.	0.87	0.84	0.81	0.77	0.74	0.67	0.62	0.59	0.54	0.51	0.46	0.44
RS - RT 70 2.76" CD	HP	6.54	4.53	3.52	2.35	1.84	1.68	1.19	0.92	0.77	0.60	0.54	0.40
	in-lb	2071	1912	2062	2044	1991	2266	2168	1947	1743	1558	1478	1328
	eff.	0.87	0.85	0.82	0.78	0.75	0.68	0.63	0.6	0.56	0.51	0.48	0.45
RS - RT 85 3.35" CD	HP	10.39	7.71	5.87	4.19	3.18	2.51	2.01	1.56	1.31	0.99	0.94	0.74
	in-lb	3292	3275	3540	3611	3434	3540	3717	3354	3124	2744	2699	2434
	eff.	0.87	0.85	0.83	0.79	0.76	0.69	0.65	0.61	0.59	0.55	0.5	0.46
RS - RT 110 4.33" CD	HP	---	14.25	11.40	8.21	6.54	5.53	3.86	3.35	2.85	2.51	2.01	1.32
	in-lb	---	6195	6903	7036	7213	7877	7257	7434	6815	7213	6372	4558
	eff.	---	0.86	0.84	0.8	0.77	0.71	0.66	0.62	0.6	0.57	0.55	0.48
RS 130 5.12" CD	HP	---	21.46	17.27	12.40	9.39	7.38	6.03	4.53	4.02	3.02	2.68	1.84
	in-lb	---	9381	10620	10886	10753	10620	11682	10487	10753	9116	8452	7567
	eff.	---	0.87	0.85	0.81	0.8	0.72	0.68	0.65	0.66	0.61	0.56	0.55
RS 150 5.91" CD	HP	---	30.17	22.96	17.77	13.58	10.39	8.21	6.37	5.03	4.36	3.86	2.85
	in-lb	---	13054	14249	15974	15753	15842	16727	15134	13585	13275	12611	11284
	eff.	---	0.87	0.86	0.83	0.81	0.75	0.71	0.68	0.67	0.61	0.58	0.56

RS-RT Worm Gearboxes

RA-TA Selection

Helical/worm - 3.5:1

4 poles - SF1.0

XA	i_n rpm	3.5	6.3	8	
			514	286	
XA63	i_r	3.5	6.2	7.8	XA - Single-stage helical attachment FXA63, FXA71 & FXA80: IEC input only FXA100: NEMA and IEC input
	HP	0.84	0.39	0.30	
	in-lb	106	89	80	
	R_2 [lb]	8435	9732	9732	
XA71	i_r	3.5	6.4	8.0	
	HP	1.84	0.87	0.62	
	in-lb	230	195	177	
	R_2 [lb]	10597	12111	12111	
XA80	i_r	3.4	6.4	8.3	
	HP	5.20	2.51	1.84	
	in-lb	602	575	531	
	R_2 [lb]	13193	15139	15139	
XA100	i_r	3.9	6.2	7.5	R_2 [lb] = Input Overhung Load (OHL) A_2 (0.2 x R_2) [lb] = Output Axial Load i_n = nominal reduction ratio i_r = real reduction ratio
	HP	14.58	6.71	3.69	
	in-lb	2080	1443	1204	
	R_2 [lb]	44979	31198	26030	

Helical/worm gearbox RA - TA

R_1 3.5:1	$R_1 \times R_2$	18	25	35	53	70	98	140	172	196	245	280	350
			R_2	5	7	10	15	20	28	40	49	56	70
	rpm	100	72	51	34	26	18	13	10	9	7	6	5
RA - TA 63/40	HP	0.94	0.92	0.67	0.47	0.34	0.32	0.22	0.18	0.17	0.10	0.08	0.05
	in-lb	0.37	637	637	620	531	620	566	513	496	372	310	221
	eff.	0.80	0.78	0.75	0.7	0.63	0.56	0.5	0.46	0.44	0.41	0.4	0.35
RA - TA 63/50 71/50	HP	1.37	1.71	1.17	0.84	0.55	0.54	0.35	0.34	0.27	0.18	0.15	0.10
	in-lb	1270	1195	1124	1106	929	1106	929	1018	885	708	620	443
	eff.	0.81	0.79	0.76	0.7	0.66	0.59	0.52	0.5	0.46	0.42	0.4	0.35
RA - TA 63/60 71/60 80/60	HP	2.70	2.56	1.98	1.39	0.96	0.89	0.55	0.45	0.39	0.32	0.25	0.17
	in-lb	1940	1814	1920	1903	1699	1920	1566	1505	1345	1283	974	752
	eff.	0.82	0.8	0.77	0.72	0.7	0.61	0.57	0.54	0.49	0.45	0.38	0.36
RA - TA 71/70 80/70	HP	3.57	3.29	2.48	1.81	1.29	1.21	0.84	0.72	0.60	0.50	0.44	0.32
	in-lb	2500	2345	2434	2522	2301	2744	2390	2390	2080	1991	1770	1593
	eff.	0.83	0.81	0.78	0.74	0.71	0.64	0.57	0.54	0.49	0.45	0.41	0.39
RA - TA 71/85 80/85	HP	5.5	5.26	4.01	2.97	2.30	1.86	1.34	1.09	0.97	0.82	0.67	0.44
	in-lb	3900	3806	3983	4204	4160	4204	3938	3717	3629	3452	3009	2213
	eff.	0.84	0.82	0.79	0.75	0.72	0.64	0.58	0.55	0.53	0.48	0.44	0.4
RA - TA 80/110 100/110	HP	---	10.09	7.76	6.00	4.38	3.65	2.68	2.13	1.88	1.44	1.44	0.91
	in-lb	---	7390	7921	8408	8054	8496	8408	7523	7257	6638	6549	4779
	eff.	---	0.83	0.81	0.74	0.73	0.66	0.62	0.57	0.55	0.52	0.45	0.42
RA 100/130	HP	---	11.73	11.40	9.22	6.37	5.20	3.86	2.85	2.51	2.18	1.84	1.34
	in-lb	---	8629	11682	13231	11948	12656	12213	11505	11063	10620	9558	7788
	eff.	---	0.83	0.81	0.77	0.75	0.67	0.63	0.64	0.62	0.6	0.5	0.48
RA 100/150	HP	---	13.24	13.07	12.57	9.55	7.54	5.53	4.53	4.02	3.02	2.68	1.68
	in-lb	---	11415	13585	18497	18231	18851	18143	18054	17921	15045	12912	10620
	eff.	---	0.84	0.82	0.79	0.76	0.69	0.66	0.64	0.62	0.6	0.52	0.5

Worm Gearboxes - Series RS - RT

SF1.0 - 4 poles

Helical/worm - 6.3:1

RA-TA Selection

R₁ 6.3:1	R ₁ xR ₂	32	44	63	95	126	176	252	309	353	441	504	630
	R ₂	5	7	10	15	20	28	40	49	56	70	80	100
	rpm	56	41	29	19	14	10	7	6	5	4	4	3
RA - TA 63/40	HP	0.60	0,59	0,42	0,28	0,20	0,18	0,13	0,10	0,10	0,08	0,07	0,05
	in-lb	699	699	690	655	558	611	558	504	487	469	451	407
	eff.	0.78	0,76	0,72	0,67	0,6	0,52	0,45	0,43	0,39	0,35	0,34	0,31
RA - TA 63/50 71/50	HP	1.09	1,04	0,70	0,50	0,34	0,34	0,23	0,18	0,17	0,15	0,12	0,08
	in-lb	1320	1283	1177	1151	1000	1221	1018	956	885	814	788	637
	eff.	0.80	0,78	0,74	0,67	0,63	0,55	0,48	0,45	0,42	0,36	0,36	0,31
RA - TA 63/60 71/60 80/60	HP	1.63	1,54	1,24	0,87	0,67	0,59	0,39	0,27	0,27	0,18	0,17	0,13
	in-lb	1980	1929	2097	2080	2036	2106	1859	1416	1549	1248	1151	1080
	eff.	0.81	0,79	0,75	0,7	0,67	0,57	0,53	0,49	0,45	0,42	0,37	0,35
RA - TA 71/70 80/70	HP	2.08	2,01	1,59	1,14	0,84	0,74	0,54	0,44	0,39	0,30	0,28	0,20
	in-lb	2600	2558	2744	2744	2584	2832	2292	2407	2248	1956	1859	1682
	eff.	0.82	0,8	0,76	0,71	0,68	0,6	0,54	0,5	0,46	0,42	0,37	0,36
RA - TA 71/85 80/85	HP	3.48	3,35	2,68	1,84	1,41	1,16	0,89	0,72	0,62	0,47	0,44	0,37
	in-lb	4400	4337	4655	4567	4381	4434	4425	4124	3974	3460	3363	3053
	eff.	0.82	0,8	0,77	0,72	0,69	0,6	0,55	0,51	0,5	0,46	0,42	0,36
RA - TA 80/110 100/110	HP	---	7,21	5,36	4,02	3,02	2,68	1,84	1,68	1,34	1,11	0,85	0,54
	in-lb	---	9116	9735	10178	9735	10355	9824	9735	8806	8408	6903	4868
	eff.	---	0,81	0,79	0,74	0,71	0,63	0,57	0,53	0,52	0,48	0,45	0,39
RA 100/130	HP	---	10,74	8,28	6,24	4,54	3,97	2,77	2,46	2,10	1,71	1,37	0,79
	in-lb	---	14160	15045	15930	15045	15930	15045	15045	14160	14160	11505	7965
	eff.	---	0,83	0,8	0,75	0,73	0,63	0,6	0,55	0,53	0,52	0,46	0,45
RA 100/150	HP	---	14,10	11,08	8,45	6,32	5,06	3,87	3,05	2,36	2,08	1,83	1,41
	in-lb	---	18585	20355	22125	21240	21240	22125	20355	17700	15930	15930	15045
	eff.	---	0,83	0,81	0,77	0,74	0,66	0,63	0,6	0,59	0,81	0,48	0,47

RS-RT Worm Gearboxes

RA-TA Selection

Helical/worm - 8:1

4 poles - SF1.0

R ₁ 8:1	R ₁ ×R ₂	40	56	80	120	160	224	320	392	448	560	640	800
	R ₂	5	7	10	15	20	28	40	49	56	70	80	100
	rpm	45	32	23	15	11	8.0	6.6	4.6	4.0	3.2	2.8	2.2
RA - TA 63/40	HP	0.55	0.54	0.39	0.27	0.18	0.18	0.13	0.10	0.08	0.05	0.05	0.03
	in-lb	823	823	788	743	637	752	664	611	522	398	336	239
	eff.	0.71	0.75	0.72	0.65	0.59	0.5	0.44	0.41	0.38	0.36	0.34	0.31
RA - TA 63/50 71/50	HP	1.05	0.97	0.69	0.47	0.34	0.30	0.22	0.17	0.15	0.10	0.08	0.05
	in-lb	1620	1505	1460	1363	1151	1328	1151	1062	1018	761	646	469
	eff.	0.79	0.77	0.73	0.67	0.61	0.55	0.47	0.45	0.41	0.36	0.37	0.31
RA - TA 63/60 71/60 80/60	HP	1.6	1.46	1.14	0.82	0.57	0.52	0.35	0.27	0.25	0.17	0.13	0.08
	in-lb	2480	2301	2478	2434	2124	2390	2080	1947	1770	1372	1106	814
	eff.	0.80	0.78	0.75	0.69	0.65	0.57	0.51	0.5	0.43	0.41	0.37	0.35
RA - TA 71/70 80/70	HP	2.31	2.11	1.47	1.06	0.74	0.80	0.50	0.40	0.34	0.27	0.20	0.08
	in-lb	3560	3363	3230	3186	2876	3894	2832	2832	2434	2168	1770	1283
	eff.	0.81	0.79	0.76	0.7	0.67	0.6	0.53	0.5	0.45	0.41	0.38	0.35
RA - TA 71/85 80/85	HP	3.2	2.95	2.38	1.79	1.42	1.09	0.80	0.67	0.55	0.44	0.34	0.22
	in-lb	5050	4691	5266	5487	5487	5310	4956	4868	4514	3983	3186	2301
	eff.	0.81	0.79	0.77	0.71	0.67	0.6	0.54	0.52	0.5	0.45	0.41	0.37
RA - TA 80/110 100/110	HP	---	5.73	4.61	3.30	2.55	2.16	1.63	1.22	1.07	0.87	0.72	0.45
	in-lb	---	9248	10355	10443	10266	10620	10443	9027	8673	8142	7523	4868
	eff.	---	0.8	0.78	0.73	0.7	0.61	0.56	0.52	0.5	0.46	0.45	0.38
RA 100/130	HP	---	5.53	5.03	5.36	3.86	3.02	2.01	1.84	1.51	1.17	1.17	0.84
	in-lb	---	8850	10974	16284	15620	15576	15045	14691	14160	12700	11771	10266
	eff.	---	0.8	0.78	0.73	0.72	0.62	0.58	0.56	0.54	0.51	0.45	0.43
RA 100/150	HP	---	6.20	5.70	6.03	5.70	4.53	3.35	2.85	2.35	1.84	1.68	1.34
	in-lb	---	10001	12611	19028	22833	23674	25311	22568	22037	18674	17435	16417
	eff.	---	0.81	0.79	0.75	0.72	0.63	0.61	0.56	0.57	0.49	0.46	0.45

Worm Gearboxes - Series RS - RT

SF1.0 - 4 poles

Two-stage worm

RS/RS-RT/RT Selection

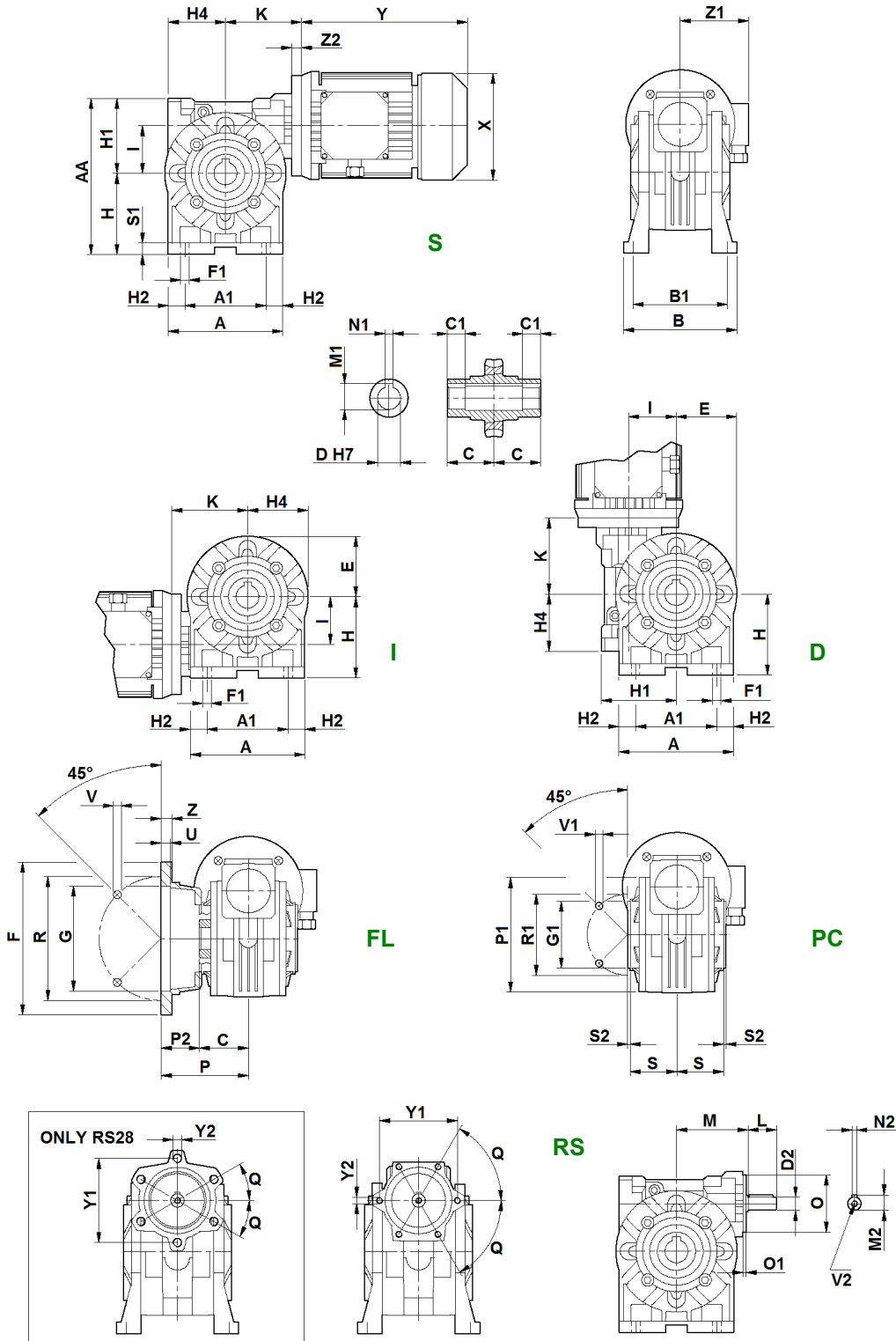
RS/RS RT/RT	R ₁	10	15	20	28	40	56	56	70	100	100	100	100
	R ₂	28	28	28	28	28	28	40	40	40	56	80	100
	R ₁ xR ₂	280	420	560	784	1120	1568	2240	2800	4000	5600	8000	10000
	rpm	6.4	4,3	3,2	2,3	1,6	1,2	0,80	0,64	0,45	0,32	0,23	0,18
28/28	HP	0.055	0.05	0.04	0.04	0.03	0.02	0.02	0.01	0.01	0.005	0.003	0.002
	in-lb	300	310	319	319	319	310	266	266	266	142	106	97
	eff.	0.40	0.38	0.37	0.32	0.3	0.25	0.21	0.20	0.18	0.14	0.12	0.13
28/40	HP	0.14	0.13	0.10	0.08	0.06	0.05	0.04	0.04	0.02	0.02	0.008	0.005
	in-lb	740	752	752	708	708	708	646	673	620	549	363	221
	eff.	0.42	0.39	0.37	0.33	0.31	0.25	0.21	0.18	0.18	0.15	0.14	0.12
28/50	HP	0.24	0.22	0.18	0.15	0.12	0.10	0.06	0.06	0.05	0.03	0.02	0.01
	in-lb	1300	1328	1328	1416	1549	1416	1106	1159	1301	1106	690	434
	eff.	0.42	0.39	0.37	0.33	0.31	0.25	0.22	0.19	0.19	0.16	0.14	0.12
28/60	HP	0.36	0.33	0.26	0.22	0.15	0.15	0.11	0.09	0.05	0.05	0.03	0.02
	in-lb	2050	2124	2124	2168	2036	2301	2168	1920	1451	1726	1133	805
	eff.	0.45	0.42	0.4	0.35	0.33	0.27	0.23	0.21	0.2	0.16	0.14	0.13
40/70	HP	0.55	0.50	0.42	0.33	0.26	0.20	0.14	0.12	0.10	0.07	0.04	0.03
	in-lb	3100	3363	3540	3540	3496	3363	3275	3053	3186	2841	1779	1363
	eff.	0.46	0.44	0.42	0.38	0.33	0.3	0.27	0.25	0.22	0.2	0.15	0.14
40/85	HP	0.8	0.75	0.62	0.46	0.38	0.30	0.23	0.20	0.15	0.12	0.07	0.04
	in-lb	5100	5266	5531	5177	5531	5399	5443	5266	5000	4868	3301	2336
	eff.	0.49	0.46	0.44	0.4	0.35	0.32	0.28	0.26	0.23	0.2	0.17	0.15
50/110	HP	1.6	1.45	1.27	0.97	0.76	0.64	0.49	0.39	0.27	0.21	0.14	0.09
	in-lb	10200	10532	11505	11505	11328	11948	11859	10709	9470	8673	7169	4956
	eff.	0.50	0.48	0.45	0.42	0.37	0.33	0.3	0.27	0.24	0.2	0.18	0.16
RS/RS only 60/130	HP	2.7	2.51	1.84	1.26	0.92	0.92	0.62	0.42	0.42	0.42	0.42	0.42
	in-lb	17100	17833	17081	14780	13541	17833	16196	12479	15665	16373	12567	10841
	eff.	0.53	0.5	0.46	0.43	0.4	0.35	0.33	0.3	0.27	0.25	0.21	0.2
RS/RS only 70/150	HP	3.3	3.02	2.51	1.84	1.26	1.26	0.92	0.62	0.62	0.42	0.42	0.42
	in-lb	27400	22745	25046	22745	21771	25223	26727	20576	25444	23630	18895	17656
	eff.	0.55	0.52	0.5	0.46	0.43	0.39	0.36	0.33	0.31	0.27	0.23	0.22

RS-RT Worm Gearboxes

Dimensions

RS

Single-stage worm



Worm Gearboxes - Series RS - RT

Single-stage worm RS Dimensions

RS (CD)	28 (1.10)	40 (1.57)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)	130 (5.12)	150 (5.91)
A	2.76	3.94	4.72	5.43	6.22	7.60	9.84	11.26	13.23
A ₁	2.05	2.76	3.35	3.74	4.72	5.51	7.87	9.25	10.24
AA	3.90	5.43	6.42	7.56	8.70	9.92	13.11	15.75	17.87
B	3.07	4.02	4.69	5.35	#	6.61	7.87	9.06	9.84
B ₁	2.60	3.31	3.90	4.37	4.57	5.51	6.38	7.48	8.27
C	1.18	1.61	1.93	2.36	2.36	2.40	3.05	3.54	4.13
D	0.625	0.75	1.0	1.125	1.25	1.375	1.625	1.75	2.0
	14	18 19 20	24 25	25	25 28 30	32 35	42	48	55
D ₂	9	11	14	19	19	24	28	38	42
E	1.34	1.97	2.40	2.76	3.15	3.86	4.92	5.63	6.61
F	2.76	5.51	6.30	7.09	7.87	7.87	9.84	11.81	13.78
F ₁	0.22	0.28	0.35	0.43	0.43	0.51	0.55	0.59	0.75
G	1.57	3.74	4.33	4.53	5.12	5.12	7.09	9.06	9.84
G ₁	1.65	2.36	2.76	2.76	3.15	4.33	5.12	7.09	7.09
H	2.05	2.80	3.35	3.94	4.53	5.31	6.77	7.87	9.06
H ₁	1.85	2.64	3.07	3.62	4.17	4.61	6.34	7.87	8.82
H ₂	0.35	0.59	0.69	0.85	0.75	1.04	0.98	1.00	1.50
H ₄	1.57	1.97	2.36	2.83	3.39	4.06	5.47	6.26	7.20
I	1.10	1.57	1.97	2.36	2.76	3.35	4.33	5.12	5.91
K	2.60	3.27	3.82	4.06	4.96	6.30	5.94	6.81	7.52
L	0.79	0.91	1.18	1.57	1.57	1.97	2.36	3.15	3.94
M	1.97	2.56	2.95	3.43	4.33	4.86	5.75	6.54	7.68
M ₁	0.71	0.84	1.12	1.25	1.37	1.52	1.80	1.93	2.27
M ₂	0.40	0.49	0.63	0.89	0.89	1.06	1.22	1.61	1.77
N ₁	0.19	0.19	0.25	0.25	0.25	0.31	0.38	0.38	0.5
N ₂	0.12	0.16	0.20	0.24	0.24	0.31	0.31	0.39	0.47
O	1.45	2.04	2.36	2.75	2.75	3.14	3.54	4.72	4.72
O ₁	0.09	0.13	0.13	0.18	0.18	0.19	0.23	0.35	0.35
P	1.93	3.23	3.60	4.57	4.37	3.94	5.91	5.91	6.30
P ₁	2.64	3.70	3.94	4.02	4.65	5.91	7.87	9.21	9.84
P ₂	0.75	1.61	1.67	2.20	2.01	1.54	2.85	2.36	2.17
Q	30°	60°	55°	60°	60°	60°	60°	60°	60°
R	2.20	4.53	5.12	5.91	6.50	6.50	8.46	10.43	11.81
R ₁	2.20	3.27	3.35	3.35	3.94	5.12	6.50	8.46	8.46
S	1.26	1.50	1.93	2.26	2.24	2.22	2.93	3.43	4.02
S ₁	0.24	0.35	0.47	0.47	0.55	0.59	0.67	0.75	0.79
S ₂	- 0.12	0.08	0.10	0.10	0.12	0.12	0.10	0.20	0.20
U	0.16	0.24	0.39	0.39	0.47	0.24	0.20	0.20	0.24
V	0.26 (4x)	0.35 (4x)	0.35 (4x)	0.43 (4x)	0.51 (4x)	0.51 (4x)	0.59 (8x)	0.59 (8x)	0.75 (8x)
V ₁	M6x6 (4x)	M6x9 (4x)	M8x12 (4x)	M8x15 (8x)	M8x18 (8x)	M10x20 (8x)	M12x21 (8x)	M12x24 (8x)	M14x30 (8x)
V ₂	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20	M10x22	M12x25
Y ₁	1.85	2.40	2.75	3.14	3.34	3.93	4.17	5.51	5.51
Y ₂	M5x8.5 (6x)	M5x10 (6x)	M6x10 (6x)	M6x12 (6x)	M8x16 (6x)	M8x15 (6x)	M8x15.5 (6x)	M10x20 (6x)	M10x20 (6x)
Z	0.24	0.39	0.39	0.43	0.55	0.55	0.63	0.87	0.79

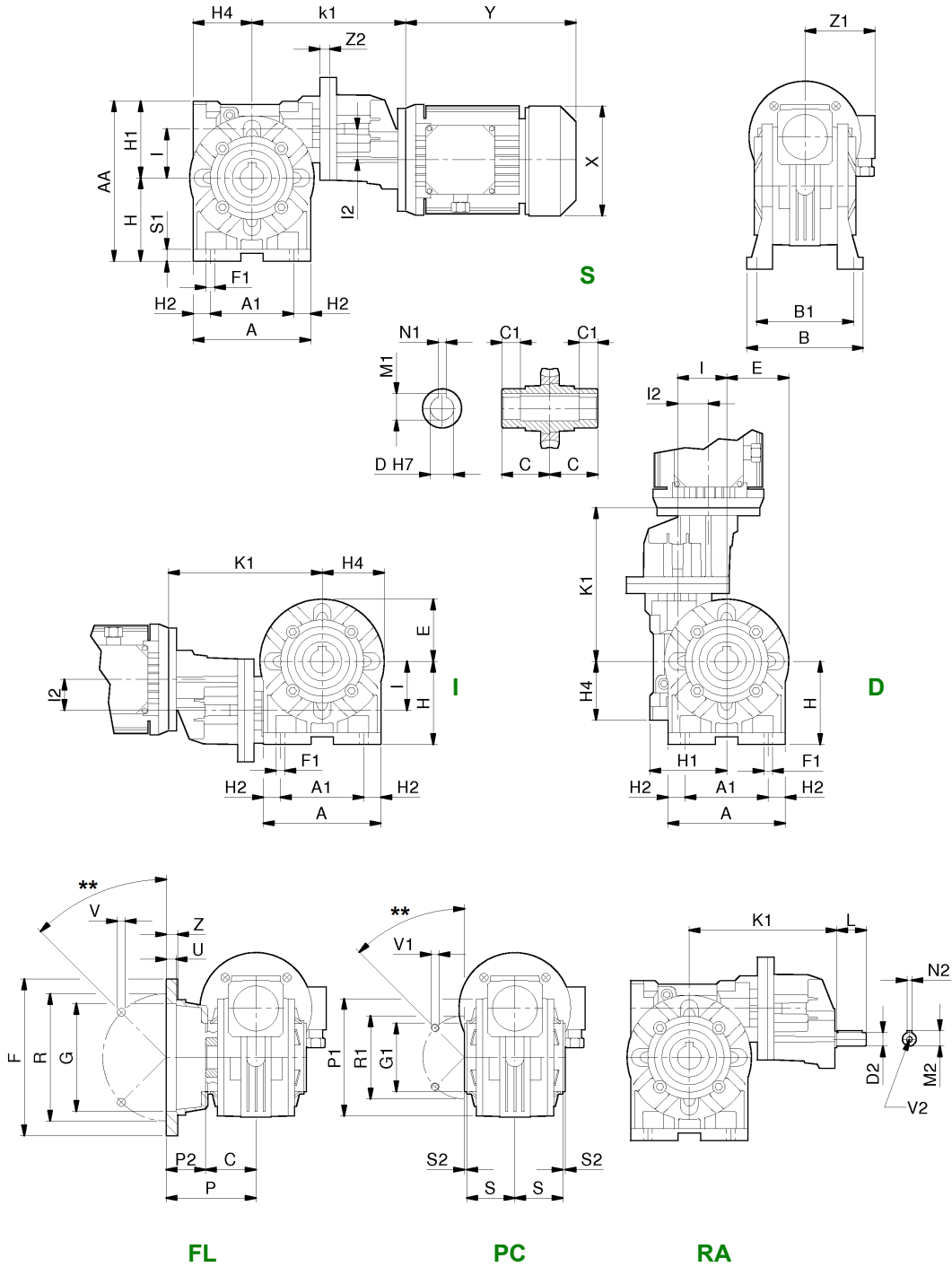
= 5.39 (Bolted feet) or 5.51 (Integral feet)
 - Motor dimensions (X, Y, Z1) refer to manufacturer's catalogue
 - RS input dimensions M, O, O₁, Q, Y₁, Y₂ also apply to SRS input
 - Not binding dimensions, for reference only
 - Dimensions: inches (black) and mm (green)

RS-RT Worm Gearboxes

Dimensions

RA

Helical / worm



Worm Gearboxes - Series RS - RT

Helical / worm RA Dimensions

XA RS (CD)	63 (IEC input only)			71 (IEC input only)				80 (IEC input only)				100 (NEMA & IEC input)		
	40 (1.57)	50 (1.97)	60 (2.36)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)	110 (4.33)	130 (5.12)	150 (5.91)
A	3.94	4.72	5.43	4.72	5.43	6.22	7.60	5.43	6.22	7.60	9.84	9.84	11.26	13.23
A ₁	2.76	3.35	3.74	3.35	3.74	4.72	5.51	3.74	4.72	5.51	7.87	7.87	9.25	10.24
AA	5.43	6.42	7.56	6.42	7.56	8.70	9.92	7.56	8.70	9.92	13.11	13.11	15.75	17.87
B	4.02	4.69	5.35	4.69	5.35	#	6.61	5.35	#	6.61	7.87	7.87	9.06	9.84
B ₁	3.31	3.90	4.37	3.90	4.37	4.57	5.51	4.37	4.57	5.51	6.38	6.38	7.48	8.27
C	1.61	1.93	2.36	1.93	2.36	2.36	2.40	2.36	2.36	2.40	3.05	3.05	3.54	4.13
D	0.75	1.0	1.125	1.0	1.125	1.25	1.375	1.125	1.25	1.375	1.625	1.625	1.75	2.0
	18 19 20	24 25	25	24 25	25	25 28 30	32 35	25	25 28 30	32 35	42	42	48	55
D ₂	11	11	11	14	14	14	14	19	19	19	19	24	24	24
E	1.97	2.40	2.76	2.40	2.76	3.15	3.86	2.76	3.15	3.86	4.92	4.92	5.63	6.61
F	5.51	6.30	7.09	6.30	7.09	7.87	7.87	7.09	7.87	7.87	9.84	9.84	11.81	13.78
F ₁	0.28	0.35	0.43	0.35	0.43	0.43	0.51	0.43	0.43	0.51	0.55	0.55	0.59	0.75
G	3.74	4.33	4.53	4.33	4.53	5.12	5.12	4.53	5.12	5.12	7.09	7.09	9.06	9.84
G ₁	2.36	2.76	2.76	2.76	2.76	3.15	4.33	2.76	3.15	4.33	5.12	5.12	7.09	7.09
H	2.80	3.35	3.94	3.35	3.94	4.53	5.31	3.94	4.53	5.31	6.77	6.77	7.87	9.06
H ₁	2.64	3.07	3.62	3.07	3.62	4.17	4.61	3.62	4.17	4.61	6.34	6.34	7.87	8.82
H ₂	0.59	0.69	0.85	0.69	0.85	0.75	1.04	0.85	0.75	1.04	0.98	0.98	1.00	1.50
H ₄	1.97	2.36	2.83	2.36	2.83	3.39	4.06	2.83	3.39	4.06	5.47	5.47	6.26	7.44
I	1.57	1.97	2.36	1.97	2.36	2.76	3.35	2.36	2.76	3.35	4.33	4.33	5.12	5.91
I ₂	1.26	1.26	1.26	1.57	1.57	1.57	1.57	1.97	1.97	1.97	1.97	2.48	2.48	2.48
K ₁	6.04	6.73	6.97	6.81	7.20	8.23	8.82	8.15	9.15	9.86	10.41	12.91	13.46	14.49
L	0.91	0.91	0.91	1.18	1.18	1.18	1.18	1.57	1.57	1.57	1.57	1.97	1.97	1.97
M ₁	0.84	1.12	1.25	1.12	1.25	1.37	1.52	1.25	1.37	1.52	1.80	1.80	1.93	2.27
M ₂	0.49	0.49	0.49	0.63	0.63	0.63	0.63	0.89	0.89	0.89	0.89	1.06	1.06	1.06
N ₁	0.19	0.25	0.25	0.25	0.25	0.25	0.31	0.25	0.25	0.31	0.38	0.37	0.38	0.50
N ₂	0.16	0.16	0.16	0.20	0.20	0.20	0.20	0.24	0.24	0.24	0.24	0.31	0.31	0.31
P	3.23	3.60	4.57	3.60	4.57	4.37	3.94	4.57	4.37	3.94	5.91	5.91	5.91	6.30
P ₁	3.70	3.94	4.02	3.94	4.02	4.65	5.91	4.02	4.65	5.91	7.87	7.87	9.21	9.84
P ₂	1.61	1.67	2.20	1.67	2.20	2.01	1.54	2.20	2.01	1.54	2.85	2.85	2.36	2.17
R	4.53	5.12	5.91	5.12	5.91	6.50	6.50	5.91	6.50	6.50	8.46	8.46	10.43	11.81
R ₁	3.27	3.35	3.35	3.35	3.35	3.94	5.12	3.35	3.94	5.12	6.50	6.50	8.46	8.46
S	1.50	1.93	2.26	1.93	2.26	2.24	2.22	2.26	2.24	2.22	2.93	2.93	3.43	4.02
S ₁	0.35	0.47	0.47	0.47	0.47	0.55	0.59	0.47	0.55	0.59	0.67	0.67	0.75	0.79
S ₂	0.08	0.10	0.10	0.10	0.10	0.12	0.12	0.10	0.12	0.12	0.10	0.10	0.20	0.20
U	0.24	0.39	0.39	0.39	0.39	0.47	0.24	0.39	0.47	0.24	0.20	0.20	0.20	0.24
V	0.35 (4)	0.35 (4)	0.43 (4)	0.35 (4)	0.43 (4)	0.51 (4)	0.51 (4)	0.43 (4)	0.51 (4)	0.51 (4)	0.59 (8)	0.59 (8)	0.59 (8)	0.75 (8)
V ₁	M6x9 (4x)	M8x12 (4x)	M8x15 (8x)	M8x12 (4x)	M8x15 (8x)	M8x18 (8x)	M10x20 (8x)	M8x15 (8x)	M8x18 (8x)	M10x20 (8x)	M12x21 (8x)	M12x21 (8x)	M12x24 (8x)	M14x30 (8x)
V ₂	M4x10	M4x10	M4x10	M6x15	M6x15	M6x15	M6x15	M8x20	M8x20	M8x20	M8x20	M8x20	M8x20	M8x20
Y ₁	4.13	4.13	4.13	4.72	4.72	4.72	4.72	5.51	5.51	5.51	5.51	5.51	7.87	7.87
Z	0.39	0.39	0.43	0.39	0.43	0.55	0.55	0.43	0.55	0.55	0.63	0.63	0.71	0.79

= 5.39 (Bolted feet) or 5.51 (Integral feet)

**= 90° for RS28 or 45° other sizes

- Motor dimensions (X, Y, Z1) refer to manufacturer's catalogue

- Not binding dimensions, for reference only

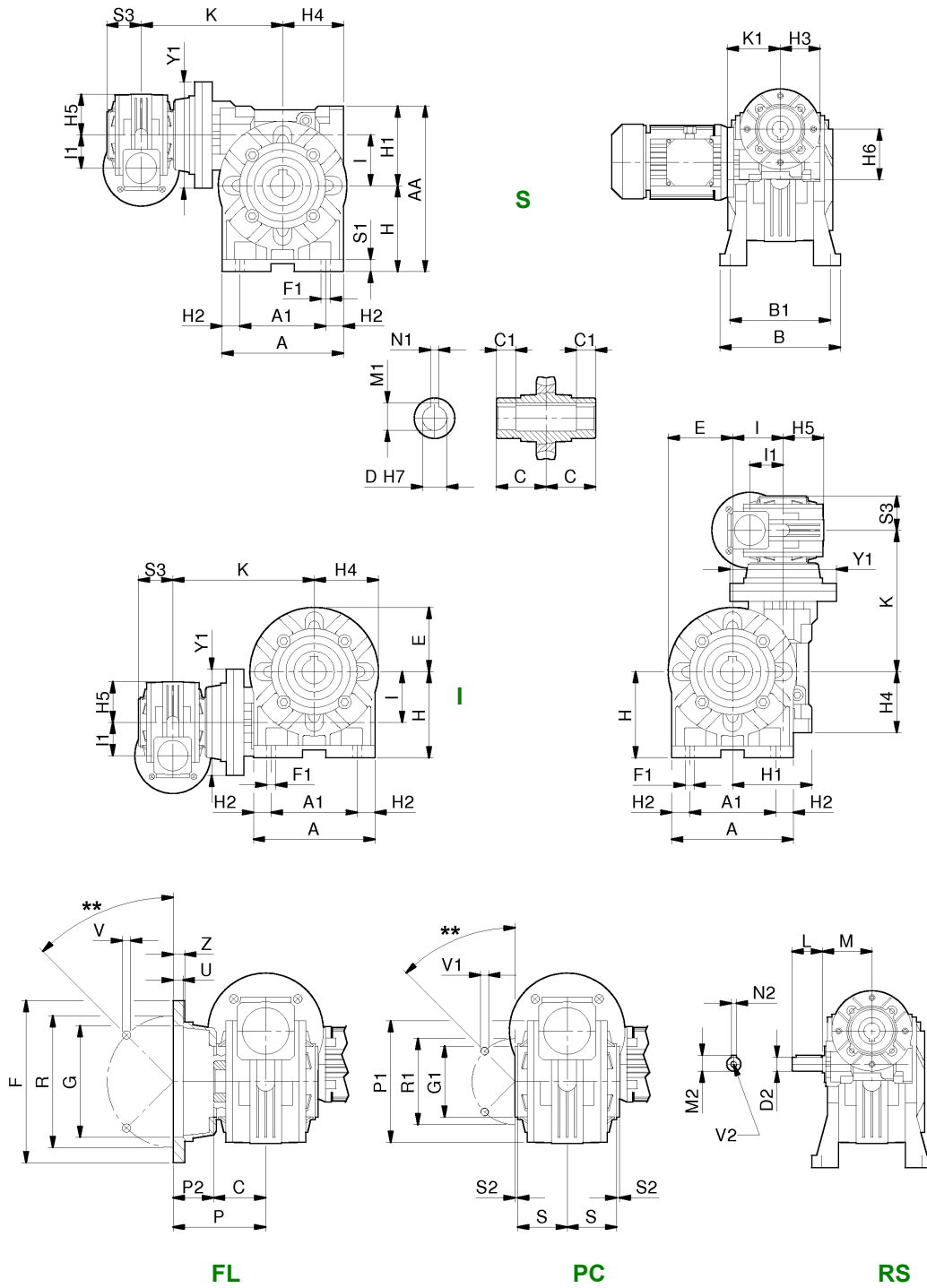
- Dimensions: inches (black) and mm (green)

RS-RT Worm Gearboxes

Dimensions

RS / RS

Two-stage worm



Worm Gearboxes - Series RS - RT

Two-stage worm

RS / RS

Dimensions

1st RS 2nd RS	28/				40/		50/110	60/130	70/150
	28	40	50	60	70	85			
A	2.76	3.94	4.72	5.43	6.22	7.60	9.84	11.26	13.23
A ₁	2.05	2.76	3.35	3.74	4.72	5.51	7.87	9.25	10.24
AA	3.90	5.43	6.42	7.56	8.70	9.92	13.11	15.75	17.87
B	3.07	4.02	4.69	5.35	#	6.61	7.87	9.06	9.84
B ₁	2.60	3.31	3.90	4.37	4.57	5.51	6.38	7.48	8.27
C	1.18	1.61	1.93	2.36	2.36	2.40	3.05	3.54	4.13
D	0.625	0.75	1.0	1.125	1.25	1.375	1.625	1.75	2.0
	14	18 19 20	24 25	25	25 28 30	32 35	42	48	55
D ₂	9	9	9	9	11	11	14	19	19
E	1.34	1.97	2.40	2.76	3.15	3.86	4.92	5.63	6.61
F	2.76	5.51	6.30	7.09	7.87	7.87	9.84	11.81	13.78
F ₁	0.22	0.28	0.35	0.43	0.43	0.51	0.55	0.59	0.75
G	1.57	3.74	4.33	4.53	5.12	5.12	7.09	9.06	9.84
G ₁	1.65	2.36	2.76	2.76	3.15	4.33	5.12	7.09	7.09
H	2.05	2.80	3.35	3.94	4.53	5.31	6.77	7.87	9.06
H ₁	1.85	2.64	3.07	3.62	4.17	4.61	6.34	7.87	8.82
H ₂	0.35	0.59	0.69	0.85	0.75	1.04	0.98	1.00	1.50
H ₃	1.57	1.57	1.57	1.57	1.97	1.97	2.36	2.83	3.39
H ₄	1.57	1.97	2.36	2.83	3.39	4.06	5.47	6.26	7.44
H ₅	1.34	1.34	1.34	1.34	1.97	1.97	2.40	2.76	3.15
H ₆	1.85	1.85	1.85	1.85	2.64	2.64	3.07	3.62	4.17
I	1.10	1.57	1.97	2.36	2.76	3.35	4.33	5.12	5.91
I ₂	1.10	1.10	1.10	1.10	1.57	1.57	1.97	2.36	2.76
K	3.92	4.57	5.45	5.75	7.17	7.83	9.69	9.69	11.81
K ₁	2.26	2.26	2.26	2.26	2.78	2.78	3.27	3.66	4.61
L	0.79	0.79	0.79	0.79	0.91	0.91	1.18	1.57	1.57
M	1.97	1.97	1.97	1.97	2.56	2.56	2.95	3.43	4.33
M ₁	0.71	0.84	1.12	1.25	1.37	1.52	1.80	1.93	2.27
M ₂	0.40	0.40	0.40	0.40	0.49	0.49	0.63	0.89	0.89
N ₁	0.19	0.19	0.25	0.25	0.25	0.31	0.38	0.38	0.50
N ₂	0.12	0.12	0.12	0.12	0.16	0.16	0.20	0.24	0.24
P	1.93	3.23	3.60	4.57	4.37	3.94	5.91	5.91	6.30
P ₁	2.64	3.70	3.94	4.02	4.65	5.91	7.87	9.21	9.84
P ₂	0.75	1.61	1.67	2.20	2.01	1.54	2.85	2.36	2.17
R	2.20	4.53	5.12	5.91	6.50	6.50	8.46	10.43	11.81
R ₁	2.20	3.27	3.35	3.35	3.94	5.12	6.50	8.46	8.46
S	1.26	1.50	1.93	2.26	2.24	2.22	2.93	3.43	4.02
S ₁	0.24	0.35	0.47	0.47	0.55	0.59	0.67	0.75	0.79
S ₂	-0.12	0.08	0.10	0.10	0.12	0.12	0.10	0.20	0.20
S ₃	1.18	1.18	1.18	1.18	1.61	1.61	1.93	2.36	2.36
U	0.16	0.24	0.39	0.39	0.47	0.24	0.20	0.20	0.24
V	0.24 (4x)	0.35 (4x)	0.35 (4x)	0.43 (4x)	0.51 (4x)	0.51 (4x)	0.59 (8x)	0.59 (8x)	0.75 (8x)
V ₁	M6x6 (4x)	M6x9 (4x)	M8x12 (4x)	M8x15 (8x)	M8x18 (8x)	M10x20 (8x)	M12x21 (8x)	M12x24 (8x)	M14x30 (8x)
V ₂	M4x10	M4x10	M4x10	M4x10	M4x10	M4x10	M6x15	M8x20	M8x20
Y ₁	3.15	3.15	3.15	3.54	4.53	4.53	4.33	7.09	7.87
Z	0.24	0.39	0.39	0.43	0.55	0.55	0.63	0.71	0.79

= 5.39 (Bolted feet) or 5.51 (Integral feet)

**= 90° for RS28 or 45° other sizes

- Motor dimensions refer to manufacturer's catalogue

- Not binding dimensions, for reference only

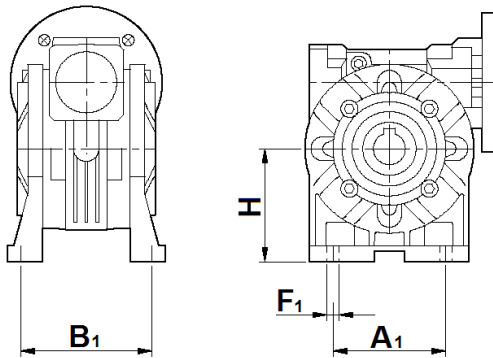
- Dimensions: inches (black) and mm (green)

RS-RT Worm Gearboxes

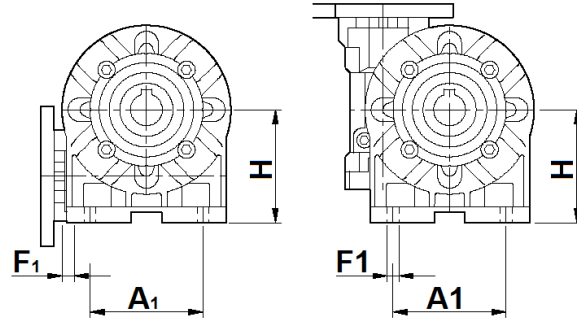
Dimensions

RS

Alternative mountings

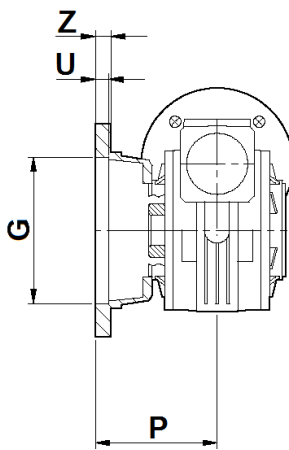


SA

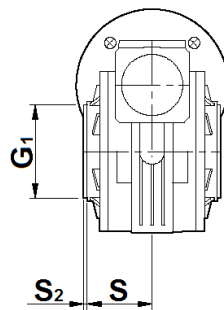
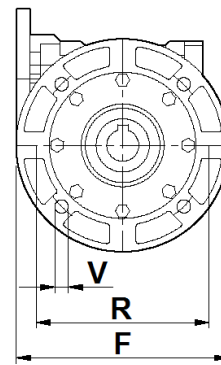


IA

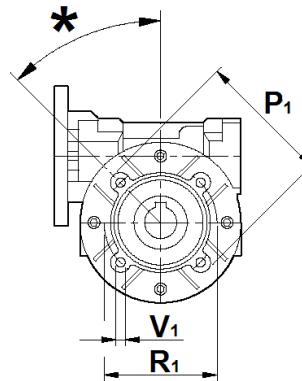
DA



FA - FB - FR



PA - PB



Worm Gearboxes - Series RS - RT

Alternative mountings RS Dimensions

RS (CD)	28 (1.10)	40 (1.57)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)	130 (5.12)	150 (5.91)
SA - IA - DA									
A ₁	---	2.05	2.48	---	---	5.51	---	---	---
B ₁	---	3.19	3.88	---	---	5.75	---	---	---
F ₁	---	0.33	0.34	---	---	0.43	---	---	---
H	---	2.84	3.23	---	---	5.59	---	---	---
FA									
F	3.15	4.13	4.92	6.50	6.50	---	---	---	---
G	1.97	2.36	2.76	4.33	4.53	---	---	---	---
P	1.99	2.72	3.66	3.54	4.57	---	---	---	---
R	2.68	3.43	3.54	5.12	5.91	---	---	---	---
U	0.14	0.20	0.20	0.39	0.18	---	---	---	---
V	0.26 (4x)	0.35 (4x)	0.43 (4x)	0.41 (4x)	0.43 (4x)	---	---	---	---
Z	0.28	0.31	0.39	0.59	0.39	---	---	---	---
FB									
F	---	4.72	---	7.09	---	8.27	10.63	---	---
G	---	3.15	---	4.53	---	5.98	6.69	---	---
P	---	2.44	---	3.39	---	4.70	5.18	---	---
R	---	3.94	---	5.91	---	6.93	9.06	---	---
U	---	0.16	---	0.14	---	0.20	0.20	---	---
V	---	0.35 (4x)	---	0.43 (4x)	---	0.43 (4x)	0.52 (4x)	---	---
Z	---	0.35	---	0.47	---	0.55	0.71	---	---
FR									
F	---	---	---	---	6.30	---	---	---	---
G	---	---	---	---	4.33	---	---	---	---
P	---	---	---	---	3.33	---	---	---	---
R	---	---	---	---	5.12	---	---	---	---
U	---	---	---	---	0.18	---	---	---	---
V	---	---	---	---	0.43 (4x)	---	---	---	---
Z	---	---	---	---	0.55	---	---	---	---
PA									
G ₁	---	1.97	2.68	2.95	3.54	---	---	---	---
P ₁	---	3.74	4.33	4.09	4.92	---	---	---	---
R ₁	---	2.56	3.70	3.54	4.33	---	---	---	---
S	---	1.50	1.93	1.87	2.17	---	---	---	---
S ₂	---	0.08	0.10	0.22	0.12	---	---	---	---
V ₁	---	M6x8 (4x)	M6x12.5 (4x)	M8x14 (4x)	M8x14 (4x)	---	---	---	---
PB									
G ₁	---	---	2.36	---	2.76	---	---	---	---
P ₁	---	---	4.33	---	4.57	---	---	---	---
R ₁	---	---	2.95	---	3.35	---	---	---	---
S	---	---	1.93	---	2.64	---	---	---	---
S ₂	---	---	0.10	---	0.16	---	---	---	---
V ₁	---	---	M6x12.5 (4x)	---	M8x14 (4x)	---	---	---	---

* = 45° standard or 90° on demand
 - Not binding dimensions, for reference only
 - Dimensions: inches (black) and mm (green)

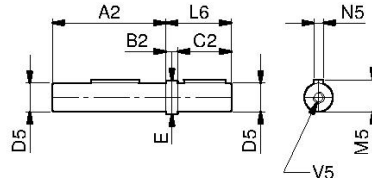
RS-RT Worm Gearboxes

Dimensions

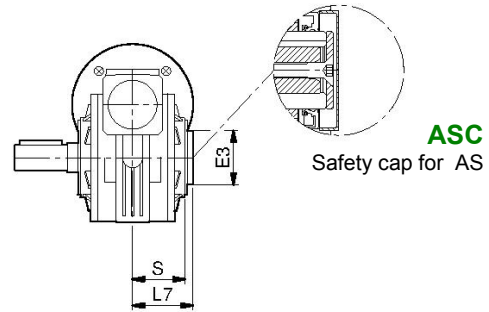
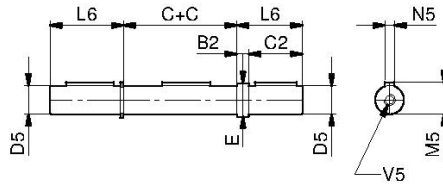
RS

Accessories

AS
Solid single output shaft

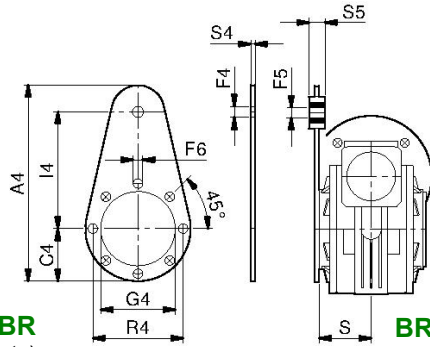


AD
Solid double output shaft



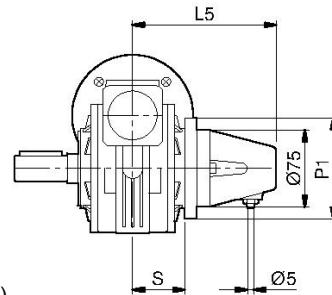
ASC
Safety cap for AS

BR
Torque arm



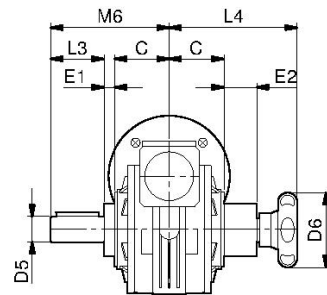
BR
(plain plate)

BRV
(with Vulkollan bush)

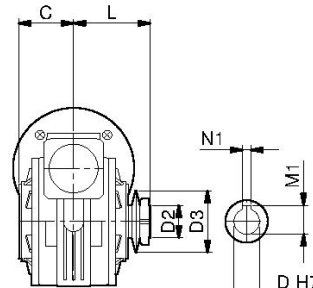


SL
Speed Limiter

TL
Torque Limiter

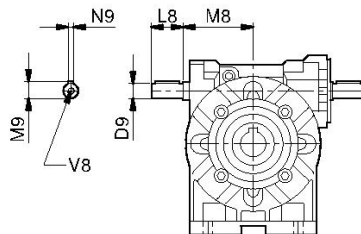


TLE (external)



TLI (internal)

VB
NDE wormshaft extension



TLI
LUBRICATION

Size	US qt	litres
28	0.04	0.04
40	0.10	0.10
50	0.14	0.13
60	0.31	0.30
70	0.48	0.45
85	0.79	0.75
110	2.38	2.25

Worm Gearboxes - Series RS - RT

Accessories

RS

Dimensions

RS (CD)	28 (1.10)	40 (1.57)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)	130 (5.12)	150 (5.91)
AS & AD A ₂	2.28	3.16	3.74	4.61	4.61	4.69	6.02	6.97	8.15
B ₂	0.08	0.39	0.39	0.39	0.39	0.39	0.39	0.79	0.79
C	1.18	1.61	1.93	2.36	2.36	2.40	3.05	3.54	4.13
C ₂	1.375	1.57	1.97	2.36	2.36	2.76	3.15	3.54	3.94
D ₅	0.625	0.75	1.0	1.125	1.25	1.375	1.625	1.75	2.0
	14	19 18	24 25	25	28 30	32 35	42	48	55
E	0.82	0.98	1.25	1.37	1.49	1.69	1.95	2.28	2.48
L ₆	1.42	1.97	2.37	2.76	2.76	3.15	3.54	4.33	4.33
M ₅	0.70	0.83	1.10	1.23	1.36	1.51	1.79	1.91	2.21
N ₅	3/16	3/16	1/4	1/4	1/4	5/16	3/8	3/8	1/2
V ₅	1/4"-20	1/4"-20	3/8"-16	3/8"-16	1/2"-13	1/2"-13	5/8"-11	5/8"-11	3/4"-10
ASC E ₃	1.65	2.17	2.44	2.44	2.83	3.54	4.72	---	---
L ₇	1.42	1.91	2.19	2.70	2.64	3.03	3.35	---	---
S	1.08	1.52	1.83	2.24	2.24	2.64	2.91	---	---
BR & BRV A ₄	5.26	6.61	7.28	9.06	9.45	12.32	15.28	18.31	20.67
C ₄	1.32	1.69	2.36	1.97	2.36	2.95	3.94	4.72	4.92
F ₄	0.41	0.41	0.41	0.41	0.41	0.81	0.81	1.02	1.02
F ₅	0.39	0.39	0.39	0.39	0.39	0.79	0.79	0.98	0.98
F ₆	0.28	0.28	0.35	0.35	0.35	0.43	0.51	0.51	0.59
G ₄	1.65	2.36	2.76	2.76	3.15	4.33	5.12	7.09	7.09
I ₄	3.15	3.54	3.94	5.91	5.91	7.87	9.84	11.81	13.78
R ₄	2.20	2.95	3.35	3.35	3.94	5.12	6.50	8.46	8.46
S ₄	0.16	0.16	0.16	0.24	0.24	0.24	0.24	0.24	0.24
S ₅	0.59	0.59	0.59	0.79	0.79	0.98	0.98	1.18	1.18
SL L ₅	3.82	4.49	5.08	5.39	5.24	5.24	5.94	---	---
P ₁	2.64	3.94	4.33	4.02	4.72	5.91	7.87	---	---
S	1.26	1.50	1.93	2.26	2.24	2.22	2.93	---	---
TLE D ₆	2.05	2.76	2.76	2.76	3.15	3.94	3.94	---	---
E ₁	0.39	0.47	0.47	0.59	0.55	0.75	0.94	---	---
E ₂	1.10	1.46	1.22	1.57	1.81	2.24	2.80	---	---
L ₃	1.18	1.57	1.97	1.97	2.36	2.76	3.15	---	---
L ₄	3.70	4.57	4.65	5.04	5.75	6.61	7.91	---	---
M ₆	2.76	3.66	4.37	4.92	5.28	5.91	7.13	---	---
TLI D	14	18	24	25	28	32	42	---	---
D ₂	0.56 x 0.79	0.77 x 0.81	0.97 x 1.10	1.00 x 1.02	1.12 x 0.87	1.28 x 1.06	1.67 x 1.52	---	---
D ₃	1.57	2.20	2.80	2.80	3.15	3.54	4.92	---	---
L	1.77	2.42	3.03	3.41	3.50	3.70	4.43	---	---
M ₁	0.61*	0.86	1.07	1.07*	1.23	1.39	1.78	---	---
N ₁	0.20	0.24	0.31	0.31	0.31	0.39	0.47	---	---
VB D ₉	9	11	14	19	19	24	28	38	42
L ₈	0.79	0.91	1.18	1.57	1.57	1.97	2.36	3.15	3.94
M ₈	1.69	2.17	2.56	3.03	3.5	4.19	5.71	6.54	7.68
M ₉	0.40	0.49	0.63	0.89	0.89	1.06	1.22	1.61	1.77
N ₉	0.12	0.16	0.20	0.24	0.24	0.31	0.31	1.50	1.65
V ₈	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20	M10x22	M12x25

* = Undersized key

- Not binding dimensions, for reference only

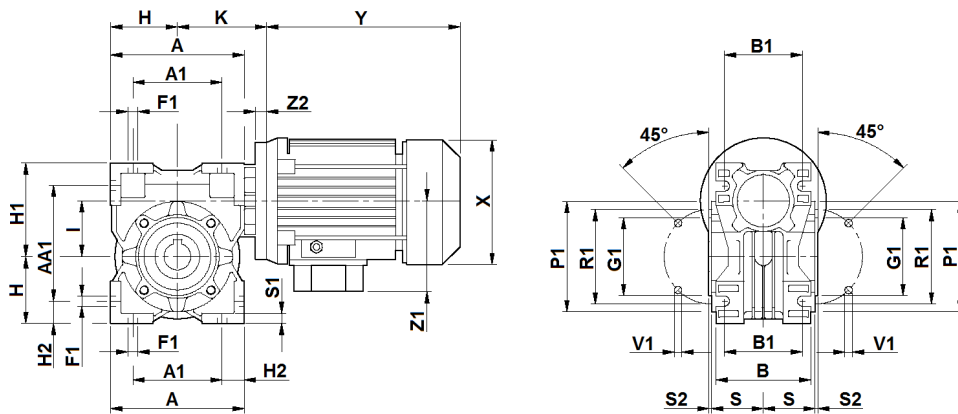
- Dimensions: inches (black) and mm (green)

RS-RT Worm Gearboxes

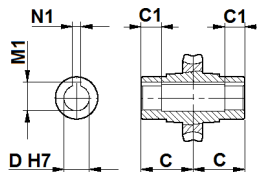
Dimensions

RT

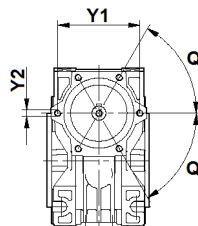
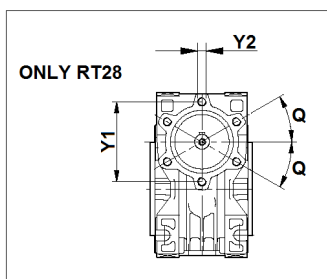
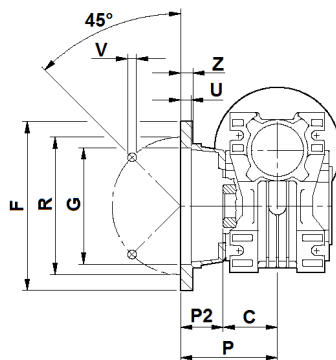
Single-stage worm



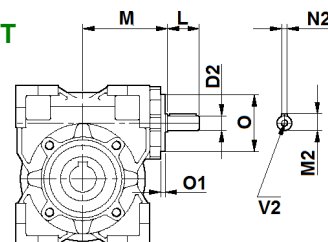
B3



F, [FV], {FL}



RT



Worm Gearboxes - Series RS - RT

Single-stage worm

RT

Dimensions

RT (CD)	28 (1.10)	40 (1.57)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)
A	3.15	3.94	4.72	5.67	6.77	8.11	10.04
A ₁	2.13	2.76	3.15	3.94	4.72	5.51	6.69
AA	3.82	4.78	5.67	6.85	8.07	9.37	11.61
AA ₁	2.80	3.60	4.09	5.12	6.02	6.77	8.27
B	2.09	2.80	3.35	3.94	4.41	5.12	5.67
B ₁	1.73	2.36	2.76	3.35	3.54	3.94	4.53
C	1.18	1.61	1.93	2.36	2.36	2.40	3.05
D	0.625	0.75	1.0	1.125	1.25	1.375	1.625
	14	18 19 20	24 25	25	25 28 30	32 35	42
D ₂	9	11	14	19	19	24	28
F	3.15	4.33	4.92	7.09	7.87	8.27	10.63
F ₁	0.28	0.28	0.35	0.35	0.43	0.51	0.59
G	1.97	2.36	2.76	4.53	5.12	5.98	6.69
G ₁	2.17	2.36	2.76	3.15	3.74	4.33	5.12
H	1.57	1.97	2.36	2.83	3.39	4.06	5.02
H ₁	2.24	2.81	3.31	4.02	4.69	5.31	6.59
H ₂	0.51	0.59	0.79	0.87	1.02	1.30	1.67
I	1.10	1.57	1.97	2.36	2.76	3.35	4.33
K	2.60	3.27	3.82	4.06	4.96	6.30	5.94
L	0.79	0.91	1.18	1.57	1.57	1.97	2.36
M	1.97	2.56	2.95	3.43	4.33	4.86	5.75
M ₁	0.71	0.84	1.12	1.25	1.37	1.52	1.80
M ₂	0.40	0.49	0.63	0.89	0.89	1.06	1.22
N ₁	0.19	0.19	0.25	0.25	0.25	0.31	0.38
N ₂	0.12	0.16	0.20	0.24	0.24	0.31	0.31
O	1.45	2.04	2.36	2.75	2.75	3.14	3.54
O ₁	0.09	0.13	0.13	0.18	0.18	0.19	0.23
P	2.09	2.72	3.66	3.39	4.37	4.37	5.16
P ₁	2.95	3.39	3.94	4.33	5.12	6.30	7.87
P ₂	0.91	1.10	1.73	0.98	2.01	1.97	2.11
Q	30°	60°	55°	60°	60°	60°	60°
R	2.68	3.43	3.54	5.93	6.50	6.89	9.06
R ₁	2.56	2.95	3.35	3.74	4.53	5.12	6.50
S	1.08	1.52	1.83	2.24	2.24	2.64	2.91
S ₁	0.24	0.28	0.31	0.39	0.43	0.55	0.51
S ₂	0.10	0.10	0.12	0.12	0.12	0.12	0.14
U	0.39	0.16	0.20	0.26	0.47	0.24	0.20
V	0.28	0.35	0.43	0.43	0.51	0.51	0.55
V ₁	M6x10 (4x)	M6x8.5 (4x)	M8x10 (4x)	M8x16 (8x)	M8x16 (8x)	M10x18 (8x)	M10x21 (8x)
V ₂	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20
Y ₁	1.85	2.40	2.75	3.14	3.34	3.93	4.17
Y ₂	M5x8.5 (6x)	M5x10 (6x)	M6x10 (6x)	M6x12 (6x)	M8x16 (6x)	M8x15 (6x)	M8x15.5 (6x)
Z	0.28	0.23	0.39	0.39	0.55	0.63	0.71
Z ₂	0.51	0.51	0.52 - 0.73	0.55 - 0.59	0.61 - 0.69	0.61 - 0.73	0.71-0.79

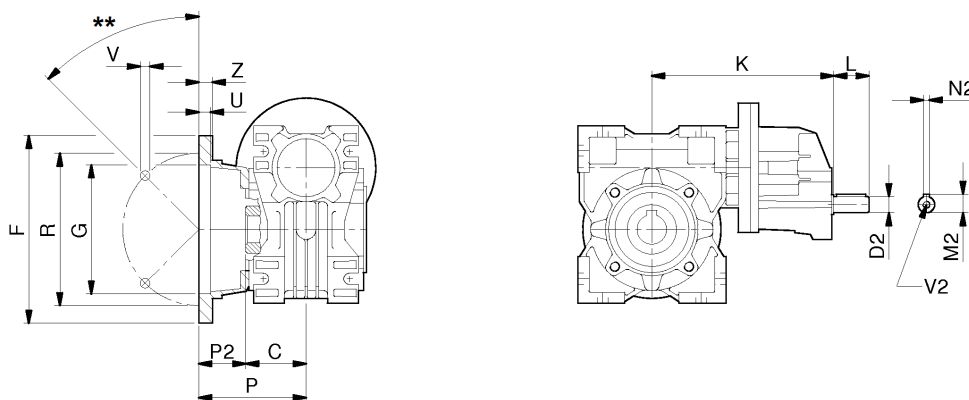
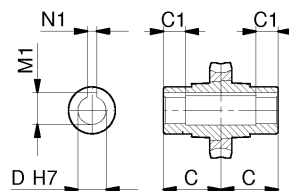
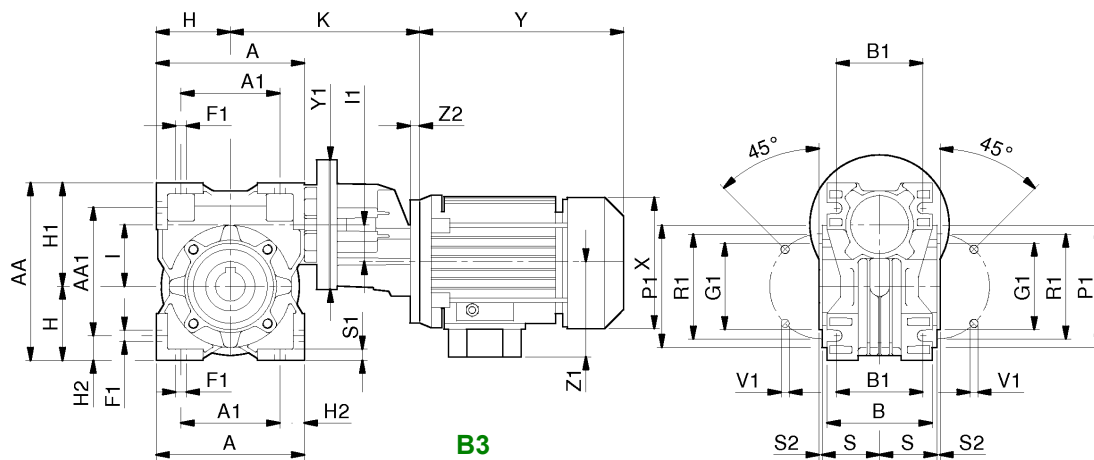
- RS input dimensions M, O, O₁, Q, Y₁, Y₂ also apply to SRS input
- Motor dimensions (X, Y, Z1) refer to manufacturer's catalogue
- Not binding dimensions, for reference only
- Dimensions: inches (black) and mm (green)

RS-RT Worm Gearboxes

Dimensions

TA

Helical / worm



Worm Gearboxes - Series RS - RT

Helical / worm

TA

Dimensions

TA RT (CD)	63 (IEC input only)			71 (IEC input only)				80 (IEC input only)				100 *
	40 (1.57)	50 (1.97)	60 (2.36)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)	110 (4.33)
A	3.94	4.72	5.67	4.72	5.67	6.77	8.11	5.67	6.77	8.11	10.04	10.04
A ₁	2.76	3.15	3.94	3.15	3.94	4.72	5.51	3.94	4.72	5.51	6.69	6.69
AA	4.78	5.67	6.85	5.67	6.85	8.07	9.37	6.85	8.07	9.37	11.61	11.61
AA ₁	3.60	4.09	5.12	4.09	5.12	6.02	6.77	5.12	6.02	6.77	8.27	8.27
B	2.80	3.35	3.94	3.35	3.94	4.41	5.12	3.94	4.41	5.12	5.67	5.67
B ₁	2.36	2.76	3.35	2.76	3.35	3.54	3.94	3.35	3.54	3.94	4.53	4.53
C	1.61	1.93	2.36	1.93	2.36	2.36	2.40	2.36	2.36	2.40	3.05	3.05
D	0.625	1.0	1.125	1.0	1.125	1.25	1.375	1.125	1.25	1.375	1.625	1.625
	18 19 20	24 25	25	24 25	25	25 28 30	32 35	25	25 28 30	32 35	42	42
D ₂	11	11	11	14	14	14	14	19	19	19	19	24
F	4.33	4.92	7.09	4.92	7.09	7.87	8.27	7.09	7.87	8.27	10.63	10.63
F ₁	0.28	0.35	0.35	0.35	0.35	0.43	0.51	0.35	0.43	0.51	0.59	0.59
G	2.36	2.76	4.53	2.76	4.53	5.12	5.98	4.53	5.12	5.98	6.69	6.69
G ₁	2.36	2.76	3.15	2.76	3.15	3.74	4.33	3.15	3.74	4.33	5.12	5.12
H	1.97	2.36	2.83	2.36	2.83	3.39	4.06	2.83	3.39	4.06	5.02	5.02
H ₁	2.81	3.31	4.02	3.31	4.02	4.69	5.31	4.02	4.69	5.31	6.59	6.59
H ₂	0.59	0.79	0.87	0.79	0.87	1.02	1.30	0.87	1.02	1.30	1.67	1.67
I	1.57	1.97	2.36	1.97	2.36	2.76	3.35	2.36	2.76	3.35	4.33	4.33
I ₁	1.26	1.26	1.26	1.57	1.57	1.57	1.57	1.97	1.97	1.97	1.97	1.97
K	6.04	6.73	6.97	6.81	7.20	8.23	8.82	8.15	9.15	9.86	10.41	12.91
L	0.91	0.91	0.91	1.18	1.18	1.18	1.18	1.57	1.57	1.57	1.57	1.97
M ₁	0.71	1.12	1.25	1.12	1.25	1.37	1.52	1.25	1.37	1.52	1.80	1.80
M ₂	0.49	0.49	0.49	0.63	0.63	0.63	0.63	0.89	0.89	0.89	0.89	1.06
N ₁	0.19	0.25	0.25	0.25	0.25	0.25	0.31	0.25	0.25	0.31	0.38	0.38
N ₂	0.16	0.16	0.16	0.20	0.20	0.20	0.20	0.24	0.24	0.24	0.24	0.31
P	2.72	3.66	3.39	3.66	3.39	4.37	4.37	3.39	4.37	4.37	5.16	5.16
P ₁	3.39	3.94	4.33	3.94	4.33	5.12	6.30	4.33	5.12	6.30	7.87	7.87
P ₂	1.10	1.73	0.98	1.73	0.98	2.01	1.97	0.98	2.01	1.97	2.11	2.11
R	3.43	3.54	5.93	3.54	5.93	6.50	6.89	5.93	6.50	6.89	9.06	9.06
R ₁	2.95	3.35	3.74	3.35	3.74	4.53	5.12	3.74	4.53	5.12	6.50	6.50
S	1.52	1.83	2.24	1.83	2.24	2.24	2.64	2.24	2.24	2.64	2.91	2.91
S ₁	0.28	0.31	0.39	0.31	0.39	0.43	0.55	0.39	0.43	0.55	0.51	0.51
S ₂	0.10	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.14	0.14
U	0.16	0.20	0.26	0.20	0.26	0.47	0.24	0.26	0.47	0.24	0.20	0.20
V	0.35	0.43	0.43	0.43	0.43	0.51	0.51	0.43	0.51	0.51	0.55	0.55
V ₁	M6x8 (4)	M8x10 (4)	M8x16 (8)	M8x10 (4)	M8x16 (8)	M8x16 (8)	M10x18 (8)	M8x16 (8)	M8x16 (8)	M10x18 (8)	M10x21 (8)	M10x21 (8)
V ₃	M4 x 10	M4 x 10	M4 x 10	M6 x 15	M6 x 15	M6 x 15	M6 x 15	M8 x 20	M8 x 20	M8 x 20	M8 x 20	M8 x 20
Y ₁	4.13	4.13	4.13	4.72	4.72	4.72	4.72	5.51	5.51	5.51	5.51	5.51
Z	0.24	0.39	0.39	0.39	0.39	0.55	0.63	0.39	0.55	0.63	0.71	0.71
Z ₂	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.55	0.55	0.55	0.55	0.55

* NEMA & IEC input

** = 90° for RT28 or 45° other sizes

- Motor dimensions (X, Y, Z1) refer to manufacturer's catalogue

- Not binding dimensions, for reference only

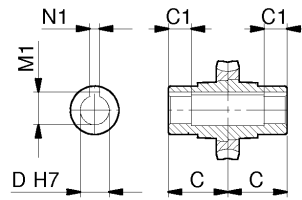
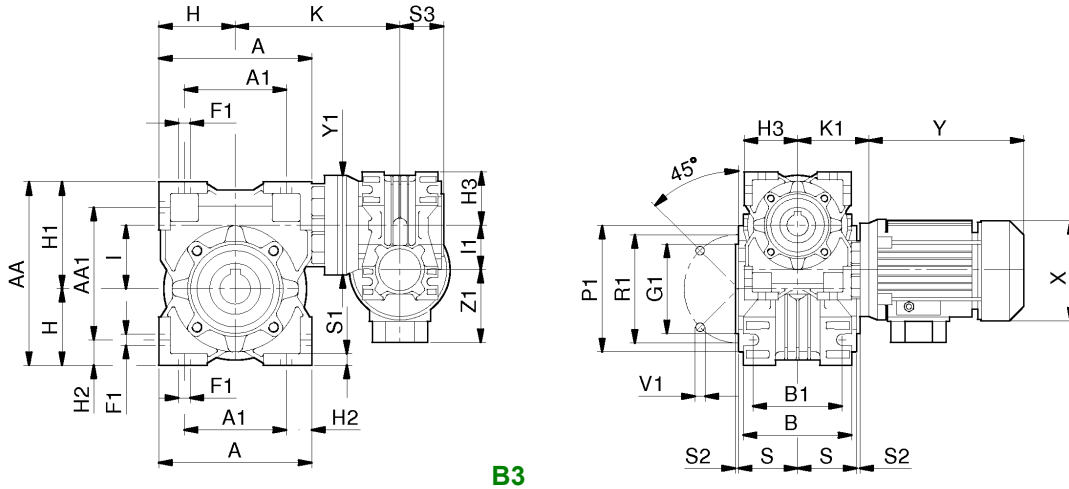
- Dimensions: inches (black) and mm (green)

RS-RT Worm Gearboxes

Dimensions

RT / RT

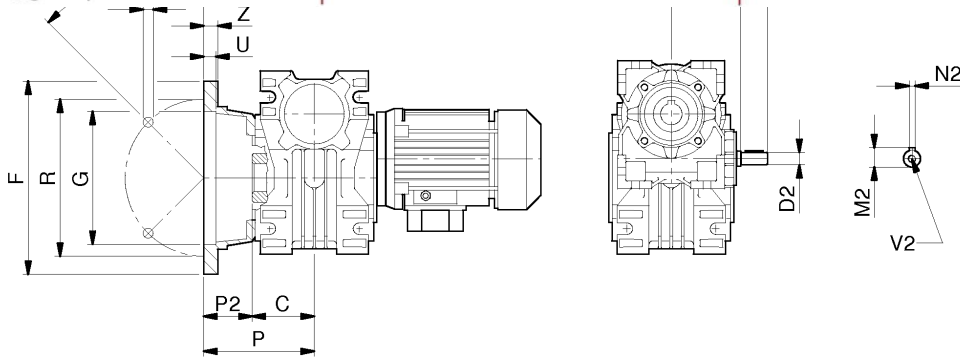
Two-stage worm



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روبروی پالایشگاه نفت پارس، پلاک ۱۲



F, [FV], {FL}

RT

Worm Gearboxes - Series RS - RT

Two-stage worm

RT / RT

Dimensions

1st RT 2nd RT	28 /				40 /		50 /
	28	40	50	60	70	85	110
A	3.15	3.94	4.72	5.67	6.77	8.11	10.04
A ₁	2.13	2.76	3.15	3.94	4.72	5.51	6.69
AA	3.82	4.78	5.67	6.85	8.07	9.37	11.61
AA ₁	2.80	3.60	4.09	5.12	6.02	6.77	8.27
B	2.09	2.80	3.35	3.94	4.41	5.12	5.67
B ₁	1.73	2.36	2.76	3.35	3.54	3.94	4.53
C	1.18	1.61	1.93	2.36	2.36	2.40	3.05
D	0.625	0.75	1.0	1.125	1.25	1.375	1.625
	14	18 19 20	24 25	25	25 28 30	32 35	42
D ₂	9	9	9	9	11	11	14
F	3.15	4.33	4.92	7.09	7.87	8.27	10.63
F ₁	0.28	0.28	0.35	0.35	0.43	0.51	0.59
G	1.97	2.36	2.76	4.53	5.12	5.98	6.69
G ₁	2.17	2.36	2.76	3.15	3.74	4.33	5.12
H	1.57	1.97	2.36	2.83	3.39	4.06	5.02
H ₁	2.24	2.81	3.31	4.02	4.69	5.31	6.59
H ₂	0.51	0.59	0.79	0.87	1.02	1.30	1.67
H ₃	1.57	1.57	1.57	1.57	1.97	1.97	2.36
I	1.10	1.57	1.97	2.36	2.76	3.35	4.33
I ₁	1.10	1.10	1.10	1.10	1.57	1.57	1.97
K	3.13	3.92	5.55	5.73	5.65	7.83	7.99
K ₁	2.26	2.26	2.26	2.26	2.78	2.78	3.27
L	0.79	0.79	0.79	0.79	0.91	0.91	1.18
M	1.97	1.97	1.97	1.97	2.56	2.56	2.95
M ₁	0.71	0.84	1.12	1.25	1.37	1.52	1.80
M ₂	0.40	0.40	0.40	0.40	0.49	0.49	0.63
N ₁	0.20	0.24	0.31	0.31	0.31	0.39	0.47
N ₂	0.12	0.12	0.12	0.12	0.16	0.16	0.20
P	2.09	2.72	3.66	3.39	4.37	4.37	5.16
P ₁	2.95	3.39	3.94	4.33	5.12	6.30	7.87
P ₂	0.91	1.10	1.73	0.98	2.01	1.97	2.11
R	2.68	3.43	3.54	5.93	6.50	6.89	9.06
R ₁	2.56	2.95	3.35	3.74	4.53	5.12	6.50
S	1.08	1.52	1.83	2.24	2.24	2.64	2.91
S ₁	0.24	0.28	0.31	0.39	0.43	0.55	0.51
S ₂	0.10	0.10	0.12	0.12	0.12	0.12	0.14
S ₃	1.18	1.18	1.18	1.18	1.61	1.61	1.93
U	0.39	0.16	0.20	0.26	0.47	0.24	0.20
V	0.28	0.35	0.43	0.43	0.51	0.51	0.55
V ₁	M6x10 (4x)	M6x8,5 (4x)	M8x10 (4x)	M8x16 (8x)	M8x16 (8x)	M10x18 (8x)	M10x21 (8x)
V ₂	M4x10	M4x10	M4x10	M4x10	M4x10	M4x10	M6x15
Y ₁	3.15	3.54	3.54	3.54	4.72	4.72	4.72
Z	0.28	0.24	0.39	0.39	0.55	0.63	0.71

** = 90° for RT28 or 45° other sizes

- Not binding dimensions, for reference only

- Dimensions: inches (black) and mm (green)

RS-RT Worm Gearboxes

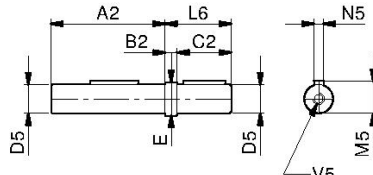
Dimensions

RT

Accessories

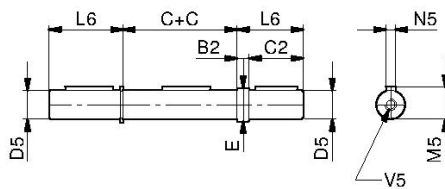
AS

Solid single output shaft



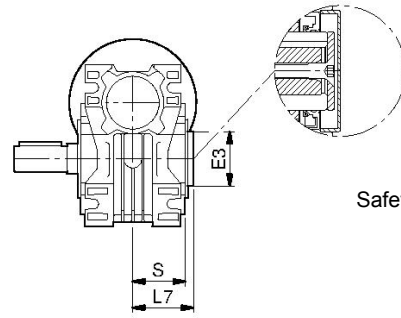
AD

Solid double output shaft



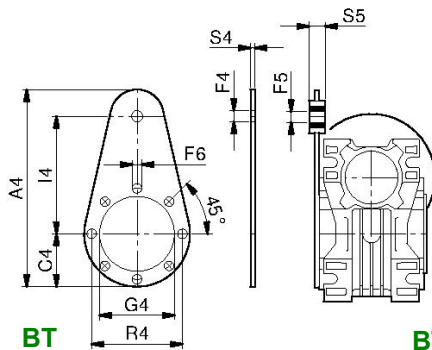
ASC

Safety cap for AS



BT

Torque arm

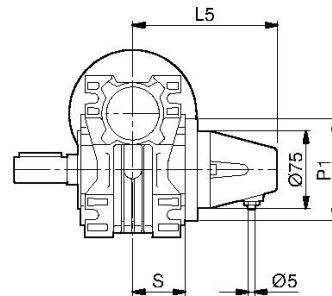


BT
(plain sheet)

BTV
(with Vulkollan bush)

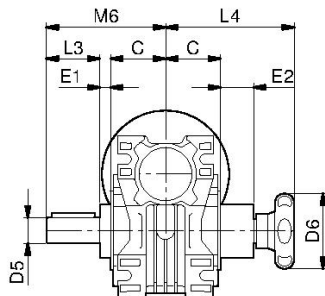
SL

Speed Limiter

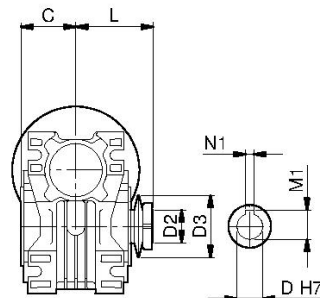


TL

Torque Limiter



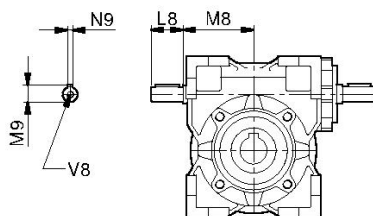
TLE (external)



TLI (internal)

VB

NDE wormshaft extension



TLI LUBRICATION

Size	US qt	litres
28	0.04	0.04
40	0.10	0.10
50	0.14	0.13
60	0.31	0.30
70	0.48	0.45
85	0.79	0.75
110	2.38	2.25

Worm Gearboxes - Series RS - RT

Accessories RT Dimensions

RT (CD)	28 (1.10)	40 (1.57)	50 (1.97)	60 (2.36)	70 (2.76)	85 (3.35)	110 (4.33)
AS & AD A ₂	2.28	3.16	3.74	4.61	4.61	4.69	6.02
B ₂	0.08	0.39	0.39	0.39	0.39	0.39	0.39
C	1.18	1.61	1.93	2.36	2.36	2.40	3.05
C ₂	1.375	1.57	1.97	2.36	2.36	2.76	3.15
D ₅	0.625	0.75	1.0	1.125	1.25	1.375	1.625
	14	19 18	24 25	25	28 30	32 35	42
E	0.82	0.98	1.25	1.37	1.49	1.69	1.95
L ₆	1.42	1.97	2.37	2.76	2.76	3.15	3.54
M ₅	0.70	0.83	1.10	1.23	1.36	1.51	1.79
N ₅	3/16	3/16	1/4	1/4	1/4	5/16	3/8
V ₅	1/4"-20	1/4"-20	3/8"-16	3/8"-16	1/2"-13	1/2"-13	5/8"-11
ASC E ₃	1.97	2.05	2.44	2.95	3.54	3.94	4.72
L ₇	1.42	1.91	2.19	2.70	2.64	3.03	3.35
S	1.08	1.52	1.83	2.24	2.24	2.64	2.91
BT & BTV A ₄	5.43	6.61	7.28	9.25	11.61	12.32	15.28
C ₄	1.50	1.69	2.36	2.17	2.56	2.95	3.94
F ₄	0.41	0.41	0.41	0.41	0.41	0.81	0.81
F ₅	0.39	0.39	0.39	0.39	0.39	0.79	0.79
F ₆	0.28	0.28	0.35	0.35	0.35	0.47	0.51
G ₄	2.17	2.36	2.76	3.15	3.74	4.33	5.12
I ₄	3.15	3.94	3.94	5.91	7.87	7.87	9.84
R ₄	2.56	2.95	3.35	3.74	4.53	5.12	6.50
S ₄	0.16	0.16	0.16	0.24	0.24	0.24	0.24
S ₅	0.59	0.59	0.59	0.79	0.79	0.98	0.98
SL L ₅	3.78	4.45	4.84	5.24	5.24	5.47	5.91
P ₁	3.07	3.54	3.94	4.33	5.12	6.30	7.87
S	1.08	1.52	1.83	2.24	2.24	2.64	2.91
TLE D ₆	2.05	2.76	2.76	2.76	3.15	3.94	3.94
E ₁	0.39	0.47	0.47	0.59	0.55	0.75	0.94
E ₂	1.10	1.46	1.22	1.57	1.81	2.24	2.80
L ₃	1.18	1.57	1.97	1.97	2.36	2.76	3.15
L ₄	3.70	4.57	4.65	5.04	5.75	6.61	7.91
M ₆	2.76	3.66	4.37	4.92	5.28	5.91	7.13
TLI D	14	18	24	25	28	32	42
D ₂	0.56x0.79	0.77x0.81	0.96x1.10	1.00x1.02	1.12x0.87	1.28x1.06	1.67x1.52
D ₃	1.57	2.20	2.80	2.80	3.15	3.54	4.92
L	1.77	2.42	3.03	3.41	3.50	3.70	4.43
M ₁	0.61*	0.86	1.07	1.07*	1.23	1.39	1.78
N ₁	0.20	0.24	0.31	0.31	0.31	0.39	0.47
VB D ₉	9	11	14	19	19	24	28
L ₈	0.79	0.91	1.18	1.57	1.57	1.97	2.36
M ₈	1.69	2.17	2.56	3.03	3.5	4.19	5.71
M ₉	0.40	0.49	0.63	0.89	0.89	1.06	1.22
N ₉	0.12	0.16	0.20	0.24	0.24	0.31	0.31
V ₈	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20

* = Undersized key

- Not binding dimensions, for reference only

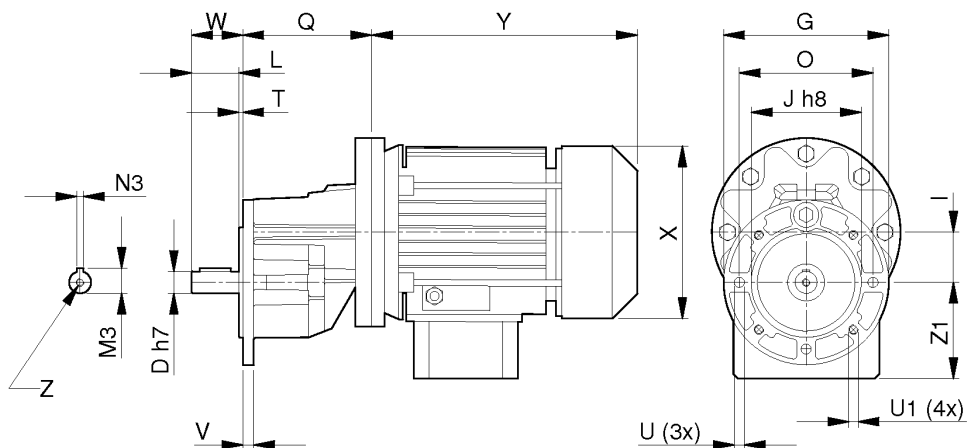
- Dimensions: inches (black) and mm (green)

RS-RT Worm Gearboxes

Dimensions

XA

Single-stage attachment



FXA dimensions	D	G	I	J h8	L	O	Q	U	U1	T	V	W	Z
63	14	105	1.26	70	1.18	85	3.27	0.26	M6	0.10	0.28	1.28	M5x10
71	19	120	1.57	80	1.57	100	3.54	0.22	M6	0.10	0.30	1.67	M8x20
80	24	140	1.97	95	1.95	115	4.49	0.35	M6	0.10	0.41	2.05	M8x20
100	28	200	2.48	130	2.26	165	6.97	0.41	0.41	0.10	0.47	2.36	M10x22

- FXA 63, 71 and 80 with IEC input only
- FXA100 with NEMA and IEC input

FXA weights	lb	US qt	litres
63	2.23	0.04	0.04
71	4.28	0.06	0.06
80	6.36	0.11	0.10
100	15.25	0.21	0.20

- Motor dimensions (X, Y, Z1) refer to manufacturer's catalogue
- Not binding dimensions, for reference only
- Dimensions: inches (black) and mm (green)

Worm Gearboxes - Series RS - RT

Back driving - Reversibility - Irreversibility

In case a worm gearbox is back-driven by using the worm wheel as input, efficiency is lower than forward-driving and back-drive efficiency can be reduced to zero obtaining a self-locking, or irreversible gear set.

When back-driving the worm gear, internal friction tends to lock the mesh, and the bigger the applied torque the mesh friction increases proportionally augmenting the lockage at the same time.

The most obvious example is during braking or slowing-down a weight where the inertial load will try to back-drive the worm shaft.

A worm gear is intended as static self-locking drive when the lead angle (β) is lower than the friction angle (arc tangent of friction coefficient) but tooth contact can be dynamic even when the mesh velocity is zero, as vibrations in a non-rotating gear set can induce motion in the tooth contact area.

To provide a safety factor, gearing lead angles smaller than 3 degrees are recommended for full self-locking condition, and lead angles bigger than 10 degrees for full reversibility condition, according to the below cross-table between lead angles and self-locking.

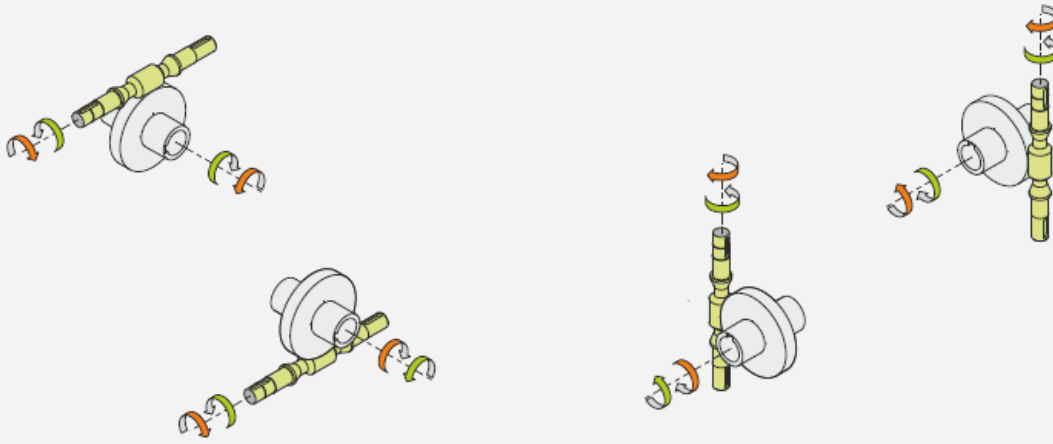
Lead angle	Static self-locking & Reversibility	
$\beta > 20^\circ$	Full reversibility	Examples (Gearing lead angle "β" from the table below) - FRT50 1/7 $\beta = 23$ degrees & 52 minutes \rightarrow Full reversibility - FRS60 1/20 $\beta = 11$ degrees & 18 minutes \rightarrow High reversibility - FRT85 1/56 $\beta = 4$ degrees & 45 minutes \rightarrow Good reversibility Poor static self-locking - FRT40 1/56 $\beta = 3$ degrees & 25 minutes \rightarrow Poor reversibility/ Good static self-locking - FRT70 1/80 $\beta = 2$ degrees & 51 minutes \rightarrow Full static self-locking
$10^\circ < \beta < 20^\circ$	High reversibility	
$5^\circ < \beta < 10^\circ$	Good reversibility Poor static self-locking	
$3^\circ < \beta < 5^\circ$	Poor reversibility Good static self-locking	
$1^\circ < \beta < 3^\circ$	Full static self-locking	

Size	Reduction ratio / Lead angle " β "											
	5	7	10	15	20	28	40	49	56	70	80	100
RS / RT 28	29°33'	23°11'	16°41'	11°18'	10°23'	6°06'	5°14'	4°19'	3°03'	2°27'	2°37'	2°20'
RS / RT 40	30°57'	21°36'	16°41'	11°18'	8°31'	5°39'	4°17'	3°48'	3°25'	3°01'	2°51'	2°38'
RS / RT 50	30°57'	23°52'	16°41'	11°18'	8°59'	6°19'	4°31'	4°14'	3°42'	2°44'	2°51'	2°17'
RS / RT 60	36°32'	25°33'	19°0'	12°55'	11°18'	6°49'	5°42'	5°11'	3°55'	3°38'	2°51'	2°51'
RS / RT 70	34°01'	26°51'	18°38'	12°40'	11°18'	7°12'	5°42'	4°48'	4°05'	3°16'	2°51'	2°38'
RS / RT 85	34°47'	26°05'	19°09'	13°02'	11°18'	6°58'	5°52'	4°52'	4°45'	3°48'	3°14'	2°40'
RS/RT 110	---	26°22'	20°43'	14°09'	11°18'	7°04'	5°42'	4°43'	4°29'	3°54'	3°39'	2°34'
RS 130	---	26°57'	21°20'	14°06'	13°05'	7°14'	6°18'	5°18'	6°20'	4°33'	3°30'	3°40'
RS 150	---	25°33'	21°48'	16°22'	13°24'	7°35'	7°07'	5°48'	6°11'	4°17'	3°45'	3°43'

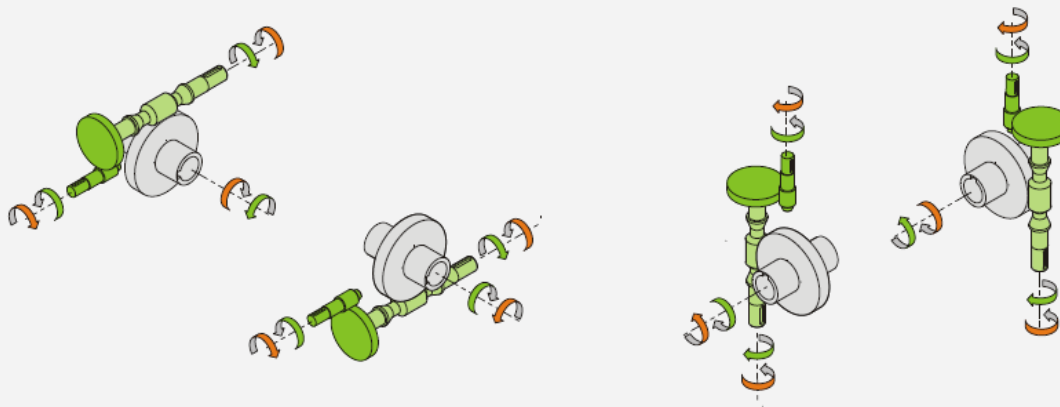
RS-RT Worm Gearboxes

Direction of rotation

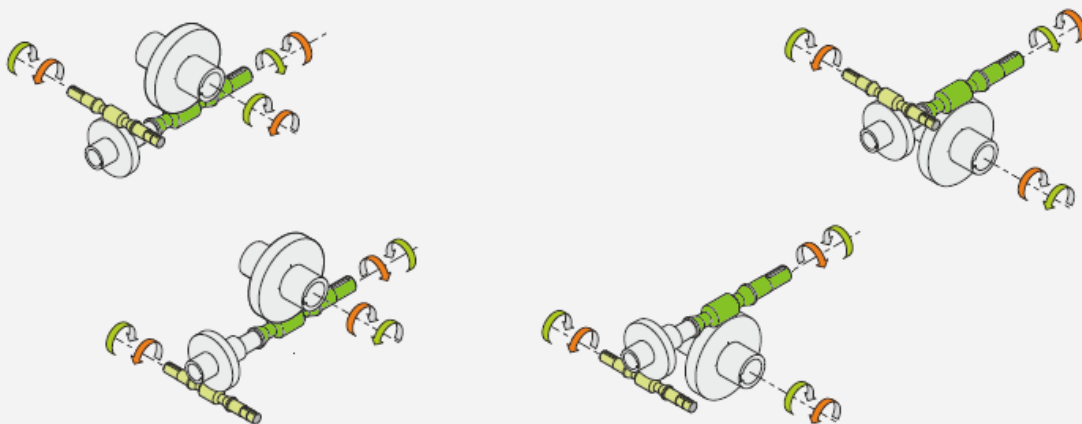
RS - RT



RA - TA



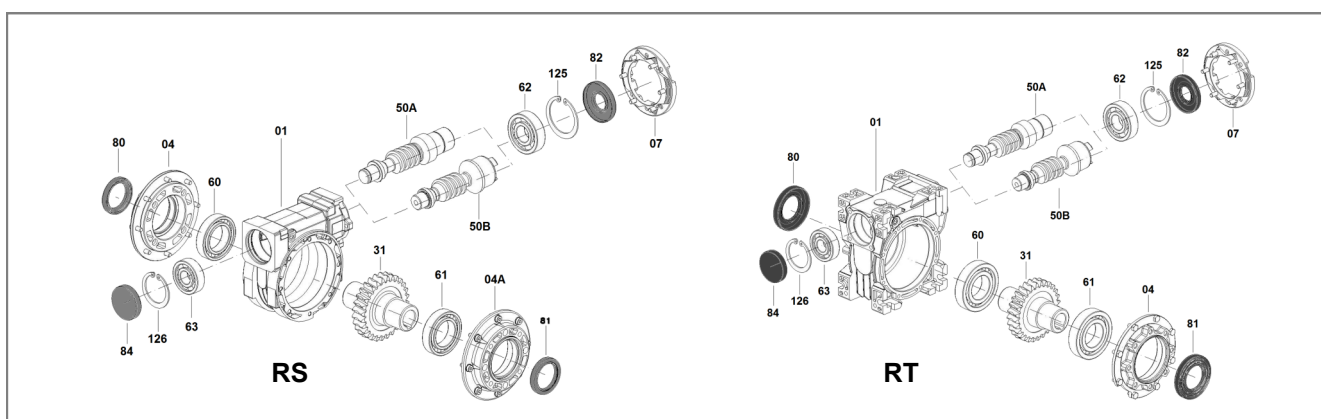
RS/RS - RT/RT



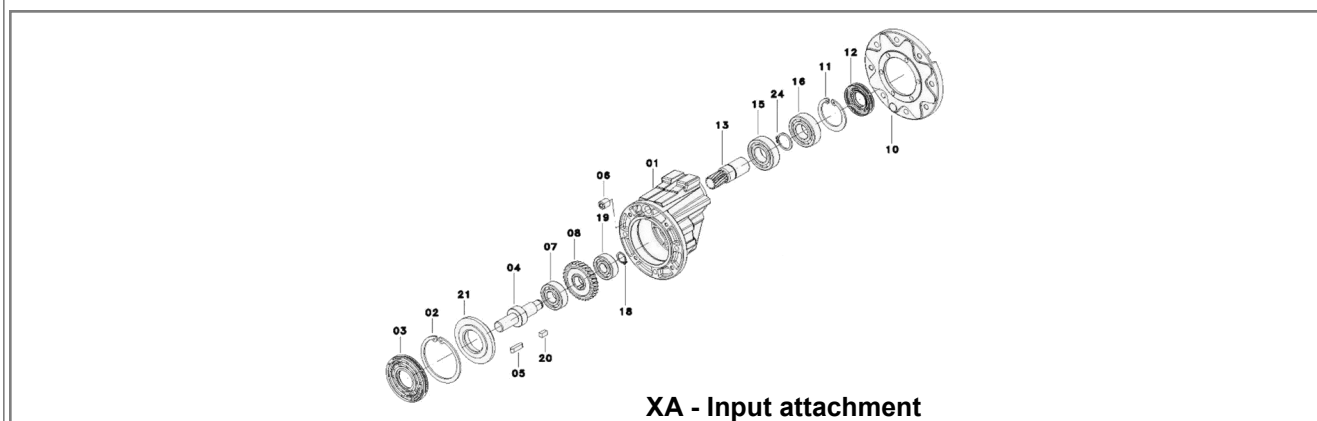
Worm Gearboxes - Series RS - RT

RS - RT - XA

Component parts



Item	Description	Item	Description	Item	Description
01	Body	50B	Worm shaft "G"	81	Oil seal
04	Side cover RT	60	Bearing	82	Oil seal
04A	Side cover RS	61	Bearing	84	Oil seal RCA
07	Motor flange	62	Bearing	125	Snap ring
31	Worm wheel	63	Bearing	126	Snap ring
50A	Worm shaft NEMA/IEC	80	Oil seal		



XA - Input attachment

Item	Description	Item	Description	Item	Description
01	Body	08	Gear	18	Snap ring
02	Snap ring	10	Motor flange	19	Bearing
03	Oil seal	11	Snap ring	20	Key
04	Output shaft	12	Oil seal	21	Adapter
05	Key	13	Pinion	24	Snap ring
06	Screw	15	Bearing		
07	Bearing	16	Bearing		

RS-RT Worm Gearboxes

Imperial	CONVERSION FACTORS	Metric
1 lb = 4.45 N 1 lb = 0.454 kg 1 oz = 0.028 kg	Mass & Force	1 N = 0.225 lb 1 kg = 2.205 lb 1 kg = 35.27 oz
HP (60Hz) = kW (50Hz) × 1.341 × 1.2 HP (50Hz) = kW (50Hz) × 1.341 HP = in-lb × rpm : (63025 x eff.)	Power	kW (50Hz) = HP (60Hz) × 0.745 × 0.833 kW (50Hz) = HP (50Hz) × 0.745 kW = Nm × rpm / (9550 × eff.)
1 in-lb = 0.113 Nm 1 ft-lb = 1.355 Nm ft-lb = 108 × k × HP × eff. × ratio in-lb = 63025 × HP × eff. / rpm = 9 × k × HP × eff. × ratio = 8000 × k × HP × eff. / output speed (where k= motor pole number, i.e. 2, 4, 6, 8)	Torque	1 Nm = 8.851 in-lb 1 Nm = 0.738 ft-lb Nm = 9550 × kW × eff. / rpm
1 qt (US) = 0.946 litre	Volume	1 litre = 1.057 qt (US)

Abstract of OPERATION AND MAINTENANCE INSTRUCTIONS

Under the terms of the Machine Directive 2006/42/EC and relevant Guidelines, the speed gearboxes and variators are considered as "machines' separate elements not having a specific application and meant for being incorporated onto the machine. The complete machine and equipped with such components must comply with the essential and relevant requisites for safety and health preservation" of the mentioned Directive.

Installation

Check if the unit to be installed, is properly selected to perform the required function and that its mounting position complies with the order.

The nameplate reports such information.

Check mounting stability to ensure the unit runs without vibrations or overloads.

Running

The unit may be connected for clockwise or counter-clockwise rotation.

The unit must be stopped as soon as defective running or unexpected noise occur, remove the faulty part or return the unit to the factory for checking.

If the faulty part is not replaced, other parts can also be affected, causing more severe damage and making the identification of initial cause more difficult.

Maintenance

Although the units are no-load run tested in the factory before despatch, it is recommended not to run them at maximum load for the first 20-30 running hours to allow the proper running in.

The gearboxes are delivered already filled with long-life synthetic oil and, in case of replacement or topping, do not mix with mineral lubricants.

Handling

When hoisting, use relevant housing locations or eyebolts if provided, or foot or flange holes.

Never hoist on any moving part.

Painting

Carefully protect oil seals, coupling faces and shafts when units are re-painted.

Long-term storage

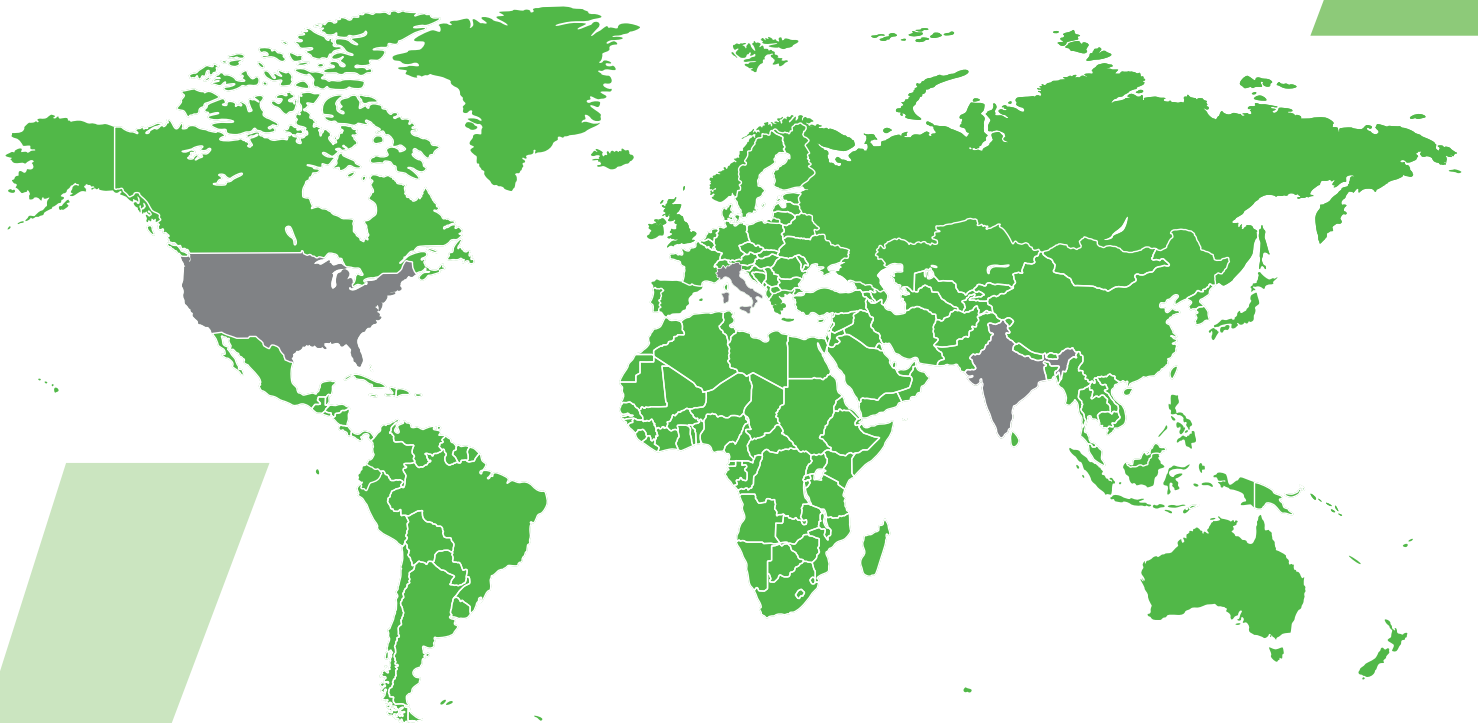
For storage longer than 3 months, apply anti-oxidants onto shafts and machined surfaces, and protective grease on oil seal lips.

Product's Environmental Management

In conformity with Environmental Certification ISO 14001, we recommend the following to dispose of our products:

- scraped components of the units to be delivered to authorized centres for metal object collection;
- oils and lubricants drained from the units to be delivered to Exhausted Oil Unions;
- packages (pallets, carton boxes, paper, plastic, etc.) to lead into regeneration/recycling circuits as far as possible, by delivering separate waste classes to authorized companies.

D00-RSRT-USA-EN-ED01-REV00



2 Foreign subsidiaries, one in India, one in the USA



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100 A global network with over 100 commercial partners

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RN

PARALLEL SHAFT GEARBOXES

two and three gear trains



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RN Gearboxes

Description



The gearboxes, series RN are designed according to latest ISO engineering specifications with the help of computer aided structural analysis for displacement and stress field.

The monolithic framework does not deflect under the effect of torque and external loads with effective results on sealing surfaces.

The gearboxes of series RN are manufactured of pressure die cast for the first 3 sizes and of cast iron for the others.

The shaft mount version allows the flange mount B5 conversion by simply fitting one of the many output flanges available.

Various dimensions and types of output shafts (hollow with through keyway, hollow with shrink disk and solid with single or double end) are available for the majority of applications.

The series RN is made in 6 sizes, 30 reduction ratios and output torques between 160 and 3400 Nm.

The gearbox series RN consists of parallel shaft gearboxes with hollow output shaft, and two- and three-stage execution.

Directive ATEX

The gearboxes VARVEL-ATEX, supplied on demand, are designed and manufactured according to Directive 94/9/CE "ATEX" and therefore, they are qualified for installation in potentially explosive atmospheres:

- Zones of Group II,
- Category 2 (or 3),
- Explosion hazard with gas presence (Zone 1 or 2),
- Explosion hazard with combustible dust presence (Zone 21 or 22).

See detailed information at pages 86, 87.

The units VARVEL-ATEX are identified by the additional marking:

II 2 GD ck IP66 Cc Tmax=135 °C

Gearboxes RN

Description



Series RN - Parallel shaft gearboxes

Multipurpose Housing	Foot & Foot/Flange mountings One housing for 2- & 3-stages
Housing & Covers	Aluminium die cast (3 sizes) Grey cast iron (3 sizes).
Input	IEC and NEMA motor adapters with universal flexible coupling, or bore and keyway.
Gearing	Alloy steel Case hardened Profile ground or shaved.
Oil seals	NBR - Nitrile Butadiene Rubber as standard Viton and Silicone on request.
Bearings	Ball or roller types according to sizes and technical requirements.
Output	Solid shafts, metric and imperial
Lubrication	Synthetic long-life oil Grade ISO VG 320 No oil/vent plugs In-house filling

RN Gearboxes

Description

	GENERAL SPECIFICATIONS
Range	6 sizes 40 ratios in 2 and 3 stages 3400 Nm max. output torque
Sizing	According to ISO6336 / DIN3990. 10,000 hrs average lifetime with service factor SF1
Housing, Covers	Pressure die cast aluminium up to size 3 and cast iron from size 4
Coupling G input	Pressure die cast aluminium for sizes G3, G5, G6 and alloyed steel from size G8
Toothed parts	Steel case hardened Tooth profile ground or shaved Run-in bevel gears
Hollow output shafts	Ductile cast iron
Shafts & Keys	Steel Tolerances: Shafts h6, Bores E8 Keys according to DIN6885 B1
Bearings	Ball- or roller-types according to sizes and technical requirements
Oil seals	Type NBR - Nitril-Butadiene Rubber with additional anti-dust lip according to DIN 3760 Type FKM - Fluor elastomer Viton on demand
Lubricant	Synthetic long-life oil Grade ISO VG 320
Painting	Aluminium until size 3 and from size 4 Epoxy powder paint Standard colour RAL 7012
ATEX	On demand

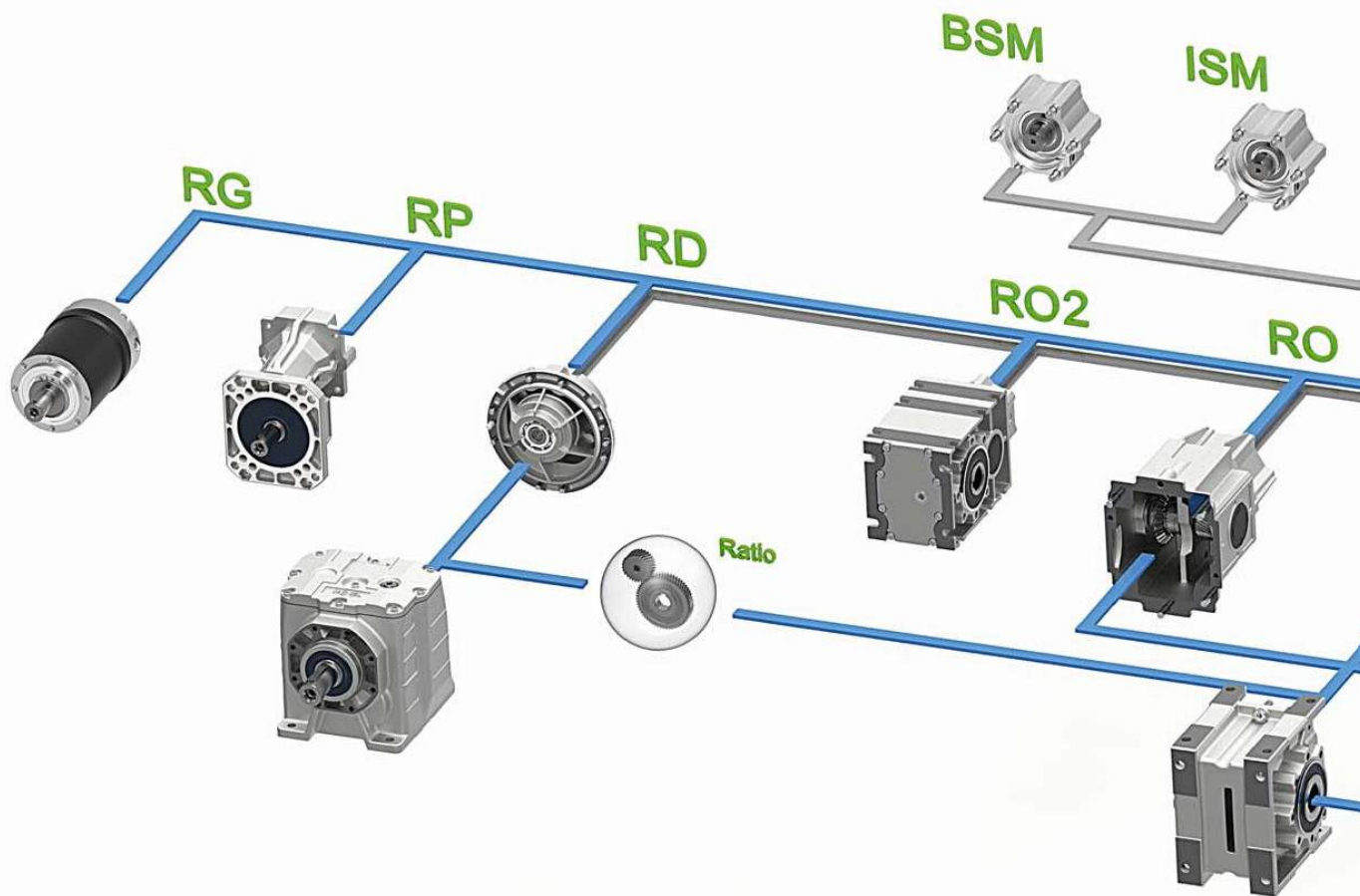
Gearboxes RN

Symbols

Symbol	Description
D [mm]	PCD of transmission element $k_{(t)}$
F_r [N]	Application radial load
F_{r1} [N]	Catalogue radial load (input)
F_{r2} [N]	Catalogue radial load (output)
$F_{r2b(x)}$ [N]	Permissible radial load at position "X" on output shaft. Based on bearing lifetime.
$F_{r2s(x)}$ [N]	Permissible radial load same as $F_{r2b(x)}$. Based on shaft bending and torsional stress.
SF	Service factor $FS = \frac{M_2}{M_{(app)}}$
i_n	Nominal reduction ratio
i_r	Actual reduction ratio
J_1 [kgm ²]	Moment of inertia of the gearbox at gearbox input shaft
J_2 [kgm ²]	Moment of inertia of the application
J_m [kgm ²]	Moment of inertia of the motor
$k_{(a)}$	Mass acceleration factor
$k_{(t)}$	Transmission element factor
Lub [l]	Lubricant (litres) H - Horizontal mounting V - Vertical mounting
M_2 [Nm]	Gearbox maximum output torque $M_2 = \frac{9550 * P_1 * \eta}{n_2}$
$M_{(app)}$ [Nm]	Application torque
n_1 [min ⁻¹]	Input speed
n_2 [min ⁻¹]	Output speed
P_1 [kW]	Input power $P_1 = \frac{M_2 * n_2}{9550 * \eta}$
$P_{(kg)}$ [kg]	Weight: for mounting B3H and average reduction ratio
η	Efficiency $\eta = 0.96$ for 2 stages $\eta = 0.94$ for 3 stages

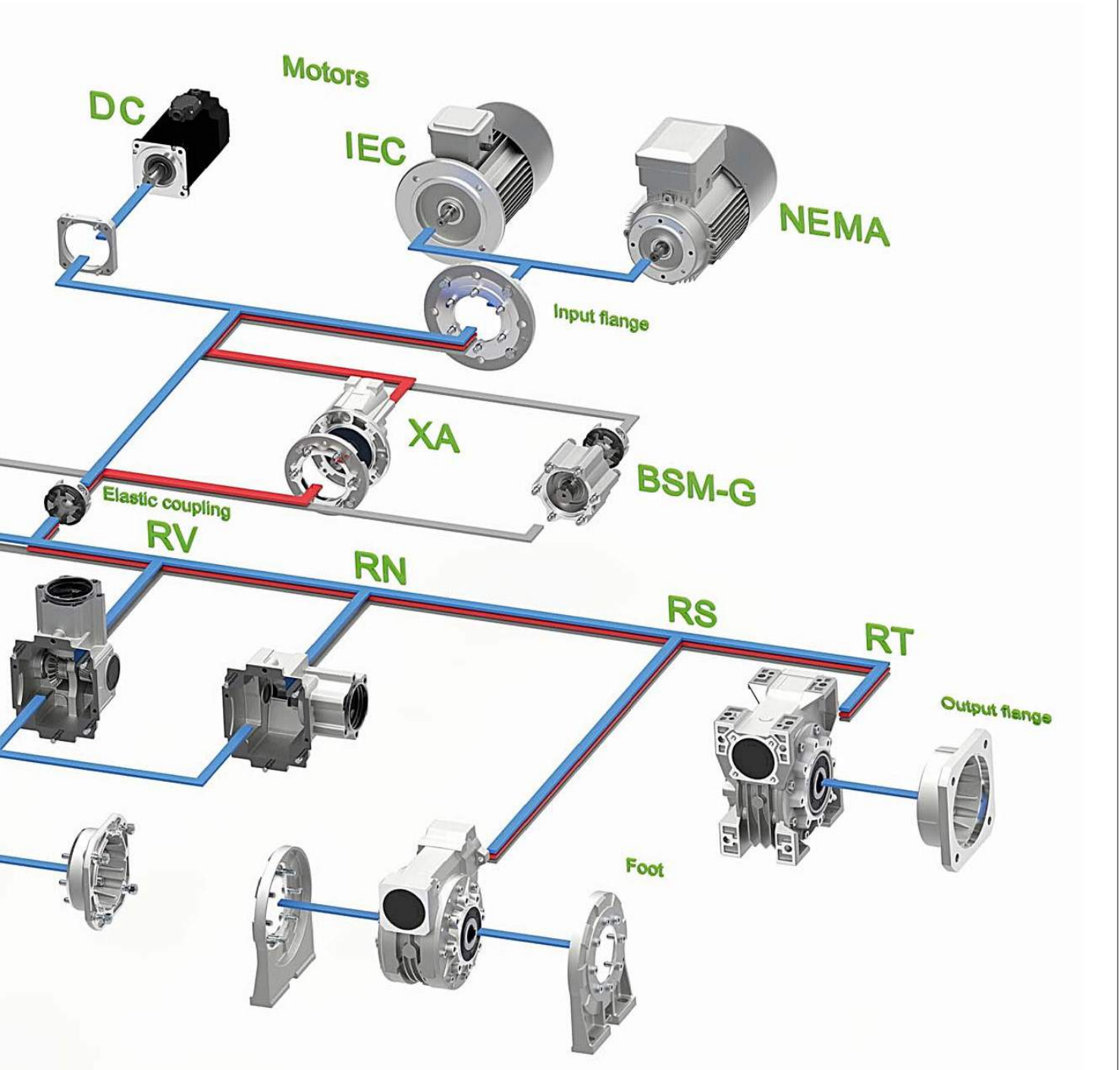
RN Gearboxes

Modular System



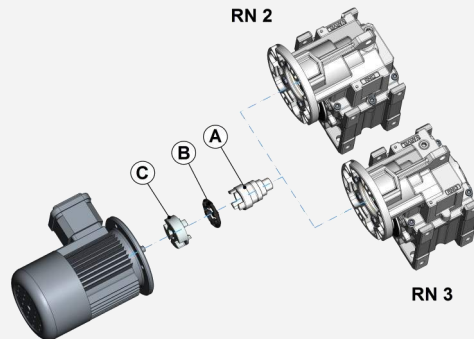
Gearboxes RN

Modular System



RN Gearboxes

Coupling "G" Input



A)

Reducer-side coupling hub

- Material: steel
- One piece machined on input shaft
- Two bearing setting
- Unchanged casing dimensions

B)

Spider

- External tooth connection
- Material: Thermoplastic Elastomer: IXEF® - Polyarylamide
- Hardness 90 Shore D
- Temperature -30/+135°C (-22/+275°F)

C)

Motor-side coupling hub

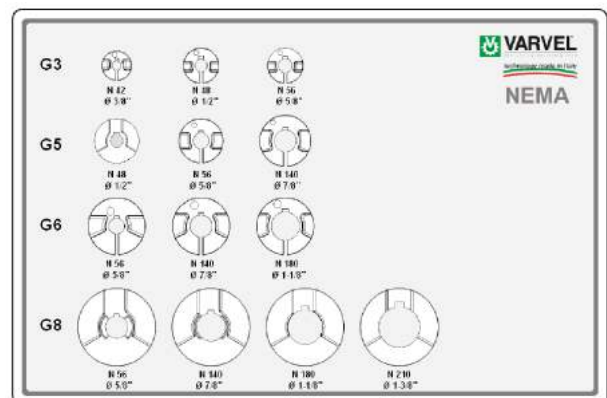
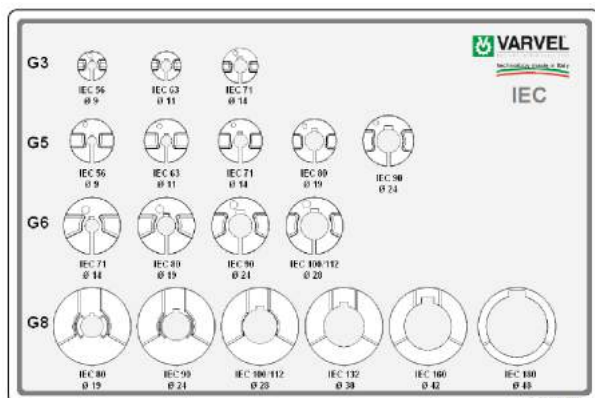
- Material: Pressure die cast aluminium (G3, G5, G6) Steel (GS3, GS5, GS6, GS8)
- Dynamic balancing
- Fitting: Clamp (G3, G5, G6) Key (GS3, GS5, GS6, GS8)
- Bores, available according to: IEC 72 / DIN42948 NEMA C and TC

Advantages:

- One gearbox only for each reduction ratio
- Greater flexibility
- Increased stock rotation
- Elimination of fretting corrosion between key and keyway
- Gearbox / motor connection with zero backlash
- Allowed angular misalignment 1° max.
- High torsional rigidity
- High vibration damping

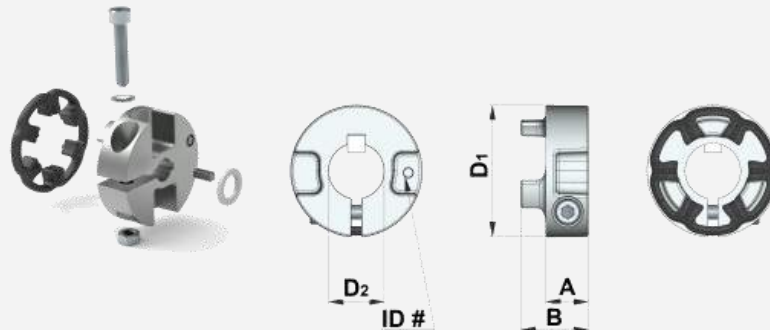
Input flanges:

- Material: Aluminium up to IEC112 & NEMA TC180 Cast iron from IEC 132 & NEMA TC200



Gearboxes RN

Coupling "G"



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Type	IEC NEMA	Kit Code.	RN	Mt [Nm]	Mt ₁ [Nm]	Mt ₂ [Nm]	A [mm]	B [mm]	D ₁ [mm/ inch]	D ₂ [mm/ inch]	ID#
G5	IEC	KG5.009/X	RN12-13	10	14	10	14.5	23	45	9	509
		KG5.011/X	RN12-13		15	10			45	11	511
KG5.014/X		RN12-13	30		17	45			14	514	
KG5.019/X		RN12-13	40		25	45			19	519	
KG5.024/X		RN12-13	70		40	52			24	524	
	NEMA	KG5.N56/X	RN12-13	45	35			1.77	5/8"	5N56	
		KG5.N140/X	RN12	60	45			2.05	7/8"	5N140	
G6	IEC	KG6.014/X	RN22-23-32-33-42-43	18	60	40	19.5	31.5	58	14	614
		KG6.019/X	RN22-23-32-33-42-43		90	65				19	619
KG6.024/X		RN22-32-33-42-43	130		100	24				624	
KG6.028/X		RN22-32-42-43	180		120	28				628	
		NEMA	KG6.N56/X		RN22-23-32-33-42-43	50				---	
		KG6.N140/X	RN22-32-33-42-43	85	---				7/8"	6N140	
		KG6.N180/X	RN42-43	200	---				1-1/8"	6N180	
GS8	IEC	KGS8.19/X	RN52-53-62-63	15	150	---	35	51	79	19	*
		KGS8.24/X	RN52-53-62-63		250	---				24	*
KGS8.28/X		RN52-53-62-63	350		---	28				*	
KGS8.38/X		RN52-53-62-63	500		---	38				*	
KGS8.42/X		RN62-63	500		---	42				*	
	NEMA	KGS8.N056/X	RN52-53-62-63	140	---			3.11	5/8"	*	
		KGS8.N140/X	RN52-53-62-63	200	---				7/8"	*	
		KGS8.N180/X	RN52-53-62-63	300	---				1-1/8"	*	
		KGS8.N210/X	RN62-63	500	---				1-3/8"	*	
		KGS8.N250/X	RN62	500	---				1-5/8"	*	

Mt - Screw locking torque
 Mt₁ - Transmissible torque with key
 Mt₂ - Transmissible torque without key
 * - Coupling GS8: steel, key fit and grub screw
 ..X - Code of coupling with IXEF black-spider

Note - No ID# marked on Coupling GS8

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روبروی پالایشگاه نفت پارس، پلاک ۱۳

RN Gearboxes

IEC Flanges & Coupling

Gearbox	Flange				Coupling	
	Type	IEC	Kit B5 Part No.	Kit B14 Part No.	Type	Kit Part No.
RN12	FM 50	IEC56	K532.206.120	---	G5 ø9	KG5.009/X
		IEC63	K532.206.140	K532.206.090	G5 ø11	KG5.011/X
		IEC71	K532.206.160	K532.206.105	G5 ø14	KG5.014/X
		IEC80	K532.206.200	K532.206.120	G5 ø19	KG5.019/X
		IEC90	K532.206.200	K532.206.140	G5 ø24	KG5.024/X
RN13		IEC56	K532.206.120	---	G5 ø9	KG5.009/X
		IEC63	K532.206.140	K532.206.090	G5 ø11	KG5.011/X
		IEC71	K532.206.160	K532.206.105	G5 ø14	KG5.014/X
RN22	FM 70	IEC71	K533.206.160	K533.206.105	G6 ø14	KG6.014/X
		IEC80	K533.206.200	K533.206.120	G6 ø19	KG6.019/X
		IEC90	K533.206.200	K533.206.140	G6 ø24	KG6.024/X
		IEC 100/112	K533.206.250	K533.206.160	G6 ø28	KG6.028/X
RN23		IEC71	K533.206.160	K533.206.105	G5 ø14	KG5.014/X
		IEC80	K533.206.200	K533.206.120	G5 ø19	KG5.019/X
RN32 RN33	FM 70	IEC71	K533.206.160	K533.206.105	G6 ø14	KG6.014/X
		IEC80	K533.206.200	K533.206.120	G6 ø19	KG6.019/X
		IEC90	K533.206.200	K533.206.140	G6 ø24	KG6.024/X
		* IEC 100/112	K533.206.250	K533.206.160	G6 ø28	KG6.028/X
RN42 RN43	FM 85	IEC71	K534.206.160	---	G6 ø14	KG6.014/X
		IEC80	K534.206.200	K534.206.120	G6 ø19	KG6.019/X
		IEC90	K534.206.200	K534.206.140	G6 ø24	KG6.024/X
		IEC 100/112	K534.206.250	K534.206.160	G6 ø28	KG6.028/X
RN52	FM 130 & FM 150	IEC 80	K536.206.200	---	** GS8 ø19	KGS8.019/X
		IEC 90	K536.206.200	---	** GS8 ø24	KGS8.024/X
		IEC 100/112	K536.206.250	---	** GS8 ø28	KGS8.028/X
		IEC 132	K537.206.300	K536.206.200	** GS8 ø38	KGS8.038/X
		IEC 160	K565.206.350	---	** GS8 ø42	KGS8.042/X
		IEC 180	K565.206.350	---	** GS8 ø48	KGS8.048/X
RN53	FM 130	IEC 80	K536.206.200	---	** GS8 ø19	KGS8.019/X
		IEC 90	K536.206.200	---	** GS8 ø24	KGS8.024/X
		IEC 100/112	K536.206.250	---	** GS8 ø28	KGS8.028/X
		IEC132	K537.206.300	K536.206.200	** GS8 ø38	KGS8.038/X
RN62	FM 130 & FM 150	IEC 80	K536.206.200	---	** GS8 ø19	KGS8.019/X
		IEC 90	K536.206.200	---	** GS8 ø24	KGS8.024/X
		IEC 100/112	K536.206.250	---	** GS8 ø28	KGS8.028/X
		IEC 132	K537.206.300	K536.206.200	** GS8 ø38	KGS8.038/X
		IEC 160	K565.206.350	---	** GS8 ø42	KGS8.042/X
		IEC 180	K565.206.350	---	** GS8 ø48	KGS8.048/X
RN63		IEC 80	K536.206.200	---	** GS8 ø19	KGS8.019/X
		IEC 90	K536.206.200	---	** GS8 ø24	KGS8.024/X
		IEC 100/112	K536.206.250	---	** GS8 ø28	KGS8.028/X
		IEC 132	K537.206.300	K536.206.200	** GS8 ø38	KGS8.038/X
		IEC160	K565.206.350	K536.206.250	** GS8 ø42	KGS8.042/X

* - IEC100/112: not for RN33

** - Coupling GS8: key fitting and axial locking grub screw

../X - Code of coupling with IXEF black spider

Gearboxes RN

NEMA Flanges & Coupling

Gearbox	Type	Flange		Coupling	
		NEMA	Kit Part No.	Type	Kit Part No.
RN12	FM 50	56 C 140 TC	K532.227.N56 K532.227.N56	G5 ø 5/8" G5 ø 7/8"	KG5.N56/X KG5.N140/X
RN13		56 C	K532.227.N56	G5 ø 5/8"	KG5.N56/X
RN22	FM 70	56 C 140 C	K533.227.N56 K533.227.N56	G6 ø 5/8" G6 ø 7/8"	KG6.N56/X KG6.N140/X
RN23		56 C	K533.227.N56	G5 ø 5/8"	KG5.N56/X
RN32 RN33	FM 70	56 C 140 TC	K533.227.N56 K533.227.N56	G6 ø 5/8" G6 ø 7/8"	KG6.N56/X KG6.N140/X
RN42 RN43	FM 85	56 C 140 TC 180 TC	K534.227.N56 K534.227.N56 K534.227.N180	G6 ø 5/8" G6 ø 7/8" G6 ø 1-1/8"	KG6.N56/X KG6.N140/X KG6.N180/X
RN52 RN53	FM 150	56 C 140 TC 180 TC 210 TC	K537.227.N56 K537.227.N56 K537.227.N180 K537.227.N180	* GS8 ø 5/8" * GS8 ø 7/8" * GS8 ø 1-1/8" * GS8 ø 1-3/8"	KGS8.N56/X KGS8.N140/X KGS8.N180/X KGS8.N210/X
RN62 RN63	FM 150	56 C 140 TC 180 TC 210 TC 250 TC	K537.227.N56 K537.227.N56 K537.227.N180 K537.227.N180 K537.227.N180	* GS8 ø 5/8" * GS8 ø 7/8" * GS8 ø 1-1/8" * GS8 ø 1-3/8" * GS8 ø 1-5/8"	KGS8.N56/X KGS8.N140/X KGS8.N180/X KGS8.N210/X KGS8.N250/X

* - Coupling GS8: key fitting and axial locking grub screw
 ../X - Code of coupling with IXEF blackspider

RN Gearboxes

Gearbox & Motor Designation

GEARBOX DESIGNATION

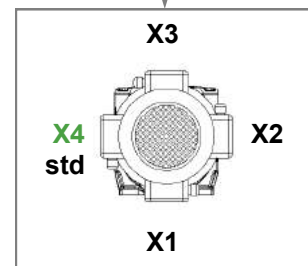
F	RN	32	/B3	H	31.5	IEC71	-B14	AU30	DFU200
									Output flange
									Output shaft \varnothing
									B5, B14 = Motor form
									Electric motor frame
									Reduction ratio
									H, V = Gearbox mounting position
									B3, B5, B3/B5 = Gearbox form
									Gearbox size and stages
									RN = Gearbox type

M = Geared motor
 F = Gearbox with input flange
 S = Gearbox without input flange
 ... = ((nothing) Gearbox with input free shaft

MOTOR DESIGNATION

MT	0.37 kW	71 B	4	B14	230/400/50	IP55	F	X4
								Terminal box position
								Classe F (std) = Insulation class
								IP55 (std) = Protection class
								Voltage/frequency
								B5 o B14 = Mounting form
								Number of poles
								IEC motor frame
								Motor power

MT = Three-phase motor
 MM = Single-phase motor





Modularity and flexibility

have been leading the design of VARVEL products since the years 2000: this way, the gearbox-kit concept was carried out allowing anyone to assemble the unit in few minutes with standard tooling.

This feature provides the highest flexibility to VARVEL's distributors and resellers who - thanks to a limited kit selection - are able to immediately configure the required product.

VARSIZE® selection program, available from our web-site

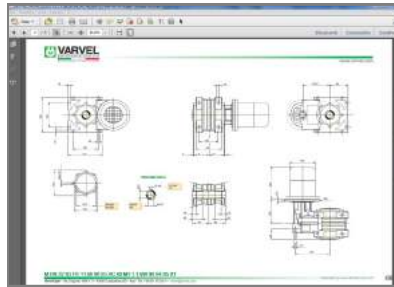
allows a friendly sizing of VARVEL product range.

2D/3D Drawings

A guided selection lets 2D/3D models downloaded for the most popular CAD systems.

Guided selection

This option returns a list of applicable product configurations upon a given sequence of application parameters (power, output torque, rpm, service factor etc.); a PDF data sheet featuring performance data and dimensional drawings is generated for each configuration, as well as the 3D model and 2D drawings.

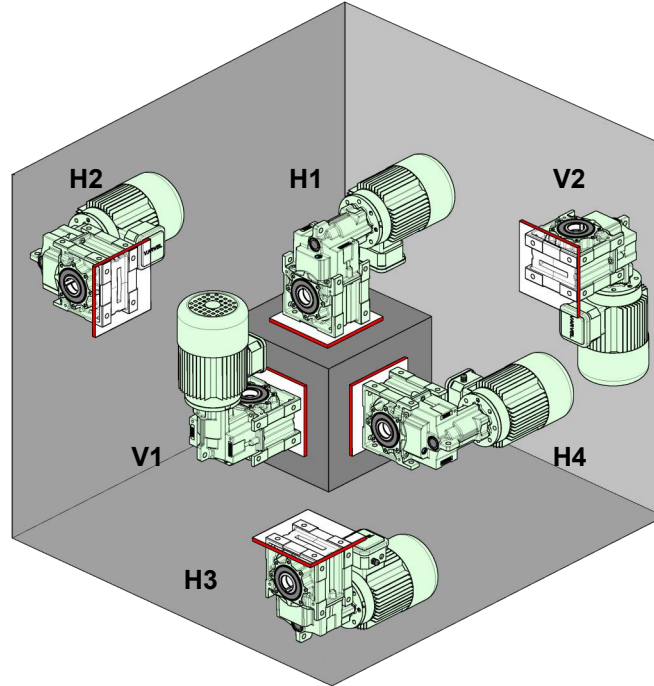


RN Gearboxes

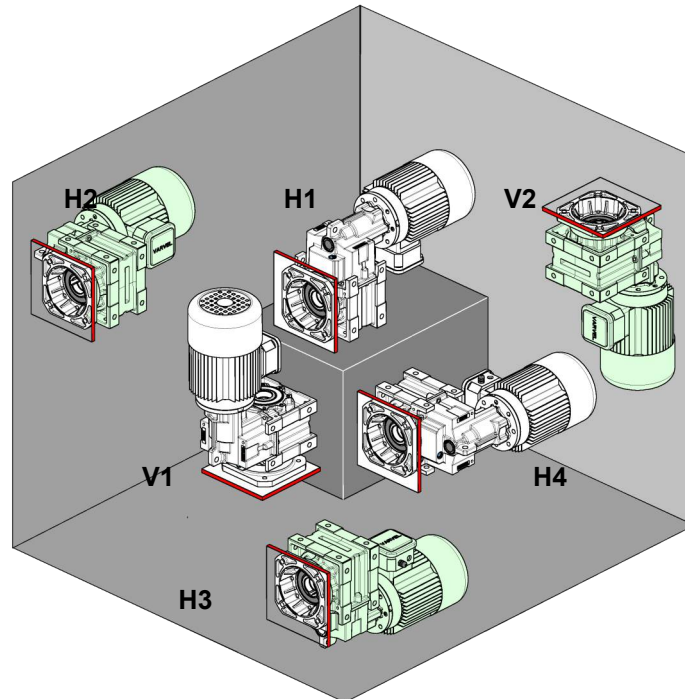
Mounting positions

RN

- two and three stages



B3
Foot mounting



B5
Flange mounting

Mounting position is referred to the output shaft and not to foot or flange fixing.

Gearboxes RN

Service factors

SERVICE FACTOR of the gearbox

Service factor FS1.0 is meant as typical of 8 hours/day operation, with uniform load and mass acceleration factor $k_{(a)} \leq 0.2$, starts/ stops lower than 300 per hour and ambient temperature between 15 and 35 Celsius.

The performance shown in the tables gives the service factor calculation as a ratio between gearbox maximum output torque M_2 and application torque $M_{(app)}$.

Thermal power (see page19) can be not considered when the max. continuous operation is about 3 hours with long enough rest periods (about 2 to 4 hours) to restore the ambient temperature into the gearbox.

For max. ambient temperature exceeding 40 °C or below 0 °C, please ask our Customer Service.

Service factor SF						
Load SF ₁				Start-Stops / hour		SF = SF ₁ x SF ₂
Hours	Uniform	Variable	Shock	Number	SF ₂	
8	0.8	1.1	1.4	6	1.0	
16	1.0	1.3	1.5	600	1.2	
24	1.2	1.4	1.6	1200	1.3	

Mass acceleration factor

$$k_{(a)} = \frac{J_2 + J_1}{J_m \cdot r^2}$$

Load class

A - Uniform load

$$k_{(a)} \leq 0,2$$

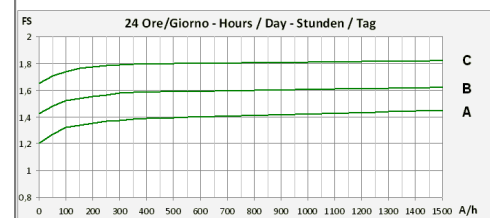
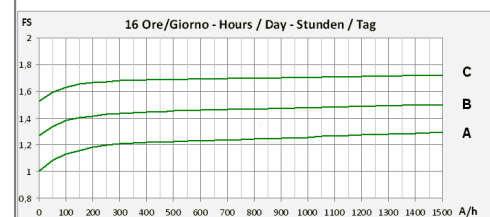
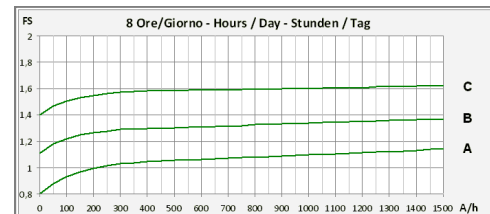
B - Moderate shock load

$$0,2 > k_{(a)} \leq 3$$

C - Severe shock load

$$3 < k_{(a)} \leq 10$$

A/h - Number of starts/stops per hour



RN Gearboxes

Service factors

DUTY TYPE of the motor

Duty types are defined by CEI EN 60034-1 / IEC34-1 Standard.

S1 - Continuous duty

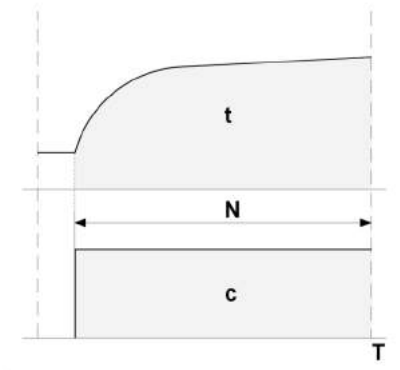
Steady load operation for an indefinite period (N), but long enough to achieve thermal balancing.

$$FS = 1.0$$

N = Operation time

c = Load

t = Temperature



S3 - Periodic intermittent duty

Operation according to cycle (C) including steady load time (N) and rest time (R).

Starts/stops do not affect temperature.

The reference cycle (C) to count as a total of 10 minutes.

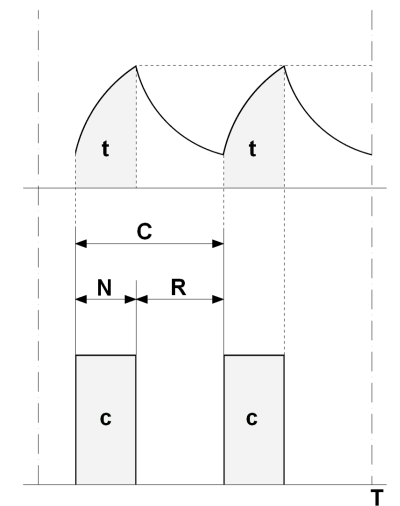
Intermittence ratio is calculated according the following formula.

$$\frac{N}{(N+R)} * 100 = \begin{matrix} 60\% & \text{FS 1.1} \\ 40\% & \text{FS 1.2} \\ 25\% & \text{FS 1.3} \\ 15\% & \text{FS 1.4} \end{matrix}$$

N = Operation time

R = Rest time

C = Duty cycle



Gearboxes RN

External Loads

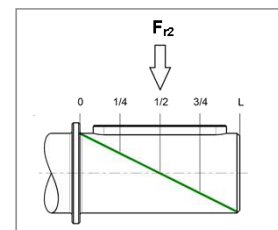
OUTPUT RADIAL LOADS (OHL)

The radial (overhung) load shown in the tables should be checked according to output speed, mounting position (A) and type of the transmission element (B) fitted on the gearbox output shaft by the appropriate k_L and k_T rating factors.

A - Application point of radial load

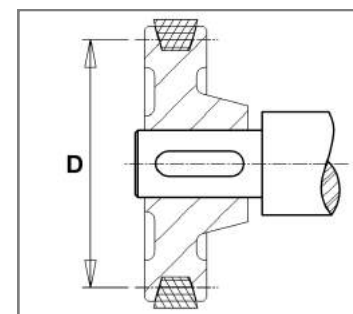
OHL is considered as applied at the output shaft mid-point.
Other positions origin loads to be adjusted with the appropriate factor k_L .
Examples of the distance from the shaft shoulder follow.

k_L	L
1.1	1/4 * L
1.0	1/2 * L
0.9	3/4 * L
0.8	L



B - Transmission element

k_T	Element type
1.15	Gear tooth No. < 17
	Chain sprocket
1.40	tooth No. < 13
1.25	tooth No. < 20
1.00	tooth No. > 20
	Pulley for
2.50	V-belt
1.25	toothed-belt



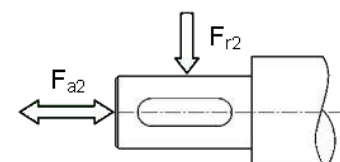
F_{r2} - Radial (overhung) load

OUTPUT AXIAL LOADS

Axial load value

$$F_{a2} = F_{r2} \times 0.2$$

is included within the catalogue radial load figure
and is valid on both tensile and compressive stress.



RN Gearboxes

Versions

MRN

- Geared motors with two and three gear sets
Powers: 0.09 kW to 22 kW, 4 poles
Output speed: 250 rpm to 2.5 rpm

FRN

- Gearboxes with two and three gear sets and with input motor flange, input quill and flexible coupling
Motor flanges: IEC 56 to IEC 180 and NEMA 56C to NEMA 250TC
Output torque: 120 Nm [1060 in-lb] to 3400 Nm [30100 in-lb]
Reduction ratios: 6.3:1 to 710:1

SRN

- Gearboxes with two and three gear sets without input motor flange, but with input hollow shaft with flexible coupling
Output torque: 120 Nm [1060 in-lb] to 3400 Nm [30100 in-lb]
Reduction ratios: 6.3:1 to 710:1

RN

- Gearboxes with two and three gear sets with input solid shaft
Output torque: 120 Nm [1060 in-lb] to 3400 Nm [30100 in-lb]
Reduction ratios: 6.3:1 to 710:1



Gearboxes RN

Thermal power

Thermal power

Rated power (P_1) is the power that can be applied at the gearbox input, on continuous operation, max. temperature of 40 °C , max. altitude 1000 m and air speed of 1.25 m/s, without exceeding the oil temperature of about 85 °C.

Thermal power (P_{t1}) can limit the rated P_1 (shaded area) depending on the cooling system, input speed, ambient temperature and service factor.

	i_n	FRN12-13		FRN22-23		FRN32-33		FRN42-43		FRN52-53		FRN62-63	
		P_1 [kW]	P_{t1} [kW]	P_1 [kW]	P_{t1} [kW]	P_1 [kW]	P_{t1} [kW]	P_1 [kW]	P_{t1} [kW]	P_1 [kW]	P_{t1} [kW]	P_1 [kW]	P_{t1} [kW]
2c	6,3	---	---	5,10	6,77	10,90	8,36	18,10	11,75	29,80	18,07	60,10	25,79
	7,1	2,90	3,40	4,60	6,21	9,20	7,86	16,60	11,05	25,80	16,88	53,70	24,75
	8,0	2,50	3,47	4,40	5,11	7,10	7,37	13,90	8,37	22,70	15,76	42,10	22,32
	9,0	2,60	3,30	4,10	5,72	8,30	7,29	15,00	10,20	22,60	15,56	47,20	23,14
	10,0	2,30	3,14	3,60	4,81	5,70	6,92	11,00	7,89	17,30	14,76	31,90	21,35
	11,2	---	---	3,60	5,22	7,30	6,69	12,00	9,18	20,70	14,33	41,70	21,29
	12,5	1,60	3,19	2,90	4,49	4,60	6,57	8,90	7,36	13,90	13,64	---	---
	14,0	1,90	2,86	3,20	4,65	5,80	6,00	10,00	8,43	17,40	13,03	34,50	19,36
	16,0	1,30	2,90	2,30	4,14	3,80	6,08	7,10	6,87	11,60	12,72	21,20	18,54
	18,0	1,50	2,60	2,70	4,26	4,50	5,16	8,10	7,55	13,90	11,52	27,60	17,01
	20,0	1,30	2,34	1,80	3,73	3,00	5,46	---	---	9,50	11,75	17,40	17,15
	22,4	1,00	2,09	2,10	3,56	3,80	4,67	6,30	6,48	10,70	9,92	21,30	14,48
	25,0	---	---	1,50	3,45	2,30	4,71	---	---	7,60	10,44	18,20	15,34
	28,0	---	---	1,40	3,24	2,90	4,17	4,80	5,88	9,30	9,65	18,00	13,60
	31,5	0,70	2,11	1,20	2,96	1,90	4,26	3,70	5,12	8,10	9,10	15,60	12,77
	33,0	0,70	1,74	---	---	---	---	---	---	---	---	---	---
	35,5	0,60	1,65	1,00	2,84	2,00	3,69	3,00	4,71	5,50	8,06	10,30	11,04
	40	0,50	1,76	0,90	2,72	1,60	3,82	2,60	4,81	4,70	8,30	12,50	12,36
	45	0,50	1,64	0,80	2,42	1,00	2,97	2,50	4,23	3,70	6,86	8,30	11,64
	50	0,40	1,54	0,80	2,26	1,30	3,40	2,30	3,98	4,00	7,40	6,80	10,15
	56	0,30	1,28	---	---	1,20	3,21	1,90	3,71	---	---	6,10	9,25
	60	0,30	1,29	---	---	---	---	---	---	---	---	---	---
63	---	---	0,60	2,06	1,00	2,78	---	---	3,20	6,36	---	---	
3c	40	0,60	1,10	1,10	2,14	2,10	3,23	3,30	4,84	6,90	7,28	13,30	11,52
	45	---	---	0,90	2,00	1,90	3,07	3,30	4,60	5,60	6,87	---	---
	50	0,50	1,04	---	---	---	---	---	---	---	---	10,90	10,97
	56	---	---	0,90	1,83	1,60	2,87	2,80	4,29	4,80	6,51	9,00	10,41
	63	0,40	0,93	---	---	---	---	2,30	4,03	---	---	---	---
	71	---	---	0,70	1,63	1,30	2,65	0,90	3,04	3,90	6,10	7,30	10,27
	80	0,40	0,84	0,30	1,35	0,50	2,23	1,90	3,71	---	---	3,50	9,99
	90	---	---	0,60	1,49	1,00	2,37	0,90	2,92	3,10	5,56	5,80	9,87
	100	0,30	0,76	0,30	1,28	0,50	2,13	1,50	3,31	1,90	4,88	3,50	8,37
	112	---	---	0,40	1,28	0,80	2,19	---	---	2,40	4,96	---	---
	125	0,20	0,67	0,30	1,21	0,50	2,04	---	---	1,70	4,65	4,40	9,32
	140	---	---	0,30	1,10	0,60	1,97	1,10	3,04	2,00	4,78	3,70	9,07
	160	0,20	0,56	0,30	1,12	0,40	1,94	0,70	2,75	1,80	4,56	3,30	8,71
	180	0,10	0,52	0,20	0,91	0,40	1,77	0,70	2,52	1,20	4,13	---	---
	200	0,10	0,55	0,20	1,03	0,30	1,80	0,40	2,39	---	---	2,20	7,99
	224	---	---	0,10	0,80	0,20	1,45	0,60	2,36	0,90	3,88	1,70	7,37
	250	0,10	0,46	0,20	0,94	---	---	---	---	---	---	1,60	7,22
	280	0,10	0,44	---	---	0,30	1,62	0,50	2,15	---	---	---	---
	315	0,10	0,41	0,10	0,83	0,20	1,51	---	---	0,70	3,50	1,20	6,94
	355	---	---	---	---	---	---	0,40	1,99	0,60	3,35	---	---
	400	0,00	0,34	0,10	0,72	0,20	1,35	---	---	0,60	3,22	1,00	6,71
450	---	---	0,10	0,65	---	---	0,30	1,82	0,50	2,93	0,90	6,59	
500	---	---	0,10	0,61	0,10	1,23	0,30	1,72	---	---	0,80	6,00	
560	---	---	---	---	0,10	1,16	0,20	1,61	0,40	2,58	0,70	5,79	
630	---	---	0,10	0,53	---	---	---	---	---	---	---	---	
710	---	---	---	---	0,10	1,01	---	---	---	---	---	---	

2c, 3c - Number of reduction stages

RN Gearboxes

Speed Reducer Selection

1400 rpm

	i_n	i_r	n_2 [rpm]	M_2 [Nm]	P_1 [kW]	F_{r1} [N]	F_{r2} [N]	$J_1 (x 10^{-4})$ [kgm ²]	56 B5	63 B*	71 B*	80 B*	90 B14
FRN 12 2c	7,1	6,59	212	125	2,90	1050	3350	0,8414	⊙	⊙	⊙	⊙	⊙
	8,0	7,95	176	130	2,50	1100	3470	0,7600	⊙	⊙	⊙	⊙	⊙
	9,0	8,32	168	140	2,60	1030	3580	0,6786	⊙	⊙	⊙	⊙	⊙
	10,0	10,11	138	150	2,30	1010	3490	0,5849	⊙	⊙	⊙	⊙	⊙
	12,5	12,19	115	130	1,60	1110	3470	0,5416	⊙	⊙	⊙	⊙	⊙
	14,0	13,17	106	165	1,90	1000	3450	0,4982	⊙	⊙	⊙	⊙	⊙
	16,0	15,87	88,2	140	1,30	1110	3450	0,4722	⊙	⊙	⊙	⊙	⊙
	18,0	16,65	84,1	165	1,50	1060	3560	0,4462	⊙	⊙	⊙	⊙	⊙
	20,0	20,29	69,0	170	1,30	1110	3710	0,4149	⊙	⊙	⊙	⊙	⊙
	22,4	25,37	55,2	170	1,00	1130	3850	0,3892	⊙	⊙	⊙	⊙	
	31,5	30,59	45,8	140	0,70	1270	4070	0,3789	⊙	⊙	⊙	⊙	
	33,0	33,00	42,4	160	0,74	1230	4290	0,3685	⊙	⊙	⊙	⊙	
	35,5	36,47	38,4	140	0,59	1330	4700	0,3626	⊙	⊙	⊙	⊙	
	40	39,78	35,2	140	0,54	1420	4870	0,3635	⊙	⊙	⊙		
	45	43,96	31,8	140	0,49	1420	4900	0,3585	⊙	⊙	⊙		
	50	48,98	28,6	140	0,44	1420	4900	0,3539	⊙	⊙	⊙		
	56	52,07	26,9	110	0,32	1420	5150	0,3499	⊙	⊙	⊙		
60	62,78	22,3	120	0,29	1470	5400	0,3459	⊙	⊙	⊙			
FRN 13 3c	40	39,52	35,4	145	0,57	850	4762	0,2554	⊙	⊙	⊙		
	50	48,04	29,1	155	0,50	950	4600	0,2512	⊙	⊙	⊙		
	63	62,54	22,4	170	0,42	1070	4300	0,2474	⊙	⊙	⊙		
	80	79,10	17,7	180	0,35	1140	4000	0,2451	⊙	⊙	⊙		
	100	96,36	14,5	180	0,29	1200	4000	0,2437	⊙	⊙	⊙		
	125	120,51	11,6	180	0,23	1250	4000	0,2426	⊙	⊙			
	160	156,75	8,93	175	0,17	1300	4100	0,2416	⊙	⊙			
	180	173,22	8,08	150	0,14	1340	4800	0,2414	⊙	⊙			
	200	203,91	6,87	150	0,11	1320	4800	0,2326	⊙				
	250	265,22	5,28	150	0,09	1350	4800	0,2322	⊙				
	280	293,09	4,78	150	0,08	1360	4800	0,2321	⊙				
	315	326,53	4,29	150	0,07	1360	4800	0,2320	⊙				
	400	418,50	3,35	120	0,04	1440	5300	0,2318	⊙				

2c & 3c - Number of reduction stages
B* = B5 & B14

| B* = B5 & B14

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRN12	0.5	0.6	0.4	0.6	0.6	0.6	5.4
FRN13	0.5	0.4	0.3	0.3	0.6	0.4	5.5

	i_n	i_r	n_2 [rpm]	M_2 [Nm]	P_1 [kW]	F_{r1} [N]	F_{r2} [N]	$J_1 (x 10^{-4})$ [kgm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
FRN 22 2c	6,3	5,76	243	190	5,1	2900	3200	2,5855	⊙	⊙	⊙	⊙	⊙
	7,1	7,37	190	215	4,6	2900	3450	2,1881	⊙	⊙	⊙	⊙	⊙
	8,0	7,80	179	220	4,4	2900	3530	2,2972	⊙	⊙	⊙	⊙	⊙
	9,0	9,07	154	240	4,1	2900	3690	1,9599	⊙	⊙	⊙	⊙	⊙
	10,0	9,98	140	230	3,6	3000	3850	2,0120	⊙	⊙	⊙	⊙	
	11,2	11,33	124	260	3,6	2900	3890	1,7848	⊙	⊙	⊙	⊙	
	12,5	12,29	114	230	2,9	3000	4140	1,8436	⊙	⊙	⊙	⊙	
	14,0	14,51	96,5	300	3,2	3000	3720	1,6479	⊙	⊙	⊙	⊙	
	16,0	15,36	91,2	230	2,3	3000	4480	1,7103	⊙	⊙	⊙	⊙	
	18,0	17,87	78,4	310	2,7	3000	3590	1,5647	⊙	⊙	⊙	⊙	
	20,0	19,66	71,2	230	1,8	3000	4810	1,6024	⊙	⊙	⊙		
	22,4	22,67	61,8	310	2,1	3000	3800	1,4958	⊙	⊙	⊙		
	25,0	24,21	57,8	240	1,5	3000	4970	1,5348	⊙	⊙	⊙		
	28,0	29,32	47,8	265	1,4	3000	4770	1,4440	⊙	⊙	⊙		
	31,5	30,71	45,6	240	1,2	3000	5180	1,4772	⊙	⊙	⊙		
	35,5	34,52	40,6	220	0,99	3000	5420	1,4202	⊙	⊙			
	40	39,72	35,2	240	0,94	3000	5380	1,4329	⊙	⊙			
	45	46,78	29,9	245	0,82	3000	5550	1,4122	⊙	⊙			
FRN 23 3c	50	51,19	27,3	245	0,75	3000	5650	1,4027	⊙	⊙			
	63	62,66	22,3	250	0,62	3000	6040	1,3859	⊙	⊙			
	40	36,34	38,5	250	1,07	-	5130	0,9994	⊙	⊙			
	45	44,73	31,3	270	0,94	-	5070	0,9900	⊙	⊙			
	56	55,91	25,0	310	0,86	1070	4970	0,9828	⊙	⊙			
	71	71,57	19,6	310	0,68	1210	5100	0,9772	⊙	⊙			
	80	79,01	17,7	140	0,28	1390	7160	0,9250	⊙	⊙			
	90	88,14	15,9	310	0,55	1370	5200	0,9738	⊙	⊙			
	100	101,07	13,9	180	0,28	1390	7190	0,9223	⊙				
	112	111,82	12,5	310	0,43	1480	5200	0,9710	⊙	⊙			
	125	124,39	11,3	220	0,28	1390	6700	0,9206	⊙				
	140	144,62	9,7	265	0,29	1550	6100	0,9688	⊙				
	160	155,49	9,0	260	0,26	1450	6200	0,9193	⊙				
	180	186,37	7,5	200	0,17	1570	7000	0,9674	(⊙)				
	200	199,03	7,0	260	0,20	1500	6200	0,9183	(⊙)				
	224	228,12	6,1	170	0,12	1580	7400	0,9666	(⊙)				
	250	245,13	5,7	260	0,17	1540	6200	0,9176	(⊙)				
	315	310,98	4,5	260	0,13	1560	6200	0,9170	(⊙)				
	400	402,20	3,5	260	0,10	1570	6200	0,9166	(⊙)				
	450	473,65	3,0	260	0,09	1570	6200	0,9164	(⊙)				
500	518,30	2,7	260	0,08	1580	6200	0,9163	(⊙)					
630	634,40	2,2	230	0,06	1580	6700	0,9161	(⊙)					

2c & 3c - Number of reduction stages | B* = B5 & B14
 (⊙) - Max. available power ≤ P₁

	Oil [litres]						Weight
	H1	H2	H3	H4	V1	V2	[kg]
FRN22	0,7	0,8	0,5	0,8	0,7	0,7	8,6
FRN23	0,7	0,6	0,4	0,6	0,7	0,7	9,1

RN Gearboxes

Speed Reducer Selection

1400 rpm

	i_n	i_r	n_2 [rpm]	M_2 [Nm]	P_1 [kW]	F_{r1} [N]	F_{r2} [N]	J_1 (x 10 ⁻⁴) [kgm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
FRN 32 2c	6,3	5,59	250	400	10,9	1780	4760	4,8684	⊙	⊙	⊙	⊙	⊙
	7,1	7,17	195	430	9,2	1890	5180	3,8232	⊙	⊙	⊙	⊙	⊙
	8,0	7,90	177	370	7,1	2100	5410	3,9288	⊙	⊙	⊙	⊙	⊙
	9,0	8,84	158	480	8,3	1790	5180	3,2176	⊙	⊙	⊙	⊙	⊙
	10,0	10,13	138	380	5,7	2170	5890	3,2515	⊙	⊙	⊙	⊙	⊙
	11,2	11,06	127	530	7,3	-	4550	2,7466	⊙	⊙	⊙	⊙	⊙
	12,5	12,49	112	380	4,6	2180	6330	2,8412	⊙	⊙	⊙	⊙	⊙
	14,0	14,18	98,8	540	5,8	1870	4700	2,3720	⊙	⊙	⊙	⊙	⊙
	16,0	15,63	89,6	390	3,8	2180	6830	2,5063	⊙	⊙	⊙	⊙	
	18,0	18,84	74,3	550	4,5	2020	4860	2,0717	⊙	⊙	⊙	⊙	
	20,0	20,03	69,9	390	3,0	2180	7400	2,2256	⊙	⊙	⊙	⊙	
	22,4	22,18	63,1	550	3,8	-	5000	1,9456	⊙	⊙	⊙	⊙	
	25,0	26,62	52,6	400	2,3	2180	7750	1,9888	⊙	⊙	⊙	⊙	
	28,0	28,93	48,4	540	2,9	1610	5550	1,7952	⊙	⊙	⊙	⊙	
	31,5	31,33	44,7	400	1,9	2180	7920	1,8858	⊙	⊙	⊙		
	35,5	34,50	40,6	450	2,0	2020	7320	1,7221	⊙	⊙	⊙		
	40	40,87	34,3	420	1,6	2180	8250	1,7600	⊙	⊙	⊙		
	45	47,50	29,5	320	1,0	2180	9440	1,6310	⊙	⊙	⊙		
	50	48,74	28,7	420	1,3	2180	8530	1,6974	⊙	⊙	⊙		
56	53,75	26,0	420	1,2	2180	8640	1,6689	⊙	⊙	⊙			
63	67,10	20,9	420	1,0	2180	9030	1,6180	⊙	⊙				
FRN 33 3c	40	35,86	39,0	490	2,1	1610	6840	1,2294	⊙	⊙	⊙		
	45	44,20	31,7	550	1,9	-	5900	1,2052	⊙	⊙	⊙		
	56	55,31	25,3	580	1,6	1640	5500	1,1864	⊙	⊙	⊙		
	71	70,88	19,8	580	1,3	1950	5500	1,1714	⊙	⊙	⊙		
	80	80,62	17,4	265	0,51	2160	10880	1,0679	⊙	⊙			
	90	94,22	14,9	580	0,96	2160	5500	1,1594	⊙	⊙			
	100	103,34	13,5	340	0,51	2170	10730	1,0614	⊙	⊙			
	112	110,89	12,6	580	0,82	2230	5500	1,1543	⊙	⊙			
	125	127,37	11,0	420	0,51	2160	9700	1,0575	⊙	⊙			
	140	144,64	9,7	580	0,63	2300	5500	1,1483	⊙	⊙			
	160	159,41	8,8	430	0,42	2240	9400	1,0542	⊙				
	180	172,50	8,1	480	0,43	2300	8600	1,1454	⊙				
	200	204,26	6,9	430	0,33	2300	9400	1,0515	⊙				
	224	237,50	5,9	320	0,21	2300	11100	1,1417	⊙				
	280	271,53	5,2	430	0,25	2300	9400	1,0493	⊙				
	315	319,58	4,4	430	0,21	2300	9400	1,0483	(⊙)				
	400	416,85	3,4	430	0,16	2300	9400	1,0471	(⊙)				
500	497,13	2,8	430	0,13	2300	9400	1,0465	(⊙)					
560	548,22	2,6	430	0,12	2300	9400	1,0462	(⊙)					
710	684,45	2,1	430	0,10	2300	9400	1,0457	(⊙)					

2c & 3c - Number of reduction stages | B* = B5 & B14

(⊙) - Max. available power ≤ P₁

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRN32	1,1	1,3	0,8	1,3	1,2	1,2	12,5
FRN33	1,2	1,0	0,6	1,0	1,2	1,0	13,0

Gearboxes RN

1400 rpm

Speed Reducer Selection

	i_n	i_r	n_2 [rpm]	M_2 [Nm]	P_1 [kW]	F_{r1} [N]	F_{r2} [N]	$J_1 (x 10^{-4})$ [kgm ²]	71 B5	80 B*	90 B5	100 B*	112 B*
FRN 42 2c	6,3	5,74	244	680	18	-	5030	13,0943	⊙	⊙	⊙	⊙	⊙
	7,1	7,26	193	790	17	-	5190	10,7969	⊙	⊙	⊙	⊙	⊙
	8,0	7,59	185	690	14	2020	5680	11,2674	⊙	⊙	⊙	⊙	⊙
	9,0	9,08	154	890	15	-	5660	9,2579	⊙	⊙	⊙	⊙	⊙
	10,0	9,60	146	690	11	2400	6200	9,6555	⊙	⊙	⊙	⊙	⊙
	11,2	11,55	121	910	12	-	6170	8,0995	⊙	⊙	⊙	⊙	⊙
	12,5	12,00	117	700	9	2610	6720	8,5274	⊙	⊙	⊙	⊙	⊙
	14,0	14,09	99,3	920	10	2440	6810	7,4107	⊙	⊙	⊙	⊙	⊙
	16,0	15,27	91,7	710	7,1	2720	7330	7,6485	⊙	⊙	⊙	⊙	⊙
	18,0	17,59	79,6	930	8,1	-	7410	6,8426	⊙	⊙	⊙	⊙	⊙
	22,4	22,69	61,7	940	6,3	2090	8160	6,4129	⊙	⊙	⊙	⊙	⊙
	28,0	28,28	49,5	890	4,8	2450	8920	6,1008	⊙	⊙	⊙	⊙	⊙
	31,5	30,00	46,7	730	3,7	2850	9290	6,2602	⊙	⊙	⊙	⊙	⊙
	35,5	37,39	37,4	740	3,0	2860	10030	6,0256	⊙	⊙	⊙	⊙	⊙
	40	38,12	36,7	650	2,6	2800	10140	5,8382	⊙	⊙	⊙	⊙	⊙
	45	45,27	30,9	750	2,5	2900	10720	5,8675	⊙	⊙	⊙	⊙	⊙
50	50,40	27,8	750	2,3	2870	11110	5,7968	⊙	⊙	⊙	⊙	⊙	
56	56,67	24,7	700	1,9	2880	11600	5,7318	⊙	⊙	⊙	⊙	⊙	
FRN 43 3c	40	34,07	41,1	730	3,3	-	9670	4,3102	⊙	⊙	⊙	⊙	⊙
	45	42,59	32,9	910	3,3	-	10030	4,2058	⊙	⊙	⊙	⊙	⊙
	56	54,21	25,8	980	2,8	2030	9830	4,1359	⊙	⊙	⊙	⊙	⊙
	63	66,13	21,2	990	2,3	2270	10110	4,0833	⊙	⊙	⊙	⊙	⊙
	71	70,82	19,8	410	0,9	3020	12640	4,0520	⊙	⊙			
	80	82,52	17,0	1000	1,9	2720	10510	3,7956	⊙	⊙	⊙		
	90	89,60	15,6	510	0,9	3020	13650	4,0262	⊙	⊙			
	100	106,48	13,1	1010	1,5	3060	10930	3,7770	⊙	⊙	⊙		
	140	132,69	10,6	950	1,1	3270	12260	4,0051	⊙	⊙	⊙		
	160	160,69	8,7	760	0,74	3370	14590	3,9942	⊙	⊙			
	180	173,90	8,1	800	0,72	3170	14570	3,9843	⊙	⊙			
	200	201,13	7,0	550	0,43	3370	16680	3,7478	⊙				
	224	217,00	6,5	800	0,57	3300	15210	3,9773	⊙	⊙			
	280	280,00	5,0	800	0,45	3370	16030	3,7425	⊙				
	355	348,92	4,01	800	0,36	3370	16500	3,7381	⊙				
	450	422,55	3,31	800	0,30	3370	16500	3,7354	⊙				
500	470,40	2,98	800	0,27	3370	16500	3,7336	⊙					
560	528,89	2,65	800	0,24	3370	17000	3,7328	⊙					

2c & 3c - Number of reduction stages | B* = B5 & B14
 (⊙) - Max. available power ≤ P₁

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRN42	2,8	1,8	1,2	1,8	2,7	2,7	33,5
FRN43	2,5	1,5	0,9	1,5	2,2	1,9	36,0

RN Gearboxes

Speed Reducer Selection

1400 rpm

	i_n	i_r	n_2 [rpm]	M_2 [Nm]	P_1 [kW]	F_{r1} [N]	F_{r2} [N]	J_1 ($\times 10^{-4}$) [kgm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
FRN 52 2c	6,3	5,64	248	1100	30	-	7550	37,6347	⊙	⊙	⊙	⊙	⊙
	7,1	7,46	188	1260	26	-	8250	31,2885	⊙	⊙	⊙	⊙	⊙
	8,0	7,66	183	1140	23	-	8410	31,9539	⊙	⊙	⊙	⊙	⊙
	9,0	9,46	148	1400	23	-	8900	27,6749	⊙	⊙	⊙	⊙	⊙
	10,0	10,13	138	1150	17	-	9280	28,0395	⊙	⊙	⊙	⊙	⊙
	11,2	11,45	122	1550	21	-	8400	25,5151	⊙	⊙	⊙	⊙	⊙
	12,5	12,85	109	1170	14	-	10080	25,6545	⊙	⊙	⊙	⊙	
	14,0	14,12	99,2	1610	17	-	8470	23,7029	⊙	⊙	⊙	⊙	⊙
	16,0	15,56	90,0	1180	12	-	10780	24,1384	⊙	⊙	⊙	⊙	
	18,0	17,85	78,4	1630	14	-	8680	22,1741	⊙	⊙	⊙	⊙	
	20,0	19,19	73,0	1190	10	-	11580	22,7969	⊙	⊙	⊙		
	22,4	23,45	59,7	1650	11	-	8020	20,8963	⊙	⊙	⊙		
	25,0	24,26	57,7	1200	7,6	-	12560	21,6073	⊙	⊙	⊙		
	28,0	27,55	50,8	1670	9,3	-	8090	20,3546	⊙	⊙	⊙		
	31,5	30,02	46,6	1590	8,1	-	9610	20,1029	⊙	⊙	⊙		
	35,5	36,31	38,6	1300	5,5	-	13530	19,6654	⊙	⊙	⊙		
	40	40,79	34,3	1250	4,7	3370	14620	19,9025	⊙	⊙			
	45	45,38	30,8	1100	3,7	-	15630	19,2544	⊙	⊙			
50	49,33	28,4	1300	4,0	3410	15030	19,5092	⊙	⊙				
63	61,67	22,7	1300	3,2	3440	15530	19,1667	⊙	⊙				
FRN 53 3c	40	37,28	37,6	1650	6,9	-	9220	13,8553	⊙	⊙	⊙		
	45	47,28	29,6	1710	5,6	-	8610	13,7108	⊙	⊙	⊙		
	56	57,27	24,4	1750	4,8	3470	8800	13,6244	⊙	⊙			
	71	70,60	19,8	1750	3,9	3930	9010	13,5519	⊙	⊙			
	90	89,26	15,7	1770	3,1	4280	8500	13,4907	⊙	⊙			
	100	95,68	14,6	1160	1,9	4190	17820	12,7382	⊙				
	112	117,24	11,9	1790	2,4	4560	7200	13,4396	⊙	⊙			
	125	121,33	11,5	1310	1,7	4350	17330	12,7114	⊙				
	140	137,77	10,2	1800	2,0	4680	7200	13,4179	⊙				
	160	150,12	9,33	1700	1,8	4790	12400	13,4079	⊙				
	180	181,54	7,71	1360	1,2	4960	18220	13,3896	⊙				
	224	229,08	6,11	1350	0,92	4830	19100	12,6660	⊙				
	315	300,91	4,65	1350	0,70	4950	19100	12,6544	⊙				
	355	353,60	3,96	1350	0,60	5000	19100	12,6493	⊙				
	400	385,28	3,63	1350	0,55	5030	19100	12,6469	⊙				
	450	465,93	3,00	1350	0,45	5070	19100	12,6425	⊙				
560	582,41	2,40	1350	0,36	5110	19100	12,6387	⊙					

2c & 3c - Number of reduction stages | B* = B5 & B14

(⊙) - Max. available power ≤ P₁

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRN52	5,1	3,2	2,1	3,2	4,9	4,9	62
FRN53	5,0	2,8	1,6	2,8	4,0	3,4	67

Gearboxes RN

1400 rpm

Speed Reducer Selection

	i_n	i_r	n_2 [rpm]	M_2 [Nm]	P_1 [kW]	F_{r1} [N]	F_{r2} [N]	$J_1 (x 10^{-4})$ [kgm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
FRN 62 2c	6,3	5,77	250	2200	60	-	10060	84,0612	⊙	⊙	⊙	⊙	⊙
	7,1	7,39	189	2600	54	-	9540	68,0211	⊙	⊙	⊙	⊙	⊙
	8,0	7,97	176	2200	42	-	11380	68,6806	⊙	⊙	⊙	⊙	⊙
	9,0	9,38	149	2900	47	-	9030	56,8499	⊙	⊙	⊙	⊙	⊙
	10,0	10,54	133	2200	32	-	12550	58,6662	⊙	⊙	⊙	⊙	⊙
	11,2	11,36	123	3100	42	-	5620	50,1639	⊙	⊙	⊙	⊙	⊙
	14,0	14,00	100	3160	35	-	5450	44,5468	⊙	⊙	⊙	⊙	⊙
	16,0	16,19	86,4	2250	21	3800	11630	46,1997	⊙	⊙	⊙	⊙	⊙
	18,0	17,70	79,1	3200	28	-	3100	39,8027	⊙	⊙	⊙	⊙	⊙
	20,0	19,96	70,1	2270	17	4020	15790	41,9382	⊙	⊙	⊙	⊙	⊙
	22,4	23,25	60,2	3250	21	-	8000	35,8331	⊙	⊙	⊙	⊙	⊙
	25,0	25,24	55,5	3000	18	4200	16780	38,1707	⊙	⊙	⊙	⊙	⊙
	28,0	27,69	50,6	3270	18	-	6000	34,0539	⊙	⊙	⊙	⊙	⊙
	31,5	30,38	46,1	3105	16	-	7160	33,2259	⊙	⊙	⊙	⊙	⊙
	35,5	37,35	37,5	2515	10	-	16090	31,7360	⊙	⊙	⊙	⊙	⊙
	40	39,49	35,5	3245	13	4440	18170	33,3872	⊙	⊙	⊙	⊙	
	45	43,31	32,3	2360	8,3	4470	18380	32,6717	⊙	⊙	⊙		
50	53,26	26,3	2380	6,8	4520	18970	31,3694	⊙	⊙	⊙			
56	59,89	23,4	2400	6,1	4540	19310	30,7868	⊙	⊙	⊙			
FRN 63 3c	40	38,20	36,7	3250	13	-	7350	22,6869	⊙	⊙	⊙	⊙	
	50	48,44	28,9	3400	11	-	7670	22,2684	⊙	⊙	⊙	⊙	
	56	58,68	23,9	3400	9,0	-	7800	22,0179	⊙	⊙	⊙		
	71	72,33	19,4	3400	7,3	3670	7800	21,8075	⊙	⊙	⊙		
	80	79,72	17,6	1780	3,5	2870	25090	19,9592	⊙	⊙			
	90	91,45	15,3	3400	5,8	3030	7800	21,6298	⊙	⊙	⊙		
	100	105,42	13,3	2350	3,5	2870	22430	19,8591	⊙	⊙			
	125	120,13	11,7	3400	4,4	3840	7800	21,4811	⊙	⊙			
	140	143,08	9,78	3400	3,7	4160	7800	21,4145	⊙	⊙			
	160	156,94	8,92	3300	3,3	4330	7900	21,3834	⊙	⊙			
	200	192,98	7,25	2700	2,2	4720	21200	21,3276	⊙	⊙			
	224	217,00	6,45	2300	1,7	4880	26700	21,3029	⊙				
	250	252,39	5,55	2600	1,6	4490	22500	19,6541	⊙				
	315	331,53	4,22	2600	1,2	4720	22500	19,6213	⊙				
	400	394,87	3,55	2600	1,0	4820	22500	19,6063	⊙				
450	433,13	3,23	2600	0,94	4870	22500	19,5991	⊙					
500	532,58	2,63	2600	0,76	4960	22500	19,5861	⊙					
560	598,89	2,34	2600	0,68	4990	22500	19,5803	⊙					

2c & 3c - Number of reduction stages
B* = B5 & B14

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRN62	9,2	5,8	3,8	5,8	8,8	8,8	109
FRN63	9,0	5,0	2,9	5,0	7,2	6,1	116

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0,06	7,1	6,59	212	2,59	> 3,0	MRN 12	3350	8,5	6,0	1,50	0,8414
	8,0	7,95	176	3,12	> 3,0	MRN 12	3470	8,5	6,0	1,50	0,7600
	9,0	8,32	168	3,23	> 3,0	MRN 12	3580	8,5	6,0	1,50	0,6786
	10,0	10,11	138	3,91	> 3,0	MRN 12	3490	8,5	6,0	1,50	0,5849
	12,5	12,19	115	4,88	> 3,0	MRN 12	3470	8,5	6,0	1,50	0,5416
	14,0	13,17	106	5,21	> 3,0	MRN 12	3450	8,5	6,0	1,50	0,4982
	16,0	15,87	88,2	6,46	> 3,0	MRN 12	3450	8,5	6,0	1,50	0,4722
	18,0	16,65	84,1	6,60	> 3,0	MRN 12	3560	8,5	6,0	1,50	0,4462
	20,0	20,29	69	7,85	> 3,0	MRN 12	3710	8,5	6,0	1,50	0,4149
	22,4	25,37	55,2	10,20	> 3,0	MRN 12	3850	8,5	6,0	1,50	0,3892
	31,5	30,59	45,8	12,00	> 3,0	MRN 12	4070	8,5	6,0	1,50	0,3789
	33,0	33	42,4	12,97	> 3,0	MRN 12	4290	8,5	6,0	1,50	0,3685
	35,5	36,47	38,4	14,24	> 3,0	MRN 12	4700	8,5	6,0	1,50	0,3626
	40,0	39,78	35,2	15,56	> 3,0	MRN 12	4870	8,5	6,0	1,50	0,3635
		39,52	35,4	15,26	> 3,0	MRN 13	4762	8,3	5,8	1,50	0,2554
	45,0	43,96	31,8	17,14	> 3,0	MRN 12	4900	8,5	6,0	1,50	0,3585
	50,0	48,98	28,6	19,09	> 3,0	MRN 12	4900	8,5	6,0	1,50	0,3539
		48,04	29,1	18,60	> 3,0	MRN 13	4600	8,3	5,8	1,50	0,2512
	56,0	52,07	26,9	20,63	> 3,0	MRN 12	5150	8,5	6,0	1,50	0,3499
	60,0	62,78	22,3	24,83	> 3,0	MRN 12	5400	8,5	6,0	1,50	0,3459
	63,0	62,54	22,4	24,29	> 3,0	MRN 13	4300	8,3	5,8	1,50	0,2474
	80,0	79,1	17,7	30,86	> 3,0	MRN 13	4000	8,3	5,8	1,50	0,2451
	100,0	96,36	14,5	37,24	> 3,0	MRN 13	4000	8,3	5,8	1,50	0,2437
	125,0	120,51	11,6	46,96	> 3,0	MRN 13	4000	8,3	5,8	1,50	0,2426
	160,0	156,75	8,93	61,76	2,8	MRN 13	4100	8,3	5,8	1,50	0,2416
	180,0	173,22	8,08	64,29	2,3	MRN 13	4800	8,3	5,8	1,50	0,2414
	200,0	203,91	6,87	81,82	1,8	MRN 13	4800	8,3	5,8	1,50	0,2326
	250,0	265,22	5,28	100,00	1,5	MRN 13	4800	8,3	5,8	1,50	0,2322
	280,0	293,09	4,78	112,50	1,3	MRN 13	4800	8,3	5,8	1,50	0,2321
	315,0	326,53	4,29	128,57	1,2	MRN 13	4800	8,3	5,8	1,50	0,2320
	0,09	7,1	6,59	212	3,88	> 3,0	MRN 12	3350	8,6	6,0	2,00
8,0		7,95	176	4,68	> 3,0	MRN 12	3470	8,6	6,0	2,00	0,7600
9,0		8,32	168	4,85	> 3,0	MRN 12	3580	8,6	6,0	2,00	0,6786
10,0		10,11	138	5,87	> 3,0	MRN 12	3490	8,6	6,0	2,00	0,5849
12,5		12,19	115	7,31	> 3,0	MRN 12	3470	8,6	6,0	2,00	0,5416
14,0		13,17	106	7,82	> 3,0	MRN 12	3450	8,6	6,0	2,00	0,4982
16,0		15,87	88,2	9,69	> 3,0	MRN 12	3450	8,6	6,0	2,00	0,4722
18,0		16,65	84,1	9,90	> 3,0	MRN 12	3560	8,6	6,0	2,00	0,4462
20,0		20,29	69	11,77	> 3,0	MRN 12	3710	8,6	6,0	2,00	0,4149
22,4		25,37	55,2	15,30	> 3,0	MRN 12	3850	8,6	6,0	2,00	0,3892
31,5		30,59	45,8	18,00	> 3,0	MRN 12	4070	8,6	6,0	2,00	0,3789
33,0		33	42,4	19,46	> 3,0	MRN 12	4290	8,6	6,0	2,00	0,3685
35,5		36,47	38,4	21,36	> 3,0	MRN 12	4700	8,6	6,0	2,00	0,3626
40,0		39,78	35,2	23,33	> 3,0	MRN 12	4870	8,6	6,0	2,00	0,3635
		39,52	35,4	22,89	> 3,0	MRN 13	4762	8,4	5,8	2,00	0,2554
45,0		43,96	31,8	25,71	> 3,0	MRN 12	4900	8,6	6,0	2,00	0,3585
50,0		48,98	28,6	28,64	> 3,0	MRN 12	4900	8,6	6,0	2,00	0,3539
		48,04	29,1	27,90	> 3,0	MRN 13	4600	8,4	5,8	2,00	0,2512
56,0		52,07	26,9	30,94	> 3,0	MRN 12	5150	8,6	6,0	2,00	0,3499
60,0		62,78	22,3	37,24	> 3,0	MRN 12	5400	8,6	6,0	2,00	0,3459

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0,09	63,0	62,54	22,4	36,43	> 3,0	MRN 13	4300	8,4	5,8	2,00	0,2474
	80,0	79,1	17,7	46,29	> 3,0	MRN 13	4000	8,4	5,8	2,00	0,2451
	100,0	96,36	14,5	55,86	> 3,0	MRN 13	4000	8,4	5,8	2,00	0,2437
	125,0	120,51	11,6	70,43	2,6	MRN 13	4000	8,4	5,8	2,00	0,2426
	160,0	156,75	8,93	92,65	1,9	MRN 13	4100	8,4	5,8	2,00	0,2416
	180,0	173,22	8,08	96,43	1,6	MRN 13	4800	8,4	5,8	2,00	0,2414
	200,0	203,91	6,87	122,73	1,2	MRN 13	4800	8,4	5,8	2,00	0,2326
	250,0	265,22	5,28	150,00	1,0	MRN 13	4800	8,4	5,8	2,00	0,2322
	280,0	293,09	4,78	168,75	0,9	MRN 13	4800	8,4	5,8	2,00	0,2321
	315,0	326,53	4,29	192,86	0,8	MRN 13	4800	8,4	5,8	2,00	0,2320
0,12	7,1	6,59	212	5,60	> 3,0	MRN 12	3350	9,7	6,0	2,80	0,8414
	8,0	7,95	176	6,76	> 3,0	MRN 12	3470	9,7	6,0	2,80	0,7600
	9,0	8,32	168	7,00	> 3,0	MRN 12	3580	9,7	6,0	2,80	0,6786
	10,0	10,11	138	8,48	> 3,0	MRN 12	3490	9,7	6,0	2,80	0,5849
	12,5	12,19	115	10,56	> 3,0	MRN 12	3470	9,7	6,0	2,80	0,5416
	14,0	13,17	106	11,29	> 3,0	MRN 12	3450	9,7	6,0	2,80	0,4982
	16,0	15,87	88,2	14,00	> 3,0	MRN 12	3450	9,7	6,0	2,80	0,4722
	18,0	16,65	84,1	14,30	> 3,0	MRN 12	3560	9,7	6,0	2,80	0,4462
	20,0	20,29	69	17,00	> 3,0	MRN 12	3710	9,7	6,0	2,80	0,4149
	22,4	25,37	55,2	22,10	> 3,0	MRN 12	3850	9,7	6,0	2,80	0,3892
	31,5	30,59	45,8	26,00	> 3,0	MRN 12	4070	9,7	6,0	2,80	0,3789
	33,0	33	42,4	28,11	> 3,0	MRN 12	4290	9,7	6,0	2,80	0,3685
	35,5	36,47	38,4	30,85	> 3,0	MRN 12	4700	9,7	6,0	2,80	0,3626
	40,0	39,78	35,2	33,70	> 3,0	MRN 12	4870	9,7	6,0	2,80	0,3635
		39,52	35,4	33,07	> 3,0	MRN 13	4762	9,5	5,8	2,80	0,2554
	45,0	43,96	31,8	37,14	> 3,0	MRN 12	4900	9,7	6,0	2,80	0,3585
	50,0	48,98	28,6	41,36	> 3,0	MRN 12	4900	9,7	6,0	2,80	0,3539
		48,04	29,1	40,30	> 3,0	MRN 13	4600	9,5	5,8	2,80	0,2512
	56,0	52,07	26,9	44,69	2,5	MRN 12	5150	9,7	6,0	2,80	0,3499
	60,0	62,78	22,3	53,79	2,2	MRN 12	5400	9,7	6,0	2,80	0,3459
63,0	62,54	22,4	52,62	3,2	MRN 13	4300	9,5	5,8	2,80	0,2474	
80,0	79,1	17,7	66,86	2,7	MRN 13	4000	9,5	5,8	2,80	0,2451	
100,0	96,36	14,5	80,69	2,2	MRN 13	4000	9,5	5,8	2,80	0,2437	
125,0	120,51	11,6	101,74	1,8	MRN 13	4000	9,5	5,8	2,80	0,2426	
160,0	156,75	8,93	133,82	1,3	MRN 13	4100	9,5	5,8	2,80	0,2416	
180,0	173,22	8,08	139,29	1,1	MRN 13	4800	9,5	5,8	2,80	0,2414	
0,18	7,1	6,59	212	7,76	> 3,0	MRN 12	3350	10,3	6,0	4,00	0,8414
	8,0	7,95	176	9,36	> 3,0	MRN 12	3470	10,3	6,0	4,00	0,7600
	9,0	8,32	168	9,69	> 3,0	MRN 12	3580	10,3	6,0	4,00	0,6786
	10,0	10,11	138	11,74	> 3,0	MRN 12	3490	10,3	6,0	4,00	0,5849
	12,5	12,19	115	14,63	> 3,0	MRN 12	3470	10,3	6,0	4,00	0,5416
	14,0	13,17	106	15,63	> 3,0	MRN 12	3450	10,3	6,0	4,00	0,4982
	16,0	15,87	88,2	19,38	> 3,0	MRN 12	3450	10,3	6,0	4,00	0,4722
	18,0	16,65	84,1	19,80	> 3,0	MRN 12	3560	10,3	6,0	4,00	0,4462
	20,0	20,29	69	23,54	> 3,0	MRN 12	3710	10,3	6,0	4,00	0,4149
	22,4	25,37	55,2	30,60	> 3,0	MRN 12	3850	10,3	6,0	4,00	0,3892
	31,5	30,59	45,8	36,00	> 3,0	MRN 12	4070	10,3	6,0	4,00	0,3789
	33,0	33	42,4	38,92	> 3,0	MRN 12	4290	10,3	6,0	4,00	0,3685
	35,5	36,47	38,4	42,71	> 3,0	MRN 12	4700	10,3	6,0	4,00	0,3626
	40,0	39,78	35,2	46,67	3,0	MRN 12	4870	10,3	6,0	4,00	0,3635

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0,18	40,0	39,52	35,4	45,79	> 3,0	MRN 13	4762	10,1	5,8	4,00	0,2554
	45,0	43,96	31,8	51,43	2,7	MRN 12	4900	10,3	6,0	4,00	0,3585
	50,0	48,98	28,6	57,27	2,4	MRN 12	4900	10,3	6,0	4,00	0,3539
	50,0	48,04	29,1	55,80	2,8	MRN 13	4600	10,1	5,8	4,00	0,2512
	56,0	52,07	26,9	61,88	1,8	MRN 12	5150	10,3	6,0	4,00	0,3499
	60,0	62,78	22,3	74,48	1,6	MRN 12	5400	10,3	6,0	4,00	0,3459
	63,0	62,54	22,4	72,86	2,3	MRN 13	4300	10,1	5,8	4,00	0,2474
	80,0	79,1	17,7	92,57	1,9	MRN 13	4000	10,1	5,8	4,00	0,2451
	100,0	96,36	14,5	111,72	1,6	MRN 13	4000	10,1	5,8	4,00	0,2437
	125,0	120,51	11,6	140,87	1,3	MRN 13	4000	10,1	5,8	4,00	0,2426
	160,0	156,75	8,93	185,29	0,9	MRN 13	4100	10,1	5,8	4,00	0,2416
180,0	173,22	8,08	192,86	0,8	MRN 13	4800	10,1	5,8	4,00	0,2414	
0,25	6,3	5,76	243	9,31	> 3,0	MRN 22	3200	15,2	9,4	5,00	2,5855
		5,59	250	9,17	> 3,0	MRN 32	4760	19,6	13,8	5,00	4,8684
		5,74	244	9,39	> 3,0	MRN 42	5030	41,1	35,3	5,00	13,0943
	7,1	6,59	212	10,78	> 3,0	MRN 12	3350	11,8	6,0	5,00	0,8414
		7,37	190	11,68	> 3,0	MRN 22	3450	15,2	9,4	5,00	2,1881
		7,17	195	11,68	> 3,0	MRN 32	5180	19,6	13,8	5,00	3,8232
	8,0	7,26	193	11,90	> 3,0	MRN 42	5190	41,1	35,3	5,00	10,7969
		7,95	176	13,00	> 3,0	MRN 12	3470	11,8	6,0	5,00	0,7600
		7,8	179	12,50	> 3,0	MRN 22	3530	15,2	9,4	5,00	2,2972
	9,0	7,9	177	13,03	> 3,0	MRN 32	5410	19,6	13,8	5,00	3,9288
		7,59	185	12,41	> 3,0	MRN 42	5680	41,1	35,3	5,00	11,2674
		8,32	168	13,46	> 3,0	MRN 12	3580	11,8	6,0	5,00	0,6786
		9,07	154	14,63	> 3,0	MRN 22	3690	15,2	9,4	5,00	1,9599
	10,0	8,84	158	14,46	> 3,0	MRN 32	5180	19,6	13,8	5,00	3,2176
		9,08	154	14,83	> 3,0	MRN 42	5660	41,1	35,3	5,00	9,2579
		10,11	138	16,30	> 3,0	MRN 12	3490	11,8	6,0	5,00	0,5849
		9,98	140	15,97	> 3,0	MRN 22	3850	15,2	9,4	5,00	2,0120
		10,13	138	16,67	> 3,0	MRN 32	5890	19,6	13,8	5,00	3,2515
	11,2	9,6	146	15,68	> 3,0	MRN 42	6200	41,1	35,3	5,00	9,6555
		11,33	124	18,06	> 3,0	MRN 22	3890	15,2	9,4	5,00	1,7848
		11,06	127	18,15	> 3,0	MRN 32	4550	19,6	13,8	5,00	2,7466
		11,55	121	18,96	> 3,0	MRN 42	6170	41,1	35,3	5,00	8,0995
	12,5	12,19	115	20,31	> 3,0	MRN 12	3470	11,8	6,0	5,00	0,5416
		12,29	114	19,83	> 3,0	MRN 22	4140	15,2	9,4	5,00	1,8436
		12,49	112	20,65	> 3,0	MRN 32	6330	19,6	13,8	5,00	2,8412
		12	117	19,66	> 3,0	MRN 42	6720	41,1	35,3	5,00	8,5274
	14,0	13,17	106	21,71	> 3,0	MRN 12	3450	11,8	6,0	5,00	0,4982
		14,51	96,5	23,44	> 3,0	MRN 22	3720	15,2	9,4	5,00	1,6479
		14,18	98,8	23,28	> 3,0	MRN 32	4700	19,6	13,8	5,00	2,3720
	16,0	14,09	99,3	23,00	> 3,0	MRN 42	6810	41,1	35,3	5,00	7,4107
		15,87	88,2	26,92	> 3,0	MRN 12	3450	11,8	6,0	5,00	0,4722
15,36		91,2	25,00	> 3,0	MRN 22	4480	15,2	9,4	5,00	1,7103	
15,63		89,6	25,66	> 3,0	MRN 32	6830	19,6	13,8	5,00	2,5063	
18,0	15,27	91,7	25,00	> 3,0	MRN 42	7330	41,1	35,3	5,00	7,6485	
	16,65	84,1	27,50	> 3,0	MRN 12	3560	11,8	6,0	5,00	0,4462	
	17,87	78,4	28,70	> 3,0	MRN 22	3590	15,2	9,4	5,00	1,5647	
	18,84	74,3	30,56	> 3,0	MRN 32	4860	19,6	13,8	5,00	2,0717	
	17,59	79,6	28,70	> 3,0	MRN 42	7410	41,1	35,3	5,00	6,8426	

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0,25	20,0	20,29	69	32,69	> 3,0	MRN 12	3710	11,8	6,0	5,00	0,4149
		19,66	71,2	31,94	> 3,0	MRN 22	4810	15,2	9,4	5,00	1,6024
22,4	22,4	20,03	69,9	32,50	> 3,0	MRN 32	7400	19,6	13,8	5,00	2,2256
		25,37	55,2	42,50	> 3,0	MRN 12	3850	11,8	6,0	5,00	0,3892
		22,67	61,8	36,90	> 3,0	MRN 22	3800	15,2	9,4	5,00	1,4958
		22,18	63,1	36,18	> 3,0	MRN 32	5000	19,6	13,8	5,00	1,9456
		22,69	61,7	37,30	> 3,0	MRN 42	8160	41,1	35,3	5,00	6,4129
25,0	25,0	24,21	57,8	40,00	> 3,0	MRN 22	4970	15,2	9,4	5,00	1,5348
		26,62	52,6	43,48	> 3,0	MRN 32	7750	19,6	13,8	5,00	1,9888
		29,32	47,8	47,32	> 3,0	MRN 22	4770	15,2	9,4	5,00	1,4440
28,0	28,0	28,93	48,4	46,55	> 3,0	MRN 32	5550	19,6	13,8	5,00	1,7952
		28,28	49,5	46,35	> 3,0	MRN 42	8920	41,1	35,3	5,00	6,1008
31,5	31,5	30,59	45,8	50,00	2,8	MRN 12	4070	11,8	6,0	5,00	0,3789
		30,71	45,6	50,00	> 3,0	MRN 22	5180	15,2	9,4	5,00	1,4772
		31,33	44,7	52,63	> 3,0	MRN 32	7920	19,6	13,8	5,00	1,8858
		30	46,7	49,32	> 3,0	MRN 42	9290	41,1	35,3	5,00	6,2602
33,0	33	42,4	54,05	3,0	MRN 12	4290	11,8	6,0	5,00	0,3685	
35,5	35,5	36,47	38,4	59,32	2,4	MRN 12	4700	11,8	6,0	5,00	0,3626
		34,52	40,6	55,56	> 3,0	MRN 22	5420	15,2	9,4	5,00	1,4202
		34,5	40,6	56,25	> 3,0	MRN 32	7320	19,6	13,8	5,00	1,7221
		37,39	37,4	61,67	> 3,0	MRN 42	10030	41,1	35,3	5,00	6,0256
40,0	40,0	39,78	35,2	64,81	2,2	MRN 12	4870	11,8	6,0	5,00	0,3635
		39,52	35,4	63,60	2,3	MRN 13	4762	11,6	5,8	5,00	0,2554
		39,72	35,2	63,83	> 3,0	MRN 22	5380	15,2	9,4	5,00	1,4329
		36,34	38,5	58,41	> 3,0	MRN 23	5130	15,5	9,7	5,00	0,9994
		40,87	34,3	65,63	> 3,0	MRN 32	8250	19,6	13,8	5,00	1,7600
		35,86	39	58,33	> 3,0	MRN 33	6840	19,8	14,0	5,00	1,2294
45,0	45,0	38,12	36,7	62,50	> 3,0	MRN 42	10140	41,1	35,3	5,00	5,8382
		34,07	41,1	55,30	> 3,0	MRN 43	9670	43,3	37,5	5,00	4,3102
		43,96	31,8	71,43	2,0	MRN 12	4900	11,8	6,0	5,00	0,3585
		46,78	29,9	74,70	> 3,0	MRN 22	5550	15,2	9,4	5,00	1,4122
		44,73	31,3	71,81	> 3,0	MRN 23	5070	15,5	9,7	5,00	0,9900
		47,5	29,5	80,00	> 3,0	MRN 32	9440	19,6	13,8	5,00	1,6310
		44,2	31,7	72,37	> 3,0	MRN 33	5900	19,8	14,0	5,00	1,2052
		45,27	30,9	75,00	> 3,0	MRN 42	10720	41,1	35,3	5,00	5,8675
		42,59	32,9	68,94	> 3,0	MRN 43	10030	43,3	37,5	5,00	4,2058
		48,98	28,6	79,55	1,8	MRN 12	4900	11,8	6,0	5,00	0,3539
50,0	50,0	48,04	29,1	77,50	2,0	MRN 13	4600	11,6	5,8	5,00	0,2512
		51,19	27,3	81,67	3,0	MRN 22	5650	15,2	9,4	5,00	1,4027
		48,74	28,7	80,77	> 3,0	MRN 32	8530	19,6	13,8	5,00	1,6974
		50,4	27,8	81,52	> 3,0	MRN 42	11110	41,1	35,3	5,00	5,7968
		52,07	26,9	85,94	1,3	MRN 12	5150	11,8	6,0	5,00	0,3499
		55,91	25	90,12	> 3,0	MRN 23	4970	15,5	9,7	5,00	0,9828
56,0	56,0	53,75	26	87,50	> 3,0	MRN 32	8640	19,6	13,8	5,00	1,6689
		55,31	25,3	90,63	> 3,0	MRN 33	5500	19,8	14,0	5,00	1,1864
		56,67	24,7	92,11	> 3,0	MRN 42	11600	41,1	35,3	5,00	5,7318
		54,21	25,8	87,50	> 3,0	MRN 43	9830	43,3	37,5	5,00	4,1359
		62,78	22,3	103,45	1,2	MRN 12	5400	11,8	6,0	5,00	0,3459
		62,54	22,4	101,19	1,7	MRN 13	4300	11,6	5,8	5,00	0,2474
60,0	60,0	62,66	22,3	100,81	2,5	MRN 22	6040	15,2	9,4	5,00	1,3859

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴	
0,25	63,0	67,1	20,9	109,38	> 3,0	MRN 32	9030	19,6	13,8	5,00	1,6180	
		66,13	21,2	107,61	> 3,0	MRN 43	10110	43,3	37,5	5,00	4,0833	
	71,0	71,57	19,6	113,97	2,7	MRN 23	5100	15,5	9,7	5,00	0,9772	
		70,88	19,8	111,54	> 3,0	MRN 33	5500	19,8	14,0	5,00	1,1714	
		70,82	19,8	113,89	> 3,0	MRN 43	12640	43,3	37,5	5,00	4,0520	
	80,0	79,1	17,7	128,57	1,4	MRN 13	4000	11,6	5,8	5,00	0,2451	
			79,01	17,7	125,00	1,1	MRN 23	7160	15,5	9,7	5,00	0,9250
		80,62	17,4	129,90	2,0	MRN 33	10880	19,8	14,0	5,00	1,0679	
	90,0	88,14	15,9	140,91	2,2	MRN 23	5200	15,5	9,7	5,00	0,9738	
			94,22	14,9	151,04	> 3,0	MRN 33	5500	19,8	14,0	5,00	1,1594
		89,6	15,6	143,26	> 3,0	MRN 43	13650	43,3	37,5	5,00	4,0262	
	100,0	96,36	14,5	155,17	1,2	MRN 13	4000	11,6	5,8	5,00	0,2437	
			101,07	13,9	160,71	1,1	MRN 23	7190	15,5	9,7	5,00	0,9223
		103,34	13,5	166,67	2,0	MRN 33	10730	19,8	14,0	5,00	1,0614	
	112,0	106,48	13,1	168,33	> 3,0	MRN 43	10930	43,3	37,5	5,00	3,7770	
			111,82	12,5	180,23	1,7	MRN 23	5200	15,5	9,7	5,00	0,9710
		110,89	12,6	176,83	> 3,0	MRN 33	5500	19,8	14,0	5,00	1,1543	
	125,0	124,39	11,3	196,43	1,1	MRN 23	6700	15,5	9,7	5,00	0,9206	
			127,37	11	205,88	2,0	MRN 33	9700	19,8	14,0	5,00	1,0575
		144,62	9,68	228,45	1,2	MRN 23	6100	15,5	9,7	5,00	0,9688	
	140,0	144,64	9,68	230,16	2,5	MRN 33	5500	19,8	14,0	5,00	1,1483	
			132,69	10,6	215,91	> 3,0	MRN 43	12260	43,3	37,5	5,00	4,0051
		155,49	9	250,00	1,0	MRN 23	6200	15,5	9,7	5,00	0,9193	
	160,0	159,41	8,78	255,95	1,7	MRN 33	9400	19,8	14,0	5,00	1,0542	
			160,69	8,71	256,76	3,0	MRN 43	14590	43,3	37,5	5,00	3,9942
		172,5	8,12	279,07	1,7	MRN 33	8600	19,8	14,0	5,00	1,1454	
	180,0	173,9	8,05	277,78	2,9	MRN 43	14570	43,3	37,5	5,00	3,9843	
			199,03	7,03	325,00	0,8	MRN 23	6200	15,5	9,7	5,00	0,9183
		204,26	6,85	325,76	1,3	MRN 33	9400	19,8	14,0	5,00	1,0515	
	200,0	201,13	6,96	319,77	1,7	MRN 43	16680	43,3	37,5	5,00	3,7478	
			224,0	237,5	5,89	380,95	0,8	MRN 33	11100	19,8	14,0	5,00
		224,0	217	6,45	350,88	2,3	MRN 43	15210	43,3	37,5	5,00	3,9773
	280,0	271,53	5,16	430,00	1,0	MRN 33	9400	19,8	14,0	5,00	1,0493	
			280,0	280	5	444,44	1,8	MRN 43	16030	43,3	37,5	5,00
		315,0	319,58	4,38	511,90	0,8	MRN 33	9400	19,8	14,0	5,00	1,0483
	355,0	348,92	4,01	555,56	1,4	MRN 43	16500	43,3	37,5	5,00	3,7381	
450,0			422,55	3,31	666,67	1,2	MRN 43	16500	43,3	37,5	5,00	3,7354
500,0		470,4	2,98	740,74	1,1	MRN 43	16500	43,3	37,5	5,00	3,7336	
560,0	528,89	2,65	833,33	1,0	MRN 43	17000	43,3	37,5	5,00	3,7328		
		0,37	6,3	5,76	243	13,78	> 3,0	MRN 22	3200	15,6	9,4	8,00
	5,59	250		13,58	> 3,0	MRN 32	4760	20,0	13,8	8,00	4,8684	
7,1	5,74	244	13,90	> 3,0	MRN 42	5030	41,5	35,3	8,00	13,0943		
		6,59	212	15,95	> 3,0	MRN 12	3350	12,2	6,0	8,00	0,8414	
	7,37	190	17,29	> 3,0	MRN 22	3450	15,6	9,4	8,00	2,1881		
8,0	7,17	195	17,29	> 3,0	MRN 32	5180	20,0	13,8	8,00	3,8232		
		7,26	193	17,61	> 3,0	MRN 42	5190	41,5	35,3	8,00	10,7969	
	7,95	176	19,24	> 3,0	MRN 12	3470	12,2	6,0	8,00	0,7600		
7,8	7,9	179	18,50	> 3,0	MRN 22	3530	15,6	9,4	8,00	2,2972		
		177	19,28	> 3,0	MRN 32	5410	20,0	13,8	8,00	3,9288		

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0,37	8,0	7,59	185	18,37	> 3,0	MRN 42	5680	41,5	35,3	8,00	11,2674
	9,0	8,32	168	19,92	> 3,0	MRN 12	3580	12,2	6,0	8,00	0,6786
	9,07	154	21,66	> 3,0	MRN 22	3690	15,6	9,4	8,00	1,9599	
	8,84	158	21,40	> 3,0	MRN 32	5180	20,0	13,8	8,00	3,2176	
	9,08	154	21,95	> 3,0	MRN 42	5660	41,5	35,3	8,00	9,2579	
10,0	10,11	138	24,13	> 3,0	MRN 12	3490	12,2	6,0	8,00	0,5849	
	9,98	140	23,64	> 3,0	MRN 22	3850	15,6	9,4	8,00	2,0120	
	10,13	138	24,67	> 3,0	MRN 32	5890	20,0	13,8	8,00	3,2515	
	9,6	146	23,21	> 3,0	MRN 42	6200	41,5	35,3	8,00	9,6555	
	11,2	11,33	124	26,72	> 3,0	MRN 22	3890	15,6	9,4	8,00	1,7848
	11,06	127	26,86	> 3,0	MRN 32	4550	20,0	13,8	8,00	2,7466	
	11,55	121	28,06	> 3,0	MRN 42	6170	41,5	35,3	8,00	8,0995	
	12,5	12,19	115	30,06	> 3,0	MRN 12	3470	12,2	6,0	8,00	0,5416
	12,29	114	29,34	> 3,0	MRN 22	4140	15,6	9,4	8,00	1,8436	
	12,49	112	30,57	> 3,0	MRN 32	6330	20,0	13,8	8,00	2,8412	
	12	117	29,10	> 3,0	MRN 42	6720	41,5	35,3	8,00	8,5274	
	14,0	13,17	106	32,13	> 3,0	MRN 12	3450	12,2	6,0	8,00	0,4982
	14,51	96,5	34,69	> 3,0	MRN 22	3720	15,6	9,4	8,00	1,6479	
	14,18	98,8	34,45	> 3,0	MRN 32	4700	20,0	13,8	8,00	2,3720	
	14,09	99,3	34,04	> 3,0	MRN 42	6810	41,5	35,3	8,00	7,4107	
16,0	15,87	88,2	39,85	> 3,0	MRN 12	3450	12,2	6,0	8,00	0,4722	
	15,36	91,2	37,00	> 3,0	MRN 22	4480	15,6	9,4	8,00	1,7103	
	15,63	89,6	37,97	> 3,0	MRN 32	6830	20,0	13,8	8,00	2,5063	
	15,27	91,7	37,00	> 3,0	MRN 42	7330	41,5	35,3	8,00	7,6485	
	18,0	16,65	84,1	40,70	> 3,0	MRN 12	3560	12,2	6,0	8,00	0,4462
	17,87	78,4	42,48	> 3,0	MRN 22	3590	15,6	9,4	8,00	1,5647	
	18,84	74,3	45,22	> 3,0	MRN 32	4860	20,0	13,8	8,00	2,0717	
	17,59	79,6	42,48	> 3,0	MRN 42	7410	41,5	35,3	8,00	6,8426	
	20,0	20,29	69	48,38	> 3,0	MRN 12	3710	12,2	6,0	8,00	0,4149
	19,66	71,2	47,28	> 3,0	MRN 22	4810	15,6	9,4	8,00	1,6024	
	20,03	69,9	48,10	> 3,0	MRN 32	7400	20,0	13,8	8,00	2,2256	
	22,4	25,37	55,2	62,90	> 3,0	MRN 12	3850	12,2	6,0	8,00	0,3892
	22,67	61,8	54,62	> 3,0	MRN 22	3800	15,6	9,4	8,00	1,4958	
	22,18	63,1	53,55	> 3,0	MRN 32	5000	20,0	13,8	8,00	1,9456	
	22,69	61,7	55,21	> 3,0	MRN 42	8160	41,5	35,3	8,00	6,4129	
25,0	24,21	57,8	59,20	> 3,0	MRN 22	4970	15,6	9,4	8,00	1,5348	
	26,62	52,6	64,35	> 3,0	MRN 32	7750	20,0	13,8	8,00	1,9888	
28,0	29,32	47,8	70,04	> 3,0	MRN 22	4770	15,6	9,4	8,00	1,4440	
28,0	28,93	48,4	68,90	> 3,0	MRN 32	5550	20,0	13,8	8,00	1,7952	
	28,28	49,5	68,60	> 3,0	MRN 42	8920	41,5	35,3	8,00	6,1008	
31,5	30,59	45,8	74,00	1,9	MRN 12	4070	12,2	6,0	8,00	0,3789	
	30,71	45,6	74,00	> 3,0	MRN 22	5180	15,6	9,4	8,00	1,4772	
	31,33	44,7	77,89	> 3,0	MRN 32	7920	20,0	13,8	8,00	1,8858	
	30	46,7	73,00	> 3,0	MRN 42	9290	41,5	35,3	8,00	6,2602	
	33,0	33	42,4	80,00	2,0	MRN 12	4290	12,2	6,0	8,00	0,3685
	35,5	36,47	38,4	87,80	1,6	MRN 12	4700	12,2	6,0	8,00	0,3626
	34,52	40,6	82,22	2,7	MRN 22	5420	15,6	9,4	8,00	1,4202	
	34,5	40,6	83,25	> 3,0	MRN 32	7320	20,0	13,8	8,00	1,7221	
	37,39	37,4	91,27	> 3,0	MRN 42	10030	41,5	35,3	8,00	6,0256	
40,0	39,78	35,2	95,93	1,5	MRN 12	4870	12,2	6,0	8,00	0,3635	

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴		
0,37	40,0	39,52	35,4	94,12	1,5	MRN 13	4762	12,0	5,8	8,00	0,2554		
		39,72	35,2	94,47	2,5	MRN 22	5380	15,6	9,4	8,00	1,4329		
		36,34	38,5	86,45	2,9	MRN 23	5130	15,9	9,7	8,00	0,9994		
45,0	45,0	40,87	34,3	97,13	> 3,0	MRN 32	8250	20,0	13,8	8,00	1,7600		
		35,86	39	86,33	> 3,0	MRN 33	6840	20,2	14,0	8,00	1,2294		
		38,12	36,7	92,50	> 3,0	MRN 42	10140	41,5	35,3	8,00	5,8382		
		34,07	41,1	81,85	> 3,0	MRN 43	9670	43,7	37,5	8,00	4,3102		
		43,96	31,8	105,71	1,3	MRN 12	4900	12,2	6,0	8,00	0,3585		
		46,78	29,9	110,55	2,2	MRN 22	5550	15,6	9,4	8,00	1,4122		
		44,73	31,3	106,28	2,5	MRN 23	5070	15,9	9,7	8,00	0,9900		
		47,5	29,5	118,40	2,7	MRN 32	9440	20,0	13,8	8,00	1,6310		
		44,2	31,7	107,11	> 3,0	MRN 33	5900	20,2	14,0	8,00	1,2052		
		45,27	30,9	111,00	> 3,0	MRN 42	10720	41,5	35,3	8,00	5,8675		
		42,59	32,9	102,03	> 3,0	MRN 43	10030	43,7	37,5	8,00	4,2058		
		50,0	50,0	48,98	28,6	117,73	1,2	MRN 12	4900	12,2	6,0	8,00	0,3539
				48,04	29,1	114,70	1,4	MRN 13	4600	12,0	5,8	8,00	0,2512
51,19	27,3			120,87	2,0	MRN 22	5650	15,6	9,4	8,00	1,4027		
48,74	28,7			119,54	> 3,0	MRN 32	8530	20,0	13,8	8,00	1,6974		
56,0	56,0	50,4	27,8	120,65	> 3,0	MRN 42	11110	41,5	35,3	8,00	5,7968		
		52,07	26,9	127,19	0,9	MRN 12	5150	12,2	6,0	8,00	0,3499		
		55,91	25	133,37	2,3	MRN 23	4970	15,9	9,7	8,00	0,9828		
		53,75	26	129,50	> 3,0	MRN 32	8640	20,0	13,8	8,00	1,6689		
		55,31	25,3	134,13	> 3,0	MRN 33	5500	20,2	14,0	8,00	1,1864		
		56,67	24,7	136,32	> 3,0	MRN 42	11600	41,5	35,3	8,00	5,7318		
60,0	60,0	54,21	25,8	129,50	> 3,0	MRN 43	9830	43,7	37,5	8,00	4,1359		
		62,78	22,3	153,10	0,8	MRN 12	5400	12,2	6,0	8,00	0,3459		
		63,0	22,4	149,76	1,1	MRN 13	4300	12,0	5,8	8,00	0,2474		
63,0	63,0	62,66	22,3	149,19	1,7	MRN 22	6040	15,6	9,4	8,00	1,3859		
		67,1	20,9	161,88	2,6	MRN 32	9030	20,0	13,8	8,00	1,6180		
		66,13	21,2	159,26	> 3,0	MRN 43	10110	43,7	37,5	8,00	4,0833		
		71,57	19,6	168,68	1,8	MRN 23	5100	15,9	9,7	8,00	0,9772		
		70,88	19,8	165,08	> 3,0	MRN 33	5500	20,2	14,0	8,00	1,1714		
71,0	71,0	70,82	19,8	168,56	2,4	MRN 43	12640	43,7	37,5	8,00	4,0520		
		79,1	17,7	190,29	0,9	MRN 13	4000	12,0	5,8	8,00	0,2451		
		79,01	17,7	185,00	0,8	MRN 23	7160	15,9	9,7	8,00	0,9250		
		80,62	17,4	192,25	1,4	MRN 33	10880	20,2	14,0	8,00	1,0679		
80,0	80,0	82,52	17	194,74	> 3,0	MRN 43	10510	43,7	37,5	8,00	3,7956		
		88,14	15,9	208,55	1,5	MRN 23	5200	15,9	9,7	8,00	0,9738		
		94,22	14,9	223,54	2,6	MRN 33	5500	20,2	14,0	8,00	1,1594		
90,0	90,0	89,6	15,6	212,02	2,4	MRN 43	13650	43,7	37,5	8,00	4,0262		
		96,36	14,5	229,66	0,8	MRN 13	4000	12,0	5,8	8,00	0,2437		
		101,07	13,9	237,86	0,8	MRN 23	7190	15,9	9,7	8,00	0,9223		
		103,34	13,5	246,67	1,4	MRN 33	10730	20,2	14,0	8,00	1,0614		
100,0	100,0	106,48	13,1	249,13	> 3,0	MRN 43	10930	43,7	37,5	8,00	3,7770		
		112,0	111,82	12,5	266,74	1,2	MRN 23	5200	15,9	9,7	8,00	0,9710	
		110,89	12,6	261,71	2,2	MRN 33	5500	20,2	14,0	8,00	1,1543		
125,0	125,0	124,39	11,3	290,71	0,8	MRN 23	6700	15,9	9,7	8,00	0,9206		
		127,37	11	304,71	1,4	MRN 33	9700	20,2	14,0	8,00	1,0575		
140,0	140,0	144,62	9,68	338,10	0,8	MRN 23	6100	15,9	9,7	8,00	0,9688		
		144,64	9,68	340,63	1,7	MRN 33	5500	20,2	14,0	8,00	1,1483		

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴	
0,37	140,0	132,69	10,6	319,55	3,0	MRN 43	12260	43,7	37,5	8,00	4,0051	
		160,0	155,49	9	370,00	0,7	MRN 23	6200	15,9	9,7	8,00	0,9193
			159,41	8,78	378,81	1,1	MRN 33	9400	20,2	14,0	8,00	1,0542
	180,0		160,69	8,71	380,00	2,0	MRN 43	14590	43,7	37,5	8,00	3,9942
			172,5	8,12	413,02	1,2	MRN 33	8600	20,2	14,0	8,00	1,1454
			173,9	8,05	411,11	1,9	MRN 43	14570	43,7	37,5	8,00	3,9843
	200,0		204,26	6,85	482,12	0,9	MRN 33	9400	20,2	14,0	8,00	1,0515
			201,13	6,96	473,26	1,2	MRN 43	16680	43,7	37,5	8,00	3,7478
			217	6,45	519,30	1,5	MRN 43	15210	43,7	37,5	8,00	3,9773
	280,0		280	5	657,78	1,2	MRN 43	16030	43,7	37,5	8,00	3,7425
			348,92	4,01	822,22	1,0	MRN 43	16500	43,7	37,5	8,00	3,7381
			422,55	3,31	986,67	0,8	MRN 43	16500	43,7	37,5	8,00	3,7354
			470,4	2,98	1096,30	0,7	MRN 43	16500	43,7	37,5	8,00	3,7336
	0,55	6,3	5,76	243	20,49	< 3,0	MRN 22	3200	17,9	9,4	14,00	2,5855
5,59			250	20,18	< 3,0	MRN 32	4760	22,3	13,8	14,00	4,8684	
5,74			244	20,66	< 3,0	MRN 42	5030	43,8	35,3	14,00	13,0943	
5,64			248	20,30	< 3,0	MRN 52	7550	73,7	65,2	14,00	37,6347	
5,77			250	20,13	< 3,0	MRN 62	10060	123,3	114,8	14,00	84,0612	
7,1		6,59	212	23,71	< 3,0	MRN 12	3350	14,5	6,0	14,00	0,8414	
		7,37	190	25,71	< 3,0	MRN 22	3450	17,9	9,4	14,00	2,1881	
		7,17	195	25,71	< 3,0	MRN 32	5180	22,3	13,8	14,00	3,8232	
		7,26	193	26,17	< 3,0	MRN 42	5190	43,8	35,3	14,00	10,7969	
		7,46	188	26,86	< 3,0	MRN 52	8250	73,7	65,2	14,00	31,2885	
		7,39	189	26,63	< 3,0	MRN 62	9540	123,3	114,8	14,00	68,0211	
		8,0	7,95	176	28,60	< 3,0	MRN 12	3470	14,5	6,0	14,00	0,7600
			7,8	179	27,50	< 3,0	MRN 22	3530	17,9	9,4	14,00	2,2972
9,0			7,9	177	28,66	< 3,0	MRN 32	5410	22,3	13,8	14,00	3,9288
			7,59	185	27,30	< 3,0	MRN 42	5680	43,8	35,3	14,00	11,2674
			7,66	183	27,62	< 3,0	MRN 52	8410	73,7	65,2	14,00	31,9539
			7,97	176	28,74	< 3,0	MRN 62	11380	123,3	114,8	14,00	68,6806
			8,32	168	29,62	< 3,0	MRN 12	3580	14,5	6,0	14,00	0,6786
			9,07	154	32,20	< 3,0	MRN 22	3690	17,9	9,4	14,00	1,9599
			8,84	158	31,81	< 3,0	MRN 32	5180	22,3	13,8	14,00	3,2176
			9,08	154	32,63	< 3,0	MRN 42	5660	43,8	35,3	14,00	9,2579
10,0			9,46	148	34,07	< 3,0	MRN 52	8900	73,7	65,2	14,00	27,6749
			9,38	149	33,79	< 3,0	MRN 62	9030	123,3	114,8	14,00	56,8499
			10,11	138	35,87	< 3,0	MRN 12	3490	14,5	6,0	14,00	0,5849
			9,98	140	35,14	< 3,0	MRN 22	3850	17,9	9,4	14,00	2,0120
			10,13	138	36,67	< 3,0	MRN 32	5890	22,3	13,8	14,00	3,2515
			9,6	146	34,50	< 3,0	MRN 42	6200	43,8	35,3	14,00	9,6555
			10,13	138	36,56	< 3,0	MRN 52	9280	73,7	65,2	14,00	28,0395
			10,54	133	37,93	< 3,0	MRN 62	12550	123,3	114,8	14,00	58,6662
11,2			11,33	124	39,72	< 3,0	MRN 22	3890	17,9	9,4	14,00	1,7848
			11,06	127	39,93	< 3,0	MRN 32	4550	22,3	13,8	14,00	2,7466
			11,55	121	41,71	< 3,0	MRN 42	6170	43,8	35,3	14,00	8,0995
			11,45	122	41,18	< 3,0	MRN 52	8400	73,7	65,2	14,00	25,5151
			11,36	123	40,89	< 3,0	MRN 62	5620	123,3	114,8	14,00	50,1639
12,5			12,19	115	44,69	2,9	MRN 12	3470	14,5	6,0	14,00	0,5416
			12,29	114	43,62	< 3,0	MRN 22	4140	17,9	9,4	14,00	1,8436
			12,49	112	45,43	< 3,0	MRN 32	6330	22,3	13,8	14,00	2,8412

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴		
0,55	12,5	12	117	43,26	< 3,0	MRN 42	6720	43,8	35,3	14,00	8,5274		
		12,85	109	46,29	< 3,0	MRN 52	10080	73,7	65,2	14,00	25,6545		
14,0	14,0	13,17	106	47,76	< 3,0	MRN 12	3450	14,5	6,0	14,00	0,4982		
		14,51	96,5	51,56	< 3,0	MRN 22	3720	17,9	9,4	14,00	1,6479		
		14,18	98,8	51,21	< 3,0	MRN 32	4700	22,3	13,8	14,00	2,3720		
		14,09	99,3	50,60	< 3,0	MRN 42	6810	43,8	35,3	14,00	7,4107		
		14,12	99,2	50,89	< 3,0	MRN 52	8470	73,7	65,2	14,00	23,7029		
		14	100	50,38	< 3,0	MRN 62	5450	123,3	114,8	14,00	44,5468		
		16,0	16,0	15,87	88,2	59,23	2,4	MRN 12	3450	14,5	6,0	14,00	0,4722
				15,36	91,2	55,00	< 3,0	MRN 22	4480	17,9	9,4	14,00	1,7103
				15,63	89,6	56,45	< 3,0	MRN 32	6830	22,3	13,8	14,00	2,5063
				15,27	91,7	55,00	< 3,0	MRN 42	7330	43,8	35,3	14,00	7,6485
15,56	90			55,95	< 3,0	MRN 52	10780	73,7	65,2	14,00	24,1384		
16,19	86,4			58,37	< 3,0	MRN 62	11630	123,3	114,8	14,00	46,1997		
18,0	18,0	16,65	84,1	60,50	2,7	MRN 12	3560	14,5	6,0	14,00	0,4462		
		17,87	78,4	63,15	< 3,0	MRN 22	3590	17,9	9,4	14,00	1,5647		
18,0	18,0	18,84	74,3	67,22	< 3,0	MRN 32	4860	22,3	13,8	14,00	2,0717		
		17,59	79,6	63,15	< 3,0	MRN 42	7410	43,8	35,3	14,00	6,8426		
		17,85	78,4	64,50	< 3,0	MRN 52	8680	73,7	65,2	14,00	22,1741		
		17,7	79,1	63,77	< 3,0	MRN 62	3100	123,3	114,8	14,00	39,8027		
		20,0	20,0	20,29	69	71,92	2,4	MRN 12	3710	14,5	6,0	14,00	0,4149
				19,66	71,2	70,28	< 3,0	MRN 22	4810	17,9	9,4	14,00	1,6024
				20,03	69,9	71,50	< 3,0	MRN 32	7400	22,3	13,8	14,00	2,2256
				19,19	73	68,89	< 3,0	MRN 52	11580	73,7	65,2	14,00	22,7969
		22,4	22,4	19,96	70,1	71,75	< 3,0	MRN 62	15790	123,3	114,8	14,00	41,9382
				25,37	55,2	93,50	1,8	MRN 12	3850	14,5	6,0	14,00	0,3892
22,67	61,8			81,19	< 3,0	MRN 22	3800	17,9	9,4	14,00	1,4958		
22,18	63,1			79,61	< 3,0	MRN 32	5000	22,3	13,8	14,00	1,9456		
22,69	61,7			82,06	< 3,0	MRN 42	8160	43,8	35,3	14,00	6,4129		
23,45	59,7			84,81	< 3,0	MRN 52	8020	73,7	65,2	14,00	20,8963		
25,0	25,0	23,25	60,2	83,92	< 3,0	MRN 62	8000	123,3	114,8	14,00	35,8331		
		24,21	57,8	88,00	2,7	MRN 22	4970	17,9	9,4	14,00	1,5348		
		26,62	52,6	95,65	< 3,0	MRN 32	7750	22,3	13,8	14,00	1,9888		
		24,26	57,7	86,84	< 3,0	MRN 52	12560	73,7	65,2	14,00	21,6073		
		25,24	55,5	90,66	< 3,0	MRN 62	16780	123,3	114,8	14,00	38,1707		
		28,0	28,0	29,32	47,8	104,11	2,5	MRN 22	4770	17,9	9,4	14,00	1,4440
28,93	48,4			102,41	< 3,0	MRN 32	5550	22,3	13,8	14,00	1,7952		
28,28	49,5			101,98	< 3,0	MRN 42	8920	43,8	35,3	14,00	6,1008		
27,55	50,8			98,76	< 3,0	MRN 52	8090	73,7	65,2	14,00	20,3546		
27,69	50,6			99,92	< 3,0	MRN 62	6000	123,3	114,8	14,00	34,0539		
31,5	31,5			30,59	45,8	110,00	1,3	MRN 12	4070	14,5	6,0	14,00	0,3789
		30,71	45,6	110,00	2,2	MRN 22	5180	17,9	9,4	14,00	1,4772		
		31,33	44,7	115,79	< 3,0	MRN 32	7920	22,3	13,8	14,00	1,8858		
		30	46,7	108,51	< 3,0	MRN 42	9290	43,8	35,3	14,00	6,2602		
		30,02	46,6	107,96	< 3,0	MRN 52	9610	73,7	65,2	14,00	20,1029		
		30,38	46,1	109,47	< 3,0	MRN 62	7160	123,3	114,8	14,00	33,2259		
33,0	33	42,4	118,92	1,3	MRN 12	4290	14,5	6,0	14,00	0,3685			
35,5	35,5	36,47	38,4	130,51	1,1	MRN 12	4700	14,5	6,0	14,00	0,3626		
		34,52	40,6	122,22	1,8	MRN 22	5420	17,9	9,4	14,00	1,4202		
		34,5	40,6	123,75	< 3,0	MRN 32	7320	22,3	13,8	14,00	1,7221		

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴			
0,55	35,5	37,39	37,4	135,67	< 3,0	MRN 42	10030	43,8	35,3	14,00	6,0256			
		36,31	38,6	130,00	< 3,0	MRN 52	13530	73,7	65,2	14,00	19,6654			
		37,35	37,5	134,30	< 3,0	MRN 62	16090	123,3	114,8	14,00	31,7360			
	40,0	40,0	39,72	35,2	140,43	1,7	MRN 22	5380	17,9	9,4	14,00	1,4329		
			36,34	38,5	128,50	1,9	MRN 23	5130	18,2	9,7	14,00	0,9994		
			40,87	34,3	144,38	2,9	MRN 32	8250	22,3	13,8	14,00	1,7600		
		45,0	45,0	35,86	39	128,33	< 3,0	MRN 33	6840	22,5	14,0	14,00	1,2294	
				38,12	36,7	137,50	< 3,0	MRN 42	10140	43,8	35,3	14,00	5,8382	
				34,07	41,1	121,67	< 3,0	MRN 43	9670	46,0	37,5	14,00	4,3102	
			50,0	50,0	40,79	34,3	146,28	8,5	MRN 52	14620	73,7	65,2	14,00	19,9025
					37,28	37,6	131,52	< 3,0	MRN 53	9220	78,3	69,8	14,00	13,8553
					39,49	35,5	142,78	< 3,0	MRN 62	18170	123,3	114,8	14,00	33,3872
56,0				56,0	38,2	36,7	134,40	< 3,0	MRN 63	7350	129,5	121,0	14,00	22,6869
					46,78	29,9	164,33	1,5	MRN 22	5550	17,9	9,4	14,00	1,4122
					44,73	31,3	157,98	1,7	MRN 23	5070	18,2	9,7	14,00	0,9900
	63,0			63,0	47,5	29,5	176,00	1,8	MRN 32	9440	22,3	13,8	14,00	1,6310
					44,2	31,7	159,21	< 3,0	MRN 33	5900	22,5	14,0	14,00	1,2052
					45,27	30,9	165,00	< 3,0	MRN 42	10720	43,8	35,3	14,00	5,8675
		71,0		71,0	42,59	32,9	151,67	< 3,0	MRN 43	10030	46,0	37,5	14,00	4,2058
					45,38	30,8	163,51	< 3,0	MRN 52	15630	73,7	65,2	14,00	19,2544
					47,28	29,6	167,95	< 3,0	MRN 53	8610	78,3	69,8	14,00	13,7108
			80,0	80,0	43,31	32,3	156,39	< 3,0	MRN 62	18380	123,3	114,8	14,00	32,6717
					51,19	27,3	179,67	1,4	MRN 22	5650	17,9	9,4	14,00	1,4027
					48,74	28,7	177,69	2,4	MRN 32	8530	22,3	13,8	14,00	1,6974
90,0				90,0	50,4	27,8	179,35	< 3,0	MRN 42	11110	43,8	35,3	14,00	5,7968
					49,33	28,4	178,75	< 3,0	MRN 52	15030	73,7	65,2	14,00	19,5092
					53,26	26,3	192,50	< 3,0	MRN 62	18970	123,3	114,8	14,00	31,3694
				56,0	48,44	28,9	171,56	< 3,0	MRN 63	7670	129,5	121,0	14,00	22,2684
					55,91	25	198,26	1,6	MRN 23	4970	18,2	9,7	14,00	0,9828
					53,75	26	192,50	2,2	MRN 32	8640	22,3	13,8	14,00	1,6689
				63,0	55,31	25,3	199,38	2,9	MRN 33	5500	22,5	14,0	14,00	1,1864
					56,67	24,7	202,63	< 3,0	MRN 42	11600	43,8	35,3	14,00	5,7318
					54,21	25,8	192,50	< 3,0	MRN 43	9830	46,0	37,5	14,00	4,1359
				71,0	57,27	24,4	200,52	< 3,0	MRN 53	8800	78,3	69,8	14,00	13,6244
					59,89	23,4	216,39	< 3,0	MRN 62	19310	123,3	114,8	14,00	30,7868
					58,68	23,9	207,78	< 3,0	MRN 63	7800	129,5	121,0	14,00	22,0179
				80,0	62,66	22,3	221,77	1,1	MRN 22	6040	17,9	9,4	14,00	1,3859
					67,1	20,9	240,63	1,7	MRN 32	9030	22,3	13,8	14,00	1,6180
					66,13	21,2	236,74	< 3,0	MRN 43	10110	46,0	37,5	14,00	4,0833
				90,0	61,67	22,7	223,44	< 3,0	MRN 52	15530	73,7	65,2	14,00	19,1667
					71,57	19,6	250,74	1,2	MRN 23	5100	18,2	9,7	14,00	0,9772
					70,88	19,8	245,38	2,4	MRN 33	5500	22,5	14,0	14,00	1,1714
				90,0	70,82	19,8	250,56	1,6	MRN 43	12640	46,0	37,5	14,00	4,0520
					70,6	19,8	246,79	< 3,0	MRN 53	9010	78,3	69,8	14,00	13,5519
					72,33	19,4	256,16	< 3,0	MRN 63	7800	129,5	121,0	14,00	21,8075
				90,0	80,62	17,4	285,78	0,9	MRN 33	10880	22,5	14,0	14,00	1,0679
					82,52	17	289,47	< 3,0	MRN 43	10510	46,0	37,5	14,00	3,7956
					79,72	17,6	279,71	< 3,0	MRN 63	25090	129,5	121,0	14,00	19,9592
				90,0	88,14	15,9	310,00	1,0	MRN 23	5200	18,2	9,7	14,00	0,9738
					94,22	14,9	332,29	1,7	MRN 33	5500	22,5	14,0	14,00	1,1594

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0,55	90,0	89,6	15,6	315,17	1,6	MRN 43	13650	46,0	37,5	14,00	4,0262
		89,26	15,7	314,03	> 3,0	MRN 53	8500	78,3	69,8	14,00	13,4907
		91,45	15,3	322,41	> 3,0	MRN 63	7800	129,5	121,0	14,00	21,6298
	100,0	103,34	13,5	366,67	0,9	MRN 33	10730	22,5	14,0	14,00	1,0614
		106,48	13,1	370,33	2,7	MRN 43	10930	46,0	37,5	14,00	3,7770
		95,68	14,6	335,79	> 3,0	MRN 53	17820	78,3	69,8	14,00	12,7382
	112,0	105,42	13,3	369,29	> 3,0	MRN 63	22430	129,5	121,0	14,00	19,8591
		111,82	12,5	396,51	0,8	MRN 23	5200	18,2	9,7	14,00	0,9710
		110,89	12,6	389,02	1,5	MRN 33	5500	22,5	14,0	14,00	1,1543
	125,0	117,24	11,9	410,21	> 3,0	MRN 53	7200	78,3	69,8	14,00	13,4396
		127,37	11	452,94	0,9	MRN 33	9700	22,5	14,0	14,00	1,0575
		121,33	11,5	423,82	> 3,0	MRN 53	17330	78,3	69,8	14,00	12,7114
	140,0	120,13	11,7	425,00	> 3,0	MRN 63	7800	129,5	121,0	14,00	21,4811
		144,64	9,68	506,35	1,1	MRN 33	5500	22,5	14,0	14,00	1,1483
		132,69	10,6	475,00	2,0	MRN 43	12260	46,0	37,5	14,00	4,0051
	160,0	137,77	10,2	495,00	> 3,0	MRN 53	7200	78,3	69,8	14,00	13,4179
		143,08	9,78	505,41	> 3,0	MRN 63	7800	129,5	121,0	14,00	21,4145
		160,69	8,71	564,86	1,3	MRN 43	14590	46,0	37,5	14,00	3,9942
	180,0	150,12	9,33	519,44	> 3,0	MRN 53	12400	78,3	69,8	14,00	13,4079
		156,94	8,92	550,00	> 3,0	MRN 63	7900	129,5	121,0	14,00	21,3834
		173,9	8,05	611,11	1,3	MRN 43	14570	46,0	37,5	14,00	3,9843
	180,0	181,54	7,71	623,33	2,2	MRN 53	18220	78,3	69,8	14,00	13,3896
	200,0	192,98	7,25	675,00	> 3,0	MRN 63	21200	129,5	121,0	14,00	21,3276
	224,0	217	6,45	771,93	1,0	MRN 43	15210	46,0	37,5	14,00	3,9773
		229,08	6,11	807,07	1,7	MRN 53	19100	78,3	69,8	14,00	12,6660
		217	6,45	744,12	> 3,0	MRN 63	26700	129,5	121,0	14,00	21,3029
	250,0	252,39	5,55	893,75	2,9	MRN 63	22500	129,5	121,0	14,00	19,6541
	315,0	300,91	4,65	1060,71	1,3	MRN 53	19100	78,3	69,8	14,00	12,6544
		331,53	4,22	1191,67	2,2	MRN 63	22500	129,5	121,0	14,00	19,6213
	355,0	353,6	3,96	1237,50	1,1	MRN 53	19100	78,3	69,8	14,00	12,6493
400,0	385,28	3,63	1350,00	1,0	MRN 53	19100	78,3	69,8	14,00	12,6469	
	394,87	3,55	1430,00	1,8	MRN 63	22500	129,5	121,0	14,00	19,6063	
450,0	465,93	3	1650,00	0,8	MRN 53	19100	78,3	69,8	14,00	12,6425	
	433,13	3,23	1521,28	1,7	MRN 63	22500	129,5	121,0	14,00	19,5991	
500,0	532,58	2,63	1881,58	1,4	MRN 63	22500	129,5	121,0	14,00	19,5861	
560,0	598,89	2,34	2102,94	1,2	MRN 63	22500	129,5	121,0	14,00	19,5803	
0,75	6,3	5,76	243	27,94	> 3,0	MRN 22	3200	19,2	9,4	17,00	2,5855
		5,59	250	27,52	> 3,0	MRN 32	4760	23,6	13,8	17,00	4,8684
		5,74	244	28,18	> 3,0	MRN 42	5030	45,1	35,3	17,00	13,0943
	7,1	5,64	248	27,68	> 3,0	MRN 52	7550	75,0	65,2	17,00	37,6347
		5,77	250	27,45	> 3,0	MRN 62	10060	124,6	114,8	17,00	84,0612
		6,59	212	32,33	> 3,0	MRN 12	3350	15,8	6,0	17,00	0,8414
	8,0	7,37	190	35,05	> 3,0	MRN 22	3450	19,2	9,4	17,00	2,1881
		7,17	195	35,05	> 3,0	MRN 32	5180	23,6	13,8	17,00	3,8232
		7,26	193	35,69	> 3,0	MRN 42	5190	45,1	35,3	17,00	10,7969
	8,0	7,46	188	36,63	> 3,0	MRN 52	8250	75,0	65,2	17,00	31,2885
		7,39	189	36,31	> 3,0	MRN 62	9540	124,6	114,8	17,00	68,0211
		7,95	176	39,00	> 3,0	MRN 12	3470	15,8	6,0	17,00	0,7600
	8,0	7,8	179	37,50	> 3,0	MRN 22	3530	19,2	9,4	17,00	2,2972
		7,9	177	39,08	> 3,0	MRN 32	5410	23,6	13,8	17,00	3,9288

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴	
0,75	8,0	7,59	185	37,23	< 3,0	MRN 42	5680	45,1	35,3	17,00	11,2674	
		7,66	183	37,67	< 3,0	MRN 52	8410	75,0	65,2	17,00	31,9539	
7,97		176	39,19	< 3,0	MRN 62	11380	124,6	114,8	17,00	68,6806		
9,0	9,0	8,32	168	40,38	< 3,0	MRN 12	3580	15,8	6,0	17,00	0,6786	
		9,07	154	43,90	< 3,0	MRN 22	3690	19,2	9,4	17,00	1,9599	
		8,84	158	43,37	< 3,0	MRN 32	5180	23,6	13,8	17,00	3,2176	
		9,08	154	44,50	< 3,0	MRN 42	5660	45,1	35,3	17,00	9,2579	
		9,46	148	46,46	< 3,0	MRN 52	8900	75,0	65,2	17,00	27,6749	
		9,38	149	46,08	< 3,0	MRN 62	9030	124,6	114,8	17,00	56,8499	
		10,11	138	48,91	< 3,0	MRN 12	3490	15,8	6,0	17,00	0,5849	
10,0	10,0	9,98	140	47,92	< 3,0	MRN 22	3850	19,2	9,4	17,00	2,0120	
		10,13	138	50,00	< 3,0	MRN 32	5890	23,6	13,8	17,00	3,2515	
		9,6	146	47,05	< 3,0	MRN 42	6200	45,1	35,3	17,00	9,6555	
		10,13	138	49,86	< 3,0	MRN 52	9280	75,0	65,2	17,00	28,0395	
		10,54	133	51,72	< 3,0	MRN 62	12550	124,6	114,8	17,00	58,6662	
		11,33	124	54,17	< 3,0	MRN 22	3890	19,2	9,4	17,00	1,7848	
		11,06	127	54,45	< 3,0	MRN 32	4550	23,6	13,8	17,00	2,7466	
11,2	11,2	11,55	121	56,88	< 3,0	MRN 42	6170	45,1	35,3	17,00	8,0995	
		11,45	122	56,16	< 3,0	MRN 52	8400	75,0	65,2	17,00	25,5151	
		11,36	123	55,76	< 3,0	MRN 62	5620	124,6	114,8	17,00	50,1639	
		12,19	115	60,94	< 3,0	MRN 12	3470	15,8	6,0	17,00	0,5416	
		12,29	114	59,48	< 3,0	MRN 22	4140	19,2	9,4	17,00	1,8436	
		12,49	112	61,96	< 3,0	MRN 32	6330	23,6	13,8	17,00	2,8412	
		12	117	58,99	< 3,0	MRN 42	6720	45,1	35,3	17,00	8,5274	
12,5	12,5	12,85	109	63,13	< 3,0	MRN 52	10080	75,0	65,2	17,00	25,6545	
		13,17	106	65,13	2,5	MRN 12	3450	15,8	6,0	17,00	0,4982	
		14,51	96,5	70,31	< 3,0	MRN 22	3720	19,2	9,4	17,00	1,6479	
		14,18	98,8	69,83	< 3,0	MRN 32	4700	23,6	13,8	17,00	2,3720	
		14,09	99,3	69,00	< 3,0	MRN 42	6810	45,1	35,3	17,00	7,4107	
		14,12	99,2	69,40	< 3,0	MRN 52	8470	75,0	65,2	17,00	23,7029	
		14	100	68,70	< 3,0	MRN 62	5450	124,6	114,8	17,00	44,5468	
14,0	14,0	15,87	88,2	80,77	1,7	MRN 12	3450	15,8	6,0	17,00	0,4722	
		15,36	91,2	75,00	< 3,0	MRN 22	4480	19,2	9,4	17,00	1,7103	
		15,63	89,6	76,97	< 3,0	MRN 32	6830	23,6	13,8	17,00	2,5063	
		15,27	91,7	75,00	< 3,0	MRN 42	7330	45,1	35,3	17,00	7,6485	
		15,56	90	76,29	< 3,0	MRN 52	10780	75,0	65,2	17,00	24,1384	
		16,19	86,4	79,60	< 3,0	MRN 62	11630	124,6	114,8	17,00	46,1997	
		16,65	84,1	82,50	2,0	MRN 12	3560	15,8	6,0	17,00	0,4462	
16,0	16,0	17,87	78,4	86,11	< 3,0	MRN 22	3590	19,2	9,4	17,00	1,5647	
		18,84	74,3	91,67	< 3,0	MRN 32	4860	23,6	13,8	17,00	2,0717	
		17,59	79,6	86,11	< 3,0	MRN 42	7410	45,1	35,3	17,00	6,8426	
		17,85	78,4	87,95	< 3,0	MRN 52	8680	75,0	65,2	17,00	22,1741	
		17,7	79,1	86,96	< 3,0	MRN 62	3100	124,6	114,8	17,00	39,8027	
		20,29	69	98,08	1,7	MRN 12	3710	15,8	6,0	17,00	0,4149	
		19,66	71,2	95,83	2,4	MRN 22	4810	19,2	9,4	17,00	1,6024	
18,0	18,0	20,03	69,9	97,50	< 3,0	MRN 32	7400	23,6	13,8	17,00	2,2256	
		19,19	73	93,95	< 3,0	MRN 52	11580	75,0	65,2	17,00	22,7969	
		19,96	70,1	97,84	< 3,0	MRN 62	15790	124,6	114,8	17,00	41,9382	
		22,4	25,37	55,2	127,50	1,3	MRN 12	3850	15,8	6,0	17,00	0,3892
		22,67	61,8	110,71	2,8	MRN 22	3800	19,2	9,4	17,00	1,4958	

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴	
0,75	22,4	22,18	63,1	108,55	< 3,0	MRN 32	5000	23,6	13,8	17,00	1,9456	
		22,69	61,7	111,90	< 3,0	MRN 42	8160	45,1	35,3	17,00	6,4129	
23,45		59,7	115,65	< 3,0	MRN 52	8020	75,0	65,2	17,00	20,8963		
25,0	25,0	23,25	60,2	114,44	< 3,0	MRN 62	8000	124,6	114,8	17,00	35,8331	
		24,21	57,8	120,00	2,0	MRN 22	4970	19,2	9,4	17,00	1,5348	
		26,62	52,6	130,43	< 3,0	MRN 32	7750	23,6	13,8	17,00	1,9888	
		24,26	57,7	118,42	< 3,0	MRN 52	12560	75,0	65,2	17,00	21,6073	
		25,24	55,5	123,63	< 3,0	MRN 62	16780	124,6	114,8	17,00	38,1707	
28,0	28,0	29,32	47,8	141,96	1,9	MRN 22	4770	19,2	9,4	17,00	1,4440	
		28,93	48,4	139,66	< 3,0	MRN 32	5550	23,6	13,8	17,00	1,7952	
		28,28	49,5	139,06	< 3,0	MRN 42	8920	45,1	35,3	17,00	6,1008	
		27,55	50,8	134,68	< 3,0	MRN 52	8090	75,0	65,2	17,00	20,3546	
		27,69	50,6	136,25	< 3,0	MRN 62	6000	124,6	114,8	17,00	34,0539	
31,5	31,5	30,59	45,8	150,00	0,9	MRN 12	4070	15,8	6,0	17,00	0,3789	
		30,71	45,6	150,00	1,6	MRN 22	5180	19,2	9,4	17,00	1,4772	
		31,33	44,7	157,89	2,5	MRN 32	7920	23,6	13,8	17,00	1,8858	
		30	46,7	147,97	< 3,0	MRN 42	9290	45,1	35,3	17,00	6,2602	
		30,02	46,6	147,22	< 3,0	MRN 52	9610	75,0	65,2	17,00	20,1029	
33,0	33,0	30,38	46,1	149,28	< 3,0	MRN 62	7160	124,6	114,8	17,00	33,2259	
		33	42,4	162,16	1,0	MRN 12	4290	15,8	6,0	17,00	0,3685	
		35,5	36,47	38,4	177,97	0,8	MRN 12	4700	15,8	6,0	17,00	0,3626
		34,52	40,6	166,67	1,3	MRN 22	5420	19,2	9,4	17,00	1,4202	
		34,5	40,6	168,75	2,7	MRN 32	7320	23,6	13,8	17,00	1,7221	
35,5	35,5	37,39	37,4	185,00	< 3,0	MRN 42	10030	45,1	35,3	17,00	6,0256	
		36,31	38,6	177,27	< 3,0	MRN 52	13530	75,0	65,2	17,00	19,6654	
		37,35	37,5	183,13	< 3,0	MRN 62	16090	124,6	114,8	17,00	31,7360	
		40,0	39,72	35,2	191,49	1,3	MRN 22	5380	19,2	9,4	17,00	1,4329
		36,34	38,5	175,23	1,4	MRN 23	5130	19,5	9,7	17,00	0,9994	
40,0	40,0	40,87	34,3	196,88	2,1	MRN 32	8250	23,6	13,8	17,00	1,7600	
		35,86	39	175,00	2,8	MRN 33	6840	23,8	14,0	17,00	1,2294	
		38,12	36,7	187,50	< 3,0	MRN 42	10140	45,1	35,3	17,00	5,8382	
		34,07	41,1	165,91	< 3,0	MRN 43	9670	47,3	37,5	17,00	4,3102	
		40,79	34,3	199,47	< 3,0	MRN 52	14620	75,0	65,2	17,00	19,9025	
45,0	45,0	37,28	37,6	179,35	< 3,0	MRN 53	9220	79,6	69,8	17,00	13,8553	
		39,49	35,5	194,70	< 3,0	MRN 62	18170	124,6	114,8	17,00	33,3872	
		38,2	36,7	183,27	< 3,0	MRN 63	7350	130,8	121,0	17,00	22,6869	
		46,78	29,9	224,09	1,1	MRN 22	5550	19,2	9,4	17,00	1,4122	
		44,73	31,3	215,43	1,3	MRN 23	5070	19,5	9,7	17,00	0,9900	
50,0	50,0	47,5	29,5	240,00	1,3	MRN 32	9440	23,6	13,8	17,00	1,6310	
		44,2	31,7	217,11	2,5	MRN 33	5900	23,8	14,0	17,00	1,2052	
		45,27	30,9	225,00	< 3,0	MRN 42	10720	45,1	35,3	17,00	5,8675	
		42,59	32,9	206,82	< 3,0	MRN 43	10030	47,3	37,5	17,00	4,2058	
		45,38	30,8	222,97	< 3,0	MRN 52	15630	75,0	65,2	17,00	19,2544	
		47,28	29,6	229,02	< 3,0	MRN 53	8610	79,6	69,8	17,00	13,7108	
		43,31	32,3	213,25	< 3,0	MRN 62	18380	124,6	114,8	17,00	32,6717	
		51,19	27,3	245,00	1,0	MRN 22	5650	19,2	9,4	17,00	1,4027	
		48,74	28,7	242,31	1,7	MRN 32	8530	23,6	13,8	17,00	1,6974	
		50,4	27,8	244,57	< 3,0	MRN 42	11110	45,1	35,3	17,00	5,7968	
50,0	50,0	49,33	28,4	243,75	< 3,0	MRN 52	15030	75,0	65,2	17,00	19,5092	
		53,26	26,3	262,50	< 3,0	MRN 62	18970	124,6	114,8	17,00	31,3694	

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0,75	50,0	48,44	28,9	233,94	> 3,0	MRN 63	7670	130,8	121,0	17,00	22,2684
		56,0	55,91	25	270,35	1,1	MRN 23	4970	19,5	9,7	17,00
	63,0	53,75	26	262,50	1,6	MRN 32	8640	23,6	13,8	17,00	1,6689
		55,31	25,3	271,88	2,1	MRN 33	5500	23,8	14,0	17,00	1,1864
		56,67	24,7	276,32	2,5	MRN 42	11600	45,1	35,3	17,00	5,7318
		54,21	25,8	262,50	> 3,0	MRN 43	9830	47,3	37,5	17,00	4,1359
		57,27	24,4	273,44	> 3,0	MRN 53	8800	79,6	69,8	17,00	13,6244
		59,89	23,4	295,08	> 3,0	MRN 62	19310	124,6	114,8	17,00	30,7868
		58,68	23,9	283,33	> 3,0	MRN 63	7800	130,8	121,0	17,00	22,0179
		62,66	22,3	302,42	0,8	MRN 22	6040	19,2	9,4	17,00	1,3859
67,1	20,9	328,13	1,3	MRN 32	9030	23,6	13,8	17,00	1,6180		
66,13	21,2	322,83	> 3,0	MRN 43	10110	47,3	37,5	17,00	4,0833		
71,0	61,67	22,7	304,69	> 3,0	MRN 52	15530	75,0	65,2	17,00	19,1667	
	71,57	19,6	341,91	0,9	MRN 23	5100	19,5	9,7	17,00	0,9772	
	70,88	19,8	334,62	1,7	MRN 33	5500	23,8	14,0	17,00	1,1714	
	70,82	19,8	341,67	1,2	MRN 43	12640	47,3	37,5	17,00	4,0520	
	70,6	19,8	336,54	> 3,0	MRN 53	9010	79,6	69,8	17,00	13,5519	
	72,33	19,4	349,32	> 3,0	MRN 63	7800	130,8	121,0	17,00	21,8075	
80,0	82,52	17	394,74	2,5	MRN 43	10510	47,3	37,5	17,00	3,7956	
	79,72	17,6	381,43	> 3,0	MRN 63	25090	130,8	121,0	17,00	19,9592	
	88,14	15,9	422,73	0,7	MRN 23	5200	19,5	9,7	17,00	0,9738	
	90,0	14,9	453,13	1,3	MRN 33	5500	23,8	14,0	17,00	1,1594	
90,0	89,6	15,6	429,78	1,2	MRN 43	13650	47,3	37,5	17,00	4,0262	
	89,26	15,7	428,23	> 3,0	MRN 53	8500	79,6	69,8	17,00	13,4907	
	91,45	15,3	439,66	> 3,0	MRN 63	7800	130,8	121,0	17,00	21,6298	
	100,0	106,48	13,1	505,00	2,0	MRN 43	10930	47,3	37,5	17,00	3,7770
	95,68	14,6	457,89	2,5	MRN 53	17820	79,6	69,8	17,00	12,7382	
	105,42	13,3	503,57	> 3,0	MRN 63	22430	130,8	121,0	17,00	19,8591	
112,0	110,89	12,6	530,49	1,1	MRN 33	5500	23,8	14,0	17,00	1,1543	
	117,24	11,9	559,38	> 3,0	MRN 53	7200	79,6	69,8	17,00	13,4396	
125,0	121,33	11,5	577,94	2,3	MRN 53	17330	79,6	69,8	17,00	12,7114	
125,0	120,13	11,7	579,55	> 3,0	MRN 63	7800	130,8	121,0	17,00	21,4811	
	140,0	144,64	9,68	690,48	0,8	MRN 33	5500	23,8	14,0	17,00	1,1483
140,0	132,69	10,6	647,73	1,5	MRN 43	12260	47,3	37,5	17,00	4,0051	
	137,77	10,2	675,00	2,7	MRN 53	7200	79,6	69,8	17,00	13,4179	
	143,08	9,78	689,19	> 3,0	MRN 63	7800	130,8	121,0	17,00	21,4145	
	160,0	160,69	8,71	770,27	1,0	MRN 43	14590	47,3	37,5	17,00	3,9942
	150,12	9,33	708,33	2,4	MRN 53	12400	79,6	69,8	17,00	13,4079	
	156,94	8,92	750,00	> 3,0	MRN 63	7900	130,8	121,0	17,00	21,3834	
180,0	173,9	8,05	833,33	1,0	MRN 43	14570	47,3	37,5	17,00	3,9843	
	181,54	7,71	850,00	1,6	MRN 53	18220	79,6	69,8	17,00	13,3896	
200,0	192,98	7,25	920,45	2,9	MRN 63	21200	130,8	121,0	17,00	21,3276	
224,0	217	6,45	1052,63	0,8	MRN 43	15210	47,3	37,5	17,00	3,9773	
	229,08	6,11	1100,54	1,2	MRN 53	19100	79,6	69,8	17,00	12,6660	
	217	6,45	1014,71	2,3	MRN 63	26700	130,8	121,0	17,00	21,3029	
	250,0	252,39	5,55	1218,75	2,1	MRN 63	22500	130,8	121,0	17,00	19,6541
315,0	300,91	4,65	1446,43	0,9	MRN 53	19100	79,6	69,8	17,00	12,6544	
	331,53	4,22	1625,00	1,6	MRN 63	22500	130,8	121,0	17,00	19,6213	
355,0	353,6	3,96	1687,50	0,8	MRN 53	19100	79,6	69,8	17,00	12,6493	
400,0	385,28	3,63	1840,91	0,7	MRN 53	19100	79,6	69,8	17,00	12,6469	

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0,75	400,0	394,87	3,55	1950,00	1,3	MRN 63	22500	130,8	121,0	17,00	19,6063
	450,0	433,13	3,23	2074,47	1,3	MRN 63	22500	130,8	121,0	17,00	19,5991
	500,0	532,58	2,63	2565,79	1,0	MRN 63	22500	130,8	121,0	17,00	19,5861
	560,0	598,89	2,34	2867,65	0,9	MRN 63	22500	130,8	121,0	17,00	19,5803
1,1	6,3	5,76	243	40,98	> 3,0	MRN 22	3200	21,4	9,4	33,00	2,5855
		5,59	250	40,37	> 3,0	MRN 32	4760	25,8	13,8	33,00	4,8684
		5,74	244	41,33	> 3,0	MRN 42	5030	47,3	35,3	33,00	13,0943
		5,64	248	40,60	> 3,0	MRN 52	7550	77,2	65,2	33,00	37,6347
		5,77	250	40,27	> 3,0	MRN 62	10060	126,8	114,8	33,00	84,0612
	7,1	6,59	212	47,41	2,6	MRN 12	3350	18,0	6,0	33,00	0,8414
		7,37	190	51,41	> 3,0	MRN 22	3450	21,4	9,4	33,00	2,1881
		7,17	195	51,41	> 3,0	MRN 32	5180	25,8	13,8	33,00	3,8232
		7,26	193	52,35	> 3,0	MRN 42	5190	47,3	35,3	33,00	10,7969
		7,46	188	53,72	> 3,0	MRN 52	8250	77,2	65,2	33,00	31,2885
		7,39	189	53,26	> 3,0	MRN 62	9540	126,8	114,8	33,00	68,0211
		7,95	176	57,20	2,3	MRN 12	3470	18,0	6,0	33,00	0,7600
	8,0	7,8	179	55,00	> 3,0	MRN 22	3530	21,4	9,4	33,00	2,2972
		7,9	177	57,32	> 3,0	MRN 32	5410	25,8	13,8	33,00	3,9288
		7,59	185	54,60	> 3,0	MRN 42	5680	47,3	35,3	33,00	11,2674
		7,66	183	55,24	> 3,0	MRN 52	8410	77,2	65,2	33,00	31,9539
		7,97	176	57,48	> 3,0	MRN 62	11380	126,8	114,8	33,00	68,6806
		8,32	168	59,23	2,4	MRN 12	3580	18,0	6,0	33,00	0,6786
		9,07	154	64,39	> 3,0	MRN 22	3690	21,4	9,4	33,00	1,9599
	9,0	8,84	158	63,61	> 3,0	MRN 32	5180	25,8	13,8	33,00	3,2176
		9,08	154	65,27	> 3,0	MRN 42	5660	47,3	35,3	33,00	9,2579
		9,46	148	68,14	> 3,0	MRN 52	8900	77,2	65,2	33,00	27,6749
		9,38	149	67,58	> 3,0	MRN 62	9030	126,8	114,8	33,00	56,8499
		10,11	138	71,74	2,1	MRN 12	3490	18,0	6,0	33,00	0,5849
		9,98	140	70,28	> 3,0	MRN 22	3850	21,4	9,4	33,00	2,0120
		10,13	138	73,33	> 3,0	MRN 32	5890	25,8	13,8	33,00	3,2515
	10,0	9,6	146	69,00	> 3,0	MRN 42	6200	47,3	35,3	33,00	9,6555
		10,13	138	73,12	> 3,0	MRN 52	9280	77,2	65,2	33,00	28,0395
		10,54	133	75,86	> 3,0	MRN 62	12550	126,8	114,8	33,00	58,6662
		11,33	124	79,44	> 3,0	MRN 22	3890	21,4	9,4	33,00	1,7848
		11,06	127	79,86	> 3,0	MRN 32	4550	25,8	13,8	33,00	2,7466
		11,55	121	83,42	> 3,0	MRN 42	6170	47,3	35,3	33,00	8,0995
		11,45	122	82,37	> 3,0	MRN 52	8400	77,2	65,2	33,00	25,5151
	11,2	11,36	123	81,77	> 3,0	MRN 62	5620	126,8	114,8	33,00	50,1639
		12,19	115	89,38	1,5	MRN 12	3470	18,0	6,0	33,00	0,5416
		12,29	114	87,24	2,6	MRN 22	4140	21,4	9,4	33,00	1,8436
12,49		112	90,87	> 3,0	MRN 32	6330	25,8	13,8	33,00	2,8412	
12		117	86,52	> 3,0	MRN 42	6720	47,3	35,3	33,00	8,5274	
12,85		109	92,59	> 3,0	MRN 52	10080	77,2	65,2	33,00	25,6545	
14,0		106	95,53	1,7	MRN 12	3450	18,0	6,0	33,00	0,4982	
12,5	14,51	96,5	103,13	2,9	MRN 22	3720	21,4	9,4	33,00	1,6479	
	14,18	98,8	102,41	> 3,0	MRN 32	4700	25,8	13,8	33,00	2,3720	
	14,09	99,3	101,20	> 3,0	MRN 42	6810	47,3	35,3	33,00	7,4107	
	14,12	99,2	101,78	> 3,0	MRN 52	8470	77,2	65,2	33,00	23,7029	
	14	100	100,75	> 3,0	MRN 62	5450	126,8	114,8	33,00	44,5468	
	16,0	88,2	118,46	1,2	MRN 12	3450	18,0	6,0	33,00	0,4722	

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
1,1	16,0	15,36	91,2	110,00	2,1	MRN 22	4480	21,4	9,4	33,00	1,7103
		15,63	89,6	112,89	> 3.0	MRN 32	6830	25,8	13,8	33,00	2,5063
		15,27	91,7	110,00	> 3.0	MRN 42	7330	47,3	35,3	33,00	7,6485
18,0	18,0	15,56	90	111,90	> 3.0	MRN 52	10780	77,2	65,2	33,00	24,1384
		16,19	86,4	116,75	> 3.0	MRN 62	11630	126,8	114,8	33,00	46,1997
		16,65	84,1	121,00	1,4	MRN 12	3560	18,0	6,0	33,00	0,4462
		17,87	78,4	126,30	2,5	MRN 22	3590	21,4	9,4	33,00	1,5647
		18,84	74,3	134,44	> 3.0	MRN 32	4860	25,8	13,8	33,00	2,0717
		17,59	79,6	126,30	> 3.0	MRN 42	7410	47,3	35,3	33,00	6,8426
		17,85	78,4	128,99	> 3.0	MRN 52	8680	77,2	65,2	33,00	22,1741
		17,7	79,1	127,54	> 3.0	MRN 62	3100	126,8	114,8	33,00	39,8027
		20,29	69	143,85	1,2	MRN 12	3710	18,0	6,0	33,00	0,4149
		19,66	71,2	140,56	1,6	MRN 22	4810	21,4	9,4	33,00	1,6024
22,4	22,4	20,03	69,9	143,00	2,7	MRN 32	7400	25,8	13,8	33,00	2,2256
		19,19	73	137,79	> 3.0	MRN 52	11580	77,2	65,2	33,00	22,7969
		19,96	70,1	143,51	> 3.0	MRN 62	15790	126,8	114,8	33,00	41,9382
		22,67	61,8	162,38	1,9	MRN 22	3800	21,4	9,4	33,00	1,4958
		22,18	63,1	159,21	> 3.0	MRN 32	5000	25,8	13,8	33,00	1,9456
		22,69	61,7	164,13	> 3.0	MRN 42	8160	47,3	35,3	33,00	6,4129
		23,45	59,7	169,63	> 3.0	MRN 52	8020	77,2	65,2	33,00	20,8963
		23,25	60,2	167,84	> 3.0	MRN 62	8000	126,8	114,8	33,00	35,8331
		24,21	57,8	176,00	1,4	MRN 22	4970	21,4	9,4	33,00	1,5348
		26,62	52,6	191,30	2,1	MRN 32	7750	25,8	13,8	33,00	1,9888
25,0	25,0	24,26	57,7	173,68	> 3.0	MRN 52	12560	77,2	65,2	33,00	21,6073
		25,24	55,5	181,32	> 3.0	MRN 62	16780	126,8	114,8	33,00	38,1707
		29,32	47,8	208,21	1,3	MRN 22	4770	21,4	9,4	33,00	1,4440
		28,93	48,4	204,83	2,6	MRN 32	5550	25,8	13,8	33,00	1,7952
		28,28	49,5	203,96	> 3.0	MRN 42	8920	47,3	35,3	33,00	6,1008
		27,55	50,8	197,53	> 3.0	MRN 52	8090	77,2	65,2	33,00	20,3546
		27,69	50,6	199,83	> 3.0	MRN 62	6000	126,8	114,8	33,00	34,0539
		30,71	45,6	220,00	1,1	MRN 22	5180	21,4	9,4	33,00	1,4772
		31,33	44,7	231,58	1,7	MRN 32	7920	25,8	13,8	33,00	1,8858
		30	46,7	217,03	> 3.0	MRN 42	9290	47,3	35,3	33,00	6,2602
31,5	31,5	30,02	46,6	215,93	> 3.0	MRN 52	9610	77,2	65,2	33,00	20,1029
		30,38	46,1	218,94	> 3.0	MRN 62	7160	126,8	114,8	33,00	33,2259
		34,5	40,6	247,50	1,8	MRN 32	7320	25,8	13,8	33,00	1,7221
		37,39	37,4	271,33	2,7	MRN 42	10030	47,3	35,3	33,00	6,0256
		36,31	38,6	260,00	> 3.0	MRN 52	13530	77,2	65,2	33,00	19,6654
		37,35	37,5	268,59	> 3.0	MRN 62	16090	126,8	114,8	33,00	31,7360
		40,87	34,3	288,75	1,5	MRN 32	8250	25,8	13,8	33,00	1,7600
		35,86	39	256,67	1,9	MRN 33	6840	26,0	14,0	33,00	1,2294
		38,12	36,7	275,00	2,4	MRN 42	10140	47,3	35,3	33,00	5,8382
		34,07	41,1	243,33	3,0	MRN 43	9670	49,5	37,5	33,00	4,3102
40,0	40,0	40,79	34,3	292,55	> 3.0	MRN 52	14620	77,2	65,2	33,00	19,9025
		37,28	37,6	263,04	> 3.0	MRN 53	9220	81,8	69,8	33,00	13,8553
		39,49	35,5	285,56	> 3.0	MRN 62	18170	126,8	114,8	33,00	33,3872
		38,2	36,7	268,80	> 3.0	MRN 63	7350	133,0	121,0	33,00	22,6869
		47,5	29,5	352,00	0,9	MRN 32	9440	25,8	13,8	33,00	1,6310
		44,2	31,7	318,42	1,7	MRN 33	5900	26,0	14,0	33,00	1,2052
		45,27	30,9	330,00	2,3	MRN 42	10720	47,3	35,3	33,00	5,8675

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴	
1,1	45,0	42,59	32,9	303,33	3,0	MRN 43	10030	49,5	37,5	33,00	4,2058	
		45,38	30,8	327,03	> 3,0	MRN 52	15630	77,2	65,2	33,00	19,2544	
		47,28	29,6	335,89	> 3,0	MRN 53	8610	81,8	69,8	33,00	13,7108	
		43,31	32,3	312,77	> 3,0	MRN 62	18380	126,8	114,8	33,00	32,6717	
	50,0	48,74	28,7	355,38	1,2	MRN 32	8530	25,8	13,8	33,00	1,6974	
		50,4	27,8	358,70	2,1	MRN 42	11110	47,3	35,3	33,00	5,7968	
		49,33	28,4	357,50	> 3,0	MRN 52	15030	77,2	65,2	33,00	19,5092	
		53,26	26,3	385,00	> 3,0	MRN 62	18970	126,8	114,8	33,00	31,3694	
		48,44	28,9	343,12	> 3,0	MRN 63	7670	133,0	121,0	33,00	22,2684	
		56,0	53,75	26	385,00	1,1	MRN 32	8640	25,8	13,8	33,00	1,6689
			55,31	25,3	398,75	1,5	MRN 33	5500	26,0	14,0	33,00	1,1864
	56,67		24,7	405,26	1,7	MRN 42	11600	47,3	35,3	33,00	5,7318	
	54,21		25,8	385,00	2,5	MRN 43	9830	49,5	37,5	33,00	4,1359	
	57,27		24,4	401,04	> 3,0	MRN 53	8800	81,8	69,8	33,00	13,6244	
	59,89		23,4	432,79	> 3,0	MRN 62	19310	126,8	114,8	33,00	30,7868	
	58,68		23,9	415,56	> 3,0	MRN 63	7800	133,0	121,0	33,00	22,0179	
	63,0		66,13	21,2	473,48	2,1	MRN 43	10110	49,5	37,5	33,00	4,0833
		61,67	22,7	446,88	2,9	MRN 52	15530	77,2	65,2	33,00	19,1667	
		71,0	70,88	19,8	490,77	1,2	MRN 33	5500	26,0	14,0	33,00	1,1714
	70,6		19,8	493,59	> 3,0	MRN 53	9010	81,8	69,8	33,00	13,5519	
	72,33		19,4	512,33	> 3,0	MRN 63	7800	133,0	121,0	33,00	21,8075	
	80,0	82,52	17	578,95	1,7	MRN 43	10510	49,5	37,5	33,00	3,7956	
		79,72	17,6	559,43	> 3,0	MRN 63	25090	133,0	121,0	33,00	19,9592	
	90,0	89,26	15,7	628,06	2,8	MRN 53	8500	81,8	69,8	33,00	13,4907	
		91,45	15,3	644,83	> 3,0	MRN 63	7800	133,0	121,0	33,00	21,6298	
	100,0	106,48	13,1	740,67	1,4	MRN 43	10930	49,5	37,5	33,00	3,7770	
		95,68	14,6	671,58	1,7	MRN 53	17820	81,8	69,8	33,00	12,7382	
		105,42	13,3	738,57	> 3,0	MRN 63	22430	133,0	121,0	33,00	19,8591	
	112,0	117,24	11,9	820,42	2,2	MRN 53	7200	81,8	69,8	33,00	13,4396	
		125,0	121,33	11,5	847,65	1,5	MRN 53	17330	81,8	69,8	33,00	12,7114
	120,13		11,7	850,00	> 3,0	MRN 63	7800	133,0	121,0	33,00	21,4811	
	140,0		132,69	10,6	950,00	1,0	MRN 43	12260	49,5	37,5	33,00	4,0051
		137,77	10,2	990,00	1,8	MRN 53	7200	81,8	69,8	33,00	13,4179	
		143,08	9,78	1010,81	> 3,0	MRN 63	7800	133,0	121,0	33,00	21,4145	
	160,0	150,12	9,33	1038,89	1,6	MRN 53	12400	81,8	69,8	33,00	13,4079	
		156,94	8,92	1100,00	3,0	MRN 63	7900	133,0	121,0	33,00	21,3834	
	180,0	181,54	7,71	1246,67	1,1	MRN 53	18220	81,8	69,8	33,00	13,3896	
	200,0	192,98	7,25	1350,00	2,0	MRN 63	21200	133,0	121,0	33,00	21,3276	
	224,0	229,08	6,11	1614,13	0,8	MRN 53	19100	81,8	69,8	33,00	12,6660	
		217	6,45	1488,24	1,5	MRN 63	26700	133,0	121,0	33,00	21,3029	
		252,39	5,55	1787,50	1,5	MRN 63	22500	133,0	121,0	33,00	19,6541	
	315,0	331,53	4,22	2383,33	1,1	MRN 63	22500	133,0	121,0	33,00	19,6213	
	400,0	394,87	3,55	2860,00	0,9	MRN 63	22500	133,0	121,0	33,00	19,6063	
	450,0	433,13	3,23	3042,55	0,9	MRN 63	22500	133,0	121,0	33,00	19,5991	
1,5	6,3	5,76	243	55,88	> 3,0	MRN 22	3200	22,9	9,4	40,00	2,5855	
		5,59	250	55,05	> 3,0	MRN 32	4760	27,3	13,8	40,00	4,8684	
		5,74	244	56,35	> 3,0	MRN 42	5030	48,8	35,3	40,00	13,0943	
		5,64	248	55,37	> 3,0	MRN 52	7550	78,7	65,2	40,00	37,6347	
		5,77	250	54,91	> 3,0	MRN 62	10060	128,3	114,8	40,00	84,0612	
	7,1	6,59	212	64,66	1,9	MRN 12	3350	19,5	6,0	40,00	0,8414	

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
1,5	7,1	7,37	190	70,11	>3,0	MRN 22	3450	22,9	9,4	40,00	2,1881
		7,17	195	70,11	> 3.0	MRN 32	5180	27,3	13,8	40,00	3,8232
		7,26	193	71,39	> 3.0	MRN 42	5190	48,8	35,3	40,00	10,7969
		7,46	188	73,26	> 3.0	MRN 52	8250	78,7	65,2	40,00	31,2885
		7,39	189	72,63	> 3.0	MRN 62	9540	128,3	114,8	40,00	68,0211
	8,0	7,95	176	78,00	1,7	MRN 12	3470	19,5	6,0	40,00	0,7600
		7,8	179	75,00	2,9	MRN 22	3530	22,9	9,4	40,00	2,2972
		7,9	177	78,17	> 3.0	MRN 32	5410	27,3	13,8	40,00	3,9288
		7,59	185	74,46	> 3.0	MRN 42	5680	48,8	35,3	40,00	11,2674
		7,66	183	75,33	> 3.0	MRN 52	8410	78,7	65,2	40,00	31,9539
	9,0	7,97	176	78,38	> 3.0	MRN 62	11380	128,3	114,8	40,00	68,6806
		8,32	168	80,77	1,7	MRN 12	3580	19,5	6,0	40,00	0,6786
		9,07	154	87,80	2,7	MRN 22	3690	22,9	9,4	40,00	1,9599
		8,84	158	86,75	> 3.0	MRN 32	5180	27,3	13,8	40,00	3,2176
		9,08	154	89,00	> 3.0	MRN 42	5660	48,8	35,3	40,00	9,2579
	10,0	9,46	148	92,92	> 3.0	MRN 52	8900	78,7	65,2	40,00	27,6749
		9,38	149	92,16	> 3.0	MRN 62	9030	128,3	114,8	40,00	56,8499
		10,11	138	97,83	1,5	MRN 12	3490	19,5	6,0	40,00	0,5849
		9,98	140	95,83	2,4	MRN 22	3850	22,9	9,4	40,00	2,0120
		10,13	138	100,00	> 3.0	MRN 32	5890	27,3	13,8	40,00	3,2515
11,2	9,6	146	94,09	> 3.0	MRN 42	6200	48,8	35,3	40,00	9,6555	
	10,13	138	99,71	> 3.0	MRN 52	9280	78,7	65,2	40,00	28,0395	
	10,54	133	103,45	> 3.0	MRN 62	12550	128,3	114,8	40,00	58,6662	
	11,33	124	108,33	2,4	MRN 22	3890	22,9	9,4	40,00	1,7848	
	11,06	127	108,90	> 3.0	MRN 32	4550	27,3	13,8	40,00	2,7466	
12,5	11,55	121	113,75	> 3.0	MRN 42	6170	48,8	35,3	40,00	8,0995	
	11,45	122	112,32	> 3.0	MRN 52	8400	78,7	65,2	40,00	25,5151	
	11,36	123	111,51	> 3.0	MRN 62	5620	128,3	114,8	40,00	50,1639	
	12,19	115	121,88	1,1	MRN 12	3470	19,5	6,0	40,00	0,5416	
	12,29	114	118,97	1,9	MRN 22	4140	22,9	9,4	40,00	1,8436	
14,0	12,49	112	123,91	> 3.0	MRN 32	6330	27,3	13,8	40,00	2,8412	
	12	117	117,98	> 3.0	MRN 42	6720	48,8	35,3	40,00	8,5274	
	12,85	109	126,26	> 3.0	MRN 52	10080	78,7	65,2	40,00	25,6545	
	13,17	106	130,26	1,3	MRN 12	3450	19,5	6,0	40,00	0,4982	
	14,51	96,5	140,63	2,1	MRN 22	3720	22,9	9,4	40,00	1,6479	
16,0	14,18	98,8	139,66	> 3.0	MRN 32	4700	27,3	13,8	40,00	2,3720	
	14,09	99,3	138,00	> 3.0	MRN 42	6810	48,8	35,3	40,00	7,4107	
	14,12	99,2	138,79	> 3.0	MRN 52	8470	78,7	65,2	40,00	23,7029	
	14	100	137,39	> 3.0	MRN 62	5450	128,3	114,8	40,00	44,5468	
	15,87	88,2	161,54	0,9	MRN 12	3450	19,5	6,0	40,00	0,4722	
18,0	15,36	91,2	150,00	1,5	MRN 22	4480	22,9	9,4	40,00	1,7103	
	15,63	89,6	153,95	2,5	MRN 32	6830	27,3	13,8	40,00	2,5063	
	15,27	91,7	150,00	> 3.0	MRN 42	7330	48,8	35,3	40,00	7,6485	
	15,56	90	152,59	> 3.0	MRN 52	10780	78,7	65,2	40,00	24,1384	
	16,19	86,4	159,20	> 3.0	MRN 62	11630	128,3	114,8	40,00	46,1997	
17,85	16,65	84,1	165,00	1,0	MRN 12	3560	19,5	6,0	40,00	0,4462	
	17,87	78,4	172,22	1,8	MRN 22	3590	22,9	9,4	40,00	1,5647	
	18,84	74,3	183,33	3,0	MRN 32	4860	27,3	13,8	40,00	2,0717	
	17,59	79,6	172,22	> 3.0	MRN 42	7410	48,8	35,3	40,00	6,8426	
	17,85	78,4	175,90	> 3.0	MRN 52	8680	78,7	65,2	40,00	22,1741	

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
1,5	18,0	17,7	79,1	173,91	> 3,0	MRN 62	3100	128,3	114,8	40,00	39,8027
	20,0	20,29	69	196,15	0,9	MRN 12	3710	19,5	6,0	40,00	0,4149
22,4	19,66	71,2	191,67	1,2	MRN 22	4810	22,9	9,4	40,00	1,6024	
	20,03	69,9	195,00	2,0	MRN 32	7400	27,3	13,8	40,00	2,2256	
	19,19	73	187,89	> 3,0	MRN 52	11580	78,7	65,2	40,00	22,7969	
	19,96	70,1	195,69	> 3,0	MRN 62	15790	128,3	114,8	40,00	41,9382	
	22,67	61,8	221,43	1,4	MRN 22	3800	22,9	9,4	40,00	1,4958	
	22,18	63,1	217,11	2,5	MRN 32	5000	27,3	13,8	40,00	1,9456	
	22,69	61,7	223,81	> 3,0	MRN 42	8160	48,8	35,3	40,00	6,4129	
	23,45	59,7	231,31	> 3,0	MRN 52	8020	78,7	65,2	40,00	20,8963	
	23,25	60,2	228,87	> 3,0	MRN 62	8000	128,3	114,8	40,00	35,8331	
	25,0	24,21	57,8	240,00	1,0	MRN 22	4970	22,9	9,4	40,00	1,5348
28,0	26,62	52,6	260,87	1,5	MRN 32	7750	27,3	13,8	40,00	1,9888	
	24,26	57,7	236,84	> 3,0	MRN 52	12560	78,7	65,2	40,00	21,6073	
	25,24	55,5	247,25	> 3,0	MRN 62	16780	128,3	114,8	40,00	38,1707	
	29,32	47,8	283,93	0,9	MRN 22	4770	22,9	9,4	40,00	1,4440	
	28,93	48,4	279,31	1,9	MRN 32	5550	27,3	13,8	40,00	1,7952	
	28,28	49,5	278,13	> 3,0	MRN 42	8920	48,8	35,3	40,00	6,1008	
	27,55	50,8	269,35	> 3,0	MRN 52	8090	78,7	65,2	40,00	20,3546	
	27,69	50,6	272,50	> 3,0	MRN 62	6000	128,3	114,8	40,00	34,0539	
	31,5	30,71	45,6	300,00	0,8	MRN 22	5180	22,9	9,4	40,00	1,4772
	31,33	44,7	315,79	1,3	MRN 32	7920	27,3	13,8	40,00	1,8858	
35,5	30	46,7	295,95	2,5	MRN 42	9290	48,8	35,3	40,00	6,2602	
	30,02	46,6	294,44	> 3,0	MRN 52	9610	78,7	65,2	40,00	20,1029	
	30,38	46,1	298,56	> 3,0	MRN 62	7160	128,3	114,8	40,00	33,2259	
	34,5	40,6	337,50	1,3	MRN 32	7320	27,3	13,8	40,00	1,7221	
	37,39	37,4	370,00	2,0	MRN 42	10030	48,8	35,3	40,00	6,0256	
	36,31	38,6	354,55	> 3,0	MRN 52	13530	78,7	65,2	40,00	19,6654	
	37,35	37,5	366,26	> 3,0	MRN 62	16090	128,3	114,8	40,00	31,7360	
	40,0	40,87	34,3	393,75	1,1	MRN 32	8250	27,3	13,8	40,00	1,7600
	35,86	39	350,00	1,4	MRN 33	6840	27,5	14,0	40,00	1,2294	
	38,12	36,7	375,00	1,7	MRN 42	10140	48,8	35,3	40,00	5,8382	
45,0	34,07	41,1	331,82	2,2	MRN 43	9670	51,0	37,5	40,00	4,3102	
	40,79	34,3	398,94	> 3,0	MRN 52	14620	78,7	65,2	40,00	19,9025	
	37,28	37,6	358,70	4,6	MRN 53	9220	83,3	69,8	40,00	13,8553	
	39,49	35,5	389,40	8,3	MRN 62	18170	128,3	114,8	40,00	33,3872	
	38,2	36,7	366,54	8,9	MRN 63	7350	134,5	121,0	40,00	22,6869	
	44,2	31,7	434,21	1,3	MRN 33	5900	27,5	14,0	40,00	1,2052	
	45,27	30,9	450,00	1,7	MRN 42	10720	48,8	35,3	40,00	5,8675	
	42,59	32,9	413,64	2,2	MRN 43	10030	51,0	37,5	40,00	4,2058	
	45,38	30,8	445,95	2,5	MRN 52	15630	78,7	65,2	40,00	19,2544	
	47,28	29,6	458,04	3,7	MRN 53	8610	83,3	69,8	40,00	13,7108	
50,0	43,31	32,3	426,51	5,5	MRN 62	18380	128,3	114,8	40,00	32,6717	
	48,74	28,7	484,62	0,9	MRN 32	8530	27,3	13,8	40,00	1,6974	
	50,4	27,8	489,13	1,5	MRN 42	11110	48,8	35,3	40,00	5,7968	
	49,33	28,4	487,50	2,7	MRN 52	15030	78,7	65,2	40,00	19,5092	
	53,26	26,3	525,00	4,5	MRN 62	18970	128,3	114,8	40,00	31,3694	
	48,44	28,9	467,89	7,3	MRN 63	7670	134,5	121,0	40,00	22,2684	
	56,0	53,75	26	525,00	0,8	MRN 32	8640	27,3	13,8	40,00	1,6689
	55,31	25,3	543,75	1,1	MRN 33	5500	27,5	14,0	40,00	1,1864	

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴	
1,5	56,0	56,67	24,7	552,63	1,3	MRN 42	11600	48,8	35,3	40,00	5,7318	
		54,21	25,8	525,00	1,9	MRN 43	9830	51,0	37,5	40,00	4,1359	
		57,27	24,4	546,88	> 3,0	MRN 53	8800	83,3	69,8	40,00	13,6244	
		59,89	23,4	590,16	> 3,0	MRN 62	19310	128,3	114,8	40,00	30,7868	
		58,68	23,9	566,67	> 3,0	MRN 63	7800	134,5	121,0	40,00	22,0179	
		63,0	66,13	21,2	645,65	1,5	MRN 43	10110	51,0	37,5	40,00	4,0833
	71,0	61,67	22,7	609,38	2,1	MRN 52	15530	78,7	65,2	40,00	19,1667	
		70,88	19,8	669,23	0,9	MRN 33	5500	27,5	14,0	40,00	1,1714	
		70,6	19,8	673,08	2,6	MRN 53	9010	83,3	69,8	40,00	13,5519	
		72,33	19,4	698,63	> 3,0	MRN 63	7800	134,5	121,0	40,00	21,8075	
		80,0	82,52	17	789,47	1,3	MRN 43	10510	51,0	37,5	40,00	3,7956
		79,72	17,6	762,86	2,3	MRN 63	25090	134,5	121,0	40,00	19,9592	
	90,0	89,26	15,7	856,45	2,1	MRN 53	8500	83,3	69,8	40,00	13,4907	
		91,45	15,3	879,31	> 3,0	MRN 63	7800	134,5	121,0	40,00	21,6298	
		100,0	106,48	13,1	1010,00	1,0	MRN 43	10930	51,0	37,5	40,00	3,7770
		95,68	14,6	915,79	1,3	MRN 53	17820	83,3	69,8	40,00	12,7382	
		105,42	13,3	1007,14	2,3	MRN 63	22430	134,5	121,0	40,00	19,8591	
		112,0	117,24	11,9	1118,75	1,6	MRN 53	7200	83,3	69,8	40,00	13,4396
	125,0	121,33	11,5	1155,88	1,1	MRN 53	17330	83,3	69,8	40,00	12,7114	
		120,13	11,7	1159,09	2,9	MRN 63	7800	134,5	121,0	40,00	21,4811	
		140,0	132,69	10,6	1295,45	0,7	MRN 43	12260	51,0	37,5	40,00	4,0051
		137,77	10,2	1350,00	1,3	MRN 53	7200	83,3	69,8	40,00	13,4179	
		143,08	9,78	1378,38	2,5	MRN 63	7800	134,5	121,0	40,00	21,4145	
		160,0	150,12	9,33	1416,67	1,2	MRN 53	12400	83,3	69,8	40,00	13,4079
	180,0	156,94	8,92	1500,00	2,2	MRN 63	7900	134,5	121,0	40,00	21,3834	
		181,54	7,71	1700,00	0,8	MRN 53	18220	83,3	69,8	40,00	13,3896	
		200,0	192,98	7,25	1840,91	1,5	MRN 63	21200	134,5	121,0	40,00	21,3276
		224,0	217	6,45	2029,41	1,1	MRN 63	26700	134,5	121,0	40,00	21,3029
		250,0	252,39	5,55	2437,50	1,1	MRN 63	22500	134,5	121,0	40,00	19,6541
		315,0	331,53	4,22	3250,00	0,8	MRN 63	22500	134,5	121,0	40,00	19,6213
2,2	6,3	5,76	243	81,96	2,3	MRN 22	3200	28,4	9,4	75,00	2,5855	
		5,59	250	80,73	> 3,0	MRN 32	4760	32,8	13,8	75,00	4,8684	
		5,74	244	82,65	> 3,0	MRN 42	5030	54,3	35,3	75,00	13,0943	
		5,64	248	81,21	> 3,0	MRN 52	7550	84,2	65,2	75,00	37,6347	
		5,77	250	80,53	> 3,0	MRN 62	10060	133,8	114,8	75,00	84,0612	
		7,1	7,37	190	102,83	2,1	MRN 22	3450	28,4	9,4	75,00	2,1881
	7,1	7,17	195	102,83	> 3,0	MRN 32	5180	32,8	13,8	75,00	3,8232	
		7,26	193	104,70	> 3,0	MRN 42	5190	54,3	35,3	75,00	10,7969	
		7,46	188	107,44	> 3,0	MRN 52	8250	84,2	65,2	75,00	31,2885	
		7,39	189	106,52	> 3,0	MRN 62	9540	133,8	114,8	75,00	68,0211	
		8,0	7,8	179	110,00	2,0	MRN 22	3530	28,4	9,4	75,00	2,2972
		7,9	177	114,65	> 3,0	MRN 32	5410	32,8	13,8	75,00	3,9288	
	9,0	7,59	185	109,21	> 3,0	MRN 42	5680	54,3	35,3	75,00	11,2674	
		7,66	183	110,48	> 3,0	MRN 52	8410	84,2	65,2	75,00	31,9539	
		7,97	176	114,96	> 3,0	MRN 62	11380	133,8	114,8	75,00	68,6806	
		9,07	154	128,78	1,9	MRN 22	3690	28,4	9,4	75,00	1,9599	
		8,84	158	127,23	> 3,0	MRN 32	5180	32,8	13,8	75,00	3,2176	
		9,08	154	130,53	> 3,0	MRN 42	5660	54,3	35,3	75,00	9,2579	
	9,0	9,46	148	136,28	> 3,0	MRN 52	8900	84,2	65,2	75,00	27,6749	
		9,38	149	135,17	> 3,0	MRN 62	9030	133,8	114,8	75,00	56,8499	

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
2,2	10,0	9,98	140	140,56	1,6	MRN 22	3850	28,4	9,4	75,00	2,0120
		10,13	138	146,67	2,6	MRN 32	5890	32,8	13,8	75,00	3,2515
		9,6	146	138,00	> 3,0	MRN 42	6200	54,3	35,3	75,00	9,6555
		10,13	138	146,24	> 3,0	MRN 52	9280	84,2	65,2	75,00	28,0395
		10,54	133	151,72	> 3,0	MRN 62	12550	133,8	114,8	75,00	58,6662
		11,2	11,33	124	158,89	1,6	MRN 22	3890	28,4	9,4	75,00
	11,06	127	159,73	> 3,0	MRN 32	4550	32,8	13,8	75,00	2,7466	
	11,55	121	166,83	> 3,0	MRN 42	6170	54,3	35,3	75,00	8,0995	
	11,45	122	164,73	> 3,0	MRN 52	8400	84,2	65,2	75,00	25,5151	
	11,36	123	163,55	> 3,0	MRN 62	5620	133,8	114,8	75,00	50,1639	
	12,5	12,29	114	174,48	1,3	MRN 22	4140	28,4	9,4	75,00	1,8436
	12,49	112	181,74	2,1	MRN 32	6330	32,8	13,8	75,00	2,8412	
12	117	173,03	> 3,0	MRN 42	6720	54,3	35,3	75,00	8,5274		
12,85	109	185,18	> 3,0	MRN 52	10080	84,2	65,2	75,00	25,6545		
14,0	14,51	96,5	206,25	1,5	MRN 22	3720	28,4	9,4	75,00	1,6479	
14,18	98,8	204,83	2,6	MRN 32	4700	32,8	13,8	75,00	2,3720		
14,09	99,3	202,40	> 3,0	MRN 42	6810	54,3	35,3	75,00	7,4107		
14,12	99,2	203,56	> 3,0	MRN 52	8470	84,2	65,2	75,00	23,7029		
14	100	201,51	> 3,0	MRN 62	5450	133,8	114,8	75,00	44,5468		
16,0	15,36	91,2	220,00	1,0	MRN 22	4480	28,4	9,4	75,00	1,7103	
15,63	89,6	225,79	1,7	MRN 32	6830	32,8	13,8	75,00	2,5063		
15,27	91,7	220,00	> 3,0	MRN 42	7330	54,3	35,3	75,00	7,6485		
15,56	90	223,79	> 3,0	MRN 52	10780	84,2	65,2	75,00	24,1384		
16,19	86,4	233,49	> 3,0	MRN 62	11630	133,8	114,8	75,00	46,1997		
18,0	17,87	78,4	252,59	1,2	MRN 22	3590	28,4	9,4	75,00	1,5647	
18,84	74,3	268,89	2,0	MRN 32	4860	32,8	13,8	75,00	2,0717		
17,59	79,6	252,59	> 3,0	MRN 42	7410	54,3	35,3	75,00	6,8426		
17,85	78,4	257,99	> 3,0	MRN 52	8680	84,2	65,2	75,00	22,1741		
17,7	79,1	255,07	> 3,0	MRN 62	3100	133,8	114,8	75,00	39,8027		
20,0	20,03	69,9	286,00	1,4	MRN 32	7400	32,8	13,8	75,00	2,2256	
19,19	73	275,58	> 3,0	MRN 52	11580	84,2	65,2	75,00	22,7969		
19,96	70,1	287,01	> 3,0	MRN 62	15790	133,8	114,8	75,00	41,9382		
22,4	22,18	63,1	318,42	> 3,0	MRN 32	5000	32,8	13,8	75,00	1,9456	
22,69	61,7	328,25	2,9	MRN 42	8160	54,3	35,3	75,00	6,4129		
23,45	59,7	339,25	> 3,0	MRN 52	8020	84,2	65,2	75,00	20,8963		
23,25	60,2	335,68	> 3,0	MRN 62	8000	133,8	114,8	75,00	35,8331		
25,0	26,62	52,6	382,61	1,0	MRN 32	7750	32,8	13,8	75,00	1,9888	
24,26	57,7	347,37	> 3,0	MRN 52	12560	84,2	65,2	75,00	21,6073		
25,24	55,5	362,64	> 3,0	MRN 62	16780	133,8	114,8	75,00	38,1707		
28,0	28,93	48,4	409,66	1,3	MRN 32	5550	32,8	13,8	75,00	1,7952	
28,28	49,5	407,92	2,2	MRN 42	8920	54,3	35,3	75,00	6,1008		
27,55	50,8	395,05	> 3,0	MRN 52	8090	84,2	65,2	75,00	20,3546		
27,69	50,6	399,67	> 3,0	MRN 62	6000	133,8	114,8	75,00	34,0539		
31,5	30	46,7	434,05	1,7	MRN 42	9290	54,3	35,3	75,00	6,2602	
30,02	46,6	431,85	> 3,0	MRN 52	9610	84,2	65,2	75,00	20,1029		
30,38	46,1	437,88	> 3,0	MRN 62	7160	133,8	114,8	75,00	33,2259		
35,5	37,39	37,4	542,67	1,4	MRN 42	10030	54,3	35,3	75,00	6,0256	
36,31	38,6	520,00	2,5	MRN 52	13530	84,2	65,2	75,00	19,6654		
37,35	37,5	537,18	> 3,0	MRN 62	16090	133,8	114,8	75,00	31,7360		
40,0	38,12	36,7	550,00	1,2	MRN 42	10140	54,3	35,3	75,00	5,8382	

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴	
2,2	40,0	34,07	41,1	486,67	1,5	MRN 43	9670	56,5	37,5	75,00	4,3102	
		40,79	34,3	585,11	2,1	MRN 52	14620	84,2	65,2	75,00	19,9025	
		37,28	37,6	526,09	> 3.0	MRN 53	9220	88,8	69,8	75,00	13,8553	
		39,49	35,5	571,12	> 3.0	MRN 62	18170	133,8	114,8	75,00	33,3872	
		38,2	36,7	537,59	> 3.0	MRN 63	7350	140,0	121,0	75,00	22,6869	
		45,0	45,27	30,9	660,00	1,1	MRN 42	10720	54,3	35,3	75,00	5,8675
		42,59	32,9	606,67	1,5	MRN 43	10030	56,5	37,5	75,00	4,2058	
		45,38	30,8	654,05	1,7	MRN 52	15630	84,2	65,2	75,00	19,2544	
	50,0	47,28	29,6	671,79	2,5	MRN 53	8610	88,8	69,8	75,00	13,7108	
		43,31	32,3	625,54	> 3.0	MRN 62	18380	133,8	114,8	75,00	32,6717	
		50,4	27,8	717,39	1,0	MRN 42	11110	54,3	35,3	75,00	5,7968	
		49,33	28,4	715,00	1,8	MRN 52	15030	84,2	65,2	75,00	19,5092	
		53,26	26,3	770,00	> 3.0	MRN 62	18970	133,8	114,8	75,00	31,3694	
		48,44	28,9	686,24	> 3.0	MRN 63	7670	140,0	121,0	75,00	22,2684	
		56,0	54,21	25,8	770,00	1,3	MRN 43	9830	56,5	37,5	75,00	4,1359
		57,27	24,4	802,08	2,2	MRN 53	8800	88,8	69,8	75,00	13,6244	
	63,0	59,89	23,4	865,57	2,8	MRN 62	19310	133,8	114,8	75,00	30,7868	
		58,68	23,9	831,11	> 3.0	MRN 63	7800	140,0	121,0	75,00	22,0179	
		66,13	21,2	946,96	1,0	MRN 43	10110	56,5	37,5	75,00	4,0833	
		61,67	22,7	893,75	1,5	MRN 52	15530	84,2	65,2	75,00	19,1667	
		71,0	70,6	19,8	987,18	1,8	MRN 53	9010	88,8	69,8	75,00	13,5519
		72,33	19,4	1024,66	> 3.0	MRN 63	7800	140,0	121,0	75,00	21,8075	
		80,0	79,72	17,6	1118,86	1,6	MRN 63	25090	140,0	121,0	75,00	19,9592
		90,0	89,26	15,7	1256,13	1,4	MRN 53	8500	88,8	69,8	75,00	13,4907
	90,0	91,45	15,3	1289,66	2,6	MRN 63	7800	140,0	121,0	75,00	21,6298	
		100,0	105,42	13,3	1477,14	1,6	MRN 63	22430	140,0	121,0	75,00	19,8591
		112,0	117,24	11,9	1640,83	1,1	MRN 53	7200	88,8	69,8	75,00	13,4396
		125,0	120,13	11,7	1700,00	2,0	MRN 63	7800	140,0	121,0	75,00	21,4811
140,0		143,08	9,78	2021,62	1,7	MRN 63	7800	140,0	121,0	75,00	21,4145	
160,0		156,94	8,92	2200,00	1,5	MRN 63	7900	140,0	121,0	75,00	21,3834	
200,0		192,98	7,25	2700,00	1,0	MRN 63	21200	140,0	121,0	75,00	21,3276	
3		6,3	5,76	243	111,76	1,7	MRN 22	3200	30,4	9,4	85,00	2,5855
	5,59		250	110,09	> 3.0	MRN 32	4760	34,8	13,8	85,00	4,8684	
	5,74		244	112,71	> 3.0	MRN 42	5030	56,3	35,3	85,00	13,0943	
	5,64		248	110,74	> 3.0	MRN 52	7550	86,2	65,2	85,00	37,6347	
	5,77		250	109,82	> 3.0	MRN 62	10060	135,8	114,8	85,00	84,0612	
	7,1	7,37	190	140,22	1,5	MRN 22	3450	30,4	9,4	85,00	2,1881	
		7,17	195	140,22	> 3.0	MRN 32	5180	34,8	13,8	85,00	3,8232	
		7,26	193	142,77	> 3.0	MRN 42	5190	56,3	35,3	85,00	10,7969	
		7,46	188	146,51	> 3.0	MRN 52	8250	86,2	65,2	85,00	31,2885	
		7,39	189	145,25	> 3.0	MRN 62	9540	135,8	114,8	85,00	68,0211	
	8,0	7,8	179	150,00	1,5	MRN 22	3530	30,4	9,4	85,00	2,2972	
		7,9	177	156,34	2,4	MRN 32	5410	34,8	13,8	85,00	3,9288	
		7,59	185	148,92	> 3.0	MRN 42	5680	56,3	35,3	85,00	11,2674	
		7,66	183	150,66	> 3.0	MRN 52	8410	86,2	65,2	85,00	31,9539	
		7,97	176	156,77	> 3.0	MRN 62	11380	135,8	114,8	85,00	68,6806	
	9,0	9,07	154	175,61	1,4	MRN 22	3690	30,4	9,4	85,00	1,9599	
		8,84	158	173,49	2,8	MRN 32	5180	34,8	13,8	85,00	3,2176	
		9,08	154	178,00	> 3.0	MRN 42	5660	56,3	35,3	85,00	9,2579	
		9,46	148	185,84	> 3.0	MRN 52	8900	86,2	65,2	85,00	27,6749	

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
3	9,0	9,38	149	184,32	> 3,0	MRN 62	9030	135,8	114,8	85,00	56,8499
	10,0	9,98	140	191,67	1,2	MRN 22	3850	30,4	9,4	85,00	2,0120
11,2	10,13	138	200,00	1,9	MRN 32	5890	34,8	13,8	85,00	3,2515	
	9,6	146	188,18	> 3,0	MRN 42	6200	56,3	35,3	85,00	9,6555	
	10,13	138	199,42	> 3,0	MRN 52	9280	86,2	65,2	85,00	28,0395	
	10,54	133	206,90	> 3,0	MRN 62	12550	135,8	114,8	85,00	58,6662	
	11,33	124	216,67	1,2	MRN 22	3890	30,4	9,4	85,00	1,7848	
	11,06	127	217,81	2,4	MRN 32	4550	34,8	13,8	85,00	2,7466	
	11,55	121	227,50	> 3,0	MRN 42	6170	56,3	35,3	85,00	8,0995	
	11,45	122	224,64	> 3,0	MRN 52	8400	86,2	65,2	85,00	25,5151	
	11,36	123	223,02	> 3,0	MRN 62	5620	135,8	114,8	85,00	50,1639	
	12,5	12,29	114	237,93	1,0	MRN 22	4140	30,4	9,4	85,00	1,8436
14,0	12,49	112	247,83	1,5	MRN 32	6330	34,8	13,8	85,00	2,8412	
	12	117	235,96	3,0	MRN 42	6720	56,3	35,3	85,00	8,5274	
	12,85	109	252,52	> 3,0	MRN 52	10080	86,2	65,2	85,00	25,6545	
	14,51	96,5	281,25	1,1	MRN 22	3720	30,4	9,4	85,00	1,6479	
	14,18	98,8	279,31	1,9	MRN 32	4700	34,8	13,8	85,00	2,3720	
	14,09	99,3	276,00	> 3,0	MRN 42	6810	56,3	35,3	85,00	7,4107	
	14,12	99,2	277,59	> 3,0	MRN 52	8470	86,2	65,2	85,00	23,7029	
	14	100	274,78	> 3,0	MRN 62	5450	135,8	114,8	85,00	44,5468	
	16,0	15,36	91,2	300,00	0,8	MRN 22	4480	30,4	9,4	85,00	1,7103
	15,63	89,6	307,89	1,3	MRN 32	6830	34,8	13,8	85,00	2,5063	
18,0	15,27	91,7	300,00	2,4	MRN 42	7330	56,3	35,3	85,00	7,6485	
	15,56	90	305,17	> 3,0	MRN 52	10780	86,2	65,2	85,00	24,1384	
	16,19	86,4	318,40	> 3,0	MRN 62	11630	135,8	114,8	85,00	46,1997	
	17,87	78,4	344,44	0,9	MRN 22	3590	30,4	9,4	85,00	1,5647	
	18,84	74,3	366,67	1,5	MRN 32	4860	34,8	13,8	85,00	2,0717	
	17,59	79,6	344,44	2,7	MRN 42	7410	56,3	35,3	85,00	6,8426	
	17,85	78,4	351,80	> 3,0	MRN 52	8680	86,2	65,2	85,00	22,1741	
	17,7	79,1	347,83	> 3,0	MRN 62	3100	135,8	114,8	85,00	39,8027	
	20,0	20,03	69,9	390,00	1,0	MRN 32	7400	34,8	13,8	85,00	2,2256
	19,19	73	375,79	> 3,0	MRN 52	11580	86,2	65,2	85,00	22,7969	
22,4	19,96	70,1	391,38	> 3,0	MRN 62	15790	135,8	114,8	85,00	41,9382	
	22,18	63,1	434,21	1,3	MRN 32	5000	34,8	13,8	85,00	1,9456	
	22,69	61,7	447,62	2,1	MRN 42	8160	56,3	35,3	85,00	6,4129	
	23,45	59,7	462,62	> 3,0	MRN 52	8020	86,2	65,2	85,00	20,8963	
	23,25	60,2	457,75	> 3,0	MRN 62	8000	135,8	114,8	85,00	35,8331	
	25,0	26,62	52,6	521,74	0,8	MRN 32	7750	34,8	13,8	85,00	1,9888
	24,26	57,7	473,68	2,5	MRN 52	12560	86,2	65,2	85,00	21,6073	
	25,24	55,5	494,51	> 3,0	MRN 62	16780	135,8	114,8	85,00	38,1707	
	28,0	28,93	48,4	558,62	1,0	MRN 32	5550	34,8	13,8	85,00	1,7952
	28,28	49,5	556,25	1,6	MRN 42	8920	56,3	35,3	85,00	6,1008	
31,5	27,55	50,8	538,71	> 3,0	MRN 52	8090	86,2	65,2	85,00	20,3546	
	27,69	50,6	545,00	> 3,0	MRN 62	6000	135,8	114,8	85,00	34,0539	
	30	46,7	591,89	1,2	MRN 42	9290	56,3	35,3	85,00	6,2602	
	30,02	46,6	588,89	2,7	MRN 52	9610	86,2	65,2	85,00	20,1029	
	30,38	46,1	597,12	> 3,0	MRN 62	7160	135,8	114,8	85,00	33,2259	
	35,5	37,39	37,4	740,00	1,0	MRN 42	10030	56,3	35,3	85,00	6,0256
	36,31	38,6	709,09	1,8	MRN 52	13530	86,2	65,2	85,00	19,6654	
	37,35	37,5	732,52	> 3,0	MRN 62	16090	135,8	114,8	85,00	31,7360	

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴	
3	40,0	38,12	36,7	750,00	0,9	MRN 42	10140	56,3	35,3	85,00	5,8382	
		34,07	41,1	663,64	1,1	MRN 43	9670	58,5	37,5	85,00	4,3102	
		40,79	34,3	797,87	1,6	MRN 52	14620	86,2	65,2	85,00	19,9025	
		37,28	37,6	717,39	2,3	MRN 53	9220	90,8	69,8	85,00	13,8553	
		39,49	35,5	778,80	> 3,0	MRN 62	18170	135,8	114,8	85,00	33,3872	
		38,2	36,7	733,08	> 3,0	MRN 63	7350	142,0	121,0	85,00	22,6869	
	45,0	45,27	30,9	900,00	0,8	MRN 42	10720	56,3	35,3	85,00	5,8675	
		42,59	32,9	827,27	1,1	MRN 43	10030	58,5	37,5	85,00	4,2058	
		45,38	30,8	891,89	1,2	MRN 52	15630	86,2	65,2	85,00	19,2544	
		47,28	29,6	916,07	1,9	MRN 53	8610	90,8	69,8	85,00	13,7108	
		43,31	32,3	853,01	2,8	MRN 62	18380	135,8	114,8	85,00	32,6717	
		50,0	50,4	27,8	978,26	0,8	MRN 42	11110	56,3	35,3	85,00	5,7968
	50,0	49,33	28,4	975,00	1,3	MRN 52	15030	86,2	65,2	85,00	19,5092	
		53,26	26,3	1050,00	2,3	MRN 62	18970	135,8	114,8	85,00	31,3694	
		48,44	28,9	935,78	> 3,0	MRN 63	7670	142,0	121,0	85,00	22,2684	
		56,0	54,21	25,8	1050,00	0,9	MRN 43	9830	58,5	37,5	85,00	4,1359
		57,27	24,4	1093,75	1,6	MRN 53	8800	90,8	69,8	85,00	13,6244	
		59,89	23,4	1180,33	2,0	MRN 62	19310	135,8	114,8	85,00	30,7868	
	56,0	58,68	23,9	1133,33	3,0	MRN 63	7800	142,0	121,0	85,00	22,0179	
		63,0	66,13	21,2	1291,30	0,8	MRN 43	10110	58,5	37,5	85,00	4,0833
		61,67	22,7	1218,75	1,1	MRN 52	15530	86,2	65,2	85,00	19,1667	
		71,0	70,6	19,8	1346,15	1,3	MRN 53	9010	90,8	69,8	85,00	13,5519
		72,33	19,4	1397,26	2,4	MRN 63	7800	142,0	121,0	85,00	21,8075	
		80,0	79,72	17,6	1525,71	1,2	MRN 63	25090	142,0	121,0	85,00	19,9592
	80,0	90,0	89,26	15,7	1712,90	1,0	MRN 53	8500	90,8	69,8	85,00	13,4907
		91,45	15,3	1758,62	1,9	MRN 63	7800	142,0	121,0	85,00	21,6298	
		100,0	105,42	13,3	2014,29	1,2	MRN 63	22430	142,0	121,0	85,00	19,8591
		112,0	117,24	11,9	2237,50	0,8	MRN 53	7200	90,8	69,8	85,00	13,4396
		125,0	120,13	11,7	2318,18	1,5	MRN 63	7800	142,0	121,0	85,00	21,4811
		140,0	143,08	9,78	2756,76	1,2	MRN 63	7800	142,0	121,0	85,00	21,4145
160,0	156,94	8,92	3000,00	1,1	MRN 63	7900	142,0	121,0	85,00	21,3834		
	200,0	192,98	7,25	3681,82	0,7	MRN 63	21200	142,0	121,0	85,00	21,3276	
	4	6,3	5,76	243	149,02	1,3	MRN 22	3200	38,4	9,4	130,00	2,5855
			5,59	250	146,79	2,7	MRN 32	4760	42,8	13,8	130,00	4,8684
			5,74	244	150,28	> 3,0	MRN 42	5030	64,3	35,3	130,00	13,0943
			5,64	248	147,65	> 3,0	MRN 52	7550	94,2	65,2	130,00	37,6347
5,77			250	146,42	> 3,0	MRN 62	10060	143,8	114,8	130,00	84,0612	
7,1			7,37	190	186,96	1,2	MRN 22	3450	38,4	9,4	130,00	2,1881
7,1		7,17	195	186,96	2,3	MRN 32	5180	42,8	13,8	130,00	3,8232	
		7,26	193	190,36	> 3,0	MRN 42	5190	64,3	35,3	130,00	10,7969	
		7,46	188	195,35	> 3,0	MRN 52	8250	94,2	65,2	130,00	31,2885	
		7,39	189	193,67	> 3,0	MRN 62	9540	143,8	114,8	130,00	68,0211	
		8,0	7,8	179	200,00	1,1	MRN 22	3530	38,4	9,4	130,00	2,2972
		7,9	177	208,45	1,8	MRN 32	5410	42,8	13,8	130,00	3,9288	
7,9		7,59	185	198,56	> 3,0	MRN 42	5680	64,3	35,3	130,00	11,2674	
		7,66	183	200,88	> 3,0	MRN 52	8410	94,2	65,2	130,00	31,9539	
		7,97	176	209,03	> 3,0	MRN 62	11380	143,8	114,8	130,00	68,6806	
		9,0	9,07	154	234,15	1,0	MRN 22	3690	38,4	9,4	130,00	1,9599
		8,84	158	231,33	2,1	MRN 32	5180	42,8	13,8	130,00	3,2176	
		9,08	154	237,33	> 3,0	MRN 42	5660	64,3	35,3	130,00	9,2579	

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
4	9,0	9,46	148	247,79	> 3,0	MRN 52	8900	94,2	65,2	130,00	27,6749
		9,38	149	245,76	> 3,0	MRN 62	9030	143,8	114,8	130,00	56,8499
10,0	10,13	10,13	138	266,67	1,4	MRN 32	5890	42,8	13,8	130,00	3,2515
		9,6	146	250,91	2,8	MRN 42	6200	64,3	35,3	130,00	9,6555
		10,13	138	265,90	> 3,0	MRN 52	9280	94,2	65,2	130,00	28,0395
		10,54	133	275,86	> 3,0	MRN 62	12550	143,8	114,8	130,00	58,6662
11,2	11,06	11,06	127	290,41	1,8	MRN 32	4550	42,8	13,8	130,00	2,7466
		11,55	121	303,33	3,0	MRN 42	6170	64,3	35,3	130,00	8,0995
		11,45	122	299,52	> 3,0	MRN 52	8400	94,2	65,2	130,00	25,5151
		11,36	123	297,36	> 3,0	MRN 62	5620	143,8	114,8	130,00	50,1639
12,5	12,49	12,49	112	330,43	1,2	MRN 32	6330	42,8	13,8	130,00	2,8412
		12	117	314,61	2,2	MRN 42	6720	64,3	35,3	130,00	8,5274
		12,85	109	336,69	> 3,0	MRN 52	10080	94,2	65,2	130,00	25,6545
14,0	14,18	14,18	98,8	372,41	1,5	MRN 32	4700	42,8	13,8	130,00	2,3720
		14,09	99,3	368,00	2,5	MRN 42	6810	64,3	35,3	130,00	7,4107
		14,12	99,2	370,11	> 3,0	MRN 52	8470	94,2	65,2	130,00	23,7029
		14	100	366,38	> 3,0	MRN 62	5450	143,8	114,8	130,00	44,5468
16,0	15,27	15,27	91,7	400,00	1,8	MRN 42	7330	64,3	35,3	130,00	7,6485
		15,56	90	406,90	2,9	MRN 52	10780	94,2	65,2	130,00	24,1384
		16,19	86,4	424,53	> 3,0	MRN 62	11630	143,8	114,8	130,00	46,1997
18,0	17,59	17,59	79,6	459,26	2,0	MRN 42	7410	64,3	35,3	130,00	6,8426
		17,85	78,4	469,06	> 3,0	MRN 52	8680	94,2	65,2	130,00	22,1741
		17,7	79,1	463,77	> 3,0	MRN 62	3100	143,8	114,8	130,00	39,8027
20,0	19,19	19,19	73	501,05	2,4	MRN 52	11580	94,2	65,2	130,00	22,7969
		19,96	70,1	521,84	> 3,0	MRN 62	15790	143,8	114,8	130,00	41,9382
22,4	22,69	22,69	61,7	596,83	1,6	MRN 42	8160	64,3	35,3	130,00	6,4129
		23,45	59,7	616,82	2,7	MRN 52	8020	94,2	65,2	130,00	20,8963
		23,25	60,2	610,33	> 3,0	MRN 62	8000	143,8	114,8	130,00	35,8331
25,0	24,26	24,26	57,7	631,58	1,9	MRN 52	12560	94,2	65,2	130,00	21,6073
		25,24	55,5	659,34	> 3,0	MRN 62	16780	143,8	114,8	130,00	38,1707
28,0	28,28	28,28	49,5	741,67	1,2	MRN 42	8920	64,3	35,3	130,00	6,1008
		27,55	50,8	718,28	2,3	MRN 52	8090	94,2	65,2	130,00	20,3546
		27,69	50,6	726,67	> 3,0	MRN 62	6000	143,8	114,8	130,00	34,0539
31,5	30,02	30,02	46,6	785,19	2,0	MRN 52	9610	94,2	65,2	130,00	20,1029
		30,38	46,1	796,15	> 3,0	MRN 62	7160	143,8	114,8	130,00	33,2259
35,5	36,31	36,31	38,6	945,45	1,4	MRN 52	13530	94,2	65,2	130,00	19,6654
		37,35	37,5	976,70	2,6	MRN 62	16090	143,8	114,8	130,00	31,7360
40,0	40,79	40,79	34,3	1063,83	1,2	MRN 52	14620	94,2	65,2	130,00	19,9025
		37,28	37,6	956,52	1,7	MRN 53	9220	98,8	69,8	130,00	13,8553
		39,49	35,5	1038,40	> 3,0	MRN 62	18170	143,8	114,8	130,00	33,3872
		38,2	36,7	977,44	> 3,0	MRN 63	7350	150,0	121,0	130,00	22,6869
45,0	45,38	45,38	30,8	1189,19	0,9	MRN 52	15630	94,2	65,2	130,00	19,2544
		47,28	29,6	1221,43	1,4	MRN 53	8610	98,8	69,8	130,00	13,7108
50,0	43,31	43,31	32,3	1137,35	2,1	MRN 62	18380	143,8	114,8	130,00	32,6717
		49,33	28,4	1300,00	1,0	MRN 52	15030	94,2	65,2	130,00	19,5092
		53,26	26,3	1400,00	1,7	MRN 62	18970	143,8	114,8	130,00	31,3694
56,0	48,44	48,44	28,9	1247,71	2,7	MRN 63	7670	150,0	121,0	130,00	22,2684
		57,27	24,4	1458,33	1,2	MRN 53	8800	98,8	69,8	130,00	13,6244
		59,89	23,4	1573,77	1,5	MRN 62	19310	143,8	114,8	130,00	30,7868
		58,68	23,9	1511,11	2,3	MRN 63	7800	150,0	121,0	130,00	22,0179

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
4	63,0	61,67	22,7	1625,00	0,8	MRN 52	15530	94,2	65,2	130,00	19,1667
	71,0	70,6	19,8	1794,87	1,0	MRN 53	9010	98,8	69,8	130,00	13,5519
		72,33	19,4	1863,01	1,8	MRN 63	7800	150,0	121,0	130,00	21,8075
	80,0	79,72	17,6	2034,29	0,9	MRN 63	25090	150,0	121,0	130,00	19,9592
	90,0	89,26	15,7	2283,87	0,8	MRN 53	8500	98,8	69,8	130,00	13,4907
		91,45	15,3	2344,83	1,5	MRN 63	7800	150,0	121,0	130,00	21,6298
	100,0	105,42	13,3	2685,71	0,9	MRN 63	22430	150,0	121,0	130,00	19,8591
	125,0	120,13	11,7	3090,91	1,1	MRN 63	7800	150,0	121,0	130,00	21,4811
	140,0	143,08	9,78	3675,68	0,9	MRN 63	7800	150,0	121,0	130,00	21,4145
160,0	156,94	8,92	4000,00	0,8	MRN 63	7900	150,0	121,0	130,00	21,3834	
5,5	6,3	5,64	248	203,02	> 3,0	MRN 52	7550	108,2	65,2	240,00	37,6347
		5,77	250	201,33	> 3,0	MRN 62	10060	157,8	114,8	240,00	84,0612
	7,1	7,46	188	268,60	> 3,0	MRN 52	8250	108,2	65,2	240,00	31,2885
		7,39	189	266,29	> 3,0	MRN 62	9540	157,8	114,8	240,00	68,0211
	8,0	7,66	183	276,21	> 3,0	MRN 52	8410	108,2	65,2	240,00	31,9539
		7,97	176	287,41	> 3,0	MRN 62	11380	157,8	114,8	240,00	68,6806
	9,0	9,46	148	340,71	> 3,0	MRN 52	8900	108,2	65,2	240,00	27,6749
		9,38	149	337,92	> 3,0	MRN 62	9030	157,8	114,8	240,00	56,8499
	10,0	10,13	138	365,61	> 3,0	MRN 52	9280	108,2	65,2	240,00	28,0395
		10,54	133	379,31	> 3,0	MRN 62	12550	157,8	114,8	240,00	58,6662
	11,2	11,45	122	411,84	> 3,0	MRN 52	8400	108,2	65,2	240,00	25,5151
		11,36	123	408,87	> 3,0	MRN 62	5620	157,8	114,8	240,00	50,1639
	12,5	12,85	109	462,95	2,5	MRN 52	10080	108,2	65,2	240,00	25,6545
	14,0	14,12	99,2	508,91	> 3,0	MRN 52	8470	108,2	65,2	240,00	23,7029
		14	100	503,77	> 3,0	MRN 62	5450	157,8	114,8	240,00	44,5468
	16,0	15,56	90	559,48	2,1	MRN 52	10780	108,2	65,2	240,00	24,1384
		16,19	86,4	583,73	> 3,0	MRN 62	11630	157,8	114,8	240,00	46,1997
	18,0	17,85	78,4	644,96	2,5	MRN 52	8680	108,2	65,2	240,00	22,1741
		17,7	79,1	637,68	> 3,0	MRN 62	3100	157,8	114,8	240,00	39,8027
	20,0	19,19	73	688,95	1,7	MRN 52	11580	108,2	65,2	240,00	22,7969
	20,0	19,96	70,1	717,53	> 3,0	MRN 62	15790	157,8	114,8	240,00	41,9382
	22,4	23,45	59,7	848,13	1,9	MRN 52	8020	108,2	65,2	240,00	20,8963
		23,25	60,2	839,20	> 3,0	MRN 62	8000	157,8	114,8	240,00	35,8331
	25,0	24,26	57,7	868,42	1,4	MRN 52	12560	108,2	65,2	240,00	21,6073
		25,24	55,5	906,59	> 3,0	MRN 62	16780	157,8	114,8	240,00	38,1707
	28,0	27,55	50,8	987,63	1,7	MRN 52	8090	108,2	65,2	240,00	20,3546
		27,69	50,6	999,17	> 3,0	MRN 62	6000	157,8	114,8	240,00	34,0539
	31,5	30,02	46,6	1079,63	1,5	MRN 52	9610	108,2	65,2	240,00	20,1029
		30,38	46,1	1094,71	2,8	MRN 62	7160	157,8	114,8	240,00	33,2259
	35,5	36,31	38,6	1300,00	1,0	MRN 52	13530	108,2	65,2	240,00	19,6654
		37,35	37,5	1342,96	1,9	MRN 62	16090	157,8	114,8	240,00	31,7360
	40,0	37,28	37,6	1315,22	1,3	MRN 53	9220	112,8	69,8	240,00	13,8553
	39,49	35,5	1427,80	2,3	MRN 62	18170	157,8	114,8	240,00	33,3872	
	38,2	36,7	1343,98	2,4	MRN 63	7350	164,0	121,0	240,00	22,6869	
45,0	47,28	29,6	1679,46	1,0	MRN 53	8610	112,8	69,8	240,00	13,7108	
	43,31	32,3	1563,86	1,5	MRN 62	18380	157,8	114,8	240,00	32,6717	
50,0	53,26	26,3	1925,00	1,2	MRN 62	18970	157,8	114,8	240,00	31,3694	
	48,44	28,9	1715,60	2,0	MRN 63	7670	164,0	121,0	240,00	22,2684	
56,0	59,89	23,4	2163,93	1,1	MRN 62	19310	157,8	114,8	240,00	30,7868	
	58,68	23,9	2077,78	1,6	MRN 63	7800	164,0	121,0	240,00	22,0179	

RN Gearboxes

Geared Motor Selection

1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
5,5	71,0	72,33	19,4	2561,64	1,3	MRN 63	7800	164,0	121,0	240,00	21,8075
	90,0	91,45	15,3	3224,14	1,1	MRN 63	7800	164,0	121,0	240,00	21,6298
7,5	6,3	5,64	248	276,85	> 3,0	MRN 52	7550	117,2	65,2	330,00	37,6347
		5,77	250	274,54	> 3,0	MRN 62	10060	166,8	114,8	330,00	84,0612
	7,1	7,46	188	366,28	> 3,0	MRN 52	8250	117,2	65,2	330,00	31,2885
		7,39	189	363,13	> 3,0	MRN 62	9540	166,8	114,8	330,00	68,0211
	8,0	7,66	183	376,65	3,0	MRN 52	8410	117,2	65,2	330,00	31,9539
		7,97	176	391,92	> 3,0	MRN 62	11380	166,8	114,8	330,00	68,6806
	9,0	9,46	148	464,60	3,0	MRN 52	8900	117,2	65,2	330,00	27,6749
		9,38	149	460,81	> 3,0	MRN 62	9030	166,8	114,8	330,00	56,8499
	10,0	10,13	138	498,55	2,3	MRN 52	9280	117,2	65,2	330,00	28,0395
		10,54	133	517,24	> 3,0	MRN 62	12550	166,8	114,8	330,00	58,6662
	11,2	11,45	122	561,59	2,8	MRN 52	8400	117,2	65,2	330,00	25,5151
		11,36	123	557,55	> 3,0	MRN 62	5620	166,8	114,8	330,00	50,1639
	12,5	12,85	109	631,29	1,9	MRN 52	10080	117,2	65,2	330,00	25,6545
		14,0	99,2	693,97	2,3	MRN 52	8470	117,2	65,2	330,00	23,7029
	14,0	14	100	686,96	> 3,0	MRN 62	5450	166,8	114,8	330,00	44,5468
		15,56	90	762,93	1,5	MRN 52	10780	117,2	65,2	330,00	24,1384
	16,0	16,19	86,4	795,99	2,8	MRN 62	11630	166,8	114,8	330,00	46,1997
		17,85	78,4	879,50	1,9	MRN 52	8680	117,2	65,2	330,00	22,1741
	18,0	17,7	79,1	869,57	> 3,0	MRN 62	3100	166,8	114,8	330,00	39,8027
		19,19	73	939,47	1,3	MRN 52	11580	117,2	65,2	330,00	22,7969
	20,0	19,96	70,1	978,45	2,3	MRN 62	15790	166,8	114,8	330,00	41,9382
		22,4	59,7	1156,54	1,4	MRN 52	8020	117,2	65,2	330,00	20,8963
	22,4	23,25	60,2	1144,37	2,8	MRN 62	8000	166,8	114,8	330,00	35,8331
		24,26	57,7	1184,21	1,0	MRN 52	12560	117,2	65,2	330,00	21,6073
	25,0	25,24	55,5	1236,26	2,4	MRN 62	16780	166,8	114,8	330,00	38,1707
		27,55	50,8	1346,77	1,2	MRN 52	8090	117,2	65,2	330,00	20,3546
	28,0	27,69	50,6	1362,50	2,4	MRN 62	6000	166,8	114,8	330,00	34,0539
		30,02	46,6	1472,22	1,1	MRN 52	9610	117,2	65,2	330,00	20,1029
	31,5	30,38	46,1	1492,79	2,1	MRN 62	7160	166,8	114,8	330,00	33,2259
		35,5	36,31	38,6	1772,73	0,7	MRN 52	13530	117,2	65,2	330,00
	35,5	37,35	37,5	1831,31	1,4	MRN 62	16090	166,8	114,8	330,00	31,7360
		37,28	37,6	1793,48	0,9	MRN 53	9220	121,8	69,8	330,00	13,8553
	40,0	39,49	35,5	1947,00	1,7	MRN 62	18170	166,8	114,8	330,00	33,3872
		38,2	36,7	1832,71	1,8	MRN 63	7350	173,0	121,0	330,00	22,6869
	45,0	47,28	29,6	2290,18	0,7	MRN 53	8610	121,8	69,8	330,00	13,7108
		43,31	32,3	2132,53	1,1	MRN 62	18380	166,8	114,8	330,00	32,6717
	50,0	53,26	26,3	2625,00	0,9	MRN 62	18970	166,8	114,8	330,00	31,3694
		48,44	28,9	2339,45	1,5	MRN 63	7670	173,0	121,0	330,00	22,2684
	56,0	59,89	23,4	2950,82	0,8	MRN 62	19310	166,8	114,8	330,00	30,7868
		58,68	23,9	2833,33	1,2	MRN 63	7800	173,0	121,0	330,00	22,0179
	71,0	72,33	19,4	3493,15	1,0	MRN 63	7800	173,0	121,0	330,00	21,8075
		90,0	91,45	15,3	4396,55	0,8	MRN 63	7800	173,0	121,0	330,00
11	6,3	5,64	248	406,04	2,7	MRN 52	7550	155,2	65,2	620,00	37,6347
		5,77	250	402,66	> 3,0	MRN 62	10060	204,8	114,8	620,00	84,0612
	7,1	7,46	188	537,21	2,3	MRN 52	8250	155,2	65,2	620,00	31,2885
		7,39	189	532,59	> 3,0	MRN 62	9540	204,8	114,8	620,00	68,0211
	8,0	7,66	183	552,42	2,1	MRN 52	8410	155,2	65,2	620,00	31,9539
		7,97	176	574,82	> 3,0	MRN 62	11380	204,8	114,8	620,00	68,6806

Gearboxes RN

1400 rpm

Geared Motor Selection

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
11	9,0	9,46	148	681,42	2,1	MRN 52	8900	155,2	65,2	620,00	27,6749
		9,38	149	675,85	> 3,0	MRN 62	9030	204,8	114,8	620,00	56,8499
	10,0	10,13	138	731,21	1,6	MRN 52	9280	155,2	65,2	620,00	28,0395
		10,54	133	758,62	2,9	MRN 62	12550	204,8	114,8	620,00	58,6662
	11,2	11,45	122	823,67	1,9	MRN 52	8400	155,2	65,2	620,00	25,5151
		11,36	123	817,75	> 3,0	MRN 62	5620	204,8	114,8	620,00	50,1639
	12,5	12,85	109	925,90	1,3	MRN 52	10080	155,2	65,2	620,00	25,6545
	14,0	14,12	99,2	1017,82	1,6	MRN 52	8470	155,2	65,2	620,00	23,7029
		14	100	1007,54	> 3,0	MRN 62	5450	204,8	114,8	620,00	44,5468
	16,0	15,56	90	1118,97	1,1	MRN 52	10780	155,2	65,2	620,00	24,1384
		16,19	86,4	1167,45	1,9	MRN 62	11630	204,8	114,8	620,00	46,1997
	18,0	17,85	78,4	1289,93	1,3	MRN 52	8680	155,2	65,2	620,00	22,1741
		17,7	79,1	1275,36	2,5	MRN 62	3100	204,8	114,8	620,00	39,8027
	20,0	19,96	70,1	1435,06	1,6	MRN 62	15790	204,8	114,8	620,00	41,9382
	22,4	23,25	60,2	1678,40	1,9	MRN 62	8000	204,8	114,8	620,00	35,8331
	25,0	25,24	55,5	1813,19	1,7	MRN 62	16780	204,8	114,8	620,00	38,1707
	28,0	27,69	50,6	1998,33	1,6	MRN 62	6000	204,8	114,8	620,00	34,0539
	31,5	30,38	46,1	2189,42	1,4	MRN 62	7160	204,8	114,8	620,00	33,2259
	35,5	37,35	37,5	2685,92	0,9	MRN 62	16090	204,8	114,8	620,00	31,7360
	40,0	39,49	35,5	2855,60	1,1	MRN 62	18170	204,8	114,8	620,00	33,3872
38,2		36,7	2687,97	1,2	MRN 63	7350	211,0	121,0	620,00	22,6869	
50,0	48,44	28,9	3431,19	1,0	MRN 63	7670	211,0	121,0	620,00	22,2684	
15	6,3	5,64	248	553,69	2,0	MRN 52	7550	165,2	65,2	740,00	37,6347
		5,77	250	549,08	> 3,0	MRN 62	10060	214,8	114,8	740,00	84,0612
	7,1	7,46	188	732,56	1,7	MRN 52	8250	165,2	65,2	740,00	31,2885
		7,39	189	726,26	> 3,0	MRN 62	9540	214,8	114,8	740,00	68,0211
	8,0	7,66	183	753,30	1,5	MRN 52	8410	165,2	65,2	740,00	31,9539
		7,97	176	783,85	2,8	MRN 62	11380	214,8	114,8	740,00	68,6806
	9,0	9,46	148	929,20	1,5	MRN 52	8900	165,2	65,2	740,00	27,6749
		9,38	149	921,61	> 3,0	MRN 62	9030	214,8	114,8	740,00	56,8499
	10,0	10,13	138	997,11	1,2	MRN 52	9280	165,2	65,2	740,00	28,0395
		10,54	133	1034,48	2,1	MRN 62	12550	214,8	114,8	740,00	58,6662
	11,2	11,45	122	1123,19	1,4	MRN 52	8400	165,2	65,2	740,00	25,5151
		11,36	123	1115,11	2,8	MRN 62	5620	214,8	114,8	740,00	50,1639
	12,5	12,85	109	1262,59	0,9	MRN 52	10080	165,2	65,2	740,00	25,6545
	14,0	14,12	99,2	1387,93	1,2	MRN 52	8470	165,2	65,2	740,00	23,7029
		14	100	1373,91	2,3	MRN 62	5450	214,8	114,8	740,00	44,5468
	16,0	15,56	90	1525,86	0,8	MRN 52	10780	165,2	65,2	740,00	24,1384
		16,19	86,4	1591,98	1,4	MRN 62	11630	214,8	114,8	740,00	46,1997
	18,0	17,85	78,4	1758,99	0,9	MRN 52	8680	165,2	65,2	740,00	22,1741
		17,7	79,1	1739,13	1,8	MRN 62	3100	214,8	114,8	740,00	39,8027
	20,0	19,96	70,1	1956,90	1,2	MRN 62	15790	214,8	114,8	740,00	41,9382
22,4	23,25	60,2	2288,73	1,4	MRN 62	8000	214,8	114,8	740,00	35,8331	
25,0	25,24	55,5	2472,53	1,2	MRN 62	16780	214,8	114,8	740,00	38,1707	
28,0	27,69	50,6	2725,00	1,2	MRN 62	6000	214,8	114,8	740,00	34,0539	
31,5	30,38	46,1	2985,58	1,0	MRN 62	7160	214,8	114,8	740,00	33,2259	
40,0	39,49	35,5	3894,00	0,8	MRN 62	18170	214,8	114,8	740,00	33,3872	
	38,2	36,7	3665,41	0,9	MRN 63	7350	221,0	121,0	740,00	22,6869	
50,0	48,44	28,9	4678,90	0,7	MRN 63	7670	221,0	121,0	740,00	22,2684	
18,5	6,3	5,64	248	682,89	1,6	MRN 52	7550	185,2	65,2	1300,00	37,6347

RN Gearboxes

Geared Motor Selection

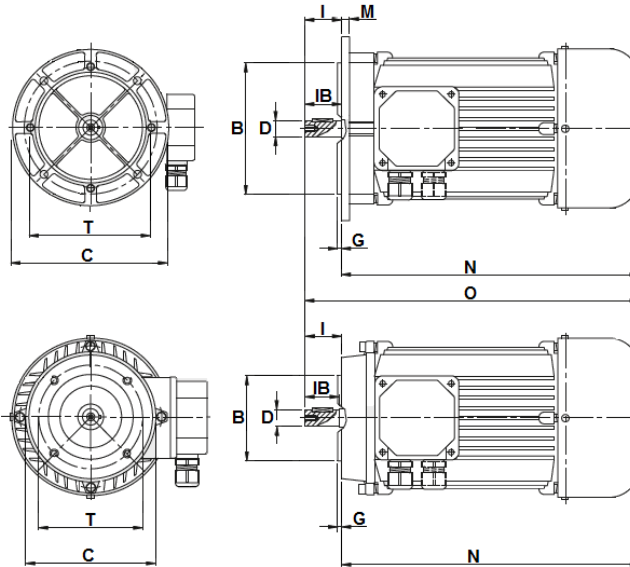
1400 rpm

P ₁ [kW]	i _n	i _r	N ₂ [rpm]	M ₂ [Nm]	FS	Tipo - Size - Größe	F _{r2} [N]	MRN [kg]	FRN [kg]	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
18,5	6,3	5,77	250	677,20	> 3,0	MRN 62	10060	234,8	114,8	1300,00	84,0612
	7,1	7,46	188	903,49	1,4	MRN 52	8250	185,2	65,2	1300,00	31,2885
		7,39	189	895,72	2,9	MRN 62	9540	234,8	114,8	1300,00	68,0211
	8,0	7,66	183	929,07	1,2	MRN 52	8410	185,2	65,2	1300,00	31,9539
		7,97	176	966,75	2,3	MRN 62	11380	234,8	114,8	1300,00	68,6806
	9,0	9,46	148	1146,02	1,2	MRN 52	8900	185,2	65,2	1300,00	27,6749
		9,38	149	1136,65	2,6	MRN 62	9030	234,8	114,8	1300,00	56,8499
	10,0	10,13	138	1229,77	0,9	MRN 52	9280	185,2	65,2	1300,00	28,0395
		10,54	133	1275,86	1,7	MRN 62	12550	234,8	114,8	1300,00	58,6662
	11,2	11,45	122	1385,27	1,1	MRN 52	8400	185,2	65,2	1300,00	25,5151
		11,36	123	1375,30	2,3	MRN 62	5620	234,8	114,8	1300,00	50,1639
	14,0	14,12	99,2	1711,78	0,9	MRN 52	8470	185,2	65,2	1300,00	23,7029
		14	100	1694,49	1,9	MRN 62	5450	234,8	114,8	1300,00	44,5468
	16,0	16,19	86,4	1963,44	1,1	MRN 62	11630	234,8	114,8	1300,00	46,1997
	18,0	17,7	79,1	2144,93	1,5	MRN 62	3100	234,8	114,8	1300,00	39,8027
	20,0	19,96	70,1	2413,51	0,9	MRN 62	15790	234,8	114,8	1300,00	41,9382
	22,4	23,25	60,2	2822,77	1,2	MRN 62	8000	234,8	114,8	1300,00	35,8331
	25,0	25,24	55,5	3049,45	1,0	MRN 62	16780	234,8	114,8	1300,00	38,1707
	28,0	27,69	50,6	3360,83	1,0	MRN 62	6000	234,8	114,8	1300,00	34,0539
	31,5	30,38	46,1	3682,21	0,8	MRN 62	7160	234,8	114,8	1300,00	33,2259
22	6,3	5,64	248	812,08	1,4	MRN 52	7550	200,2	65,2	1500,00	37,6347
		5,77	250	805,32	2,7	MRN 62	10060	249,8	114,8	1500,00	84,0612
	7,1	7,46	188	1074,42	1,2	MRN 52	8250	200,2	65,2	1500,00	31,2885
		7,39	189	1065,18	2,4	MRN 62	9540	249,8	114,8	1500,00	68,0211
	8,0	7,66	183	1104,85	1,0	MRN 52	8410	200,2	65,2	1500,00	31,9539
		7,97	176	1149,64	1,9	MRN 62	11380	249,8	114,8	1500,00	68,6806
	9,0	9,46	148	1362,83	1,0	MRN 52	8900	200,2	65,2	1500,00	27,6749
		9,38	149	1351,69	2,1	MRN 62	9030	249,8	114,8	1500,00	56,8499
	10,0	10,13	138	1462,43	0,8	MRN 52	9280	200,2	65,2	1500,00	28,0395
		10,54	133	1517,24	1,5	MRN 62	12550	249,8	114,8	1500,00	58,6662
	11,2	11,45	122	1647,34	0,9	MRN 52	8400	200,2	65,2	1500,00	25,5151
		11,36	123	1635,49	1,9	MRN 62	5620	249,8	114,8	1500,00	50,1639
	14,0	14,12	99,2	2035,63	0,8	MRN 52	8470	200,2	65,2	1500,00	23,7029
		14	100	2015,07	1,6	MRN 62	5450	249,8	114,8	1500,00	44,5468
	16,0	16,19	86,4	2334,91	1,0	MRN 62	11630	249,8	114,8	1500,00	46,1997
	18,0	17,7	79,1	2550,72	1,3	MRN 62	3100	249,8	114,8	1500,00	39,8027
	20,0	19,96	70,1	2870,11	0,8	MRN 62	15790	249,8	114,8	1500,00	41,9382
	22,4	23,25	60,2	3356,81	1,0	MRN 62	8000	249,8	114,8	1500,00	35,8331
	25,0	25,24	55,5	3626,37	0,8	MRN 62	16780	249,8	114,8	1500,00	38,1707
	28,0	27,69	50,6	3996,67	0,8	MRN 62	6000	249,8	114,8	1500,00	34,0539
31,5	30,38	46,1	4378,85	0,7	MRN 62	7160	249,8	114,8	1500,00	33,2259	

Gearboxes RN

Motor Quick-Reference Chart

IEC - B5



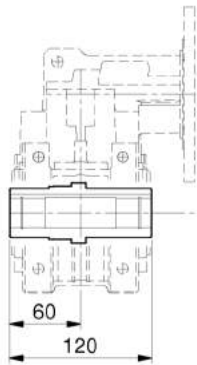
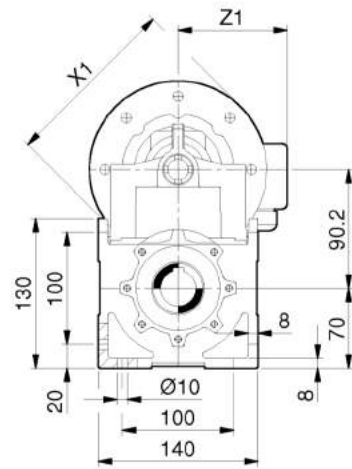
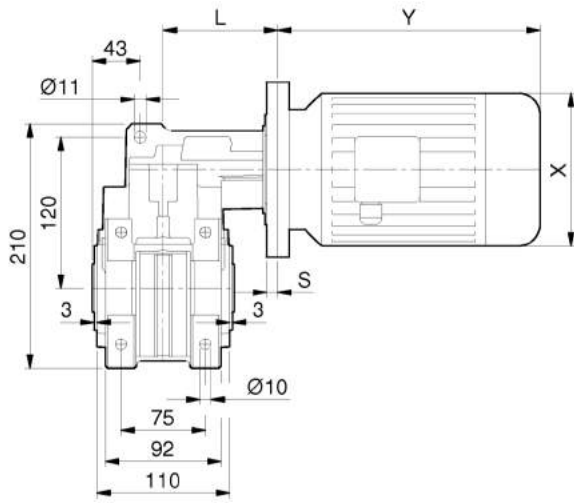
IEC - B14

Frame	4 poles			2 poles			Flange C / T / B	Shaft D x I	G	IB	M	N	O
	kW	rpm	kg (B3)	kW	rpm	kg (B3)							
T56A	0.06	1410	2.5	0.09	2730	2.6	B5 - 120 / 100 / 80	9 x 20	2.5	20	8.5	168	188
T56B	0.09	1340	2.6	0.14	2750	3.2	B14 - 80 / 65 / 50					125	145
T63A	0.13	1340	3.7	0.18	2770	3.7	B5 - 140 / 115 / 95	11 x 23	2.5	23	10	190.5	213.5
T63B	0.18	1360	4.3	0.25	2820	4.3	B14 - 90 / 75 / 60					140	161
T71A	0.25	1410	5.8	0.37	2860	5.8	B5 - 160 / 130 / 110	14 x 30	3.0	30	10	218	248
T71B	0.37	1370	6.2	0.55	2860	6.2	B14 - 105 / 85 / 70					168	188
T80A	0.55	1430	8.5	0.75	2860	8.5	B5 - 200 / 165 / 130	19 x 40	3.0	40	11	248	282
T80B	0.75	1430	9.8	1.1	2850	9.8	B14 - 120 / 100 / 80						
T90S	1.1	1430	12.0	1.5	2880	12.0	B5 - 200 / 165 / 130	24 x 50	3.5	50	10	255	305
T90L	1.5	1430	13.5	2.2	2850	13.5	B14 - 140 / 115 / 95					280	330
T100A	2.2	1430	19.0	3	2910	18.5	B5 - 250 / 215 / 180	28 x 60	4.0	60	14	312	372
T100B	3	1430	21.0	4	2920	21.0	B14 - 160 / 130 / 110						
T112A	4	1440	29.0	5.5	2920	32.0	B5 - 250 / 215 / 180 B14 - 160 / 130 / 110	28 x 60	4.0	60	14	330	390
T132S	5.5	1460	43	7.5	2920	48	B5 - 300 / 265 / 230	38 x 80	4.0	80	20	380.5	460.5
T132M	7.5	1460	52	11	2940	54	B14 - 200 / 165 / 130					418.5	498.5
T132ML	9.2	1460	54	15	2940	58							
T160M	11	1470	90	---	---	---	B5 - 350 / 300 / 250	42 x 110	5.0	110	20	491	601
T160L	15	1480	100	18.5	2960	99	B14 - 250 / 215 / 180					535	645
T180M	18.5	1470	120	22	2940	110	B% - 350 / 300 / 250	48 x 110	5.0	110	20	610	720
T180L	22	1480	135	---	---	---							

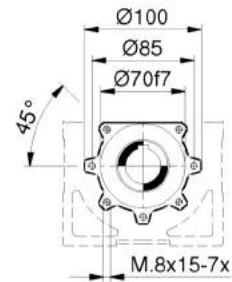
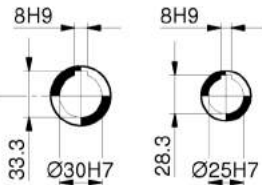
Not binding dimensions and weights

Dimensions

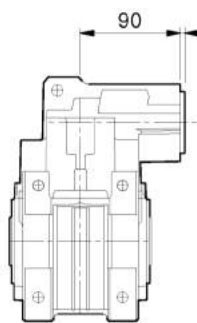
**MRN
FRN**



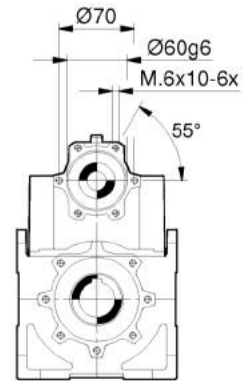
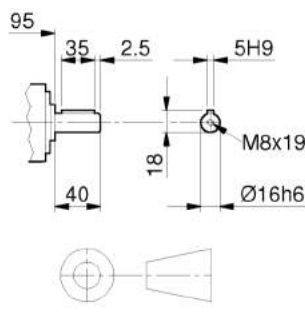
AC30 AC25



SRN

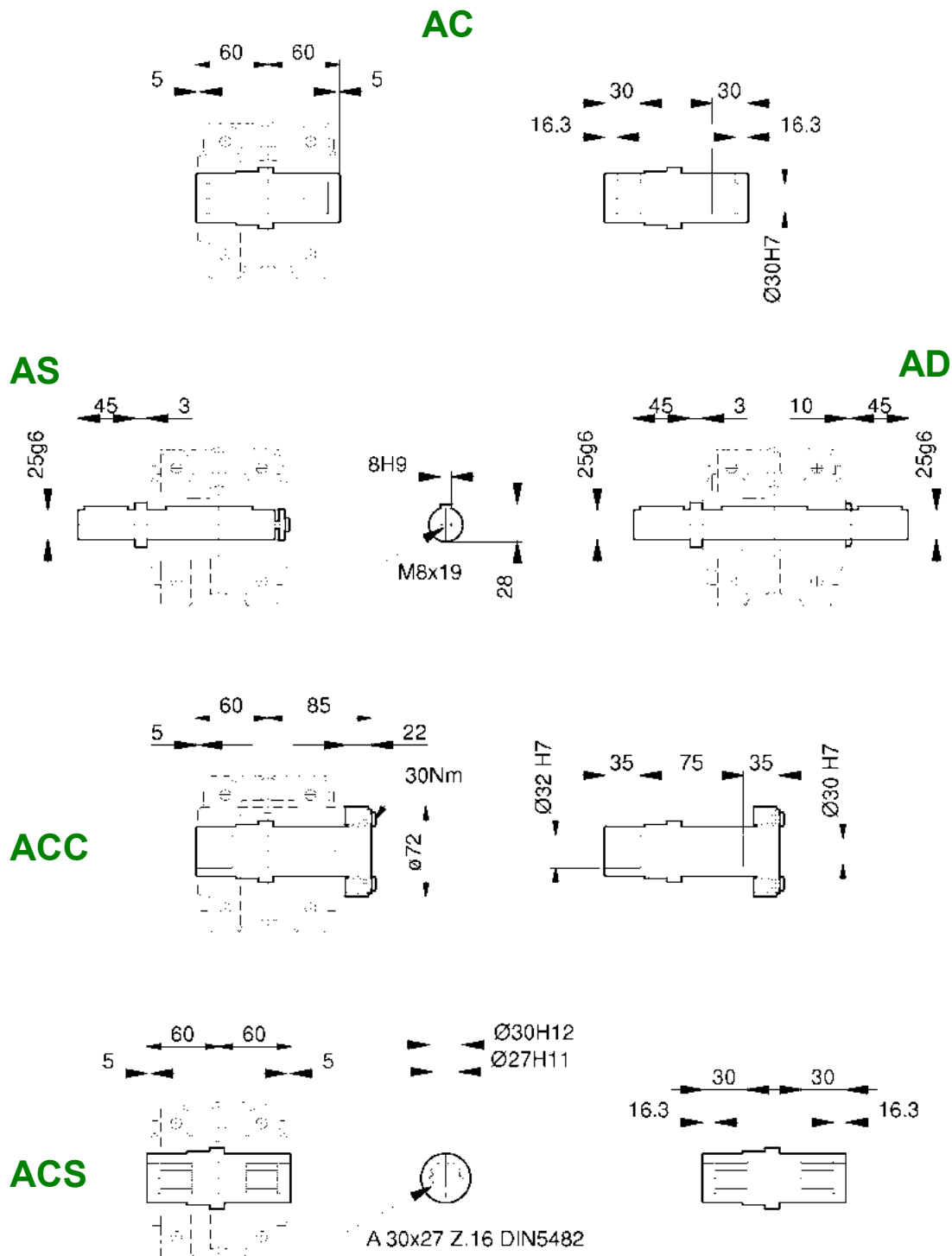


RN



RN	12 / 13	12 / 13	12 / 13	12	12	12
IEC	56	63	71	80	90 S	90 L
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149
X1 (B5) / S	120/13	140/13	160/13,5	200/13,5	---	---
X1 (B14) / S	---	90/13	105/18,5	120/13,5	140/13,5	140/13,5
L (RN12)	103	103	103,5 (108,5)	103,5	103,5	103,5
L (RN13)	103	103	103,5 (108,5)	---	---	---

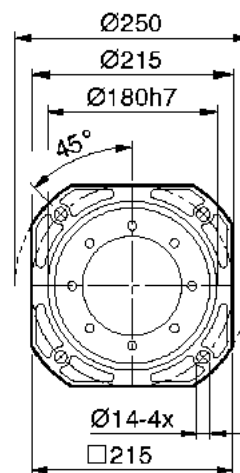
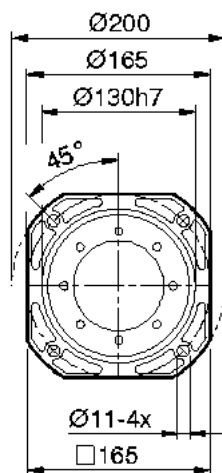
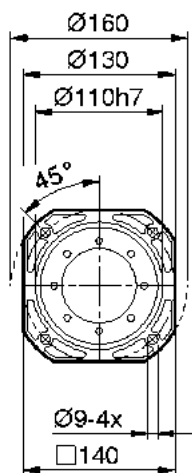
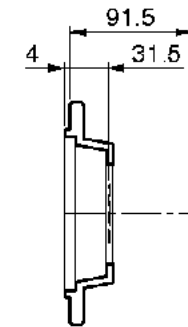
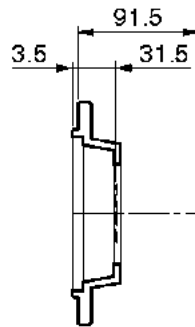
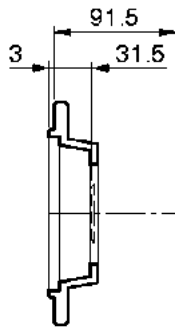
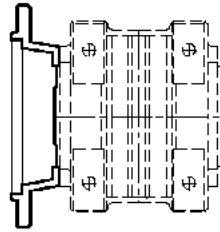
Not binding dimensions and weights



- Machine shaft dimensions: pages 80-82

Not binding dimensions and weights

Dimensions

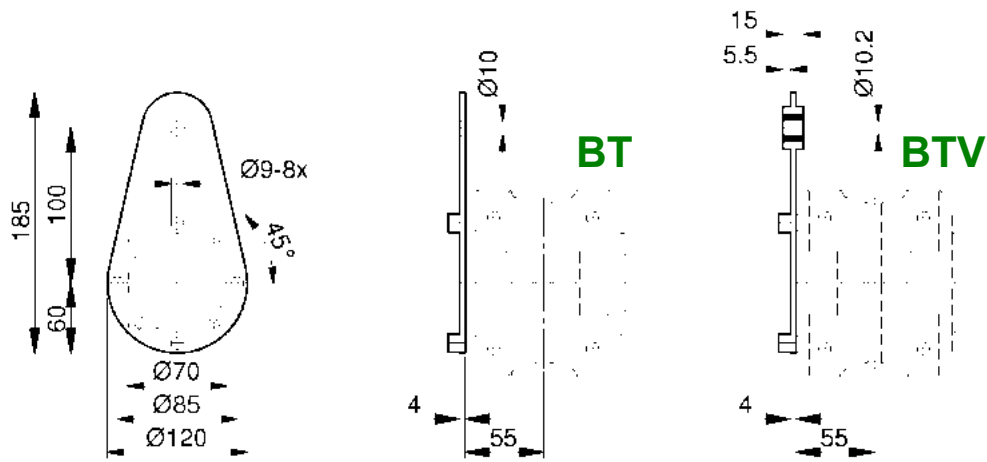


Not binding dimensions and weights

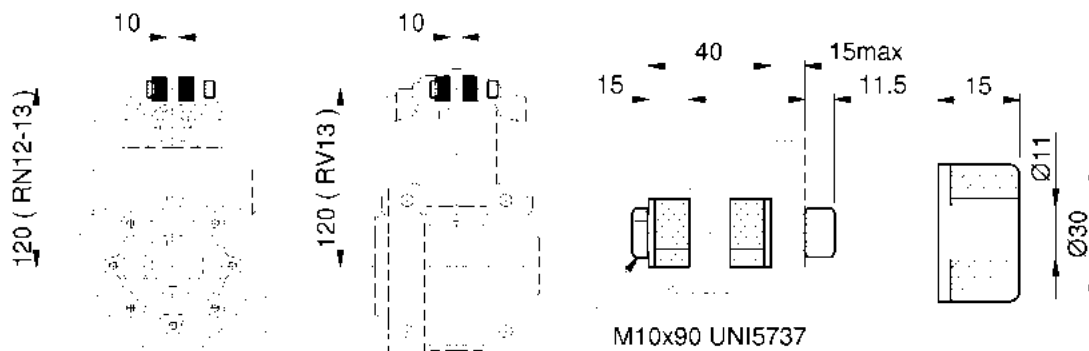
RN12-13

Gearboxes RN

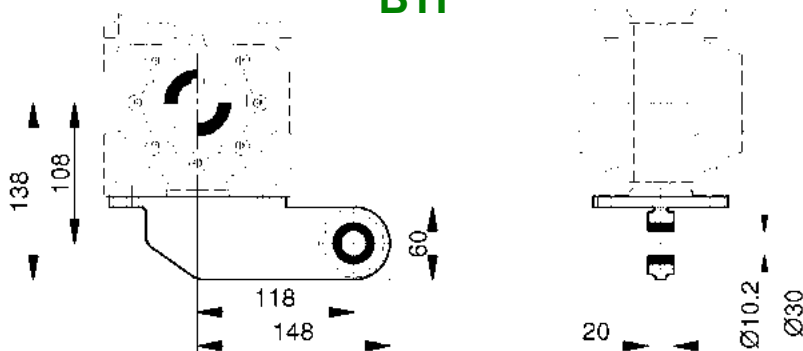
Dimensions



BTA



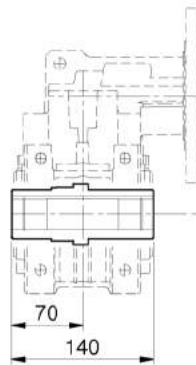
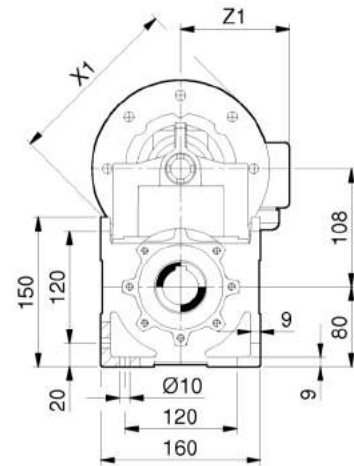
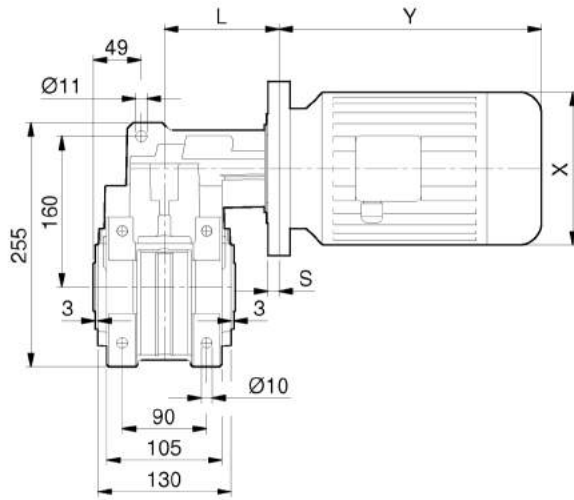
BTF



Not binding dimensions and weights

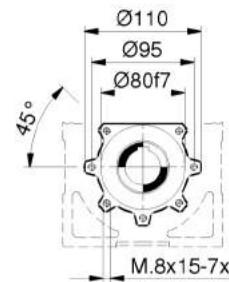
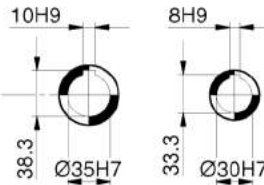
Dimensions

**MRN
FRN**



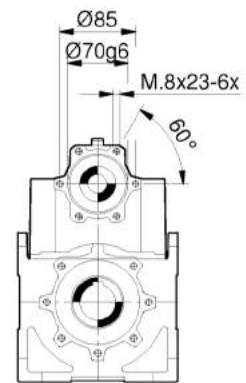
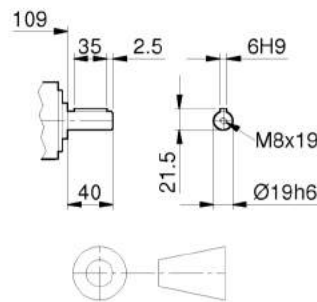
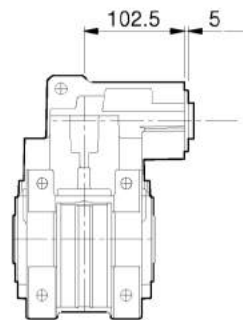
AC35

AC30



SRN

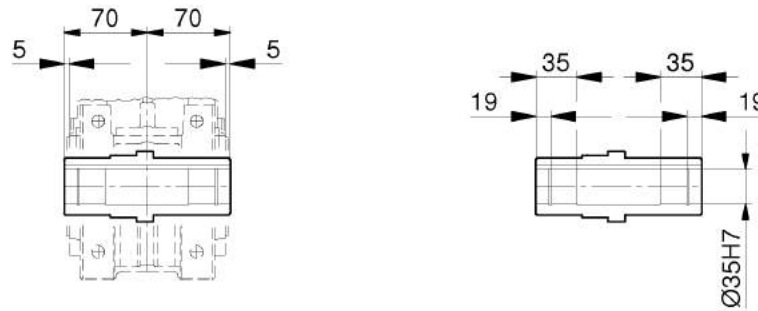
RN



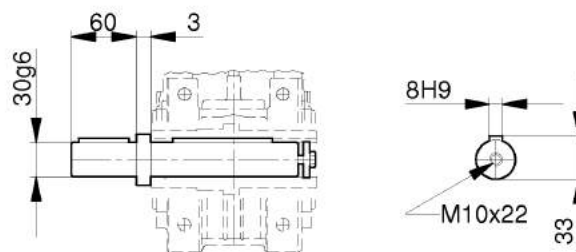
RN	22 / 23	22 / 23	22	22	22	22
IEC	71	80	90 S	90 L	100	112
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5
L (RN22)	118	118 (120)	118 (120)	118 (120)	119 (118)	119 (118)
L (RN23)	118	118 (120)	---	---	---	---

Not binding dimensions and weights

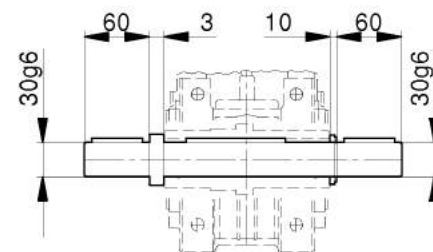
AC



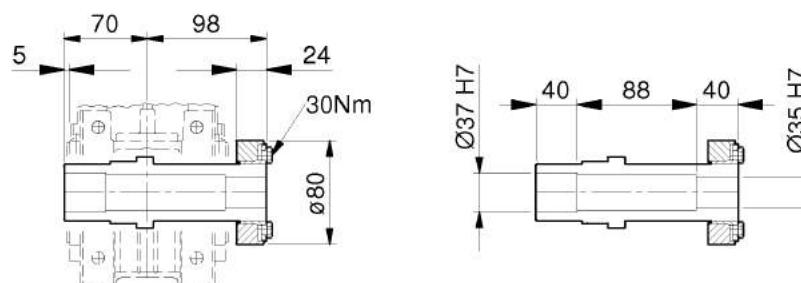
AS



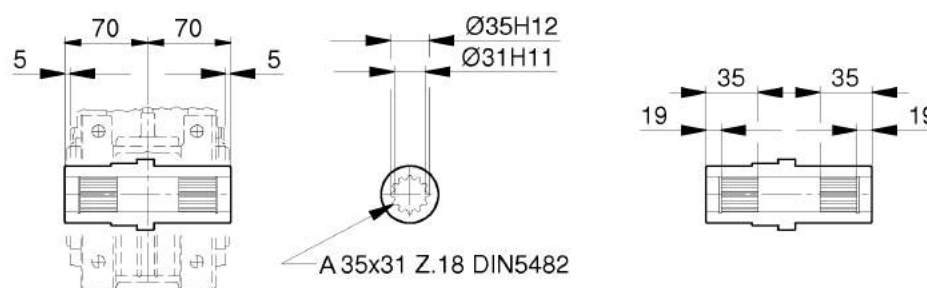
AD



ACC



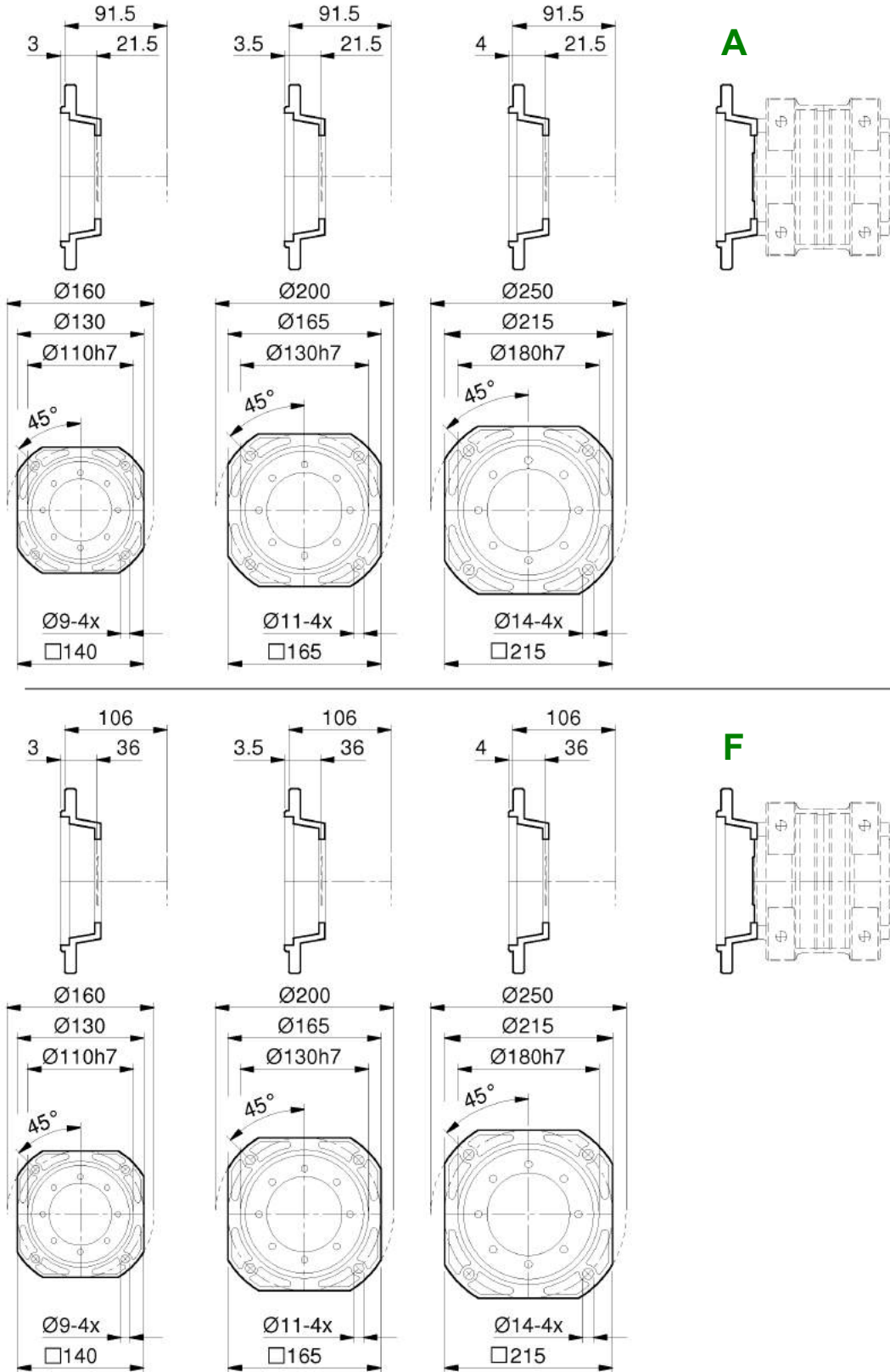
ACS



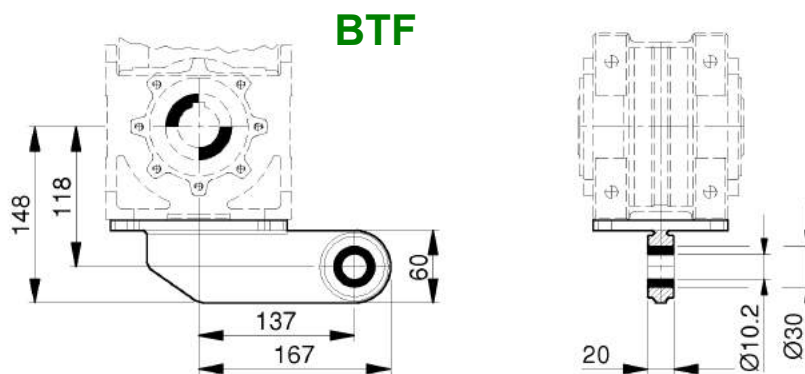
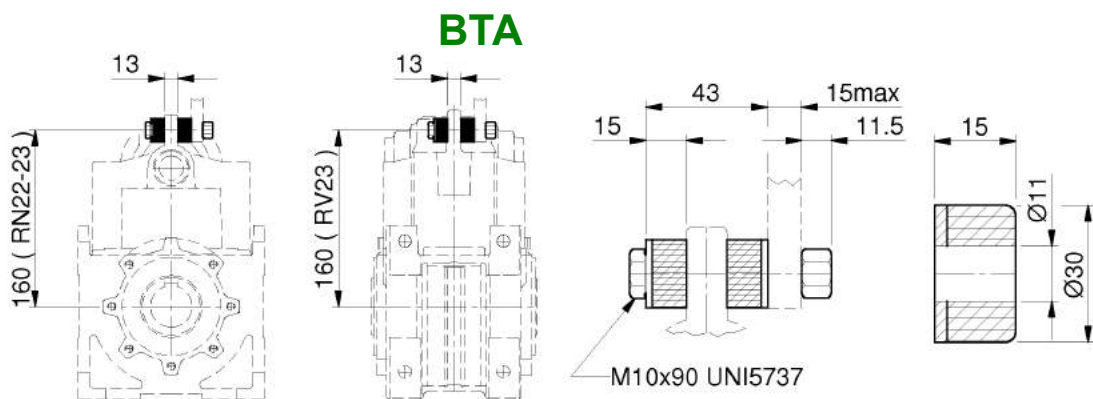
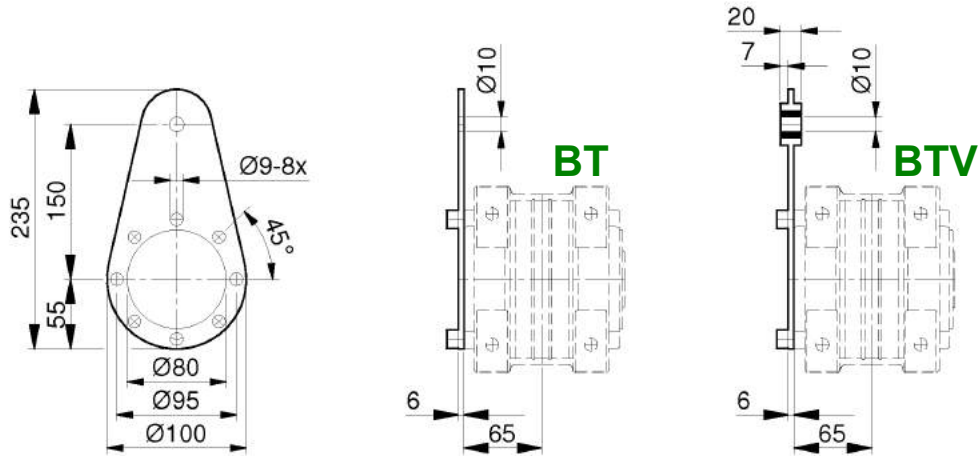
- Machine shaft dimensions: pages 80-82

Not binding dimensions and weights

Dimensions



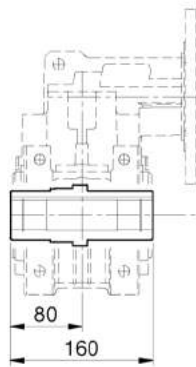
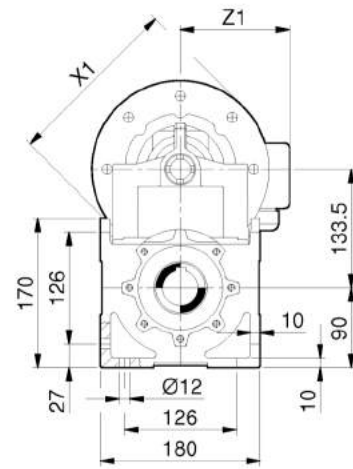
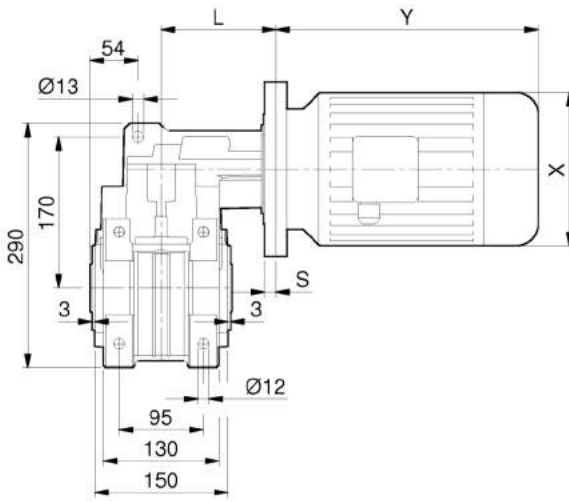
Not binding dimensions and weights



Not binding dimensions and weights

Dimensions

**MRN
FRN**

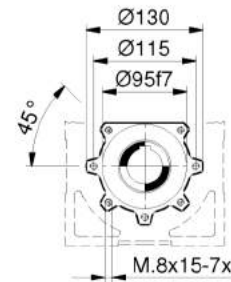
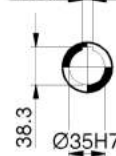


AC40

AC35

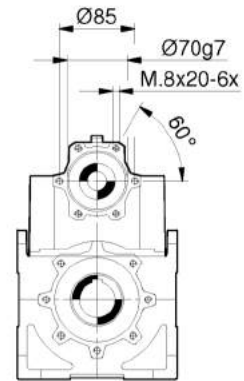
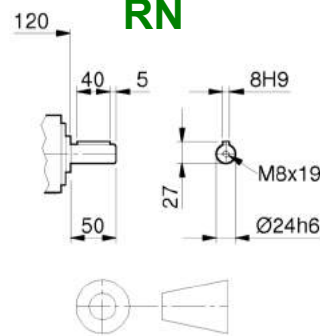
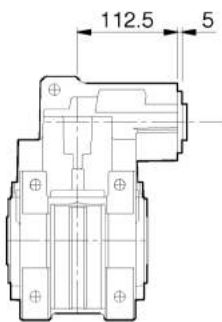
12H9

10H9



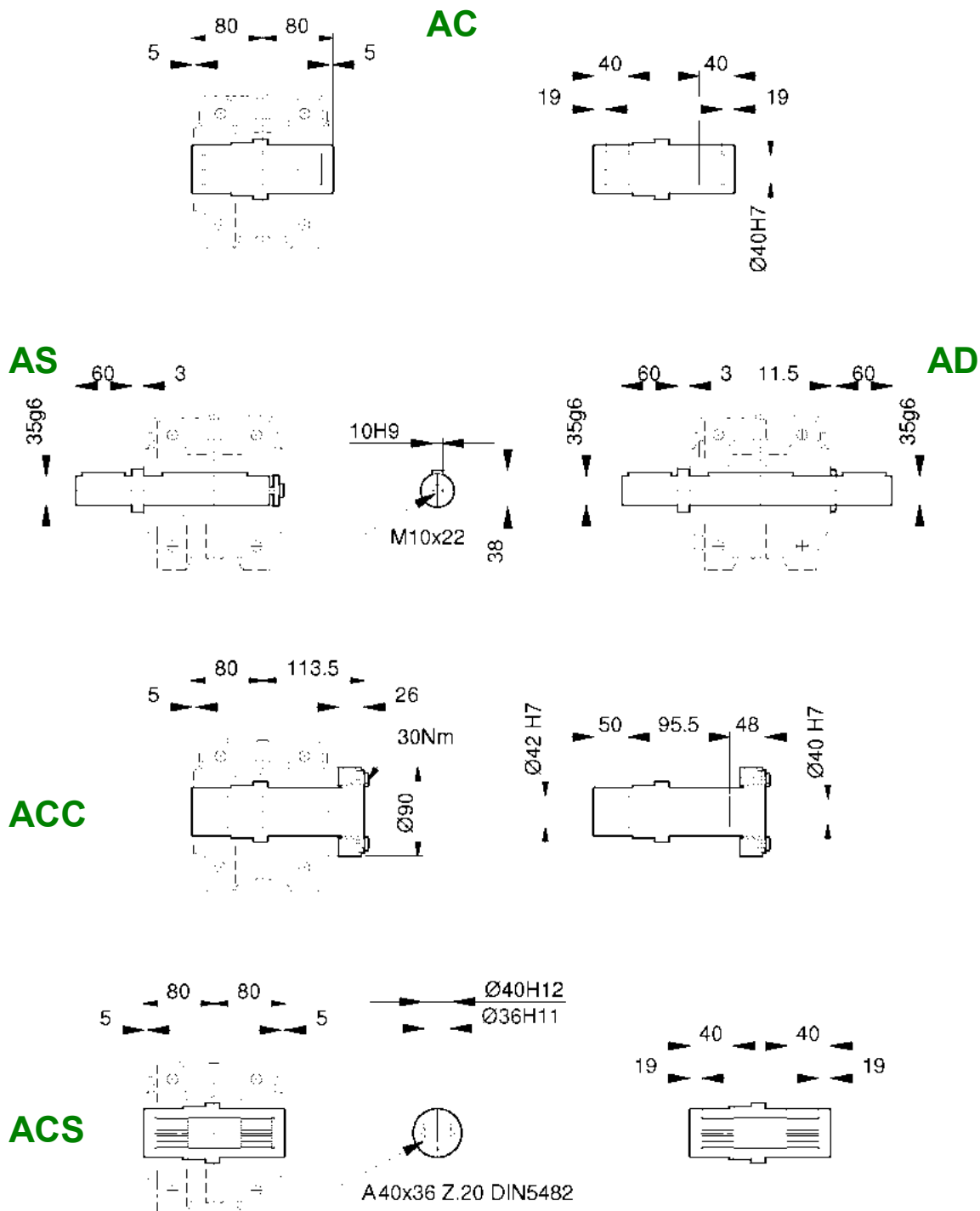
SRN

RN



RN	32 / 33	32 / 33	32 / 33	32 / 33	32	32
IEC	71	80	90 S	90 L	100	112
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5
L (RN32)	128	128 (130)	128 (130)	128 (130)	129 (128)	129 (128)
L (RN33)	128	128 (130)	128 (130)	128 (130)	---	---

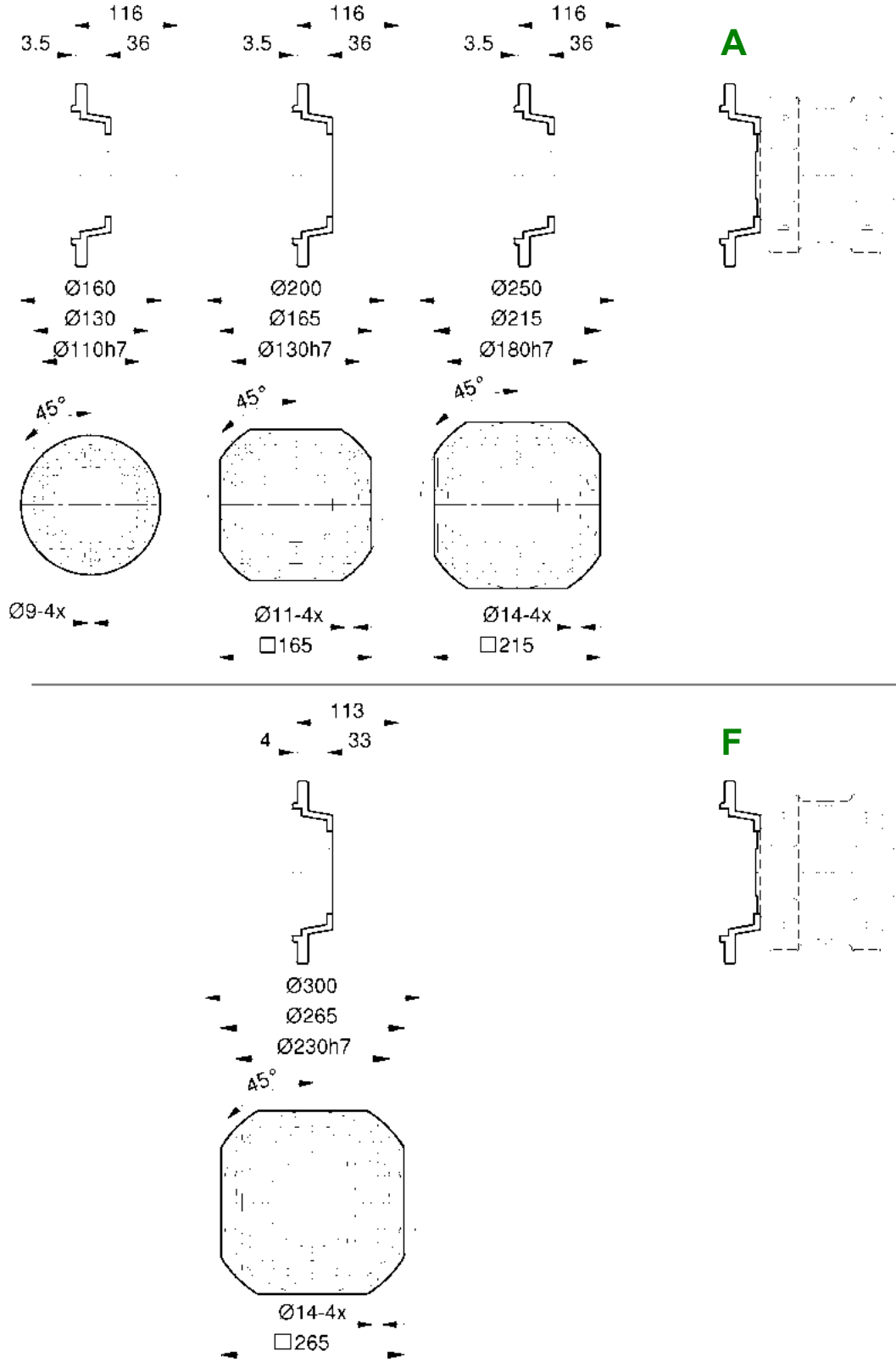
Not binding dimensions and weights



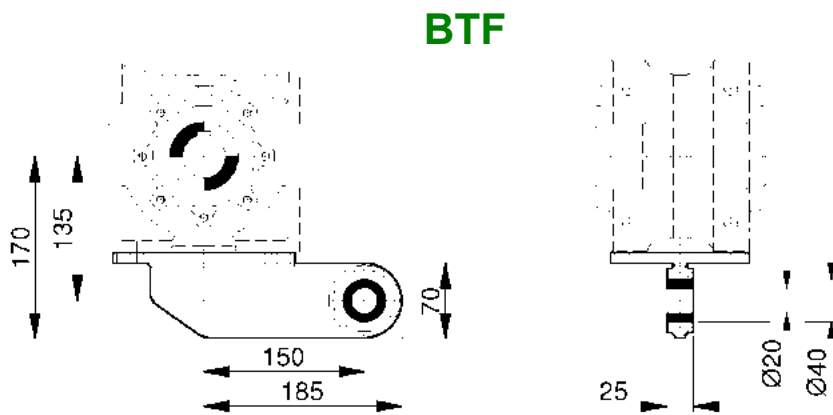
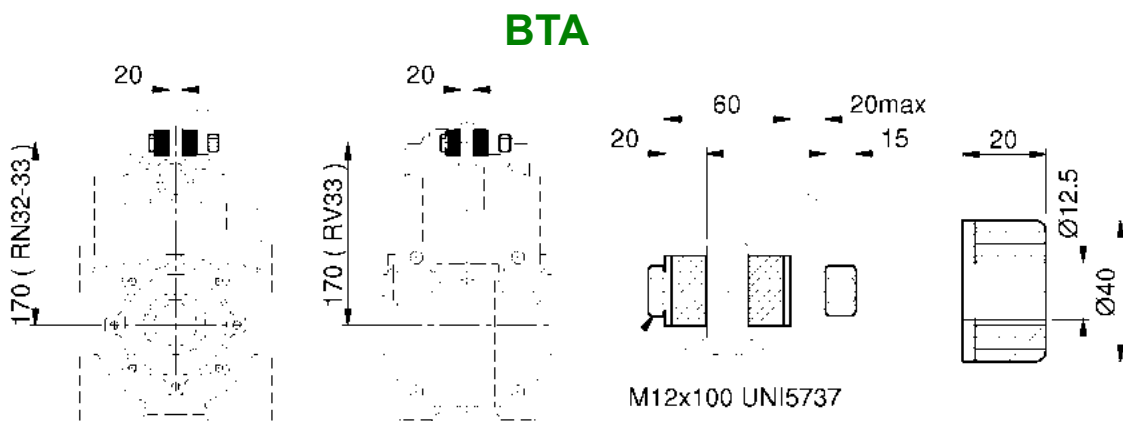
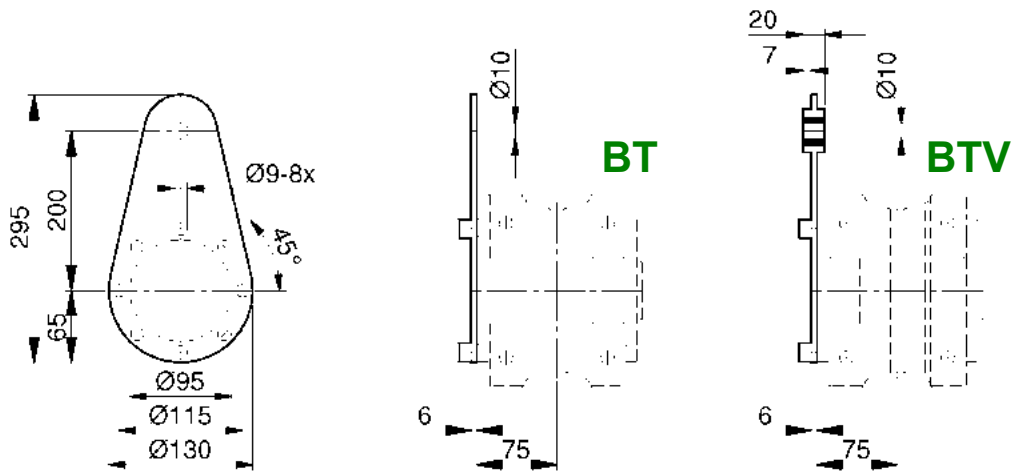
- Machine shaft dimensions: pages 80-82

Not binding dimensions and weights

Dimensions



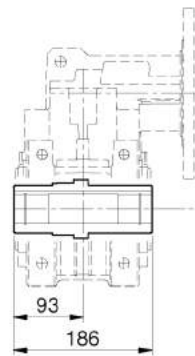
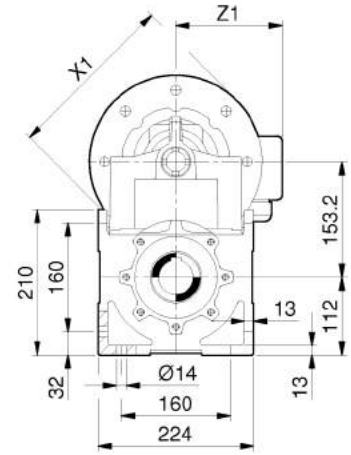
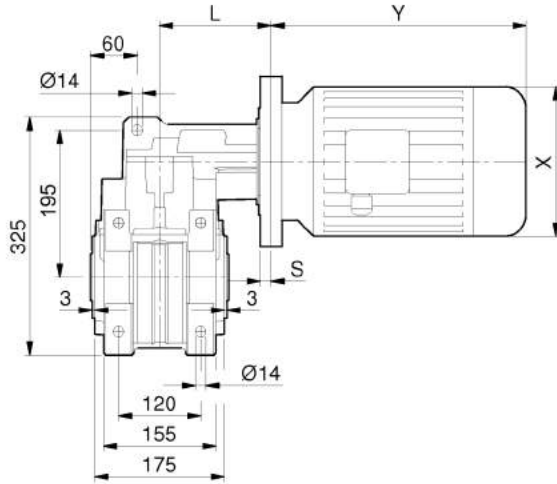
Not binding dimensions and weights



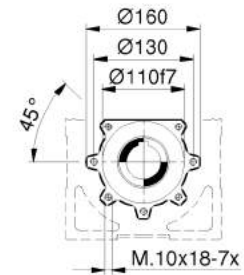
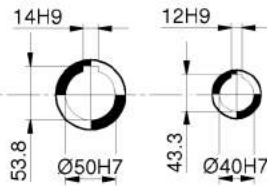
Not binding dimensions and weights

Dimensions

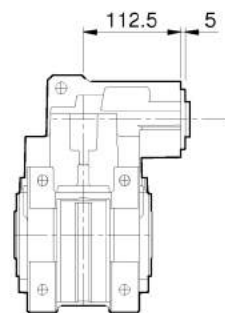
**MRN
FRN**



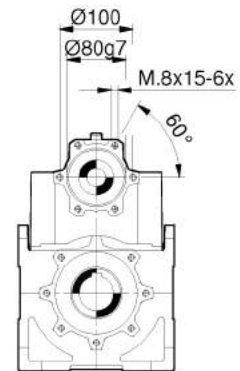
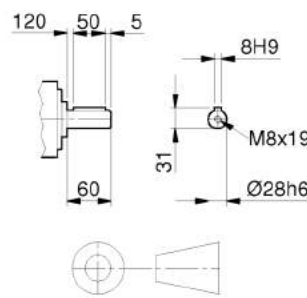
AC50 AC40



SRN

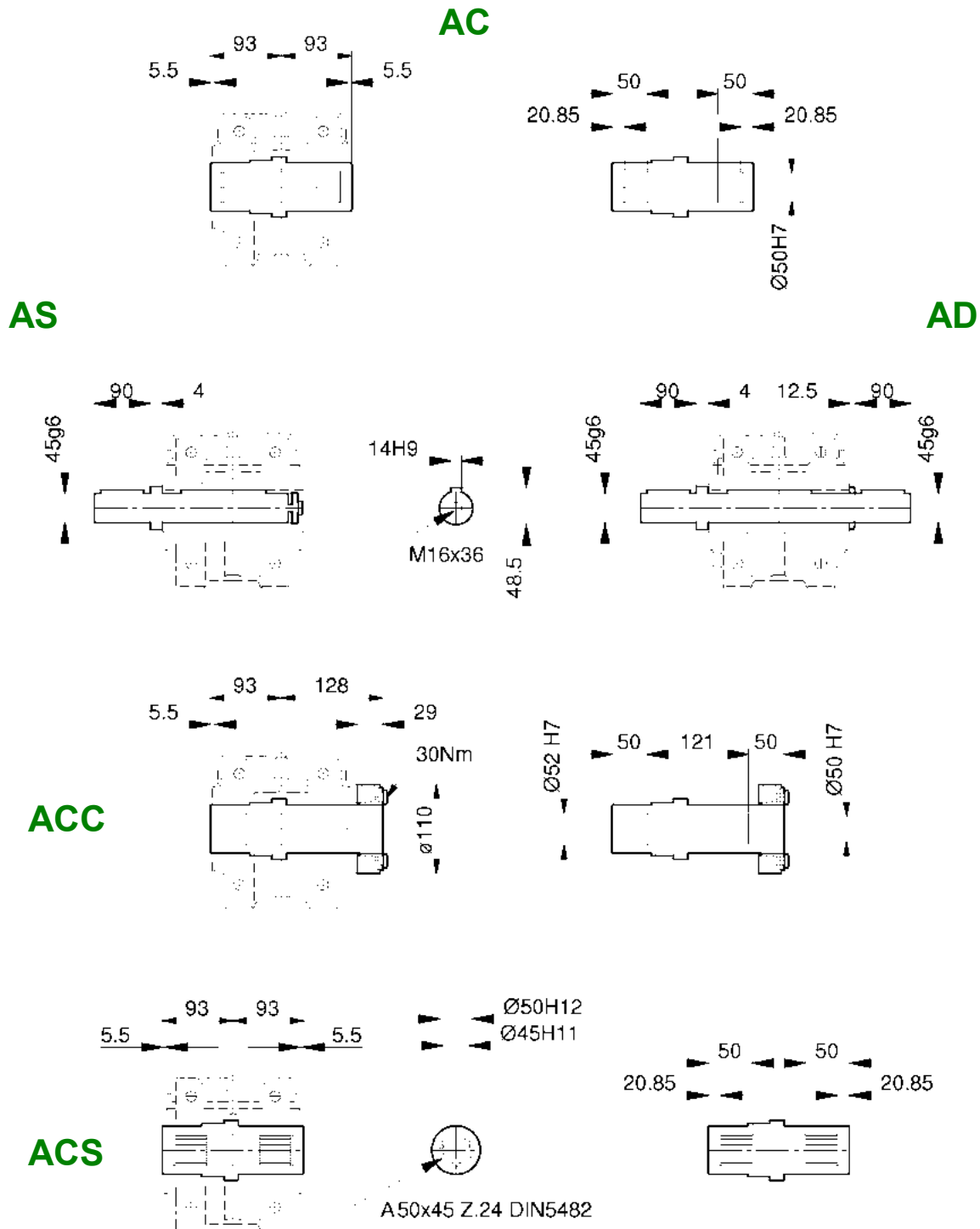


RN



RN	42 / 43	42 / 43	42 / 43	42 / 43	42 / 43	42
IEC	71	80	90 S	90 L	100	112
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5
X1 (B14) / S	---	120/15,5	---	---	160/15,5	160/15,5
L (RN42)	148	148	148 (151)	148 (151)	149 (148)	149 (148)
L (RN43)	148	148	148 (151)	148 (151)	149 (148)	---

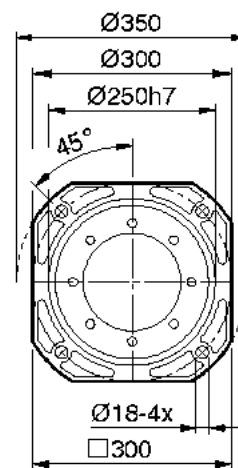
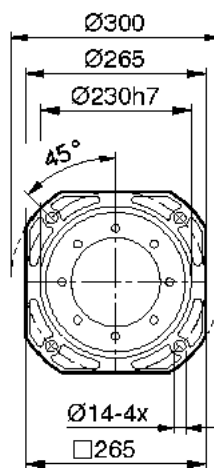
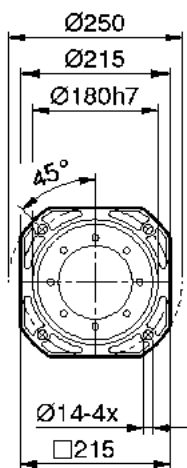
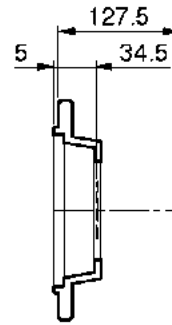
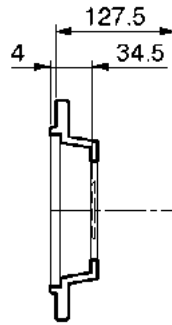
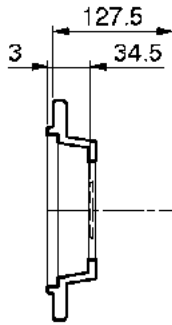
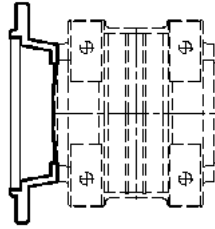
Dimensioni e pesi non impegnativi



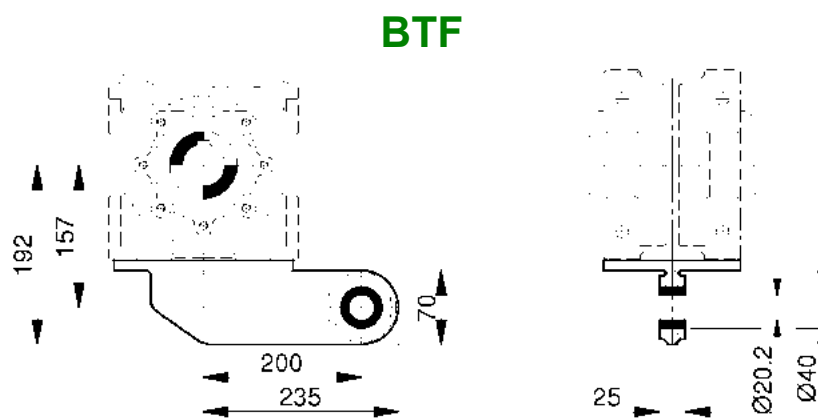
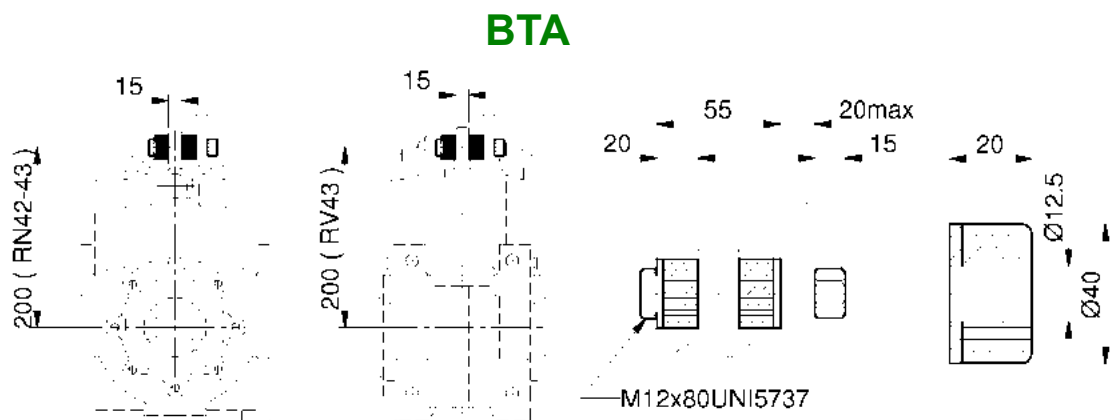
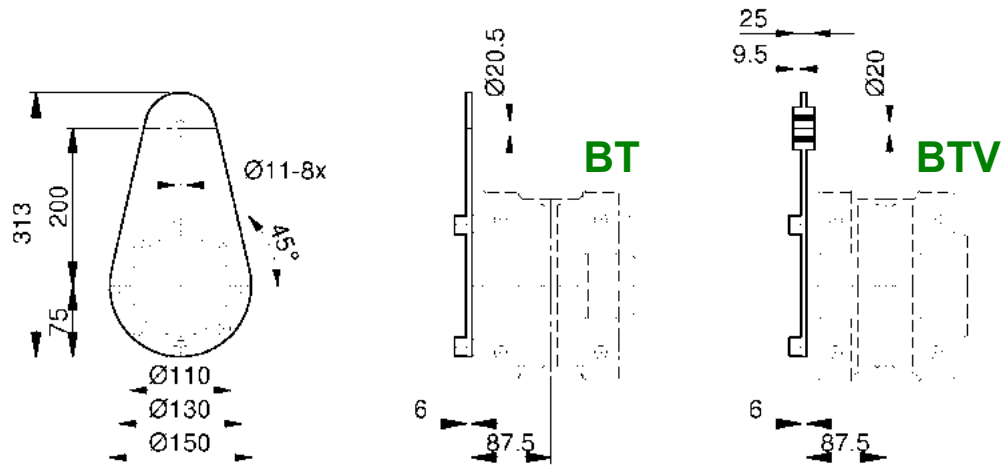
- Machine shaft dimensions: pages 80-82

Dimensioni e pesi non impegnativi

Dimensions



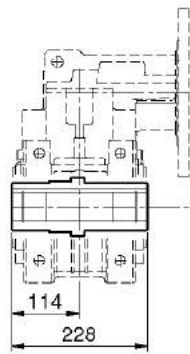
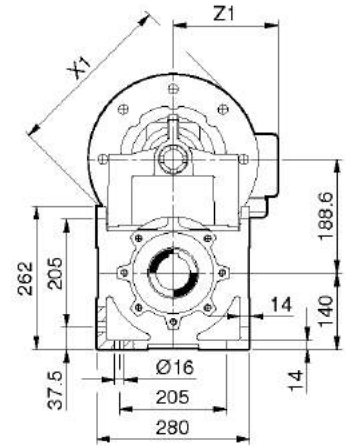
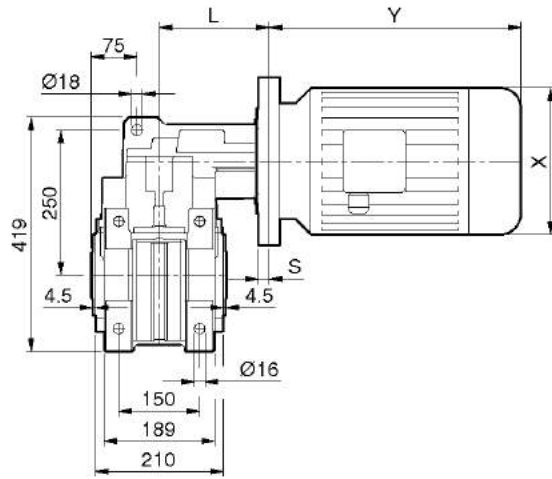
Not binding dimensions and weights



Not binding dimensions and weights

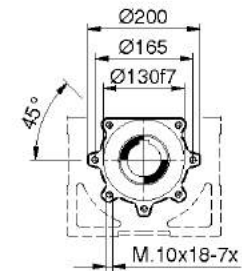
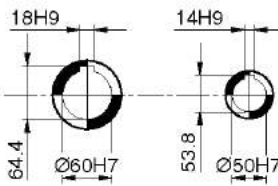
Dimensions

**MRN
FRN**



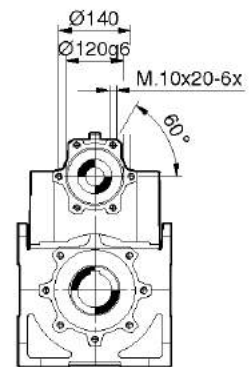
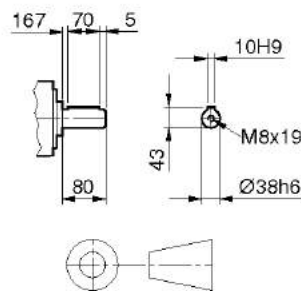
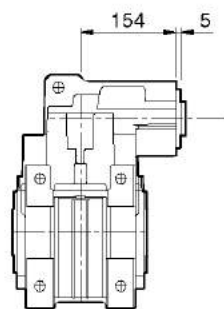
AC60

AC50



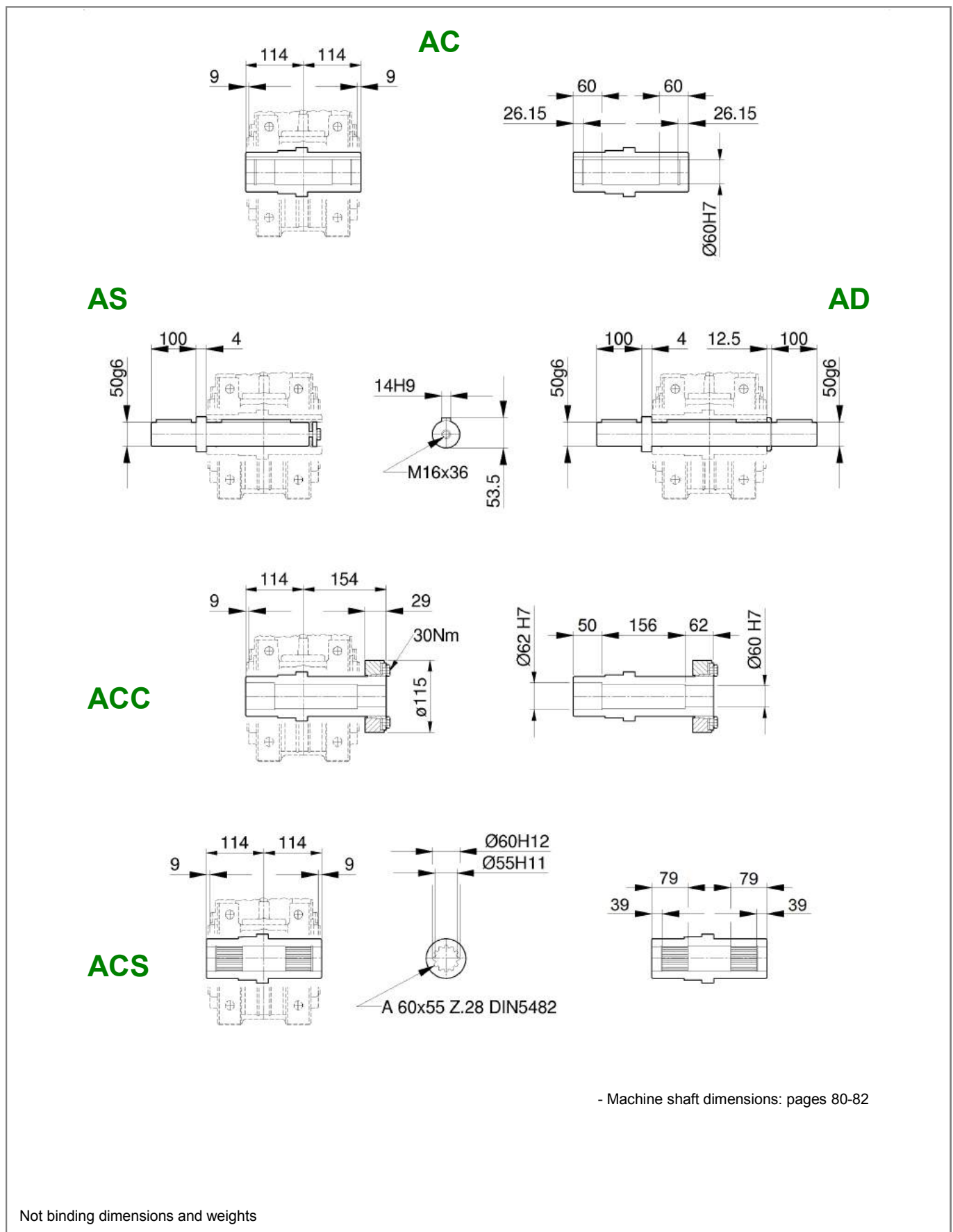
SRN

RN

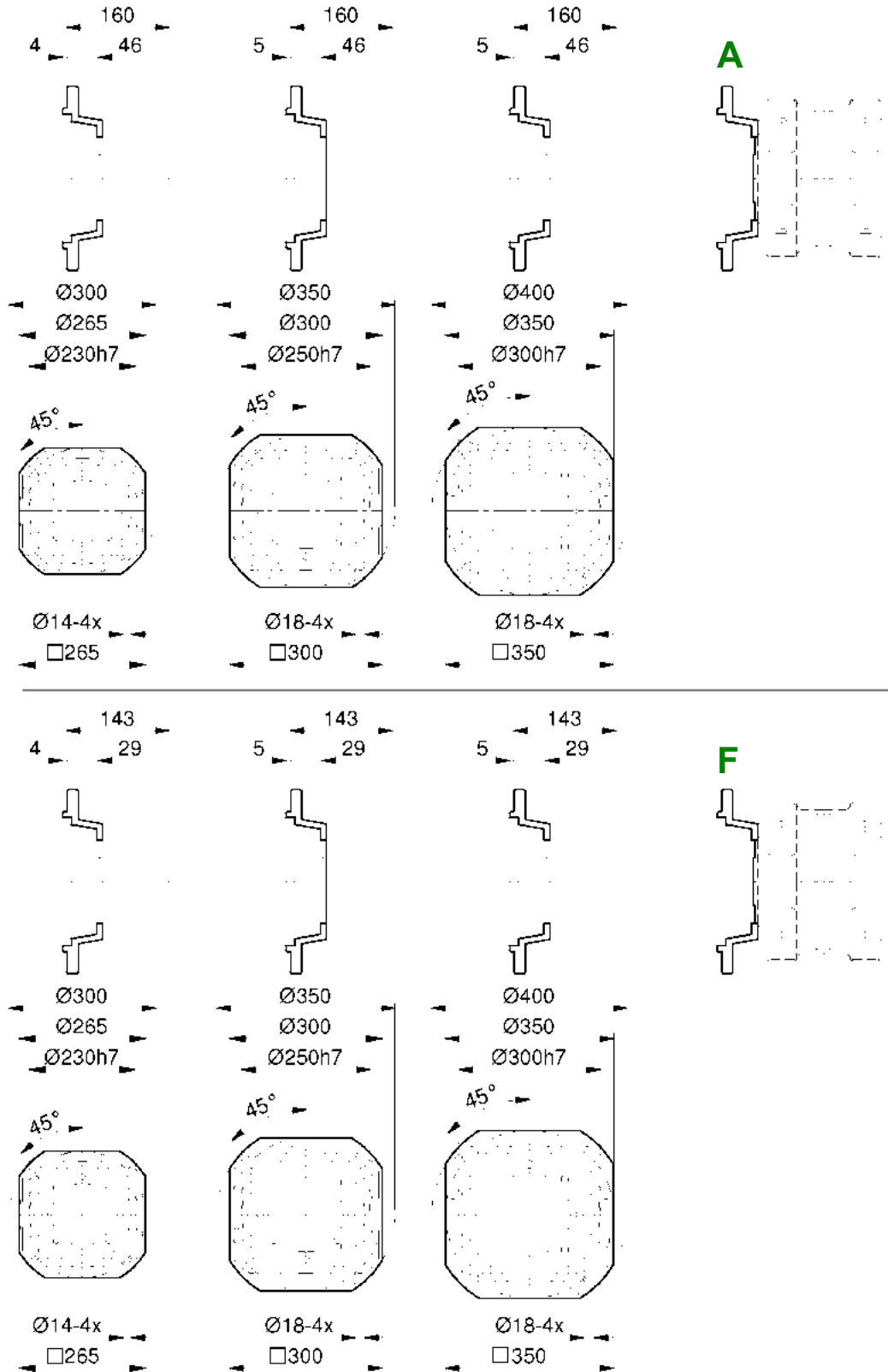


RN	52 / 53	52 / 53	52 / 53	52 / 53	52 / 53	52	52
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RN52)	176	176	176	176	176	189 (176)	189 (176)
L (RN53)	176	176	176	176	176	---	---

Not binding dimensions and weights



Dimensions

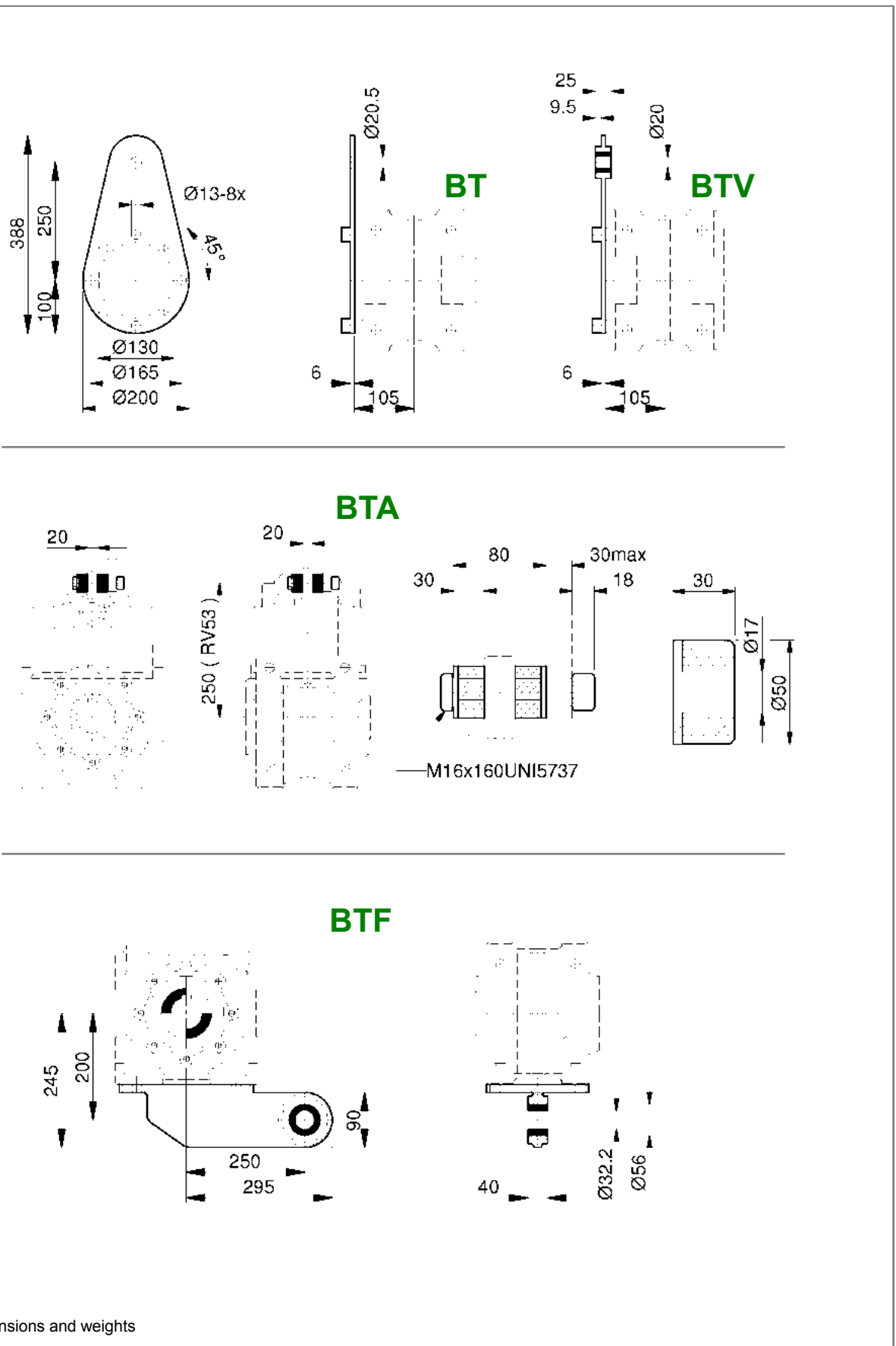


Not binding dimensions and weights

RN52-53

Gearboxes RN

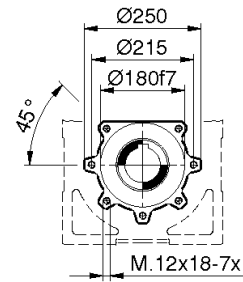
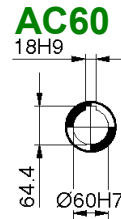
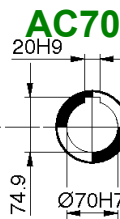
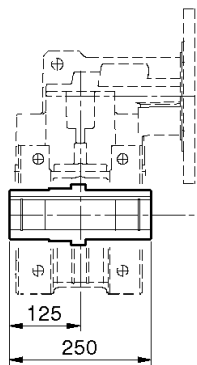
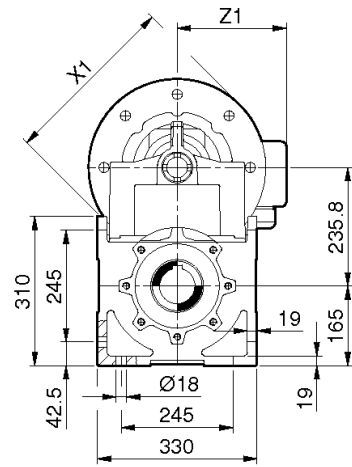
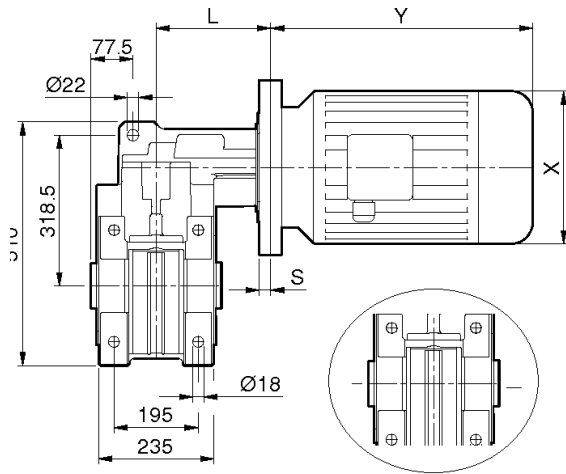
Dimensions



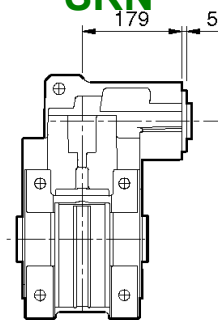
Not binding dimensions and weights

Dimensions

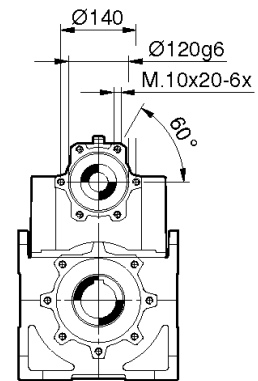
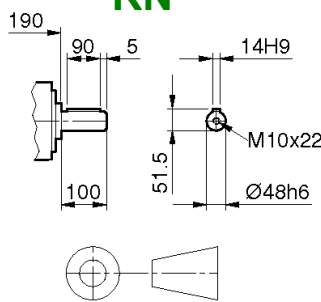
**MRN
FRN**



SRN

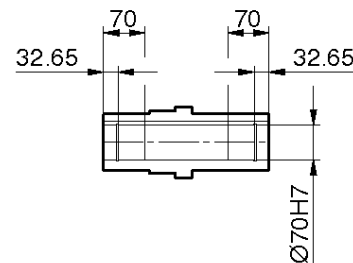
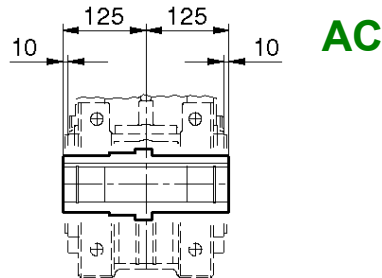


RN

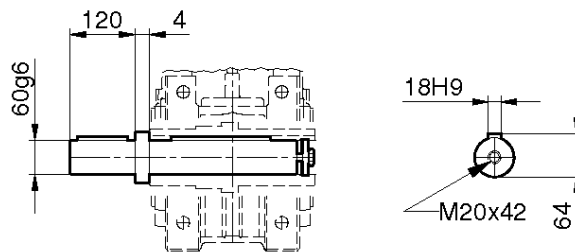


RN	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RN62)	201	201	201	201	201	214 (201)	214 (201)
L (RN63)	201	201	201	201	201	214 (201)	---

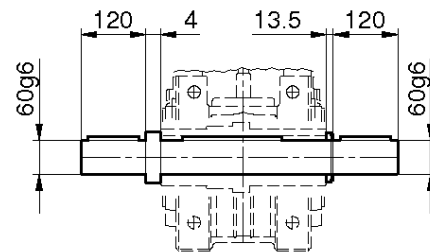
Not binding dimensions and weights



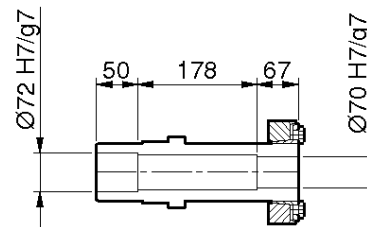
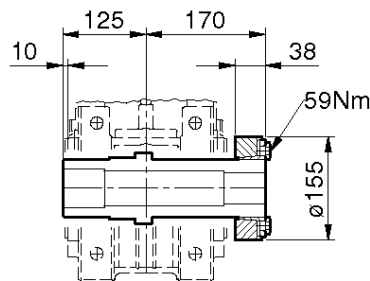
AS



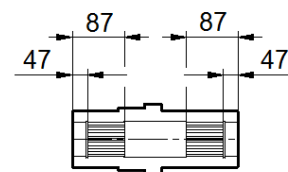
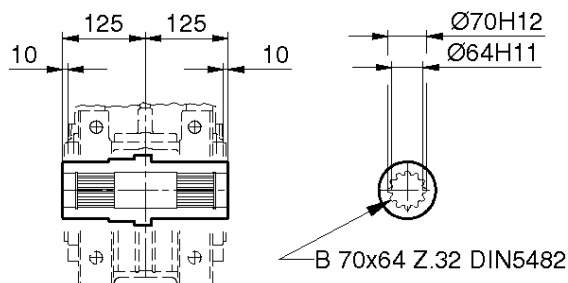
AD



ACC



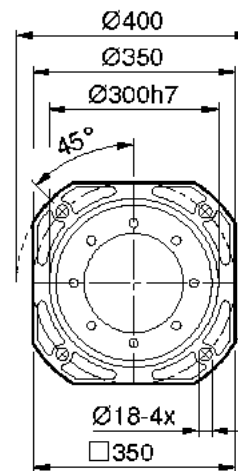
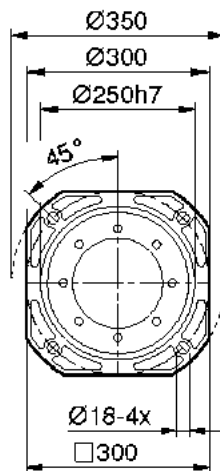
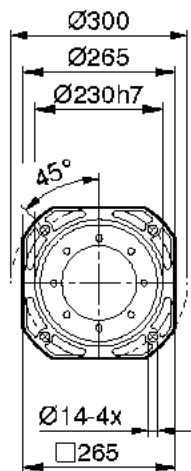
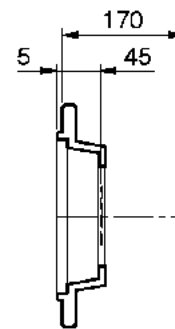
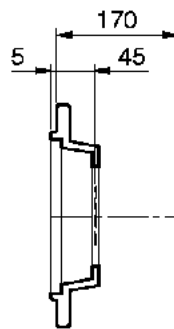
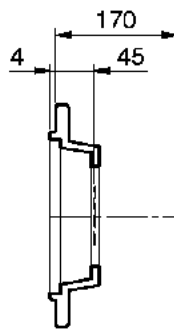
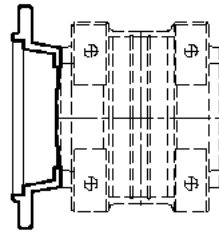
ACS



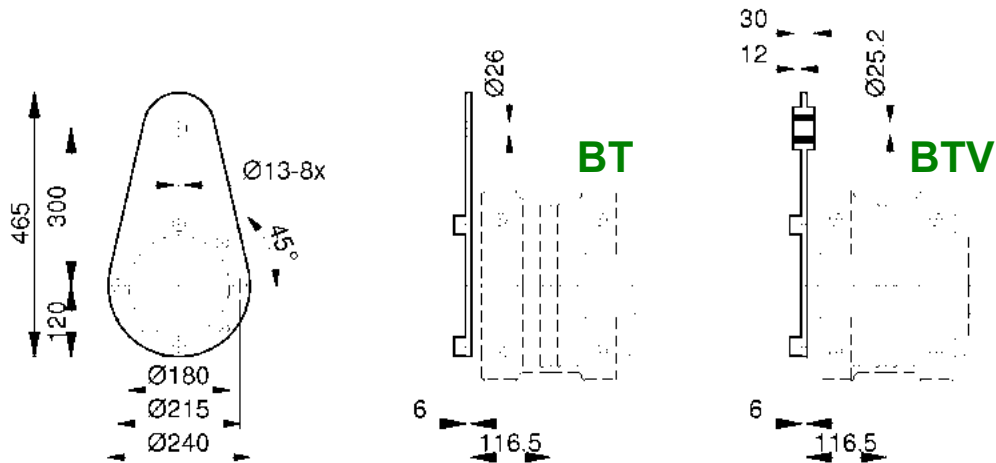
- Machine shaft dimensions: pages 80-82

Not binding dimensions and weights

Dimensions



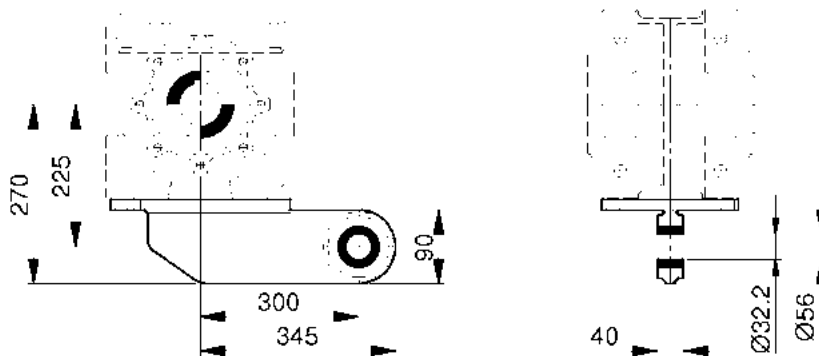
Not binding dimensions and weights



BTA



BTF

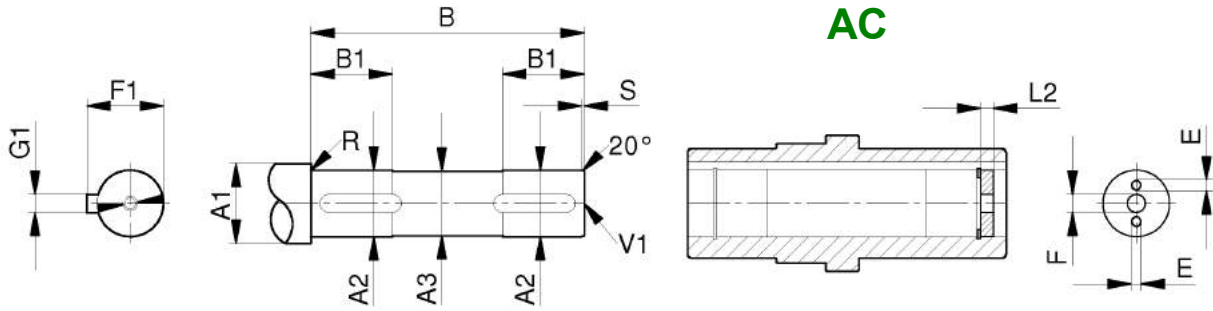


Not binding dimensions and weights

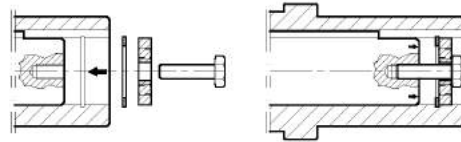
RN Gearboxes

Machine Shaft Dimensions

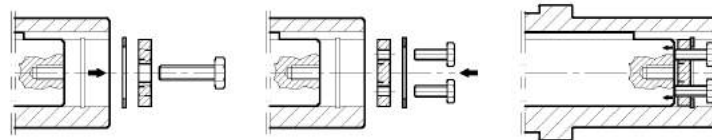
The table shows the dimensions of the machine shaft to be fitted into the AC hollow output shaft with standard key.



- Mounting



- Disassembly



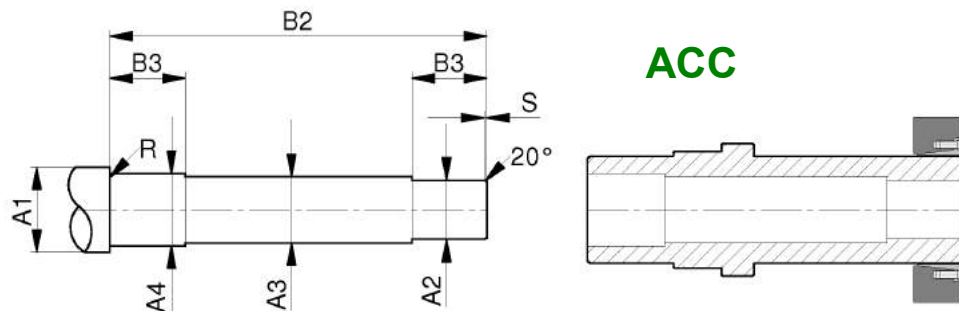
Size	A1	A2	A3	B	B1	E	F	F1	G1	L2	R	S	V1
RN12 - RN13	40	30	29	98	35	M6	11	33	8	5,5	1	2	M10x22
	35	25	24	98	35	M6	9	28	8	4,5	1	2	M8x19
RN22 - RN23	45	35	34	113,5	40	M8	11	38	10	7	1	2	M10x22
	40	30	29	113,5	40	M6	11	33	8	7	1	2	M10x22
RN32 - RN33	50	40	39	133,5	45	M8	13	43	12	7	1	2	M12x28
	45	35	34	133,5	45	M8	11	38	10	7	1	2	M10x22
RN42 - RN43	60	50	49	155,5	55	M10	17	53,5	14	8	1,5	3	M16x36
	55	45	44	155,5	55	M10	17	48,5	14	8	1,5	3	M16x36
	50	40	39	155,5	55	M8	13	43	12	8	1,5	3	M12x28
RN52 - RN53	75	60	59	185	65	M12	17	64	18	12,5	2	4	M16x36
	70	55	54	185	65	M12	17	59	16	12,5	2	4	M16x36
	65	50	49	185	65	M10	17	53,5	14	12,5	2	4	M16x36
RN62 - RN63	85	70	69	205	70	M12	21	74,5	20	12,5	2	4	M20x42
	80	65	64	205	70	M12	21	69	18	12,5	2	4	M20x42
	75	60	59	205	70	M12	21	64	18	12,5	2	4	M16x36

Not binding dimensions and weights

Gearboxes RN

Machine Shaft Dimensions

The table shows the dimensions of the machine shaft to be fitted into the ACC hollow output shaft with shrink disk.



Size	A1	A2	A3	A4	B2	B3	R	S
RN12 - RN13	40	30	29	32	144	34	1	2
RN22 - RN23	45	35	34	37	167	39	1	2
RN32 - RN33	50	40	39	42	189	49	1	2
RN42 - RN43	60	50	49	52	220	49	1,5	3
RN52 - RN53	75	60	59	62	267	49	2	4
RN62 - RN63	85	70	69	72	294	49	2	4

The shrink-disk fit relies upon the proven wedge principle to create a keyless mechanical interference fit.

Screw axial locking tension is converted into radial contact pressure on the shaft/hub connection, making the shrink fit steady.

Assembly

Carefully clean the shaft/hub contact surfaces and grease with a fine layer of oil. Tighten the screws gradually and evenly until the locking torque is reached.

Do not use lubricants containing molybdenum bisulphite that origins notable lowering of the friction coefficient. No axial hub shifting occurs as regards the shaft when are tightening the screws.

Disassembly

Loose the screws in a continuous and even way without removing the screws.

In case of further assembly, apply a lubricant paste on screws and tapered surfaces to guarantee a friction coefficient of 0.04.

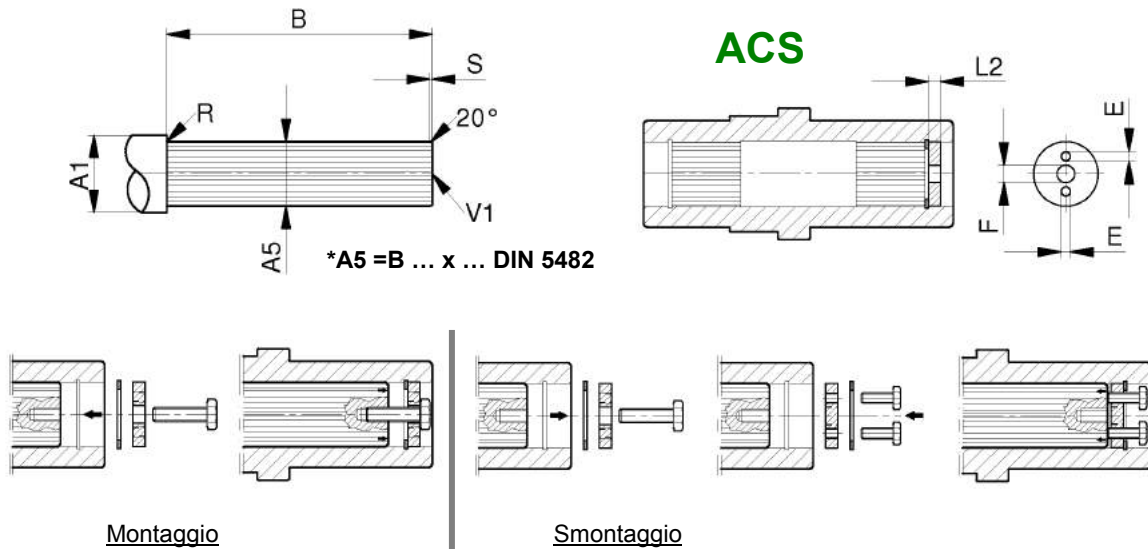
Locking torques, tolerances and roughness according to manufacturer's specifications.

Not binding dimensions and weights

RN Gearboxes

Machine Shaft Dimensions

The table shows the dimensions of the machine shaft to be fitted into the ACS splined hollow output shaft.



Size	A1	A5	B	E	F	L2	R	S	V1
RN12 - RN13	40	30x27	98	M6	11	5,5	1	2	M8x19
RN22 - RN23	45	35x31	113,5	M8	11	7	1	2	M10x22
RN32 - RN33	50	40x36	133,5	M8	13	7	1	2	M10x22
RN42 - RN43	60	50x45	155,5	M10	17	8	1,5	3	M16x36
RN52 - RN53	75	60x55	185	M12	17	12,5	2	4	M16x36
RN62 - RN63	85	70x64	205	M12	21	12,5	2	4	M20x42

Spline shafts have teeth that mesh with grooves in a mating piece and transfer torque to it, maintaining the angular correspondence between them.

As alternative to key/keyway connection, splines provide higher torque and longer fatigue lifetime.

Not binding dimensions and weights

Gearboxes RN

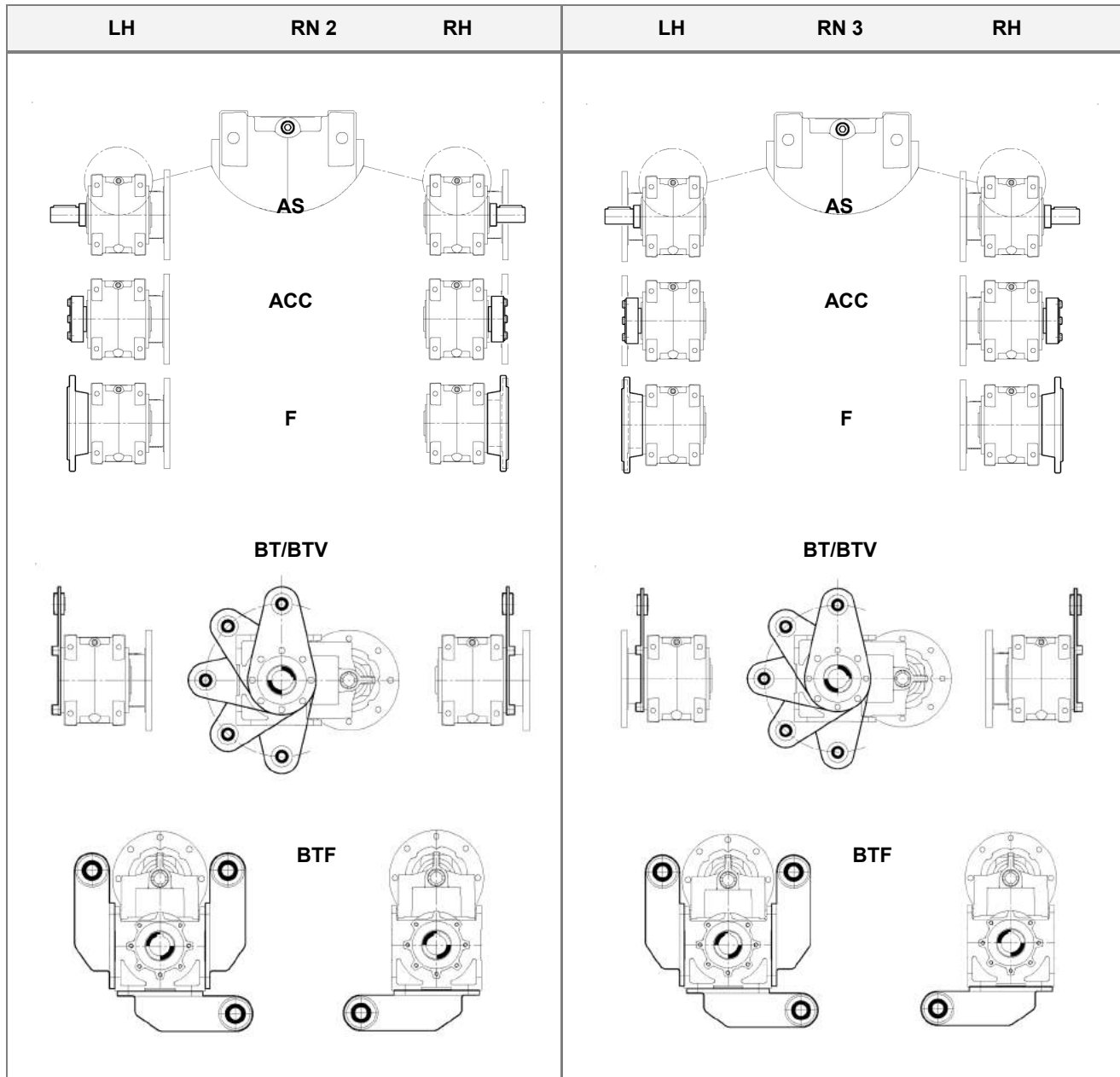
Accessory position

Accessory positions, here defined as RH and LH, refer to H1 mounting position at page 14 and are seen from the bottom side of the gearbox RN2 or RN3 accordingly.

The housing side with the screw as shown is the right identification of the reference side.

If the accessory is requested in-house assembled, the order is held-on until RH or LH side is defined.

For other mounting positions, please refer to the Customer Service.



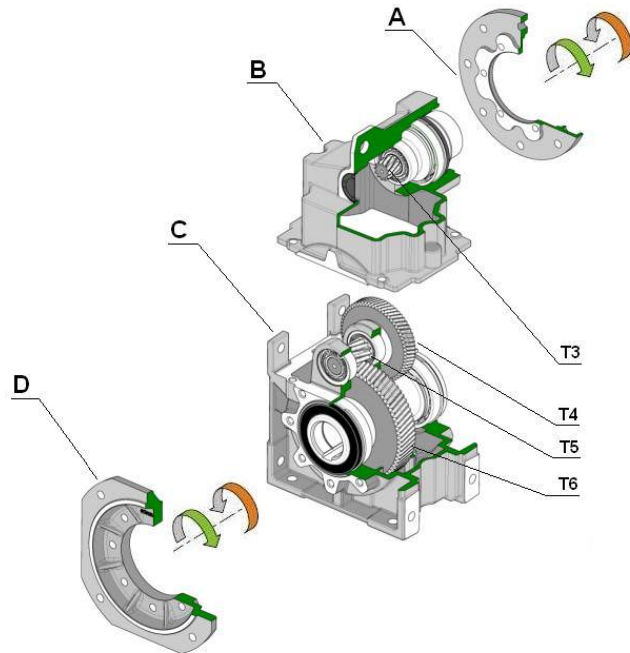
RN Gearboxes

Rotation and Component Parts

RN2

Two-stage gearbox

- A - Motor flange
- B - 2 stage input cover + T3 gear
- C - Housing + T4, T5, T6 gears
- D - Output flange

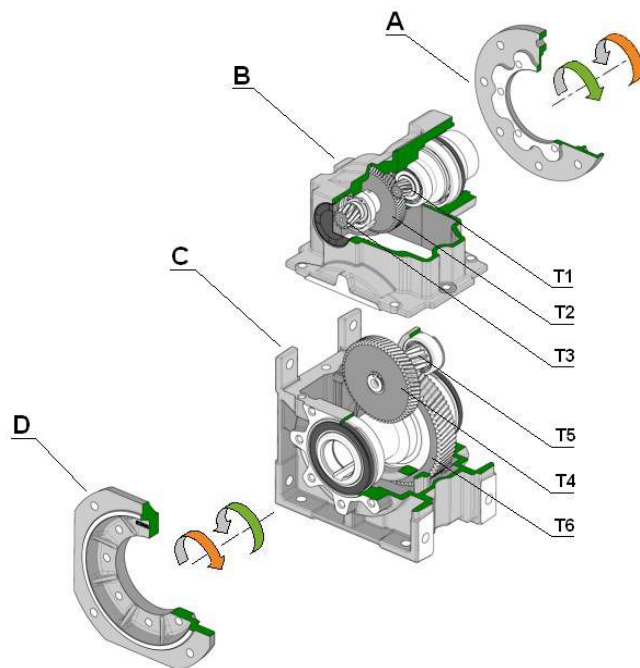


- Input/output rotation

RN3

Three-stage gearbox

- A - Flangia motore
- B - 3 stage input cover + T1, T2, T3 gears
- C - Housing + T4, T5, T6 gears
- D - Output flange

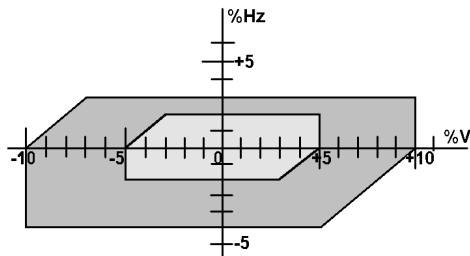


- Input/output rotation

Gearboxes RN

Electric motor Standards

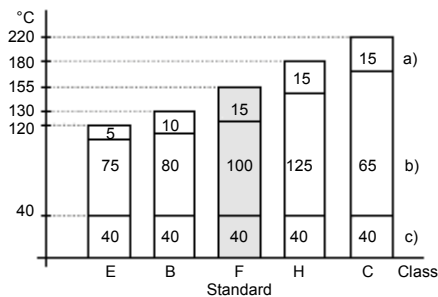
Voltage and frequency



Rated values	Usable values
230/400V 50Hz	240/415V 50Hz 220/380V 50Hz
277/480V 60 Hz	265/460V 60Hz 260/440V 60Hz

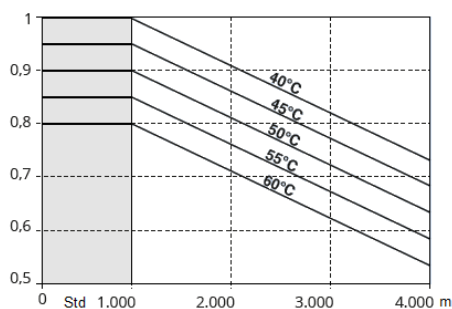
- Normal duty
- Heavy duty but limited

Insulation class



- a) safety margin
- b) admissible temperature
- c) conventional ambient temperature

Altitude and Temperature Factors



Conventional conditions

- 1000 m - altitude above sea level [3285 ft]
- 40 °C - ambient temperature [104 °F]
- 15 °C - min. ambient air temperature [5 °F]
- ≤ 60% - relative humidity

RN Gearboxes

ATEX - European Directive 94/9/EC -

The European Directive 94/9/EC-ATEX relates not only to electric devices but to all the machines and driving units destined, alone or combined, to operate in potentially explosive environments within European Community territory.

The gearboxes VARVEL-ATEX are manufactured

- with metallic housings and covers, containing the driving gears fitted on ball or roller bearings;
- FKM-Fluor-elastomer (Viton) oil seals on input and output shafts;
- the needed oil quantity to ensure the unit operation;
- sealed thread screws with sealing paste.

The gearboxes VARVEL-ATEX are identified in the Directive as «components», therefore stripped away any autonomous function, but fundamental to operation of units and protection systems destined to production, transport, storage, measuring, adjusting and conversion of energy and material transformation that because of their own inflammable potentiality, risk to induce an explosion trigger.

ATEX-Directive Code Breakdown

- **Group**

utilization in

I - mining

II - surface industries

- **Category**

1- continuous exposure in possibly explosive environment for more than 1000 hrs/year or with frequent malfunctioning

2- occasional exposure in possibly explosive environment for 10 to 1000 hrs/year or with sporadic malfunctioning

3- not very likely exposure in possibly explosive environment and if happened, not longer than 10 hours/year

- **Letters “G” and “D”**

G - gas presence

D - dust presence

- **Letters “c” and “k”**

c - safety indication of construction

k - safety indication of immersion in liquid

- **IP66 (IP4X Nema)**

IP- International Protection Coding

6 - 1st digit - protection dust tight

6 - 2nd digit - protection against powerful water jets

- **T_{max} and T_{amb}**

T_{max} - surface max. temperature

T_{amb} - ambient max. temperature

Gearboxes RN

European Directive 94/9/EC - ATEX

VARVEL RD, RS, RT, RN, RO, RV, RP90 and XA100 series are conforming with design requirements asked by Group II, Category 2 or 3, and for operation in possible hazardous zones in presence of gas (zones 1 and 2) and combustible dust (zones 21 and 22).

The VARVEL-ATEX products are marked

Ⓔ II 2 GD ck IP66 CE
T_{max}=135°C

Group	Category	Gas, Vapours, Cloud	Zone	Dust
I (a)	M1 (c) M2 (d)			
II (b)	1 (c)	G (0)		D (20)
	2 (d)	G (1)		D (21)
	3 (e)	G (2)		D (22)

Warning

The VARVEL-ATEX gearboxes **are not certified** for operation in **shaded areas**.

Key:

- (a) - Mines
- (b) - Surface industries
- (c) - Protection level: very high
- (d) - Protection level: high
- (e) - Protection level: normal
- (0) - Continuous presence of gas
- (1) - Discontinuous presence of gas
- (2) - Occasional presence of gas
- (20) - Continuous presence of dust
- (21) - Discontinuous presence of dust
- (22) - Occasional presence of dust

RN Gearboxes

Abstract of OPERATION AND MAINTENANCE INSTRUCTIONS

Under the terms of the Machine Directive 2006/42/EC and relevant Guidelines, the speed gearboxes and variators are considered as "machines" separate elements not having a specific application and meant for being incorporated onto the machine. The complete machine and equipped with such components must comply with the essential and relevant requisites for safety and health preservation" of the mentioned Directive.

Installation

Check if the unit to be installed, is properly selected to perform the required function and that its mounting position complies with the order.

The nameplate reports such information.

Check mounting stability to ensure the unit runs without vibrations or overloads.

Running

The unit may be connected for clockwise or counter-clockwise rotation.

The unit must be stopped as soon as defective running or unexpected noise occur, remove the faulty part or return the unit to the factory for checking.

If the faulty part is not replaced, other parts can also be affected, causing more severe damage and making the identification of initial cause more difficult.

Maintenance

Although the units are no-load run tested in the factory before despatch, it is recommended not to run them at maximum load for the first 20-30 running hours to allow the proper running in.

The gearboxes are delivered already filled with long-life synthetic oil and, in case of replacement or topping, do not mix with mineral lubricants.

Handling

When hoisting, use relevant housing locations or eyebolts if provided, or foot or flange holes.

Never hoist on any moving part.

Painting

Carefully protect oil seals, coupling faces and shafts when units are repainted.

Long-term storage

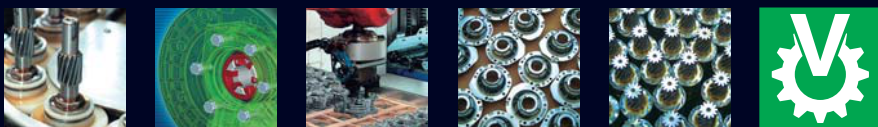
For storages longer than three months, apply anti-oxidants onto shafts and machined surfaces, and protective grease on oil seal lips.

Product's Environmental Management

In conformity with Environmental Certification ISO 14001, we recommend the following to dispose of our products:

- scraped components of the units to be delivered to authorized centres for metal object collection;
- oils and lubricants drained from the units to be delivered to Exhausted Oil Unions;
- packages (pallets, carton boxes, paper, plastic, etc.) to lead into regeneration/recycling circuits as far as possible, by delivering separate waste classes to authorized companies.

Abstract of OPERATION AND MAINTENANCE INSTRUCTIONS





Technology Made in Italy

Since 1955 Varvel has been making speed reducers and variators for light industry applications. Reliable partner in power transmission equipment offers also customized solutions always according to a socially responsible company values. Modularity and flexibility lead Varvel products by a unique kit form, common to all gearbox series. This feature allows distributors an easier job to set up required products in few minutes.

RD

HELICAL GEARBOXES



FAMCO
هایپر صنعت

Gearboxes Series RD

Product description

Multipurpose housing

Foot & Foot/Flange Mountings
One housing for 2- & 3-stages

Housing & Covers

Aluminium die cast (5 sizes)
Cast iron (2 sizes)

Gearing

20MnCr5 alloy steel
Case hardened
Profile ground or shaved

Bearings

Ball or roller types
according to sizes
and technical requirements



Input

NEMA and IEC
motor adapters and
Universal elastic coupling

Oil seals

Nitrile Butadiene Rubber -NBR
as standard;
Viton and Silicon on request

Output

Solid shafts
imperial and metric

Lubrication

Synthetic long-life oil Grade ISO VG 320
No oil plugs
In-house filling

The helical gearboxes Series RD feature a one-piece cast housing complete with inner support to accommodate 2 or 3 gear stages into the same casing. Manufactured to latest ISO engineering design specifications the housing is checked by computer-aided structural analysis for deflection and stress distribution.

Significant strains caused by the effects of torque and external loads do not deflect the monolithic ribwork of the housing, which significantly improves the integrity of the sealed surfaces.

The helical gearboxes Series RD are manufactured in B3 base mounted configuration. They can be easily converted to B5 flange mounting by fitting of the appropriate additional adaptor flange.

Single-setup machining on state-of-the-art CNC production lines, the most recent calculation techniques and process controls give superior operational reliability, maximum output torques, high overhung and thrust load capacity, and long working life-time.


IEC or NEMA motor are easily mounted by fitting interchangeable bolted flanges and elastic couplings.

The elastic coupling, built-in inside the gearbox body, does not affect any dimensional length increase of the gearbox.

Directive ATEX

The gearboxes VARVEL-ATEX, delivered on demand, are designed and manufactured according to Directive 94/9/CE "ATEX" and therefore, they are qualified for installation in potentially explosive atmospheres:


- Zones of Group II,
- Category 2 (or 3),
- Explosion hazard with gas presence (Zone 1 or 2),
- Explosion hazard with combustible dust presence (Zone 21 or 22).

The units VARVEL-ATEX are identified by the additional marking:  II 2 GD ck IP66 T_{max}=135 °C

Gearboxes Series RD

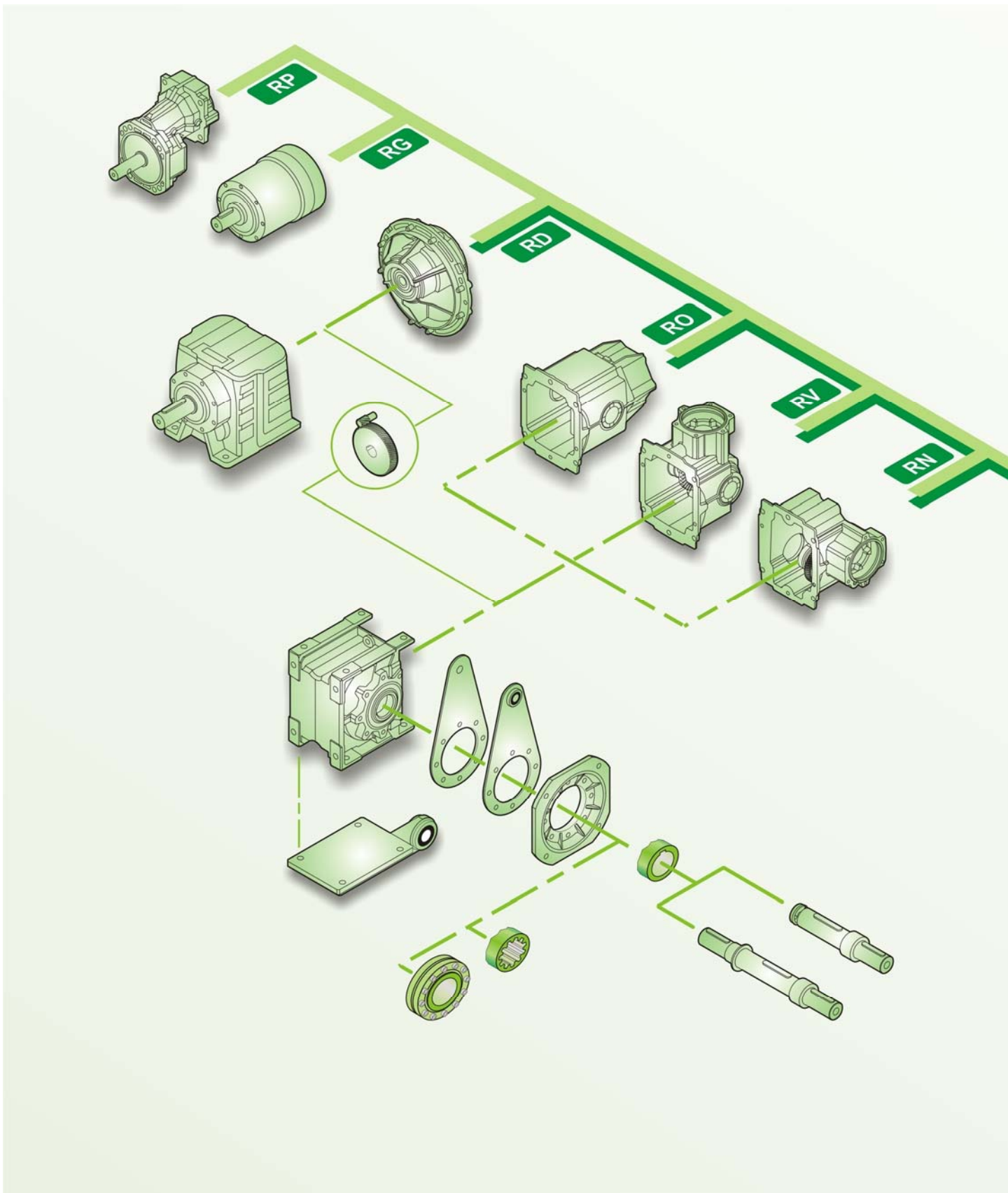
Product description



	GENERAL SPECIFICATIONS
Range	7 sizes 28 ratios in 2 and 3 stages
Sizing	According to ISO6336/DIN3990. 15,000 hours average lifetime with service factor SF1
Housing, Covers	Pressure die cast aluminium AlSi12Cu2Fe up to size 4 and cast iron G25 from size 5.
Toothed parts	Steel 20MnCr5 case hardened. Tooth profile ground or shaved
Shafts & Keys	Steel 39NiCrMo3 Shafts h6 - Bores E8
Bearings	Ball- or roller-types according to sizes and technical requirements
Oilseals	Type NB - nitrile-butadiene with additional anti-dust lip
Lubricant	Synthetic long-life oil Grade ISO VG 320
Powder coating	Epoxy powder paint from size 5. Standard colour RAL 7012
Execution ATEX	 II 2 GD ck IP66 T _{max} =135 °C

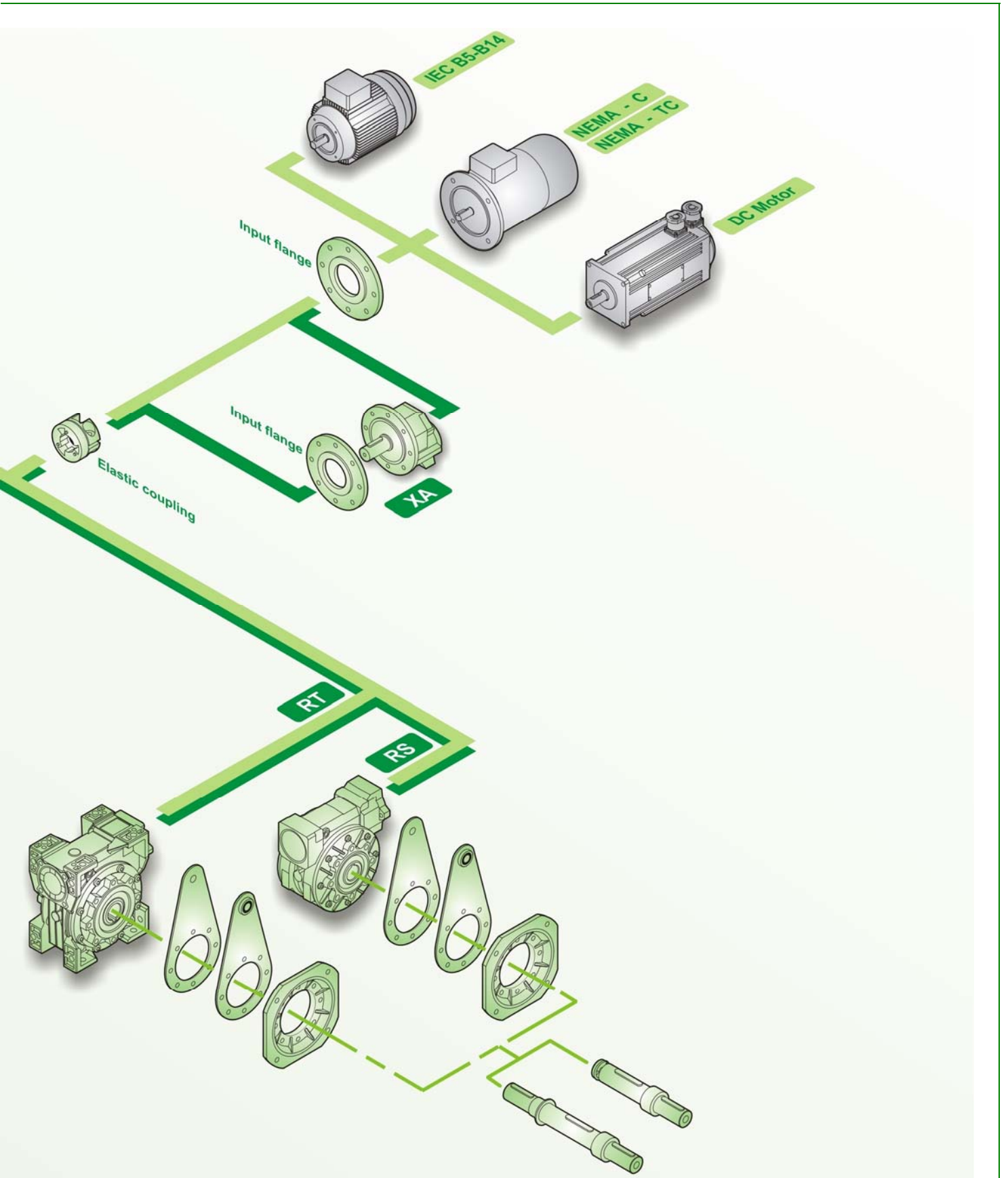
Gearboxes Series RD

Modular system



Gearboxes Series RD

Modular system



Gearboxes Series RD

Elastic coupling "G" description

Reducer half-coupling

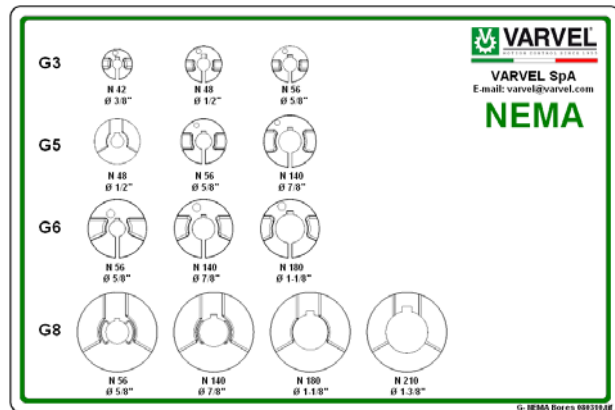
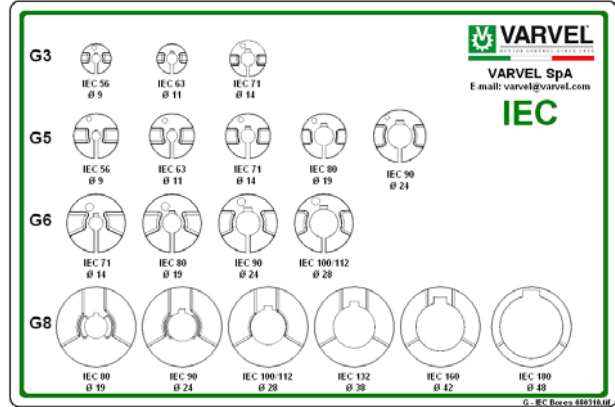
- Material: Alloy 20MnCr5
- Input shaft built-in
- Two bearing set
- Unchanged casing dimensions

Spider

- External tooth connection
- Material: Thermoplastic Elastomer
 - Elastollan[®] TPU - Polyurethane
 - Hytrel[®] TPE - Polyester
- Hardness
 - TPU 98 Shore A
 - TPE 72 Shore D
- Temperature
 - TPU -20/+75°C (-4 / +167°F)
 - TPE -30/+100°C (-22 / +212°F)

Motor half-coupling

- Material:
 - Aluminium die cast (G3, G5, G6)
 - Steel 36SMnPb14 (GS8)
 - Steel C43 on demand (GS3, Gs5, GS6)
- Dynamic balancing
- Fitting:
 - Clamp (G3, G5, G6)
 - Key (GS8)
- Bores:
 - IEC 72 / N42948
 - NEMA C y TC



Advantages:

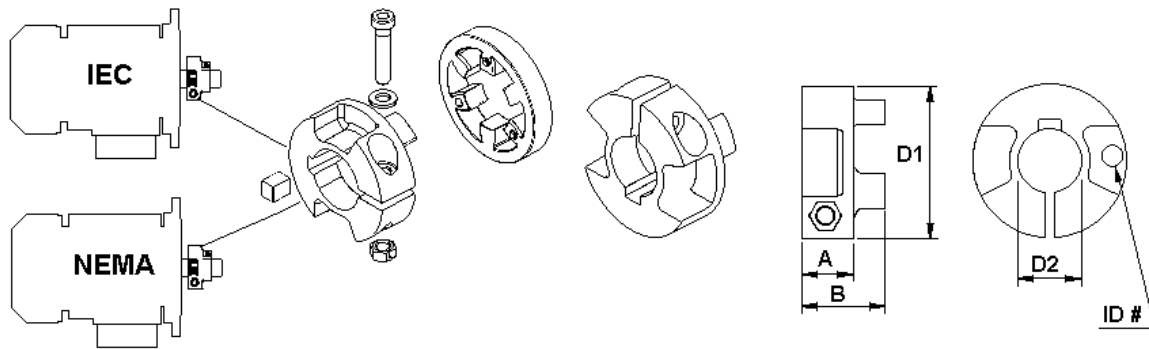
- One gearbox only for each reduction ratio
- Greater flexibility
- Increased stock rotation
- Fretting corrosion elimination between key and keyway
- Zero backlash in gearbox/motor connection
- Allowed angular misalignment 1° max
- Torsional rigidity
- High vibration damping

Input flanges:

- Material:
 - Aluminium up to IEC112 and NEMA TC180
 - Cast iron from IEC 132 and NEMA TC200

Gearboxes Series RD

Elastic coupling "G" selection



Type	IEC NEMA	Kit Part No.	RD	Mt [Nm]	Mt1 [Nm]	Mt2 [Nm]	A [mm]	B [mm]	D1 [mm]	D2 [mm/inch]	ID#
G3	IEC	KG3.009	03	4.5 - 6	15	8 - 10	11	19	30	9	309
		KG3.011	03	4.5 - 6	15	8 - 10			30	11	311
		KG3.014	03	7 - 8.5	28	18 - 22			36	14	314
	NEMA	KG3.N42	03	4.5 - 6	16	8 - 10			30	3/8"	3N42
		KG3.N48	03	4.5 - 6	18	10 - 12			36	1/2"	3N48
G5	IEC	KG5.009	02-12-13-23	8.9 - 10	14	8 - 10	14.5	23	45	9	509
		KG5.011	02-12-13-23		15	8 - 10			45	11	511
		KG5.014	02-12-13-23		30	12 - 17			45	14	514
		KG5.019	02-12-23		40	20 - 25			45	19	519
	KG5.024	12-23	70		30 - 40	52			24	524	
	NEMA	KG5.N48	02		30	20 - 24			40	1/2"	5N48
		KG5.N56	02-12-13-23	45	30 - 35	45	5/8"	5N56			
		KG5.N140	12-23	60	40 - 45	52	7/8"	5N140			
G6	IEC	KG6.014	22-32-33-42-43	15.3 - 18	60	30 - 40	19.5	31.5	58	14	614
		KG6.019	22-32-33-42-43		90	50 - 65				19	619
		KG6.024	22-32-33-42-43		130	85 - 100				24	624
	KG6.028	22-32-42	180		100 - 120	28				628	
NEMA	KG6.N56	22-32-33-42-43	50	---	5/8"	6N56					
		KG6.N140	22-32-33-42-43	85	---	7/8"	6N140				
		KG6.N180	22-32-42-43	200	---	1-1/8"	6N180				
G8	IEC	* KGS8.19	52-53-62-63	15	150	---	35	51	79	19	819
		* KGS8.24	52-53-62-63		250	---				24	824
		* KGS8.28	52-53-62-63		350	---				28	828
		* KGS8.38	52-62-63		500	---				38	838
	* KGS8.42	52-62	500		---	42				842	
	* KGS8.48	52-62	500		---	48				848	
	NEMA	* KGS8.N056	52-53-62-63		140	---				5/8"	8N56
		* KGS8.N140	52-53-62-63		200	---				7/8"	8N140
* KGS8.N180		52-53-62-63	300	---	1-1/8"	8N180					
* KGS8.N210		52-53-62-63	500	---	1-3/8"	8N210					

Mt - Screw locking torque

Mt1 - Transmissible torque with key

Mt2 - Transmissible torque without key

* - Coupling GS8: steel and key fit

Gearboxes Series RD

IEC - Flanges and Elastic coupling selection

RS - RT	Flange Type	IEC	Kit Part No.		Elastic coupling	
			Flange B5	Flange B14	Type	Kit Part No.
RD 02	FM 40	IEC56	K531.206.120	K531.206.080	G5 ø9	KG5.009
		IEC63	K531.206.140	K531.206.090	G5 ø11	KG5.011
		IEC71	K531.206.160	K531.206.105	G5 ø14	KG5.014
		IEC80	---	K531.206.120	G5 ø19	KG5.019
RD 03	FM 40	IEC56	K531.206.120	K531.206.080	G3 ø9	KG3.009
		IEC63	K531.206.140	K531.206.090	G3 ø11	KG3.011
		IEC71	K531.206.160	K531.206.105	G3 ø14	KG3.014
RD 12	FM 50	IEC56	K532.206.120	---	G5 ø9	KG5.009
		IEC63	K532.206.140	K532.206.090	G5 ø11	KG5.011
		IEC71	K532.206.160	K532.206.105	G5 ø14	KG5.014
		IEC80	K532.206.200	K532.206.120	G5 ø19	KG5.019
		IEC90	K532.206.200	K532.206.140	G5 ø24	KG5.024
RD 13	FM 50	IEC56	K532.206.120	---	G5 ø9	KG5.009
		IEC63	K532.206.140	K532.206.090	G5 ø11	KG5.011
		IEC71	K532.206.160	K532.206.105	G5 ø14	KG5.014
RD 22	FM 70	IEC71	K533.206.160	K533.206.105	G6 ø14	KG6.014
		IEC80	K533.206.200	K533.206.120	G6 ø19	KG6.019
		IEC90	K533.206.200	K533.206.140	G6 ø24	KG6.024
		IEC 100/112	K533.206.250	K533.206.160	G6 ø28	KG6.028
RD 23	FM 70	IEC63	K533.206.140	---	G5 ø11	KG5.011
		IEC71	K533.206.160	K533.206.105	G5 ø14	KG5.014
		IEC80	K533.206.200	K533.206.120	G5 ø19	KG5.019
		IEC90	K533.206.200	K533.206.140	G5 ø24	KG5.024
RD 32 RD 33	FM 70	IEC71	K533.206.160	K533.206.105	G6 ø14	KG6.014
		IEC80	K533.206.200	K533.206.120	G6 ø19	KG6.019
		IEC90	K533.206.200	K533.206.140	G6 ø24	KG6.024
		* IEC 100/112	K533.206.250	K533.206.160	G6 ø28	KG6.028
RD 42 RD 43	FM 85	IEC71	K534.206.160	---	G6 ø14	KG6.014
		IEC80	K534.206.200	K534.206.120	G6 ø19	KG6.019
		IEC90	K534.206.200	K534.206.140	G6 ø24	KG6.024
		** IEC 100/112	K534.206.250	K534.206.160	G6 ø28	KG6.028
RD 52	FM 130 & FM 150	IEC 80	K536.206.200	---	*** GS8 ø19	KGS8.019
		IEC 90	K536.206.200	---	*** GS8 ø24	KGS8.024
		IEC 100/112	K536.206.250	---	*** GS8 ø28	KGS8.028
		IEC 132	K537.206.300	K536.206.200	*** GS8 ø38	KGS8.038
		IEC 160	K565.206.350	K536.206.250	*** GS8 ø42	KGS8.042
		IEC 180	K565.206.350	---	*** GS8 ø48	KGS8.048
RD 53	FM 130	IEC 80	K536.206.200	---	*** GS8 ø19	KGS8.019
		IEC 90	K536.206.200	---	*** GS8 ø24	KGS8.024
		IEC 100/112	K536.206.250	---	*** GS8 ø28	KGS8.028
RD 62	FM 130 & FM 150	IEC 80	K536.206.200	---	*** GS8 ø19	KGS8.019
		IEC 90	K536.206.200	---	*** GS8 ø24	KGS8.024
		IEC 100/112	K536.206.250	---	*** GS8 ø28	KGS8.028
		IEC 132	K537.206.300	K536.206.200	*** GS8 ø38	KGS8.038
		IEC 160	K565.206.350	K536.206.250	*** GS8 ø42	KGS8.042
IEC 180	K565.206.350	---	*** GS8 ø48	KGS8.048		
RD 63	FM 130 & FM 150	IEC 80	K536.206.200	---	*** GS8 ø19	KGS8.019
		IEC 90	K536.206.200	---	*** GS8 ø24	KGS8.024
		IEC 100/112	K536.206.250	---	*** GS8 ø28	KGS8.028
		IEC 132	K537.206.300	K536.206.200	*** GS8 ø38	KGS8.038

* - IEC100/112: not for RD33

** - IEC112: not for RD43

*** - Coupling GS8: steel and key fit

Gearboxes Series RD

Flanges and Elastic coupling selection - NEMA

RS - RT	Flange Type	NEMA	Kit Part No.	Elastic coupling	
				Type	Kit Part No.
RD 02	FM 40	48 C	K531.227.N48	G5 ø 1/2"	KG5.N48
		56 C	K531.227.N56	G5 ø 5/8"	KG5.N56
RD 03	FM 40	42 C 48 C	K531.227.N48 K531.227.N48	G3 ø 3/8" G3 ø 1/2"	KG3.N42 KG3.N48
RD 12	FM 50	56 C	K532.227.N56	G5 ø 5/8"	KG5.N56
RD 13		140 TC	K532.227.N56	G5 ø 7/8"	KG5.N140
RD 22	FM 70	56 C	K533.227.N56	G6 ø 5/8"	KG6.N56
RD 23		140 C	K533.227.N56	G6 ø 7/8"	KG6.N140
RD 32	FM 70	180 C	K533.227.N180	G6 ø 1-1/8"	KG6.N180
RD 33		56 C	K533.227.N56	G5 ø 5/8"	KG5.N56
RD 42	FM 85	140 TC	K533.227.N56	G5 ø 7/8"	KG5.N140
RD 43		180 TC	K533.227.N56	G6 ø 5/8"	KG6.N56
RD 52	FM 150	56 C	K534.227.N56	G6 ø 7/8"	KG6.N140
RD 53		140 TC	K534.227.N56	G6 ø 1-1/8"	KG6.N180
RD 62	FM 150	180 TC	K534.227.N180	G6 ø 5/8"	KG6.N56
RD 63		210 TC	K534.227.N180	G6 ø 7/8"	KG6.N140
RD 22	FM 70	56 C	K533.227.N56	G6 ø 5/8"	KG6.N56
RD 32		140 TC	K533.227.N56	G6 ø 7/8"	KG6.N140
RD 42	FM 85	180 TC	K533.227.N180	G6 ø 1-1/8"	KG6.N180
RD 52		56 C	K537.227.N56	* GS8 ø 5/8"	KGS8.N56
RD 62	FM 150	140 TC	K537.227.N56	* GS8 ø 7/8"	KGS8.N140
RD 72		180 TC	K537.227.N180	* GS8 ø 1-1/8"	KGS8.N180
RD 82	FM 150	210 TC	K537.227.N180	* GS8 ø 1-3/8"	KGS8.N210
RD 92		56 C	K537.227.N56	* GS8 ø 5/8"	KGS8.N56
RD 102	FM 150	140 TC	K537.227.N56	* GS8 ø 7/8"	KGS8.N140
RD 112		180 TC	K537.227.N180	* GS8 ø 1-1/8"	KGS8.N180
RD 122	FM 150	210 TC	K537.227.N180	* GS8 ø 1-3/8"	KGS8.N210
RD 132		56 C	K537.227.N56	* GS8 ø 5/8"	KGS8.N56
RD 142	FM 150	140 TC	K537.227.N56	* GS8 ø 7/8"	KGS8.N140
RD 152		180 TC	K537.227.N180	* GS8 ø 1-1/8"	KGS8.N180
RD 162	FM 150	210 TC	K537.227.N180	* GS8 ø 1-3/8"	KGS8.N210
RD 172		56 C	K537.227.N56	* GS8 ø 5/8"	KGS8.N56
RD 182	FM 150	140 TC	K537.227.N56	* GS8 ø 7/8"	KGS8.N140
RD 192		180 TC	K537.227.N180	* GS8 ø 1-1/8"	KGS8.N180
RD 202	FM 150	210 TC	K537.227.N180	* GS8 ø 1-3/8"	KGS8.N210

** - Coupling GS8: steel and key fit

Gearboxes Series RD

Symbols

D	[mm]	PCD of transmission element $k_{(t)}$	
F_r	[N]	Application radial load	
F_{r1}	[N]	Catalogue radial load (input)	
F_{r2}	[N]	Catalogue radial load (output)	
$F_{r2b(x)}$	[N]	Permissible radial load at position "X" on output shaft. Based on bearing	
$F_{r2s(x)}$	[N]	Permissible radial same as $F_{r2b(x)}$. Based on shaft bending and torsional stress.	
FS		Service factor	$FS = \frac{M_2}{M_{(app)}}$
i_n		Nominal reduction ratio	
i_r		Actual reduction ratio	
J_1	[kgm ²]	Moment of inertia of the gearbox at gearbox input shaft	
J_2	[kgm ²]	Moment of inertia of the application	
J_m	[kgm ²]	Moment of inertia of the motor	
$k_{(a)}$		Mass acceleration factor	
$k_{(t)}$		Transmission element factor	
Lub H / V	[l]	Lubricant (litres): H - Horizontal mounting V - Vertical mounting	
M_2	[Nm]	Gearbox output torque	$M_2 = \frac{9550 * P_1 * \eta}{n_2}$
$M_{(app)}$	[Nm]	Application torque	
n_1	[min ⁻¹]	Input speed	
n_2	[min ⁻¹]	Output speed	
P_1	[kW]	Motor power	$P_1 = \frac{M_2 * n_2}{9550 * \eta}$
$P_{(kg)}$	[kg]	Weight: for mounting B3H and average reduction ratio	
η		$\eta = 0.96$ - 2 stages $\eta = 0.94$ - 3 stages	

Gearboxes Series RD

External loads

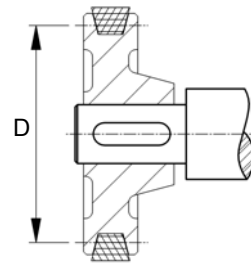
OUTPUT RADIAL LOADS

Radial (overhung) loads have to be checked with the rating factor given in the RD gearbox selection tables. The $k_{(t)}$ rating factor will vary according to the transmission element fitted on the gearbox output shaft according to the below table.

Application radial load

$$F_r = \frac{2000 * M_2}{D} * k_{(t)}$$

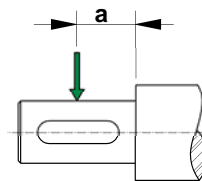
$k_{(t)}$	Transmission element
1,15	Gear - Tooth No. < 17
1,40	Chain sprocket - Tooth No. < 13
1,25	Chain sprocket - Tooth No. < 20
1,00	Chain sprocket - Tooth No. > 20
2,50	"V" belt pulley
1,25	Timing belt pulley



Catalogue radial load at shaft centre

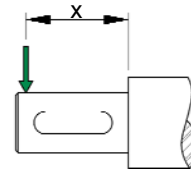
$$F_{r2} \geq F_r$$

RD	0	1	2	3	4	5	6
a	17.5	20	25	30	35	40	50 [mm]



Radial load offset from centre

RD	0	1	2	3	4	5	6
a	17.5	20	25	30	35	40	50
b	15.5	23	24	27	31	37	39
c	33	43	49	57	66	77	89



Check both (*) and (**) comparisons

$$(*) \quad F_{r2b(x)} \geq F_r$$

$$(**) \quad F_{r2b(x)} = F_{r2} * \frac{c}{x + b}$$

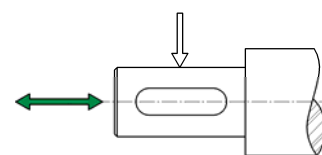
$$F_{r2s(x)} \geq F_r$$

$$F_{r2s(x)} = F_{r2} * \frac{a}{x}$$

OUTPUT AXIAL LOADS

Axial load value, both on tensile and compressive stress, and with radial load.

$$F_{a2} = F_{r2} * 0.2$$



Gearboxes Series RD

Service factors

SERVICE FACTOR of the gearbox

The performance quoted in MRD geared motor tables (pages 24 to 39) is set out by taking the following service factor range

$$0.8 \leq FS \leq 3.5$$

Service factor FS1.0 is meant as typical of 8 hours/day operation, uniform load, mass acceleration factor $k_{(a)} \leq 0.2$, starts/stops less than 300 per hour and ambient temperature between 15 and 35 Celsius.

The performance quoted in gearbox RD tables (pages 9 to 15) gives the service factor calculation as ratio between gearbox maximum output torque M_2 and application torque $M_{(app)}$.

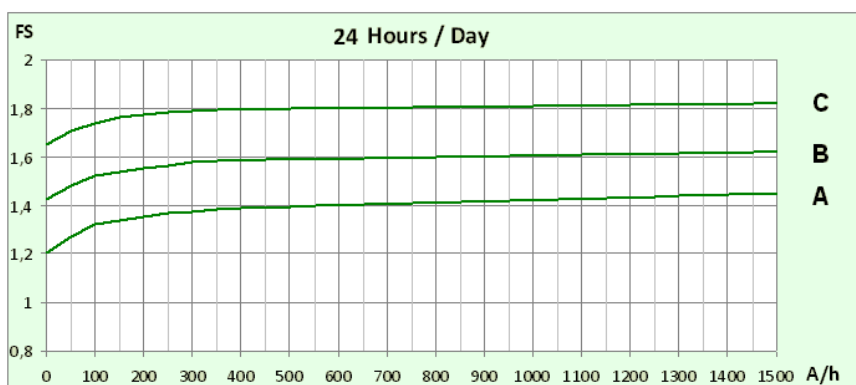
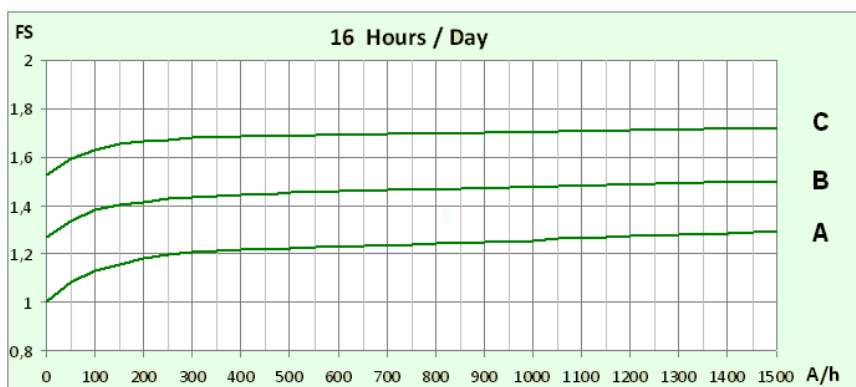
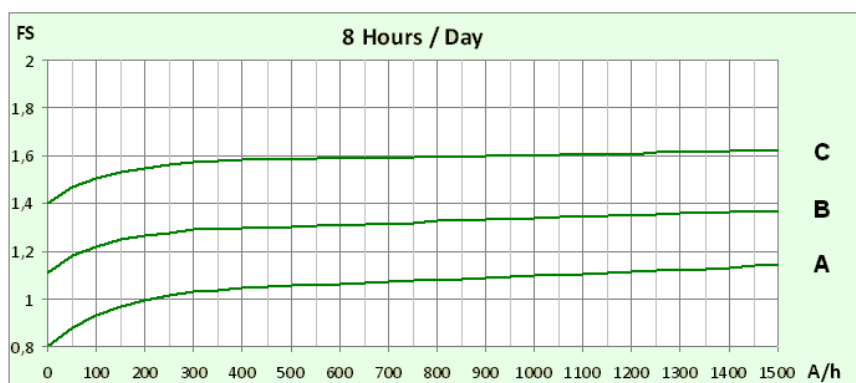
Mass acceleration factor

$$k_{(a)} = \frac{J_2}{J_m} + J_1$$

Load classes

- A - Uniform load
 $k_{(a)} \leq 0,2$
- B - Moderate shock load
 $0,2 < k_{(a)} \leq 3$
- C - Severe shock load
 $3 < k_{(a)} \leq 10A/h$

A/h - Number of start/stops per hour



Gearboxes Series RD

Service factors

SERVICE FACTOR of the motor

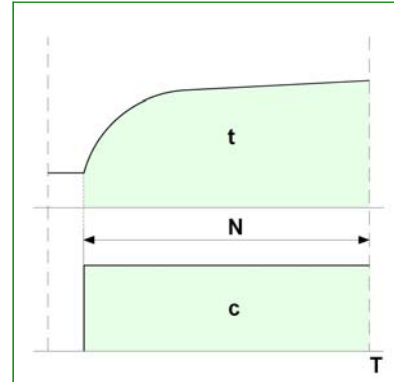
The specifications of various duty types are defined by the Standard CEI EN 60034-1 / IEC34-1.

S1 – Continuous duty

The specifications of various duty types are defined by the Standard CEI EN 60034-1 / IEC34-1

$$fs = 1.0$$

- N = Operation time
c = Load
t = Temperature



S3 – Periodic intermittent duty

Operation according to cycle (C) including steady load time (N) and rest time (R).

Starts/stops do not affect temperature.

The reference cycle (C) is up to a total of 10 minutes. Intermittence ratio is calculated as follows:

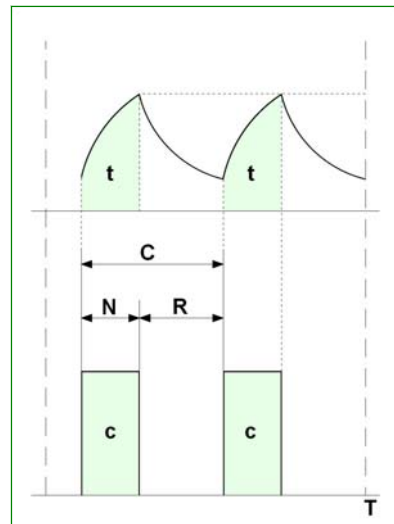
$$\frac{N}{(N+R)} * 100 = 60\% \quad fs = 0.90$$

$$40\% \quad fs = 0.85$$

$$25\% \quad fs = 0.75$$

$$15\% \quad fs = 0.70$$

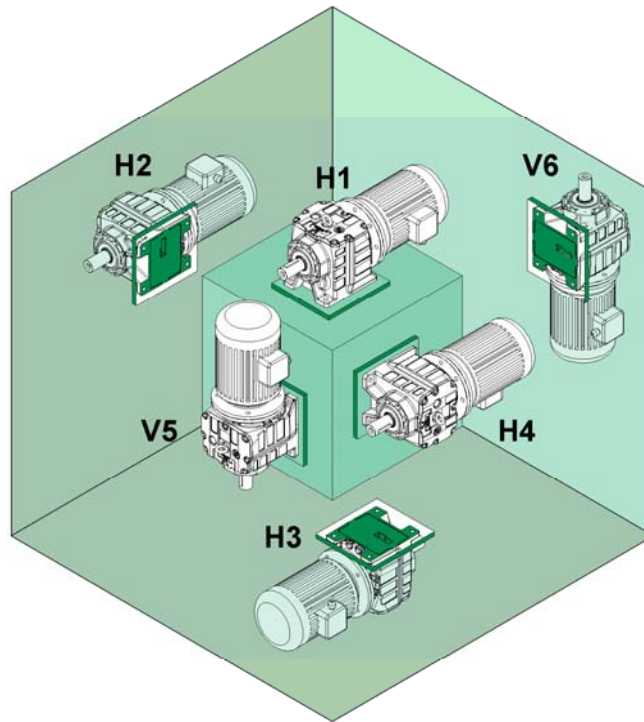
- N = Operation time
R = Rest time
C = Duty cycle



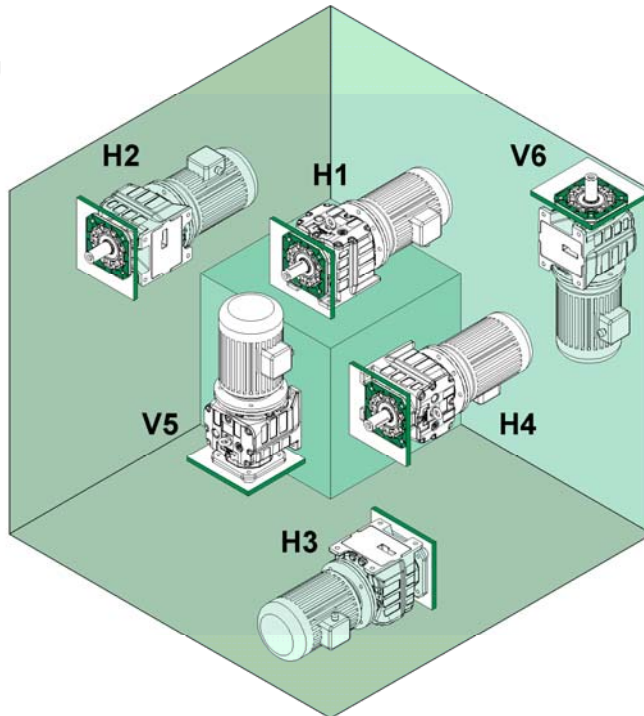
Gearboxes Series RD

Mounting positions

B3
Foot mounting



B5
Flange mounting

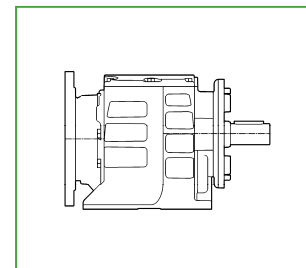


Gearboxes Series RD

Designation

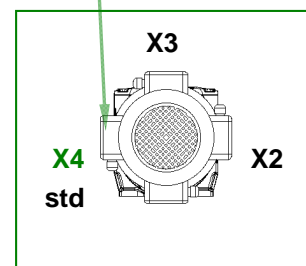
GEARBOX DESIGNATION

F	R	32	/B3	H	31.5	IEC71	-B14	AU30	DFU200
									Output flange diameter \varnothing ... mm
									Output shaft diameter \varnothing ... mm
									B5, B14 = Electric motor format
									Electric motor frame
									Reduction ratio
									H, V = Gearbox mounting position
									B3, B5, B3/B5 = Gearbox format
									Gearbox size
									Gearbox type
<p>M = Geared motor F = Gearbox with input flange IEC S = Gearbox without input flange IEC ... = (nihl) Gearbox with input free shaft</p>									



MOTOR DESIGNATION

MT	0.37 kW	71 B	4	B14	230/400/50	IP55	F	X4	
									Terminal box position
									Class F (std) = Insulation class
									IP55 (std) = Protection class
									Voltage / Frequency
									B5 or B14 = Mounting format
									Number of poles
									IEC motor frame
									Motor power
<p>MT = Three-phase motor MM = Single-phase motor MA = Brake motor</p>									



Gearboxes Series RD

Electronic catalogue



Modularity and flexibility have been leading the design of Varvel products since the years 2000: this way, the gearbox-kit concept was carried out allowing anyone to assemble the unit in few minutes with standard tooling.

This feature provides the highest flexibility to Varvel's distributors and resellers who - thanks to a limited kit selection - are able to immediately configure the required product.

VARSIZE® selection programme - available from our site - allows a friendly sizing of Varvel product range.

3D-models and 2D-drawings

A guided selection lets 2D/3D models downloaded for the most popular CAD systems.

Guided selection

This option returns a list of applicable product configurations upon a given sequence of application parameters (power, output torque, rpm, service factor etc.).

A PDF data sheet featuring performance data and dimensional drawings is generated for each configuration, as well as the 3D-model and 2D-drawings.



RD0 - 50 Nm

Gearboxes Series RD

1400 rpm

Speed Reducer Selection

RD 0	i_n	i_r	n_2 [min]	M_2	P_1	F_{r1}	F_{r2}	J_1	Lub	Lub	P	56	63	71	80
RD02 2c	2.25	2.314	605	27	1.8	*	400	0.6467	0,20	0,30	3,0	⊙	⊙	⊙	⊙
	2.50	2,568	545	30	1.82	*	430	0.5251				⊙	⊙	⊙	⊙
	2.80	2.952	474	30	1.60	*	410	0.4835				⊙	⊙	⊙	⊙
	3.15	3,277	427	33	1.57	*	420	0.4443				⊙	⊙	⊙	⊙
	3.55	3.834	365	34	1.3	*	420	0.4253				⊙	⊙	⊙	⊙
	4.0	4,256	329	36	1.32	*	430	0.3884				⊙	⊙	⊙	⊙
	4.5	4.753	295	34	1.10	*	470	0.3674				⊙	⊙	⊙	⊙
	5.0	5,276	265	38	1.13	*	520	0.3587				⊙	⊙	⊙	⊙
	5.6	5.747	244	52	1.40	*	580	0.3841				⊙	⊙	⊙	⊙
	6.3	6,253	234	48	1.22	36	640	0.4296				⊙	⊙	⊙	⊙
	7.1	7.333	191	53	1.10	50	680	0.4015				⊙	⊙	⊙	⊙
	8.0	7,979	175	49	0.97	110	720	0.3856				⊙	⊙	⊙	⊙
	9.0	9.524	147	54	0.89	140	770	0.3618				⊙	⊙	⊙	⊙
	10.0	10,362	135	50	0.78	172	820	0.3536				⊙	⊙	⊙	⊙
	12.5	12,844	109	50	0.62	211	920	0,3361				⊙	⊙	⊙	⊙
	16.0	16,320	86	51	0.49	244	1020	0,3218				⊙	⊙	⊙	
	20.0	21,533	65	51	0.38	273	1170	0,3106				⊙	⊙	⊙	
	25.0	26,747	52	52	0.31	292	1200	0,3045				⊙	⊙	⊙	
	31.5	30,222	46	52	0.27	299	1200	0,3019				⊙	⊙		
	35,5	34,675	40	35	0,16	638	1430	0,3089				⊙	⊙		
40	43,070	33	35	0,13	646	1430	0,3033				⊙	⊙			
50	48,667	29	35	0,11	651	1420	0,3010				⊙	⊙			
RD03 3c	40	36,892	37	52	0,22	76	1200	0,3065	0,30	0,38	3,2	⊙	⊙	⊙	
	50	47,074	30	52	0,18	149	1200	0,6431				⊙	⊙	⊙	
	63	61,135	23	52	0,14	208	1200	0,6342				⊙	⊙	⊙	
	80	75,782	18	52	0,11	248	1200	0,6299				⊙	⊙		
	100	96,288	15	52	0,09	281	1200	0,6270				⊙			
	125	127,047	11	52	0,07	312	1200	0,6252				(⊙)			
	160	157,805	8.9	52	0,05	332	1200	0,6244				(⊙)			
	180	178,311	7,9	52	0,05	341	1200	0,6241				(⊙)			
	200	204,583	6.9	36	0,03	367	1420	0,6251				(⊙)			
	250	254,113	5,5	36	0,02	376	1420	0,6244				(⊙)			
	280	287,133	4,9	36	0,02	380	1420	0,6241				(⊙)			
	315	324,444	4,3	36	0,02	380	1420	0,6462				(⊙)			

2c & 3c - Number of reduction stages

(⊙) - Max. available power $\leq P_1$

* - Recommended coupling drive

IEC	56	63	71	80	90	100	112	132
∅ B5	120	140	160	---	---	---	---	---
∅ B14	80	90	105	120	---	---	---	---
∅ × l	9 × 20	11 × 23	14 × 30	19 × 40	---	---	---	---

Gearboxes Series RD

RD1 - 100 Nm

Speed Reducer Selection

1400 rpm

RD 1	i_n	i_r	n_2 [min]	M_2	P_1	F_{r1}	F_{r2}	J_1	Lub	Lub	P	56	63	71	80	90
RD12 2c	2.25	2.348	596	40	2.70	*	1200	1.2989	0,5	0,7	4,8	⊙	⊙	⊙	⊙	⊙
	2.50	2.534	560	45	2.50	*	1300	1.1152				⊙	⊙	⊙	⊙	⊙
	2.80	2.855	490	43	2.40	*	1350	0.1056				⊙	⊙	⊙	⊙	⊙
	3.15	3.081	445	45	2.21	*	1400	0.9332				⊙	⊙	⊙	⊙	⊙
	3.55	3.716	377	46	2.00	*	1450	0.8131				⊙	⊙	⊙	⊙	⊙
	4.0	4.011	350	50	1.84	*	1500	0.7691				⊙	⊙	⊙	⊙	⊙
	4.5	4.700	298	49	1.60	*	1550	0.7912				⊙	⊙	⊙	⊙	⊙
	5.0	5.073	280	55	1.55	*	1600	0.6732				⊙	⊙	⊙	⊙	⊙
	5.6	5.726	251	51	1.40	*	1650	0.7514				⊙	⊙	⊙	⊙	⊙
	6.3	6.686	220	90	2.06	*	1700	0.8357				⊙	⊙	⊙	⊙	⊙
	7.1	7.161	196	54	1.20	*	1750	0.7857				⊙	⊙	⊙	⊙	⊙
	8.0	8.129	175	90	1.71	*	1800	0.7441				⊙	⊙	⊙	⊙	⊙
	9.0	9.315	150	45	0.76	*	1850	0.7013				⊙	⊙	⊙	⊙	⊙
	10.0	10.581	140	90	1.33	*	1900	0.6575				⊙	⊙	⊙	⊙	⊙
	12.5	13.384	110	90	1.06	*	1900	0.6035				⊙	⊙	⊙	⊙	⊙
	16.0	16.309	90	90	0.88	20	1900	0.5710				⊙	⊙	⊙	⊙	
	20.0	20.391	70	90	0.71	55	1900	0.5435				⊙	⊙	⊙	⊙	
	25.0	26.522	55	95	0.56	75	2000	0.5211				⊙	⊙	⊙	⊙	
	31.5	32.653	45	95	0.46	100	2000	0.5088				⊙	⊙	⊙		
	40	39.083	35	70	0.27	590	2000	0.5184				⊙	⊙	⊙		
50	48.118	30	70	0.22	630	2000	0.5070				⊙	⊙	⊙			
63	61.670	22	70	0.17	640	2000	0.4975				⊙	⊙				
RD13 3c	40	40.103	35	95	0.38	120	1500	0.5267	0,5	0,7	4,8	[⊙]	⊙	⊙		
	50	52.201	30	95	0.29	210	1600	1.5521				[⊙]	⊙	⊙		
	63	66.028	22	95	0.23	270	1700	1.5394				[⊙]	⊙			
	80	80.432	18	100	0.19	320	1800	1.5333				[⊙]	⊙			
	100	100.596	14	100	0.16	350	1900	1.5288				[⊙]	⊙			
	125	130.843	11	100	0.12	400	2000	1.5260				[⊙]	⊙			
	160	165.075	9.0	100	0.10	410	2000	1.9460				[⊙]				
	200	206.460	7.0	100	0.08	420	2000	1.9423				[⊙]				
	250	268.538	5.5	100	0.06	430	2000	1.9401				[⊙]				
	315	330.615	4.5	100	0.05	450	2000	1.9391				(⊙)				
	400	395.719	3.5	70	0.03	480	2200	1.9401				(⊙)				
	500	487.197	2.8	70	0.02	490	2200	1.9391				(⊙)				
	630	624.413	2.2	70	0.02	510	2200	1.9385				(⊙)				

2c & 3c - Number of reduction stages

* - Recommended coupling drive

(⊙) - Max. available power ≤ P₁

[⊙] - Only B5

IEC	56	63	71	80	90	100	112	132
∅ B5	120	140	160	200	200	---	---	---
∅ B14	---	90	105	120	140	---	---	---
∅ × l	9 × 20	11 × 23	14 × 30	19 × 40	24 × 50	---	---	---

RD2 - 200 Nm

Gearboxes Series RD

1400 rpm

Speed Reducer Selection

RD 2	i_n	i_r	n_2 [min]	M_2	P_1	F_{r1}	F_{r2}	J_1	Lub	Lub	P	71	80	90	100	112
RD22 2c	2.25	2.336	599	79	5.30	*	1000	4.1128	0,8	1,0	7,9	⊙	⊙	⊙	⊙	⊙
	2.50	2.548	560	85	4.99	*	1100	3.4569				⊙	⊙	⊙	⊙	⊙
	2.80	2.875	487	85	4.60	*	1200	3.1032				⊙	⊙	⊙	⊙	⊙
	3.15	3.133	445	90	4.37	*	1350	2.8995				⊙	⊙	⊙	⊙	⊙
	3.55	3.594	390	91	4.00	*	1400	2.6305				⊙	⊙	⊙	⊙	⊙
	4.0	3.917	350	100	3.75	*	1500	2.4858				⊙	⊙	⊙	⊙	⊙
	4.5	4.600	304	97	3.30	*	1600	2.2505				⊙	⊙	⊙	⊙	⊙
	5.0	5.013	280	105	3.12	*	1700	2.1816				⊙	⊙	⊙	⊙	⊙
	5.6	5.665	247	102	2.80	*	1760	2.5308				⊙	⊙	⊙	⊙	⊙
	6.3	6.717	220	175	4.13	*	1850	2.7248				⊙	⊙	⊙	⊙	⊙
	7.1	7.188	195	99	2.20	*	1910	2.6423				⊙	⊙	⊙	⊙	
	8.0	8.267	175	180	3.39	*	2000	2.4162				⊙	⊙	⊙	⊙	
	9.0	9.296	151	83	1.40	*	2040	2.2654				⊙	⊙	⊙	⊙	
	10.0	10.333	140	180	2.74	*	2100	2.1765				⊙	⊙	⊙	⊙	
	12.5	13.227	110	180	2.17	*	2200	1.9928				⊙	⊙	⊙	⊙	
	16.0	16.290	90	185	1.78	*	2300	1.8826				⊙	⊙	⊙		
	20.0	20.667	70	190	1.42	*	2400	1.7924				⊙	⊙	⊙		
	25.0	26.729	55	190	1.11	40	2500	1.7234				⊙	⊙	⊙		
	31.5	31.477	45	190	0.95	50	2600	1.6937				⊙	⊙	⊙		
40	39.388	35	140	0.53	720	2900	1.6604				⊙	⊙				
50	50.758	30	140	0.41	740	3050	1.6757				⊙					
63	62.127	22	140	0.34	760	3200	1.6537				⊙					
RD23 3c	40	40.759	35	200	0.75	140	2300	1,7501	0,8	1,25	8,5	⊙	⊙	⊙		
	50	52.172	30	200	0.59	280	2400	2,5709				⊙	⊙	⊙		
	63	64.256	22	200	0.48	380	2500	2,5490				⊙	⊙	⊙		
	80	81.519	18	200	0.39	460	2600	2,5337				⊙				
	100	105.431	14	200	0.30	550	2700	2,5230				⊙				
	125	124.159	11	200	0.25	590	2800	2,5195				⊙				
	160	164.938	9.0	200	0.19	430	2900	3,0999								
	200	209.250	7.0	200	0.15	520	3000	3,0889								
	250	270.630	5.5	200	0.12	580	3200	3,0816								
	315	318.704	4.5	200	0.10	600	3500	3,0796								
	400	398.802	3.5	140	0.06	700	3500	3,0809								
	500	513.920	2.8	140	0.04	730	3500	3,0790								
630	629.039	2.2	140	0.04	760	3500	3,0783									

2c & 3c - Number of reduction stages

⊙ - Max. available power ≤ P₁

* - Recommended coupling drive

IEC	56	63	71	80	90	100	112	132
∅ B5	---	140	160	200	200	250	250	---
∅ B14	---	---	105	120	140	160	160	---
∅ × l	---	11 × 23	14 × 30	19 × 40	24 × 50	28 × 60	28 × 60	---

Gearboxes Series RD

RD3 - 420 Nm

Speed Reducer Selection

1400 rpm

RD 3	i_n	i_r	n_2 [min]	M_2	P_1	F_{r1}	F_{r2}	J_1	Lub	Lub	P	71	80	90	100	112
RD32 2c	2.25	2.420	579	171	11.20	800	2000	9.3605				⊙	⊙	⊙	⊙	⊙
	2.50	2.697	560	190	10.49	830	2100	7.5606	1,3	1,8	13,5	⊙	⊙	⊙	⊙	⊙
	2.80	2.983	469	184	9.80	840	2100	6.5382				⊙	⊙	⊙	⊙	⊙
	3.15	3.324	445	205	9.18	850	2200	5.9052				⊙	⊙	⊙	⊙	⊙
	4.5	3.733	375	198	8.40	860	2200	5.4374				⊙	⊙	⊙	⊙	⊙
	4.0	4.160	350	220	7.87	880	2300	4.6789				⊙	⊙	⊙	⊙	⊙
	4.5	4.783	293	211	7.00	890	2400	4.2591				⊙	⊙	⊙	⊙	⊙
	5.0	5.331	280	235	6.55	900	2500	3.7739				⊙	⊙	⊙	⊙	⊙
	6.3	6.261	220	370	9.31	920	2700	5.2968				⊙	⊙	⊙	⊙	⊙
	7.1	7.484	187	217	4.6	960	2900	4.6784				⊙	⊙	⊙	⊙	⊙
	8.0	7.717	175	370	7.63	980	3100	4.4149				⊙	⊙	⊙	⊙	⊙
	10.0	9.658	140	375	6.17	1030	3600	3.7274				⊙	⊙	⊙	⊙	⊙
	12.5	12.375	110	380	4.87	1070	3800	3,1944				⊙	⊙	⊙	⊙	⊙
	16.0	16.451	90	390	3.72	1110	4000	3,2491				⊙	⊙	⊙	⊙	⊙
	20.0	19.362	70	390	3.19	1110	4200	2,9048				⊙	⊙	⊙	⊙	
	25.0	25.255	55	395	2.48	1150	4500	2,3847				⊙	⊙	⊙	⊙	
	31.5	33.214	45	400	1.68	1210	4700	2,2448				⊙	⊙	⊙	⊙	
40	38.571	35	285	1.10	1380	4900	2,3551				⊙	⊙	⊙			
50	50.727	30	285	0.85	1390	5000	2,2276				⊙	⊙				
63	63.333	22	285	0.69	1400	5000	2,1571				⊙	⊙				
RD33 3c	40	38.063	35	420	1.68	100	4000	2,3849	1,6	2,3	14,5	⊙	⊙	⊙		
	50	48.772	30	420	1.33	350	4100	4,8227				⊙	⊙	⊙		
	63	64.836	22	420	1.01	580	4200	5,2165				⊙	⊙	⊙		
	80	76.310	18	420	0.87	690	4400	5,0177				⊙	⊙			
	100	99.535	14	425	0.67	830	4500	4,6787				⊙	⊙			
	125	130.903	11	425	0.51	870	4600	4,6625				⊙	⊙			
	160	167.799	9.0	425	0.40	850	4700	6,8317				⊙	⊙			
	200	197.495	7.0	425	0.34	900	4100	6,6412				⊙	⊙			
	250	257.602	5.5	430	0.26	930	4300	6,3012				⊙	⊙			
	315	307.214	4.5	430	0.22	950	4500	6,3065				⊙	⊙			
	400	393.429	3.5	290	0.11	1150	5000	6,3129				(⊙)				
500	517.418	2.8	290	0.09	1170	5000	6,3038				(⊙)					
630	646.000	2.2	290	0.07	1200	5000	6,2999				(⊙)					

2c & 3c - Number of reduction stages

(⊙) - Max. available power $\leq P_1$

IEC	56	63	71	80	90	100	112	132
∅ B5	---	---	160	200	200	250	250	---
∅ B14	---	---	105	120	140	160	160	---
∅ × l	---	---	14 × 30	19 × 40	24 × 50	28 × 60	28 × 60	---

RD4 - 700 Nm

Gearboxes Series RD

1400 rpm

Speed Reducer Selection

RD 4	i_n	i_r	n_2 [min]	M_2	P_1	F_{r1}	F_{r2} [J_1	Lub	Lub	P	80	90	100	112	132
RD42 2c	2.25	2.343	598	278	18.8	480	2000	22.729	2,2	3,0	20,0	⊙	⊙	⊙	⊙	⊙
	2.50	2.489	560	300	17.7	490	2300	18.663				⊙	⊙	⊙	⊙	⊙
	2.80	2.929	478	301	16.3	500	2400	16.454				⊙	⊙	⊙	⊙	⊙
	3.15	3.111	445	320	15.3	530	2500	14.976				⊙	⊙	⊙	⊙	⊙
	3.55	3.727	376	324	13.7	550	2600	13.145				⊙	⊙	⊙	⊙	⊙
	4.0	3.960	350	380	14.2	560	2700	12.317				⊙	⊙	⊙	⊙	⊙
	4.5	4.547	308	342	11.9	570	2800	12.115				⊙	⊙	⊙	⊙	⊙
	5.0	4.830	280	400	12.3	580	3000	10.808				⊙	⊙	⊙	⊙	⊙
	5.6	5.674	247	359	10.0	750	3000	12.483				⊙	⊙	⊙	⊙	⊙
	6.3	6.286	220	620	15.2	1000	3100	13.636				⊙	⊙	⊙	⊙	⊙
	7.1	7.321	191	329	7.1	1040	3300	12.434				⊙	⊙	⊙	⊙	⊙
	8.0	7.857	175	620	12.3	1070	3500	11.759				⊙	⊙	⊙	⊙	⊙
	9.0	9.124	153	282	4.9	1100	3600	10.943				⊙	⊙	⊙	⊙	⊙
	10.0	10.000	140	620	9.8	1140	3700	10.331				⊙	⊙	⊙	⊙	⊙
	12.5	12.199	110	620	8.0	1180	4600	9,4739				⊙	⊙	⊙	⊙	⊙
	16.0	15.223	90	650	6.6	1210	5700	8,7672				⊙	⊙	⊙	⊙	⊙
	20.0	19.643	70	650	5.7	1250	5800	8,1877				⊙	⊙	⊙	⊙	⊙
	25.0	24.478	55	650	4.2	1270	6000	7,8266				⊙	⊙	⊙	⊙	⊙
	31.5	29.643	45	650	3.5	1280	6100	7,6050				⊙	⊙	⊙	⊙	⊙
40	41.538	35	450	1.5	1580	7000	7,7554				⊙	⊙				
50	50.303	30	450	1.2	1590	7500	7,5565				⊙	⊙				
63	62.963	22	450	1.1	1590	8000	7,3860				⊙	⊙				
RD43 3c	40	41.875	35	700	2.5	400	5000	7,5184	2,2	3,75	21,5	⊙	⊙	⊙		
	50	51.084	30	700	2.1	640	5100	9,8959				⊙	⊙	⊙		
	63	63.747	22	700	1.5	860	5200	10,279				⊙	⊙			
	80	82.254	18	700	1.7	1070	5200	10,062				⊙	⊙			
	100	102.502	14	700	1.1	1210	5300	9,7166				⊙	⊙			
	125	124.129	11	700	0.9	1310	5400	9,6972				⊙				
	160	160.689	9.0	700	0.7	1250	5500	11,857				⊙				
	200	207.341	7.0	700	0.6	1160	5600	11,663				⊙				
	250	258.379	5.5	700	0.4	1290	5800	11,324				⊙				
	315	312.297	4.5	700	0.35	1390	6000	11,326				⊙				
	400	438.462	3.5	460	0.22	1610	7000	11,333								
	500	530.976	2.8	460	0.12	1650	7500	11,324								
	630	664.609	2.2	460	0.11	1670	8000	11,319								

2c & 3c - Number of reduction stages

IEC	56	63	71	80	90	100	112	132
∅ B5	---	---	160	200	200	250	250	300
∅ B14	---	---	---	120	140	160	160	200
∅ × l	---	---	14 × 30	19 × 40	24 × 50	28 × 60	28 × 60	38 × 80

Gearboxes Series RD

RD5 - 1300 Nm

Speed Reducer Selection

1400 rpm

RD 5	i_n	i_r	n_2 [min]	M_2	P_1	F_{r1}	F_{r2}	J_1	Lub	Lub	P	80	100	132	160	180
RD52 2c	2.25	2.323	603	574	39.1	720	3200	31.657	4.5	5.5	49	⊙	⊙	⊙	⊙	⊙
	2.50	2.557	548	630	34.0	750	3400	26.128				⊙	⊙	⊙	⊙	⊙
	2.80	2.945	475	624	33.5	770	3500	24.154				⊙	⊙	⊙	⊙	⊙
	3.15	3.241	432	690	30.0	790	3700	20.966				⊙	⊙	⊙	⊙	⊙
	3.55	3.568	392	662	29.3	820	3900	18.578				⊙	⊙	⊙	⊙	⊙
	4.0	3.926	357	750	29.0	850	4000	17.244				⊙	⊙	⊙	⊙	⊙
	4.5	4.398	318	698	25.1	860	4300	16.421				⊙	⊙	⊙	⊙	⊙
	5.0	4.840	289	850	26.8	870	4500	15.131				⊙	⊙	⊙	⊙	⊙
	5.6	5.561	252	713	20.3	1100	4500	17.750				⊙	⊙	⊙	⊙	⊙
	6.3	6.454	217	1160	27.4	1500	4600	23.290				⊙	⊙	⊙	⊙	⊙
	7.1	7.305	192	630	13.6	1550	4800	18.351				⊙	⊙	⊙	⊙	⊙
	8.0	8.185	171	1170	21.8	1600	5200	16.463				⊙	⊙	⊙	⊙	⊙
	9.0	9.353	150	512	8.7	1650	5300	15.154				⊙	⊙	⊙	⊙	⊙
	10.0	9.915	141	1180	18.1	1700	5500	14.463				⊙	⊙	⊙	⊙	⊙
	12.5	12.222	115	1190	14.8	1780	6900	13.264				⊙	⊙	⊙	⊙	
	16.0	15.452	91	1200	11.8	1820	8500	12.274				⊙	⊙	⊙	⊙	
	20.0	20.298	69	1220	9.1	1870	8700	11.463				⊙	⊙	⊙		
	25.0	25.989	54	1230	7.2	1900	9000	10.963				⊙	⊙	⊙		
31.5	31.429	45	1240	6.0	1920	9100	10.647				⊙	⊙				
40	40.476	35	850	3.2	2400	10500	10.858				⊙	⊙				
50	53.333	26	850	2.4	2450	11200	10.579				⊙	⊙				
63	66.667	21	850	1.9	2500	12000	10.340				⊙	⊙				
RD53 3c	40	39.333	36	1270	5.0	700	7600	10.526	4.5	6.5	52	⊙	⊙			
	50	47.984	29	1280	4.1	970	7800	13.854				⊙	⊙			
	63	59.878	23	1290	3.4	1290	7800	14.391				⊙	⊙			
	80	77.262	18	1300	2.6	1610	7900	14.087				⊙	⊙			
	100	96.280	15	1300	2.1	1820	7900	13.603				⊙				
	125	129.800	11	1300	1.6	1980	8100	13.576				⊙				
	160	157.143	8.9	1300	1.3	1450	8200	16.600				⊙				
	200	195.824	7.1	1300	1.1	1750	8400	16.328				⊙				
	250	264.000	5.3	1300	0.8	1930	8700	15.854				(⊙)				
	315	332.308	4.2	900	0.45	2100	9000	15.857				(⊙)				
	400	402.424	3.5	900	0.35	2400	10500	15.866				(⊙)				
500	503.704	2.8	900	0.3	2500	11200	15.854				(⊙)					
630	629.630	2.2	900	0.25	2550	12000	15.847				(⊙)					

2c & 3c - Number of reduction stages

(⊙) - Max. available power $\leq P_1$

IEC	80	90	100	112	132	160	180	---
∅ B5	200	200	250	250	300	350	350	---
∅ B14	---	---	---	---	200	---	---	---
∅ × l	19 × 40	24 × 50	28 × 60	28 × 60	38 × 80	42 × 110	48 × 110	---

RD6 - 2300 Nm

Gearboxes Series RD

1400 rpm

Speed Reducer Selection

RD 6	i_n	i_r	n_2 [min]	M_2	P_1	F_{r1}	F_{r2}	J_1	Lub	Lub	P	80	100	132	160	180
RD62 2c	2.25	2.323	603	1149	78.2	1100	4800	85.205	7.5	10.5	62	⊙	⊙	⊙	⊙	⊙
	2.50	2.616	535	1300	70.0	1100	5100	67.187				⊙	⊙	⊙	⊙	⊙
	2.80	2.945	475	1249	67.0	1100	5400	58.515				⊙	⊙	⊙	⊙	⊙
	3.15	3.318	422	1400	60.0	1150	5600	53.914				⊙	⊙	⊙	⊙	⊙
	3.55	3.568	392	1324	58.7	1200	5800	49.394				⊙	⊙	⊙	⊙	⊙
	4.0	4.019	348	1600	58.0	1220	6000	44.341				⊙	⊙	⊙	⊙	⊙
	4.5	4.398	318	1399	50.3	1250	6400	42.724				⊙	⊙	⊙	⊙	⊙
	5.0	4.955	283	1800	55.4	1270	6700	38.909				⊙	⊙	⊙	⊙	⊙
	5.6	5.561	252	1427	40.6	1500	6800	42.780				⊙	⊙	⊙	⊙	⊙
	6.3	6.571	213	2000	46.8	2180	6900	59.890				⊙	⊙	⊙	⊙	⊙
	7.1	7.305	192	1261	27.3	2200	7200	45.425				⊙	⊙	⊙	⊙	⊙
	8.0	8.333	168	2000	36.6	2340	7800	42.332				⊙	⊙	⊙	⊙	⊙
	9.0	8.700	161	1145	20.8	2400	8000	40.422				⊙	⊙	⊙	⊙	⊙
	10.0	10.095	139	2100	31.7	2500	8300	37.192				⊙	⊙	⊙	⊙	⊙
	12.5	12.444	113	2100	25.7	2600	10300	34.106				⊙	⊙	⊙	⊙	⊙
	16.0	15.733	89	2100	20.3	2650	12800	31.562				⊙	⊙	⊙	⊙	⊙
	20.0	20.667	68	2100	15.5	2700	13000	29.477				⊙	⊙	⊙	⊙	⊙
	25.0	24.615	57	2100	13.0	2750	13500	28.188				⊙	⊙	⊙	⊙	⊙
	31.5	33.200	42	2220	10.0	2850	13700	27.378				⊙	⊙	⊙	⊙	⊙
40	40.500	35	1600	6	3400	15700	27.919				⊙	⊙	⊙	⊙	⊙	
50	49.800	28	1600	4.9	3450	16800	27.203				⊙	⊙	⊙	⊙	⊙	
63	56.000	25	1600	4.3	3500	18000	26.590				⊙	⊙	⊙	⊙	⊙	
RD63 3c	40	39.708	35	2200	8.6	900	11400	27.066	7.5	12	70	⊙	⊙	⊙	⊙	⊙
	50	48.948	29	2200	7	1400	11700	35.625				⊙	⊙	⊙	⊙	⊙
	63	61.884	23	2200	5.5	1870	11700	37.004				⊙	⊙	⊙	⊙	⊙
	80	81.289	17	2300	4.4	2400	11900	36.223				⊙	⊙	⊙		
	100	104.082	13	2300	3.7	2600	11900	34.980				⊙	⊙	⊙		
	125	125.867	11	2300	3.4	2800	12000	34.910				⊙	⊙	⊙		
	160	157.333	9	2300	2.8	2100	12300	42.685				⊙	⊙	⊙		
	200	201.571	6.9	2300	1.8	2500	12600	41.987				⊙				
	250	265.600	5.3	2300	1.4	2800	13000	40.766				⊙				
	315	332.000	4.2	2300	1.1	3000	13500	40.774				⊙				
	355	373.333	3.1	2300	1.6	3500	15700	40.799				⊙				
	450	448.000	3.1	2300	0.8	3600	16800	40.766				⊙				
560	560.000	2.5	2300	0.7	3700	18000	40.748				⊙					

2c & 3c - Number of reduction stages

IEC	80	90	100	112	132	160	180	---
∅ B5	200	200	250	250	300	350	350	---
∅ B14	---	---	---	---	200	---	---	---
∅ × l	19 × 40	24 × 50	28 × 60	28 × 60	38 × 80	42 × 110	48 × 110	---

Gearboxes Series RD

MRD - 4 poles

Geared motor selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0.06	2,5	2,57	530	1,0	>3,5	MRD02	820	5,5	3,0	0,20	0,28	1,50	0,4044
	3,15	3,28	415	1,3	>3,5	MRD02	890	5,5	3,0	0,20	0,28	1,50	0,3235
	4,0	4,26	320	1,7	>3,5	MRD02	960	5,5	3,0	0,20	0,28	1,50	0,2677
	5,0	5,28	258	2,1	>3,5	MRD02	1020	5,5	3,0	0,20	0,28	1,50	0,2380
	6,3	6,25	217	2,5	>3,5	MRD02	1100	5,5	3,0	0,20	0,28	1,50	0,3088
	8,0	7,98	170	3,2	>3,5	MRD02	1180	5,5	3,0	0,20	0,28	1,50	0,2649
	10,0	10,36	131	4,2	>3,5	MRD02	1290	5,5	3,0	0,20	0,28	1,50	0,2329
	12,5	12,84	106	5,2	>3,5	MRD02	1370	5,5	3,0	0,20	0,28	1,50	0,2153
	16,0	16,32	83	6,6	>3,5	MRD02	1480	5,5	3,0	0,20	0,28	1,50	0,2010
	20,0	21,53	63	8,7	>3,5	MRD02	1590	5,5	3,0	0,20	0,28	1,50	0,1899
	25,0	26,75	51	10,8	>3,5	MRD02	1590	5,5	3,0	0,20	0,28	1,50	0,1837
	31,5	30,22	45	12,2	>3,5	MRD02	1580	5,5	3,0	0,20	0,28	1,50	0,1812
	35,5	34,68	40	13,9	>3,5	MRD02	1580	5,5	3,0	0,20	0,28	1,50	0,1881
	40	43,07	32	17,4	2,01	MRD02	1560	5,5	3,0	0,20	0,28	1,50	0,1826
		36,89	37	14,9	3,48	MRD03	1570	5,7	3,2	0,30	0,38	1,50	0,1530
	50	48,67	28	19,7	1,83	MRD02	1550	5,5	3,0	0,20	0,28	1,50	0,1803
		47,07	29	19,0	2,73	MRD03	1560	5,7	3,2	0,30	0,38	1,50	0,4897
	63	61,14	22	24,7	2,10	MRD03	1520	5,7	3,2	0,30	0,38	1,50	0,4807
		61,67	22	25,0	2,81	MRD12	1960	7,0	4,5	0,5	0,7	1,50	0,6681
	80	75,78	18	30,7	1,70	MRD03	1480	5,7	3,2	0,30	0,38	1,50	0,4764
		80,43	17	33	3,07	MRD13	1930	7,2	4,7	0,5	0,7	1,50	1,2905
	100	96,29	14	38,9	1,34	MRD03	1400	5,7	3,2	0,30	0,38	1,50	0,4735
		100,60	14	41	2,45	MRD13	1900	7,2	4,7	0,5	0,7	1,50	1,2861
	125	127,05	10,7	51,4	1,01	MRD03	1230	5,7	3,2	0,30	0,38	1,50	0,4717
		130,84	10,4	53	1,89	MRD13	1820	7,2	4,7	0,5	0,7	1,50	1,2833
	160	157,81	8,6	63,8	0,81	MRD03	970	5,7	3,2	0,30	0,38	1,50	0,4709
		165,08	8,2	67	1,50	MRD13	1710	7,2	4,7	0,5	0,7	1,50	1,7033
	180	178,31	7,6	72,1	0,80	MRD03	700	5,7	3,2	0,30	0,38	1,50	0,4706
	200	204,58	6,6	45,0	0,80	MRD03	1300	5,7	3,2	0,30	0,38	1,50	0,4716
		206,46	6,6	84	1,20	MRD13	1530	7,2	4,7	0,5	0,7	1,50	1,6996
	250	254,11	5,4	45,0	0,80	MRD03	1300	5,7	3,2	0,30	0,38	1,50	0,4709
	268,54	5,1	109	0,92	MRD13	1100	7,2	4,7	0,5	0,7	1,50	1,6974	
280	287,13	4,7	45,0	0,80	MRD03	1300	5,7	3,2	0,30	0,38	1,50	0,4706	
315	324,44	4,2	45,0	0,80	MRD03	1300	5,7	3,2	0,30	0,38	1,50	0,4927	
0,09	2,5	2,57	530	1,6	>3,5	MRD02	810	5,6	3,0	0,20	0,28	2,00	0,4044
	3,15	3,28	415	2,0	>3,5	MRD02	880	5,6	3,0	0,20	0,28	2,00	0,3235
	4,0	4,26	320	2,6	>3,5	MRD02	950	5,6	3,0	0,20	0,28	2,00	0,2677
	5,0	5,28	258	3,2	>3,5	MRD02	1010	5,6	3,0	0,20	0,28	2,00	0,2380
	6,3	6,25	217	3,8	>3,5	MRD02	1080	5,6	3,0	0,20	0,28	2,00	0,3088
	8,0	7,98	170	4,8	>3,5	MRD02	1170	5,6	3,0	0,20	0,28	2,00	0,2649
	10,0	10,36	131	6,3	>3,5	MRD02	1270	5,6	3,0	0,20	0,28	2,00	0,2329
	12,5	12,84	106	7,8	>3,5	MRD02	1350	5,6	3,0	0,20	0,28	2,00	0,2153
	16,0	16,32	83	9,9	>3,5	MRD02	1450	5,6	3,0	0,20	0,28	2,00	0,2010
	20,0	21,53	63	13,1	>3,5	MRD02	1570	5,6	3,0	0,20	0,28	2,00	0,1899
	25,0	26,75	51	16,2	3,20	MRD02	1570	5,6	3,0	0,20	0,28	2,00	0,1837
	31,5	30,22	45	18,3	2,84	MRD02	1560	5,6	3,0	0,20	0,28	2,00	0,1812
	35,5	34,68	40	20,9	1,68	MRD02	1540	5,6	3,0	0,20	0,28	2,00	0,1881
	40	43,07	32	26,1	1,34	MRD02	1510	5,6	3,0	0,20	0,28	2,00	0,1826
		36,89	37	22,4	2,32	MRD03	1540	5,8	3,2	0,30	0,38	2,00	0,1530
		39,08	35	23,7	2,95	MRD12	1940	7,0	4,4	0,5	0,7	2,00	0,6890

MRD - 4 poles

Gearboxes Series RD

1400 rpm

Geared motor selection

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0.09	50	48,67	28	29,5	1,22	MRD02	1490	5,6	3,0	0,20	0,28	2,00	0,1803
		47,07	29	28,6	1,82	MRD03	1500	5,8	3,2	0,30	0,38	2,00	0,4897
		48,12	28	29,2	2,40	MRD12	1940	7,0	4,4	0,50	0,70	2,00	0,6776
		52,20	26	32	3,12	MRD13	1940	7,2	4,6	0,50	0,70	2,00	1,3094
	63	61,14	22	37,1	1,40	MRD03	1420	5,8	3,2	0,30	0,38	2,00	0,4807
		61,67	22	37	1,88	MRD12	1900	7,1	4,5	0,50	0,70	2,00	0,6681
		66,03	21	40	2,50	MRD13	1900	7,3	4,7	0,50	0,70	2,00	1,2967
	80	75,78	18	46,0	1,13	MRD03	1310	5,8	3,2	0,30	0,38	2,00	0,4764
		80,43	17	49	2,05	MRD13	1850	7,3	4,7	0,50	0,70	2,00	1,2905
	100	96,29	14	58,4	0,89	MRD03	1100	5,8	3,2	0,30	0,38	2,00	0,4735
		100,60	14	61	1,64	MRD13	1760	7,3	4,7	0,50	0,70	2,00	1,2861
	125	130,84	10,4	79	1,26	MRD13	1580	7,3	4,7	0,50	0,70	2,00	1,2833
160	165,08	8,2	100	1,00	MRD13	1280	7,3	4,7	0,50	0,70	2,00	1,7033	
200	206,46	6,6	125	0,80	MRD13	1000	7,3	4,7	0,50	0,70	2,00	1,6996	
0.13	2,5	2,57	530	2,1	>3,5	MRD02	810	6,8	3,1	0,20	0,28	2,80	0,5356
	3,15	3,28	415	2,7	>3,5	MRD02	870	6,8	3,1	0,20	0,28	2,80	0,4548
	4,0	4,26	320	3,4	>3,5	MRD02	940	6,8	3,1	0,20	0,28	2,80	0,3989
	5,0	5,28	258	4,3	>3,5	MRD02	1000	6,8	3,1	0,20	0,28	2,80	0,3692
	6,3	6,25	217	5,1	>3,5	MRD02	1070	6,8	3,1	0,20	0,28	2,80	0,4401
	8,0	7,98	170	6,5	>3,5	MRD02	1160	6,8	3,1	0,20	0,28	2,80	0,3961
	10,0	10,36	131	8,4	>3,5	MRD02	1250	6,8	3,1	0,20	0,28	2,80	0,3641
	12,5	12,84	106	10,4	>3,5	MRD02	1330	6,8	3,1	0,20	0,28	2,80	0,3466
	16,0	16,32	83	13,2	>3,5	MRD02	1420	6,8	3,1	0,20	0,28	2,80	0,3323
	20,0	21,53	63	17,4	2,93	MRD02	1530	6,8	3,1	0,20	0,28	2,80	0,3211
	25,0	26,75	51	21,6	2,40	MRD02	1550	6,8	3,1	0,20	0,28	2,80	0,3150
	31,5	30,22	45	24,4	2,13	MRD02	1530	6,8	3,1	0,20	0,28	2,80	0,3124
	35,5	34,68	40	27,8	1,26	MRD02	1510	6,8	3,1	0,20	0,28	2,80	0,3194
	40	43,07	32	34,8	1,00	MRD02	1450	6,8	3,1	0,20	0,28	2,80	0,3138
		36,89	37	29,8	1,74	MRD03	1500	7,0	3,3	0,30	0,38	2,80	0,1499
		39,08	35	32	2,21	MRD12	1910	8,3	4,6	0,50	0,70	2,80	0,6867
	50	40,10	34	32	3,05	MRD13	1940	8,4	4,7	0,50	0,70	2,80	0,4521
		48,67	28	39,4	0,91	MRD02	1410	6,8	3,1	0,20	0,28	2,80	0,3115
		47,07	29	38,1	1,37	MRD03	1430	7,0	3,3	0,30	0,38	2,80	0,4865
		48,12	28	39	1,80	MRD12	1910	8,3	4,6	0,50	0,70	2,80	0,6753
	63	52,20	26	42	2,34	MRD13	1900	8,4	4,7	0,50	0,70	2,80	1,4775
		61,14	22	49,5	1,05	MRD03	1300	7,0	3,3	0,30	0,38	2,80	0,4775
		61,67	22	50	1,41	MRD12	1850	8,4	4,7	0,50	0,70	2,80	0,6658
		66,03	21	53	1,87	MRD13	1840	8,5	4,8	0,50	0,70	2,80	1,4648
		75,78	18	61,3	0,85	MRD03	1100	7,0	3,3	0,30	0,38	2,80	0,4733
	80	80,43	17	65	1,54	MRD13	1750	8,5	4,8	0,50	0,70	2,80	1,4586
		81,52	16,7	66	3,03	MRD23	3300	26,3	12,8	0,80	1,00	2,80	2,0939
		100	100,60	14	81	1,23	MRD13	1600	8,5	4,8	0,50	0,70	2,80
	100	105,43	12,9	85	2,34	MRD23	3250	26,6	13,1	0,80	1,00	2,80	2,0832
		125	130,84	10,4	106	0,94	MRD13	1270	8,5	4,8	0,50	0,70	2,80
	125	124,16	11,0	100	1,99	MRD23	3150	27,2	13,7	0,80	1,00	2,80	2,0798
160		165,08	8,2	134	0,75	MRD13	1100	8,5	4,8	0,50	0,70	2,80	1,8714
160	164,94	8,2	133	1,50	MRD23	2950	32,4	18,9	0,80	1,00	2,80	2,6601	
	200	209,25	6,5	169	1,18	MRD23	2650	27,2	13,7	0,80	1,00	2,80	2,6491
250	270,63	5,0	219	0,91	MRD23	1980	33,5	20,0	0,80	1,00	2,80	2,6418	
315	318,70	4,3	258	0,78	MRD23	1600	33,6	20,1	0,80	1,00	2,80	2,6399	

Gearboxes Series RD

MRD - 4 poles

Geared motor selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0.18	2,5	2,57	533	3,1	>3,5	MRD02	800	7,4	3,1	0,20	0,28	4	0,5356
	3,15	3,28	418	3,9	>3,5	MRD02	860	7,4	3,1	0,20	0,28	4	0,4548
	4,0	4,26	322	5,1	>3,5	MRD02	920	7,4	3,1	0,20	0,28	4	0,3989
	5,0	5,28	260	6,4	>3,5	MRD02	980	7,4	3,1	0,20	0,28	4	0,3692
	6,3	6,25	219	7,5	>3,5	MRD02	1050	7,4	3,1	0,20	0,28	4	0,4401
	8,0	7,98	172	9,6	>3,5	MRD02	1130	7,4	3,1	0,20	0,28	4	0,3961
	10,0	10,36	132	12,5	>3,5	MRD02	1210	7,4	3,1	0,20	0,28	4	0,3641
	12,5	12,84	107	15,5	3,23	MRD02	1280	7,4	3,1	0,20	0,28	4	0,3466
	16,0	16,32	84	19,7	2,59	MRD02	1360	7,4	3,1	0,20	0,28	4	0,3323
	20,0	21,53	64	25,9	1,97	MRD02	1460	7,4	3,1	0,20	0,28	4	0,3211
	25,0	26,75	51	32,2	1,61	MRD02	1480	7,4	3,1	0,20	0,28	4	0,3150
		26,52	51	32	2,90	MRD12	1940	8,9	4,6	0,50	0,70	4	0,6894
	31,5	30,22	45	36,4	1,43	MRD02	1440	7,4	3,1	0,20	0,28	4	0,3124
		32,65	42	40	2,38	MRD12	1910	8,9	4,6	0,50	0,70	4	0,6771
	35,5	34,68	40	41,8	0,84	MRD02	1390	7,4	3,1	0,20	0,28	4	0,3194
	40	36,89	37	44,4	1,17	MRD03	1370	7,6	3,3	0,30	0,38	4	0,1499
		39,08	35	47	1,48	MRD12	1800	8,9	4,6	0,50	0,70	4	0,6867
		40,10	34	49	2,03	MRD13	1870	9,0	4,7	0,50	0,70	4	0,4521
	50	47,07	29	56,7	0,92	MRD03	1200	7,6	3,3	0,30	0,38	4	0,4865
		48,12	28	58	1,20	MRD12	1800	8,9	4,6	0,50	0,70	4	0,6753
		52,20	26	63	1,56	MRD13	1770	9,0	4,7	0,50	0,70	4	1,4775
		52,17	26,1	63	3,15	MRD23	3330	34,0	18,5	0,80	1,00	4	2,1312
	63	61,14	22	73,6	0,80	MRD03	800	7,6	3,3	0,30	0,38	4	0,4775
	61,67	22	75	0,94	MRD12	1670	9,0	4,7	0,50	0,70	4	0,6658	
	66,03	21	80	1,25	MRD13	1630	9,1	4,8	0,50	0,70	4	1,4648	
	64,26	21,2	78	2,57	MRD23	3280	35,5	20,0	0,80	1,00	4	2,1092	
80	80,43	17	98	1,02	MRD13	1420	9,1	4,8	0,50	0,70	4	1,4586	
	81,52	16,7	99	2,02	MRD23	3190	35,7	20,2	0,80	1,00	4	2,0939	
100	100,60	14	122	0,82	MRD13	1200	9,1	4,8	0,50	0,70	4	1,4542	
	105,43	12,9	128	1,56	MRD23	3000	26,6	7,6	0,80	1,00	4	2,0832	
125	124,16	11,0	151	1,33	MRD23	2850	26,6	7,6	0,80	1,00	4	2,0798	
160	164,94	8,2	200	1,00	MRD23	2280	26,6	7,6	0,80	1,00	4	2,6601	
200	209,25	6,5	254	0,79	MRD23	1500	32,1	13,1	0,80	1,00	4	2,6491	
0.25	2,5	2,57	533	4,3	>3,5	MRD02	780	9,0	3,2	0,20	0,28	5	0,5251
	3,15	3,28	418	5,5	>3,5	MRD02	840	9,0	3,2	0,20	0,28	5	0,4443
	4,0	4,26	322	7,1	>3,5	MRD02	900	9,0	3,2	0,20	0,28	5	0,3587
	5,0	5,28	260	8,8	>3,5	MRD02	960	9,0	3,2	0,20	0,28	5	0,3587
	6,3	6,25	219	10,5	>3,5	MRD02	1020	9,0	3,2	0,20	0,28	5	0,4296
	8,0	7,98	172	13,3	>3,5	MRD02	1100	9,0	3,2	0,20	0,28	5	0,3856
	10,0	10,36	132	17,3	2,88	MRD02	1170	9,0	3,2	0,20	0,28	5	0,3536
	12,5	12,84	107	21,5	2,33	MRD02	1230	9,0	3,2	0,20	0,28	5	0,3361
	16,0	16,32	84	27,3	1,87	MRD02	1300	9,0	3,2	0,20	0,28	5	0,3218
		16,30	85	27	3,36	MRD12	1960	10,5	4,7	0,50	0,70	5	0,7295
	20,0	21,53	64	36,0	1,42	MRD02	1370	9,0	3,2	0,20	0,28	5	0,3106
		20,39	68	34	2,72	MRD12	1930	10,5	4,7	0,50	0,70	5	0,7019
	25,0	26,75	51	44,7	1,16	MRD02	1370	9,0	3,2	0,20	0,28	5	0,3045
		26,52	52	44	2,12	MRD12	1890	10,5	4,7	0,50	0,70	5	0,6796
	31,5	32,65	42	54	1,74	MRD12	1840	10,5	4,7	0,50	0,70	5	0,6672
	40	36,89	37	61,7	0,84	MRD03	1140	9,2	3,4	0,30	0,38	5	0,1763
		39,08	35	65	1,08	MRD12	1630	10,5	4,7	0,50	0,70	5	0,6769

MRD - 4 poles

Gearboxes Series RD

1400 rpm

Geared motor selection

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0.25	40	40,10	34	67	1,49	MRD13	1750	10,6	4,8	0,50	0,70	5	0,4422
		39,39	35	65	2,11	MRD22	3320	13,5	7,7	0,80	1,00	5	1,2877
		40,76	34	68	2,94	MRD23	2000	13,9	8,1	0,80	1,00	5	1,3104
	50	48,12	29	80	0,88	MRD12	1630	10,5	4,7	0,50	0,70	5	0,6654
		52,20	26	87	1,14	MRD13	1580	10,6	4,8	0,50	0,70	5	1,4676
		50,76	27	84	1,64	MRD22	3250	13,5	7,7	0,80	1,00	5	1,3030
		52,17	26	87	2,30	MRD23	3250	14,0	8,2	0,80	1,00	5	2,1312
	63	50,73	27	84	3,37	MRD32	7950	19,1	13,3	1,30	1,80	5	1,8570
		66,03	21	110	0,91	MRD13	1260	10,7	4,9	0,50	0,70	5	1,4549
		62,13	22	103	1,35	MRD22	3170	13,6	7,8	0,80	1,00	5	1,2810
		64,26	21	107	1,87	MRD23	3150	14,0	8,2	0,80	1,00	5	2,1092
	80	63,33	22	105	2,71	MRD32	7850	19,1	13,3	1,30	1,80	5	1,7865
		80,43	17	134	0,75	MRD13	1020	10,7	4,9	0,50	0,70	5	1,4487
		81,52	17	135	1,48	MRD23	2950	14,0	8,2	0,80	1,00	5	2,0939
	100	76,31	18	127	3,33	MRD33	7800	20,1	14,3	1,60	2,10	5	4,6584
		105,43	13	175	1,14	MRD23	2650	14,0	8,2	0,80	1,00	5	2,0832
		99,54	14	165	2,56	MRD33	7600	20,2	14,4	1,60	2,10	5	4,3194
	125	124,16	11	206	0,97	MRD23	2250	14,0	8,2	0,80	1,00	5	2,0798
		130,90	10,5	217	1,95	MRD33	7200	20,2	14,4	1,60	2,10	5	4,3033
		128,71	10,7	214	2,95	MRD43	7700	28,2	9,2	2,20	3,40	5	6,6730
	160	164,94	8,4	274	0,73	MRD23	2000	14,0	8,2	0,80	1,00	5	2,6601
167,80		8,2	279	1,53	MRD33	6500	20,2	14,4	1,60	2,10	5	6,4724	
157,36		8,8	261	2,68	MRD43	9800	33,8	14,8	2,20	3,40	5	8,8326	
197,50		7,0	328	1,30	MRD33	5900	20,2	14,4	1,60	2,10	5	6,2820	
200	206,95	6,7	344	1,84	MRD43	9600	33,8	14,8	2,20	3,40	5	8,6391	
	257,60	5,4	428	1,00	MRD33	3600	20,3	14,5	1,60	2,10	5	5,9420	
	258,38	5,3	429	1,63	MRD43	9100	28,3	9,3	2,20	3,40	5	8,2999	
315	307,21	4,5	510	0,84	MRD33	2700	20,3	14,5	1,60	2,10	5	5,9472	
	318,46	4,3	529	1,37	MRD43	8000	39,6	20,6	2,20	3,40	5	8,3020	
	0.37	2,5	2,57	537	6,3	>3,5	MRD02	760	9,4	3,2	0,20	0,28	8
3,15		3,28	421	8,1	>3,5	MRD02	820	9,4	3,2	0,20	0,28	8	0,4443
4,0		4,26	324	10,5	3,44	MRD02	870	9,4	3,2	0,20	0,28	8	0,3587
5,0		5,28	260	13,1	2,91	MRD02	920	9,4	3,2	0,20	0,28	8	0,3587
6,3		6,25	221	15,4	3,12	MRD02	980	9,4	3,2	0,20	0,28	8	0,4296
8,0		7,98	173	19,6	2,50	MRD02	1040	9,4	3,2	0,20	0,28	8	0,3856
10,0		10,36	133	25,5	1,96	MRD02	1100	9,4	3,2	0,20	0,28	8	0,3536
		10,58	130	26	3,42	MRD12	1960	10,8	4,6	0,50	0,70	8	0,8159
12,5		12,84	107	31,6	1,62	MRD02	1140	9,4	3,2	0,20	0,28	8	0,3361
		13,38	103	33	2,74	MRD12	1940	10,8	4,6	0,50	0,70	8	0,7619
16,0		16,32	85	40,1	1,27	MRD02	1180	9,4	3,2	0,20	0,28	8	0,3218
		16,30	85	40	2,27	MRD12	1910	10,9	4,7	0,50	0,70	8	0,7295
20,0		21,53	64	52,9	0,96	MRD02	1220	9,4	3,2	0,20	0,28	8	0,3106
		20,39	68	50	1,84	MRD12	1860	10,9	4,7	0,50	0,70	8	0,7019
25,0		26,75	52	65,7	0,80	MRD02	1020	9,4	3,2	0,20	0,28	8	0,3045
		26,52	52	65	1,43	MRD12	1760	10,9	4,7	0,50	0,70	8	0,6796
		26,73	52	66	2,85	MRD22	3320	13,8	7,6	0,80	1,00	8	1,3507
31,5		32,65	42	80	1,17	MRD12	1630	10,9	4,7	0,50	0,70	8	0,6672
		31,48	44	77	2,44	MRD22	3280	13,8	7,6	0,80	1,00	8	1,3210
40		39,08	35	96	0,73	MRD12	1630	10,9	4,7	0,50	0,70	8	0,6769
		40,10	34	99	1,00	MRD13	1580	11,0	4,8	0,50	0,70	8	0,4422

Gearboxes Series RD

MRD - 4 poles

Geared motor selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0.37	40	39,39	35	97	1,43	MRD22	3200	13,9	7,7	0,80	1,00	8	1,2877
		40,76	34	100	1,99	MRD23	2000	14,3	8,1	0,80	1,00	8	1,3104
		38,57	36	95	2,99	MRD32	7900	19,5	13,3	1,30	1,80	8	1,9845
	50	52,20	26	128	0,77	MRD13	1500	11,0	4,8	0,50	0,70	8	1,4676
		50,76	27	125	1,11	MRD22	3040	13,9	7,7	0,80	1,00	8	1,3030
		52,17	26	128	1,56	MRD23	2800	14,4	8,2	0,80	1,00	8	2,1312
	63	50,73	27	125	2,28	MRD32	7800	19,5	13,3	1,30	1,80	8	1,8570
		62,13	22	153	0,91	MRD22	2820	14,0	7,8	0,80	1,00	8	1,2810
		64,26	21	158	1,27	MRD23	2350	14,4	8,2	0,80	1,00	8	2,1092
	80	63,33	22	156	1,83	MRD32	7600	19,5	13,3	1,30	1,80	8	1,7865
		64,84	21	159	2,64	MRD33	7600	20,5	14,3	1,60	2,10	8	4,8573
		81,52	17	200	1,00	MRD23	1500	14,4	8,2	0,80	1,00	8	2,0939
	100	76,31	18	188	2,25	MRD33	7400	20,5	14,3	1,60	2,10	8	4,6584
		82,25	18,4	184	3,80	MRD43	9900	43,4	14,4	2,20	3,40	8	7,0373
		105,43	13	259	0,77	MRD23	1200	14,4	8,2	0,80	1,00	8	2,0832
	125	99,54	14	245	1,73	MRD33	6900	20,6	14,4	1,60	2,10	8	4,3194
		102,50	14,1	241	2,90	MRD43	9800	43,5	14,5	2,20	3,40	8	6,6923
		130,90	10,5	322	1,32	MRD33	6000	20,6	14,4	1,60	2,10	8	4,3033
	160	124,13	10,7	316	2,21	MRD43	7700	41,0	12,0	2,20	3,40	8	6,6730
		167,80	8,2	413	1,03	MRD33	4100	20,6	14,4	1,60	2,10	8	6,4724
160,69		8,8	387	1,80	MRD43	9400	43,7	14,7	2,20	3,40	8	8,8326	
200	197,50	7,0	486	0,88	MRD33	3500	20,6	14,4	1,60	2,10	8	6,2820	
	207,34	6,7	509	1,37	MRD43	8100	43,8	14,8	2,20	3,40	8	8,6391	
	258,38	5,3	635	1,10	MRD43	6000	49,4	20,4	2,20	3,40	8	8,2999	
315	312,90	4,3	783	0,90	MRD43	5000	43,8	14,8	2,20	3,40	8	8,3020	
0.55	2,5	2,57	541	9,3	3,22	MRD02	730	11,5	3,0	0,20	0,28	14	0,6362
		3,15	424	11,9	2,78	MRD02	780	11,5	3,0	0,20	0,28	14	0,5554
	4,0	4,26	327	15,4	2,33	MRD02	820	11,5	3,0	0,20	0,28	14	0,4995
		4,01	344	14,7	3,39	MRD12	1889	13,3	4,8	0,50	0,70	14	1,2685
	5,0	5,28	262	19,3	1,97	MRD02	870	11,5	3,0	0,20	0,28	14	0,4698
		5,07	272	18,5	2,85	MRD12	1980	13,3	4,8	0,50	0,70	14	1,1726
	6,3	6,25	222	22,7	2,12	MRD02	910	11,5	3,0	0,20	0,28	14	0,5407
		7,98	174	28,9	1,69	MRD02	960	11,5	3,0	0,20	0,28	14	0,4967
	8,0	8,13	170	30	2,96	MRD12	1950	13,4	4,9	0,50	0,70	14	1,2435
		10,36	134	37,6	1,33	MRD02	980	11,5	3,0	0,20	0,28	14	0,4647
	10,0	10,58	130	39	2,30	MRD12	1920	13,4	4,9	0,50	0,70	14	1,1569
		12,84	108	46,6	1,07	MRD02	1010	11,5	3,0	0,20	0,28	14	0,4472
	12,5	13,38	103	49	1,84	MRD12	1870	13,4	4,9	0,50	0,70	14	1,1028
		16,32	85	59,2	0,86	MRD02	1010	11,5	3,0	0,20	0,28	14	0,4329
	16,0	16,30	85	60	1,53	MRD12	1800	13,5	5,0	0,50	0,70	14	1,0704
		16,29	85	60	3,07	MRD22	3253	16,4	7,9	0,80	1,00	14	2,0125
	20,0	20,39	68	75	1,23	MRD12	1660	13,5	5,0	0,50	0,70	14	1,0429
		20,67	67	76	2,45	MRD22	3290	16,4	7,9	0,80	1,00	14	1,9223
	25,0	26,52	52	97	0,96	MRD12	1430	13,5	5,0	0,50	0,70	14	0,6741
		26,73	52	98	1,92	MRD22	3200	16,4	7,9	0,80	1,00	14	1,8534
31,5	32,65	42	119	0,79	MRD12	1020	13,5	5,0	0,50	0,70	14	0,6741	
	31,48	44	115	1,64	MRD22	3100	16,4	7,9	0,80	1,00	14	1,8236	
40	33,21	42	121	3,30	MRD32	7800	21,8	13,3	1,30	1,80	14	2,3727	
	39,39	35	144	0,96	MRD22	2900	16,5	8,0	0,80	1,00	14	1,7903	
	40,76	34	149	1,34	MRD23	1870	16,9	8,4	0,80	1,00	14	1,7099	

MRD - 4 poles

Gearboxes Series RD

1400 rpm

Geared motor selection

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0.55	40	38,57	36	141	2,01	MRD32	7700	22,1	13,6	1,30	1,80	14	2,4830
		41,54	33	152	2,96	MRD42	10700	28,8	20,3	2,20	3,00	14	4,5875
		38,06	36	139	3,01	MRD33	1940	23,0	14,5	1,60	2,10	14	2,5282
	50	50,76	27	186	0,75	MRD22	2700	16,5	8,0	0,80	1,00	14	1,8056
		52,17	26	191	1,05	MRD23	2450	17,0	8,5	0,80	1,00	14	2,5308
		50,73	27	185	1,53	MRD32	7400	22,1	13,6	1,30	1,80	14	2,3555
	63	50,30	27	184	2,20	MRD42	10600	28,8	20,3	2,20	3,00	14	4,3886
		48,77	28	178	2,36	MRD33	7500	23,0	14,5	1,60	2,10	14	4,8058
		64,26	21	235	0,85	MRD23	1800	17,0	8,5	0,80	1,00	14	2,5088
	80	63,33	22	231	1,23	MRD32	7000	22,1	13,6	1,30	1,80	14	2,2850
		62,96	22	230	1,95	MRD42	10300	28,9	20,4	2,20	3,00	14	4,2181
		64,84	21	237	1,78	MRD33	7000	23,1	14,6	1,60	2,10	14	4,8220
	100	63,75	21,6	233	2,69	MRD43	9800	30,0	21,5	2,20	3,40	14	7,2550
		66,67	20,8	242	3,51	MRD52	12000	57,5	49	4,50	5,50	14	10,340
		76,31	18	279	1,51	MRD33	6500	23,1	14,6	1,60	2,10	14	4,9660
	125	82,25	18,4	274	2,55	MRD43	9700	30,1	21,6	2,20	3,40	14	7,0373
		99,54	14	364	1,16	MRD33	5200	23,2	14,7	1,60	2,10	14	5,1610
		102,50	14,1	358	1,95	MRD43	9500	30,3	21,8	2,20	3,40	14	6,6923
	160	130,90	10,5	478	0,89	MRD33	4200	23,2	14,7	1,60	2,10	14	5,3598
		124,13	10,7	470	1,49	MRD43	7200	30,4	21,9	2,20	3,40	14	6,6730
		129,80	10,7	461	2,82	MRD53	8100	60,5	52	4,50	6,50	14	13,576
	200	160,69	8,8	575	1,21	MRD43	7000	30,2	21,7	2,20	3,40	14	8,8326
		157,14	8,8	558	2,33	MRD53	8200	60,5	52	4,50	6,50	14	16,600
		207,34	6,7	756	0,92	MRD43	9000	30,3	21,8	2,20	3,40	14	8,6391
250	195,82	7,1	696	1,87	MRD53	8400	50,5	52	4,50	6,50	14	16,328	
	201,57	6,9	716	3,21	MRD53	12600	78,5	70	7,00	11	14	41,987	
	264,00	5,3	938	1,39	MRD53	8700	60,5	52	4,50	6,50	14	14,854	
315	265,50	5,2	943	2,44	MRD63	13000	78,5	70	7,00	11	14	40,766	
	332,31	4,2	1180	0,76	MRD53	9000	60,5	52	4,50	6,50	14	15,856	
	332,00	4,2	1179	1,95	MRD63	13500	78,5	70	7,00	11	14	40,774	
355	373,33	3,7	1326	1,73	MRD63	15700	78,5	70	7,00	11	14	40,799	
	448,00	3,1	1591	1,45	MRD63	16800	78,5	70	7,00	11	14	40,766	
	560,00	2,5	1989	1,16	MRD63	18000	78,5	70	7,00	11	14	40,748	
0.75	2,5	2,57	541	12,7	2,36	MRD02	700	12,8	3,0	0,20	0,28	17	0,6362
		2,53	546	12,6	3,39	MRD12	1680	14,6	4,8	0,50	0,70	17	1,6146
	3,15	3,28	424	16,2	2,04	MRD02	730	12,8	3,0	0,20	0,28	17	0,5554
		3,08	450	15,3	2,99	MRD12	1713	14,6	4,8	0,50	0,70	17	1,4326
	4,0	4,26	327	21,1	1,71	MRD02	760	12,8	3,0	0,20	0,28	17	0,4995
		4,01	345	19,9	2,50	MRD12	1842	14,6	4,8	0,50	0,70	17	1,2685
	5,0	5,28	263	26,1	1,46	MRD02	810	12,8	3,0	0,20	0,28	17	0,4698
		5,07	273	25	2,10	MRD12	1958	14,6	4,8	0,50	0,70	17	1,1726
	6,3	6,25	222	30,9	1,55	MRD02	840	12,8	3,0	0,20	0,28	17	0,5407
		6,69	207	33	2,62	MRD12	1940	14,7	4,9	0,50	0,70	17	1,3350
	8,0	7,98	174	39,5	1,24	MRD02	860	12,8	3,0	0,20	0,28	17	0,4967
		8,13	170	40	2,18	MRD12	1910	14,7	4,9	0,50	0,70	17	1,2435
	10,0	10,36	134	51,3	0,98	MRD02	860	12,8	3,0	0,20	0,28	17	0,4647
		10,58	131	53	1,69	MRD12	1850	14,7	4,9	0,50	0,70	17	1,1569
	12,5	12,84	108	63,5	0,80	MRD02	850	12,8	3,0	0,20	0,28	17	0,4472
13,38		103	66	1,36	MRD12	1750	14,7	4,9	0,50	0,70	17	1,1028	
13,23		105	66	2,76	MRD22	2970	17,6	7,8	0,80	1,00	17	2,1227	

Gearboxes Series RD

MRD - 4 poles

Geared motor selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
0.75	16,0	16,30	85	81	1,12	MRD12	1620	14,8	5,0	0,50	0,70	17	1,0704
		16,29	85	81	2,26	MRD22	3120	17,7	7,9	0,80	1,00	17	2,0125
	20,0	20,39	68	101	0,91	MRD12	1360	14,8	5,0	0,50	0,70	17	1,0429
		20,67	67	103	1,80	MRD22	3170	17,7	7,9	0,80	1,00	17	1,9223
	25,0	26,52	52	132	0,71	MRD12	1380	14,8	5,0	0,50	0,70	17	0,6741
		26,73	52	133	1,41	MRD22	2980	17,7	7,9	0,80	1,00	17	1,8534
		25,26	55	125	3,15	MRD32	7550	23,1	13,3	1,30	1,80	17	2,5126
	31,5	31,48	44	156	1,21	MRD22	2790	17,7	7,9	0,80	1,00	17	1,8236
		33,21	42	165	2,43	MRD32	7350	23,1	13,3	1,30	1,80	17	2,3727
		40	39,39	35	196	0,71	MRD22	2600	17,8	8,0	0,80	1,00	17
	40	40,76	34	202	0,98	MRD23	1750	18,2	8,4	0,80	1,00	17	1,7099
		38,57	36	192	1,48	MRD32	6800	23,4	13,6	1,30	1,80	17	2,4830
		41,54	33	206	2,18	MRD42	10480	30,1	20,3	2,2	3,0	17	4,5875
	50	38,06	36	189	2,22	MRD33	5000	24,3	14,5	1,6	2,1	17	2,5282
		37,42	37,0	186	3,76	MRD43	9900	31,2	21,4	2,2	3,4	17	4,4941
		52,17	27	259	0,77	MRD23	1500	18,3	8,5	0,8	1,0	17	2,5308
		50,73	27	252	1,13	MRD32	5950	23,4	13,6	1,3	1,8	17	2,3555
		50,30	28	250	2,41	MRD42	9500	30,1	20,3	2,2	3,0	17	4,3886
	63	48,77	28	242	1,74	MRD33	6900	24,3	14,5	1,6	2,1	17	4,8058
		47,95	28,9	238	2,94	MRD43	9800	31,2	21,4	2,2	3,4	17	6,8717
		53,33	26,1	264	3,22	MRD52	11200	58,8	49	4,5	5,5	17	10,579
		63,33	22	315	0,91	MRD32	5000	23,4	13,6	1,3	1,8	17	2,2850
		62,96	22	313	1,43	MRD42	8500	30,2	20,4	2,2	3,0	17	4,2181
		64,84	21	322	1,31	MRD33	5900	24,4	14,6	1,6	2,1	17	4,8220
		63,75	21,7	317	2,20	MRD43	9700	31,3	21,5	2,2	3,4	17	7,2550
		66,67	20,8	330	2,58	MRD52	12000	58,8	49	4,5	5,5	17	10,240
	80	76,31	18	379	1,11	MRD33	4900	24,4	14,6	1,6	2,1	17	4,9660
		75,03	18,5	373	1,87	MRD43	9200	31,4	21,6	2,2	3,4	17	7,0373
77,26		18,0	374	3,47	MRD53	7900	61,8	52	4,5	6,5	17	14,087	
100		99,54	14	494	0,86	MRD33	3500	24,5	14,7	1,6	2,1	17	5,1610
100	97,86	14,2	486	1,44	MRD43	8100	31,6	21,8	2,2	3,4	17	6,6923	
	96,28	14,4	466	2,79	MRD53	7900	61,8	52	4,5	6,5	17	13,603	
	125	124,13	10,8	639	1,10	MRD43	6000	31,7	21,9	2,2	3,4	17	6,6730
	129,80	10,7	629	2,07	MRD53	8100	61,8	52	4,5	6,5	17	13,576	
160	160,69	8,8	781	0,9	MRD43	5000	31,5	21,7	2,2	3,4	17	8,8326	
	157,14	8,8	761	1,71	MRD53	8200	61,8	52	4,5	6,5	17	16,600	
	157,33	8,8	762	3,02	MRD63	12300	79,8	70	7,0	11	17	42,685	
200	195,82	7,1	949	1,37	MRD53	8400	61,8	52	4,5	6,5	17	13,328	
	201,57	6,9	976	2,36	MRD63	12600	79,8	70	7,0	11	17	41,987	
250	264,00	5,3	1279	1,02	MRD53	8700	61,8	52	4,5	6,5	17	15,854	
	265,50	5,2	1286	1,79	MRD63	13000	79,8	70	7,0	11	17	40,766	
315	332,00	4,2	1608	1,43	MRD63	13500	79,8	70	7,0	11	17	40,774	
	355	373,33	3,7	1808	1,27	MRD63	15700	79,8	70	7,0	11	17	40,799
450	448,00	3,1	2170	1,06	MRD63	16800	79,8	70	7,0	11	17	40,766	
	560	560,00	2,5	2712	0,85	MRD63	18000	79,8	70	7,0	11	17	40,748
1.1	2,5	2,53	548	18,4	2,34	MRD12	1569	16,8	4,8	0,5	0,7	33	1,4856
	3,15	3,08	451	22,4	2,05	MRD12	1650	16,8	4,8	0,5	0,7	33	1,3036
	4,0	4,01	347	29	1,71	MRD12	1761	16,8	4,8	0,5	0,7	33	1,1395
	5,0	5,07	274	37	1,43	MRD12	1855	16,8	4,8	0,5	0,7	33	1,0436
	5,01	277	36	2,89	MRD22	2160	19,6	7,6	0,8	1,0	33	2,1816	

MRD - 4 poles

Gearboxes Series RD

1400 rpm

Geared motor selection

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
1.1	6,3	6,69	208	49	1,79	MRD12	1870	16,9	4,9	0,5	0,7	33	1,2060
	8,0	8,13	171	59	1,49	MRD12	1800	16,9	4,9	0,5	0,7	33	1,1144
		8,27	168	60	2,95	MRD22	2510	19,8	7,8	0,8	1,0	33	2,4162
	10,0	10,58	131	77	1,16	MRD12	1660	16,9	4,9	0,5	0,7	33	1,0278
		10,33	135	75	2,39	MRD22	2650	19,8	7,8	0,8	1,0	33	2,1765
	12,5	13,38	104	97	0,93	MRD12	1420	16,9	4,9	0,5	0,7	33	0,9738
		13,23	105	96	1,89	MRD22	2790	19,8	7,8	0,8	1,0	33	1,9928
	16,0	16,30	85	118	0,77	MRD12	1030	17,0	5,0	0,5	0,7	33	0,9414
		16,29	85	118	1,55	MRD22	2900	19,9	7,9	0,8	1,0	33	1,8826
		16,45	84	119	3,24	MRD32	6290	25,2	13,2	1,3	1,8	33	3,2491
20,0	20,67	67	150	1,23	MRD22	2850	19,9	7,9	0,8	1,0	33	1,7924	
	19,36	72	141	2,77	MRD32	6560	25,2	13,2	1,3	1,8	33	2,9048	
25,0	26,73	52	194	0,97	MRD22	2380	19,9	7,9	0,8	1,0	33	1,7234	
	25,26	55	183	2,15	MRD32	7020	25,3	13,3	1,3	1,8	33	2,3847	
	24,48	57	178	3,65	MRD42	8820	31,9	19,9	2,2	3,0	33	8,3681	
	31,5	31,48	44	228	0,83	MRD22	1820	19,9	7,9	0,8	1,0	33	1,6937
		33,21	42	241	1,66	MRD32	6900	25,3	13,3	1,3	1,8	33	2,2448
		29,64	47	215	3,00	MRD42	9290	31,9	19,9	2,2	3,0	33	8,0069
40	38,57	36	280	1,01	MRD32	6470	25,6	13,6	1,3	1,8	33	2,3551	
	41,54	33	301	1,50	MRD42	9860	32,3	20,3	2,2	3,0	33	7,9357	
	38,06	37	276	1,52	MRD33	3800	26,5	14,5	1,6	2,1	33	2,3981	
	41,88	37,1	272	2,57	MRD43	9700	33,4	21,4	2,2	3,4	33	7,8832	
50	40,48	34,8	292	2,92	MRD52	10500	61	49	4,5	5,5	33	10,858	
	50,73	27	368	0,77	MRD32	5800	25,6	13,6	1,3	1,8	33	2,2276	
	50,30	28	365	1,23	MRD42	9310	32,3	20,3	2,2	3,0	33	7,7368	
	48,77	28	354	1,19	MRD33	5400	26,5	14,5	1,6	2,1	33	4,8359	
	51,08	29,0	348	1,80	MRD43	9500	33,4	21,4	2,2	3,4	33	10,261	
	53,33	26,3	384	2,21	MRD52	11200	61	49	4,5	5,5	33	10,579	
63	62,96	22	457	0,98	MRD42	8200	32,4	20,4	2,2	3,0	33	7,5664	
	64,84	21	471	0,90	MRD33	4000	26,6	14,6	1,6	2,1	33	5,2297	
	63,75	21,8	463	1,51	MRD43	8700	33,5	21,5	2,2	3,4	33	10,644	
	66,67	21,0	480	1,77	MRD52	12000	61	49	4,5	5,5	33	10,340	
80	59,88	23,4	422	3,05	MRD53	7800	64	52	4,5	6,5	33	14,391	
	76,31	18	554	0,76	MRD33	3000	26,6	14,6	1,6	2,1	33	5,0309	
	82,25	18,5	545	1,28	MRD43	6700	33,6	21,6	2,2	3,4	33	10,426	
	77,26	18,1	545	2,39	MRD53	7900	64	52	4,5	6,5	33	14,087	
100	102,50	14,2	710	0,98	MRD43	5500	33,8	21,8	2,2	3,4	33	10,081	
	96,28	14,5	679	1,91	MRD53	7900	64	52	4,5	6,5	33	13,603	
	104,08	13,5	734	3,13	MRD63	11900	82	70	7,0	11	33	34,980	
	125	129,80	10,8	916	1,42	MRD53	8100	64	52	4,5	6,5	33	13,576
	125,87	11,1	888	2,59	MRD63	12000	82	70	7,0	11	33	34,910	
	160	157,14	8,9	1108	1,17	MRD53	8200	64	52	4,5	6,5	33	16,600
	157,33	8,9	1110	2,07	MRD63	12300	82	70	7,0	11	33	42,685	
	200	195,82	7,1	1381	0,94	MRD53	8400	64	52	4,5	6,5	33	16,328
	201,57	6,9	1422	1,62	MRD63	12600	82	70	7,0	11	33	41,987	
	250	264,00	5,3	1862	0,70	MRD53	8700	64	52	4,5	6,5	33	15,854
	265,50	5,3	1873	1,23	MRD63	13000	82	70	7,0	11	33	40,766	
	315	332,00	4,2	2342	0,98	MRD63	13500	82	70	7,0	11	33	40,777
	355	373,33	3,8	2633	0,87	MRD63	15700	82	70	7,5	11	33	40,799
	450	448,00	3,1	3160	0,73	MRD63	16800	82	70	7,0	11	33	40,766

Gearboxes Series RD

MRD - 4 poles

Geared motor selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
1.5	2,5	2,55	550	25	3,42	MRD22	1950	21,1	7,6	0,8	1,0	40	3,4569
	3,15	3,13	447	31	2,99	MRD22	1840	21,1	7,6	0,8	1,0	40	2,8995
	4,0	3,92	357	38	2,56	MRD22	1950	21,1	7,6	0,8	1,0	40	2,4858
	5,0	5,01	279	49	2,14	MRD22	2060	21,1	7,6	0,8	1,0	40	2,1816
	6,3	6,72	208	66	2,65	MRD22	2280	21,1	7,6	0,8	1,0	40	2,7248
	8,0	8,27	169	81	2,18	MRD22	2380	21,3	7,8	0,8	1,0	40	2,4162
	10,0	10,33	135	102	1,76	MRD22	2490	21,3	7,8	0,8	1,0	40	2,1765
	12,5	13,23	106	130	1,39	MRD22	2580	21,3	7,8	0,8	1,0	40	1,9928
		12,38	113	122	3,13	MRD32	5500	26,6	13,1	1,3	1,8	40	3,1944
	16,0	16,29	86	160	1,14	MRD22	2650	21,4	7,9	0,8	1,0	40	1,8826
		16,45	85	162	2,39	MRD32	6080	26,7	13,2	1,3	1,8	40	3,2491
	20,0	20,67	68	203	0,91	MRD22	2230	21,4	7,9	0,8	1,0	40	1,7924
		19,36	72	190	2,05	MRD32	6310	26,7	13,2	1,3	1,8	40	2,9048
		19,64	71	193	3,36	MRD42	8050	33,3	19,8	2,2	3,0	40	8,3681
	25,0	26,73	52	263	0,71	MRD22	2100	21,4	7,9	0,8	1,0	40	1,7234
		25,26	55	248	1,59	MRD32	6705	26,8	13,3	1,3	1,8	40	2,3847
		24,48	57	241	2,70	MRD42	8510	33,4	19,9	2,2	3,0	40	8,3681
	31,5	33,21	42	326	1,23	MRD32	5700	26,8	13,3	1,3	1,8	40	2,2448
		29,64	47	291	2,23	MRD42	8920	33,4	19,9	2,2	3,0	40	8,0069
	40	38,57	36	379	0,75	MRD32	5000	27,1	13,6	1,3	1,8	40	2,3551
		41,54	34	408	1,10	MRD42	8830	33,8	20,3	2,2	3,0	40	7,9357
		38,06	37	374	1,12	MRD33	3000	28,0	14,5	1,6	2,1	40	2,3981
		41,88	37,4	368	1,90	MRD43	9200	34,9	21,4	2,2	3,4	40	7,8832
		40,48	34,6	398	2,14	MRD52	10500	62,5	49,0	4,5	5,5	40	10,858
		39,33	35,6	378	3,36	MRD53	7600	65,5	52,0	4,5	6,5	40	10,526
	50	50,30	28	494	0,91	MRD42	7850	33,8	20,3	2,2	3,0	40	7,7368
		48,77	29	479	0,88	MRD33	4500	28,0	14,5	1,6	2,1	40	4,8359
		51,08	29,2	471	1,49	MRD43	8100	34,9	21,4	2,2	3,4	40	10,261
		53,33	26,3	524	1,62	MRD52	11200	62,5	49,0	4,5	5,5	40	10,579
		47,98	29,2	462	2,77	MRD53	7800	65,5	52,0	4,5	6,5	40	13,854
		49,80	28,1	489	3,27	MRD62	16800	75,5	62,0	7,0	9,0	40	27,203
	63	63,75	22,0	626	1,11	MRD43	6000	35,0	21,5	2,2	3,4	40	10,644
	66,67	21,0	655	1,30	MRD52	12000	62,5	49,0	4,5	5,5	40	10,340	
	59,88	23,4	576	2,24	MRD53	7800	65,5	52,0	4,5	6,5	40	14,391	
	56,00	25,0	550	2,91	MRD62	18000	75,5	62,0	7,0	9,0	40	25,590	
80	82,25	18,7	737	0,95	MRD43	6100	35,1	21,6	2,2	3,4	40	10,426	
	77,26	18,1	743	1,75	MRD53	7900	65,5	52,0	4,5	6,5	40	14,087	
	81,29	17,2	782	2,94	MRD63	11900	83,5	70,0	7,0	11	40	36,223	
100	96,28	14,5	926	1,40	MRD53	7900	65,5	52,0	4,5	6,5	40	13,603	
	104,08	13,5	1001	2,30	MRD63	11900	83,5	70,0	7,0	11	40	34,980	
125	129,80	10,8	1248	1,04	MRD53	8100	65,5	52,0	4,5	6,5	40	13,576	
	125,87	11,1	1211	1,90	MRD63	12000	83,5	70,0	7,0	11	40	34,910	
160	157,14	8,9	1511	0,86	MRD53	8200	65,5	52,0	4,5	6,5	40	16,600	
	157,33	8,9	1513	1,52	MRD63	12300	83,5	70,0	7,0	11	40	42,685	
200	201,57	6,9	1939	1,18	MRD63	12600	83,5	70,0	7,0	11	40	41,987	
250	265,50	5,3	2554	0,90	MRD63	13000	83,5	70,0	7,0	11	40	40,766	
315	332,00	4,2	3193	0,72	MRD63	13500	83,5	70,0	7,0	11	40	40,774	
1.8	2,5	2,55	550	31	2,79	MRD22	1710	23,1	7,6	0,8	1,0	50	3,4569
	3,15	3,13	447	38	2,44	MRD22	1795	23,1	7,6	0,8	1,0	50	2,8995
	4,0	3,92	357	47	2,09	MRD22	1885	23,1	7,6	0,8	1,0	50	2,4858

MRD - 4 poles

Gearboxes Series RD

1400 rpm

Geared motor selection

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
1.8	5,0	5,01	279	60	1,74	MRD22	1978	23,1	7,6	0,8	1,0	50	2,1816
	6,3	6,72	208	81	2,16	MRD22	2194	23,1	7,6	0,8	1,0	50	2,7248
	8,0	8,27	169	100	1,78	MRD22	2270	23,3	7,8	0,8	1,0	50	2,4162
	10,0	10,33	135	125	1,44	MRD22	2346	23,3	7,8	0,8	1,0	50	2,1765
		9,66	145	116	3,23	MRD32	5000	28,6	13,1	1,3	1,8	50	3,7274
	12,5	13,23	106	159	1,14	MRD22	2402	23,3	7,8	0,8	1,0	50	1,9928
		12,38	113	149	2,56	MRD32	5490	28,6	13,1	1,3	1,8	50	3,1944
	16,0	16,29	86	196	0,93	MRD22	2300	23,4	7,9	0,8	1,0	50	1,8826
		16,45	85	198	1,95	MRD32	5890	28,7	13,2	1,3	1,8	50	3,2491
		15,22	92	183	3,12	MRD42	7000	35,2	19,7	2,2	3,0	50	8,9476
	20,0	20,67	68	249	0,74	MRD22	2100	23,4	7,9	0,8	1,0	50	1,7924
		19,36	72	233	1,67	MRD32	6010	28,7	13,2	1,3	1,8	50	2,9048
		19,64	71	237	2,45	MRD42	7850	35,3	19,8	2,2	3,0	50	8,3681
	25,0	25,26	55	304	1,30	MRD32	6050	28,8	13,3	1,3	1,8	50	2,3847
		24,48	57	295	2,20	MRD42	8270	35,4	19,9	2,2	3,0	50	8,0069
	31,5	33,21	42	400	1,00	MRD32	3950	28,8	13,3	1,3	1,8	50	2,2448
		29,64	47	357	1,82	MRD42	8620	35,4	19,9	2,2	3,0	50	7,7854
		31,43	44,5	370	3,35	MRD52	9100	64,5	49,0	4,5	5,5	50	10,647
	40	41,54	34	501	0,90	MRD42	7100	35,8	20,3	2,2	3,0	50	7,7368
		38,06	37	459	0,91	MRD33	4000	30,0	14,5	1,6	2,1	50	2,3981
		41,88	37,4	451	1,55	MRD43	8000	36,9	21,4	2,2	3,4	50	7,8832
		40,48	34,6	477	1,78	MRD52	10500	64,5	49,0	4,5	5,5	50	10,858
		39,33	35,6	454	2,80	MRD53	7600	67,5	52,0	4,5	6,5	50	10,523
		40,50	34,6	477	3,35	MRD62	15700	77,5	62,0	7,0	9,0	50	27,919
	50	48,77	29	588	0,72	MRD33	3500	30,0	14,5	1,6	2,1	50	4,8359
		47,95	29,2	578	1,21	MRD43	6100	36,9	21,4	2,2	3,4	50	10,2607
		53,33	26,3	629	1,35	MRD52	11200	64,5	49,0	4,5	5,5	50	10,579
	47,98	29,2	554	2,31	MRD53	7800	67,5	52,0	4,5	6,5	50	13,854	
	49,80	28,1	587	2,73	MRD62	16800	77,5	62,0	7,0	9,0	50	27,203	
63	63,75	22,0	768	0,91	MRD43	5000	37,0	21,5	2,2	3,4	50	10,6441	
	66,67	21,0	786	1,08	MRD52	12000	64,5	49,0	4,5	5,5	50	10,340	
	59,88	23,4	691	1,87	MRD53	7800	67,5	52,0	4,5	6,5	50	14,391	
	56,00	25,0	660	2,42	MRD62	18000	77,5	62,0	7,0	9,0	50	26,590	
	61,88	22,6	714	3,08	mrd63	11700	85,5	70,0	7,0	11	50	37,004	
80	82,25	18,7	904	0,78	MRD43	4000	37,1	21,6	2,2	3,4	50	10,4264	
	77,26	18,1	892	1,46	MRD53	7900	67,5	52,0	4,5	6,5	50	14,087	
	81,29	17,2	938	2,45	MRD63	11900	85,5	70,0	7,0	11	50	36,223	
100	96,28	14,5	1111	1,17	MRD53	7900	67,5	52,0	4,5	6,5	50	13,603	
	104,08	13,5	1201	1,91	MRD63	11900	85,5	70,0	7,0	11	50	34,980	
125	129,80	10,8	1498	0,87	MRD53	8100	67,5	52,0	4,5	6,5	50	13,576	
	125,87	11,1	1453	1,58	MRD63	12000	85,5	70,0	7,0	11	50	34,910	
160	157,14	8,9	1814	0,72	MRD53	8200	67,5	52,0	4,5	6,5	50	16,600	
	157,33	8,9	1816	1,27	MRD63	12300	85,5	70,0	7,0	11	50	42,685	
200	201,57	6,9	2327	0,99	MRD63	12600	85,5	70,0	7,0	11	50	41,987	
250	265,50	5,3	3064	0,75	MRD63	13000	85,5	70,0	7,0	11	50	40,766	
2.2	2,5	2,55	558	36	2,36	MRD22	1670	26,6	7,6	0,8	1,0	75	3,8842
	3,15	3,13	453	45	2,07	MRD22	1740	26,6	7,6	0,8	1,0	75	3,3268
	4,0	3,92	363	56	1,77	MRD22	1820	26,6	7,6	0,8	1,0	75	2,9131
	5,0	5,01	283	71	1,48	MRD22	1890	26,6	7,6	0,8	1,0	75	2,6089
		5,33	266	76	3,10	MRD32	4250	32,6	13,6	1,3	1,8	75	4,2003

Gearboxes Series RD

MRD - 4 poles

Geared motor selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
2.2	6,3	6,72	211	95	1,83	MRD22	2100	26,6	7,6	0,8	1,0	75	3,1521
	8,0	8,27	172	117	1,51	MRD22	2160	26,8	7,8	0,8	1,0	75	2,8435
		7,72	184	110	3,39	MRD32	4800	32,8	13,8	1,3	1,8	75	4,8413
	10,0	10,33	137	147	1,22	MRD22	2200	26,8	7,8	0,8	1,0	75	2,6037
		9,66	147	137	2,74	MRD32	5050	32,9	13,9	1,3	1,8	75	4,1539
	12,5	13,23	107	188	0,96	MRD22	2220	26,8	7,8	0,8	1,0	75	2,4201
		12,38	115	176	2,17	MRD32	5360	32,9	13,9	1,3	1,8	75	3,6208
		12,20	116	173	3,58	MRD42	6800	39,5	20,5	2,2	3,0	75	9,4739
	16,0	16,29	87	231	0,79	MRD22	1650	26,9	7,9	0,8	1,0	75	2,3099
		16,45	86	234	1,65	MRD32	5710	33,0	14,0	1,3	1,8	75	3,6755
		15,22	93	216	3,00	MRD42	7180	39,6	20,6	2,2	3,0	75	8,7672
	20,0	19,36	73	275	1,42	MRD32	5890	33,0	14,0	1,3	1,8	75	3,3312
		19,64	72	279	2,32	MRD42	7620	39,7	20,7	2,2	3,0	75	8,1877
	25,0	25,26	56	359	1,10	MRD32	5000	33,1	14,1	1,3	1,8	75	2,8112
		24,48	58	348	1,86	MRD42	7990	39,8	20,8	2,2	3,0	75	7,8266
		25,99	54	372	3,31	MRD52	9000	68,0	49,0	4,5	5,5	75	10,962
	31,5	33,21	43	472	0,85	MRD32	4200	33,1	14,1	1,3	1,8	75	2,6712
		29,64	48	421	1,54	MRD42	8290	39,8	20,8	2,2	3,0	75	7,6050
		31,43	45	450	2,76	MRD52	9100	68,0	49,0	4,5	5,5	75	10,547
	40	41,88	38	532	1,31	MRD43	6800	41,2	22,2	2,2	3,4	75	7,6977
		40,48	35	579	1,47	MRD52	10500	68,0	49,0	4,5	5,5	75	10,858
		39,33	36	551	2,31	MRD53	7600	71,0	52,0	4,5	6,5	75	10,526
		40,50	35	579	2,76	MRD62	15700	81,0	62,0	7,0	9,0	75	27,919
	50	51,08	29,6	681	1,02	MRD43	5500	41,2	22,2	2,2	3,4	75	10,753
		53,33	26	763	1,11	MRD52	11200	68	49	4,5	5,5	75	10,579
		47,98	29	672	1,90	MRD53	7800	71	52	4,5	6,5	75	13,854
		49,80	28	712	2,25	MRD62	16800	81	62	7,0	9,0	75	27,203
		48,95	29	686	3,21	MRD63	11700	89	70	7,0	11	75	35,625
63	66,67	21	954	0,89	MRD52	12000	68	49	4,5	5,5	75	10,340	
	59,88	24	839	1,54	MRD53	7800	71	52	4,5	6,5	75	14,391	
	56,00	25	801	2,00	MRD62	18000	81	62	7,0	9,0	75	26,590	
	61,88	23	867	2,54	MRD63	11700	89	70	7,0	11	75	37,004	
80	77,26	18	1082	1,20	MRD53	7900	71	52	4,5	6,5	75	14,087	
	81,29	17	1139	2,02	MRD63	11900	89	70	7,0	11	75	36,223	
100	96,28	15	1349	0,96	MRD53	7900	71	52	4,5	6,5	75	13,603	
	104,08	14	1458	1,58	MRD63	11900	89	70	7,0	11	75	34,980	
125	129,80	11	1818	0,72	MRD53	8100	71	52	4,5	6,5	75	13,576	
	125,87	11	1763	1,30	MRD63	12000	89	70	7,0	11	75	34,910	
160	157,33	9,0	2204	1,04	MRD63	12300	89	70	7,0	11	75	42,685	
200	201,57	7,0	2823	0,81	MRD63	12600	89	70	7,0	11	75	41,987	
3.0	2,5	2,55	562	49	1,75	MRD22	1570	28,6	7,6	0,8	1,0	85	3,8842
	3,15	3,13	456	60	1,53	MRD22	1620	28,6	7,6	0,8	1,0	85	3,3268
		3,32	430	64	3,21	MRD32	3630	34,5	13,5	1,3	1,8	85	6,3316
	4,0	3,92	365	75	1,31	MRD22	1660	28,6	7,6	0,8	1,0	85	2,9131
		4,16	344	80	2,75	MRD32	3850	34,6	13,6	1,3	1,8	85	5,1053
	5,0	5,01	285	96	1,09	MRD22	1700	28,6	7,6	0,8	1,0	85	2,6089
		5,33	268	103	2,29	MRD32	4080	34,6	13,6	1,3	1,8	85	4,2003
	6,3	6,72	213	129	1,35	MRD22	1890	28,6	7,6	0,8	1,0	85	3,1521
		6,26	228	120	3,06	MRD32	4360	32,1	11,1	1,3	1,8	85	5,7232
	8,0	8,27	173	159	1,11	MRD22	1900	28,8	7,8	0,8	1,0	85	2,8435

MRD - 4 poles

Gearboxes Series RD

1400 rpm

Geared motor selection

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
3.0	8.0	7,72	185	148	2,51	MRD32	4580	34,8	13,8	1,3	1,8	85	4,8413
	10,0	10,33	138	199	0,90	MRD22	1880	28,8	7,8	0,8	1,0	85	2,6037
		9,66	148	186	2,03	MRD32	4800	34,9	13,9	1,3	1,8	85	4,1539
		10,00	143	192	2,91	MRD42	6200	41,4	20,4	2,2	3,0	85	10,331
	12,5	13,23	108	254	0,71	MRD22	1600	28,8	7,8	0,8	1,0	85	2,4201
		12,38	116	238	1,60	MRD32	5040	34,9	13,9	1,3	1,8	85	3,6208
		12,20	117	235	2,63	MRD42	6500	41,5	20,5	2,2	3,0	85	9,4739
	16,0	16,45	87	317	1,22	MRD32	5300	35,0	14,0	1,3	1,8	85	3,6755
		15,22	94	293	1,96	MRD42	6810	41,6	20,6	2,2	3,0	85	8,7672
	20,0	19,36	74	373	1,05	MRD32	4500	35,0	14,0	1,3	1,8	85	3,3312
		19,64	73	378	1,71	MRD42	7150	41,7	20,7	2,2	3,0	85	8,1877
		20,30	70	393	3,10	MRD52	8700	70,0	49,0	4,5	5,5	85	11,463
	25,0	25,26	57	486	0,81	MRD32	4000	35,1	14,1	1,3	1,8	85	2,8112
		24,48	58	471	1,38	MRD42	7400	41,8	20,8	2,2	3,0	85	7,8266
		25,99	55	503	2,44	MRD52	9000	70,0	49,0	4,5	5,5	85	10,962
	31,5	29,64	48	570	1,14	MRD42	6110	41,8	20,8	2,2	3,0	85	7,6050
		31,43	45	609	2,04	MRD52	9100	70,0	49,0	4,5	5,5	85	10,647
		33,20	43	643	3,45	MRD62	13700	83,0	62,0	7,0	9,0	85	27,378
	40	41,88	38,2	720	0,97	MRD43	5800	43,2	22,2	2,2	3,4	85	7,6977
		40,48	35	784	1,08	MRD52	10500	70,0	49,0	4,5	5,5	85	10,858
		39,33	36	746	1,70	MRD53	7600	73,0	52,0	4,5	6,5	85	10,526
		40,50	35	784	2,04	MRD62	15700	83,0	62,0	7,0	9,0	85	27,920
		39,71	36	753	2,92	MRD63	11400	91,0	70,0	7,0	11	85	27,066
	50	53,33	27	1033	0,82	MRD52	11200	70,0	49,0	4,5	5,5	85	10,579
	47,98	30	910	1,41	MRD53	7800	73,0	52,0	4,5	6,5	85	13,854	
	49,80	29	965	1,66	MRD62	16800	83,0	62,0	7,0	9,0	85	27,203	
	48,95	29	928	2,37	MRD63	11700	91,0	70,0	7,0	11	85	35,625	
63	59,88	24	1136	1,14	MRD53	7800	73,0	52,0	4,5	6,5	85	14,391	
	56,00	25	1085	1,48	MRD62	18000	83,0	62,0	7,0	9,0	85	26,590	
	61,88	23	1174	1,87	MRD63	11700	91,0	70,0	7,0	11	85	37,004	
80	77,26	18	1465	0,89	MRD53	7900	73,0	52,0	4,5	6,5	85	14,087	
	81,29	18	1542	1,49	MRD63	11900	91,0	70,0	7,0	11	85	36,223	
100	96,28	15	1826	0,71	MRD53	7900	73,0	52,0	4,5	6,5	85	13,603	
	104,08	14	1974	1,17	MRD63	11900	91,0	70,0	7,0	11	85	34,980	
125	125,87	11	2387	0,96	MRD63	12000	91,0	70,0	7,0	11	85	34,910	
160	157,33	9,0	2984	0,77	MRD63	12300	91,0	70,0	7,0	11	85	42,685	
4.0	2,5	2,70	528	69	2,74	MRD32	3330	36,5	13,5	1,3	1,8	130	7,9870
	3,15	3,32	429	86	2,40	MRD32	3500	42,5	13,5	1,3	1,8	130	6,3316
	4,0	4,16	343	107	2,05	MRD32	3690	42,6	13,6	1,3	1,8	130	5,1053
		3,96	360	102	3,72	MRD42	4000	48,8	19,8	2,2	3,0	130	12,317
	5,0	5,33	267	137	1,71	MRD32	3880	42,6	13,6	1,3	1,8	130	4,2003
		4,83	295	124	3,06	MRD42	4850	48,8	19,8	2,2	3,0	130	10,808
	6,3	6,26	228	161	2,29	MRD32	4160	40,1	11,1	1,3	1,8	130	5,7232
		6,29	227	162	3,50	MRD42	5340	49,3	20,3	2,2	3,0	130	13,636
	8,0	7,72	185	199	1,87	MRD32	4330	42,8	13,8	1,3	1,8	130	4,8413
		7,86	181	202	3,06	MRD42	5620	49,3	20,3	2,2	3,0	130	11,758
	10,0	9,66	148	249	1,51	MRD32	4500	42,9	13,9	1,3	1,8	130	4,1539
		10,00	143	257	2,41	MRD42	5920	49,4	20,4	2,2	3,0	130	10,331
	12,5	12,38	115	319	1,20	MRD32	4650	42,9	13,9	1,3	1,8	130	3,6208
		12,20	117	314	1,97	MRD42	6150	49,5	20,5	2,2	3,0	130	9,4739

Gearboxes Series RD

MRD - 4 poles

Geared motor selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
4.0	16,0	16,45	87	424	0,91	MRD32	2900	43,0	14,0	1,3	1,8	130	3,6755
		15,22	94	392	1,65	MRD42	6380	49,6	20,6	2,2	3,0	130	8,7672
		15,45	92	398	3,02	MRD52	8500	72,0	49,0	4,5	5,5	130	12,274
	20,0	19,36	74	498	0,78	MRD32	2500	43,0	14,0	1,3	1,8	130	3,3312
		19,64	73	506	1,28	MRD42	6590	49,7	20,7	2,2	3,0	130	8,1877
		20,30	70	522	2,34	MRD52	8700	72,0	49,0	4,5	5,5	130	11,463
	25,0	24,48	58	630	1,03	MRD42	4290	49,8	20,8	2,2	3,0	130	7,8266
		25,99	55	669	1,84	MRD52	9000	72,0	49,0	4,5	5,5	130	10,962
		24,62	58	633	3,32	MRD62	13500	85,0	62,0	7,0	9,0	130	28,188
	31,5	29,64	48	763	0,85	MRD42	4000	49,8	20,8	2,2	3,0	130	7,6050
		31,43	45	809	1,53	MRD52	9100	72,0	49,0	4,5	5,5	130	10,647
		33,20	43	854	2,60	MRD62	13700	85,0	62,0	7,0	9,0	130	27,378
	40	40,48	35	1042	0,82	MRD52	10500	72,0	49,0	4,5	5,5	130	10,858
		39,33	36	991	1,28	MRD53	7600	75,0	52,0	4,5	6,5	130	10,526
		40,50	35	1042	1,54	MRD62	15700	85,0	62,0	7,0	9,0	130	27,919
	50	39,71	36	1001	2,20	MRD63	11400	93,0	70,0	7,0	11,0	130	27,066
		47,98	30	1209	1,06	MRD53	7800	75,0	52,0	4,5	6,5	130	13,854
		49,80	29	1282	1,25	MRD62	16800	85,0	62,0	7,0	9,0	130	27,203
	63	48,95	29	1233	1,78	MRD63	11700	93,0	70,0	7,0	11	130	35,625
		59,88	24	1509	0,85	MRD53	7800	75,0	52,0	4,5	6,5	130	14,391
56,00		25	1441	1,11	MRD62	18000	85,0	62,0	7,0	9,0	130	26,590	
80	61,88	23	1559	1,41	MRD63	11700	93	70,0	7,0	110	130	37,004	
	81,29	18	2048	1,12	MRD63	11900	93,0	70,0	7,0	11	130	36,223	
	100	104,08	14	2623	0,88	MRD63	11900	93,0	70,0	7,0	11	130	34,980
125	125,87	11	3172	0,73	MRD63	12000	93,0	70,0	7,0	11,0	130	34,910	
5.5	2,5	2,49	579	87	3,50	MRD42	3950	58,0	23,0	2,2	3,0	240	17,505
		3,15	463	109	2,94	MRD42	4167	58,0	23,0	2,2	3,0	240	13,818
	4,0	3,96	364	139	2,73	MRD42	4400	58,1	23,1	2,2	3,0	240	11,159
		4,83	298	169	2,36	MRD42	4580	58,1	23,1	2,2	3,0	240	9,6510
	6,3	6,29	229	220	2,81	MRD42	5050	58,6	23,6	2,2	3,0	240	12,479
		7,86	183	275	2,25	MRD42	5270	58,6	23,6	2,2	3,0	240	10,601
	10,0	10,00	144	350	1,77	MRD42	5480	58,7	23,7	2,2	3,0	240	9,1738
		9,92	145	347	3,40	MRD52	5500	84,0	49,0	4,5	5,5	240	14,463
	12,5	12,20	118	427	1,45	MRD42	5610	58,8	23,8	2,2	3,0	240	8,3166
		12,22	118	428	2,78	MRD52	6900	84,0	49,0	4,5	5,5	240	13,264
	16,0	15,22	95	533	1,22	MRD42	5710	58,9	23,9	2,2	3,0	240	7,6100
		15,45	93	541	2,22	MRD52	8500	84,0	49,0	4,5	5,5	240	12,274
	20,0	19,64	73	688	0,95	MRD42	5260	59,0	24,0	2,2	3,0	240	7,0305
		20,30	71	711	1,72	MRD52	8700	84,0	49,0	4,5	5,5	240	11,463
	25,0	20,67	70	724	2,90	MRD62	13000	97,00	62,00	7,0	9,0	240	29,476
		25,99	55	910	1,35	MRD52	9000	84,0	49,0	4,5	5,5	240	10,962
	31,5	24,62	59	862	2,44	MRD62	13500	97,0	62,0	7,0	9,0	240	28,188
		31,43	46	1101	1,13	MRD52	9100	84,0	49,0	4,5	5,5	240	10,647
	40	33,20	43	1163	1,91	MRD62	13700	97,0	62,0	7,0	9,0	240	27,378
		39,33	37	1349	0,94	MRD53	7600	87,0	52,0	4,5	6,5	240	10,526
50	40,50	36	1418	1,13	MRD62	15700	97,0	62,0	7,0	9,0	240	27,919	
	39,71	36	1361	1,62	MRD63	11400	105	70,0	7,0	11	240	27,066	
50	47,98	30	1645	0,78	MRD53	7800	87,0	52,0	4,5	6,5	240	13,854	
	49,80	29	1744	0,92	MRD62	16800	97,0	62,0	7,0	9,0	240	27,203	
	48,95	29	1678	1,31	MRD63	11700	105	70,0	7,0	11,0	240	35,625	

MRD - 4 poles

Gearboxes Series RD

1400 rpm

Geared motor selection

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
5.5	63	56.00	26	1961	0.82	MRD62	18000	97.0	62.0	7.0	9.0	240	26.590
		61.88	23	2122	1.04	MRD63	11700	105	70.0	7.0	11	240	37.004
	80	81.29	18	2787	0.83	MRD63	11900	105	70.0	7.0	11	240	36.223
7.5	2,5	2,49	583	118	2,50	MRD42	3760	75,0	23,0	2,2	3,0	330	17,505
		3,11	466	148	2,17	MRD42	3940	75,0	23,0	2,2	3,0	330	13,818
	4,0	3,96	366	188	2,02	MRD42	4110	75,1	23,1	2,2	3,0	330	11,159
		4,83	300	229	1,74	MRD42	4230	75,1	23,1	2,2	3,0	330	9,6510
	6,3	6,29	231	298	2,10	MRD42	4690	75,6	23,6	2,2	3,0	330	12,479
		7,86	185	373	1,66	MRD42	4820	75,6	23,6	2,2	3,0	330	10,601
	8,0	8,19	176	391	2,99	MRD52	5200	101	49,0	4,5	5,5	330	16,463
		10,00	145	474	1,30	MRD42	4900	75,7	23,7	2,2	3,0	330	9,1738
	9,92	145	473	2,49	MRD52	5500	101	49,0	4,5	5,5	330	14,463	
		12,20	119	579	1,10	MRD42	4590	75,8	23,8	2,2	3,0	330	8,3166
	12,22	118	584	2,04	MRD52	6900	101	49,0	4,5	5,5	330	13,264	
		12,44	116	594	3,53	MRD62	10300	114	62,0	7,0	9,0	330	34,106
	16,0	15,22	95	722	0,90	MRD42	5100	75,9	23,9	2,2	3,0	330	7,6100
		15,45	93	738	1,63	MRD52	8500	101	49,0	4,5	5,5	330	12,274
	15,73	92	751	2,80	MRD62	12800	114	62,0	7,0	9,0	330	31,562	
		20,30	71	969	1,26	MRD52	8700	101	49,0	4,5	5,5	330	11,463
	20,67	70	987	2,13	MRD62	13000	114	62,0	7,0	9,0	330	29,476	
		25,0	55	1241	0,99	MRD52	9000	101	49,0	4,5	5,5	330	10,962
	24,62	59	1175	1,79	MRD62	13500	114	62,0	7,0	9,0	330	28,188	
		31,5	46	1501	0,83	MRD52	9100	101	49,0	4,5	5,5	330	10,647
33,20	43	1585	1,40	MRD62	13700	114	62,0	7,0	9,0	330	27,378		
	40	36	1934	0,83	MRD62	15700	114	62,0	7,0	9,0	330	27,919	
39,71	36	1857	1,18	MRD63	11400	122	70,0	7,0	11	330	27,066		
	50	29	2289	0,96	MRD63	11700	122	70,0	7,0	11	330	35,625	
63	23	2893	0,76	MRD63	11700	122	70,0	7,0	11	330	37,004		
9.2	2,5	2,49	587	144	2,05	MRD42	3610	77,0	23,0	2,2	3,0	340	17,506
		3,11	469	180	1,78	MRD42	3750	77,0	23,0	2,2	3,0	340	13,818
	4,0	3,96	369	229	1,65	MRD42	3870	77,1	23,1	2,2	3,0	340	11,160
		3,93	369	228	3,28	MRD52	4000	103	49,0	4,5	5,5	340	17,244
	5,0	4,83	302	279	1,43	MRD42	3940	77,1	23,1	2,2	3,0	340	9,6510
		4,84	300	282	3,02	MRD52	4500	103	49,0	4,5	5,5	340	15,131
	6,3	6,29	232	363	1,70	MRD42	4380	77,6	23,6	2,2	3,0	340	12,479
		6,45	225	375	3,09	MRD52	4600	103	49,0	4,5	5,5	340	23,290
	8,0	7,86	186	454	1,36	MRD42	4430	77,6	23,6	2,2	3,0	340	10,602
		8,19	177	476	2,46	MRD52	5200	103	49,0	4,5	5,5	340	16,463
	10,0	10,00	146	578	1,07	MRD42	3700	77,7	23,7	2,2	3,0	340	9,1738
		9,92	146	577	2,05	MRD52	5500	103	49,0	4,5	5,5	340	14,463
	10,10	144	587	3,58	MRD62	8300	116	62,0	7,0	9,0	340	37,192	
		12,20	120	705	0,88	MRD42	3000	77,8	23,8	2,2	3,0	340	8,3166
	12,22	119	711	1,67	MRD52	6900	103	49,0	4,5	5,5	340	13,264	
		12,44	117	724	2,90	MRD62	10300	116	62,0	7,0	9,0	340	34,106
	16,0	15,45	94	899	1,34	MRD52	8500	103	49,0	4,5	5,5	340	12,274
		15,73	92	915	2,29	MRD62	12800	116	62,0	7,0	9,0	340	31,562
	20,0	20,30	71	1181	1,03	MRD52	8700	103	49,0	4,5	5,5	340	11,463
		20,67	70	1202	1,75	MRD62	13000	116	62,0	7,0	9,0	340	29,476
25,0	25,99	56	1512	0,81	MRD52	9000	103	49,0	4,5	5,5	340	10,962	
	24,62	59	1432	1,47	MRD62	13500	116	62,0	7,0	9,0	340	28,188	

Gearboxes Series RD

MRD - 4 poles

Geared motor selection

1400 rpm

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
9.2	31.5	33.20	44	1931	1.15	MRD62	13700	116	62.0	7.0	9.0	340	27.378
	40	39.71	37	2262	0.97	MRD63	11400	124	70.0	7.0	11	340	27.066
	50	48.95	30	2788	0.79	MRD63	11700	124	70.0	7.0	11	340	35.625
11	2.5	2.56	571	185	3.41	MRD52	3400	117	49	4.5	5.5	620	26.128
	3.15	3.24	451	234	2.95	MRD52	3700	117	49	4.5	5.5	620	20.966
	4.0	3.93	372	284	2.65	MRD52	4000	117	49	4.5	5.5	620	17.244
	5.0	4.84	302	350	2.43	MRD52	4500	117	49	4.5	5.5	620	15.131
	6.3	6.45	226	466	2.49	MRD52	4600	117	49	4.5	5.5	620	23.290
	8.0	8.19	178	591	1.98	MRD52	5200	117	49	4.5	5.5	620	16.463
		8.33	175	602	3.32	MRD62	7800	130	62	7.0	9.0	620	42.332
	10.0	9.92	147	716	1.65	MRD52	5500	117	49	4.5	5.5	620	14.463
		10.10	145	729	2.88	MRD62	8300	130	62	7.0	9.0	620	37.192
	12.5	12.22	120	883	1.35	MRD52	6900	117	49	4.5	5.5	620	13.264
		12.44	117	899	2.34	MRD62	10300	130	62	7.0	9.0	620	34.106
	16.0	15.45	95	1116	1.08	MRD52	8500	49	117	4.5	5.5	620	12.274
		15.73	93	1136	1.85	MRD62	12800	130	62	7.0	9.0	620	31.562
	20.0	20.30	72	1466	0.83	MRD52	8700	117	49	4.5	5.5	620	11.463
	20.67	70	1492	1.41	MRD62	13000	130	62	7.0	9.0	620	29.476	
25.0	24.62	59	1778	1.18	MRD62	13500	130	62	7.0	9.0	620	28.188	
31.5	33.20	44	2397	0.93	MRD62	13700	130	62	7.0	9.0	620	27.378	
40	39.71	37	2808	0.78	MRD63	11400	138	70	7.0	11	620	27.066	
15	2.5	2.56	571	241	2.62	MRD52	3400	127	49	4.5	5.5	740	26.128
	3.15	3.24	451	305	2.26	MRD52	3700	127	49	4.5	5.5	740	20.966
	4.0	3.93	372	370	2.03	MRD52	4000	127	49	4.5	5.5	740	17.244
	5.0	4.84	302	456	1.86	MRD52	4500	127	49	4.5	5.5	740	15.131
	6.3	6.45	226	608	1.91	MRD52	4600	127	49	4.5	5.5	740	23.290
		6.57	222	619	3.23	MRD62	6900	140	62	7.0	9.0	740	59.890
	8.0	8.19	178	771	1.52	MRD52	5200	127	49	4.5	5.5	740	16.463
		8.33	175	785	2.55	MRD62	7800	140	62	7.0	9.0	740	42.332
	10	9.92	147	934	1.26	MRD52	5500	127	49	4.5	5.5	740	14.463
		10.10	145	951	2.21	MRD62	8300	140	62	7.0	9.0	740	37.192
	12.5	12.22	120	1151	1.03	MRD52	6900	127	49	4.5	5.5	740	13.264
		12.44	117	1172	1.79	MRD62	10300	140	62	7.0	9.0	740	34.106
	16.0	15.45	95	1455	0.82	MRD52	8500	127	49	4.5	5.5	740	12.274
		15.73	93	1482	1.42	MRD62	12800	140	62	7.0	9.0	740	31.562
20.0	20.67	71	1947	1.08	MRD62	13000	140	62	7.0	9.0	740	29.476	
25.0	24.62	59	2319	0.91	MRD62	13500	140	62	7.0	9.0	740	28.188	
31.5	33.20	44	3127	0.71	MRD62	13700	140	62	7.0	9.0	740	27.378	
18.5	2.5	2.56	575	295	2.14	MRD52	3400	159	49	4.5	5.5	900	26.128
	3.15	3.24	454	374	1.85	MRD52	3700	159	49	4.5	5.5	900	20.966
	4.0	3.93	374	453	1.66	MRD52	4000	159	49	4.5	5.5	900	17.244
		4.02	366	464	3.45	MRD62	6000	172	62	7.0	9.0	900	44.341
	5.0	4.84	304	558	1.52	MRD52	4500	159	49	4.5	5.5	900	15.131
		4.96	297	572	3.15	MRD62	6700	172	62	7.0	9.0	900	39.909
	6.3	6.45	228	745	1.56	MRD52	4600	159	49	4.5	5.5	900	23.290
		6.57	224	758	2.64	MRD62	6900	172	62	7.0	9.0	900	59.890
	8.0	8.19	180	944	1.24	MRD52	5200	159	49	4.5	5.5	900	16.463
		8.33	176	961	2.08	MRD62	7800	172	62	7.0	9.0	900	42.332
	10.0	9.92	148	1144	1.03	MRD52	5500	159	49	4.5	5.5	900	14.463
	10.10	146	1165	1.80	MRD62	8300	172	62	7.0	9.0	900	37.192	

MRD - 4 poles

Gearboxes Series RD

1400 rpm

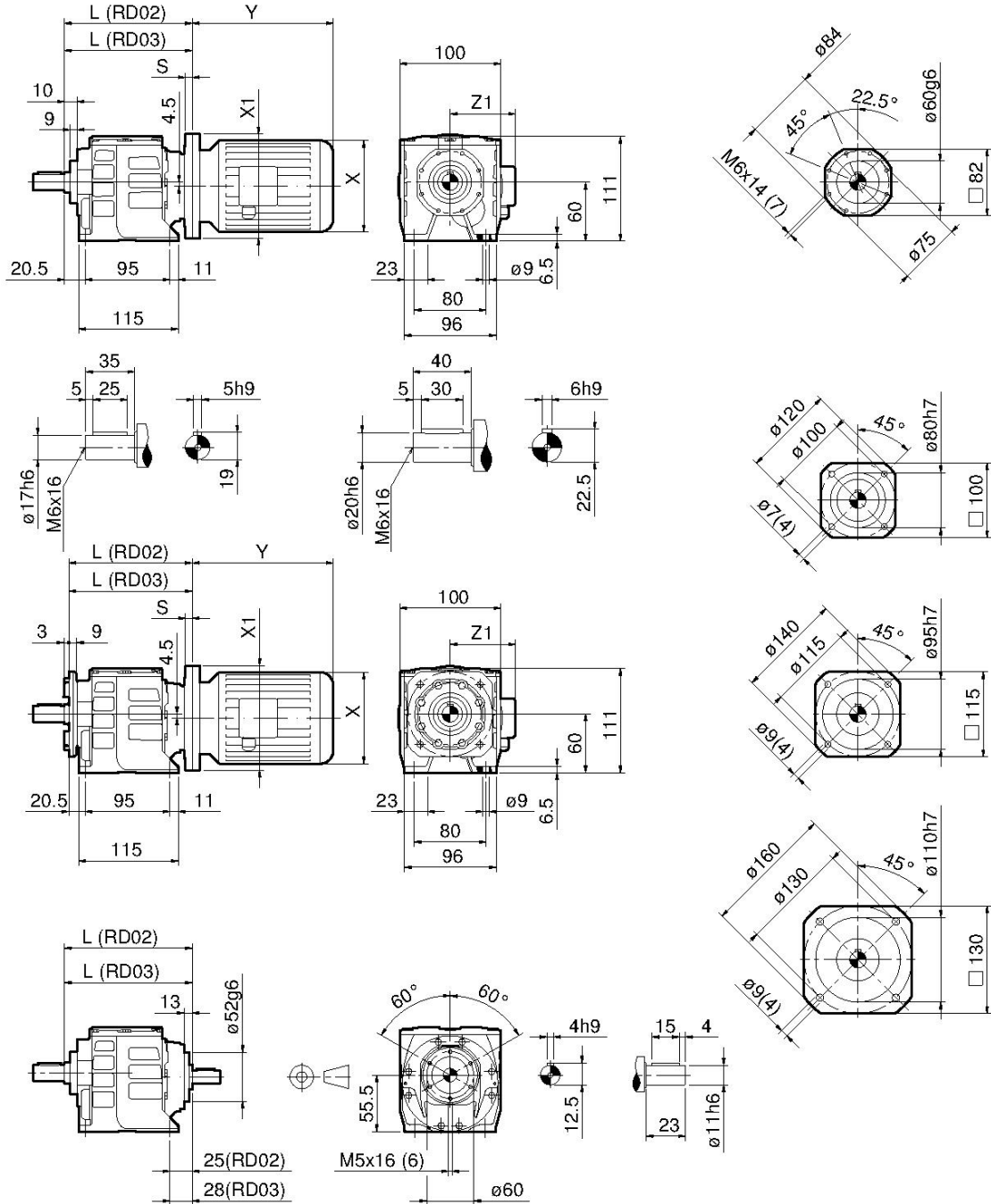
Geared motor selection

P ₁ [kW]	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	FS	TYPE	F _{r2} [N]	MRD [kg]	FRD [kg]	Lub H	Lub V	J _m × 10 ⁻⁴	J ₁ × 10 ⁻⁴
18.5	12.5	12.22	120	1410	0.84	MRD52	6900	159	49	4.5	5.5	900	13.264
		12.44	118	1436	1.46	MRD62	10300	172	62	7.0	9.0	900	34.106
	16.0	15.73	93	1815	1.16	MRD62	12800	172	62	7.0	9.0	900	31.562
		20.67	71	2385	0.88	MRD62	13000	172	62	7.0	9.0	900	29.476
		24.62	60	2840	0.74	MRD62	13500	172	62	7.0	9.0	900	28.188
22	2.5	2.56	575	351	1.80	MRD52	3400	168	49	4.5	5.5	1150	26.128
		3.24	454	445	1.55	MRD52	3700	168	49	4.5	5.5	1150	20.966
	3.15	3.32	443	455	3.08	MRD62	5600	181	62	7.0	9.0	1150	53.914
		3.93	374	539	1.39	MRD52	4000	168	49	4.5	5.5	1150	17.244
	4.0	4.02	366	551	2.90	MRD62	6000	181	62	7.0	9.0	1150	44.341
		4.84	304	664	1.28	MRD52	4500	168	49	4.5	5.5	1150	15.131
	5.0	4.96	297	680	2.65	MRD62	6700	181	62	7.0	9.0	1150	39.909
		6.45	228	886	1.31	MRD52	4600	168	49	4.5	5.5	1150	23.290
	6.3	6.57	224	902	2.22	MRD62	6900	181	62	7.0	9.0	1150	59.890
		8.33	176	1143	1.75	MRD62	7800	181	62	7.0	9.0	1150	42.332
	8.0	10.10	146	1385	1.52	MRD62	8300	181	62	7.0	9.0	1150	37.192
		12.44	118	1707	1.23	MRD62	10300	181	62	7.0	9.0	1150	34.106
	10.0	15.73	93	2159	0.97	MRD62	12800	181	62	7.0	9.0	1150	31.562
20.67		71	2836	0.74	MRD62	13000	181	62	7.0	9.0	1150	29.476	

Gearboxes Series RD

RD02 - RD03

Dimensions

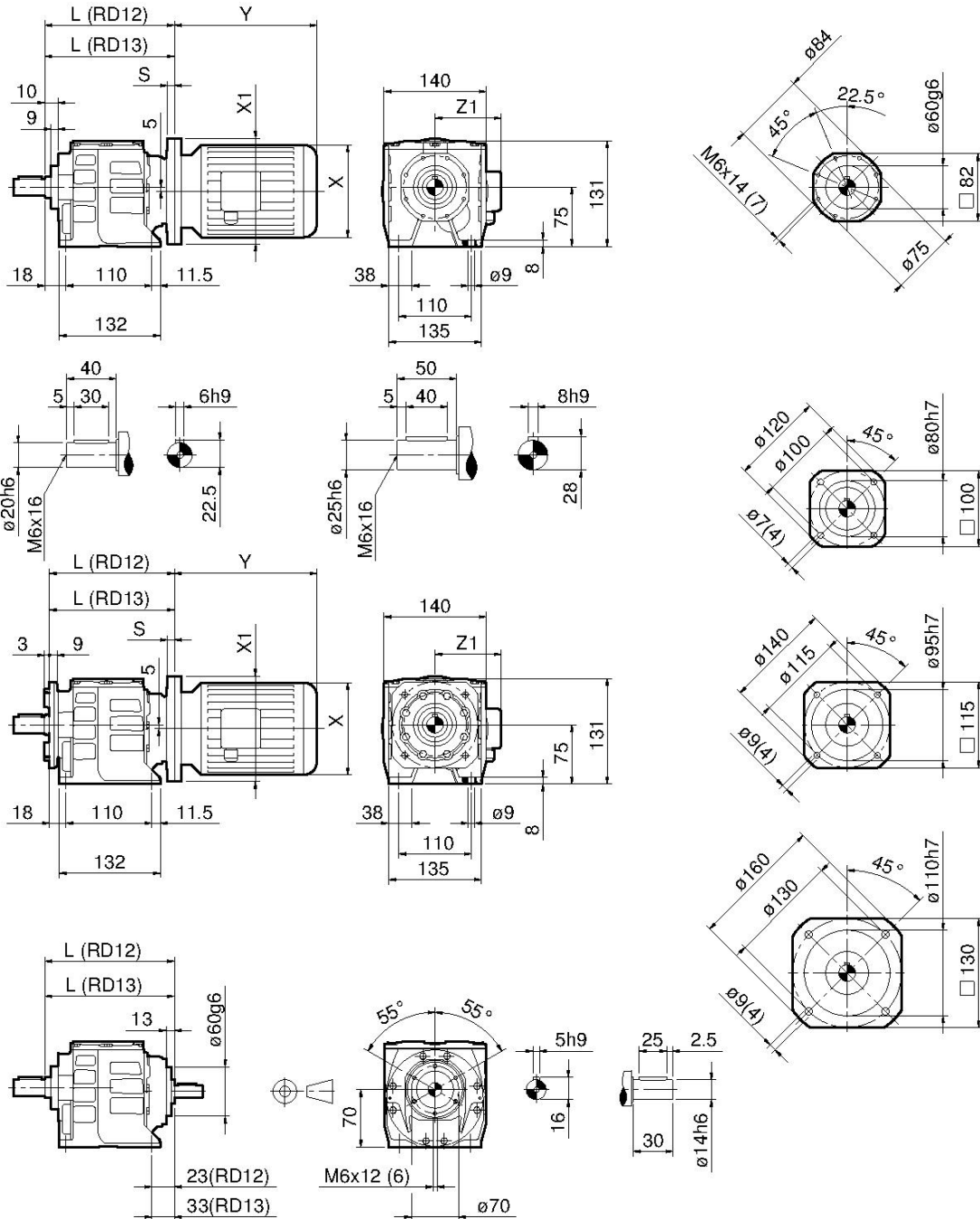


RD	02 / 03	02 / 03	02 / 03	02	---	---	---	---
IEC	56	63	71	80	---	---	---	---
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	---	---	---	---
X1 (B5) / S	120/11	140/10	160/11.5	---	---	---	---	---
X1 (B14) / S	80/8	90/10	105/10	120/11	---	---	---	---
L (RD02)	140	140	140	140	---	---	---	---
L (RD03)	143	143	143	---	---	---	---	---

RD12 - RD13

Gearboxes Series RD

Dimensions

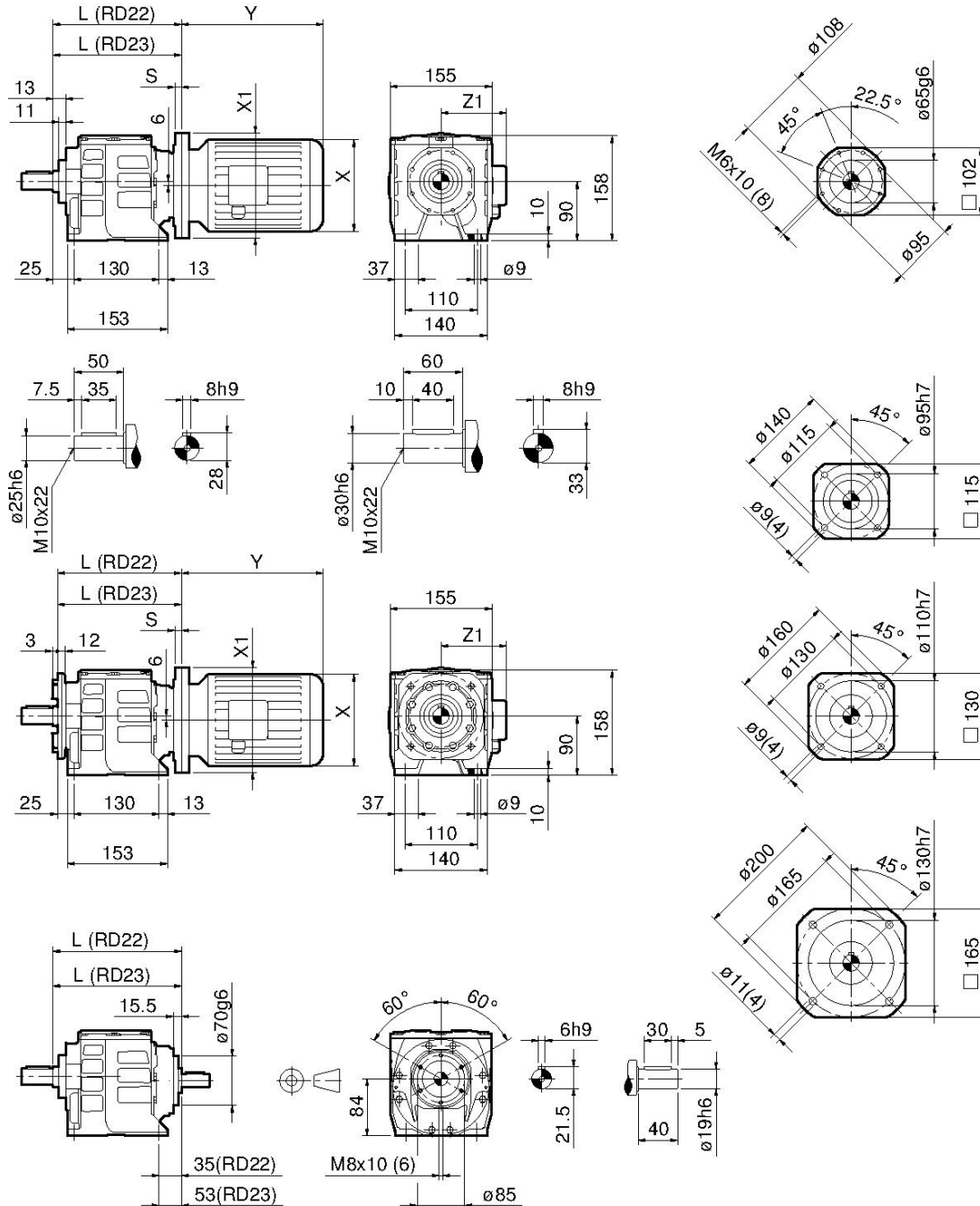


RD	12 / 13	12 / 13	12 / 13	12	12	12	---	---
IEC	56	63	71	80	90 S	90 L	---	---
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	---	---
X1 (B5) / S	120/11	140/10	160/11.5	200/11	200/11	200/11	---	---
X1 (B14) / S	---	90/8	105/10	120/11	140/10	140/10	---	---
L (RD12)	151	151	151[155-	151	151	151	---	---
L (RD13)	161	161	161[155-	161	161	161	---	---

Gearboxes Series RD

RD22 - RD23

Dimensions

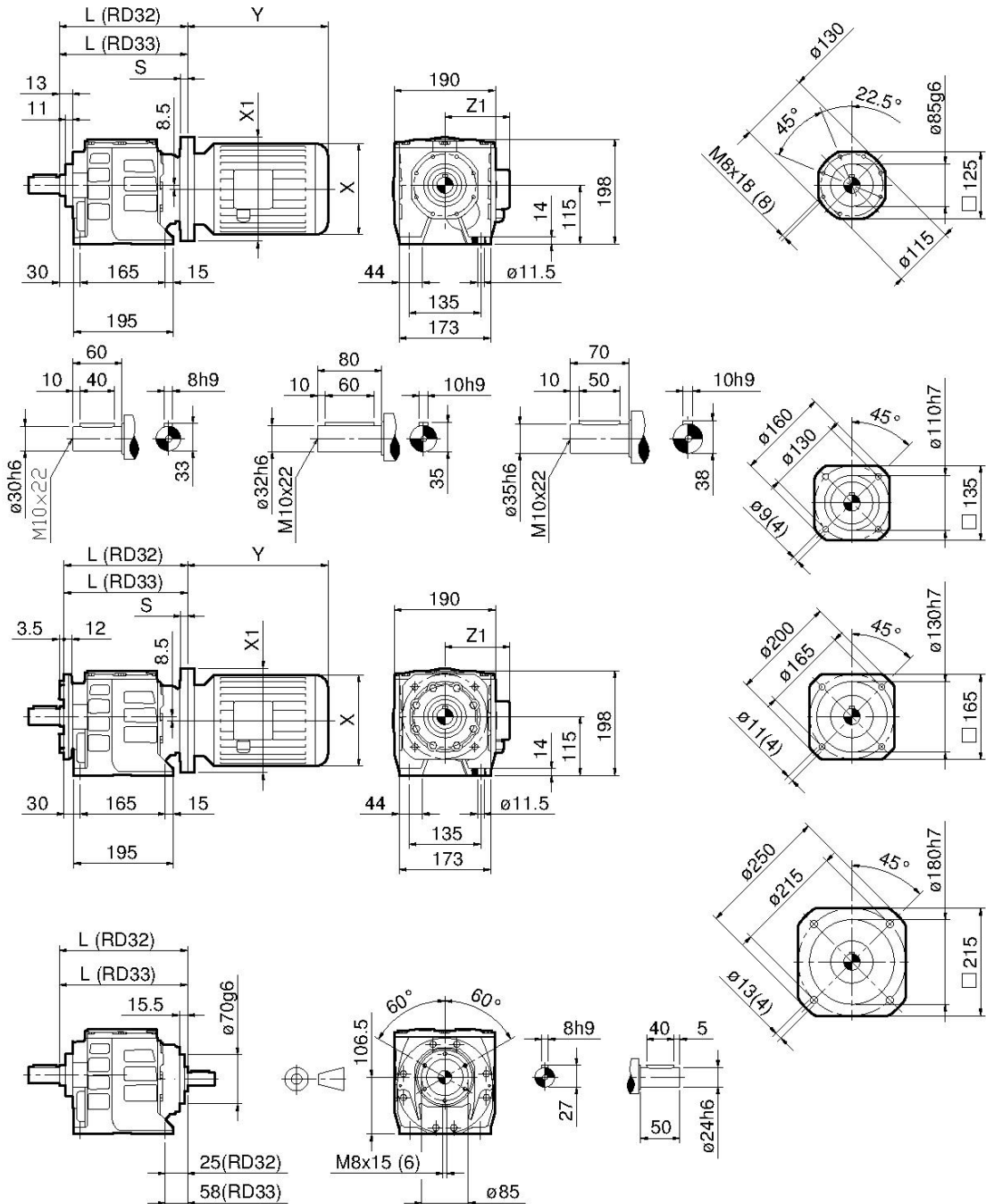


RD	22 / 23	22 / 23	22 / 23	22 / 23	22 / 23	22	22	---
IEC	63	71	80	90 S	90 L	100	112	---
X / Y / Z1	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	---
X1 (B5) / S	140/10	160/11.5	200/11	200/11	200/11	250/13	250/13	---
X1 (B14) / S	---	105/10.5	120/10	140/10	140/10	160/11.5	160/11.5	---
L (RD22)	192	190	190[192-B14]	190[192-B14]	190[192-B14]	191[190-B14]	191[190-B14]	---
L (RD23)	240	208	208[210-B14]	208[210-B14]	208[210-B14]	---	---	---

RD32 - RD33

Gearboxes Series RD

Dimensions

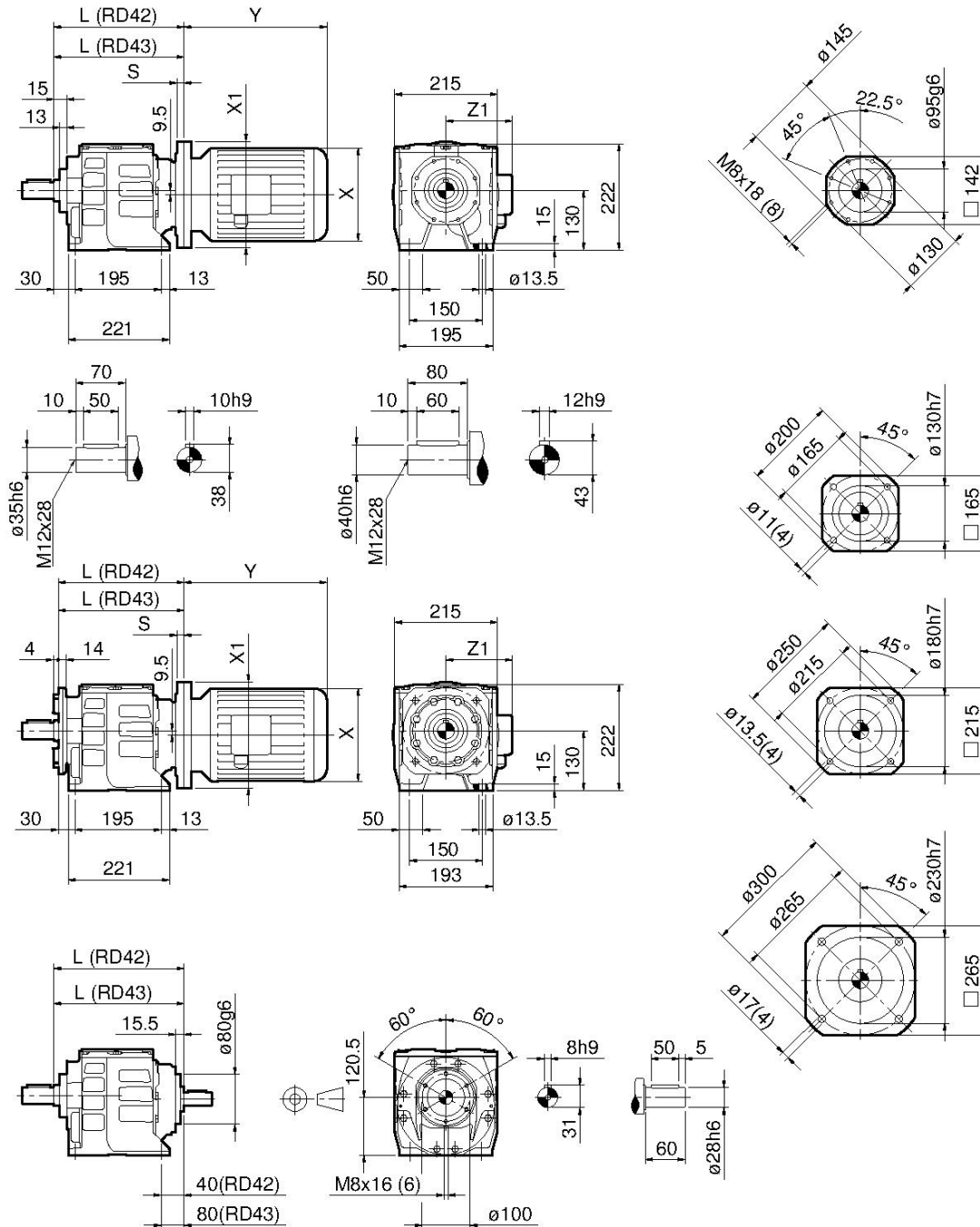


RD	32 / 33	32 / 33	32 / 33	32 / 33	32	32	---	---
IEC	71	80	90 S	90 L	100	112	---	---
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	---	---
X1 (B5) / S	160/11.5	200/11	200/11	200/11	250/13	250/13	---	---
X1 (B14) / S	105/10.5	120/10	140/10	140/10	160/11.5	160/11.5	---	---
L (RD32)	220	220[222-B14]	220[222-B14]	220[222-B14]	228[221-B14]	228[221-B14]	---	---
L (RD33)	253	253[255-B14]	253[255-B14]	253[255-B14]	---	---	---	---

Gearboxes Series RD

RD42 - RD43

Dimensions

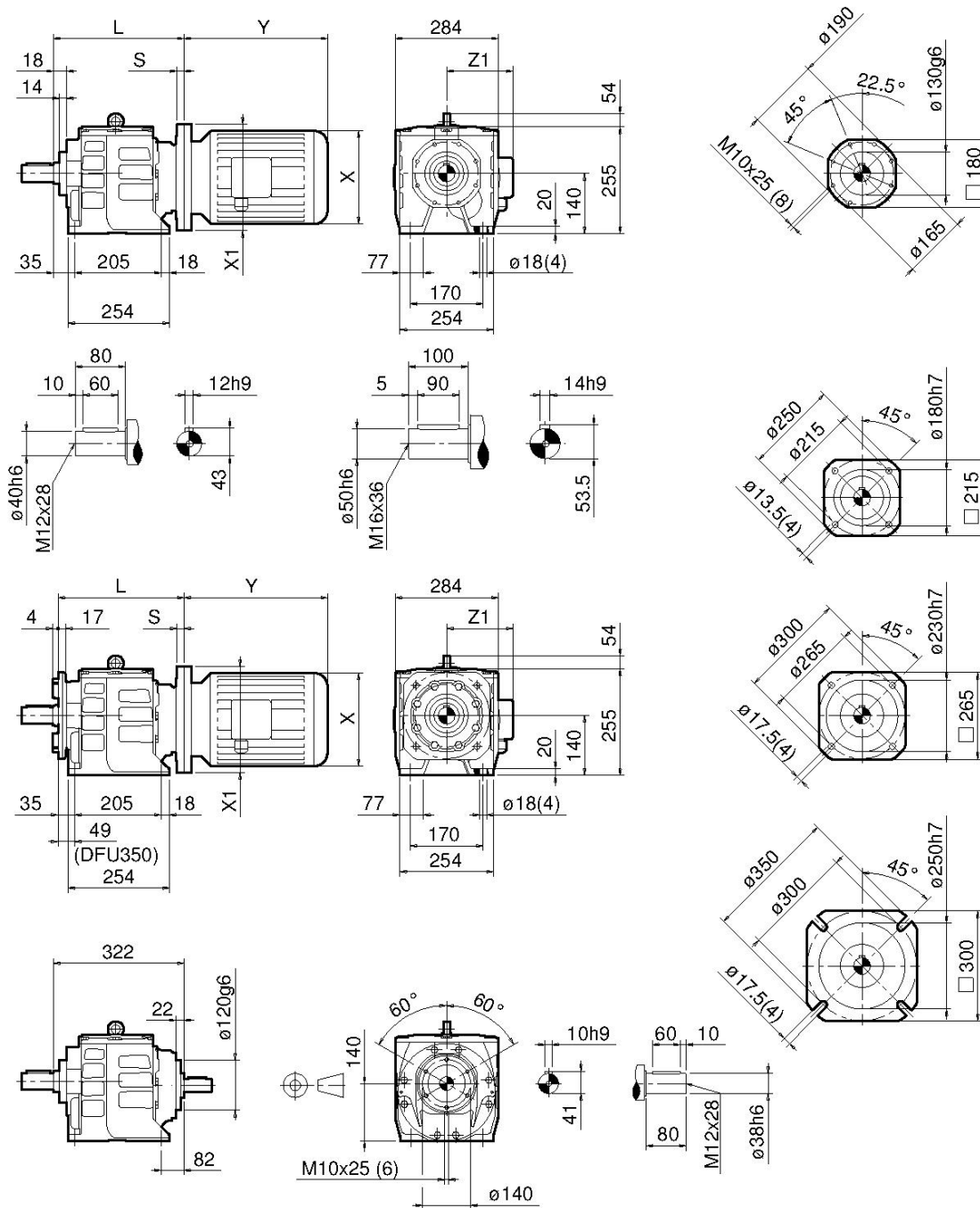


RD	43	42 / 43	42 / 43	42 / 43	42 / 43	42	42	42
IEC	71	80	90 S	90 L	100	112	132 S	132 M
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	258/368/192	258/410/192
X1 (B5) / S	160/11.5	200/11.5	200/11.5	200/11.5	250/14	250/14	300/15	300/15
X1 (B14) / S	---	120/10	140/10	140/10	160/11.5	160/11.5	200/11.5	200/11.5
L (RD42)	---	265	265[268-B14]	265[268-B14]	266[264-B14]	266[264-B14]	268	268
L (RD43)	305	305	305[308-B14]	305[308-B14]	306[304-B14]	---	---	---

RD52 - RD53

Gearboxes Series RD

Dimensions

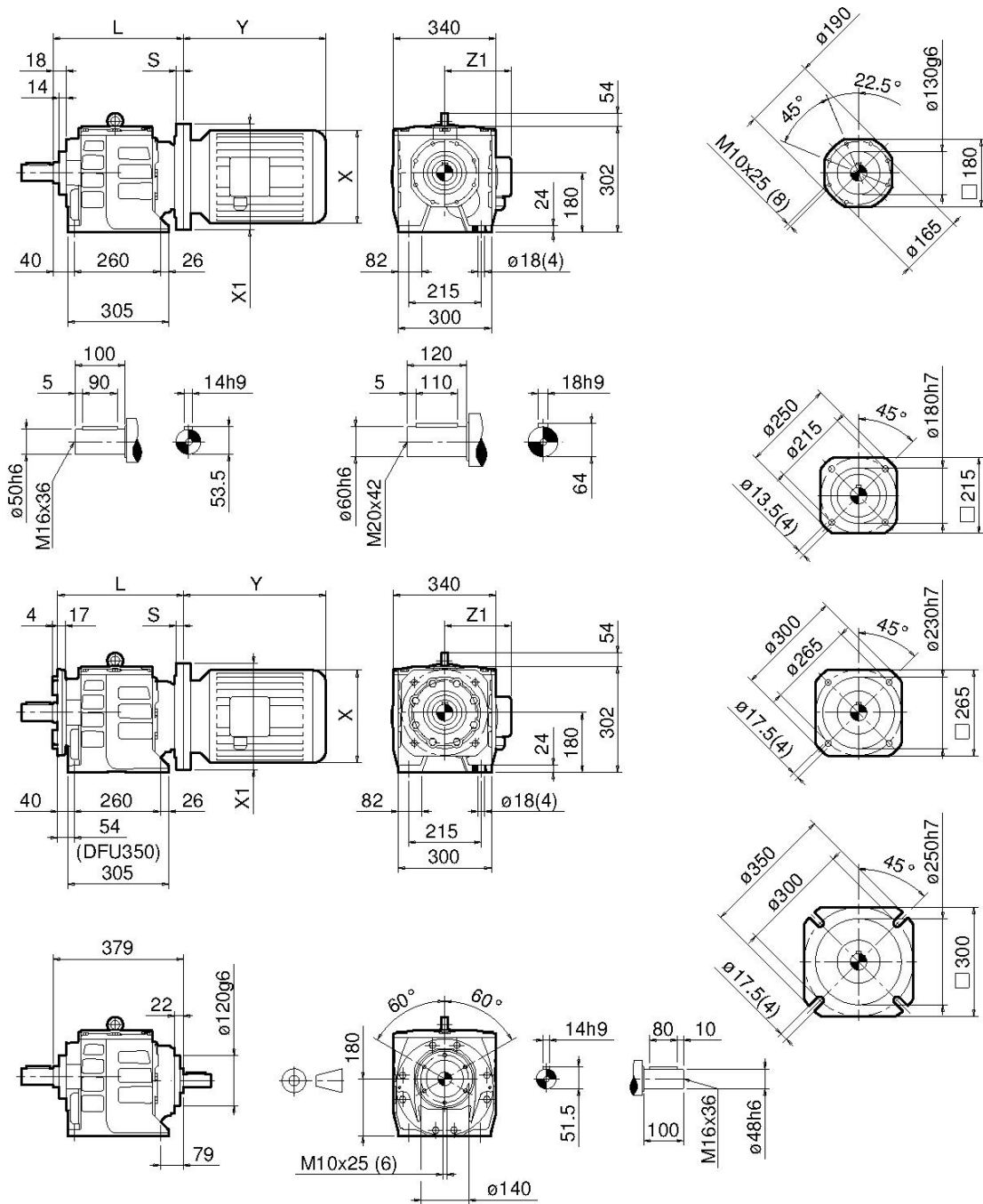


RD	52 / 53	52 / 53	52 / 53	52/53	52/53	52/53	52	52
IEC	80	90 S	90 L	100	112	132 S/M	160	180
X / Y / Z1	159/238/138	176/255/14	176/280/149	195/314/16	219/328/172	258/368[410-M]/192	310/486/2	320/580/24
X1 (B5) / S	200/16	200/16	200/16	250/16	250/16	300/16	350/25	350/25
X1 (B14) / S	---	---	---	---	---	200/16	---	---
L	322	322	322	322	322	322	353	353
L1 / L1	322/336	322/336	322/336	322/336	322/336	322/336	353/367	353/367

Gearboxes Series RD

RD62 - RD63

Dimensions



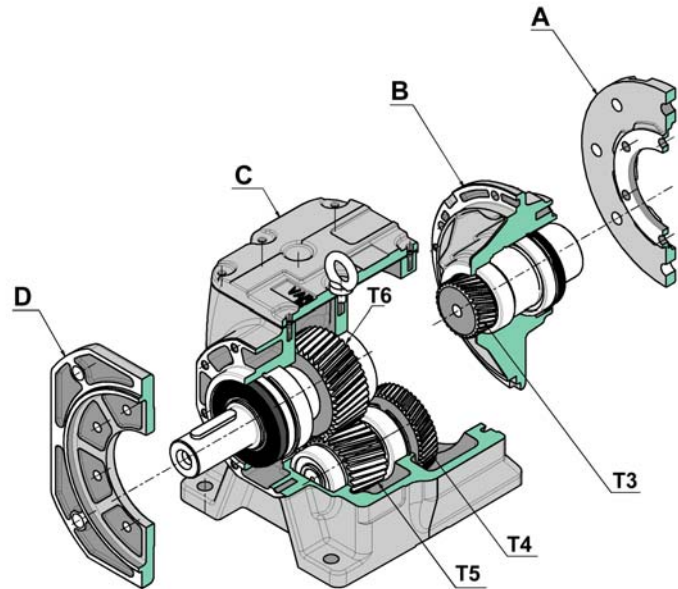
RD	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62	62
IEC	80	90 S	90 L	100	112	132 S/M	160	180
X / Y / Z1	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	258/368[410-M]/192	310/486/235	320/580/245
X1 (B5) / S	200/16	200/16	200/16	250/16	250/16	300/16	350/25	350/25
X1(B14) / S	---	---	---	---	---	200/16	---	---
L	379	379	379	379	379	379	410	410
L1 / L1(ø350)	379/393	379/393	379/393	379/393	379/393	379/393	410/424	410/424

Gearboxes Series RD

Component parts

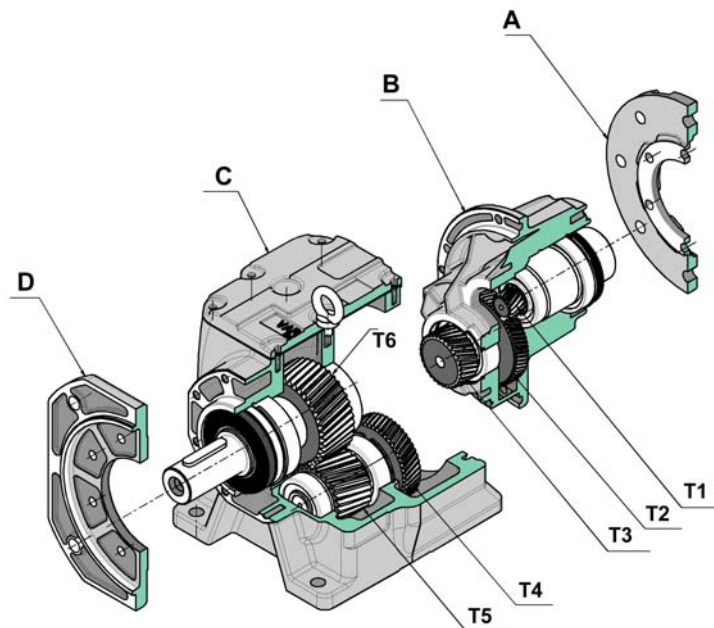
TWO GEAR STAGE REDUCER

- A - IEC motor flange
- B - 2-stage input cover
& T3 pinion
- C - Housing
& T4, T5, T6 gears
- D - Output flange



THREE GEAR STAGE REDUCER

- A - IEC motor flange
- B - 3-stage input cover
& T1, T2, T3 gears
- C - Housing
& T4, T5, T6 gears
- D - Output flange



Gearboxes Series RD

Abstract of OPERATION AND MAINTENANCE INSTRUCTIONS

Variable speed and reduction gearboxes are not part of the field of application of the Machinery Directive, art.1(2), and they must not be put into service until the machinery into which they are to be incorporated, has been declared in conformity with the provision of art. 4(2), annex II(B) of Machinery Directives 98/37/CEE/22.6.98 and for Italy only, of DL 459/24.7.96.

Installation

Check if the unit to be installed, is properly selected to perform the required function and that its mounting position complies with the order.

The nameplate reports such information.

Check mounting stability to ensure the unit runs without vibrations or overloads.

Running

The unit may be connected for clockwise or counter-clockwise rotation.

The unit must be stopped as soon as defective running or unexpected noise occur, remove the faulty part or return the unit to the factory for checking.

If the faulty part is not replaced, other parts can also be affected, causing more severe damage and making the identification of initial cause more difficult.

Maintenance

Although the units are no-load run tested in the factory before despatch, it is recommended not to run them at maximum load for the first 20-30 running hours to allow the proper running in.

The gearboxes are delivered already filled with long-life synthetic oil and, in case of replacement or topping, do not mix with mineral lubricants.

Handling

When hoisting, use relevant housing locations or eyebolts if provided, or foot or flange holes.

Never hoist on any moving part.

Painting

Carefully protect oil seals, coupling faces and shafts when units are re-painted.

Long-term storage

For storage longer than 3 months, apply anti-oxidants onto shafts and machined surfaces, and protective grease on oil seal lips.

Product's Environmental Management

In conformity with Environmental Certification ISO 14001, we recommend the following to dispose of our products:

- scraped components of the units to be delivered to authorized centres for metal object collection;
- oils and lubricants drained from the units to be delivered to Exhausted Oil Unions;
- packages (pallets, carton boxes, paper, plastic, etc.) to lead into regeneration/recycling circuits as far as possible, by delivering separate waste classes to authorized companies.

C-RD ed01-2011 rev01 **GB 121212**



A socially responsible company

To the scope of intensifying our commitment to society, Varvel since 2004 started an ongoing support programme with three non-profit institutions: UNICEF (United Nations Children's Fund), MSF (Médecins sans Frontières) and ANT (National Cancer Association). Environmental respect and protection are also part of Varvel's values and this is why Varvel certified in 2001 its Environmental System to standard UNI EN ISO 14001.



RN/RO/RV



RS/RT



RD



RG



RP



VR/VS



FAMCO
هایپر صنعت

Varvel SpA

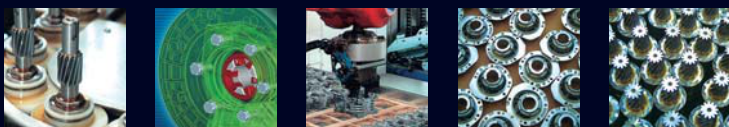
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FAMCO
هایپر صنعت



RN/RO/RV

FAMCO

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Technology Made in Italy

Since 1955 Varvel has been making speed reducers and variators for light industry applications. Reliable partner in power transmission equipment offers also customized solutions always according to a socially responsible company values. Modularity and flexibility lead Varvel products by a unique kit form, common to all gearbox series. This feature allows distributors an easier job to set up required products in few minutes.

RN-RO-RV

PARALLEL SHAFT
AND BEVEL/HELICAL GEARBOXES



FAMCO
هایپر صنعت

RN-RO-RV Gearboxes

Description

The gearboxes, series RN, RO, RV are manufactured with a common housing that allows the same footprint for the three versions and are designed according to latest ISO engineering specifications with the help of computer aided structural analysis for displacement and stress field.

The monolithic framework does not deflect under the effect of torque and external loads with effective results on sealing surfaces.

The gearboxes of series RN, RO, RV are manufactured of pressure die cast for the first 3 sizes and of cast iron for the others.

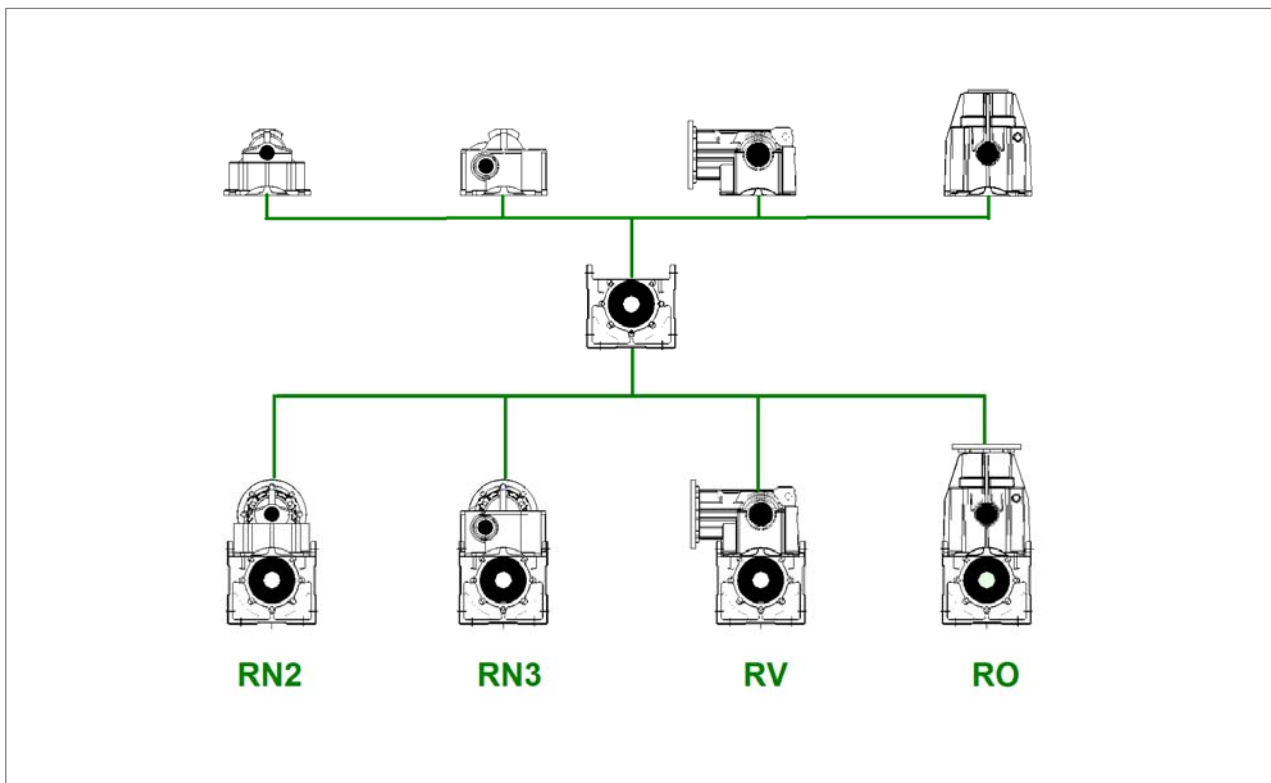
The shaft mount version, common to the three types, allows the flange mount B5 conversion by simply fitting one of the many output flanges available.

Various dimensions and types of output shafts (hollow with through keyway, hollow with shrink disk and solid with single or double end) are available for the majority of applications.

The series RN, RO, RV are made in 6 sizes for each type of gearboxes, 30 reduction ratios and output torques between 100 and 3400 Nm.

The gearbox series RN-RO-RV is made of a common housing that allows same footprint for the three versions:

- **RN** - parallel shaft gearboxes, hollow output shaft, two- and three-stage execution.
- **RO** - bevel/helical gearboxes, in-line input, hollow output shaft, three-stage execution.
- **RV** - bevel/helical gearboxes, right angle input, hollow output shaft, three-stage execution.



Parallel Shaft Gearboxes - Series RN

Multipurpose Housing

Foot & Foot/Flange Mountings
One housing for 2- & 3-stages

Housing & Covers

Aluminium die cast (3 sizes);
Grey cast iron (3 sizes).

Gearing

20MnCr5 alloy steel;
Case hardened.
Profile ground or shaved.

Bearings

Ball or roller types;
according to sizes
and technical requirements.



Input

NEMA and IEC motor adapters
with universal elastic coupling
or customary bore and keyway.

Oil seals

NBR - Nitrile Butadiene Rubber
as standard;
Viton and Silicone on request.

Output

Solid shafts,
metric and imperial.

Lubrication

Synthetic long-life oil; Grade ISO VG 320.
No oil/vent plugs.
In-house filling.

Bevel/Helical Gearboxes, In-line Input -Series RO

Multipurpose Housing

Foot & Foot/Flange Mountings
One housing for 3-stages

Housing & Covers

Aluminium die cast (3 sizes);
Grey cast iron (3 sizes).

Gearing

20MnCr5 alloy steel;
Case hardened.
Profile ground or shaved.

Bearings

Ball or roller types;
according to sizes
and technical requirements.



Input

NEMA and IEC motor adapters
with universal elastic coupling
or customary bore and keyway.

Oil seals

NBR - Nitrile Butadiene Rubber
as standard;
Viton and Silicone on request.

Output

Solid shafts,
metric and imperial.

Lubrication

Synthetic long-life oil; Grade ISO VG 320.
No oil/vent plugs.
In-house filling.

RN-RO-RV Gearboxes

Description

Bevel/Helical Gearboxes, 90 Degree Input -Series RO

Multipurpose Housing

Foot & Foot/Flange Mountings
One housing for 3-stages

Housing & Covers

Aluminium die cast (3 sizes);
Grey cast iron (3 sizes).

Gearing

20MnCr5 alloy steel;
Case hardened.
Profile ground or shaved.

Bearings

Ball or roller types;
according to sizes
and technical requirements.



Input

NEMA and IEC motor adapters
with universal elastic coupling
or customary bore and keyway.

Oil seals

NBR - Nitrile Butadiene Rubber
as standard;
Viton and Silicone on request.

Output

Solid shafts,
metric and imperial.

Lubrication

Synthetic long-life oil; Grade ISO VG 320.
No oil/vent plugs.
In-house filling.

GENERAL SPECIFICATIONS

Range	6 sizes; 30 ratios in 2 and 3 stages; 3400 Nm max. output torque
Sizing	According to ISO6336/DIN3990. 15,000 hrs average lifetime with service factor SF1
Housing, Covers	Pressure die cast aluminium AISi12Cu2Fe up to size 3 and cast iron G25 from size 4
Coupling G input	Pressure die cast aluminium AISi12Cu2Fe for sizes 3, 5, 6 and alloyed steel from size 8
Toothed parts	Steel 20MnCr5 case hardened. Tooth profile ground or shaved. Run-in bevel gears
Shafts & Keys	Steel 39NiCrMo3; Shafts h6 - Bores E8; Keys according to DIN6885 B1
Bearings	Ball- or roller-types according to sizes and technical requirements
Oil seals	Type NB - nitril-butadiene with additional anti-dust lip according to DIN 3760
Lubricant	Synthetic long-life oil; Grade ISO VG 320
Powder coating	Aluminium until size 3 and Epoxy powder paint Standard colour RAL 7012 from size 4

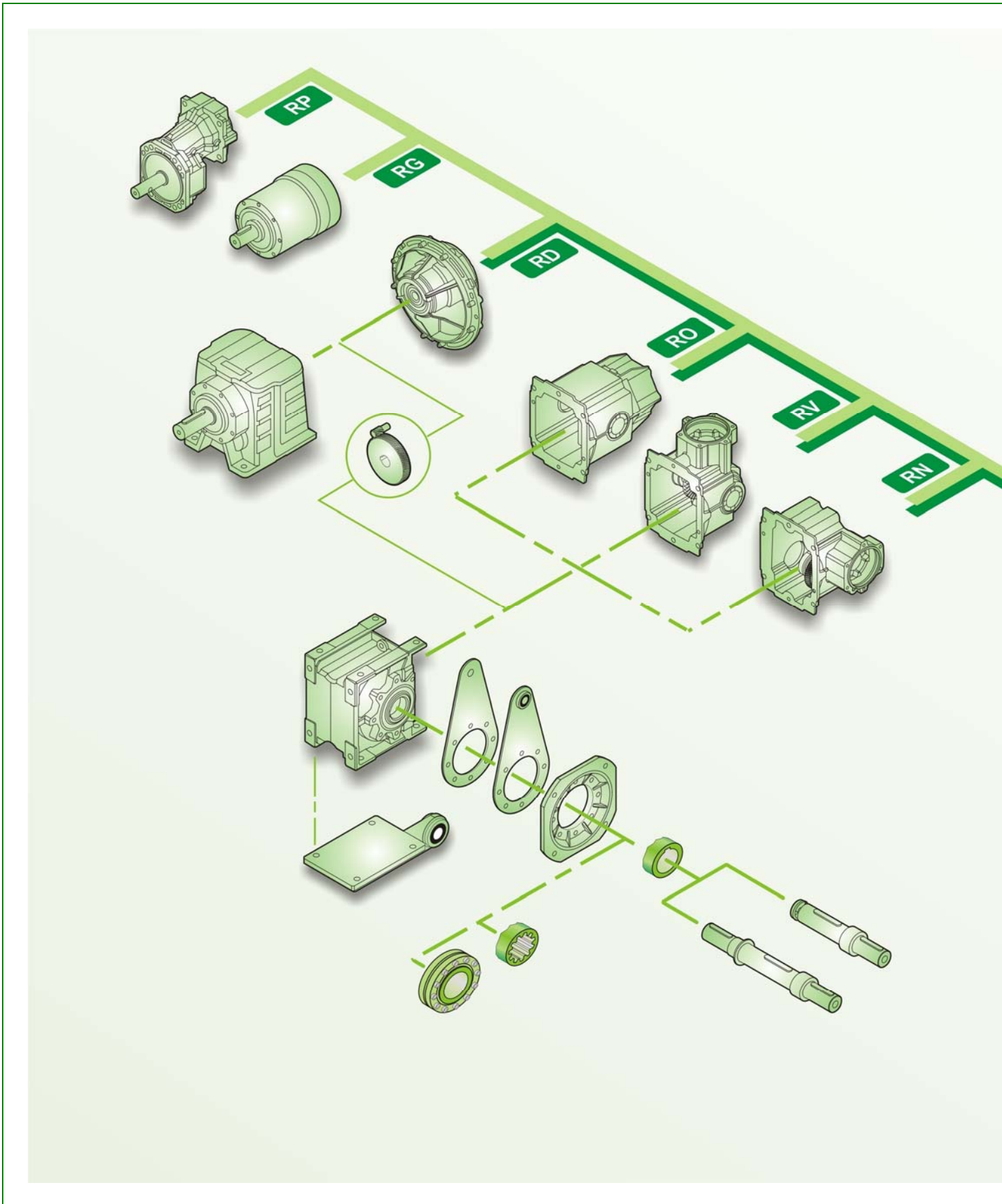
Gearboxes RN-RO-RV

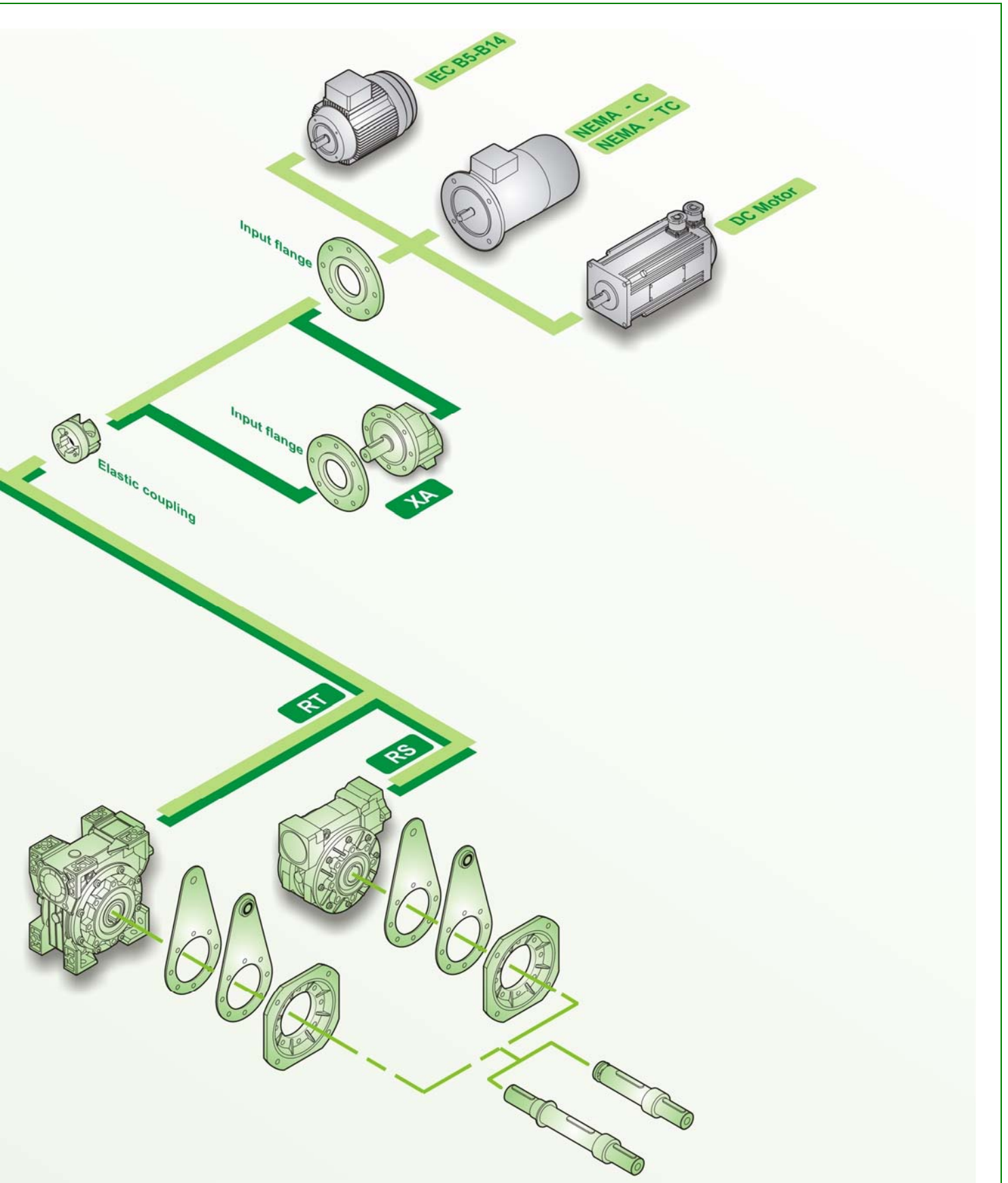
Symbols

D	[mm]	PCD of transmission element $k_{(t)}$	
F_r	[N]	Application radial load	
F_{r1}	[N]	Catalogue radial load (input)	
F_{r2}	[N]	Catalogue radial load (output)	
$F_{r2b(x)}$	[N]	Permissible radial load at position "X" on output shaft. Based on bearing lifetime.	
$F_{r2s(x)}$	[N]	Permissible radial load same as $F_{r2b(x)}$. Based on shaft bending and torsional stress.	
FS		Service factor	$FS = \frac{M_2}{M_{(app)}}$
i_n		Nominal reduction ratio	
i_r		Actual reduction ratio	
J_1	[kgm ²]	Moment of inertia of the gearbox at gearbox input shaft	
J_2	[kgm ²]	Moment of inertia of the application	
J_m	[kgm ²]	Moment of inertia of the motor	
$k_{(a)}$		Mass acceleration factor	
$k_{(t)}$		Transmission element factor	
Lub H / V	[l]	Lubricant (litres) H - In-line mounting / V - 90 degree mounting	
M_2	[Nm]	Gearbox maximum output torque	$M_2 = \frac{9550 * P_1 * \eta}{n_2}$
$M_{(app)}$	[Nm]	Application torque	
n_1	[min ⁻¹]	Input speed	
n_2	[min ⁻¹]	Output speed	
P_1	[kW]	Input power	$P_1 = \frac{M_2 * n_2}{9550 * \eta}$
$P_{(kg)}$	[kg]	Weight: for mounting B3H and average reduction ratio	
η		$\eta = 0.96$ - 2 stages $\eta = 0.94$ - 3 stages	

RN-RO-RV Gearboxes

Modular System





RN-RO-RV Gearboxes

Coupling "G" Description

Reducer Half-coupling

- Material: Alloy 20MnCr5I
- Input shaft built-in
- Two bearing setting
- Unchanged casing dimensions

Spider

- External tooth connection
- Material: Thermoplastic Elastomer:
Elastollan[®] TPU - Polyurethanic
Hytrell[®] TPE - Polyester
- Hardness
TPU 98 Shore A
TPE 72 Shore D
- Temperature range
TPU -20/+75°C (-4 / +167°F)
TPE -30/+100°C (-22 / +212°F)

Motor Half-coupling

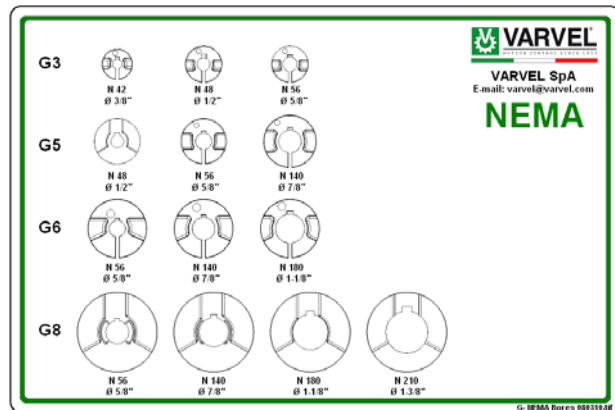
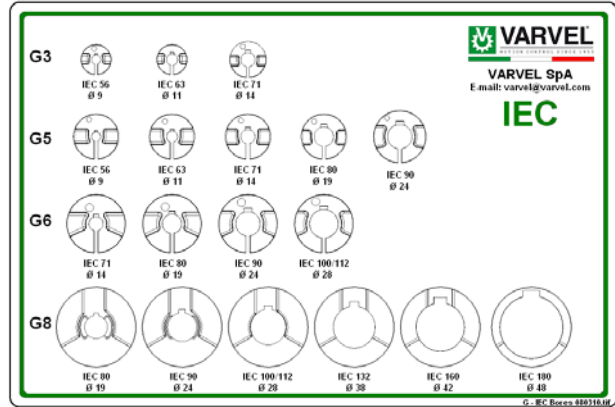
- Material:
Alu pressure die cast (G3, G5, G6)
Steel 36SMnPb14 (GS8)
Steel C43 on demand (GS3, GS5, GS6)
- Dynamic balancing
- Fitting:
Clamp (G3, G5, G6)
Key (GS3, GS5, GS6, GS8)
- Bores:
IEC 72/DIN42948
NEMA C and TC

Advantages:

- One gearbox only for each ratio
- Greater flexibility
- Increased stock rotation
- Elimination of fretting corrosion between key and keyway
- Gearbox / motor connection with zero backlash
- Allowed angular misalignment 1° max.
- High torsional rigidity
- High vibration damping

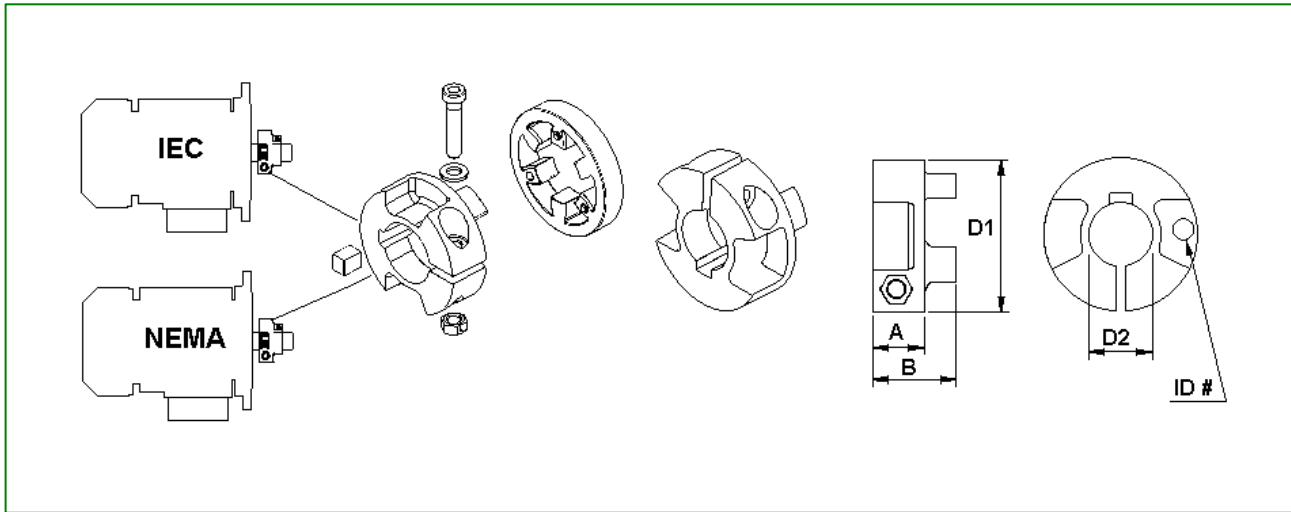
Input flanges:

- Material:
Aluminium to IEC112 & NEMA C180
Cast iron from IEC 132 & NEMA C200



Gearboxes RN-RO-RV

"G" Elastic Coupling Selection



Tipo	IEC NEMA	Kit Part No.	RN	RO - RV	Mt [Nm]	Mt1 [Nm]	Mt2 [Nm]	A [mm]	B [mm]	D1 [mm/ inch]	D2 [mm/ inch]	ID#
G5	IEC	KG5.009	RN12-13	RO-RV13	10	14	10	14.5	23	45	9	509
		KG5.011	RN12-13	RO-RV13		15	10			45	11	511
KG5.014		RN12-13	RO-RV13	30		17	45			14	514	
KG5.019		RN12-13	RO-RV13	40		25	45			19	519	
KG5.024		RN12-13	RO-RV13	70		40	52			24	524	
	NEMA	KG5.N56 KG5.N140	RN12-13 RN12	RO-RV13 RO-RV13		45 60	35 45			1.77 2.05	5/8" 7/8"	5N56 5N140
G6	IEC	KG6.014	RN22-23-32-33-42-43	RO-RV23-33-43	18	60	40	19.5	31.5	58	14	614
		KG6.019	RN22-23-32-33-42-43	RO-RV23-33-43		90	65				19	619
KG6.024		RN22-32-33-42-43	RO-RV23-33-43	130		100	24				624	
KG6.028		RN22-32-42-43	RO-RV23-33-43	180		120	28				628	
		NEMA	KG6.N56 KG6.N140 KG6.N180	RN22-23-32-33-42-43 RN22-32-33-42-43 RN42-43		RO-RV23-33-43 RO-RV23-33-43 RO-RV43					50 85 200	--- --- ---
G8	IEC	* KGS8.19	RN52-53-62-63	RO-RV53-63	15	150	---	35	51	79		
		* KGS8.24	RN52-53-62-63	RO-RV53-63		250	---					
* KGS8.28		RN52-53-62-63	RO-RV53-63	350		---						
* KGS8.38		RN52-53-62-63	RO-RV53-63	500		---						
* KGS8.42		RN62-63	RO-RV53-63	500		---						
	NEMA	* KGS8.N056 * KGS8.N140 * KGS8.N180 * KGS8.N210 * KGS8.N250	RN52-53-62-63 RN52-53-62-63 RN52-53-62-63 RN62-63 RN62	RO-RV53-63 RO-RV53-63 RO-RV53-63 RO-RV53-63 RO-RV63		140 200 300 500 500	--- --- --- --- ---			3.11		

Mt - Screw locking torque
 Mt1 - Transmissible torque with key
 Mt2 - Transmissible torque without key
 * - Coupling GS8: steel made, key fit and grub screw
 Note - Coupling GS8: any ID# marked on

RN-RO-RV Gearboxes

IEC Flange & Coupling Selection

RN - RO - RV	Flange Type	IEC Frame	Kit Part No.		G Coupling	
			B5 Flange	B14 Flange	Type	Kit Part No.
RN12 RO-RV13	FM 50	IEC56	K532.206.120	---	G5 ø9	KG5.009
		IEC63	K532.206.140	K532.206.090	G5 ø11	KG5.011
		IEC71	K532.206.160	K532.206.105	G5 ø14	KG5.014
		IEC80	K532.206.200	K532.206.120	G5 ø19	KG5.019
		IEC90	K532.206.200	K532.206.140	G5 ø24	KG5.024
RN13	FM 50	IEC56	K532.206.120	---	G5 ø9	KG5.009
		IEC63	K532.206.140	K532.206.090	G5 ø11	KG5.011
		IEC71	K532.206.160	K532.206.105	G5 ø14	KG5.014
RN22 RO-RV23	FM 70	IEC71	K533.206.160	K533.206.105	G6 ø14	KG6.014
		IEC80	K533.206.200	K533.206.120	G6 ø19	KG6.019
		IEC90	K533.206.200	K533.206.140	G6 ø24	KG6.024
		IEC 100/112	K533.206.250	K533.206.160	G6 ø28	KG6.028
RN23	FM 70	IEC71	K533.206.160	K533.206.105	G5 ø14	KG5.014
		IEC80	K533.206.200	K533.206.120	G5 ø19	KG5.019
RN32 RN33	FM 70	IEC71	K533.206.160	K533.206.105	G6 ø14	KG6.014
		IEC80	K533.206.200	K533.206.120	G6 ø19	KG6.019
		IEC90	K533.206.200	K533.206.140	G6 ø24	KG6.024
		* IEC 100/112	K533.206.250	K533.206.160	G6 ø28	KG6.028
RO-RV33	FM 85	IEC71	K534.206.160	---	G6 ø14	KG6.014
		IEC80	K534.206.200	K534.206.120	G6 ø19	KG6.019
		IEC90	K534.206.200	K534.206.140	G6 ø24	KG6.024
		IEC 100/112	K534.206.250	K534.206.160	G6 ø28	KG6.028
RN42 RN43	FM 85	IEC71	K534.206.160	---	G6 ø14	KG6.014
		IEC80	K534.206.200	K534.206.120	G6 ø19	KG6.019
		IEC90	K534.206.200	K534.206.140	G6 ø24	KG6.024
		IEC 100/112	K534.206.250	K534.206.160	G6 ø28	KG6.028
RO-RV43	FM 110	IEC71	K535.206.160	---	G6 ø14	KG6.014
		IEC80	K535.206.200	---	G6 ø19	KG6.019
		IEC90	K535.206.200	---	G6 ø24	KG6.024
		IEC 100/112	K535.206.250	K535.206.160	G6 ø28	KG6.028
RN52 RO-RV53	FM 130 & FM 150	IEC 80	K536.206.200	---	** GS8 ø19	KGS8.019
		IEC 90	K536.206.200	---	** GS8 ø24	KGS8.024
		IEC 100/112	K536.206.250	---	** GS8 ø28	KGS8.028
		IEC 132	K537.206.300	K536.206.200	** GS8 ø38	KGS8.038
		IEC 160	K565.206.350	---	** GS8 ø42	KGS8.042
		IEC 180	K565.206.350	---	** GS8 ø48	KGS8.048
RN53	FM 130	IEC 80	K536.206.200	---	** GS8 ø19	KGS8.019
		IEC 90	K536.206.200	---	** GS8 ø24	KGS8.024
		IEC 100/112	K536.206.250	---	** GS8 ø28	KGS8.028
		IEC132	K537.206.300	K536.206.200	** GS8 ø38	KGS8.038
RN62 RO-RV63	FM 130 & FM 150	IEC 80	K536.206.200	---	** GS8 ø19	KGS8.019
		IEC 90	K536.206.200	---	** GS8 ø24	KGS8.024
		IEC 100/112	K536.206.250	---	** GS8 ø28	KGS8.028
		IEC 132	K537.206.300	K536.206.200	** GS8 ø38	KGS8.038
		IEC 160	K565.206.350	---	** GS8 ø42	KGS8.042
		IEC 180	K565.206.350	---	** GS8 ø48	KGS8.048
RN63	FM 130 & FM 150	IEC 80	K536.206.200	---	** GS8 ø19	KGS8.019
		IEC 90	K536.206.200	---	** GS8 ø24	KGS8.024
		IEC 100/112	K536.206.250	---	** GS8 ø28	KGS8.028
		IEC 132	K537.206.300	K536.206.200	** GS8 ø38	KGS8.038
		IEC160	K565.206.350	K536.206.250	** GS8 ø42	KGS8.042

* - IEC100/112: not for RN33

** - Coupling GS8: key fitting and axial locking grub screw

Gearboxes RN-RO-RV

NEMA Flange & Coupling Selection

RN - RO - RV	Flange Type	NEMA Frame	Flange Kit Part No.	G Coupling	
				Type	Kit Part No.
RN12 RO-RV13	FM 50	56 C 140 TC	K532.227.N56 K532.227.N56	G5 \varnothing 5/8" G5 \varnothing 7/8"	KG5.N56 KG5.N140
RN13		56 C	K532.227.N56	G5 \varnothing 5/8"	KG5.N56
RN22 RO-RV23	FM 70	56 C 140 C	K533.227.N56 K533.227.N56	G6 \varnothing 5/8" G6 \varnothing 7/8"	KG6.N56 KG6.N140
RN23		56 C	K533.227.N56	G5 \varnothing 5/8"	KG5.N56
RN32	FM 70	56 C 140 TC	K533.227.N56 K533.227.N56	G6 \varnothing 5/8" G6 \varnothing 7/8"	KG6.N56 KG6.N140
RO-RV33	FM 85	56 C 140 TC	K534.227.N56 K534.227.N56	G6 \varnothing 5/8" G6 \varnothing 7/8"	KG6.N56 KG6.N140
RN42 RN43	FM 85	56 C 140 TC 180 TC	K534.227.N56 K534.227.N56 K534.227.N180	G6 \varnothing 5/8" G6 \varnothing 7/8" G6 \varnothing 1-1/8"	KG6.N56 KG6.N140 KG6.N180
RO-RV43	FM 110	56 C 140 TC 180 TC	K535.227.N56 K535.227.N56 K535.227.N180	G6 \varnothing 5/8" G6 \varnothing 7/8" G6 \varnothing 1-1/8"	KG6.N56 KG6.N140 KG6.N180
RN52 RN53	FM 150	56 C 140 TC 180 TC 210 TC	K537.227.N56 K537.227.N56 K537.227.N180 K537.227.N180	* GS8 \varnothing 5/8" * GS8 \varnothing 7/8" * GS8 \varnothing 1-1/8" * GS8 \varnothing 1-3/8"	KGS8.N56 KGS8.N140 KGS8.N180 KGS8.N210
RO-RV53		56 C 140 TC 180 TC	K537.227.N56 K537.227.N56 K537.227.N180	* GS8 \varnothing 5/8" * GS8 \varnothing 7/8" * GS8 \varnothing 1-1/8"	KGS8.N56 KGS8.N140 KGS8.N180
RN62 RN63	FM 150	56 C 140 TC 180 TC 210 TC 250 TC	K537.227.N56 K537.227.N56 K537.227.N180 K537.227.N180 K537.227.N180	* GS8 \varnothing 5/8" * GS8 \varnothing 7/8" * GS8 \varnothing 1-1/8" * GS8 \varnothing 1-3/8" * GS8 \varnothing 1-5/8"	KGS8.N56 KGS8.N140 KGS8.N180 KGS8.N210 KGS8.N250
RO-RV63		56 C 140 TC 180 TC 210 TC	K537.227.N56 K537.227.N56 K537.227.N180 K537.227.N180	* GS8 \varnothing 5/8" * GS8 \varnothing 7/8" * GS8 \varnothing 1-1/8" * GS8 \varnothing 1-3/8"	KGS8.N56 KGS8.N140 KGS8.N180 KGS8.N210

* - Coupling GS8: key fitting and axial locking grub screw

RN-RO-RV Gearboxes

Service factors

SERVICE FACTOR of the gearbox

Service factor FS1.0 is meant as typical of 8 hours/day operation, with uniform load and mass acceleration factor $k_{(a)} \leq 0.2$, starts/ stops lower than 300 per hour and ambient temperature between 15 and 35 Celsius.

The performance shown in the tables gives the service factor calculation as a ratio between gearbox maximum output torque M_2 and application torque $M_{(app)}$.

Mass acceleration factor

$$k_{(a)} = \frac{\frac{J_2}{i r^2} + J_1}{J_m}$$

Load Class

A - Uniform load

$$k_{(a)} \leq 0,2$$

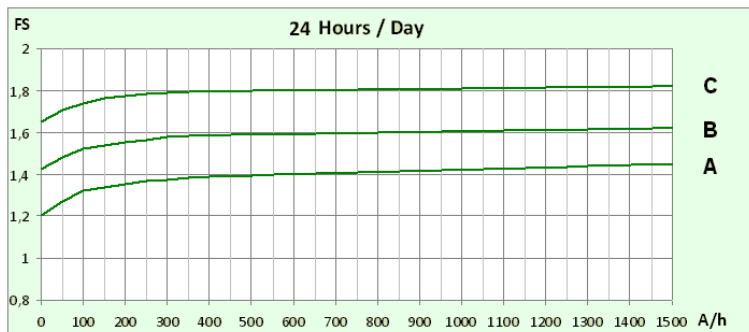
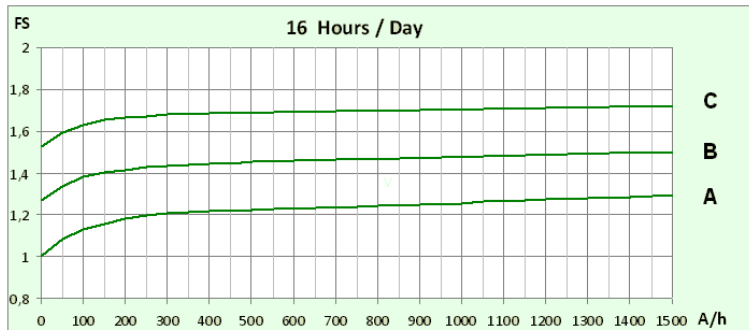
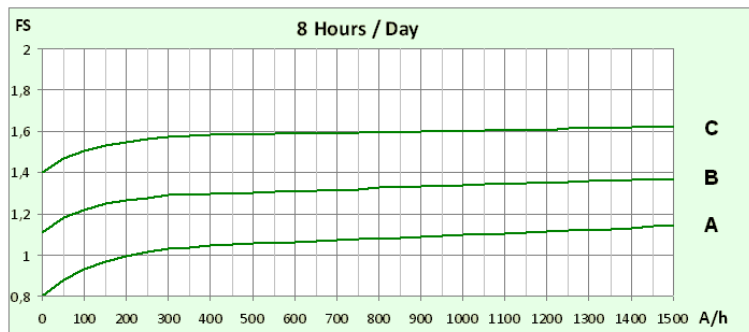
B - Moderate shock load

$$0,2 < k_{(a)} \leq 3$$

C - Severe shock load

$$3 < k_{(a)} \leq 10$$

A/h - Number of starts/stops per hour



DUTY TYPE of the motor

The specifications of various duty types are defined by the Standard CEI EN 60034-1 / IEC34-1.

S1 - Continuous duty

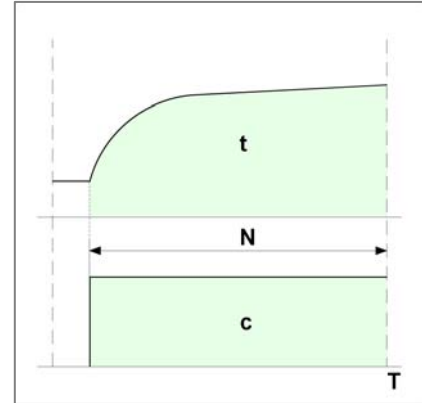
Steady load operation for an indefinite period (N), but long enough to achieve thermal balancing.

$$f_s = 1.0$$

N = Operation time

c = Load

t = Temperature



S3 - Periodic intermittent duty

Operation according to cycle (C) including steady load time (N) and rest time (R).

Starts/stops do not affect temperature. The reference cycle (C) is up to a total of 10 minutes.

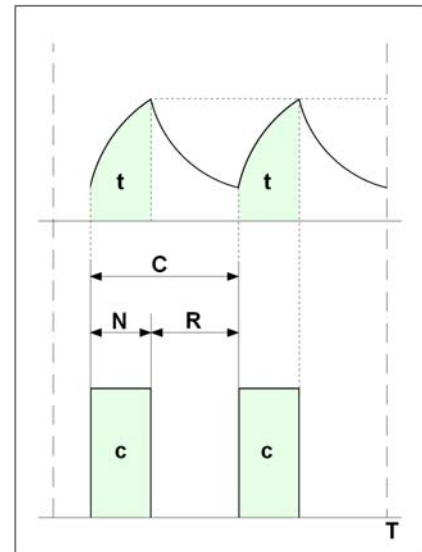
Intermittence ratio is calculated as follows

$$\frac{N}{(N+R)} * 100 = \begin{matrix} 60\% & \mathbf{Sf = 0.90} \\ 40\% & \mathbf{Sf = 0.85} \\ 25\% & \mathbf{Sf = 0.75} \\ 15\% & \mathbf{Sf = 0.70} \end{matrix}$$

N = Operation time

R = Rest time

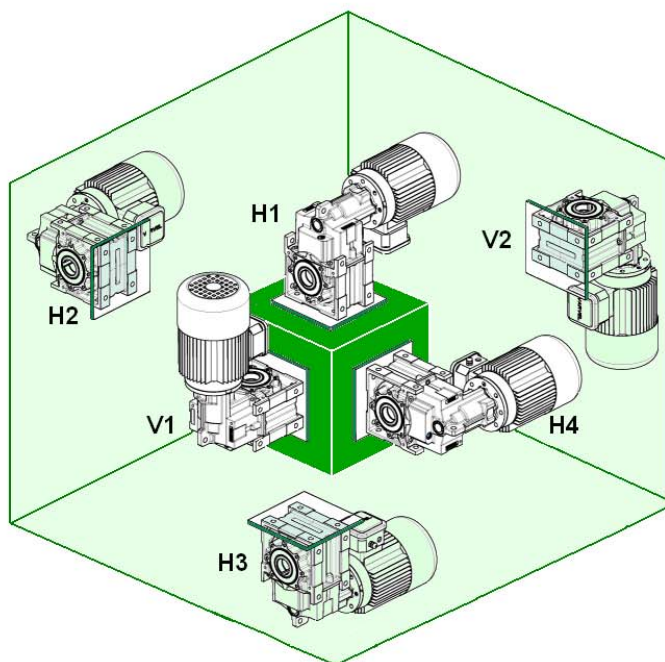
C = Duty cycle



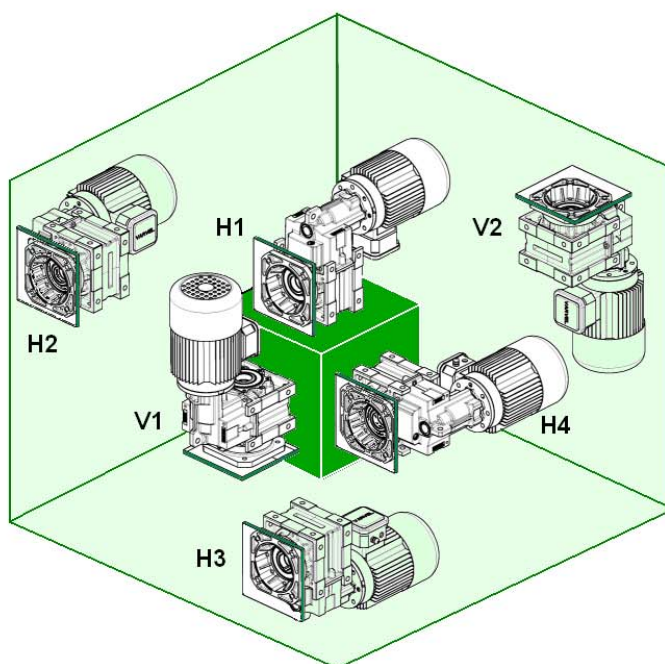
RN-RO-RV Gearboxes

Mounting positions

RN



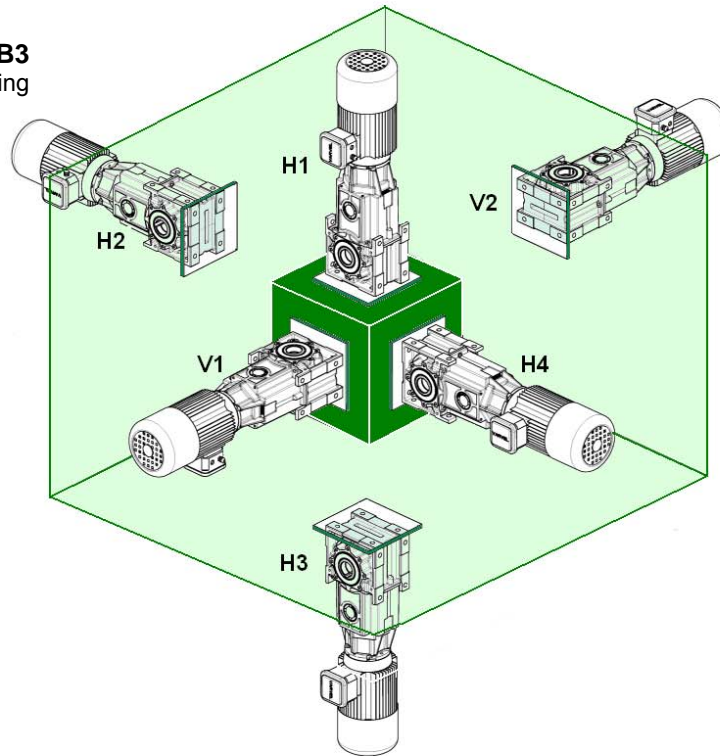
B3
Foot mounting



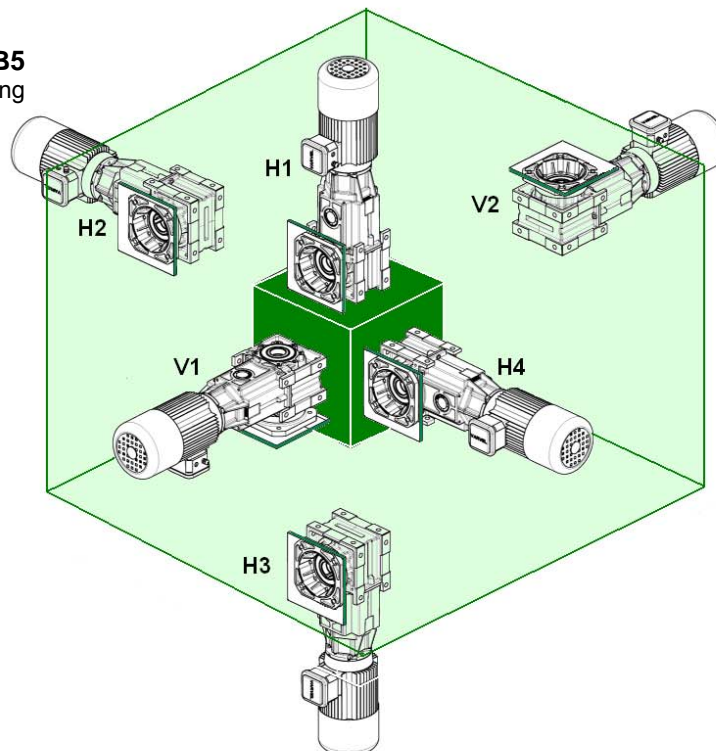
B5
Flange mounting

RO

B3
Foot mounting



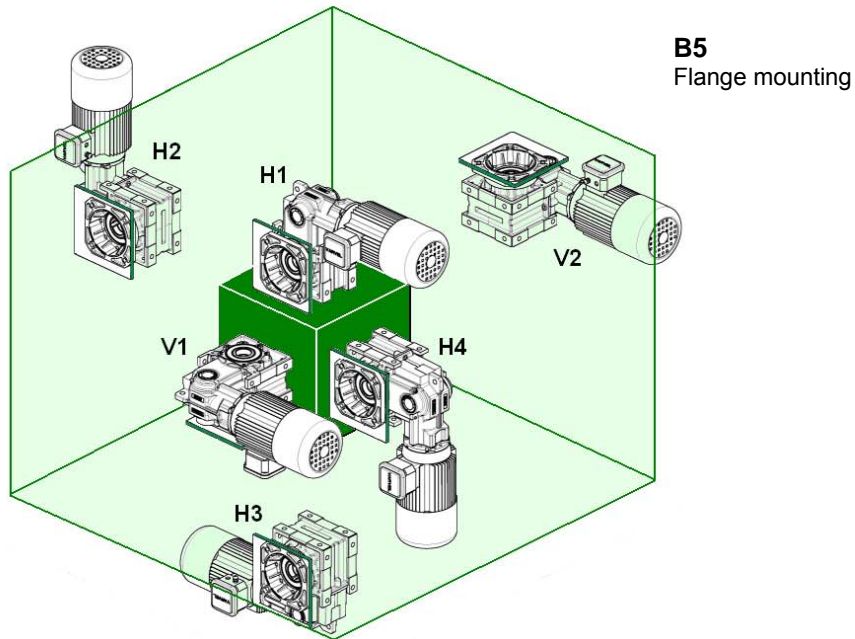
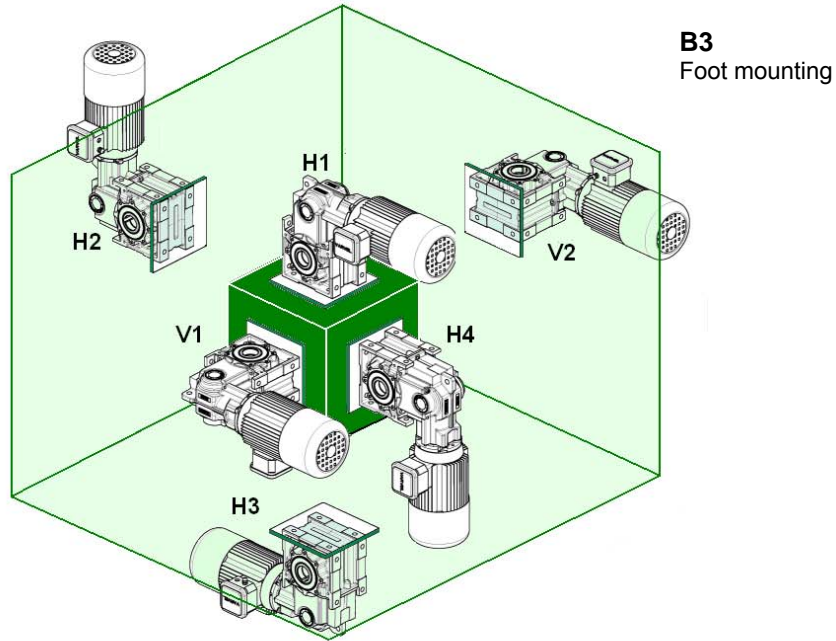
B5
Flange mounting



RN-RO-RV Gearboxes

Mounting positions

RV



Gearboxes RN-RO-RV

Designation

GEARBOX DESIGNATION

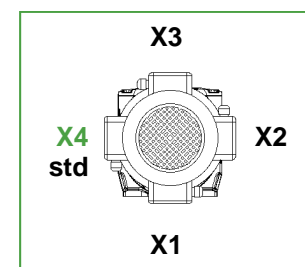
F	RN	32	/B3	H	31.5	IEC71	-B14	AU30	DFU200
									Output flange ø ...
									Output shaft ø ...
									B5, B14 = Motor form
									Electric motor frame
									Reduction ratio
									H, V = Gearbox mounting position
									B3, B5, B3/B5 = Gearbox form
									Gearbox size and stages
									Tipo del riduttore (RN, RO, RV)

M = Geared motor
 F = Gearbox with input flange
 S = Gearbox without input flange
 ... = (nothing) Gearbox with input free shaft

MOTOR DESIGNATION

MT	0.37 kW	71 B	4	B14	230/400/50	IP55	F	X4
								Terminal box position
								Class F (std) = Insulation class
								IP55 (std) = Protection class
								Voltage / Frequency
								B5 o B14 = Mounting form
								Number of poles
								IEC motor frame
								Motor power

MT = Three-phase motor
 MM = Single-phase motor
 MA = Brake motor



RN-RO-RV Gearboxes

External Loads

OUTPUT RADIAL LOADS

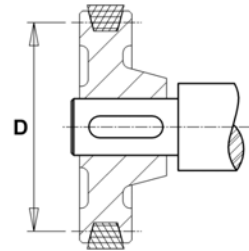
Radial (overhung) loads have to be checked with the rating factor given in the gearbox selection tables.

The $k_{(t)}$ rating factor will vary according to the transmission element fitted on the gearbox output shaft according to the below table.

- Application radial load

$k_{(t)}$	Transmission element
1,15	Gear - Tooth No. < 17
1,40	Chain sprocket - Tooth No. < 13
1,25	Chain sprocket - Tooth No. < 20
1,00	Chain sprocket - Tooth No. > 20
2,50	V-belt pulley
1,25	Toothed-belt pulley

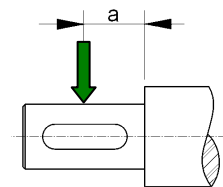
$$F_r = \frac{2000 * M_2}{D} * k_{(t)}$$



- Catalogue radial load at shaft centre

[mm]	0	1	2	3	4	5	6
a	17.5	20	25	30	35	40	50

$$F_{r2} \geq F_r$$



- Radial load offset from centre

[mm]	0	1	2	3	4	5	6
a	17.5	20	25	30	35	40	50
b	15.5	23	24	27	31	37	39
c	33	43	49	57	66	77	89

Check both (*) and (**) comparisons

(*)

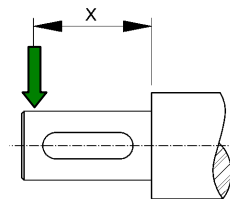
$$F_{r2b(x)} \geq F_r$$

$$F_{r2b(x)} = F_{r2} * \frac{c}{x + b}$$

$$F_{r2s(x)} \geq F_r$$

(**)

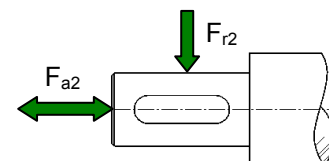
$$F_{r2s(x)} = F_{r2} * \frac{a}{x}$$



OUTPUT AXIAL LOADS

Axial load value, both on tensile and compressive stress, and with radial load:

$$F_{a2} = F_{r2} * 0.2$$





Modularity and flexibility have been leading the design of VARVEL products since the years 2000: this way, the gear-box-kit concept was carried out allowing anyone to assemble the unit in few minutes with standard tooling.

This feature provides the highest flexibility to VARVEL's distributors and resellers who - thanks to a limited kit selection - are able to immediately configure the required product.

VARSIZE® selection program, available from our web-site

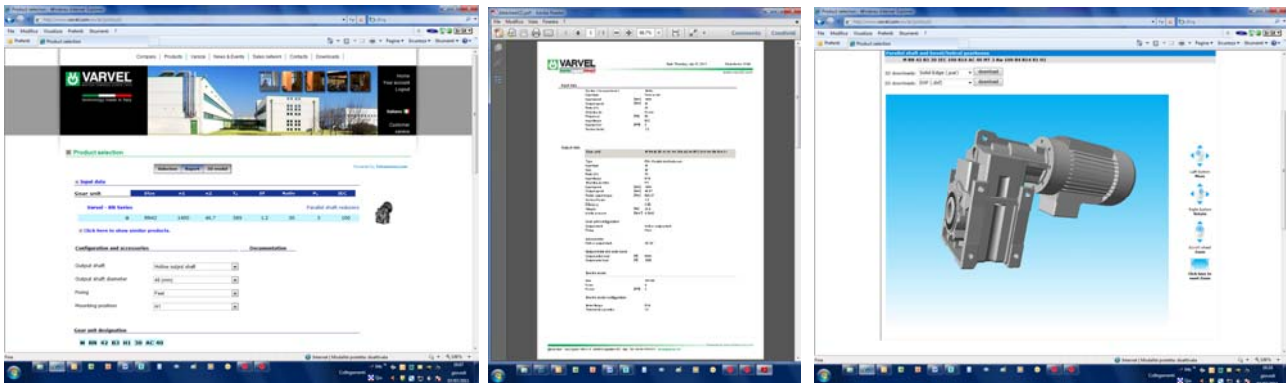
allows a friendly sizing of VARVEL product range.

2D/3D Drawings

A guided selection lets 2D/3D models downloaded for the most popular CAD systems.

Guided selection

This option returns a list of applicable product configurations upon a given sequence of application parameters (power, output torque, rpm, service factor etc.); a PDF data sheet featuring performance data and dimensional drawings is generated for each configuration, as well as the 3D model and 2D drawings.



RN-RO-RV Gearboxes

RN1 - 180 Nm

Speed Reducer Selection

1400 min⁻¹

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	56 B5	63 B*	71 B*	80 B*	90 B14
12 2c	7,1	6,59	212	125	2,9	1050	3350	0,8414	⊙	⊙	⊙	⊙	⊙
	8,0	7,95	176	130	2,5	1100	3470	0,7600	⊙	⊙	⊙	⊙	⊙
	9,0	8,32	168	140	2,6	1030	3580	0,6786	⊙	⊙	⊙	⊙	⊙
	10,0	10,11	138	150	2,3	1010	3490	0,5849	⊙	⊙	⊙	⊙	⊙
	12,5	12,19	115	130	1,6	1110	3470	0,5416	⊙	⊙	⊙	⊙	⊙
	14,0	13,17	106	165	1,9	1000	3450	0,4982	⊙	⊙	⊙	⊙	⊙
	16,0	15,87	88,2	140	1,3	1110	3450	0,4722	⊙	⊙	⊙	⊙	⊙
	18,0	16,65	84,1	165	1,5	1060	3560	0,4462	⊙	⊙	⊙	⊙	⊙
	20,0	20,29	69	170	1,3	1110	3710	0,4149	⊙	⊙	⊙	⊙	⊙
	22,4	25,37	55,2	170	1,0	1130	3850	0,3892	⊙	⊙	⊙	⊙	⊙
	31,5	30,59	45,8	140	0,70	1270	4070	0,3789	⊙	⊙	⊙	⊙	⊙
	33,0	33,00	42,4	160	0,74	1230	4290	0,3685	⊙	⊙	⊙	⊙	⊙
	35,5	36,47	38,4	140	0,59	1330	4700	0,3626	⊙	⊙	⊙	⊙	⊙
	40	39,78	35,2	140	0,54	1420	4870	0,3635	⊙	⊙	⊙	⊙	⊙
	45	43,96	31,8	140	0,49	1420	4900	0,3585	⊙	⊙	⊙	⊙	⊙
	50	48,98	28,6	140	0,44	1420	4900	0,3539	⊙	⊙	⊙	⊙	⊙
56	52,07	26,9	110	0,32	1420	5150	0,3499	⊙	⊙	⊙	⊙	⊙	
60	62,78	22,3	120	0,29	1470	5400	0,3459	⊙	⊙	⊙	⊙	⊙	
13 3c	40	39,52	35,4	145	0,57	850	4762	0,2554	⊙	⊙	⊙	⊙	⊙
	50	48,04	29,1	155	0,50	950	4600	0,2512	⊙	⊙	⊙	⊙	⊙
	63	62,54	22,4	170	0,42	1070	4300	0,2474	⊙	⊙	⊙	⊙	⊙
	80	79,10	17,7	180	0,35	1140	4000	0,2451	⊙	⊙	⊙	⊙	⊙
	100	96,36	14,5	180	0,29	1200	4000	0,2437	⊙	⊙	⊙	⊙	⊙
	125	120,51	11,6	180	0,23	1250	4000	0,2426	⊙	⊙	⊙	⊙	⊙
	160	156,75	8,93	175	0,17	1300	4100	0,2416	⊙	⊙	⊙	⊙	⊙
	180	173,22	8,08	150	0,14	1340	4800	0,2414	⊙	⊙	⊙	⊙	⊙
	200	203,91	6,87	150	0,11	1320	4800	0,2326	⊙	⊙	⊙	⊙	⊙
	250	265,22	5,28	150	0,09	1350	4800	0,2322	⊙	⊙	⊙	⊙	⊙
	280	293,09	4,78	150	0,08	1360	4800	0,2321	⊙	⊙	⊙	⊙	⊙
	315	326,53	4,29	150	0,07	1360	4800	0,2320	⊙	⊙	⊙	⊙	⊙
400	418,50	3,35	120	0,04	1440	5300	0,2318	⊙	⊙	⊙	⊙	⊙	

2c & 3c - Number of reduction stages
 B* = B5 & B14

	Oil [litres]						Weight [kg]	
	H1	H2	H3	H4	V1	V2		
FRN12	0.5	0.6	0.4	0.6	0.6	0.6	5.4	
FRN13	0.5	0.4	0.3	0.3	0.6	0.4	5.5	

RO1/RV1 - 180 Nm

Gearboxes RN-RO-RV

1400 min⁻¹

Speed Reducer Selection

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	56 B5	63 B*	71 B*	80 B*	90 B14
13 3c	7,1	7,58	185	130	2,7	1550	3310	1,1700	⊙	⊙	⊙	⊙	⊙
	9,0	9,14	153	130	2,2	1580	3740	1,0754	⊙	⊙	⊙	⊙	⊙
	10,0	9,57	146	140	2,3	1580	3600	1,0469	⊙	⊙	⊙	⊙	⊙
	11,2	11,63	120	150	2,0	1590	3570	0,9761	⊙	⊙	⊙	⊙	⊙
	14,0	14,02	100	130	1,5	1600	4040	0,9358	⊙	⊙	⊙	⊙	⊙
	16,0	15,14	92,5	165	1,7	1600	3550	0,9105	⊙	⊙	⊙	⊙	⊙
	18,0	18,25	76,7	135	1,2	1610	4240	0,8868	⊙	⊙	⊙	⊙	⊙
	20,0	19,15	73,1	170	1,4	1610	3670	0,8712	⊙	⊙	⊙	⊙	⊙
	22,4	23,33	60,0	170	1,1	1610	3820	0,8476	⊙	⊙	⊙	⊙	⊙
	25,0	24,44	57,3	150	0,96	1600	4150	0,3567	⊙	⊙	⊙	⊙	⊙
	28,0	29,18	48,0	170	0,91	1610	3960	0,8281	⊙	⊙	⊙	⊙	⊙
	31,5	31,82	44,0	165	0,81	1600	4120	0,3418	⊙	⊙	⊙	⊙	⊙
	35,5	37,95	36,9	160	0,66	1610	4430	0,8125	⊙	⊙	⊙	⊙	⊙
	40	40,25	34,8	175	0,68	1610	4100	0,3329	⊙	⊙	⊙	⊙	⊙
	45	47,88	29,2	170	0,55	1600	4300	0,2717	⊙	⊙	⊙	⊙	⊙
	50	49,02	28,6	175	0,56	1610	4100	0,3276	⊙	⊙	⊙	⊙	⊙
	56	59,10	23,7	140	0,37	1610	4820	0,3253	⊙	⊙	⊙	⊙	⊙
	63	61,31	22,8	170	0,43	1610	4000	0,3231	⊙	⊙	⊙	⊙	⊙
	71	73,77	19,0	170	0,36	1610	4000	0,2654	⊙	⊙	⊙	⊙	⊙
	80	84,93	16,5	165	0,30	1610	4400	0,2441	⊙	⊙	⊙	⊙	⊙
	90	92,26	15,2	180	0,30	1610	4000	0,2634	⊙	⊙	⊙	⊙	⊙
	100	103,46	13,5	180	0,27	1610	4000	0,2429	⊙	⊙	⊙	⊙	⊙
	112	111,22	12,6	150	0,21	1610	4800	0,2628	⊙	⊙	⊙	⊙	⊙
	125	129,39	10,8	180	0,22	1610	4000	0,2419	⊙	⊙	⊙	⊙	⊙
	140	132,61	10,6	150	0,18	1610	4700	0,2614	⊙	⊙	⊙	⊙	⊙
	160	168,30	8,32	175	0,16	1610	4100	0,2411	⊙	⊙	⊙	⊙	⊙
	180	185,98	7,53	150	0,13	1610	4700	0,2409	⊙	⊙	⊙	⊙	⊙
	200	202,90	6,90	150	0,12	1610	4800	0,2408	⊙	⊙	⊙	⊙	⊙
224	224,22	6,24	150	0,10	1610	4800	0,2407	⊙	⊙	⊙	⊙	⊙	
250	249,80	5,60	150	0,09	1610	4800	0,2405	⊙	⊙	⊙	⊙	⊙	
315	326,53	4,29	150	0,07	1360	4800	0,2320	⊙	⊙	⊙	⊙	⊙	

2c & 3c - Number of reduction stages

B* = B5 & B14

	Oil [litres]						Weight [kg]	
	H1	H2	H3	H4	V1	V2		
FRO13	0,5	0,45	0,4	0,45	0,45	0,45	6,4	
FRV13	0,5	0,35	0,25	0,35	0,4	0,4	6,1	

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
22 2c	6,3	5,76	243	190	5,1	2900	3200	2,5855	⊙	⊙	⊙	⊙	⊙
	7,1	7,37	190	215	4,6	2900	3450	2,1881	⊙	⊙	⊙	⊙	⊙
	8,0	7,80	179	220	4,4	2900	3530	2,2972	⊙	⊙	⊙	⊙	⊙
	9,0	9,07	154	240	4,1	2900	3690	1,9599	⊙	⊙	⊙	⊙	⊙
	10,0	9,98	140	230	3,6	3000	3850	2,0120	⊙	⊙	⊙	⊙	⊙
	11,2	11,33	124	260	3,6	2900	3890	1,7848	⊙	⊙	⊙	⊙	⊙
	12,5	12,29	114	230	2,9	3000	4140	1,8436	⊙	⊙	⊙	⊙	⊙
	14,0	14,51	96,5	300	3,2	3000	3720	1,6479	⊙	⊙	⊙	⊙	⊙
	16,0	15,36	91,2	230	2,3	3000	4480	1,7103	⊙	⊙	⊙	⊙	⊙
	18,0	17,87	78,4	310	2,7	3000	3590	1,5647	⊙	⊙	⊙	⊙	⊙
	20,0	19,66	71,2	230	1,8	3000	4810	1,6024	⊙	⊙	⊙	⊙	⊙
	22,4	22,67	61,8	310	2,1	3000	3800	1,4958	⊙	⊙	⊙	⊙	⊙
	25,0	24,21	57,8	240	1,5	3000	4970	1,5348	⊙	⊙	⊙	⊙	⊙
	28,0	29,32	47,8	265	1,4	3000	4770	1,4440	⊙	⊙	⊙	⊙	⊙
	31,5	30,71	45,6	240	1,2	3000	5180	1,4772	⊙	⊙	⊙	⊙	⊙
35,5	34,52	40,6	220	0,99	3000	5420	1,4202	⊙	⊙	⊙	⊙	⊙	
40	39,72	35,2	240	0,94	3000	5380	1,4329	⊙	⊙	⊙	⊙	⊙	
45	46,78	29,9	245	0,82	3000	5550	1,4122	⊙	⊙	⊙	⊙	⊙	
23 3c	50	51,19	27,3	245	0,75	3000	5650	1,4027	⊙	⊙	⊙	⊙	⊙
	63	62,66	22,3	250	0,62	3000	6040	1,3859	⊙	⊙	⊙	⊙	⊙
	40	36,34	38,5	250	1,07	-	5130	0,9994	⊙	⊙	⊙	⊙	⊙
	45	44,73	31,3	270	0,94	-	5070	0,9900	⊙	⊙	⊙	⊙	⊙
	56	55,91	25,0	310	0,86	1070	4970	0,9828	⊙	⊙	⊙	⊙	⊙
	71	71,57	19,6	310	0,68	1210	5100	0,9772	⊙	⊙	⊙	⊙	⊙
	80	79,01	17,7	140	0,28	1390	7160	0,9250	⊙	⊙	⊙	⊙	⊙
	90	88,14	15,9	310	0,55	1370	5200	0,9738	⊙	⊙	⊙	⊙	⊙
	100	101,07	13,9	180	0,28	1390	7190	0,9223	⊙	⊙	⊙	⊙	⊙
	112	111,82	12,5	310	0,43	1480	5200	0,9710	⊙	⊙	⊙	⊙	⊙
	125	124,39	11,3	220	0,28	1390	6700	0,9206	⊙	⊙	⊙	⊙	⊙
	140	144,62	9,68	265	0,29	1550	6100	0,9688	⊙	⊙	⊙	⊙	⊙
	160	155,49	9,00	260	0,26	1450	6200	0,9193	⊙	⊙	⊙	⊙	⊙
	180	186,37	7,51	200	0,17	1570	7000	0,9674	⊙	⊙	⊙	⊙	⊙
	200	199,03	7,03	260	0,20	1500	6200	0,9183	⊙	⊙	⊙	⊙	⊙
224	228,12	6,14	170	0,12	1580	7400	0,9666	⊙	⊙	⊙	⊙	⊙	
250	245,13	5,71	260	0,17	1540	6200	0,9176	⊙	⊙	⊙	⊙	⊙	
315	310,98	4,50	260	0,13	1560	6200	0,9170	⊙	⊙	⊙	⊙	⊙	
400	402,20	3,48	260	0,10	1570	6200	0,9166	⊙	⊙	⊙	⊙	⊙	
450	473,65	2,96	260	0,09	1570	6200	0,9164	⊙	⊙	⊙	⊙	⊙	
500	518,30	2,70	260	0,08	1580	6200	0,9163	⊙	⊙	⊙	⊙	⊙	
630	634,40	2,21	230	0,06	1580	6700	0,9161	⊙	⊙	⊙	⊙	⊙	

2c & 3c - Number of reduction stages
B* = B5 & B14

⊙ - Max, available power ≤ P₁

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRN22	0,7	0,8	0,5	0,8	0,7	0,7	8,6
FRN23	0,7	0,6	0,4	0,6	0,7	0,7	9,1

RO2/RV2 - 310 Nm

Gearboxes RN-RO-RV

1400 min⁻¹

Speed Reducer Selection

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
23 3c	6,3	6,62	211,4	200	4,7	2900	3350	3,7230	⊙	⊙	⊙	⊙	⊙
	8,0	8,47	165,3	220	4,1	2900	3620	3,4225	⊙	⊙	⊙	⊙	⊙
	9,0	8,97	156,0	225	3,9	2900	3710	3,4623	⊙	⊙	⊙	⊙	
	10,0	10,43	134,3	245	3,7	2900	3870	3,2499	⊙	⊙	⊙	⊙	
	11,2	11,48	122,0	230	3,1	3000	4040	3,2632	⊙	⊙	⊙	⊙	
	12,5	13,03	107,4	275	3,3	3000	3920	3,1175	⊙	⊙	⊙	⊙	
	14,0	14,13	99,1	230	2,5	3000	4340	3,1448	⊙	⊙	⊙	⊙	
	16,0	16,68	83,9	305	2,9	3000	3620	3,0140	⊙	⊙	⊙	⊙	
	18,0	17,80	78,6	250	2,2	3000	4480	1,3623	⊙	⊙	⊙	⊙	
	20,0	20,55	68,1	310	2,4	3000	3720	2,9511	⊙	⊙	⊙	⊙	
	22,4	21,91	63,9	270	1,9	3000	4420	1,3232	⊙	⊙	⊙		
	25,0	26,07	53,7	310	1,9	3000	3930	2,8990	⊙	⊙	⊙		
	28,0	27,39	51,1	310	1,8	3000	4180	1,2932	⊙	⊙	⊙		
	31,5	32,97	42,5	260	1,2	3000	4960	1,0795	⊙	⊙	⊙		
	35,5	35,06	39,9	310	1,4	3000	4220	1,2698	⊙	⊙	⊙		
	40	41,21	34,0	310	1,2	3000	4600	1,0662	⊙	⊙	⊙		
	45	43,18	32,4	310	1,1	3000	4450	1,2555	⊙	⊙	⊙		
	50	52,75	26,5	310	0,92	3000	4680	1,0559	⊙	⊙			
	56	54,78	25,6	310	0,88	3000	4720	1,2437	⊙	⊙			
	63	64,97	21,5	310	0,74	3000	4930	1,0496	⊙	⊙			
	71	73,98	18,9	285	0,60	3000	5510	0,9764	⊙	⊙			
	80	82,42	17,0	310	0,59	3000	5100	1,0444	⊙	⊙			
	90	91,12	15,4	310	0,53	3000	5100	0,9732	⊙				
	100	106,60	13,1	270	0,39	3000	6000	1,0405	⊙				
	112	115,60	12,1	310	0,42	3000	5100	0,9706	⊙				
	125	123,47	11,34	260	0,33	3000	6200	0,9721	⊙				
	140	149,51	9,36	270	0,28	3000	6000	0,9686	⊙				
	160	156,64	8,94	260	0,26	3000	6200	0,9699	⊙				
	180	170,11	8,23	260	0,24	3000	6200	1,0381	(⊙)				
	200	202,59	6,91	260	0,20	3000	6200	0,9682	(⊙)				
	224	238,58	5,87	260	0,17	3000	6200	0,9674	(⊙)				
250	261,07	5,363	260	0,16	3000	6200	0,9670	(⊙)					
315	319,55	4,381	260	0,13	3000	6200	0,9664	(⊙)					

3c - Number of reduction stages
B* = B5 & B14

(⊙) - Max, available power ≤ P₁

	Oil [litres]						Weight [kg]	
	H1	H2	H3	H4	V1	V2		
FRO23	0,8	0,7	0,8	0,7	0,9	0,9	10,6	
FRV23	0,7	0,6	0,5	0,6	0,7	0,6	10,1	

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
32 2c	6,3	5,59	250	400	10,9	1780	4760	4,8684	⊙	⊙	⊙	⊙	⊙
	7,1	7,17	195	430	9,2	1890	5180	3,8232	⊙	⊙	⊙	⊙	⊙
	8,0	7,90	177	370	7,1	2100	5410	3,9288	⊙	⊙	⊙	⊙	⊙
	9,0	8,84	158	480	8,3	1790	5180	3,2176	⊙	⊙	⊙	⊙	⊙
	10,0	10,13	138	380	5,7	2170	5890	3,2515	⊙	⊙	⊙	⊙	⊙
	11,2	11,06	127	530	7,3	-	4550	2,7466	⊙	⊙	⊙	⊙	⊙
	12,5	12,49	112	380	4,6	2180	6330	2,8412	⊙	⊙	⊙	⊙	⊙
	14,0	14,18	98,8	540	5,8	1870	4700	2,3720	⊙	⊙	⊙	⊙	⊙
	16,0	15,63	89,6	390	3,8	2180	6830	2,5063	⊙	⊙	⊙	⊙	⊙
	18,0	18,84	74,3	550	4,5	2020	4860	2,0717	⊙	⊙	⊙	⊙	⊙
	20,0	20,03	69,9	390	3,0	2180	7400	2,2256	⊙	⊙	⊙	⊙	⊙
	22,4	22,18	63,1	550	3,8	-	5000	1,9456	⊙	⊙	⊙	⊙	⊙
	25,0	26,62	52,6	400	2,3	2180	7750	1,9888	⊙	⊙	⊙	⊙	⊙
	28,0	28,93	48,4	540	2,9	1610	5550	1,7952	⊙	⊙	⊙	⊙	⊙
	31,5	31,33	44,7	400	1,9	2180	7920	1,8858	⊙	⊙	⊙	⊙	⊙
	35,5	34,50	40,6	450	2,0	2020	7320	1,7221	⊙	⊙	⊙	⊙	⊙
	40	40,87	34,3	420	1,6	2180	8250	1,7600	⊙	⊙	⊙	⊙	⊙
	45	47,50	29,5	320	1,0	2180	9440	1,6310	⊙	⊙	⊙	⊙	⊙
	50	48,74	28,7	420	1,3	2180	8530	1,6974	⊙	⊙	⊙	⊙	⊙
56	53,75	26,0	420	1,2	2180	8640	1,6689	⊙	⊙	⊙	⊙	⊙	
63	67,10	20,9	420	0,96	2180	9030	1,6180	⊙	⊙	⊙	⊙	⊙	
33 3c	40	35,86	39,0	490	2,1	1610	6840	1,2294	⊙	⊙	⊙	⊙	⊙
	45	44,20	31,7	550	1,9	-	5900	1,2052	⊙	⊙	⊙	⊙	⊙
	56	55,31	25,3	580	1,6	1640	5500	1,1864	⊙	⊙	⊙	⊙	⊙
	71	70,88	19,8	580	1,3	1950	5500	1,1714	⊙	⊙	⊙	⊙	⊙
	80	80,62	17,4	265	0,51	2160	10880	1,0679	⊙	⊙	⊙	⊙	⊙
	90	94,22	14,9	580	0,96	2160	5500	1,1594	⊙	⊙	⊙	⊙	⊙
	100	103,34	13,5	340	0,51	2170	10730	1,0614	⊙	⊙	⊙	⊙	⊙
	112	110,89	12,6	580	0,82	2230	5500	1,1543	⊙	⊙	⊙	⊙	⊙
	125	127,37	11,0	420	0,51	2160	9700	1,0575	⊙	⊙	⊙	⊙	⊙
	140	144,64	9,68	580	0,63	2300	5500	1,1483	⊙	⊙	⊙	⊙	⊙
	160	159,41	8,78	430	0,42	2240	9400	1,0542	⊙	⊙	⊙	⊙	⊙
	180	172,50	8,12	480	0,43	2300	8600	1,1454	⊙	⊙	⊙	⊙	⊙
	200	204,26	6,85	430	0,33	2300	9400	1,0515	⊙	⊙	⊙	⊙	⊙
	224	237,50	5,89	320	0,21	2300	11100	1,1417	⊙	⊙	⊙	⊙	⊙
	280	271,53	5,16	430	0,25	2300	9400	1,0493	⊙	⊙	⊙	⊙	⊙
315	319,58	4,38	430	0,21	2300	9400	1,0483	⊙	⊙	⊙	⊙	⊙	
400	416,85	3,36	430	0,16	2300	9400	1,0471	⊙	⊙	⊙	⊙	⊙	
500	497,13	2,82	430	0,13	2300	9400	1,0465	⊙	⊙	⊙	⊙	⊙	
560	548,22	2,55	430	0,12	2300	9400	1,0462	⊙	⊙	⊙	⊙	⊙	
710	684,45	2,05	430	0,10	2300	9400	1,0457	⊙	⊙	⊙	⊙	⊙	

2c & 3c - Number of reduction stages
B* = B5 & B14

⊙ - Max, available power ≤ P₁

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRN32	1,1	1,3	0,8	1,3	1,2	1,2	12,5
FRN33	1,2	1,0	0,6	1,0	1,2	1,0	13,0

RO3/RV3 - 580 Nm

Gearboxes RN-RO-RV

1400 min⁻¹

Speed Reducer Selection

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
33 3c	6,3	6,43	217,6	420	10,2	4550	4990	7,8449	⊙	⊙	⊙	⊙	⊙
	8,0	8,25	169,7	450	8,5	5540	5430	7,0546	⊙	⊙	⊙	⊙	⊙
	9,0	9,09	154,0	380	6,5	5710	5680	7,1141	⊙	⊙	⊙	⊙	⊙
	10,0	10,17	137,7	500	7,7	5630	4980	6,5966	⊙	⊙	⊙	⊙	⊙
	11,2	11,65	120,2	380	5,1	5730	6180	6,6099	⊙	⊙	⊙	⊙	⊙
	12,5	12,72	110,0	540	6,6	5710	4640	6,2405	⊙	⊙	⊙	⊙	⊙
	14,0	13,52	103,5	460	5,3	5520	5970	2,2602	⊙	⊙	⊙	⊙	⊙
	16,0	16,30	85,9	540	5,2	5730	4800	5,9573	⊙	⊙	⊙	⊙	⊙
	18,0	17,33	80,8	510	4,6	5680	5460	2,0812	⊙	⊙	⊙	⊙	⊙
	20,0	19,10	73,3	390	3,2	5730	7310	2,0993	⊙	⊙	⊙	⊙	⊙
	22,4	21,67	64,6	550	4,0	5740	4970	5,7302	⊙	⊙	⊙	⊙	⊙
	25,0	26,73	52,4	560	3,3	5730	5130	1,8969	⊙	⊙	⊙	⊙	⊙
	28,0	28,74	48,7	400	2,2	5740	7800	1,4638	⊙	⊙	⊙	⊙	⊙
	31,5	33,27	42,1	550	2,6	5740	4800	5,5211	⊙	⊙	⊙	⊙	⊙
	35,5	34,26	40,9	560	2,5	5740	5370	1,8327	⊙	⊙	⊙	⊙	⊙
	40	40,23	34,8	570	2,2	5740	5500	1,3744	⊙	⊙	⊙	⊙	⊙
	45	45,54	30,7	570	2,0	5740	5580	1,7813	⊙	⊙	⊙	⊙	⊙
	50	51,55	27,2	580	1,8	5740	5600	1,3460	⊙	⊙	⊙	⊙	⊙
	56	53,60	26,1	580	1,7	5740	5600	1,7597	⊙	⊙	⊙	⊙	⊙
	63	64,33	21,8	410	1,0	5740	8950	1,7667	⊙	⊙	⊙	⊙	⊙
	71	68,52	20,4	580	1,3	5740	5500	1,3233	⊙	⊙	⊙	⊙	⊙
	80	80,65	17,4	580	1,1	5740	5500	1,3138	⊙	⊙	⊙	⊙	⊙
	90	91,94	15,2	410	0,70	5740	9580	1,7158	⊙	⊙	⊙	⊙	⊙
	100	105,20	13,3	580	0,86	5750	5500	1,3024	⊙	⊙	⊙	⊙	⊙
	112	113,11	12,4	580	0,80	5740	5500	1,1546	⊙	⊙	⊙	⊙	⊙
	125	125,46	11,16	480	0,60	5740	8500	1,2969	⊙	⊙	⊙	⊙	⊙
	140	147,54	9,49	580	0,61	5740	5500	1,1488	⊙	⊙	⊙	⊙	⊙
	160	162,17	8,63	430	0,41	5740	9400	1,7036	⊙	⊙	⊙	⊙	⊙
	180	175,95	7,96	490	0,43	5740	8200	1,1460	⊙	⊙	⊙	⊙	⊙
	200	208,42	6,72	430	0,32	5740	9400	1,1474	⊙	⊙	⊙	⊙	⊙
	250	248,56	5,63	430	0,27	5740	9400	1,1450	⊙	⊙	⊙	⊙	⊙
	280	274,11	5,107	430	0,25	5740	9400	1,1439	⊙	⊙	⊙	⊙	⊙
	315	342,23	4,091	430	0,20	5740	9400	1,1420	⊙	⊙	⊙	⊙	⊙

3c - Number of reduction stages
B* = B5 & B14

(⊙) - Max, available power ≤ P₁

	Oil [litres]						Weight [kg]	
	H1	H2	H3	H4	V1	V2		
FRO33	1,1	1,3	0,8	1,3	1,2	1,2	12,5	
FRV33	1,2	1,0	0,6	1,0	1,2	1,0	13,0	

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	71 B5	80 B*	90 B*	100 B*	112 B*
42 2c	6,3	5,74	244	680	18,1	-	5030	13,0943	⊙	⊙	⊙	⊙	⊙
	7,1	7,26	193	790	16,6	-	5190	10,7969	⊙	⊙	⊙	⊙	⊙
	8,0	7,59	185	690	13,9	2020	5680	11,2674	⊙	⊙	⊙	⊙	⊙
	9,0	9,08	154	890	15,0	-	5660	9,2579	⊙	⊙	⊙	⊙	⊙
	10,0	9,60	146	690	11,0	2400	6200	9,6555	⊙	⊙	⊙	⊙	⊙
	11,2	11,55	121	910	12,0	-	6170	8,0995	⊙	⊙	⊙	⊙	⊙
	12,5	12,00	117	700	8,9	2610	6720	8,5274	⊙	⊙	⊙	⊙	⊙
	14,0	14,09	99,3	920	10,0	2440	6810	7,4107	⊙	⊙	⊙	⊙	⊙
	16,0	15,27	91,7	710	7,1	2720	7330	7,6485	⊙	⊙	⊙	⊙	⊙
	18,0	17,59	79,6	930	8,1	-	7410	6,8426	⊙	⊙	⊙	⊙	⊙
	22,4	22,69	61,7	940	6,3	2090	8160	6,4129	⊙	⊙	⊙	⊙	⊙
	28,0	28,28	49,5	890	4,8	2450	8920	6,1008	⊙	⊙	⊙	⊙	⊙
	31,5	30,00	46,7	730	3,7	2850	9290	6,2602	⊙	⊙	⊙	⊙	⊙
	35,5	37,39	37,4	740	3,0	2860	10030	6,0256	⊙	⊙	⊙	⊙	⊙
	40	38,12	36,7	650	2,6	2800	10140	5,8382	⊙	⊙	⊙	⊙	⊙
	45	45,27	30,9	750	2,5	2900	10720	5,8675	⊙	⊙	⊙	⊙	⊙
	50	50,40	27,8	750	2,3	2870	11110	5,7968	⊙	⊙	⊙	⊙	⊙
56	56,67	24,7	700	1,9	2880	11600	5,7318	⊙	⊙	⊙	⊙	⊙	
43 3c	40	34,07	41,1	730	3,3	-	9670	4,3102	⊙	⊙	⊙	⊙	⊙
	45	42,59	32,9	910	3,3	-	10030	4,2058	⊙	⊙	⊙	⊙	⊙
	56	54,21	25,8	980	2,8	2030	9830	4,1359	⊙	⊙	⊙	⊙	⊙
	63	66,13	21,2	990	2,3	2270	10110	4,0833	⊙	⊙	⊙	⊙	⊙
	71	70,82	19,8	410	0,90	3020	12640	4,0520	⊙	⊙	⊙	⊙	⊙
	80	82,52	17,0	1000	1,9	2720	10510	3,7956	⊙	⊙	⊙	⊙	⊙
	90	89,60	15,6	510	0,89	3020	13650	4,0262	⊙	⊙	⊙	⊙	⊙
	100	106,48	13,1	1010	1,5	3060	10930	3,7770	⊙	⊙	⊙	⊙	⊙
	140	132,69	10,6	950	1,1	3270	12260	4,0051	⊙	⊙	⊙	⊙	⊙
	160	160,69	8,71	760	0,74	3370	14590	3,9942	⊙	⊙	⊙	⊙	⊙
	180	173,90	8,05	800	0,72	3170	14570	3,9843	⊙	⊙	⊙	⊙	⊙
	200	201,13	6,96	550	0,43	3370	16680	3,7478	⊙	⊙	⊙	⊙	⊙
	224	217,00	6,45	800	0,57	3300	15210	3,9773	⊙	⊙	⊙	⊙	⊙
	280	280,00	5,00	800	0,45	3370	16030	3,7425	⊙	⊙	⊙	⊙	⊙
	355	348,92	4,01	800	0,36	3370	16500	3,7381	⊙	⊙	⊙	⊙	⊙
	450	422,55	3,31	800	0,30	3370	16500	3,7354	⊙	⊙	⊙	⊙	⊙
	500	470,40	2,98	800	0,27	3370	16500	3,7336	⊙	⊙	⊙	⊙	⊙
560	528,89	2,65	800	0,24	3370	17000	3,7328	⊙	⊙	⊙	⊙	⊙	

2c & 3c - Number of reduction stages
B* = B5 & B14

(⊙) - Max, available power ≤ P₁

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRN42	2,8	1,8	1,2	1,8	2,7	2,7	33,5
FRN43	2,5	1,5	0,9	1,5	2,2	1,9	36,0

RO4/RV4 - 1000 Nm

Gearboxes RN-RO-RV

1400 min⁻¹

Speed Reducer Selection

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	71 B5	80 B5	90 B*	100 B*	112 B*
43 3c	6,3	6,60	212,1	470	11,1	5670	5570	18,0401	⊙	⊙	⊙	⊙	⊙
	8,0	8,35	167,6	530	9,9	5740	6000	16,3029	⊙	⊙	⊙	⊙	⊙
	9,0	8,72	160,6	650	11,6	5560	5980	16,5334	⊙	⊙	⊙	⊙	⊙
	10,0	10,43	134,2	610	9,1	5770	6430	15,1392	⊙	⊙	⊙	⊙	⊙
	11,2	11,04	126,8	650	9,2	5740	6520	15,3615	⊙	⊙	⊙	⊙	⊙
	12,5	13,29	105,4	670	7,9	5780	6950	14,2633	⊙	⊙	⊙	⊙	⊙
	14,0	13,87	100,9	515	5,8	5630	7190	6,3637	⊙	⊙	⊙	⊙	⊙
	16,0	16,21	86,4	730	7,0	5780	7420	13,7425	⊙	⊙	⊙	⊙	⊙
	18,0	17,55	79,8	610	5,4	5700	7740	5,9704	⊙	⊙	⊙	⊙	⊙
	20,0	20,22	69,2	780	6,0	5780	7980	13,3129	⊙	⊙	⊙	⊙	⊙
	22,4	21,94	63,8	690	4,9	5740	8310	5,7069	⊙	⊙	⊙	⊙	⊙
	25,0	26,10	53,6	840	5,0	5780	8690	12,9609	⊙	⊙	⊙	⊙	⊙
	28,0	27,92	50,1	770	4,3	5780	8990	5,5085	⊙	⊙	⊙	⊙	⊙
	31,5	32,52	43,1	890	4,3	5790	9390	12,7520	⊙	⊙	⊙	⊙	⊙
	35,5	34,06	41,1	840	3,9	5780	9580	5,3906	⊙	⊙	⊙	⊙	⊙
	45	42,50	32,9	840	3,1	5780	10020	5,2933	⊙	⊙	⊙	⊙	⊙
	50	51,25	27,3	980	3,0	5780	9720	4,3723	⊙	⊙	⊙	⊙	⊙
	56	54,84	25,5	980	2,8	5790	9800	5,2136	⊙	⊙	⊙	⊙	⊙
	63	63,95	21,9	990	2,4	5780	10090	4,3293	⊙	⊙	⊙	⊙	⊙
	71	68,34	20,5	920	2,1	5790	10970	5,1663	⊙	⊙	⊙	⊙	⊙
	80	82,52	17,0	1000	1,9	5790	10510	4,2941	⊙	⊙	⊙	⊙	⊙
	90	89,69	15,6	890	1,6	5790	11880	3,9791	⊙	⊙	⊙	⊙	⊙
	100	102,83	13,6	940	1,4	5790	11740	4,2732	⊙	⊙	⊙	⊙	⊙
	112	115,73	12,1	1020	1,4	5790	11130	3,9612	⊙	⊙	⊙	⊙	⊙
	125	121,80	11,5	780	1,0	5790	13730	5,1136	⊙	⊙	⊙	⊙	⊙
	140	144,22	9,71	950	1,0	5790	12410	3,9506	⊙	⊙	⊙	⊙	⊙
	160	164,63	8,50	750	0,71	5790	14400	4,2552	⊙	⊙	⊙	⊙	⊙
	180	183,27	7,64	790	0,67	5790	14710	4,2500	⊙	⊙	⊙	⊙	⊙
200	190,66	7,34	750	0,61	5790	14830	3,9474	⊙	⊙	⊙	⊙	⊙	
224	230,89	6,06	750	0,51	5790	15400	3,9414	⊙	⊙	⊙	⊙	⊙	
250	257,04	5,45	750	0,46	5790	16500	3,9388	⊙	⊙	⊙	⊙	⊙	
280	289,000	4,844	750	0,41	5790	16470	3,9363	⊙	⊙	⊙	⊙	⊙	

3c - Number of reduction stages
B* = B5 & B14

	Oil [litres]						Weight [kg]
	H1	H2	H3	H4	V1	V2	
FRO43	2,8	2,0	1,6	2,0	2,5	2,5	39,0
FRV43	2,9	1,9	1,2	1,8	2,6	2,6	36,5

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
52 2c	6,3	5,64	248	1100	29,8	-	7550	37,6347	⊙	⊙	⊙	⊙	⊙
	7,1	7,46	188	1260	25,8	-	8250	31,2885	⊙	⊙	⊙	⊙	⊙
	8,0	7,66	183	1140	22,7	-	8410	31,9539	⊙	⊙	⊙	⊙	⊙
	9,0	9,46	148	1400	22,6	-	8900	27,6749	⊙	⊙	⊙	⊙	⊙
	10,0	10,13	138	1150	17,3	-	9280	28,0395	⊙	⊙	⊙	⊙	⊙
	11,2	11,45	122	1550	20,7	-	8400	25,5151	⊙	⊙	⊙	⊙	⊙
	12,5	12,85	109	1170	13,9	-	10080	25,6545	⊙	⊙	⊙	⊙	⊙
	14,0	14,12	99,2	1610	17,4	-	8470	23,7029	⊙	⊙	⊙	⊙	⊙
	16,0	15,56	90,0	1180	11,6	-	10780	24,1384	⊙	⊙	⊙	⊙	⊙
	18,0	17,85	78,4	1630	13,9	-	8680	22,1741	⊙	⊙	⊙	⊙	⊙
	20,0	19,19	73,0	1190	9,5	-	11580	22,7969	⊙	⊙	⊙	⊙	⊙
	22,4	23,45	59,7	1650	10,7	-	8020	20,8963	⊙	⊙	⊙	⊙	⊙
	25,0	24,26	57,7	1200	7,6	-	12560	21,6073	⊙	⊙	⊙	⊙	⊙
	28,0	27,55	50,8	1670	9,3	-	8090	20,3546	⊙	⊙	⊙	⊙	⊙
	31,5	30,02	46,6	1590	8,1	-	9610	20,1029	⊙	⊙	⊙	⊙	⊙
	35,5	36,31	38,6	1300	5,5	-	13530	19,6654	⊙	⊙	⊙	⊙	⊙
	40	40,79	34,3	1250	4,7	3370	14620	19,9025	⊙	⊙	⊙	⊙	⊙
	45	45,38	30,8	1100	3,7	-	15630	19,2544	⊙	⊙	⊙	⊙	⊙
50	49,33	28,4	1300	4,0	3410	15030	19,5092	⊙	⊙	⊙	⊙	⊙	
63	61,67	22,7	1300	3,2	3440	15530	19,1667	⊙	⊙	⊙	⊙	⊙	
53 3c	40	37,28	37,6	1650	6,9	-	9220	13,8553	⊙	⊙	⊙	⊙	⊙
	45	47,28	29,6	1710	5,6	-	8610	13,7108	⊙	⊙	⊙	⊙	⊙
	56	57,27	24,4	1750	4,8	3470	8800	13,6244	⊙	⊙	⊙	⊙	⊙
	71	70,60	19,8	1750	3,9	3930	9010	13,5519	⊙	⊙	⊙	⊙	⊙
	90	89,26	15,7	1770	3,1	4280	8500	13,4907	⊙	⊙	⊙	⊙	⊙
	100	95,68	14,6	1160	1,9	4190	17820	12,7382	⊙	⊙	⊙	⊙	⊙
	112	117,24	11,9	1790	2,4	4560	7200	13,4396	⊙	⊙	⊙	⊙	⊙
	125	121,33	11,5	1310	1,7	4350	17330	12,7114	⊙	⊙	⊙	⊙	⊙
	140	137,77	10,2	1800	2,0	4680	7200	13,4179	⊙	⊙	⊙	⊙	⊙
	160	150,12	9,33	1700	1,8	4790	12400	13,4079	⊙	⊙	⊙	⊙	⊙
	180	181,54	7,71	1360	1,2	4960	18220	13,3896	⊙	⊙	⊙	⊙	⊙
	224	229,08	6,11	1350	0,92	4830	19100	12,6660	⊙	⊙	⊙	⊙	⊙
	315	300,91	4,65	1350	0,70	4950	19100	12,6544	⊙	⊙	⊙	⊙	⊙
	355	353,60	3,96	1350	0,60	5000	19100	12,6493	⊙	⊙	⊙	⊙	⊙
	400	385,28	3,63	1350	0,55	5030	19100	12,6469	⊙	⊙	⊙	⊙	⊙
450	465,93	3,00	1350	0,45	5070	19100	12,6425	⊙	⊙	⊙	⊙	⊙	
560	582,41	2,40	1350	0,36	5110	19100	12,6387	⊙	⊙	⊙	⊙	⊙	

2c & 3c - Number of reduction stages
B* = B5 & B14

(⊙) - Max, available power ≤ P₁

	Oil [litres]						Weight [kg]	
	H1	H2	H3	H4	V1	V2		
FRN52	5,1	3,2	2,1	3,2	4,9	4,9	62	
FRN53	5,0	2,8	1,6	2,8	4,0	3,4	67	

RO5/RV5 - 1800 Nm

Gearboxes RN-RO-RV

1400 min⁻¹

Speed Reducer Selection

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
53 3c	6,3	6,48	215,9	930	22,4	8200	8020	57,2158	⊙				
	8,0	8,57	163,3	1100	20,0	8290	8770	52,4172	⊙				
	10,0	10,87	128,8	1230	17,6	8350	9470	49,6847	⊙				
	12,5	13,17	106,3	1400	16,6	8350	10050	48,0516	⊙				
	14,0	13,63	102,7	1050	12,0	8110	10340	20,5375	⊙				
	16,0	16,24	86,2	1470	14,1	8360	10150	46,6813	⊙				
	18,0	18,02	77,7	1250	10,8	8260	11300	19,4509	⊙				
	20,0	20,53	68,2	1600	12,2	8360	8650	45,5253	⊙				
	22,4	22,85	61,3	1420	9,7	8310	11180	18,8321	⊙				
	25,0	26,97	51,9	1670	9,7	8360	8140	44,5592	⊙				
	28,0	27,68	50,6	1560	8,8	8350	9800	18,4623	⊙				
	31,5	31,69	44,2	1680	8,3	8360	8230	44,1495	⊙				
	35,5	34,12	41,0	1690	7,7	8360	8340	18,1520	⊙				
	40	41,65	33,6	1700	6,4	8330	8510	14,8941	⊙				
	45	43,14	32,5	1700	6,2	8360	8540	17,8902	⊙				
	50	51,34	27,3	1720	5,2	8360	8720	14,7570	⊙				
	56	56,67	24,7	1730	4,8	8360	8820	17,6715	⊙				
	63	64,91	21,6	1740	4,2	8360	8950	14,6414	⊙				
	71	72,56	19,3	1660	3,6	8360	10800	17,5356	⊙				
	80	79,37	17,6	1280	2,5	8360	16160	13,5189	⊙				
	90	91,04	15,4	1770	3,0	8360	8400	13,4434	⊙				
	100	100,20	14,0	1780	2,8	8360	8000	14,5038	⊙				
	112	109,18	12,8	1700	2,4	8360	11200	14,4848	⊙				
	125	119,59	11,7	1790	2,3	8360	7200	13,3942	⊙				
	140	140,53	10,0	1790	2,0	8360	7200	13,3734	⊙				
	160	153,12	9,14	1720	1,8	8360	10100	13,3637	⊙				
	180	185,17	7,56	1420	1,2	8360	17640	13,3462	⊙				
200	208,05	6,73	1330	1,0	8360	19060	13,3560	⊙					
224	224,24	6,24	1330	0,92	8360	19100	14,4140	⊙					
250	251,60	5,56	1330	0,82	8360	19100	13,3409	⊙					
315	314,50	4,45	1330	0,66	8360	19100	13,3277	⊙					

3c - Number of reduction stages
B* = B5 & B14

	Oil [litres]						Weight [kg]	
	H1	H2	H3	H4	V1	V2		
FRO53	5,1	3,6	2,9	3,6	5,0	5,0	73	
FRV53	5,2	3,4	2,1	3,2	4,7	4,7	68	

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
62 2c	6,3	5,59	250	2200	60,1	-	10060	84,0612	⊙	⊙	⊙	⊙	⊙
	7,1	7,39	189	2600	53,7	-	9540	68,0211	⊙	⊙	⊙	⊙	⊙
	8,0	7,97	176	2200	42,1	-	11380	68,6806	⊙	⊙	⊙	⊙	⊙
	9,0	9,38	149	2900	47,2	-	9030	56,8499	⊙	⊙	⊙	⊙	⊙
	10,0	10,54	133	2200	31,9	-	12550	58,6662	⊙	⊙	⊙	⊙	⊙
	11,2	11,36	123	3100	41,7	-	5620	50,1639	⊙	⊙	⊙	⊙	⊙
	14,0	14,00	100	3160	34,5	-	5450	44,5468	⊙	⊙	⊙	⊙	⊙
	16,0	16,19	86,4	2250	21,2	3800	11630	46,1997	⊙	⊙	⊙	⊙	⊙
	18,0	17,70	79,1	3200	27,6	-	3100	39,8027	⊙	⊙	⊙	⊙	⊙
	20,0	19,96	70,1	2270	17,4	4020	15790	41,9382	⊙	⊙	⊙	⊙	⊙
	22,4	23,25	60,2	3250	21,3	-	8000	35,8331	⊙	⊙	⊙	⊙	⊙
	25,0	25,24	55,5	3000	18,2	4200	16780	38,1707	⊙	⊙	⊙	⊙	⊙
	28,0	27,69	50,6	3270	18,0	-	6000	34,0539	⊙	⊙	⊙	⊙	⊙
	31,5	30,38	46,1	3105	15,6	-	7160	33,2259	⊙	⊙	⊙	⊙	⊙
	35,5	37,35	37,5	2515	10,3	-	16090	31,7360	⊙	⊙	⊙	⊙	⊙
	40	39,49	35,5	3245	12,5	4440	18170	33,3872	⊙	⊙	⊙	⊙	⊙
	45	43,31	32,3	2360	8,3	4470	18380	32,6717	⊙	⊙	⊙	⊙	⊙
	50	53,26	26,3	2380	6,8	4520	18970	31,3694	⊙	⊙	⊙	⊙	⊙
	56	59,89	23,4	2400	6,1	4540	19310	30,7868	⊙	⊙	⊙	⊙	⊙
	63 3c	40	38,20	36,7	3250	13,3	-	7350	22,6869	⊙	⊙	⊙	⊙
50		48,44	28,9	3400	10,9	-	7670	22,2684	⊙	⊙	⊙	⊙	⊙
56		58,68	23,9	3400	9,0	-	7800	22,0179	⊙	⊙	⊙	⊙	⊙
71		72,33	19,4	3400	7,3	3670	7800	21,8075	⊙	⊙	⊙	⊙	⊙
80		79,72	17,6	1780	3,5	2870	25090	19,9592	⊙	⊙	⊙	⊙	⊙
90		91,45	15,3	3400	5,8	3030	7800	21,6298	⊙	⊙	⊙	⊙	⊙
100		105,42	13,3	2350	3,5	2870	22430	19,8591	⊙	⊙	⊙	⊙	⊙
125		120,13	11,7	3400	4,4	3840	7800	21,4811	⊙	⊙	⊙	⊙	⊙
140		143,08	9,78	3400	3,7	4160	7800	21,4145	⊙	⊙	⊙	⊙	⊙
160		156,94	8,92	3300	3,3	4330	7900	21,3834	⊙	⊙	⊙	⊙	⊙
200		192,98	7,25	2700	2,2	4720	21200	21,3276	⊙	⊙	⊙	⊙	⊙
224		217,00	6,45	2300	1,7	4880	26700	21,3029	⊙	⊙	⊙	⊙	⊙
250		252,39	5,55	2600	1,6	4490	22500	19,6541	⊙	⊙	⊙	⊙	⊙
315		331,53	4,22	2600	1,2	4720	22500	19,6213	⊙	⊙	⊙	⊙	⊙
400	394,87	3,55	2600	1,0	4820	22500	19,6063	⊙	⊙	⊙	⊙	⊙	
450	433,13	3,23	2600	0,94	4870	22500	19,5991	⊙	⊙	⊙	⊙	⊙	
500	532,58	2,63	2600	0,76	4960	22500	19,5861	⊙	⊙	⊙	⊙	⊙	
560	598,89	2,34	2600	0,68	4990	22500	19,5803	⊙	⊙	⊙	⊙	⊙	

2c & 3c - Number of reduction stages
B* = B5 & B14

	Oil [litres]						Weight [kg]	
	H1	H2	H3	H4	V1	V2		
FRN62	9,2	5,8	3,8	5,8	8,8	8,8	109	
FRN63	9,0	5,0	2,9	5,0	7,2	6,1	116	

RO6/RV6 - 3300 Nm

Gearboxes RN-RO-RV

1400 min⁻¹

Speed Reducer Selection

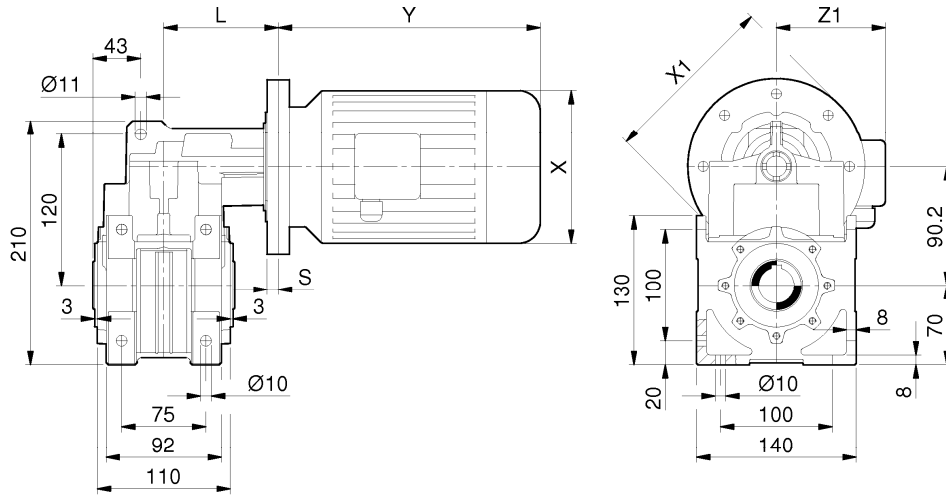
FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ (x 10 ⁻⁴) [kgm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
63 3c	6,3	6,43	217,7	1660	40,3	6670	10740	102,1187	⊙	⊙	⊙	⊙	⊙
	8,0	8,50	164,7	1740	31,9	7570	11850	89,9906	⊙	⊙	⊙	⊙	⊙
	10,0	10,78	129,9	1970	28,5	7820	12750	81,543	⊙	⊙	⊙	⊙	⊙
	12,5	13,06	107,2	2150	25,7	8010	13550	76,4873	⊙	⊙	⊙	⊙	⊙
	14,0	13,51	103,6	1640	18,9	7530	14110	40,9607	⊙	⊙	⊙	⊙	⊙
	16,0	16,10	87,0	2330	22,6	8190	14450	72,2401	⊙	⊙	⊙	⊙	⊙
	18,0	17,87	78,4	1950	17,0	7880	15380	38,2144	⊙	⊙	⊙	⊙	⊙
	20,0	20,36	68,8	2530	19,4	8310	14100	68,6529	⊙	⊙	⊙	⊙	⊙
	22,4	22,66	61,8	2230	15,4	8090	16460	36,3014	⊙	⊙	⊙	⊙	⊙
	25,0	25,48	55,0	2300	14,1	8230	16820	36,6126	⊙	⊙	⊙	⊙	⊙
	28,0	27,45	51,0	2450	13,9	8240	15700	35,1566	⊙	⊙	⊙	⊙	⊙
	31,5	31,85	44,0	2860	14,0	8360	11540	64,3060	⊙	⊙	⊙	⊙	⊙
	35,5	33,83	41,4	2690	12,4	8310	13920	34,1949	⊙	⊙	⊙	⊙	⊙
	40	42,78	32,7	2950	10,8	8360	11390	33,3825	⊙	⊙	⊙	⊙	⊙
	45	42,95	32,6	2540	9,2	8360	16450	62,5533	⊙	⊙	⊙	⊙	⊙
	50	50,91	27,5	3360	10,3	8120	9810	25,1536	⊙	⊙	⊙	⊙	⊙
	56	56,19	24,9	3360	9,3	8360	9970	32,7029	⊙	⊙	⊙	⊙	⊙
	63	64,36	21,8	3360	8,1	8330	10200	24,7949	⊙	⊙	⊙	⊙	⊙
	71	73,41	19,1	3250	6,9	8360	11430	32,2564	⊙	⊙	⊙	⊙	⊙
	80	84,55	16,6	3360	6,2	8360	11400	24,4947	⊙	⊙	⊙	⊙	⊙
	90	90,27	15,5	3360	5,8	8340	11400	21,7196	⊙	⊙	⊙	⊙	⊙
	100	100,70	13,9	3360	5,2	8360	9800	24,3601	⊙	⊙	⊙	⊙	⊙
	112	118,58	11,8	3360	4,4	8360	9800	21,5670	⊙	⊙	⊙	⊙	⊙
	125	128,72	10,9	2490	3,0	8360	22060	21,6569	⊙	⊙	⊙	⊙	⊙
	140	141,23	9,9	3360	3,7	8360	9800	21,4986	⊙	⊙	⊙	⊙	⊙
	160	154,91	9,04	3360	3,4	8360	9800	21,4668	⊙	⊙	⊙	⊙	⊙
	180	190,49	7,35	2730	2,2	8360	19400	21,4095	⊙	⊙	⊙	⊙	⊙
	224	220,89	6,34	2550	1,8	8360	22500	21,4455	⊙	⊙	⊙	⊙	⊙
280	271,62	5,15	2550	1,5	8360	22500	21,3954	⊙	⊙	⊙	⊙	⊙	
315	305,43	4,58	2550	1,3	8360	22500	21,3730	⊙	⊙	⊙	⊙	⊙	

3c - Number of reduction stages
B* = B5 & B14

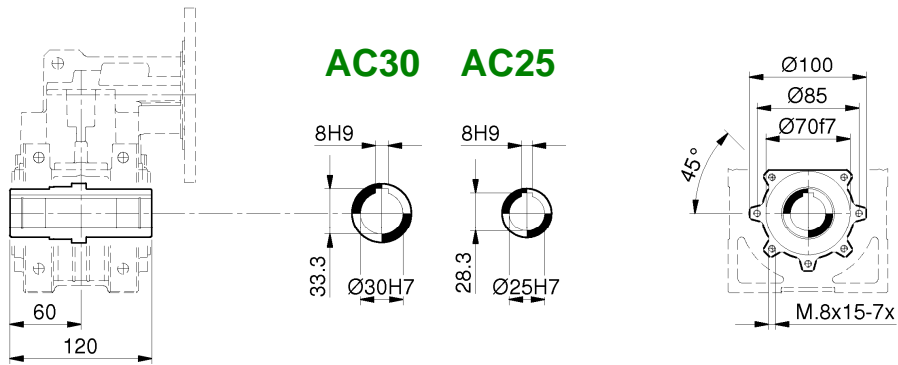
	Oil [litres]						Weight [kg]	
	H1	H2	H3	H4	V1	V2		
FRO63	9,2	6,5	5,2	6,5	9,0	9,0	121	
FRV63	9,4	6,1	3,8	5,8	8,5	8,5	117	

Dimensions

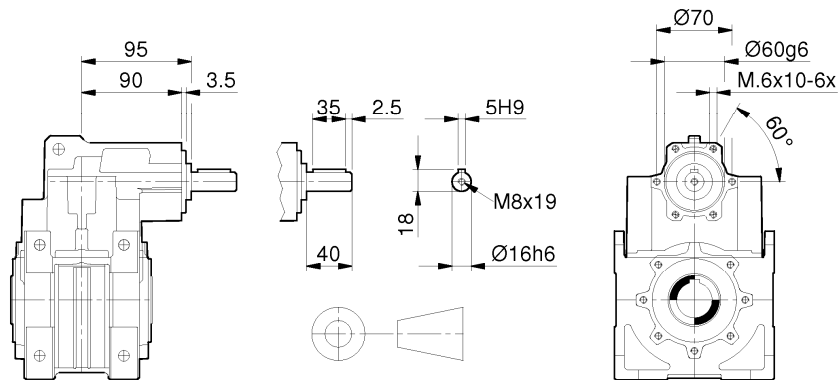
MRN



AC30 AC25

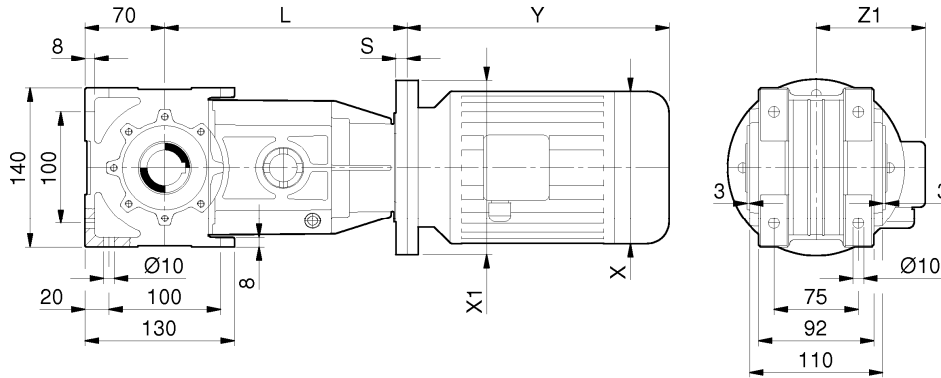


RN

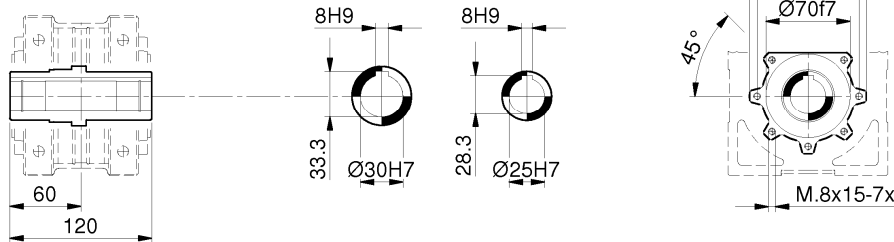


RN	12 / 13	12 / 13	12 / 13	12	12	12	
IEC	56	63	71	80	90 S	90 L	
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	
X1 (B5) / S	120/13	140/13	160/13,5	200/13,5	---	---	
X1 (B14) / S	---	90/13	105/18,5	120/13,5	140/13,5	140/13,5	
L (RN12)	103	103	103,5 (108,5)	103,5	103,5	103,5	
L (RN13)	103	103	103,5 (108,5)	---	---	---	

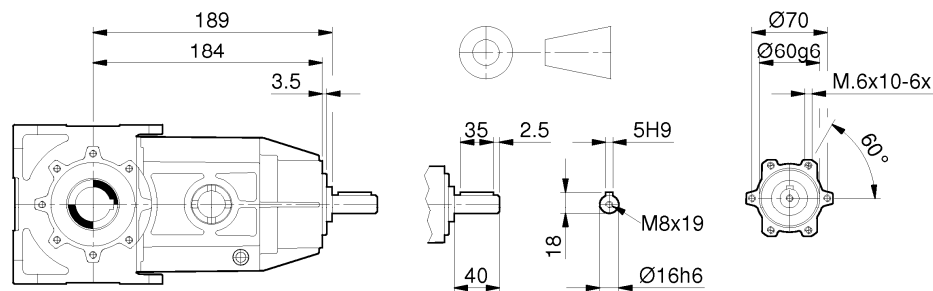
MRO



AC30 AC25



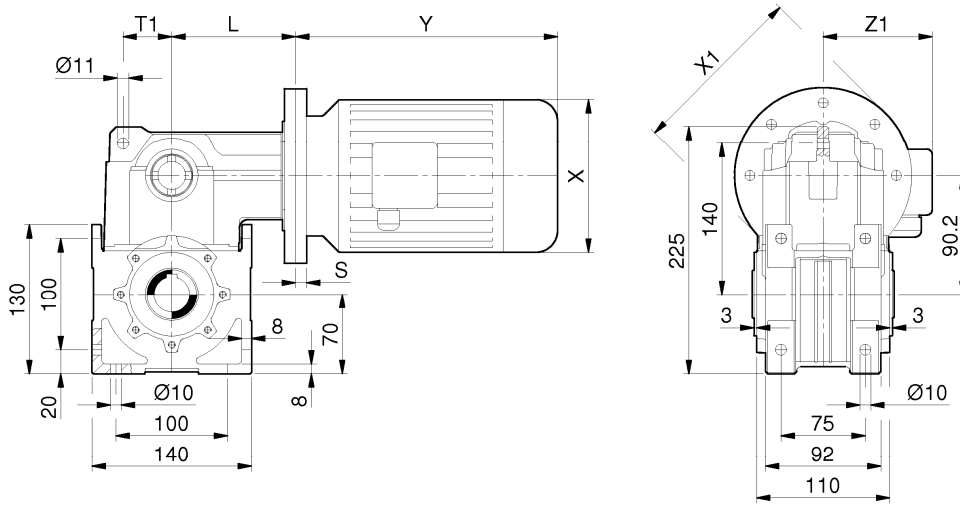
RO



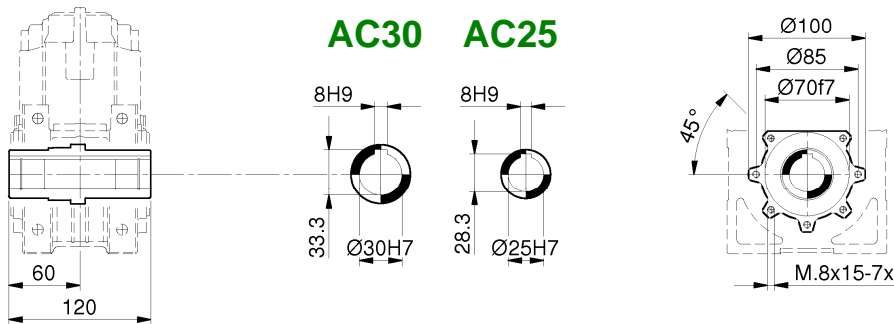
RO	13	13	13	13	13	13	
IEC	56	63	71	80	90 S	90 L	
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	
X1 (B5) / S	120/13	140/13	160/13,5	200/13,5	---	---	
X1 (B14) / S	---	90/13	105/18,5	120/13,5	140/13,5	140/13,5	
L (RO13)	197	197	197,5 (202,5)	197,5	197,5	197,5	

Dimensions

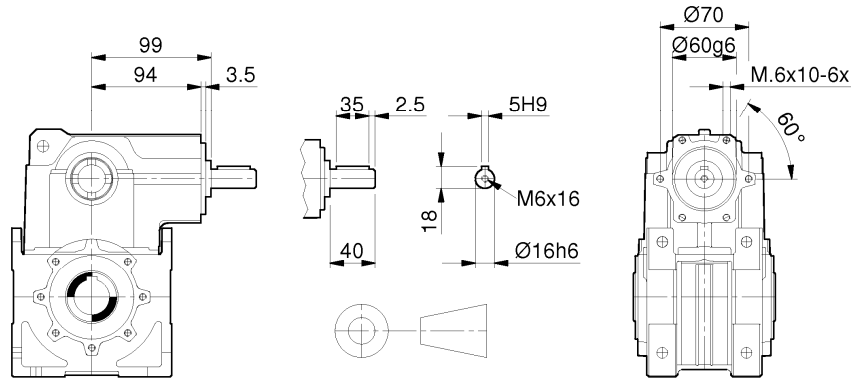
MRV



AC30 AC25



RV



RV	13	13	13	13	13	13	
IEC	56	63	71	80	90 S	90 L	
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	
X1 (B5) / S	120/13	140/13	160/13,5	200/13,5	---	---	
X1 (B14) / S	---	90/13	105/18,5	120/13,5	140/13,5	140/13,5	
L (RV13)	107	107	107,5 (112,5)	107,5	107,5	107,5	

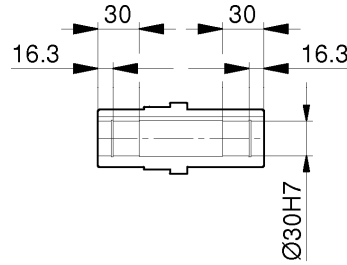
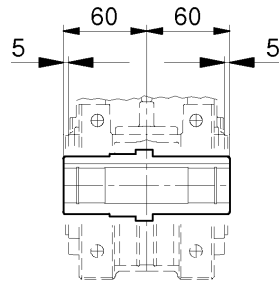
R1

Gearboxes RN-RO-RV

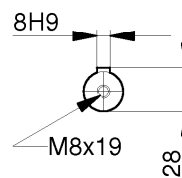
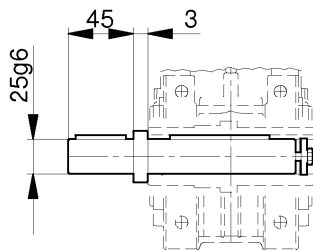
RN12-13 / RO13 / RV13

Dimensions

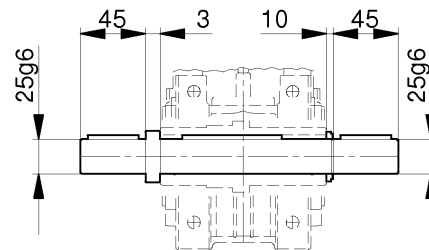
AC



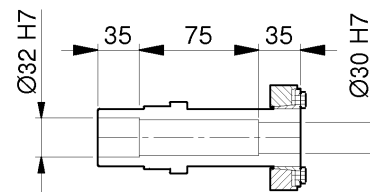
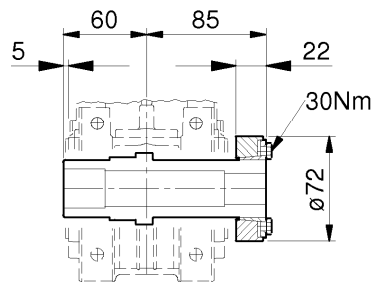
AS



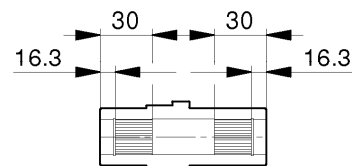
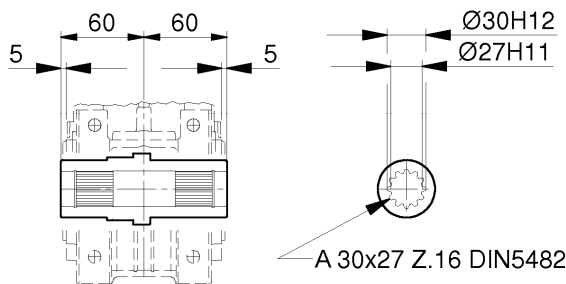
AD



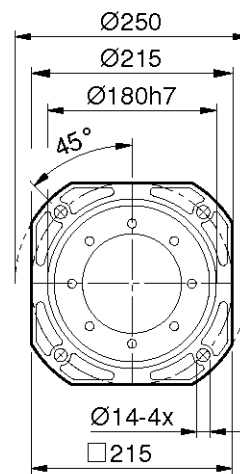
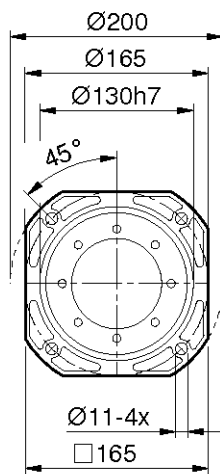
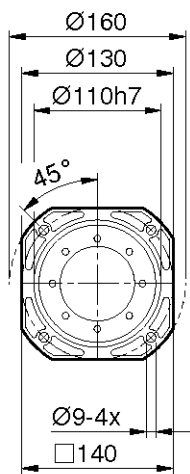
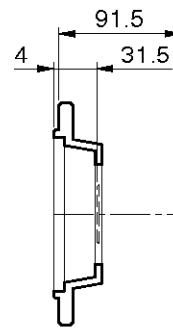
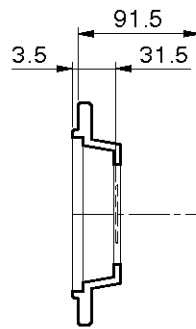
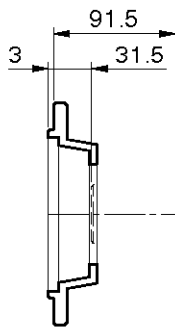
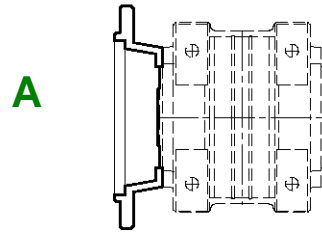
ACC

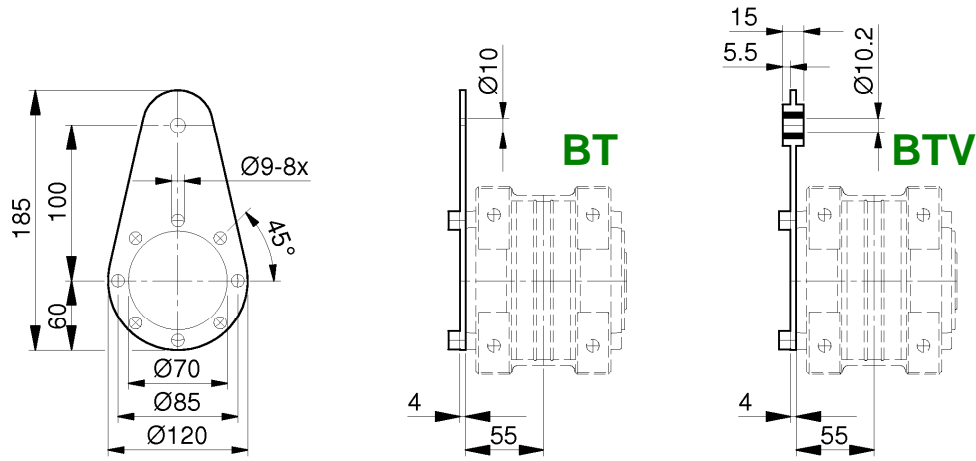


ACS

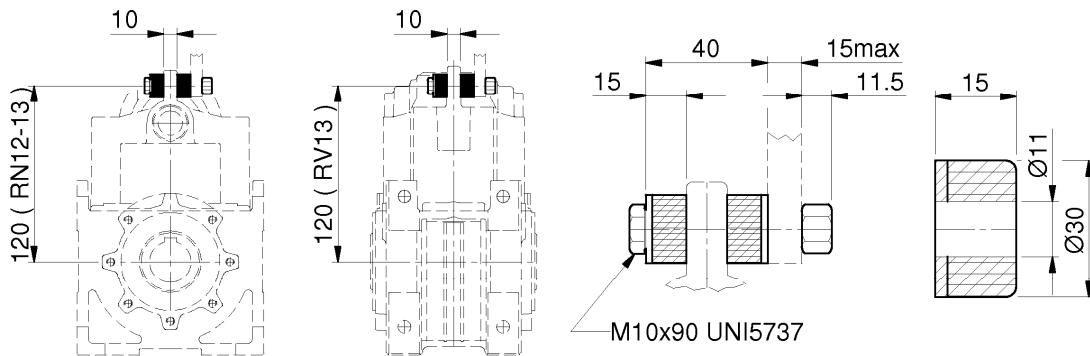


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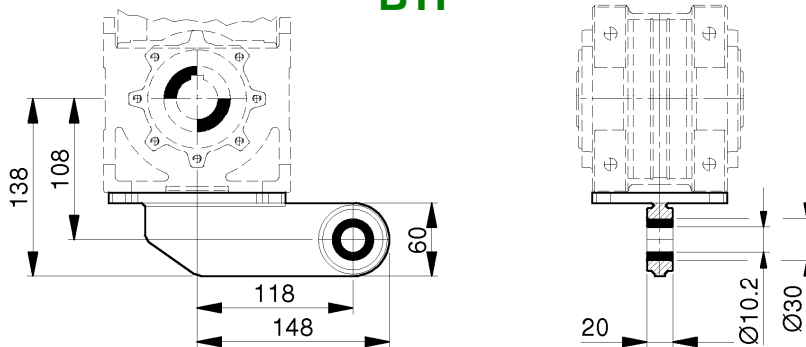




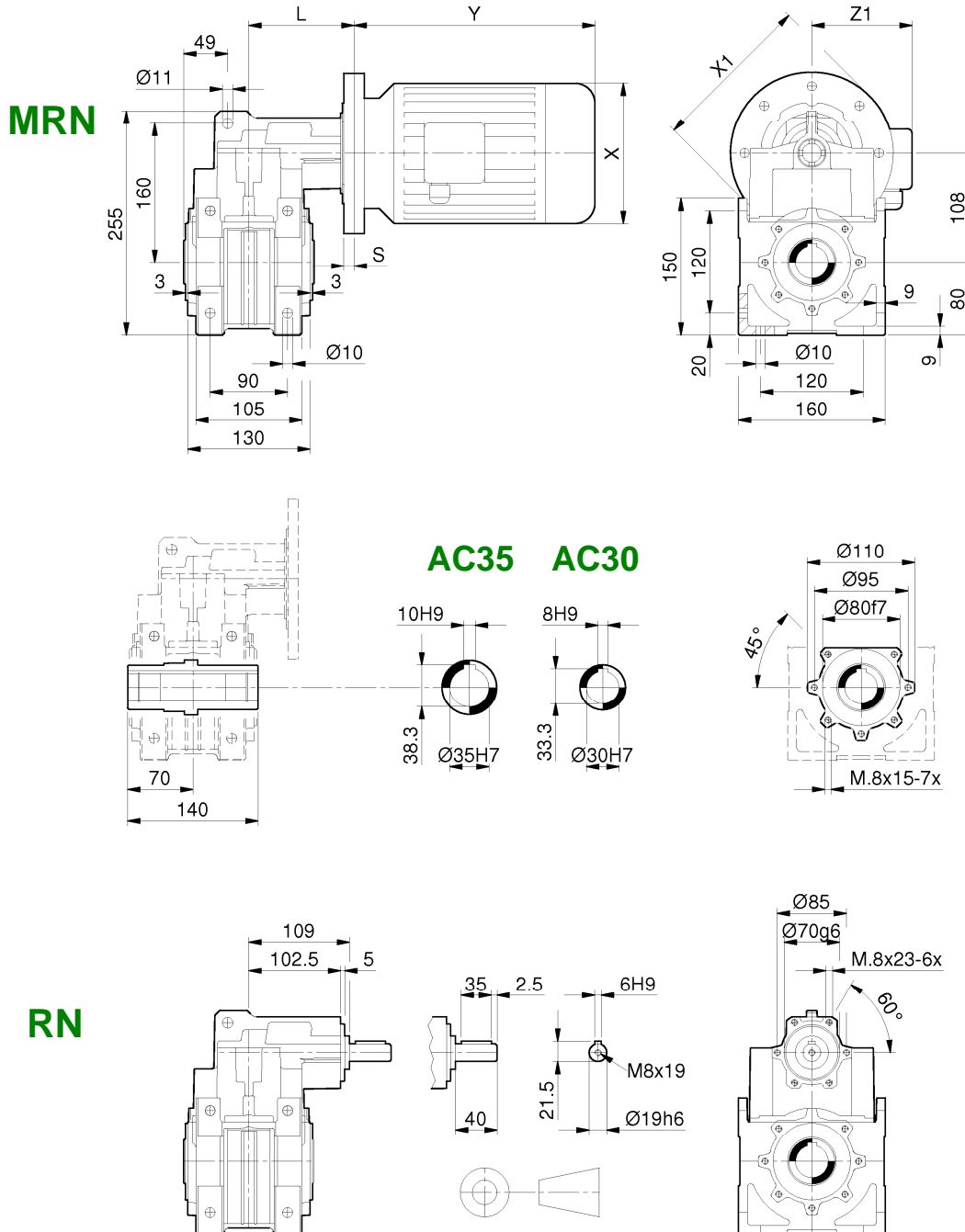
BTA



BTF

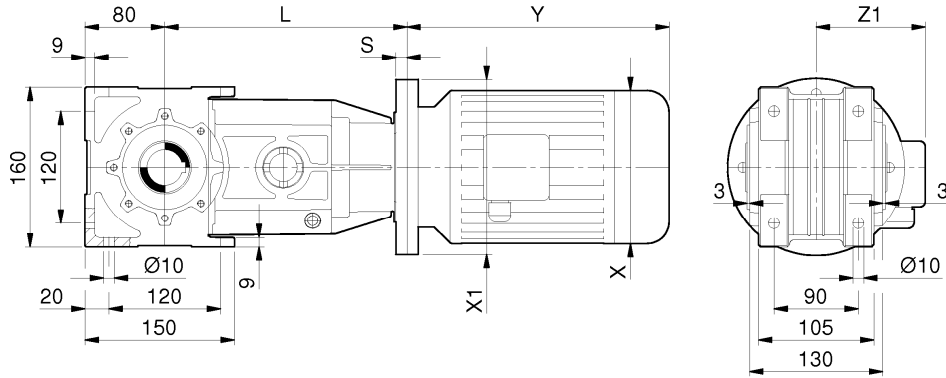


Dimensions

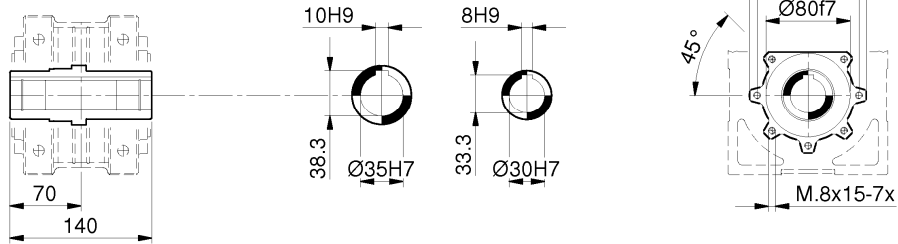


RN	22 / 23	22 / 23	22	22	22	22	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5	
L (RN22)	118	118 (120)	118 (120)	118 (120)	119 (118)	119 (118)	
L (RN23)	118	118 (120)	---	---	---	---	

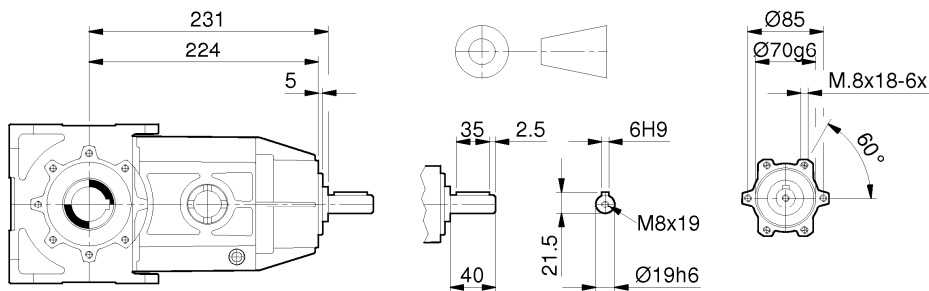
MRO



AC35 AC30



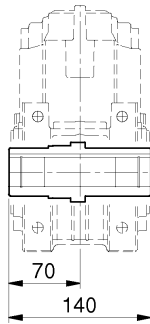
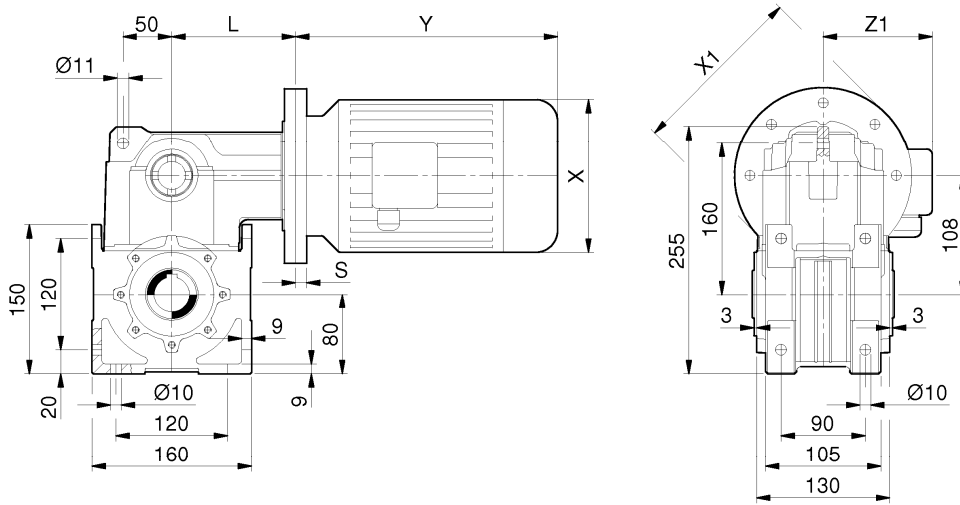
RO



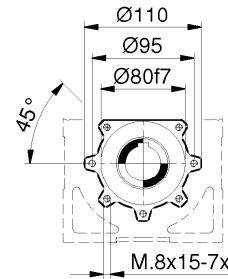
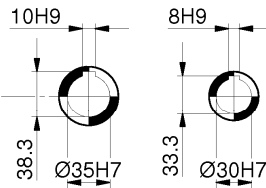
RO	23	23	23	23	23	23	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5	
L (RO23)	239,5	239,5 (241,5)	239,5 (241,5)	239,5 (241,5)	240,5 (239,5)	240,5 (239,5)	

Dimensions

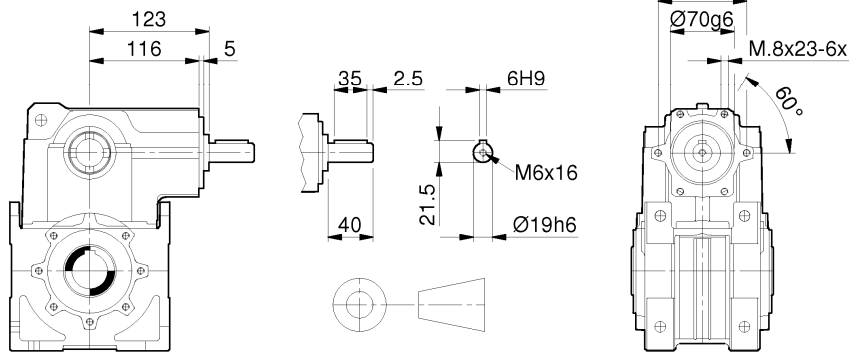
MRV



AC35 AC30

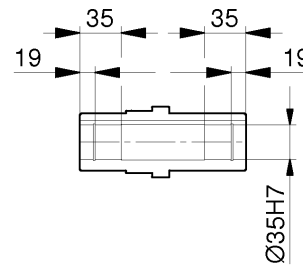
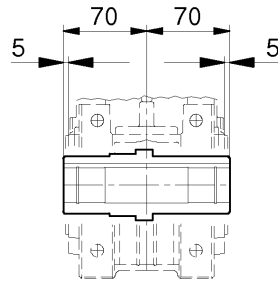


RV

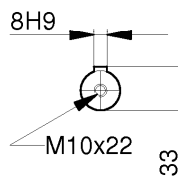
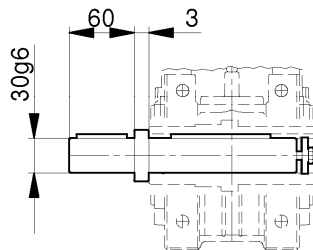


RV	23	23	23	23	23	23
IEC	71	80	90 S	90 L	100	112
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5
L (RV23)	131,5	131,5 (133,5)	131,5 (133,5)	131,5 (133,5)	132,5 (131,5)	132,5 (131,5)

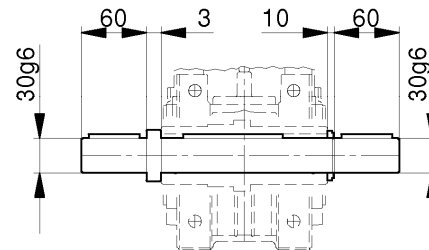
AC



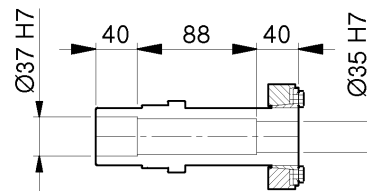
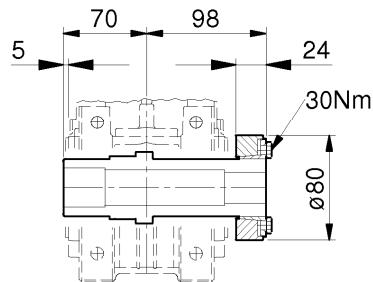
AS



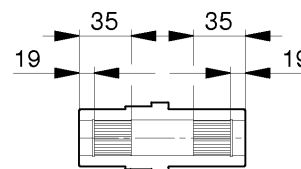
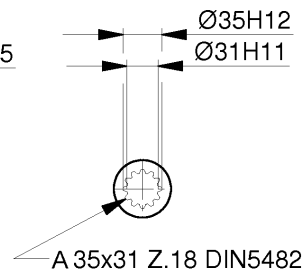
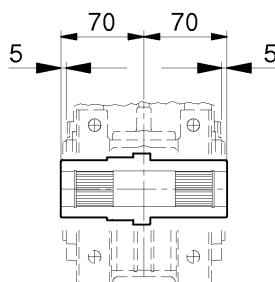
AD



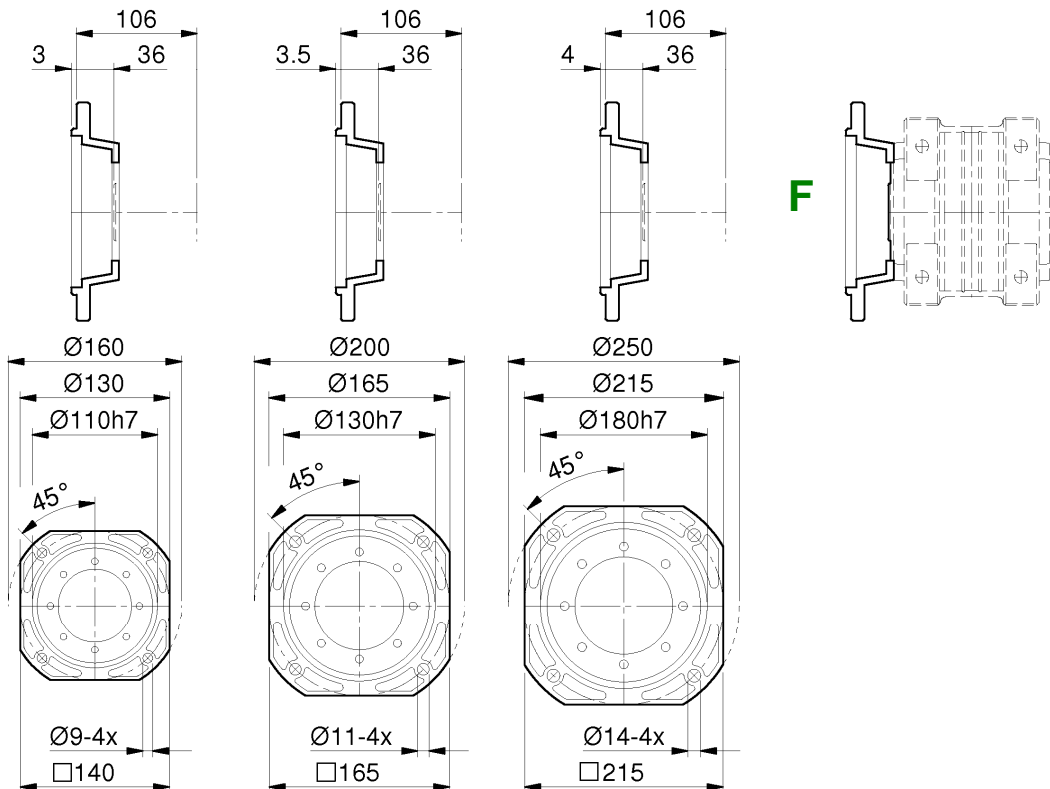
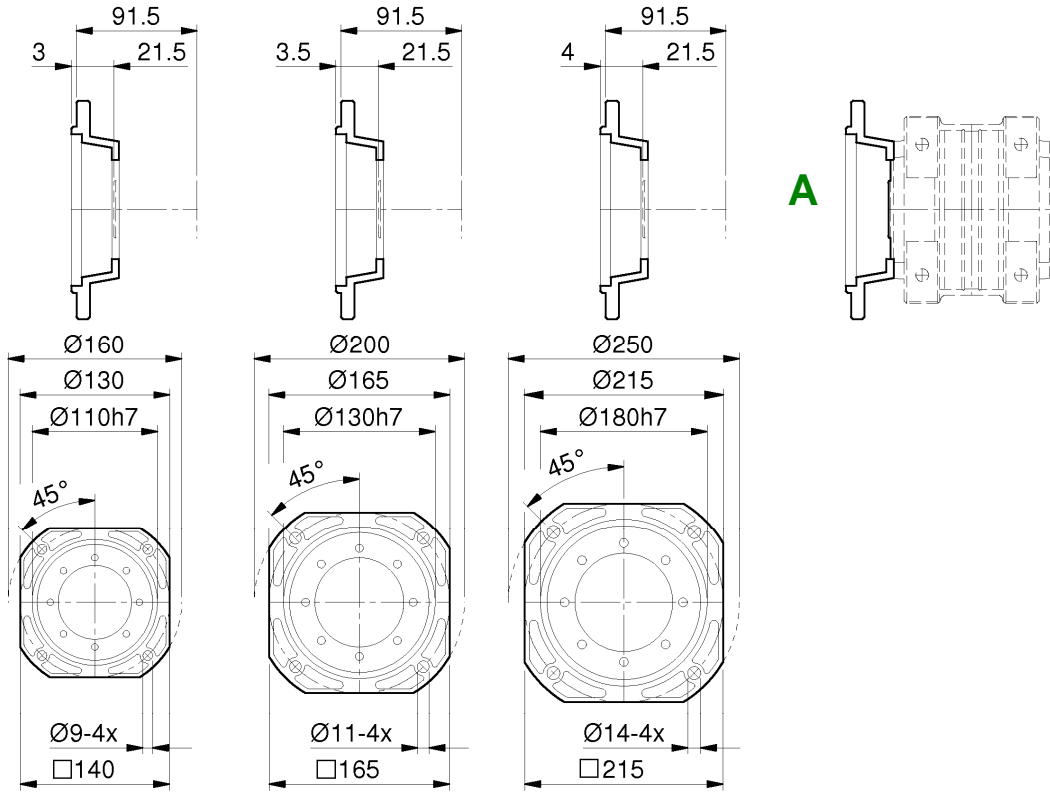
ACC



ACS



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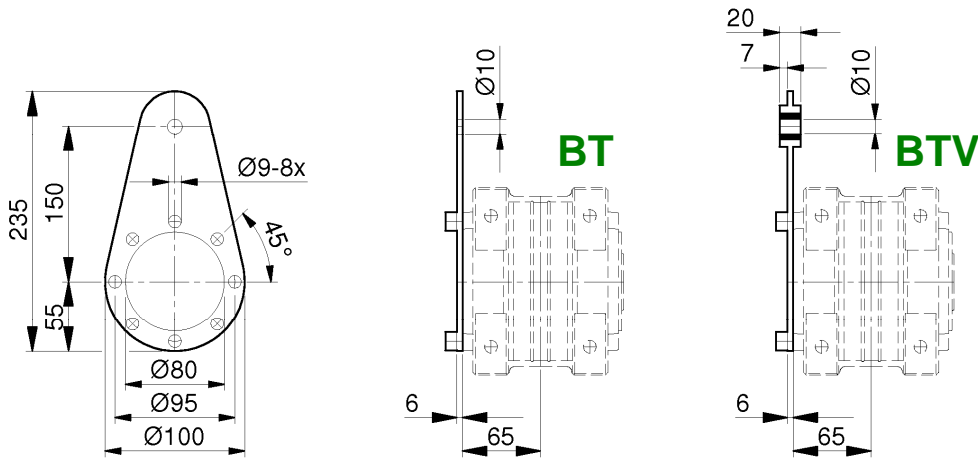


R2

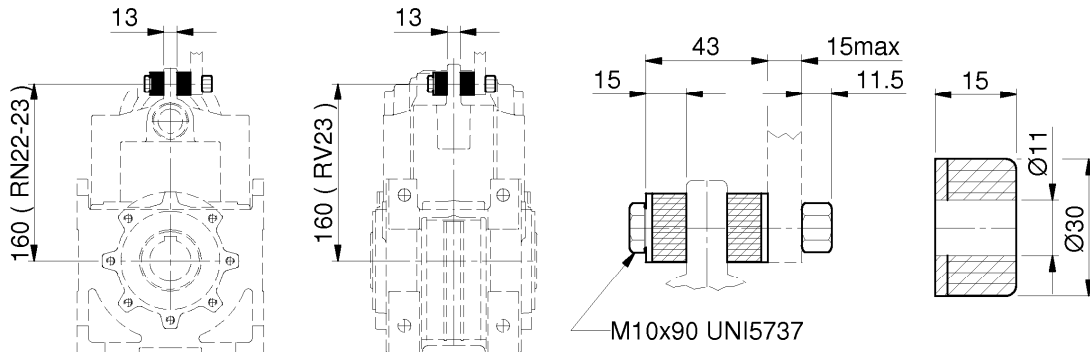
Gearboxes RN-RO-RV

RN22-23 / RO23 / RV23

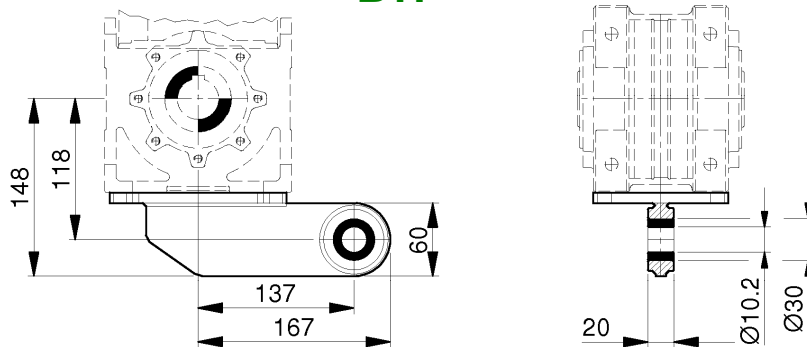
Dimensions



BTA

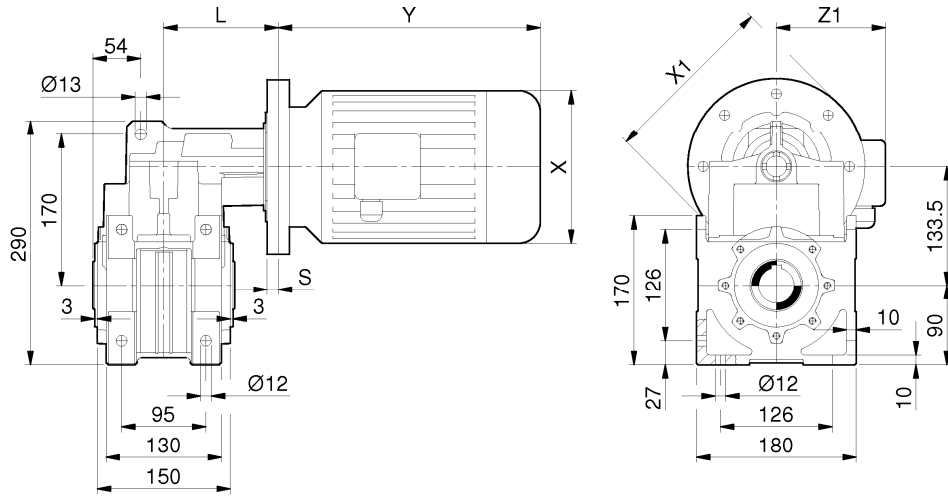


BTF

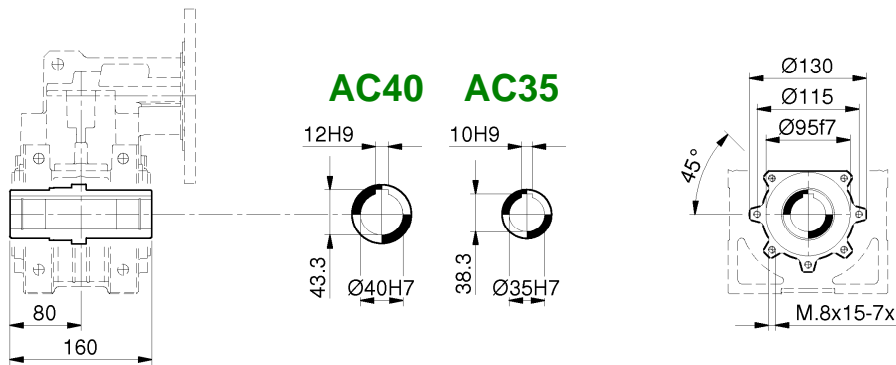


Dimensions

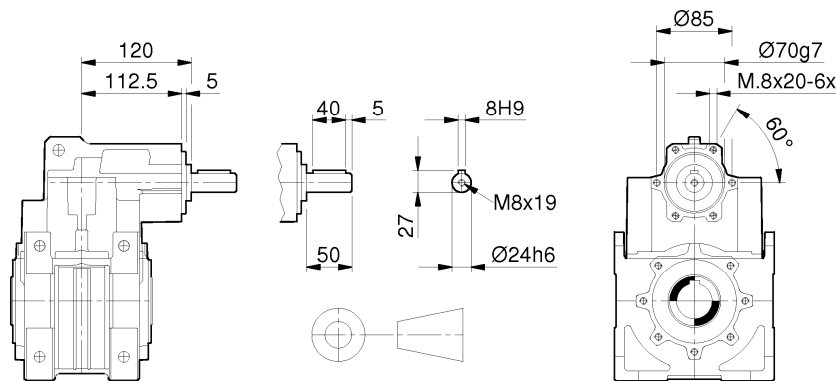
MRN



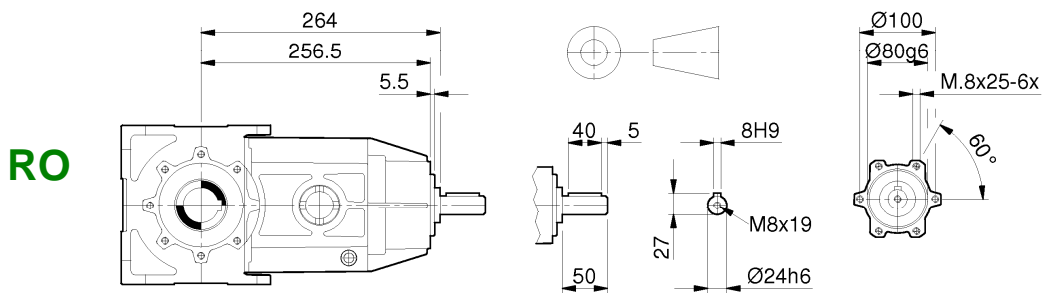
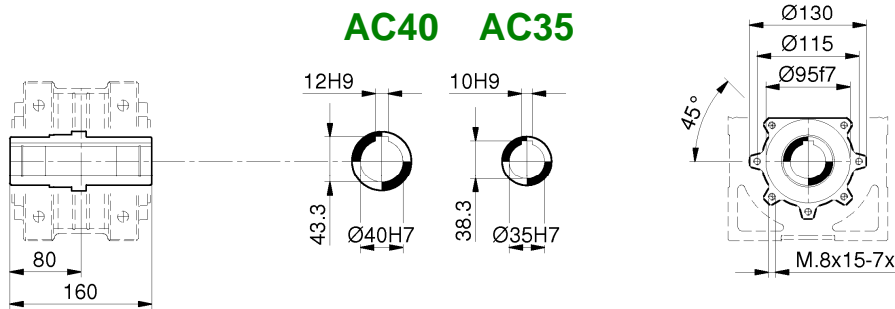
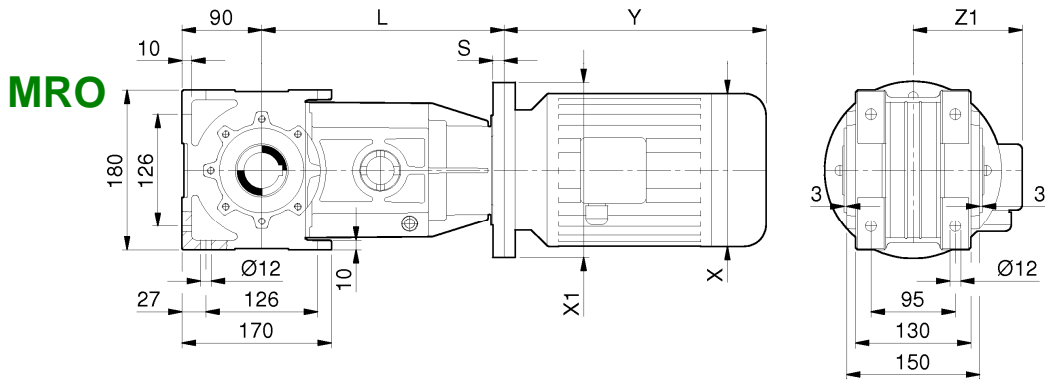
AC40 AC35



RN



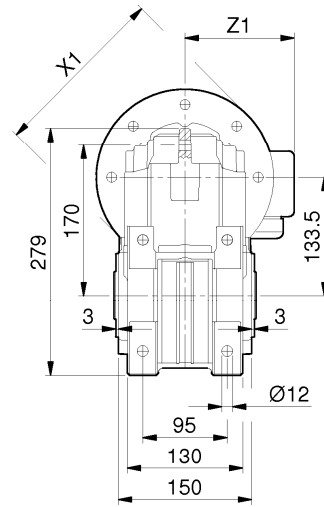
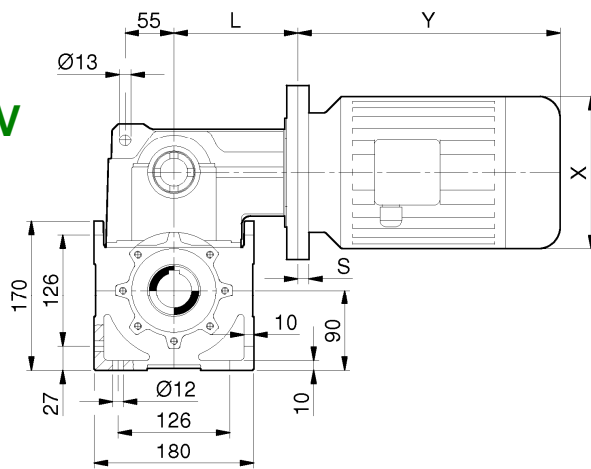
RN	32 / 33	32 / 33	32 / 33	32 / 33	32	32	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5	
L (RN32)	128	128 (130)	128 (130)	128 (130)	129 (128)	129 (128)	
L (RN33)	128	128 (130)	128 (130)	128 (130)	---	---	



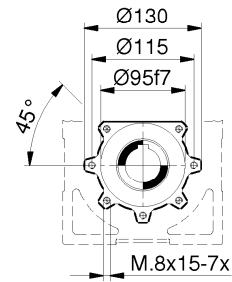
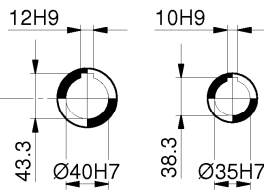
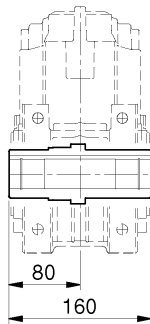
RO	33	33	33	33	33	33	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/18,5	200/18,5	250/16,5	250/16,5	
X1 (B14) / S	---	120/15,5	140/15,5	140/15,5	160/15,5	160/15,5	
L (RO33)	272	272	275 (272)	275 (272)	273 (272)	273 (272)	

Dimensions

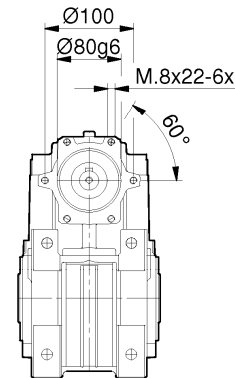
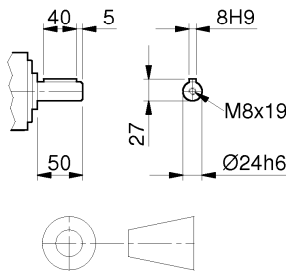
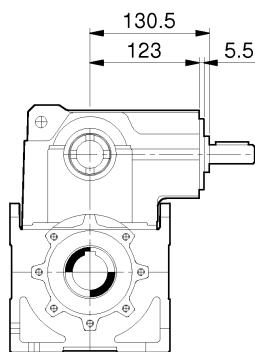
MRV



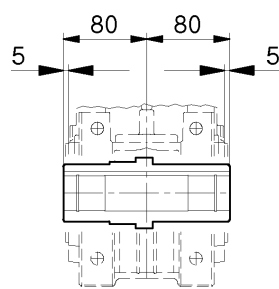
AC40 AC35



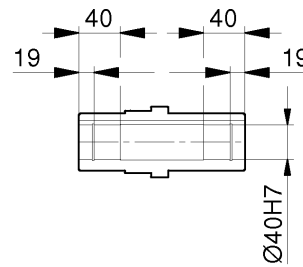
RV



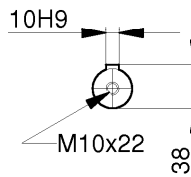
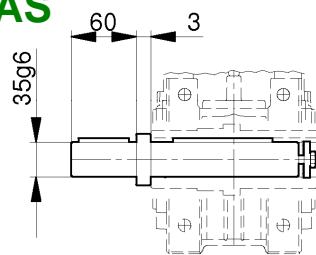
RV	33	33	33	33	33	33
IEC	71	80	90 S	90 L	100	112
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5
X1 (B14) / S	---	120/15,5	140/17,5	140/17,5	160/15,5	160/15,5
L (RV33)	138,5	144,5	138,5 (141,5)	138,5 (141,5)	139,5 (138,5)	139,5 (138,5)



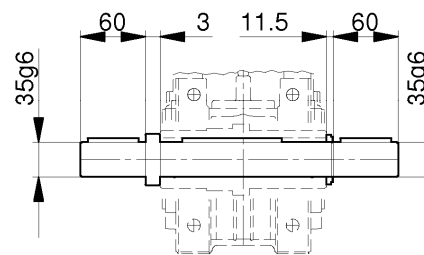
AC



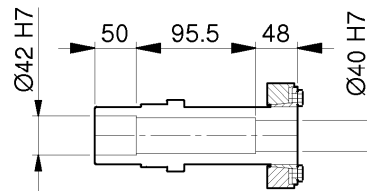
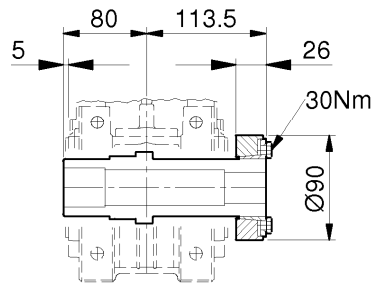
AS



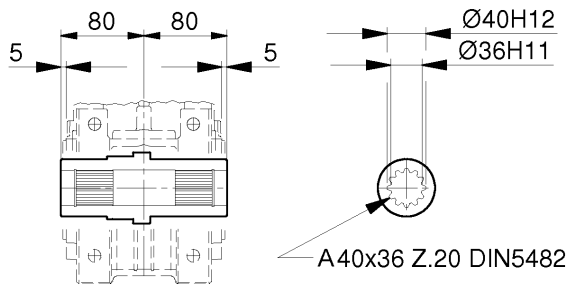
AD



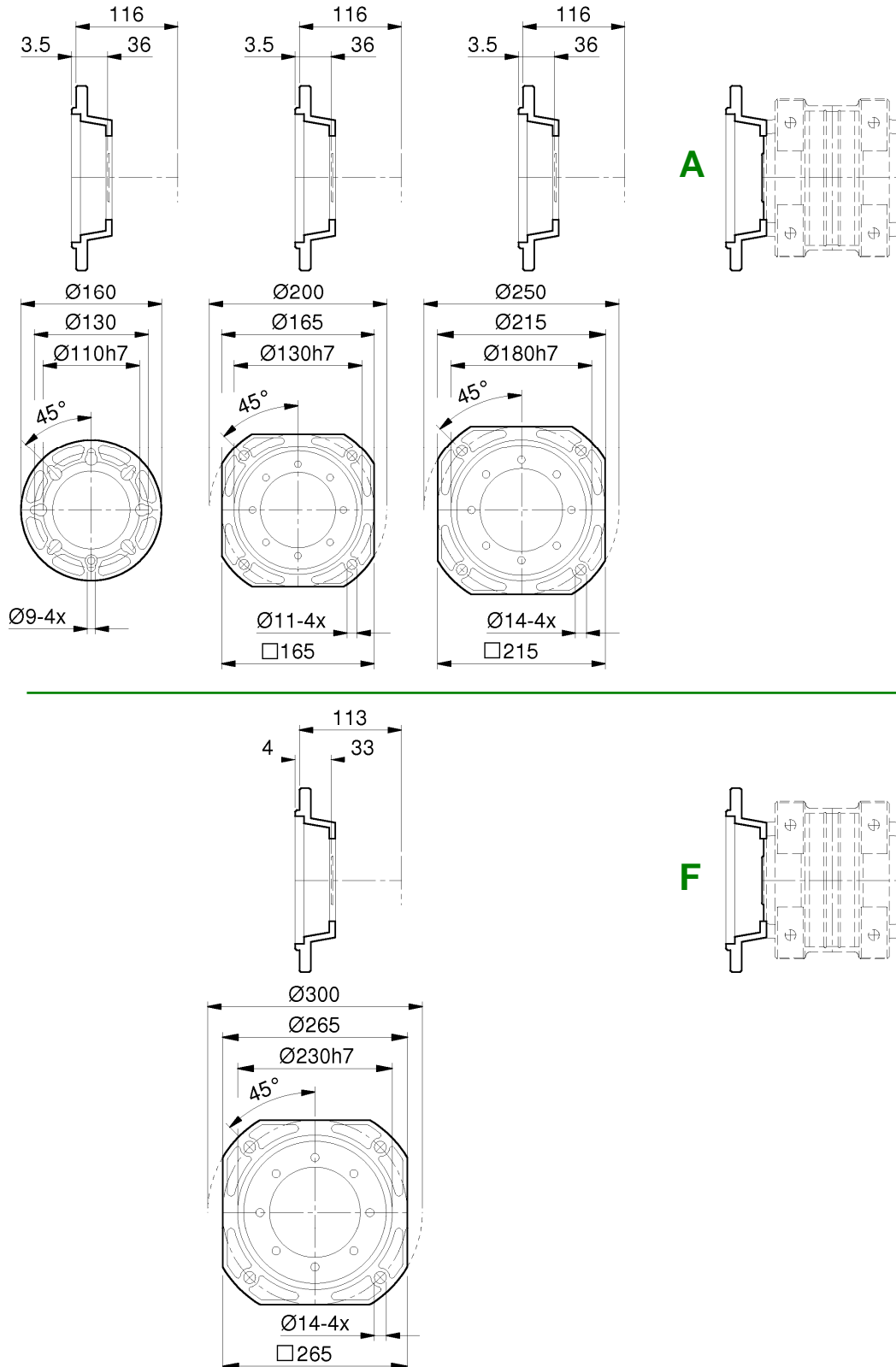
ACC



ACS



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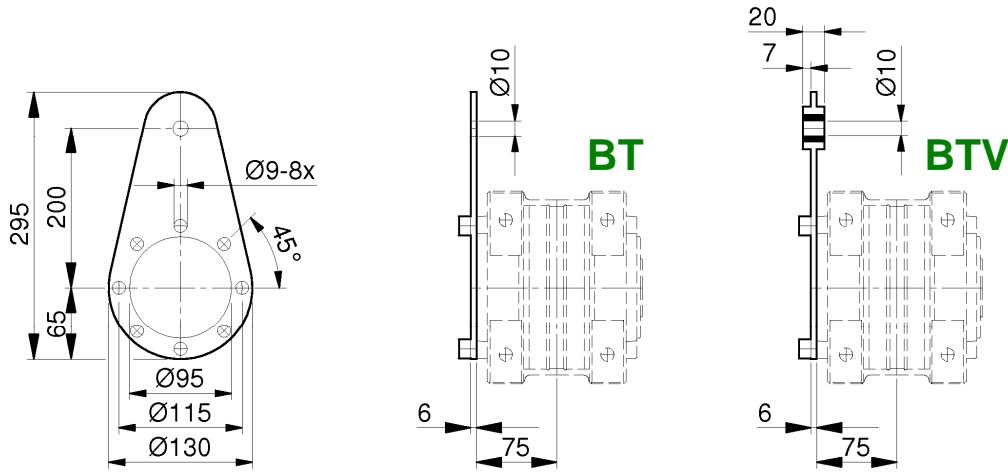


R3

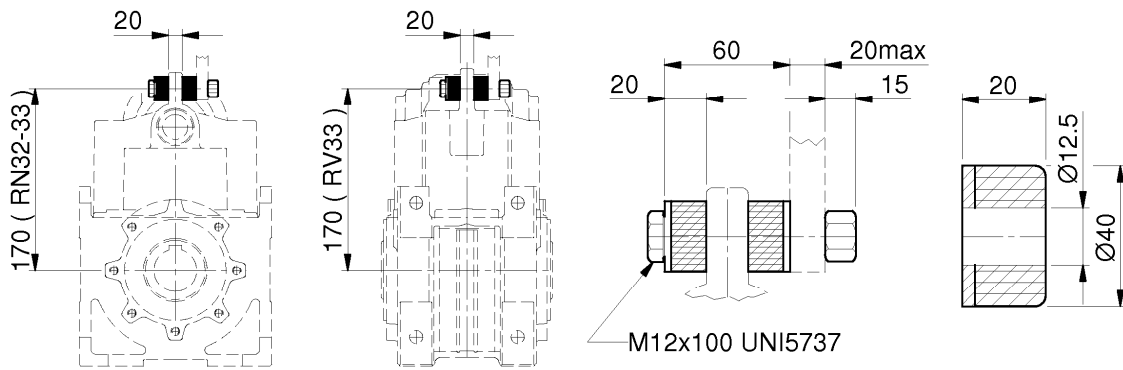
Gearboxes RN-RO-RV

RN32-33 / RO33 / RV33

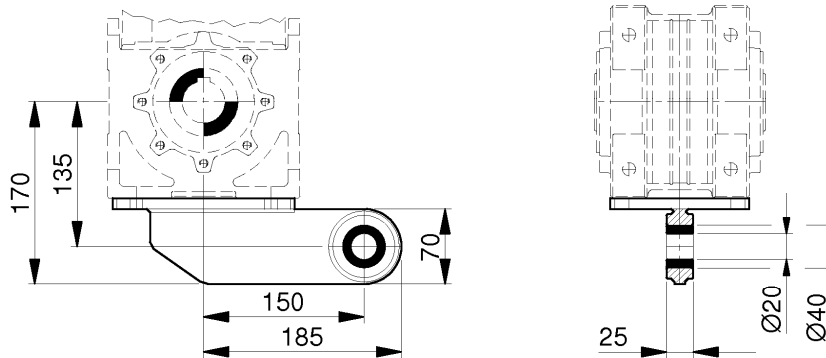
Dimensions



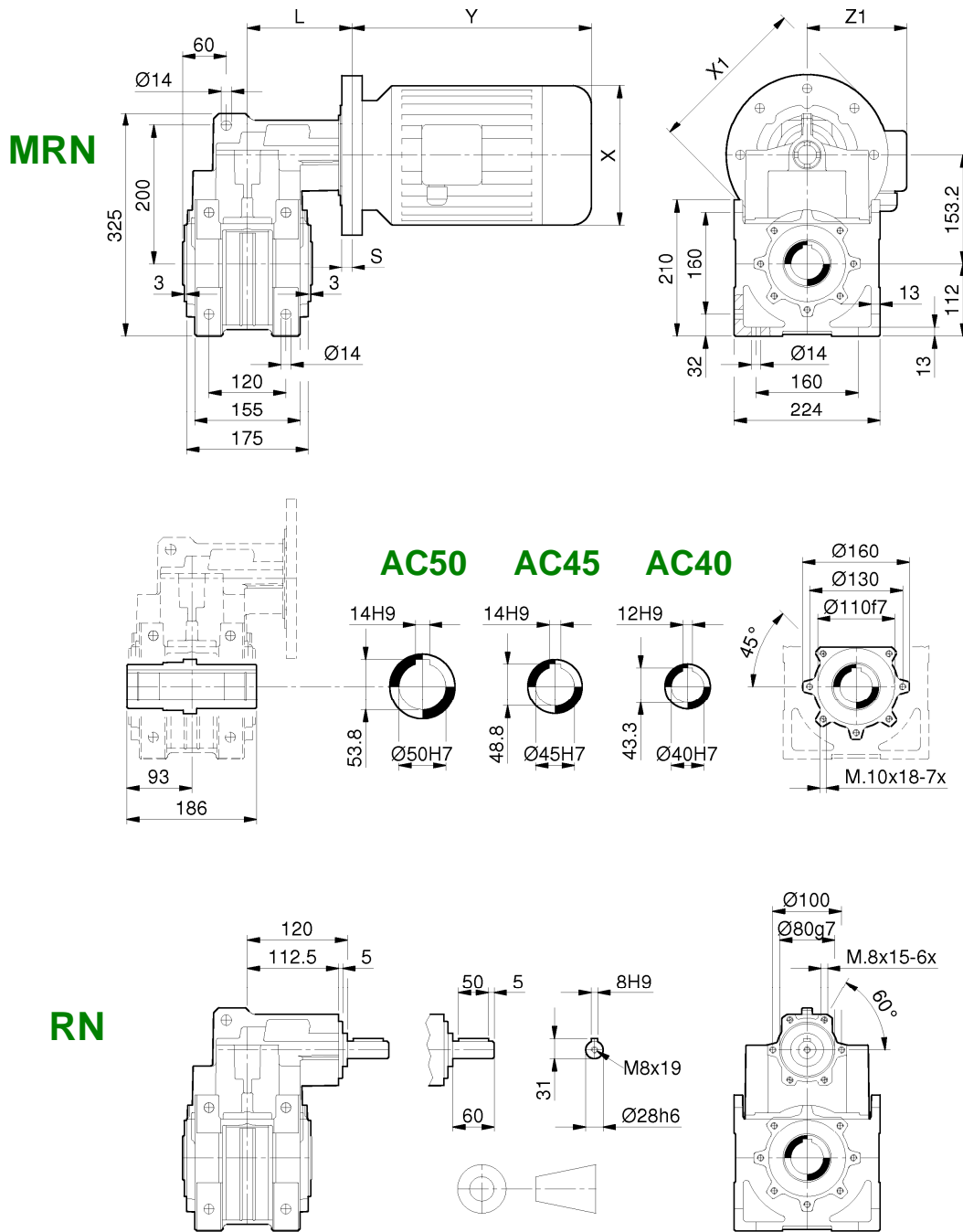
BTA



BTF

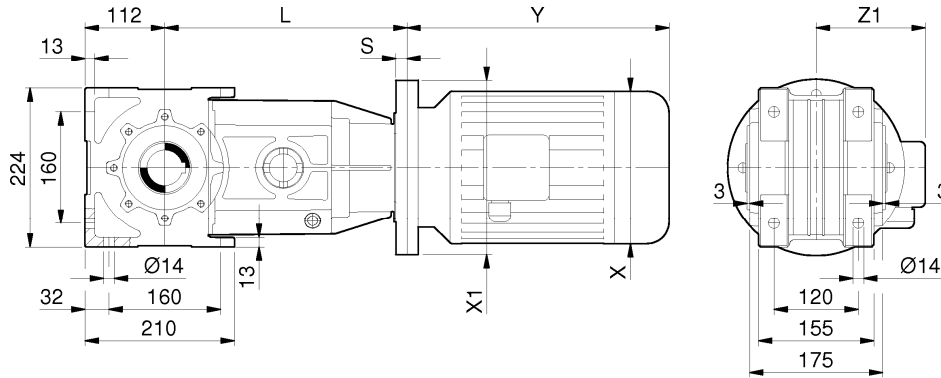


Dimensions

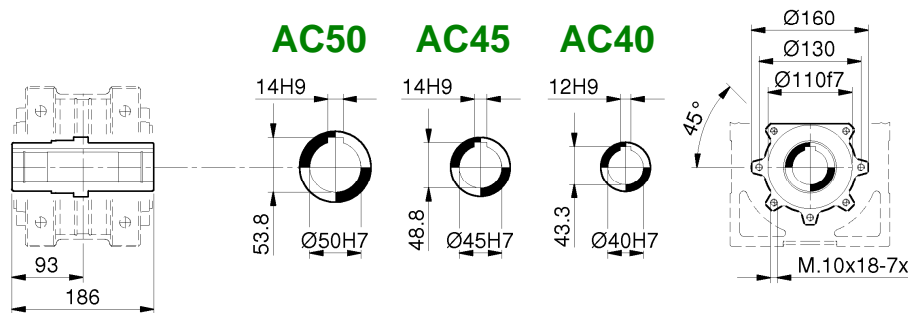


RN	42 / 43	42 / 43	42 / 43	42 / 43	42 / 43	42	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	---	120/15,5	140/18,5	140/18,5	160/15,5	160/15,5	
L (RN42)	148	148	148 (151)	148 (151)	149 (148)	149 (148)	
L (RN43)	148	148	148 (151)	148 (151)	149 (148)	---	

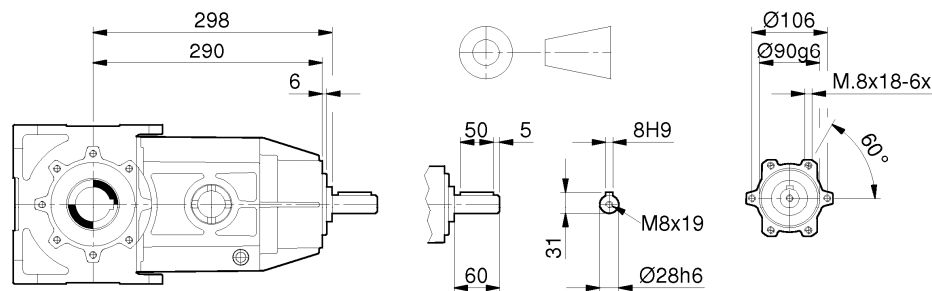
MRO



AC50 AC45 AC40



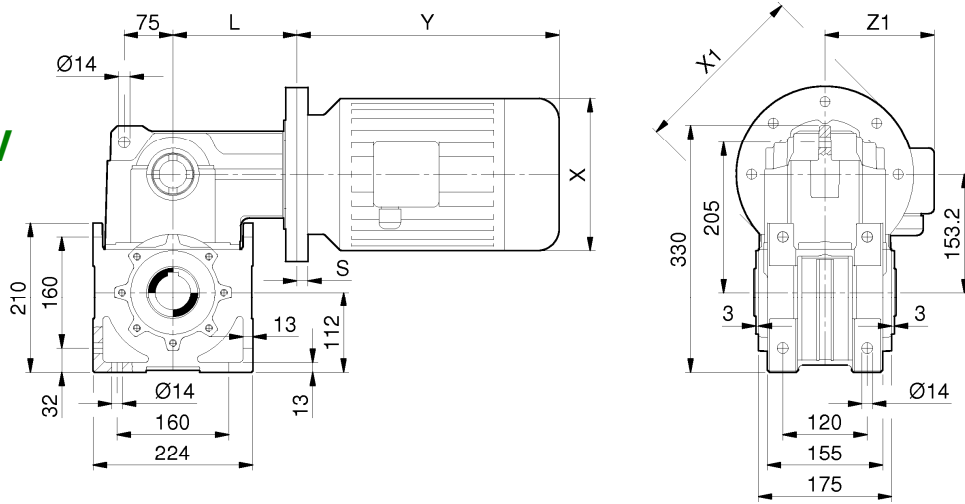
RO



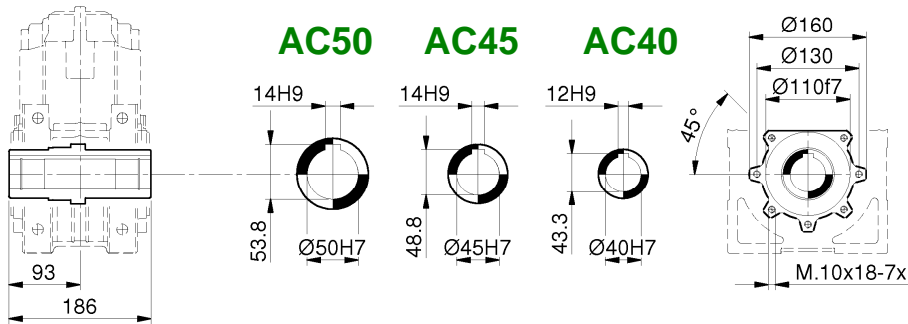
RO	43	43	43	43	43	43	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/18	200/18	200/18	200/18	250/18,5	250/18,5	
X1 (B14) / S	---	---	---	---	160/18	160/18	
L (RO43)	308	308	308 (310)	308 (310)	308,5 (308)	308,5 (308)	

Dimensions

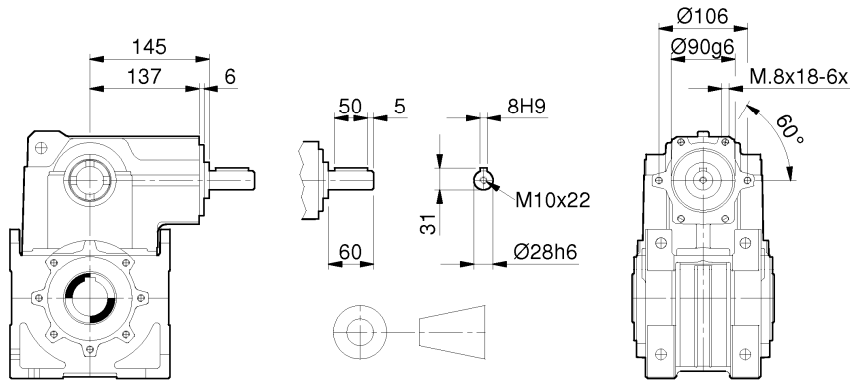
MRV



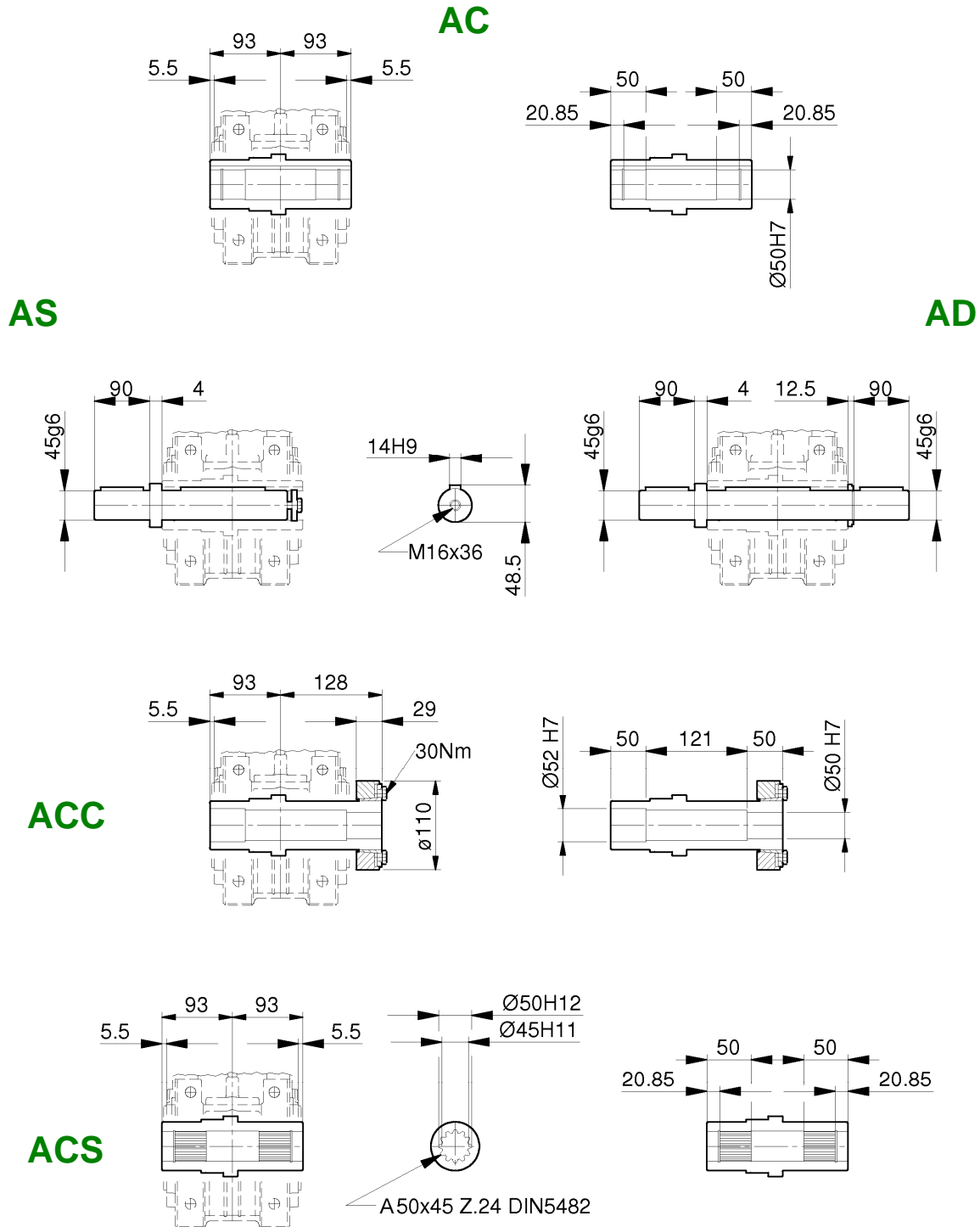
AC50 AC45 AC40



RV

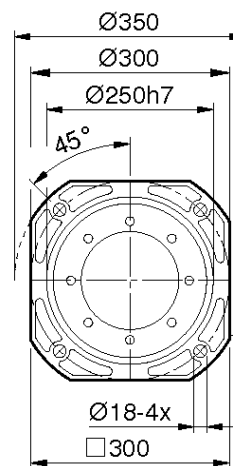
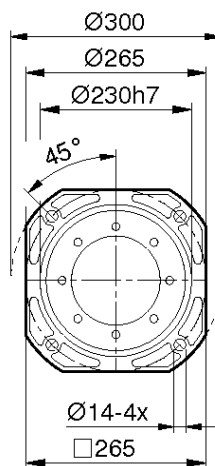
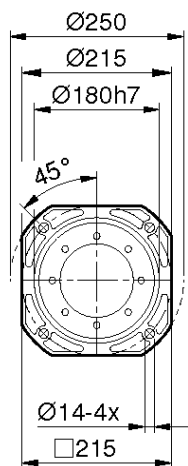
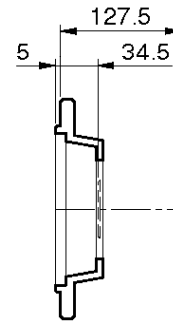
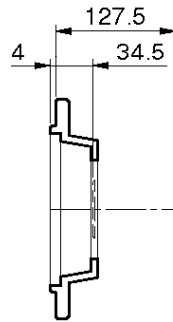
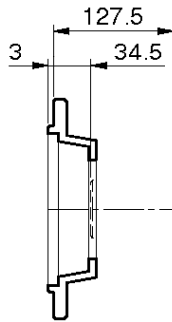
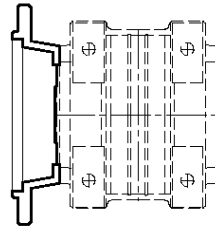


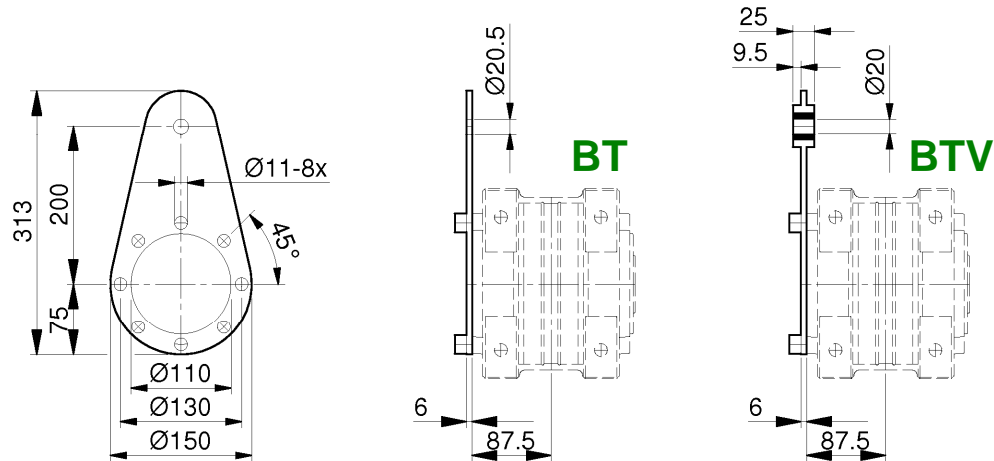
RV	43	43	43	43	43	43
IEC	71	80	90 S	90 L	100	112
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172
X1 (B5) / S	160/18	200/18	200/18	200/18	250/18,5	250/18,5
X1 (B14) / S	---	---	---	---	160/18	160/18
L (RV43)	155	155	155 (157)	155 (157)	155,5 (155)	155,5 (155)



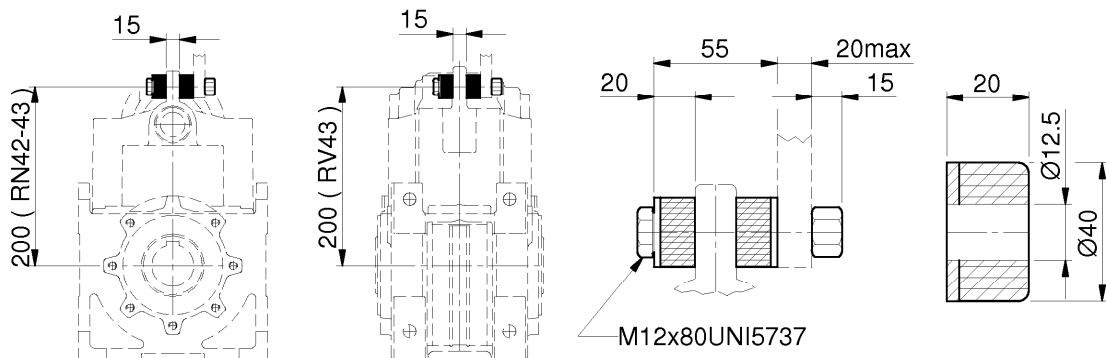
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A

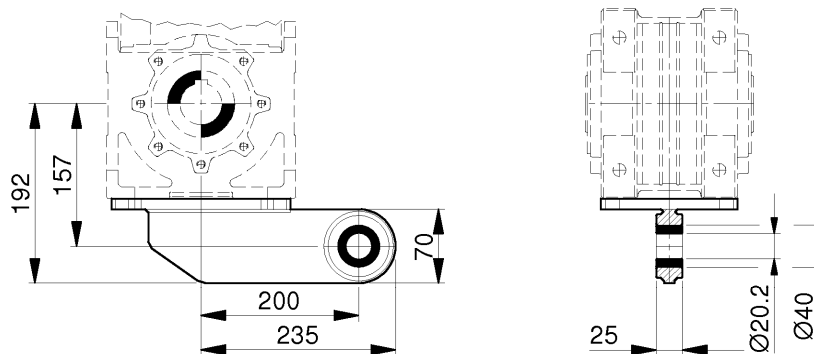




BTA

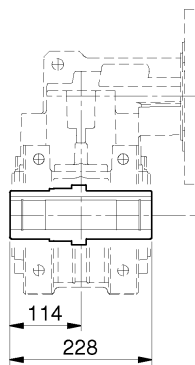
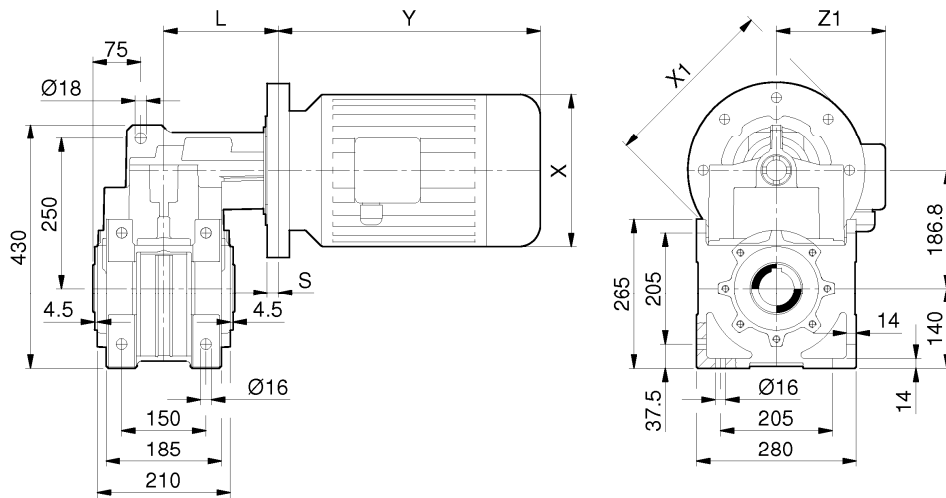


BTF



Dimensions

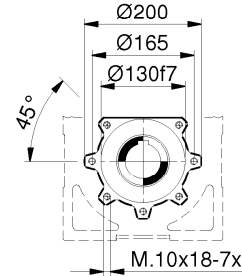
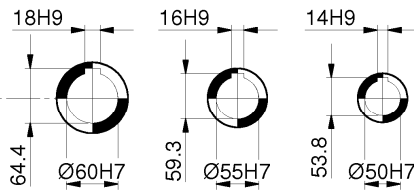
MRN



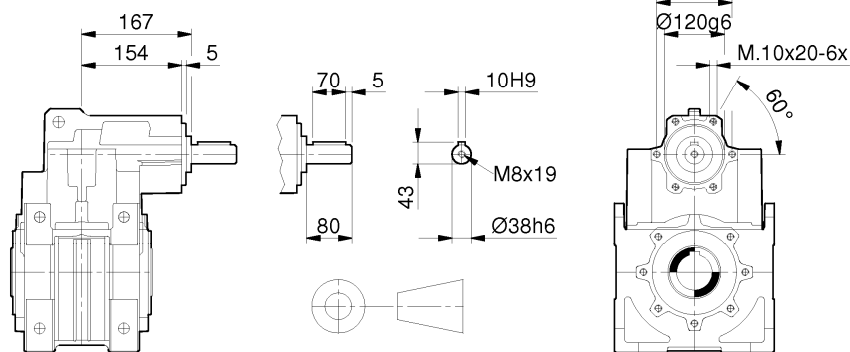
AC60

AC55

AC50

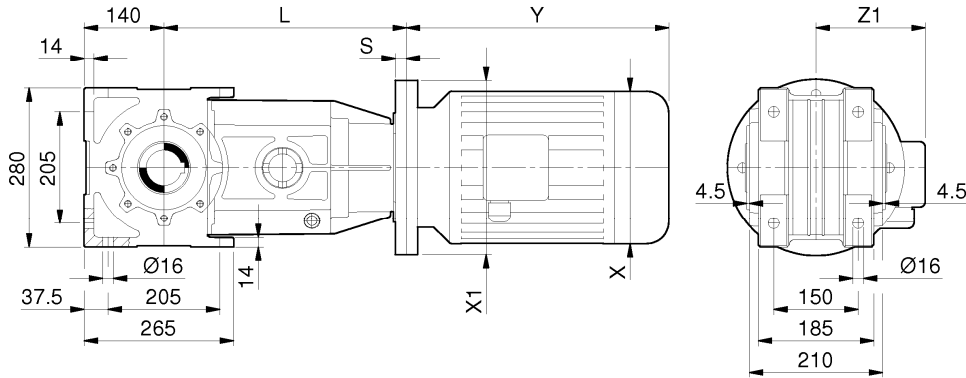


RN

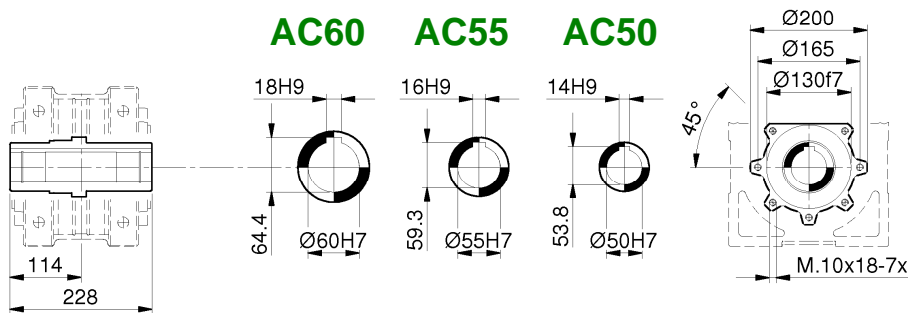


RN	52 / 53	52 / 53	52 / 53	52 / 53	52 / 53	52	52
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RN52)	176	176	176	176	176	189 (176)	189 (176)
L (RN53)	176	176	176	176	176	---	---

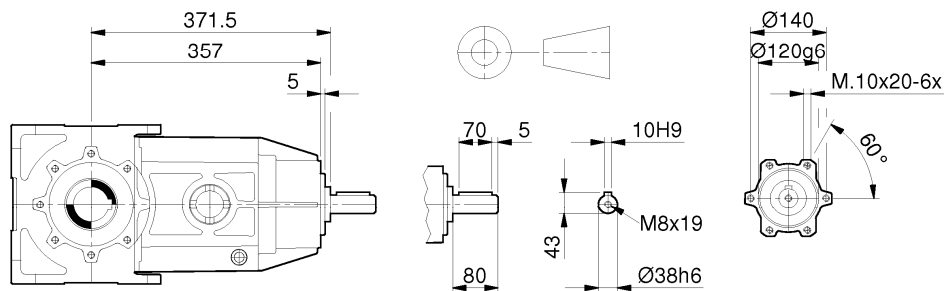
MRO



AC60 AC55 AC50



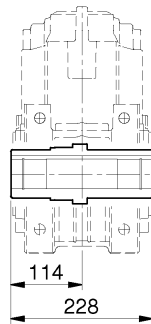
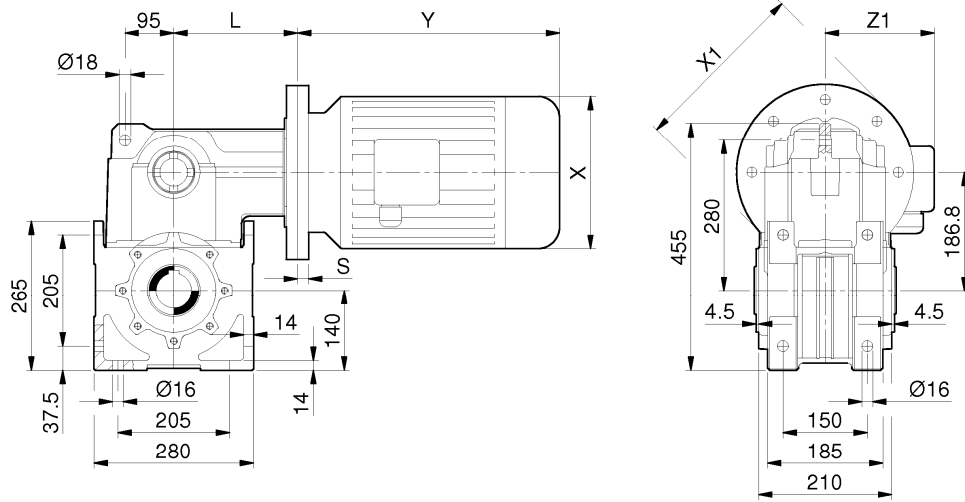
RO



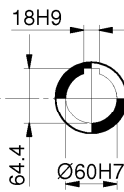
RO	53	53	53	53	53	53	53
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RO53)	379	379	379	379	379	392 (379)	392 (379)

Dimensions

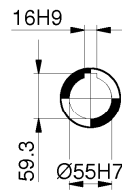
MRV



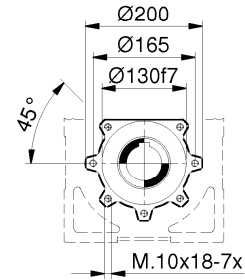
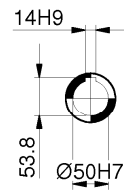
AC60



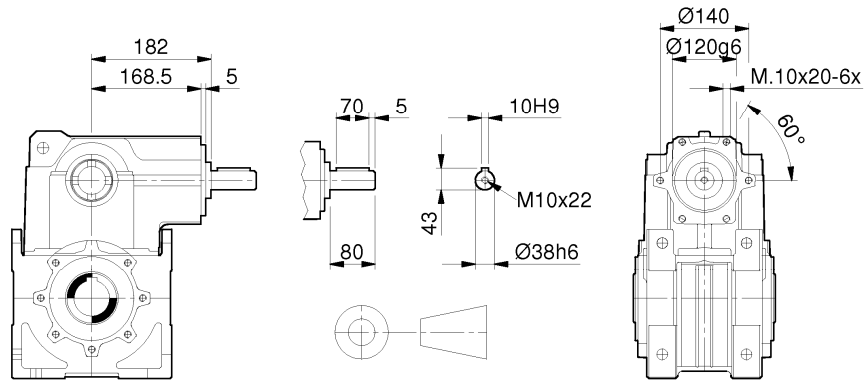
AC55



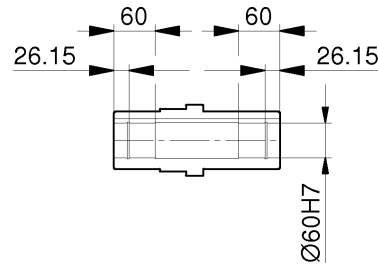
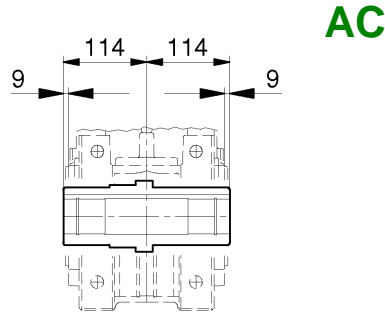
AC50



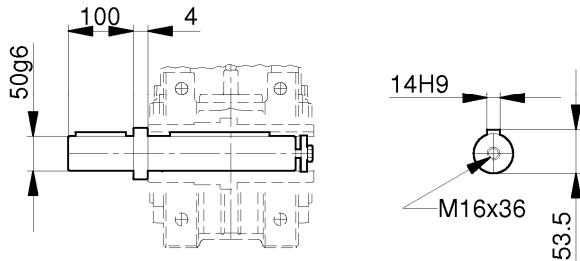
RV



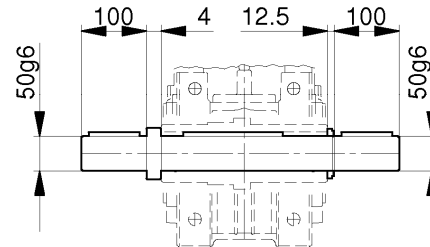
RV	53	53	53	53	53	53	53
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RV53)	190,5	190,5	190,5	190,5	190,5	203,5 (190,5)	203,5 (190,5)



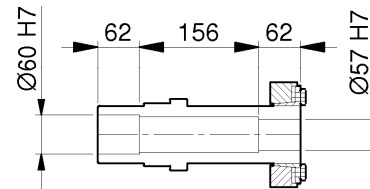
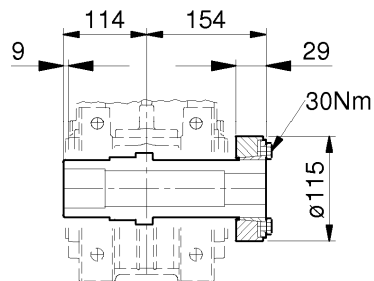
AS



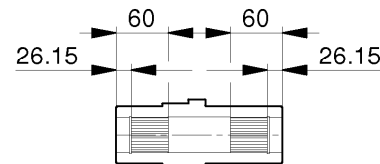
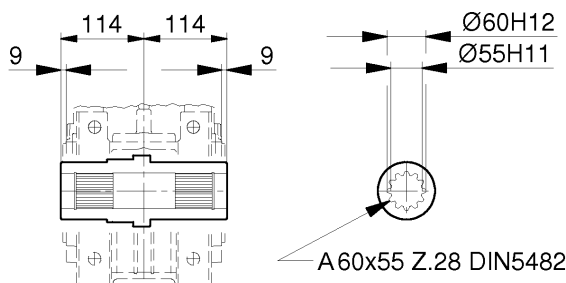
AD



ACC



ACS



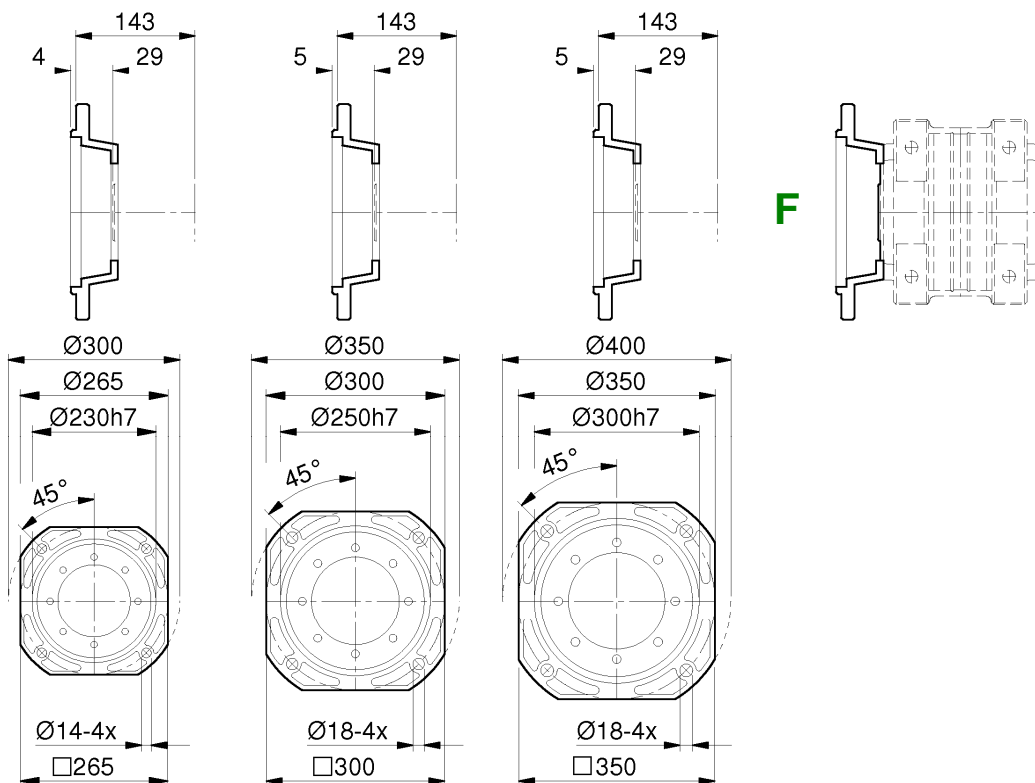
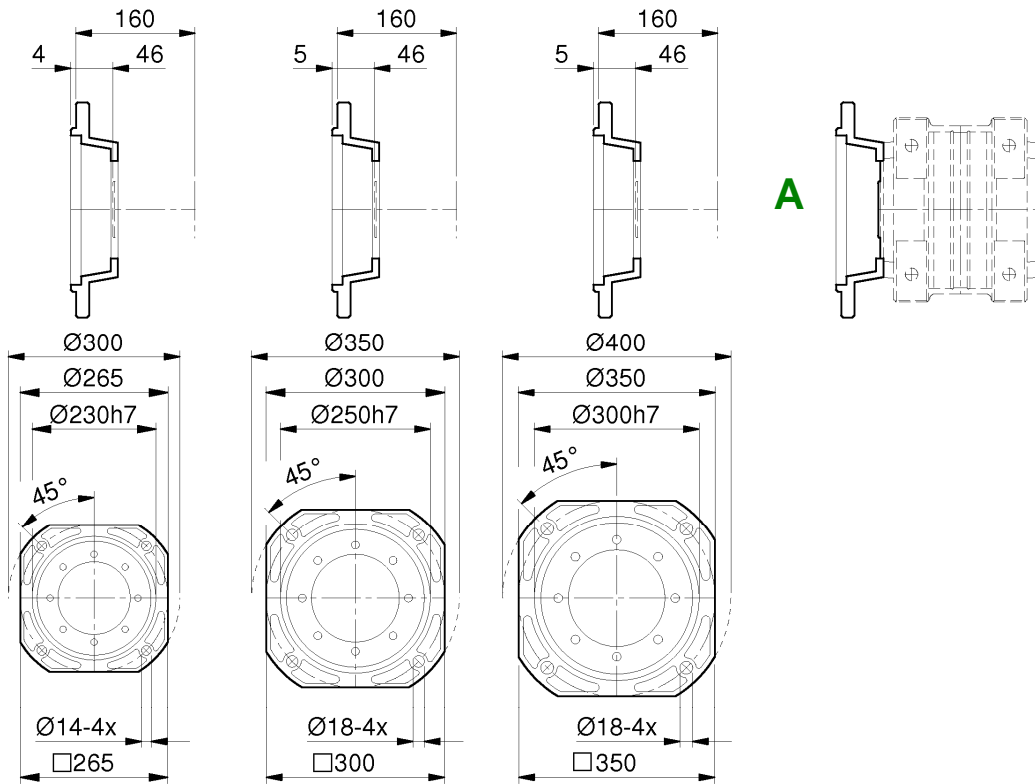
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RN-RO-RV Gearboxes

R5

Dimensions

RN52-53 / RO53 / RV53

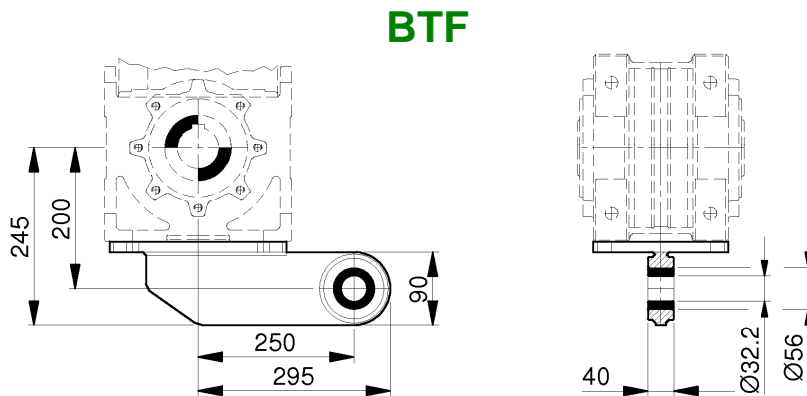
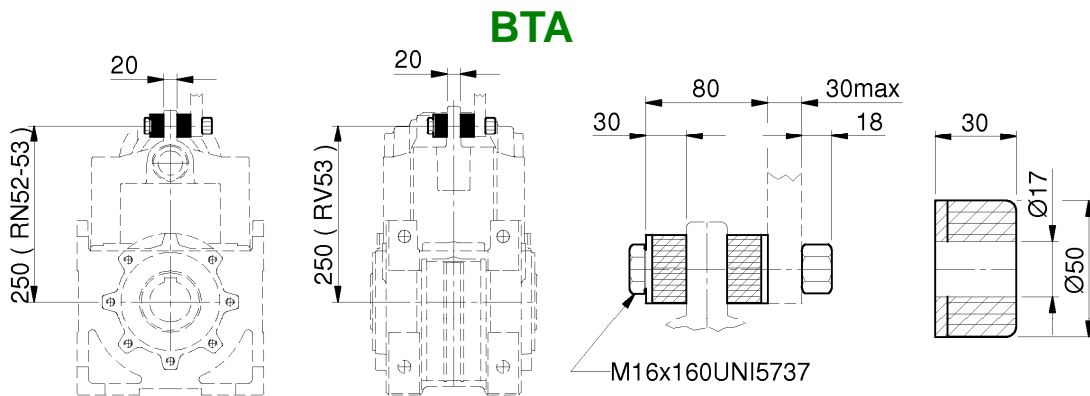
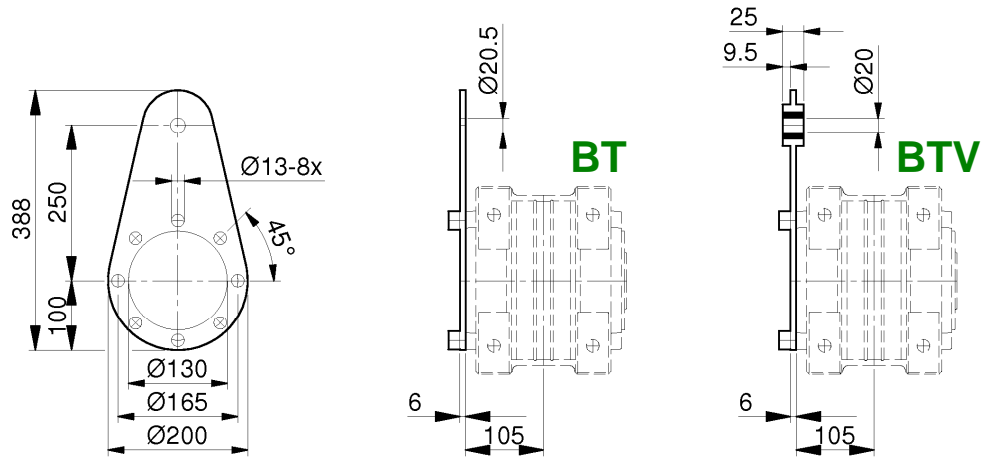


R5

Gearboxes RN-RO-RV

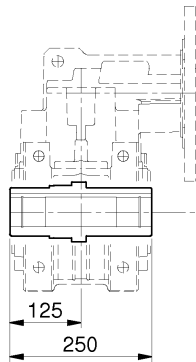
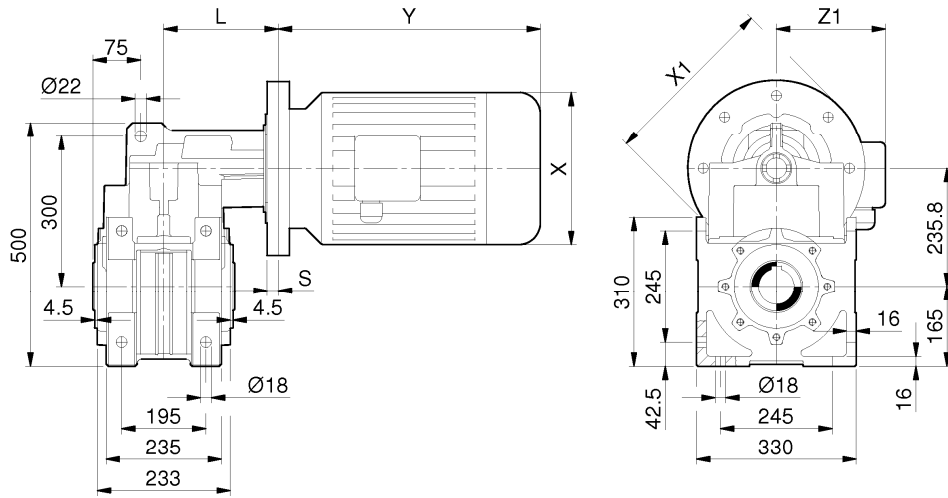
RN52-53 / RO53 / RV53

Dimensions



Dimensions

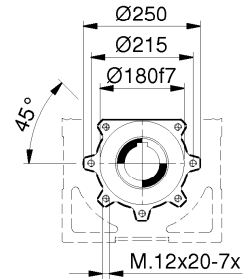
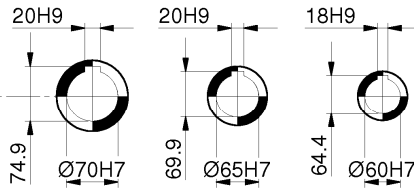
MRN



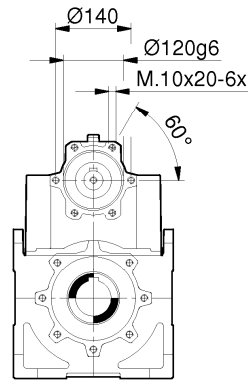
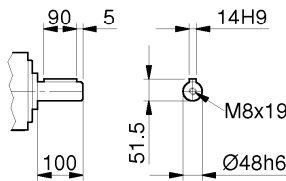
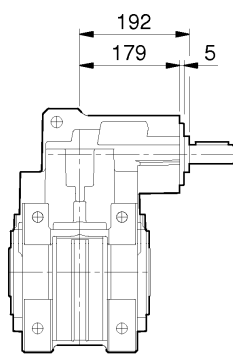
AC70

AC65

AC60

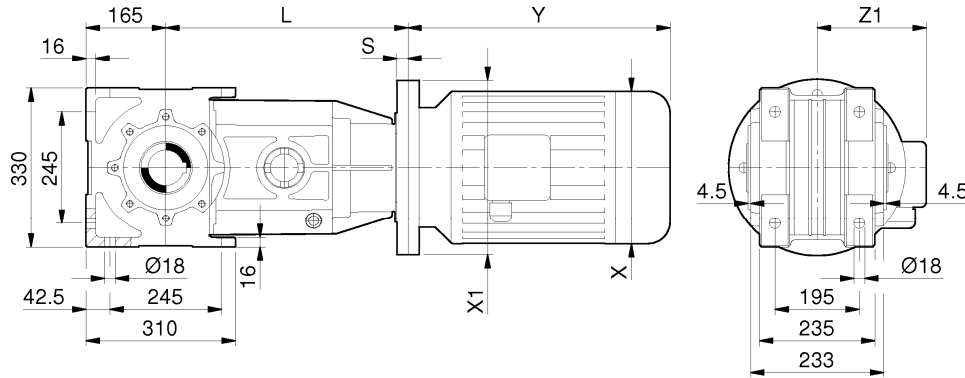


RN

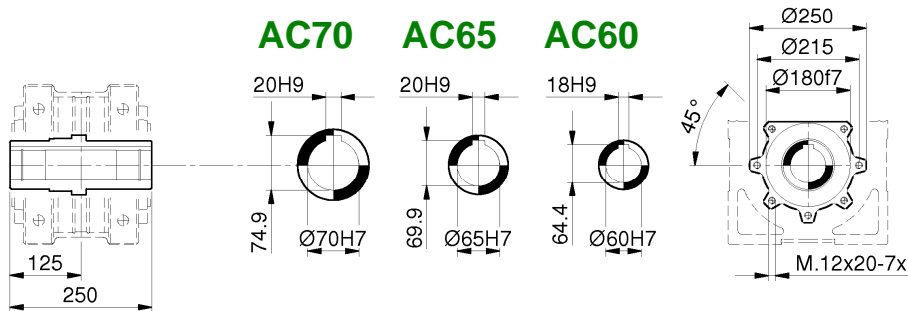


RN	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RN62)	201	201	201	201	201	214 (201)	214 (201)
L (RN63)	201	201	201	201	201	214 (201)	---

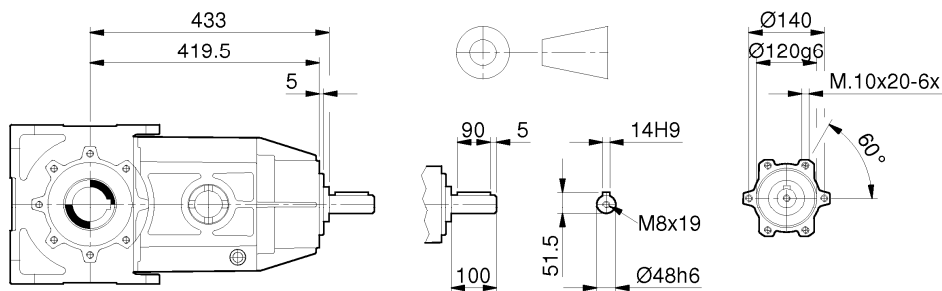
MRO



AC70 AC65 AC60



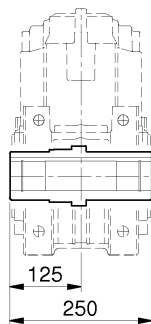
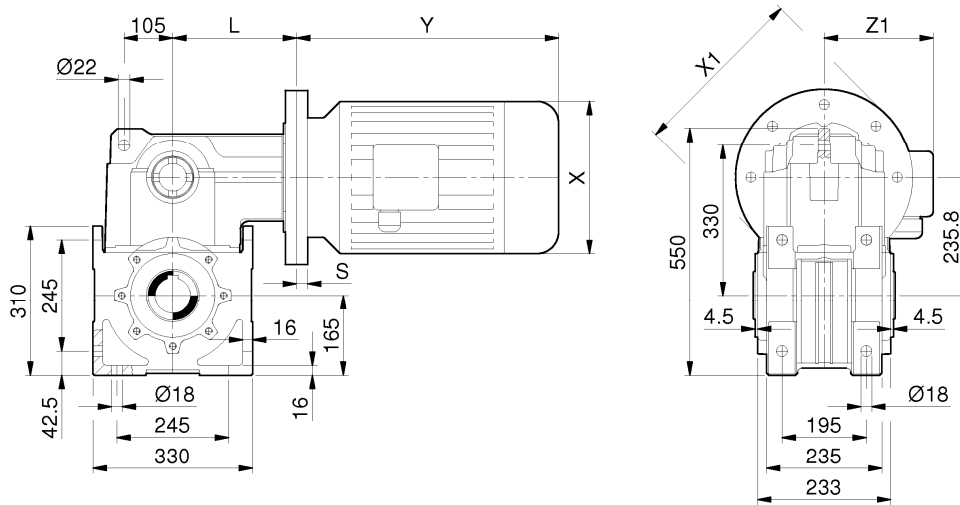
RO



RO	63	63	63	63	63	63	63
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RO63)	421,5	421,5	421,5	421,5	421,5	434,5 (421,5)	434,5 (421,5)

Dimensions

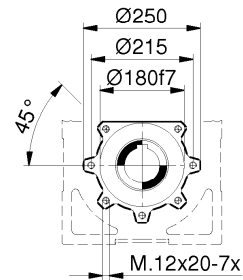
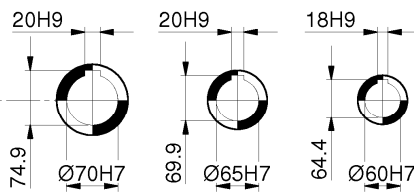
MRV



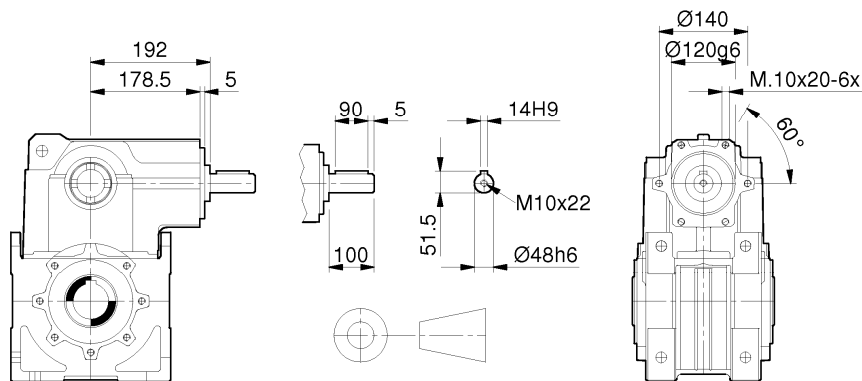
AC70

AC65

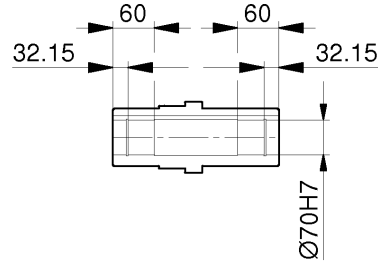
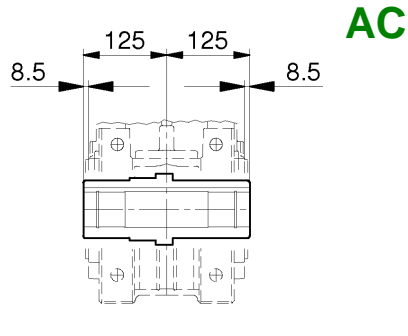
AC60



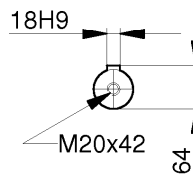
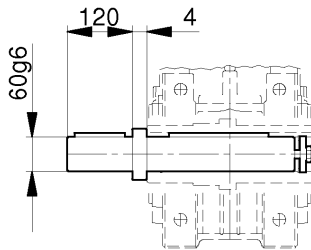
RV



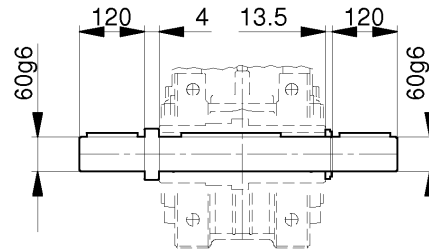
RV	63	63	63	63	63	63	63
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RV63)	205,5	205,5	205,5	205,5	205,5	218,5 (205,5)	218,5 (205,5)



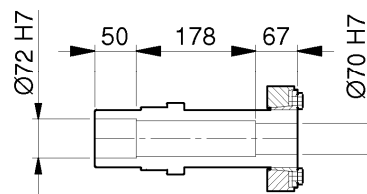
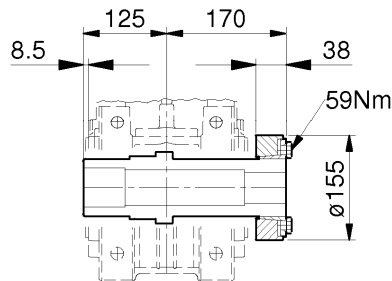
AS



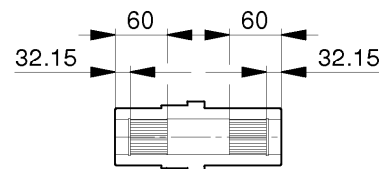
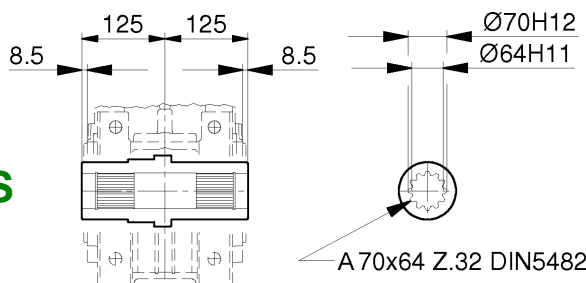
AD



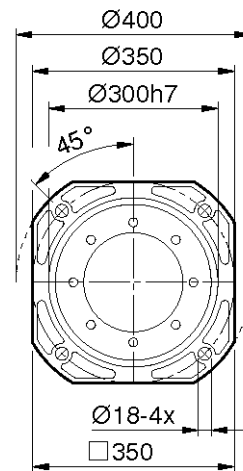
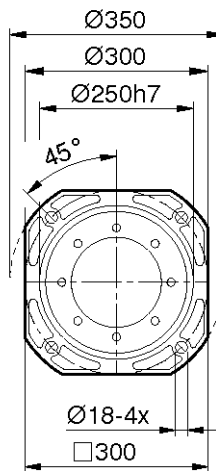
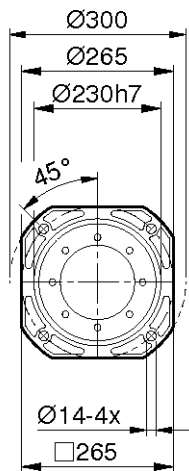
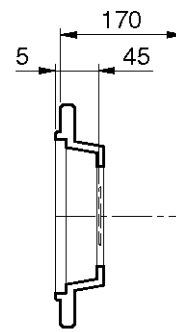
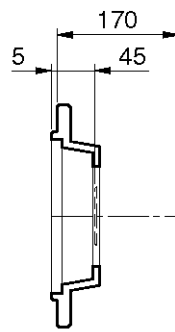
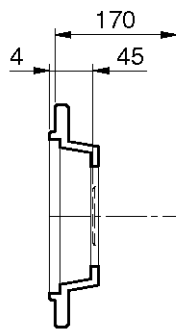
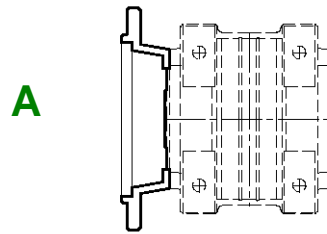
ACC



ACS



- Dimensioni del perno macchina: pag. 68-69

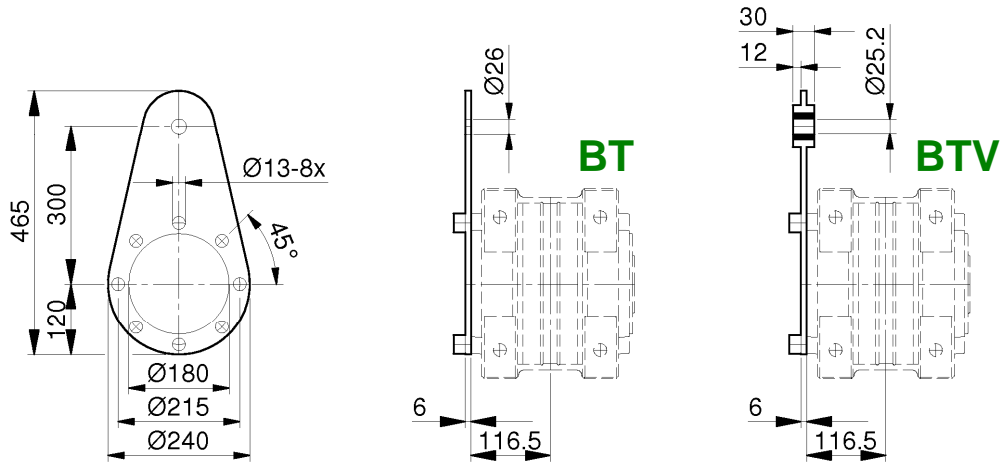


R6

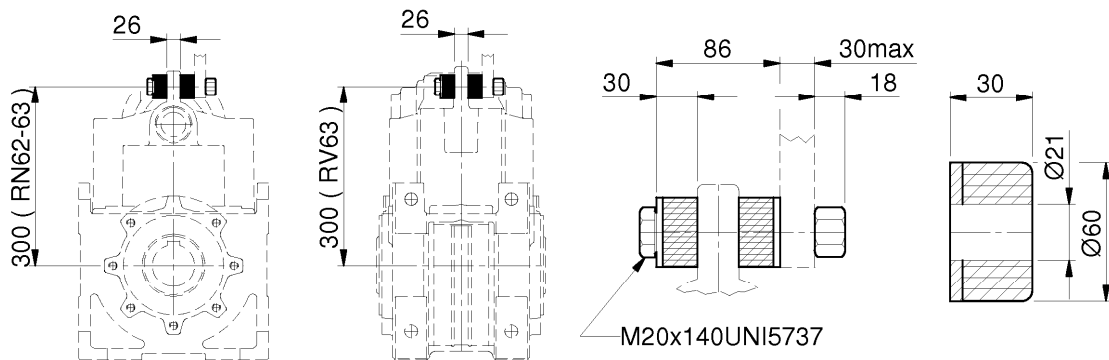
Gearboxes RN-RO-RV

RN62-63 / RO63 / RV63

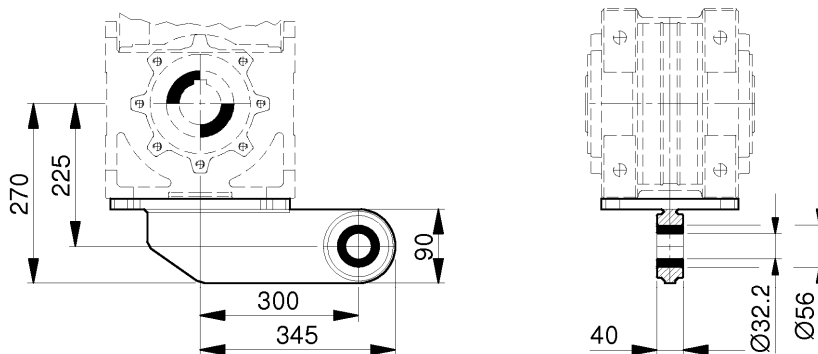
Dimensions

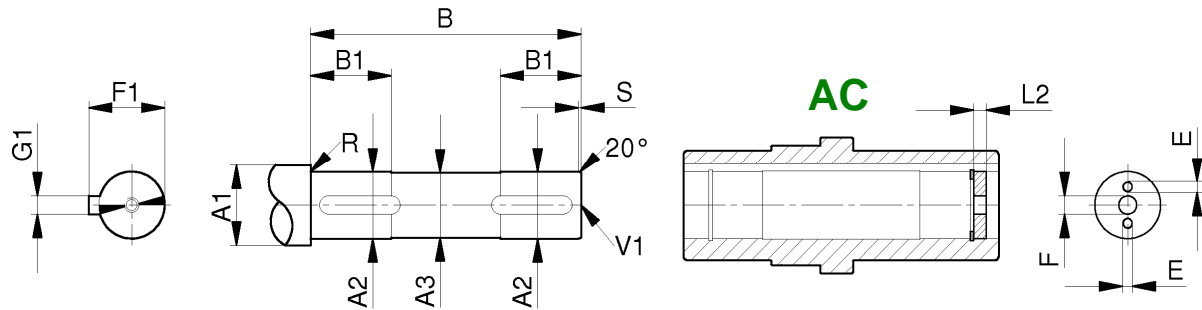


BTA

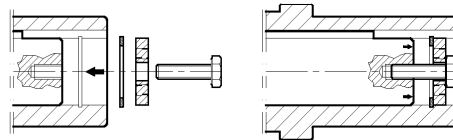


BTF

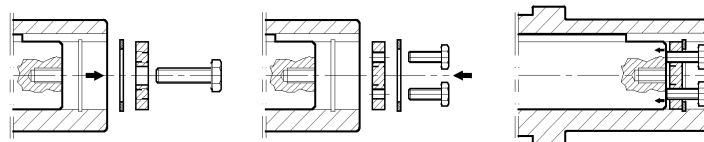




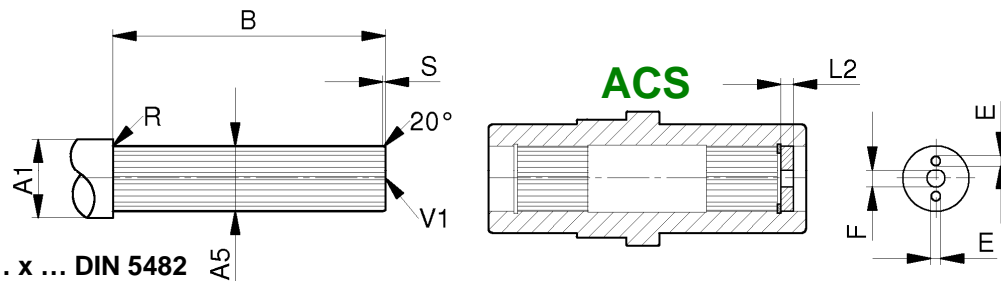
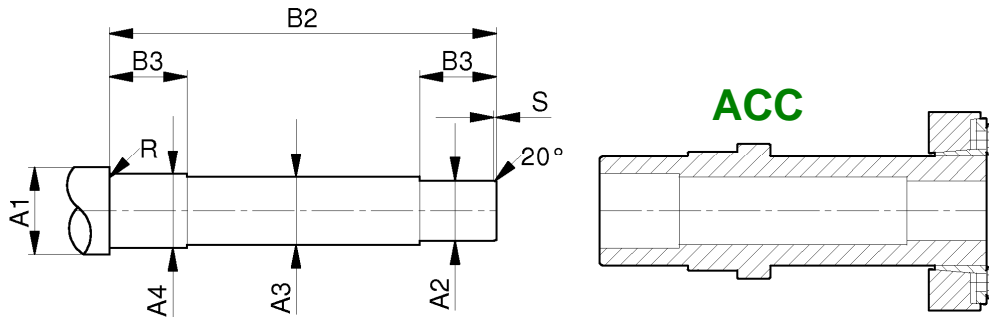
- Mounting



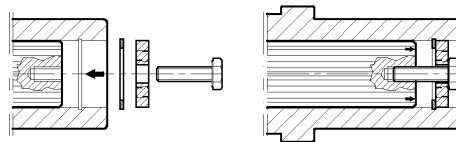
- Disassembly



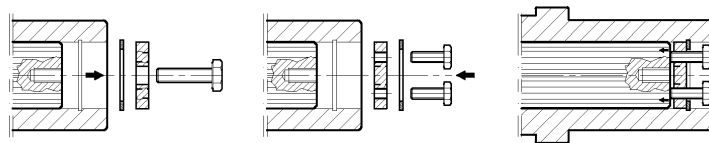
Size	A1	A2	A3	B	B1	E	F	F1	G1	L2	R	S	V1
Gr.1	40	30	29	98	35	M6	11	33	8	5,5	1	2	M10x22
	35	25	24	98	35	M6	9	28	8	5,5	1	2	M8x19
Gr.2	45	35	34	113,5	40	M8	11	38	10	7	1	2	M10x22
	40	30	29	113,5	40	M6	11	33	8	7	1	2	M10x22
Gr.3	50	40	39	133,5	45	M8	13	43	12	7	1	2	M12x28
	45	35	34	133,5	45	M8	11	38	10	7	1	2	M10x22
Gr.4	60	50	49	155,5	55	M10	17	53,5	14	8	1,5	3	M16x36
	55	45	44	155,5	55	M10	17	48,5	14	8	1,5	3	M16x36
	50	40	39	155,5	55	M8	13	43	12	8	1,5	3	M12x28
Gr.5	75	60	59	185	65	M12	17	64	18	12,5	2	4	M16x36
	70	55	54	185	65	M12	17	59	16	12,5	2	4	M16x36
	65	50	49	185	65	M10	17	53,5	14	12,5	2	4	M16x36
Gr.6	85	70	69	205	70	M12	21	74,5	20	12,5	2	4	M20x42
	80	65	64	205	70	M12	21	69	18	12,5	2	4	M20x42
	75	60	59	205	70	M12	21	64	18	12,5	2	4	M16x36



- Mounting



- Disassembly

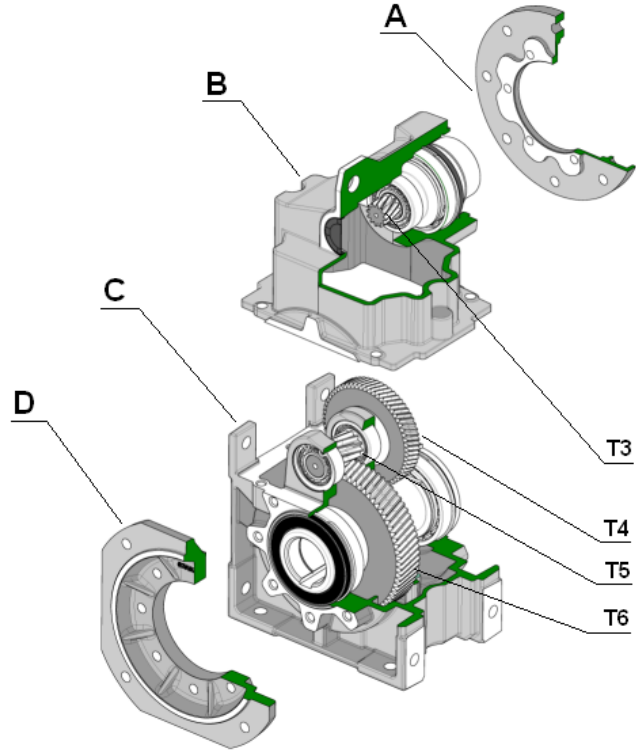


Size	A1	A2	A3	A4	A5	B	B2	B3	E	F	L2	R	S	V1
Gr.1	40	30	29	32	30x27	98	144	34	M6	11	5,5	1	2	M8x19
Gr.2	45	35	34	37	35x31	113,5	167	39	M8	11	7	1	2	M10x22
Gr.3	50	40	39	42	40x36	133,5	189	49	M8	13	7	1	2	M10x22
Gr.4	60	50	49	52	50x45	155,5	220	49	M10	17	8	1,5	3	M16x36
Gr.5	75	60	59	62	60x55	185	267	49	M12	17	12,5	2	4	M16x36
Gr.6	85	70	69	72	70x64	205	294	49	M12	21	12,5	2	4	M20x42

**Parallel Shaft Gearboxes
RN2**

TWO GEAR STAGE REDUCER

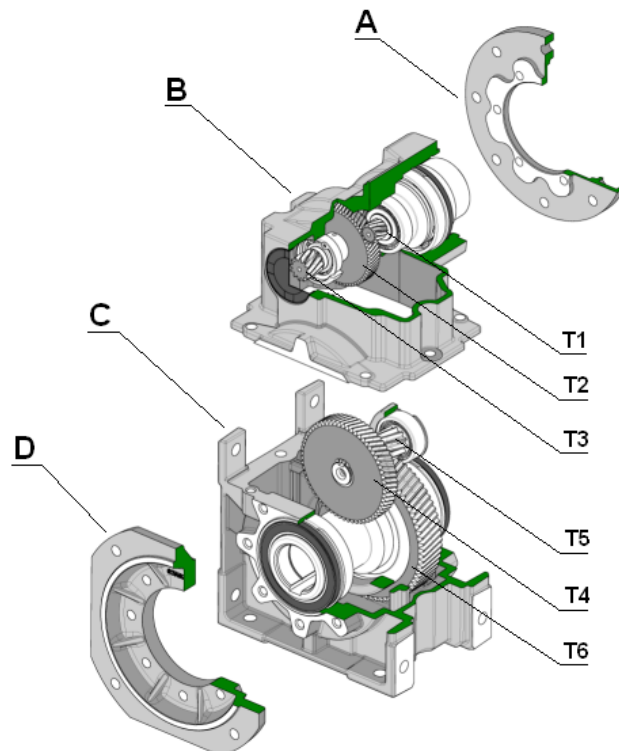
- A - IEC motor flange
- B - Two stage input cover + T3 gear
- C - Housing + T4, T5, T6 gears
- D - Output flange



**Parallel Shaft Gearboxes
RN3**

THREE GEAR STAGE REDUCER

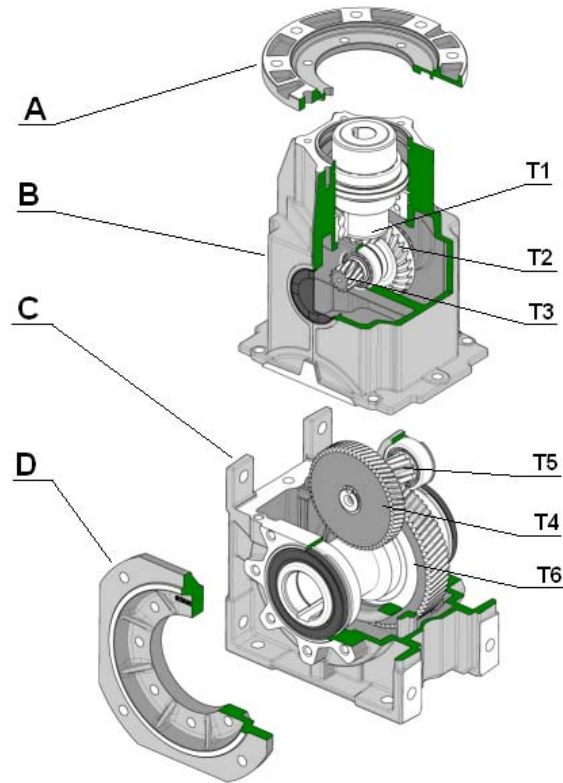
- A - IEC motor flange
- B - Three stage input cover + T1, T2, T3 gears
- C - Housing + T4, T5, T6 gears
- D - Output flange



**Bevel/Helical Gearboxes,
In-line RO3**

THREE GEAR STAGE REDUCER

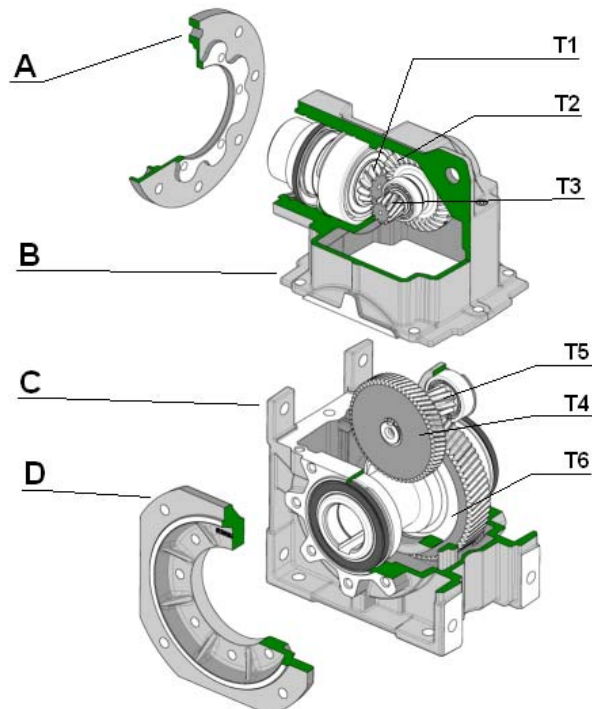
- A - IEC motor flange
- B - Three stage input cover + T1, T2, T3 gears
- C - Housing + T4, T5, T6 gears
- D - Output flange



**Bevel/Helical Gearboxes,
Right Angle RV3**

THREE GEAR STAGE REDUCER

- A - IEC motor flange
- B - Three stage input cover + T1, T2, T3 gears
- C - Housing + T4, T5, T6 gears
- D - Output flange



RN-RO-RV Gearboxes

Abstract of OPERATION AND MAINTENANCE INSTRUCTIONS

Variable speed and reduction gearboxes are not part of the field of application of the Machinery Directive, art,1(2), and they must not be put into service until the machinery into which they are to be incorporated, has been declared in conformity with the provision of art,4(2), annex II(B) of Machinery Directives 98/37/CEE/22,6,98 and for Italy only, of DL 459/24,7,96.

Installation

Check if the unit to be installed, is properly selected to perform the required function and that its mounting position complies with the order.

The nameplate reports such information.

Check mounting stability to ensure the unit runs without vibrations or overloads.

Running

The unit may be connected for clockwise or counter-clockwise rotation.

The unit must be stopped as soon as defective running or unexpected noise occur, remove the faulty part or return the unit to the factory for checking.

If the faulty part is not replaced, other parts can also be affected, causing more severe damage and making the identification of initial cause more difficult.

Maintenance

Although the units are no-load run tested in the factory before despatch, it is recommended not to run them at maximum load for the first 20-30 running hours to allow the proper running in.

The gearboxes are delivered already filled with long-life synthetic oil and, in case of replacement or topping, do not mix with mineral lubricants.

Handling

When hoisting, use relevant housing locations or eyebolts if provided, or foot or flange holes

Never hoist on any moving part.

Painting

Carefully protect oil seals, coupling faces and shafts when units are re-painted.

Long-term storage

For storage longer than three months, apply anti-oxidants onto shafts and machined surfaces, and protective grease on oil seal lips.

Product's Environmental Management

In conformity with Environmental Certification ISO 14001, we recommend the following to dis-pose of our products:

- scraped components of the units to be delivered to authorized centres for metal object collection;
- oils and lubricants drained from the units to be delivered to Exhausted Oil Unions;
- packages (pallets, carton boxes, paper, plastic, etc.) to lead into regeneration/recycling circuits as far as possible, by delivering separate waste classes to authorized companies.

C-RN-RO-RV ed01-2011 rev02 GB **040612**



A socially responsible company

To the scope of intensifying our commitment to society, Varvel since 2004 started an ongoing support programme with three non-profit institutions: UNICEF (United Nations Children's Fund), MSF (Médecins sans Frontières) and ANT (National Cancer Association). Environmental respect and protection are also part of Varvel's values and this is why Varvel certified in 2001 its Environmental System to standard UNI EN ISO 14001.



RN/RO/RV



RS/RT



RD

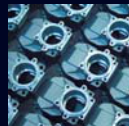


RG



RP

VR/VS



FAMCO
هایپر صنعت

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