

VARVEL®
MOTION CONTROL SINCE 1955

DISTRIBUTED BY



CHAIN & DRIVES®
COMPLETE BEARINGS
& POWER TRANSMISSION

SERVICE & SUPPORT

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chainanddrives.com.au

technology made in Italy



RD

GB



* VS made in China

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



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

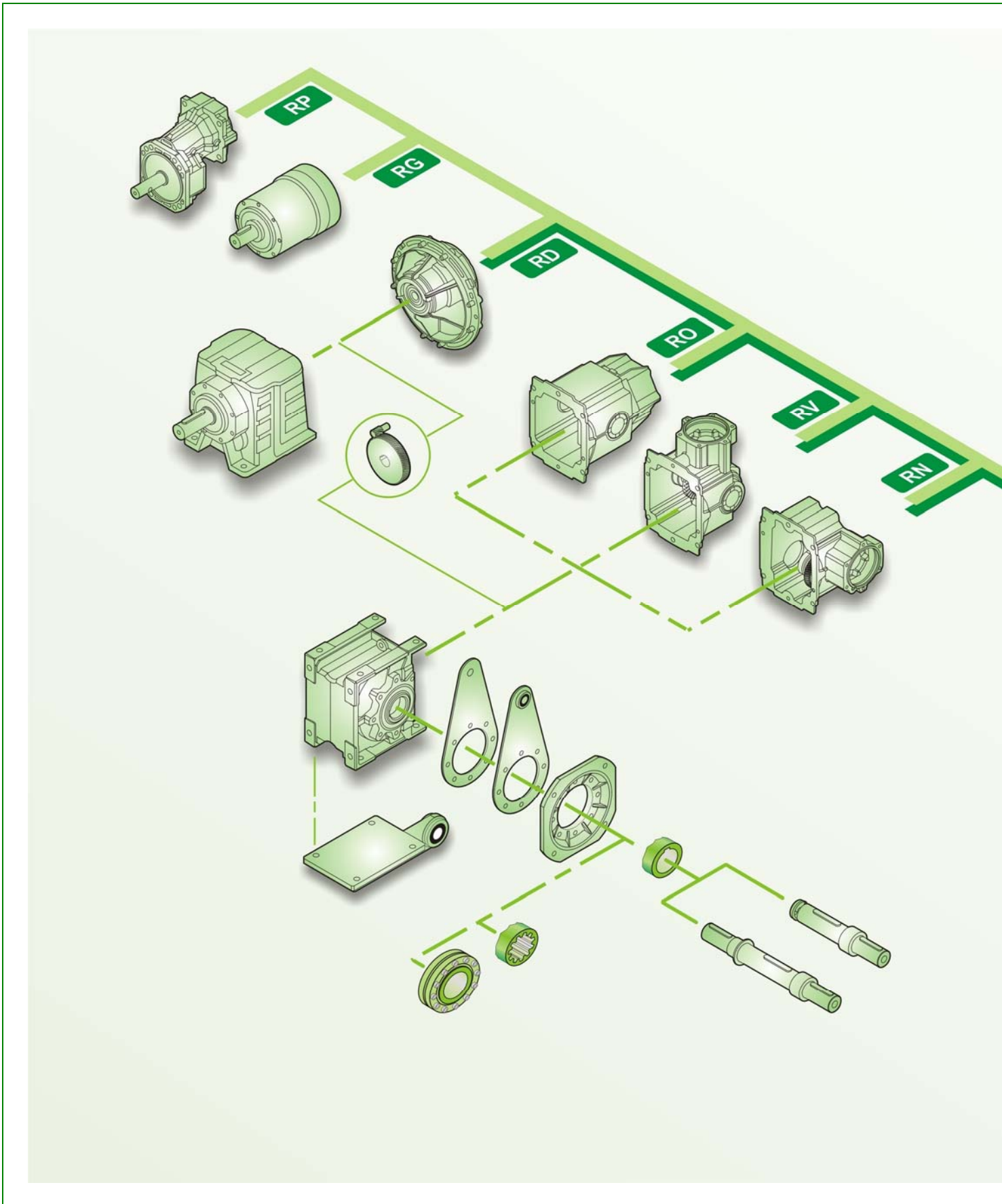
Product description



	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 up to size 4 and cast iron G25 from size 5.
Toothed parts	Steel 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	NBR Acrylonitril-butadiene or FKM Fluorinated 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

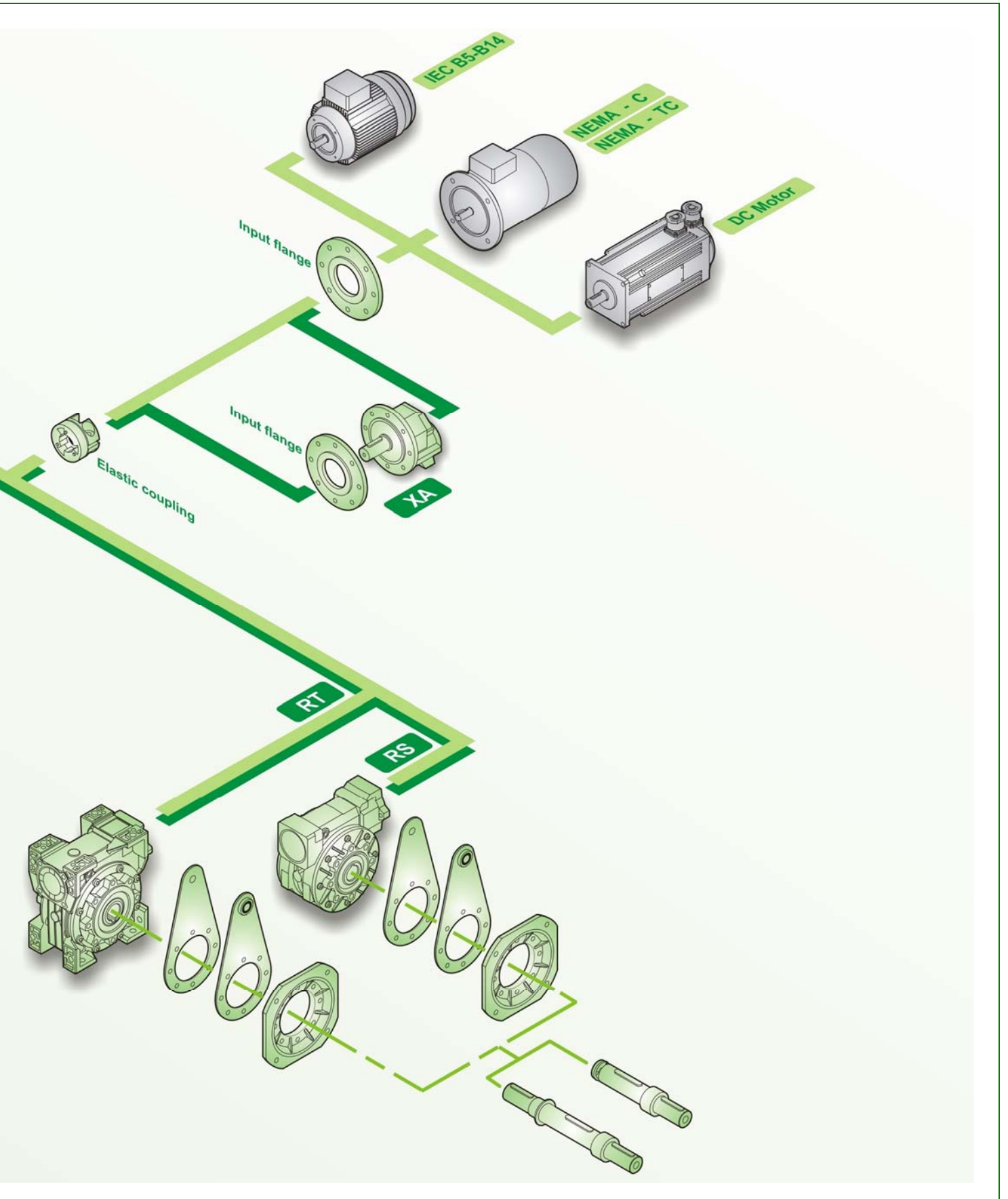
Gearboxes Series RD

Modular system



Gearboxes Series RD

Modular system



Gearboxes Series RD

Elastic coupling "G" description

Reducer half-coupling

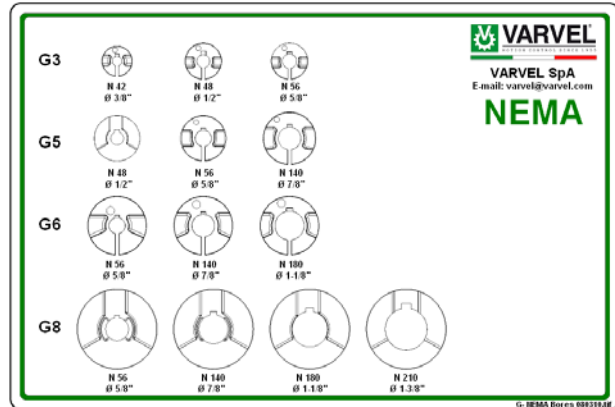
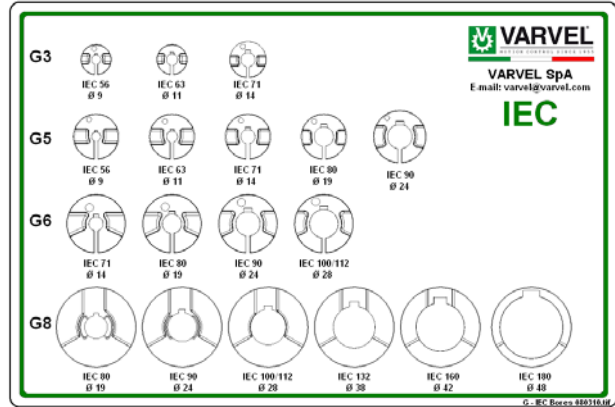
- Material: Alloy steel
- Input shaft built-in
- Two bearing set
- Unchanged casing dimensions

Spider

- External tooth connection
- Material: Thermoplastic Elastomer
 - Hytrel® TPE - Polyester
- Hardness
 - TPE 72 Shore D
- Temperature
 - TPE -30/+100°C (-22 / +212°F)

Motor half-coupling

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



Advantages:

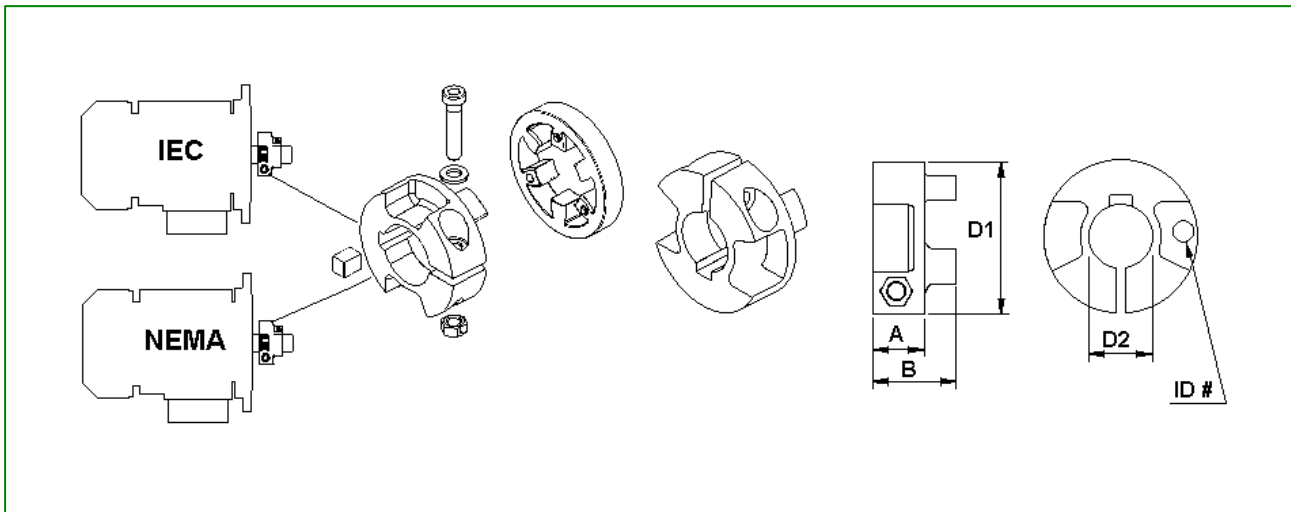
- One gearbox only for each reduction ratio
- Greater flexibility
- Increased stock rotation
- Fretting corrosion elimination between key and keyway
- Zero backlash in gearbox/motor connection
- Allowed angular misalignment 1° max
- Torsional rigidity
- High vibration damping

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 56 C	K531.227.N48 K531.227.N56	G5 ø 1/2" G5 ø 5/8"	KG5.N48 KG5.N56
RD 03		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 140 TC	K532.227.N56 K532.227.N56	G5 ø 5/8" G5 ø 7/8"	KG5.N56 KG5.N140
RD 13		56 C	K532.227.N56	G5 ø 5/8"	KG5.N56
RD 22	FM 70	56 C 140 C 180 C	K533.227.N56 K533.227.N56 K533.227.N180	G6 ø 5/8" G6 ø 7/8" G6 ø 1-1/8"	KG6.N56 KG6.N140 KG6.N180
RD 23		56 C 140 C	K533.227.N56 K533.227.N56	G5 ø 5/8" G5 ø 7/8"	KG5.N56 KG5.N140
RD 32	FM 70	56 C 140 TC 180 TC	K533.227.N56 K533.227.N56 K533.227.N180	G6 ø 5/8" G6 ø 7/8" G6 ø 1-1/8"	KG6.N56 KG6.N140 KG6.N180
RD 33		56 C 140 TC	K533.227.N56 K533.227.N56	G6 ø 5/8" G6 ø 7/8"	KG6.N56 KG6.N140
RD 42	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 KG6.N140 KG6.N180
RD 43		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 KG6.N140 KG6.N180
RD 52	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 KGS8.N140 KGS8.N180 KGS8.N210
RD 53		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 KGS8.N140 KGS8.N180 KGS8.N210
RD 62	FM 150	56 C 140 TC 180 TC 210 TC	K537.227.N56 K537.227.N56 K537.227.N180 K537.227.N210	* GS8 ø 5/8" * GS8 ø 7/8" * GS8 ø 1-1/8" * GS8 ø 1-3/8"	KGS8.N56 KGS8.N140 KGS8.N180 KGS8.N210
RD 63		56 C 140 TC 180 TC 210 TC	K537.227.N56 K537.227.N56 K537.227.N180 K537.227.N210	* GS8 ø 5/8" * GS8 ø 7/8" * GS8 ø 1-1/8" * GS8 ø 1-3/8"	KGS8.N56 KGS8.N140 KGS8.N180 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

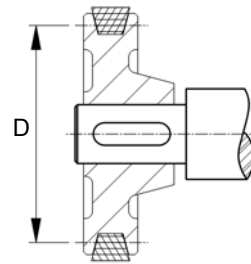
OUTPUT RADIAL LOADS

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

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

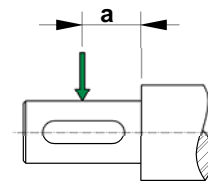
$k_{(t)}$	Transmission element
1,15	Gear - Tooth No. < 17
1,40	Chain sprocket - Tooth No. < 13
1,25	Chain sprocket - Tooth No. < 20
1,00	Chain sprocket - Tooth No. > 20
2,50	"V" belt pulley
1,25	Timing belt pulley



Catalogue radial load at shaft centre

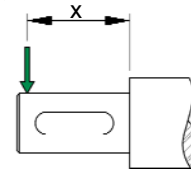
$$F_{r2} \geq F_r$$

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

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

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

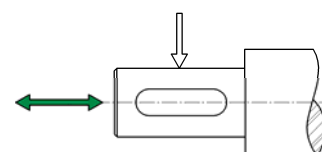
$$F_{r2s(x)} \geq F_r$$

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

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 $M_{(app)}$.

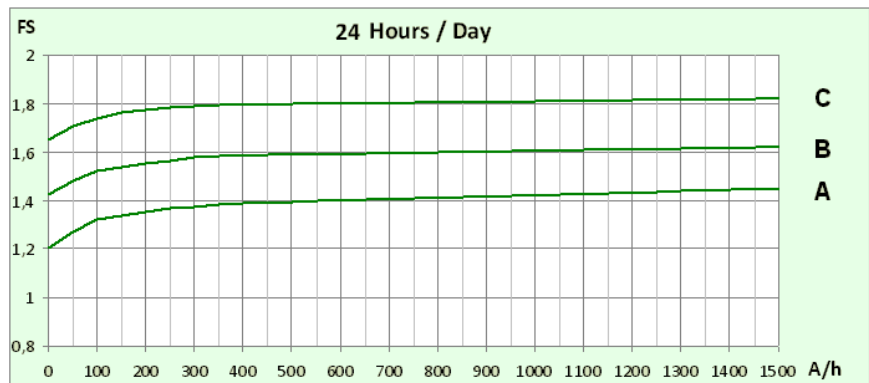
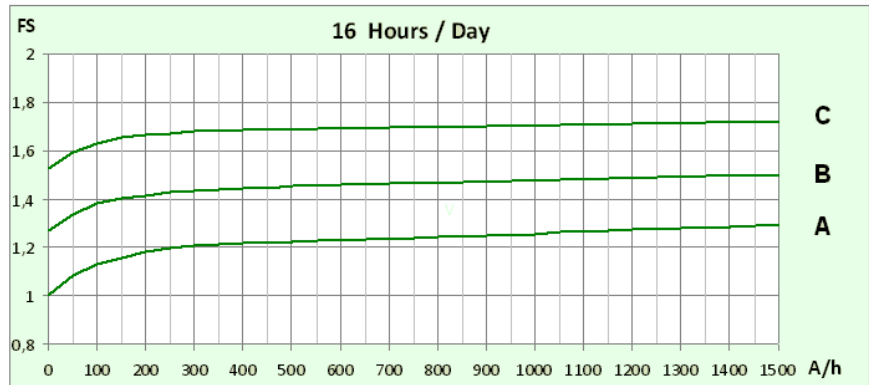
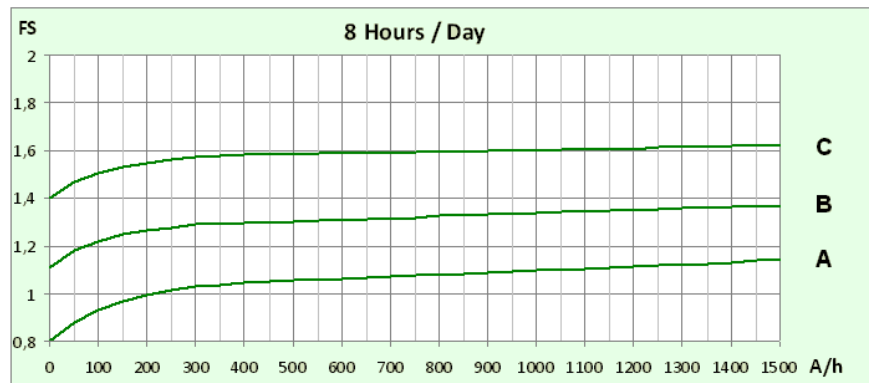
Mass acceleration factor

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

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

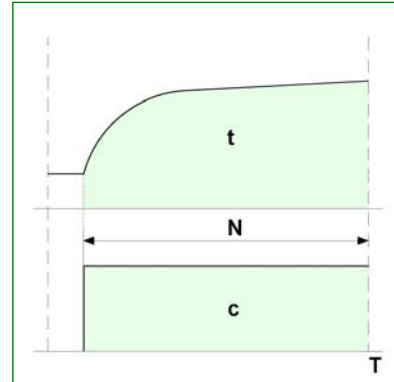
The specifications of various duty types are defined by the Standard CEI EN 60034-1 / IEC34-1.

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

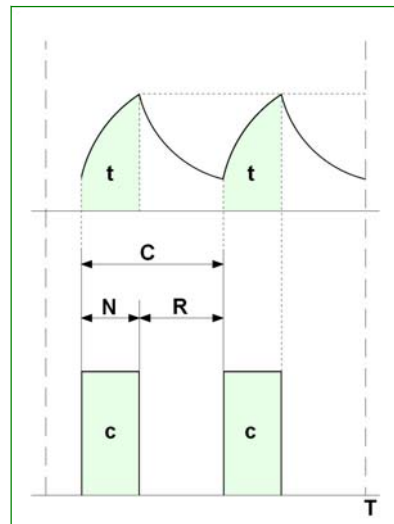
Operation according to cycle (C) including steady load time (N) and rest time (R).

Starts/stops do not affect temperature.

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

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

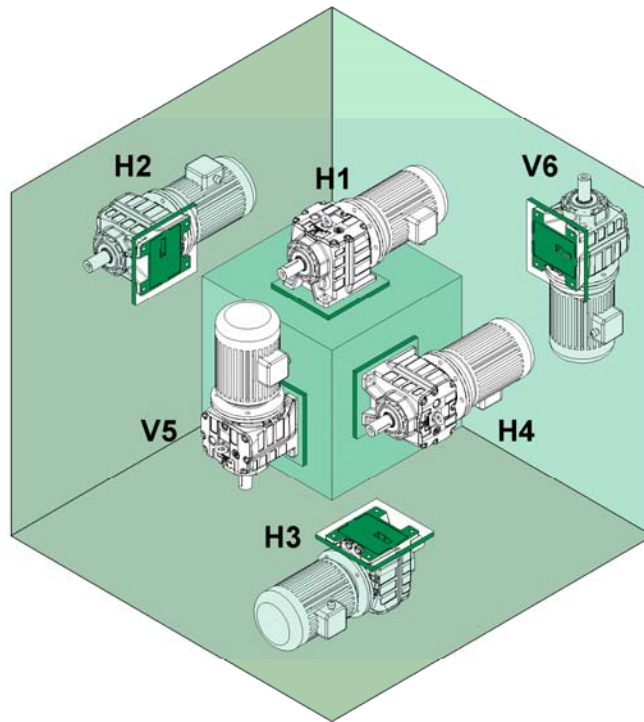
- N = Operation time
- R = Rest time
- C = Duty cycle



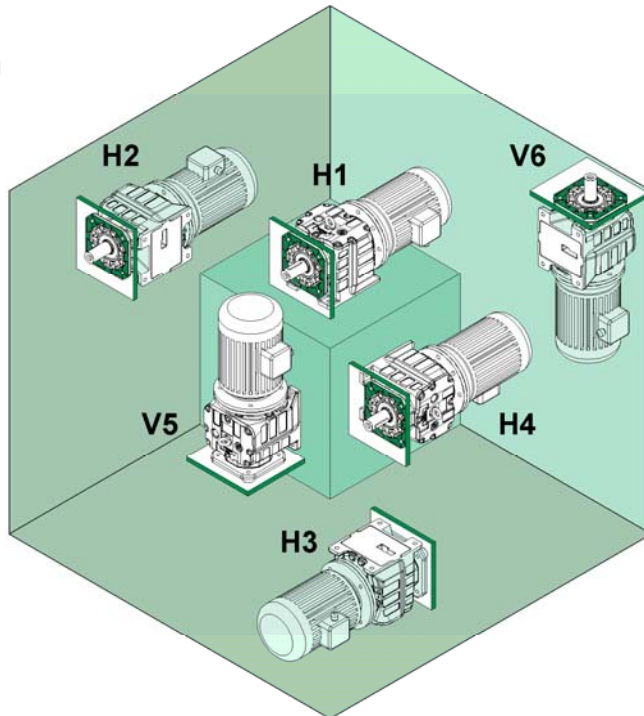
Gearboxes Series RD

Mounting positions

B3
Foot mounting



B5
Flange mounting

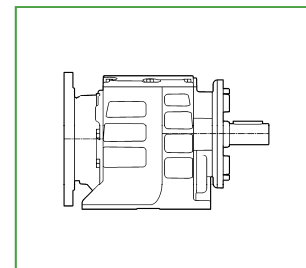


Gearboxes Series RD

Designation

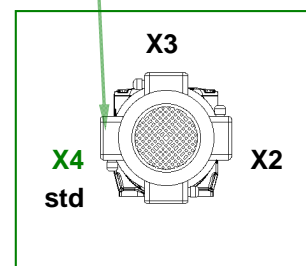
GEARBOX DESIGNATION

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 www.varvel.com - 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	2.313	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									IEC63-B5 solo
	200	209.250	7.0	200	0.15	520	3000	3,0889									IEC63-B5 solo
	250	270.630	5.5	200	0.12	580	3200	3,0816									IEC63-B5 solo
	315	318.704	4.5	200	0.10	600	3500	3,0796									(⊙) = IEC63-B5
	400	398.802	3.5	140	0.06	700	3500	3,0809									(⊙) = IEC63-B5
	500	513.920	2.8	140	0.04	730	3500	3,0790									(⊙) = IEC63-B5
	630	629.039	2.2	140	0.04	760	3500	3,0783									(⊙) = IEC63-B5

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	---	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	---

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

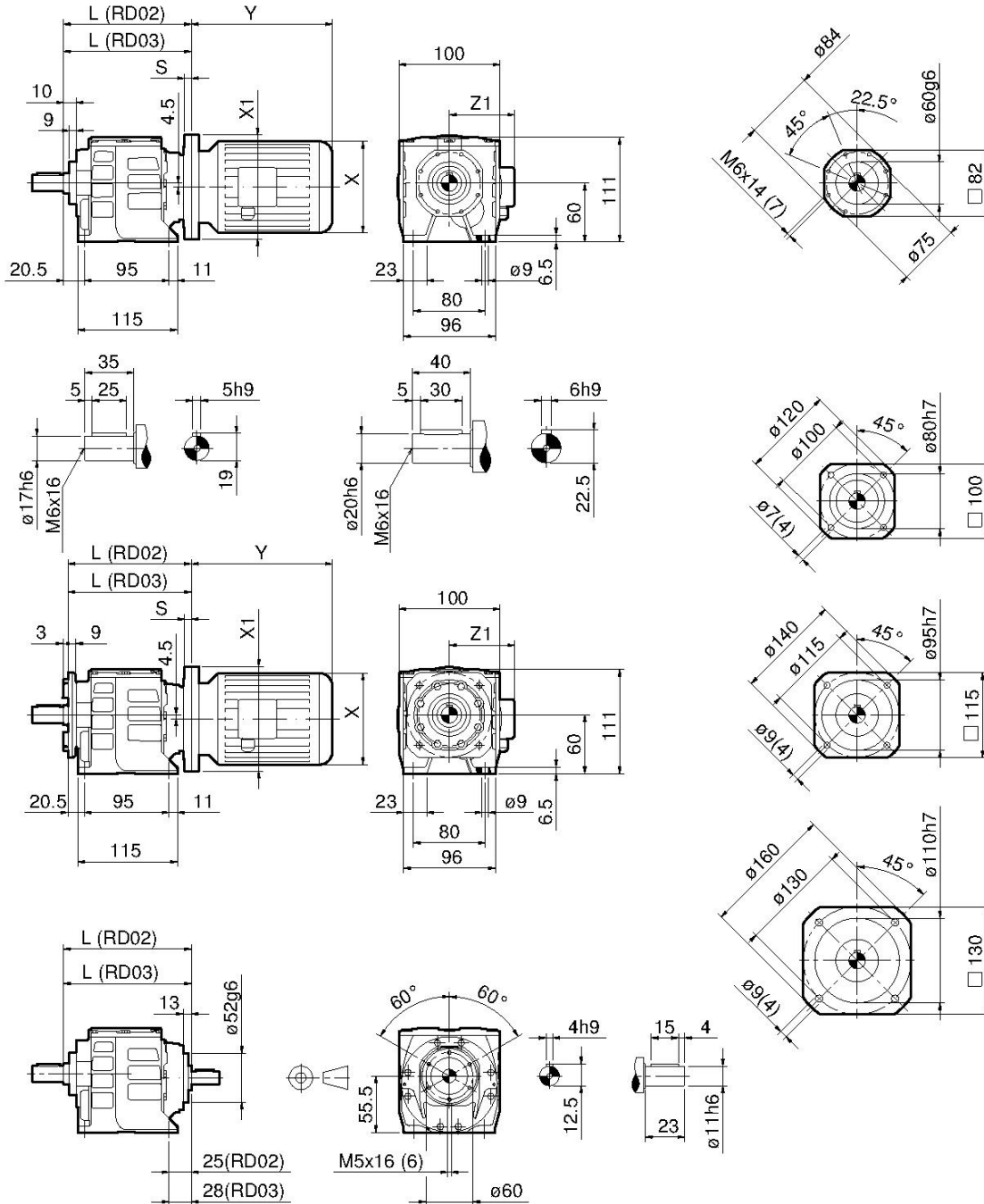
Geared motor selection

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
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
	10.0	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
	16.0	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

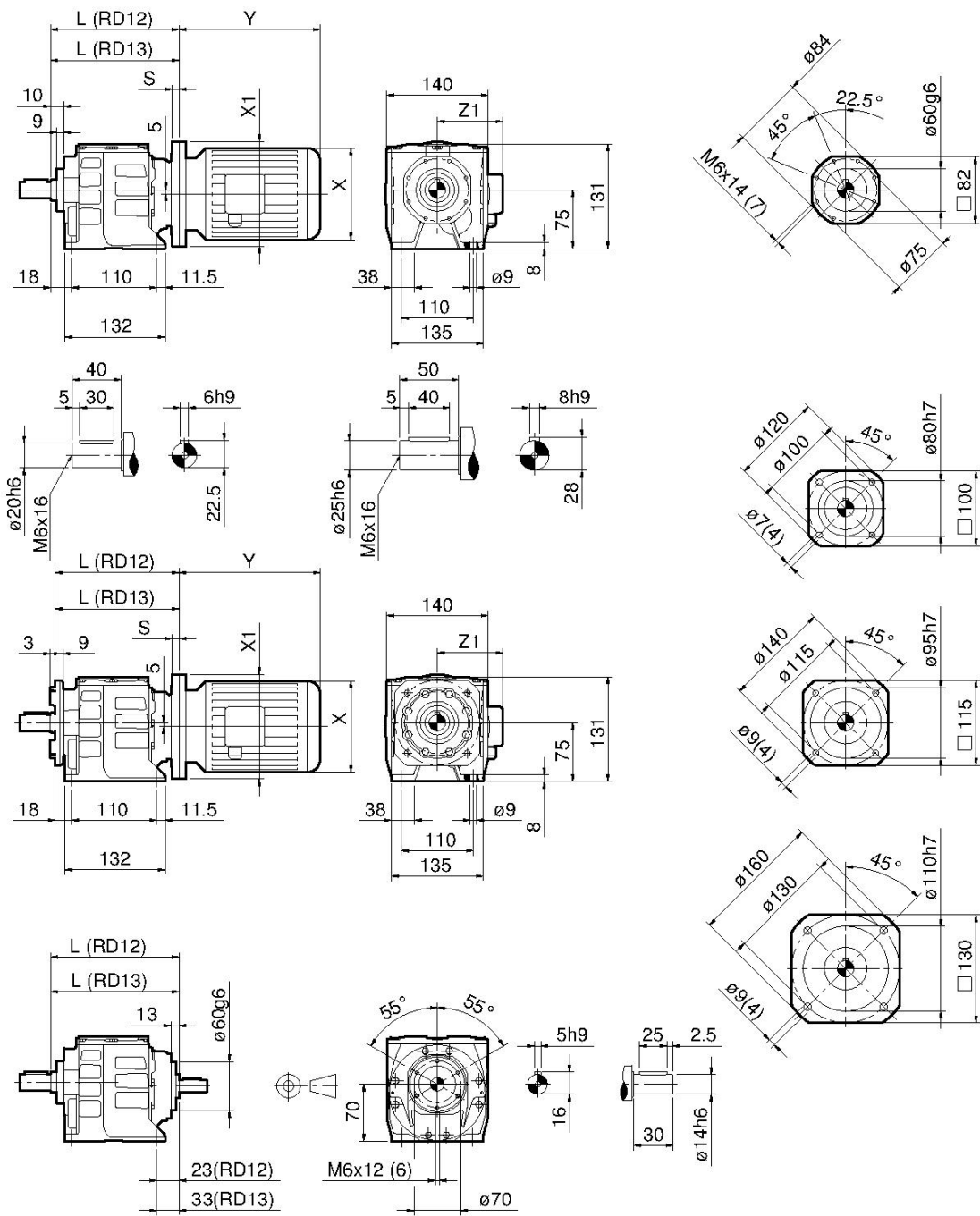


RD	02 / 03	02 / 03	02 / 03	02	---	---	---	---
IEC	56	63	71	80	---	---	---	---
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	---	---	---	---
X1 (B5) / S	120/11	140/10	160/11.5	---	---	---	---	---
X1 (B14) / S	80/8	90/10	105/10	120/11	---	---	---	---
L (RD02)	140	140	140	140	---	---	---	---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

RD12 - RD13

Gearboxes Series RD

Dimensions

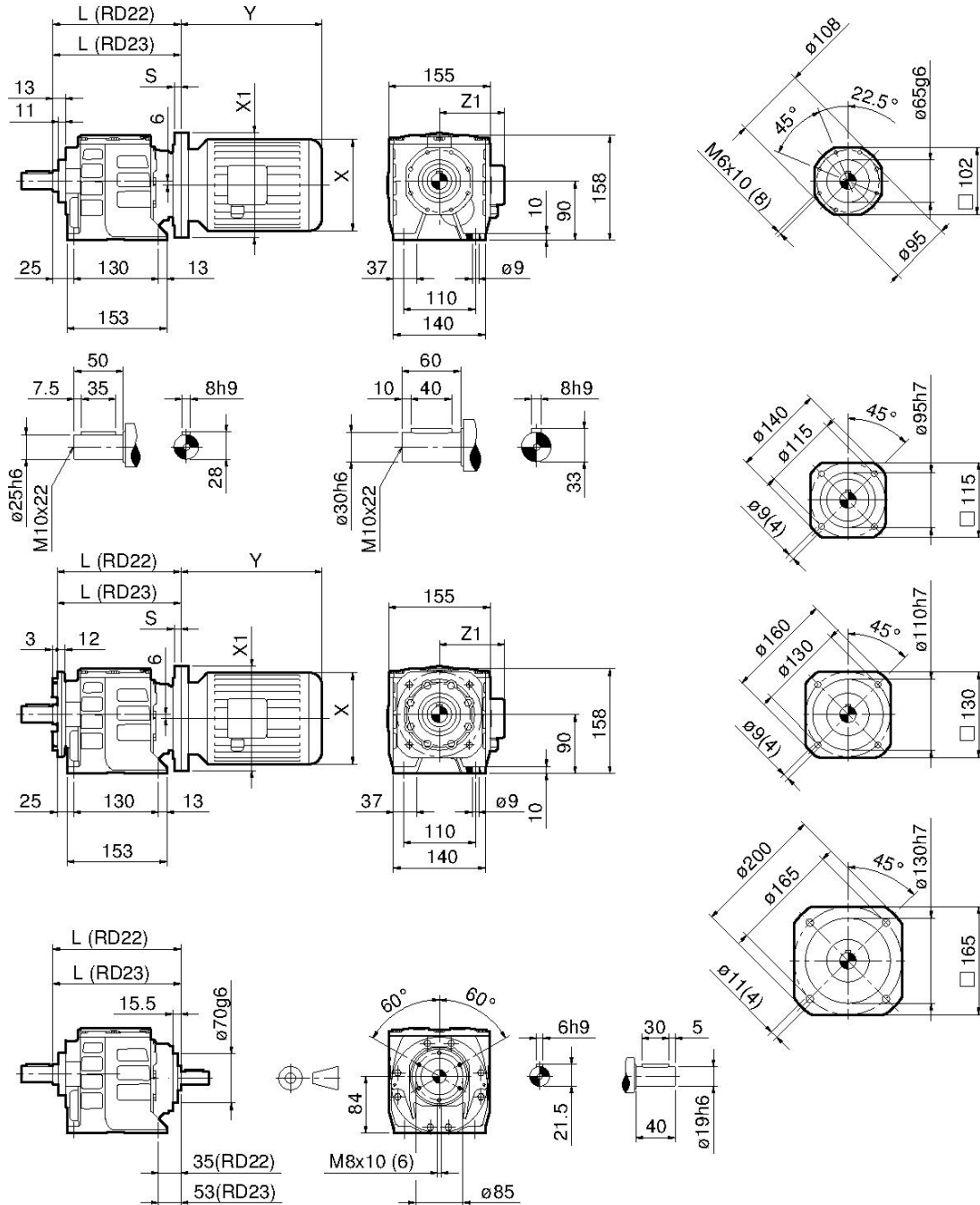


RD	12 / 13	12 / 13	12 / 13	12	12	12	---	---
IEC	56	63	71	80	90 S	90 L	---	---
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	---	---
X1 (B5) / S	120/11	140/10	160/11.5	200/11	200/11	200/11	---	---
X1 (B14) / S	---	90/8	105/10	120/11	140/10	140/10	---	---
L (RD12)	151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

Gearboxes Series RD

RD22 - RD23

Dimensions

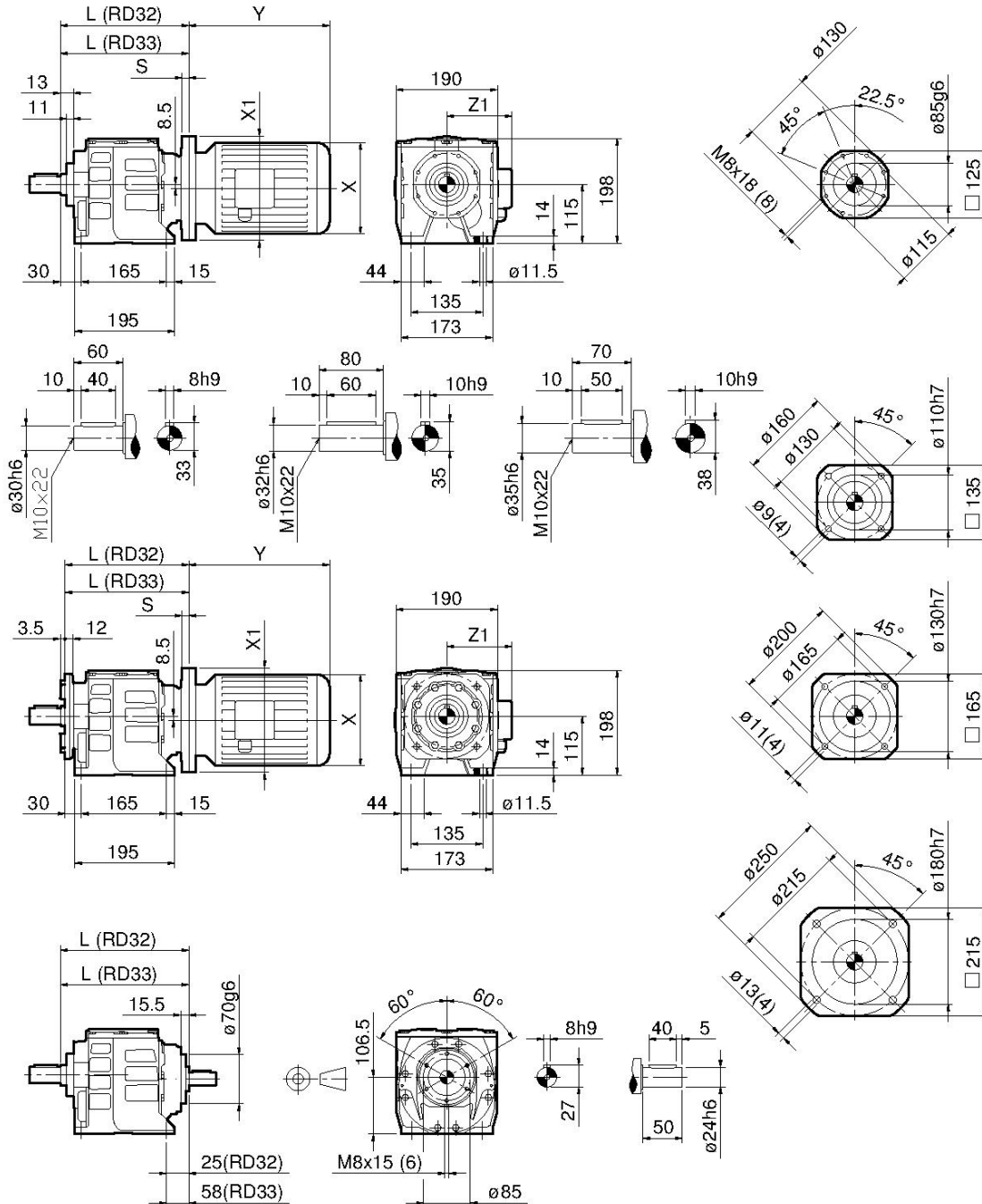


RD	22 / 23	22 / 23	22 / 23	22 / 23	22 / 23	22	22	---
IEC	63	71	80	90 S	90 L	100	112	---
X / Y / Z1	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	---
X1 (B5) / S	140/10	160/11.5	200/11	200/11	200/11	250/13	250/13	---
X1 (B14) / S	---	105/10.5	120/10	140/10	140/10	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)	211	209	209[211-B14]	209[211-B14]	209[211-B14]	---	---	---

RD32 - RD33

Gearboxes Series RD

Dimensions

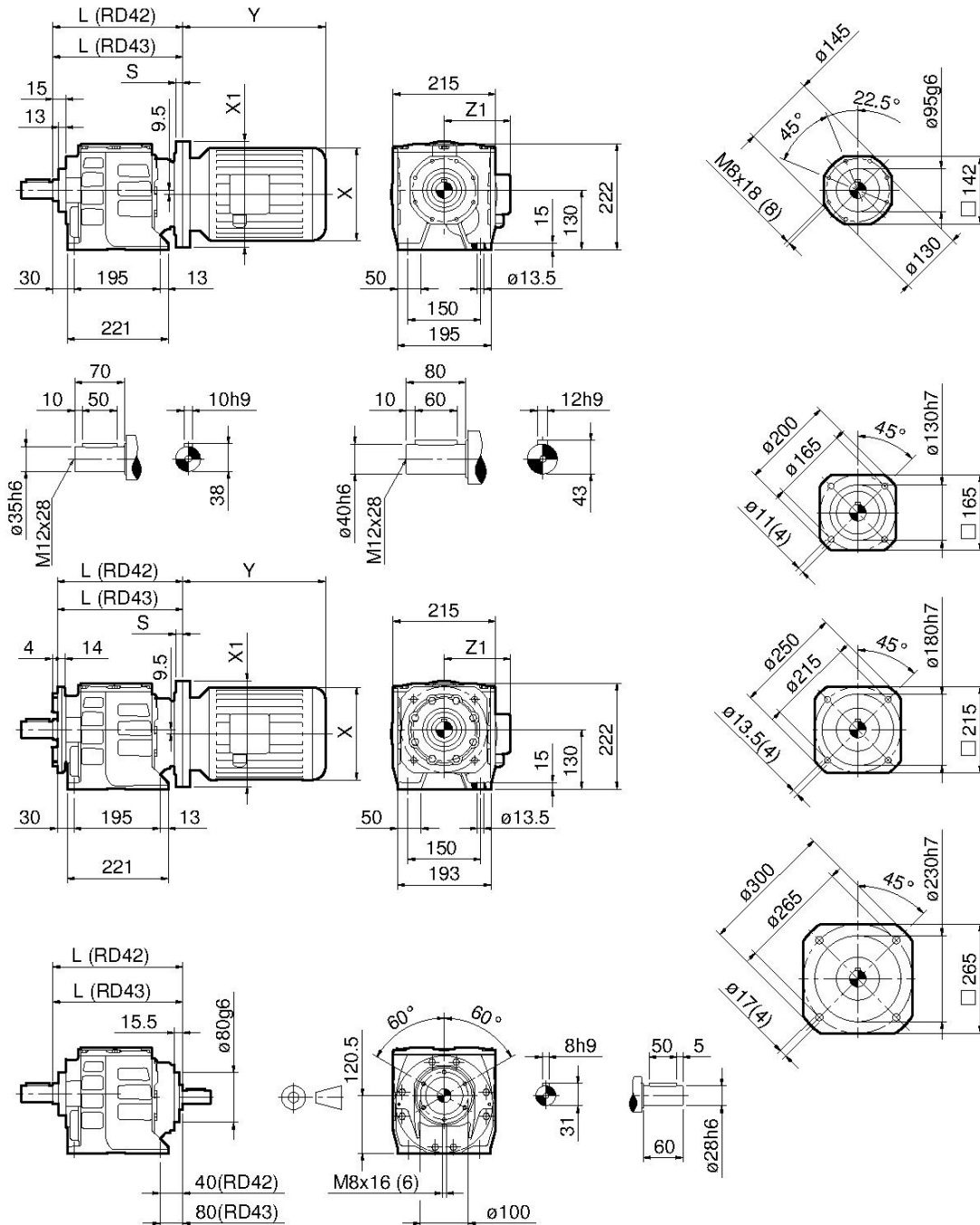


RD	32 / 33	32 / 33	32 / 33	32 / 33	32	32	---	---
IEC	71	80	90 S	90 L	100	112	---	---
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	---	---
X1 (B5) / S	160/11.5	200/11	200/11	200/11	250/13	250/13	---	---
X1 (B14) / S	105/10.5	120/10	140/10	140/10	160/11.5	160/11.5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

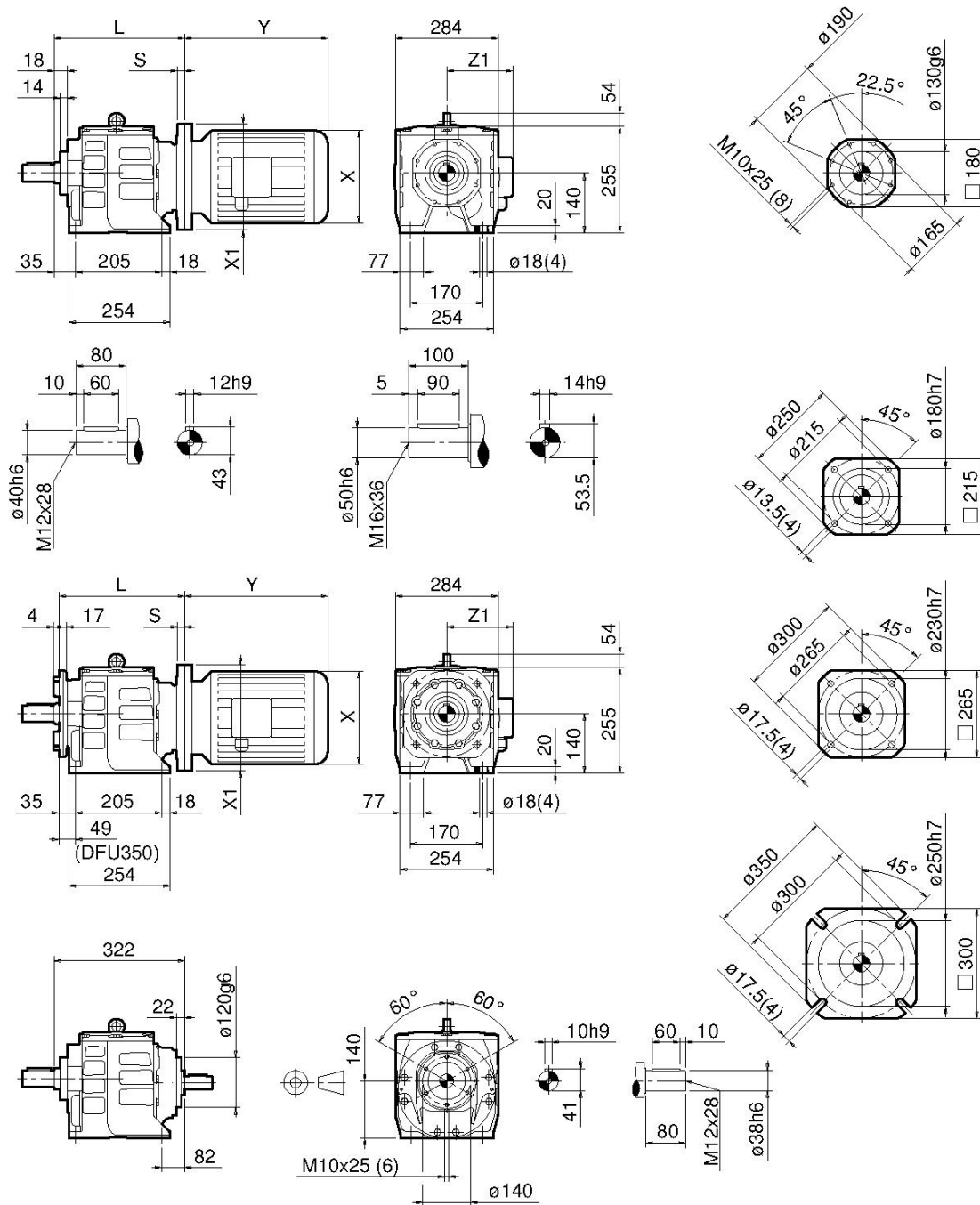


RD	43	42 / 43	42 / 43	42 / 43	42 / 43	42	42	42
IEC	71	80	90 S	90 L	100	112	132 S	132 M
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	258/368/192	258/410/192
X1 (B5) / S	160/11.5	200/11.5	200/11.5	200/11.5	250/14	250/14	300/15	300/15
X1 (B14) / S	---	120/10	140/10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

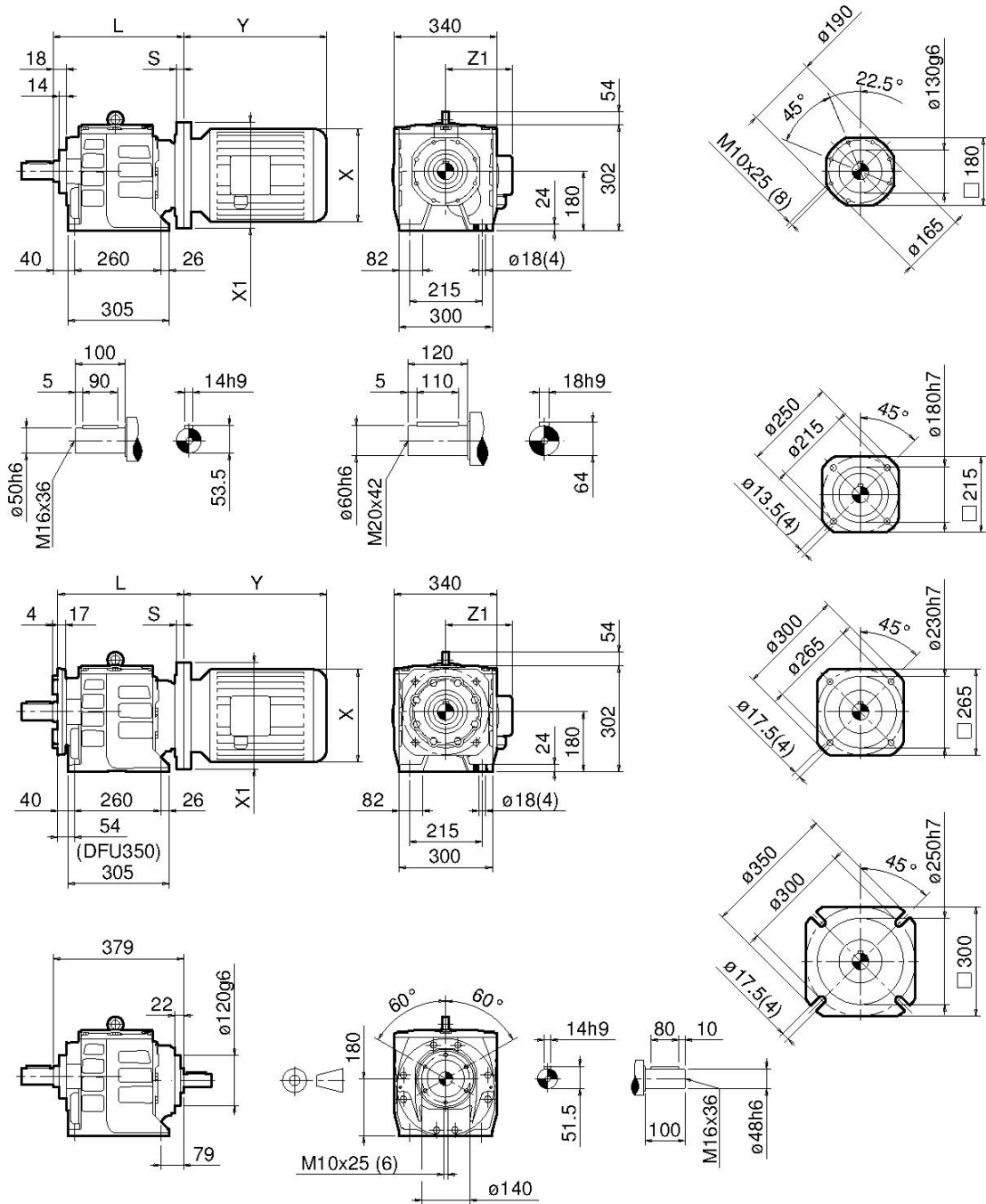


RD	52 / 53	52 / 53	52 / 53	52/53	52/53	52/53	52	52
IEC	80	90 S	90 L	100	112	132 S/M	160	180
X / Y / Z1	159/238/138	176/255/14	176/280/149	195/314/16	219/328/172	258/368[410-M]/192	310/486/2	320/580/24
X1 (B5) / S	200/16	200/16	200/16	250/16	250/16	300/16	350/25	350/25
X1 (B14) / S	---	---	---	---	---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



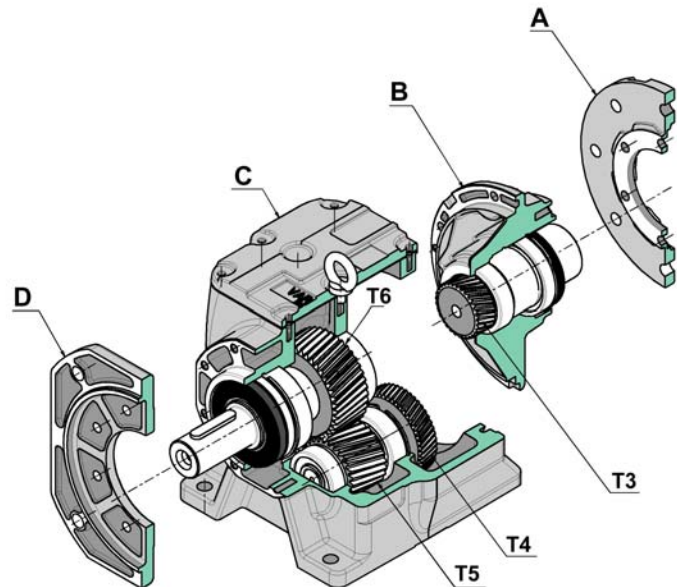
RD	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62	62
IEC	80	90 S	90 L	100	112	132 S/M	160	180
X / Y / Z1	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	258/368[410-M]/192	310/486/235	320/580/245
X1 (B5) / S	200/16	200/16	200/16	250/16	250/16	300/16	350/25	350/25
X1(B14) / S	---	---	---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

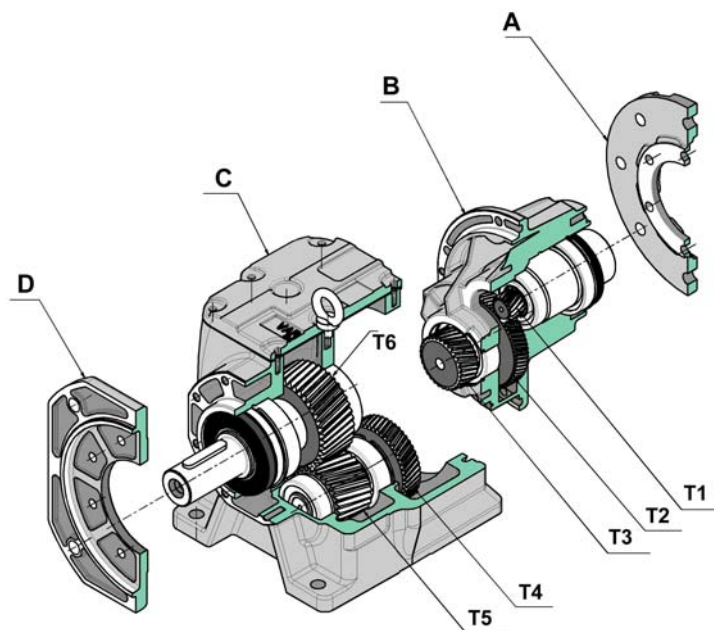
TWO GEAR STAGE REDUCER

- 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

(complete manual on www.varvel.com)

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.



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



VR•VS



ISM•BSM



VARfarm
by VARVEL



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