

# VARVEL®

MOTION CONTROL SINCE 1955

technology made in Italy



EN

## RS·RT



## Technology Made in Italy

EN

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.



- UNI EN ISO 9001:2008
- UNI EN ISO 14001:2004
- BS OHSAS 18001:2007



DIRECTIVE 94/9/EC (ATEX)

# RS - RT

## WORM GEAR BOXES

- single-stage worm
- helical / worm
- two-stage worm



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# RS - RT Gearboxes

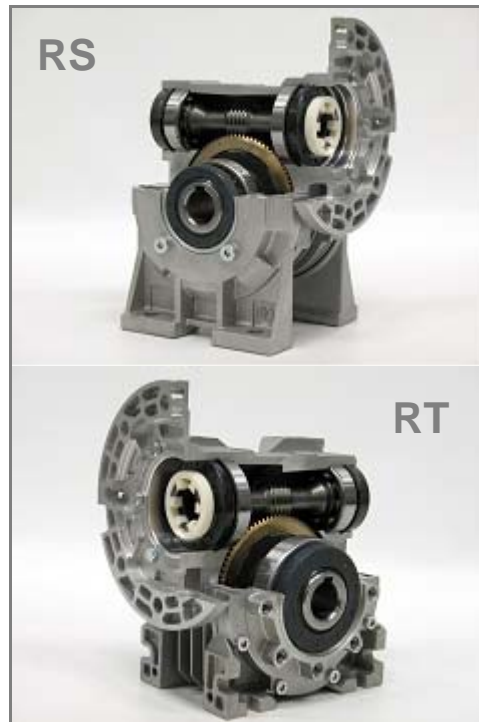
## Product description

**Multipurpose mounting**  
Aluminium die cast  
and Cast iron (from size 110 up)

**Wormshafts**  
ZI profile  
hardened and ground  
alloy steel

**Wormwheels**  
bronze alloy cast & cast iron hub

**Bearings**  
ball or roller types.  
Tapered roller types at output  
for heavy duty applications.



**Input**  
IEC and NEMA  
motor adapters and coupling  
or traditional key/keyway fitting

**Oil seals**  
NBR as standard  
Viton and Silicone on request

**Output**  
hollow bore as standard  
single or double solid shaft  
on request

**Modular attachments**  
One-stage helical input, Output flanges,  
Torque arm, Torque limiter.

### RS and RT - Single-stage worm gear boxes

The worm gearboxes, RS and RT series, specifically designed for universal mounting, are manufactured with aluminium die cast housings and covers up to the size 85 and cast iron from the size 110.

Torques listed in selection tables are output torque values; input motor powers are always referred to 1440 rpm.

On request, input Viton oil seals allow trouble-free operation with 2-pole standard AC, brushless or 3000 rpm DC motors, and Silicone oil seals are recommended for low temperatures.

Gearboxes are delivered filled with synthetic long-life oil (without plugs), see filling quantities at page 17, and valid for all mounting positions.

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

### RA and TA - Helical worm gear boxes

The helical/worm gearboxes, RA and TA series, made by of an independent single stage helical gearbox FXA fitted to a standard FRS or FTR gearbox, allow greater output torques and higher efficiency than the FRS and FRT gearbox with equivalent ratios.

### RS/RS and RT/RT - Two-stage worm gear boxes

The gearboxes, RS/RS and RT/RT series, are made of two gearboxes RS or RT and offer a full selection of high reduction ratios to obtain low output speeds and high torques.

## Gearboxes RS - RT

### Product description

#### **AS, AD - Output shafts**

All gearboxes are manufactured with hollow output shaft as standard. Optionally, a single AS or double AD solid output shaft - made of steel C43 - can be supplied.

An ASC safety shield for the opposite side of a single output shaft AS, is available on demand.

#### **BR, BT - Torque arms**

Standard gearboxes are normally supplied with covers on each side to allow the torque arm fixing when gearboxes have to operate as shaft mounted units.

The torque arm, standard or with Vulkollan vibration damping, is made of extra thick plate and white galvanized.

#### **TLI/TLE - Torque limiters**

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

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.

Oil quantity of torque limiters TLI are listed on page 42 and 50.

#### **SL - Travel limiters**

The SL travel limiter device stops - by means of built-in limit switches - the gearbox after a given operation time.

Standard thread allows approx. 40 turns of the output shaft.

The limit switch travel is adjustable and operation time varies upon the used reduction ratio from min. 12 to max. 170 seconds.

#### **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).

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

 II 2 GD ck IP66 T<sub>max</sub>=135 °C

## RS - RT Gearboxes

### Product description



	<b>GENERAL SPECIFICATIONS</b>
Range	Sizes: 9 RS + 7 RT 55 reduction ratios 3020 Nm max. output torque
Sizing	According to BS721. 15,000 hrs average lifetime with service factor SF1
Housing, Covers	Pressure die cast aluminium till size 85 Cast iron from size 110.
Coupling G input	Pressure die cast aluminium
Toothed parts	Worms of steel CH and tooth profile ground. Wheels of bronze on cast iron hub.
Shafts & Keys	Steel Tolerances: shafts h6 - bores E8 Keys according to DIN6885 B1
Hollow output shaft	Steel, grey or ferritic cast iron according to gearbox size
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
Coating	RS/RT $\geq 110$ : epoxy powder paint, std colour RAL 7012. RS/RT28-85: real aluminium.
Protection Grade	Gearbox body IP66. Motor and connection flanges IP20; increased protection on demand.

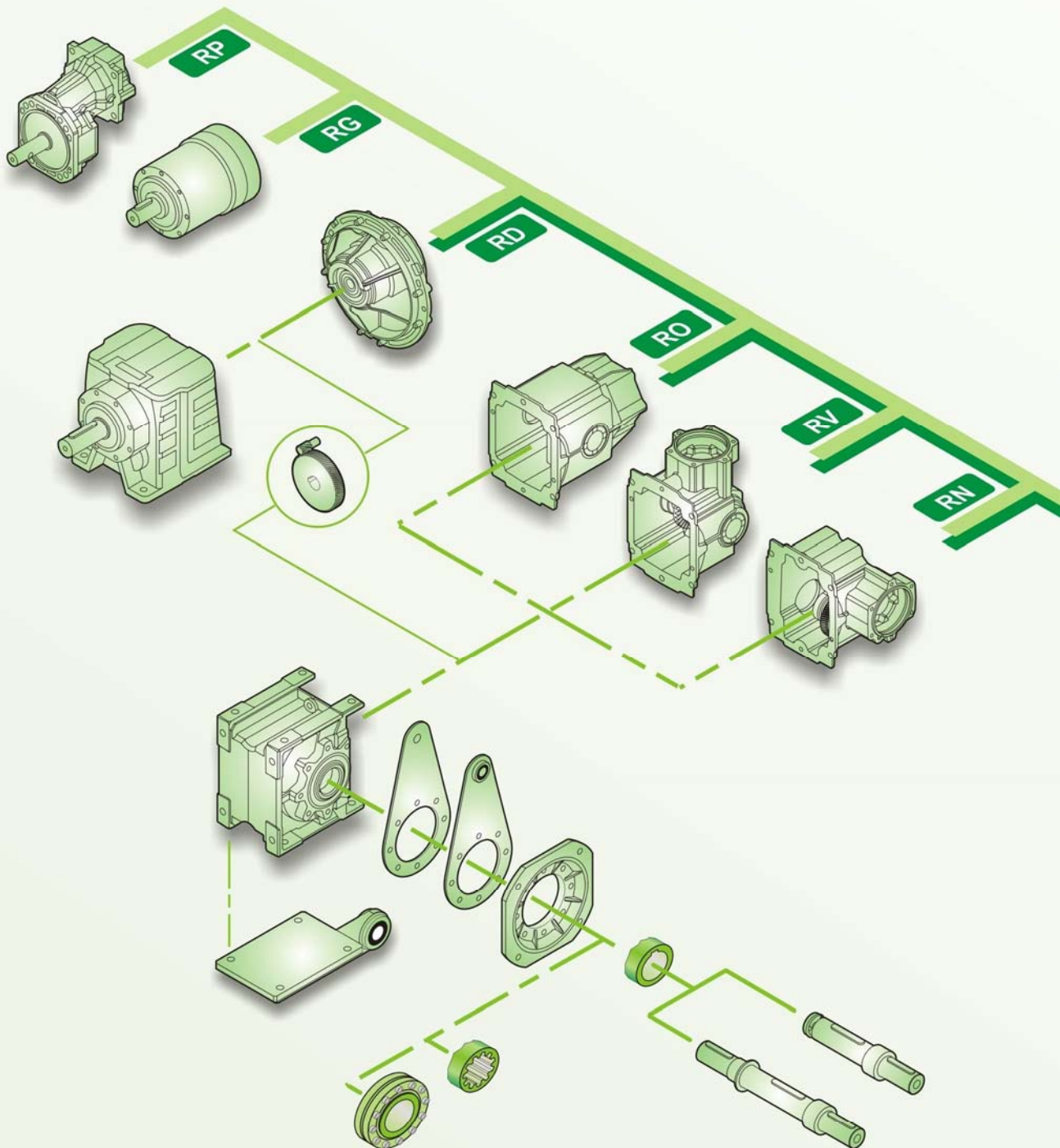
## Gearboxes RS - RT

### Symbols

Symbol	Description	Formula
$F_r$ [N]	Application radial load	
$F_{r1}$ [N]	Catalogue radial load (input)	
$F_{r2}$ [N]	Catalogue radial load (output)	
FS	Service factor	$FS = \frac{M_2}{M_{(app)}}$
$i_n$	Nominal reduction ratio	
$i_r$	Actual reduction ratio	
$J_1$ [kgcm <sup>2</sup> ]	Lubricant (litres)	
Lub [I]	Moment of inertia of the gearbox at input shaft	
$M_2$ [Nm]	Gearbox maximum output torque	
$M_{(app)}$ [Nm]	Application torque	
$n_1$ [rpm]	Input speed	
$n_2$ [rpm]	Output speed	
$P_1$ [kW]	Motor power	$P_1 = \frac{M_2 * n_2}{9550 * \eta}$
$P_{(kg)}$ [kg]	Weight	
$\eta$	Efficiency	

# RS - RT Gearboxes

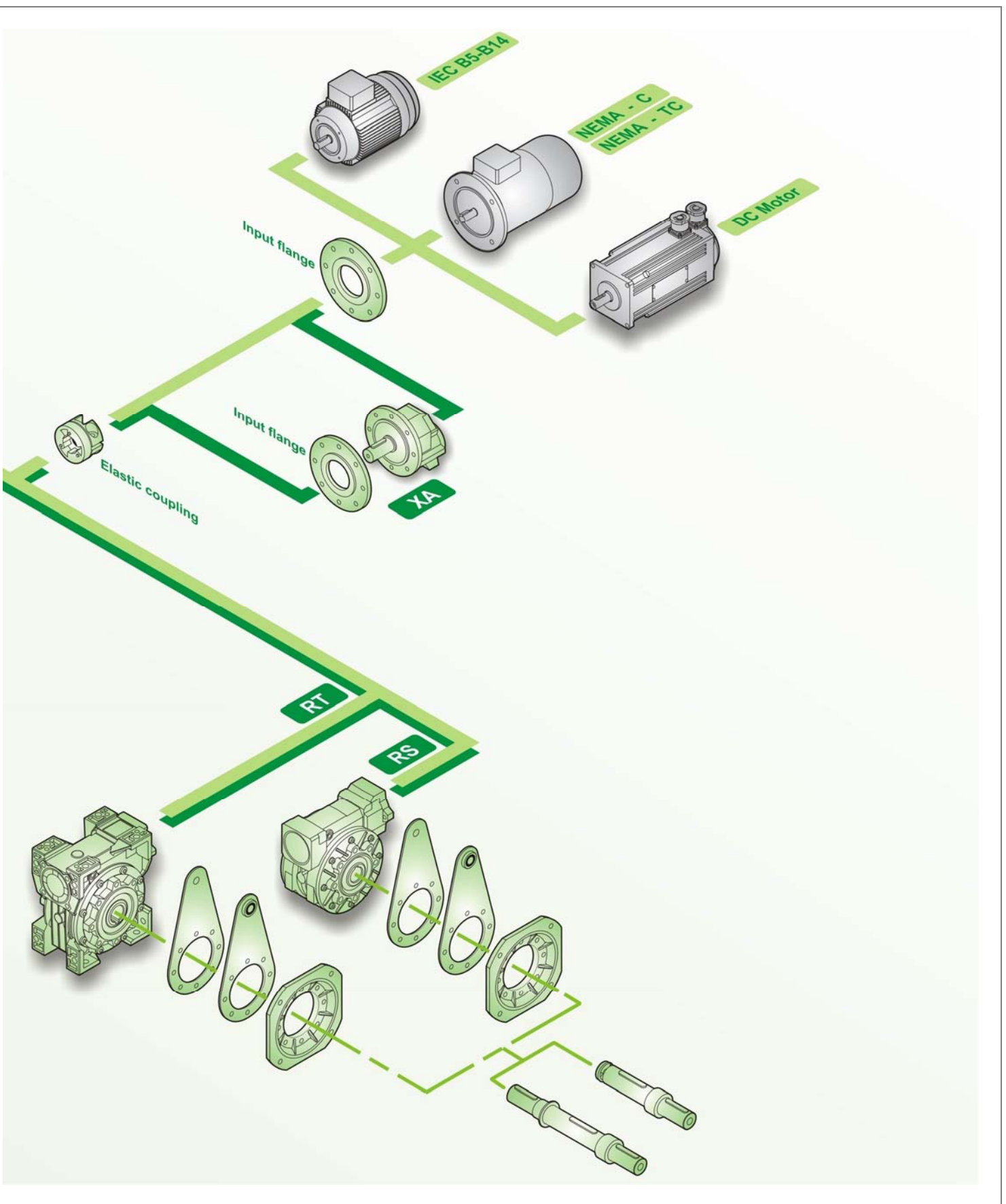
Modular system





## Gearboxes RS - RT

Modular system



# RS - RT Gearboxes

## Flexible coupling "G"

### Reducer Half-coupling

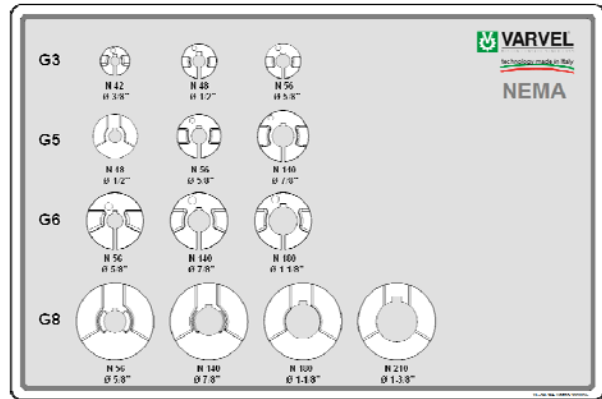
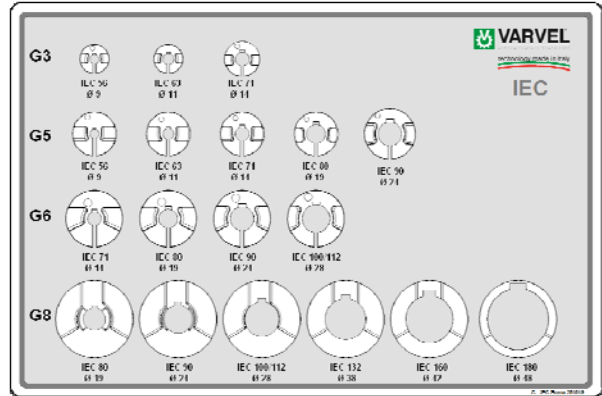
- Material: steel
- One-piece machined on Input shaft
- Two bearing setting
- Unchanged casing dimensions

### Spider

- External tooth connection
- Material: Thermoplastic Elastomer:
  - Hytrel® TPE - PolyEster
  - Ixef® TPA - Piyarilamide
- Hardness
  - TPE 72 Shore D
  - TPA 90 Shore D
- Temperature
  - TPE -30/+100°C (-22/+212°F)
  - TPA -30/+135°C (-22/+275°F)

### Motor Half-coupling

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



### Advantages:

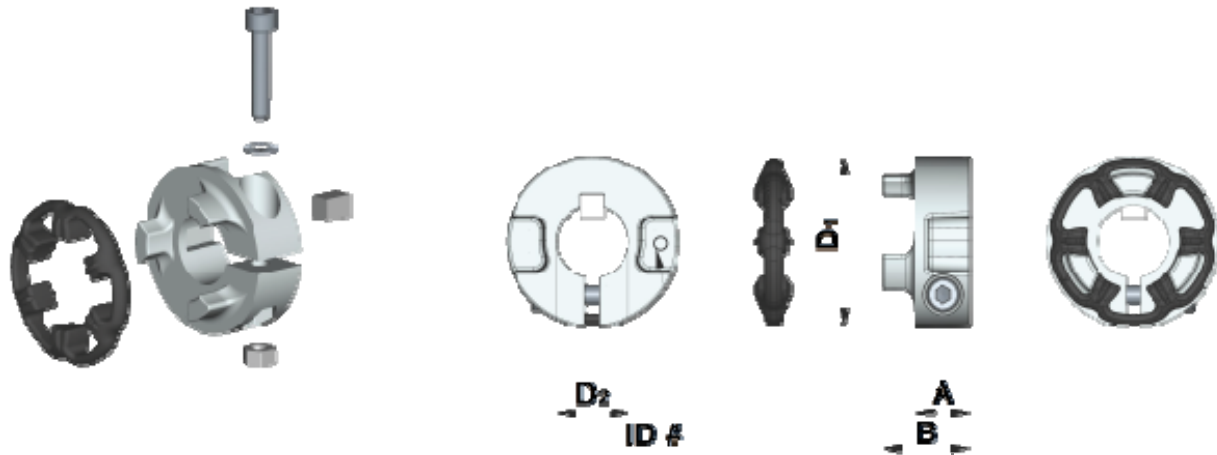
- One gearbox only for each reduction ratio
- Greater flexibility
- Increased stock rotation
- Elimination of fretting corrosion between key and keyway
- Gearbox / motor connection with zero backlash
- Allowed angular misalignment 1° max.
- High torsional rigidity
- High vibration damping

### Input flanges:

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

## Gearboxes RS - RT

Flexible coupling selection



Type	IEC NEMA	Kit code	RS - RT	Mt [Nm]	Mt1 [Nm]	Mt2 [Nm]	A [mm]	B [mm]	D1 [mm]	D2 [mm/inch]	ID#					
G3	IEC	KG3.009	28 - 40	4.5 - 6	15	8 - 10	11	19	30	9	309					
		KG3.011	28 - 40	4.5 - 6	15	8 - 10			30	11	311					
		KG3.014	40	7 - 8.5	28	18 - 22			36	14	314					
G3	NEMA	KG3.N42	28 - 40	4.5 - 6	16	8 - 10	11	19	30	3/8"	3N42					
		KG3.N48	40	4.5 - 6	18	10 - 12			36	1/2"	3N48					
		KG3.N56	40	7 - 8.5	30	20 - 24			36	5/8"	3N56					
G5	IEC	KG5.011	50 - 60	8.9 - 10	15	8 - 10	14.5	23	45	11	511					
		KG5.014	50 - 60		30	12 - 17			45	14	514					
		KG5.019	50 - 60		40	20 - 25			45	19	519					
		KG5.024	60		70	30 - 40			52	24	524					
G5	NEMA	KG5.N56	50 - 60	8.9 - 10	45	30 - 35	14.5	23	45	5/8"	5N56					
		KG5.N140	60		60	40 - 45			52	7/8"	5N140					
G6	IEC	KG6.014	70	15.3 - 18	60	30 - 40	19.5	31.5	58	14	614					
		KG6.019	70 - 85 - 110		90	50 - 65				19	619					
		KG6.024	70 - 85 - 110		130	85 - 100				24	624					
		KG6.028	70 - 85 - 110		180	100 - 120				28	628					
	G6	NEMA	KG6.N56		70 - 85 - 110	15.3 - 18				50	---	19.5	31.5	58	5/8"	6N56
			KG6.N140		70 - 85 - 110					85	---				7/8"	6N140
KG6.N180	70 - 85 - 110	200	---	1-1/8"	6N180											

Mt - Screw locking torque  
 Mt<sub>1</sub> - Transmissible torque with key  
 Mt<sub>2</sub> - Transmissible torque without key

## RS - RT Gearboxes

### IEC flanges & flexible coupling

RS - RT	Flange	IEC size	Kit Code		Coupling	
			B5 Flange	B14 Flange	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 KG3.011
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 KG3.011 KG3.014
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 KG5.014 KG5.019
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 KG5.019 KG5.024
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 KG6.019 KG6.024 KG6.028
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 KG6.024 KG6.028
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 KG6.028 ---
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 KG6.024 KG6.028

# - Key / keyway motor fitting

## Gearboxes RS - RT

### NEMA flanges & flexible coupling

RS - RT	Flange	NEMA size	Kit Code	Coupling	
				Type	Kit Code
RS-RT 28	FM 28	42 C 56 C	K530.207.N042 K530.207.N048	G5 ø 3/8" G5 ø 1/2"	KG3.N042 KG3.N048
RS-RT 40	FM 40	42 C 48 C 56 C	K531.227.N048 K531.227.N048 K531.227.N056	G3 ø 3/8" G3 ø 1/2" G3 ø 5/8"	KG3.N042 KG3.N048 KG3.N056
RS-RT 50	FM 50	56 C	K532.227.N056	G6 ø 5/8"	KG6.N056
RS-RT 60	FM 60	56 C 140 TC	K539.227.N056 K539.227.N056	G5 ø 5/8" G5 ø 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 ø 5/8" G6 ø 7/8" G6 ø 1-1/8"	KG6.N056 KG6.N140 KG6.N180
RS-RT 85	FM 85	56 C 140 TC 180 TC	K534.227.N056 K534.227.N056 K534.227.N180	G6 ø 5/8" G6 ø 7/8" G6 ø 1-1/8"	KG6.N056 KG6.N140 KG6.N180
RS-RT 110	FM 110	56 C 140 TC 180 TC	K535.227.N056 K535.227.N056 K535.227.N180	G6 ø 5/8" G6 ø 7/8" G6 ø 1-1/8"	KG6.N056 KG6.N140 KG6.N180
RS 130	FM 130	56 C 140 TC 180 TC	K536.227.N056 K536.227.N056 K536.227.N180	# ø 5/8" # ø 7/8" # ø 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	# ø 5/8" # ø 7/8" # ø 1-1/8" # ø 1-1/8"	--- --- --- ---
XA 63	FM 40	* IEC56 * IEC63	K531.206.120 K531.206.140	# ø9 mm # ø11 mm	--- ---
XA 71	FM 50	* IEC71	K532.206.160	# ø14 mm	---
XA 80	FM 70	* IEC80 * IEC90	K533.206.200 K533.206.200	# ø19 mm # ø24 mm	--- ---
XA 100	FM 85	56 C 140 TC 180 TC	K334.227.N056 K334.227.N056 K334.227.N180	G6 ø 5/8" G6 ø 7/8" G6 ø 1-1/8"	KG6.N056 KG6.N140 KG6.N180

# - Key/keyway motor fitting  
\* - IEC input only

# RS - RT Gearboxes

## Product designation

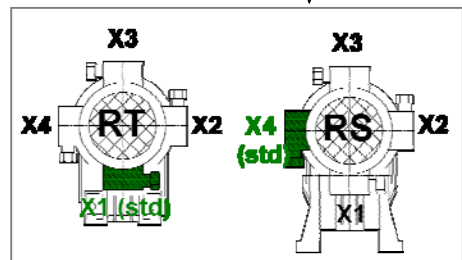
### GEARBOX DESIGNATION

<b>F</b>	<b>RS</b>	<b>[./]</b>	<b>40</b>	<b>B3</b>	<b>28</b>	<b>IEC71</b>	<b>B14</b>	<b>(OPS, OPP)</b>
								OPS = Standard options: pages 42, 50 OPP = Options listed at the foot of the page
								B5, B14 = Motor form
								Motor size
								Reduction ratio
								Mounting form
								28, 40, 50, 60, 70, 85, 110 = RT size 28, 40, 50, 60, 70, 85, 110, 130, 150 = RS size
								63/, 71/, 80/, 100/ = RX helical attachment size (1 <sup>st</sup> gearbox) 28/, 40/, 50/, 60/, 70/ = RS, RT worm attachment size (1 <sup>st</sup> gearbox)
								RS, RT = Gearbox type

- M = geared motor
- F = with input flange
- S = without input flange
- ... = nothing - free input shaft

### MOTOR DESIGNATION

<b>MT</b>	<b>0,37 kW</b>	<b>71b4</b>	<b>B14</b>	<b>230/400/50</b>	<b>IP55</b>	<b>F</b>	<b>X1</b>
							Terminal box position
							F (std) = Insulation class
							IP55 (std) = Protection class
							Voltage / Frequency
							B5 or B14 = Mounting
							IEC size and Number of poles
							Motor power



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

### OPTIONS OPP

Standard fitting side, unless otherwise requested, is the right side of the gearbox when seen from the input side .

- |   |                                |
|---|--------------------------------|
| ACØ - Non standard hollow shaft ø... mm | GRM - Reduced endplay          |
| CS - Heavy duty bearings                | LNS - Non-standard lubrication |
| F, FL - Additional output flange        | VB - NDE wormshaft extension   |



### Modularity and flexibility

have been leading the design of Varvel products since 2000.

The gearbox-kit concept was carried out allowing anyone to assemble the unit in a 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 site

[www.varvel.com](http://www.varvel.com)

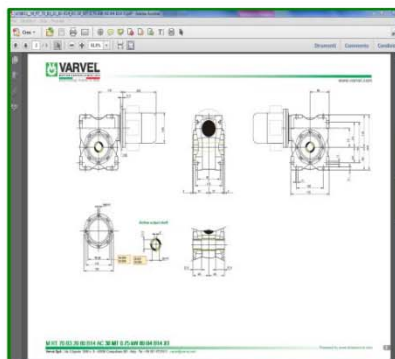
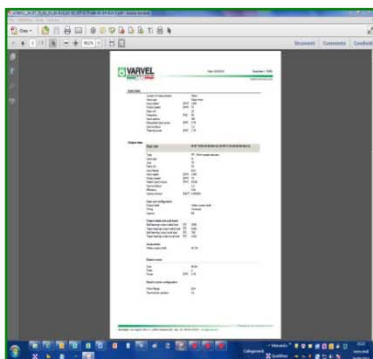
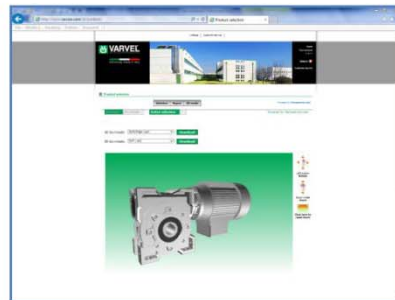
allows easy sizing selection from the Varvel product range.

### 2D/3D Drawings

A guided selection allows the 2D drawing / 3D model downloading for the most popular CAD systems.

### Guided selection

The suitable product configuration returns upon a given sequence of application parameters (power, output torque, rpm, service factor, etc.) a PDF data sheet including performance data, and 2D dimensional drawings are generated accordingly. A 3D model is also available as alternative output



# RS - RT Gearboxes

**RS**

Mounting positions

**RS , RA , RS/RS**

Output

S (SA)	I (IA)	D (DA)	PC (PC)	FL (FA - FB - PA - PB)	
<b>B3 (std)</b>	<b>B3 (std)</b>	<b>B3 (std)</b>	<b>B5 (std)</b>	<b>B5 (std)</b>	<b>B5i</b>
<b>V5</b>	<b>V5</b>	<b>V5</b>	<b>B5</b>	<b>B5a</b>	<b>B5ai</b>
<b>B8</b>	<b>B8</b>	<b>B8</b>	<b>B5</b>	<b>B5b</b>	<b>B5bi</b>
<b>V6</b>	<b>V6</b>	<b>V6</b>	<b>B5</b>	<b>B5c</b>	<b>B5ci</b>
<b>B6</b>	<b>B6</b>	<b>B6</b>	<b>V1</b>	<b>V1</b>	<b>V1i</b>
<b>B7</b>	<b>B7</b>	<b>B7</b>	<b>V3</b>	<b>V3</b>	<b>V3i</b>

**RA**

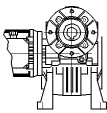
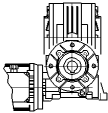
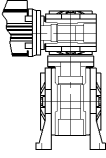
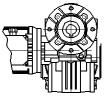
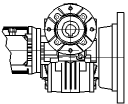
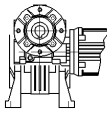
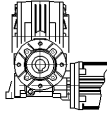
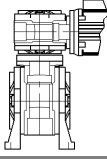
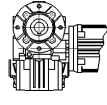
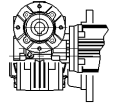
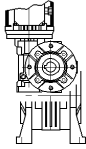
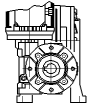
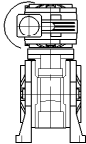
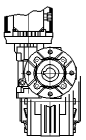
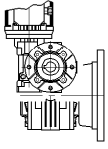
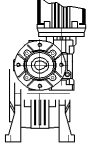
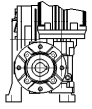
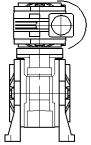
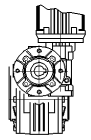
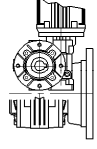
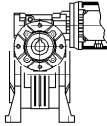
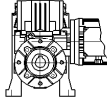
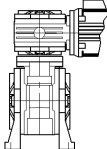
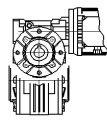
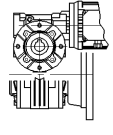
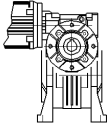
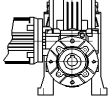
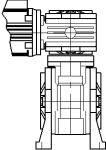
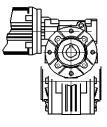
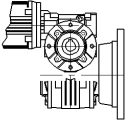
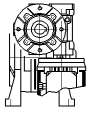
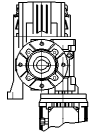
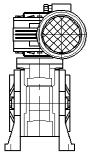
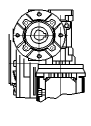
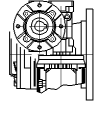
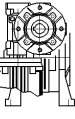
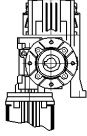
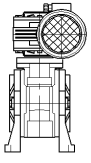
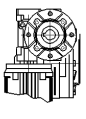
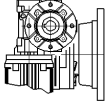
Input

10 (std)	11	12	13		



**RS / RS**

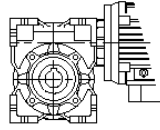
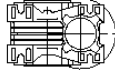
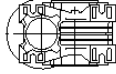
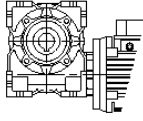
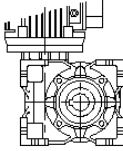
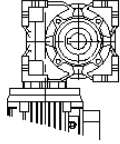
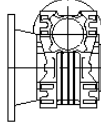
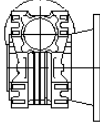
Output

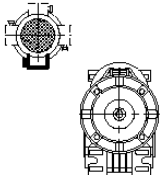
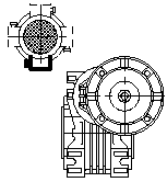
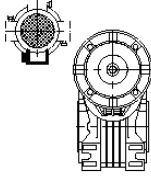
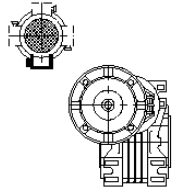
	<b>S (SA)</b>	<b>I (IA)</b>	<b>D (DA)</b>	<b>PC (PA - PB)</b>	<b>FL (FA - FB)</b>
<b>11</b>					
<b>12</b>					
<b>13</b>					
<b>14</b>					
<b>15</b>					
<b>16</b>					
<b>17</b>					
<b>18</b>					

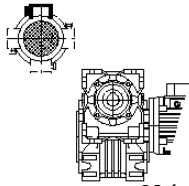
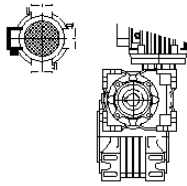
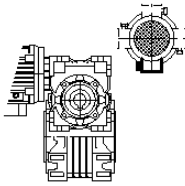
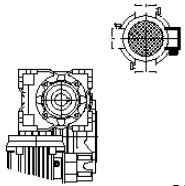
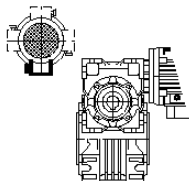
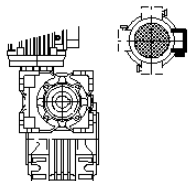
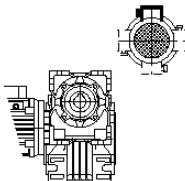
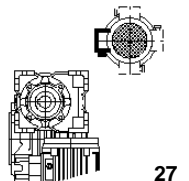
# RS - RT Gearboxes

**RT**

## Mounting positions

<b>RT</b> <b>TA</b> <b>RT/RT</b> Output	 <p><b>B3 (std)</b></p>	 <p><b>B6</b></p>	 <p><b>B7</b></p>	 <p><b>B8</b></p>
	 <p><b>V5</b></p>	 <p><b>V6</b></p>	 <p><b>F (std)</b></p>	 <p><b>Fi</b></p>

<b>TA</b> Input	 <p><b>10 (std)</b></p>	 <p><b>11</b></p>	 <p><b>12</b></p>	 <p><b>13</b></p>
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<b>RT/RT</b> Input	 <p><b>20 (std)</b></p>	 <p><b>21</b></p>	 <p><b>22</b></p>	 <p><b>23</b></p>
	 <p><b>24</b></p>	 <p><b>25</b></p>	 <p><b>26</b></p>	 <p><b>27</b></p>

## Gearboxes RS - RT

Service factors - Weights - Lubricants

### SERVICE FACTORS - $FS = FS_1 \times FS_2$

Load	FS <sub>1</sub>			FS <sub>2</sub>	
	uniform	variable	shock	Start/stops per hour	FS <sub>2</sub>
3 - 4 h	0.8	1.0	1.5	6	1.0
8 - 10 h	1.0	1.2	1.8	60	1.2
10 - 24 h	1.4	1.6	2.0	120	1.4

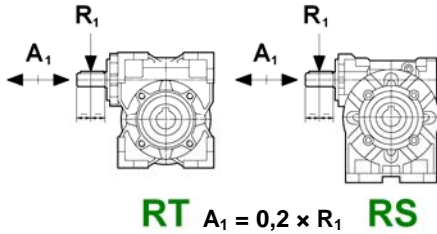
### WEIGHTS AND LUBRICANTS

RS - RT	kg	litres	RA - RT	kg	litres l <sub>1</sub> / l <sub>2</sub>	RS / RS RT / RT	kg	litres l <sub>1</sub> / l <sub>2</sub>
28	1.1	0.03	63 / 40	4.0	0.04/0.08	28 / 28	2.5	0.03/0.03
40	2.5	0.08	63 / 50	5.3	0.04/0.13	28 / 40	3.9	0.03/0.08
50	3.8	0.13	63 / 60	8.0	0.04/0.25	28 / 50	5.2	0.03/0.13
60	6.5	0.25	71 / 50	6.6	0.06/0.13	28 / 60	7.9	0.03/0.25
70	9.0	0.35	71 / 60	9.3	0.06/0.25	40 / 70	12.0	0.08/0.35
85	13.5	0.60	71 / 70	11.8	0.06/0.35	40 / 85	16.5	0.08/0.60
110	39.0	1.50	71 / 85	16.3	0.06/0.60	50 / 110	45.0	0.13/1.50
RS 130	50.0	2.75	80 / 60	10.5	0.10/0.25	RS 60/130	57.0	0.25/2.75
RS 150	80.0	4.40	80 / 70	13.0	0.10/0.35	RS 70/150	90.0	0.35/4.40
			80 / 85	17.5	0.10/0.60			
			80 / 110	43.0	0.10/1.50			
			100/110	46.0	0.20/1.50			
			RS 100/130	64.0	0.20/2.75			
			RS 100/150	94.0	0.20/4.40			

XA	kg	litres
63	1.5	0.04
71	2.2	0.06
80	3.0	0.10
100	7.0	0.20

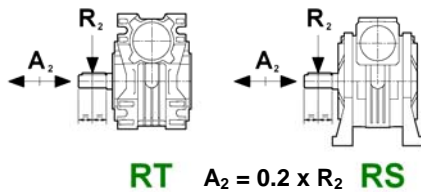
# RS - RT Gearboxes

## External loads



### Input radial loads $R_1$ [daN]

rpm	2800	1400	900	700	500	300
RS - RT 28	5	7	8	9	10	12
RS - RT 40	11	15	16	17	18	20
RS - RT 50	15	20	22	25	28	30
RS - RT 60	23	30	33	35	37	40
RS - RT 70	26	35	40	44	47	50
RS - RT 85	34	45	52	58	62	70
RS - RT 110	57	75	80	85	92	100
RS130	70	100	105	110	115	120
RS150	90	120	125	130	140	150



### Output radial loads $R_2$ [daN] with standard bearings

rpm	280	200	140	93	70	50	35	29	25	20	18	14	Brg code
RS - RT 28	---	45	50	55	60	62	70	75	80	90	95	100	16005
RS - RT 40	100	100	110	120	135	150	160	170	180	190	200	230	16006
RS - RT 50	145	125	145	170	190	200	230	240	260	280	290	320	16008
RS - RT 60	225	240	250	290	330	360	390	430	320	500	420	560	①
RS - RT 70	260	270	290	360	390	420	450	520	550	590	630	670	②
RS - RT 85	330	330	370	440	470	540	550	630	660	710	750	830	③
RS - RT 110	---	390	415	520	540	590	570	750	780	800	880	980	④
RS 130	---	500	565	615	650	660	780	880	950	970	1050	1150	6015
RS 150	---	650	770	830	880	900	1100	1200	1250	1300	1400	1500	6216

① - RS: 6008 / RT: 6208

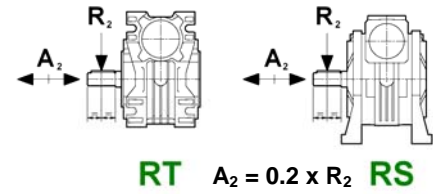
③ - RS: 6010 / RT: 6210

② - RS: 6009 / RT: 6209

④ - RS: 6012 / RT: 6212

## Gearboxes RS - RT

Output loads with heavy duty bearings



**Output radial loads  $R_2$  [daN] with heavy duty bearings**

rpm	280	200	140	93	70	50	35	29	25	20	18	14	Brg code
RS-RT 28	---	65	75	82	90	93	105	112	120	130	130	130	6005
RS-RT 40	140	150	155	165	190	210	225	240	250	260	260	260	32006
RS-RT 50	200	175	200	240	260	300	340	360	390	420	420	420	32008
RS-RT 60	290	300	320	370	420	480	510	570	610	660	660	660	30208
RS-RT 70	335	330	370	450	516	560	610	690	730	790	790	790	⑤
RS-RT 85	410	420	460	550	630	720	730	840	870	940	940	940	⑥
RS-RT 110	---	500	540	670	750	800	930	1050	1110	1110	1110	1110	⑦
RS 130	---	700	790	860	970	990	1170	1290	1420	1450	1450	1450	32015
RS 150	---	900	1080	1160	1320	1350	1650	1800	1870	1950	1950	1950	30216

⑤ - RS: 32009 / RT: 30209

⑥ - RS: 32010 / RT: 30210

⑦ - RS:32012 / RT: 30212

## RS - RT Motor fitting

FRS FRT	rpm IEC	i = 5	i7	10	15	20	28	40	49	56	70	80	100
		280	200	140	93	70	50	35	29	25	20	18	14
28	56	---	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	63	---	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
40	56	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	63	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	71	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
50	63	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	71	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	80	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
60	71	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	80	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	90	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
70	71	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	80	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	90	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	100	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
85	80	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	90	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	100/112	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
110	90	---	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	100/112	---	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	132	---	○	○	○	○	○	○	○	○	○	○	○
RS 130	100/112	---	○	○	○	○	○	○	○	○	○	○	○
	132	---	○	○	○	○	○	○	---	---	---	---	---
RS 150	100/112	---	○	○	○	○	○	○	○	○	○	○	○
	132	---	○	○	○	○	○	○	○	○	○	---	---
	160	---	○	○	○	○	○	○	○	---	---	---	---

- ⊙ - B5 & B14 (Flexible coupling)
- ⊙ - B5 (Flexible coupling)
- - B5 & B14 (Bore & key)
- - B5 (Bore & key)

# FRA - FTA

# Gearboxes RS - RT

Motor fitting RA-TA

FRA FTA	IEC *	i = 7 **	10 **	15 **	20 **	28 **	40 **	49 **	56 **	70 **	80 **	100 **
63/40	56	①	①	①	①	①	①	①	①	①	①	①
63/50	B5&B14	①	①	①	①	①	①	①	①	①	①	①
63/60		---	---	---	---	①	①	①	①	①	①	①
63/40	63	①	①	①	①	①	①	①	①	①	①	①
63/50	B5&B14	①	①	①	①	①	①	①	①	①	①	①
63/60		---	---	---	---	①	①	①	①	①	①	①
71/50	71 B5&B14	②	②	②	②	②	②	②	---	---	---	---
71/60		②	②	②	②	②	②	②	②	②	②	②
71/70		②	②	②	②	②	②	②	②	②	②	②
71/85		---	---	---	---	---	②	②	②	②	②	②
80/60	80 B5&B14	③	③	③	③	③	---	---	---	---	---	---
80/70		③	③	③	③	③	③	③	---	---	---	---
80/85		③	③	③	③	③	③	③	③	③	③	③
80/110		④	④	④	④	③	③	③	③	③	③	③
80/60	90 B5&B14	③	③	③	③	③	---	---	---	---	---	---
80/70		③	③	③	③	③	③	③	---	---	---	---
80/85		③	③	③	③	③	③	③	③	③	③	③
80/110		④	④	④	④	③	③	③	③	③	③	③
100/110		④	④	④	④	③	③	③	③	③	③	③
FRA 100/130	90 B5	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤
	100 B5	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤
FRA 100/150	90 B5	⑥	⑥	⑥	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤
	100 B5	⑥	⑥	⑥	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤

\* - FXA helical stage input

\*\* - FXA helical stage output & FRS/FRT input

① -  $\varnothing 105 \times 14$

② -  $\varnothing 120 \times 19$

③ -  $\varnothing 140 \times 24$

④ -  $\varnothing 140 \times 28$

⑤ -  $\varnothing 200 \times 28$

⑥ -  $\varnothing 200 \times 28$  (Wormshaft bore  $\varnothing 38$  mm & Adapter  $\varnothing 38/\varnothing 28$ )

# RS - RT Gearboxes

Input 2800 rpm

Selection table

Worm gear boxes RS - RT

RS RT	i =	5	7	10	15	20	28	40	49	56	70	80	100
	rpm	560	400	280	187	140	100	70	57	50	40	35	28
RS - RT 28	kW	---	0.63	0.49	0.35	0.25	0.23	0.16	0.13	0.12	0.09	0.08	0.04
	Nm	---	13	14	14	13	15	14	13	12	11	10	7
	eff.	---	0.86	0.83	0.79	0.77	0.69	0.64	0.61	0.54	0.49	0.49	0.46
	$J_1 \times 10^{-6}$	---	6,0100	5,5500	5,3000	5,2100	5,1600	5,1300	5,1200	5,1200	5,1100	5,1100	5,1100
RS - RT 40	kW	2.1	1.5	1.2	0.82	0.56	0.49	0.36	0.30	0.26	0.21	0.19	0.15
	Nm	32	31	34	34	30	34	32	31	30	29	28	26
	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
	$J_1 \times 10^{-5}$	2,2750	2,2130	2,0040	1,8920	1,8530	1,8280	1,8150	1,8110	1,8090	1,8060	1,8050	1,8040
RS - RT 50	kW	3.8	3.0	2.0	1.5	0.95	0.92	0.63	0.51	0.43	0.33	0.31	0.23
	Nm	58	62	59	61	52	66	59	56	53	46	49	40
	eff.	0.90	0.88	0.86	0.82	0.8	0.75	0.69	0.66	0.64	0.58	0.58	0.52
	$J_1 \times 10^{-5}$	7,1680	6,0680	5,3610	4,9830	4,8510	4,7680	4,7240	4,7100	4,7030	4,6950	4,6920	4,6880
RS - RT 60	kW	5.8	4.4	3.5	2.6	1.9	1.6	1.1	0.72	0.73	0.60	0.52	0.34
	Nm	90	93	104	110	108	116	105	85	92	92	85	68
	eff.	0.90	0.88	0.87	0.84	0.82	0.76	0.73	0.71	0.66	0.64	0.6	0.58
	$J_1 \times 10^{-4}$	1,3740	1,3443	1,1860	1,1016	1,0720	1,0534	1,0435	1,0403	1,0388	1,0371	1,0364	1,0355
RS - RT 70	kW	8.1	5.7	4.3	3.2	2.4	2.2	1.5	1.2	1.0	0.80	0.69	0.54
	Nm	126	122	130	139	136	161	155	142	130	120	115	107
	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
	$J_1 \times 10^{-4}$	3,3190	3,0626	2,7418	2,5706	2,5107	2,4729	2,4529	2,4464	2,4434	2,4399	2,4384	2,4367
RS - RT 85	kW	13.0	9.6	7.5	5.3	4.3	3.1	2.4	2.0	1.7	1.3	1.1	0.93
	Nm	202	205	225	234	237	235	250	242	229	210	200	190
	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
	$J_1 \times 10^{-4}$	5,0250	4,8911	4,1250	3,7160	3,5729	3,4828	3,4349	3,4196	3,4124	3,4039	3,4004	3,3963
RS - RT 110	kW	---	17.5	14.8	10.7	8.6	7.0	5.0	4.5	3.6	3.1	3.0	2.1
	Nm	---	375	445	470	490	530	520	545	490	525	540	450
	eff.	---	0.9	0.88	0.86	0.84	0.79	0.76	0.73	0.71	0.7	0.67	0.62
	$J_1 \times 10^{-3}$	---	2,2160	1,9420	1,7960	1,7450	1,7130	1,6960	1,6910	1,6880	1,6850	1,6840	1,6820
RS 130	kW	---	26.3	21.6	15.8	12.2	9.4	7.7	6.0	5.3	3.9	3.3	2.4
	Nm	---	565	655	705	715	715	815	740	780	670	620	560
	eff.	---	0.9	0.89	0.87	0.86	0.8	0.78	0.74	0.77	0.72	0.68	0.68
	$J_1 \times 10^{-3}$	---	3,9443	3,2820	2,9284	2,8047	2,7268	2,6854	2,6721	2,6659	2,6586	2,6555	2,6520
RS 150	kW	---	37.0	29.6	22.8	17.1	13.6	10.7	8.5	6.6	5.5	4.9	3.6
	Nm	---	795	900	1015	1005	1065	1170	1090	970	950	915	845
	eff.	---	0.9	0.89	0.87	0.86	0.82	0.8	0.77	0.77	0.72	0.68	0.68
	$J_1 \times 10^{-3}$	---	8,1739	6,9606	6,3130	6,0863	5,9436	5,8678	5,8435	5,8321	5,8187	5,8131	5,8066



<b>RS RT</b>	<b>i = rpm</b>	<b>5</b>	<b>7</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>28</b>	<b>40</b>	<b>49</b>	<b>56</b>	<b>70</b>	<b>80</b>	<b>100</b>
		280	200	140	93	70	50	35	29	25	20	18	14
RS - RT 28	kW	---	0,45	0,33	0,23	0,16	0,16	0,10	0,09	0,08	0,06	0,05	0,03
	Nm	---	18	18	18	16	20	17	17	15	12	12	8
	eff.	---	0,84	0,81	0,77	0,74	0,66	0,62	0,57	0,51	0,45	0,45	0,43
	$J_1 \times 10^{-6}$	---	6,0100	5,5500	5,3000	5,2100	5,1600	5,1300	5,1200	5,1200	5,1100	5,1100	5,1100
RS - RT 40	kW	1,5	1,1	0,81	0,55	0,38	0,37	0,25	0,21	0,18	0,14	0,12	0,09
	Nm	45	45	46	44	39	48	42	41	38	36	32	29
	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
	$J_1 \times 10^{-5}$	2,275	2,2130	2,0040	1,8920	1,8530	1,8280	1,8150	1,8110	1,8090	1,8060	1,8050	1,8040
RS - RT 50	kW	2,7	1,8	1,3	0,93	0,63	0,63	0,41	0,37	0,31	0,25	0,20	0,13
	Nm	81	75	75	74	65	85	72	76	71	63	58	43
	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
	$J_1 \times 10^{-5}$	7,1680	6,0680	5,3610	4,9830	4,8510	4,7680	4,7240	4,7100	4,7030	4,6950	4,6920	4,6880
RS - RT 60	kW	4,1	2,8	2,3	1,6	1,2	1,0	0,75	0,62	0,54	0,46	0,37	0,25
	Nm	125	113	133	130	122	139	135	128	123	122	106	83
	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
	$J_1 \times 10^{-4}$	1,3740	1,3443	1,1860	1,1016	1,0720	1,0534	1,0435	1,0403	1,0388	1,0371	1,0364	1,0355
RS - RT 70	kW	5,7	4,0	3,1	2,2	1,8	1,5	1,2	0,84	0,74	0,58	0,50	0,37
	Nm	176	166	180	188	194	216	238	189	180	163	154	130
	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
	$J_1 \times 10^{-4}$	3,3190	3,0626	2,7418	2,5706	2,5107	2,4729	2,4529	2,4464	2,4434	2,4399	2,4384	2,4367
RS - RT 85	kW	9,1	6,2	4,6	3,4	2,9	2,2	1,6	1,4	1,2	0,96	0,86	0,55
	Nm	279	259	268	289	322	319	325	316	305	290	280	210
	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
	$J_1 \times 10^{-4}$	5,0250	4,8911	4,1250	3,7160	3,5729	3,4828	3,4349	3,4196	3,4124	3,4039	3,4004	3,3963
RS - RT 110	kW	---	12,5	9,0	6,5	5,7	4,4	3,5	2,7	2,2	2,0	1,5	1,1
	Nm	---	525	532	560	647	642	691	631	595	635	525	469
	eff.	---	0,88	0,87	0,84	0,83	0,76	0,73	0,71	0,70	0,67	0,66	0,61
	$J_1 \times 10^{-3}$	---	2,2160	1,9420	1,7960	1,7450	1,7130	1,6960	1,6910	1,6880	1,6850	1,6840	1,6820
RS 130	kW	---	19,0	15,0	11,0	8,5	7,5	5,5	3,9	3,7	2,7	2,4	1,8
	Nm	---	807	890	960	975	1100	1140	950	1005	865	810	750
	eff.	---	0,89	0,87	0,85	0,84	0,77	0,76	0,72	0,71	0,67	0,63	0,61
	$J_1 \times 10^{-3}$	---	3,9443	3,2820	2,9284	2,8047	2,7268	2,6854	2,6721	2,6659	2,6586	2,6555	2,6520
RS 150	kW	---	24,9	21,0	16,0	12,5	9,5	8,0	5,9	5,1	3,8	3,3	2,6
	Nm	---	1060	1260	1410	1430	1435	1680	1440	1420	1230	1170	1120
	eff.	---	0,89	0,88	0,86	0,84	0,79	0,77	0,73	0,73	0,68	0,65	0,63
	$J_1 \times 10^{-3}$	---	8,1739	6,9606	6,3130	6,0863	5,9436	5,8678	5,8435	5,8321	5,8187	5,8131	5,8066

# RS - RT Gearboxes

Input 900 rpm

Selection table Worm gear boxes RS - RT

RS RT	i = rpm	5 180	7 128	10 90	15 60	20 45	28 32	40 23	49 19	56 16	70 13	80 11	100 9
RS - RT 28	kW	---	0,36	0,24	0,18	0,13	0,12	0,08	0,07	0,06	0,04	0,03	0,02
	Nm	---	22	20	21	19	22	20	19	16	13	11	8
	eff.	---	0.82	0.78	0.72	0.70	0.61	0.56	0.52	0.45	0.43	0.40	0.37
	$J_1 \times 10^{-6}$	---	6,0100	5,5500	5,3000	5,2100	5,1600	5,1300	5,1200	5,1200	5,1100	5,1100	5,1100
RS - RT 40	kW	1.2	0,84	0,64	0,44	0,30	0,28	0,19	0,16	0,14	0,12	0,10	0,08
	Nm	54	52	54	52	45	52	46	43	41	40	39	36
	eff.	0.86	0.83	0.80	0.74	0.70	0.63	0.56	0.52	0.49	0.46	0.44	0.42
	$J_1 \times 10^{-5}$	2,275	2,2130	2,0040	1,8920	1,8530	1,8280	1,8150	1,8110	1,8090	1,8060	1,8050	1,8040
RS - RT 50	kW	2.1	1,5	1,1	0,75	0,52	0,51	0,35	0,28	0,25	0,19	0,17	0,12
	Nm	96	95	95	91	79	99	85	81	80	67	67	55
	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
	$J_1 \times 10^{-5}$	7,1680	6,0680	5,3610	4,9830	4,8510	4,7680	4,7240	4,7100	4,7030	4,6950	4,6920	4,6880
RS - RT 60	kW	3.2	2,4	1,9	1,4	1,0	0,87	0,56	0,43	0,40	0,32	0,28	0,19
	Nm	150	150	163	166	161	175	152	135	130	125	115	94
	eff.	0.87	0.85	0.83	0.75	0.76	0.68	0.64	0.61	0.55	0.53	0.480	0.47
	$J_1 \times 10^{-4}$	1,3740	1,3443	1,1860	1,1016	1,0720	1,0534	1,0435	1,0403	1,0388	1,0371	1,0364	1,0355
RS - RT 70	kW	4.5	3,2	2,4	1,7	1,3	1,2	0,87	0,64	0,53	0,42	0,38	0,30
	Nm	212	202	211	218	207	242	240	205	187	170	160	147
	eff.	0.88	0.86	0.83	0.79	0.77	0.70	0.654	0.62	0.59	0.54	0.50	0.46
	$J_1 \times 10^{-4}$	3,3190	3,0626	2,7418	2,5706	2,5107	2,4729	2,4529	2,4464	2,4434	2,4399	2,4384	2,4367
RS - RT 85	kW	7.2	5,0	3,9	3,0	2,1	1,8	1,5	1,0	0,83	0,73	0,64	0,51
	Nm	338	320	350	378	355	373	410	350	332	300	290	260
	eff.	0.88	0.86	0.84	0.80	0.78	0.71	0.66	0.672	0.671	0.55	0.53	0.48
	$J_1 \times 10^{-4}$	5,0250	4,8911	4,1250	3,7160	3,5729	3,4828	3,4349	3,4196	3,4124	3,4039	3,4004	3,3963
RS - RT 110	kW	---	9,8	8,0	5,7	4,4	3,7	2,7	2,3	1,9	1,7	1,5	0,94
	Nm	---	635	720	745	745	795	780	780	690	765	715	500
	eff.	---	0.87	0.85	0.82	0.79	0.73	0.68	0.64	0.62	0.59	0.57	0.50
	$J_1 \times 10^{-3}$	---	2,2160	1,9420	1,7960	1,7450	1,7130	1,6960	1,6910	1,6880	1,6850	1,6840	1,6820
RS 130	kW	---	14,9	11,7	8,4	6,5	5,1	4,1	3,1	2,8	2,1	1,8	1,3
	Nm	---	975	1070	1115	1115	1145	1215	1095	1145	960	890	805
	eff.	---	0.88	0.86	0.83	0.81	0.75	0.70	0.67	0.68	0.63	0.58	0.57
	$J_1 \times 10^{-3}$	---	3,9443	3,2820	2,9284	2,8047	2,7268	2,6854	2,6721	2,6659	2,6586	2,6555	2,6520
RS 150	kW	---	20,8	15,9	12,2	9,3	7,3	5,6	4,5	3,3	2,9	2,5	2,0
	Nm	---	1360	1470	1635	1625	1660	1740	1600	1370	1390	1290	1230
	eff.	---	0.88	0.87	0.84	0.82	0.77	0.73	0.69	0.69	0.64	0.61	0.58
	$J_1 \times 10^{-3}$	---	8,1739	6,9606	6,3130	6,0863	5,9436	5,8678	5,8435	5,8321	5,8187	5,8131	5,8066

## Input 700 rpm

## Gearboxes RS - RT

### RS - RT Worm gear boxes

### Selection table

RS RT	i = rpm	5 140	7 100	10 70	15 47	20 35	28 25	40 18	49 15	56 13	70 10	80 8.7	100 7
RS - RT 28	kW	---	0,29	0,21	0,14	0,10	0,10	0,06	0,05	0,04	0,03	0,02	0,01
	Nm	---	23	23	22	21	24	21	20	17	13	11	8
	eff.	---	0.81	0.77	0.71	0.69	0.60	0.55	0.51	0.44	0.40	0.39	0.36
	$J_1 \times 10^{-6}$	---	6,0100	5,5500	5,3000	5,2100	5,1600	5,1300	5,1200	5,1200	5,1100	5,1100	5,1100
RS - RT 40	kW	1.00	0,74	0,54	0,39	0,26	0,24	0,17	0,14	0,12	0,10	0,09	0,07
	Nm	59	58	58	58	49	55	49	46	45	43	41	38
	eff.	0.85	0.82	0.79	0.73	0.68	0.59	0.53	0.50	0.48	0.44	0.42	0.39
	$J_1 \times 10^{-5}$	2,275	2,2130	2,0040	1,8920	1,8530	1,8280	1,8150	1,8110	1,8090	1,8060	1,8050	1,8040
RS - RT 50	kW	1.8	1,4	0,92	0,65	0,44	0,43	0,29	0,24	0,21	0,16	0,15	0,12
	Nm	106	110	100	99	86	106	91	87	83	70	72	62
	eff.	0.86	0.83	0.80	0.75	0.71	0.64	0.57	0.542	0.52	0.45	0.44	0.39
	$J_1 \times 10^{-5}$	7,1680	6,0680	5,3610	4,9830	4,8510	4,7680	4,7240	4,7100	4,7030	4,6950	4,6920	4,6880
RS - RT 60	kW	2.8	2,0	1,6	1,1	0,87	0,73	0,49	0,35	0,34	0,26	0,24	0,17
	Nm	165	164	177	178	175	187	165	140	139	128	120	100
	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
	$J_1 \times 10^{-4}$	1,3740	1,3443	1,1860	1,1016	1,0720	1,0534	1,0435	1,0403	1,0388	1,0371	1,0364	1,0355
RS - RT 70	kW	3.9	2,7	2,1	1,4	1,1	1,0	0,71	0,55	0,46	0,36	0,32	0,24
	Nm	234	216	233	231	225	256	245	220	197	176	167	150
	eff.	0.87	0.85	0.82	0.78	0.75	0.68	0.63	0.60	0.56	0.51	0.48	0.45
	$J_1 \times 10^{-4}$	3,3190	3,0626	2,7418	2,5706	2,5107	2,4729	2,4529	2,4464	2,4434	2,4399	2,4384	2,4367
RS - RT 85	kW	6.2	4,6	3,5	2,5	1,9	1,5	1,2	0,93	0,78	0,59	0,56	0,44
	Nm	372	370	400	408	388	400	420	379	353	310	305	275
	eff.	0.87	0.85	0.83	0.79	0.76	0.69	0.65	0.61	0.59	0.55	0.50	0.46
	$J_1 \times 10^{-4}$	5,0250	4,8911	4,1250	3,7160	3,5729	3,4828	3,4349	3,4196	3,4124	3,4039	3,4004	3,3963
RS - RT 110	kW	---	8,5	6,8	4,9	3,9	3,3	2,3	2,0	1,7	1,5	1,2	0,79
	Nm	---	700	780	795	815	890	820	840	770	815	720	515
	eff.	---	0.86	0.84	0.80	0.77	0.71	0.66	0.62	0.60	0.57	0.55	0.48
	$J_1 \times 10^{-3}$	---	2,2160	1,9420	1,7960	1,7450	1,7130	1,6960	1,6910	1,6880	1,6850	1,6840	1,6820
RS 130	kW	---	12,8	10,3	7,4	5,6	4,4	3,6	2,7	2,4	1,8	1,6	1,1
	Nm	---	1060	1200	1230	1215	1200	1320	1185	1215	1030	955	855
	eff.	---	0.87	0.85	0.81	0.80	0.72	0.68	0.65	0.66	0.61	0.56	0.55
	$J_1 \times 10^{-3}$	---	3,9443	3,2820	2,9284	2,8047	2,7268	2,6854	2,6721	2,6659	2,6586	2,6555	2,6520
RS 150	kW	---	18,0	13,7	10,6	8,1	6,2	4,9	3,8	3,0	2,6	2,3	1,7
	Nm	---	1475	1610	1805	1780	1790	1890	1710	1535	1500	1425	1275
	eff.	---	0.87	0.86	0.83	0.81	0.75	0.71	0.68	0.67	0.61	0.58	0.56
	$J_1 \times 10^{-3}$	---	8,1739	6,9606	6,3130	6,0863	5,9436	5,8678	5,8435	5,8321	5,8187	5,8131	5,8066

# RS - RT Gearboxes

Input 1400 rpm

Selection table

Helical/worm gear boxes RA - TA

XA	$i_n =$ rpm	3.5 400	6.3 225	8 175
XA63	$i_r =$	3.5	6.2	7.8
	kW	0.50	0.23	0.18
	Nm	12	10	9
	$R_2$ [N]	390	450	450
XA71	$i_r =$	3.5	6.4	8.0
	kW	1.1	0.52	0.37
	Nm	26	22	20
	$R_2$ [N]	490	560	560
XA80	$i_r =$	3.4	6.4	8.3
	kW	3.1	1.5	1.1
	Nm	68	65	60
	$R_2$ [N]	610	700	700
XA100	$i_r =$	3.9	6.2	7.5
	kW	8.7	4.0	2.2
	Nm	235	163	136
	$R_2$ [N]	1500	2500	2500

$A_2 = 0.2 \times R_2$

XA Dimensions: page 52

RA TA $i_n = 3.5$	$i = i_n \times i_2$	25	35	53	70	98	140	172	196	245	280	350
	rpm	57	40	27	20	14	10	8	7	6	5	4
	$i_2$	7	10	15	20	28	40	49	56	70	80	100
63/40	kW	0.55	0.40	0.28	0.20	0.19	0.13	0.11	0.10	0.06	0.05	0.03
	Nm	72	72	70	60	70	64	58	56	42	35	25
	eff.	0.78	0.75	0.70	0.63	0.56	0.50	0.46	0.44	0.41	0.40	0.35
63/50	kW	1.02	0.70	0.50	0.33	0.32	0.21	0.20	0.16	0.11	0.09	0.06
	Nm	135	127	125	105	125	105	115	100	80	70	50
	eff.	0.79	0.76	0.70	0.66	0.59	0.52	0.50	0.46	0.42	0.40	0.35
63/60	kW	1.53	1.18	0.83	0.57	0.53	0.33	0.27	0.23	0.19	0.15	0.10
	Nm	205	217	215	192	217	177	170	152	145	110	85
	eff.	0.80	0.77	0.72	0.70	0.61	0.57	0.54	0.49	0.45	0.38	0.36
71/70	kW	1.96	1.48	1.08	0.77	0.72	0.50	0.43	0.36	0.30	0.26	0.19
	Nm	265	275	285	260	310	270	270	235	225	200	180
	eff.	0.81	0.78	0.74	0.71	0.64	0.57	0.54	0.49	0.45	0.41	0.39
71/85	kW	3.14	2.39	1.77	1.37	1.11	0.80	0.65	0.58	0.49	0.40	0.26
	Nm	430	450	475	470	475	445	420	410	390	340	250
	eff.	0.82	0.79	0.75	0.72	0.64	0.58	0.55	0.53	0.48	0.44	0.40
80/110	kW	6.02	4.63	3.58	2.61	2.18	1.60	1.27	1.12	0.86	0.86	0.54
	Nm	835	895	950	910	960	950	850	820	750	740	540
	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	kW	7.0	6.8	5.5	3.8	3.1	2.3	1.7	1.5	1.3	1.1	0.8
	Nm	975	1320	1495	1350	1430	1380	1300	1250	1200	1080	880
	eff.	0.83	0.81	0.77	0.75	0.67	0.63	0.64	0.62	0.60	0.50	0.48
RA 100/150	kW	7.9	7.8	7.5	5.7	4.5	3.3	2.7	2.4	1.8	1.6	1.0
	Nm	1115	1535	2090	2060	2130	2050	2040	2025	1700	1459	1200
	eff.	0.84	0.82	0.79	0.76	0.69	0.66	0.64	0.62	0.60	0.52	0.50

## Input 1400 rpm

## Gearboxes RS - RT

RA - TA Helical/worm gear boxes

Selection table

RA TA $i_n = 6.3$	$i = i_n \times i_2$	44	63	95	126	176	252	309	353	441	504	630
	rpm	32	22	15	11	8	5.5	4.6	4	3.2	2.8	2.2
	$i_2$	7	10	15	20	28	40	49	56	70	80	100
63/40	kW	0.35	0.25	0.17	0.12	0.11	0.08	0.06	0.06	0.05	0.04	0.03
	Nm	79	78	74	63	69	63	57	55	53	51	46
	eff.	0.76	0.72	0.67	0.60	0.52	0.45	0.43	0.39	0.35	0.34	0.31
63/50 71/50	kW	0.62	0.42	0.30	0.20	0.20	0.14	0.11	0.10	0.09	0.07	0.05
	Nm	145	133	130	113	138	115	108	100	92	89	72
	eff.	0.78	0.74	0.67	0.63	0.55	0.48	0.45	0.42	0.36	0.36	0.31
63/60 71/60 80/60	kW	0.92	0.74	0.52	0.40	0.35	0.23	0.16	0.16	0.11	0.10	0.08
	Nm	218	237	235	230	238	210	160	175	141	130	122
	eff.	0.79	0.75	0.70	0.67	0.57	0.53	0.49	0.45	0.42	0.37	0.35
71/70 80/70	kW	1.2	0.95	0.68	0.50	0.44	0.32	0.26	0.23	0.18	0.17	0.12
	Nm	289	310	310	292	320	295	272	254	221	210	190
	eff.	0.80	0.76	0.71	0.68	0.60	0.54	0.50	0.46	0.42	0.37	0.36
71/85 80/85	kW	2.0	1.6	1.1	0.84	0.69	0.53	0.43	0.37	0.28	0.26	0.22
	Nm	490	526	516	495	501	500	466	449	391	380	345
	eff.	0.80	0.77	0.72	0.69	0.60	0.55	0.51	0.50	0.46	0.42	0.36
80/110 100/110	kW	4.3	3.2	2.4	1.8	1.6	1.1	1.0	0.80	0.66	0.51	0.32
	Nm	1030	1100	1150	1100	1170	1110	1100	995	950	780	550
	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	kW	6.41	4.94	3.72	2.71	2.37	1.65	1.47	1.25	1.02	0.82	0.47
	Nm	1600	1700	1800	1700	1800	1700	1700	1600	1600	1300	900
	eff.	0.83	0.80	0.75	0.73	0.63	0.60	0.55	0.53	0.52	0.46	0.45
RA 100/150	kW	8.41	6.61	5.04	3.77	3.02	2.31	1.82	1.41	1.24	1.09	0.84
	Nm	2100	2300	2500	2400	2400	2500	2300	2000	1800	1800	1700
	eff.	0.83	0.81	0.77	0.74	0.66	0.63	0.60	0.59	0.81	0.48	0.47

# RS - RT Gearboxes

Input 1400 rpm

Selection table

Helical/worm gear boxes RA - TA

RA TA $i_n = 8$	$i = i_n \times i_2$	56	80	120	160	224	320	392	448	560	640	800
	rpm	25	18	12	9	6	4	3.5	3	2.5	2.2	1.75
	$i_2$	7	10	15	20	28	40	49	56	70	80	100
63/40	kW	0.32	0.23	0.16	0.11	0.11	0.08	0.06	0.05	0.03	0.03	0.02
	Nm	93	89	84	72	85	75	69	59	45	38	27
	eff.	0.75	0.72	0.65	0.59	0.50	0.44	0.41	0.38	0.36	0.34	0.31
63/50 71/50	kW	0.58	0.41	0.28	0.20	0.18	0.13	0.10	0.09	0.06	0.05	0.03
	Nm	170	165	154	130	150	130	120	115	86	73	53
	eff.	0.77	0.73	0.67	0.61	0.55	0.47	0.45	0.41	0.36	0.37	0.31
63/60 71/60 80/60	kW	0.87	0.68	0.49	0.34	0.31	0.21	0.16	0.15	0.10	0.08	0.05
	Nm	260	280	275	240	270	235	220	200	155	125	92
	eff.	0.78	0.75	0.69	0.65	0.57	0.51	0.50	0.43	0.41	0.37	0.35
71/70 80/70	kW	1.26	0.88	0.63	0.44	0.48	0.28	0.24	0.20	0.16	0.12	0.05
	Nm	380	365	360	325	440	320	320	275	245	200	145
	eff.	0.79	0.76	0.70	0.67	0.60	0.53	0.50	0.45	0.41	0.38	0.35
71/85 80/85	kW	1.76	1.42	1.07	0.85	0.65	0.48	0.40	0.33	0.26	0.20	0.13
	Nm	530	595	620	620	600	560	550	510	450	360	260
	eff.	0.79	0.77	0.71	0.67	0.60	0.54	0.52	0.50	0.45	0.41	0.37
80/110 100/110	kW	3.42	2.75	1.97	1.52	1.29	0.97	0.73	0.64	0.52	0.43	0.27
	Nm	1045	1170	1180	1160	1200	1180	1020	980	920	850	550
	eff.	0.80	0.78	0.73	0.70	0.61	0.56	0.52	0.50	0.46	0.45	0.38
RA 100/130	kW	3.3	3.0	3.2	2.3	1.8	1.2	1.1	0.9	0.7	0.7	0.5
	Nm	1000	1240	1840	1765	1760	1700	1660	1600	1435	1330	1160
	eff.	0.80	0.78	0.73	0.72	0.62	0.58	0.56	0.54	0.51	0.45	0.43
RA 100/150	kW	3.7	3.4	3.6	3.4	2.7	2.0	1.7	1.4	1.1	1.0	0.8
	Nm	1130	1425	2150	2580	2675	2860	2550	2490	2110	1970	1855
	eff.	0.81	0.79	0.75	0.72	0.63	0.61	0.56	0.57	0.49	0.46	0.45

## Input 1400 rpm

## Gearboxes RS - RT

### Two-stage worm gear boxes RS/RS - RT/RT

### Selection table

RS/RS RT/RT	$i = i_1 \times i_2$	420	560	784	1120	1568	2240	2800	4000	5600	8000	10000
	rpm	3.3	2.5	1.8	1.25	0.9	0.6	0.5	0.35	0.25	0.17	0.14
	$i_1 =$ $i_2 =$	15 28	20 28	28 28	40 28	56 28	56 40	70 40	100 40	100 56	100 80	100 100
28/28	W	32	25	21	16	13	9	8	6	3	1.8	1.3
	Nm	35	36	36	36	35	30	30	30	16	12	11
	eff.	0.38	0.37	0.32	0.30	0.25	0.21	0.20	0.18	0.14	0.12	0.13
28/40	W	75	60	46	34	30	22	22	14	11	5	3
	Nm	85	85	80	80	80	73	76	70	62	41	25
	eff.	0.39	0.37	0.33	0.31	0.25	0.21	0.18	0.18	0.15	0.14	0.12
28/50	W	133	106	91	74	60	36	36	28	20	10	6
	Nm	150	150	160	175	160	125	131	147	125	78	49
	eff.	0.39	0.37	0.33	0.31	0.25	0.22	0.19	0.19	0.16	0.14	0.12
28/60	W	197	157	132	91	91	67	54	30	32	16	10
	Nm	240	240	245	230	260	245	217	164	195	128	91
	eff.	0.42	0.40	0.35	0.33	0.27	0.23	0.21	0.20	0.16	0.14	0.13
40/70	W	298	249	198	157	119	86	72	60	42	24	16
	Nm	380	400	400	395	380	370	345	360	321	201	154
	eff.	0.44	0.42	0.38	0.33	0.30	0.27	0.25	0.22	0.20	0.15	0.14
40/85	W	447	372	276	224	180	138	120	90	72	39	26
	Nm	595	625	585	625	610	615	595	565	550	373	264
	eff.	0.46	0.44	0.40	0.35	0.32	0.28	0.26	0.23	0.20	0.17	0.15
50/110	W	865	756	579	453	382	292	235	163	128	82	51
	Nm	1190	1300	1300	1280	1350	1340	1210	1070	980	810	560
	eff.	0.48	0.45	0.42	0.37	0.33	0.30	0.27	0.24	0.20	0.18	0.16
RS/RS 60/130	kW	1.5	1.1	0.75	0.55	0.55	0.37	0.25	0.25	0.25	0.25	0.25
	Nm	2015	1930	1670	1530	2015	1830	1410	1770	1850	1420	1225
	eff.	0.50	0.46	0.43	0.40	0.35	0.33	0.30	0.27	0.25	0.21	0.20
RS/RS 70/150	kW	1.8	1.5	1.1	0.75	0.75	0.55	0.37	0.37	0.25	0.25	0.25
	Nm	2570	2830	2570	2460	2850	3020	2325	2875	2670	2135	1995
	eff.	0.52	0.50	0.46	0.43	0.39	0.36	0.33	0.31	0.27	0.23	0.22

# RS - RT Gearboxes

Input 1400 rpm

Selection table

Geared motors

0.06 kW						0.09 kW					
	rpm	i =	Nm	SF	kg		rpm	i =	Nm	SF	kg
MRS-MRT 28	200	7	2.4	>3	3.6	MRS-MRT 40/85	0.4	4000	565	1.0	19
MRS-MRT 28	140	10	3.3	>3	3.6	MRS-MRT 40/85	0.3	5600	688	0.8	19
MRS-MRT 28	93	15	4.7	>3	3.6	<b>0.12 kW</b>					
MRS-MRT 28	70	20	6.1	2.6	3.6		rpm	i =	Nm	SF	kg
MRS-MRT 28	50	28	7.6	2.6	3.6	MRS-MRT 28	200	7	4.8	>3	4.8
MRS-MRT 28	35	40	10	1.7	3.6	MRS-MRT 28	140	10	6.6	2.7	4.8
MRA-MTA 63/40	32	44	14	>3	6.5	MRS-MRT 28	93	15	9.5	1.9	4.8
MRS-MRT 28	29	49	11	1.5	3.6	MRS-MRT 28	70	20	12	1.3	4.8
MRS-MRT 28	25	56	12	1.3	3.6	MRS-MRT 28	50	28	15	1.3	4.8
MRA-MTA 63/40	22	63	19	>3	6.5	MRS-MRT 40	35	40	20	2.1	6.2
MRS-MRT 28	20	70	13	0.9	3.6	MRA-MTA 63/40	32	44	27	2.9	7.7
MRS-MRT 40	18	80	16	2.0	5.0	MRS-MRT 40	29	49	23	1.8	6.2
MRA-MTA 63/40	15	95	26	2.8	6.5	MRS-MRT 40	25	56	26	1.5	6.2
MRS-MRT 40	14	100	19	1.5	5.0	MRA-MTA 63/40	22	63	37	2.1	7.7
MRA-MTA 63/40	11	126	31	2.0	6.5	MRS-MRT 40	20	70	30	1.2	6.2
MRS-MRT 28/28	9.3	150	31	1.1	5.0	MRS-MRT 40	18	80	33	1.0	6.2
MRA-MTA 63/40	8.0	176	37	1.8	6.5	MRA-MTA 63/40	15	95	52	1.4	7.7
MRS-MRT 28/28	7.0	200	30	0.8	5.0	MRS-MRT 50	14	100	38	1.1	7.5
MRA-MTA 63/40	5.5	252	46	1.4	6.5	MRA-MTA 63/40	11	126	62	1.0	7.7
MRS-MRT 28/28	5.0	280	35	0.8	5.0	MRS-MRT 28/40	9.3	150	64	1.4	7.6
MRA-MTA 63/40	4.6	309	54	1.0	6.5	MRA-MTA 63/40	8.0	176	75	0.9	7.7
MRA-MTA 63/40	4.0	353	56	1.0	6.5	MRS-MRT 28/40	7.0	200	77	1.0	7.6
MRS-MRT 28/40	3.3	420	67	1.3	6.4	MRA-MTA 63/50	5.5	252	99	1.2	9.0
MRA-MTA 63/50	3.2	441	65	1.4	7.8	MRS-MRT 28/40	5.0	280	94	0.8	7.6
MRA-MTA 63/50	2.8	504	74	1.2	7.8	MRA-MTA 63/50	4.6	309	114	0.9	9.0
MRS-MRT 28/40	2.5	560	85	1.0	6.4	MRS-MRT 28/50	3.3	420	134	1.2	8.9
MRA-MTA 63/50	2.2	630	80	0.9	7.8	MRS-MRT 28/50	2.5	560	170	0.9	8.9
MRS-MRT 28/50	1.8	784	106	1.5	7.7	MRS-MRT 28/60	1.8	784	225	1.1	12
MRS-MRT 28/50	1.3	1120	142	1.2	7.7	MRS-MRT 28/60	1.3	1120	303	0.8	12
MRS-MRT 28/50	0.9	1568	160	1.0	7.7	MRS-MRT 40/70	0.9	1568	385	1.0	16
MRS-MRT 28/60	0.6	2240	211	1.2	10	MRS-MRT 40/85	0.6	2240	513	1.2	20
MRS-MRT 28/60	0.5	2800	241	0.9	10	MRS-MRT 40/85	0.5	2800	596	1.0	20
MRS-MRT 40/70	0.4	4000	360	1.0	15	MRS-MRT 40/85	0.4	4000	753	0.8	20
MRS-MRT 40/70	0.3	5600	458	0.7	15	<b>0.18 kW</b>					
MRS-MRT 40/85	0.2	8000	557	0.7	19		rpm	i =	Nm	SF	kg
MRS-MRT 40/110	0.1	10000	614	0.4	19	MRS-MRT 28	200	7	7.2	2.5	5.4
<b>0.09 kW</b>						MRS-MRT 28	140	10	9.9	1.8	5.4
	rpm	i =	Nm	SF	kg	MRS-MRT 28	93	15	14	1.3	5.4
MRS-MRT 28	200	7	3.6	>3	3.7	MRS-MRT 40	70	20	18	2.1	6.8
MRS-MRT 28	140	10	5.0	>3	3.7	MRS-MRT 40	50	28	23	2.1	6.8
MRS-MRT 28	93	15	7.1	2.5	3.7	MRS-MRT 40	35	40	30	1.4	6.8
MRS-MRT 28	70	20	9.1	1.8	3.7	MRA-MTA 63/40	32	44	41	1.9	8.3
MRS-MRT 28	50	28	11	1.8	3.7	MRS-MRT 40	29	49	35	1.2	6.8
MRS-MRT 28	35	40	15	1.1	3.7	MRS-MRT 40	25	56	39	1.0	6.8
MRA-MTA 63/40	32	44	21	>3	6.6	MRA-MTA 63/40	22	63	56	1.4	8.3
MRS-MRT 28	29	49	17	1.0	3.7	MRS-MRT 50	20	70	46	1.4	8.1
MRS-MRT 40	25	56	20	2.1	5.1	MRS-MRT 50	18	80	51	1.1	8.1
MRA-MTA 63/40	22	63	28	2.8	6.6	MRA-MTA 63/40	15	95	78	0.9	8.3
MRS-MRT 40	20	70	22	1.6	5.1	MRA-MTA 63/50	11	126	97	1.2	9.6
MRS-MRT 40	18	80	25	1.3	5.1	MRS-MRT 28/50	9.3	150	93	1.6	9.5
MRA-MTA 63/40	15	95	39	1.9	6.6	MRA-MTA 63/50	8.0	176	119	1.2	9.6
MRS-MRT 40	14	100	28	1.0	5.1	MRS-MRT 28/50	7.0	200	120	1.1	9.5
MRA-MTA 63/40	11	126	46	1.4	6.6	MRS-MRT 28/50	5.0	280	141	1.1	9.5
MRS-MRT 28/40	9.3	150	48	1.3	6.5	MRS-MRT 28/60	3.3	420	217	1.1	12
MRA-MTA 63/40	8.0	176	56	1.2	6.6	MRS-MRT 40/70	2.5	560	289	1.4	16
MRS-MRT 28/40	7.0	200	60	1.3	6.5	MRS-MRT 40/70	1.8	784	366	1.1	16
MRA-MTA 63/40	5.5	252	70	0.9	6.6	MRS-MRT 40/85	1.3	1120	481	1.3	21
MRS-MRT 28/40	5.0	280	70	1.0	6.5	MRS-MRT 40/85	0.9	1568	616	1.0	21
MRA-MTA 63/50	4.6	309	86	1.3	7.9	MRS-MRT 40/85	0.6	2240	770	0.8	21
MRA-MTA 63/50	4.0	353	91	1.1	7.9	<b>0.25 kW</b>					
MRS-MRT 28/50	3.3	420	101	1.5	7.8		rpm	i =	Nm	SF	kg
MRA-MTA 63/50	3.2	441	97	0.9	7.9	MRS-MRT 40	280	5	7.5	>3	8.3
MRS-MRT 28/50	2.5	560	127	1.2	7.8	MRS-MRT 40	200	7	10	>3	8.3
MRS-MRT 28/50	1.8	784	159	1.0	7.8	MRS-MRT 40	140	10	14	>3	8.3
MRS-MRT 28/50	1.3	1120	213	0.8	7.8	MRS-MRT 40	93	15	20	2.2	8.3
MRS-MRT 28/60	0.9	1568	260	1.0	11	MRS-MRT 40	70	20	26	1.5	8.3
MRS-MRT 40/70	0.6	2240	371	1.0	15	MRS-MRT 40	50	28	32	1.5	8.3
MRS-MRT 40/85	0.5	2800	447	1.3	19	MRS-MRT 40	35	40	42	1.0	8.3



## Input 1400 rpm

## Gearboxes RS - RT

### Geared motors

### Selection table

0.25 kW						0.55 kW					
	rpm	i =	Nm	SF	kg		rpm	i =	Nm	SF	kg
MRA-MTA 71/50	32	44	59	2.5	12	MRA-MTA 80/85	8.0	176	396	1.3	26
MRS-MRT 50	29	49	52	1.5	9.6	MRA-MTA 80/85	5.5	252	520	1.0	26
MRS-MRT 50	25	56	57	1.3	9.6	MRA-MTA 80/110	4.6	309	614	1.8	49
MRA-MTA 71/50	22	63	80	1.7	12	MRA-MTA 80/110	4.0	353	689	1.4	49
MRS-MRT 50	20	70	63	1.0	9.6	MRS-MRT 50/110	3.3	420	756	1.1	49
MRS-MRT 60	18	80	72	1.5	12	MRA-MTA 80/110	3.2	441	794	1.2	49
MRA-MTA 71/50	95	95	109	1.2	12	MRA-MTA 80/110	2.8	504	851	0.9	49
MRS-MRT 60	14	100	88	1.0	12	MRS-MRT 50/110	2.5	570	962	1.3	49
MRA-MTA 71/60	11	126	144	1.6	15	MRS-MRT 50/110	1.8	784	1235	1.5	49
MRS-MRT 40/70	9.3	150	146	1.5	18						
MRA-MTA 71/60	8.0	176	171	1.4	15	0.75 kW					
MRS-MRT 40/70	7.0	200	188	1.5	18		rpm	i =	Nm	SF	kg
MRA-MTA 71/70	5.5	252	232	1.3	18	MRS-MRT 50	280	5	23	>3	14
MRS-MRT 40/70	5.0	280	224	1.5	18	MRS-MRT 50	200	7	31	2.4	14
MRA-MTA 71/70	4.6	309	263	1.0	18	MRS-MRT 50	140	10	43	1.7	14
MRA-MTA 71/70	4.0	353	277	0.9	18	MRS-MRT 50	93	15	60	1.2	14
MRS-MRT 40/70	3.3	420	315	1.2	18	MRS-MRT 60	70	20	79	1.5	17
MRS-MRT 40/70	2.5	560	401	1.0	18	MRS-MRT 60	50	28	102	1.4	17
MRS-MRT 40/85	1.8	784	535	1.1	22	MRS-MRT 60	35	40	135	1.0	17
MRS-MRT 50/110	1.3	1120	707	1.8	46	MRA-MTA 80/60	32	44	178	1.2	20
MRS-MRT 50/110	0.9	1568	882	1.5	46	MRS-MRT 70	29	49	168	1.1	19
MRS-MRT 50/110	0.6	2240	1146	1.2	46	MRS-MRT 70	25	56	183	1.0	19
MRS-MRT 50/110	0.5	2800	1289	0.9	46	MRA-MTA 80/60	22	63	242	1.0	20
						MRS-MRT 85	20	70	226	1.3	23
0.37 kW						MRS-MRT 85	18	80	246	1.1	23
	rpm	i =	Nm	SF	kg	MRA-MTA 80/70	11	126	341	0.9	23
MRS-MRT 40	280	5	11	>3	8.7	MRA-MTA 80/85	8.0	176	540	0.9	27
MRS-MRT 40	200	7	15	3.0	8.7	MRA-MTA 80/110	5.5	252	735	1.5	50
MRS-MRT 40	140	10	21	2.2	8.7	MRA-MTA 80/110	4.6	309	838	1.3	50
MRS-MRT 40	93	15	30	1.5	8.7	MRA-MTA 80/110	4.0	353	939	1.1	50
MRS-MRT 40	70	20	38	1.0	8.7	MRS-MRT 50/110	3.3	420	1031	1.2	50
MRS-MRT 40	50	28	48	1.0	8.7	MRA-MRT 80/110	3.2	441	1083	0.9	50
MRS-MRT 50	35	40	65	1.1	10	MRS-MRT 50/110	2.5	570	1289	1.0	50
MRA-MTA 71/50	32	44	87	1.7	13						
MRS-MRT 50	29	49	77	1.0	10	1.1 kW					
MRS-MRT 60	25	56	85	1.5	13		rpm	i =	Nm	SF	kg
MRA-MTA 71/50	22	63	118	1.1	13	MRS-MRT 60	280	5	34	>3	19
MRS-MRT 60	20	70	97	1.3	13	MRS-MRT 60	200	7	45	2.5	19
MRS-MRT 60	18	80	107	1.0	13	MRS-MRT 60	140	10	63	2.1	19
MRA-MTA 71/60	15	95	168	1.4	16	MRS-MRT 60	93	15	91	1.4	19
MRS-MRT 70	14	100	130	1.0	15	MRS-MRT 60	70	20	116	1.1	19
MRA-MTA 71/60	11	126	213	1.1	15	MRS-MRT 70	50	28	158	1.4	21
MRS-MRT 40/70	9.3	150	217	2.1	18	MRS-MRT 70	35	40	213	1.1	21
MRA-MTA 71/60	8.0	176	253	0.9	15	MRA-MTA 80/70	32	44	264	1.1	25
MRS-MRT 40/70	7.0	200	278	1.3	18	MRS-MRT 85	29	49	246	1.3	26
MRA-MTA 71/70	5.5	252	343	0.9	18	MRS-MRT 85	25	56	286	1.1	26
MRS-MRT 40/70	5.0	280	332	1.1	18	MRA-MTA 80/85	22	63	364	1.4	30
MRS-MRT 40/85	3.3	420	488	1.2	23	MRS-MRT 110	20	70	352	1.8	48
MRS-MRT 40/85	2.5	560	622	1.0	23	MRS-MRT 110	18	80	396	1.3	48
MRS-MRT 50/110	1.3	1120	1046	1.2	47	MRA-MTA 80/85	15	95	513	1.0	30
MRS-MRT 50/110	0.9	1568	1306	1.1	47	MRS-MRT 110	14	100	458	1.0	48
						MRA-MTA 80/110	11	126	671	1.6	52
0.55 kW						MRA-MTA 80/110	8.0	176	832	1.4	52
	rpm	i =	Nm	SF	kg	MRA-MRT 80/110	5.5	252	1078	1.0	52
MRS-MRT 40	280	5	16	2.8	10.7	MRA-MTA 80/110	4.6	309	1229	0.9	52
MRS-MRT 50	200	7	23	>3	12	MRA 100/130	3.5	400	1681	1.0	76
MRS-MRT 50	140	10	32	2.4	12	MRS-MRT 60/130	3.3	420	1576	1.3	69
MRS-MRT 50	93	15	44	1.7	12	MRA 100/150	3.0	448	1916	1.3	106
MRS-MRT 50	70	20	57	1.1	12	MRA 100/150	2.5	560	2059	1.0	106
MRS-MRT 50	50	28	75	1.1	12	MRA 100/150	2.2	640	2209	0.9	106
MRS-MRT 60	35	40	99	1.4	15	MRS-MRT 70/150	1.8	784	2706	0.9	102
MRA-MTA 80/60	32	44	130	1.7	19						
MRS-MRT 60	29	49	114	1.1	15	1.5 kW					
MRS-MRT 60	25	56	126	1.0	15		rpm	i =	Nm	SF	kg
MRA-MTA 80/60	22	63	177	1.2	19	MRS-MRT 60	280	5	46	2.7	20
MRS-MRT 70	20	70	155	1.1	18	MRS-MRT 60	200	7	62	1.8	20
MRS-MRT 70	18	80	168	1.0	18	MRS-MRT 60	140	10	86	1.5	20
MRA-MTA 80/60	15	95	249	1.0	19	MRS-MRT 60	93	15	124	1.0	20
MRS-MRT 85	14	100	210	1.0	22	MRS-MRT 70	70	20	166	1.2	23
MRA-MTA 80/70	11	126	321	1.1	22	MRS-MRT 70	50	28	215	1.0	23
						MRS-MRT 85	35	40	295	1.4	27

# RS - RT Gearboxes

Input 1400 rpm

Selection table

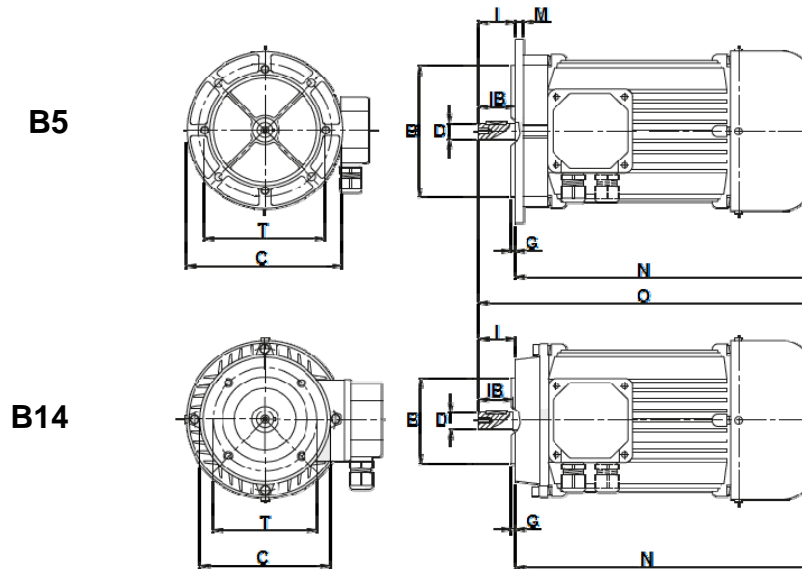
Geared motors

1.5 kW						4.0 kW					
	rpm	i =	Nm	SF	kg		rpm	i =	Nm	SF	kg
MRA-MTA 80/85	32	44	360	1.4	31	MRS 150	25	56	1115	1.3	130
MRS-MRT 85	29	49	336	0.9	27	MRS 150	20	70	1299	0.9	130
MRS-MRT 110	29	49	356	1.8	50	MRA 100/130	20	70	1433	0.9	93
MRS-MRT 110	25	56	401	1.5	50	MRA 100/150	18	80	1724	0.9	123
MRA-MTA 80/85	22	63	496	1.1	31	MRA 100/150	14	98	1845	1.2	123
MRS-MRT 110	20	70	480	1.3	50	MRA 100/150	12	120	2456	0.9	123
MRS-MRT 110	18	80	540	1.0	50						
MRA-MTA 80/110	15	95	719	1.6	54	5.5 kW					
MRS 130	14	100	624	1.2	64		rpm	i =	Nm	SF	kg
MRA-MTA 80/110	11	126	915	1.2	54	MRS-MRT 110	200	7	231	2.3	79
MRA-MTA 80/110	8.0	176	1135	1.0	54	MRS-MRT 110	140	10	326	1.6	79
MRA 100/130	7.0	200	1269	1.0	78	MRS-MRT 110	93	15	473	1.2	79
MRA 100/130	6.3	224	1421	1.2	78	MRS-MRT 110	70	20	623	1.0	79
MRA 100/150	5.0	280	1490	1.1	108	MRS 130	50	28	809	1.4	93
MRA 100/150	3.5	400	2292	1.1	108	MRS 130	35	40	1141	1.0	93
MRA 100/150	3.0	448	2613	1.0	108	MRS 150	29	49	1342	1.1	123
						MRS 150	25	56	1534	0.9	123
2.2 kW						7.5 kW					
	rpm	i =	Nm	SF	kg		rpm	i =	Nm	SF	kg
MRS-MRT 70	280	5	92	1.9	28	MRS-MRT 110	200	7	315	1.7	88
MRS-MRT 70	200	7	92	1.8	28	MRS-MRT 110	140	10	445	1.2	88
MRS-MRT 70	140	10	129	1.4	28	MRS-MRT 110	93	15	645	0.9	88
MRS-MRT 70	93	15	187	1.0	28	MRS 130	93	15	652	1.5	102
MRS-MRT 85	70	20	246	1.3	33	MRS 130	70	20	860	1.1	102
MRS-MRT 85	50	28	319	1.0	33	MRS 130	50	28	1103	1.0	102
MRS-MRT 110	35	40	438	1.6	55	MRS 150	35	40	1576	1.1	132
MRS-MRT 110	29	49	522	1.2	55						
MRS-MRT 110	25	56	588	1.0	55	11 kW					
MRS-MRT 110	20	70	704	0.9	55		rpm	i =	Nm	SF	kg
MRS 130	18	80	756	1.1	69	MRS 150	200	7	467	2.3	148
MRS 150	14	100	945	1.2	99	MRS 150	140	10	660	1.9	148
MRA 100/130	14	98	985	1.5	83	MRS 150	93	15	968	1.5	148
MRA 100/130	12	125	1369	1.3	83	MRS 150	70	20	1261	1.1	148
MRA 100/130	10	140	1324	1.0	83	MRS 150	50	28	1660	0.9	148
MRA 100/130	8.9	160	1729	1.0	83						
MRA 100/150	7.0	200	1861	1.1	113	15 kW					
MRA 100/150	6.3	230	2175	1.2	113		rpm	i =	Nm	SF	kg
						MRS 150	200	7	637	1.7	158
						MRS 150	140	10	900	1.4	158
						MRS 150	93	15	1320	1.1	158
3.0 kW											
	rpm	i =	Nm	SF	kg						
MRS-MRT 70	280	5	91	1.9	30						
MRS-MRT 70	200	7	126	1.3	30						
MRS-MRT 70	140	10	176	1.0	30						
MRS-MRT 85	93	15	255	1.1	35						
MRS-MRT 85	70	20	336	1.0	35						
MRS-MRT 110	50	28	435	1.5	57						
MRS-MRT 110	35	40	598	1.2	57						
MRS-MRT 110	29	49	712	0.9	57						
MRS 130	29	49	722	1.3	71						
MRS 130	25	56	814	1.2	71						
MRS 150	20	70	974	1.3	101						
MRA 100/130	20	70	1074	1.3	85						
MRS 150	18	80	1064	1.1	101						
MRA 100/130	18	80	1277	1.0	85						
MRS 150	14	100	1289	0.9	101						
MRA 100/130	14	98	1344	1.1	85						
MRA 100/130	12	120	1793	1.0	85						
MRA 100/150	10	140	1891	1.1	101						
MRA 100/150	8.9	160	2357	1.1	101						
4.0 kW											
	rpm	i =	Nm	SF	kg						
MRS-MRT 85	280	5	122	2.3	43						
MRS-MRT 85	200	7	168	1.5	43						
MRS-MRT 85	140	10	235	1.1	43						
MRS-MRT 110	93	15	344	1.6	65						
MRS-MRT 110	70	20	453	1.4	65						
MRS-MRT 110	50	28	581	1.1	65						
MRS 130	35	40	829	1.4	79						
MRS 130	29	49	963	1.0	79						
MRS 130	25	56	1085	0.9	79						

## Gearboxes RS - RT

IEC Electric motors

Quick reference-chart



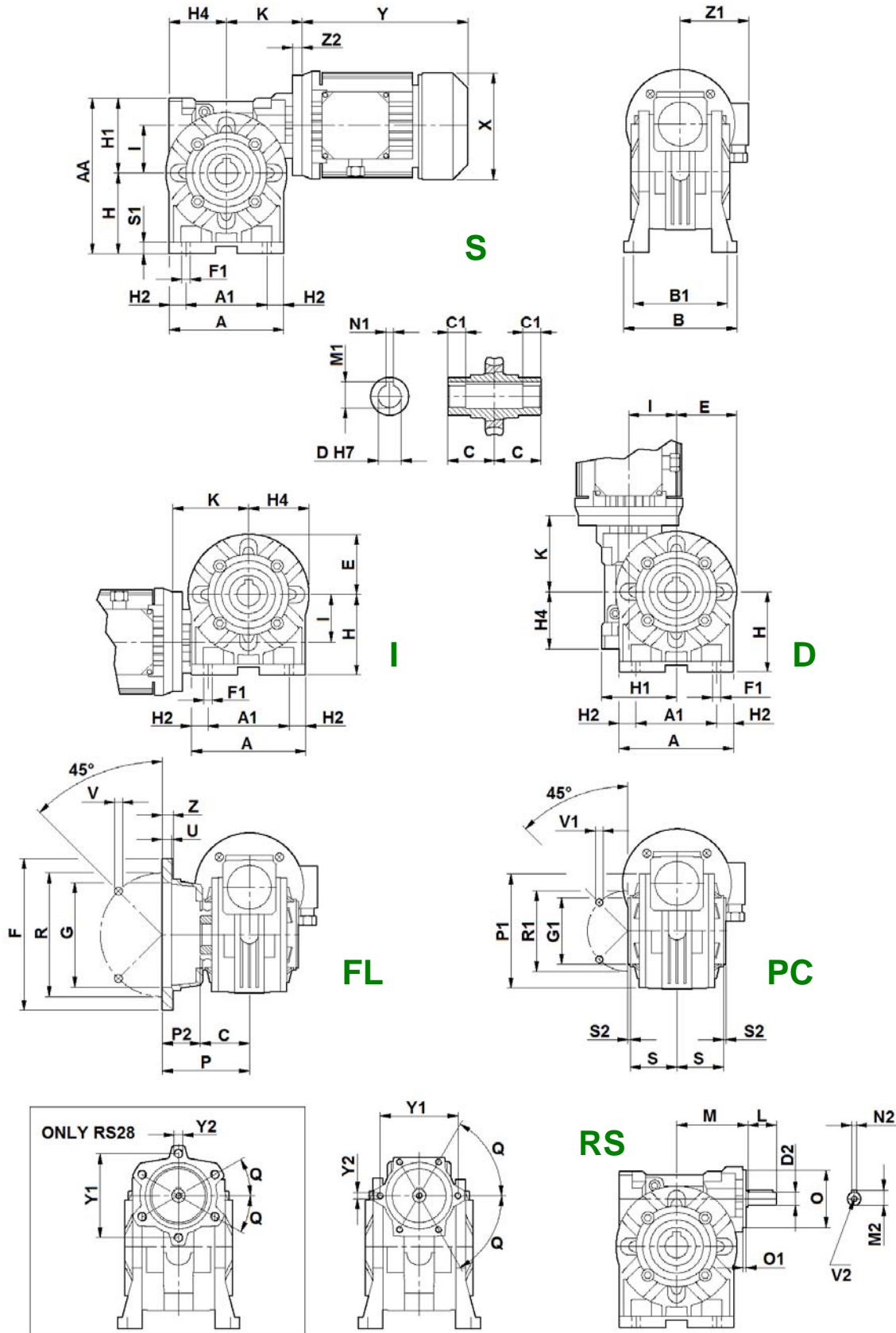
Size	4 poles			2 poles			Flange C / T / B	Shaft D x l	G	IB	M	N	O
	kW	rpm	kg (B3)	kW	rpm	kg (B3)							
T56A T56B	0.06 0.09	1410 1340	2.5 2.6	0.09 0.14	2730 2750	2.6 3.2	B5 - 120 / 100 / 80 B14 - 80 / 65 / 50	9 x 20	2.5	20	8.5	168 125	188 145
T63A T63B	0.13 0.18	1340 1360	3.7 4.3	0.18 0.25	2770 2820	3.7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

Not binding dimensions and weights

# RS - RT Gearboxes

Dimensions

Worm gear boxes RS



## Gearboxes RS - RT

### RS Worm gear boxes

### Dimensions

RS	28	40	50	60	70	85	110	130	150
A	70	100	120	138	158	193	250	286	336
A <sub>1</sub>	52	70	85	95	120	140	200	235	260
AA	99	138	163	192	221	252	333	400	454
B	78	102	119	136	#	168	200	230	250
B <sub>1</sub>	66	84	99	111	116	140	162	190	210
C	30	41	49	60	60	61	77,5	90	105
C <sub>1</sub>	26,5	26	30,5	39	37,5	38,5	52,5	85	100
D <sup>(H7)</sup>	14	18-19-20	24-25	25	25-28-30	32-35	42	48	55
D <sub>2</sub> <sup>(h6)</sup>	9	11	14	19	19	24	28	38	42
E	34	50	61	70	80	98	125	143	168
F	70	140	160	180	200	200	250	300	350
F <sub>1</sub>	5,5	7	9	11	11	13	14	15	19
G <sup>(H8)</sup>	40	95	110	115	130	130	180	230	250
G <sub>1</sub> <sup>(f8)</sup>	42	60	70	70	80	110	130	180	180
H	52	71	85	100	115	135	172	200	230
H <sub>1</sub>	47	67	78	92	106	117	161	200	224
H <sub>2</sub>	9	15	17,5	21,5	19	26,5	25	25,5	38
H <sub>4</sub>	40	50	60	72	86	103	139	159	183
I	28	40	50	60	70	85	110	130	150
K	57,5	70,5	83-88*	93-94*	117-118*	134-137*	151-153*	173	191-211*
L	20	23	30	40	40	50	60	80	100
M	50	65	75	87	110	123,5	146	166	195
M <sub>1</sub>	16,3	21,8	27,3	28,3	31,3	35,3	45,3	51,8	59,3
M <sub>2</sub>	10,2	12,5	16	22,5	22,5	27	31	41	45
N <sub>1</sub>	5	6	8	8	8	10	12	14	16
N <sub>2</sub>	3	4	5	6	6	8	8	10	12
O	37	52	60	70	70	80	90	120	120
O <sub>1</sub>	2,5	3,5	3,5	4,75	4,75	5	6	9	9
P	49	82	91,5	116	111	100	150	150	160
P <sub>1</sub>	67	94	100	102	118	150	200	234	250
P <sub>2</sub>	19	41	42,5	56	51	39	72,5	60	55
Q	30°	60°	55°	60°	60°	60°	60°	60°	60°
R	56	115	130	150	165	165	215	265	300
R <sub>1</sub>	56	83	85	85	100	130	165	215	215
S	32	38	49	57,5	57	56,5	74,5	87	102
S <sub>1</sub>	6	9	12	12	14	15	17	19	20
S <sub>2</sub>	-3	2	2,5	2,5	3	3	2,5	5	5
U	4	6	10	10	12	6	5	5	6
V	6,5 (4)	9 (4)	9 (4)	11 (4)	13 (4)	13 (4)	15 (8)	15 (8)	19 (8)
V <sub>1</sub>	M6x6 (4)	M6x9 (4)	M8x12 (4)	M8x15 (8)	M8x18 (8)	M10x20 (8)	M12x21 (8)	M12x24 (8)	M14x30 (8)
V <sub>2</sub>	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20	M10x22	M12x25
Y <sub>1</sub>	47	61	70	80	85	100	106	140	140
Y <sub>2</sub>	M5x8,5 (6)	M5x10 (6)	M6x10 (6)	M6x12 (6)	M8x16 (6)	M8x15 (6)	M8x15,5	M10x20 (6)	M10x20 (6)
Z	6	10	10	11	14	14	16	22	20

\* - IEC71-B14 (FRS50) - IEC71-B14 (FRS60) - IEC 80-B14 (FRS70) - IEC 90-B14 (FRS85) - IEC100/112-B14 (FRS110) - IEC 100/112-B5 (FRS130) - IEC 160-B5 (FRS150)

# - 137 (Bolted feet - std) - 142 (Integral feet)

Motor dimensions: see page 33

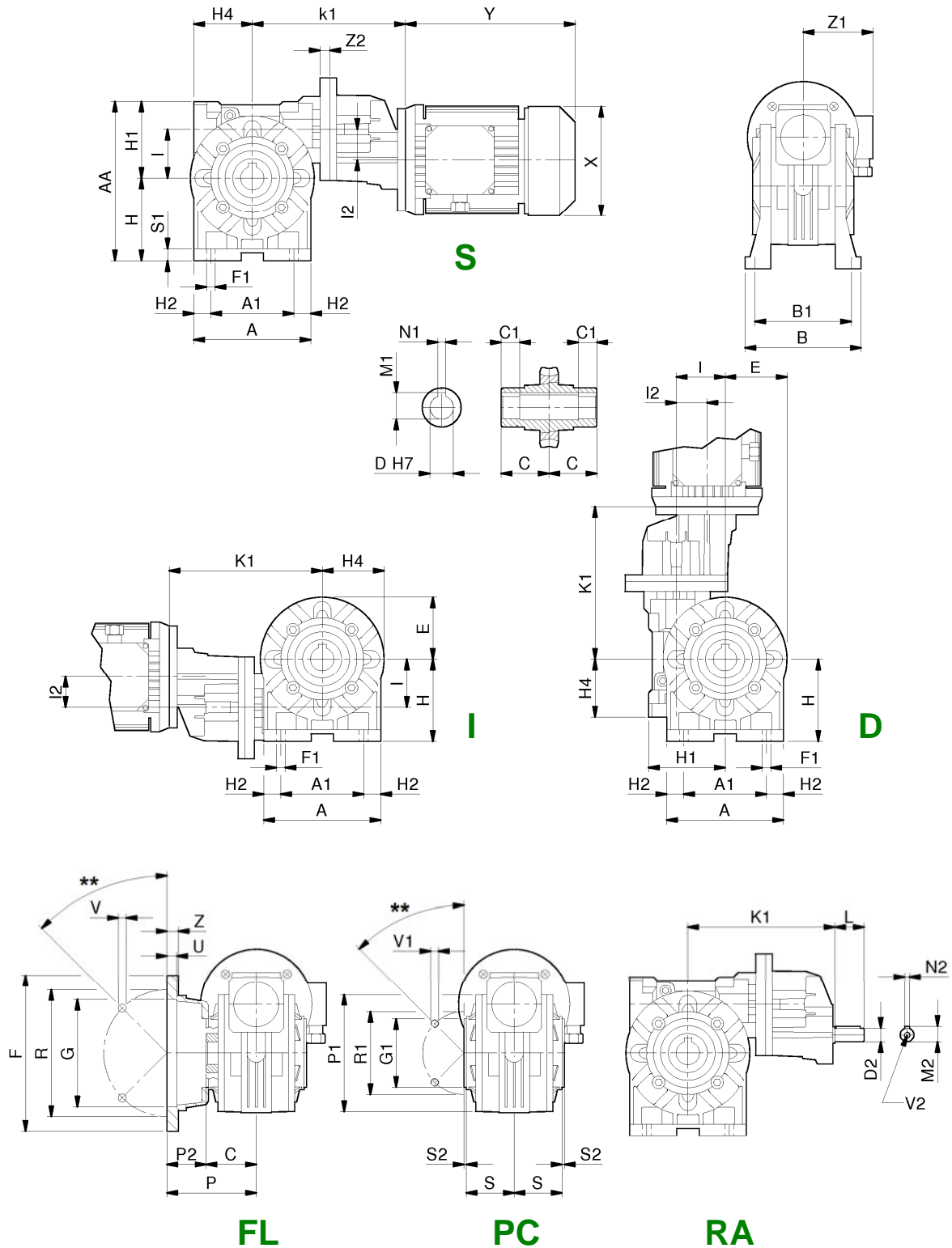
Not binding dimensions and weights

**Note:** dimensions L, M, O, O<sub>1</sub>, Y<sub>1</sub>, Y<sub>2</sub> also apply to SRS input

# RS - RT Gearboxes

Dimensions

Helical/worm gear boxes RA



## Gearboxes RS - RT

### RA Helical/worm gear boxes

### Dimensions

RA	63/40	63/50	63/60	71/50	71/60	71/70	71/85	80/60	80/70	80/85	80/110	100/110	100/130	100/150
A	100	120	138	120	138	158	193	138	158	193	250	250	286	336
A <sub>1</sub>	70	85	95	85	95	120	140	95	120	140	200	250	235	260
AA	138	163	192	163	192	221	252	192	221	252	342	200	400	454
B	102	119	136	119	136	#	168	136	#	168	200	333	230	250
B <sub>1</sub>	84	99	111	99	111	116	140	111	116	140	162	200	190	210
C	41	49	60	49	60	60	61	60	60	61	77,5	162	90	105
C <sub>1</sub>	26	30,5	39	30,5	39	37,5	38,5	39	37,5	38,5	52,5	52,5	85	100
D <sub>(H7)</sub>	18-19	24-25	25	24-25	25	25-28	32-35	25	28-30	32-35	42	48	55	55
	20	---	---	---	---	30	---	---	---	---	---	---	---	---
D <sub>2</sub>	11	11	11	14	14	14	14	19	19	19	19	---	19	19
E	50	61	70	61	70	80	98	70	80	98	125	24	143	168
F	140	160	180	160	180	200	200	180	200	200	250	125	300	350
F <sub>1</sub>	7	9	11	9	11	11	13	11	11	13	14	250	15	19
G <sub>(H8)</sub>	95	110	115	110	115	130	130	115	130	130	180	14	230	250
G <sub>1</sub>	60	70	70	70	70	80	110	70	80	110	130	180	180	180
H	71	85	100	85	100	115	135	100	115	135	172	130	200	230
H <sub>1</sub>	67	78	92	78	92	106	117	92	106	117	170	172	200	224
H <sub>2</sub>	15	17,5	21,5	17,5	21,5	19	26,5	21,5	19	26,5	25	161	25,5	38
H <sub>4</sub>	50	60	72	60	72	86	103	72	86	103	142	25	159	189
I	40	50	60	50	60	70	85	60	70	85	110	139	130	150
I <sub>1</sub>	32	32	32	40	40	40	40	50	50	50	50	110	75	75
K	153,	171	177	173	183	209	224	207	232,	250,	264,	63	290	316
	---	---	---	178*	188*	214*	229*	---	---	---	---	328	300*	326*
L	23	23	23	30	30	30	30	40	40	40	40	50	40	40
M <sub>1</sub>	21,8	27,3	28,3	27,3	28,3	31,3	35,3	28,3	31,3	35,3	45,3	45,3	51,8	59,3
M <sub>2</sub>	12,5	12,5	12,5	16	16	16	16	22,5	22,5	22,5	22,5	27	22,5	22,5
N <sub>1</sub>	6	8	8	8	8	8	10	8	8	10	12	12	14	16
N <sub>2</sub>	4	4	4	5	5	5	5	6	6	6	6	8	6	6
P	82	91,5	116	91,5	116	111	100	116	111	100	150	150	150	160
P <sub>1</sub>	94	100	102	100	102	118	150	102	118	150	200	200	234	250
P <sub>2</sub>	41	42,5	56	42,5	56	51	39	56	51	39	72,5	72,5	60	55
R	115	130	150	130	150	165	165	150	165	165	215	215	265	300
R <sub>1</sub>	83	85	85	85	85	100	130	85	100	130	165	165	215	215
S	38	49	57,5	49	57,5	57	56,5	57,5	57	56,5	74,5	74,5	87	102
S <sub>1</sub>	9	12	12	12	12	14	15	12	14	15	17	17	19	20
S <sub>2</sub>	2	2,5	2,5	2,5	2,5	3	3	2,5	3	3	2,5	2,5	5	5
U	6	10	10	10	10	12	6	10	12	6	5	5	5	6
V	9 (4)	9 (4)	11	9 (4)	11	13	13	11	13	13	15	15	15	19
V <sub>1</sub>	M6x9 (4)	M8x12 (4)	M8x15 (8)	M8x12 (4)	M8x15 (8)	M8x18 (8)	M10x2 (8)	M8x15 (8)	M8x18 (8)	M10x2 (8)	M12x2 (8)	M12x2 (8)	M12x2 (8)	M14x3 (8)
V <sub>2</sub>	M4x10	M4x10	M4x10	M6x15	M6x15	M6x15	M6x15	M8x20	M8x20	M8x20	M8x20	M8x20	M8x20	M8x20
Y <sub>1</sub>	105	105	105	120	120	120	120	140	140	140	140	140	200	200
Z	10	10	11	10	11	14	14	11	14	14	16	16	22	20

\* - IEC71-B14 (FRA 71/50, FRA 71/60, FRA 71/70, FRA 71/85) - IEC100-B5 (FRA100/130) - IEC100-B5 (FRA100/150)

\*\* - 90° on RS28 - 45° other sizes

# - 137 (Bolted feet version - std) - 142 (Integral feet version)

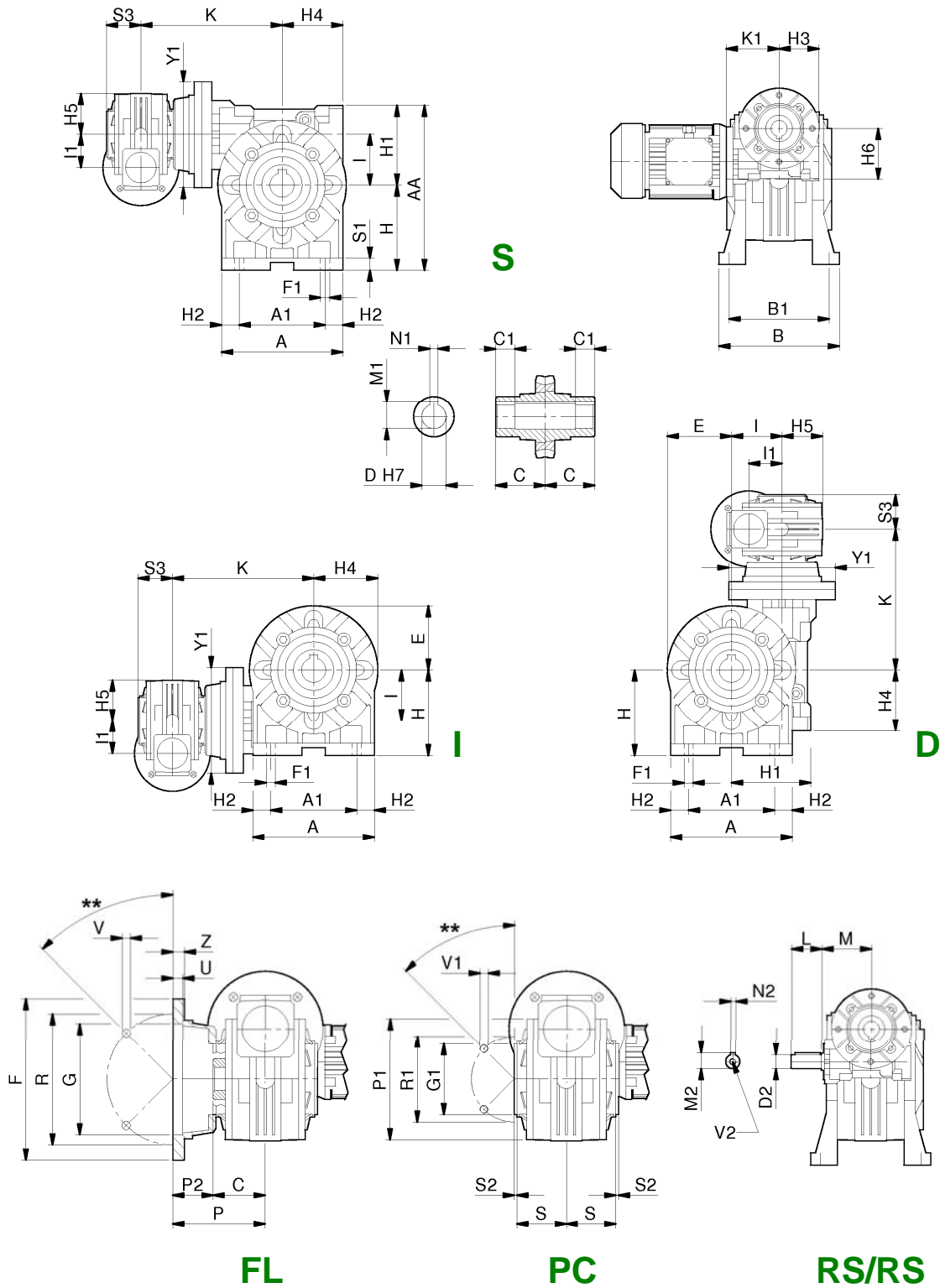
Motor dimensions: see page 33

Not binding dimensions and weights

# RS - RT Gearboxes

Dimensions

Two-stage worm boxes RS/RS





## Gearboxes RS - RT

### RS/RS Two-stage worm boxes

### Dimensions

RS/RS	28/28	28/40	28/50	28/60	40/70	40/85	50/110	60/130	70/150
A	70	100	120	138	158	193	250	286	336
A <sub>1</sub>	52	70	85	95	120	140	200	235	260
AA	99	138	163	192	221	252	342	400	454
B	78	102	119	136	#	168	200	230	250
B <sub>1</sub>	66	84	99	111	116	140	162	190	210
C	30	41	49	60	60	61	77,5	90	105
C <sub>1</sub>	26.5	26	30.5	39	37.5	38.5	52.5	85	100
D <sup>(H7)</sup>	14	18-19-20	24-25	25	25-28-30	32-35	42	48	55
D <sub>2</sub> <sup>(h6)</sup>	9	9	9	9	11	11	14	38	42
E	34	50	61	70	80	98	125	143	168
F	70	140	160	180	200	200	250	300	350
F <sub>1</sub>	5,5	7	9	11	11	13	14	15	19
G <sup>(H8)</sup>	40	95	110	115	130	130	180	230	250
G <sub>1</sub> <sup>(f8)</sup>	42	60	70	70	80	110	130	180	180
H	52	71	85	100	115	135	172	200	230
H <sub>1</sub>	47	67	78	92	106	117	170	200	224
H <sub>2</sub>	9	15	17,5	21,5	19	26,5	25	25,5	38
H <sub>3</sub>	40	40	40	40	50	50	60	72	86
H <sub>4</sub>	40	50	60	72	86	103	142	159	189
H <sub>5</sub>	34	34	34	34	50	50	61	70	80
H <sub>6</sub>	47	47	47	47	67	67	78	92	106
I	28	40	50	60	70	85	110	130	150
I <sub>2</sub>	28	28	28	28	40	40	50	60	70
K	99,5	123	138,5	146	182	199	246	246	300
K <sub>1</sub>	57,5	57,5	57,5	57,5	70,5	70,5	83 - 88*	93 - 94*	117 - 118*
L	20	20	20	20	23	23	30	40	40
M	50	50	50	50	65	65	75	87	110
M <sub>1</sub>	16,3	21,8	27,3	28,3	31,3	35,3	45,3	51,8	59,3
M <sub>2</sub>	10,2	10,2	10,2	10,2	12,5	12,5	16	22,5	22,5
N <sub>1</sub>	5	6	8	8	8	10	12	14	16
N <sub>2</sub>	3	3	3	3	4	4	5	6	6
P	49	82	91,5	116	111	100	150	150	160
P <sub>1</sub>	67	94	100	102	118	150	200	234	250
P <sub>2</sub>	19	41	42,5	56	51	39	72,5	60	55
R	56	115	130	150	165	165	215	265	300
R <sub>1</sub>	56	83	85	85	100	130	165	215	215
S	32	38	49	57,5	57	56,5	74,5	87	102
S <sub>1</sub>	6	9	12	12	14	15	17	19	20
S <sub>2</sub>	-3	2	2,5	2,5	3	3	2,5	5	5
S <sub>3</sub>	30	30	30	30	41	41	49	60	60
U	4	6	10	10	12	6	5	5	6
V	6,5 (4)	9 (4)	9 (4)	11 (4)	13 (4)	13 (4)	15 (8)	15 (8)	19 (8)
V <sub>1</sub>	M6x6 (4)	M6x9 (4)	M8x12 (4)	M8x15 (8)	M8x18 (8)	M10x20 (8)	M12x21 (4)	M12x24 (4)	M14x30 (4)
V <sub>2</sub>	M4x10	M4x10	M4x10	M4x10	M4x10	M4x10	M6x15	M8x20	M8x20
Y <sub>1</sub>	80	80	80	90	115	115	110	180	200
Z	6	10	10	11	14	14	16	22	20

\* - IEC71-B14 (FRS50) - IEC71-B14 (FRS60) - IEC 80-B14 (FRS70)

\*\* - 90° on RS28 - 45° other sizes

# - 137 (Bolted feet version - std) - 142 (Integral feet version)

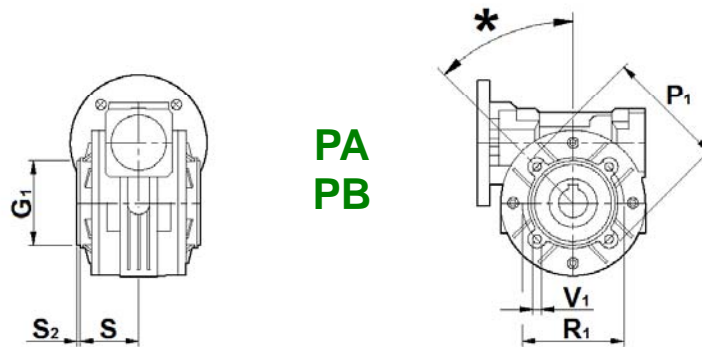
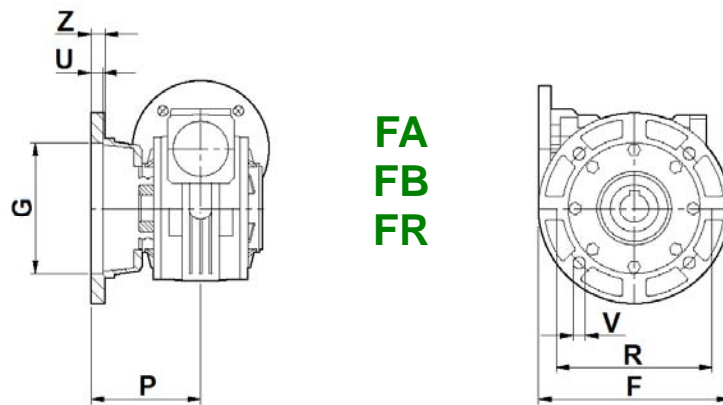
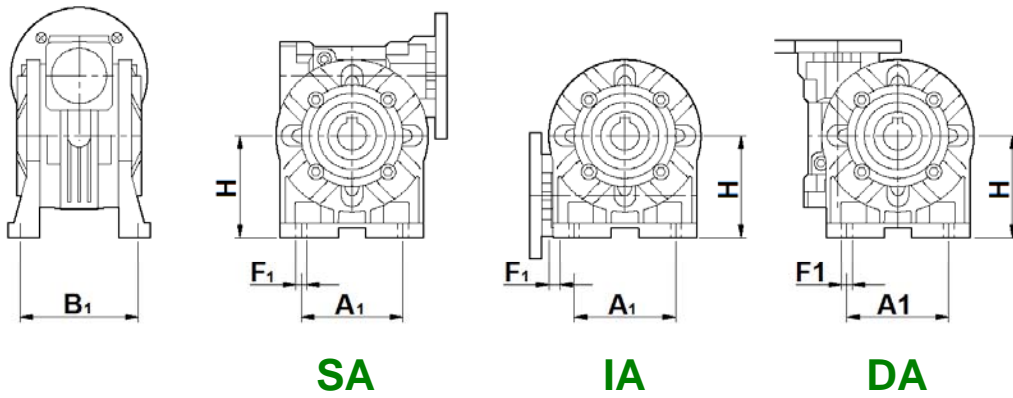
Motor dimensions: see page 33

Not binding dimensions and weights

# RS - RT Gearboxes

Dimensions

Alternative mountings RS



## Gearboxes RS - RT

### RS Alternative mountings

### Dimensions

RS	28	40	50	60	70	85	110	130	150
<b>SA - IA - DA</b>									
A <sub>1</sub>	---	52	63	---	---	140	---	---	---
B <sub>1</sub>	---	81	98.5	---	---	146	---	---	---
F <sub>1</sub>	---	8.5	9	---	---	11	---	---	---
H	---	72	82	---	---	142	---	---	---
<b>FA</b>									
F	80	114	125	165	165	---	---	---	---
G <sub>(H8)</sub>	50	60	70	110	115	---	---	---	---
P	50.5	69	93	90	116	---	---	---	---
R	68	87	90	130	150	---	---	---	---
U	3.5	5	5	10	4.5	---	---	---	---
V	6.5 (4)	9 (4)	11 (4)	10.5 (4)	11 (4)	---	---	---	---
Z	7	8	10	15	10	---	---	---	---
<b>FB</b>									
F	---	120	---	180	---	210	270	---	---
G <sub>(H8)</sub>	---	80	---	115	---	152	170	---	---
P	---	62	---	86	---	119.5	131.5	---	---
R	---	100	---	150	---	176	230	---	---
U	---	4	---	3.5	---	5	5	---	---
V	---	9 (4)	---	11 (4)	---	11 (4)	13 (4)	---	---
Z	---	9	---	12	---	14	18	---	---
<b>FR</b>									
F	---	---	---	---	160	---	---	---	---
G <sub>(H8)</sub>	---	---	---	---	110	---	---	---	---
P	---	---	---	---	84.5	---	---	---	---
R	---	---	---	---	130	---	---	---	---
U	---	---	---	---	4.5	---	---	---	---
V	---	---	---	---	11 (4)	---	---	---	---
Z	---	---	---	---	14	---	---	---	---
<b>PA</b>									
G <sub>1 (H8)</sub>	---	50	68	75	90	---	---	---	---
P <sub>1</sub>	---	95	110	104	125	---	---	---	---
R <sub>1</sub>	---	65	94	90	110	---	---	---	---
S	---	38	49	47.5	55	---	---	---	---
S <sub>2</sub>	---	2	2.5	5.5	3	---	---	---	---
V <sub>1</sub>	---	M6x8 (4)	M6x12.5(4)	M8x14 (4)	M8x14 (4)	---	---	---	---
<b>PB</b>									
G <sub>1 (H8)</sub>	---	---	60	---	70	---	---	---	---
P <sub>1</sub>	---	---	110	---	116	---	---	---	---
R <sub>1</sub>	---	---	75	---	85	---	---	---	---
S	---	---	49	---	67	---	---	---	---
S <sub>2</sub>	---	---	2.5	---	4	---	---	---	---
V <sub>1</sub>	---	---	M6x12.5(4)	---	M8x14 (4)	---	---	---	---

\* - 45° std / 90° on request

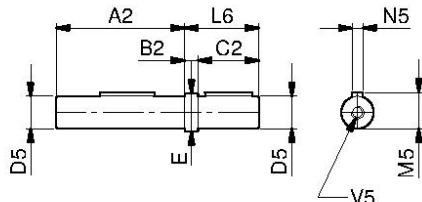
Not binding dimensions and weights

# RS - RT Gearboxes

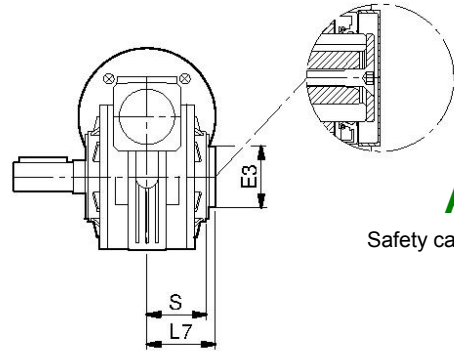
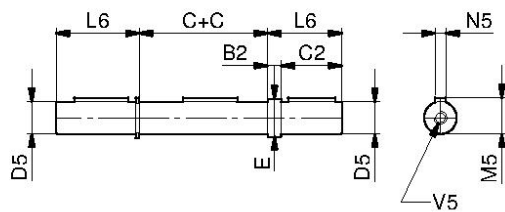
Dimensions

Accessories RS

**AS**



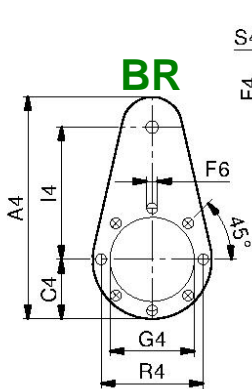
**AD**



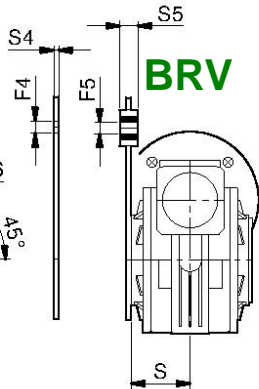
**ASC**

Safety cap for AS

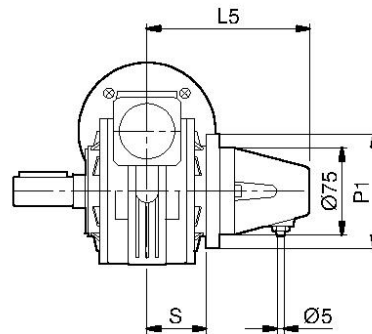
**BR**



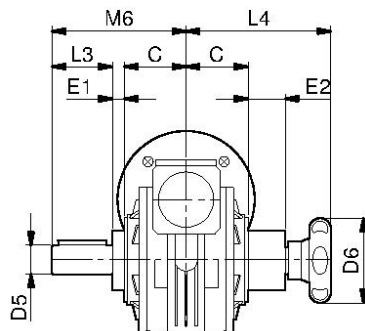
**BRV**



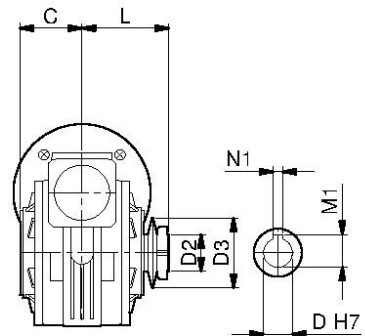
**SL**



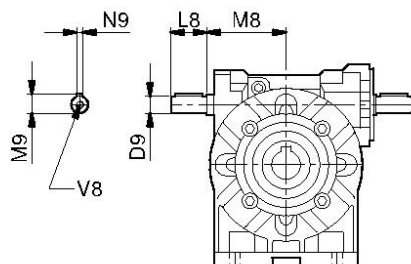
**TLE**



**TLI**



**VB**



**TLI  
Oil  
quantity**

Type	Litres
28	0.04
40	0.10
50	0.13
60	0.30
70	0.45
85	0.75
110	2.25

## Gearboxes RS - RT

### RS Accessories

### Dimensions

RS		28	40	50	60	70	85	110	130	150
<b>AS &amp; AD</b>	A <sub>2</sub>	58	80	95	117	117	119	153	177	207
	B <sub>2</sub>	1	10	10	10	10	10	10	20	20
	C	30	41	49	60	60	61	77.5	90	105
	C <sub>2</sub>	30	40	45	50	60	70	100	110	110
	D <sub>5 (g6)</sub>	14	19 (18)	24 (25)	25	28 (25-32)	32 (35)	42	48	55
	E	14	22	28	30	34	38	50	58	63
	L <sub>6</sub>	31	50	55	60	70	80	106	130	130
	M <sub>5</sub>	16	21.5	27	28	31	35	45	51.5	59
	N <sub>5 (h9)</sub>	5	6	8	8	8	10	12	14	16
	V <sub>5</sub>	M5x10	M8x20	M8x20	M8x20	M8x20	M10x25	M10x25	---	---
<b>ASC</b>	E <sub>3</sub>	42	55	62	62	72	90	120	---	---
	L <sub>7</sub>	36	48.5	55.5	68.5	67	77	85	---	---
	S	27.5	38.5	46.5	57	57	67	74	---	---
<b>BR BRV</b>	A <sub>4</sub>	138	168	185	235	295	313	388	465	525
	C <sub>4</sub>	38	43	60	55	65	75	100	120	125
	F <sub>4</sub>	10.5	10.5	10.5	10.5	10.5	20.5	20.5	26	26
	F <sub>5 (0/+0.4)</sub>	10	10	10	10	10	20	20	25	25
	F <sub>6</sub>	7	7	9	9	9	12	13	13	15
	G <sub>4</sub>	42	60	70	80	95	110	130	180	180
	I <sub>4</sub>	80	90	100	150	150	200	250	300	350
	R <sub>4</sub>	65	75	85	95	115	130	165	215	215
	S <sub>4</sub>	4	4	4	6	6	6	6	6	6
	S <sub>5</sub>	15	15	15	20	20	25	25	30	30
<b>SL</b>	L <sub>5</sub>	100	110	120	130	130	140	155	---	---
	P <sub>1</sub>	77	88	100	110	132	160	200	---	---
	S	27.5	38.5	46.5	57	57	67	74	---	---
<b>TLE</b>	D <sub>6</sub>	52	70	70	70	80	100	100	---	---
	E <sub>1</sub>	10	12	12	15	14	19	24	---	---
	E <sub>2</sub>	28	37	31	40	46	57	71	---	---
	L <sub>3</sub>	30	40	50	50	60	70	80	---	---
	L <sub>4</sub>	94	116	118	128	146	168	201	---	---
	M <sub>6</sub>	70	93	111	125	134	150	181	---	---
<b>TLI</b>	D (H7)	14	18/19	24/25	25	28	32/35	42	---	---
	D <sub>2</sub>	40	56	71	71	80	90	125	---	---
	D <sub>3</sub>	14.2 x 20	19.5 x 20.5	24.5 x 28	25.5 x 26	28.5 x 22	32.5 x 27	42.5 x 38.5	---	---
	L	45	61.5	77	86.5	89	94	112.5	---	---
	M <sub>1</sub>	15.4*	21.8	27.3	27.3*	31.3	35.3	45.3	---	---
	N <sub>1 (h9)</sub>	5	6	8	8	8	10	12	---	---
<b>VB</b>	D <sub>9</sub>	9	11	14	19	19	24	28	---	---
	L <sub>8</sub>	20	23	30	40	40	50	60	---	---
	M <sub>8</sub>	43	55	65	77	89	106.5	145	---	---
	M <sub>9</sub>	10.2	12.5	16	22.5	22.5	27	31	---	---
	N <sub>9 (h9)</sub>	3	4	5	6	6	8	8	---	---
	V <sub>8</sub>	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20	---	---

D<sub>5</sub> (..) = Diameter on request

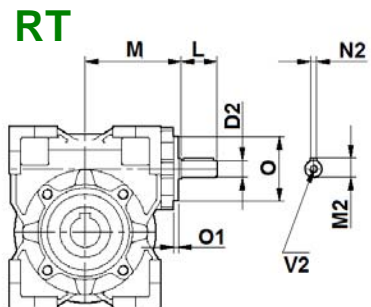
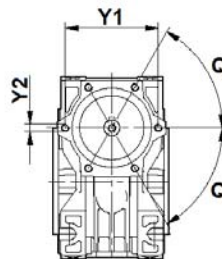
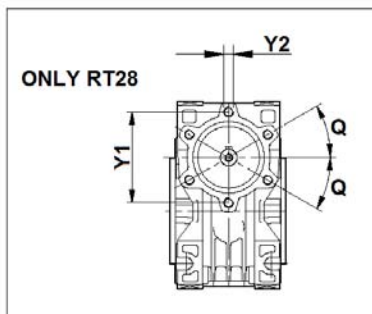
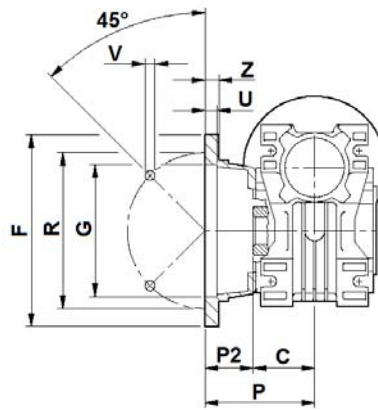
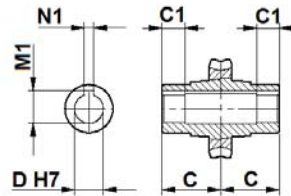
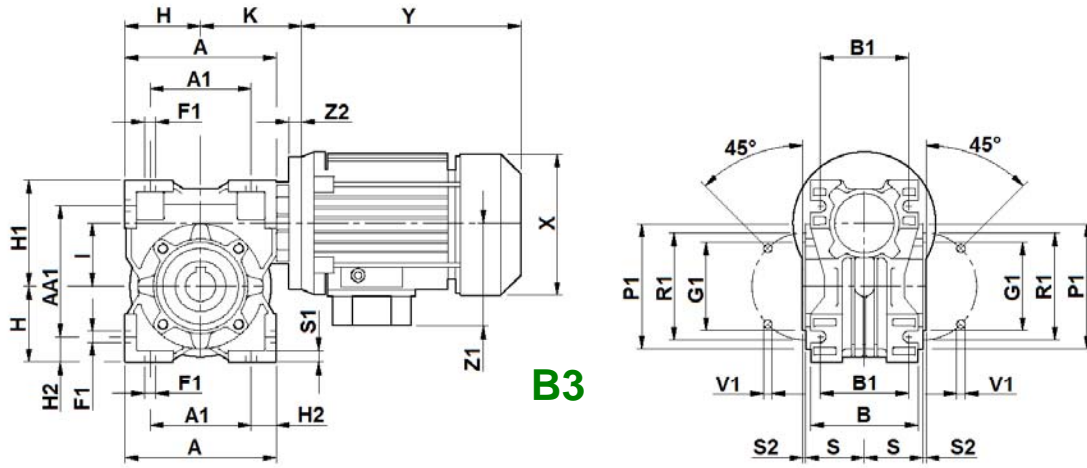
\* = Undersized key

Not binding dimensions and weights

# RS - RT Gearboxes

Dimensions

Worm gear boxes RT



## Gearboxes RS - RT

### RT Worm gear boxes

### Dimensions

RT	28	40	50	60	70	85	110
A	80	100	120	144	172	206	255
A <sub>1</sub>	54	70	80	100	120	140	170
AA	97	121,5	144	174	205	238	295
AA <sub>1</sub>	71	91,5	104	130	153	172	210
B	53	71	85	100	112	130	144
B <sub>1</sub>	44	60	70	85	90	100	115
C	30	41	49	60	60	61	77,5
C <sub>1</sub>	26,5	26	30,5	39	37,5	38,5	52,5
D <sup>(H7)</sup>	14	18-19-20	24-25	25	25-28-30	32-35	42
D <sub>2</sub> <sup>(h6)</sup>	9	11	14	19	19	24	28
F	80	110 {110}	125 [160] 125}	180 {180}	200	210	270
F <sub>1</sub>	7	7	9	9	11	13	15
G <sup>(H8)</sup>	50	60 {60}	70 [110] {70}	115 {115}	130	152	170
G <sub>1</sub> <sup>(h8)</sup>	55	60	70	80	95	110	130
H	40	50	60	72	86	103	127,5
H <sub>1</sub>	57	71,5	84	102	119	135	167,5
H <sub>2</sub>	13	15	20	22	26	33	42,5
I	28	40	50	60	70	85	110
K	57,5	70,5	83-88*	93-94*	117-118*	134-137*	151-153*
L	20	23	30	40	40	50	60
M	50	65	75	87	110	123,5	146
M <sub>1</sub>	16,3	21,8	27,3	28,3	31,3	35,3	45,3
M <sub>2</sub>	10,2	12,5	16	22,5	22,5	27	31
N <sub>1</sub>	5	6	8	8	8	10	12
N <sub>2</sub>	3	4	5	6	6	8	8
O	37	52	60	70	70	80	90
O <sub>1</sub>	2,5	3,5	3,5	4,75	4,75	5	6
P	53	69 {99}	93 [90,5] {123}	86 {116}	111	111	131
P <sub>1</sub>	75	86	100	110	130	160	200
P <sub>2</sub>	23	28 {58}	44 [41,5] {74}	25 {56}	51	50	53,5
Q	30°	60°	55°	60°	60°	60°	60°
R	68	87 {87}	90 [130] {90}	150,5 {150,5}	165	175	230
R <sub>1</sub>	65	75	85	95	115	130	165
S	27,5	38,5	46,5	57	57	67	74
S <sub>1</sub>	6	7	8	10	11	14	13
S <sub>2</sub>	2,5	2,5	3	3	3	3	3,5
U	10	4 {4}	5 [11] {5}	6,5 {6,5}	12	6	5
V	7	9 {9}	11 [9] {9}	11 {11}	13	13	14
V <sub>1</sub>	M6x10 (4)	M6x8,5 (4)	M8x10 (4)	M8x16 (8)	M8x16 (8)	M10x18 (8)	M10x21 (8)
V <sub>2</sub>	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20
Y <sub>1</sub>	47	61	70	80	85	100	106
Y <sub>2</sub>	M5x8,5 (6)	M5x10 (6)	M6x10 (6)	M6x10 (6)	M8x16 (6)	M8x15 (6)	M8x15,5 (6)
Z	7	6 {8}	10 [13] {10}	10 {10}	14	16	18
Z <sub>2</sub>	13	13	13 - 18,5	14 - 15	15,5 - 17,5	15,5 - 18,5	18-20

(\*) - IEC71-B14 (FRS50) - IEC71-B14 (FRS60) - IEC 80-B14 (FRS70) - IEC 90-B14 (FRS85) - IEC100/112-B14 (FRS110)

\*\* - 90° on RT28 - 45° other sizes

Motor dimensions: see page 33

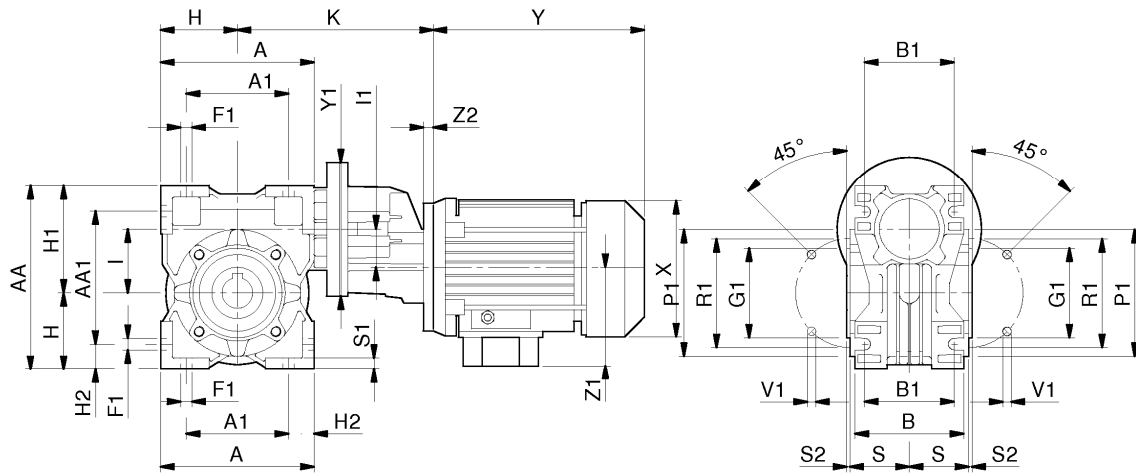
Not binding dimensions and weights

**Note:** dimensions L, M, O, O<sub>1</sub>, Y<sub>1</sub>, Y<sub>2</sub> also apply to SRT input

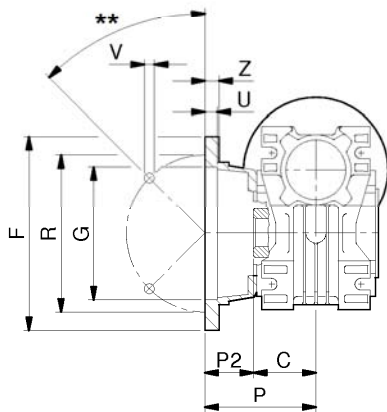
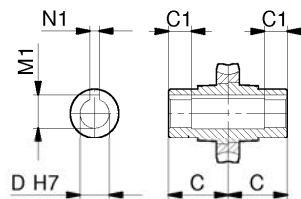
# RS - RT Gearboxes

Dimensions

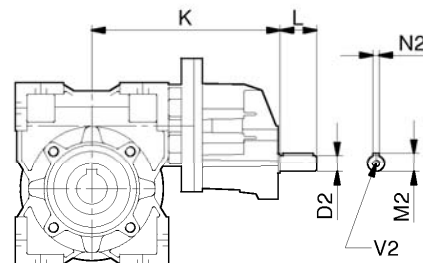
Helical/worm gear boxes TA



**B3**



**F, [FV], {FL}**



**TA**



## Gearboxes RS - RT

### TA Helical/worm gear boxes

### Dimensions

TA	63/40	63/50	63/60	71/50	71/60	71/70	71/85	80/60	80/70	80/85	80/110	100/110
A	100	120	144	120	144	172	206	144	172	206	255	255
A <sub>1</sub>	70	80	100	80	100	120	140	100	120	140	170	170
AA	121,5	144	174	144	174	205	238	174	205	238	295	295
AA <sub>1</sub>	91,5	104	130	104	130	153	172	130	153	172	210	210
B	71	85	100	85	100	112	130	100	112	130	144	144
B <sub>1</sub>	60	70	85	70	85	90	100	85	90	100	115	115
C	41	49	60	49	60	60	61	60	60	61	77,5	77,5
C <sub>1</sub>	26	30,5	39	30,5	39	37,5	38,5	39	37,5	38,5	52,5	52,5
D <sub>(H7)</sub>	18-19-	24-25	25	24-25	25	25-28-	32-35	25	25-28-	32-35	42	42
D*	20	---	---	---	---	30	---	---	30	---	---	---
D <sub>4</sub>	11	11	11	14	14	14	14	19	19	19	19	24
F	110	125	180	125	180	200	210	180	200	210	270	270
	---	{125}	---	{125}	---	---	---	---	---	---	---	---
F <sub>1</sub>	7	9	9	9	9	11	13	9	11	13	15	15
G <sub>(H8)</sub>	60 {60}	70 [110]	115	70 [110]	115	130	152	115	130	152	170	170
	---	{70}	---	{70}	---	---	---	---	---	---	---	---
G <sub>1</sub>	60	70	80	70	80	95	110	80	95	110	130	130
H	50	60	72	60	72	86	103	72	86	103	127,5	127,5
H <sub>1</sub>	71,5	84	102	84	102	119	135	102	119	135	167,5	167,5
H <sub>2</sub>	15	20	22	20	22	26	33	22	26	33	42,5	42,5
I	40	50	60	50	60	70	85	60	70	85	110	110
I <sub>1</sub>	32	32	32	40	40	40	40	50	50	50	50	50
K	153,5	171	177	173-178*	183	209-214*	224	207	232,5	250,5	264,5	328
L	23	23	23	30	30	30	30	40	40	40	40	50
M <sub>1</sub>	21,8	27,3	28,3	27,3	28,3	31,3	35,3	28,3	31,3	35,3	45,3	45,3
M <sub>2</sub>	12,5	12,5	12,5	16	16	16	16	22,5	22,5	22,5	22,5	27
N <sub>1</sub>	6	8	8	8	8	8	10	8	8	10	12	12
N <sub>4</sub>	4	4	4	5	5	5	5	6	6	6	6	8
P	69 {99}	93	86 {116}	93	86 {116}	111	111	86 {116}	111	111	131	131
	---	{123}	---	{123}	---	---	---	---	---	---	---	---
P <sub>1</sub>	86	100	110	100	110	130	160	110	130	160	200	200
P <sub>2</sub>	28 {58}	44	25 {56}	44	25 {56}	51	50	25 {56}	51	50	53,5	53,5
	---	{74}	---	{74}	---	---	---	{56}	---	---	---	---
R	87	90	150,5	90 [130]	150,5	165	175	150,5	165	175	230	230
	---	{90}	{150,5}	{90}	{150,5}	---	---	{150,5}	---	---	---	---
R <sub>1</sub>	75	85	95	85	95	115	130	95	115	130	165	165
S	38,5	46,5	57	46,5	57	57	67	57	57	67	74	74
S <sub>1</sub>	7	8	10	8	10	11	14	10	11	14	13	13
S <sub>2</sub>	2,5	3	3	3	3	3	3	3	3	3	3,5	3,5
U	4 {4}	5 [11] {5}	6,5 {6,5}	5 [11] {5}	6,5 {6,5}	12	6	6,5 {6,5}	12	6	5	5
V	9 {9}	10,5 [9]	11	10,5 [9]	11	13	13	11	13	13	14	14
V <sub>1</sub>	M6x8 (4)	M8x10 (4)	M8x16 (8)	M8x10 (4)	M8x16 (8)	M8x16 (8)	M10x18	M8x16 (8)	M8x16 (8)	M10x18 (8)	M10x21 (8)	M10x21 (8)
V <sub>3</sub>	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 <sub>1</sub>	105	105	105	120	120	120	120	140	140	140	140	140
Z	6 {8}	10 [13] {10}	10 {10}	10 [13] {10}	10 {10}	14	16	10 {10}	14	16	18	18
Z <sub>2</sub>	13	13	13	13 - 18,5	13 - 18,5	13 - 18,5	13 - 18,5	14 - 15	14 - 15	14 - 15	14 - 15	14 - 15

\* - IEC71-B14 (FTA 71/50, FTA 71/60, FTA 71/70, FTA 71/85)

\*\* - 90° on RT28 - 45° other sizes

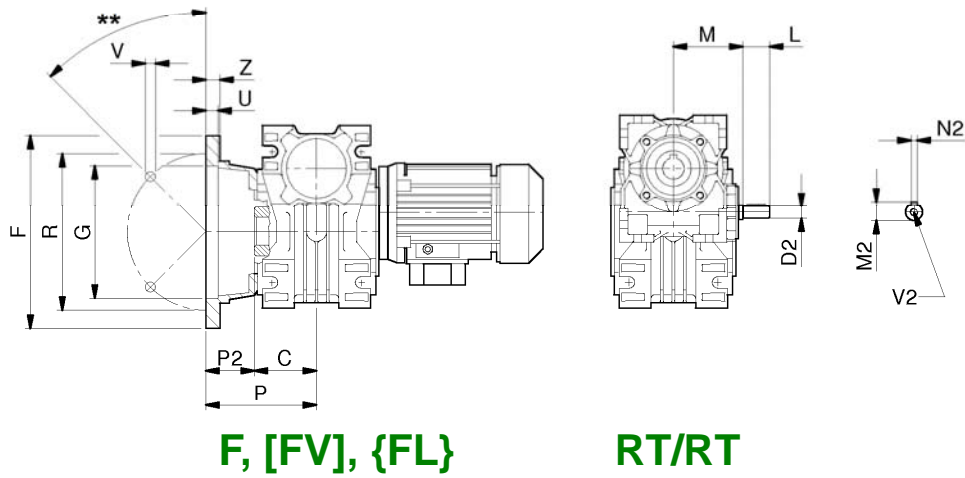
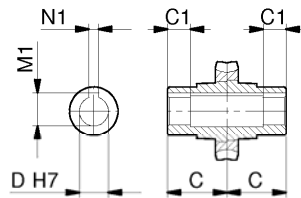
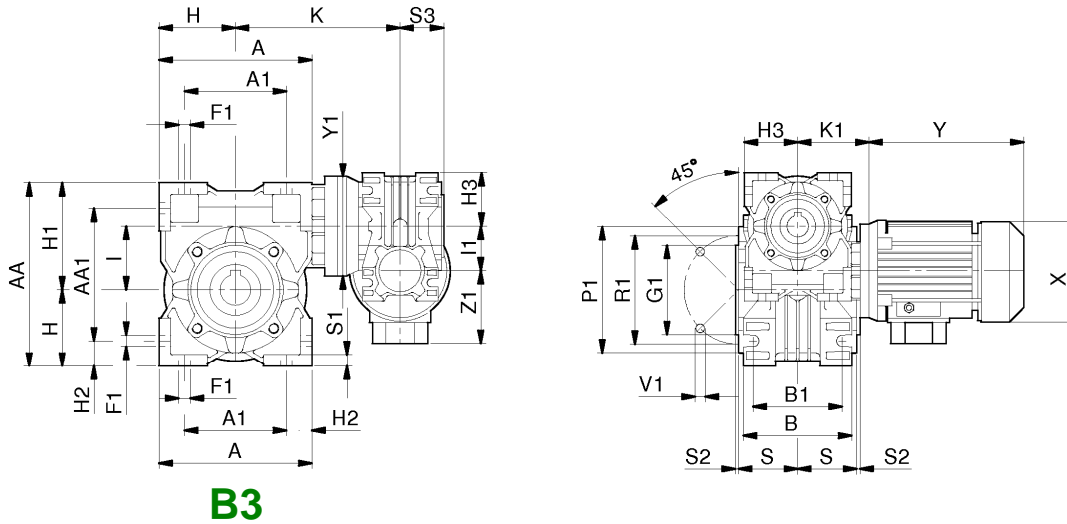
Motor dimensions: see page 33

Not binding dimensions and weights

# RS - RT Gearboxes

Dimensions

Two-stage worm gear boxes RT/RT



## Gearboxes RS - RT

RT/RT Two-stage worm gear boxes

Dimensions

RT/RT	28/28	28/40	28/50	28/60	40/70	40/85	50/110
A	80	100	120	144	172	206	255
A <sub>1</sub>	54	70	80	100	120	140	170
AA	97	121,5	144	174	205	238	295
AA <sub>1</sub>	71	91,5	104	130	153	172	210
B	53	71	85	100	112	130	144
B <sub>1</sub>	44	60	70	85	90	100	115
C	30	41	49	60	60	61	77,5
C <sub>1</sub>	26,5	26	30,5	39	37,5	38,5	52,5
D (H7)	14	18-19-20	24-25	25	25-28-30	32-35	42
D <sub>2</sub> (h6)	9	9	9	9	11	11	14
F	80	110 {110}	125 [160] {125}	180 {180}	200	210	270
F <sub>1</sub>	7	7	9	9	11	13	15
G (H8)	50	60 {60}	70 [110] {70}	115 {115}	130	152	170
G <sub>1</sub> (h8)	55	60	70	80	95	110	130
H	40	50	60	72	86	103	127,5
H <sub>1</sub>	57	71,5	84	102	119	135	167,5
H <sub>2</sub>	13	15	20	22	26	33	42,5
H <sub>3</sub>	40	40	40	40	50	50	60
I	28	40	50	60	70	85	110
I <sub>1</sub>	28	28	28	28	40	40	50
K	79,5	118,5	134	145,5	143,5	199	203
K <sub>1</sub>	57,5	57,5	57,5	57,5	70,5	70,5	83 - 88*
L	20	20	20	20	23	23	30
M	50	50	50	50	65	65	75
M <sub>1</sub>	16,3	21,8	27,3	28,3	31,3	35,3	45,3
M <sub>2</sub>	10,2	10,2	10,2	10,2	12,5	12,5	16
N <sub>1</sub>	5	6	8	8	8	10	12
N <sub>2</sub>	3	3	3	3	4	4	5
P	53	69 {99}	93 [90,5] {123}	86 {116}	111	111	131
P <sub>1</sub>	75	86	100	110	130	160	200
P <sub>2</sub>	23	28 {58}	44 [41,5] {74}	25 {56}	51	50	53,5
R	68	87 {87}	90 [130] {90}	150,5 {150,5}	165	175	230
R <sub>1</sub>	65	75	85	95	115	130	165
S	27,5	38,5	46,5	57	57	67	74
S <sub>1</sub>	6	7	8	10	11	14	13
S <sub>2</sub>	2,5	2,5	3	3	3	3	3,5
S <sub>3</sub>	30	30	30	30	41	41	49
U	10	4 {4}	5 [11] {5}	6,5 {6,5}	12	6	5
V	7	9 {9}	10,5 [9] {9}	11 {11}	13	13	14
V <sub>1</sub>	M6x10 (4)	M6x8,5 (4)	M8x10 (4)	M8x16 (8)	M8x16 (8)	M10x18 (8)	M10x21 (8)
V <sub>2</sub>	M4x10	M4x10	M4x10	M4x10	M4x10	M4x10	M6x15
Y <sub>1</sub>	80	90	90	90	120	120	120
Z	7	6 {8}	10 [13] {10}	10 {10}	14	16	18

\* - IEC71-B14 (FRS50)

\*\* - 90° on RT28 - 45° other sizes

Motor dimensions: see page 33

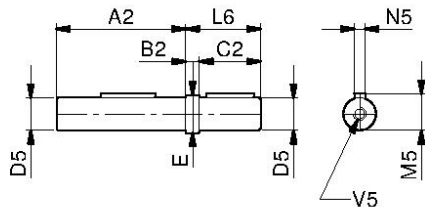
Not binding dimensions and weights

# RS - RT Gearboxes

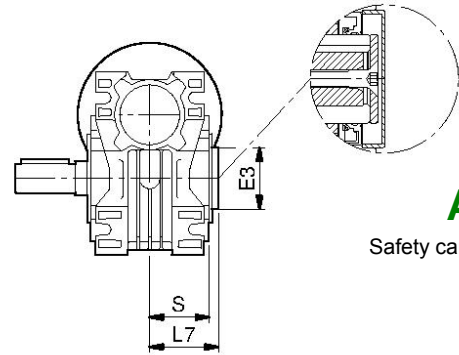
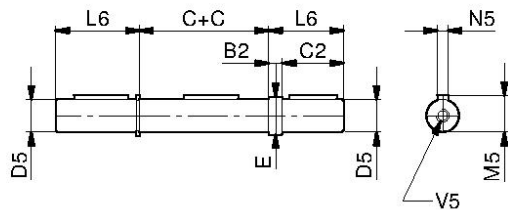
Dimensions

Accessories RT

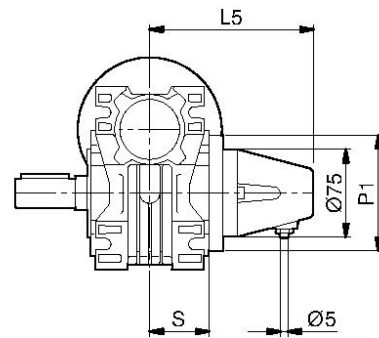
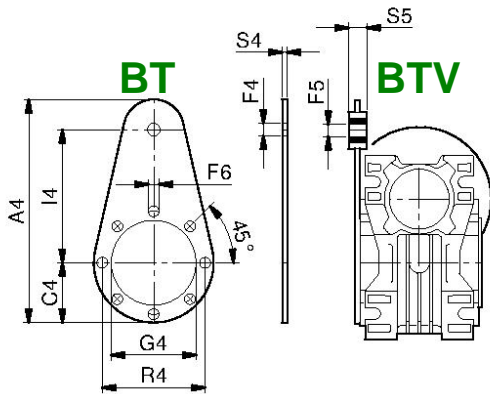
**AS**



**AD**

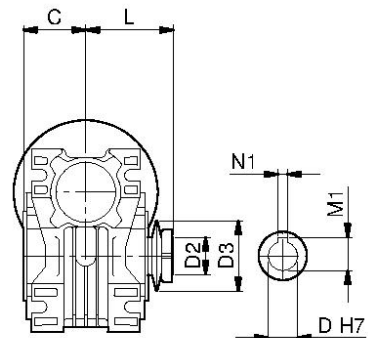
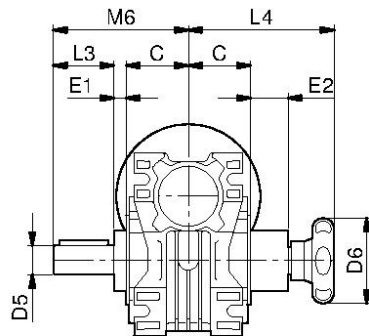


**ASC**  
Safety cap for AS



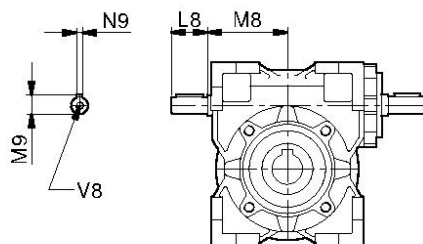
**SL**

**TLE**



**TLI**

**VB**



**TLI**  
**Oil**  
**quantity**

Type	Litres
28	0.04
40	0.10
50	0.13
60	0.30
70	0.45
85	0.75
110	2.25

## Gearboxes RS - RT

### RT Accessories

### Dimensions

RT	28	40	50	60	70	85	110
<b>AS &amp; AD</b> A <sub>2</sub>	58	80	95	117	117	119	153
B <sub>2</sub>	1	10	10	10	10	10	10
C	30	41	49	60	60	61	77.5
C <sub>2</sub>	30	40	45	50	60	70	100
D <sub>5 (g6)</sub>	14	19 (18)	24 (25)	25	28	32 (35)	42
E	14	22	28	30	34	38	50
L <sub>6</sub>	31	50	55	60	70	80	110
M <sub>5</sub>	16	21.5	27	28	31	35	45
N <sub>5 (h9)</sub>	5	6	8	8	8	10	12
V <sub>5</sub>	M5x10	M8x20	M8x20	M8x20	M8x20	M10x25	M10x25
<b>ASC</b> E <sub>3</sub>	50	52	62	75	90	100	120
L <sub>7</sub>	36	48.5	55.5	68.5	67	77	85
S	27.5	38.5	46.5	57	57	67	74
<b>BT &amp; BTV</b> A <sub>4</sub>	138	168	185	235	295	313	388
C <sub>4</sub>	38	43	60	55	65	75	100
F <sub>4</sub>	10.5	10.5	10.5	10.5	10.5	20.5	20.5
F <sub>5 (0/+0.4)</sub>	10	10	10	10	10	20	20
F <sub>6</sub>	7	7	9	9	9	12	13
G <sub>4</sub>	55	60	70	80	95	110	130
I <sub>4</sub>	80	90	100	150	150	200	250
R <sub>4</sub>	65	75	85	95	115	130	165
S <sub>4</sub>	4	4	4	6	6	6	6
S <sub>5</sub>	15	15	15	20	20	25	25
<b>SL</b> L <sub>5</sub>	96	113	123	133	133	139	150
P <sub>1</sub>	78	90	100	110	130	160	200
S	27.5	38.5	46.5	57	57	67	74
<b>TLE</b> D <sub>6</sub>	52	70	70	70	80	100	100
E <sub>1</sub>	10	12	12	15	14	19	24
E <sub>2</sub>	28	37	31	40	46	57	71
L <sub>3</sub>	30	40	50	50	60	70	80
L <sub>4</sub>	94	116	118	128	146	168	201
M <sub>6</sub>	70	93	111	125	134	150	181
<b>TLI</b> D <sub>(H7)</sub>	14	18/19	24/25	25	28	32/35	42
D <sub>2</sub>	40	56	71	71	80	90	125
D <sub>3</sub>	14.2 x 20	19.5 x 20.5	24.5 x 28	25.5 x 26	28.5 x 22	32.5 x 27	42.5 x 38.5
L	45	61.5	77	86.5	89	94	112.5
M <sub>1</sub>	15.4*	21.8	27.3	27.3*	31.3	35.3	45.3
N <sub>1 (h9)</sub>	5	6	8	8	8	10	12
<b>VB</b> D <sub>9</sub>	9	11	14	19	19	24	28
L <sub>8</sub>	20	23	30	40	40	50	60
M <sub>8</sub>	43	55	65	77	89	106.5	145
M <sub>9</sub>	10.2	12.5	16	22.5	22.5	27	31
N <sub>9 (h9)</sub>	3	4	5	6	6	8	8
V <sub>8</sub>	M4x10	M4x10	M6x15	M8x20	M8x20	M8x20	M8x20

D<sub>5</sub> (...) = Diameter on request

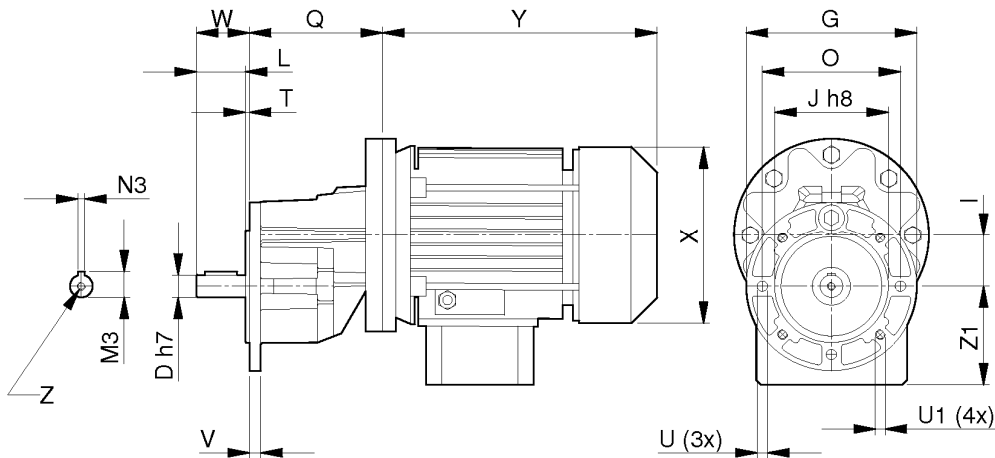
\* = Undersized key

Not binding dimensions and weights

# RS - RT Gearboxes

Dimensions

Single-stage helical gearbox XA



XA	D <sub>h7</sub>	G	I	J <sub>h8</sub>	L	M <sub>3</sub>	N <sub>3 h9</sub>	O	Q	T	U	U1	V	W	Z
XA 63	14	105	32	70	30	16	5	85	83	2.5	6.5	M6	7	32.5	M5x10
XA 71	19	120	40	80	40	22.5	6	100	90	2.5	5.5	M6	7.5	42.5	M8x20
XA 80	24	140	50	95	49.5	27	8	115	114	2.5	9	M8	10.5	52	M8x20
XA 100	28	200	63	130	57,5	31	8	165	177	2,5	10.5	10,5	12	60	M10 x 22

X, Y, Z<sub>1</sub> - see page 33

IEC	56	63	71	80	90 S / L	100	112
X	110	123	137	156	176	194	218
Y	168	190.5	218	242	255 / 280	312	330
Z <sub>1</sub> + I	95	100	109	123	128	140	148

Not binding dimensions and weights

## Gearboxes RS - RT

### Reversibility and Irreversibility

When back-driving a worm gear set using the worm wheel as input, the efficiency is lower than forward-driving and, by varying the design data, 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 is, the more mesh friction increases proportionally augmenting the lockage at the same time.

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

A worm gear is intended as a self-locking unit when the lead angle is less than the friction angle (arc tangent of friction coefficient).

Tooth contact is dynamic even when the mesh velocity is zero, as vibrations in a non-rotating gear set can induce motion in the tooth contact.

To provide a safety factor, a  $3^\circ$  lead angle is recommended for full self-locking condition, and  $10^\circ$  lead angle for poor self-locking condition, according to the table of relations between lead angles and self-locking,

Lead angle	Static self-locking
$\beta > 20^\circ$	Full back-driving
$10^\circ < \beta < 20^\circ$	High back-driving
$5^\circ < \beta < 10^\circ$	Good back-driving Poor self-locking
$3^\circ < \beta < 5^\circ$	Poor back-driving Good self-locking
$1^\circ < \beta < 3^\circ$	Full self-locking

## RS - RT Gearboxes

### Gearing data

	i =	5	7	10	15	20	28	40	49	56	70	80	100
<b>RS / RT 28</b>	$m_x$		1.50	1.40	1.40	1.10	1.50	1.10	0.90	0.75	0.60	0.55	0.45
	$\beta$	---	23°11'	16°41'	11°18'	10°23'	6°06'	5°14'	4°19'	3°03'	2°27'	2°37'	2°20'
	$z_1$		4	3	2	2	1	1	1	1	1	1	1
<b>RS / RT 40</b>	$m_x$	2,00	2.10	2.00	2.00	1.50	2.10	1.50	1.25	1.10	0.90	0.80	0.65
	$\beta$	30°57'	21°36'	16°41'	11°18'	8°31'	5°39'	4°17'	3°48'	3°25'	3°01'	2°51'	2°38'
	$z_1$	6	4	3	2	2	1	1	1	1	1	1	1
<b>RS / RT 50</b>	$m_x$	2,50	2.70	2.50	2.50	1.90	2.70	1.90	1.60	1.40	1.10	1.00	0.80
	$\beta$	30°57'	23°52'	16°41'	11°18'	5°59'	6°19'	4°31'	4°14'	3°42'	2°44'	2°51'	2°17'
	$z_1$	6	4	3	2	2	1	1	1	1	1	1	1
<b>RS / RT 60</b>	$m_x$	3,15	3.30	3.10	3.10	2.40	3.30	2.40	2.00	1.70	1.40	1.20	1.00
	$\beta$	36°32'	25°33'	19°0'	12°55'	11°18'	6°49'	5°42'	5°11'	3°55'	3°38'	2°51'	2°51'
	$z_1$	6	4	3	2	2	1	1	1	1	1	1	1
<b>RS / RT 70</b>	$m_x$	3,60	3.90	3.60	3.60	2.80	3.90	2.80	2.30	2.00	1.60	1.40	1.15
	$\beta$	34°01'	26°51'	18°38'	12°40'	11°18'	7°12'	5°42'	4°48'	4°05'	3°16'	2°51'	2°38'
	$z_1$	6	4	3	2	2	1	1	1	1	1	1	1
<b>RS / RT 85</b>	$m_x$	4,40	4.70	4.40	4.40	3.40	4.70	3.40	2.80	2.50	2.00	1.74	1.40
	$\beta$	34°47'	26°05'	19°09'	13°02'	11°18'	6°58'	5°52'	4°52'	4°45'	3°48'	3°14'	2°40'
	$z_1$	6	4	3	2	2	1	1	1	1	1	1	1
<b>RS / RT 110</b>	$m_x$		6.10	5.80	5.80	4.40	6.10	4.40	3.60	3.20	2.60	2.30	1.80
	$\beta$	---	26°22'	20°43'	14°09'	11°18'	7°04'	5°42'	4°43'	4°29'	3°54'	3°39'	2°34'
	$z_1$		4	3	2	2	1	1	1	1	1	1	1
<b>RS 130</b>	$m_x$		7.25	6.90	6.85	5.35	7.25	5.30	4.35	4.00	3.15	2.70	2.25
	$\beta$	---	26°57'	21°20'	14°06'	13°5'	7°14'	6°18'	5°18'	6°20'	4°33'	3°30'	3°40'
	$z_1$		4	3	2	2	1	1	1	1	1	1	1
<b>RS 150</b>	$m_x$		8.25	8.00	8.15	6.20	8.45	6.25	5.10	4.60	3.60	3.15	2.60
	$\beta$	---	25°33'	21°48'	16°22'	13°24'	7°35'	7°07'	5°48'	6°11'	4°17'	3°45'	3°43'
	$z_1$		4	3	2	2	1	1	1	1	1	1	1

$m_x$  = Axial module  
 $z_1$  = Number of starts  
 $\beta$  = Lead angle (r.h.)  
 $20^\circ$  = Pressure angle

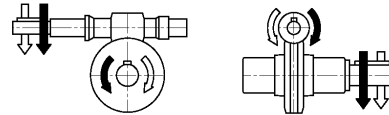


# Gearboxes RS - RT

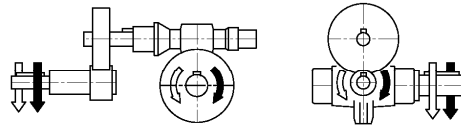
Direction of rotation

## WORMSHAFT upwards

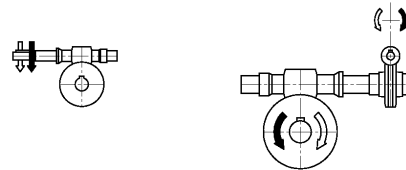
- RS - RT



- RA - TA

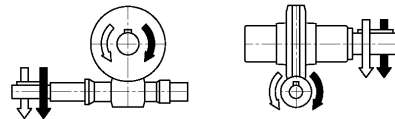


- RS / RS  
RT / RT

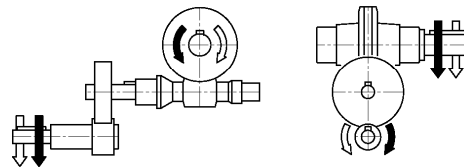


## WORMSHAFT downwards

- RS - RT



- RA - TA



- RS / RS  
RT / RT



# RS - RT Gearboxes

## Operation and Maintenance

### Abstract of OPERATION AND MAINTENANCE INSTRUCTIONS

(complete manual on [www.varvel.com](http://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.

Immediately stop the unit, 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 tested with no load in the factory before despatch, it is recommended not to run them at maximum load for the first 20-30 working hours to allow the proper running in.

The gearboxes are delivered already filled with long-life synthetic oil and, in case of replacement or top up, this type of oil cannot be mixed 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 surfaces and shafts when units are repainted.

#### Long-term storage

For storage longer than three months, apply antioxidants 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 be placed in the appropriate bins, in order for authorized companies to pick them up according to the waste types.

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