

# FRP680 CATALOGUE



**TS TECH**  
DRIVE & MOTION  
(주)티에스테크솔루션

 **VARVEL**<sup>®</sup>  
KNOW-HOW TO DO IT



EN

### Experience at the service of innovation

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

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



EC DIRECTIVE 2014/34/EC (ATEX)



## RP680



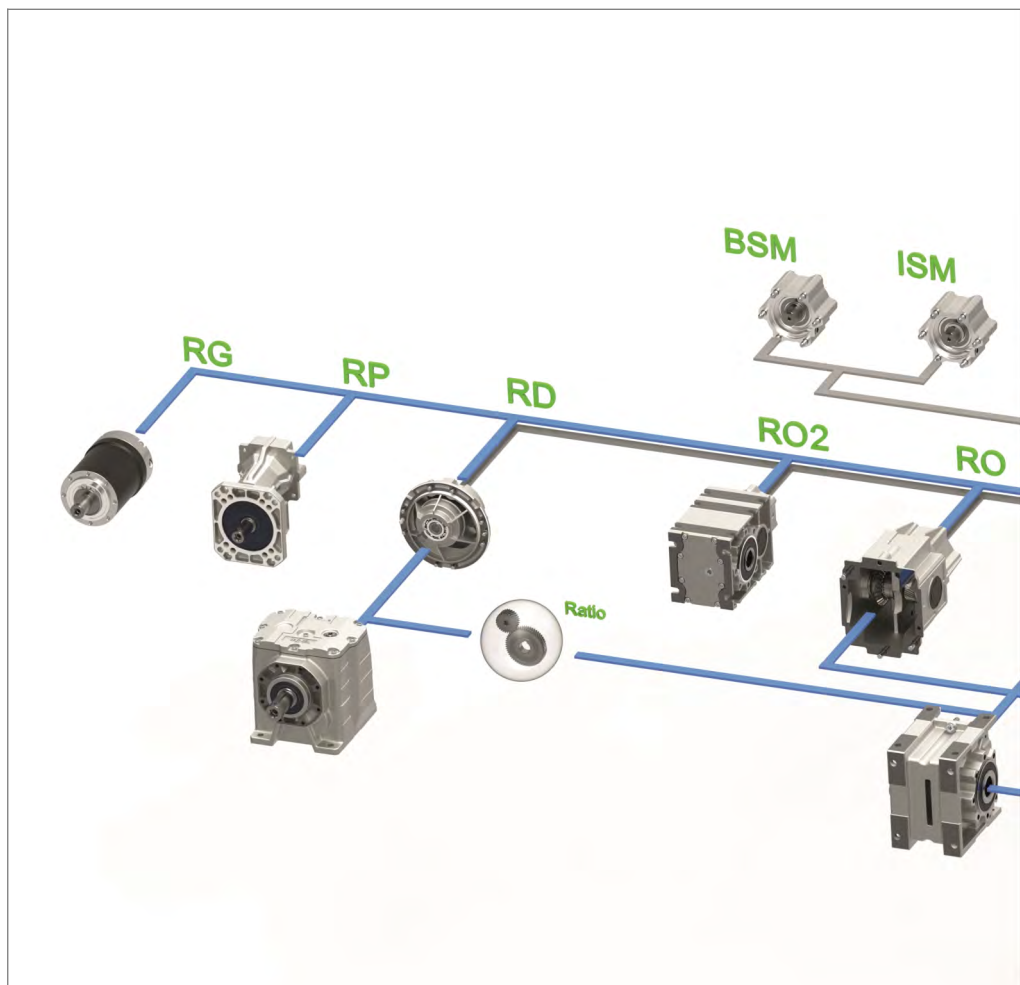
### BEVEL HELICAL GEARBOXES

- for feeding systems
- IEC and NEMA motors
- flexible coupling between motor and gearbox
- one gear train

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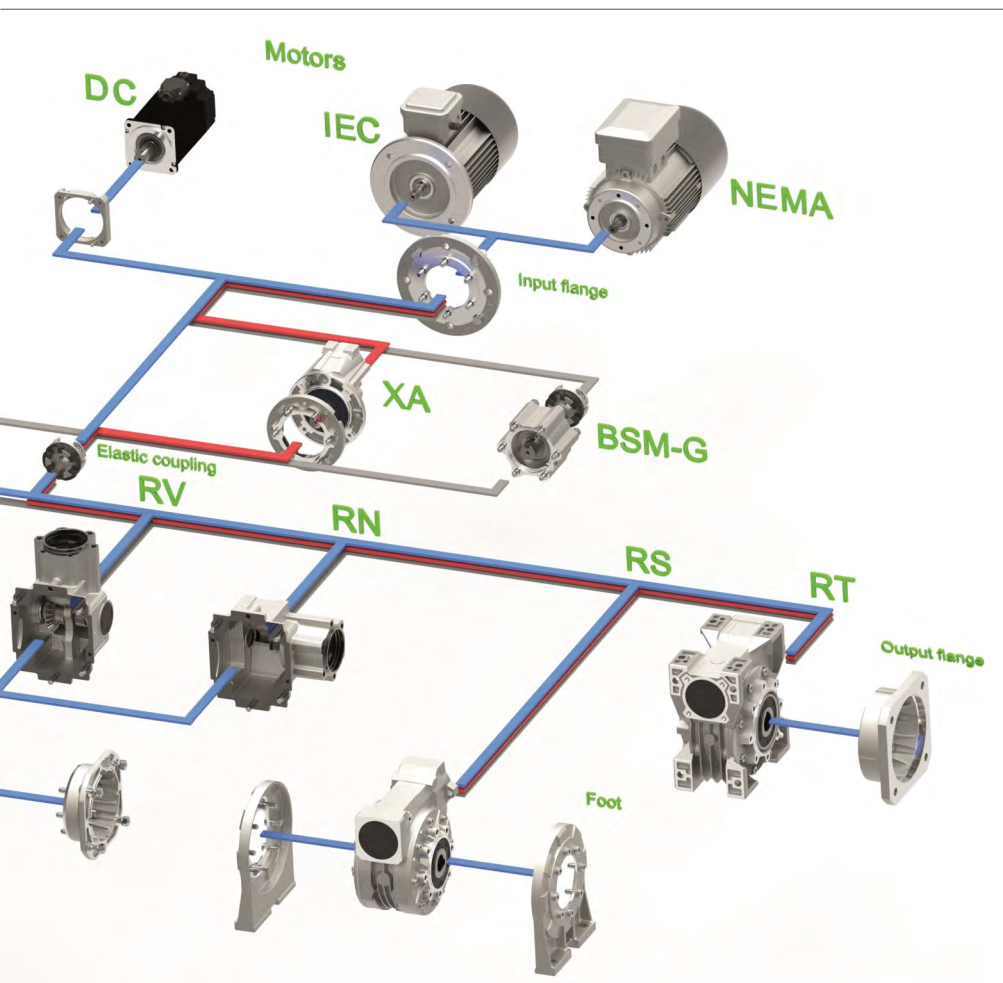
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### Modularity

Modularity and flexibility have been leading the VARVEL product design since the 2000s, allowing our sales net the assembly of gearboxes in kit form in a few minutes and with a normal equipment.

The kit-form mounting allows maximum flexibility to VARVEL distributors and resellers who, thanks to the availability of a limited kit number in stock, can instantly configure the product requested.



### Selection wizard

**VARsize®** selection program, available from our site

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

allows a friendly sizing of VARVEL product range.

#### 2D/3D Drawings

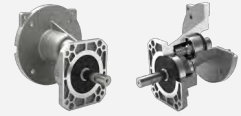
A guided selection lets 2D/3D models downloaded for the most popular CAD systems.

#### Guided selection

VARsize returns

- the gearboxes matching the required operation parameters (power, output torque, rpm, service factor etc.),
- a data sheet featuring performance data of the selected gearbox;
- the 2D dimensional drawings,
- the 3D model.

**Description  
Coupling**



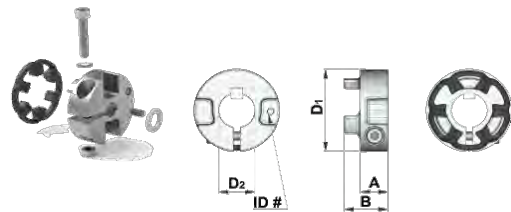
The gearbox FRP680 is expressly designed to be fitted on screw conveyor feeding systems; the gearbox output does not match specific standard but a wide range of feeders with adapters and shafts to the customer's needs.

Input is provided with clamp coupling or traditional bore/keyway system and adapter for IEC or NEMA motor fitting.

The abundantly sized one-piece aluminium die-cast body avoids any harmful vibration to the feeding system and to withstand heavy operations.

Helical gears - made of alloy steel, casehardened, tempered and shaved - are designed and verified according to ISO 6336 and DIN 3990. Keyways according to DIN 6884.

The gearboxes are delivered filled with synthetic long-life oil (without plugs), in the appropriate quantity to install them in any mounting position without any prior specification.



Friction clamped coupling on motor shaft:

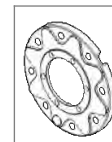
- IEC/NEMA adapters and couplings fitted on the assembled gearbox
- Elimination of fretting corrosion between bore and key
- Zero backlash in gearbox/motor connection
- High torsional rigidity

Coupling	Kit Part No.	Gearbox	Mt	Mt <sub>1</sub>	Mt <sub>2</sub>	A	B	D <sub>1</sub>	D <sub>2</sub>	ID#
G5 IEC	KG5.014 KG5.019 KG5.024	RP680	[Nm]	[Nm]	[Nm]	[mm]	[mm]	[mm]	[mm]	
			8.9 - 10	30 40 70	12 - 17 20 - 25 30 - 40	14.5	23	45 45 52	14 19 24	514 519 524
G5 NEMA	KG5.N56 KG5.N140	RP680	[in-lb]	[in-lb]	[in-lb]	[in]	[in]	[in]	[in]	
			80 - 90	400 530	265 - 310 355 - 400	0.57	0.91	1.77 2.05	5/8" 7/8"	5N56 5N140



**Technical information**
**RP680**
**Coupling and Motor flanges**
**Designation**
**Weights**

Gearbox	Type	Motor flange			Coupling	
		IEC / NEMA	Part No. .		Type	Kit Part No.
			Kit B5	Kit B14		
RP680	FM 50	IEC71 IEC80 IEC90	K532.206.160 K532.206.200 K532.206.200	K532.206.105 K532.206.120 K532.206.140	G5 ø14 G5 ø19 G5 ø24	KG5.014 KG5.019 KG5.024
		NEMA 56C NEMA 140TC	K532.227.N56	---	G5 ø5/8" G5 ø7/8"	KG5.N56/X KG5.N140/X


**Gearbox designation**

<b>F</b>	<b>RP</b>	<b>-G</b>	<b>680</b>	<b>SQ</b> (□ 10)	<b>3.94</b> (□ 5-6)	<b>IEC80</b> (□ 7)	<b>B14</b> (□ 7)	<b>680.01. ...</b> (□ 11)
M F S	RP	-G ---	680	SQ SQ/1 B5 B5/1 B5/140 B5/160	2.52 ... 7.91	IEC71-80-90 NEMA 56C-140TC	B5 B14	Output shaft Motor mounting
				Reduction ratio		Motor size		
				Output flange type		Gearbox size		
				Gearbox type		Gearbox size		
				-G = Input with G-type coupling		---		
				--- = Input with bore and keyway				
				Gearbox type				
				M = Geared motor				
				F = Gearbox with input flange				
				S = Gearbox without input flange				

**Weights**

		SQ-SQ/1	B5-B5/1	B5/140	B5/160
		FRP680 [kg]	IEC71	2.3	2.3
	IEC80-90	2.5	2.5	2.6	2.7
	NEMA 56	2.3	2.3	2.4	2.5
	NEMA 140	2.3	2.3	2.4	2.5

**Oil**

Shell Omala	S4 WE 320
FRP680 [litres]	0.04

**Duty factor  
Service factor  
Apparent oil leakages**

**Duty Factor [FU]** is defined as the ratio between gearbox maximum output torque  $M_2$  and application torque  $M_{app}$ . The ratio must be bigger than or equal to SF or  $k_{(a)}$  factors here defined.

$$FU = \frac{M_2}{M_{app}}$$

$$FU \geq SF \quad FU \geq k_{(a)}$$

**Service factor [SF1.0]** is meant as typical operation of 8 hours/day, with uniform load, starts/ stops lower than 6 per hour and ambient temperature between 15 and 35 Celsius.  
For other operation conditions, select SF according to tables SF<sub>1</sub> and SF<sub>2</sub>

$$SF = SF_1 \times SF_2$$

hours	Load type		
	uniform	variable	with shocks
8	1.0	1.2	1.4
16	1.2	1.4	1.6
24	1.4	1.6	1.8

number	RD-RN RO RV	Start-Stops / hour Schaltungen/Stunde	
		number	RS-RT
6	1.0	6	1.0
240	1.25	60	1.1
1200	.35	120	1.2

**Apparent oil leakages**

Oil seal lips are safeguarded with an adequate grease amount against oil seal dry running-in and shaft oxidation at gearbox assembly .

Oil seal lip-temperature increases during operation; the grease laid on the outer side of the oil seal becomes then more and more fluid and the grease oily component may be misread as oil coming from inside the gearbox.

Apparently, this oiliness and also the lubricant film, that must always exist between oil seal lip and shaft seat to avoid the oil seal lip quick damaging, might be wrongly considered as lubricant leakages.

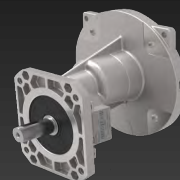


**Versions**

**FRP-G 680 SQ - FRP-G 680 SQ/1**

Helical gearboxes with one gear set

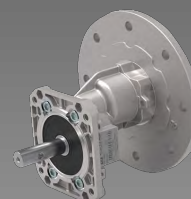
- SQ - Square output flange, 127 mm PCD fixing with spigot
- SQ/1 - Square flange, 127 mm PCD, without spigot



**FRP-G 680 B5 - FRP-G 680 B5/1**

Helical gearboxes with one gear set

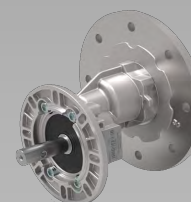
- B5 - Square output flange, 100 mm PCD fixing with spigot
- B5/1 - Square output flange, 100 mm PCD fixing without spigot



**FRP-G 680 B5/140 - FRP-G 680 B5/160**

Helical gearboxes with one gear set

- B5/140 - Output flange with IEC63-B5 dimensions
- B5/160 - Output flange with IEC71-B5 dimensions



Selection tables

RP680

**MRP680 - 1400 rpm**  
Geared motor



kW	in	ir	rpm	Nm	SF	kW	in	ir	rpm	Nm	SF	
0.25	2.5	2.54	551	4.2	>3.0	0.55	5.1	5.07	276	18.6	2.1	
	3.0	2.95	475	4.9	>3.0		6.2	6.15	228	22.6	1.5	
	3.2	3.19	439	5.3	>3.0		6.7	6.67	210	24.5	1.3	
	3.5	3.50	400	5.8	>3.0		8.1	8.10	173	29.8	0.9	
	3.9	3.94	355	6.6	>3.0	0.75	2.5	2.54	551	12.7	>3.0	
	4.2	4.17	336	7.0	>3.0		3.0	2.95	475	14.8	>3.0	
	4.7	4.69	299	7.8	>3.0		3.2	3.19	439	16.0	2.9	
	5.1	5.07	276	8.5	>3.0		3.5	3.50	400	17.5	2.6	
	6.2	6.15	228	10.3	>3.0		3.9	3.94	355	19.8	2.2	
	6.7	6.67	210	11.1	2.9		4.2	4.17	336	20.9	2.1	
8.1	8.10	173	13.5	2.0	4.7		4.69	299	23.5	1.7		
0.37	2.5	2.54	551	6.3	>3.0		5.1	5.07	276	25.4	1.5	
	3.0	2.95	475	7.3	>3.0		6.2	6.15	228	30.8	1.1	
	3.2	3.19	439	7.9	>3.0		6.7	6.67	210	33.4	1.0	
	3.5	3.50	400	8.7	>3.0	1.1	2.5	2.54	551	18.7	2.6	
	3.9	3.94	355	9.7	>3.0		3.0	2.95	475	21.7	2.3	
	4.2	4.17	336	10.3	>3.0		3.2	3.19	439	23.5	2.0	
	4.7	4.69	299	11.6	>3.0		3.5	3.50	400	25.7	1.8	
	5.1	5.07	276	12.5	>3.0		3.9	3.94	355	29.0	1.5	
	6.2	6.15	228	15.2	2.3		4.2	4.17	336	30.7	1.4	
	6.7	6.67	210	16.5	2.0		4.7	4.69	299	34.5	1.2	
8.1	8.10	173	20.0	1.3	5.1		5.07	276	37.3	1.0		
0.55	2.5	2.54	551	9.3	>3.0		1.5	2.5	2.54	551	25.5	1.9
	3.0	2.95	475	10.8	>3.0			3.0	2.95	475	29.6	1.7
	3.2	3.19	439	11.7	>3.0	3.2		3.19	439	32.0	1.4	
	3.5	3.50	400	12.9	>3.0	3.5		3.50	400	35.1	1.3	
	3.9	3.94	355	14.5	>3.0	3.9		3.94	355	39.5	1.1	
	4.2	4.17	336	15.3	2.8	4.2		4.17	336	41.8	1.0	
	4.7	4.69	299	17.2	2.4							

in - nominal reduction ratio  
ir - real reduction ratio

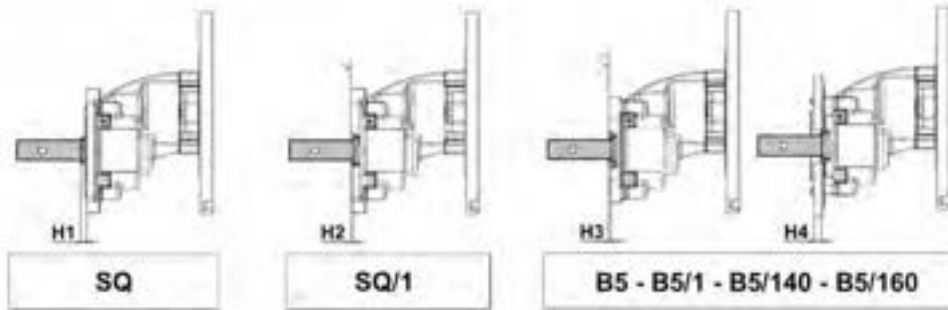
**Selection tables**
**RP680**
**MRP680 - 1750 rpm**  
 Geared motor

**60 Hz**

kW	in	ir	rpm	Nm	SF	kW	in	ir	rpm	Nm	SF	
0.25	2.5	2.54	689	3.4	>3.0	0.55	5.1	5.07	345	14.9	2.1	
	3.0	2.95	593	3.9	>3.0		6.2	6.15	285	18.1	1.6	
	3.2	3.19	549	4.3	>3.0		6.7	6.67	262	19.6	1.3	
	3.5	3.50	500	4.7	>3.0		8.1	8.10	216	23.8	0.9	
	3.9	3.94	444	5.3	>3.0	0.75	2.5	2.54	689	10.2	>3.0	
	4.2	4.17	420	5.6	>3.0		3.0	2.95	593	11.8	>3.0	
	4.7	4.69	373	6.3	>3.0		3.2	3.19	549	12.8	2.9	
	5.1	5.07	345	6.8	>3.0		3.5	3.50	500	14.0	2.7	
	6.2	6.15	285	8.2	>3.0		3.9	3.94	444	15.8	2.2	
	6.7	6.67	262	8.9	2.9		4.2	4.17	420	16.7	2.1	
8.1	8.10	216	10.8	2.0	4.7		4.69	373	18.8	1.7		
0.37	2.5	2.54	689	5.0	>3.0		5.1	5.07	345	20.3	1.5	
	3.0	2.95	593	5.8	>3.0		6.2	6.15	285	24.7	1.1	
	3.2	3.19	549	6.3	>3.0		6.7	6.67	262	26.8	1.0	
	3.5	3.50	500	6.9	>3.0	1.1	2.5	2.54	689	14.9	2.6	
	3.9	3.94	444	7.8	>3.0		3.0	2.95	593	17.4	2.3	
	4.2	4.17	420	8.3	>3.0		3.2	3.19	549	18.8	2.0	
	4.7	4.69	373	9.3	>3.0		3.5	3.50	500	20.6	1.8	
	5.1	5.07	345	10.0	>3.0		3.9	3.94	444	23.2	1.5	
	6.2	6.15	285	12.2	2.3		4.2	4.17	420	24.5	1.4	
	6.7	6.67	262	13.2	2.0		4.7	4.69	373	27.6	1.2	
8.1	8.10	216	16.0	1.3	5.1		5.07	345	29.8	1.0		
0.55	2.5	2.54	689	7.5	>3.0		1.5	2.5	2.54	689	20.4	1.9
	3.0	2.95	593	8.7	>3.0			3.0	2.95	593	23.7	1.7
	3.2	3.19	549	9.4	>3.0	3.2		3.19	549	25.6	1.4	
	3.5	3.50	500	10.3	>3.0	3.5		3.50	500	28.1	1.3	
	3.9	3.94	444	11.6	>3.0	3.9		3.94	444	31.6	1.1	
	4.2	4.17	420	12.3	2.8	4.2		4.17	420	33.5	1.0	
	4.7	4.69	373	13.8	2.4							

 in - nominal reduction ratio  
 ir - real reduction ratio

Output shafts



Shaft Coder	SQ SQ/1	B5 B5/1	B5/140	B5/160	H1		H2		H3	H4		
					F1	F2	F1	F2		B5	140	160
680 01 001A	*				1.25	2.5	0.25	0				
680 01 002A	*				1.25	2.5	0.25	0				
680 01 003A			*	*							6.5	0
680 01 005A	*				1.25	2.5	0.25	0				
680 01 006A	*				1.25	2.5	0.25	0				
680 01 007A			*	*							6.5	0
680 01 009A			*	*							6.5	0
680 01 010A			*	*							6.5	0
680 01 011A			*	*							6.5	0
680 01 012A	*				1.25	2.5	0.25	0				
680 01 015A	*	*			1.25	2.5	0.25	0	2.5	2.5		
680 01 016A	*				1.25	2.5	0.25	0				
680 01 017A	*				1.25	2.5	0.25	0				
680 01 019A			*	*							6.5	0
680 01 020A			*	*							6.5	0
680 01 021A			*	*	1.25	2.5	0.25	0			6.5	0
680 01 022A	*				1.25	2.5	0.25	0				
680 01 023A	*				1.25	2.5	0.25	0				
680 01 024A	*				1.25	2.5	0.25	0				
680 01 025A	*	*			1.25	2.5	0.25	0	2.5	2.5		

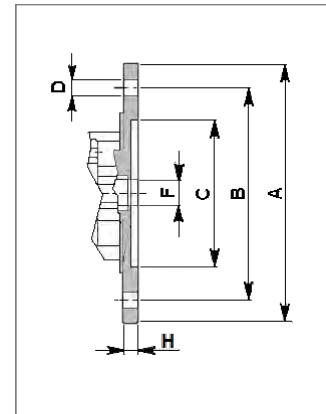
F1 - Bolted flange execution  
 F2 - Cast flange execution

## Dimensions

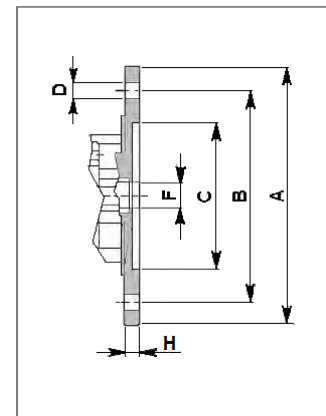
## RP680

### Input flanges

① [mm]	IEC						NEMA	
	71-B5	71-B14	80-B5	80-B14	90-B5 ③	90-B14 ③	56C	140TC
A	160	105	200	120	200	140	165.10	165.10
B	130	85	165	100	165	115	149.35	149.35
C	110	70	130	80	130	95	114.30	114.30
D	10	7	11	70	11	10	10.92	10.92
F	14	14	19	19	24	24	16	22.35
H	11.5	10.5	11.5	10	11.5	11	12.95	12.95



② [in]	NEMA		IEC					
	NEMA 56C	NEMA 140TC	IEC 71-B5	IEC 71-B14	IEC 80-B5	IEC 80-B14	IEC 90-B5 ③	IEC 90-B14 ③
A	6.50	6.50	6.30	4.13	7.87	4.72	7.87	5.51
B	5.88	5.88	5.12	3.35	6.50	3.94	6.50	4.53
C	4.50	4.50	4.33	2.76	5.12	3.15	5.12	3.74
D	0.43	0.43	0.39	0.28	0.43	0.28	0.43	0.39
F	0.63	0.88	0.55	0.55	0.75	0.75	0.94	0.94
H	0.51	0.51	0.45	0.41	0.45	0.39	0.45	0.43



① - Dimensions in mm

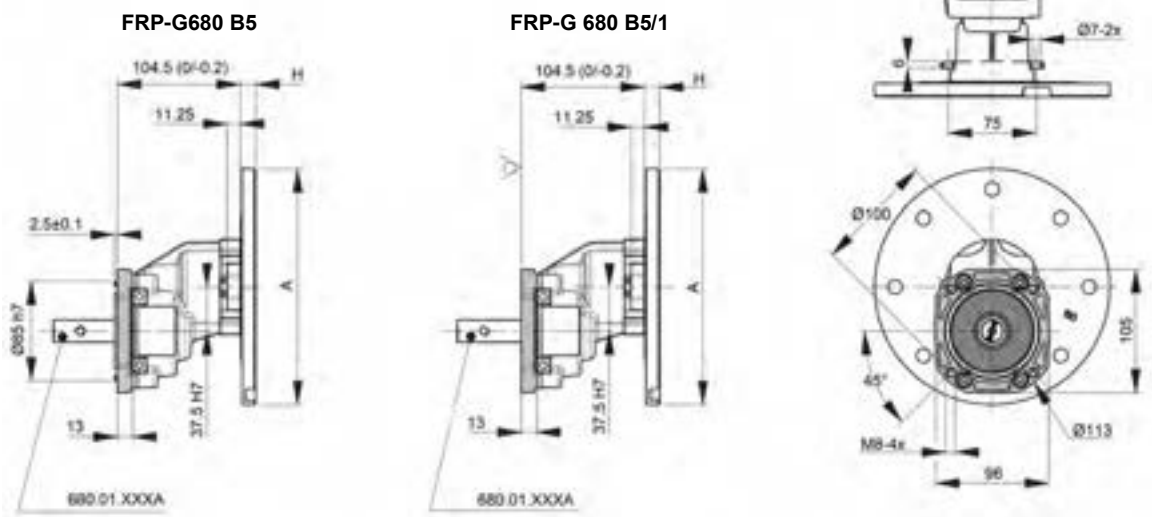
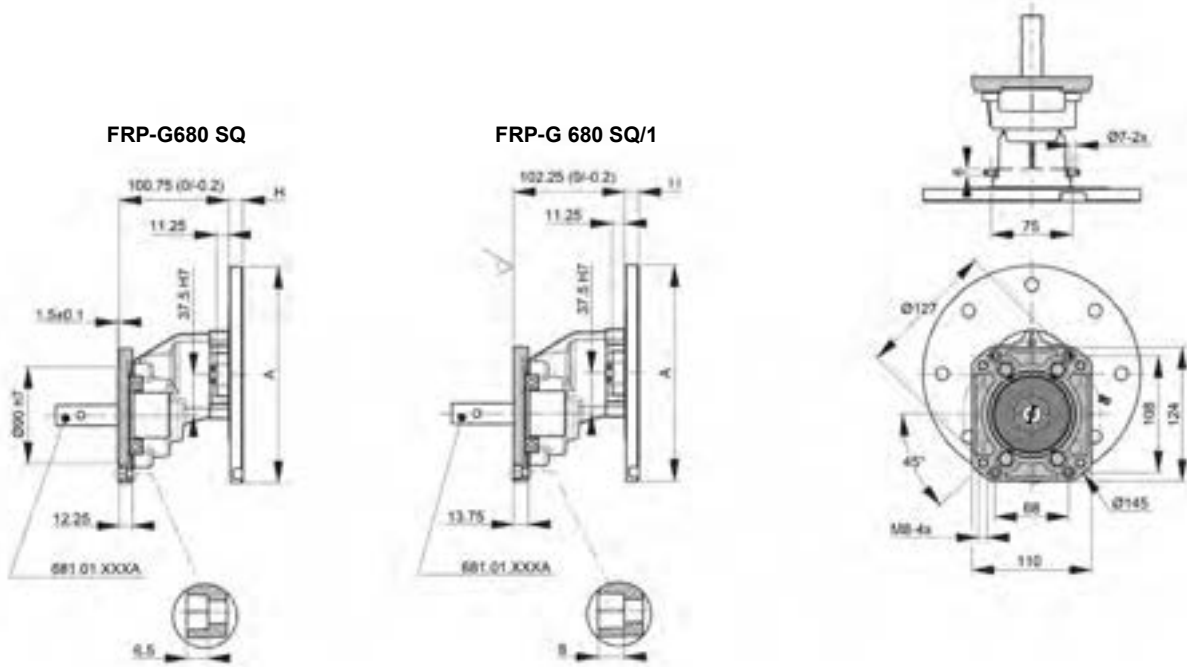
② - Dimensions in inches

③ - Contact our Customer Service

Not binding dimensions and weights



FRP-G 680  
SQ - SQ/1 - B5 - B5/1



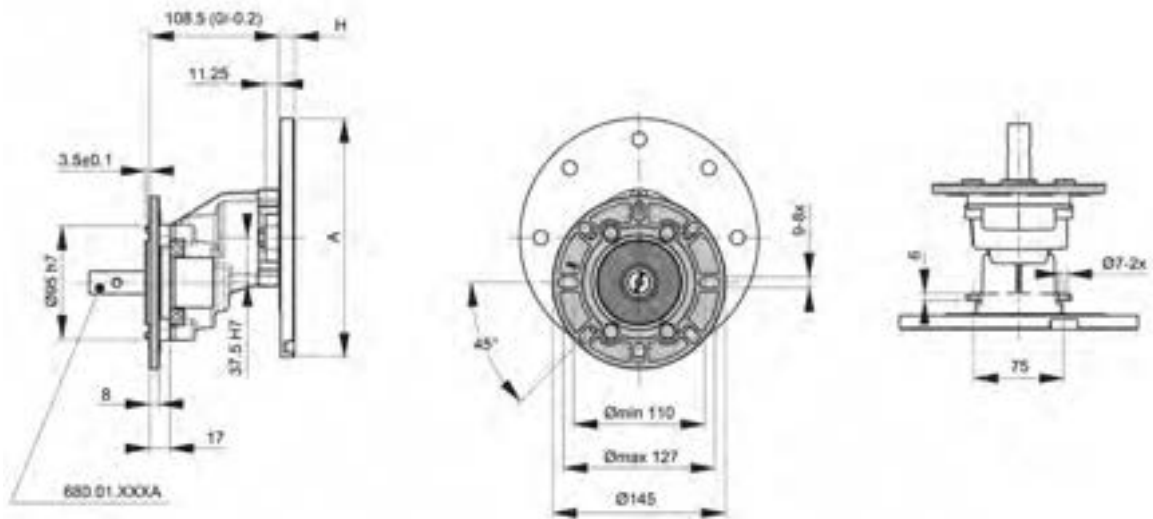
Dimensions A and H: see page 11  
Dimensions 680.01.XXXA: see pages 14  
Not binding dimensions and weights

Dimensions

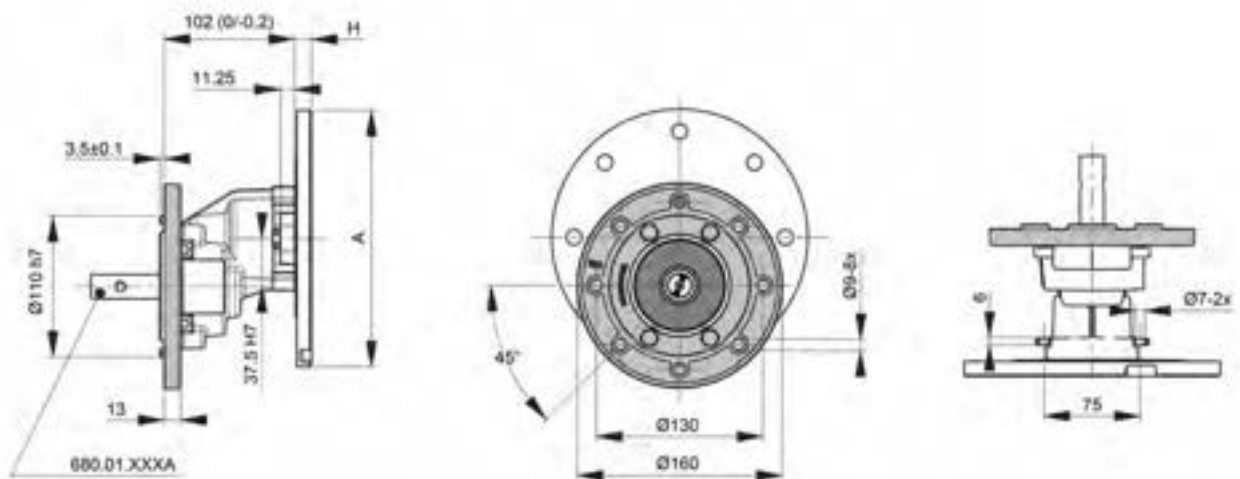
RP680

FRP-G 680  
B5/140 - B5/160

FRP-G 680 B5/140



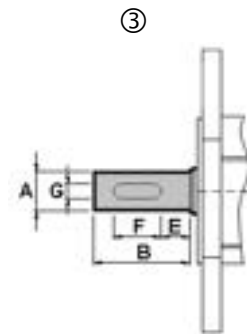
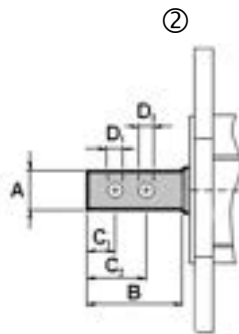
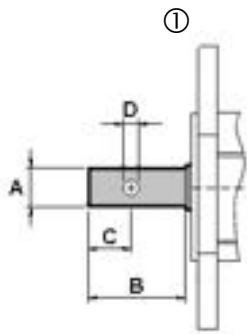
FRP-G 680 B5/160



Dimensions A and H: see page 11  
 Dimensions 680.01.XXXA: see pages 14  
 Not binding dimensions and weights



Output shafts



①	A	B	C	D	②	A	B	C <sub>1</sub>	C <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	③	A	B	E	F	G
680 01 005A	16	50	21	7	680 01 016A	19	57	23	38	8.5	8.5	680 01 003A	19	40	5	30	6
680 01 010A	18.8	80	15	8.5	680 01 017A	19	57	23	38	6.5	6.5						
680 01 012A	19	40	14	6.5	680 01 015A	19.7	100	30	50	6	6						
680 01 001A	19	57	23	6.5	680 01 024A	20	57	23	38	6.5	6.5						
680 01 021A	19	77	38.5	6	680 01 023A	20	75	36.5	52.5	7	7						
680 01 009A	19.7	100	50	6	680 01 025A	22	52	23	38	6.5	6.5						
680 01 019A	20	52	23	6.5													
680 01 011A	20	84	30	6													
680 01 007A	21	52	23	6													
680 01 006A	21	57	23	6													
680 01 022A	22	54	20	8													
680 01 002A	22	57	23	8.5													
680 01 020A	22	80	15	8.5													

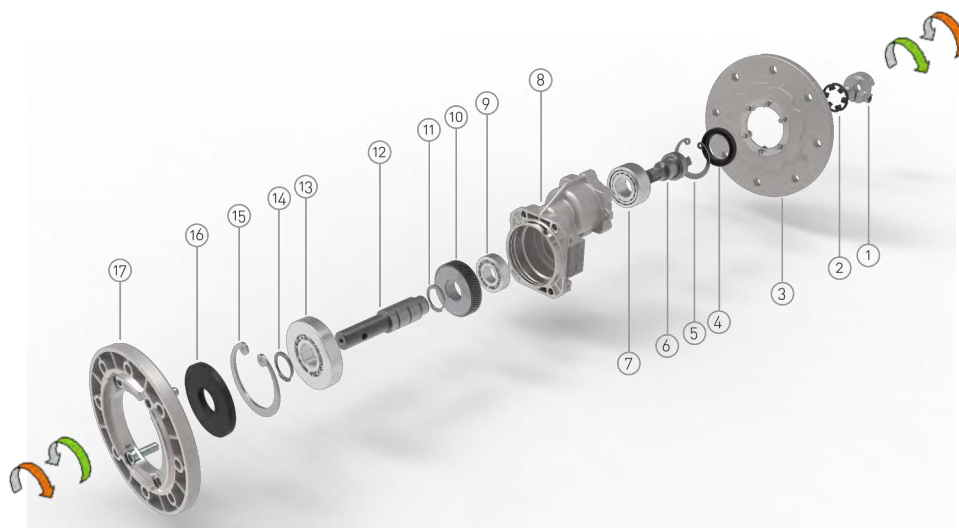
Not binding dimensions and weights



General information

RP680

Component parts  
Rotation



Item No.	Description	Item No.	Description
01	Motor coupling	10	Gear
02	Spider	11	Circlip
03	Input flange	12	Output shaft
04	Input oil seal	13	Bearing
05	Circlip	14	Circlip
06	Pinion	15	Circlip
07	Bearing	16	Output oil seal
08	Housing	17	Output flange
09	Bearing		

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

#### **Installation**

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

The nameplate reports such information.

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

#### **Running**

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

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

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

#### **Maintenance**

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

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

#### **Handling**

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

Never hoist on any moving part.

#### **Painting**

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

#### **Long-term storage**

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

#### **Product's Environmental Management**

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

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

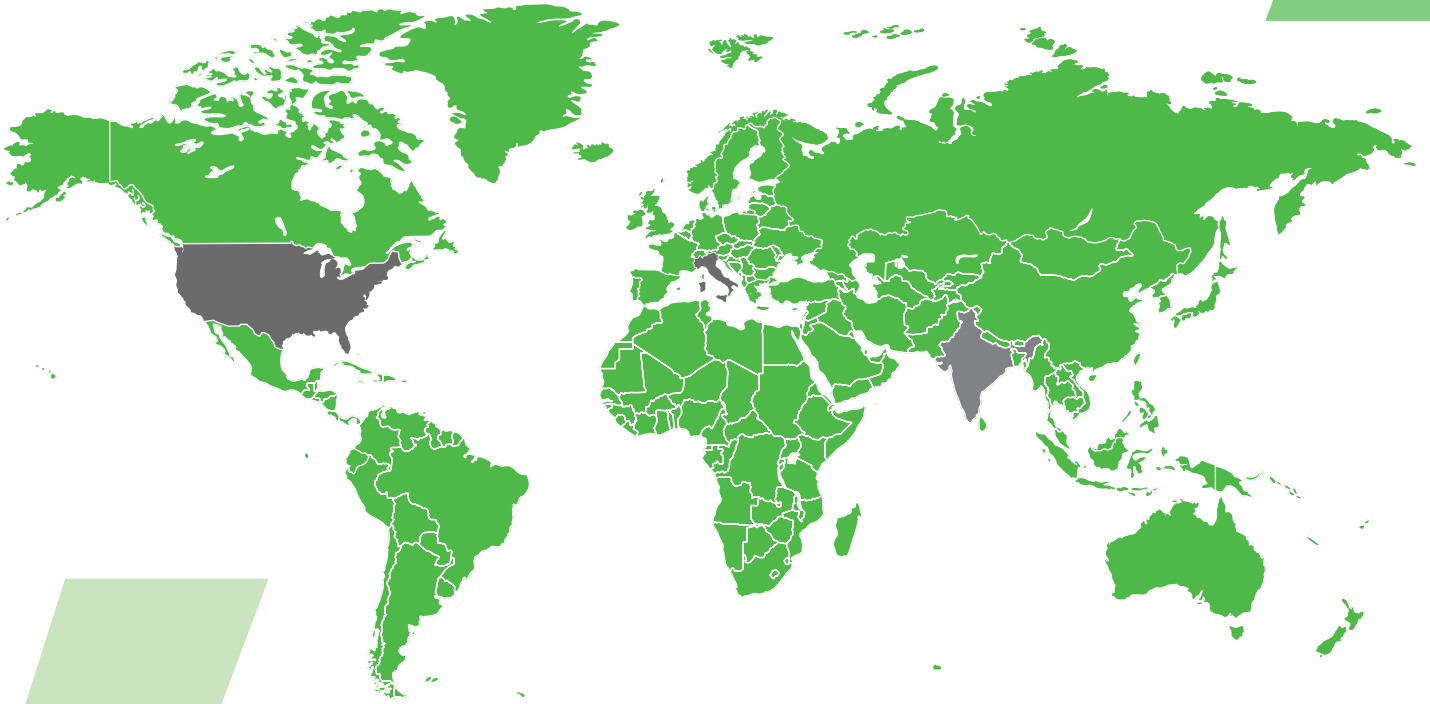
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This catalogue cancels and replaces the previous ones.

Dimensions and weights are not binding.

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