G series

Helical gearmotor
G MR 3I 140 UP2A - 38 x 300 - 45,1 B7
HB3 132S 4 230.400-50 B5

Helical gearmotor - Application given data

Product series		• G series
Measure system		Metric
Frequency	[Hz]	50
Product type		Gearmotors with motor
Input speed n_1		Motor dependent
Shaft arrangement		Helical / Coaxial
Ratio *i*		From 35.629 to 54.571
Applied power P_1	[k W]	5.5 (7.5 [hp])
Service factor s_f		From 0.8 to 4
Loads		Constant load

Thermal power *Pt*

Max. environment temperature	[° C]	20
Air speed on the housing	[m / s]	Large, slight ventilation (air speed 1.25 [m / s])
Installation altitude	[m]	up to 1 000 [m]
Type of duty		Continuous - S1
Cooling system		Natural convection
Mounting position		B7

External loads

High speed shaft end

There are no radial loads F_{r2} applied on low speed shaft end

There are no axial loads F_{a2} applied on low speed shaft end

BARG SANAT PAYA

Configured product

Designation

Standard (catalog) product

G MR 3I 140 UP2A - 38 x 300 - 45,1 B7
HB3 132S 4 230.400-50 B5

Helical gearmotor G series
Input speed n_1 1 470 min^{-1}
Coupled with motor
Mounting position B7

Accessories

Fluorinated seal rings on high-low speed shaft [TV3]
Metal plugs; filler plug with filter and breather [TM3]

Helical gearmotor - Technical data

Designation ratio		45.1
Effective ratio i_{EFF}		45.07
Output speed n_2	[min^{-1}]	32.61
Input speed n_1	[min^{-1}]	1 470
Applied power P_1	[k W]	5.5
Output torque M_2	[N m]	1 516.77
Service factor s_f (installed power)		3.136
Nominal efficiency η		0.94
Gearmotor mass (without motor)	[kg]	124.92
Moment of inertia (of mass) J_1	[Kg m^2]	0.001
Sound levels (to ISO/CD 8579, tolerance +3 ***dB(A)***)		
sound power level L_{WA}	[dB(A)]	83
sound pressure level L_{pA}	[dB(A)]	73
Angular backlash at a distance of 1 [m] from the low speed shaft centre		
min	[rad]	0.0017
max	[rad]	0.0034
min	[arcmin]	5.8
max	[arcmin]	12
Torsional stiffness in condition of nominal load	[N m / arcmin]	112

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Lubrication

Gearmotor supplied without oil		
Approximate lubricant quantity	[l]	9.7
ISO viscosity grade		
mineral oil - Environment temperature 0 ÷ 20 [° C]	[cSt]	150
mineral oil - Environment temperature 10 ÷ 40 [° C]		220
synthetic oil - Environment temperature 0 ÷ 40 [° C]		220

Overall guide to oil-change interval (not according ATEX directive)

Oil temperature[° C]	Oil change interval [h]	
	mineral oil	synthetic oil
≤ 65	8 000	25 000
65 ÷ 80	4 000	18 000
80 ÷ 95	2 000	12 500
95 ÷ 110	-	9 000

Nominal data

Nominal input power P_{N1}	[k W]	17.27
Nominal output power P_{N2}	[k W]	16.24
Nominal thermal power P_{TN} @20°	[k W]	28
Nominal output torque M_{N2}	[N m]	4 757
Maximum output torque $M_{2\,MAX}$	[N m]	7 611

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Verification

Thermal power ***Pt***

$$PT = PT_N * ft_{1a} * ft_{1b} * ft_2 * ft_3 * ft_4 * ft_5$$

where:

P_{TN}	[k W]	nominal thermal power when operating in following running conditions: • input speed n_1 = 1 400 [min^{-1}] • mounting position B3 • continuous duty S1 • maximum ambient temperature 20° [C] • maximum altitude 1 000 [m] above sea level • air speed 1.25 [m/s] (typical value in presence of a gearmotor with self-cooled motor)
ft_{1a}		thermal factor according to cooling system
ft_{1b}		thermal factor according to input speed n_1
ft_2		thermal factor according to max. ambient temperature and service / duty
ft_3		thermal factor according to mounting position, train of gears, size and nominal ratio i_N
ft_4		thermal factor according to installation altitude
ft_5		thermal factor according to air speed on housing

Calculation

Applied power P_1	[k W]	5.5
Thermal power *Pt*	[k W]	= 28 * 0.991 * 1 * 1 * 1 * 1 = 27.75

Thermal power verification passed

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Maximum bending moment $M_{b\,MAX}$ of flange MR

$$M_{bMAX} \geq M_b = \frac{G \star (X + H_F)}{1000}$$

where:		
$M_{b\,MAX}$	[N m]	maximum bending moment on flange
G	[N]	is the motor weight
X		is the distance from motor center of gravity from flange surface
H_F		is a variable value according to gear reducer size and flange diameter P_1
$1\,000$	[N m]	is a constant value
Calculation		
$M_{b\,MAX}$	[N m]	= 560
M_b	[N m]	= 568.79 * (192.5 + 55) / 1 000 = 140.78

Maximum bending moment verification passed

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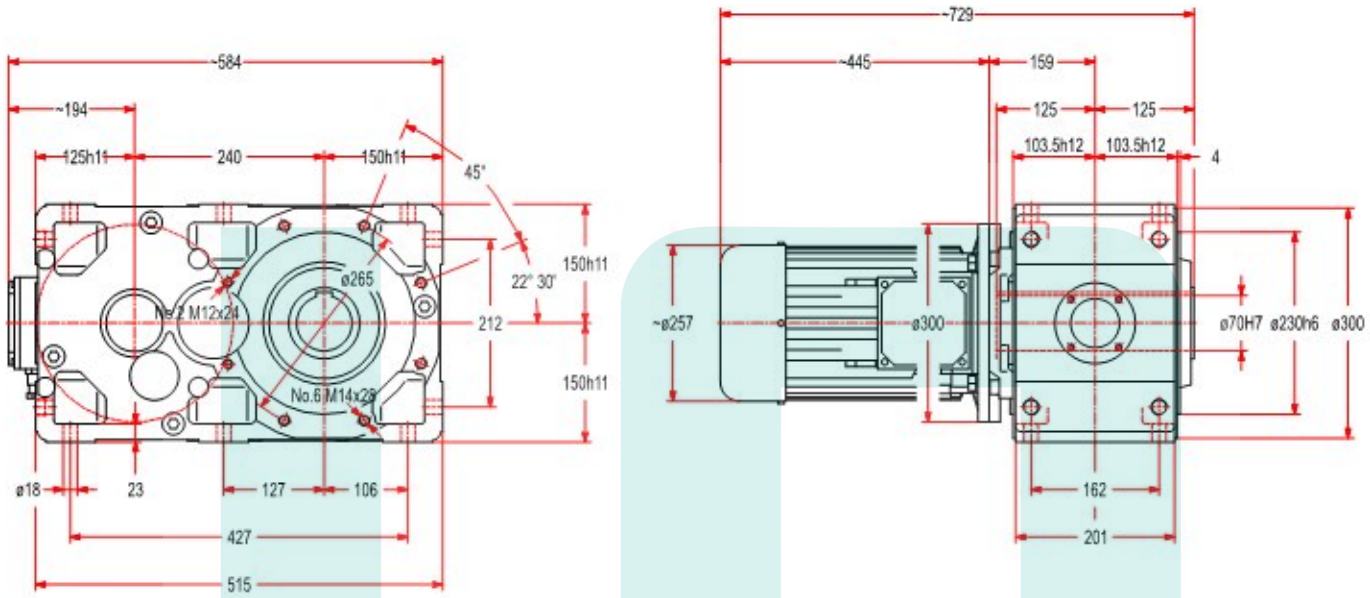
Main dimensions [mm] (for accessories, see following pages)



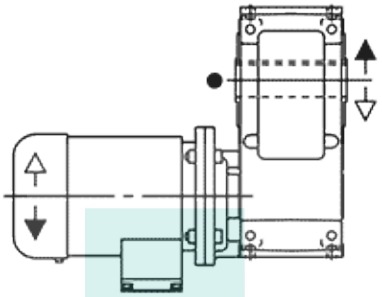
Information

Screws UNI 5737: M 16 x 55

Bolts UNI 5588: M 16

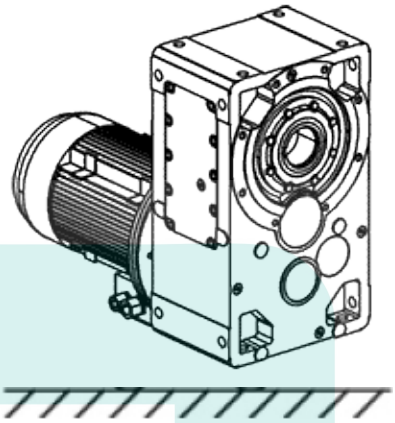
Product liability, application considerations
The customer is responsible for the correct selection and application of product in view of its industrial and/or commercial needs, unless the use has been recommended by technical qualified personnel of Rossi, who were duly informed about customer's application purposes. In this case all the necessary data required for the selection shall be communicated exactly and in writing by the customer, stated in the order and confirmed by Rossi. The customer is always responsible for the safety of product applications. Every care has been taken in the drawing up of the catalog to ensure the accuracy of the information contained in this publication, however Rossi can accept no responsibility for any errors, omissions or outdated data. Due to the constant evolution of the state of the art, Rossi reserves the right to make any modification whenever to this publication contents. The responsibility for the product selection is of the customer, excluding different agreements duly legalized in writing and undersigned by the parties.

Design: UP2A

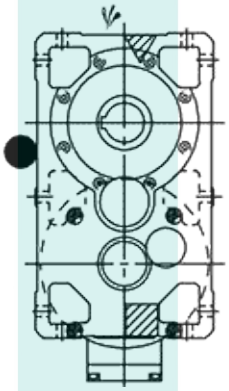


● groove side

Mounting position: B7

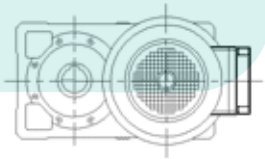


Plugs position (supplied without oil as standard)



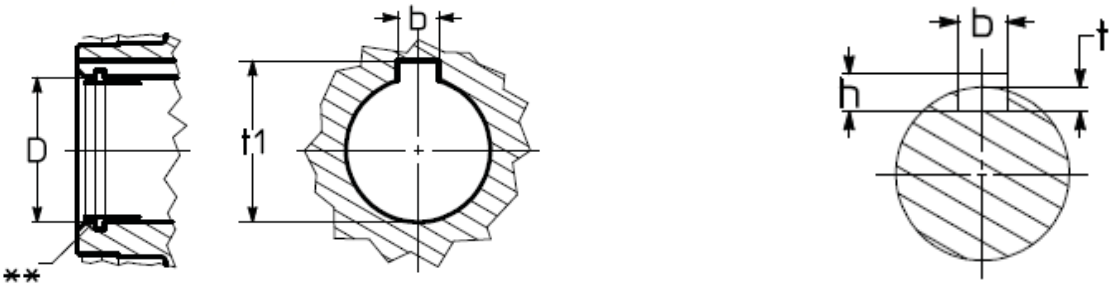
● Oil level plug
▽ Oil level filler on opposite side (not in view)
▨ Oil drain plug on opposite side (not in view)
Possible high oil splash

Terminal box position: TB0



BARG SANAT PAYA

Hollow low speed shaft



Gear reducer hollow shaft

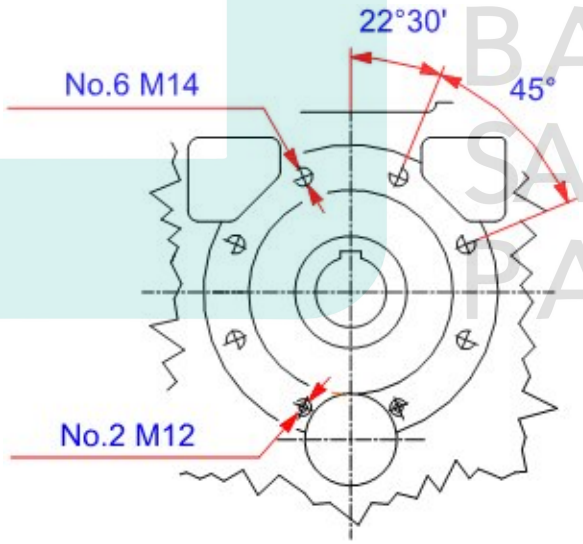
Machine shaft

Hole	Parallel Key	Keyway		
D Ø H7**	b x h x l* h9 h11	b H9 hub N9 shaft	t shaft	t_1 hub
70	20 x 12 x 150	20	8 1)	74,3 1)

* Recommended length.
** Each hollow shaft type (standard, stepped, with shrink disc) has a slightly oversized diameter D (at the input) to facilitate the assembly of gear reducer on machine shaft end: this, however, does not affect the connection reliability.
1) Values not to standard.

Fastening tapped holes (size 140)

The relevant through holes to be realized on the driven machine must be all of equal diameter for sizes 140, 200 and 250 (Ø 15, Ø 21 and Ø 25, respectively) as the 2 holes of smaller diameter are not in the position of 22° 30'



BARG SANAT PAYA

Configured motor

Designation

HB3 132S 4 230.400-50 B5

Motor catalog TX

Pn 5.5 kW (7.5 hp)

Motor specifications

- 5 voltage values stated on nameplate:
  220.380 @50Hz
  230.400 @50Hz
  240.415 @50Hz
  265.460 @60Hz
  277.480 @60Hz

Motor mounting position (IM) B5

Electric motor technical data TX catalog

Type		HB3 132 S 4
Size		132
Poles		4
Coupling dimensions Ø D x E - Ø P		Ø38 x 80 Ø300
Power supply	[V - Hz]	230.400 - 50
Nominal input power P_{N1}	[k W]	5.5
Nominal speed n_N	[min^{-1}]	1 470
Motor mass	[kg]	58
Directive		Motor ErP
Efficiency class		IE3
Power factor cosφ		0.74
Moment of inertia J_0	[Kg m^2]	0.0357
Overtemperature class		B
Insulation class		F
Protection		IP 55
Type of duty		S1
Synchronous speed	[min^{-1}]	1 500

Efficiency

100 %	89.60
75 %	89.50
50 %	87.60

BARG SANAT PAYA

Nominal data

Nominal torque M_N	[N m]	35.80
Nominal starting torque M_s / M_n		4.50
Maximum torque M_{MAX} / M_n		5.00
Starting current ratio i_s / i_n		9.10
Rated current I_n @230 [V]	[A]	20.80
Rated current I_n @400 [V]	[A]	12.00

Construction features

Motor size	Bearing D-E	Bearing N-D-E	Housing	Flange B5	End-shield N-D-E	Terminal box cover	Seal rings D-E	Terminal block (4)	Cable glands	Fan cover	Cooling fan
132 S	6308 2Z	6308 2Z	LL	LL	LL	LL	LL	40 × 60 × 10	M6	Painted sheet	Plastic

LL = Light alloy

(4) Terminal block with 6 terminals for cable terminal connection

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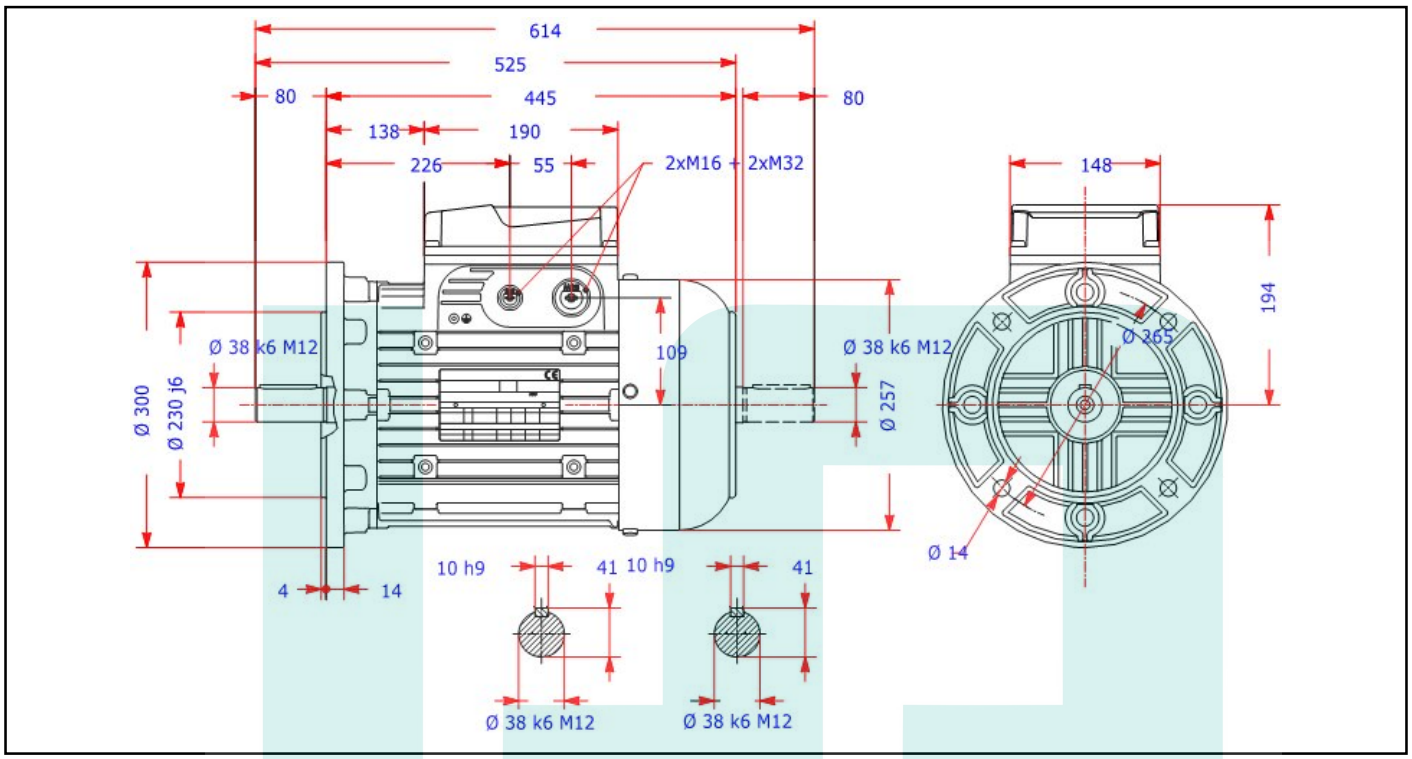
Motor main dimensions [mm]



BARG SANAT PAYA

G series

Helical gearmotor
G MR 3I 140 UP2A - 38 x 300 - 45,1 B7
HB3 132S 4 230.400-50 B5

Helical gearmotor - Application given data

Product series		• G series
Measure system		Metric
Frequency	[Hz]	50
Product type		Gearmotors with motor
Input speed n_1		Motor dependent
Shaft arrangement		Helical / Coaxial
Ratio *i*		From 35.629 to 54.571
Applied power P_1	[k W]	5.5 (7.5 [hp])
Service factor s_f		From 0.8 to 4
Loads		Constant load

Thermal power *Pt*

Max. environment temperature	[° C]	20
Air speed on the housing	[m / s]	Large, slight ventilation (air speed 1.25 [m / s])
Installation altitude	[m]	up to 1 000 [m]
Type of duty		Continuous - S1
Cooling system		Natural convection
Mounting position		B7

External loads

High speed shaft end

There are no radial loads F_{r2} applied on low speed shaft end

There are no axial loads F_{a2} applied on low speed shaft end

BARG SANAT PAYA

Configured product

Designation

Standard (catalog) product

G MR 3I 140 UP2A - 38 x 300 - 45,1 B7
HB3 132S 4 230.400-50 B5

Helical gearmotor G series
Input speed n_1 1 470 min^{-1}
Coupled with motor
Mounting position B7

Accessories

Fluorinated seal rings on high-low speed shaft [TV3]
Metal plugs; filler plug with filter and breather [TM3]

Helical gearmotor - Technical data

Designation ratio		45.1
Effective ratio i_{EFF}		45.07
Output speed n_2	[min^{-1}]	32.61
Input speed n_1	[min^{-1}]	1 470
Applied power P_1	[k W]	5.5
Output torque M_2	[N m]	1 516.77
Service factor s_f (installed power)		3.136
Nominal efficiency η		0.94
Gearmotor mass (without motor)	[kg]	124.92
Moment of inertia (of mass) J_1	[Kg m^2]	0.001
Sound levels (to ISO/CD 8579, tolerance +3 ***dB(A)***)		
sound power level L_{WA}	[dB(A)]	83
sound pressure level L_{pA}	[dB(A)]	73
Angular backlash at a distance of 1 [m] from the low speed shaft centre		
min	[rad]	0.0017
max	[rad]	0.0034
min	[arcmin]	5.8
max	[arcmin]	12
Torsional stiffness in condition of nominal load	[N m / arcmin]	112

BARG SANAT PAYA

Lubrication

Gearmotor supplied without oil		
Approximate lubricant quantity	[l]	9.7
ISO viscosity grade		
mineral oil - Environment temperature 0 ÷ 20 [° C]	[cSt]	150
mineral oil - Environment temperature 10 ÷ 40 [° C]		220
synthetic oil - Environment temperature 0 ÷ 40 [° C]		220

Overall guide to oil-change interval (not according ATEX directive)

Oil temperature[° C]	Oil change interval [h]	
	mineral oil	synthetic oil
≤ 65	8 000	25 000
65 ÷ 80	4 000	18 000
80 ÷ 95	2 000	12 500
95 ÷ 110	-	9 000

Nominal data

Nominal input power P_{N1}	[k W]	17.27
Nominal output power P_{N2}	[k W]	16.24
Nominal thermal power P_{TN} @20°	[k W]	28
Nominal output torque M_{N2}	[N m]	4 757
Maximum output torque $M_{2\,MAX}$	[N m]	7 611

BARG SANAT PAYA

Verification

Thermal power ***Pt***

$$PT = PT_N * ft_{1a} * ft_{1b} * ft_2 * ft_3 * ft_4 * ft_5$$

where:

P_{TN}	[k W]	nominal thermal power when operating in following running conditions: • input speed n_1 = 1 400 [min^{-1}] • mounting position B3 • continuous duty S1 • maximum ambient temperature 20° [C] • maximum altitude 1 000 [m] above sea level • air speed 1.25 [m/s] (typical value in presence of a gearmotor with self-cooled motor)
ft_{1a}		thermal factor according to cooling system
ft_{1b}		thermal factor according to input speed n_1
ft_2		thermal factor according to max. ambient temperature and service / duty
ft_3		thermal factor according to mounting position, train of gears, size and nominal ratio i_N
ft_4		thermal factor according to installation altitude
ft_5		thermal factor according to air speed on housing

Calculation

Applied power P_1	[k W]	5.5
Thermal power *Pt*	[k W]	= 28 * 0.991 * 1 * 1 * 1 * 1 = 27.75

Thermal power verification passed

BARG SANAT PAYA

Maximum bending moment $M_{b\,MAX}$ of flange MR

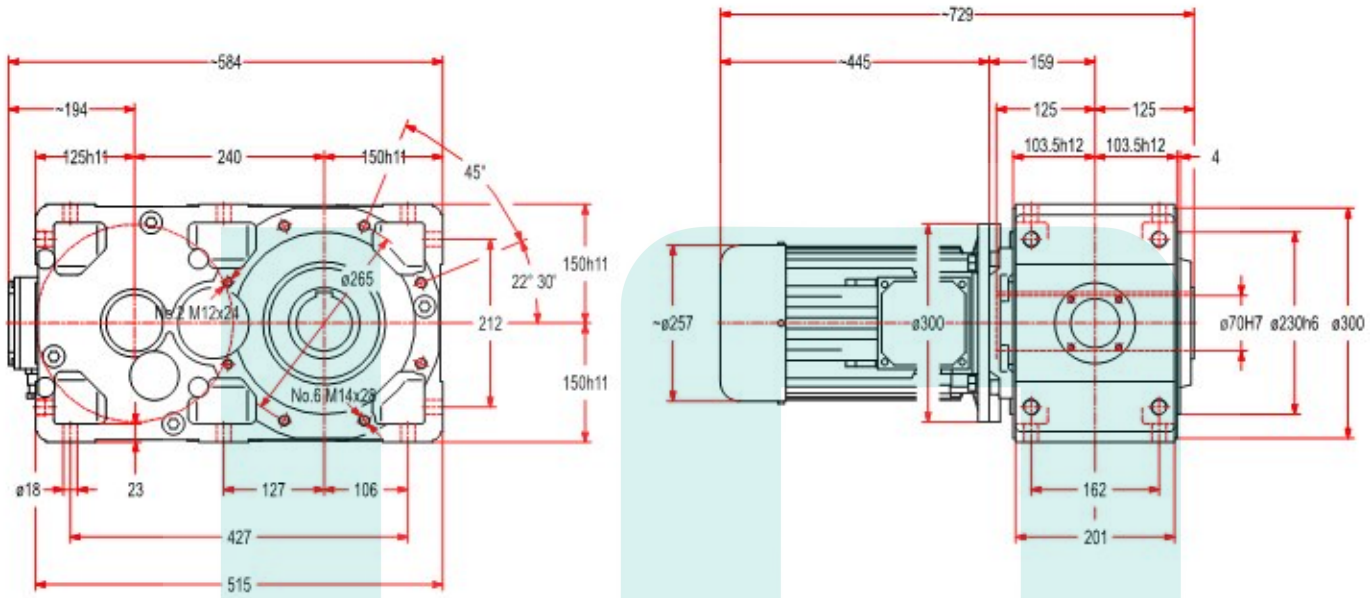
$$M_{bMAX} \geq M_b = \frac{G \star (X + H_F)}{1000}$$

where:		
$M_{b\,MAX}$	[N m]	maximum bending moment on flange
G	[N]	is the motor weight
X		is the distance from motor center of gravity from flange surface
H_F		is a variable value according to gear reducer size and flange diameter P_1
$1\,000$	[N m]	is a constant value
Calculation		
$M_{b\,MAX}$	[N m]	= 560
M_b	[N m]	= 568.79 * (192.5 + 55) / 1 000 = 140.78

Maximum bending moment verification passed

BARG SANAT PAYA

Main dimensions [mm] (for accessories, see following pages)



Information

Screws UNI 5737: M 16 x 55

Bolts UNI 5588: M 16

Product liability, application considerations
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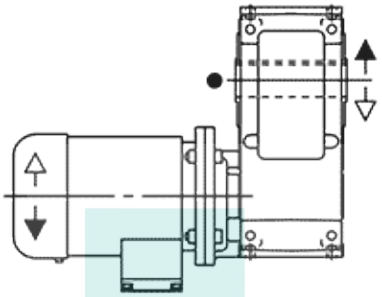
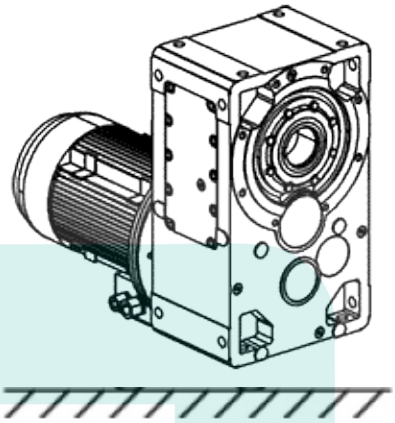
Design: UP2A

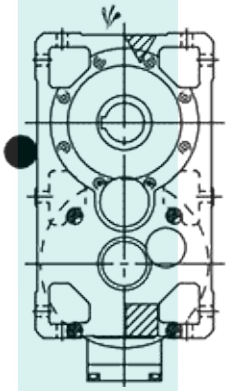


● groove side

Mounting position: B7

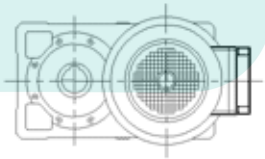


Plugs position (supplied without oil as standard)



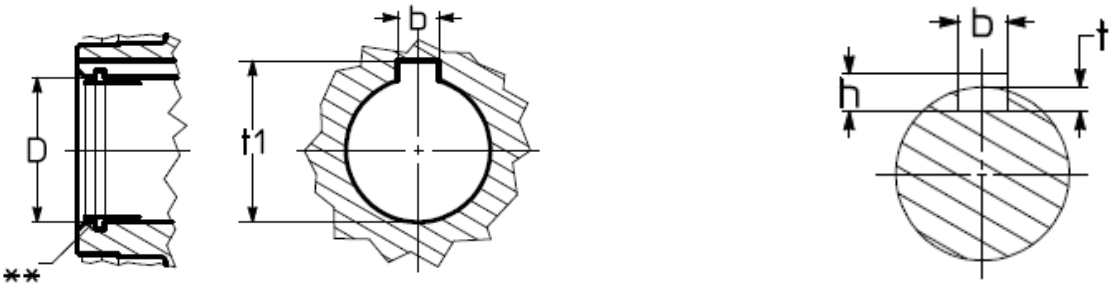
● Oil level plug
▽ Oil level filler on opposite side (not in view)
▨ Oil drain plug on opposite side (not in view)
Possible high oil splash

Terminal box position: TB0



BARG SANAT PAYA

Hollow low speed shaft



Gear reducer hollow shaft

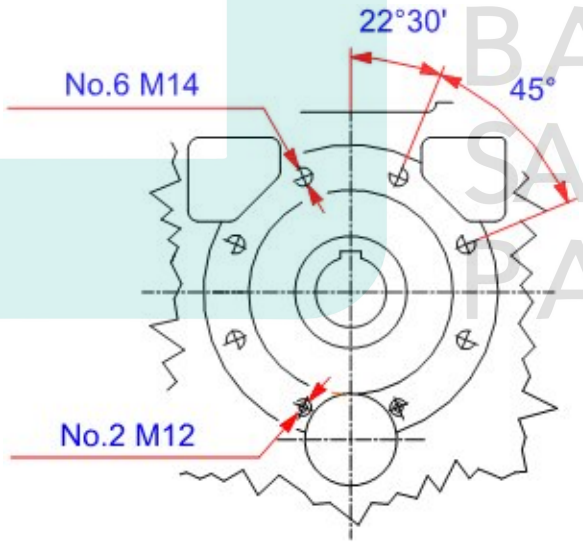
Machine shaft

Hole	Parallel Key	Keyway		
D Ø H7**	b x h x l* h9 h11	b H9 hub N9 shaft	t shaft	t_1 hub
70	20 x 12 x 150	20	8 1)	74,3 1)

* Recommended length.
** Each hollow shaft type (standard, stepped, with shrink disc) has a slightly oversized diameter D (at the input) to facilitate the assembly of gear reducer on machine shaft end: this, however, does not affect the connection reliability.
1) Values not to standard.

Fastening tapped holes (size 140)

The relevant through holes to be realized on the driven machine must be all of equal diameter for sizes 140, 200 and 250 (Ø 15, Ø 21 and Ø 25, respectively) as the 2 holes of smaller diameter are not in the position of 22° 30'



BARG SANAT PAYA

Configured motor

Designation

HB3 132S 4 230.400-50 B5

Motor catalog TX

Pn 5.5 kW (7.5 hp)

Motor specifications

- 5 voltage values stated on nameplate:
  220.380 @50Hz
  230.400 @50Hz
  240.415 @50Hz
  265.460 @60Hz
  277.480 @60Hz

Motor mounting position (IM) B5

Electric motor technical data TX catalog

Type		HB3 132 S 4
Size		132
Poles		4
Coupling dimensions Ø D x E - Ø P		Ø38 x 80 Ø300
Power supply	[V - Hz]	230.400 - 50
Nominal input power P_{N1}	[k W]	5.5
Nominal speed n_N	[min^{-1}]	1 470
Motor mass	[kg]	58
Directive		Motor ErP
Efficiency class		IE3
Power factor cosφ		0.74
Moment of inertia J_0	[Kg m^2]	0.0357
Overtemperature class		B
Insulation class		F
Protection		IP 55
Type of duty		S1
Synchronous speed	[min^{-1}]	1 500

Efficiency

100 %	89.60
75 %	89.50
50 %	87.60

BARG SANAT PAYA

Nominal data

Nominal torque M_N	[N m]	35.80
Nominal starting torque M_s / M_n		4.50
Maximum torque M_{MAX} / M_n		5.00
Starting current ratio i_s / i_n		9.10
Rated current I_n @230 [V]	[A]	20.80
Rated current I_n @400 [V]	[A]	12.00

Construction features

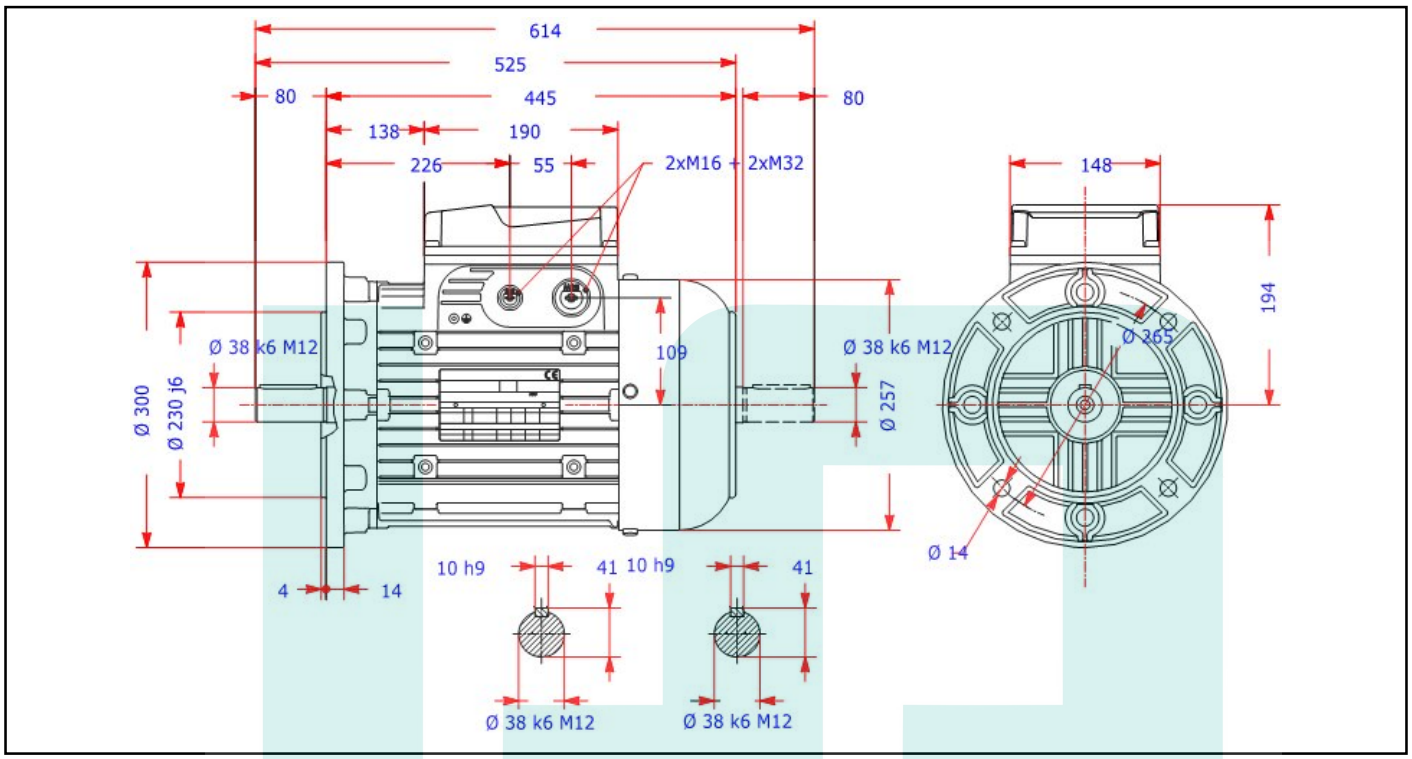
Motor size	Bearing D-E	Bearing N-D-E	Housing	Flange B5	End-shield N-D-E	Terminal box cover	Seal rings D-E	Terminal block (4)	Cable glands	Fan cover	Cooling fan
132 S	6308 2Z	6308 2Z	LL	LL	LL	LL	LL	40 × 60 × 10	M6	Painted sheet	Plastic

LL = Light alloy

(4) Terminal block with 6 terminals for cable terminal connection

BARG SANAT PAYA

Motor main dimensions [mm]



BARG SANAT PAYA