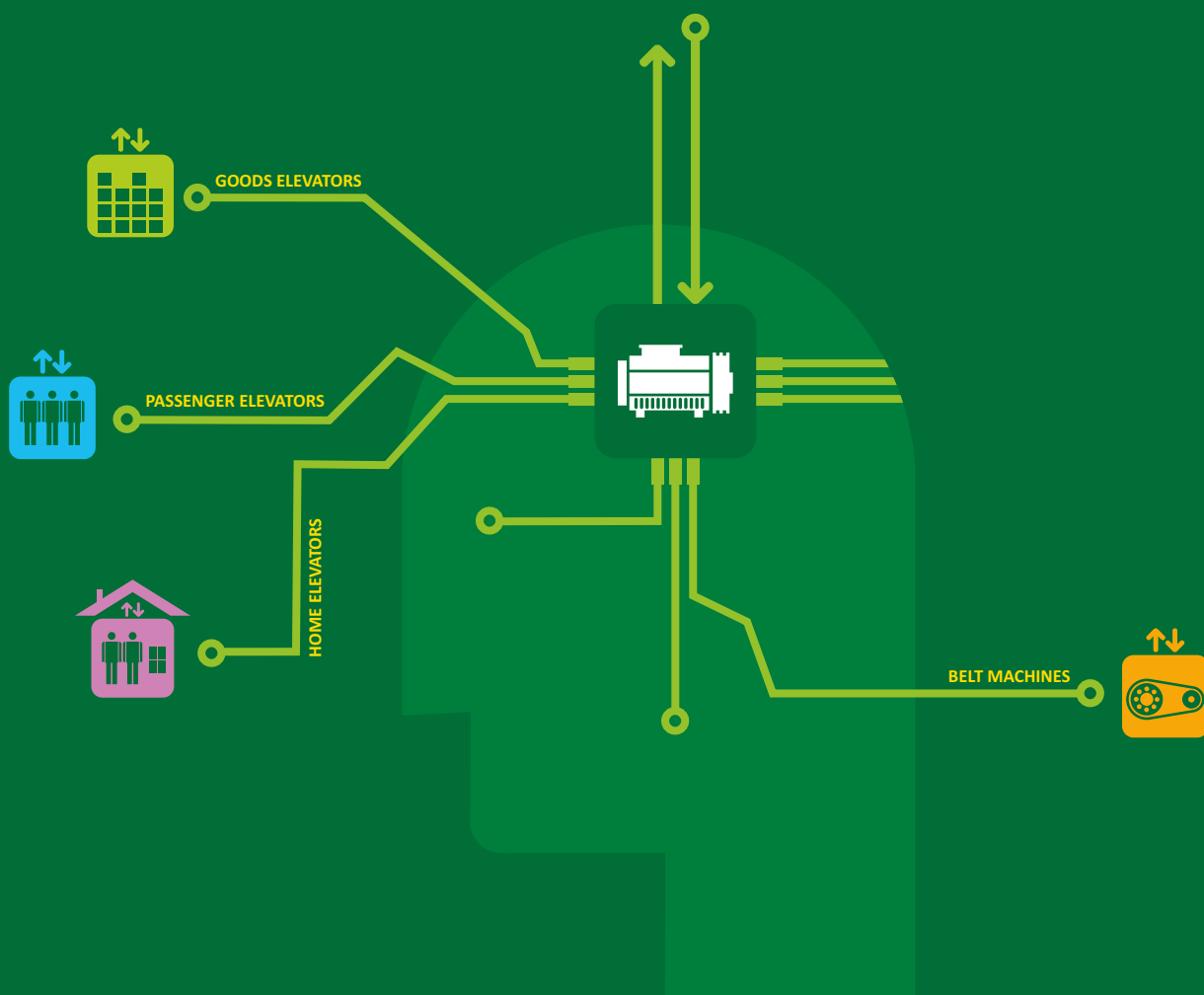


# PERMANENT MAGNET MACHINES FOR ELEVATORS

## WORKS SMARTER





## GreenStar

**GreenStar** from Bharat Bijlee is a new-generation gearless machine for elevators powered by a permanent magnet synchronous motor. Compact modular design, light weight and low operating noise levels make it especially suitable for machine room-less applications. GreenStar has

outstanding torque and cogging characteristics and no oil spillage problems. Real savings in energy consumption, space and routine maintenance, contribute to a significant reduction in cost of ownership.

Technology Partners with **PERMAGSA**



**NO MACHINE ROOM**



**GEARLESS**



**LOW NOISE**







**SIGNIFICANT ENERGY SAVING**



**COMPACT DESIGN**

### CAPACITY FOR GREENSTAR SERIES

	Series	Rated Load	Rated Speed
	<b>GreenStar</b>	6 to 26 passengers	0.7 to 2.0 m/s
	<b>GreenStarMAX</b>	1500 to 5000 kg	1.0 m/s
	<b>GreenStarmini</b>	Upto 6 passengers	0.32 to 0.5 m/s
	<b>GreenStarBELT</b>	4 to 16 passengers	0.32 to 1.0 m/s

## GC 06 TECHNICAL SPECIFICATIONS

Model	GC06-320-100	GC06-320-125	GC06-320-150	GC-06-200-070	GC-06-200-100		GC-06-240-100	
Duty Load (kg)	408	408	408	408	408		408	
Passenger Capacity	6	6	6	6	6		6	
Speed upto (m/s)	1	1.25	1.5	0.7	1		1	
Sheave Diameter (mm)	320	320	320	200	200		240	
Rope Diameter (mm)	8	8	8	6.5	6.5	8	6.5	8
No. of Ropes	4	4	4	4	4	4	4	4
Roping Ratio	2:1	2:1	2:1	2:1	2:1		2:1	
RPM	120	150	180	133	190		160	
Rated Frequency (Hz)	12	15	18	13.3	19		16	
Rated Torque (Nm)	215	215	215	135	135		150	
Rated Output Power (kW)	2.7	3.4	4	1.88	2.68		2.5	
Rated Output Power (HP)	3.6	4.5	5.4	2.5	3.59		3.35	
Rated Current (Amps)	8.5	10	11.5	7	8.5		7	
Starts/Hour	120	120	180	90	120		120	
Static Load (kg)	1300	1300	1300	1300	1300		1300	
Machine weight (kg)	125	125	140	120	120		135	

## GC 08 TECHNICAL SPECIFICATIONS

Model	GC08-320-100	GC08-320-125	GC08-320-150	GC08-320-175	GC08-320-200	GC-08-200-070	GC-08-200-100		GC-08-240-070	GC-08-240-100	
Duty Load (kg)	544	544	544	544	544	544	544		544	544	
Passenger Capacity	8	8	8	8	8	8	8		8	8	
Speed upto (m/s)	1	1.25	1.5	1.75	2	0.7	1		0.7	1	
Sheave Diameter (mm)	320	320	320	320	320	200	200		240	240	
Rope Diameter (mm)	8	8	8	8	8	6.5	6.5	8	6.5	6.5	8
No. of Ropes	4	4	4	4	4	6	6	4	6	6	4
Roping Ratio	2:1	2:1	2:1	2:1	2:1	2:1	2:1		2:1	2:1	
RPM	120	150	180	208	240	133	190		111	160	
Rated Frequency (Hz)	12	15	18	20.8	24	13.3	19		11.1	16	
Rated Torque (Nm)	270	270	270	270	270	180	180		215	215	
Rated Output Power (kW)	3.4	4.2	5	5.88	6.78	2.5	3.5		2.4	3.6	
Rated Output Power (HP)	4.5	5.6	6.7	7.88	9.09	3.4	4.69		3.2	4.83	
Rated Current (Amps)	10	11.5	13	18.5	18.5	6.5	8		8.2	9.2	
Starts/Hour	120	120	180	180	180	90	120		90	120	
Static Load (kg)	1300	1300	1300	1300	1300	1300	1300		1300	1300	
Machine weight (kg)	150	150	190	190	190	145	145		145	145	

## GC 10 TECHNICAL SPECIFICATIONS

Model	GC10-320-100	GC10-320-125	GC10-320-150	GC10-320-175	GC10-320-200	GC-10-240-100
Duty Load (kg)	680	680	680	680	680	680
Passenger Capacity	10	10	10	10	10	10
Speed upto (m/s)	1	1.25	1.5	1.75	2	1
Sheave Diameter (mm)	320	320	320	320	320	240
Rope Diameter (mm)	8	8	8	8	8	6.5
No. of Ropes	6	6	6	6	6	8
Roping Ratio	2:1	2:1	2:1	2:1	2:1	2:1
RPM	120	150	180	208	240	160
Rated Frequency (Hz)	12	15	18	20.8	24	16
Rated Torque (Nm)	335	335	335	335	335	250
Rated Output Power (kW)	4.2	5.2	6.3	7.3	8.4	4.2
Rated Output Power (HP)	5.6	7	8.4	9.8	11.3	5.6
Rated Current (Amps)	13.5	15	19	24	24	12
Starts/Hour	120	120	180	180	180	120
Static Load (kg)	2300	2300	2300	2300	2300	1300
Machine weight (kg)	190	190	200	200	200	160

## GC 13 TECHNICAL SPECIFICATIONS

Model	GC13-320-100	GC13-320-125	GC13-320-150	GC13-320-175	GC13-320-200
Duty Load (kg)	884	884	884	884	884
Passenger Capacity	13	13	13	13	13
Speed upto (m/s)	1	1.25	1.5	1.75	2
Sheave Diameter (mm)	320	320	320	320	320
Rope Diameter (mm)	8	8	8	8	8
No. of Ropes	6	6	6	6	6
Roping Ratio	2:1	2:1	2:1	2:1	2:1
RPM	120	150	180	208	240
Rated Frequency (Hz)	12	15	18	20.8	24
Rated Torque (Nm)	435	435	435	435	435
Rated Output Power (kW)	5.4	6.8	8.1	9.47	10.93
Rated Output Power (HP)	7.2	9.1	10.8	12.7	14.65
Rated Current (Amps)	17.5	20	23.5	30	30
Starts/Hour	120	120	180	180	180
Static Load (kg)	2300	2300	2300	2300	2300
Machine weight (kg)	200	200	250	250	250

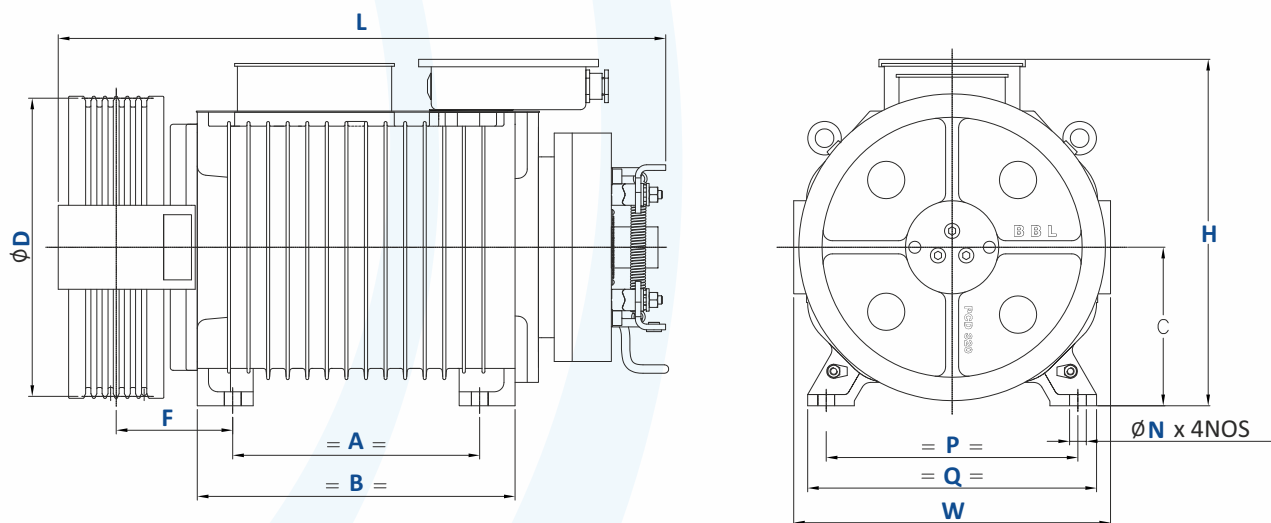
## GC 16 TECHNICAL SPECIFICATIONS

Model	GC16-320-100	GC16-320-125	GC16-320-150	GC16-320-175	GC16-320-200
Duty Load (kg)	1088	1088	1088	1088	1088
Passenger Capacity	16	16	16	16	16
Speed upto (m/s)	1	1.25	1.5	1.75	2
Sheave Diameter (mm)	320	320	320	320	320
Rope Diameter (mm)	8	8	8	8	8
No. of Ropes	8	8	8	8	8
Roping Ratio	2:1	2:1	2:1	2:1	2:1
RPM	120	150	180	208	240
Rated Frequency (Hz)	12	15	18	20.8	24
Rated Torque (Nm)	535	535	535	535	535
Rated Output Power (kW)	6.7	8.4	10.1	11.6	13.4
Rated Output Power (HP)	8.9	11.3	13.4	15.6	18.0
Rated Current (Amps)	21.5	23	30	39	39
Starts/Hour	120	120	180	180	180
Static Load (kg)	3500	3500	3500	3500	3500
Machine weight (kg)	250	250	250	250	250

## GC 20 AND GSH 26 TECHNICAL SPECIFICATIONS

Model	GC20-320-100	GC20-320-125	GC20-320-150	GC20-320-175	GC20-320-200	GSH26-320-100
Duty Load (kg)	1360	1360	1360	1360	1360	1768
Passenger Capacity	20	20	20	20	20	26
Speed upto (m/s)	1	1.25	1.5	1.75	2	1
Sheave Diameter (mm)	320	320	320	320	320	320
Rope Diameter (mm)	8	8	8	8	8	8
No. of Ropes	8	8	8	8	8	10
Roping Ratio	2:1	2:1	2:1	2:1	2:1	2:1
RPM	120	150	180	208	240	120
Rated Frequency (Hz)	12	15	18	20.8	24	18
Rated Torque (Nm)	670	670	670	670	670	900
Rated Output Power (kW)	8.4	10.5	12.6	14.59	16.83	11.3
Rated Output Power (HP)	11.2	14.1	16.8	19.56	22.57	15.16
Rated Current (Amps)	26.5	30	38	45	45	31
Starts/Hour	120	120	180	180	180	120
Static Load (kg)	3500	3500	3500	3500	3500	5000
Machine weight (kg)	250	250	280	280	280	355

## DIMENSIONS



Model	A	B	C	D	P	Q	F	L	W	H	N
GC06-320-100	165	231	170	320	270	310	97	525	340	385	18
GC06-320-125											
GC06-320-150											
GC06-320-175											
GC06-320-200											
GC-06-200-070											
GC-06-200-100											
GC-06-240-100											
GC08-320-100	200	266	170	320	270	310	97	560	340	385	18
GC08-320-125											
GC08-320-150											
GC08-320-175											
GC08-320-200											
GC-08-200-070											
GC-08-200-100											
GC-08-240-070											
GC-08-240-100											
GC10-320-100	265	341	170	320	270	310	125	660	340	385	18
GC10-320-125											
GC10-320-150											
GC10-320-175											
GC10-320-200											
GC-10-240-100											
GC13-320-100	265	341	170	320	270	310	125	660	340	385	18
GC13-320-125											
GC13-320-150											
GC13-320-175											
GC13-320-200											
GC16-320-100	310	416	170	320	270	310	125	740	340	395	18
GC16-320-125											
GC16-320-150											
GC16-320-175											
GC16-320-200											
GC20-320-100	310	416	170	320	270	310	125	740	340	395	18
GC20-320-125											
GC20-320-150											
GC20-320-175											
GC20-320-200											
GSH26-320-100	365	450	175	320	270	342	139	795	360	420	M20



## GreenStarMAX

GreenStar Max extends our range of PMSM gearless solutions to carrying capacities of up to 5000 kg: the right machine for your Goods, Stretcher and Car elevators.

Technology Partners with **PERMAGSA**  
ELEVATOR DIVISION

### Features

- Outstanding torque
- Capacity up to 3000 kg with 2:1 roping
- Static load up to 6000 kg
- Cantilever design

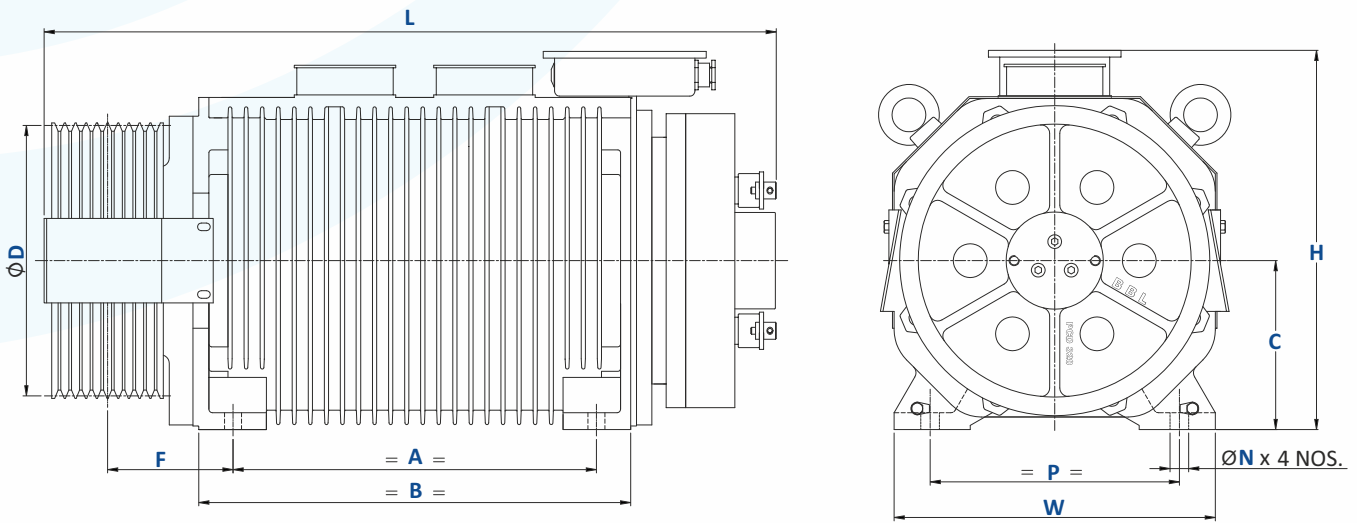
### GCH 1.6T TO 2.5T TECHNICAL SPECIFICATIONS

Model	GC 1.6T-400-100	GCH 1.6T -320-100	GCH 2.0T -320-100	GSH 2.0T-400-100	GCH 2.5T -320-100	GSH 2.5T-400-100
Duty Load (kg)	1600	1600	2000	2000	2500	2500
Speed (m/s)	1	1	1	1	1.0	1
Sheave Diameter (mm)	400	320	320	400	320	400
Rope Diameter (mm)	10	8	8	10	8	10
No. of Ropes	4	10	10	4	10	5
Roping Ratio	4:1	2:1	2:1	4:1	2:1	4:1
RPM	191	120	120	191	120	191
Rated Frequency (Hz)	19.1	18	18	28.6	18	28.6
Rated Torque (Nm)	572	800	1000	688	1200	860
Rated Power kW	11.43	10.1	12.5	13.76	15.1	17.2
Rated Power HP	15.3	13.54	16.75	18.5	20.24	23.1
Rated Current (Amps)	42	25.0	33.0	35	39.0	45
Static load	3500	6000	6000	3500	6000	3500
Starts/Hour	120	120	120	120	120	120
Machine weight (kg)	250	400	450	360	450	360

## 3T TO 5T TECHNICAL SPECIFICATIONS

Model	GCH 3T-320-050	GCH 3T-320-100	GCH 3T-400-050	GCH 4T-320-100	GCH 5T-320-100
Duty Load (kg)	3000	3000	3000	4000	5000
Speed (m/s)	0.5	1	0.5	1	1
Sheave Diameter (mm)	320	320	400	320	320
Rope Diameter (mm)	8	8	10	8	8
No. of Ropes	12	12	6	10	12
Roping Ratio	2:1	2:1	4:1	4:1	4:1
RPM	60	120	95	240	240
Rated Frequency (Hz)	9	18	14.2	36	36
Rated Torque (Nm)	1500	1500	1032	1062	1350
Rated Power kW	9.5	19	10.32	26.68	34
Rated Power HP	12.7	25.5	13.8	35.8	45.6
Rated Current (Amps)	36	50	34	60	100
Static load	6000	6000	6000	6000	6000
Starts/Hour	90	120	90	120	120
Machine weight (kg)	500	500	430	450	780

## DIMENSIONS



Model	A	B	C	D	P	F	L	W	H	N
GC 1.6T-400-100	340	416	220	400	270	147.5	755	424	445	18
GCH 1.6T-320-100	430	511	200	320	295	148.5	880	400	460	22
GCH 2.0T-320-100						179			465	
GCH 3T-320-050						147.5			495	
GCH 3T-320-100						148.5			460	
GCH 3T-400-050						148.5			460	
GCH 4T-320-100	365	450	220	400	270	147.5	785	424	465	M20
GSH 2.0T-400-100						147.5			465	
GSH 2.5T-400-100						147.5			465	





# GreenStarmini

GreenStar Mini is a gearless PMSM ideal for home elevators i.e. bungalows and penthouses. It is compact and facilitates elevators with a minimum of space and civil work.

Technology Partners with **PERMAGSA**  
ELEVATOR DIVISION

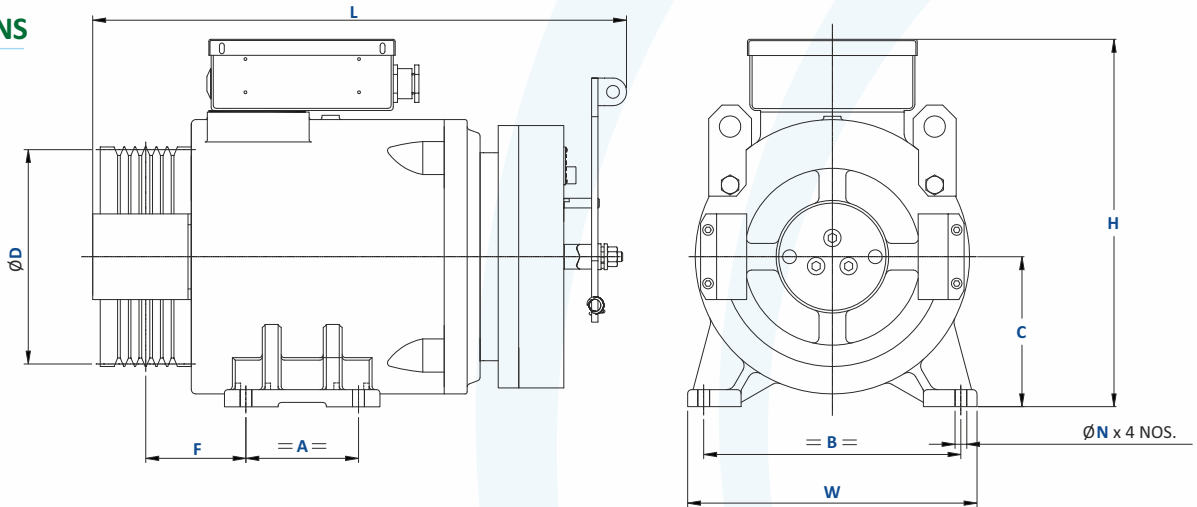
### Features

- Lifts loads up to 300 kg and travels up to 15 meters
- Operates on single-phase 230V Drive domestic power supply
- Manual release for brake provided
- Insulation class F with thermistor for thermal protection

## GH 04, GS 04 AND GC 06 TECHNICAL SPECIFICATIONS

Model	GH-04-200-032	GS-04-160-050	GC-06-200-050
Duty Load (kg)	300	300	408
Passenger Capacity	4	4	6
Speed upto (m/s)	0.32	0.5	0.5
Sheave Diameter (mm)	200	160	200
Rope Diameter (mm)	6	6.5	6.5
No. of Ropes	4	4	4
Roping Ratio	2:1	2:1	2:1
RPM	60	120	96
Rated Frequency (Hz)	6	12	9.6
Rated Torque (Nm)	100	80	135
Rated Output Power (kW)	0.62	1	1.35
Rated Output Power (HP)	0.84	1.34	1.81
Rated Current (Amps)	4	5.5	7
Rated Voltage (Volts)	230	230	230
Starts/Hour	90	90	90
Static Load (kg)	1300	1300	1300
Machine weight (kg)	90	94	106

### DIMENSIONS



Model	A	B	C	D	F	L	W	H	N
GH 04-200-032	105	240	140	200	77	455	270	329	11
GS-04-160-050	140	220	135	160	98.5	475	270	340	M16
GC-06-200-050	105	240	140	200	94	500	270	345	11



# GreenStarBELT

This range of GreenStar machines is especially suited for elevators with belts that ensure a smooth ride and minimal noise. They can be used for home elevators as well as commercial elevators.

Technology Partners with **PERMAGSA**

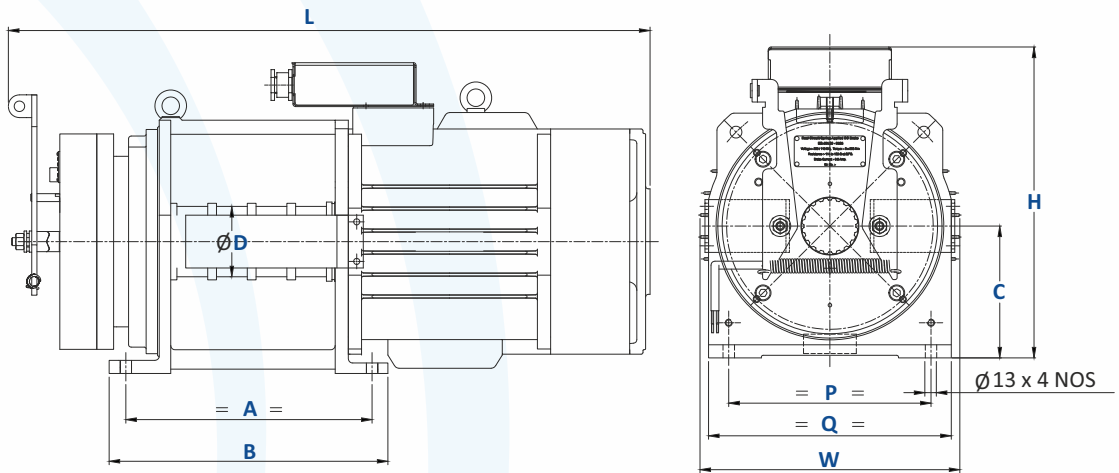
### Features

- Deploys Polyurethane coated steel belts for suspension
- Manual release for brake provided
- Insulation class F with thermistors for thermal protection

## TECHNICAL SPECIFICATIONS

Model	GB-04-080-032	GB-06-080-100	GB-08-080-100	GB-10-080-100	GB-13-080-100	GB-16-080-100
Duty Load (kg)	300	408	544	680	884	1088
Passenger Capacity	4	6	8	10	13	16
Speed upto (m/s)	0.32	1	1	1	1	1
Sheave Diameter (mm)	80	80	80	80	80	80
Belt width (mm)	30	30	30	30	30	30
No. of Belt	3	3	3	3	4	4
Roping Ratio	2:1	2:1	2:1	2:1	2:1	2:1
RPM	152	480	480	480	480	480
Rated Frequency (Hz)	15.2	48	48	48	48	48
Rated Torque (Nm)	45	60	75	90	115	140
Rated Output Power (kW)	0.8	3	3.8	4.5	5.8	7
Rated Output Power (HP)	1.1	4.0	5.1	6.0	7.8	9.4
Rated Current (Amps)	4	7	9	10	14	16
Starts/Hour	7	120	120	120	120	120
Static Load (kg)	2500	2500	2500	2500	3000	3000
Machine weight (kg)	100	100	100	100	120	150

## DIMENSIONS



Model	A	B	C	D	P	Q	L	W	H
GB-04-080-032	210	250	150	80	230	276	565	300	355
GB-06-080-100									
GB-08-080-100									
GB-10-080-100	280	320	150	80	230	276	640	300	355
GB-13-080-100									
GB-16-080-100									

# SynchroTorq™



SynchroTorq™ is a range of high torque Permanent Magnet Technology machines for passenger elevators. It can also be used for direct drive applications.

## Features

20 pole motor

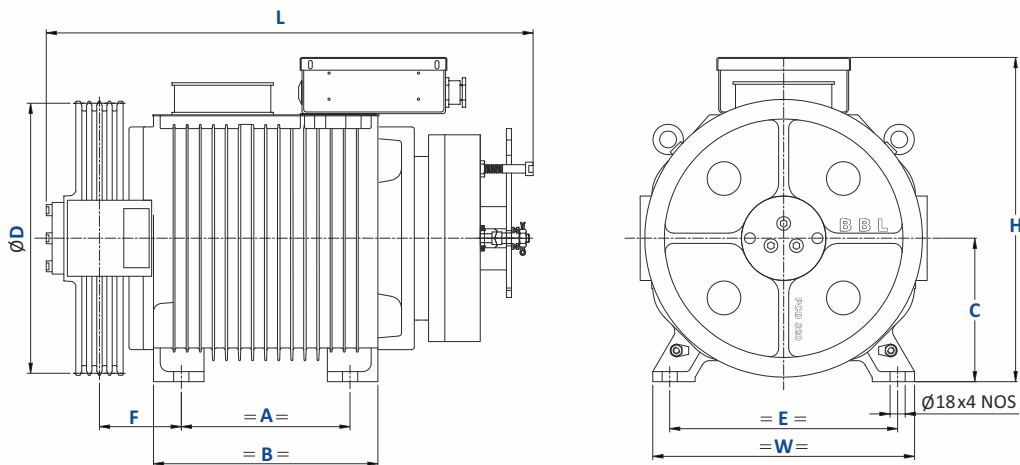
Manual release for brake provided

Insulation class F with thermistor for thermal protection

## TECHNICAL SPECIFICATIONS

Model	STES-06-320-100	STES-08-320-100
Duty Load (kg)	408	544
Passenger Capacity	6	8
Speed upto (m/s)	1	1
Sheave Diameter (mm)	320	320
Rope Diameter (mm)	8	8
No. of Ropes	4	4
Roping Ratio	2:1	2:1
RPM	120	120
Rated Frequency (Hz)	20	20
Rated Torque (Nm)	215	270
Rated Output Power (kW)	2.7	3.4
Rated Output Power (HP)	3.6	4.5
Rated Current (Amps)	8.5	10
Starts/Hour	120	120
Static Load (kg)	1300	1300
Machine weight (kg)	125	155

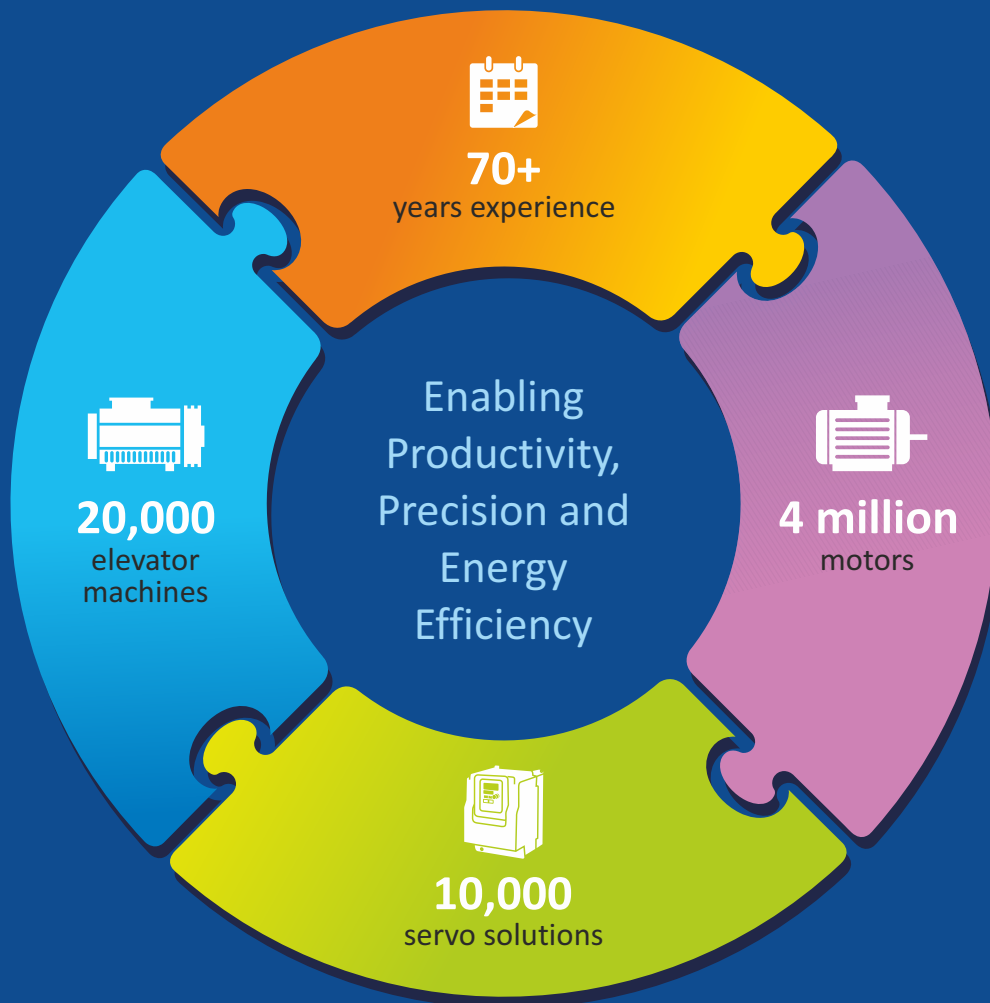
## DIMENSIONS




Model	A	B	C	D	E	F	L	W	H
STES 06-320-100	165	231	170	320	270	97	525	310	385
STES 08-320-100	200	266	170	320	270	97	560	310	385

### Notes:

- Wrap Angle- Minimum 175 degrees • Shaft efficiency - > 85% • No. of poles: GC, GH, GS & GB series = 12, GSH & GCH series = 18, STES series = 20
- Duty cycle - S3 40% • Brake Voltage - 220/110 VDC
- Assumed Car weight - 1.2 X duty load • Compensating Chain necessary for travel more than 20m
- Encoder - SinCos, PPR - 2048, Voltage - 5 VDC
- Please contact Bharat Bijlee representative for using these machines with different roping combinations than specified.
- Product Development is a continuous process and technical information herein is subject to change.




**BB ServiceLINE**

Customer Service Helpdesk for Industrial Systems

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Product improvement is a continuous process and technical information herein is subject to change.