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Technical Documentation

Wind Turbine Generator Systems

GE 158 - 50/60 Hz



Technical Description and Data

Weights and Dimensions

Rev. 03 - EN

2019-05-02



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All technical data is subject to change in line with ongoing technical development!

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1 Introduction

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This document provides estimated weights and dimensions of the GE Wind turbines with 158 m Rotordiameter. The weights and dimensions herein do not include shipping frames/fixtures. Actual weights may vary depending on the final configuration. All weights must be verified prior to installation and transportation.

2 Tower Sections Weights and Dimensions

Overview of the platform configurations.

Turbine	Hub Height			
	101 m	120.9 m	150 m	161 m
GE 158	X	X	X	X

Table 1: Tower configuration related to hub height

The following table provides a basic description of the different sections required for each available tower configuration.

Hub Height	Top Section	Mid Section A	Mid Section B	Mid Section C	Mid Section D	Mid Section E	Door Section	Concrete Section
101 m								
120.9 m Tubular Steel Tower 4.3 m OD with TBR	X	X	X	X	X		X	
150 m Concrete Hybrid Tower	X	X	X					X
161 m Concrete Hybrid Tower	X	X	X					X

Table 2: Tower sections overview

This following table gives the weights and dimensions of each tower section and excludes anchor ring and tower base ring.

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The concrete part of the tower is built out of segmented rings which can be transported using standard transportation equipment.

	Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m) top/bottom	Width (ft) top/bottom
Top Section 150 m hybrid 161 m hybrid			28.0	92.0	3.6/4.3	12.0/14.1
Mid Section A 150 m hybrid 161 m hybrid			25.2	82.6	4.3/4.3	14.1/14.1
Mid Section B 150 m hybrid 161 m hybrid			23.8	78.0	4.3/4.3	14.1/14.1

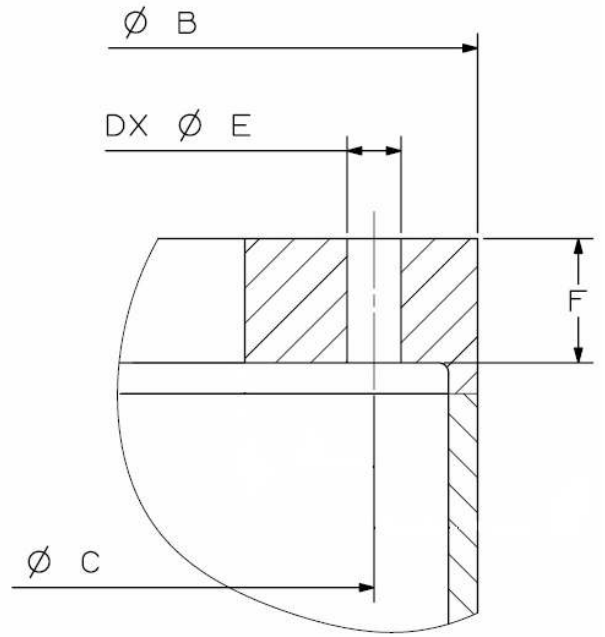
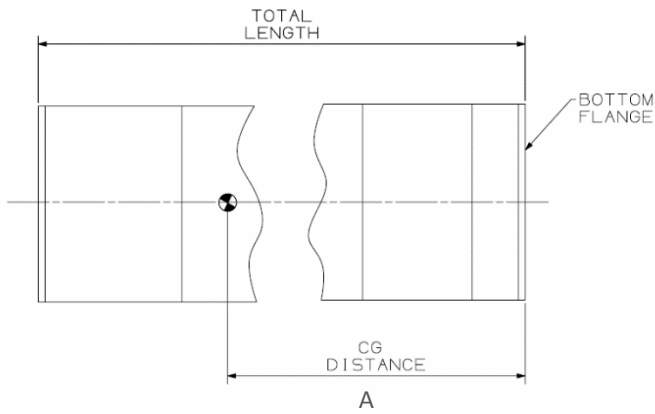
Table 3: Weights and dimensions of the tower sections – Hybrid Towers

	Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m) top/bottom	Width (ft) top/bottom
Top Section 120.9 m HH	~ 50000	~ 110000	28.0	92.0	3.6/4.3	12.0/14.1
Mid Section A 120.9 m HH	~ 46000	~ 100,000	25.2	82.6	4.3/4.3	14.1/14.1
Mid Section B 120.9 m HH	~ 59000	~ 129000	19.8	65.2	4.3/4.3	14.1/14.1
Mid Section C 120.9 m HH	~ 62000	~ 137000	18.2	59.7	4.3/4.3	14.1/14.1
Mid Section D 120.9 m HH	~ 66000	~ 145000	14.8	48.6	4.3/4.3	14.1/14.1
Door Section 120.9 m HH	~ 68000	~ 149000	10.3	33.8	4.3/4.3	14.1/14.1

Table 4: Weights and dimensions of the tower sections – Tubular Steel Towers

2.1 Tower Flange Dimensions

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Section	Distance to CG	Shell Ø	"C" Bolt circle Ø	"D" Numbers of holes	"E" Bolt hole Ø	"F" Flange thickness
	(mm)	(mm)	(mm)		(mm)	(mm)
Top Section – 150 m/161 m hybrid - Top Flange	14410	3684	3534	86	39	150
Top Section – 150 m/161 m hybrid - Bottom Flange	11950	4300	4154	130	39	91
Mid Section A – 150 m/161 m hybrid - Top Flange	11950	4300	4154	130	39	91
Mid Section A – 150 m/161 m hybrid - Bottom Flange	11330	4300	4110	121	52	91
Mid Section B – 150 m/161 m hybrid Top Flange	11330	4300	4110	121	52	91
Mid Section B – 150 m/161 m hybrid Bottom Flange		4300	4108.5	96	61	120

Table 5: Tower internals specification – Hybrid Towers

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Section	"A" Distance to CG	"B" Shell Ø	"C" Bolt circle Ø	"D" Numbers of holes	"E" Bolt hole Ø	"F" Flange thick- ness
	(mm)	(mm)	(mm)		(mm)	(mm)
Top Section – Top Flange	14410	3684	3534	86	39	150
Top Section – Bottom Flange	12011	4300	4154	130	39	91
Mid Section A – Top Flange	12011	4300	4154	130	39	91
Mid Section A – Bottom Flange	9490	4300	4110	121	52	91
Mid Section B – Top Flange	9490	4300	4110	121	52	91
Mid Section B – Bottom Flange	8784	4300	4110	138	52	120
Mid Section C – Top Flange	8784	4300	4110	138	52	120
38Mid Section C – Bottom Flange	7268	4300	4087	120	61	140
Mid Section D – Top Flange	7268	4300	4087	120	61	140
Mid Section D – Bottom Flange	5095	4300	4053	109	70	190
Door Section– Top Flange	5095	4300	4053	109	70	190
Door Section– Bottom Flange	506	4300	4035	109	70	205

Table 6: Tower internals physical specification – 120.9 m hub height

3 Hub Assembly PDF Compressor Free Version

This section gives the weights and dimensions of the hub and excludes the bolts that are used to attach the blades to the hub.

Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
~ 50000	~ 110000	3.5	11.6	4.0	13.1	3.8	12.5

Table 7: Weight and dimensions for the 4.8-158 configuration

4 Blades

This section gives the weight of a single blade (type LM 77.4p) including bolts but the dimensions are for the blade only.

Rotor Diameter	Weight		Length		Maximum chord		Chord at 0.9 x rotor diameter		Blade root outer diameter	
	(kg)	(lbs)	(m)	(ft)	(m)	(ft)	(m)	(ft)	(m)	(ft)
158 m	~ 20000	~ 44000	77.4	253.9	4.0	13.1	1.3	4.2	3.2	10.5

Table 8: Weight and dimensions of a single blade

5 Nacelle **PDF Compressor Free Version**

This section gives the weights and dimensions of the nacelle subassemblies and their internal components and excludes the hub and blades.

Nacelle Subassemblies	Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
Complete nacelle fully installed on tower top	~ 96500	~ 213000	14.3	46.9	5.5	18.1	6.6	21.8
Nacelle including generator, transformer and transport roof, including shipping fixture No drive train, gearbox, nacelle roof and nacelle side extensions	~ 93000	~ 205000	14.0	46.1	3900	12795.2	3.4	11.1
Nacelle including generator, and transport roof, including shipping fixture No drive train, gearbox, nacelle roof and nacelle side extensions Excluding transformer	~ 79000	~ 174000	14.0	46.1	3900	12795.2	3.4	11.1
Nacelle roof and side extensions	~ 3900	~ 86000	12.0	39.3	3.8	12.5	3	9.8
Drivetrain with Gearbox	~ 74000	~ 163000	7.4	24.2	3.3	10.8	3.2	10.4
Drivetrain with Gearbox incl shipping fixture	~ 79000	~ 174000						
Drive train with gearbox and drive train roof section	~ 82000	~ 181000						
Drive train with gearbox and drive train roof section incl shipping fixture	~ 87000	~ 192000						
Gearbox incl. torque support and elastomer elements	~ 45500	~ 100000	4.0	13.1	3.3	10.8	2.9	9.5
Generator	~ 14400	~ 32000	3.4	10.6	1.8	6.0	2.6	8.5
Transformer	~ 14000	~ 32000	3.2	10.4	1.2	3.9	2.5	8.3

Table 9: Weight and dimensions of the nacelle

6 Downtower Assembly Components

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This section gives the weights and dimensions of the downtower assembly components.

Component	Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
Controller level	~ 4300	~ 9000	3.1	10.2	3.0	9.1	3.2	10.6

Table 10: Weight and dimensions of the downtower assembly components

7 Tower Base Ring

This section gives the weights and dimensions of the tower base ring.

Top / Bottom Flange							
Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
~ 15000	~ 33000	4.3/4.8	14.1/15.9	4.3/4.8	14.1/15.9	1.0	3.3

Table 11: Weight and dimensions of the tower base ring for 120.9 m hub height