

GE Power & Water

Technical Documentation

Wind Turbine Generator Systems

3 MW Series



Weights and Dimensions

Applicable for Wind Turbine Generators from 2.5 MW to 3.2 MW



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Table of Contents

1	Introduction	5
2	Tower Sections Weights and Dimensions	5
2.1	Tower Internals Physical Specification	7
3	Hub and Nose Cone Assembly	12
4	Blades	13
5	Nacelle	13
6	Downtower Assembly Components	13
7	Anchor Ring (for 50 Hz Turbines Only)	14
7.1	For 70 m, 75 m and 85 m Hub Height	14
7.2	For 98.3 m Hub Height	14
8	Tower Base Ring	15
8.1	For 70 m, 75 m and 85 m Hub Height	15
8.2	For 98.3 m Hub Height	15
8.3	For 110 m and 120 m Hub Height	15
8.4	For the Hybrid Tower with 139 m Hub Height	15
8.5	For the Space Frame Tower (SFT) with 135/139 m hub height	15
9	Single Components	16

1 Introduction

This document provides estimated weights and dimensions of the 3 MW Platform wind turbines. The weights and dimensions herein do not include shipping frames/fixtures. Actual weights may vary depending on 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							
	70 m*	75 m*	85 m	98.3 m	110 m	120 m*	139 m* Hybrid Tower	139 m Space Frame Tower
2.5-100		X	X	X				
2.5-103		X	X	X				
2.5-120			X		X	X	X	X
2.75-100		X	X	X				
2.75-103		X	X	X				
2.75-120			X	X	X		X	X
2.85-100	X	X	X	X				
2.85-103		X	X	X				
3.2-103	X	X	X	X				

Table 1: Tower configuration related to hub height

For the space frame tower, tower elements are transported in up to 16 standard 40 ft. containers. Each container can weigh up to 20 metric tons.

General Electric uses a modular tower design concept. The different hub heights are requiring the tower sections as given per the following table:

Hub Height	Top Section	Mid Section A	Mid Section B	Mid Section C	Mid Section D	Door Section	Concrete Section
139 m*	X	X	-	-	-	-	X
120 m*	X	X	X	X	X	X	-
110 m	X	X	X	X	-	X	-
98.3 m	X	X	X	X	-	X	-
85 m	X	X	-	-	-	X	-
75 m*	X	X	-	-	-	X	-
70 m*	X	X	-	-	-	X	-

Table 2: Modular tower design concept

* For 50 Hz turbines only!

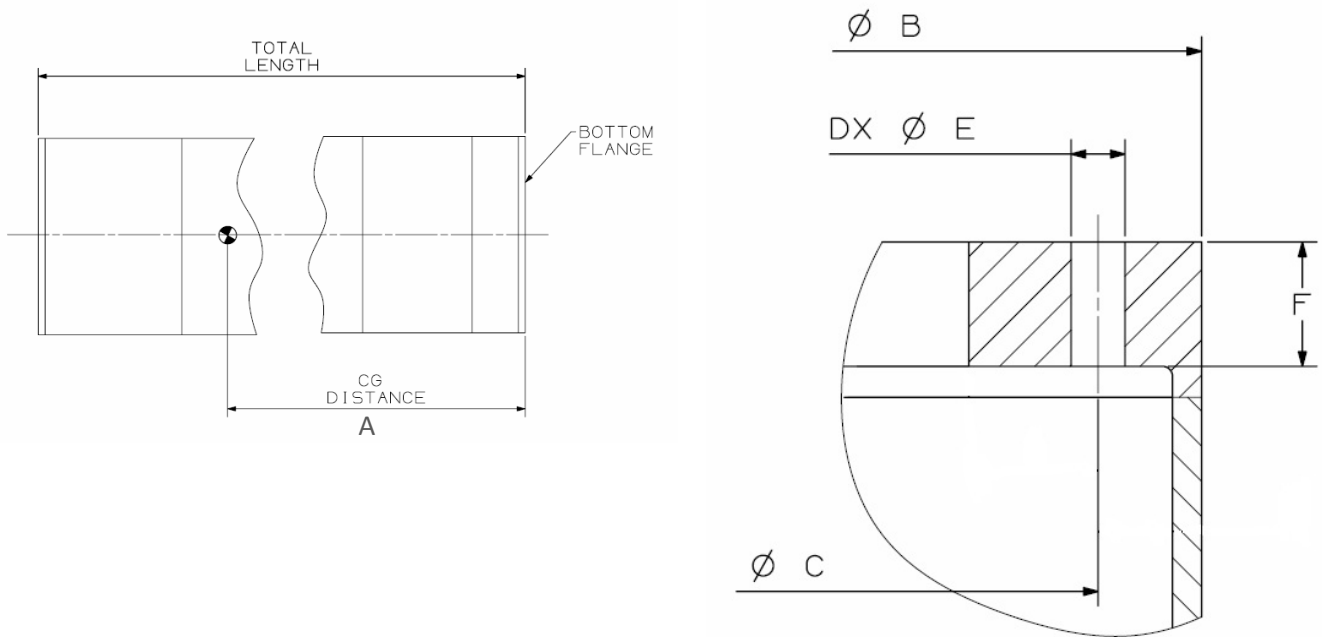
This following table gives the weight and dimensions of each tower section and excludes anchor ring and tower base ring. The table contains information on the tubular and hybrid towers only as the space frame tower is transported in parts. Regarding the hybrid tower with 139 m hub height there are different variants listed: G02 is the tower variant combined with GE 2.5-120; G03 or G04 are different variants for the GE 2.75-120 turbine.

	Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m) top/bottom	Width (ft) top/bottom
Top Section 139 m G04 tower	44000	97003	30.0	98'5"	3.1/4.3	10'2"/14'1"
Top Section 139 m G02/G03 tower, 98.3 m, 75m ; 70 m HH	36000	79366	24.4	80'1"	3.1/4.3	10'2"/14'1"
Top Section 85 m, 110 m, 120 m HH	44000	97003	30.0	98'5"	3.1/4.3	10'2"/14'1"
Mid Section A 139 m G04 tower	58500	127868	29	95'2"	4.3/4.3	14'1"/14'1"
Mid Section A 139 m G02/G03 tower, 98.3 m, 75 m, 70 m HH	46000	101413	23.9	78'5"	4.3/4.3	14'1"/14'1"
Mid Section A 85 m, 110 m, 120 m HH	58000	127868	28.0	91'9"	4.3/4.3	14'1"/14'1"
Mid Section B 110 m, 120 m HH	59000	130073	20.7	68'0"	4.3/4.3	14'1"/14'1"
Mid Section B 98.3 m HH	48900	107806	18.9	62'0"	4.3/4.3	14'1"/14'1"
Mid Section C 120 m HH	56600	124782	15.1	49'7"	4.3/4.3	14'1"/14'1"
Mid Section C 110 m HH	58000	127868	15.1	49'6"	4.3/4.3	14'1"/14'1"
Mid Section C 98.3 m HH	51000	110231	15.0	49'3"	4.3/4.3	14'1"/14'1"
Mid Section D 120 m HH	52500	115743	10.0	32'10"	4.3/4.3	14'1"/14'1"
Door Section 120 m HH	63000	138891	12.0	39'4"	4.3/4.3	14'1"/14'1"
Door Section 110 m HH	59000	130073	12.0	39'4"	4.3/4.3	14'1"/14'1"
Door Section 98.3 m HH	55000	121254	12.0	39'4"	4.3/4.3	14'1"/14'1"
Door Section 85 m HH	61790	136223	22.86	75'	4.3/4.3	14'1"/14'1"
Door Section 75 m HH	61000	134482	22.6	74'2"	4.3/4.3	14'1"/14'1"
Door Section 70 m HH	46700	102956	17.4	57'1"	4.3/4.3	14'1"/14'1"
Concrete (all sections) 139 m HH G04 tower	965760	2129136	74.99	246'1"	4.4/7.9	14'6"/25'11"
Concrete (all sections) 139 m HH G02/G03 tower	1157000	2440400	86.4	283'5"	4.4/9.6	14'6"/31'5"

Table 3: Weights and Dimensions of the tower sections

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2.1 Tower Internals Physical Specification



Section	"A" Distance to CG	"B" Shell Ø	"C" Bolt circle Ø	"D" Numbers of holes	"E" Bolt hole Ø	"F" Flange thickness
	(mm)	(mm)	(mm)		(mm)	(mm)
Top Section - Top Flange		3075	2925	60	39	150
Top Section - Bottom Flange	12367	4300	4156	90	39	91
Mid Section A - Top Flange		4300	4156	90	39	91
Mid Section A - Bottom Flange	11887	4300	4150	140	39	91
Door Section- Top Flange		4300	4150	140	39	91
Door Section- Bottom Flange	7684	4300	4088	115	52	120

Table 4: Tower internals physical specification - 70 m hub height

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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		3075	2925	60	39	150
Top Section – Bottom Flange	12367	4300	4156	90	39	91
Mid Section A – Top Flange		4300	4156	90	39	91
Mid Section A – Bottom Flange	11887	4300	4150	140	39	91
Door Section– Top Flange		4300	4150	140	39	91
Door Section– Bottom Flange	10343	4300	4088	115	52	120

Table 5: Tower internals physical specification - 75 m hub height

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		3075	2925	60	39	150
Top Section – Bottom Flange	14307	4300	4156	90	39	91
Mid Section A – Top Flange		4300	4156	90	39	91
Mid Section A – Bottom Flange	12872	4300	4093	110	52	120
Door Section– Top Flange		4300	4093	110	52	120
Door Section– Bottom Flange	10360	4300	4088	115	52	120

Table 6: Tower internals physical specification - 85 m hub height

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		3075	2925	60	39	150
Top Section - Bottom Flange	12367	4300	4156	90	39	91
Mid Section A - Top Flange		4300	4156	90	39	91
Mid Section A - Bottom Flange	11887	4300	4150	140	39	91
Mid Section B - Top Flange		4300	4150	140	39	91
Mid Section B - Bottom Flange	9137	4300	4093	110	52	120
Mid Section C - Top Flange		4300	4093	110	52	120
Mid Section C - Bottom Flange	7371	4300	4100	120	52	120
Door Section- Top Flange		4300	4100	120	52	120
Door Section- Bottom Flange	5693	4300	4096	121	52	120

Table 7: Tower internals physical specification – 98.3 m hub height

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		3075	2925	60	39	150
Top Section – Bottom Flange	14324	4300	4156	90	39	91
Mid Section A – Top Flange		4300	4156	90	39	91
Mid Section A – Bottom Flange	12869	4300	4093	110	52	120
Mid Section B – Top Flange		4300	4093	110	52	120
Mid Section B – Bottom Flange	9968	4300	4093	110	52	120
Mid Section C – Top Flange		4300	4093	110	52	120
Mid Section C – Bottom Flange	7444	4300	4096	121	52	120
Door Section– Top Flange		4300	4096	121	52	120
Door Section– Bottom Flange	8048	4300	4064	106	61	120

Table 8: Tower internals physical specification – 110 m hub height

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		3075	2925	60	39	150
Top Section – Bottom Flange	14324	4300	4156	90	39	91
Mid Section A – Top Flange		4300	4156	90	39	91
Mid Section A – Bottom Flange	12869	4300	4093	110	52	120
Mid Section B – Top Flange		4300	4093	110	52	120
Mid Section B – Bottom Flange	9968	4300	4093	110	52	120
Mid Section C – Top Flange		4300	4093	110	52	120
Mid Section C – Bottom Flange	7310	4300	4093	115	52	120
Mid Section D – Top Flange		4300	4093	115	52	120
Mid Section D – Bottom Flange	4910	4300	4078	121	52	120
Door Section– Top Flange		4300	4078	121	52	120
Door Section– Bottom Flange	5031	4300	4064	106	61	120

Table 9: Tower internals physical specification – 120 m hub height

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		3075	2925	60	39	150
Top Section – Bottom Flange	12367	4300	4156	90	39	91
Mid Section A – Top Flange		4300	4156	90	39	91
Mid Section A – Bottom Flange	11887	4300	4150	140	39	91

Table 10: Tower internals physical specification – 139 m hub height

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3 Hub and Nose Cone Assembly

This section gives the weights and dimensions of the hub and excludes the nose cone and 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)
27500	60627	3.5	11'6"	3.8	12'6"	3.3	10'10"

Table 11: Weight and dimensions for the 2.5-120/2.75-120 configurations only

Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
30500	67240	3.5	11'6"	3.8	12'6"	3.3	10'10"

Table 12: Weight and dimensions for the 3.2-103 configuration only

Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
25000	55116	3.5	11'6"	3.8	12'6"	3.3	10'10"

Table 13: Weight and dimensions of the hub for all other configurations

This section gives the weights and dimensions of the nose cone.

Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
800	1764	2.9	9'6"	2.9	9'6"	1.8	5'11"

Table 14: Weight and dimensions of the nose cone

4 Blades

This section gives the weight of a single blade 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)
100 m	8925	19676	48.7	159'9"	3.6	11'10"	1.1	3'7"	2.4	7'11"
103 m	9300	20503	50.2	164'8"	3.6	11'10"	1.1	3'7"	2.4	7'11"
120 m	13268	29251	58.7	192'7"	4.0	13'1"	1.1	3'7"	2.4	7'11"

Table 15: Weight and dimensions of a single blade

5 Nacelle

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

Turbine	Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
all other turbines	83000	182984	9.5	31'2"	4.0	13'2"	3.8	12'6"

Table 16: Weight and dimensions of the nacelle

6 Downtower Assembly Components

This section gives the weights and dimensions of the downtower assembly components. The data given is applicable to all hub heights listed in this document except for 139 m hub height.

Component	Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
Transformer level	11000	24251	2.6	8'6"	2.4	7'10"	3.0	9'10"
Controller level	4300	9479	3.1	10'2"	3.0	9'10"	3.2	10'6"
Converter level	3200 ¹	7055	2.7	8'10"	1.0	3'3"	2.3 ²	7'7"

Table 17: Weight and dimensions of the downtower assembly components for all except 139 m hub height

¹ Converter weight does not include fans or plenums. This adds an additional 295 kg (650 lbs).

² Converter level height does not include the fans and plenums. This adds an additional 0.8 m (2'8").

This section gives the weights and dimensions of the downtower assembly components. The data given is applicable only for 139 m hub height.

Component	Weight (kg)	Weight (lbs)	Width (mm)	Width (ft)	Depth (mm)	Depth (ft)	Height (mm)	Height (ft)
Converter	2950 ¹	6500	2700	8'1"	1000	3'3"	2400	7'1"
MVSG and Stator Switch	1790	3949	2800	9'2"	1000	3'3"	2400	7'1"
MCC and LVDP	645	1423	1695	5'7"	595	1'11"	2100	6'1"
Auxiliary Transformer	1095	3416	810	2'8"	310	1'0"	1500	4'1"
Transformer	8500	18754	2600	8'6"	860	2'1"	2350	7'9"

Table 18: Weights and dimensions of the down tower components for 139 m hub height only

7 Anchor Ring (for 50 Hz Turbines Only)

7.1 For 70 m, 75 m and 85 m Hub Height

This section gives the weights and dimensions of the anchor ring.

Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
3069	6766	4.823	15'10"	4.823	15'10"	0.055	0'2"

Table 19: Weight and dimensions of the anchor ring for 75 m and 85 m hub height (50 Hz turbines only)

7.2 For 98.3 m Hub Height

This section gives the weights and dimensions of the anchor ring.

Gewicht (kg)	Gewicht (lbs)	Länge (m)	Länge (ft)	Breite (m)	Breite (ft)	Höhe (m)	Höhe (ft)
3684	8122	4.842	15'11"	4.842	15'11"	0.065	0'3"

Table 20: Weight and dimensions of the anchor ring for 98.3 m hub height (50 Hz turbines only)

8 Tower Base Ring

8.1 For 70 m, 75 m and 85 m Hub Height

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)
9827	21665	4.3/4.8	14'1"/15'9"	4.3/4.8	14'1"/15'9"	1.0	3'3"

Table 21: Weight and dimensions of the tower base ring for 75 and 85 m hub height

8.2 For 98.3 m Hub Height

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)
12700	27999	4.3/4.8	14'1"/15'9"	4.3/4.8	14'1"/15'9"	1.0	3'3"

Table 22: Weight and dimensions of the tower base ring for 98.3 m hub height

8.3 For 110 m and 120 m Hub Height

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)
11425	25190	4.3/4.8	14'1"/15'9"	4.3/4.8	14'1"/15'9"	1.0	3'3"

Table 23: Weight and dimensions of the tower base ring for 110 m and 120 m hub height for 50 Hz turbines only

8.4 For the Hybrid Tower with 139 m Hub Height

The 139 m tower is a hybrid tower consisting of a concrete part at the bottom that will be constructed using prefabricated parts at the site with two tubular steel tower sections on top. This configuration has no tower base ring.

8.5 For the Space Frame Tower (SFT) with 135/139 m hub height

The tower is a five-leg encased structural steel framework. The design can be circular ring, flat or pile foundation. Every arm leads to a base plate, which is attached to the reinforced concrete foundation with 16 anchor bolts. This configuration has no tower base ring.

9 Single Components

This section gives the weights and dimensions of the major components that are located in the nacelle.

Component	Weight (kg)	Weight (lbs)	Length (m)	Length (ft)	Width (m)	Width (ft)	Height (m)	Height (ft)
Gear box	Max 24000	51809	3.5	11'6"	2.6	8'6"	2.5	8'2"
Generator	11000	24251	3.3	10'10"	1.6	5'3"	2.1	6'11"

Table 24: Weights and dimensions for single components within the nacelle