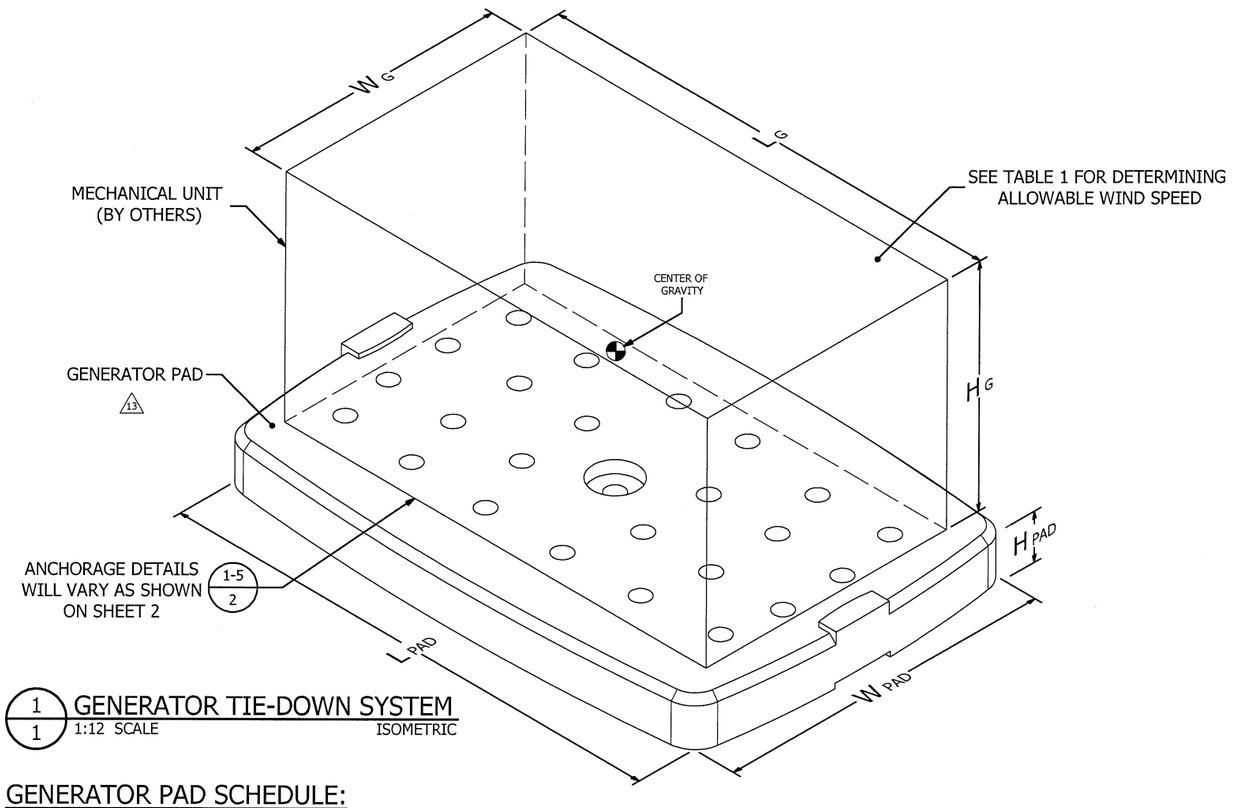
MAINSTREAM ENGINEERING CORP.

QWIKHURRICANE™ GENERATOR PAD

GENERATOR TIE-DOWN SYSTEM FOR HIGH-VELOCITY HURRICANE-ZONE (HVHZ)



1/1 GENERATOR TIE-DOWN SYSTEM
1:12 SCALE ISOMETRIC

GENERATOR PAD SCHEDULE:

QWIKHURRICANE™ GENERATOR PAD							GENERATOR						
PART NO.	INSTALLED PAD WEIGHT	L_{PAD}	W_{PAD}	H_{PAD}	RATED WIND SPEED	ULTIMATE PRESSURE	MAKE	NOMINAL RATING	SEE DESIGN NOTE 6 MODEL NO.	L_G	W_G	H_G	MIN. WEIGHT
-	*LB*	*IN*	*IN*	*IN*	*MPH*	*PSF*	-	-	-	*IN*	*IN*	*IN*	*LB*
QT8200	330	56	38	5	180	66.2	(UNIVERSAL)	-	ALL LISTED MAKES/MODELS	SEE DESIGN NOTE 6			
QT8210	330	56	38	5	180	66.2	BRIGGS & STRATTON	17 kW	040459	47	31	31	484
								20 kW	040336, 040547				500
QT8220	330	56	38	5	180	66.2		20 kW	040574, 040592, 040573	49.2	31.7	30.6	443
QT8230	330	56	38	5	180	66.2	GENERAC	9 kW	G007029, G007030	48	25.1	28.6	340
								11 k W	G007031, G007032, G007033				348
								16 kW	G007035, G007036, G007037				409
								20 kW	G007038, G007039				448
								22 kW	G007042, G007043				466
QT8230	330	56	38	5	180	66.2	HONEYWELL	16 kW	G007059	48	25.1	28.6	409
								20 kW	G007062				448
								22 kW	G007065				466
QT8240	330	56	38	5	180	66.2	KOHLER	14 kW	14RESA	48	26.2	29	420
								14 kW	14RESAL				467
								20 kW	20RESA, 20RESC				535
								20 kW	20RESAL, 20 RESCL				580

DESIGN NOTES:

1. THIS PRODUCT HAS BEEN DESIGNED IN ACCORDANCE WITH ASCE 7-10 AND THE FLORIDA BUILDING CODE - SIXTH EDITION (2017) FOR USE WITHIN AND OUTSIDE THE HIGH-VELOCITY HURRICANE ZONE (HVHZ).
2. DESIGN CONSIDERS ASCE 7-10 SECTION 29.5 DESIGN WIND LOADS - OTHER STRUCTURES. ALL OTHER DESIGN VARIABLES AND LOADING FACTORS ARE IN ACCORDANCE WITH ASCE 7-10 CHAPTERS 26 & 29 FOR EXPOSURE CATEGORY C.
3. PRODUCTS DETAILED HEREIN ARE INCLUDED WITH QWIKHURRICANE™ PAD (SERIES QT82XX) HIGH-VELOCITY HURRICANE ZONE GENERATOR MOUNTING PADS, UNLESS OTHERWISE SPECIFIED. APPROPRIATE PAD MODEL ASSUMED TO BE DETERMINED BY CONTRACTOR/ INSTALLER BASED ON GENERATOR MAKE/MODEL.
4. THIS INSTALLATION SPECIFICATION IS FOR INSTALLATION OF THE GIVEN GENERATOR MODELS ATOP ANY QWIKHURRICANE™ GENERATOR PAD (SERIES QT82XX), WITH THE PAD LEVELED AND LOCATED AT GRADE LEVEL ON COMPACTED GROUND OR ATOP EXISTING CONCRETE SLAB.
5. INSTALLATIONS ATOP EXISTING CONCRETE SLAB WHERE V_{ULT} WIND SPEEDS EXCEED DESIGN CHECK IN TABLE 2 REQUIRE (1) ANCHOR INSTALLED WITH S.S. FENDER WASHER THROUGH CENTER HOLE TO PREVENT SLIDING.
6. MODEL NUMBER LIST IN GENERATOR PAD SCHEDULE MAY NOT BE ALL INCLUSIVE. MODEL NUMBER VARIANTS MAY EXIST, OR MAY BE ADDED TO PRODUCT LINES, WHICH MEET WIND LOAD RATINGS. GENERATOR MODELS OTHER THAN THOSE LISTED HAVING EQUIVALENT, OR SMALLER, EXTERIOR DIMENSIONS (L_G, W_G, H_G), MATCHING ANCHORAGE PATTERNS, AND WEIGHT GREATER THAN OR EQUAL TO THOSE LISTED SHALL BE CONSIDERED TO MEET GIVEN V_{ULT} WIND SPEEDS. OTHERWISE, UNITS MUST BE CONSIDERED ON A CASE-BY-CASE BASIS.
7. GENERATOR MOUNT BOLTS TO BE INSTALLED INTO MAKE/MODEL SPECIFIC ACHORAGE POINTS PER THE DEPICTED CONFIGURATION VIEWS. PROPER BOLT LENGTH ASSUMED TO BE DETERMINED BY CONTRACTOR/INSTALLER BASED ON GENERATOR MAKE/MODEL AND MINIMUM THREAD ENGAGEMENT SPECIFIED HEREIN.
8. DESIGN IS BASED ON INSPECTED PRODUCTS AND MANUFACTURING DRAWINGS PRODUCED BY MAINSTREAM ENGINEERING CORP. NO SUBSTITUTIONS WITHOUT WRITTEN APPROVAL BY THIS ENGINEER SHALL BE PERMITTED.

△9 BOLTS SHALL BE 18-8 STAINLESS STEEL PER ASTM F593 IN ACCORDANCE WITH ANSI B18.2.1 WITH UNC CLASS 2A THREADS (PER ASME B1.1).

△10 WASHERS SHALL BE 18-8 STAINLESS STEEL.

△11 THREADED INSERTS SHALL BE BRASS PER ASTM B16 WITH UNC CLASS 2B THREADS (PER ASME B1.1) AND SHALL HAVE A PULL-OUT STRENGTH GREATER THAN 250 LB.

△12 GENERATOR PAD SHALL BE LOW-DENSITY POLYETHYLENE (LDPE) WITH YIELD STRENGTH = 1.675 KSI OR BETTER PER ASTM D638 AND NOMINAL WALL THICKNESS = .220 (.1875 MIN.).

△13 GENERATOR PAD SHALL BE FILLED WITH WATER AT INSTALLATION SITE TO ACHIEVE INSTALLED WEIGHTS GIVEN IN THE GENERATOR PAD SCHEDULE. WEIGHT OF FILLED PAD IS 330 LB.

GENERAL NOTES:

1. NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM.
2. CENTER OF GRAVITY ASSUMED TO ACT AT GEOMETRIC CENTER OF UNIT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO INSULATE ALL MEMBERS FROM DISSIMILAR METALS TO PREVENT ELECTROLYSIS.
4. ELECTRICAL GROUND, WHEN REQUIRED, SHALL BE DESIGNED AND INSTALLED BY OTHERS.
5. THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. FOR SITE CONDITIONS DIFFERENT FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER SHALL PREPARE SITE SPECIFIC DOCUMENTS IN CONJUNCTION WITH THIS DOCUMENT.
6. FOR AN EXPLANATION OF RISK AND EXPOSURE CATEGORIES THAT ACCOMPANY THE V_{ULT} WIND SPEEDS USED IN THIS APPROVAL, SEE SECTIONS 1.5.1 AND 26.7.3, RESPECTIVELY, OF ASCE 7-10. V_{ULT} WIND SPEEDS FOR RISK CATEGORY II DETERMINED BY FIGURE 26.5-1A OF ASCE 7-10.
7. GENERATOR WEIGHTS AND DIMENSIONS PER MANUFACTURER DOCUMENTATION, TO BE VERIFIED BY OTHERS.
8. ALL DIMENSIONS SHOWN ARE REFERENCE AND IN INCHES, UNLESS OTHERWISE SPECIFIED.

DR. ROBERT P. SCARINGE, P.E.
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ROBERT P. SCARINGE LICENSE No. 31527 STATE OF FLORIDA PROFESSIONAL ENGINEER
5/13/2019

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QWIKHURRICANE™ GENERATOR PAD
GENERATOR TIE-DOWN SYSTEM FOR HVHZ

FBC 6TH EDITION (2017) PRODUCT APPROVAL

FL# 27646.1

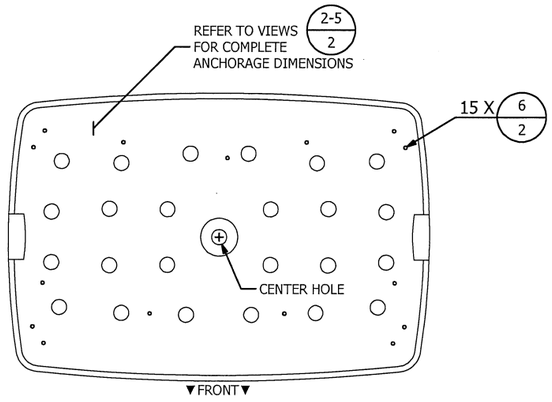
REV	REMARKS	DRWN	CHKD	DATE
A	INITIAL RELEASE	A. CARPENTER	R. SCARINGE	8/13/2018

QT82XX

DWG NO. 5010794 | REV A

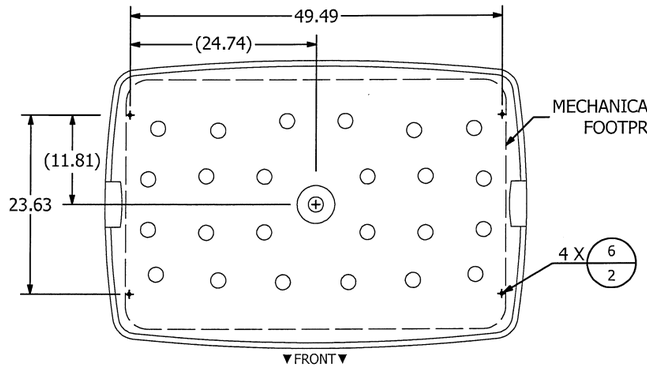
SHEET 1 OF 3

ANCHORAGE DETAILS FOR QT82XX SERIES GENERATOR PADS:



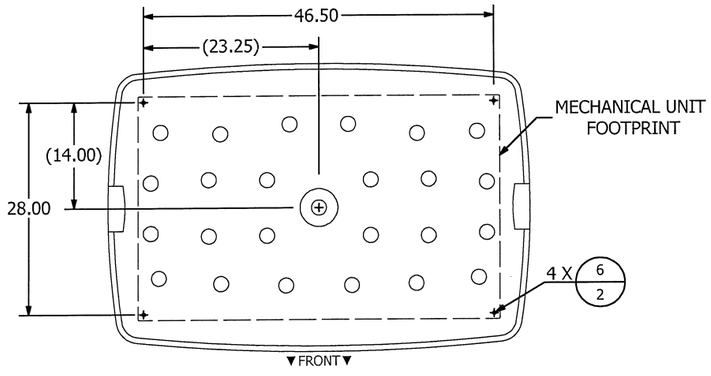
(UNIVERSAL CONFIGURATION)

1/2 QT8200 ANCHORAGE
1:20 SCALE TOP VIEW



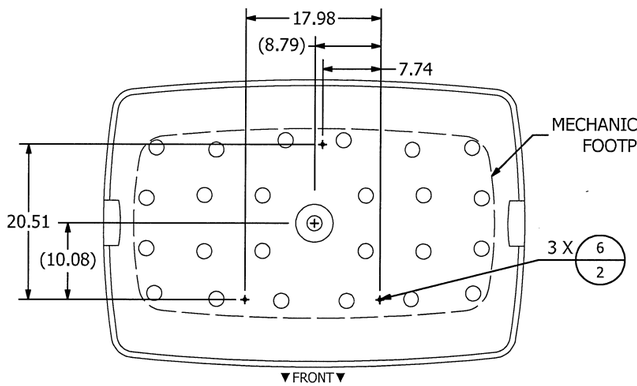
(BRIGGS & STRATTON - STEEL ENCLOSURE CONFIGURATION)

2/2 QT8210 ANCHORAGE
1:20 SCALE TOP VIEW



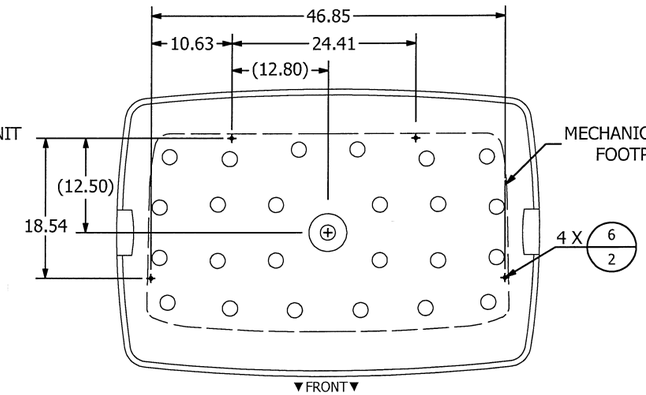
(BRIGGS & STRATTON - ALUMINUM ENCLOSURE CONFIGURATION)

3/2 QT8220 ANCHORAGE
1:20 SCALE TOP VIEW



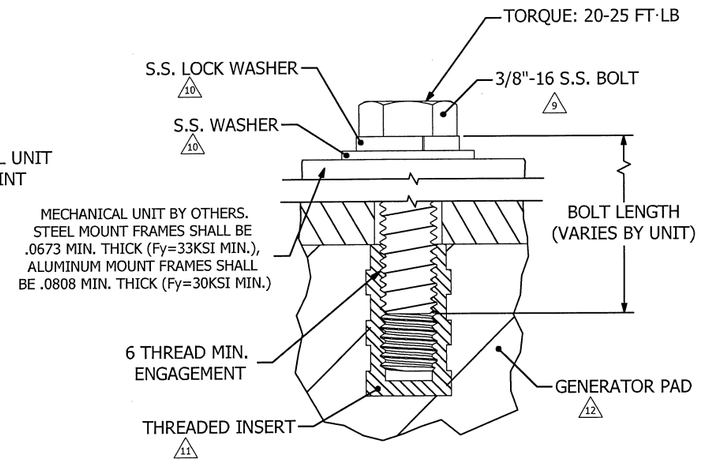
(GENERAC/HONEYWELL CONFIGURATION)

4/2 QT8230 ANCHORAGE
1:20 SCALE TOP VIEW



(KOHLER CONFIGURATION)

5/2 QT8240 ANCHORAGE
1:20 SCALE TOP VIEW



6/2 ANCHOR DETAIL
1:1 SCALE SECTION VIEW

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QT82XX

DWG NO. 5010794 **REV** A

WIND LOAD CALCULATIONS FOR QT82XX SERIES GENERATOR PADS:

APPROPRIATE PAD MODEL DETERMINED USING PAD SCHEDULE ON SHEET 1

TABLE 1. WIND LOAD OVERTURN DESIGN CHECK FOR VULT = 180 MPH (EXPOSURE 'C') FOR QT82XX SERIES GENERATOR PADS FOR USE WITH RISK CATEGORY II STRUCTURE IN THE HVHZ.

GENERATOR							V_{ULT} = 180 MPH WIND SPEED (66.2 PSF ULTIMATE WIND PRESSURE)							
MAKE	NOMINAL RATING	MODEL NO.	DIMENSIONS L_G	W_G	H_G	WEIGHT	.6XDEAD LOAD (UNIT + PAD)	DEAD LOAD MOMENT	$F_{WIND, PAD}$	$F_{WIND, UNIT}$	$F_{WIND, TOT}$	.6 X WIND MOMENT	SF OVERTURN	DESIGN CHECK
-	-	-	*IN*	*IN*	*IN*	*LB*	*LB*	*FT-LB*	*LB*	*LB*	*LB*	*FT-LB*	-	-
BRIGGS & STRATTON	17 kW	040459	47	31	31	484	488.4	773.3	128.8	670.0	798.8	702.9	1.100	OK FOR 180 MPH
	20 kW	040336, 040547	47	31	31	500	498.0	788.5	128.8	670.0	798.8	702.9	1.122	OK FOR 180 MPH
	20 kW	040573, 040574, 040592	49.2	31.7	30.6	443	463.8	734.4	128.8	692.3	821.1	718.8	1.022	OK FOR 180 MPH
GENERAC	9 kW	G007029, G007030	48	25.1	28.6	340	402.0	636.5	128.8	631.3	760.1	625.3	1.018	OK FOR 180 MPH
	11 k W	G007031, G007032, G007033	48	25.1	28.6	348	406.8	644.1	128.8	631.3	760.1	625.3	1.030	OK FOR 180 MPH
	16 kW	G007035, G007036, G007037	48	25.1	28.6	409	443.4	702.1	128.8	631.3	760.1	625.3	1.123	OK FOR 180 MPH
	20 kW	G007038, G007039	48	25.1	28.6	448	466.8	739.1	128.8	631.3	760.1	625.3	1.182	OK FOR 180 MPH
	22 kW	G007042, G007043	48	25.1	28.6	466	477.6	756.2	128.8	631.3	760.1	625.3	1.209	OK FOR 180 MPH
HONEYWELL	16 kW	G007059	48	25.1	28.6	409	443.4	702.1	128.8	631.3	760.1	625.3	1.123	OK FOR 180 MPH
	20 kW	G007062	48	25.1	28.6	448	466.8	739.1	128.8	631.3	760.1	625.3	1.182	OK FOR 180 MPH
	22 kW	G007065	48	25.1	28.6	466	477.6	756.2	128.8	631.3	760.1	625.3	1.209	OK FOR 180 MPH
KOHLER	14 kW	14RESA	48	26.2	29	420	450.0	712.5	128.8	640.1	768.9	640.2	1.113	OK FOR 180 MPH
	14 kW	14RESAL	48	26.2	29	467	478.2	757.2	128.8	640.1	768.9	640.2	1.183	OK FOR 180 MPH
	20 kW	20RESA, 20RESC	48	26.2	29	535	519.0	821.8	128.8	640.1	768.9	640.2	1.284	OK FOR 180 MPH
	20 kW	20RESAL, 20 RESCL	48	26.2	29	580	546.0	864.5	128.8	640.1	768.9	640.2	1.350	OK FOR 180 MPH

TABLE 2. WIND LOAD SLIDING DESIGN CHECK FOR QT82XX SERIES GENERATOR PADS INSTALLED **ATOP EXISTING CONCRETE SLAB** FOR USE WITH RISK CATEGORY II STRUCTURE (EXPOSURE 'C') IN THE HVHZ.

GENERATOR							NORMAL FORCE	STATIC FRICTION (μ_s = 0.6)	$F_{WIND, PAD}$	$F_{WIND, UNIT}$	$F_{WIND, TOT}$	ULTIMATE PRESSURE	WIND SPEED	DESIGN CHECK (NO ANCHORS)	DESIGN CHECK (1 ANCHOR) †
MAKE	NOMINAL RATING	MODEL NO.	DIMENSIONS L_G	W_G	H_G	WEIGHT									
-	-	-	*IN*	*IN*	*IN*	*LB*	*LB*	*LB*	*LB*	*LB*	*LB*	*PSF*	*MPH*	-	-
BRIGGS & STRATTON	17 kW	040459	47	31	31	484	814.0	488.4	78.7	409.7	488.4	40.49	140.75	UP TO 140 MPH	OKAY FOR 180 MPH
	20 kW	040336, 040547	47	31	31	500	830.0	498.0	80.3	417.7	498.0	41.28	142.13	UP TO 142 MPH	OKAY FOR 180 MPH
	20 kW	040573, 040574, 040592	49.2	31.7	30.6	443	773.0	463.8	72.7	391.1	463.8	37.40	135.28	UP TO 135 MPH	OKAY FOR 180 MPH
GENERAC	9 kW	G007029, G007030	48	25.1	28.6	340	670.0	402.0	68.1	333.9	402.0	35.02	130.91	UP TO 130 MPH	OKAY FOR 180 MPH
	11 k W	G007031, G007032, G007033	48	25.1	28.6	348	678.0	406.8	68.9	337.9	406.8	35.44	131.69	UP TO 131 MPH	OKAY FOR 180 MPH
	16 kW	G007035, G007036, G007037	48	25.1	28.6	409	739.0	443.4	75.1	368.3	443.4	38.63	137.48	UP TO 137 MPH	OKAY FOR 180 MPH
	20 kW	G007038, G007039	48	25.1	28.6	448	778.0	466.8	79.1	387.7	466.8	40.67	141.06	UP TO 141 MPH	OKAY FOR 180 MPH
	22 kW	G007042, G007043	48	25.1	28.6	466	796.0	477.6	80.9	396.7	477.6	41.61	142.69	UP TO 142 MPH	OKAY FOR 180 MPH
HONEYWELL	16 kW	G007059	48	25.1	28.6	409	739.0	443.4	75.1	368.3	443.4	38.63	137.48	UP TO 137 MPH	OKAY FOR 180 MPH
	20 kW	G007062	48	25.1	28.6	448	778.0	466.8	79.1	387.7	466.8	40.67	141.06	UP TO 141 MPH	OKAY FOR 180 MPH
	22 kW	G007065	48	25.1	28.6	466	796.0	477.6	80.9	396.7	477.6	41.61	142.69	UP TO 142 MPH	OKAY FOR 180 MPH
KOHLER	14 kW	14RESA	48	26.2	29	420	750.0	450.0	75.4	374.6	450.0	38.76	137.70	UP TO 137 MPH	OKAY FOR 180 MPH
	14 kW	14RESAL	48	26.2	29	467	797.0	478.2	80.1	398.1	478.2	41.18	141.95	UP TO 141 MPH	OKAY FOR 180 MPH
	20 kW	20RESA, 20RESC	48	26.2	29	535	865.0	519.0	86.9	432.1	519.0	44.70	147.89	UP TO 147 MPH	OKAY FOR 180 MPH
	20 kW	20RESAL, 20 RESCL	48	26.2	29	580	910.0	546.0	91.4	454.6	546.0	47.02	151.68	UP TO 151 MPH	OKAY FOR 180 MPH

† (1) Ø1/4" X 5" ITW TAPCON CONCRETE SCREW (1.25" MIN. EMBEDMENT IN 3000 PSI MIN. CONCRETE AT 3.0" MIN. EDGE DISTANCE) INSTALLED WITH S.S. FENDER WASHER (13 GA MIN.) FOR VULT WIND SPEEDS ABOVE THE 'DESIGN CHECK (NO ANCHORS)' WIND SPEED REQUIRED TO PREVENT SLIDING ON CONCRETE FOR VULT WIND SPEEDS UP TO 180 MPH.

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