

1

2

3

4

5

6

DO NOT SCALE DRAWING

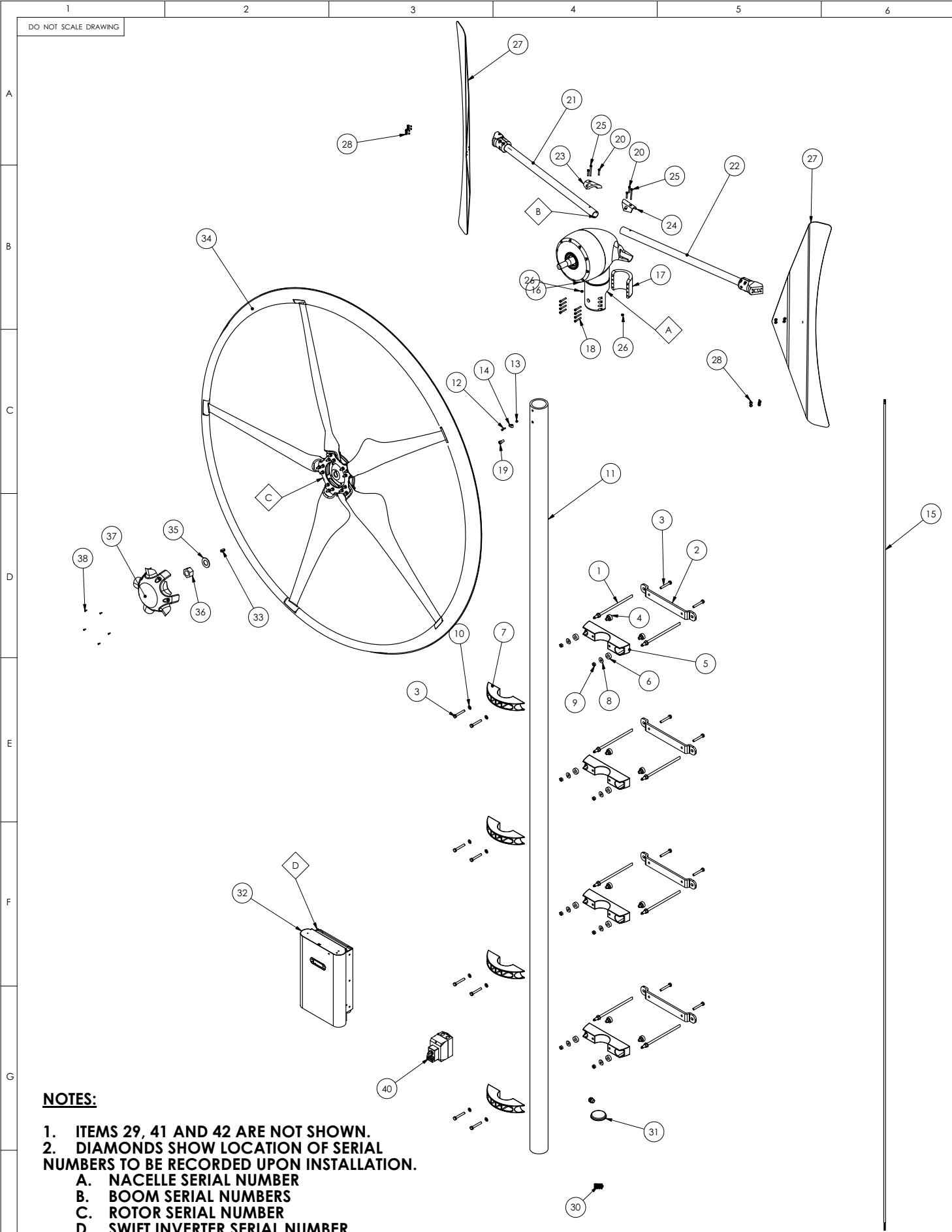
A

SWIFT ROOFTOP WIND TURBINE PACKING LIST					
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	PACKAGING DIMENSIONS	SHIPPING WEIGHT
1	P02-150	MOUNTING SYSTEM ASSEMBLY	1	440mm x 220mm x 170mm + 5m x 100mm Dia	18Kg + 35kg MAST
2	P02 -110-120-130	PMG AND NACELLE ASSEMBLY	1	570x420x500mm	37Kg
3	P02-140	FURLING SYSTEM	1	1380x330x120mm	7Kg
4	P02-160	SWIFT INVERTER	1	560x400x230mm	13Kg
5	P02-100	ROTOR ASSEMBLY	1	2100mm DIA	16Kg
6	P02 - 200	BOLTS AND BITS BOX	1	450x180x300mm	5Kg

B

INSTALLATION PARTS LIST - SEE PAGE TWO FOR EXPLODED DIAGRAM							
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	PARTS LIST	TOOLS REQUIRED	TORQUE	THREADLOCK
1	3050001	STUD, M12X300 + A4 S/S WASHER AND NUT	8	NOT SUPPLIED	FISCHER RESIN KIT	40Nm	
2	1500004	BRACKET, SPACER, 30 OFFSET	4	P02-150			
3	3040008	BOLT HEX HEAD, M10X70, S/S	16	P02-150	17MM SOCKET	40Nm	LOCTITE 243
4	1500005	BUSH RUBBER	8	P02-150			
5	1500003	LOWER MOUNTING BRACKET	4	P02-150			
6	1500005b	BUSH, RUBBER	8	P02-150			
7	1500002	UPPER MOUNTING BRACKET	4	P02-150			
8	3040011	WASHER, M10 X 30X 2.5, S/S	8	P02-150			
9	3040010	NUT, M10, STAYTITE, PLATED	8	P02-150	17MM SOCKET	40Nm	
10	3040009	WASHER, M10X21X2.0, S/S	8	P02-150			
11	1500001	MAST 5M M/C	1	P02-150			
12	3010002	CAPSCREW M5X20, S/S	1	P02-200	4MM HEX KEY SOCKET	5Nm	
13	3010006	FLANGE NUT, M5, PLATED	1	P02-200	7MM SOCKET	5Nm	
14	1500013	CABLE CLAMP	1	P02-200			
15	1500014	MAST CABLE	1	P02-200			
16	1100002	NACELLE ASSEMBLY	1	P02-110/120/130			
17	1100004	YAW POST CLAMP, CAST AND M/C	1				
18	3020008	CAPSCREW M6X40, S/S	8	P02-110/120/130	5MM HEX KEY SOCKET	10Nm	LOCTITE 243
19	3040001	CAPSCREW M10X20, S/S	1	P02-200	8MM HEX KEY SOCKET	40Nm	LOCTITE 243
20	3020006	CAPSCREW M6X30, S/S	4	P02-110/120/130	5MM HEX KEY SOCKET	10Nm	LOCTITE 243
21	P02-140-02	BOOM, FURL SIDE	1	P02-140			
22	P02-140-03	BOOM, NON FURL SIDE	1	P02-140			
23	1100010	BOOM CLAMP, LH, CAST AND M/C	1	P02-110/120/130			
24	1100009	BOOM CLAMP, RH, CAST AND M/C	1	P02-110/120/130			
25	3020018	CAPSCREW M6X60, S/S	2	P02-110/120/130	5MM HEX KEY SOCKET	10Nm	LOCTITE 243
26	3020003	FLANGE NUT, M6, STAYTITE, PLATED	2	P02-110/120/130	10MM SOCKET	10Nm	
27	1400007	FIN, BENT	2	P02-140			
28	3020005	BOLT, HHF, M6X16, S/S	8	P02-200	10MM SOCKET	10Nm	LOCTITE 243
29	1500007	CABLE GLAND CW	1	P02-200			
30	1500016	CONNECTOR BLOCK, MAST	1	P02-200			
31	1500006	END CAP, PLASTIC	1	P02-200			
32	1600001	SWIFT INVERTER	1	P02-160			
33	1300015	KEY STEEL, 12X8, S/S	1	P02-200			
34	1000020	ROTOR ASSEMBLY	1	P02-100			
35	3060002	WASHER, M30, S/S	1	P02-200			
36	3060001	NUT, M30, STAYTITE, PLATED	1	P02-200	43MM SOCKET	250Nm	
37	1000007	MOULDING, NOSE CONE, 2 PART	1	P02-200			
38	3000001	CAPSCREW, BUTTON HEAD, M4X12, S/S	5	P02-200	2.5MM HEX KEY SOCKET	5Nm	LOCTITE 243
40	1600005	DC ISOLATOR	1	P02-200			
41	1600006	DUAL SUPPLY STICKER PORTRAIT	1	P02-200			
42	1600007	DUAL SUPPLY STICKER LANDSCAPE	1	P02-200			
43	3020020	CAPSCREW, M6X180, S/S	1				

<

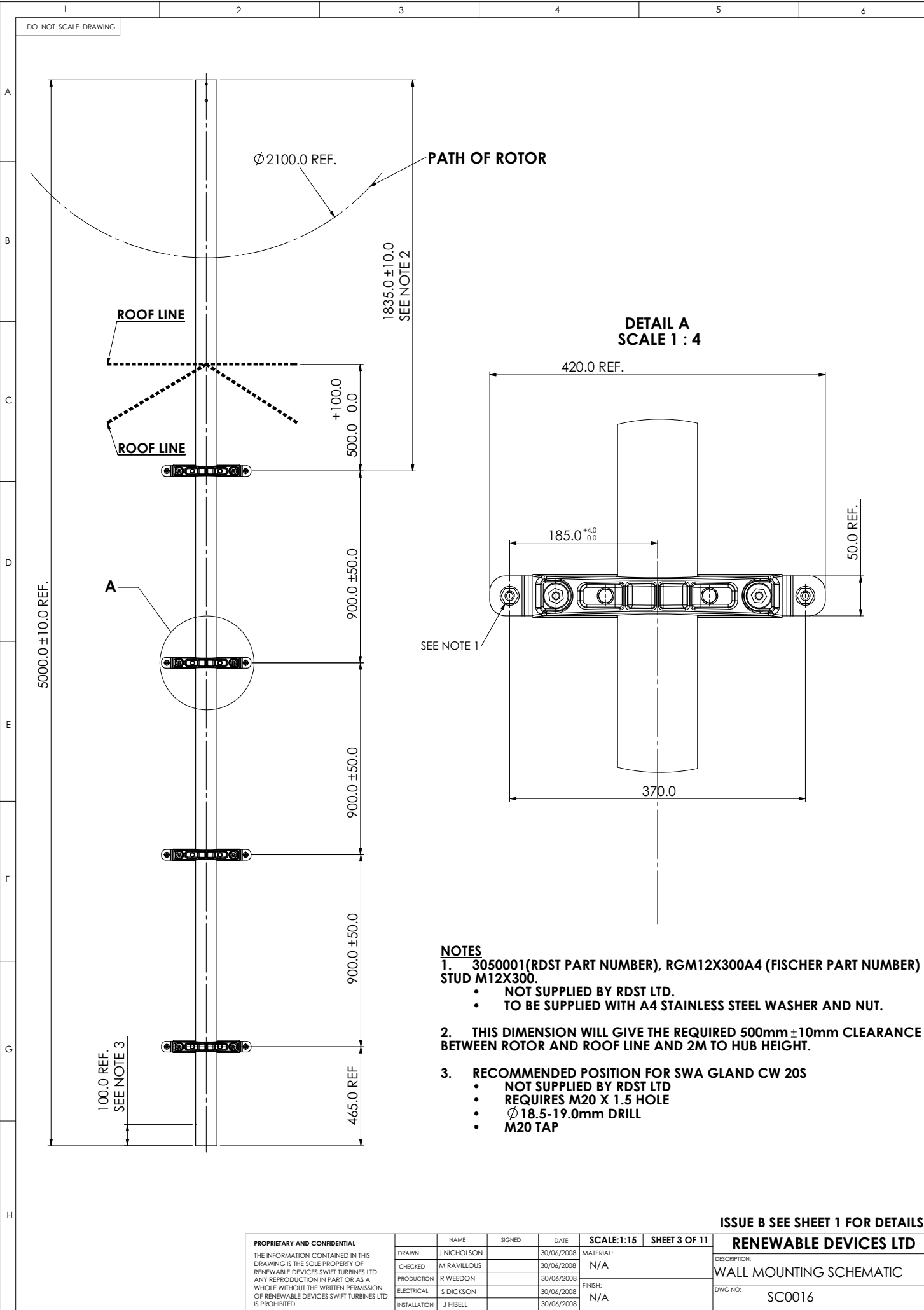


**NOTES:**

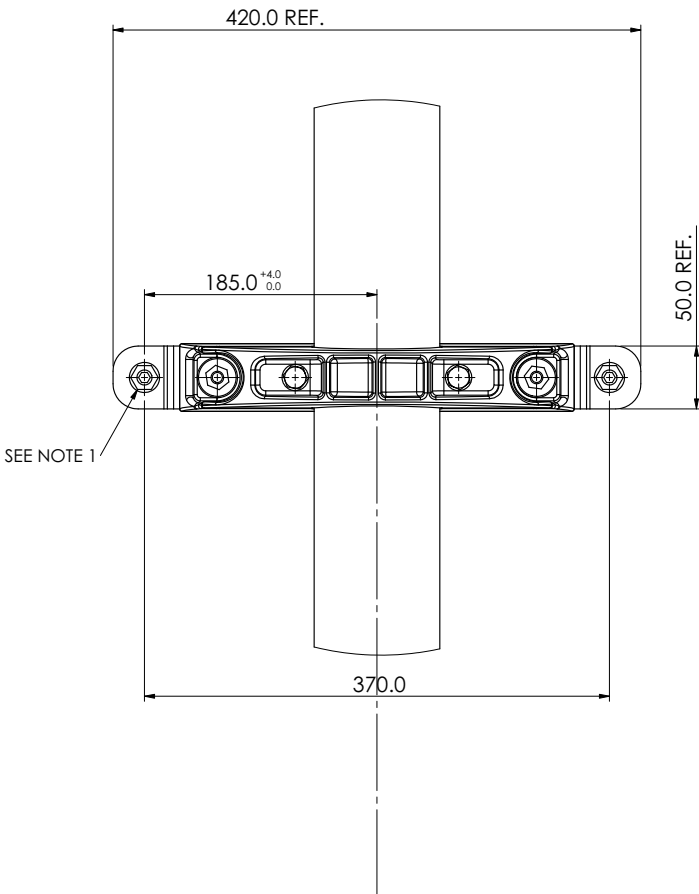
- 1. ITEMS 29, 41 AND 42 ARE NOT SHOWN.
- 2. DIAMONDS SHOW LOCATION OF SERIAL NUMBERS TO BE RECORDED UPON INSTALLATION.
- A. NACELLE SERIAL NUMBER
- B. BOOM SERIAL NUMBERS
- C. ROTOR SERIAL NUMBER
- D. SWIFT INVERTER SERIAL NUMBER

ISSUE B SEE SHEET 1 FOR DETAILS

PROPRIETARY AND CONFIDENTIAL		NAME	SIGNED	DATE	SCALE:1:18	SHEET 2 OF 11	RENEWABLE DEVICES LTD	
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RENEWABLE DEVICES SWIFT TURBINES LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RENEWABLE DEVICES SWIFT TURBINES LTD IS PROHIBITED.		DRAWN	J NICHOLSON	30/06/2008	MATERIAL: N/A		DESCRIPTION:	SYSTEM OVERVIEW
		CHECKED	M RAVILLOUS	30/06/2008				
		PRODUCTION	R WEEDON	30/06/2008	FINISH: N/A		DWG NO:	SC0016
		ELECTRICAL	S DICKSON	30/06/2008				
		INSTALLATION	J HIBELL	30/06/2008				



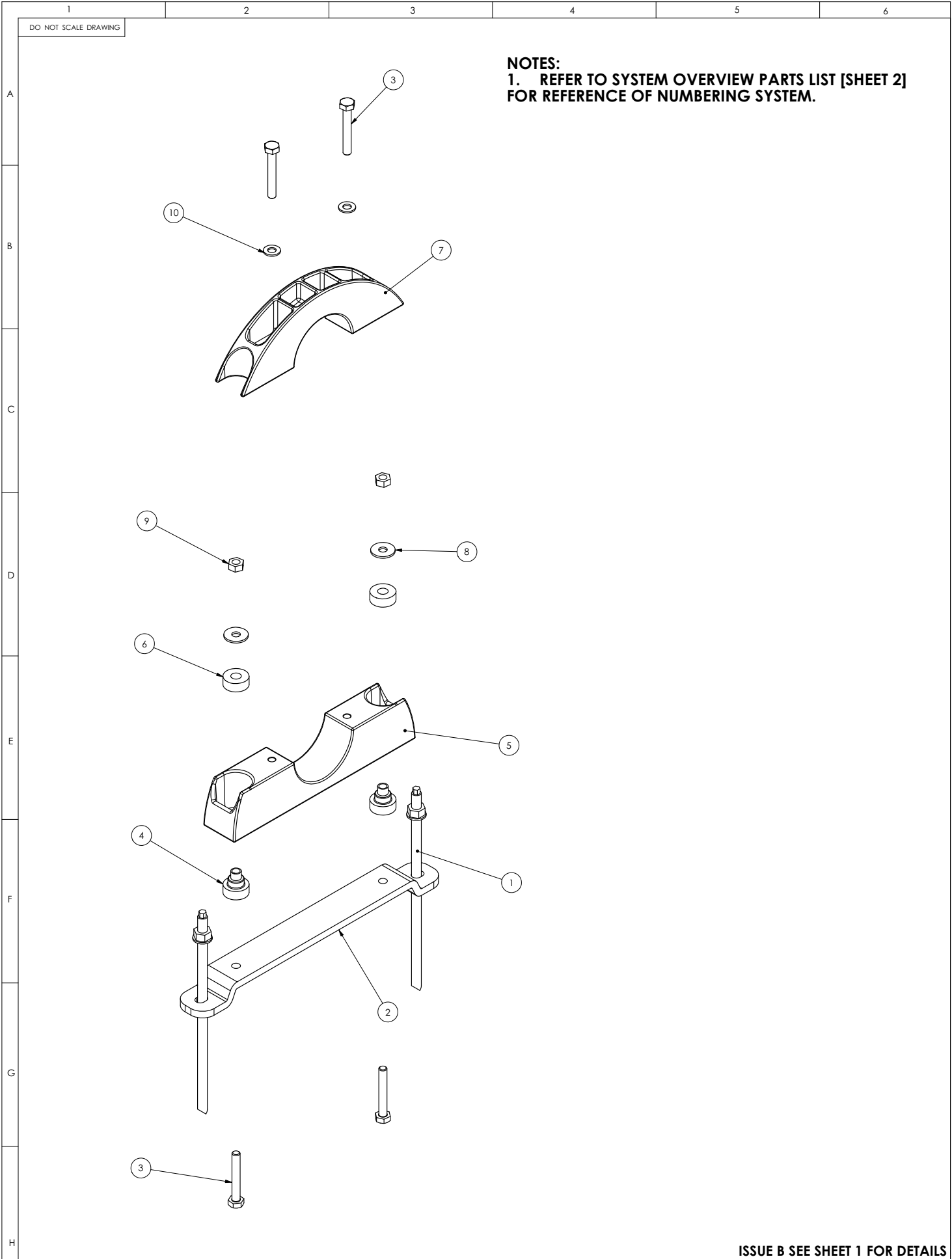
DETAIL A  
SCALE 1 : 4



- NOTES**
1. 3050001(RDST PART NUMBER), RGM12X300A4 (FISCHER PART NUMBER) STUD M12X300.
- NOT SUPPLIED BY RDST LTD.
  - TO BE SUPPLIED WITH A4 STAINLESS STEEL WASHER AND NUT.
2. THIS DIMENSION WILL GIVE THE REQUIRED 500mm ± 10mm CLEARANCE BETWEEN ROTOR AND ROOF LINE AND 2M TO HUB HEIGHT.
3. RECOMMENDED POSITION FOR SWA GLAND CW 20S
- NOT SUPPLIED BY RDST LTD
  - REQUIRES M20 X 1.5 HOLE
  - Ø 18.5-19.0mm DRILL
  - M20 TAP

ISSUE B SEE SHEET 1 FOR DETAILS

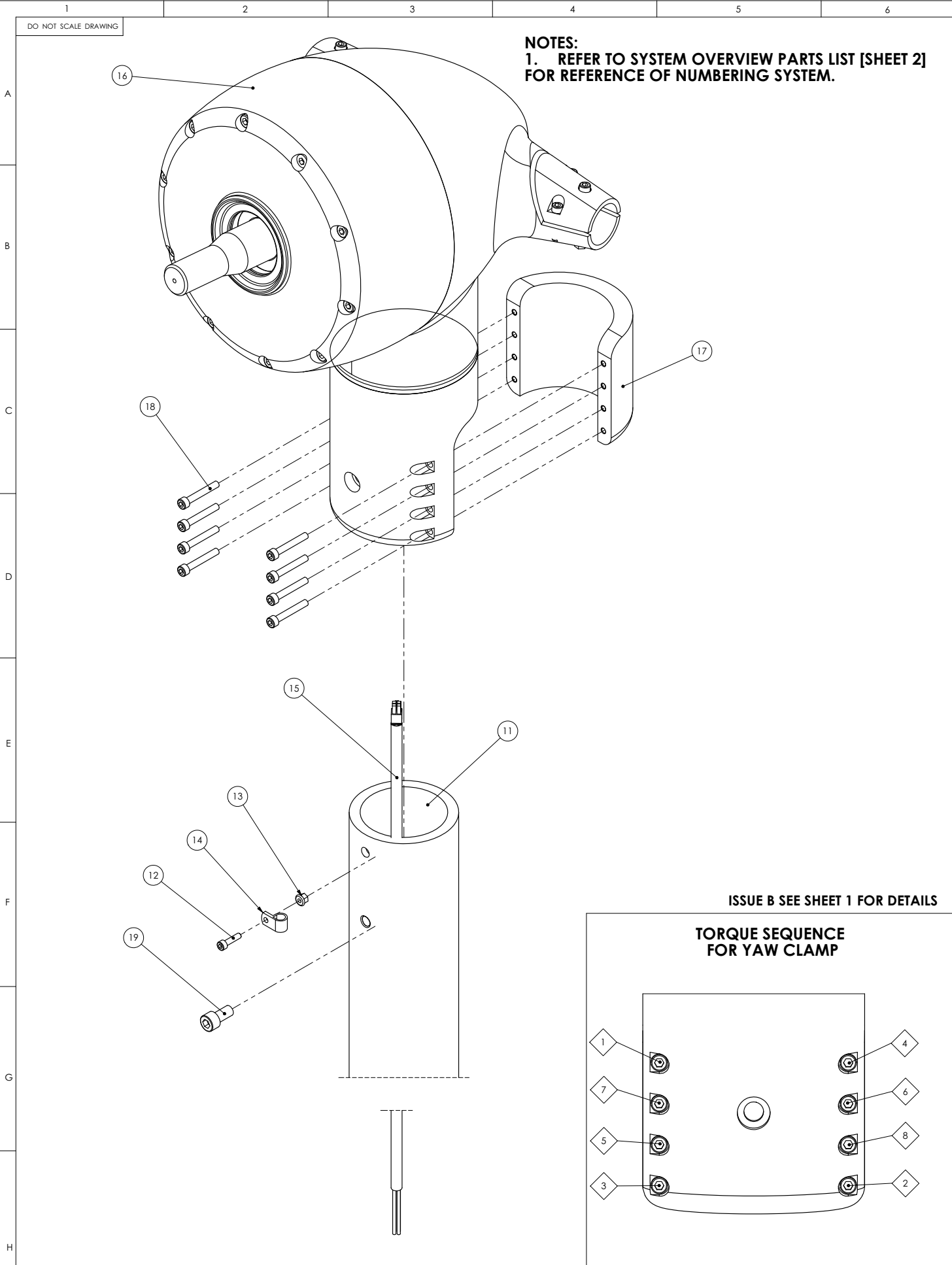
PROPRIETARY AND CONFIDENTIAL		NAME	SIGNED	DATE	SCALE:1:15	SHEET 3 OF 11	RENEWABLE DEVICES LTD
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RENEWABLE DEVICES SWIFT TURBINES LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RENEWABLE DEVICES SWIFT TURBINES LTD IS PROHIBITED.		DRAWN	J NICHOLSON	30/06/2008	MATERIAL: N/A	DESCRIPTION: WALL MOUNTING SCHEMATIC	
		CHECKED	M RAVILLOUS	30/06/2008			
		PRODUCTION	R WEEDON	30/06/2008	FINISH: N/A		
		ELECTRICAL	S DICKSON	30/06/2008			
		INSTALLATION	J HIBELL	30/06/2008			
						DWG NO: SC0016	



NOTES:  
1. REFER TO SYSTEM OVERVIEW PARTS LIST [SHEET 2]  
FOR REFERENCE OF NUMBERING SYSTEM.

ISSUE B SEE SHEET 1 FOR DETAILS

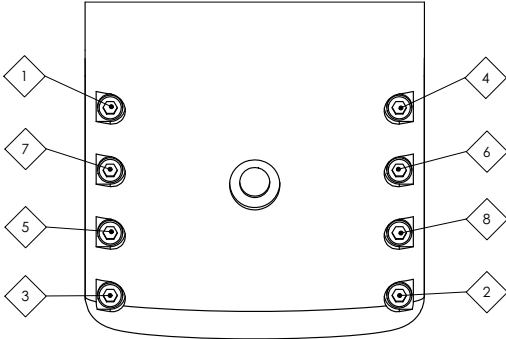
PROPRIETARY AND CONFIDENTIAL				NAME	SIGNED	DATE	SCALE:1:4	SHEET 4 OF 11	RENEWABLE DEVICES LTD
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RENEWABLE DEVICES SWIFT TURBINES LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RENEWABLE DEVICES SWIFT TURBINES LTD IS PROHIBITED.				DRAWN	J NICHOLSON	30/06/2008	MATERIAL: N/A		DESCRIPTION:
				CHECKED	M RAVILLOUS	30/06/2008			BRACKET SCHEMATIC
				PRODUCTION	R WEEDON	30/06/2008	FINISH: N/A		DWG NO:
				ELECTRICAL	S DICKSON	30/06/2008			SC0016
				INSTALLATION	J HIBELL	30/06/2008			



NOTES:  
1. REFER TO SYSTEM OVERVIEW PARTS LIST [SHEET 2]  
FOR REFERENCE OF NUMBERING SYSTEM.

ISSUE B SEE SHEET 1 FOR DETAILS

TORQUE SEQUENCE  
FOR YAW CLAMP

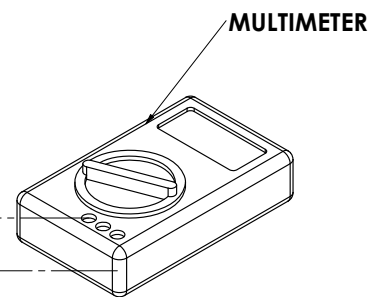
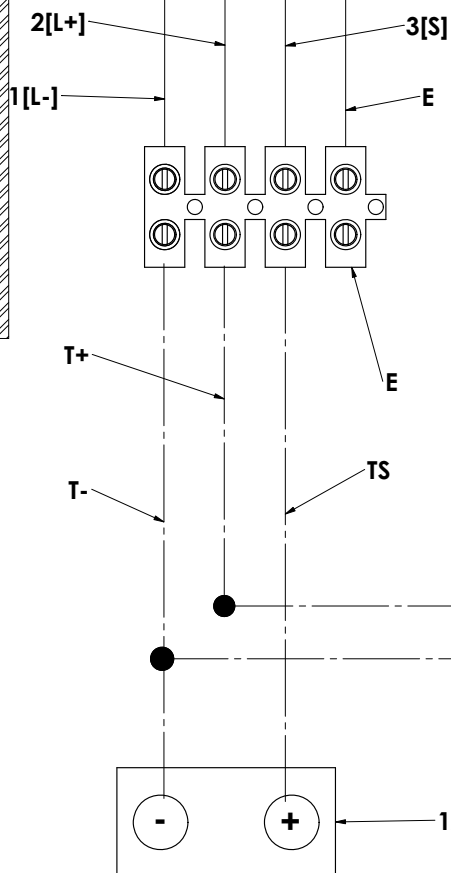
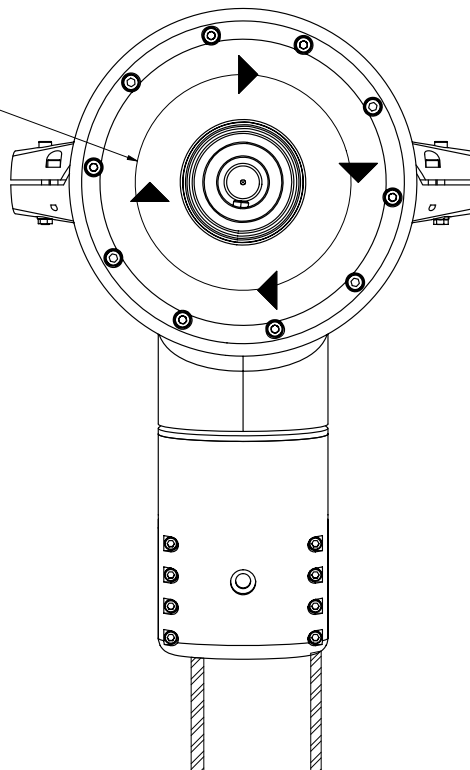


PROPRIETARY AND CONFIDENTIAL				NAME	SIGNED	DATE	SCALE:1:10	SHEET 5 OF 11	RENEWABLE DEVICES LTD	
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RENEWABLE DEVICES SWIFT TURBINES LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RENEWABLE DEVICES SWIFT TURBINES LTD IS PROHIBITED.				DRAWN	J NICHOLSON	30/06/2008	MATERIAL: N/A		DESCRIPTION:	
				CHECKED	M RAVILLOUS	30/06/2008			FITTING THE NACELLE	
				PRODUCTION	R WEEDON	30/06/2008	FINISH: N/A		DWG NO:	
				ELECTICAL	S DICKSON	30/06/2008			SC0016	
				INSTALLATION	J HIBELL	30/06/2008				

DO NOT SCALE DRAWING

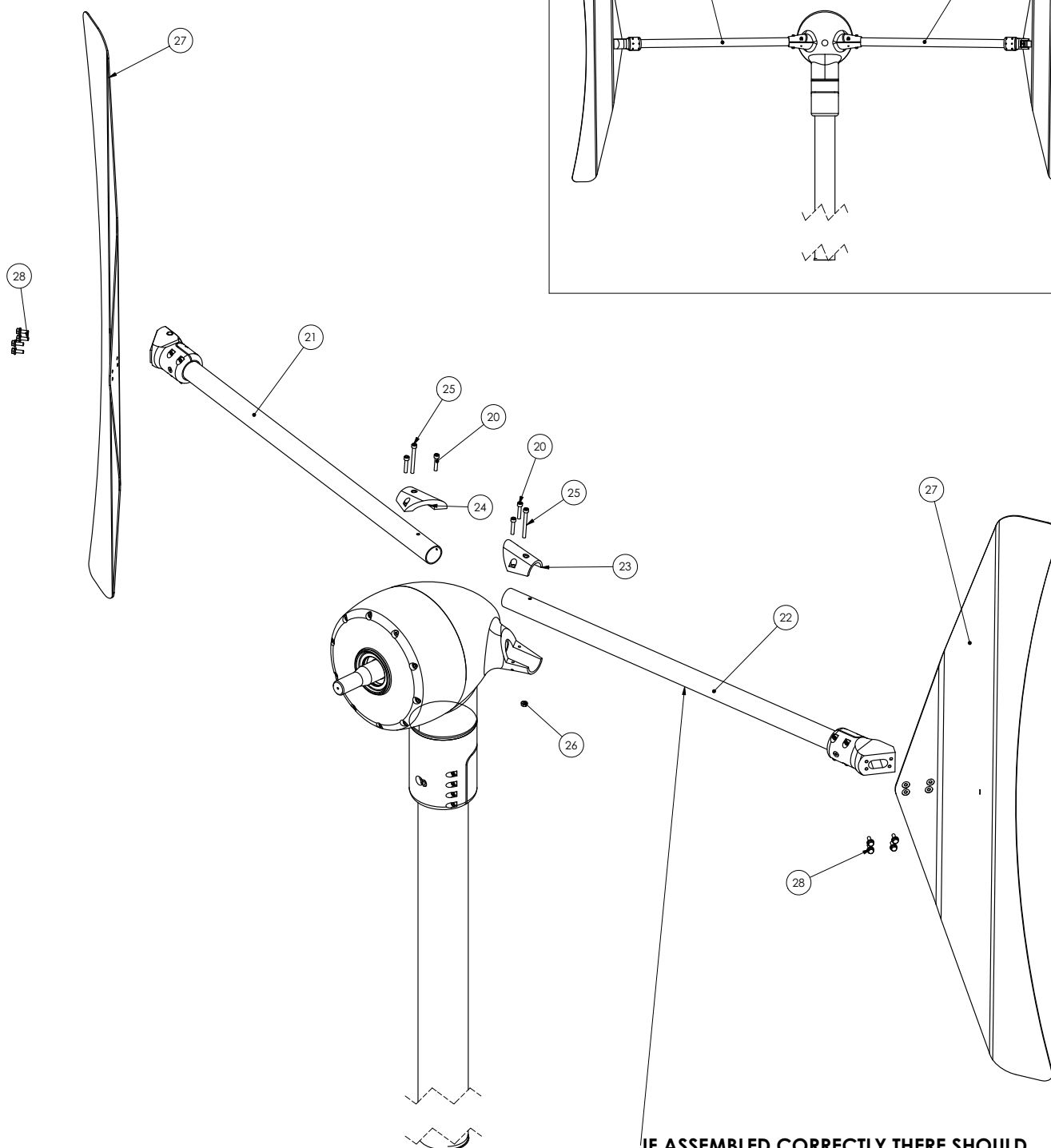
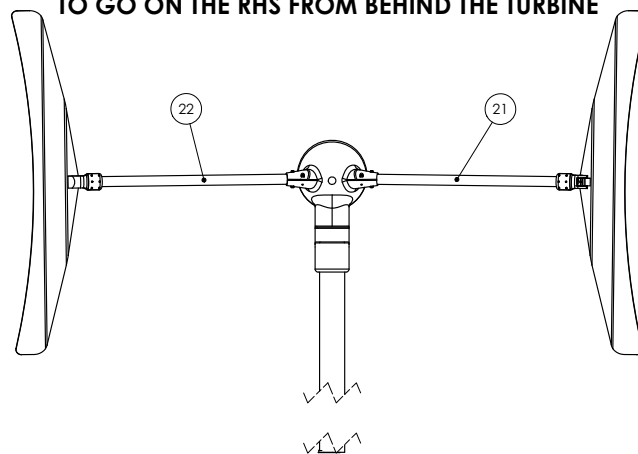
# TEST E1: BRAKE RELEASE AND DC VOLTAGE

CLOCKWISE  
ROTATION OF SHAFT



ISSUE B SEE SHEET 1 FOR DETAILS

PROPRIETARY AND CONFIDENTIAL				NAME	SIGNED	DATE	SCALE: 1:5	SHEET 6 OF 11	RENEWABLE DEVICES LTD
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RENEWABLE DEVICES SWIFT TURBINES LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RENEWABLE DEVICES SWIFT TURBINES LTD IS PROHIBITED.				DRAWN	J NICHOLSON	30/06/2008	MATERIAL:		DESCRIPTION:
				CHECKED	M RAVILLOUS	30/06/2008	N/A		ELECTRICAL TEST: E1
				PRODUCTION	R WEEDON	30/06/2008	FINISH:		DWG NO:
				ELECTRICAL	S DICKSON	30/06/2008	N/A		SC0016
				INSTALLATION	J HIBELL	30/06/2008			



**IF ASSEMBLED CORRECTLY THERE SHOULD BE TWO VISIBLE DIMPLES/DOTS ON THE UNDERSIDE OF THE NON FURL SIDE BOOM.**

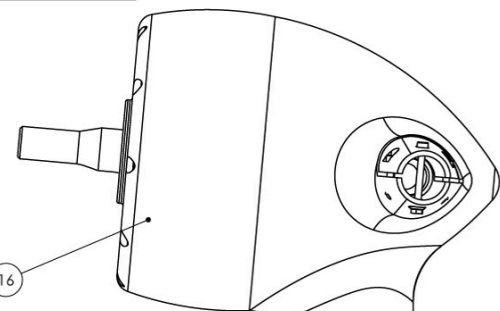
1. REFER TO SYSTEM OVERVIEW PARTS LIST [SHEET 2] FOR REFERENCE OF NUMBERING SYSTEM.

RENEWABLE DEVICES LTD

<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RENEWABLE DEVICES SWIFT TURBINES LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RENEWABLE DEVICES SWIFT TURBINES LTD IS PROHIBITED.		NAME	SIGNED	DATE	SCALE:1:50	SHEET 7 OF 11	<b>RENEWABLE DEVICES LTD</b>  DESCRIPTION: <b>FITTING THE FINS AND BOOMS</b>  DWG NO: SC0016
	DRAWN	J NICHOLSON		30/06/2008	MATERIAL:		
	CHECKED	M RAVILLOUS		30/06/2008	N/A		
	PRODUCTION	R WEEDON		30/06/2008	FINISH:		
	ELECTRICAL	S DICKSON		30/06/2008	N/A		
	INSTALLATION	J HIRFI		30/06/2008			

**NOTES**

1. ITEMS 41 AND 42: DUAL SUPPLY WARNING STICKERS TO BE ATTACHED ON SWIFT INVERTER AND DISTRIBUTION BOARD WITH DETAILS OF WHERE THE TURBINE CAN BE ISOLATED
2. WIRING SIZING FOR THE DC SIDE [CONNECTOR BLOCK TO SWIFT INVERTER] TO BE AS FOLLOWS;
  - 0-50M = 1.5mmsq
  - 50-100M = 2.5mmsq
  - 100-200M = 4.0mmsq
  - USE STANDARD WIRING COLOURS.
3. ALL INTERNAL WIRING (MIN 1.5mmsq) TO BE CONTAINED WITHIN CONDUIT OR OF SWA TYPE
4. ALTERNATIVE EARTH TO MAST EARTH: A SECOND 4mmsq EARTH WIRE IN CONDUIT FROM DC ISOLATOR TO ANY EARTH POINT. FOR THIS OPTION THE ARMOUR OF THE SWA OR 2 X 4mmsq EARTH MUST BE USED AS THE EARTH CONNECTION BETWEEN MAST AND DC ISOLATOR.
5. EARTH - 4mmsq
6. REFER TO SYSTEM OVERVIEW PARTS LIST [SHEET 2] FOR REFERENCE OF NUMBERING SYSTEM.



MAST CABLE TO MOLEX CONNECTOR  
AND EARTH CONNECTOR

MAST EARTH: 10MM SQ EARTH [YELLOW AND GREEN]  
SEE NOTE 4

SEE SHEET 5  
FOR CONNECTION

SEE NOTE 4

SWA

SEE NOTE 4

DC

SEE NOTE 3

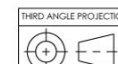
AC

SEE NOTE 5

SEE NOTE 5

DISTRIBUTION BOARD/  
CONSUMER UNIT

UNLESS OTHERWISE SPECIFIED:  
DIMENSIONS ARE IN MILLIMETERS  
SURFACE FINISH: 6.4 Ra  
TOLERANCES:  
LINEAR: ±0.25  
ANGULAR: ±0.5°  
THREADS SPECIFIED TO BS 3643: 1981  
WELD SYMBOLS SPECIFIED TO BS 499: 1991  
LIMITS AND FITS SPECIFIED TO BS 4300: 1988



SCALE: 1:18 SHEET 8 OF 11

MATERIAL:

N/A  
N/A

FINISH:

N/A  
N/A

**RENEWABLE DEVICES LTD**

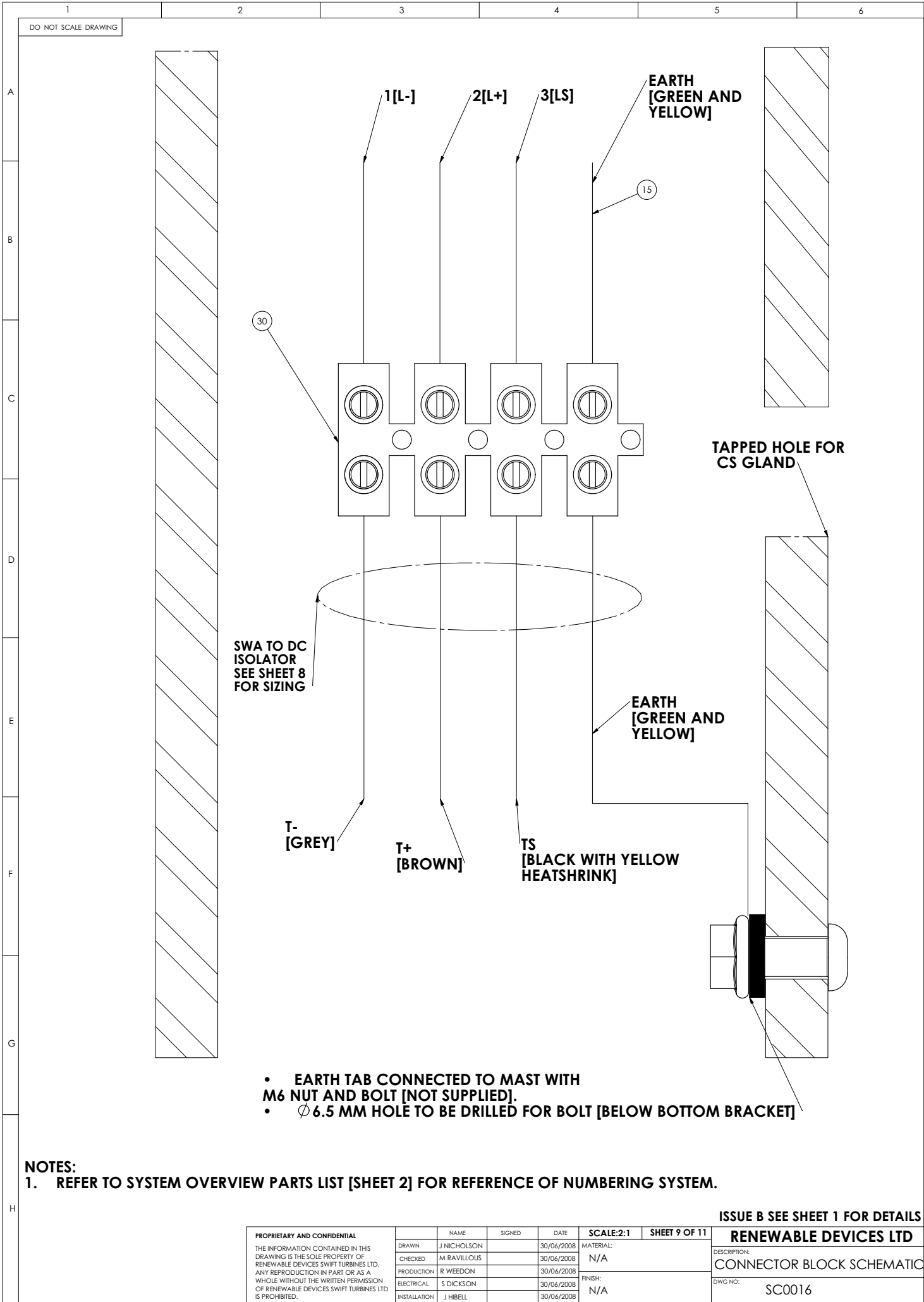
DESCRIPTION:  
**ELECTRICAL SCHEMATIC**

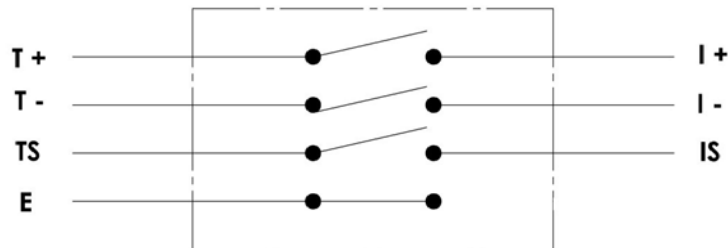
DWG NO.

**SC0016**

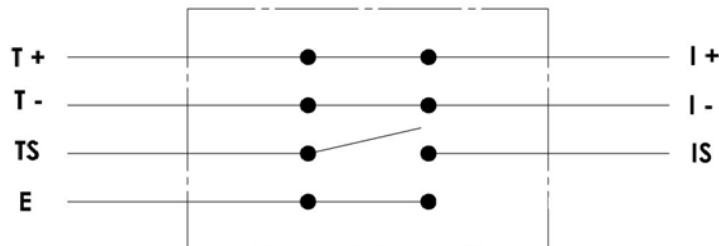
ISSUE B SEE SHEET 1 FOR DETAILS







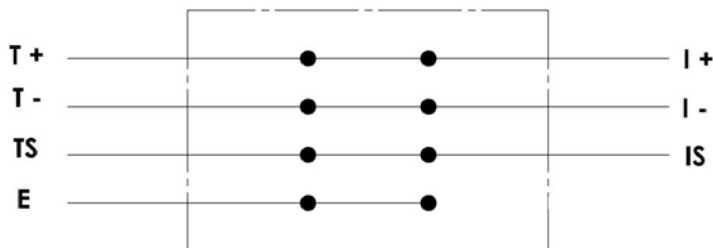
SWITCH POSITION - OFF



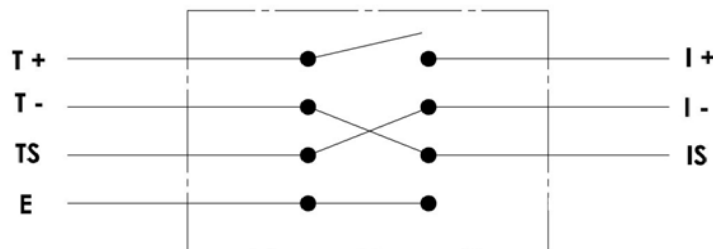
SWITCH POSITION - BRAKE

TO TURBINE  
• SWA CABLE  
• SEE ELECTRICAL SCHEMATIC FOR CABLE SIZING

TO SWIFT INVERTER  
• TRI RATED CABLE  
• SEE ELECTRICAL SCHEMATIC FOR SIZING



SWITCH POSITION - ON



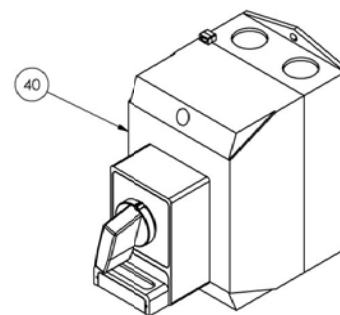
SWITCH POSITION - RESET

## NOTES

### KEY

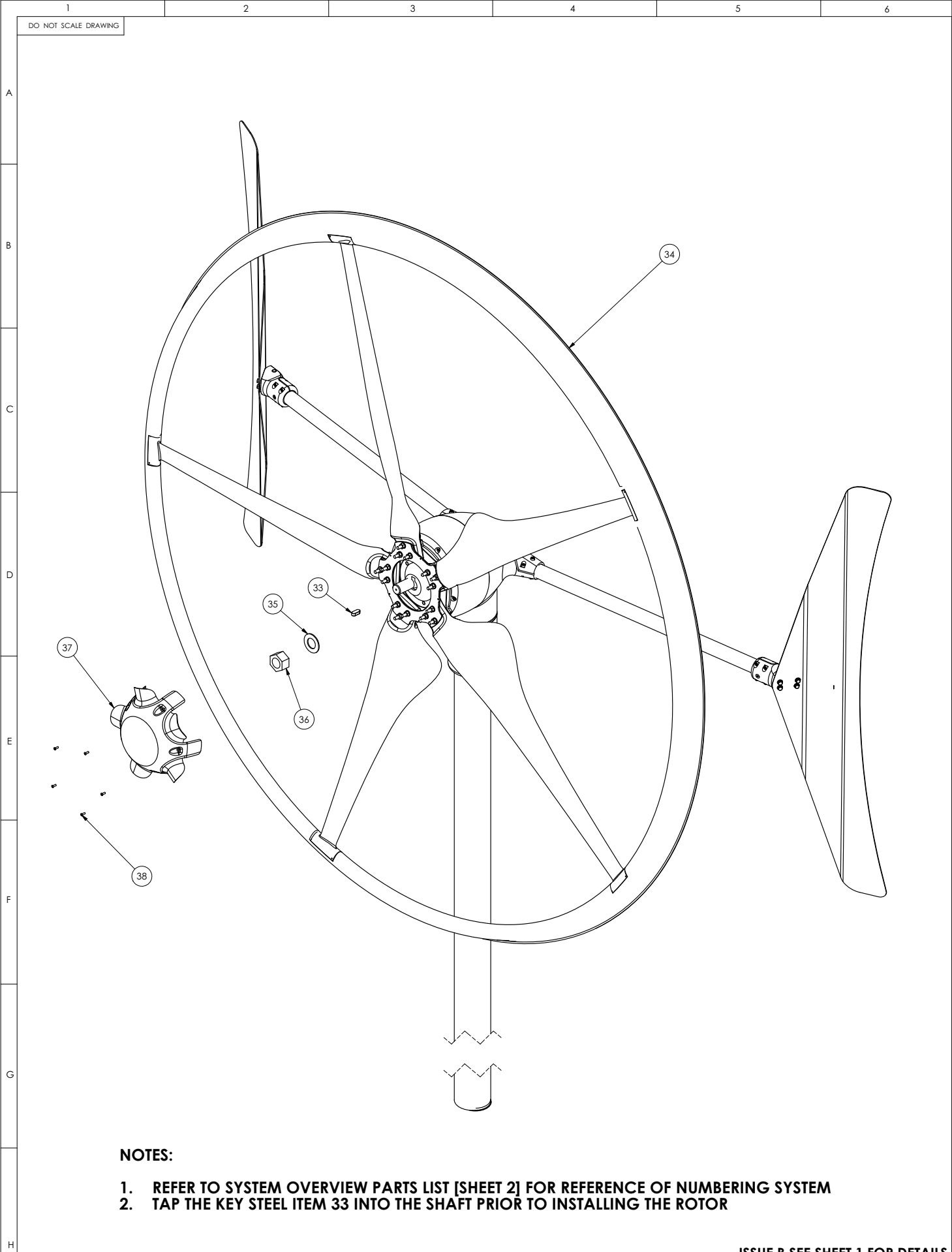
T+	TURBINE POSITIVE	BROWN
T-	TURBINE NEGATIVE	GREY
I+	INVERTER POSITIVE	BROWN
I-	INVERTER NEGATIVE	GREY
TS	TURBINE SIGNAL	BLACK WITH YELLOW SLEEVE
IS	INVERTER SIGNAL	YELLOW
E	EARTH	GREEN + YELLOW

- THE DC ISOLATOR SHOULD BE INSTALLED SO THAT IT IS ACCESSIBLE TO THE UNIT BUT AS CLOSE TO THE TURBINE AS POSSIBLE.
- THE DC ISOLATOR MUST BE SUPPLIED BY RDST LTD.
- [NORMAL DC ISOLATORS DO NOT MEET THE SPEC]



ISSUE B SEE SHEET 1 FOR DETAILS

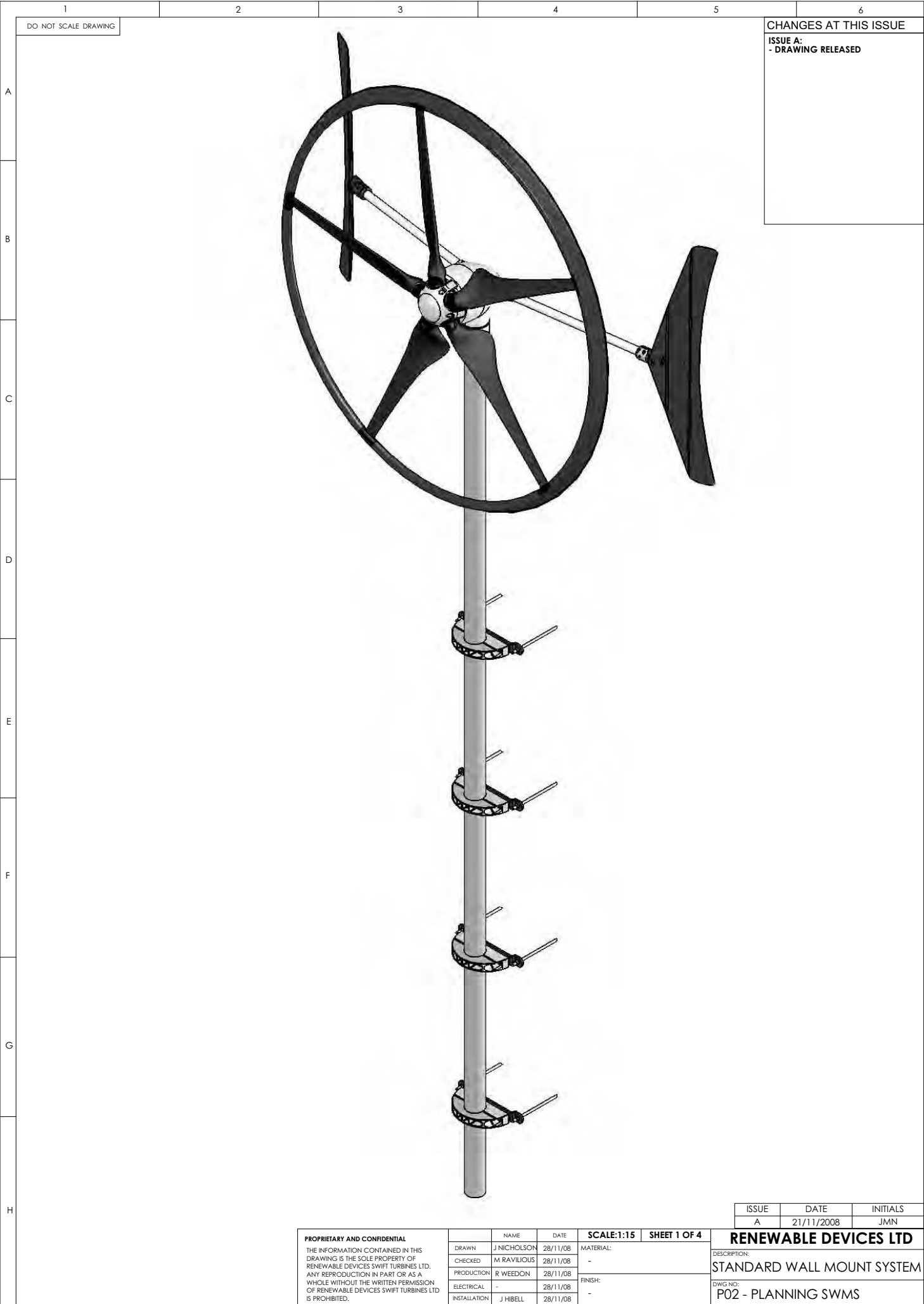
PROPRIETARY AND CONFIDENTIAL  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RENEWABLE DEVICES SWIFT TURBINES LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RENEWABLE DEVICES SWIFT TURBINES LTD IS PROHIBITED.		NAME	SIGNED	DATE	SCALE:1:18	SHEET 10 OF 11	RENEWABLE DEVICES LTD	
	DRAWN	J NICHOLSON		30/06/2008	MATERIAL: N/A		DESCRIPTION: DC ISOLATOR WIRING SCHEMATIC	DWG NO: SC0016
	CHECKED	M RAVILLOUS		30/06/2008				
	PRODUCTION	R WEEDON		30/06/2008	FINISH: N/A			
	ELECTRICAL	S DICKSON		30/06/2008				
	INSTALLATION	J HIBELL		30/06/2008				



- NOTES:**
1. REFER TO SYSTEM OVERVIEW PARTS LIST [SHEET 2] FOR REFERENCE OF NUMBERING SYSTEM
  2. TAP THE KEY STEEL ITEM 33 INTO THE SHAFT PRIOR TO INSTALLING THE ROTOR

ISSUE B SEE SHEET 1 FOR DETAILS

<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RENEWABLE DEVICES SWIFT TURBINES LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RENEWABLE DEVICES SWIFT TURBINES LTD IS PROHIBITED.		NAME	SIGNED	DATE	SCALE:1:50	SHEET 11 OF 11	<b>RENEWABLE DEVICES LTD</b>  DESCRIPTION:  FITTING THE ROTOR  DWG NO: SC0016
	DRAWN	J NICHOLSON		30/06/2008	MATERIAL:		
	CHECKED	M RAVILLOUS		30/06/2008	N/A		
	PRODUCTION	R WEEDON		30/06/2008	FINISH:		
	ELECTRICAL	S DICKSON		30/06/2008	N/A		
	INSTALLATION	J HIBELL		30/06/2008			

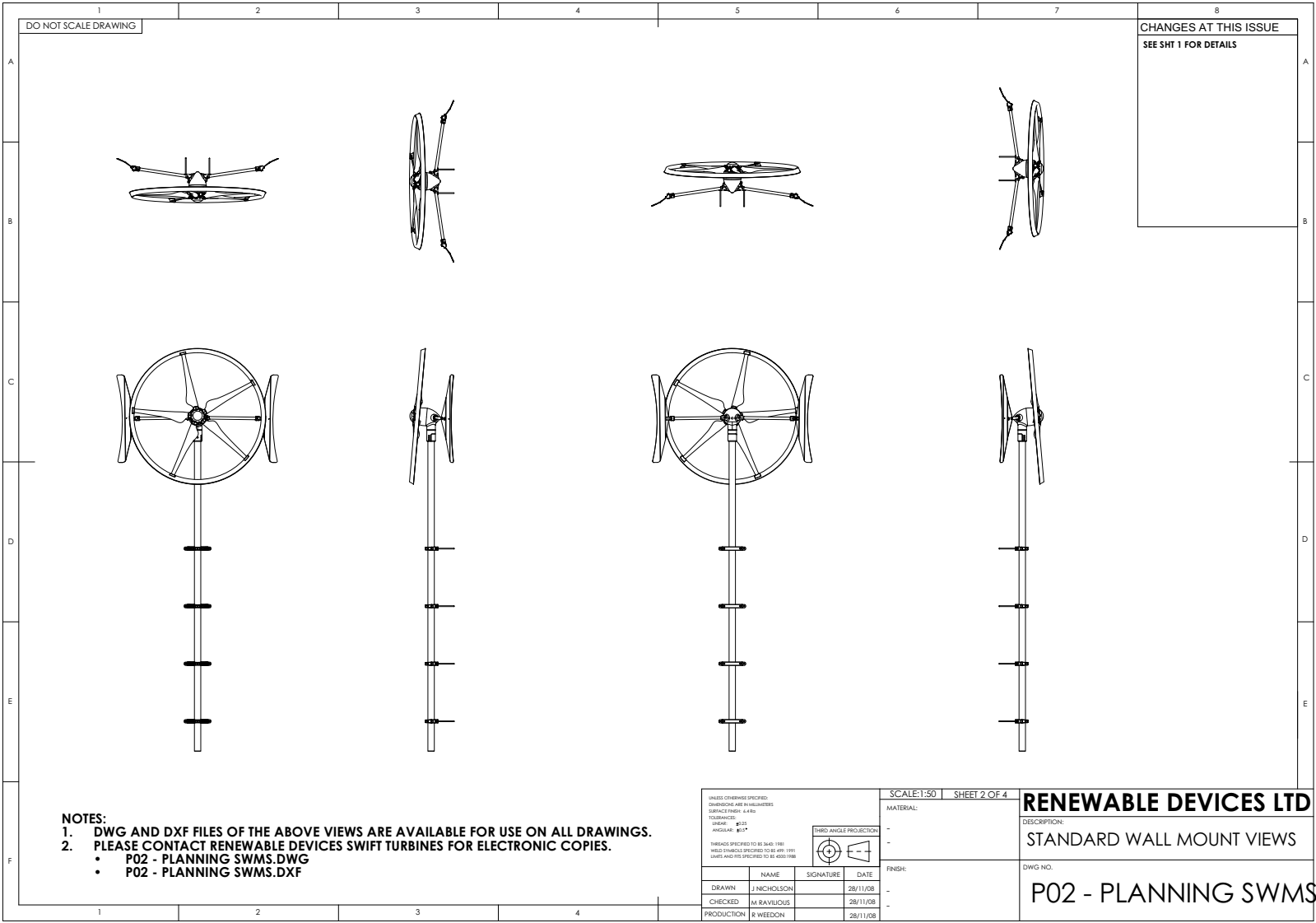


**PROPRIETARY AND CONFIDENTIAL**  
THE INFORMATION CONTAINED IN THIS  
DRAWING IS THE SOLE PROPERTY OF  
RENEWABLE DEVICES SWIFT TURBINES LTD.  
ANY REPRODUCTION IN PART OR AS A  
WHOLE WITHOUT THE WRITTEN PERMISSION  
OF RENEWABLE DEVICES SWIFT TURBINES LTD  
IS PROHIBITED.

	NAME	DATE
DRAWN	J NICHOLSON	28/11/08
CHECKED	M RAVILIOUS	28/11/08
PRODUCTION	R WEEDON	28/11/08
ELECTRICAL	-	28/11/08
INSTALLATION	J HIBELL	28/11/08

SCALE:1:15	SHEET 1 OF 4
MATERIAL:	-
FINISH:	-

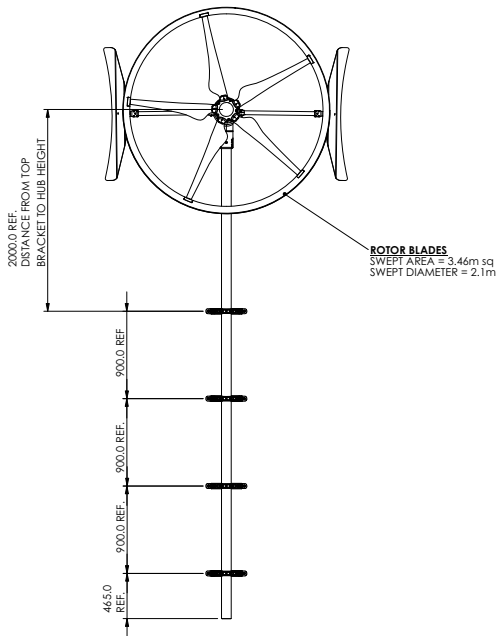
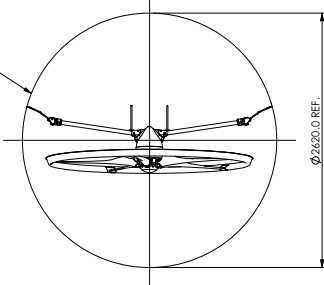
ISSUE	DATE	INITIALS
A	21/11/2008	JMN
RENEWABLE DEVICES LTD		
DESCRIPTION:		
STANDARD WALL MOUNT SYSTEM		
DWG NO:		
P02 - PLANNING SWMS		



**NOTES:**  
1. DWG AND DXF FILES OF THE ABOVE VIEWS ARE AVAILABLE FOR USE ON ALL DRAWINGS.  
2. PLEASE CONTACT RENEWABLE DEVICES SWIFT TURBINES FOR ELECTRONIC COPIES.  
• P02 - PLANNING SWMS.DWG  
• P02 - PLANNING SWMS.DXF

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: A4/RA TOLERANCES: HOLE: $\pm 0.15$ ANGULAR: $\pm 0.5^\circ$			SCALE: 1:50   SHEET 2 OF 4		<b>RENEWABLE DEVICES LTD</b>
THIRD ANGLE PROJECTION 			MATERIAL: -		
FINISH: -			DWG NO. P02 - PLANNING SWMS		
DRAWN: J NICHOLSON 28/11/08			SIGNATURE: _____ DATE: 28/11/08		
CHECKED: M RAVILIOUS 28/11/08			SIGNATURE: _____ DATE: 28/11/08		
PRODUCTION: R WEEEDON 28/11/08			SIGNATURE: _____ DATE: 28/11/08		

**YAW DIAMETER**  
THE TURBINE ROTATES 360°  
AROUND THE CENTRE OF THE MAST  
- TRACKING THE WIND DIRECTION. \




- 
- Diagram of a vertical pole with a windmill. A horizontal force of 7 kN is applied to the windmill. The pole is supported by a wall with four horizontal ties. A vertical force of 1.1 kN is applied at the bottom of the pole.

## P02 - PLANNING SWMS

UNLESS OTHERWISE SPECIFIED:  
DIMENSIONS ARE IN MILLIMETERS  
SURFACE FINISH: 6.3 μm  
TOLERANCES:  
LINEAR: ±0.25  
ANGULAR: ±0.5°

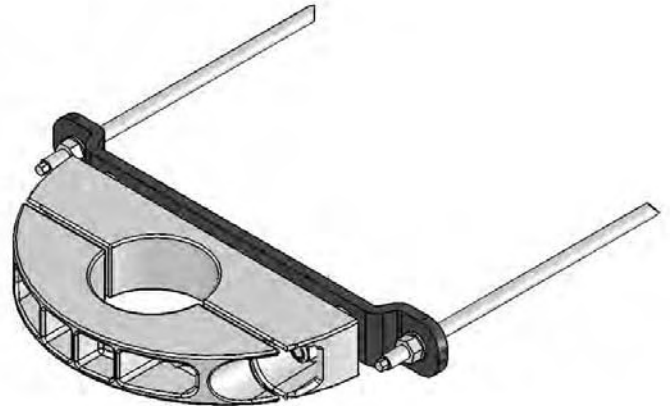
THIRD ANGLE PROJECTION



	NAME	SIGNATURE	DATE
DRAWN	J NICHOLSON		28/11/08
CHECKED	M RAVILIOUS		28/11/08
PRODUCTION	R WEEDON		28/11/08

—

CHANGES AT THIS ISSUE
SEE SHT 1 FOR DETAILS



### GENERAL ISO VIEW

[illegible]