

Equipment Summary

Royal S.O 72460
Line item 2

Item	Description	Part#	Opens	Quantity Per S.P.A.	Quantity Per Switch	Quantity Per Order
101	S.P.A.	LVTSPA3420	C.W	1	1	1
102	S.P.A.	LVTSPA3420	C.W	1	1	1
103	S.P.A.	LVTSPA3420	C.W	1	1	1
104	Insulators	TR-210		3	9	9
105	Control Mech	B-11697			1	1
106	Mounting Base	B-10757		1	3	3
107						
108						
109						
110	Arcing Horn	A-10064-A		1	3	3
111	Vacuum Interrupter					
112	Worm Gear					
113	Kirk Key Provisions					
114	Grounding Switch					
115	Motor Operator					
116	Auxiliary Switch					
117	Position Indicator	B-2160			1	1
118	Counterbalance					
119	CB Bracket					
120						
121	Pkg Assembly	PKVT764530			1	1
122						
123						
124						
125						

Control Mechanism Type:

Direct Pole - Center Phase Opposite
Direct Pole - Phase Over Phase
Underhung
Vertical
☒ Horizontal

Nameplate Data 34.5,2000,38.0,100,63,200,VT3420,53

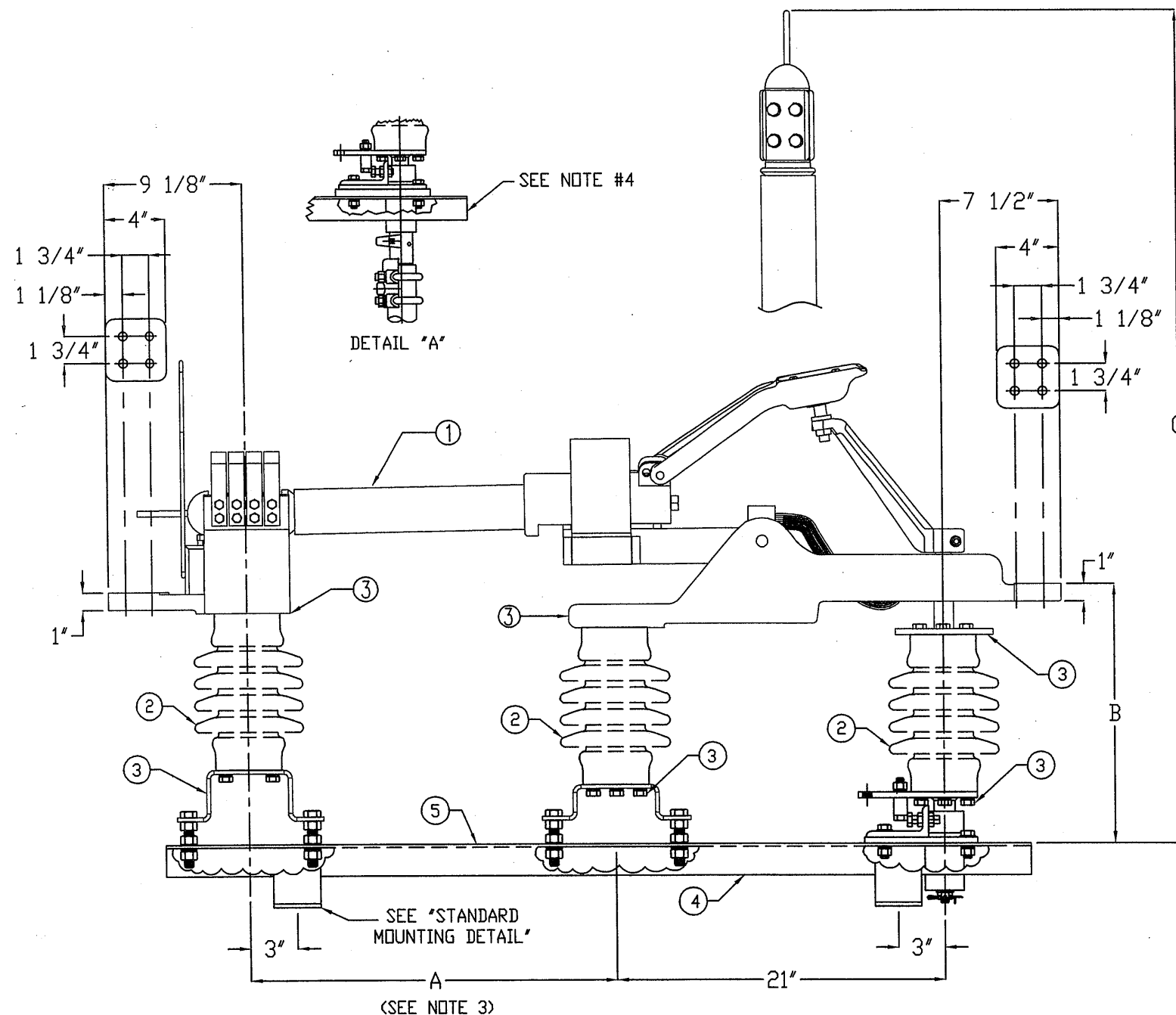
Serial Number(s) 23415
Qty 1
P.O. Number 12012.SS005
Part Number VT3420JFE100.A
Customer J. F. EDWARDS CONSTRUCTION
Substation MILLIGAN 3

Royal Switchgear Manufacturing Company
3995 Pine Lane SE
Bessemer, AL 35022

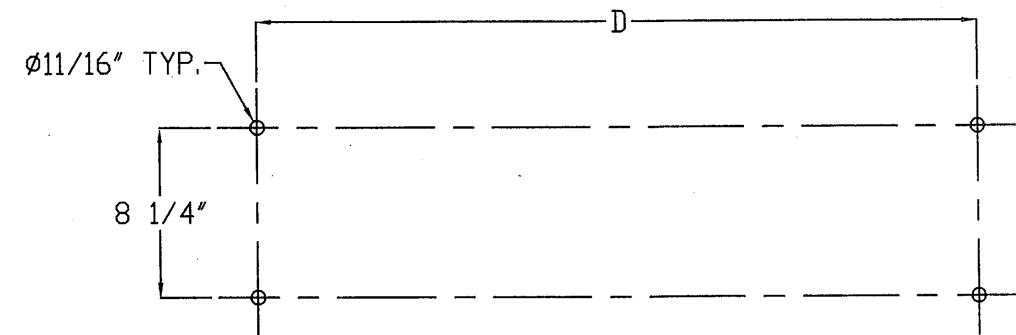
Production Notes:

CERTIFIED BY ROYAL
BY JUL 14 2017 CO
FOR CONSTRUCTION

Feb 01, 2022 7:41 PM EST



BILL OF MATERIAL			B9149	
NO.	PART DESCRIPTION	MAT'L/FIN	PART NUMBER	QTY.
1	AVT LIVE PART	STL/GAL	SEE TAB	1
2	INSULATOR	- / -	SEE E.S.	3
3	AVT MOUNTING KIT	- / -	AVT3BCMTG-U	1
4	BASE	- / -	SEE E.S.	1
5	NAMEPLATE ASSEMBLY	- / -	N08537-1	1



STANDARD MOUNTING DETAIL
SEE NOTE 2

TABULATION										
SINGLE POLE ASSY	NOM. KV	MAX. KV	BIL (KV)	ITEM #1	A	B	C	D	POLE WEIGHT (Lbs.)	WEIGHT (Lbs.)
LVTSPA1520	15	15.5	110	LVTLPT1520	15	16 3/8	52 1/2	30	225	1025
LVTSPA2320	23	27	150	LVTLPT2320	18	20 3/8	59 1/2	33	261	1133
LVTSPA3420	34.5	38	200	LVTLPT3420	24	24 3/8	69 1/2	39	286	1208
LVTSPA4620	46	48.3	250	LVTLPT4620	30	28 3/8	79 1/2	45	308	1274
LVTSPA6920	69	72.5	350	LVTLPT6920	42	36 3/8	99 1/2	57	416	1598

SEE NOTE 1

NOTE:

1. SHIPPING WEIGHTS ARE APPROXIMATE. SHIPPING WEIGHT INCLUDES CRATE, CONTROL MECHANISM PARTS AND SWITCH WITH BASE.
2. CONTROL MECHANISM DRAWING AND BASE DRAWING WILL CONTAIN PROJECT SPECIFIC MOUNTING DETAILS.
3. CENTERLINE-TO-CENTERLINE SPACING PER ANSI C37.32 FOR STANDARD STRENGTH INSULATORS.
4. DETAIL "A" SHOWS OPTIONAL BASE ASSEMBLY B5612-VB-SPL, WHICH ALLOWS DIRECT CONNECTION TO THE VERTICAL OPERATING PIPE.

ROYAL SWITCHGEAR MANUFACTURING CO.

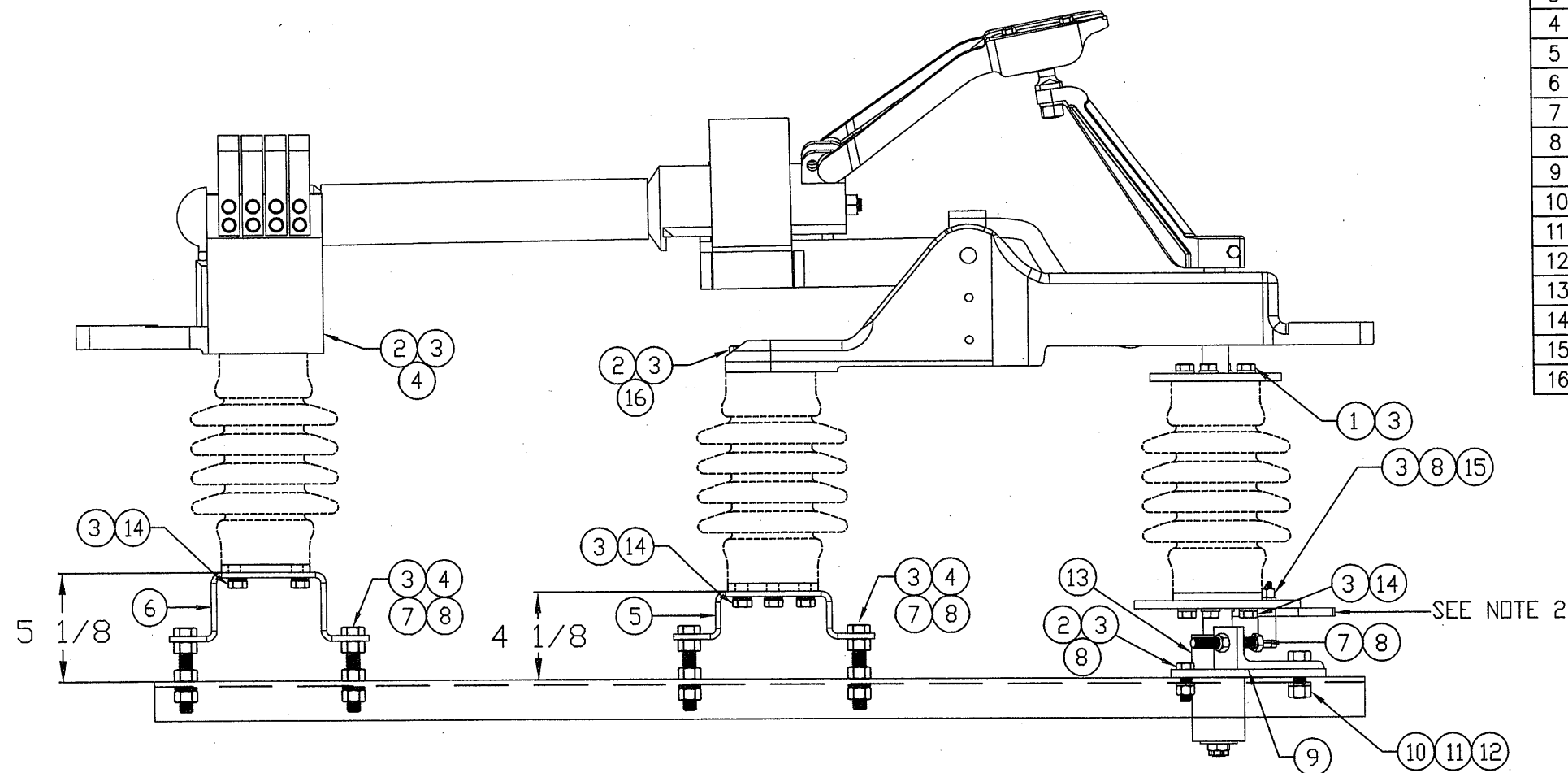
3995 PINE LANE S.E., BESSEMER, ALABAMA 35022

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON CONDITION THAT THEY ARE NOT COPIED REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL.

FOR:						MAT: SEE BOM		TITLE: 2000A LVTSPA 15KV - 69KV									
THIS DRAWING SUPERSEDES B9149; ISSUE 4						DATED 11-11-15		FIN: SEE BOM		DRAWN: R. BYRD		DATE: 07-19-12		CHECKED: 		DATE: 8-26-16	
5		08-26-16		EC082416.1		RR				TOLERANCE UNLESS SPEC'D		1 PLC DEC +/- 0.015"		2 PLC DEC +/- 0.010"		3 PLC DEC +/- 0.005"	
4		11-11-15		EC092915.1		CO				FRACTIONS +/- 1/16"		B		9149		ISSUE	
3		07-03-14		EC063014.2		MC				DEGREES +/- 2°						5	
2		11/21/13		EC112113.1		CO											
NO.		DATE		REVISION RECORD		BY		CHK		ENG							

Feb 01, 2022 7:41 PM EST

FILE: G:\DRAWINGS\RSGDWGB\B9149-5.DWG



BILL OF MATERIAL			B-8720	
NO.	PART DESCRIPTION	MAT'L/FIN	PART NUMBER	QTY.
1	1/2"-13NC X 1" HEX HD BOLT	STL/GAL	G50100H	4
2	1/2"-13NC X 1 1/2" HEX HD BOLT	STL/GAL	G50150H	10
3	1/2" SPLIT LOCKWASHER	STL/GAL	GL50	35
4	1/2" FLATWASHER 1 1/16" O.D.	STL/GAL	GF50SAE	20
5	INSULATOR STOOL STRUT	STL/GAL	B11129A	1
6	INSULATOR STOOL CONTACT	STL/GAL	B11129B	1
7	1/2"-13NC X 3 1/2" HEX HD BOLT	STL/GAL	G50350HFT	10
8	1/2"-13NC HEX NUT	STL/GAL	GN5013H	31
9	STOP ANGLE	STL/GAL	A10571	2
10	5/8"-11NC X 1 3/4" HEX HD BOLT	STL/GAL	G63175H	2
11	5/8"-11NC HEX NUT	STL/GAL	GN6311H	2
12	5/8" SPLIT LOCKWASHER	STL/GAL	GL63	2
13	BEARING ASSEMBLY	- / -	B5612VB-U	1
14	1/2"-13NC X 1" HEX HD BOLT	STL/GAL	G50100H	12
15	1/2" X 2 3/4" LG. BOLT	STL/GAL	G50275H	1
16	1/2" FLATWASHER 1 3/8" O.D.	STL/GAL	GF50137	4

NOTES:

1. THIS DRAWING IS USED FOR 1200, 2000, AND 3000 AMP SWITCHES.
2. THE BEARING ASSEMBLY (B5612VB-U) REQUIRES A OPERATING LEVER (A20396) AS SHOWN.

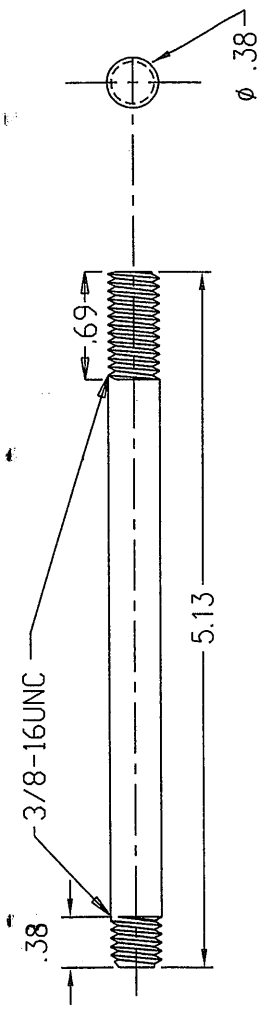
ROYAL SWITCHGEAR MANUFACTURING CO.

3995 PINE LANE S.E., BESSEMER, ALABAMA 35022

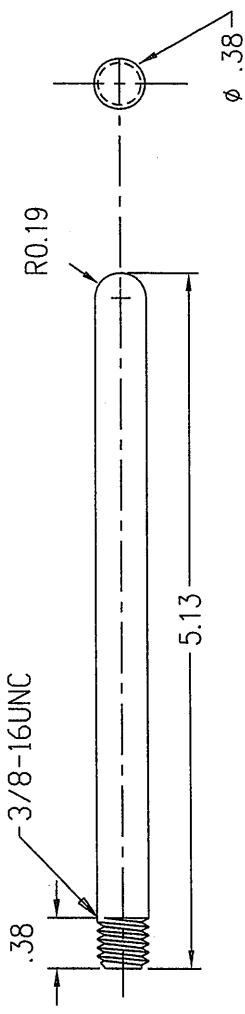
THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON CONDITION THAT THEY ARE NOT COPIED REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL.

FOR:				MAT:	TITLE:	
THIS DRAWING SUPERSEDES B8720; ISSUE 06 DATED 07-03-14				SEE BOM		AVT3BCMTG-U
				FIN:		3" BOLT CIRCLE MOUNTING KIT
				SEE BOM		DRAWN: S. LEGER DATE: 04-15-11 CHECKED: <i>SL</i> DATE: 8-26-16
				TOLERANCE UNLESS SPEC'D		ENGINEER: <i>PR</i> DATE: 8-29-16
				1 PLC DEC +/- 0.015"		SCALE: NTS
				2 PLC DEC +/- 0.010"		SIZE
				3 PLC DEC +/- 0.005"		PART DRAWING NUMBER
				FRACTIONS +/- 1/16"		ISSUE
				DEGREES +/- 2°		
NO.	DATE	REVISION RECORD	BY	CHK	ENG	
7	08-24-16	EC082416.1	RR			
6	07-03-14	EC063014.2	MC			
5	10-05-12	EC100112.3	BS			
4	06-12-12	EC060812.2	MC			

1	10748	A
ISSUE	PART DRAWING NUMBER	SIZE



ARCING HORN/STOP FOR 115-230KV VB - A10748A



ARCING HORN/STOP FOR 15-69KV VB - A10748B

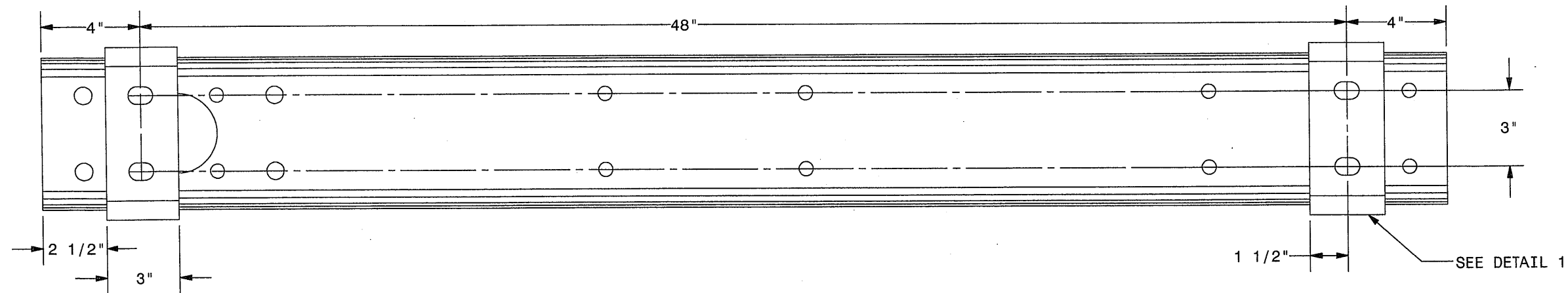
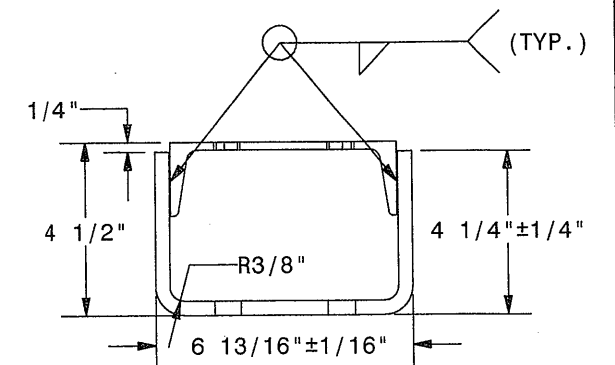
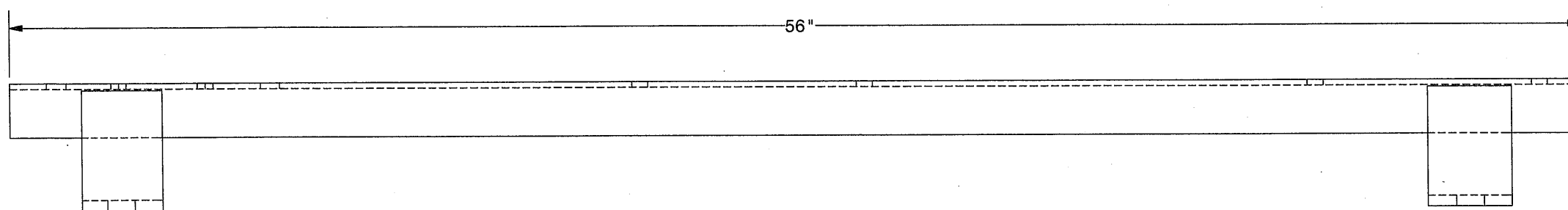
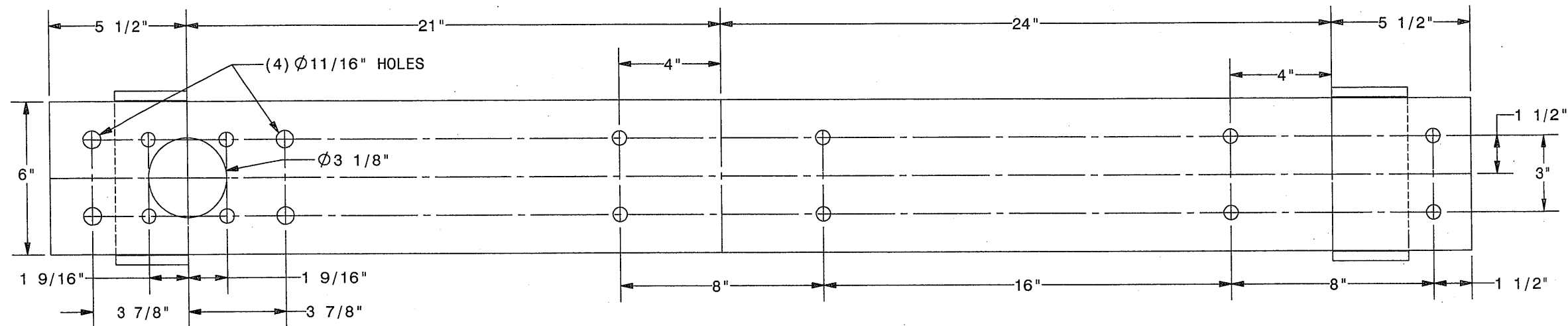
NOTES:

1. MATERIAL : AISI 303 S.S. ROD.
2. ALL DIMENSIONS SHOWN ARE GIVEN IN INCHES UNLESS NOTED OTHERWISE.

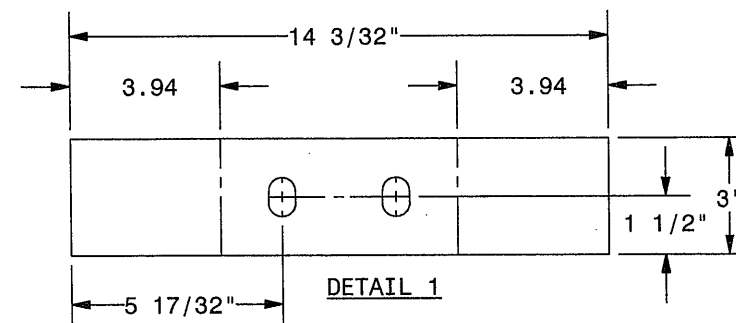
ROYAL SWITCHGEAR MANUFACTURING CO.
3995 PINE LANE S.E., BESSEMER, ALABAMA 35022

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON CONDITION THAT THEY ARE NOT COPIED, REPRODUCED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL.

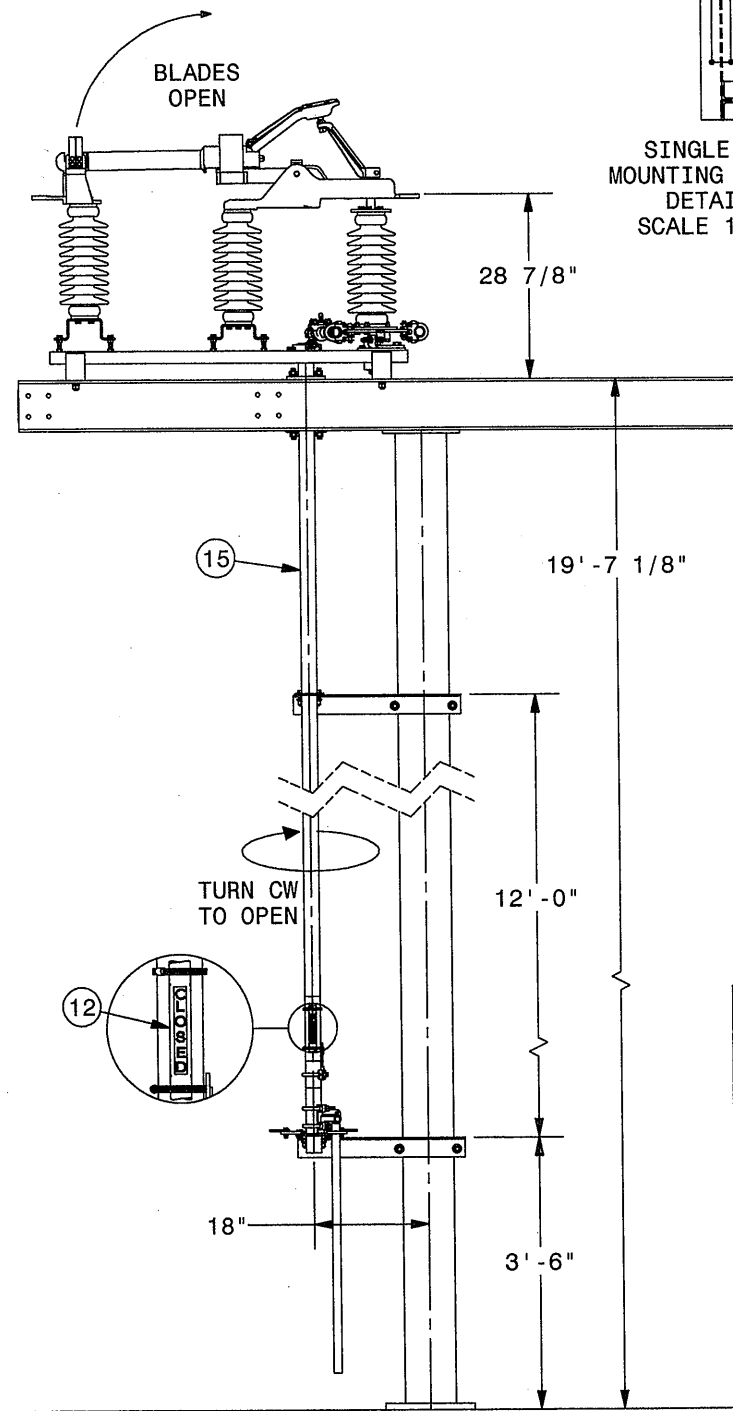
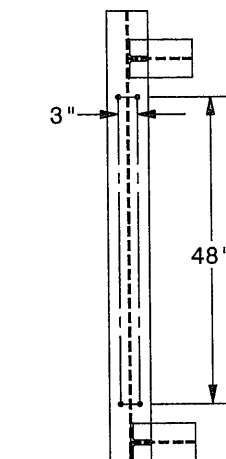
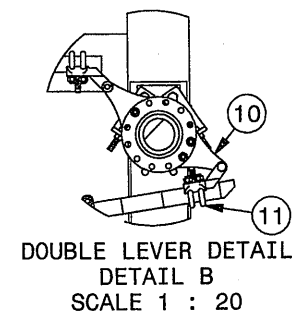
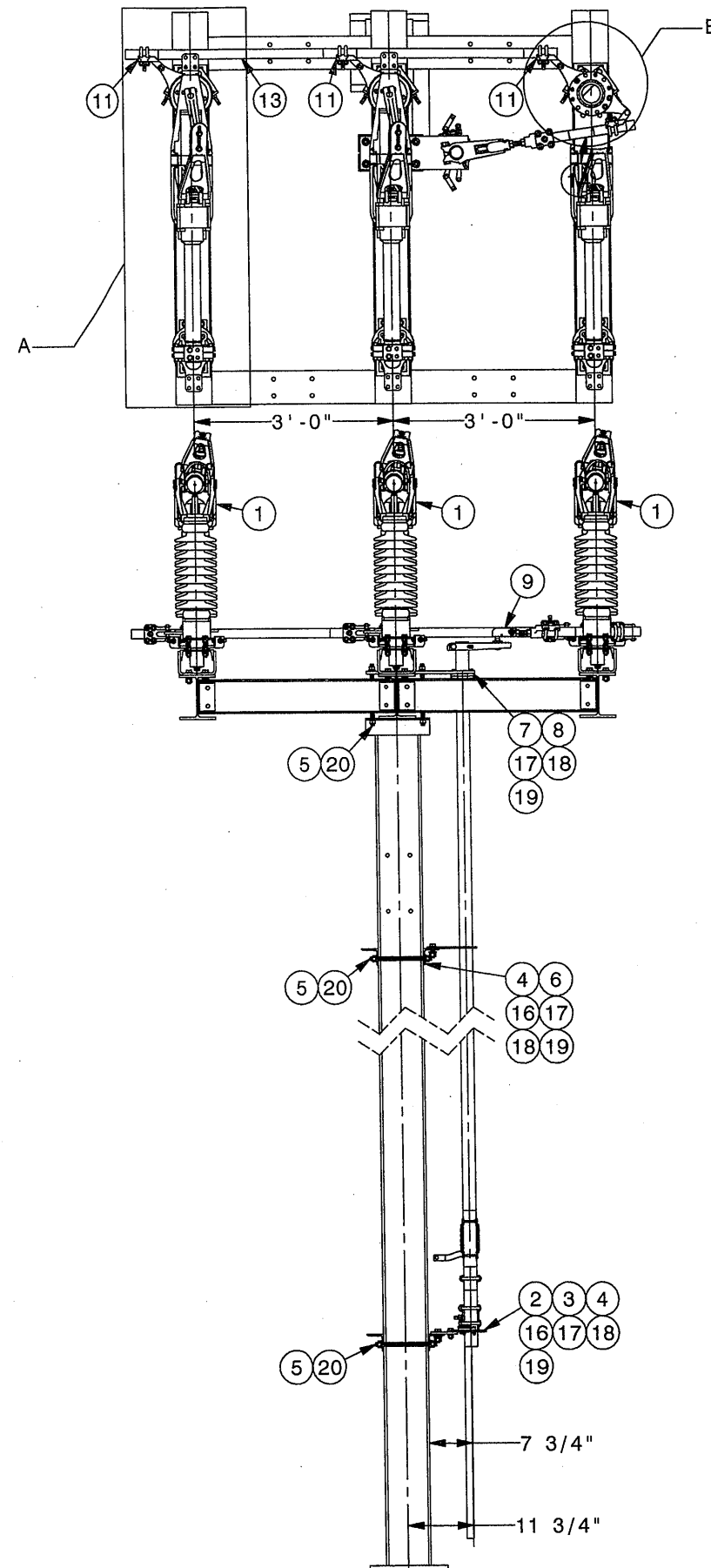
FOR:	MAT: AISI 303 ST. STL.	TITLE: SHAFTS
THIS DRAWING SUPERSEDES	FIN: NONE	DRAWN: O.TURK DATE: 01-23-03 CHECKED: TA DATE: 1/27/03
		SCALE: NTS ENGINEER: YUC DATE: 1/27/03
		SIZE: A PART DRAWING NUMBER: 10748
		ISSUE: 1
NO.	DATE	REVISION RECORD BY CHK ENG



- NOTES:
1. ALL HOLES ARE 9/16" Ø UNLESS OTHERWISE NOTED.
 2. ALL SLOTS ARE 11/16" Ø X 1" LG.
 3. MATERIAL: (1) 6" X 8.2# STEEL CHANNEL X 56" LG.
(2) 3/8" X 3" STEEL PLATE X 14 3/32"
 4. HOT DIP GALVANIZE AFTER FABRICATION PER ASTM-123.



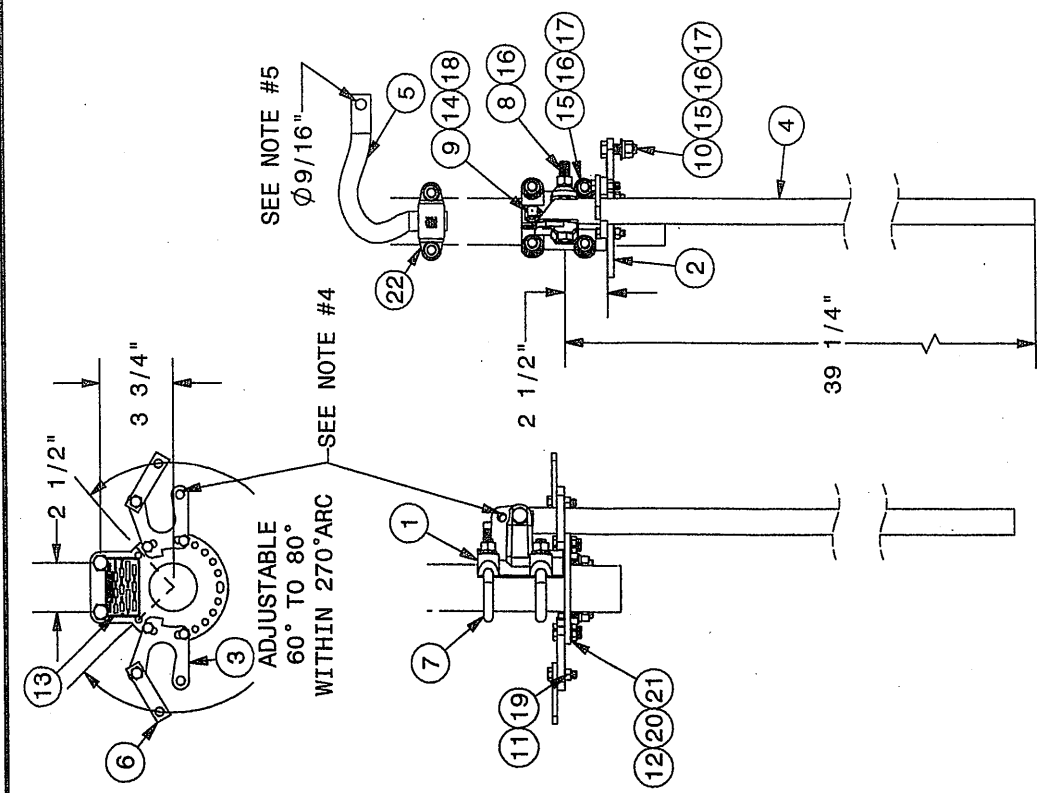
ROYAL SWITCHGEAR MANUFACTURING CO.			
3995 PINE LANE S.E., BESSEMER, ALABAMA 35022			
THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON THE CONDITION THAT THEY ARE NOT COPIED, REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL			
FOR:		MAT.	TITLE:
THIS DRAWING SUPERSEDES		SEE BOM	BASE 34KV VERTICAL BREAK
B10757; ISSUE 01 DATED 06-16-17		FIN. SEE BOM	DRAWN: rrickman DATE: 6/30/2017 CHECKED: RR DATE: 6/30/2017
NO.		DATE	REVISION RECORD
02		06-30-17	EC062917.4 RR
BY		CHK	ENG
TOLERANCE UNLESS SPEC'D		PART DRAWING NUMBER	
1. PLC DEC +/- 0.015"		10757	
2. PLC DEC +/- 0.010"		2	
3. PLC DEC +/- .005"			
FRACTIONS +/- 1/16"			
DEGREES +/- 2°			



BILL OF MATERIAL				
NO.	DESCRIPTION	CHK'D	PART NUMBER	QTY.
1	SINGLE POLE ASSEMBLY		SEE EQUIPMENT SUMMARY	3
2	CONTROL HANDLE ASSEMBLY		A2050	1
3	EXTENSION BRACKET		A4708H	1
4	OFFSET MOUNTING ANGLE		A20544AS	2
5	CLAMP BRACKET		A20517C	4
6	INTERMEDIATE GUIDE 2" IPS		A2285N	1
7	OUTBOARD BEARING ASSEMBLY		A2016	1
8	OUTBOARD BEARING BRACKET		A20635H	1
9	BALL & LEVER ASSEMBLY		A3364CS	1
10	UNIVERSAL SPINDLE OPERATING LEVER		A20396-KIT	1
11	CLEVIS ASSEMBLY		B1310A	4
12	POSITION INDICATOR ASSY.		B2160	1
13	1 1/4" IPS PIPE 10'-6" LG.		105728125040G	1
14	1 1/4" IPS PIPE 5'-3" LG.		105728125040G	1
15	2" IPS PIPE 21'-0" LG.		105728200040G	1
16	5/8"-11UNC HEX HD BOLT X 2" LG.		G63200H	16
17	5/8"-11UNC HEX HD NUT		GN6311H	32
18	5/8" LOCK WASHER		GL63	32
19	5/8" FLAT WASHER		GF63125	36
20	5/8" THREADED ROD 11" LG.		TR6311G-11	8

NOTES:
1. ALL HOLES ARE 11/16" ϕ .
2. SWITCH IS SHOWN IN THE CLOSED POSITION.
3. PIPE LENGTHS ARE APPROXIMATE AND MAY REQUIRE CUTTING IN FIELD.
4. GROUND BRAID IS SUPPLIED WITH CONTROL OPERATOR.

ROYAL SWITCHGEAR MANUFACTURING CO.			
3995 PINE LANE S.E., BESSEMER, ALABAMA 35022			
THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON THE CONDITION THAT THEY ARE NOT COPIED, REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL			
FOR: THIS DRAWING SUPERSEDES		MAT. SEE BOM	TITLE: CONTROL MECHANISM & SWITCH ASSEMBLY
FIN. SEE BOM		DRAWN: rrickman DATE: 6/29/2017 CHECKED: RR DATE: 6/29/2017	
SCALE: 1:30		ENGINEER: AG DATE: 6/30/2017	
TOLERANCE UNLESS SPEC'D 1. DEC. +/- 0.015" 2. DEC. +/- 0.010" 3. DEC. +/- .005" FRACTIONS +/- 1/16" DEGREES +/- 2°		PART DRAWING NUMBER 11697	
NO. DATE REVISION RECORD BY CHK'G ENG		ISSUE 1	



BILL OF MATERIAL				
NO.	DESCRIPTION	MATL./FIN.	PART NUMBER	QTY.
1	CLAMP & HINGE		C927B	1
2	MOUNTING PLATE	STL/G	A2049B	1
3	LOCK PLATE	STL/G	A2048B	2
4	HANDLE		A2047	1
5	GROUNDING BRAID	CUT/IN	SEE TABLE	1
6	PLATE	STL/G	A3317	2
7	U-BOLT FOR 2" IPS	STL/G	B30J12S	2
8	1/2"-13UNC HEX HD BOLT X 3-3/4 LG.	STL/G	G60375H	1
9	1/2"-13UNC X 1 1/2 SQ. HD DOG POINT SET SCREW	STL/G	762301150150G	TAB
10	1/2"-13UNC HEX HD BOLT X 1-1/2 LG.		G50150H	2
11	3/8"-16UNC HEX HD BOLT X 1-1/4 LG.	STL/G	G37125H	2
12	5/16"-18UNC HEX BOLT X 1-1/4 LG. S.S.	S.S./NONE	S31125H	4
13	NAMEPLATE		N08534-1	1
14	1/2"-13UNC X 1 3/4 SQ. HD DOG POINT SET SCREW	S.S./NONE	762315150175R	TAB
15	1/2" FLAT WASHER	STL/G	GF50SAE	6
16	1/2"-13UNC HEX HD NUT	STL/G	GN5013H	7
17	1/2" LOCK WASHER	STL/G	GL50	6
18	1/2"-13UNC HEX JAM NUT S.S.	S.S./NONE	880615113050R	1
19	3/8"-16UNC HEX HD NUT	STL/G	GN3716H	2
20	5/16"-18UNC HEX NUT S.S.	S.S./NONE	SN3118H	4
21	5/16" LOCK WASHER S.S.	S.S./NONE	SL31	4
22	GROUNDING BRAID CLAMP	D.I./G	A20693	1

- NOTES:
- SEE EQUIPMENT SUMMARY FOR NAMEPLATE DATA.
 - PEEN BOLTS OVER NUTS FOR ITEMS #8 & #10 AFTER ASSEMBLY.
 - CUSTOMER TO PEEN BOLTS OVER ALL OTHER NUTS AFTER SWITCH AND CONTROLS ARE INSTALLED AND ADJUSTED.
 - LOCKS ARE TO BE SUPPLIED BY CUSTOMER.
 - A-2050-P HAS A POLYETHER TUBE ON 18" LONG BRAID ASSEMBLY. (PART# 5184K79)
 - CLAMP & HINGE (ITEM #1) MUST SIT ON THE MOUNTING PLATE (ITEM #2) TO PROPERLY ALIGN CONTROL HANDLE MECHANICAL STOPS.

Table				
HANDLE	ITEM #5	ITEM #9	ITEM #13	ITEM #14
A-2050	A-3425-LL	1	N08534-1	0
A-2050-G	A-3425-G	1	N08534-1	0
A-2050-JJ	A-3425-JJ	1	N08534-1	0
A-2050-P	A-3425-LL	1	N08534-1	0
A-2050-S	A-3425-LL	0	N08534-1	1
A-2050-U	A-3425-LL	1	N08537-2	0
A-2050-V	A-3425-V	1	N08534-1	0
A-2050-W	A-3425-HH	1	N08534-1	0
A-2050-Z	A-3425-Z	1	N08534-1	0

ROYAL SWITCHGEAR MANUFACTURING CO.
3995 PINE LANE S.E., BESEMER, ALABAMA 35022

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON THE CONDITION THAT THEY ARE NOT COPIED, REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL

FOR: THIS DRAWING
SUPERSEDES
28 04-22-15
27 11-20-13
26 07-15-11
25 02-18-11
NO. DATE

ISSUE 27
EC052015-1
EC111918-1
EC071211-1
EC021711-1
REVISED BY CHK/ENG

DATED 11-20-13
AG
BS
ASK
MC

FIN. SEE BOM
SCALE: 1:10
ENGINEER:SPD
DATE:6/1/2015

MAT. SEE BOM
TITLE: CONTROL HANDLE ASSEMBLY
FOR 2" IPS PIPE

DATE:6/1/2015
CHECKED:AGD
DATE:6/1/2015

28
A
2050

NOTES:

1. ALL DIMENSIONS ARE GIVEN IN INCHES.
2. HOT DIP GALVANIZE AFTER FAB. PER ASTM A-123.
3. MATERIAL: 3/8" X "D" STEEL PLATE X "B" LG.

THIS DRAWING		A4708,	ISSUE 59	DATED 12/10/14	
60	04/13/15	EC041015.1	CO		
59	12/10/14	FC121014.3	CO		
58	02/23/14	EC092214.2	CO		
57	09/18/14	EC091814.1	AG		
NO.	DATE	REVISION	RECORD	BY	CHK/ENG

1 1/4"

1 1/4"

1 1/4"

1 1/2" "C"

1 1/4"

"B"

"A"

11/16" ϕ X 1" LG.

SLOTS (2) PLACES

9/16" ϕ X 1" LG. SLOTS (2) PLACES

"C"

"D"

ROYAL SWITCHGEAR MANUFACTURING CO.
3995 PINE LANE S.E. BESSEMER, ALABAMA 35022

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON CONDITION THAT THEY ARE NOT COPIED, REPRODUCED, OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL.

EXTENSION BRACKET

MAT: SEE NOTES	FILE:
--------------------------	--------------

FIN	SEE NOTES	DRAWN: LVC		DATE: 10-25-05	CHECKED: 	DATE: 11-13-05
		SCALE: NTS	ENGINEER: C	DATE: 11-13-05	ISSUE	60
		SIZE: A	PART DRAWING NUMBER: 4708			

FILE: G:\DRAWINGS\RSGDWGA\A4708-60.DWG

Feh 01, 2022 7:41 PM EST

3995 PINE LANE S.E. BESSEMER, ALABAMA 35022

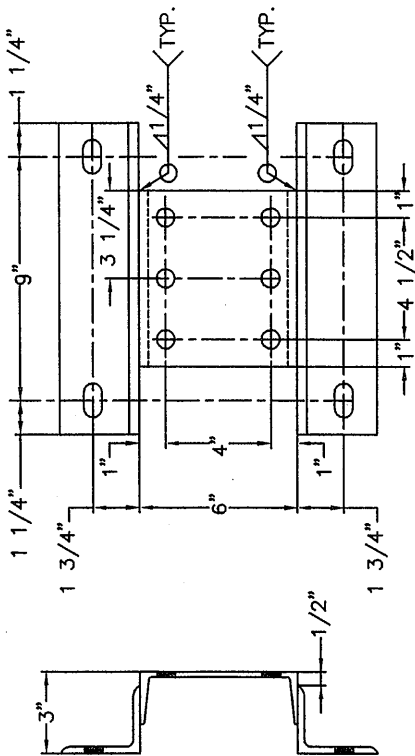
FOR:

MAT:	FILE:
OFF	NOTES

100

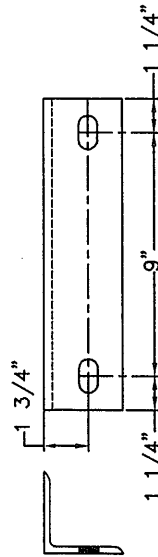
FILE: G:\DRAWINGS\RSGDWGA\A20544-14.DWG

SIZE	PART DRAWING NUMBER	A
ISSUE		4



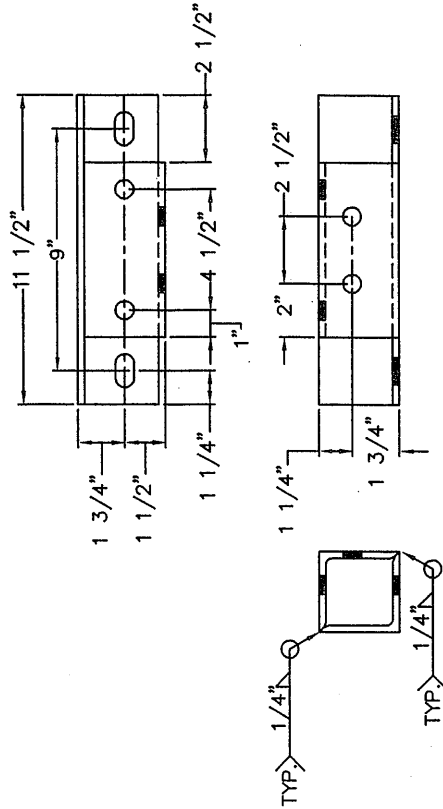
A-20517--A

MATERIAL: (1) 6" X 8.2# STEEL CHANNEL X 6 1/2" LG.
(2) 1/4" X 3" X 2 1/2" STEEL ANGLE X 11 1/2" LG.



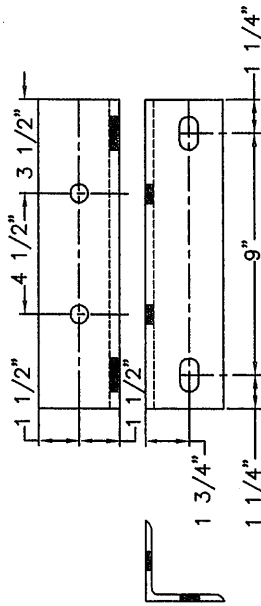
A-20517-C

MATERIAL: 1/4" X 3" X 3" STEEL ANGLE X 11 1/2" LG.



A-20517-B

MATERIAL: (1) 3" X 3" X 1/4" STEEL ANGLE X 6 1/2" LG.
(1) 1/4" X 3" X 3" STEEL ANGLE X 11 1/2" LG.



A-20517-D

MATERIAL: 1/4" X 3" X 3" STEEL ANGLE X 11 1/2" LG.

ROYAL SWITCHGEAR MANUFACTURING CO.

3995 PINE LANE S.E. BESSEMER, ALABAMA 35022

NOTES:

- NOTES:
1. ALL DIMENSIONS ARE GIVEN IN INCHES.
 2. ALL HOLES ARE 11/16" ϕ UNLESS NOTED OTHERWISE.
 3. ALL SLOTS ARE 11/16" ϕ X 1 1/4" LG.
 4. HOT DIP GALVANIZE AFTER FABRICATION PER ASTM A-123.

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON CONDITION THAT THEY ARE NOT COPIED, REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL.

COPIED REPRINTED OR DISCLOSED TO PART, THIRD PARTY, OTHER WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER										TITLE: CLAMP BRACKETS	
FOR: THIS DRAWING SUPPLEMENTS A20517; ISSUE 03 DATED 04-25-14										DATE:	
04		05-12-16		EC051216.1		RR		FIN: GALVANIZE		DRAWN: R. BYRD DATE: 01-05-11 CHECKED:  DATE: 5-12-14	
03		04-25-14		EC042414.4		BS		TOLERANCE UNLESS SPEC'D		SCALE: NTS	
02		02-01-13		EC020113.2		AG		1 FRA DEC 1/16"		PART DRAWING NUMBER	
NO.		DATE		REVISION RECORD		BY CHK ENG		2 FRA DEC 1/8"		SIZE	
								3 FRA DEC 3/32"		A	
								4 FRA DEC 1/4"		20517	
								5 FRA DEC 3/8"		4	
								6 FRA DEC 1/2"		ISSUE	
								7 FRA DEC 5/8"			
								8 FRA DEC 3/4"			
								9 FRA DEC 7/8"			
								10 FRA DEC 1"			
								11 FRA DEC 1 1/8"			
								12 FRA DEC 1 1/4"			
								13 FRA DEC 1 3/8"			
								14 FRA DEC 1 1/2"			
								15 FRA DEC 1 3/4"			
								16 FRA DEC 1 7/8"			
								17 FRA DEC 2"			
								18 FRA DEC 2 1/4"			
								19 FRA DEC 2 3/4"			
								20 FRA DEC 3"			
								21 FRA DEC 3 1/4"			
								22 FRA DEC 3 1/2"			
								23 FRA DEC 3 3/4"			
								24 FRA DEC 4"			
								25 FRA DEC 4 1/4"			
								26 FRA DEC 4 1/2"			
								27 FRA DEC 4 3/4"			
								28 FRA DEC 5"			
								29 FRA DEC 5 1/4"			
								30 FRA DEC 5 1/2"			
								31 FRA DEC 5 3/4"			
								32 FRA DEC 6"			
								33 FRA DEC 6 1/4"			
								34 FRA DEC 6 1/2"			
								35 FRA DEC 6 3/4"			
								36 FRA DEC 7"			
								37 FRA DEC 7 1/4"			
								38 FRA DEC 7 1/2"			
								39 FRA DEC 7 3/4"			
								40 FRA DEC 8"			
								41 FRA DEC 8 1/4"			
								42 FRA DEC 8 1/2"			
								43 FRA DEC 8 3/4"			
								44 FRA DEC 9"			
								45 FRA DEC 9 1/4"			
								46 FRA DEC 9 1/2"			
								47 FRA DEC 9 3/4"			
								48 FRA DEC 10"			
								49 FRA DEC 10 1/4"			
								50 FRA DEC 10 1/2"			
								51 FRA DEC 10 3/4"			
								52 FRA DEC 11"			
								53 FRA DEC 11 1/4"			
								54 FRA DEC 11 1/2"			
								55 FRA DEC 11 3/4"			
								56 FRA DEC 12"			
								57 FRA DEC 12 1/4"			
								58 FRA DEC 12 1/2"			
								59 FRA DEC 12 3/4"			
								60 FRA DEC 13"			
								61 FRA DEC 13 1/4"			
								62 FRA DEC 13 1/2"			
								63 FRA DEC 13 3/4"			
								64 FRA DEC 14"			
								65 FRA DEC 14 1/4"			
								66 FRA DEC 14 1/2"			
								67 FRA DEC 14 3/4"			
								68 FRA DEC 15"			
								69 FRA DEC 15 1/4"			
								70 FRA DEC 15 1/2"			
								71 FRA DEC 15 3/4"			
								72 FRA DEC 16"			
								73 FRA DEC 16 1/4"			
								74 FRA DEC 16 1/2"			
								75 FRA DEC 16 3/4"			
								76 FRA DEC 17"			
								77 FRA DEC 17 1/4"			
								78 FRA DEC 17 1/2"			
								79 FRA DEC 17 3/4"			
								80 FRA DEC 18"			
								81 FRA DEC 18 1/4"			
								82 FRA DEC 18 1/2"			
								83 FRA DEC 18 3/4"			
								84 FRA DEC 19"			
								85 FRA DEC 19 1/4"			
								86 FRA DEC 19 1/2"			
								87 FRA DEC 19 3/4"			
								88 FRA DEC 20"			
								89 FRA DEC 20 1/4"			
								90 FRA DEC 20 1/2"			
								91 FRA DEC 20 3/4"			
								92 FRA DEC 21"			
								93 FRA DEC 21 1/4"			
								94 FRA DEC 21 1/2"			
								95 FRA DEC 21 3/4"			
								96 FRA DEC 22"			
								97 FRA DEC 22 1/4"			
								98 FRA DEC 22 1/2"			
								99 FRA DEC 22 3/4"			
								100 FRA DEC 23"			
								101 FRA DEC 23 1/4"			
								102 FRA DEC 23 1/2"			
								103 FRA DEC 23 3/4"			
								104 FRA DEC 24"			
								105 FRA DEC 24 1/4"			
								106 FRA DEC 24 1/2"			
								107 FRA DEC 24 3/4"			
								108 FRA DEC 25"			
								109 FRA DEC 25 1/4"			
								110 FRA DEC 25 1/2"			
								111 FRA DEC 25 3/4"			
								112 FRA DEC 26"			
								113 FRA DEC 26 1/4"			
								114 FRA DEC 26 1/2"			
								115 FRA DEC 26 3/4"			
								116 FRA DEC 27"			
								117 FRA DEC 27 1/4"			
								118 FRA DEC 27 1/2"			
								119 FRA DEC 27 3/4"			
								120 FRA DEC 28"			
								121 FRA DEC 28 1/4"			
								122 FRA DEC 28 1/2"			
								123 FRA DEC 28 3/4"			
								124 FRA DEC 29"			
								125 FRA DEC 29 1/4"			
								126 FRA DEC 29 1/2"			
								127 FRA DEC 29 3/4"			
								128 FRA DEC 30"			
								129 FRA DEC 30 1/4"			
								130 FRA DEC 30 1/2"			
								131 FRA DEC 30 3/4"			
								132 FRA DEC 31"			
								133 FRA DEC 31 1/4"			
								134 FRA DEC 31 1/2"			
								135 FRA DEC 31 3/4"			
								136 FRA DEC 32"			
								137 FRA DEC 32 1/4"			
								138 FRA DEC 32 1/2"			
								139 FRA DEC 32 3/4"			
								140 FRA DEC 33"			
								141 FRA DEC 33 1/4"			
								142 FRA DEC 33 1/2"			
								143 FRA DEC 33 3/4"			
								144 FRA DEC 34"			
								145 FRA DEC 34 1/4"			
								146 FRA DEC 34 1/2"			
								147 FRA DEC 34 3/4"			
								148 FRA DEC 35"			
								149 FRA DEC 35 1/4"			
								150 FRA DEC 35 1/2"			
								151 FRA DEC 35 3/4"			
								152 FRA DEC 36"			
								153 FRA DEC 36 1/4"			
								154 FRA DEC 36 1/2"			
								155 FRA DEC 36 3/4"			
								156 FRA DEC 37"			
								157 FRA DEC 37 1/4"			
								158 FRA DEC 37 1/2"			
								159 FRA DEC 37 3/4"			
								160 FRA DEC 38"			
								161 FRA DEC 38 1/4"			
								162 FRA DEC 38 1/2"			
								163 FRA DEC 38 3/4"			
								164 FRA DEC 39"			
								165 FRA DEC 39 1/4"			
								166 FRA DEC 39 1/2"			
								167 FRA DEC 39 3/4"			
								168 FRA DEC 40"			
								169 FRA DEC 40 1/4"			
								170 FRA DEC 40 1/2"			
								171 FRA DEC 40 3/4"			
								172 FRA DEC 41"			
								173 FRA DEC 41 1/4"			
								174 FRA DEC 41 1/2"			
								175 FRA DEC 41 3/4"			
								176 FRA DEC 42"			
								177 FRA DEC 42 1/4"			
								178 FRA DEC 42 1/2"			
								179 FRA DEC 42 3/4"			
								180 FRA DEC 43"			
								181 FRA DEC 43 1/4"			
								182 FRA DEC 43 1/2"			
								183 FRA DEC 43 3/4"			
								184 FRA DEC 44"			
								185 FRA DEC 44 1/4"			
								186 FRA DEC 44 1/2"			
								187 FRA DEC 44 3/4"			
								188 FRA DEC 45"			
								189 FRA DEC 45 1/4"			
								190 FRA DEC 45 1/2"			
								191 FRA DEC 45 3/4"			
								192 FRA DEC 46"			
								193 FRA DEC 46 1/4"			
								194 FRA DEC 46 1/2"			
								195 FRA DEC 46 3/4"			
								196 FRA DEC 47"			
								197 FRA DEC 47 1/4"			
								198 FRA DEC 47 1/2"			
								199 FRA DEC 47 3/4"			
								200 FRA DEC 48"			
								201 FRA DEC 48 1/4"			
								202 FRA DEC 48 1/2"			
								203 FRA DEC 48 3/4"			
								204 FRA DEC 49"			
								205 FRA DEC 49 1/4"			
								206 FRA DEC 49 1/2"			

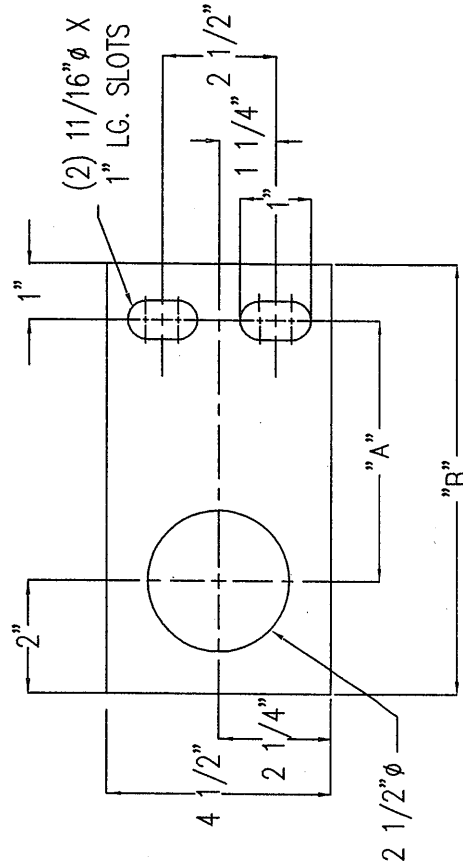
FILE G:\DRAWINGS\RSGDWGA\A20517-4.DWG

ISSUE	17
PART DRAWING NUMBER	2285
SIZE	A

TAB	A	B
A-2285-AB	9	12
A-2285-AC	9 1/4	12 1/4
A-2285-AD	9 1/2	12 1/2
A-2285-AE	9 3/4	12 3/4
A-2285-AF	10	13
A-2285-AG	10 1/4	13 1/4
A-2285-AH	10 1/2	13 1/2
A-2285-AJ	10 3/4	13 3/4
A-2285-AK	11	14
A-2285-AL	11 1/4	14 1/4
A-2285-AM	11 1/2	14 1/2
A-2285-AN	11 3/4	14 3/4
A-2285-AP	12	15
A-2285-AQ	12 1/4	15 1/4
A-2285-AR	12 1/2	15 1/2
A-2285-AS	12 3/4	15 3/4
A-2285-AT	13	16
A-2285-AU	13 1/4	16 1/4
A-2285-AV	13 1/2	16 1/2
A-2285-AW	8 7/8	11 7/8

TAB	A	B
A-2285-A	3	6
A-2285-B	3 1/4	6 1/4
A-2285-C	3 1/2	6 1/2
A-2285-D	3 3/4	6 3/4
A-2285-E	4	7
A-2285-F	4 1/4	7 1/4
A-2285-G	4 1/2	7 1/2
A-2285-H	4 3/4	7 3/4
A-2285-J	5	8
A-2285-K	5 1/4	8 1/4
A-2285-L	5 1/2	8 1/2
A-2285-M	5 3/4	8 3/4
A-2285-N	6	9
A-2285-P	6 1/4	9 1/4
A-2285-Q	6 1/2	9 1/2
A-2285-R	6 3/4	9 3/4
A-2285-S	7	10
A-2285-T	7 1/4	10 1/4
A-2285-U	7 1/2	10 1/2
A-2285-V	7 3/4	10 3/4
A-2285-W	8	11
A-2285-X	8 1/4	11 1/4
A-2285-Y	8 1/2	11 1/2
A-2285-Z	8 3/4	11 3/4

confidential



NOTE: MATERIAL: 1/4" X 4 1/2" X "B" LG.
STL. PLATE

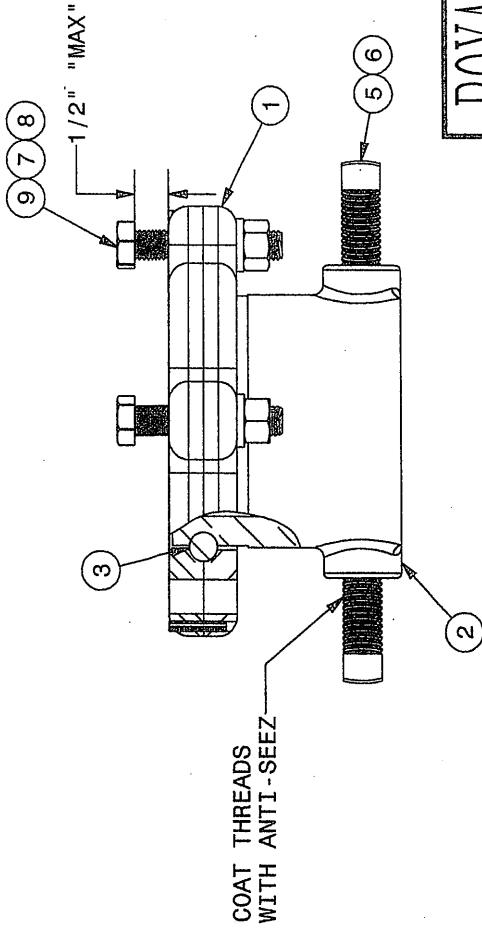
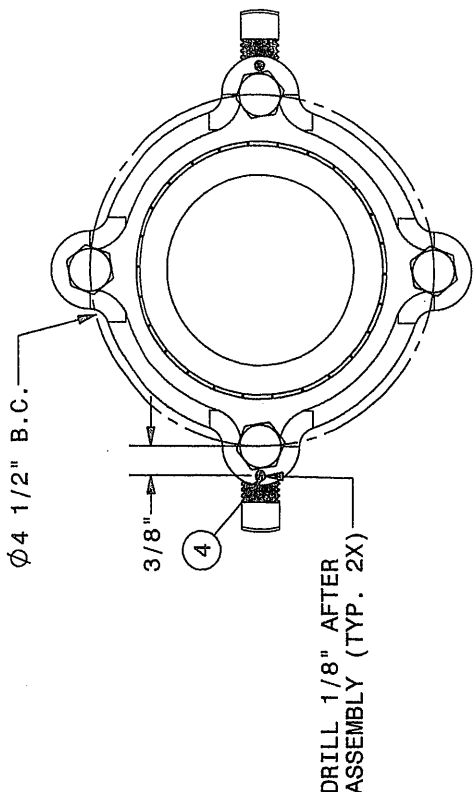
ROYAL SWITCHGEAR MANUFACTURING CO.
3995 PINE LANE S.E., BESSEMER, ALABAMA 35022

TITLE		GUIDE 2" IPS		DRAWN: C KING		DATE: 8-21-01		CHECKED: <i>WJ</i>		DATE: <i>8-22-01</i>	
				SCALE: NTS				ENGINEER: <i>W</i>		DATE: <i>8-23-01</i>	
				SIZE		PART DRAWING NUMBER				ISSUE	
		A		2285						17	

G:\DRAWINGS\RSGDWGA\A2285-17.DWG

BILL OF MATERIAL

ITEM	DESCRIPTION	CHK'D	PART NO.	QTY.
1	OUTER BEARING RACE (BRONZE)		A2013A	2
2	INNER RACE & SPINDLE (BRONZE)		A2014A	1
3	BEARING BALL		A9080A	26
4	ROLL PIN		S12075RP	2
5	1/2" X 1 1/2" SQUARE HD DOG POINT SET BOLT (GALV.)		762301150150G	SEE TAB
6	1/2" X 1 1/2" SQUARE HD DOG POINT SET BOLT (S.S.)		S50200HDP	SEE TAB
7	3/8" -16UNC HEX HD NUT		GN3716H	4
8	3/8" LOCK WASHER		GL37	4
9	3/8" -16UNC HEX HD BOLT X 2" LG.		G37200H	4



TAB	ITEM #5	ITEM #6
A-2016	2	0
A-2016-S	0	2

ROYAL SWITCHGEAR MANUFACTURING CO.
3995 PINE LANE S.E., BESEMER, ALABAMA 35022

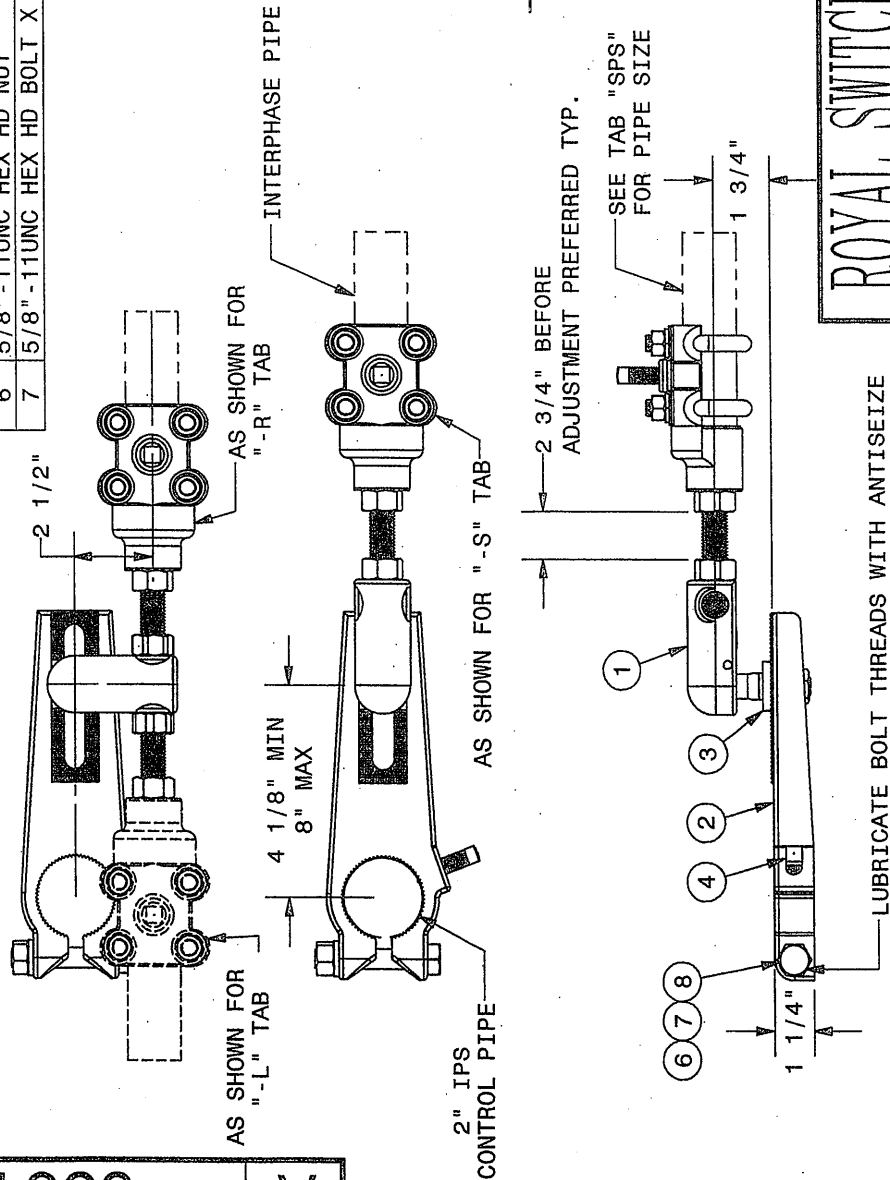
THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON THE CONDITION THAT THEY ARE NOT COPIED, REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL

FOR: THIS DRAWING A2016; ISSUE 07 DATED 10-04-00		TITLE: OUTBOARD BEARING FOR 2" IPS PIPE	
SUPERSEDES		DRAWN: agnntt DATE: 2/22/2017 CHECKED: AG DATE: 5/28/2015	
08 5-13-15 EC052015.1 AG		SCALE: 2:5 ENGINEER: SPD DATE: 5/28/2015	
07 10-04-00 EC100400.2 DML		PART DRAWING NUMBER	
NO. DATE REVISION RECORD BY CHK ENG		A 2016 8	

8	2016	A
ISSUE	PART DRAWING NUMBER	SIZE

BILL OF MATERIAL

NO.	DESCRIPTION	CHK'D	PART NUMBER	QTY.
1	BALL AND SOCKET ASSEMBLY	SEE TAB	1	1
2	LEVER	B1291	1	1
3	SERRATED WASHER	A2022	1	1
4	1/2"-13UNC X 1 1/2 SQ. HD DOG POINT SET SCREW	762301150150G	1	1
5	5/8" LOCK WASHER	GL63	1	1
6	5/8"-11UNC HEX HD NUT	GN6311H	1	1
7	5/8"-11UNC HEX HD BOLT X 3-1/2" LG.	G63350H	1	1



TABULATION			
DWG. NO.	ITEM #1	SPS	
A-3364-AS	A-3354-AS	2"	
A-3364-AL	A-3354-AL		
A-3364-AR	A-3354-AR		
A-3364-BS	A-3354-BS	1-1/2"	
A-3364-BL	A-3354-BL		
A-3364-BR	A-3354-BR		
A-3364-CS	A-3354-CS	1-1/4"	
A-3364-CL	A-3354-CL		
A-3364-CR	A-3354-CR		
A-3364-DS	A-3354-DS	1"	
A-3364-DL	A-3354-DL		
A-3364-DR	A-3354-DR		

ROYAL SWITCHGEAR MANUFACTURING CO.
3995 PINE LANE S.E., BESEMER, ALABAMA 35022

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON THE CONDITION THAT THEY ARE NOT COPIED, REPRODUCED, OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL

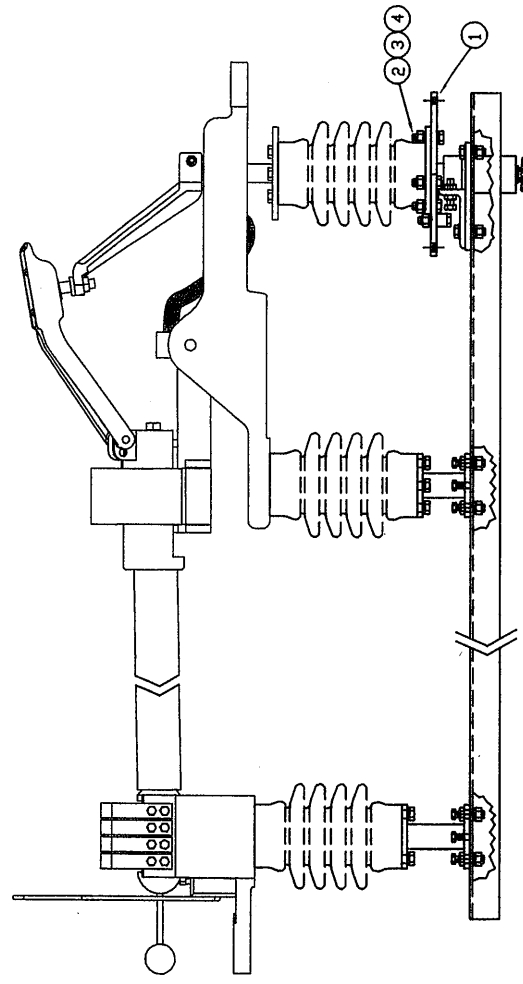
FOR: MAT. TITLE: BALL & LEVER ASSEMBLY	
THIS DRAWING: A-3364; ISSUE 7	DATED: 05-02-16
SUPERSEDES: 8 02-28-17 EC052015.1 RR	
7 05-02-16 EC042816.4 CO	
6 12-31-15 EC123115.1 TM	
5 01-08-13 EC10713.1 RA	
NO. DATE REVISION RECORD BY CHK/ENG	
DRAWN: spant DATE: 3/25/2015 CHECKED: RR DATE: 3/2/2017	
SCALE: 1:5 ENGINEER: AG DATE: 3/2/2017	
PART NUMBER: A 3364	
ISSUE: 8	

FILE: C:\Vault\control mechanism part assembly\lever & ball\A3364

8	3364	A
ISSUE	PART DRAWING NUMBER	SIZE

BILL OF MATERIAL				A-20396-KIT
NO.	PART DESCRIPTION	MATL/FIN	PART NUMBER	QTY.
1	OPERATING LEVER TAB	STL/GAL	A20396	1
2	1 1/2"-13NC X 1-1/2" HEX HD BOLT	STL/GAL	G50150H	2
3	1 1/2" LOCK WASHER	STL/GAL	GL50	2
4	1 1/2"-13 HEX NUT	STL/GAL	GN5013H	2

ISSUE	1
PART DRAWING NUMBER	A-20396-KIT
SIZE	



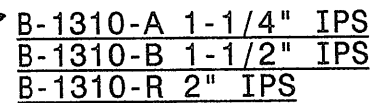
NOTES:
1. THIS DRAWING IS USED FOR BOTH
1200, 2000 AND 3000 AMP SWITCH.

ROYAL SWITCHGEAR MANUFACTURING CO.

3995 PINE LANE S.E. BESEMER, ALABAMA 35022

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON CONDITION THAT THEY ARE NOT COPIED, REPRODUCED, REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL.

FOR:	MAT. SEE NOTES	TITLE
THIS DRAWING SUPERSEDES A20396-KIT; ISSUE 1 DATED 05-02-11	SEE NOTES	UNIVERSAL SPINDLE
	FIN	LEVER TAB KIT (3" B.C.)
	TELEPHONE	DRAWN: A. SUPINSKY DATE: 05-02-11 CHECKED: J. L. DATE: 10-15-12
	1 P.L. REC. 1/2" XX	SCALE: NTS
	2 P.L. REC. 1/2" XX	ENGINEER: J.S. DATE: 10-15-12
02 10-15-12 EC100112.3 BS	3 P.L. REC. 1/2" XX	SIZE
NO. DATE REVISION RECORD BY CHK ENG	FRANCHES 1/2" XX	PART DRAWING NUMBER
		A 20396-KIT
		2

[illegible]

B-1310-C 1-1/4" IPS
B-1310-D 1-1/2" IPS
B-1310-S 2" IPS

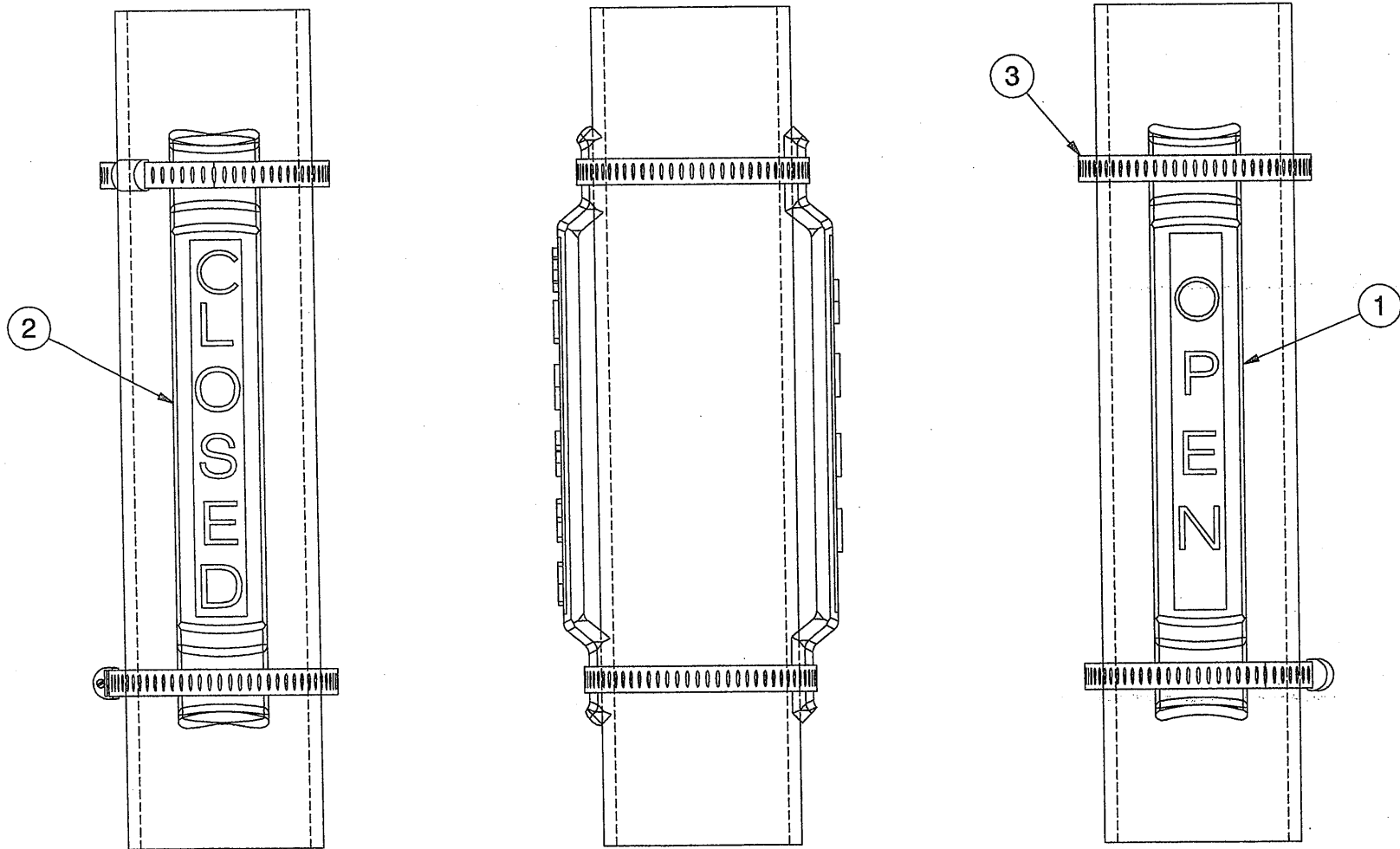
Diagram illustrating the front view of the keyboard assembly, showing the two-piece design. The components are numbered 1 through 12, corresponding to the parts list:

- 1: Upper housing (right side)
- 2: Upper housing (left side)
- 3: Keycap (right side)
- 4: Keycap (left side)
- 5: Keycap (left side)
- 6: Keycap (left side)
- 7: Keycap (left side)
- 8: Keycap (right side)
- 9: Keycap (right side)
- 10: Keycap (right side)
- 11: Keycap (right side)
- 12: Keycap (right side)

B-1310-E 1-1/4"-1-1/4" IPS
B-1310-F 1-1/2"-1-1/2" IPS
B-1310-G 1-1/4"-1-1/2" IPS
B-1310-T 2"-2" IPS

Troy Bushman
TransAlta

BILL OF MATERIAL				
NO.	DESCRIPTION	CHK'D	PART NUMBER	QTY.
1	OPEN POSITION INDICATOR		B615C	1
2	CLOSED POSITION INDICATOR		B615D	1
3	S.S. WORM SCREW DRIVE HOSE CLAMP		SPC40SAE	2



ROYAL SWITCHGEAR MANUFACTURING CO.

3995 PINE LANE S.E., BESSEMER, ALABAMA 35022

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPRIETARY PROPERTY OF ROYAL AND ARE ISSUED ON THE CONDITION THAT THEY ARE NOT
COPYIED REPRINTED OR DISCLOSED TO ANY THIRD PARTY, EITHER WHOLLY OR IN PART, WITHOUT THE CONSENT IN WRITING OF ROYAL

FOR:				MAT.		TITLE:	
THIS DRAWING SUPERSEDES				B2160; ISSUE 03		DATED 07-13-11	
				FIN.		SEE BOM	
04	05-13-15	EC052015.1	AG			DRAWN: agantt	
03	07-13-11	EC071211.2	ASK			DATE: 4/14/2015	
02	05-01-97	REDRAWN ON CAD	REC			CHECKED: AG	
						DATE: 6/1/2015	
						SCALE: 1:2	
						ENGINEER: SPD	
						DATE: 6/3/2015	
						PART DRAWING NUMBER	
						ISSUE	
						B	
						2160	
						4	