

DO NOT SCALE - WORK TO DIMENSIONS

STANDARD TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAL DIM.

TWO PLACE DECIMAL
THREE PLACE DECIMAL

± .000
± .000

HOLE DIA

FRACTIONAL, LETTER, OR DIMENSIONED DRILL

± .000
± .000

ANGLE

DIMENSIONED ± 1°

UNDIMENSIONED 90° ± 1°

REV.

C.R.

DATE

BY

IDENTIFICATION			VOLTAGE		INSULATION LEVEL		CURRENT		RELATED REQUIRED CAPABILITIES							
CIRCUIT BREAKER DESIGNATION	NOMINAL VOLTAGE CLASS	NOMINAL 3 PHASE MVA CLASS	RATED MAXIMUM VOLTAGE	K	RATED VOLTAGE RANGE FACTOR	RATED WITHSTAND TEST VOLTAGE	LOW FREQUENCY	IMPULSE	RATED CONTINUOUS CURRENT @ 60 HZ	RATED INTERRUPTING CAPACITY AT MAXIMUM RATED VOLTAGE	RATED INTERRUPTING TIME	RATED PERMISSIBLE TRIPPING DELAY	CURRENT VALUES			
													3 SECOND SHORT TIME CURRENT CARRYING CAPABILITY	CLOSE AND LATCH CAPABILITY		
VAD-1	KV, RMS		KV, RMS				KV, RMS	KV, CREST	AMPS RMS	K AMPS RMS	60HZ CYCLES	SEC.	KV, RMS	KA, RMS	KA, RMS	KA, RMS
05025-12	4.16	250	4.76	1.24	19	60	1200	29	3	2	3.85	36	36	36	58	
05025-20	4.16	250	4.76	1.24	19	60	2000	29	3	2	3.85	36	36	36	58	
15050-12	13.8	500	15	1.30	36	95	1200	18	3	2	11.5	23	23	23	37	
15050-20	13.8	500	15	1.30	36	95	2000	18	3	2	11.5	23	23	23	37	
15075-12	13.8	750	15	1.30	36	95	1200	28	3	2	11.5	36	36	36	58	
15075-20	13.8	750	15	1.30	36	95	2000	28	3	2	11.5	36	36	36	58	
08035-12	7.2	350	8.25	1.25	36	95	1200	29	3	2	6.6	36	36	36	58	
08035-20	7.2	350	8.25	1.25	36	95	2000	29	3	2	6.6	36	36	36	58	

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SCALE

DRAWN

CHECKED

DATE

C.M.

TITLE

Metal Clad Circuit Breaker Ratings

VAD-1

USED ON

RAWBIOCH

PRINTS TO

SQUARE D COMPANY

SMYRNA, TENNESSEE USA

B46002-127

FOOTNOTES:

Footnotes for Metal Clad Breaker Ratings

1. Refer to ANSI Standard C37.04 for definitions of terms used.

2. Rated short circuit current at Maximum Rated Voltage.

3. Rated Maximum Voltage divided by K.

4. Rated short circuit current at Minimum Rated Voltage.

5. Not standard ANSI rating.

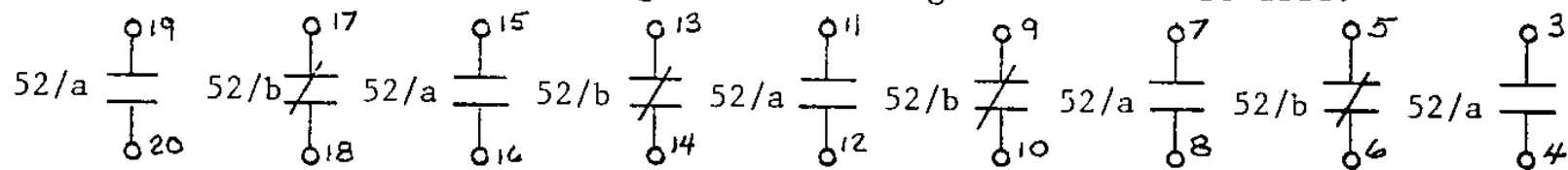
6. Breakers are reclosure rated provided that the breaker is equipped with a latch check switch.

MOC & TOC Contacts

Both the MOC and TOC contacts are rated 600 volts/20 amps continuous. These contacts are very difficult to convert from a to b or b to a thus control schemes should be designed such that conversion is not necessary.

MOC Limits

The MOC switch is operated through a series of linkages located on the right hand side or the breaker cell. The switch is located inside the low voltage wire trough and is available with 9 contacts (5a & 4b). The following contact arrangement should be used:

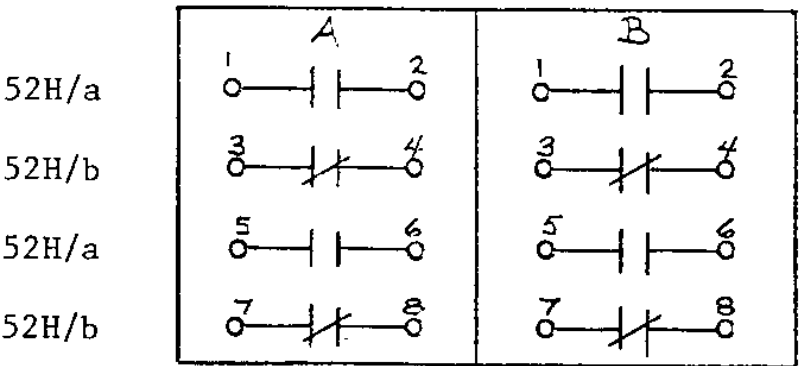


Viewed From Front

TOC Limits

The TOC switch is operated by a plate mounted around the racking screw on the breaker this plate depresses a spring loaded plunger which in turn, rotates the switch.

The switch has 4 contacts (2a & 2b) and a maximum of two switches is available. This allows for a total of 8 contacts (4a & 4b). The following contact arrangement should be used:

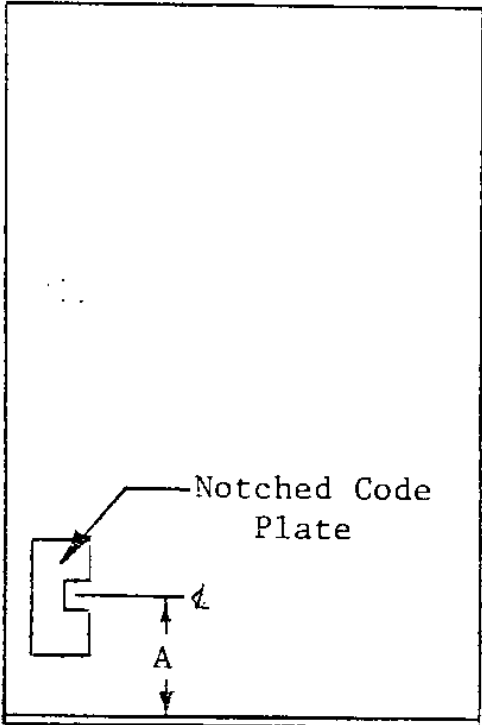


Viewed From Front

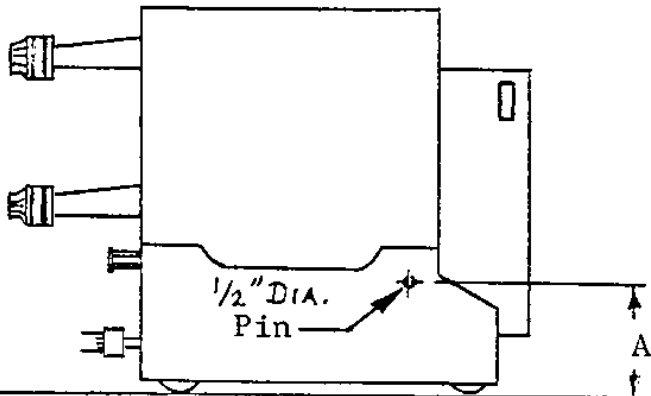
- Note: 1. TOC contacts shown with breaker in disconnected position.
2. Two switches shown. If only one switch required, omit right hand switch block.

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REVISIONS			MOC & TOC Contacts	DRAWN BY- J. King	
				CHECKED BY-	
				DATE- 5-30-84	
				V0063	
			 SQUARE D COMPANY POWER EQUIPMENT GROUP SMYRNA, TENNESSEE	A- 46002-128	REV.



Front View of Breaker Cell



Left side view of Circuit Breaker

Only the correct Breaker Rating is to be inserted into the Breaker Cell. This interlocking is accomplished by a pin welded to the left side of the circuit breaker at dimension 'A' and a notched code plate bolted to the cell at Dimension 'A'.

Breaker Rating			Dim. 'A'
KV	MVA	Ampacity	
5	250	1200	6.44
5	250	2000	3.81
15	500	1200	4.69
15	500	2000	7.31
15	750	1200	6.44
15	750	2000	3.81
8.25	350	1200	6.44
8.25	350	2000	3.81

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REV.	C. R.	DATE	BY	DO NOT SCALE - WORK TO DIMENSIONS											
				STANDARD TOLERANCE UNLESS OTHERWISE SPECIFIED	LINEAL DIM.	TWO PLACE DECIMAL $\pm .020$ THREE PLACE DECIMAL $\pm .008$									
					HOLE DIA.	FRACTIONAL LETTER OR NUMBERED DRILL $\pm .004$ THREE PLACE DECIMAL $\pm .002$ $- .003$									
					ANGLE	DIMENSIONED $\pm 1^\circ$ UNDIMENSIONED $90^\circ \pm 2^\circ$									
				SCALE	DRAWN	CHKD	DATE	C. R.	 SQUARE D COMPANY SMYRNA, TENNESSEE USA A46002-129						
					J. King		5-30-84	V0063							
				TITLE				Breaker/Cell Interlocking							
				USED ON				Vac - Arc							
				RAWSTOCK											
PRINTS TO															

A B C D E F G

VAD-1 Breaker Operating Motors & Solenoids

YIN Part No.	Description	Nominal Voltage	ANSI Range	Current (AMP)
1715D-01	Motor	48VDC	36-52	9.0
-02	"	125VDC	90-130	5.0
-02	"	250VDC	180-260	5.0
-02	"	120VAC	95-125	5.0
-02	"	240VAC	190-250	5.0
2022D-01	Closing Solenoid	24VDC	20-28	28.0
-02	"	48VDC	36-52	13.6
-03	"	125VDC	90-130	6.0
-04	"	250VDC	180-260	3.0
-05	"	120VAC	90-125	6.0
-06	"	240VAC	190-250	3.0
2033D-01	Anti Pump Relay	24VDC	18-28	.083
-02	"	48VDC	30-52	.042
-03	"	125VDC	70-130	.016
-04	"	250VDC	150-260	.008
-05	"	120VAC	95-125	.083
-01	"	240VAC	190-250	.042
2021D-01	Trip Solenoid	24VDC	14-30	28.0
-02	"	48VDC	28-60	13.6
-03	"	125VDC	70-140	6.0
-04	"	250VDC	140-280	3.0
-05	"	120VAC	95-125	6.0
-06	"	240VAC	190-250	3.0
2032D-02	Motor Relay	48VDC	30-52	.083
-03	"	125VDC	70-130	.042
-04	"	250VDC	150-260	.016
-05	"	120VAC	95-125	.008
-06	"	240VAC	190-250	.042

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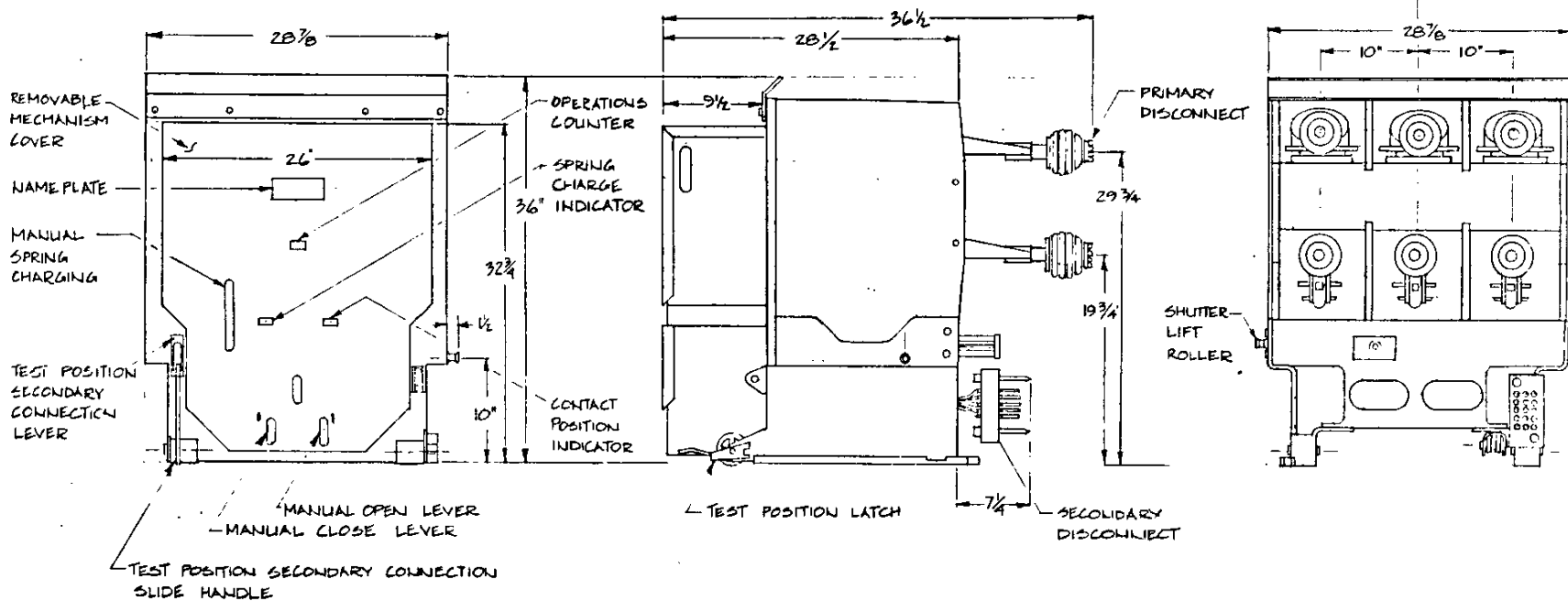
REVISIONS			VAD-1 Motors & Solenoids	DRAWN BY- J. King	
				CHECKED BY-	
				DATE- 5-30-84	
				V0063	
			 SQUARE D COMPANY POWER EQUIPMENT GROUP SMYRNA, TENNESSEE	A- 46002-130	
					REV.

NOTES:

1. THE DIMENSIONS BELOW COVER THE FOLLOWING RATINGS:

MODEL NO	RATING	SQUARE D No.
HVD-1550-12	15 KV/500MVA/1200A	VAD-15050-12
HVD-1550-20	15 KV/500MVA/2000A	VAD-15050-20
HVD-1575-12	15 KV/750MVA/1200A	VAD-15075-12
HVD-1575-20	15 KV/750MVA/2000A	VAD-15075-20
HVD-0525-12	5 KV/250MVA/1200A	VAD-05025-12
HVD-0525-20	5 KV/250MVA/2000A	VAD-05025-20
HVD-0835-12	7.2 KV/350MVA/1200A	VAD-08035-12
HVD-0835-20	7.2 KV/350MVA/2000A	VAD-08035-20

2. THE HVD SERIES OF HORIZONTAL DRAWOUT VACUUM CIRCUIT BREAKERS CAN BE USED IN CONJUNCTION WITH BOTH THE DSC AND CSC SERIES OF SKELETON CELLS.



VAD HVD VACUUM CIRCUIT BREAKER, BASIC DIMENSIONS

USED ON:	EX. NO.	REV.	DATE
VAD-1	V.1063	J.1412	04/0002-31
QTY REQD PER DASH NO	ITEM NO.	PART NUMBER	DESCRIPTION
			YIN, INC.
			SQUARE D COMPANY
			SAN LEANDRO CALIFORNIA
			HVD VACUUM CIRCUIT BREAKER
			BASIC DIMENSIONS
MATERIAL:	APPLICATION:	DATE	REV
N/A		DATE 9-21-82	
FINISH:		CATEGORY	SIZE
N/A		HVD	C
		DRWG. NO	102499
		DATE	

SDSC (Square D Skeleton Cell)

Cell Description

The SDSC breaker cell is manufactured from sheet steel, welded together to form a free standing, self supporting structure.

The cell is steam cleaned, phosphatized then spray painted Ansi #49 with an air dry vinyl paint which is U.L. outdoor listed. The dry film thickness is 3 mils.

Current transformers can be mounted over porcelain bushings which are front accessible after removing the shutter plate and the C.T. cover.

The shutter is not padlockable and is made from 1/8" thick glastic. The C.T. cover is formed from .073 thick non-flammable red plastic.

A MOC (Mechanism Operated Contact) switch is available as an option and is located inside the low voltage wire trough on the right hand side. A maximum of one switch (9-contacts, 5a & 4b) is available. The switch is reached by removing an access plate on the front of the low voltage trough.

A TOC (Truck Operated Contact) switch is available as an option and is located directly below the C.T.'s, mounted on the back wall of the breaker compartment. A maximum of two switches (4 Contacts, 2a & 2b each) is available. The switch is reached by removing the circuit breaker from the cell.

Key interlocking provisions are available as an option. The key lock can be mounted in the front lower right hand corner of the breaker cell and interlocks with the breaker through mechanical linkages. To release the key, the breaker must be moved to the test/disconnect position and locked out of the connected position. A maximum of one cylinder can be mounted. When ordering key locks, a Square D type SFOE or equal should be used.

The cell, as supplied, requires many additions to make it into a functional unit of metal-clad switchgear. See drawing B46002-132 Pg 2 of 3 for Skeleton Cell and see drawing B46002-132 Pg 3 of 3 for required minimum additions.

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					ANGLE	DIMENSIONED $\pm 1^\circ$ UNDIMENSIONED $90^\circ \pm 2^\circ$													
				SCALE	DRAWN	CHKD	DATE	C. R.											
					J.King		5-30-84	V0063											
				TITLE					 SQUARE D COMPANY SMYRNA, TENNESSEE USA										
				SDSC Cell															
				USED ON					A46002-132 Pg 1 of 3										
				Vac - Arc															
				RAWSTOCK															
PRINTS TO																			

A

B

C

D

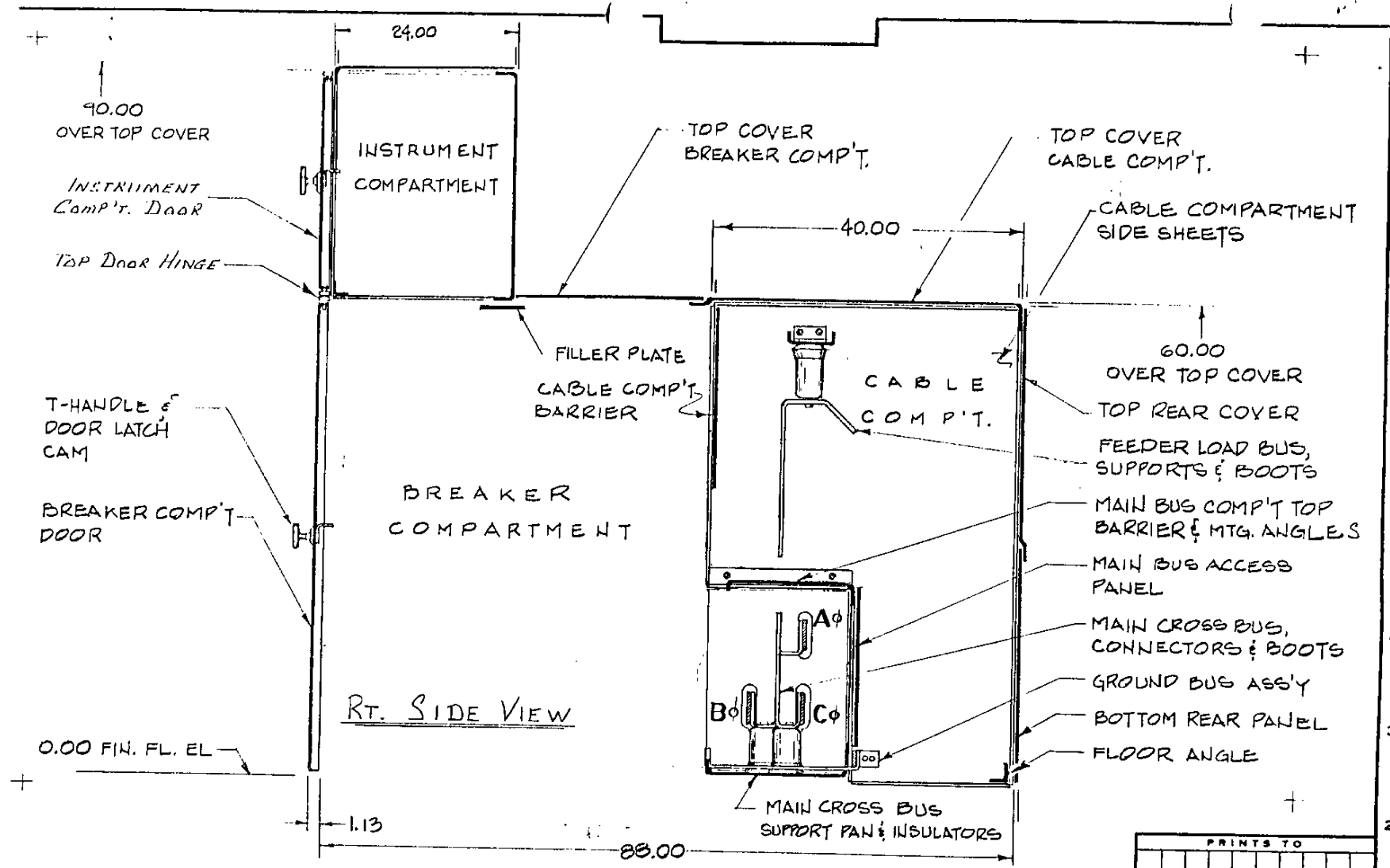
E

F

G

FORM NO. 348

DO NOT SCALE - WORK TO DIMENSIONS									
STANDARD	LINEAL DIM.	TWO PLACE DECIMAL	THREE PLACE DECIMAL	FOUR PLACE DECIMAL	FRACTIONAL LETTER OR WHOLE INCH	THREE PLACE DECIMAL	FOUR PLACE DECIMAL	UNDESIGNED	DESIGNED
TOLERANCE									
FINISH									
OTHER									
SPECIFIED									



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SCALE	DRAWN	CHKD	DATE	C.R.
1/4" = 1'-0"	W. C. C.		4-13-84	10063
TITLE				
ADDITIONS TO VACARC CELL				
USED ON				
VAC ARC				
RAWSTOCK				

PRINTS TO	
SQUARE D COMPANY	
SMYRNA, TENNESSEE USA	
B46002-132	
SHEET 3 OF 3	

Ordering Vad Breakers and Breaker Cells

Breakers and breaker cells must be ordered from Yin, Incorporated/Square D Co. San Leandro, California as soon as the job requirements are known since lead times on these items are approximately 10 weeks*. To order breaker cells, a requisition must be filled out and a specification sheet must accompany it. (See page #2 for order specification sheet)

Ordering Circuit Breaker

First select and mark the box next to the desired circuit breaker.

Example: Required breaker is 15KV, 500MVA, 1200A breaker,
mark the box next to the VAD - 15050-12 breaker.

Vacuum Circuit Breaker	
KV Class	
Nom. 3Ø MVA÷10	
Rated Cont. Current÷100	

Next place a mark in the appropriate box for each of the different control devices.

Next if the breaker is to be used on reclosure circuits, place a mark in the box under "Latch Check Switch".

Next if MOC is required, place a mark in the box under "MOC Provisions".

Ordering Breaker Cell

First mark the appropriate "NEMA Style" box (Mark NEMA I for NEMA 3R Walk-In Requirements).

Next mark the box next to the appropriate breaker cell. The catalogue number selected should match the circuit breaker number with the exception of SDSC (Square D Skeleton Cell) is substituted for VAD.

Next mark the box next to any of the desired options. Only one box under each option catagory may be marked. If MOC is marked, be sure to mark the MOC box under the breaker section.

Auxiliary Equipment

Test cabinets and test jumper cables are also available from Yin, Inc.

*Lead times are subject to change. At the present, Yin does not stock 15KV, 750MVA Vacuum Interrupters which will result in a longer lead time for breakers using these bottles.

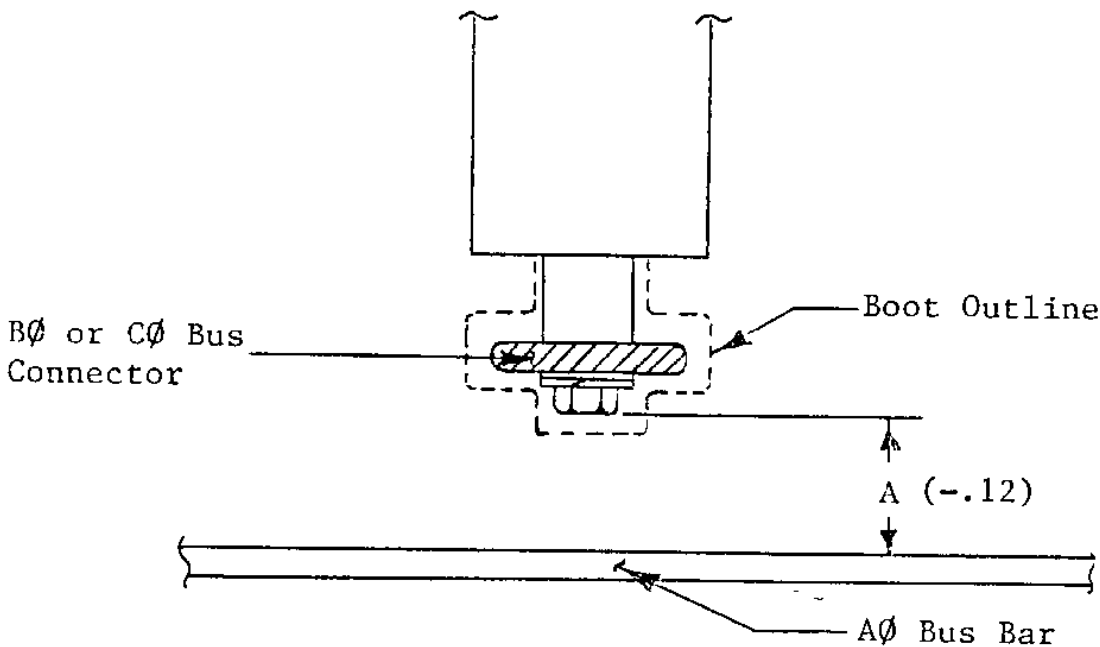
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REVISIONS			Ordering Breakers & Cells	DRAWN BY- J. King	
				CHECKED BY-	
			Vac - Arc	DATE- 5-30-84	
			 SQUARE D COMPANY POWER EQUIPMENT GROUP SMYRNA, TENNESSEE	V0063	
				A-46002-133	
				Pg 1 of 2	REV.

SPECIFICATION SHEET							
VAD - 1 Breaker and Breaker Cell							
Breaker							
5KV		8.25KV		15KV			
☐ VAD-05025-12		☐ VAD-08035-12		☐ VAD-15050-12		☐ VAD-15075-12	
☐ VAD-05025-20		☐ VAD-08035-20		☐ VAD-15050-20		☐ VAD-15075-20	
OPERATING VOLTAGE	CHARGING MOTOR	MOTOR RELAY	CLOSED COIL	ANTI-PUMP RELAY	TRIP COIL	LATCH CHECK SWITCH	MOC PROVISIONS
24 VDC	N/A	N/A	☐	☐	☐	☐	☐
48 VDC	☐	☐	☐	☐	☐		
125 VDC	☐	☐	☐	☐	☐		
250 VDC	☐	☐	☐	☐	☐		
120 VAC	☐	☐	☐	☐	☐		
240 VAC	☐	☐	☐	☐	☐		
Note: If controls are all DC, there will be 2a & 2b spare auxiliary "52" contacts. For other voltages, there will be 1a & 2b.							
Breaker Cell							
☐ NEMA I				☐ NEMA 3R NWI			
5KV		8.25KV		15KV			
☐ SDSC-05025-12		☐ SDSC-08035-12		☐ SDSC-15050-12		☐ SDSC-15075-12	
☐ SDSC-05025-20		☐ SDSC-08035-20		☐ SDSC-15050-20		☐ SDSC-15075-20	
Breaker Cell Options							
MOC		TOC		Key Interlocks			
☐ 9 Contacts (5a & 4b)		☐ 4 Contacts (2a & 2b)		☐ Provisions For			
		☐ 8 Contacts (4a & 4b)					
Additional Instructions							
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REVISIONS		Ordering Breakers & Cells Vac - Arc			DRAWN BY- J. King		
					CHECKED BY-		
					DATE- 5-30-84		
					V0063		
		 SQUARE D COMPANY POWER EQUIPMENT GROUP SMYRNA, TENNESSEE			A- 46002-133 Pg 2 of 2		
					REV.		

Bus Bar Clearances for Vac-Arc

Through actual BIL testing at Square D Middletown, it has been proven that the standard design of the Vac-Arc main bus has sufficient clearances and insulation to withstand a 95 KV - B.I.L. test as outlined in ANSI C37.20. Bus bars were epoxy coated by the fluidized bed method and the bus joints were covered with molded PVC boots.



Top View Main Bus Compartment

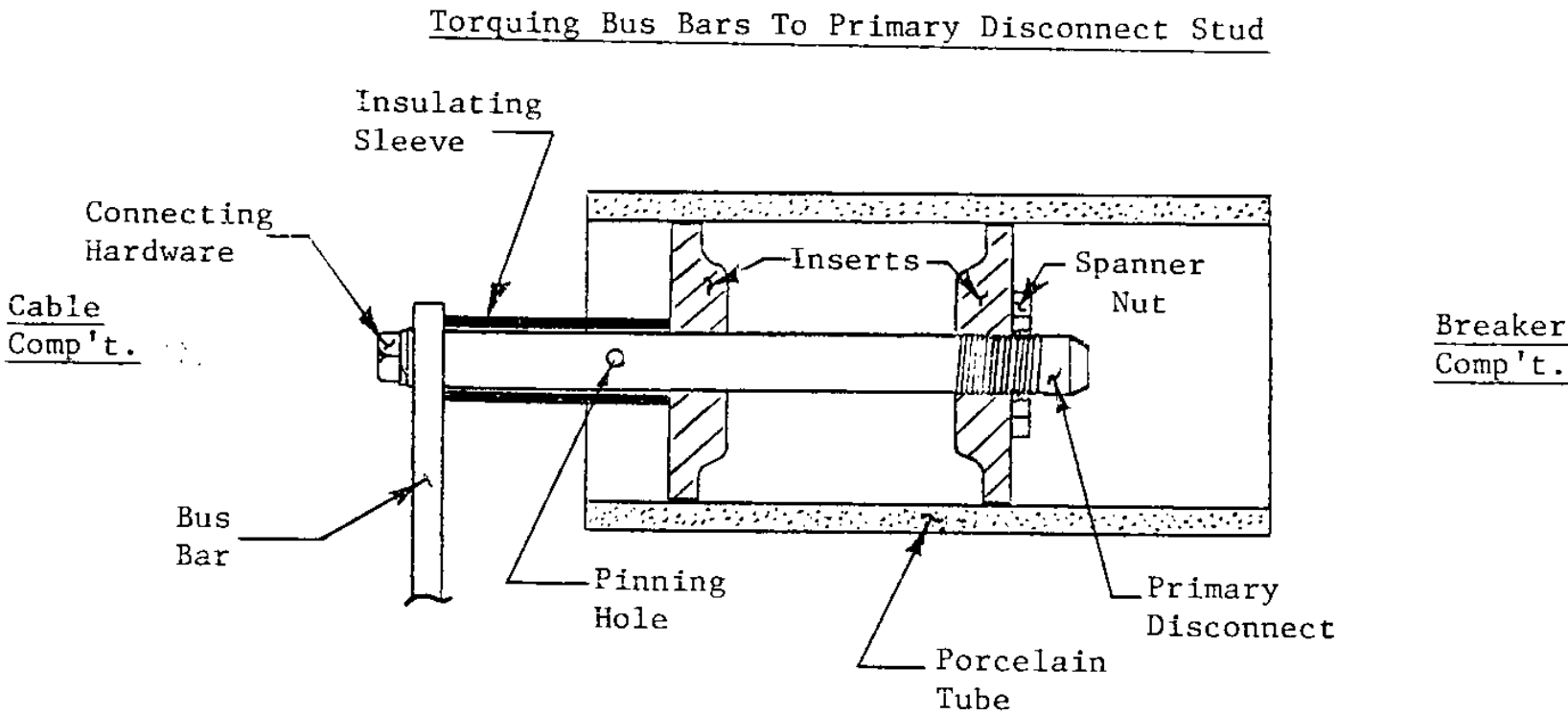
Main Bus Rating	Dim. A
1200A	2.18
2000A	2.06*

*Note: Testing was performed on 2000A Bus Assembly.
All tests passed.

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					J. King		5-30-84	V0063											
				TITLE					SQUARE D COMPANY SMYRNA, TENNESSEE USA A46002-134 Pg 1 of 3										
				Bus Bar Clearances															
				USED ON															
				Vac-Arc															
				RAWSTOCK															
PRINTS TO																			

A B C D E F G



Section View of Primary Bushing

Steps to connect bus bar to primary disconnect stud:

- 1) Loosen spanner nut and slide primary disconnect towards the cable compartment until pinning hole is accessible.
- 2) Attach bus bar to primary disconnect with existing 3/4-10 connecting hardware, insert any available tool into pinning hole (hole is 1/4" dia.) and torque connecting hardware to 125 ft. lbs.
- 3) Slide primary disconnect towards the breaker compartment, making sure insulating sleeve is in place.
- 4) Tighten the spanner nut snugly against the insert.

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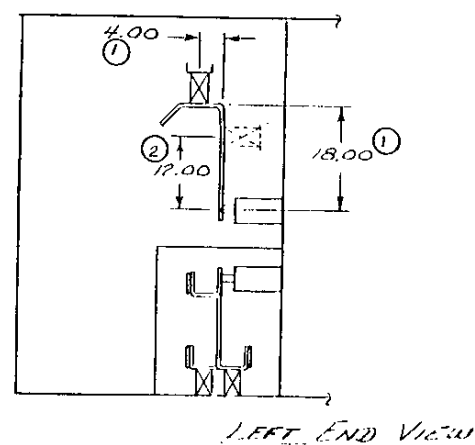
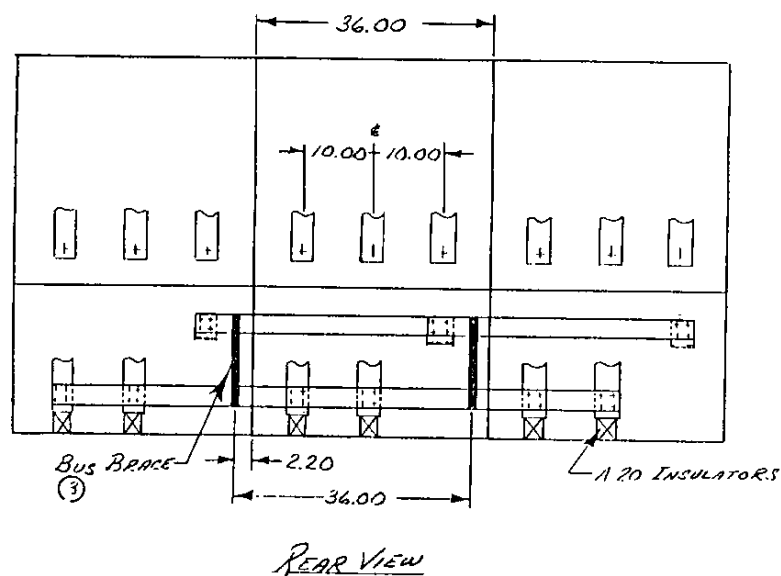
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					ANGLE	DIMENSIONED $\pm 1^\circ$ UNDIMENSIONED $90^\circ \pm 2^\circ$							
					SCALE	DRAWN	CHKD	DATE	C. R.	 SQUARE D COMPANY SMYRNA, TENNESSEE USA			
					J. King		5-30-84	V0063					
				TITLE Torquing Connector Bar									
				USED ON Vac - Arc									
PRINTS TO				RAWSTOCK					A46002-135				

A B C D E F G

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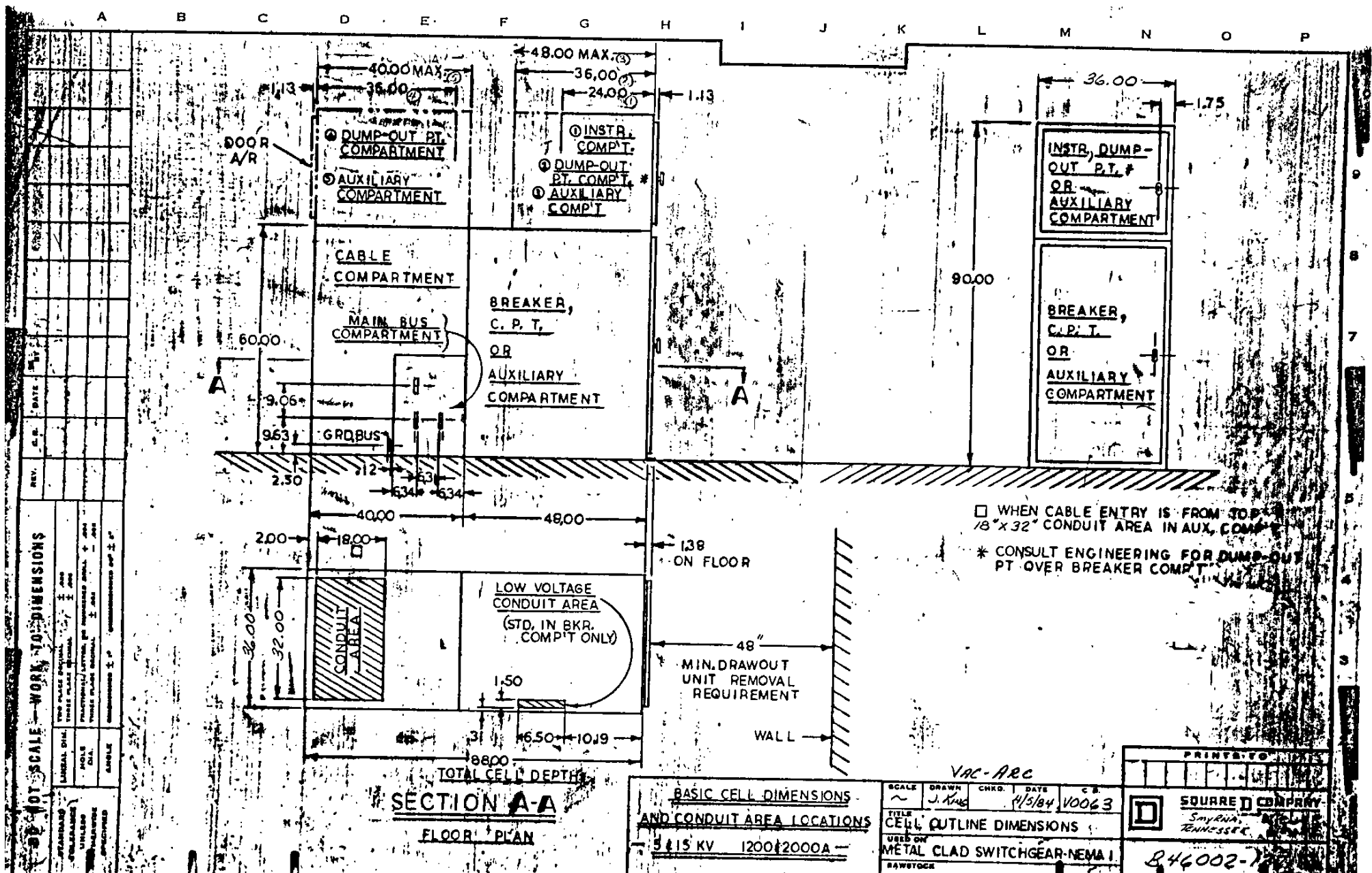
NOTES:

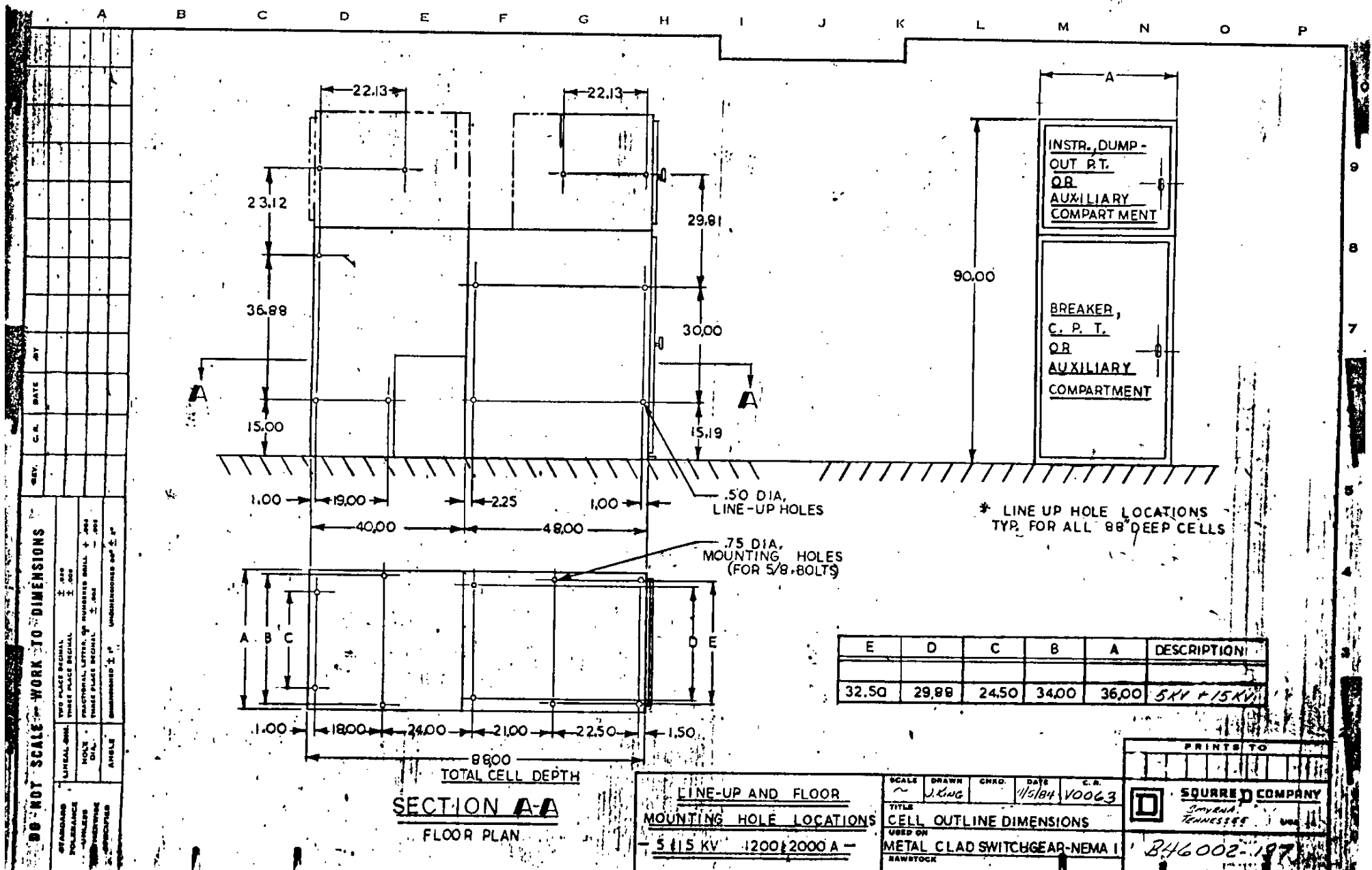
- ① PREFERRED MAXIMUM TO FIRST INSULATOR IS 22.00 INCHES FOR 42 KA AND BELOW BRACING
- ② PREFERRED MAXIMUM TO FIRST INSULATOR IS 12.00 INCHES FOR GREATER THAN 42KA BUT LESS THAN OR EQUAL TO 58 KA
- ③ BUS BRACE REQUIRED FOR GREATER THAN 40 KA BUT LESS THAN OR EQUAL TO 58 KA.
- ④ ALL CURRENTS ARE RMS ASYMMETRICAL
- ⑤ INSULATORS ARE NEMA A-20 CLASS



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SCALE					DRAWN					CHRG					DATE					C R				
1/16"					1/16"					1/16"					1/16"					1/16"				
TITLE																								
SQUARE D COMPANY																								
SMYRNA, TENNESSEE USA																								
USED ON																								
RAWSTOCK																								





SECTION A-A
FLOOR PLAN

LINE-UP AND FLOOR
MOUNTING HOLE LOCATIONS
- 5 1/2 KV 1200/2000 A -

E	D	C	B	A	DESCRIPTION
32.50	29.88	24.50	34.00	36.00	5KV + 15KV

SCALE	DRAWN	CHKD.	DATE	C.R.
1"=10'	J. King		11/5/84	V0063
TITLE				
CELL OUTLINE DIMENSIONS				
USED ON				
METAL CLAD SWITCHGEAR-NEMA 1				
RAWSTOCK				

PRINTS TO

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

SQUIRE COMPANY
Smyrna, Tennessee

246002-197

Labels For Vac-Arc

Following is a list of standard labels and nameplates for use on Vac-Arc. (Refer to the factory order notes for additional requirements).

The first section lists labels and nameplates, along with where they are to be located, that must be on every Vac-Arc Switchgear line-up.

The second section lists labels and nameplates, along with where they are to be located, that may be required depending on optional assemblies used on the line-up.

I. Required Labels and Nameplates

- 80030-154-01/02 - "Danger High Voltage" See PBD 41255 for location
- 44025-328-01 - "Square D Company" See PBD 41255 for location
- 46002-107-01 - "Switchgear Rating Label" (Blank info. must be filled in) See PBD 41255 for location
- 80043-001-01 - "Danger - Hazard of Shock..." on all screw removable panels or doors which when opened, leads to high voltage.
- 44060-346-01 - "Danger High Voltage" one on each Glastic Shutter inside the breaker compartment.
- 44060-246-01 - "Caution - Use Denatured Alcohol..." on steelwork close to or used in supporting bus bar insulators and also on the main bus rear access plate.
- 44050-304-01 - "Attention... Phase Sequence..." one tag for each incoming line. Tag is to be hung where customer cables will terminate.
- 44050-244-01 - "Device/ANSI Designation" used on each individual component identified on the wiring diagram.
- 44060-189-01 - "Connected Position"
- 44060-190-01 - "Test & Disconnected Position" on breaker compartment floor to identify circuit breaker position.

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REVISIONS			Labels for Vac-Arc	DRAWN BY- J. King		
				CHECKED BY-		
				DATE- 5-30-84		
				V0063		
			 SQUARE D COMPANY POWER EQUIPMENT GROUP SMYRNA, TENNESSEE	A- 46002-138		REV.
				Pg 1 of 2		

- 44060-523-01 - "Caution - Relays are not set..." at least one tag per instrument compartment containing protective relays. Tags to be filled out by engineering department.

II. Optional Labels and Nameplates

- 44035-902-01 - "Shipping Brace Label" used on any brace added to switchgear for shipping purposes only.
- 44061-500-01 - "Danger ... H.V. Power Conductors Exposed" used where a service panel which when opened, would expose the operator to such a condition. Example: Behind C.P.T. fuse access panel for fixed mounted C.P.T.
- 44061-764-01 - "Caution - Ground all transformer Taps..." used where a H.V. transformer is not automatically grounded when disconnected from the voltage source.
- 44061-765-01 - "Padlock Provision - Padlock Door... CPT" mounted on fuse access door for fixed mounted C.P.T.
- 44061-766-01 - "Control Power Transformer" has blanks which must be filled in depending on C.P.T. rating and is to be attached to the fuse access panel.
- 44062-025-01 - "Customer to Connect Ground... This Screw" used where customer is to ground portable equipment. Example: Test cabinet

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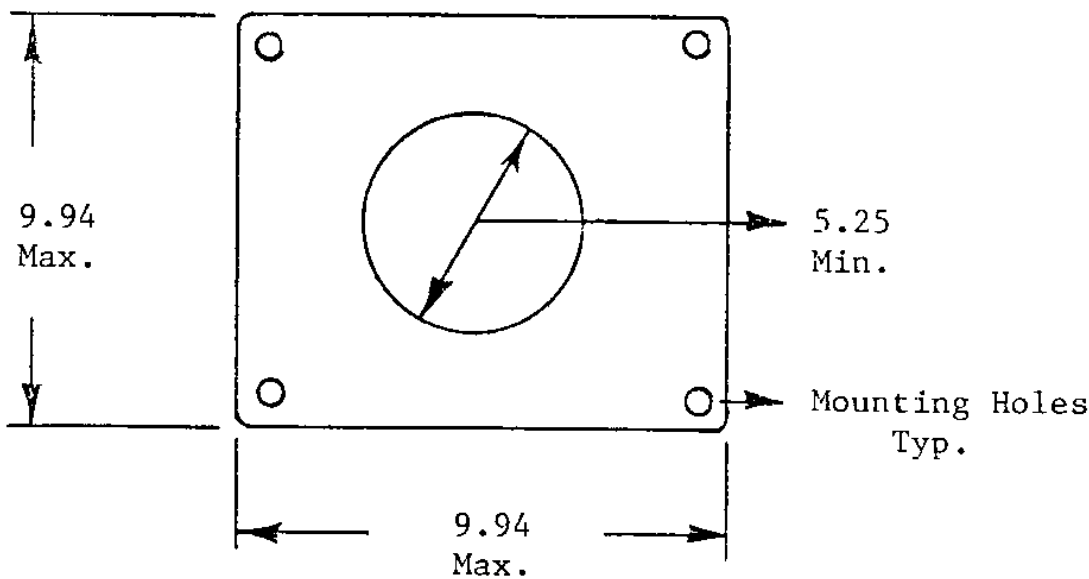
REVISIONS			Labels For Vac-Arc	DRAWN BY- J. King		
				CHECKED BY-		
				DATE- 5-30-84		
				V0063		
			 SQUARE D COMPANY POWER EQUIPMENT GROUP SMYRNA, TENNESSEE	A- 46002-138		REV.
				Pg 2 of 2		

Current Transformers for Vac - Arc

600 Volt Bushing type current transformers can be mounted in Vac-Arc switchgear. They mount over the porcelain tube which houses the H.V. primary disconnect. (see dwg B46002-132 pg 2 of 3).

When selecting C.T.'s for this application, the dimensions illustrated in drawing #1 below must be followed. A maximum of 6.50 inches of C.T. thickness is available on each the line and load porcelain tubes. This means that if two C.T.'s are to be mounted on the AØ line side tube, the combined thickness of the two C.T.'s must be equal to or less than 6.50 inches. (see dwg B46002-132 pg 2 of 3)

Type FG-2 current transformers (manufactured by Electromagnetic Industries) should be considered first when selecting C.T.'s since they meet the parameters outlined in dwg #1.



Drawing #1

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REVISIONS		DRAWN BY- J. King CHECKED BY- DATE- 5-30-84 V0063
Current Transformers for Vac - Arc		REV.
SQUARE D COMPANY POWER EQUIPMENT GROUP SMYRNA, TENNESSEE		
A-46002-139		