

THE DSE CIRCUIT BREAKER

This PBD describes the operation of the DSE "Solenarc" circuit breaker.

The first section describes the operation of the breaker.

The second section is composed of both schematic and pictorial wiring diagrams of the breaker. Options that are available are shown with dotted lines.

The auxiliary switch contacts are shown for the 5 contact standard as well as the 9 and 12 contact options.

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 $\pm .005$	
					HOLE DIA.	FRACTIONAL, LETTER, OR NUMBERED DRILL $+ .004$ THREE PLACE DECIMAL $\pm .005$ $- .005$	
					ANGLE	DIMENSIONED $\pm 1^\circ$ UNDIMENSIONED $10^\circ \pm 1^\circ$	
				SCALE	DRAWN	CHKD.	DATE
					EBZ		3-14-77
				C. R. <i>EBZ</i>			
				TITLE			
				THE DSE CIRCUIT BREAKER			
				USED ON			
PRINTS TO				 SQUARE D COMPANY BAKKELEW PLANT MIDDLETOWN, OHIO USA			
A B C D E F G				PBD 41110 Pg. 1 of 8			

Operation of Breaker:

- The breaker will not close until all the following conditions are met:
 - Closing springs charged.
 - Breaker locking handle in locked position.
 - Control power plug fully installed.
- The closing springs will not charge unless the following conditions are met:
 - Breaker locking handle in locked position.
 - Control power plug connected and control power is on.
- Charging of the closing springs is controlled by 52LS-1 and 52LS/bb. When the springs are discharged, power is available on terminals A-3 and A-4, and the breaker locking handle is in the locked position, the closing springs charging motor will run to charge the closing springs. When the springs are charged, the contact 52LS/bb opens stopping the motor.
- The breaker is electrically closed by operating the closing solenoid 52X. The closing signal is applied across terminals A-5 and A-6. The control power receptacle interlock 52IS-2 contact must be closed. The closing springs must be charged (contact 52LS/aa closed). Contacts 52/b and 52Y/b pass current to the closing solenoid 52X. When the breaker closes contacts 52/b and 52Y/b change state. Contact 52/b opens the closing solenoid circuit. Contact 52/a energizes the anti-pump relay 52Y. Contact 52Y/b opens, preventing the closing solenoid from being re-energized until 52Y is de-energized, and contact 52Y/a seals the anti-pump relay in until the close signal is removed from terminal A-5 and A-6. Contact 52LS/aa also opens but recloses as soon as the closing springs are recharged. The anti-pump relay 52Y limits the breaker to one closing operation per close signal applied across terminals A-5 and A-6.
- The breaker is electrically tripped by applying a signal across terminal A-11 and A-12. If the breaker is closed (contact 52/a closed) the trip solenoid will operate, tripping the breaker. Contact 52/a opens de-energizing the trip solenoid when the breaker is open.
- Remote status indicators are connected to terminals to indicate if the breaker is open or closed. Contact 52/a connected to terminal A-8 is closed when the breaker is closed. Contact 52/b connected to terminal A-10 is closed when the breaker is open.
- An optional remote status indicator to indicate the status of the closing springs is available at terminal A-7. The contact 52LS/bb is closed when the closing springs are discharged.
- An additional trip coil is available as an option. When the second trip coil is provided applying power across terminals B-9 and B-10 will cause the breaker to trip. Contact 52/a opens the trip coil current when the breaker is open.
- An undervoltage trip coil is available as an option. The breaker is tripped when there is a loss of voltage across terminals B-3 and B-4.

REV.	C.R.	DATE	BY	DO NOT SCALE - WORK TO DIMENSIONS			
A	CR 100-019	8-31-78	DAG				
				STANDARD TOLERANCE UNLESS OTHERWISE SPECIFIED	LINEAL DIM.	TWO PLACE DECIMAL THREE PLACE DECIMAL	$\pm .030$ $\pm .002$
					HOLE DIA.	FRACTIONAL, LETTER, OR NUMBERED DRILL THREE PLACE DECIMAL	$\pm .004$ $\pm .002$ $-.002$
					ANGLE	DIMENSIONED $\pm 1^\circ$ UNDIMENSIONED $90^\circ \pm 1^\circ$	
				SCALE	DRAWN	CHKD.	DATE
					EJZ		8-31-78
				TITLE			
				100% E-CHECKED - OK			
				USED ON			
				RAWSTOCK			
PRINTS TO				 SQUARE D COMPANY BERKELEY PLANT MIDDLETOWN, OHIO USA			
				PBD 41110 Pg. 2 of 8			

A

B

C

D

E

F

G

Legend:

- 52TC-1,-2

Breaker trip solenoid (1 standard, 2 optional)
- 52X

Breaker closing solenoid
- 52Y

Anti-pump relay
- 52M

Closing springs charging motor
- 52LS

Closing springs charged limit switch - operated when closing springs are charged
- 52IS-1

Truck interlock switch - operated when breaker locking handle is pushed in and turned clockwise (breaker locked in position)
- 52IS-2

Control power receptacle interlock switch - operated when control power plug crank handle is rotated fully clockwise (control power plug fully seated) prevents operation of closing solenoid until mechanical interlock fully defeated
- 52Y

Anti-pump relay contact - normally open
- 52Y

Anti-pump relay contact - normally closed
- 52LS

Closing springs charged limit switch - open when springs are not charged closed when springs are charged
- 52LS

Closing springs charged limit switch - closed when springs are not charged, open when springs are charged
- 52IS-1

Truck interlock switch - closed when breaker locking handle pushed in and turned clockwise
- 52IS-2

Control power receptacle interlock switch - contacts closed when control power plug fully inserted and crank handle turned fully clockwise, contacts close after mechanical closing interlock is fully defeated
- 52

Auxiliary switch contacts - open when breaker is in the tripped (open) position, closed when breaker is in the closed position
- 52

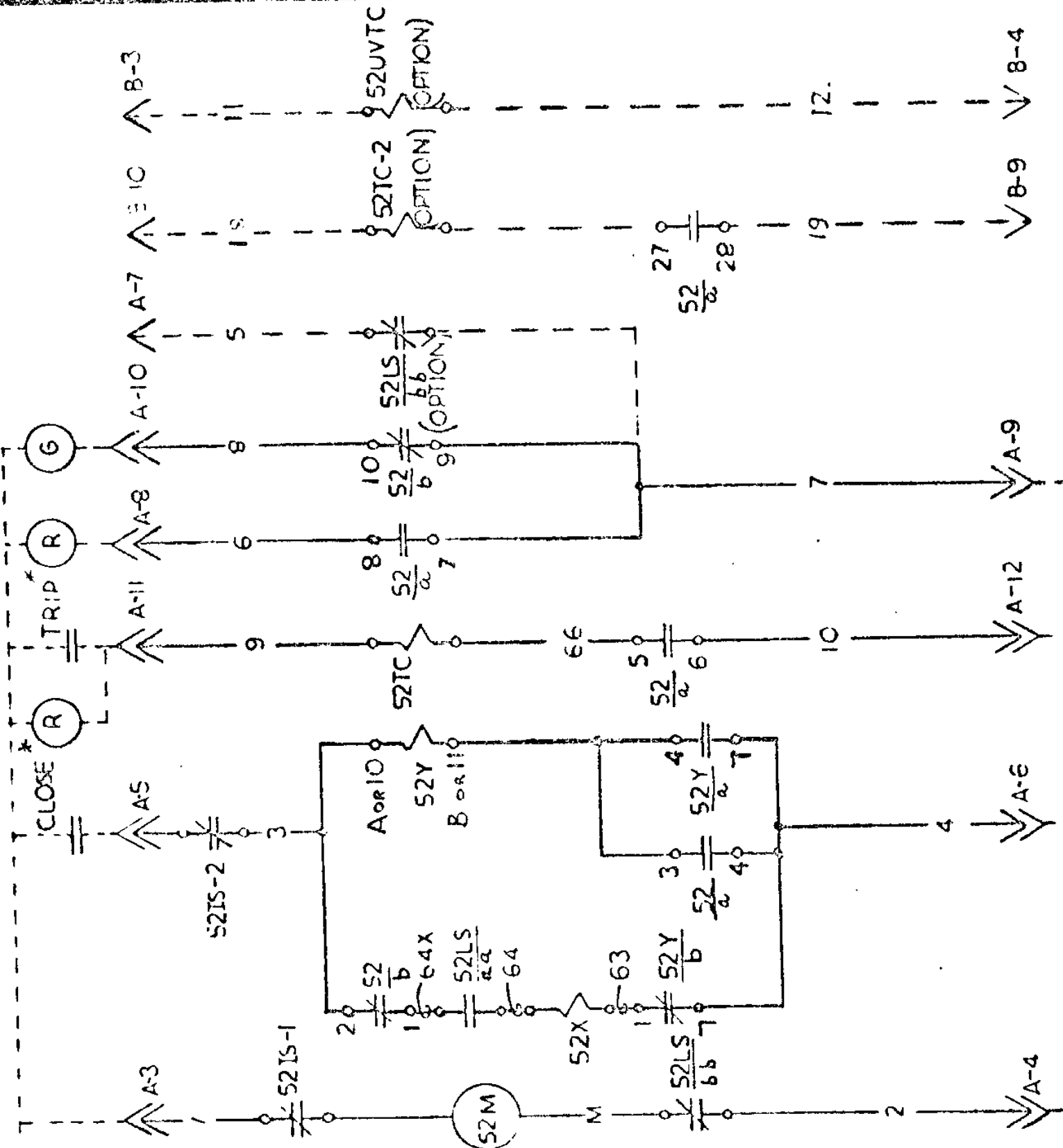
Auxiliary switch contacts - closed when breaker is in the tripped (open) position, open when the breaker is in the closed position
- 52 UATC

Undervoltage Trip Coil (Optional)

NOTES

- Breaker shown in open position, closing springs discharged, breaker locking handle in locked position, control power plug fully installed.

REV.	C.R.	DATE	BY	DO NOT SCALE - WORK TO DIMENSIONS										
A	CR-P30-419	2-21-78	DAG	STANDARD TOLERANCE UNLESS OTHERWISE SPECIFIED		LINEAL DIM.	TWO PLACE DECIMAL THREE PLACE DECIMAL		± .010 ± .008					
						HOLE DIA.	FRACTIONAL, LETTER, OR NUMBERED DRILL		+ .004 - .003					
						ANGLE	DIMENSIONED ± 1°		UNDIMENSIONED 90° ± 1°					
				SCALE	DRAWN	CHKD.	DATE	C.R.						
					EBZ		3-4-77	CR-P30-019						
				TITLE						 SQUARE D COMPANY DANFORTH PLANT MIDDLETOWN, OHIO USA				
				THE DSE CIRCUIT BREAKER										
				USED ON										
				RAWSTOCK										
PRINTS TO										PBD 41110 Pg. 3 of 8				
A	B	C	D	E	F	G								



REV.	C.N.	DATE	BY
1	25	8-31-78	DAG
2	25	2/2/80	MAAS
3	25	22 JAN 80	MAAS

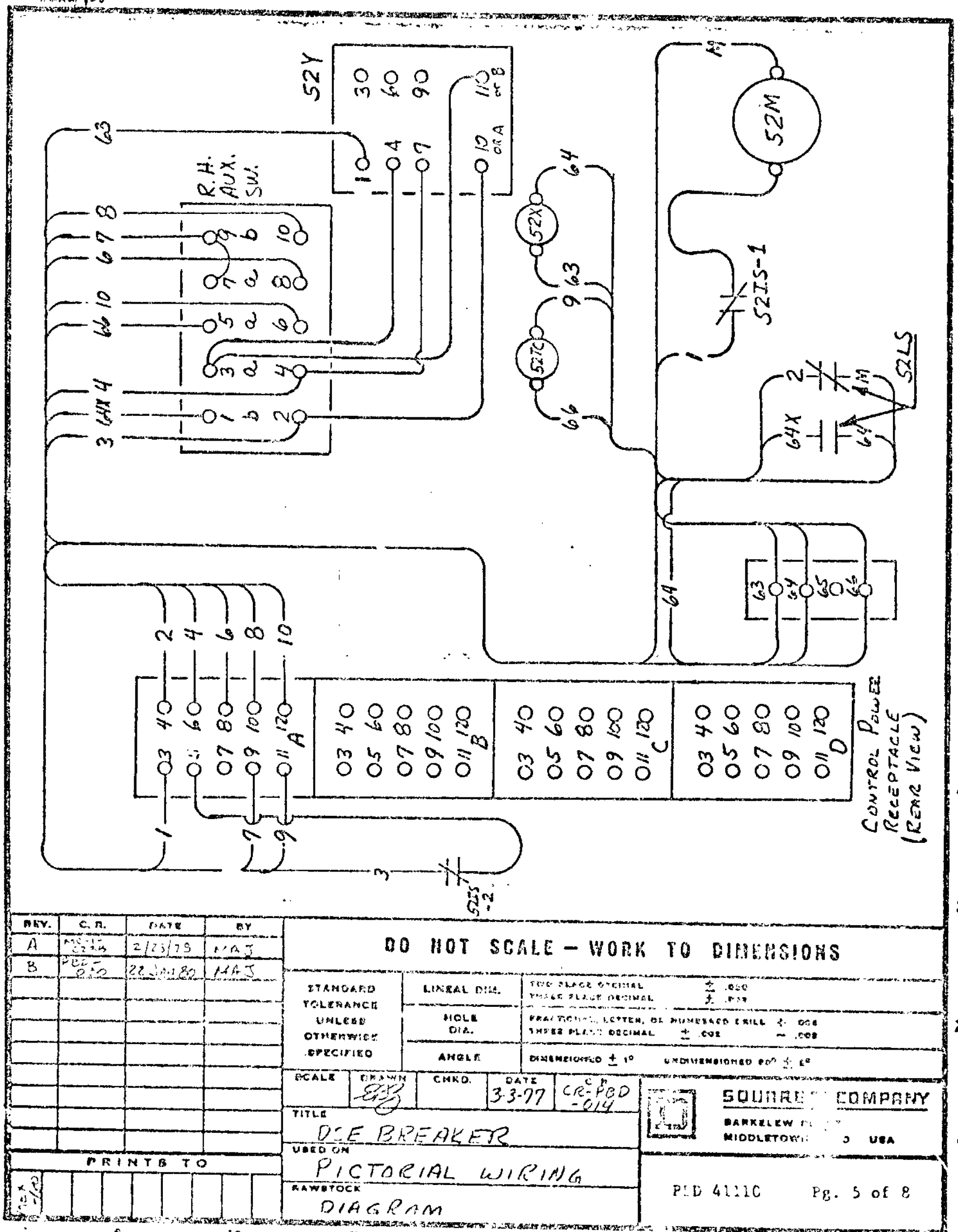
DO NOT SCALE - WORK TO DIMENSIONS			
STANDARD TOLERANCE UNLESS OTHERWISE SPECIFIED	LINEAL DIM.	TWO PLACE DECIMAL ± .000 THREE PLACE DECIMAL ± .000	
	HOLE DIA.	FRACTIONAL, LETTER, OR NUMBERED DRILL + .004 THREE PLACE DECIMAL ± .002 - .002	
	ANGLE	DIMENSIONED ± 1° UNDIMENSIONED 90° ± 2°	
SCALE	DRAWN E92	CHKD.	DATE 3/3/80
TITLE DSE BREAKER		C.N. CR-PBD -019	
USED ON SCHEMATIC WIRING DIAGRAM		PBD 41110	
RAWSTOCK		PAGE 4 OF 8	

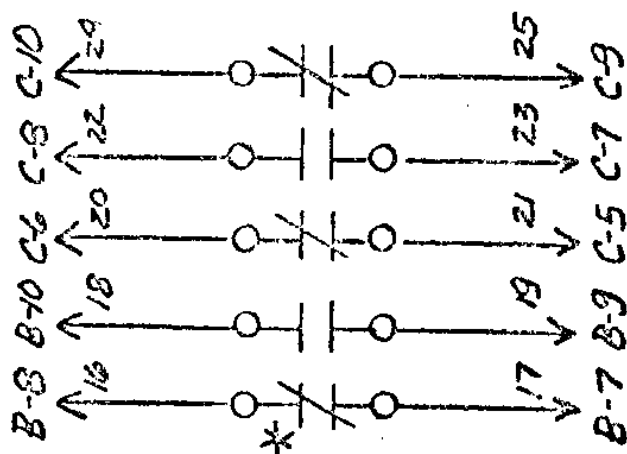
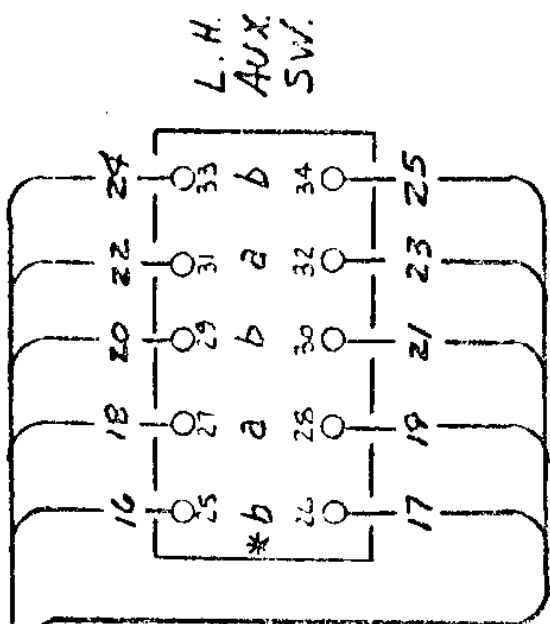
PRINTS TO



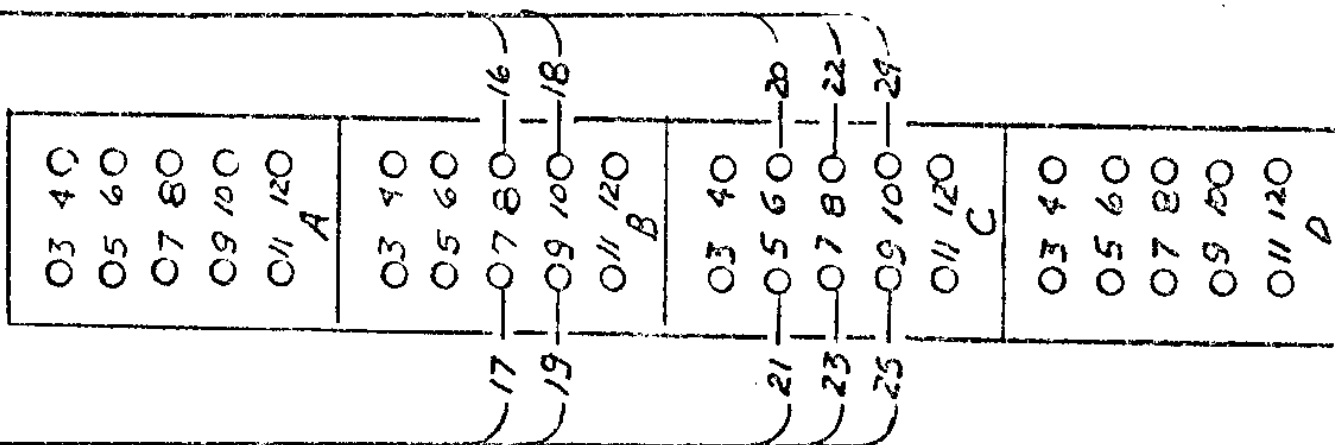
SQUARE D COMPANY
BARKELEW PLANT
MIDDLETOWN, OHIO USA

A B C D E F G





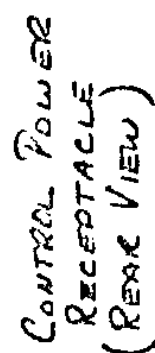
*LATE BREAK EARLY MAKE
CONTACT



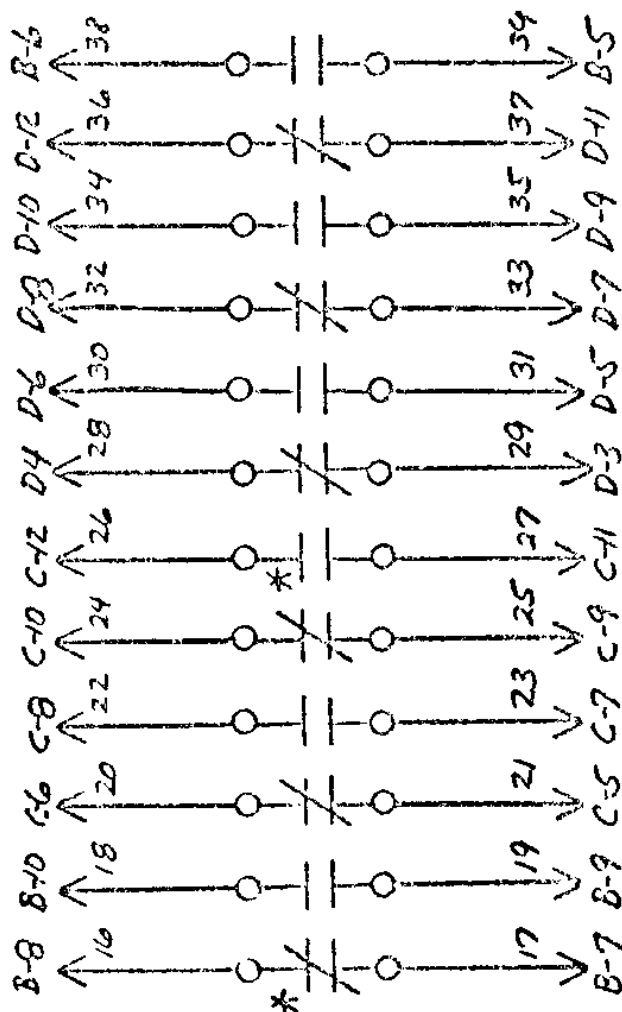
CONTROL POWER
RECEPTACLE
(REAR VIEW)

REV.	C.D.	DATE	BY	DO NOT SCALE - WORK TO DIMENSIONS			
A	21	8-31-76	DAG	STANDARD TOLERANCES UNLESS OTHERWISE SPECIFIED	LINEAL DIM.	TWO PLACE DECIMAL $\pm .020$ THREE PLACE DECIMAL $\pm .005$	
					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	BY
				EBZ		3/4/77	R-FCB 1/15
TITLE				SQUIRE COMPANY			
DSE BREAKER - 5 AUXILIARY				BARKELEW PLANT MIDDLETOWN, OHIO USA			
USED ON				PCD 4110 Pg. 6 OF 8			
SWITCH CONTACTS - STANDARD							
RAWLOCK							
WIRING DIAGRAM							

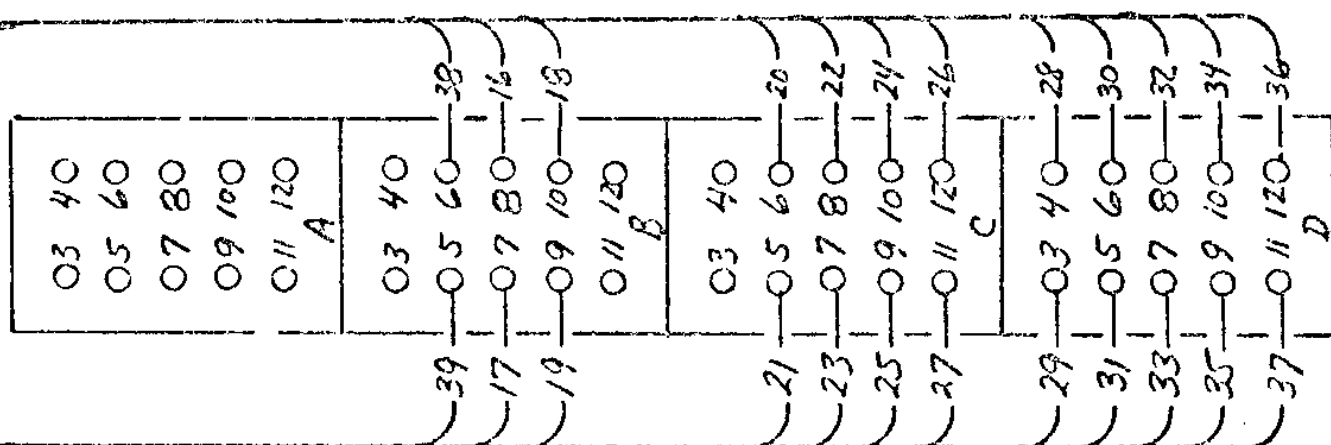
A B C D E F G

G

L. H. AUX. SW ³



* LATE BREAK EARLY MAKE CONTACTS



CONTROL POWER
RECEPTACLE
(REAR VIEW)

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