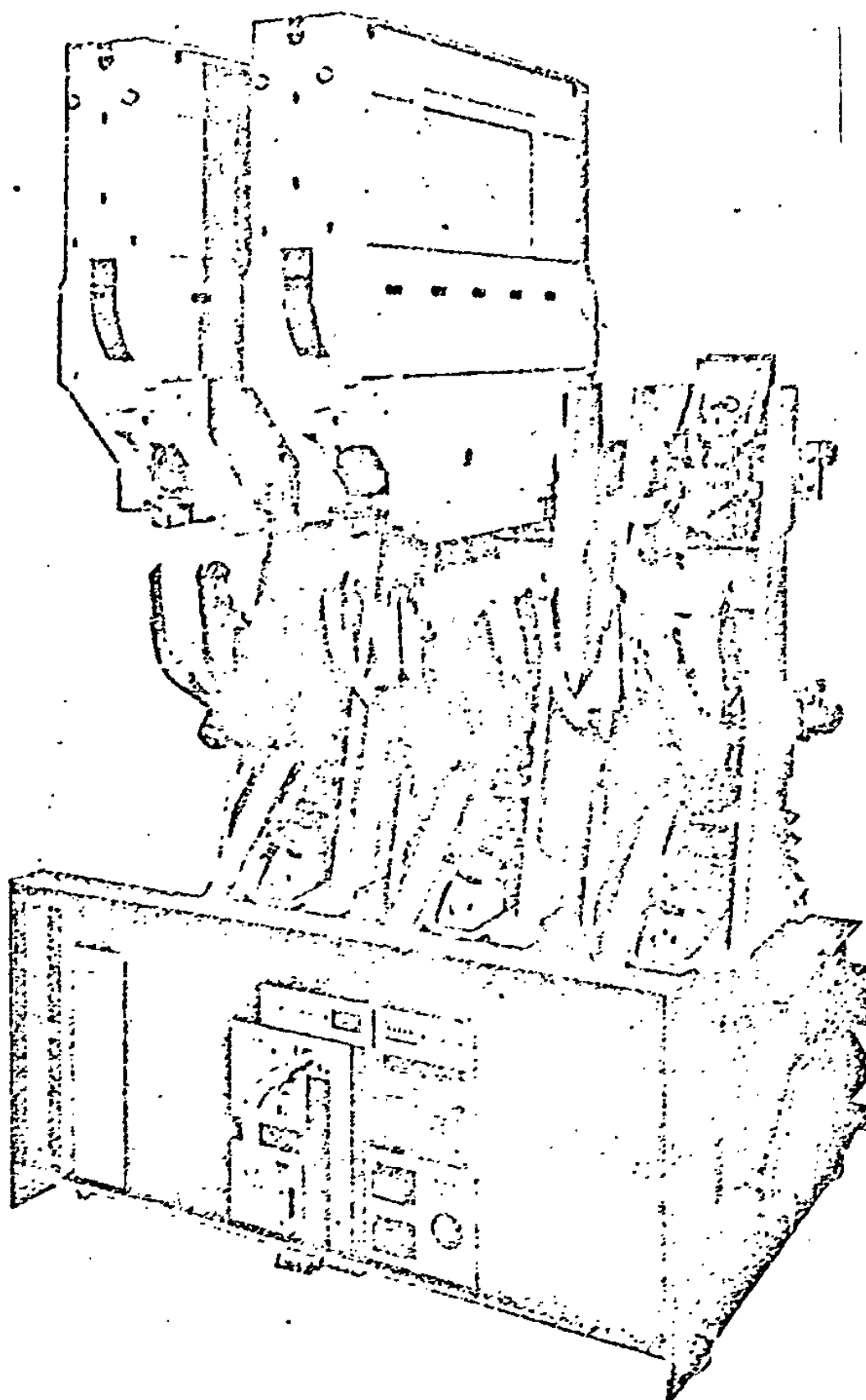
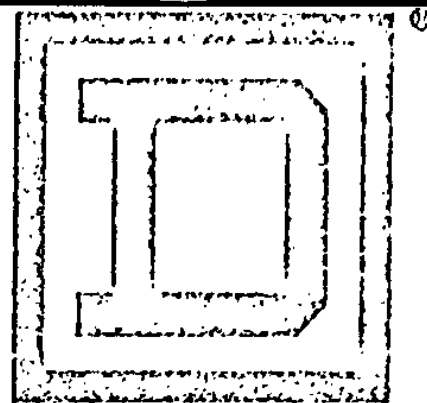


SUPPLEMENTARY
Instructions for
Type DSE-F
AC High-Voltage
Circuit Breakers

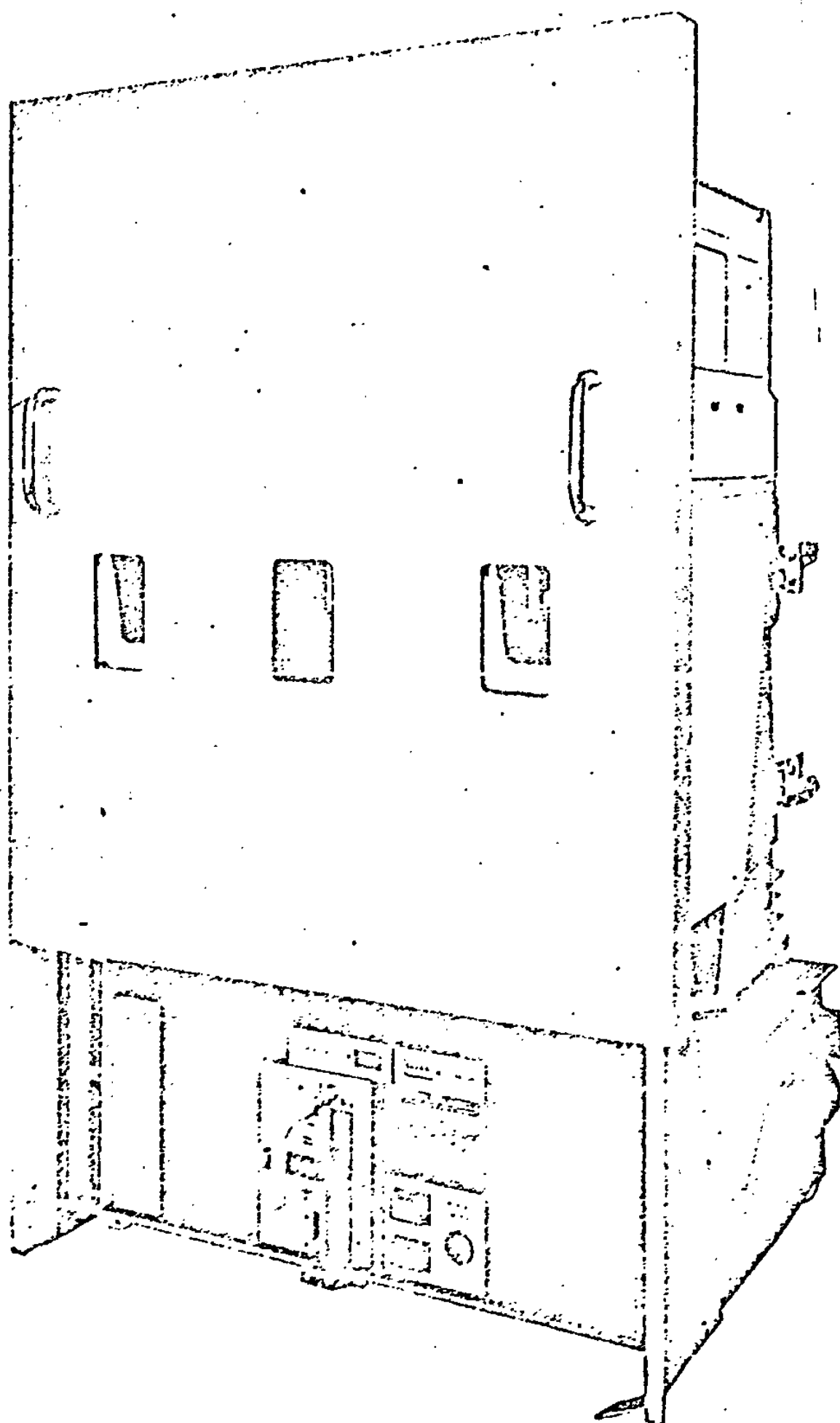


SQUARE D COMPANY

P. O. BOX 558

MIDDLETOWN, OHIO 45042

SU-6150-2



FRONTISPIECE

MECHANICAL PERFORMANCE: (Typical 15kV, 1200 amp, 500 MVA, with 23kA and below breaking capacity)

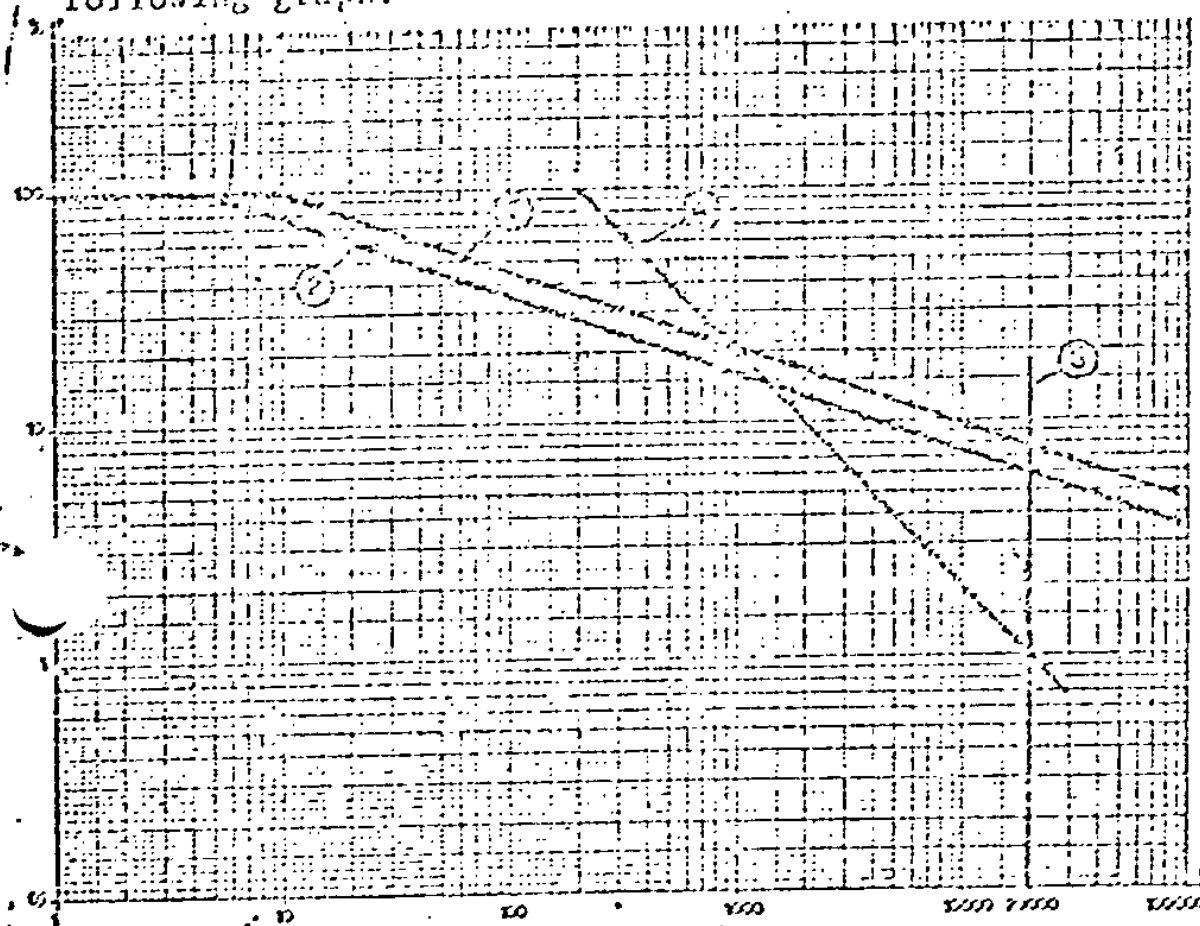
ANSI Standards require 10,000 close-open operations at no load. We have tested our standard DSE circuit breaker for 20,000 no load operations, and the Solenarc DSE-F circuit breaker far exceeds these performances. With preventative maintenance as specified, 100,000 operations can be performed.

ELECTRICAL PERFORMANCE: (Typical 15kV, 1200 amp, 500 MVA, with 23kA and below breaking capacity)

ANSI minimum performance data C37.09 and C37.06

Short Circuit	Load Current Switching
5 interruptions at 100% breaking capacity	5000 CO at FLA
5 interruptions at 75% breaking capacity	1000 CO at FLA then
2 interruptions at 50% breaking capacity	1 CO at 100% breaking capacity

Interruption tests were performed on the DSE-F and curves were plotted as shown on the following graph:



1. Breakers with breaking capacity $< 30kA$ RMS.
2. Breakers with breaking capacity $\geq 30kA$ RMS.
3. Limit of mechanical endurance of arcing contacts.
4. Vacuum circuit breakers.

N = Number of operations
%P = Percent of maximum breaking capacity

Curve #1 shows: DSE-F breaker 10 CO at 100% or 400 CO at 30% or 10,000 CO at 10% of rated breaking capacity endurance or 100,000 CO at 1200 FLA.

Curve #4 shows a plot of interruption values reported by a manufacturer of vacuum circuit breakers. If the vacuum circuit breaker is required to interrupt full rated breaking capacity (30kA), its endurance is greater than the Solenarc's 10 times. If the continuous interrupting requirement is 20% of this maximum breaking capacity (30kA), the performance of the vacuum breaker is equal to that of the Solenarc, 1000 operations. If the vacuum breaker is required to interrupt current 20,000 operations, that current must not be higher than 1% of its initial full rated breaking capacity or 300 amperes. The Solenarc for 20,000 operations is capable of continuously interrupting 2% of its full rated breaking capacity or 2400 amperes. At a full 100,000 operations the Solenarc DSE-F is capable of continuously interrupting its full rated current of 1200 amperes.

DW Selby/vs
10/27/75

General Instructions:

For all maintenance to be performed, refer to instruction manual SU-6150-2 or to the instructions packed with spare parts.

Switching Frequency:

Normally, the maximum switching frequency is 10 operating cycles per hour. For higher switching frequencies, please refer to the factory.

Environment:

In the event the application is in a dusty or polluted atmosphere, the breaker should be cleaned more frequently (see section 5 in manual).

Electrical Endurance:

Under normal duty cycles - up to 120 cycles per day and with breaking currents equal to the rated continuous current or below - electrical endurance is about 40,000 cycles for the arc chutes and 20,000 cycles for arcing contacts. Under more difficult operating conditions, checking operations shall be made more frequently (refer to the factory).

Maintenance to be performed after 10,000
operating cycles

Figure
Reference
in Manual

Check

Preventative
Maintenance

- Perform standard operations.

5.1 to 5.7

Checks

- Check all screws and snap rings on
the linkage of the puffer.

- Check the gap across arcing contacts
in the closed position.

5.8 to 5.9

Renewals

- None

Maintenance to be performed after 30,000
operating cycles

Figure
Ref.
in Manual

Check

Preventative
Maintenance

- Perform standard operations.

5.1 to 5.7

Checks

- Check all screws and snap rings
on the linkage of the puffer.

- Inspect the condition of the
arc chutes.

5.10

- Check the gap across the arcing
contacts in the closed position.

5.8 - 5.9

Renewals

- Replace the main contact fingers.

5.42 to 5.43

Maintenance to be performed after 40,000
operating cycles

Figure
Ref.
in Manual

Check

Preventative
Maintenance

- Perform standard operations.

5.1 to 5.7

Checks

- Check all screws and snap rings
on the linkage of the puffer.

Renewals

- Replace the fixed arcing contacts.

5.24 to 5.34

- Replace the eyebolt and spring.

5.57 to 5.58

- Replace the arc chutes.

5.20 to 5.21

- Replace movable arc chute
auxiliary blades (applies only
to 15kV breakers).

5.35 to 5.39

- Replace arcing contact carriers (*)

* = See assembling instructions
supplied together with spare
parts.

Maintenance to be performed after 50,000 operating cycles		Figure Ref. in Manual	Check
Preventative Maintenance	- Perform standard operations.	5.1 to 5.7	
Checks	- Check all screws and snap rings on the linkage of the puffer.		
	- Check the gap across the arcing contacts in the closed position.	5.8 - 5.9	
Renewals	- None		

Maintenance to be performed after 60,000 operating cycles.		Figure Ref. in Manual	Check
Preventative Maintenance	- Perform standard operations.	5.1 to 5.7	
Checks	- Check all screws and snap rings on the linkage of the puffer.		
	- Inspect the condition of the arc chutes.	5.10	
Renewals	- Replace arcing contacts and the arcing contact shields.	5.24 to 5.34	
	- Replace main contact fingers.	5.42 to 5.43	
	- Replace electrically charged operating mechanism (*).		
	- Replace operating shaft of the main and arcing contact carrier (*).		
	- Replace movable arc chute auxiliary blades (applies only to 15kV breaker).	5.35 to 5.39	
* = Refer to the factory.			

		70,000	
Maintenance to be performed after 70,000 operating cycles		Figure Ref. in Manual	Check
Preventative Maintenance	- Perform standard operations.	5.1 to 5.7	
Checks	- Check all screws and snap rings on the linkage of the puffer.		
	- Inspect the condition of the arc chutes.	5.10	
	- Check the gap across the arcing contacts in the closed position.	5.8 to 5.9	
Renewals	- None		

Maintenance to be performed after 80,000 operating cycles

Figure
Ref.
in Manual

Check

Preventative
Maintenance

- Perform standard operations.

5.1 to 5.7

Checks

- Check all screws and snap rings on the linkage of the puffer.

Renewals

- Replace arcing contact carriers (*).

- Replace the arcing contacts and the arcing contact shields.

5.24 to 5.34

- Replace the eyebolts and trip springs.

5.57 to 5.67

- Replace the arc chutes.

5.20 to 5.21

- Replace the movable arc chute auxiliary blades (applies only to 15kV breakers).

5.35 to 5.39

- Replace the puffer assemblies.

5.51 to 5.56

- Replace the disconnecting contact fingers.

5.40 to 5.41

* = See assembling instructions supplied with spare parts.

Maintenance to be performed after 90,000 operating cycles.		Figure Ref. in Manual	Check
Preventative Maintenance	- Perform standard operations.	5.1 to 5.7	
Checks	- Check all screws and snap rings on the linkage of the puffer.		
	- Check the gap across the arcing contacts in the closed position.	5.8 to 5.9	
Renewals	- None		

Maintenance to be performed after 100,000 operating cycles		Figure Ref. in Manual	Check
Preventative Maintenance			
Check			
Renewals	- The complete circuit breaker shall be completely overhauled by a specialist.		