

# Chapter I

## RECTIFIER, WESTINGHOUSE, TYPE 5D2

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### LEADING PARTICULARS

Rectifier, Westinghouse, Type 5D2	...	Stores Ref. 5CZ/5288
Overall length	... ..	1.75 in. approx.
Maximum width (over connection plates)	... ..	0.65 in. approx.
Weight	... ..	0.5 oz.
<b>Current rating</b>		
Temperate climate (25 deg. C.)	... ..	100 mA
Sub-tropical climate (35 deg. C.)	... ..	76 mA
Tropical climate (45 deg. C.)	... ..	60 mA
Sustained tropical climate (55 deg. C.)	... ..	35 mA

#### Introduction

1. The Westinghouse rectifier, Type 5D2, is used in the 24V d.c. circuit of the refuelling system on Vulcan aircraft. It acts as a spark quencher for preventing damage that might otherwise be caused to the float switch by an inductive spark.

#### DESCRIPTION

2. The rectifier (*fig. 1*) is of a metal, dry-plate type, the action of which is based on the fact that selenium-covered discs have a greater resistance to current flow in one direction than in the opposite direction.

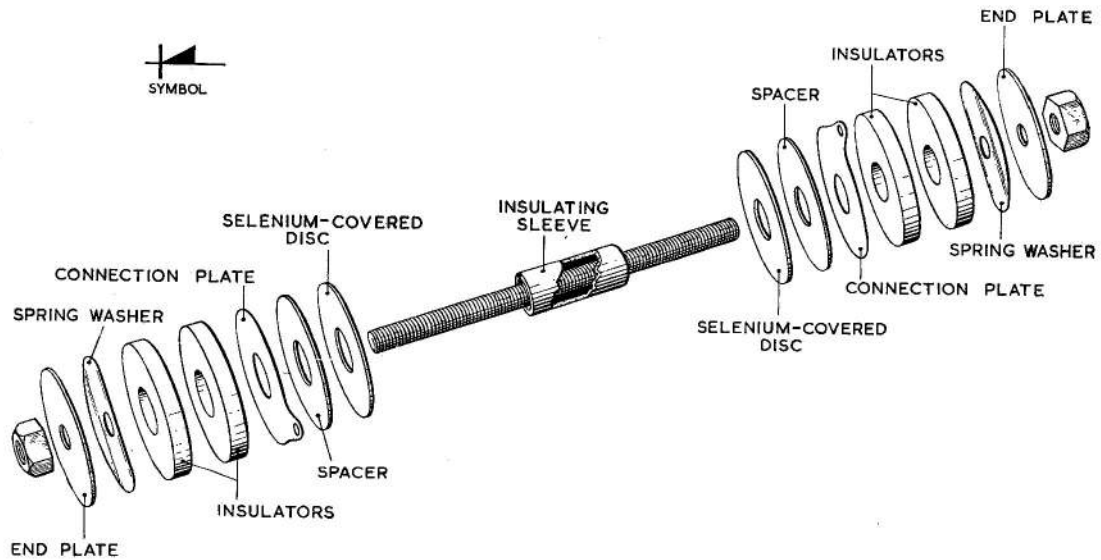


Fig. 1. Exploded view of rectifier, Westinghouse, Type 5D2

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(A.L.2, Nov. 57)

3. The unit consists of two selenium-covered discs, two spacing washers, and two connection plates, with steel washers and insulators at each end. These are assembled on an insulated stud and held together by two 4 B.A. nuts.

4. Electrical connection is made to the rectifier by passing the wires through the hole in each connection plate, bending over the end of the plate to trap the wire and then applying solder to secure the joint.

5. The exterior is protected by a coating of special paint which enables it to be used satisfactorily in reasonably dry conditions under cover, but does not make it suitable for use outdoors unless it is protected from rain.

#### SERVICING

6. No servicing is practicable on this rectifier, and if dismantling is attempted, it will be rendered unserviceable. Consequently, a faulty one must be removed and a new one fitted in its place.

#### Insulation test

7. The connection plates on the rectifier must be connected together when an insulation test to earth, or a flash test, is made. Using a 500V insulation resistance tester, a reading of not less than 20 megohms is required for the unit to be fit for service. If a reading of less than 20 megohms is obtained, the rectifier will be unfit for service. The reverse resistance must not be tested by an

insulation resistance tester as this will cause damage to the rectifier.

8. When making electrical connection to the rectifier, the positive connection plate is the one nearest the end marked with the type number.

#### Load test

9. The input voltage for a load test must be obtained from a low impedance source. Any adjustments of input voltage must be effected by tapings on a transformer. A high voltage supply, "broken down" by a series resistance or by a series potential divider, must not be used, as this would give incorrect readings and cause damage to the rectifier.

10. The current ratings shown in the leading particulars are the maximum continuous ratings permissible at the stated ambient temperatures. The forward voltage drops that may be anticipated at a rectifier temperature of 30 deg. C, which is a representative initial temperature, are as follows:—

(1) In a temperate climate (25 deg. C), 1.88V.

(2) In a sub-tropical climate (35 deg. C), 1.78V.

(3) In a tropical climate (45 deg. C), 1.64V.

(4) In a sustained tropical climate (55 deg. C), 1.4V.

A slight reduction in the forward voltage drop is likely to take place as the actual temperature of the rectifier increases.

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