

GOVERNMENT OF INDIA  
(BHARAT SARKAR)

SPECIFICATION  
FOR  
LIP TYPE OIL SEAL  
OF  
6CD4UC COMPRESSOR-EXHAUSTER

SPECIFICATION NO. MP. 9.0700-04

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MINISTRY OF RAILWAYS  
(RAIL MANTRALAYA)  
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SPECIFICATION FOR LIP TYPE OIL SEAL OF  
6CD4UC COMPRESSOR EXHAUSTER

1. FOREWORD

This standard deals with 'Lip type' crankshaft oil seal. In preparing this specification assistance has been taken from the following standards.

- .1 IS:5129-1969 - Specification for Rotary Shaft Oil Seal Units.
- .2 IS:5125-1969 - Method of Test for Rotary Shaft Oil Seals.
- .3 BS.1399-1970 - Specification for Rotary Shaft Lip Seals (Part I, II & III).
- .4 IS.3400 - Methods of test for vulcanized rubbers.

2. SCOPE:

This standard covers the requirements and technical supply conditions for Lip type crankshaft oil seal for use on 6CD4UC compressor-exhauster (expressor) units used on diesel locomotives of Indian Railways.

3. DESIGNATION:

These seals shall be designated as "Lip type oil seal for 6CD4UC expressor".

4. DIMENSIONS:

The dimensions and tolerances for the assembled seal and its components shall conform to those indicated in DRDO drg. No. SKDP 1985.

5. MATERIAL:

5.1 The material used for the manufacture of the components of the seal shall conform to the material specifications indicated in drg. No. SKDP 1985.

5.2 Specification for rubber seal (item 2) of SKDP1985

Polyacrylic elastomer shall be used for manufacture of rubber seal (item 2). When tested in accordance with IS:3400 the elastomer shall have the following properties:

- |  |                           |
|--|---------------------------|
| .1 Hardness (Shore A)                          | 70 + 5.                   |
| .2 Tensile strength (min.)                     | 105 kgf/cm <sup>2</sup> . |
| .3 Elongation at break (min.)                  | 175%.                     |
| .4 Compression set at 100±1°C<br>for 24+0 hrs. | 35%.                      |

.5 Swelling by volume at  $120 \pm 2^\circ\text{C}$  + 5%.  
for  $70 \pm 0$  hrs. in oil used - 3%.  
2  
in expressor crankcase.

.6 Change in properties after  
ageing at  $175 \pm 2^\circ\text{C}$  for  $72 \pm 0$  hrs.  
2

- (a) Hardness  $\pm 10$  units.
- (b) Tensile strength  $\pm 25\%$ .
- (c) Elongation at break +10%.  
-30%.

## 6. WORKMANSHIP AND FINISH

6.1 All the surfaces of the oil seal, particularly the sealing lip of rubber seal (item 2), shall be well finished, free from cuts, blisters and other imperfections. The spring (item 3) shall be free from harmful flaws.

6.2 The surface treatment/finish of the outer and inner casings shall be in accordance with stipulation laid down in the drg. No. EKDP 1985.

## 7. PERFORMANCE TESTS

7.1 The oil seal shall be subjected to performance tests in accordance with IS:5125-1969. Following tests shall be carried out.

(a) Type tests (clause 2.7.1 of I.S. 5125).

(b) Quality tests for acceptance (clause 2.7.2 of IS 5125).

7.2 TEST CONDITIONS: Tests shall be carried out in the following conditions to simulate the actual service conditions under which these seals are used.

- a) Shaft shall rotate at test speed of 1100 rpm.
- b) The test oil temperature shall be  $150^\circ\text{C}$ .
- c) Vacuum of 18" shall be maintained in the oil chamber during the performance tests.

7.3 TEST OIL: The oil for the performance testing shall be the same as used in expressor crankcase.

## 8. MARKING AND PACKING

8.1 Identification mark of the manufacturer, DLW part number, batch number and month and year of manufacture shall be legibly and permanently marked on the face of the outer casing of the seal.

8.2 The metallic portion of the oil seal shall be coated with suitable anti-corrosion substance and wrapped in non-absorbent paper. Each seal shall then be securely packed in suitable carton.

8.3 Carton containing seals shall indicate DLW part number, batch number, month and year of manufacture and Name/identification mark of the manufacturer.

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