

Issued 1962-06  
Cancelled 2002-10

Superseding J780 NOV2000

**Engine Coolant Pump Seals**

1. **Scope**—This SAE Standard outlines physical dimensions and nomenclature for the sizes of seals commonly used in engine coolant pumps of automotive type engines. Its purpose is to define a standard envelope to accommodate installation of various seal designs and to promote uniformity in seal nomenclature. (See Figures 1 to 5.)

2. **References**

2.1 **Applicable Publication**—For additional information on material combinations, drawing format, qualification and inspection, and quality control data, please refer to SAE J1245. Unless otherwise indicated, the latest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1245—Guide to the Application and Use of Engine Coolant Pump Face Seals

3. **Nomenclature for Figures 1 to 5**

1. Cartridge
2. Bellows
3. Spring
4. Ferrule
5. Primary Seal Ring
6. Secondary Drive Seal
7. Mating Ring
8. Unitizer

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright ©2002 Society of Automotive Engineers, Inc.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

**TO PLACE A DOCUMENT ORDER:**

Tel: 877-606-7323 (inside USA and Canada)  
Tel: 724-776-4970 (outside USA)  
Fax: 724-776-0790  
Email: [custsvc@sae.org](mailto:custsvc@sae.org)  
<http://www.sae.org>

**SAE WEB ADDRESS:**

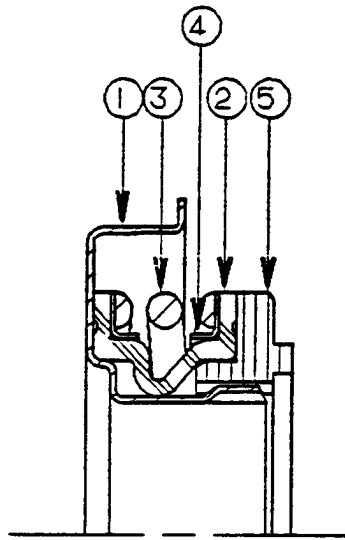


FIGURE 1—SPRING-LOADED

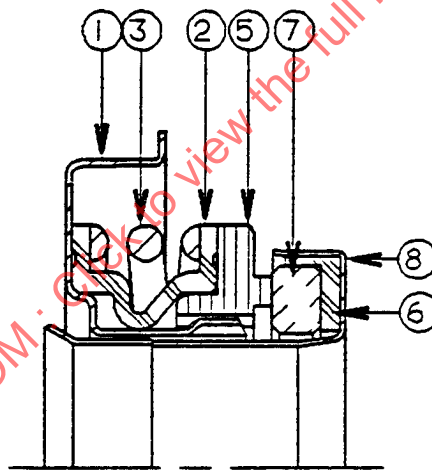


FIGURE 2—UNITIZED

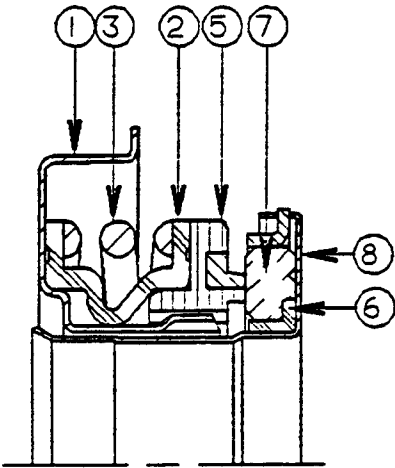


FIGURE 3—UNITIZED-POSITIVE DRIVE MATING RING

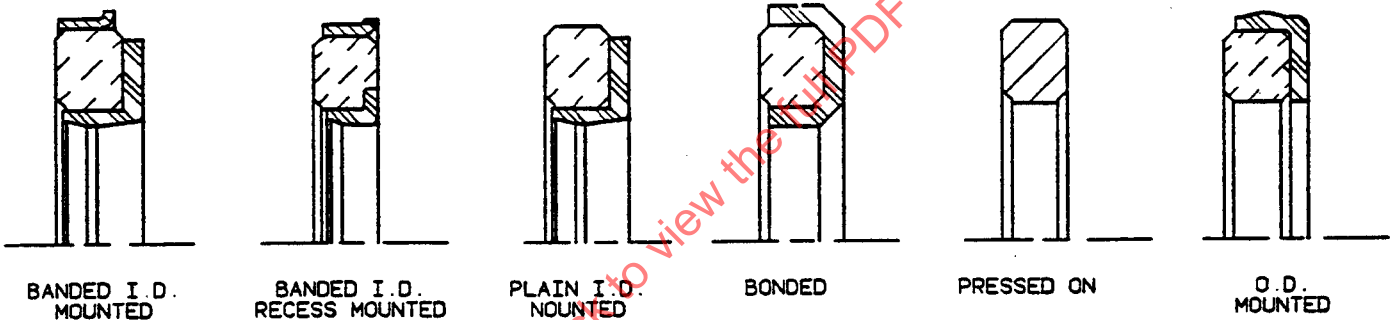


FIGURE 4—MATING RING TYPES

A <sup>1</sup> Boaring Bore	B Nominal Shaft Dia, mm	C Seal Housing Bore Dia, mm	D Seal Housing Bore Depth, mm	E Axial Clearance min, mm	F <sup>1</sup> Seal Bore Lead-in Chamfer	G <sup>1</sup> Pump Housing to Impeller or Mating Ring, mm	J <sup>1</sup> Lead-in Chamfer Bearing Shaft End
↓	10	28.55-28.60	9.14- 9.65	10.16	1.02x45°	1.57	3.18 mm x 30° Blended ↓
	12	29.95-30.00	9.14- 9.65	10.16	1.02x45°	10.0	
	13	28.55-28.60	9.14- 9.65	10.41	1.02x45°	4.75	
	15	34.92-34.95	9.85-10.35	10.16	1.02x45°	12.5	
	16	34.14-34.21	6.30- 6.80	10.41	1.02x45°	12.5	
	16	36.43-36.47	9.14- 9.65	10.41	1.02x45°	5.97	
	16	36.43-36.47	9.14- 9.65	10.41	1.02x45°	6.73	
	16	38.05-38.10	9.14- 9.65	10.41	1.02x45°	6.73	
	16	38.74-38.79	9.14- 9.65	10.41	1.02x45°	6.73	
	16	39.32-39.37	9.14- 9.65	10.41	1.02x45°	6.73	
	16	39.92-39.96	6.30- 6.80	10.41	1.02x45°	12.5	
	19	38.05-38.10	9.14- 9.65	10.41	1.02x45°	6.73	
	19	38.56-38.61	9.14- 9.65	10.41	1.02x45°	12.5	
	19	39.98-40.03	9.14- 9.65	10.41	1.02x45°	6.73	
	25	41.20-41.25	9.65-10.16	11.18	1.52x45°	14.68	

<sup>1</sup> To be determined jointly by the pump manufacturer, bearing, and seal suppliers.

Roughness Average, Ra-m  
B max  
0.81

C max  
2.54

Concentricity between A & C (FIM)  
Concentricity between B & C (FIM)  
Squareness between B & H (FIM)  
Squareness between B & Surface I (FIM)  
Shaft End Play

0.05 mm max  
0.13 mm max  
0.05 mm max  
0.13 mm max  
0.13 mm max

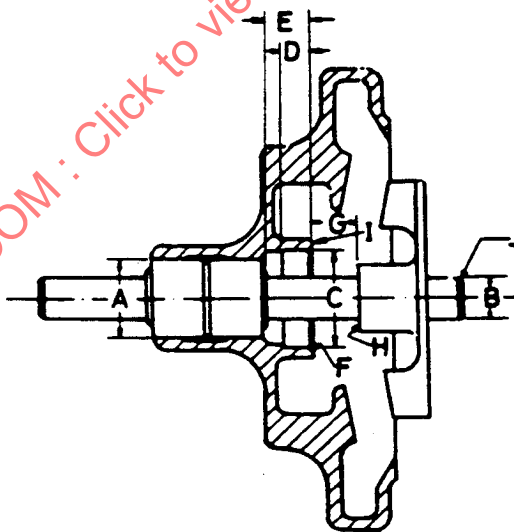


FIGURE 5—REFERENCE DIMENSIONS

PREPARED BY THE SAE MOTOR VEHICLE COUNCIL