



SURFACE VEHICLE RECOMMENDED PRACTICE

J164™**DEC2025**

Issued 1970-04
Reaffirmed 1997-02
Revised 2025-12

Superseding J164 JAN2020

Cooling System Metallic Caps and Filler Necks

RATIONALE

SAE J164 is the result of a Five-Year Review and update of the specification.

1. SCOPE

This SAE Recommended Practice was developed primarily for passenger car and truck applications but may be used in marine, industrial, and similar applications.

1.1 Purpose

The purpose of this document is to provide application information and dimensions for the different pressure ratings of bayonet-type radiator pressure caps and filler necks. Use of these dimensions will prevent the use of a high-pressure rated cap on low-pressure systems for the small and medium size applications. For example, a 12 psi, or higher, coolant cap cannot be installed on a filler-neck for a system rated at 11 psi or less, and a 6 to 11 psi coolant cap cannot be installed on a filler-neck for a system rated at 5 psi or less. This is done to prevent over-pressurization of the coolant system.

This document will allow use of a low-pressure rated cap on a nominal high-pressure system.

Table 1 - Pressure-type radiator cap

Nominal Pressure Rating kPa	Nominal Pressure Rating psi	A mm	B mm	C mm	D mm	E Max mm
Mini						
34-138	5-20	11.20 ± 0.50	11.60 ± 0.40	39.60 ± 0.40	43.62 ± 0.19	66.00
Small						
21-34	3-5	11.43 ± 0.51	15.18 ± 0.45	51.56 ± 0.76	57.47 ± 0.32	80.26
41-55	6-8	14.73 ± 0.51	15.18 ± 0.45	51.56 ± 0.76	57.47 ± 0.32	80.26
62-76	9-11	14.73 ± 0.51	15.18 ± 0.45	51.56 ± 0.76	57.47 ± 0.32	80.26
83-110	12-16	21.34 ± 0.51	15.18 ± 0.45	51.56 ± 0.76	57.47 ± 0.32	80.26
97-124	14-18	21.34 ± 0.51	15.18 ± 0.45	51.56 ± 0.76	57.47 ± 0.32	80.26
Medium						
21-34	3-5	9.65 ± 0.51	14.17 ± 0.45	63.50 ± 0.76	69.66 ± 0.32	92.71
41-55	6-8	16.00 ± 0.51	14.17 ± 0.45	63.50 ± 0.76	69.66 ± 0.32	92.71
62-76	9-11	16.00 ± 0.51	14.17 ± 0.45	63.50 ± 0.76	69.66 ± 0.32	92.71
83-110	12-16	21.34 ± 0.51	14.17 ± 0.45	63.50 ± 0.76	69.66 ± 0.32	92.71
Large						
0-138	0-20	18.80 ± 0.38	32.5 ± 1.00	95.35 ± 0.38	102.87 ± 0.25	115.93

SAE Executive Standards Committee 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 revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2025 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, or used for text and data mining, AI training, or similar technologies, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 1-877-606-7323 (U.S. and Canada only)
Tel: 1-724-776-4970 (outside U.S. and Canada)
Fax: 724-776-0790
Email: CustomerService@sae.org
http://www.sae.org

SAE WEB ADDRESS:

Full document details: SAE J164_202512

For more information on this standard, visit
https://www.sae.org/standards/content/J164_202512/

Documents

Standard, visit Sharing Hub

Table 2A - Radiator filler necks (F, G, H, I, J, and K)

Nominal Pressure Rating kPa	Nominal Pressure Rating psi	F mm	G mm	H mm	I mm	J mm	K mm
Mini 34-138	5-20	38.70 ± 0.30	12.70 ± 0.51	43.00 ± 0.20	31.4 ± 0.30	5.21 ± 0.13	22.6 ± 0.15
Small 21-34	3-5	50.04 ± 0.26	12.70 ± 0.51	56.58 ± 0.19	41.34 ± 0.19	5.59 ± 0.13	31.00 ± 0.15
41-55	6-8	50.04 ± 0.26	15.75 ± 0.51	56.58 ± 0.19	41.34 ± 0.19	5.59 ± 0.13	31.00 ± 0.15
62-76	9-11	50.04 ± 0.26	15.75 ± 0.51	56.58 ± 0.19	41.34 ± 0.19	5.59 ± 0.13	31.00 ± 0.15
83-110	12-16	50.04 ± 0.26	22.35 ± 0.51	56.58 ± 0.19	41.34 ± 0.19	5.59 ± 0.13	31.00 ± 0.15
97-124	14-18	50.04 ± 0.26	22.35 ± 0.51	56.58 ± 0.19	41.34 ± 0.19	5.59 ± 0.13	31.00 ± 0.15
Medium 21-34	3-5	61.98 ± 0.26	13.21 ± 0.51	68.52 ± 0.19	54.29 ± 0.19	5.59 ± 0.13	—
41-55	6-8	61.98 ± 0.26	18.80 ± 0.51	68.52 ± 0.19	54.29 ± 0.19	5.59 ± 0.13	—
62-76	9-11	61.98 ± 0.26	18.80 ± 0.51	68.52 ± 0.19	54.29 ± 0.19	5.59 ± 0.13	—
83-110	12-16	61.98 ± 0.26	22.86 ± 0.25	68.52 ± 0.19	54.29 ± 0.19	5.59 ± 0.13	—
Large 0-138	0-20	94.49 ± 0.76	19.31 ± 0.39	101.45 ± 0.31	84.25 ± 0.38	7.62 ± 0.13	76.07 ± 0.77

Table 2B - Radiator filler necks (L, M, N, P, R, and S)

Nominal Pressure Rating kPa	Nominal Pressure Rating psi	L mm	M mm	N mm	P Min mm	R mm	S mm
Mini 34-138	5-20	10.58 ± 0.13	12.56 ± 0.13	19.60 ± 0.15	12.00	4.85 ± 0.15	12.50 ± 0.50
Small 21-34	3-5	13.88 ± 0.13	16.18 ± 0.13	28.00 ± 0.19	12.45	5.03 ± 0.13	12.50 ± 0.50
41-55	6-8	13.88 ± 0.13	16.18 ± 0.13	28.00 ± 0.19	15.75	5.03 ± 0.13	16.00 ± 0.50
62-76	9-11	13.88 ± 0.13	16.18 ± 0.13	28.00 ± 0.19	15.75	5.03 ± 0.13	16.00 ± 0.50
83-110	12-16	13.88 ± 0.13	16.18 ± 0.13	28.00 ± 0.19	22.34	5.03 ± 0.13	22.50 ± 0.50
97-124	14-18	13.88 ± 0.13	16.18 ± 0.13	28.00 ± 0.19	22.35	5.03 ± 0.13	22.50 ± 0.50
Medium 21-34	3-5	13.18 ± 0.13	15.48 ± 0.13	40.70 ± 0.19	10.67	5.03 ± 0.13	11.00 ± 0.50
41-55	6-8	13.18 ± 0.13	15.48 ± 0.13	40.70 ± 0.19	17.02	5.03 ± 0.13	17.00 ± 0.50
62-76	9-11	13.18 ± 0.13	15.48 ± 0.13	40.70 ± 0.19	17.02	5.03 ± 0.13	17.00 ± 0.50
83-110	12-16	13.18 ± 0.13	15.48 ± 0.13	40.70 ± 0.19	22.35	5.03 ± 0.13	22.50 ± 0.50
Large 0-138	0-20	30.48 ± 0.18	33.53 ± 0.18	69.98 ± 0.28	18.92	5.84 ± 0.38	19.30 ± 0.38

Table 2C - Radiator filler necks (T, U1, U2, U3, and U4)

Nominal Pressure Rating kPa	Nominal Pressure Rating psi	T mm	U1 REF mm	U2 REF mm	U3 mm	U4 Max mm
Mini						
34-138	5-20	34.90 ± 0.50	(R1.75)	(R1.50)		R1.50
Small						
21-34	3-5	45.84 ± 0.53	(R2.25)	(R1.50)		R1.75
41-55	6-8	45.84 ± 0.53	(R2.25)	(R1.50)		R1.75
62-76	9-11	45.84 ± 0.53	(R2.25)	(R1.50)		R1.75
83-110	12-16	45.84 ± 0.53	(R2.25)	(R1.50)		R1.75
97-124	14-18	45.84 ± 0.53	(R2.25)	(R1.50)		R1.75
Medium						
21-34	3-5	58.79 ± 0.53	(R2.25)		R1.50 ± 0.25	R1.75
41-55	6-8	58.79 ± 0.53	(R2.25)		R1.50 ± 0.25	R1.75
62-76	9-11	58.79 ± 0.53	(R2.25)		R1.50 ± 0.25	R1.75
83-110	12-16	58.79 ± 0.53	(R2.25)		R1.50 ± 0.25	R1.75
Large						
0-138	0-20	89.33 ± 0.85	(R2.54)	(R3.05)		R1.90

Table 2D - Radiator filler necks (V1, V2, W1, and W2)

Nominal Pressure Rating kPa	Nominal Pressure Rating psi	V1 mm	V2 Min mm	W1 mm	W2 mm
Mini					
34-138	5-20	0.75 ± 0.45	0.30	0.13	0.04
Small					
21-34	3-5	0.75 ± 0.45	0.30	0.13	0.04
41-55	6-8	0.75 ± 0.45	0.30	0.13	0.04
62-76	9-11	0.75 ± 0.45	0.30	0.13	0.04
83-110	12-16	0.75 ± 0.45	0.30	0.13	0.04
97-124	14-18	0.75 ± 0.45	0.30	0.13	0.04
Medium					
21-34	3-5	0.75 ± 0.45		0.13	0.04
41-55	6-8	0.75 ± 0.45		0.13	0.04
62-76	9-11	0.75 ± 0.45		0.13	0.04
83-110	12-16	0.75 ± 0.45		0.13	0.04
Large					
0-138	0-20	0.75 ± 0.25	0.25	0.15	0.15