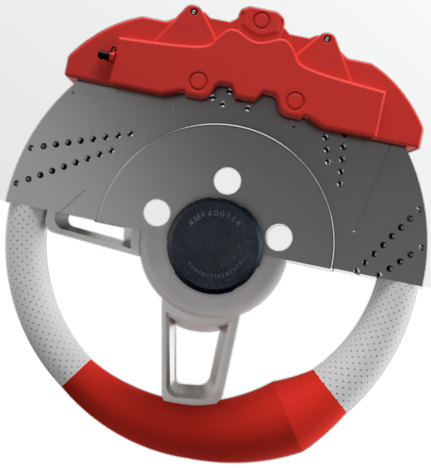
GORE® Automotive Vents
for High-Severity Applications



UNWAVERING RELIABILITY FOR MOMENTS THAT MATTER

As electrification and autonomous driving advance, automotive electronics face new and complex performance challenges. GORE® Automotive Vents for High-Severity Applications help protect vital systems by enabling pressure equalization while blocking contaminants, even under demanding real-world conditions.

Engineered to meet the strictest functional safety and quality standards, these vents are validated for applications where system failure is not an option. From electronic steering units to ADAS sensors, they provide protection you can trust.

GORE® Automotive Vents for High-Severity Applications

In high-severity applications, protection is non-negotiable. Every component must perform flawlessly under pressure, especially in systems where failure could compromise safety. That's why Gore offers venting solutions tailored to the needs of critical automotive electronics. Our engineering team is ready to help you select the right fit for your application:

- **Standard Series:** Designed to resist automotive fluids and maintain consistent performance at temperatures up to 125 °C, with short-term tolerance up to 140 °C.
- **High Temperature Series:** Built for durability in challenging environments, withstands long-term exposure to chemicals and mineral oils at up to 150 °C.
- **Compact Series:** Delivers trusted protection in a streamlined, space-efficient form for small and sensitive modules.
- **Cleanliness Protected Option:** Available across all series, each unit is cleaned and vacuum-sealed to prevent recontamination, with third-party certification to support your cleanliness standards.

Design for What Matters Most

Every capability is backed by proven test results and developed with real-world conditions in mind, to help you meet functional safety and reliability goals with greater assurance. What sets our vents apart:

- Designed to meet FMEA rating levels of 9-10
- Statistically proven process capability (Cpk ≥ 1.67)
- Full traceability per ISO 9001 and VDA 4992
- Support from a dedicated Product Safety Confirmative Representative (PSCR)
- Tested to IATF 16949 and ISO 16750 standards
- Certified particulate extraction & vacuum-sealed protection (CP option)

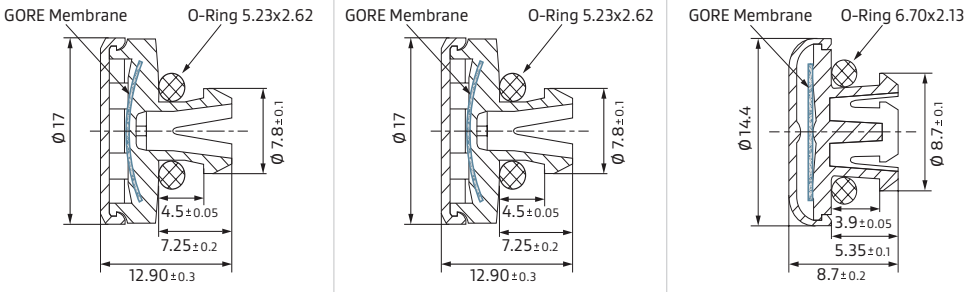
Together, improving life

	Snap-Fit Standard Series	Snap-Fit High Temperature Series	Snap-Fit Compact Series
Product Name (order number for samples)	**SMPL-AMF400114-50 SMPL-AMF400114CP-1000**	**SMPL-AMF400167-50 SMPL-AMF400167CP-1000**	**SMPL-AMF400200-50 SMPL-AMF400200CP-1000**
Product Number (order number for series production)	AMF400114 | AMF400114CP	AMF400167 | AMF400167CP	AMF400200 | AMF400200CP
			

Product Performance Characteristics

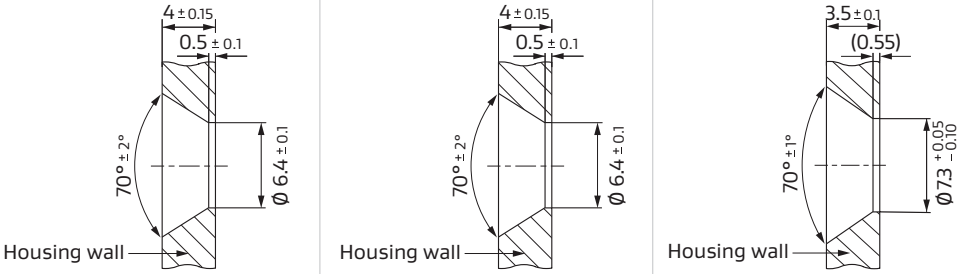
Minimum Water Entry Pressure (WEP)[1] at standard ambient temperature and pressure	> 60 kPa	> 60 kPa	> 60 kPa
Minimum airflow Maximum airflow (by conversion to the normalized state 0 °C, 1013 hPa)	Minimum: > 15 l/h at 7 kPa Maximum: < 60 l/h at 7 kPa	Minimum: > 15 l/h at 7 kPa Maximum: < 60 l/h at 7 kPa	Minimum: > 15 l/h at 7 kPa Maximum: < 45 l/h at 7 kPa
Typical Airflow (by conversion to the normalized state 0 °C, 1013 hPa)	~ 35 l/h at 7 kPa	~ 35 l/h at 7 kPa	~28 l/h at 7 kPa
Ingress Protection (IP)	• IP68 (1 m for 1 h) • Depending on housing geometry: IPX6K, IPX9K	• IP68 (1 m for 1 h) • Depending on housing geometry: IPX6K, IPX9K	• IP68 (1 m for 1 h) • Depending on housing geometry: IPX6K, IPX9K
Operating temperatures	T_{min} = -40 °C T_{max} = +125 °C (+140°C for max 168 hrs)	T_{min} = -40 °C T_{max} = +150 °C	T_{min} = -40 °C T_{max} = +140 °C
Membrane characteristic	Hydrophobic and oleophobic	Hydrophobic and oleophobic	Hydrophobic and oleophobic
Flammability[2]	*In accordance with the principles of UL 94 HB*	*In accordance with the principles of UL 94 HB*	*In accordance with the principles of UL 94 HB*
Housing material	PBT-I-GF30 hydrostabilized	PBT-I-GF30 hydrostabilized	PBT-I-GF30 hydrostabilized
O-ring material	EPDM 40 IRHD-M	Silicone 50 IRHD-M	EPDM 50 IRHD-M
O-ring color	Black	Red	Red
Cleanliness Protected (CP) available	Yes	Yes	Yes
Laser marking for increased traceability	Yes	Yes	Yes

Design & Dimensions



Recommended Installation

Please contact your Gore representative for more detailed installation drawings.



1. WEP (Water Entry Pressure) Resistance: WEP Resistance measures how much pressurized water a membrane can withstand before it leaks.
2. Flammability applies to the housing and O-ring materials.

Harness the “Cleanliness Protected” Edge

The “Cleanliness Protected” (CP) specifications of GORE® Automotive Vents for High-Severity Applications were developed through extensive testing and validation of their particulate extraction process. These rigorous CP specifications align with industry standards for technical cleanliness, specifically ISO 16232 and VDA 19.1.

GORE® Automotive Vents for High-Severity Applications “Cleanliness Protected” Specification[1]
For Snap-Fit Installation

Particle size (µm) (per VDA 19.1)	Size category (per ISO 16232)	Number of particles per 1000 cm^2 part surface*		
		Metallic particles	Non-metallic particles	Fibers**
50 ≤ x < 100	E	130	500	n/a
100 ≤ x < 150	F	64	130	64
150 ≤ x < 200	G	64	130	64
200 ≤ x < 400	H	16	32	64
400 ≤ x < 600	I	4	8	64
600 ≤ x < 1000	J	0	0	32
1000 ≤ x < 1500	K	0	0	16
1500 ≤ x < 2000	L	0	0	8
2000 ≤ x < 3000	M	0	0	8
>3000	N	0	0	0

1. Detailed specification developed in separate documents.

Component cleanliness code acc. to ISO 16232

Metallic particles: CCC = A(E7/FG6/H4/I2/JKLMN00)
Non-metallic particles: CCC = A(E9/FG7/H5/I3/JKLMN00)
Fibers: CCC = A(FGHI6/J5/K4/LM3/N00)
Gravimetric result / 1000 cm^2 7.0 mg
* Basis: 20.31 cm^2 for AMF300114CP, AMF300167CP; 13.85 cm^2 for AMF300200CP.
** Basis: Feret max. diameter for characterized fibers in the size classes.

Sealed to maintain “Cleanliness Protected” status

When the cleaning process has been completed, the Cleanliness Protected vents are immediately sealed into a bag to prevent ingress of any new environmental particulates. The bag remains sealed from that moment until you are ready to open it and install your “CP” vents.

Independent third-party Cleanliness Certificate

An independent laboratory will certify the results of the “CP” process, and their Cleanliness Certificate will be shipped to you with your vents. The Cleanliness Certificate documents all three types of particulates that were extracted, and for each type, quantifies the size and number of particles that were removed.

Environmental Performance

GORE® Automotive Vents for snap-fit installation have been extensively tested according to the following performance standards.
Please contact your Gore representative for more detailed information.

Thermal Shock Resistance Test

Vent durability under changing temperature conditions

METHOD: ISO 16750-4

TEST CONDITIONS:
- cycling temperatures between T_{min} and T_{max} within 30 seconds
- 30 minutes conditioning at each temperature
- minimum 500 cycles

Ice-Water-Shock Resistance Test

(not applicable for AMF300070)

Vent resistance to repeated thermal shock by submersion in ice water

METHOD: ISO 16750-4

TEST CONDITIONS:
- heating to T_{max} for 60 minutes
- rapid submersion in 5% NaCl ice water for 5 minutes
- 20 cycles

Climate Resistance Test

Vent durability in hot, humid environments

METHOD: DIN EN 60068-2-30

TEST CONDITIONS:
- 85 °C temperature
- 85% relative humidity
- 1,000 hours

Salt Spray Resistance Test

Vent resistance to salt, water and mist over an extended period

METHOD: DIN EN 60068-2-11

TEST CONDITIONS:
- Profile Ka

Temperature Resistance Test

Vent durability under high and low temperature conditions

METHOD: ISO 16750-4

TEST CONDITIONS:
- T_{max} for 2,000 hours
- T_{min} for 168 hours

Fluid Resistance Test

Vent protection against typical automotive chemical loads

METHOD: ISO 16750-5

Product performance depends on application method (i.e., cotton cloth, brush, spray, immersion, pouring) and the specific contaminant applied.

Vibration and Mechanical Shock Resistance Test

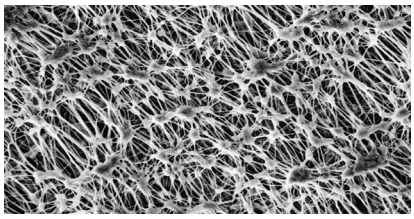
Vent performance after exposure to mechanical shocks at various temperatures

METHOD: ISO 16750-3

Product performance depends on sinusoidal and temperature profile, pulse shape and duration, number of shocks and peak acceleration. Compact Series meets the harshest severity levels.

Why the GORE Membrane matters

Only GORE® Automotive Vents incorporate the performance benefits of the GORE Membrane. Made of expanded polytetrafluoroethylene (ePTFE), it's engineered with billions of pores. These pores are 700X larger than an air molecule, to ensure reliable airflow and pressure equalization. Yet at 20,000X smaller than a drop of water, these pores effectively block entry of liquids, dirt and debris.



The GORE Membrane magnified 40,000 times

The GORE Membrane is:

- chemically inert
- non-shedding
- UV-resistant
- temperature-resistant
- hydrophobic and oleophobic

What GORE® Automotive Vents can offer you

GORE® Automotive Vents deliver innovative technology, backed by decades of research and testing. Our product portfolio has proven itself in the harshest environments: literally billions of our vents have been installed in automotive applications worldwide. Today, virtually every global OEM trusts GORE® Automotive Vents to extend the reliability and longevity of their products and assemblies for exterior lighting, electronics, powertrain, battery and acoustic microphones.

Our vents have been engineered with varied properties to fit in any automotive application. With technical support and testing centers in the US, Germany, Japan and China, our application engineers are easily accessible — and ready to work in close partnership with your design team, from product concept through manufacturing integration.

Contact Us

To discuss options and solutions for your newest application, call your local Gore representative or send your inquiry from our website: **gore.com/autovents**.

INTERNATIONAL CONTACTS

Australia +61 2 9473 6800
China +86 21 5172 8299
EMEA +49 89 4612 2211
India +91 22 6768 7000
Japan +81 3 6746 2570
Korea +82 2 393 3411
Mexico +52 81 8288 1281
Singapore +65 6733 2882
South America +55 11 5502 7800
Taiwan +886 2 2173 7799
USA +1 410 506 7812

W. L. Gore & Associates GmbH
Hermann-Oberth-Str. 26, 85640 Putzbrunn, Germany
T +49 89 4612 2211 **F** +49 89 4612 2302 **E** ipd-deutschland@wlgore.com
gore.com/autovents

AUTO-151-DSH-EN-AUG25