

Dimensional and Performance Specification for After-Market Gasoline Engine Oil Filters

**SAE/USCAR-36 REVISION 1
May 2021**

ISBN: 978-1-4686-0344-6



DIMENSIONAL AND PERFORMANCE SPECIFICATION FOR AFTER-MARKET GASOLINE ENGINE OIL FILTERS

TABLE OF CONTENTS

1.	SCOPE.....	2
2.	REFERENCE DOCUMENTS.....	2
3.	DIMENSIONAL SPECIFICATIONS	2
4.	IDENTIFICATION REQUIREMENTS	3
5.	PERFORMANCE REQUIREMENTS	3
5.1	Resistance to Flow Test.....	3
5.2	Filtration Efficiency and Capacity Test.....	4
5.3	Cleanliness and Media Migration Test.....	5
5.4	Element Collapse with Heat Aged Filter Test	6
5.5	Element Collapse with Ethanol Exposure Test	6
5.6	Anti-Drain Valve Leakage Test	7
5.7	Water Resistance Test.....	7
5.8	Low Temperature Gasket Sealing Test	8
5.9	Gasket Compliance Test.....	8
5.10	Pressure Impulse Fatigue Test	9
5.11	Vibration Fatigue Test.....	9
5.12	Hydrostatic Burst Pressure Test	9
5.13	Relief Valve Performance Test	10
5.14	Element Integrity Test	11
5.15	Corrosion Resistance Test.....	11
APPENDIX A	PROCEDURE FOR FILTER AGING WITH HOT OIL.....	12
APPENDIX B	PROCEDURE FOR FILTER AGING WITH OIL/ETHANOL MIXTURE	13
APPENDIX C	REVISION RECORD	14
Figure 1	Dimensions	2
Table 1	Dimensional requirements	2

1. SCOPE

This specification defines the dimensional and performance requirements for aftermarket spin-on oil filters intended for use on gasoline engines. Filters meeting this specification may also be suitable for use on some diesel applications.

Filters meeting these dimensional limits are intended to meet the oil filter fit and package requirements for engine and vehicle designs.

Filters meeting the performance requirements are intended to maintain sufficient durability to support typical 10000 mile oil change intervals. Some OEM engines may require special filters for which this specification would not support.

Filters that meet or exceed this specification requirements for both dimensional and performance can claim **"Conformance to SAE/USCAR - 36 Specifications."** Filters that meet just the performance specifications (ie. may have different thread) can claim **"Aligns to SAE/USCAR - 36 Performance Specifications."**

2. REFERENCE DOCUMENTS

SAE HS 806-2009, ISO 4548-5, ISO 4548-7, ISO 4548-9 ISO 4548-12, ISO 2942, ISO 16232, ASTM B117, ASTM D1654.

3. DIMENSIONAL SPECIFICATIONS

Table 1 - Dimensional requirements

Filter Type	Type A	Type B	Type C	Type D
Filter height maximum "A" (mm)	75	87	115	97
Shell OD maximum "B" (mm)	77	77	77	97
Lockseam maximum OD "C" (mm)	77	77	77	97
Minimum number of full threads	3	3	3	3

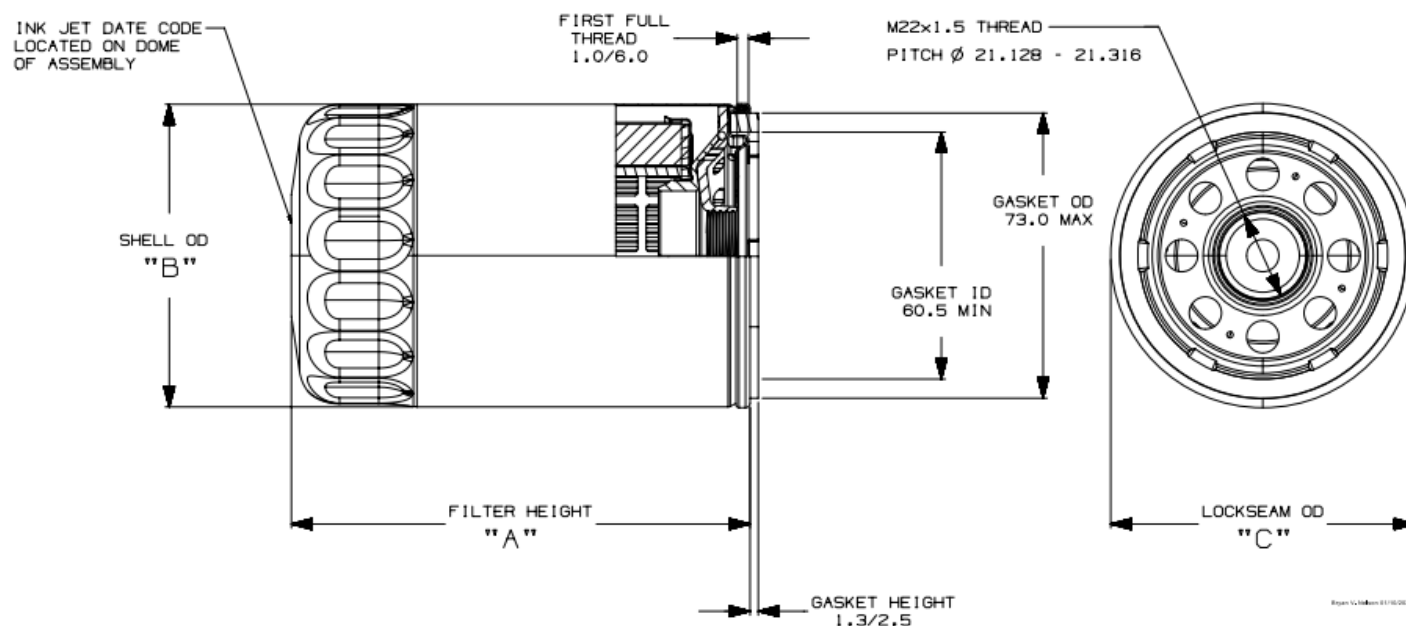


Figure 1 - Dimensions

4. IDENTIFICATION REQUIREMENTS

The filter assembly shall have a durable identification text on the shell, which identifies the production date, shift, line, and manufacturer identification (ID).

EXAMPLE: 02519-1-2-ID or (DDYYSLI - **D**ay **Y**ear **S**hift **L**ine **I**dentification)

NOTE: The **02519-1-2** is the 25th day of year 2019, shift **1**, line **2**. **ID** is the identification of the filter assembly manufacturer.

5. PERFORMANCE REQUIREMENTS

Performance requirements define the sample size, test procedures, and acceptance criteria. Samples should be selected at random. When multiple production lines are utilized, samples need to cover all production lines when specified. All specimens must meet the requirements.

5.1 Resistance to Flow Test

The purpose of this test is to determine the pressure loss under predetermined conditions of flow and fluid viscosity. The “cold oil test” evaluates the relief valve function at cold temperatures.

5.1.1 Procedure

- Test a minimum of three parts
- Test per SAE HS 806-2009, Section 5
 - Test oil, hot: RFO-3 test oil, viscosity = 10 cSt $\pm$ 1 cSt (above 90 °C)
 - Test oil, cold: 5W30 motor oil, viscosity = 2500 cSt $\pm$ 250 cSt (below -15 °C)

5.1.2 Acceptance Criteria

- Maximum pressure loss at the specified flow rate
- Hot oil test:
 - Type A: 50 kPa at 40 L/min
 - Type B: 50 kPa at 50 L/min
 - Type C: 50 kPa at 70 L/min
 - Type D: 50 kPa at 70 L/min
- Cold oil test:
 - Type A: 75 kPa at 0.8 L/min, 250 kPa at 5 L/min
 - Type B: 75 kPa at 1.0 L/min, 250 kPa at 5 L/min
 - Type C: 75 kPa at 1.5 L/min, 250 kPa at 5 L/min
 - Type D: 75 kPa at 1.5 L/min, 250 kPa at 5 L/min