



Specification for Rear Compartment Trim Subsystem

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This standard establishes the common technical requirements for Trunk Trim and Rear Compartment Trim Subsystems generally referred as Rear Compartment Trim for GM vehicles. The technical requirements for the Rear Compartment Trim subsystem's product characteristics, both functional and physical, are defined along with interface, reliability, design, and construction requirements. This specification becomes Appendix C1 of the Statement of Requirements (SOR) for a Rear Compartment Trim subsystem.

1.1.1 Program-specific requirements are to be captured in a SOR Appendix C2, derived from a template titled Program Specific Rear Compartment Trim Requirements.

1.2 Applicability. This Subsystem Technical Specification (SSTS) covers all Rear Compartment Trim components for all vehicle body styles.

This specification addresses trim that specifically is not part of the floor trim (main floor carpet) on the interior of the vehicle. Primary the trim addressed herein is used in the Rear Compartment area including closed trunk or rear glassed area of a hatchback or wagon. The Rear Compartment area may include polyester non-woven face goods and/or flat needle fleece cover bonded with cover fleece. These may be supported with a moldable polymer or moldable felt to maintain shape and coverage of the system.

This specification will not address garnish rear quarter trim in Sport Utility Vehicles (SUV), hatchback and station wagons, these are covered by the Hard Trim SSTS.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

CNCA-02C-023	ISO 1043-1	ISO 11629	IATF 16949
CNCA-02C-060	ISO 1043-2	ISO 15701	SAE J1344
FMVSS 208	ISO 11469	ISO 27955	UN R 17
FMVSS 302			

2.2 GM Standards/Specifications.

GMW3026	GMW14149	GMW14457	GMW16214
GMW3059	GMW14171	GMW14652	GMW16331
GMW3116	GMW14194	GMW14722	GMW16597
GMW3232	GMW14196	GMW15010	GMW16803
GMW3402	GMW14278	GMW15014	GMW16853
GMW14118	GMW14282	GMW15015	
GMW14124	GMW14444	GMW15992	

2.3 Additional References.

- CG1418
- CG2873

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- CG2874
- Color and Trim Design Appearance Requirement
- Deutsches Institut für Normung (DIN) (German Standards Authority)
- Dimensional Technical Specifications
- Ergonomic Requirement Guide
- GM Best Practice KPAC NVISR-95
- GM Best Practice KPAC RCOMPTR-47
- GM Best Practice KPAC RCOMPTR-89
- GM Best Practices
- GM Corporate Bill of Process (BOP)
- GM Engineering Materials and Processes Standards
- GM Ergonomic Maximum Weight Requirement
- GM Global Fastening Catalog (SOR Appendix F12)
- GM Materials Approved Source List (GRANTA)
- GM Preferred Material Catalog (PMC)
- Hard Trim SSTS
- Interface Control Drawings
- Interior Lighting Best Practices.
- Organization for International Standards (ISO) Compliance Regulations
- Perceived Quality Targets
- Program Specific Rear Compartment Trim Requirements
- Rear Compartment Acoustic Performance Requirements
- Requirements of Adhesion Requirements of Interior Carpets.
- SSTS
- Statement of Requirements Appendix C1, Appendix C2 and Appendix J1/J2
- Storage Allocation List Tracker (SALT) located in Intranet
- Tier 2 Vehicle Technical Specification (VTS) requirements
- Vehicle Technical Specification (VTS)

3 Requirements

3.1 System/Subsystem/Component/Part Definition. The Rear Compartment Trim shall cover the interior sheet metal surfaces, body hardware, and electrical wiring, while providing a pleasing aesthetic appearance of the interior of the Rear Compartment. The Rear Compartment Trim shall contribute to the reduction of noise. Additional provisions may provide for attaching or securing loose objects placed within the rear Compartment area of the vehicle. Compartment tie downs, grocery hooks, and Compartment nets may be included per program direction.

The Rear Compartment Trim provides a decorative covering of all visible areas of the vehicle structure. The trim is to provide a durable, aesthetically appealing covering that also contributes to overall vehicle acoustic and ventilation performance. The Rear Compartment Trim must withstand daily wear from cargo loads, environmental exposure, and occasional cleaning procedures. The systems will provide these functions for the lifetime of the vehicle and under typical vehicle usage including, but not limited to high and low ambient extremes. This also includes any floor mat and convenience or cargo net included in the system.

Note: Any vehicle that is sold in Europe must include a minimum of two (2) and possibly four (4) or six (6) Compartment tie downs or lashing devices. Refer to Deutsches Institut für Normung (DIN) (German Standards Authority) or the Organization for International Standards (ISO) Compliance Regulations and/or Tier 2 Vehicle Technical Specification (VTS) requirements.

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3.1.1 Appearance. The Rear Compartment Trim subsystem shall have an aesthetic appearance as defined by GM Design Staff and approved by an Interior Design Review. These requirements regarding Touch, Appearance, Lighting and Color are specified in the Program specific Color and Trim Design Appearance Requirement (CTDAR) chart. The following is a list of elements, which make up the appearance requirements.

3.1.1.1 The Rear Compartment Trim shall have colors as determined in the appearance requirements per CTDAR and the color appearance shall meet color masters specified and/or approved by GM Appearance Engineering.

3.1.1.2 The Rear Compartment Trim shall have a grain or texture appearance that meets grain or texture masters specified and/or approved by GM Appearance Engineering or regional equivalent.

3.1.1.3 The Rear Compartment Trim subsystem shall have an integrated appearance with mating parts especially to Compartment management systems when included.

3.1.2 Content. The required physical and functional content are identified in 3.1.2.1.

3.1.2.1 Physical Content. The specific required physical content for the Rear Compartment Trim is identified in the SOR Appendix B2 (Electronic Bill of Materials (EBOM)).

3.1.2.1.1 The Rear Compartment floor (load floor) may include a removable cover or floor which may store the spare tire/wheel or allow additional storage space. This removable cover and the miscellaneous items included as Part of Assembly (POA) shall meet all component retention requirements specified per the global VTS. In order to avoid further concerns with these VTS requirements, it is recommended to confirm prior release of the final design intent, with the program Safety Integration Engineer. This floor system must be capable of supporting all requirements for loads as specified per GMW14278.

3.1.2.2 Functional Content. The Rear Compartment Trim shall provide a pleasing appearance inside the passenger compartment while complying with Human Factors Design Guidelines. The supplier shall work with the GM Design Responsible Engineer to comprehend this requirement.

Note: If applicable: The Rear Compartment Trim shall provide useable storage areas as defined by the Storage Allocation List Tracker (SALT).

3.1.3 Ambient Environment. The Rear Compartment Trim shall meet all ambient environment requirements of the VTS.

3.1.4 Interfaces. Requirements for interfaces with other vehicle subsystems are defined as follows.

3.1.4.1 Rear Compartment Trim shall comply with Perceived Quality Targets for fit and finish. The supplier shall work with the GM Design Responsible Engineer to comprehend this requirement.

3.1.4.2 Rear Compartment to Body. The Rear Compartment Trim shall comprehend body build tolerances when designing clearance holes for other subsystems components, enabling easy installation.

3.1.4.2.1 Sheet metal surfaces shall provide required attaching surfaces and/or holes for the Rear Compartment Trim system attachment.

3.1.4.3 The assemblies together (in all configurations) shall provide no less than the minimum human factors requirements regarding location, position, dimension, visibility and understanding as given in the Human Factors Design Guidelines. The supplier shall work with the GM Design Responsible Engineer to comprehend this requirement.

3.1.4.3.1 Rear Compartment Trim Subsystem Interface to Interior Lighting Subsystem Specifications. Interior lighting subsystem components are to be packaged on or in other elements of the Rear Compartment Trim subsystem and both subsystems shall be designed to meet the specifications in 3.1.4.3.1.1. Refer to Interior Lighting SSTS (GMW14118) for detailed requirements.

3.1.4.3.1.1 All interior lighting electrical components (e.g., wiring harnesses and connectors) shall not be visible to the customer in any seating position or while standing outside the vehicle with the doors open.

3.1.4.4 Rear Compartment Trim to Electrical Power and Signal Distribution.

3.1.4.4.1 The Rear Compartment Trim shall provide for routing, clearance and service access as required for power and signal distribution modules, wiring, and connectors. Access holes and/or slits shall be provided for power and signal distribution and connectors leading from cables or harnesses installed prior to Rear Compartment Trim installation.

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3.1.4.4.2 Power and signal distribution components shall be designed and retained such that objectionable distortion to the Rear Compartment Trim cannot result from their mis-location.

3.1.4.4.3 Rear Compartment Trim shall provide covering and adequate clearance for wire harnesses and electric connectors, to allow them to perform their designed functions.

3.1.4.4.4 Rear Compartment Trim is not intended to protect any electrical component including hybrid system modules, batteries, wiring, etc., from final customer regular use or misuse. Protection for this items shall be provided by the electrical component owner.

3.1.4.5 Rear Compartment Trim to Interior.

3.1.4.5.1 Rear Compartment Trim to Garnish Rear Quarter Trim. Execution of this interface should be according to BFO strategy for Rear Compartment and Quarter Trim integration with no exposed sheet metal and according to program specific Dimensional Technical Specifications (DTS) requirements. The supplier shall work with the GM Design Responsible Engineer to comprehend this requirement.

3.1.4.5.2 Load Floor Trim to Sill Plate. Execution of this interface should be according to BFO strategy for Rear Compartment and Sill Plate integration with no exposed sheet metal and according to program specific DTS requirements.

3.1.4.5.3 Execution of interfaces between Rear Compartment Trim parts and hard trim components (i.e., side trim, sedan trunk sill plate and load floor) should be according to corresponding best practices in Auros that applies.

3.1.4.5.4 Rear Compartment Trim to Safety Belt Restraints. Rear Compartment Trim shall not restrict seat belt or retractor operation. Rear Compartment Trim design shall permit restraint hardware to be directly fastened to floor pan sheet metal if required.

3.1.4.5.5 Clearance shall be provided for all rear seat attachments and functions.

3.1.4.5.6 Rear Compartment Trim to Safety Triangles. When required, Rear Compartment Trim shall provide a storage space. When installed under the load floor, in a storage bin, the safety triangles must be secured with straps. When installed on side trims, safety triangles must be secured with straps and these straps must withstand a 35 N pull with the safety triangle installed.

3.1.5 Usage Definition. Squeak and Rattle Avoidance. The Squeak and Rattle requirement for the Rear Compartment Trim is defined in the Vehicle Technical Specification and will be validated at the vehicle level. All part details must be matched to each other, so that when assembled a noiseless and motionless fit is guaranteed. Follow GM Best Practice KPAC NVISR-95 in Auros recommendation.

3.1.6 Rear Compartment to Body Sealing. Rear Compartment Trim shall have a gap by design to the body sealing to avoid mismatches and/or distortions with the part assembled at final line. This information should be reviewed at each specific program's peer review and must follow the latest Best Practice release for this item. Follow GM Best Practice KPAC RCOMPTR-47 in Auros recommendation that applies. (The supplier shall work with the GM responsible engineer to comprehend this requirement)

3.2 Product Characteristics. The required product characteristics for the Rear Compartment Trim are identified in 3.2.1.

3.2.1 Performance Requirements.

3.2.1.1 Provide Pleasant and Comfortable Occupant Environment. The subsystem (in all variants) shall provide no less than the minimum human-factors requirements regarding location, position, dimension, visibility and understanding as given in the Human Factors Design Guidelines. The supplier shall work with the GM Design Responsible Engineer to comprehend this requirement.

3.2.1.2 Provide Storage. If applicable; the subsystem shall provide useable storage areas as defined by the SALT. The most useful volume is required to be executed in all trunk trim subsystems.

3.2.1.3 Cover Material Approval. All cover materials should comply with durability test requirements per GMW16597 and/or Appendix C2 specific program exceptions in the SOR.

3.2.1.4 Maintain Shape.

3.2.1.4.1 Rear Compartment Trim components (installed) shall not distort due to specified thermal cycling and humidity ranges.

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3.2.1.4.2 Joint lines shall allow for vehicle build variations, and allow for part dimensional variation due to atmospheric conditions, with no variance to original design shape.

3.2.1.4.3 Rear Compartment Trim Dimensional Stability Cycle. This test supercedes the interior trim dimensional stability cycle in GMW14444. Test according to GMW14124 following Dimensional Stability vehicle body style temperatures shown in Table 1. Consult SOR Appendix C2 for specific program requirements.

Table 1: Dimensional Stability Vehicle Body Style Temperatures and Exemptions

Vehicle Body Style	Cycle M Maximum Temperature ^{Note 1}	Parts Exemption ^{Note 1}
Sedan, coupe	70 °C	Decklid trim test at 85 °C Cargo bin or other components test at 85 °C when thermal map shows exhaust heat transfer or other heat source
SUV, hatch back and station wagon with rear glass angled between 90 degrees and 120 degrees	70 °C	Cargo bin or other components test at 85 °C when thermal map shows exhaust heat transfer or other heat source
SUV, hatch back and station wagon with rear glass angled between 121 degrees and 180 degrees	70 °C	Load floor panel test at 85 °C Cargo bin or other components test to 85 °C when thermal map shows exhaust heat transfer or other heat source

Note 1: Test all Rear Compartment parts. Check parts exemption.

3.2.1.4.4 Rear Compartment Trim Dimensional Stability Acceptance Criteria. The test piece shall show no significant surface changes according to GM Best Practice KPAC RCOMPTR-89.

3.2.1.4.5 Low Temperature Requirements. For vehicles sold in selected countries only, see Appendix A, Table A1, the cold temperatures can be modified to -20 °C.

3.2.1.4.6 Load Performance Requirement. The Rear Compartment Trim (load floor, storage bin, sill plate trim) shall be capable to withstand load requirements according to GMW14278 (palm load, knee load, distributed load, misuse and durability).

3.2.1.5 Maintain Color. The vehicle Rear Compartment Trim subsystem shall have no objectionable appearance change after five years of customer service. Reference the material specification GMW16597 - Carpet Material for Non Floor Application.

3.2.1.6 Maintain Fit/Alignment.

3.2.1.6.1 The Rear Compartment Trim design shall utilize "key features", studs, and/or holes of the floor pan sheet metal for positioning, as well as for Geometric Dimensioning and Tolerancing (GD and T).

3.2.1.6.2 The Rear Compartment Trim design shall allow installation according to ergonomic and manufacturing requirements from each specific assembly plant considering body build variation.

3.2.1.7 Meet Safety Performance Requirements. Rear Compartment Trim must comply with VTS requirements (global, regional and local). In order to avoid further concerns with these VTS requirements, it is recommended to confirm prior release of the final design intent, with the program Safety Integration Engineer.

3.2.1.7.1 Global Regulatory Requirements. Sport utility vehicles and hatchback vehicles need to meet additional regulatory requirements when sold in some regions. The responsible engineer must confirm with the specific program's Regulatory Engineer, all the testing and/or regulations to be met. It is recommended to review this based on the final approved Product Program Content (PPC) for the program. All requirements per the latest available release document shall be met as required.

Depending on the market the vehicle will be sold, a storage location must be provided for the specific warning triangles. Confirm with the program specific Regulatory Engineer.

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For Cargo/Barrier Net, this component shall meet all requirements based on UN R 17 and ISO 27955 (test procedure per GMW14282, the Body Subsystem Management Team (SMT) is responsible for execution).

3.2.1.8 Natural Weathering. Solar test not required for component level testing, only applicable at material level as part of the Trim Transmittal approval.

3.2.1.9 Facilitate Cleaning. The cleaning requirements are specified in GMW3402 for Rear Compartment materials. If specialty care or cleaning requirements are needed, should be identified in Appendix C2 of the SOR (Program Specific Rear Compartment Trim requirements).

3.2.1.10 Interior Lighting Subsystem Performance Specifications. The interior lighting subsystem shall meet all performance specifications contained within the Interior Lighting SSTs, GMW14118.

3.2.1.11 Generic Material Part Performance Requirements. All interior parts shall comply per GMW14444. For quarter trim panels (hard trim) refer to per GMW14457. If attached or combined with the Rear Compartment Trim, the following performance requirements also apply.

3.2.1.11.1 Floor trim and floor mat carpets per GMW3026.

3.2.1.11.2 Non-carpeted (non-traditional) surfaces per GMW14722 for all-weather floor mats, or GMW16803 for non-carpet floor covering.

3.2.1.11.3 Heavy layer or sound barrier materials to GMW14171.

3.2.1.11.4 Sound absorbing and/or sound dissipative materials to GMW14194.

3.2.1.11.5 Sound absorbing foams to GMW14196.

3.2.1.11.6 Plastic trim parts to GMW14444.

3.2.1.11.7 Composite floor mats to GMW3026.

3.2.1.11.8 Auxiliary floor mats for passenger and luggage compartment to GMW14722.

3.2.1.11.9 Formed carpet covered materials to GMW14652.

3.2.1.11.10 Non-floor carpet materials to GMW16597.

3.2.1.11.11 Rear Compartment floor trim shall be tested to ISO 15701 for color fastness. Color fastness to migration into plasticized Polyvinyl Chloride (PVC) requirement is $\geq$ rating 6.

3.2.1.11.12 EPP Foams to GMW16214.

3.2.1.11.13 Rear Compartment substrates to GMW14652.

3.2.1.11.14 The Convenience Net Assembly shall meet the component requirements based on GMW15014 and GMW15015.

3.2.1.11.15 Convenience Net Attachment Requirements. The attachments shall be capable to withstand a static load of 45 kg per attachment point in the body. Apply the force in a perpendicular vector from the surface of the attachment points. For the specific vehicle attachment requirement see SOR Appendix C2.

3.2.1.11.16 Convenience Net Subsystem Testing (Optional). The convenience net subassembly shall comprehend the net with all its components and body attachments (i.e., T-nuts, tie downs, etc.)

The test setup shall include a horizontally oriented fixture that simulates the vehicular cross car width and height. The fixture shall include the same number of attachments than the vehicle intent as shown in Figure 1 (only for reference). The height of the fixture from the ground should allow at least 1.2 m from the net horizontal surface.

The test shall be performed by laying a 48 kg load (in a size of (400 x 135 x 125) mm) over or inside the net (depending on the net design, i.e., envelope or one layer) with zero velocity until the load reaches the maximum elongation limit of the net. Leave the net with the load for 60 s minimum.

The net and its components shall withstand the load without loss of function.

Note: This test is for a full size cross car width net. If the net is smaller than the 48 kg load (in a size of (400 x 135 x 125) mm), do not perform this test.

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