**Appendix B**

**General Program Description**

CSS 50V 3.0 L Diesel Engine – LZ0

**Revision: *000***

**Issue Date: 05Dec23**

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**CHANGE LOG for SOR Appendix "B" Template**

Beginning with Initial Release

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev #** | **Date** | **Description of Change** | **Source** |
| 000 | 12/5/23 | Initial Release – required to support MY28 component resourcing | B. Steiert |
|  |  |  |  |

# 

# Program Summary

This document describes the program outline for CSS 50V 3.0 L Diesel Engine – LZ0 program. The LZ0 product lifecycle is 5 years. Any questions regarding this document can be directed to the buyer.

## Program Timing

The following table shows the timing highlights for the CSS 50V 3.0 L Diesel Engine-LZ0. The dates and number of sets of hardware shown below is for preliminary planning purposes only. The actual dates and quantities will be further defined as the program develops. Pre-production (Beta / Gamma) material required dates (MRDs) will be used to calculate PO timing for each component / assembly purchased. The GM DRE will communicate the required timing with GM Purchasing, GM Supplier Quality, the GM product team and the supplier to ensure that PO’s are issued and received on time to support part availability for the required MRDs. Additional engineering related deliverables can be found in Appendix C**.** (Examples: Purchased Parts for Make Parts (PPMP) will have earlier delivery dates to allow time for machining and sub-assembly. Engineering will also designate certain key parts that will require early development exposure.) PPAP dates shown below indicate when all purchased parts must have PPAP required for that group of parts. The required PPAP dates for specific parts will be refined as the program develops.

***LZ0***  **Program Timing**

|  |  |
| --- | --- |
| **Program Timing** |  |
| **GSTS Name** | 28.40 MY28 50V GMNA LZ0 T1xxF LDPU |
| **Launch Model Year** | 2028 |
| **Program** | 3.0L 6cyl Diesel CSS |
| **RPO** | LZ0 |
| **General Timing** |  |
| **Alpha MRD** | N/A |
| **Beta MRD** | N/A |
| **Gamma MRD** | 14Apr25 |
| **MRD for Advanced Product & Process Validation Build for PPMP (APPV PPMP MRD)** | 06Mar26 |
| **MRD for Advanced Product & Process Validation Build (APPV MRD)** | 03Apr26 |
| **MRD for Product & Process Validation Build for PPMP (PPV PPMP MRD)** | 24Jul26 |
| **MRD for Product & Process Validation Build (PPV MRD)** | 21Aug26 |
| **Validation Testing Complete** | 18Dec26 |
| **MRD for Start of Saleable Production PPMP (Sal PPMP MRD)** | 15Jan27 |
| **MRD for Start of Saleable Production (Sal MRD)** | 12Feb27 |
| **Start of Production Acceleration (Prod MRD)** | 24May27 |
| **Base-Purchased Parts for Make Parts (PPMP)** |  |
| **Nonsaleable PPAP Complete** | 06Feb26 |
| **Approved PPAP Complete** | 18Dec26 |
| **Base - Purchased Parts (PP)** |  |
| **Nonsaleable PPAP Complete** | 06Mar26 |
| **Approved PPAP Complete** | 15Jan27 |
| **Run at Rate PP Complete** | 12Apr27 |
| **Dress Parts** |  |
| **Nonsaleable PPAP Complete** | 24Apr26 |
| **MRD for Advanced Product & Process Validation Build (APPV MRD - Vehicle)** | 22May26 |
| **MRD for Product & Process Validation Build (PPV MRD - Vehicle)** | 09Oct26 |
| **Approved PPAP Complete** | 05Mar27 |
| **MRD for Start of non-Saleable Production (Vehicle MVB-ns MRD)** | 22Jan27 |
| **MRD for Start of Saleable Production (Vehicle MVB-s MRD)** | 02Apr27 |
| **Run at Rate DP Complete** | 17May27 |
| **Start of Production Acceleration (Vehicle Prod MRD)** | 12Jul27 |

(1) Purchased Part for Make Parts (PPMP): Components which will receive subsequent processing/machining at customer receiving location.

(2) Purchased Parts (PP): Components which are used “as received” at customer engine or transmission plant.

(3) Dress Parts: Components which are shipped to and used at customer vehicle plant locations.

Questions on whether specific content is categorized as “make”, “purchased” or “dress” can be directed to the appropriate design responsible engineer.

Parts for the Alpha build, if applicable, should represent the design intent as indicated by GM.

Parts for the Beta build, if applicable, must be production design intent. “Soft tools” are permitted as long as the part delivered is fully design representative.

Parts for the Gamma build must be production design and production intent process. Some parts require pull ahead production tools for pre-production builds. Details for specific components will be defined in Appendix C.

Parts for the APPV and/or PPV Build, if applicable, must have PPAP status assigned by GM in GQTS (minimum non-saleable).

All parts must achieve PPAP Approved status in SQMS (Supplier Quality Management System) by PPMP PPAP, PP PPAP and DP PPAP dates shown above

**1.2 Preliminary Pre-Production Material Requirements**

**1.2.1 Preliminary Program Build Information for Product**

Preliminary assembly build information for the MY28 program is as follows:

* Alpha Build – n/a engine/transmission Assemblies
* Beta Build – n/a engine/transmission Assemblies
* Gamma Build – 5 engine/transmission Assemblies
* APPV Build – 10 engine/transmission Assemblies (to be ordered via production systems)
* PPV Build – 50 engine/transmission Assemblies (to be ordered via production systems)

Additional parts may be required to support product development. Engineering will also designate certain key parts that will require early development exposure. See Appendix C for more information. The GMGPS Preproduction Material Survey Form (found in Appendix C) should document any exceptions to the production process.

**1.2.2 Preliminary Manufacturing Requirements (Machine Run Off)**

Preliminary Machine Run off requirements for the CSS 50V 3.0 L Diesel Engine-LZ0 program is as follows:

* OEM Machine Run Off parts - 50 full assemblies (MRD range)
* Plant Machine Run Off parts- 50 full assemblies (MRD range)

If additional quantities of individual components (ie: castings, PPMP, etc.) are required they will be defined in Appendix C.

## Supplier Responsibilities

Supplier responsibilities shall include but not be limited to the following:

* Supplier is responsible for development, validation and performance of all fastened joints, except those joints secured by Directed Buy suppliers.
* Supplier is responsible for dunnage and shipping cost of all components into the Supplier final assembly facility, including GM Directed Buy parts.
* Additional Supplier responsibilities based on the nature of the part or subsystem being sourced may be found within other SOR documents, especially Appendices A, C, D, F and H.

**1.3.1 DIRECTED BUY COMPONENTS**

If applicable, Appendix C lists Directed Buy components that must be integrated into the purchased sub-assembly.

* All supplier costs (with exception of the Directed Buy component piece cost) associated with integrating the Directed Buy components into the sub-assembly must be included with the response to this SOR.
* All costs necessary to receive, assemble, and manage interface quality for all Directed Buy components must be included with response to this SOR.
* Supplier is also responsible for dunnage and shipping costs of all Directed Buy components into the Supplier final assembly facility.
* All Directed Buy component suppliers are responsible for managing their component business, engineering, manufacturing, and quality processes.
* GM will ensure availability of appropriate Directed Buy component information and math data for interface engineering, manufacturing, and service purposes.
* Tier 1 is responsible to send all math and drawings to GM, and to coordinate submissions of all sub-assembly component suppliers.

Tier 1 is responsible to submit PPAP/PPQP/GP-12, etc., paperwork to GM for all Directed Buy suppliers. Tier 1 Suppliers must communicate to Directed Buy suppliers required PPAP MRDs.

If your part is a Directed Buy, RASIC B, your timing will proceed the PPMP timing listed above. Confirm specific timing requirements with your Tier 1 supplier.

**1.3.2 SUPPLIER CAPACITY**

**Capacity definitions:**

Lean Capacity Rate (LCR): represents the minimum level of daily straight time component capacity required from a supplier to support GM nominal requirements. Weekly LCR = Daily LCR x 5 days. The standard supplier operating plan to achieve daily LCR requirements must be achieved with a week not to exceed 5 days and up to 24 hours per day.

Maximum Capacity Rate (MCR): equal to LCR x 1.15 and must be achieved without additional resources from the Buyer (including additional tooling) on a sustained basis.

Supplier Daily Capacity (SDC): the number of parts produced daily, the number of hours per day, and the number of days per week it takes to support GM capacity requirements. SDC is documented in the 1804/1810 breakdown forms and confirmed on the blanket purchase order.

**Staged Capacity**

Staged Capacity occurs when the supplier plans to install capacity in multiple stages and does not have sufficient capital and/or tooling to meet the peak program volume at the Start of Production (SORP). Staged capacity proposals must receive written approval from the GM buyer and be documented on the blanket contract.

**Part Grouping**

A Part Group is a series of parts that share the same process, equipment or tool within the same manufacturing site and all parts within the group have the same cycle time such that any of the parts within the group can be ordered in any combination up to the group capacity amount, or Group SDC. Suppliers must submit Part Group requests to GM Supply Chain for approval and documentation on the blanket contract.

For all grouping and staging scenarios, the file which is embedded below must be submitted to your buyer for approval. This form is for reference only. Please refer to the Request for Quote (RFQ) and/or your GM Purchasing contact for more detailed information and training (GM Supply Power).



## Assembly Location / PPO Location

## The RPO ASM will be assembled at the Flint Plant (Michigan) – USA.

## 1.5 Capacity and Run at Rate

## See Appendix B1 for the required part level Daily LCR.

Additional information to estimate the total number of parts required can be determined from information in Appendix C. (Example: extra parts for GM manufacturing scrap, selected usage, etc.).

The supplier shall demonstrate in accordance with GP-9 Run at Rate that the supplier’s manufacturing process is capable of producing the contracted capacity in one production day. The Run at Rate shall occur no later than 8 weeks prior to Start of Regular Production.

# Quote Options:

**GM’s expectation for pre-production component pricing is as follows:**

* **Beta hardware no more than 5 times the production sourced price**
* **Gamma hardware no more than 3 times the production sourced price**
* **Pre-production (Beta / Gamma) hardware cost estimates should be provided to the GM team at time of quote submission and be included in the sourcing process (discussions, decisions, selections) by GM Purchasing and GM Engineering.**

# Special Notes and Requirements

Because the design is preliminary and attachments are incomplete, the supplier shall expect and anticipate modifications for packaging, attachments and other adjustments. GM will work with chosen supplier to provide such product accommodations with minimal disruption to existing design or function. Supplier shall identify to GM the specific date when said adjustments will be considered “frozen” to avoid cost implications to GM. Unless explicitly approved by the GM buyer, no costs will be incurred prior to P-Release.

Dimensional integrity is critical. The Supplier shall thoroughly review all GD&T requirements provided in this SOR and through GM specifications posted in GMSupplyPower; deviations are seldom granted. An optical measurement system is sometimes required with storage and reporting of variable data. The buyer’s supplier quality engineer must approve the supplier’s preferred system.

It is the responsibility of the supplier to perform tryout manufacturability of the assembly lines, sub assembly lines and component manufacturing that assures acceptable first time quality and proves that the system, in whole, can achieve LCR rate prior to PPAP.

# Change Management

As a basis for change cost control, the buyer requires the quote for the material (prior to awarding business) to be exploded to component detail. Piece cost detail for material, fabrication and assembly, as well as tool and fixture cost, will be required. Specific cost data items and level of detail must be approved by the buyer.

When the supplier is design responsible (as defined in the Appendix A RASIC and/or the Appendix C SSTS), the supplier shall anticipate that changes will occur. GM will not be responsible for the cost of minor changes. GM will be responsible for the cost of changes when GM requests a substantial change in product performance or a major change in form or function. In general, GM will not be responsible for changes to address the supplier’s manufacturing feasibility issues (formability, piercing, assembly process, etc.).

All changes to components covered by this SOR, including all black box changes and tiered supplier changes which impact fit, form, or function, shall be made via an ENGINEERING WORK ORDER after source selection is complete.

The supplier must provide design guidance estimates of these impacts within [5] normal working days of receipt of sufficient and satisfactory description of the proposed change, except as explicitly authorized by the buyer’s buyer and lead engineer. Some deviation from design guidance estimate to formal change quote is expected, but must be documented to the satisfaction of the buyer’s buyer and lead engineer.

The supplier must submit a formal change quote within [10] normal working days of receipt of change geometry and specification, except as specifically authorized by the buyer’s buyer.

Upon approval of an ENGINEERING WORK ORDER, the GM buyer will issue a separate written consent to proceed with the change. Note that an approved ENGINEERING WORK ORDER without GM buyer’s separate written consent is not approval to proceed. Furthermore, the supplier is not authorized to ship new material until receipt by buyer of a signed warrant from the supplier’s quality engineer.

The sourced price(s) will be the benchmark for change evaluations going forward. Price increases will not be accepted unless they are the result of a change in content documented by an approved ENGINEERING WORK ORDER with the GM buyer’s written concurrence. As long as the design, development, and configuration of the part of subsystem remain within the boundary of this SOR, supplier shall execute to these requirements at the sourced price, investment (if any), vehicle packaging, scope, and timing.

In summary, no changes to this SOR and its subsequently developed components will be made without the written consent of the GM buyer and a supporting approved ENGINEERING WORK ORDER. The buyer will not pay for any changes that are not supported by GM buyer’s written approval. All ENGINEERING WORK ORDER deliverables and timing requirements are available on gm.supplypower.com.

**End of document**

**Once printed, this document is uncontrolled**

**Appendix 1**

**Acronyms**

|  |  |
| --- | --- |
| **LCR** | **Lean Capacity Rate** |
| **MRD** | **Material Required Date (for physical builds)** |
| **MVB** | **Manufacturing Validation Build** |
| **APPV** | **Advanced Product Process Validation** |
| **PP** | **Purchased Parts** |
| **PPAP** | **Production Part Approval Process** |
| **PPMP** | **Purchased Parts for Make Parts** |
| **PPV** | **Product and Process Validation Vehicle** |
| **RPO** | **Regular Production Option** |
| **SOR** | **Statement of Requirement** |
| **SORP** | **Start of Regular Production** |
| **SQMS** | **Supplier Quality Management System** |