

Supplier Quality & Development Manual

i. Introduction

Dana suppliers are expected to demonstrate their commitment to excellence in every aspect of their performance in the global vehicular supply chain. This Supplier Quality & Development Manual ("Manual") is designed to set forth many of the expectations and requirements that Dana has of its suppliers. Our business relationship will be based on the requirements set forth in this manual as well as the contract or purchase order terms and conditions that are specific to your transaction(s) with Dana. In the event of any inconsistency between this manual and the specific contract or Dana's purchase order terms and conditions, the contract or purchase order will control.

To meet our customers' world-class expectations, Dana has established appropriate standards to ensure the quality of our products and the integrity of our operations. This Manual is the quality standard for every Dana supplier worldwide. This common global Manual allows Dana to evaluate all suppliers across all product groups around the world based on common expectations and performance standards.

This online Manual supersedes all other prior versions and this version is the only officially recognized release of this document. Once downloaded and printed this manual becomes an uncontrolled document.

ii. Business Conduct

Dana is committed to doing business in an ethical manner and with respect for our people and the communities in which they live. We expect the same of our suppliers. In support of this objective, Dana has established a "Supplier's Guide to Business Conduct" which is part of every supply agreement between Dana and its suppliers. To access and review Dana Suppliers' Business Conduct Guide please utilize the following Link <http://supplier.dana.com/Dana/ethics.asp>

iii. Supplier Registration

All Production suppliers must be registered to Dana 1 Source in order to gather your critical contact and organizational data. Registration is required for each of your supplying locations in order to business with Dana. To register suppliers should work with their Dana Buyer to register and receive the required log in and password. Once registered you will be required to supply additional data in the system and keep it current such as, but not limited to, all Quality & Environmental System Registration Certificates along with all applicable AIAG CQI Assessment documents. <http://dana.livesource.com>

1. Quality Objectives

The requirements and processes contained in this Manual provide a foundation for the achievement of world-class performance, superior business results and accomplishment of specific Dana customer requirements. This Manual places an emphasis on 'Performance Based Partnership' meaning that suppliers will be empowered to achieve established performance objectives.

In order for Dana and its suppliers to meet our mutual and end customer expectations, there are fundamental objectives that we must build into our business system related to:

- Quality
 - Zero Quality Incidents
 - Zero Quality Incidents Per Million Parts (IPM)
 - Zero Quality Defects Per Million Parts (PPM)
- Delivery Performance
 - 100% On Time
- Lean Manufacturing and Lean Processing
 - Best- In- Class Cost
- Best-In-Class Technology
- Successful Product Launches
 - Supplier Driven APQP Process
 - 100% 1st time, On Time, PPAP acceptance
 - 100% Safe Launch Process Compliance (SD110)
- Business Conduct and Commercial Standards
 - Suppliers Guide to Business Conduct
 - Capacity / Contingency Planning
 - Zero supply termination without prior Dana approval
- Diversity Sourcing in regions where applicable
- Respect for the Environment: Suppliers are encouraged to obtain ISO registration for their Environmental Systems

In our pursuit of the elimination of waste in the supply chain, we encourage our suppliers to provide feedback and constructive criticism of the processes identified in this Manual or elsewhere. To that end, if you have any comments or improvement suggestions please contact your Supply Chain Management Representative.

2. Supplier Assessment Processes

2.1 Supplier Systems Assessment: The objective of Dana's Supplier System Assessment is to identify potential suppliers who have operational systems and controls which are compatible and complimentary to Dana and to periodically evaluate current suppliers to ensure those systems and controls are being sustained.

The purpose of the system assessment is to identify potential performance or supply risk to Dana or its end customers prior to sourcing. Key system factors evaluated include quality, safety, process, logistics / packaging, APQP, design, change management, people, leadership, cost, special processes modules and AIAG Supplier Self-Assessments critical to producing Dana product. The special processes addressed include casting, safety, machining, stamping, tubing, forging, formed gears, taper roller bearings, ISO 26262 processes, steel and aluminum mill processing. AIAG Supplier Self-Assessments include heat treat (CQI-9), plating (CQI-11), coating (CQI-12), welding (CQI-15), soldering (CQI-17), molding (CQI-23) and casting (CQI-27). Suppliers must ascertain an Approved Status to the base assessment, all applicable special process modules and upload all applicable AIAG Supplier Self-Assessments to their profile page at <http://dana.livesource.com> to become an approved supplier to Dana.

Dana's Supplier Assessment Process applies to Tier 1 suppliers to Dana. Sub-tier suppliers to Dana are only audited when a significant potential risk to Dana has been identified. Steel Mills, Aluminum Mills and Raw Casting suppliers, may require a Dana Supplier Assessment prior to sourcing.

Dana Supplier System Assessments are reviewed prior to sourcing and/or according to our Audit Guideline. Suppliers whose Quality Performance, as shown in our Supplier Performance Feedback System, has conformed to Dana's specified requirements for a minimum of five consecutive years, will be considered to complete and submit a Self-assessment audit. Self-assessment audit requirements are re-evaluated on an annual basis.

2.2 Process Series Review: The purpose is a focused analysis on a single production line and part number (or part family). It encompasses a thorough review of a supplier's capacity, special characteristic capability, control and documentation to ensure the resultant product is in complete compliance to all Dana drawing, specification requirements and the quoted contractual volume.

3. APQP

Suppliers, upon completion of a Program Technical Review, are required to comply with the latest edition of the AIAG Advance Product Quality Planning Manual, located at <http://www.aiag.org> for a Program introduction of a new or significantly modified production product to Dana.

3.1 APQP Workbook to Supplier: The Buyer or designated Product Group representative will communicate the required APQP Workbook to your organization. It is Dana's expectation that your organization will review this information and develop their timeline for each element of the APQP Status Sheet, contained within the workbook, and identify any issues on the included Open Issues status Report (OISR). Suppliers shall submit the applicable documentation required according to their committed timeline.

For designated Projects Supplier Development will provide an APQP Workbook with Program Milestones. Suppliers are required to add their specific timing to the APQP Elements and submit the required objective evidence per the program timing schedule.

3.2 APQP Status Element Review: The Dana Regional Supplier Development personnel, Program Management or the Dana Facility Quality Team will review your updates submitted and verify their conformance to program requirements. All outstanding issues shall be documented, with responsibility & timing, on the OISR in the APQP Workbook. Any APQP requirement that yields product not meeting Dana specifications requires the supplier to submit the [Supplier Change / Deviation Request](#), for Dana approval prior to receipt of that product by Dana.

3.3 PPAP and Supplier Launch Criteria: Once all Supplier APQP Elements have been completed, your organization will submit a PPAP documentation package at the requested level of submission and the APQP Workbook to the Dana Facility and SupplierDevelopment@dana.com. For Asia Pacific Programs forward submissions to supplierdevelopmentap@dana.com.

As outlined in APQP Workbook the Supplier shall conform to the Safe Launch requirements for both new and carryover parts for the specified duration.

3.4 System Improvement: One of the goals of the APQP process is to improve itself over time. The effectiveness of the APQP process is measured on its ability to meet the goal of successful launches. The efficiency of the APQP process (i.e. the effective use of resources) to successfully launch a new product will be improved through suggestions and findings of its participants. At any stage in the program your organization may submit improvement ideas through your Supply Chain Management Representative.

4. Dana Specific Requirements

4.1 Quality System: Dana's requirement standard for our supply base is registration to the latest edition of IATF 16949 or ISO 9001. Exceptions to the Dana standard will be evaluated on their individual merits.

Organizations shall notify Dana of any change in their 3rd party certifications and more specifically, immediately for a certificate withdrawal or a certificate cancellation without replacement.

Suppliers shall document their process to ensure that purchased products, processes, and services conform to the current applicable statutory and regulatory requirements in the country of receipt, the country of shipment, and the Dana –identified country of destination, if provided.

If Dana defines special controls for certain products with statutory and regulatory requirements, suppliers shall ensure they are implemented and maintained as defined, including throughout their supply base.

Suppliers shall maintain a copy of their current Quality System Registration Certificate and all applicable current AIAG Supplier Self-Assessment documents as referenced in 2.1 in their supplier profile page within <http://dana.livesource.com>. Specifically, as applicable, the process assessments included in AIAG Special Process documents - CQI-9 Heat Treat, CQI-11 Plating, CQI-12 Coating, CQI-15 Welding, CQI-17 Soldering, CQI-23 Molding, and CQI-27 Casting – require inclusion in the suppliers' internal audits programs and are to be conducted annually. If there are questions regarding applicability, please contact the appropriate Dana representative.

Off Highway Driveline Technologies – Please refer to the Off-Highway Product Group Specific Requirements GQG-22. Contact your Off-Highway Purchasing representative for a copy.

Suppliers must also adhere to any Dana end customer specific requirements.

Those end customer specific requirements can be found at: <http://www.iatfglobaloversight.org>

4.2 Supplier's Quality Manuals: Quality Manual(s) from your organization may be reviewed by Dana at any reasonable time. In such case, you are required to allow your manual to be reviewed by the requesting Dana representative subject to reasonable confidentiality requirements.

4.3 Engineering Specifications: Engineering Specifications are provided during the request for quote process. Suppliers are required to ensure they have received and fully understand the requirements of all Engineering Standards related to the product(s) that they furnish Dana. Any missing and / or questions related to the understanding of the intent of Dana Engineering Standards shall be communicated to your Supply Chain Management Representative prior to initiating supply to Dana.

4.4 Record Retention: All records related to the manufacture of Dana parts shall be retained for ten (10) years from the date of creation (15 years for safety designated items) or such longer period as may be required by Dana's end customer.

4.5 Special Characteristics: The special characteristics defined on Dana drawings and / or in Dana Engineering Standards shall conform to the [Dana Special Characteristics](#) requirements. Suppliers shall be able to produce evidence that statistical process control is being continuously used, when required and/or appropriate, to assure stable and capable processes.

4.5.1 Prototype Sample Special Characteristics: All prototype samples furnished by suppliers shall conform to the following requirements for their applicable Dana Product Group.

Off Highway Driveline Technologies – Refer to the Off-Highway Product Group Specific Requirements GQG-22. Contact your Off-Highway Purchasing representative for a copy.

Power Technologies Product Group - As delineated on the Prototype Purchase Order.

Commercial Vehicle & Light Vehicle Driveline Technologies - Each part is to be serialized on a non-critical surface (consult with the applicable Engineering Group for non-critical surface identification). The preferred identification is Part Number and Consecutive Dash Number. (Example: Part Number -1, -2, etc....).

An inspection report is to be furnished for each serialized part for all critical / significant dimensions as designated on either the Dana Drawing or Engineering Specification.

At minimum, the inspection report shall include - date inspected, Inspector's signature, part & serial dash number, revision level, part name, purchase order number, part dimension / tolerance/actual dimension & the Gage R&R reports for all inspection tools utilized(for CMM submit a copy of the current Calibration Certificate).

The inspection report shall be in pdf file format and named with the Dana Program, Part Number and Date. (Example: Program Name_ Part Number_ Month-Day-Year.pdf).

The inspection report shall be shipped with the prototype samples. Prototype samples received without the accompanying inspection report will be rejected.

Any Metallurgical/Heat Treat/Physical Test results available for the prototype parts should be included with the inspection report furnished.

Any additional inspection requirements, outside of that listed above, will be delineated on the prototype quote request and listed on the prototype purchase order.

In all cases prototype samples that do not conform to the Dana Drawing and / or Specifications shall not be shipped prior to receipt of an approved Engineering Change or Deviation. A copy of the approval document shall be included with the prototype part shipment.

4.6 Customer Attachment Points. Customer Attachment Points will be communicated to suppliers by designation, (<CAP>), on Dana Product Drawings.

Customer Attachment Points require Poke-A-Yoke at the source of manufacture.

If Poke-A-Yoke cannot be achieved an alternative control plan method must be proposed by the supplier and be approved by Dana.

4.7 Production Part Approval Process (PPAP). Dana requires its suppliers to conform to the latest edition of the AIAG Production Part Approval Process Reference Manual, located at <http://www.aiag.org>. All suppliers shall submit PPAP documentation to Level 3, in the English language, unless otherwise specified in your supply agreement, purchase order or the Dana receiving facility without the issuance of a specific purchase order for PPAP submission.

Unless otherwise specified in your supply agreement, purchase order, the Director of Dana Supplier Development or the Dana receiving facility Quality Manager the PPAP shall include a Run@Rate analysis of at least 8 hours during which there needs to be representation of required change overs and unplanned downtime. In absence of change overs, scrap and unplanned downtime during the Run@Rate

analysis a reduction of available production time shall occur based upon recent change over, scrap and downtime records of surrogate processes to be provided by the supplier.

Suppliers furnishing parts to the Off-Highway Product group shall conform to the PPAP requirements outlined in the Dana Off-Highway Specific Requirements GQG-22. Contact your Off-Highway Purchasing representative for a copy.

Where specific packaging requirements are not specified on the Dana part drawing, engineering specification or your purchase order suppliers shall document their proposed packing method on the [Supplier Packaging Specification Form](#) and include it as part of their PPAP submission.

Dana receiving facilities are the sole authorized approver of all supplier submitted PPAP's with the exception that PPAP's for gears may be approved by a Dana Engineering entity. Contact your Receiving Dana Facility Quality Manager for guidance.

Dana Facilities, receiving previously PPAP approved carryover parts, have the right to request a new PPAP submission (default Level 3) when the initial PPAP approval, evidenced by a signed PSW, is dated back 1 year or older. The supplier furnishing the carryover part will be advised when this requirement applies by the respective Dana Facility.

Suppliers furnishing parts being PPAP'd for the first time and shipped to multiple Dana Facilities shall submit the complete Level 3 PPAP to the Dana Facility designated on their Purchase Order. For the remainder of the Dana ship to points they shall provide an approved copy of the PSW prior to shipping any production parts.

Suppliers desiring to ship the same part number from multiple manufacturing sites must obtain the approval of the Dana Receiving Facility, Dana Engineering and Dana's end customer where applicable.

Dana further reserves the right to require the submission of a new Level 3 PPAP at any time.

4.8 Periodic Production Part / Process Validation: All processes for production and service provisions shall be reviewed periodically, including all pertinent documentation (e. g. Dimensional, FMEA, Control Plan, Process Flow, etc.). This review includes all Dana end customer specific criteria along with the AIAG specified special process assessments, IMDS etc.

Where Dana end customers require specific periodic updates to any of these items the supplier shall submit updated warrants with the pertinent supporting documentation at the required frequency. Contact the Quality Department at the Dana facility receiving your product for guidance to the applicability of this requirement.

4.9 Approved / Designated Sources: The use of Dana or Dana's end customer directed sources, including tool / gauge suppliers, does not relieve your organization of the responsibility for ensuring the quality of the source's products or compliance with all other supply agreements.

4.10 Sub-Tier Supply Chain Control: Dana suppliers shall provide evidence of their sub-tier approval and performance monitoring process at Dana's request.

4.11 Supply Capacity: Suppliers are expected to manage delivery to Dana according to the release / forecasts supplied by Dana. When those releases / forecasts exceed the suppliers' ability to deliver as expected suppliers are required to notify their Supply Chain Management Representative. Supplier's notification to Dana does not relieve the supplier of its obligation to deliver products in accordance with applicable delivery schedules.

4.12 Dana Owned Tooling and Equipment: Dana owned tooling and equipment shall comply with the terms and conditions of your purchase order, regional bailment agreement plus the marking and documentation requirements delineated in the Supplier Tooling Guidelines included in this Manual.

4.13 Dana End Customer Owned Tooling: Suppliers shall comply with all Dana End Customer Tooling Requirements & Documentation received.

4.14 Global Casting Requirements: In addition to all drawing and Engineering Specifications all suppliers of castings to Dana are required to meet the [Dana Global Casting Quality Requirements](#).

4.15 Material / Substance Composition: Supplier products must not contain and/or use any substances that are banned or in excess of quantity or method restrictions as defined by Customer Specific Requirements and / or Regulatory Agency Regulations, including the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) delineated in the REACH Candidate List, Annex 14,

Annex 17 and the End of Life Vehicle Directive substances delineated in the Global Automotive Declarable Substance List. Suppliers must determine those supplied parts/assemblies that contain Conflict Minerals and the origins of their raw materials used to manufacture the parts/assemblies. Suppliers must notify their Dana Purchasing and Engineering contacts of any of the above such substances contained in their products. For further guidance see www.mdssystem.com and / or your Dana Engineering contact. All communication shall reference Dana's IMDS # 2259.

When required by customer the supplier shall register into IMDS www.mdssystem.com All communication shall reference Dana's IMDS # 2259. For further guidance contact your Dana Engineering contact.

4.16 Automotive product-related or automotive products with embedded software: Suppliers furnishing automotive product-related software or automotive products with embedded software shall implement and maintain a process for software quality assurance of their products.

An assessment process based on ISO 26262 will be utilized to assess supplier's software development process. Using prioritization based on risk and potential impact to Dana and its end Customer, suppliers shall retain documented information of a software development capability self-assessment.

4.17 Supplier Material Planning & Logistics: Dana has published a Material Planning & Logistics Supplier Manual to assist our suppliers in understanding Dana's expectations for material delivery to Dana. [Dana MP&L Manual](#)

5. Change Management

All product design, process, source, location, material changes, equipment moves and/or deviation requests to the current PPAP approved level are **required** to be submitted for formal approval through a [Supplier Change / Deviation Request](#) . This includes any and all sub-tier supplier changes and/or deviations. This requirement also applies to any change resulting from any form of process or product improvement activity or processing changes related to any previous product nonconformance.

Suppliers **must** obtain written approval from Dana **prior** to implementation of any requested change or shipment of any product containing deviation to Dana specifications.

Suppliers will be responsible for the costs of any testing required by Dana or Dana's end customer to validate the change / deviation, requested by a supplier, will not negatively impact the performance of the Dana or Dana's end customer's product. Any testing costs related to the supplier's change / deviation request incurred by Dana and / or Dana's end customer(s) will be communicated to the supplier by their Supply Chain Management Representative.

Upon receipt of written Dana approval of a supplier change request you are required to submit a new Level 3 PPAP unless the written approval specifies otherwise. The receiving Dana facility will advise if they will require a PTR (Production Trial Run) and / or any change management lot control or identification. No production shipments shall begin until you have received the approved PSW from the receiving Dana facility.

Upon receipt of written Dana approval of a supplier deviation request you are required to notify the receiving Dana facility's Materials Department that you will be shipping deviated product. Shipments of deviated product into a Dana facility must have the deviation number clearly identified on each individual container as well as the shipping documentation.

Suppliers are responsible for any and all damages or costs incurred by Dana and / or Dana's end customers for the suppliers' failure to comply completely with the Dana Change Management requirements.

6. Non-Conforming Materials Requirements

Through this Manual, contract requirements and otherwise, Dana strives to clearly define the expectations of its suppliers, provide a process to deliver on these expectations and a method for corrective action where expectations are not achieved.

6.1 Non-Conformance Determination: Non-conformity is defined as the non-conformance of any parts received by Dana to one or more of the following documented requirements -

- Material Specifications.
- Print Dimensions
- Material and Substance Specifications.
- Engineering Specifications.
- Packaging Specifications.
- Mixed / wrong parts within a shipment.
- Improper identification of parts.
- Failure of a part to perform during the warranty period Dana has extended to their end customers due to a supplier created discrepancy.

6.2 Non-Conforming Material Parts Per Million (PPM) determination: The PPM assigned to a supplier for non-conforming quantities is determined by the number of discrepant pieces contained within a part shipment to a Dana facility with the following clarifications –

- One or multiple discrepancies on a part constitutes one defective piece.
- “Bulk Material” discrepancies are classified in the units the material is ordered (kg, Liters, lbs, etc...).
- Labeling issues will be defined as one defective piece per incorrect label.
- Mixed parts will be defined as the number of wrong parts found in each correctly labeled container.
- The entire quantity of deviated parts will be considered discrepant unless the supplier has sorted the shipment to identify the number of pieces to be covered by the deviation.
 - Exception: if a supplier notifies Dana of a defect, prior to its receipt by Dana, and requests the material be returned then none of the parts will be considered defective.
 - Exception: if the deviation becomes a Dana print change then none of the deviated parts will be considered discrepant.
- If discrepant material is sorted, the rejection quantities are updated based on the sort results at Dana or supplier facility.

6.3 Supplier Notification of a Non-Conformance: When a supplier non-conformance has been identified a Supplier Corrective Action Request (SCAR) will be generated via Dana 1 Source. This notification will include the requirements for containment, material, response timing and the appropriate documents if a Dana end customer format for containment results is the required.

6.4 Supplier Initial response to a SCAR: Suppliers are required to update the SCAR and provide an initial response within 24 hours of notification. The initial response must include your containment actions from your organizations current production controls, dock audits and containment actions as well as all other Dana or Dana end customer specified containment requirements.

6.5 Restricted Shipping: Where Restricted Shipping is required, the receiving Dana facility will initiate the Restricted Shipping Process. The Restricted Shipping notification letter will delineate the supplier's responsibilities in relation to establishing the Restricted Shipping Process and the criteria to exit the process.

6.5.1 Restricted Shipping Level I is a requirement that a supplier put in place an additional 100% containment process at the supplying location to contain for specific and / or specified non-conformances. The supplier must isolate Dana from the receipt of non-conforming material. The additional 100% containment is enacted by the supplier's employees, unless an alternative approach is approved by Dana, and must be in addition to your normal production process controls.

6.5.2 Restricted Shipping Level II is a requirement that a supplier put in place a certified 3rd party (approved by the initiating Dana facility) containment process to contain for a specific non-conformance, while implementing a root cause and corrective action problem solving process. The root cause identification and implemented corrective action must be verified as effective by the certified 3rd party. The 3rd party containment is in addition to your normal production process controls as well as Restricted Shipping Level I containment activities.

6.6 Root Cause(s) and Solution Identification: It is the supplier's responsibility to confirm the root cause(s) of the discrepancy identified within 3 days and identify effective solutions to eliminate the true root cause(s). There are many potential tools to assist your organization with this including (but not limited to); brainstorming, 5 why analysis, capability (quality) index, control chart, decision matrix, design error-proofing / process mistake-proofing, design of experiments, histogram, hypothesis testing, linear regression analysis, run and trend charts and design / process failure mode effects analysis.

Although Dana does not prescribe a specific root cause analysis method, your organization shall demonstrate root cause validation on your SCAR response within 10 days. Dana representatives shall be permitted to review the submitted root cause validation. Where, in Dana's opinion, the measurement and analysis plan does not clearly validate the potential root cause(s), Dana may reject your response to the SCAR.

Where root cause(s) have been effectively validated, as determined by Dana and / or the end customer, your organization is responsible for proposing a plan to implement permanent solutions and verify their effectiveness. Where proposed changes impact the design or the PPAP approved processing of a product a [Supplier Change / Deviation Request](#) shall be generated, referencing the SCAR number. (Reference the Change Management requirements section of this Manual).

If your proposed plan is rejected, your organization is responsible for providing alternative plans to provide conforming material.

6.7 Permanent Solution Implementation: Once approved, your organization is responsible for implementing the proposal. The SCAR shall be updated by your organization to indicate progress. Dana will monitor the progress based on milestones on the planned activities. Where assistance is required to

achieve the plan, the plan cannot be implemented as defined or will not solve the original problem, your organization shall notify Dana before due dates are compromised.

6.8 Permanent Solution Effectiveness and System Changes: Your organization is responsible for providing evidence of the effectiveness of the corrective action to prevent or control the root cause(s) on the non-conformity in 30 days. This evidence shall be included in the SCAR response. Where the evidence provided does not clearly indicate the problem has been solved, your organization will be notified to include additional or more comprehensive evidence.

Your organization shall include the updates to their Failure Mode and Effects analysis and Control Plan as part of the evidence in the SCAR response.

As Dana is a partner and board member with the Automotive Industry Action Group (AIAG), we encourage you to visit www.aiag.org for training and tools related to effective Problem Solving and Core Tools. These available resources will help complement continuous improvement activities in your company, along with providing many other beneficial tools.

6.9 System Wide Deployment: Your organization is responsible for identifying areas in their organization that may share similar process characteristics (failure modes) that may benefit from the permanent corrective actions applied in response to a known non-conformity.

6.10 Non-Conformance Costs: Suppliers shall be responsible for any and all damages or costs incurred by Dana and / or its end customers as a result of suppliers' supply of non-conforming goods including a reasonable administration fee. All actual charges will be documented in the SCAR and/or related debit memo.

6.11 Supplier Improvement Process: Suppliers with ineffective problem-solving processes, multiple high quantity rejections and / or multiple quality incidents will be required to participate in a Supplier Development Improvement Process, the elements of which will be determined by Dana in its reasonable discretion. Suppliers are required to develop a plan (including a schedule for timely response) to address their deficiencies for Dana's review and approval prior to implementation of corrective action.

7. Website Links

Title: Dana Suppliers' Business Conduct Guide

Link: <http://supplier.dana.com/Dana/ethics.asp>

Title: Supplier Registration

Link: <http://dana.livesource.com>

Title: AIAG Website, Advance Product Quality Planning, Production Part Approval, Continuous Improvement Training and Tools

Link: <http://www.aiag.org>

Title: Dana End Customer Specific Requirements

Link: <http://www.iatfglobaloversight.org/>

Title: Supplier Material Planning & Logistics Manual

File: [Dana MP&L Manual](#)

7.1 Supplier Development Document Library

Title: Supplier APQP Blank Template

File: [APQP_Status_Report.xls](#)

Title: Supplier APQP Workbook with Training Call-outs

File: [APQP_Status_Report_Training.xls](#)

Title: Supplier Change / Deviation Request

File: [Supplier_Change_Deviation_Request.xls](#)

Title: Supplier Packaging Form

File: [Supplier_Packaging_Specification_Form.xls](#)

Title: Special Characteristics

File: [Special_Characteristic_Definitions.doc](#)

Title: Global Casting Requirements

File: [Dana_Global_Casting_Quality_Requirements.pdf](#)

Title: Safe Launch Process (SD110)

File: [Safe_Launch_Process.pdf](#)

I. Supplier Tooling Guidelines

In addition to the requirements identified in the Buyer's Purchase Order Terms and Conditions, the following provisions also apply to any and all Tooling provided by the Supplier.

Tooling Marking

All tools must be permanently marked as specified by the Buyer. Permanent marking includes metal tags, etchings or stampings. If the Buyer or the Buyer's customer requires the tools to be tagged using their own proprietary tags, the Buyer will provide the tags to the Supplier, indicating which tool shall be marked with which tag. In the event metal tags are not provided to the Supplier at the time the Buyer's Purchase Order is issued, the tags will be provided to the Supplier once they become available.

Tooling Documentation

Dana will pay suppliers the actual and eligible cost of making the tooling. Dana does not pay for profit margin to a supplier or sub-supplier for tooling.

Suppliers shall submit to Dana, at <http://dana.livesource.com>, the suppliers actual and eligible cost for the tooling, including invoices and / or any other documents needed to substantiate the cost of the tooling. A reasonable accounting system shall be maintained by the supplier to segregate, accumulate and document the cost of the tooling. Cost should be documented into the following – In-House Cost, Material, Labor Hours, Labor Rate and Subcontracted Work.

Tooling Identification

Suppliers shall submit, at <http://dana.livesource.com>, acceptable photographs which clearly illustrate the Tool ID # and the tool's function/part configuration

- a. Photo #1 – Close up of the Tool ID # (Exhibit A)
- b. Photo #2 – Photo of the tool showing function / part configuration (Exhibit B)
- c. Photos must be labeled with the tool description as indicated in the Buyer's Tool Specification Form. (Exhibit A and Exhibit B)

In addition to the required tooling documentation identified above, the following Tooling Documentation must also be submitted when:

1. Tooling located at a supplier, submit an approved PSW (Part Submission Warrant)
2. Tooling includes Dies, Photo #2 above must be in an open position (Exhibit C)
3. Tooling includes multiple quantities of the same tool; each individual tool must be included in a single photograph. (Exhibit D)
4. Tooling includes final inspection gages, each gauge must be supported by a part print identifying the dimensions being checked by the gage and a print of the gage, if requested by Dana.

Exhibit A

Mark the tool as specified in the Buyer's Tool Specification form and provide a close-up photograph of the Tool ID#.



Exhibit B

Photograph showing the function / part of the tooling.



Exhibit C

Provide a photograph of the Die in the "open" position.

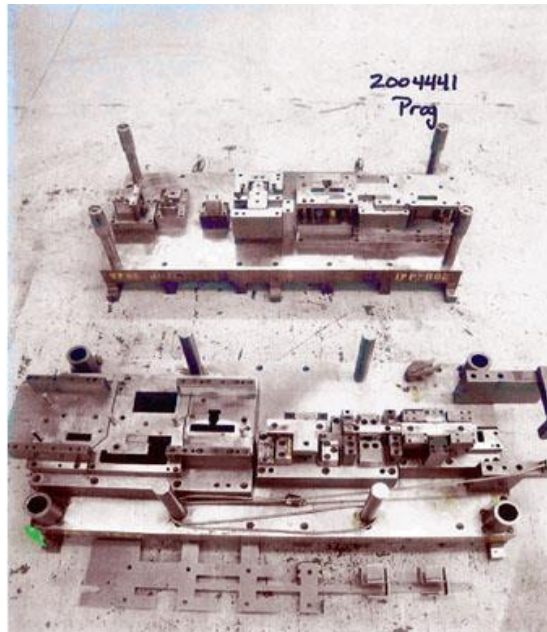


Exhibit D

Multiple quantities of the same tool must be included in single photograph.



Please contact your Supply Chain Management Representative if you have any questions regarding these requirements.

Dana Owned Tooling

If you are a recipient of Dana owned tooling, you must ensure the integrity and usefulness of the tool in respect to safe storage. Storage of the die must be kept in a dry location within your facility and stored off the floor. At no time shall the tooling be stored outside or exposed to outside weather conditions. Climate controlled areas are preferred but not mandatory.

At no time is the supplier permitted to scrap, change the intent or destroy Dana owned tooling without written consent from Dana.

II. Dana Global Casting Quality Requirements

These requirements are in addition to any requirements identified in Dana Engineering Specifications identified on the Dana Approved Product Drawing or included as a part of the purchase agreement.

Casting Development Requirements:

- a) The supplier shall utilize 3D modeling software for casting development.
- b) All casting development runs are to be sectioned, analyzed and documented. Sectioning a sufficient number (target is 10%) of the parts produced in any developmental run to clearly establish the location and level of any internal characteristic that may be evident in ongoing production runs and ensuring the product is within all functional and specification requirements.

c) The supplier shall utilize in-house non-destructive test capability for the validation of all casting integrity during the product development stage. If the supplier does not have the in-house capability they shall contract an ISO / IEC 17025 (or national equivalent) certified external source, which shall need Dana approval.

d) The supplier shall conduct on the 1st Production Run:

i) A minimum of 1 piece (3 samples total) from the beginning, middle and end of the production run must be sectioned, analyzed and documented to validate process stability & consistency with the development runs and within specification limits.

e) When required by the Dana Product Group one additional sample from the initial production must be x-rayed and documented evidence supplied with the PPAP Submission that shows the results correlate with all development modeling, Pre-PPAP sectioning and analysis or the PPAP will be rejected.

f) When required by the Dana Product Group the PPAP submission must be based on data taken from the initial production run and must include –

i) A copy of the solidification modeling results, Photos of the sectioning results conducted in the development runs & initial production run.

ii) X-Ray report & films from the part evaluated in the 1st production run.

g) No production parts from the initial production shall be shipped to Dana prior to the supplier receiving a signed PSW indicating PPAP approval has been issued by the Dana using location.

Ongoing Production / Process Change:

a) The Suppliers Control Plan must include specific on-going process integrity checks at a minimum from the beginning, middle and end of each production run to ensure the process is maintained under control to ensure internal casting quality integrity as demonstrated in the development stage through PPAP and this plan shall be approved by Dana.

b) Any process change at the supplier must be re-verified starting with the 1st Production Run of the change. The PPAP must be updated and approved before any product can be shipped to a Dana facility or supplier

III. Revision History

March, 2020

Introduction – added Last paragraph.

Section 1 – quality objectives – Successful Product Launches was Flawless Product Launches

Section 2.1 revised .

Section 3 – added reference to Program Technical Review.

Section 3.2 – first sentence revised.

Section 3.3 – first sentence revised.

Section 4.1 – 2nd, 5th & 6th paragraphs revised.

Section 4.7 – last sentence revised.

Section 4.17 - new addition referencing the MP&L Manual

Section 5 – 1st paragraph revised.

Section 6.1 – 1st sentence revised.

Section 6.6 – 1st sentence of paragraphs 1 & 2 revised.

Section 6.8 – 1st paragraph revised. Added last paragraph.

Section 7 – Added AIAG Website Link

– Added Supplier Material Planning & Logistics Manual Link

Supplier Tooling Guidelines – added Dana Owned Tooling statement at the end.

January, 2017

Section 1 - Quality Objectives was updated.

Section 2 - Supplier Assessment Process – updated paragraph 2.1

Section 3 - APQP – updated paragraphs 3.1 and 3.3

Section 4 - Dana Specific Requirements – Updated paragraphs 4.1, 4.5, 4.5.1, 4.7, 4.8, 4.9 & 4.15 & added 4.16

Section 6 - Non-Conforming Material Requirements - updated paragraph 6.3

September, 2015:

Revised iii. Supplier Registration.

Supplier Assessment Process moved up to Section 2

APQP - renumbered and revised paragraphs 3.1& 3.3.

Dana Specific Requirements – Renumbered the section and added a new paragraphs 4.6 and 4.13, revised paragraphs 4.4, 4.7 & 4.12

Renumbered Change Management.

Renumbered Non-Conforming Material Requirements and revised paragraphs 6.1 & 6.6.

Section 7.1– Supplier Development Document Library was Supplier Document Center. Revised the Instructions in the Supplier Change / Deviation request.

Dana Global Casting Quality Requirements – Revised paragraphs e) & f) in the Casting Development Requirements section.

Supplier Tooling Guidelines – Revised and rewritten.