Donaldson Buys Value

Donaldson Supplier Business Operating System Standard (S.B.O.S.S.)

Donaldson
Filtration Solutions

406.335.000-01
Rev 09-25-09

Supplier Business Operating System Standard (S.B.O.S.S.)

INTRODUCTION

DCI is a multi-plant manufacturing company serving several different markets. These markets include: Light Vehicle, Medium and Heavy Truck and Bus, Construction and Agriculture, Defense, Industrial Air Filtration, Gas Turbine Systems, Special Markets, Disk Drive & Aftermarket. These markets each vary in their technical and commercial requirements.

Donaldson Company, Inc. (DCI) expects our suppliers to provide materials, parts, assemblies, and services that meet our engineering requirements with minimum variation. In addition they must be delivered on time and be cost effective.

Donaldson Buys Value (DBV) is the comprehensive framework for the DCI/Supplier relationship.

DCI complies with its customer's contractual quality system requirements including industry specific or customer specific quality system requirements, etc. ISO/TS 16949 and ISO 9001 are the quality systems used which define the requirements outlined in DBV and the Supplier Business Operating System Standard - SBOSS.

Registration to ISO/TS 16949, ISO 9001, and/or AS9100 are required in addition to mandatory compliance to this SBOSS and any quality system elements spelled out in the request for quote, business agreement, and/or in the purchase order.

Suppliers not registered will be required to submit a detailed action plan and timeline for compliance.

*(Note: it is the responsibility of each supplier to provide Donaldson with an **up-to-date** copy of their ISO/TS/AS certificate.)*

Purchasing and Procurement Quality manage the first time buy(s) through qualification of a newly released or revised part, or a part affected by a new or revised process. This includes the hand-off to the using plant(s).

We want all suppliers doing business with DCI to have long-term relationships in mind as we proceed. Our customers expect this and we strive for it in our everyday business dealings. Obtaining the best "value" for the products purchased will always be our goal. DCI defines Value as Quality, Service, and Cost. Quality must focus on 100% acceptance and usage. Delivery must focus on 100% to the delivery requirement. Cost must focus on being market competitive so that both parties can grow and make a profit.

SUPPLIER ASSESSMENT

Corporate Purchasing and Procurement Quality will identify the status of the supplier's business operating system using assessment tools that may include questionnaires, surveys, and audits. The assessment identifies the supplier's capability to support DCI by having documented effective systems in place to meet or exceed this standard.

Supplier assessment is accomplished by a self-completed questionnaire and/or by an on-site quality system survey/audit conducted by DCI Procurement Quality. Corporate Purchasing is responsible for the assessment of new suppliers in terms of their financial strength and business management.

If successful, a supplier is first identified as an "Approved Supplier". Strategic Suppliers are identified and developed from the pool of Approved Suppliers by the Donaldson Supply Management Team.

The Donaldson Supply Management Team consists of representatives from plant and corporate staff departments in purchasing, quality and other functions as required, is responsible to assess, select, develop, retain or replace the strategic supply base.

We intend to update the Quality System Assessment of Strategic Suppliers on a triennial basis (at least once every three years).

SUPPLIER DEVELOPMENT

DCI will develop its supply base using ISO TS 16949 as the fundamental quality system requirement.

DBV provides measurements and a structure for identifying actions to improve supplier quality and service performance. A Donaldson Supply Management Team will schedule regular meetings **(**a minimum of once per year) with Strategic Suppliers to address improvement opportunities.

Each supplier is expected to have a system in place that addresses the following elements. Supplier business operating systems will be compared to the following elements to aid the identification of improvement opportunity.

SECTION I

1. Scope
2. Normative Reference
3. Term and Definitions
4. Quality Management System
5. Management Responsibility
6. Resource Management
7. Product Realization
8. Measurement, analysis and improvement

Advance Product Quality Planning is achieved by a cross-functional team that includes supplier representative(s), as appropriate. Planning occurs in phases requiring outputs (deliverables) from each phase. These outputs are verified and agreed to by management before closing out a phase and continuing the work-in-progress in the next phase. As indicated by a request/notification from a Corporate Buyer, a supplier may participate in DCI's Advanced Product Quality Planning. Formal notice may be via Request for Quote, Purchase Order, or other written method.

In more complex projects, the supplier may be required to work with CAE/CAD systems, and be required to supply preliminary drawings, documents, and prototypes.

Suppliers receive engineering drawings from the assigned Corporate Buyer with each Request for Quotation (RFQ). Each RFQ submission will be revision specific indicating the suppliers understanding of the requirements of the print. Suppliers bear the responsibility of comprehending the drawing and specification requirements. Any required clarification is to be resolved prior to finalizing tooling or commencing production.

The attached APQP Table illustrates the possible output (deliverables) which may result for a given project.

PLANNING	PRODUCT DESIGN & DEVELOPMENT	PROCESS DESIGN & DEVELOPMENT	PRODUCT & PROCESS VALIDATION	FEEDBACK, ASSESSMENT & CORR. ACTION
Design Goals	DFMEA 10	Packaging Standards	Production Trial Run	Reduced Variation
Reliability & Quality Goals	Design for Mfg & Assy 11	Product/Process Quality System Review	Measurement Systems Evaluation 7 & 13	Customer Satisfaction
Prelim BOM	Design Verification	Process Flow Chart 9	Prelim Process Capability Study 12	Delivery & Service
Prelim Process Flow Chart	Design Reviews	Floor Plan Layout	Production Part Approval PPVP	
Prelim Special Product & Process Characteristics	Prototype Control Plan	Characteristics Matrix	Production Validation Testing 8	
Product Assurance Plan	Engineering Dwgs 4	PFMEA 10	Packaging Evaluation	
Management Support	Engineering Specifications 4	Pre-Launch Control Plan 11	Production Control Plan 11	
	Material Specifications 4	Process Instructions	Quality Planning Signoff & Mgmt Support 14	
	Dwg & Spec Changes 5	Measurement Systems Analysis Plan		
	Equip, Tool, Facilities Rqmnts	Prelim Process Capability Study Plan		
	Special Product & Process Characteristics 4	Packaging Specifications		
	Gage/Test Equip Rqmnts	Management Support		
	Team Feasibility Commitment & Mgmt Support			

Numbered items correspond to the deliverables identified by the Production Part Validation Warrant

PRODUCTION PART VALIDATION PROCESS

The Production Part Validation Process **(PPVP)** assures purchased materials, parts, and assemblies meet DCI specified requirements by determining 1) if all DCI engineering drawing and specification requirements are properly understood by the supplier, and 2) that the supplier's manufacturing process has the ability to produce product meeting those requirements during an actual production run at the quoted production rates, using production tooling, gauging, process, materials, operators, environment, and process settings, from parts that are taken from a significant production run.

A PPVP is specific to a part number/revision level. PPVP is patterned after the Production Part Approval Process (PPAP) available from AIAG at the phone number noted previously. Corporate Purchasing and Corporate Quality will administer the Production Part Validation Process.

A Production Part Validation Process is required to be completed by the supplier for the following inventory items:

- a new or revised component part,
- a part from new or revised tooling,
- a part from a changed supplier process or material
- as determined by DCI (re-release of inactive part, correction of a discrepancy, etc.)
- NOTE: PPVP is not required at this time for filter media and other bulk materials such as chemicals (e.g. urethane), and steel (e.g. rolls, sheets, or structural steel as purchased by GTS and IAF). It is also not required at this time for packaging materials or electronic goods such as fans, motors, control panels, and circuit boards, or product purchased by non-US DCI entities. All other inventories purchased product, including purchased Finished Goods, require a PPVP.

A changed process is one that affects appearance, dimensional, or reliability/performance characteristics. Notify the DCI assigned Corporate Buyer of all process changes for a determination.

A) All part and process changes must be officially communicated through the Corporate Buyer and no one else.
B) Supplier actions will take place only after formal notification and an agreement is reached on what steps are to be taken and the price impacts associated with them.
C) The Supplier is obligated to inform DCI in advance of any changes to their manufacturing processes on any DCI part. Before changes can be made, the Supplier must receive an agreement from DCI to the changes and the impacts associated with them.
D) In most instances, the changed part and/or process will require that the part be re-validated. Your Corporate Buyer will notify you of the requirement.

Any product that is controlled by the supplier shall have sufficient technical documentation to enable DCI to verify its integrity.

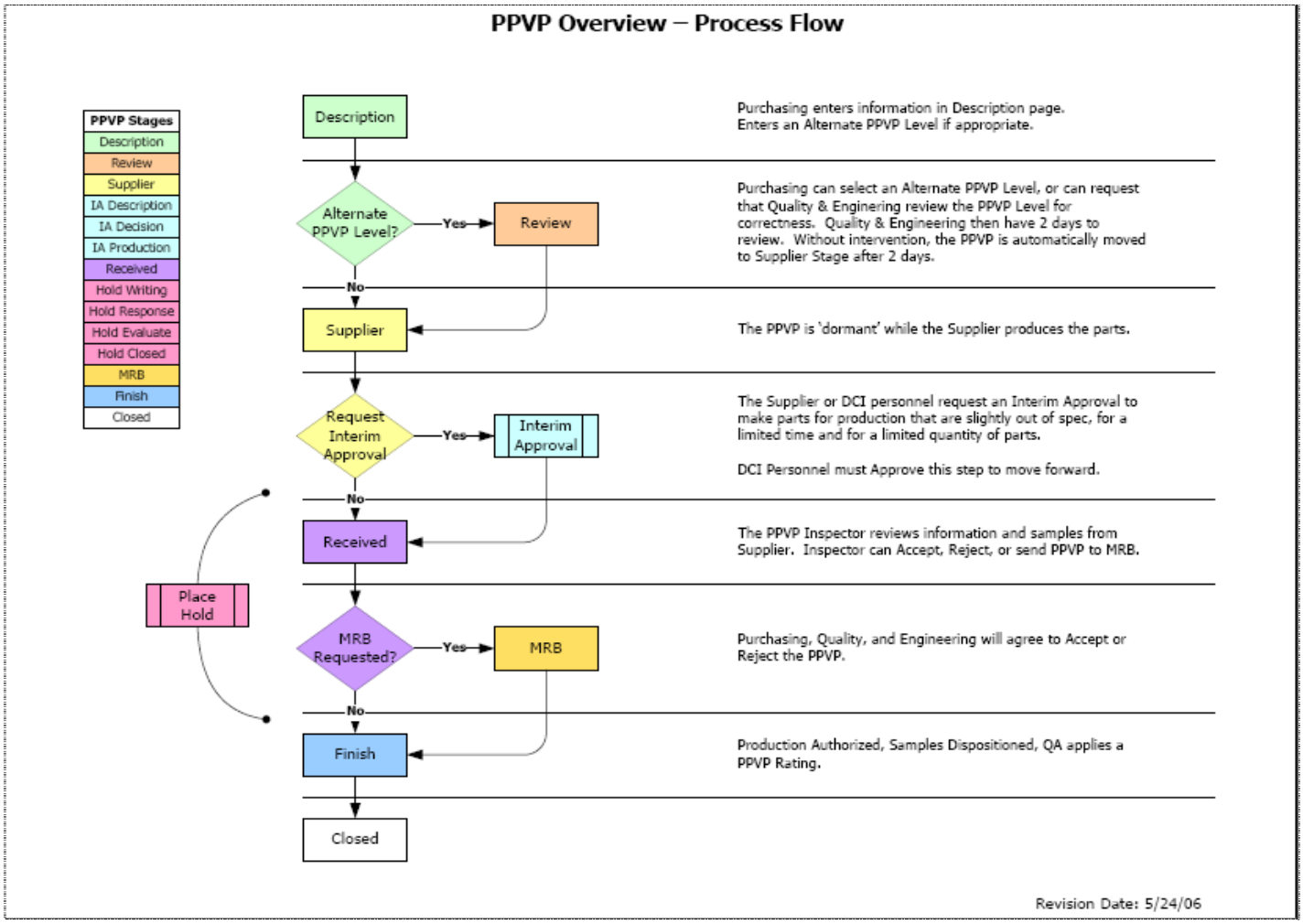
The inclusion of various deliverables in the Production Part Validation Process is determined by the Corporate Buyer in consultation with the cross-functional design team as appropriate. The requirements are communicated to the Supplier via the RFQ and PO. The submission schedule for final approval is communicated via the Purchase Order when the engineering drawings are available and released.

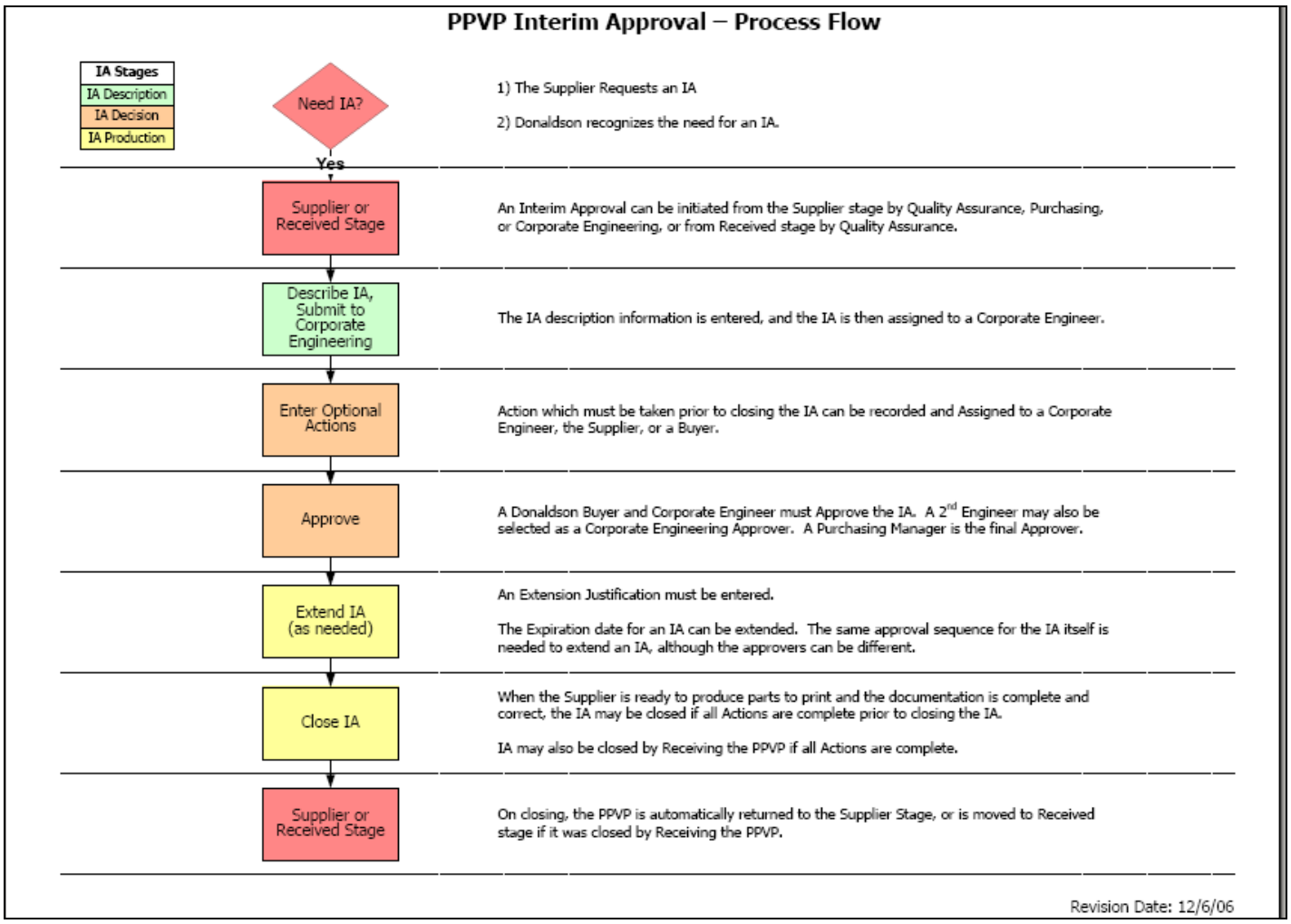
PRODUCTION PART VALIDATION PROCESS, cont.

The submission level is determined considering the following factors. The default submission level is Level 3.

- Part criticality
- Supplier expertise with a specific commodity
- Experience with prior part submission

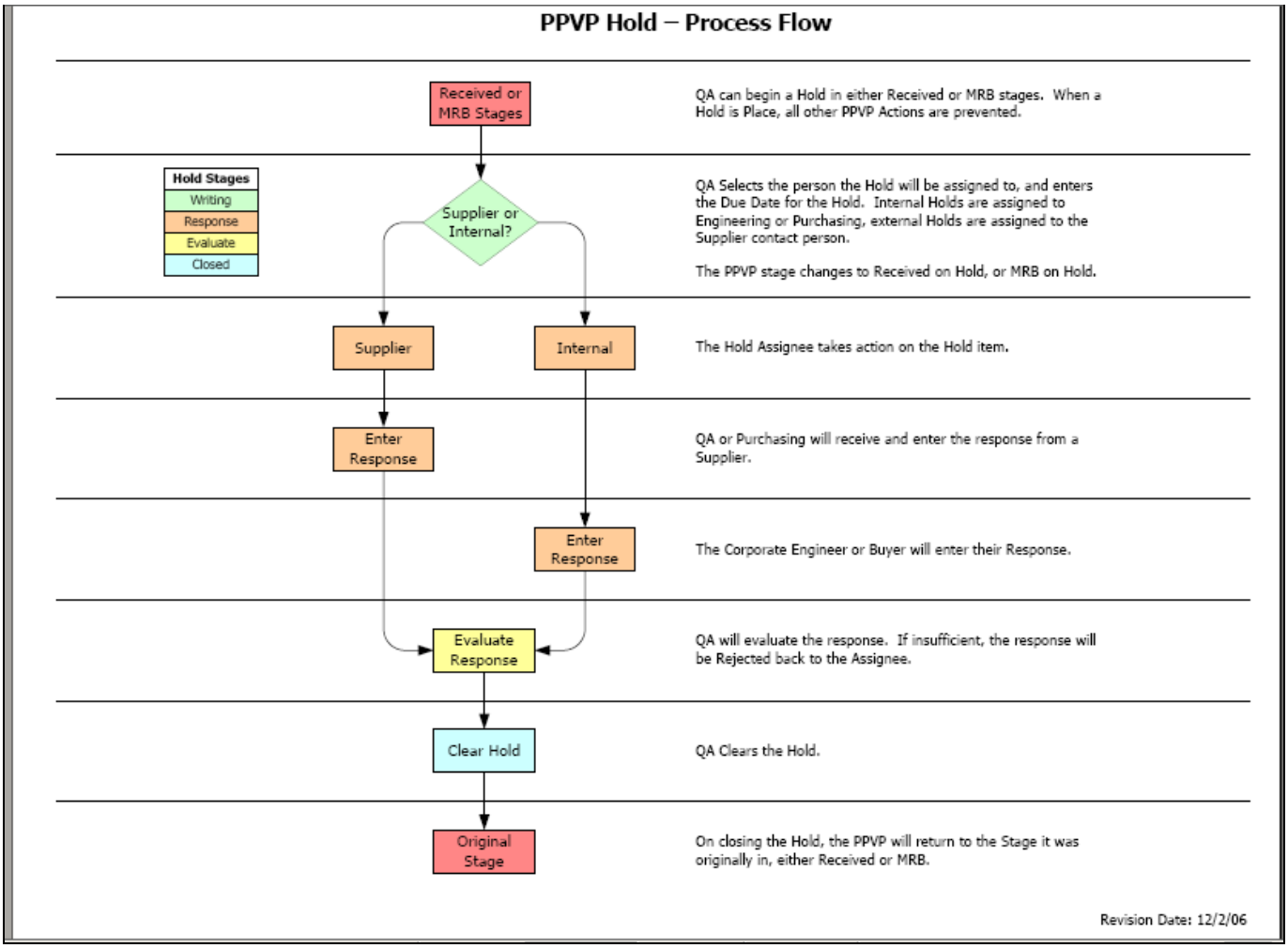
Note: Because no further inspection may be applied to product once it leaves the supplier, the supplier is responsible to assure the conformance of the product to drawings and specifications. Parts sent to any Donaldson location prior to Production Part Validation Process Approval must be marked accordingly (i.e. part number, revision, and non-approved parts).





Note: Interim approval requests include the following:

1. **Additional time is needed for PPVP preparation.**
2. **Temporary material or dimensional deviation.**
3. **Other reasons as determined by DCI Purchasing, Quality, and Engineering.**



PPVP Holds may be used for the following reasons:

1. **Additional information is needed.**
2. **Clarification of requirements.**
3. **Other reasons, as determined by DCI Purchasing, Quality, and Engineering.**

RETENTION/SUBMISSION REQUIREMENTS TABLE

Requirement	Submission Level					
	1	**2**	**3**	**4**	**5**	**6**
1. Parts Submission Warrant	S	S	S	S	S	S
2. Appearance Approval Report	If a part is a designated appearance item, appearance compliance requirements will be identified via a special purchase order notification.					
3. Design Records	R	S	S	S	W	S
4. ECO/Change Documents	R	S	S	S	W	W
5. Dimensional Results	R	S	S	S	W	S
6. Checking Aids	R	R	R	R	W	W
7. Test Results/Material Certs	R	S	S	S	W	S
8. Process Flow Designs	R	R	S	S	W	S
9. FMEA Design Process 10. (Note: DFMEA if applicable)	R	R	S	S	W	W
11. Control Plan	R	R	S	S	W	S
12. Process Capability Studies	R	R	S	S	W	W
13. Measurement System Studies	R	R	S	S	W	W
14. Lab Documentation	R	R	S	S	W	W
15. Sample Product	R	R	S	R	W	R

S - Submit to Attn: Quality Lab ms #140, Donaldson Company, Inc., 9250 West Bloomington Freeway, Bloomington, MN 55431

R - Required, but Retain at supplier manufacturing location; readily available to DCI upon request.

W - Waived

NOTE:

1. The default submission level is 3.
2. Preliminary process capability studies are intended to be performed on a production run producing at least 300 units. CPK must be greater than or equal to 1.33. PPK must be greater than or equal to 1.67. (NOTE: DCI critical characteristics are identified by a black diamond.)
3. Any specific DCI requirement must be met.

SUPPLIER HELD TOOLING

Suppliers recommend and/or select manufacturing processes and tooling to assure that production parts meet specified requirements.

Supplier tool recommendations are solicited via Request for Quote by the assigned Corporate Buyer and are evaluated on a best overall (total part) cost considering the estimated part volume, the tool cost, and the expected tool life.

All tool purchase orders will include: The tool description,
Completed Tool Data/Warranty form, and
Completed Bailment form, as applicable.

Authorization for supplier held tooling is only by purchase order from the assigned Corporate Buyer.

TOOL OWNERSHIP

DCI will purchase and own the tools used to produce DCI proprietary parts and is responsible for the insurance and income tax depreciation of the tool. Parts made from DCI owned tools shall not be sold to other parties without the written approval of DCI.

Terms and conditions for tools owned by DCI customers and managed by DCI will be conveyed via the Purchase Order authorizing the build or purchase of the tool.

TOOL QUALIFICATION

Approval of the Production Part Validation Process is required for tool qualification. The Production Part Validation Process, Submission Level 3, is to be used unless otherwise stated via purchase order.

TOOL PAYMENT

Tool payment will be made according to the terms stated on the tool purchase order.

Typically, payment terms are:	Order Receipt	33%
	Sample Submission	33%
	Submission of all PO requirements	24%
	Receipt of all approvals	10%

Separate invoices must be submitted for not more than the amount due at indicated events.

TOOL IDENTIFICATION

DCI will provide, via the authorizing PO, a tool number (PM#) which shall be permanently and legibly marked on the tool. Additional identification requirements will be conveyed via the authorizing PO.

TOOL STORAGE

Tools shall be handled and stored appropriately at all times.

SUPPLIER HELD TOOLING, cont.

TOOL RECORDS

The supplier shall maintain a record of the tool, available to the Corporate Buyer upon request. The record should contain at a minimum:

Tool PM#
Part number(s) produced by the tool
Revision level of the part that the tool currently produces
Tool description
Tool condition
Date tool last used
Tool location
Number of parts produced by the tool
Expected remaining tool life in number of parts/shots
Record of tool maintenance activities

TOOL STATUS/AUDIT

A monthly tool status report may be requested by Corporate Purchasing during the build and validation of the tool. Inspection or audit of the tool may be required at any time during the life of the tool.

TOOL MAINTENANCE

The supplier is responsible for the maintenance and repair of the tool during its warranted life. The tool must be maintained and repaired to assure conforming parts for the warranted life of the tool. If the supplier suspects that the maintenance or repair could affect appearance, dimensional, or reliability/performance characteristics of the part, notify the Corporate Buyer for determination if re-validation of the part is required.

The supplier should have formal procedures for handling, storage, and preventive maintenance. Maintenance records should record the tool PM #, maintenance date, description of work, and general tool condition.

TOOL MODIFICATIONS, REWORK, OR REPLACEMENT

Authorization for modification or replacement is only by purchase order from the assigned Corporate Buyer.

TOOL DISPOSITION

Disposition of supplier held tooling is authorized only by purchase order (or letter) from the assigned Corporate Buyer. The supplier should make such requests to the Corporate Buyer.

GOVERNMENTAL & SAFETY CONSTRAINTS

DCI expects its suppliers to be fully aware of, and have quality programs in place to assure their product and the process to manufacture it are in full compliance to all legislated requirements.

PRICING POLICY

DCI is always open to our supplier's suggestions on ways to decrease cost. We expect that our suppliers will pursue activities that will provide a minimum of 2% of the total amount of goods sold to Donaldson in annualized cost savings.

If it becomes necessary to review your prices, we have the following as a minimum requirement:

90 days written notification of the proposed price increase
supporting documentation, including labor, material, and overhead cost justification
complete list of all parts affected that includes the old and new prices
off-setting cost reduction proposals

Any price increase submitted to Donaldson may result in resourcing of the product(s) affected as well as other business held by the supplier.

QUOTING

The quoting process is an important part in decreasing our "time to market". This "time" is continually shrinking and it is becoming necessary that DCI quote products and projects faster. It is our goal to have suppliers who are capable of responding with their best quote in a 24 to 48 hour time frame (where applicable).

FORMS AND INSTRUCTIONS

The following forms are considered "generic" and are available from several sources including AIAG (see below). Printed or electronic versions may be available by calling the Corporate Buyer.

Process Flow Diagram
Process Failure Mode and Effects Analysis
Quality/Process Control Plan
Potential Process Capability
Dimensional Report

REFERENCES

Donaldson Buys Value - DBV (406.230.000-001)

The following are available by contacting AIAG, Automotive Industry Action Group, (248) 799-4228:

Quality System Requirements (ISO TS 16949)
Quality System Assessment (QSA)
Advanced Product Quality Planning (APQP)
Measurement Systems Analysis Manual (MSA)
Statistical Process Control Manual (SPC)
Production Part Approval Process (PPAP)
Potential Failure Mode and Effect Analysis (FMEA)

Note: The information in this book can also be found on the Donaldson Co. website. To access, go to www.Donaldson.com. In the Select a Region box, choose Americas-English. On that page, at the bottom of the screen, click on "Suppliers".

GLOSSARY

APPROVED means that the parts and/or related documentation submitted to or reviewed by Donaldson meet all Donaldson requirements. After production validation the supplier is authorized to ship product as directed by the plant/customer.

CAD/CAE MATH DATA is a form of design record by which all dimensional information necessary to define a product is conveyed electronically. When this design record is used, the supplier is responsible for obtaining a drawing to convey results of dimensional inspection.

CHECKED PRINT is a production released engineering drawing with **actual measurement results** recorded by the supplier adjacent to each drawing dimension and other requirements.

CONFORMANCE means that the material meets Donaldson specifications and requirements.

CONTROL PLANS are written descriptions of the system for controlling production parts and processes. They are written by Suppliers to address the important characteristics and engineering requirements of the product. Each part must have a Control Plan, but in many cases, "family" Control Plans can apply to a number of parts produced using a common process.

DESIGN RECORD is the part drawings, specifications, and/or electronic (CAD) data used to convey information necessary to produce a product.

FAILURE MODE AND EFFECTS ANALYSIS (FMEA) is a systematized technique which identifies and ranks the potential failure modes of a design or manufacturing process in order to prioritize improvement actions.

GAGE R&R refer to the Measurement System Analysis reference manual.

INTERIM APPROVAL permits shipment of products for a specified time period or quantity.

MARKED PRINT is an engineering drawing modified, signed and dated by the Donaldson engineer (the engineering change number must be included).

MEASUREMENT SYSTEM VARIATION STUDIES refer to the Measurement System Analysis reference manual.

PROCESS is a combination of people, equipment, methods, materials, and environment that produces output - a given product or service. A process can involve any aspect of a business.

PROCESS FLOW DIAGRAM depicts the flow of materials through the process, including any rework or repair operations.

PRODUCTION RELEASE DRAWING is an engineering drawing signed by the engineer and released through the Donaldson system. The drawing is forwarded to the supplier via Donaldson Corporate Purchasing.

PRODUCTION PART VALIDATION SUBMISSIONS are based on small quantities of parts taken from a significant production run made with production tooling, processes, and cycle times. The supplier checks parts for production part validation to all engineering requirements.

PRELIMINARY PROCESS CAPABILITY Studies are short-term studies conducted to obtain early information on the performance of new or revised processes relative to internal or customer requirements. In many cases, preliminary studies should be conducted at several points in the evolution of new processes (e.g. at the equipment or tooling subcontractor's plant, after installation at the supplier's plant). These studies should be based on as many measurements as possible. When X-Bar and R charts, at least twenty subgroups (typically three to five pieces) are required to obtain sufficient data for decision-making. When this amount of data is not available, control charts should be started with whatever data is available. (Refer to the Fundamental Statistical Process Control reference manual.)

S.B.O.S.S

QUALITY PLANNING is a structured process for defining the methods (i.e. measurements, tests) that will be used in the production of a specific product or family of products (i.e. parts, materials). Quality planning embodies the concepts of defect prevention and continuous improvement as contrasted with defect detection (see Advanced Product Quality Planning and Control Plan reference manual).

REJECTED means that the production part submission and/or documents did not meet the customer's requirements. The supplier must correct the production process and make a new submission. (Advise Donaldson Corporate Purchasing of the date when corrected parts will be available.) Do not ship production parts until the customer approves the corrected parts. The customer may withhold tooling payments until part approval is obtained.

REPEATABILITY AND REPRODUCIBILITY, GAGE (GAGE R&R) Refer to Measurement System Analysis reference manual.

SIGNIFICANT CHARACTERISTICS are those product features that affect subsequent operations, product function, or customer satisfaction. Significant characteristics are established by the Donaldson engineer, quality representative, and supplier personnel from a review of the Design and Process FMEAs and must be included by the supplier in the Control Plan. Any significant characteristics included in engineering requirements are provided as a starting point and do not affect the supplier's responsibility to review all aspects of the design, manufacturing process, and customer application and to determine additional process parameters.

SPECIFICATIONS are engineering requirements for judging the acceptability of a part characteristic. For the production part validation process, every feature of the product as identified by engineering specifications must be measured. Actual measurement and test results are required. Specifications should not be confused with control limits that represent "the voice of the process".

SUPPLIERS are defined as providers of production materials, or production or service parts, directly to DCI. Also included are providers of heat-treating, painting, plating or other finishing services.

STATISTICAL CONTROL is the condition of a process from which all special causes of variation have been eliminated and only common causes remain. Statistical control is evidenced on a control chart by the absence of points beyond the control limits and by the absence of any non-random patterns or trends. (**STATISTICAL CONTROL** is a descriptive term for a **STABLE PROCESS**.)

SUBMISSION LEVEL refers to the level of evidence required for production part submission.

TOOLING MAINTENANCE is the periodic sharpening, polishing, or other servicing of a tool. This maintenance will not significantly affect the dimensions or other characteristics of the product produced by the tool (contrast with **TOOLING REFURBISHMENT**).

TOOLING REFURBISHMENT is the major overhaul of a tool. Refurbishment can affect dimensions or other characteristics of the product produced by the tool. Production part approval submission of product made with refurbished tools is required before such product may be shipped to the customer.

WARRANT is an industry-standard document required for all newly-tooled or revised products in which the supplier confirms that inspections and tests on production parts show conformance to customer requirements.

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Purchasing
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