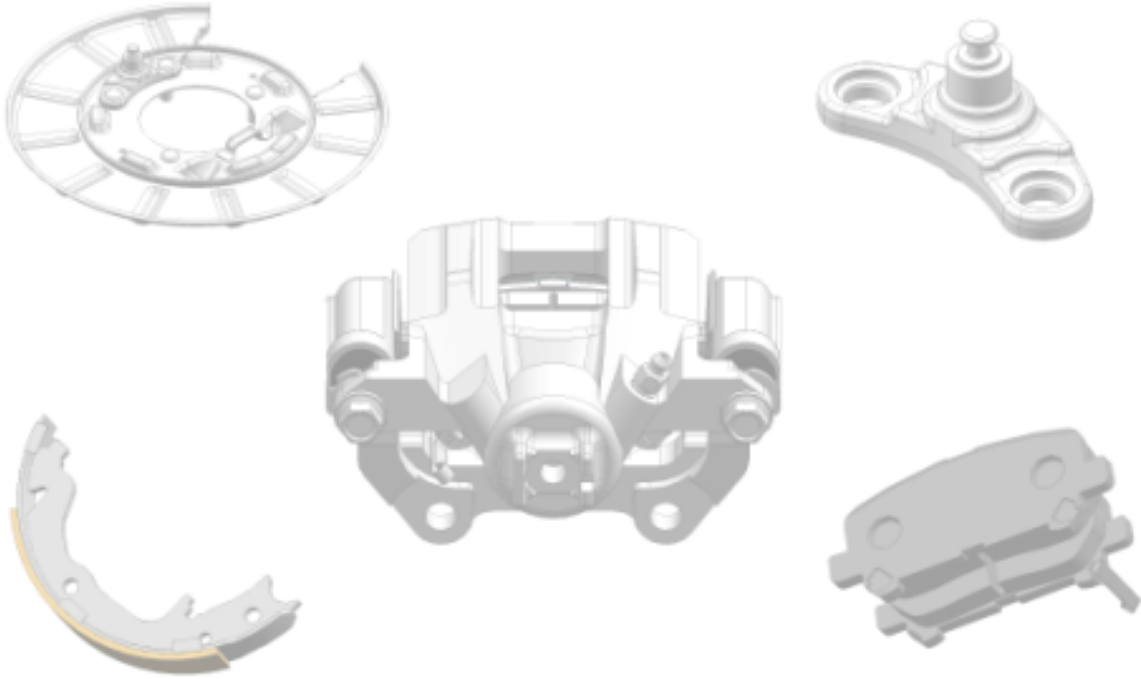


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AKEBONO BRAKE CORPORATION NORTH AMERICA



"Building Quality Together"

Supplier Quality Assurance Manual



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AKEBONO SUPPLIER QUALITY ASSURANCE MANUAL

AKEBONO is committed to quality through continual improvement in an effort to maintain a world-class quality system. This manual is based on a quality system intended to encourage and implement a spirit of cooperation and continual improvement. Akebono Brake Industry Co. Ltd of Japan is a world leader in the design and manufacture of technologically advanced, high quality, precision automotive brakes and components in both domestic and international markets.

AKEBONO's Suppliers performs a major role in our Quality System. Our quality depends on your products. It is our desire to encourage a partnership atmosphere that unites a strong Supplier/ Customer relationship that produces a quality, on time, competitive product.

The following facilities comprise the Akebono Brake Corporation located in North America referred to in this manual as AKEBONO. The Director of Quality and the Quality Management of each group approve the requirements set forth in this manual.

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AKEBONO Engineering Center (AEC)
34385 West Twelve Mile Road
Farmington Hills, Michigan 48331
Ph. (248) 489-7400
R&D Center

AKEBONO Brake -Glasgow (ABG)
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Glasgow, Kentucky 42141
Ph. (270) 678-1765
Fax: (270) 678-5659

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Revision History

Revision Date	Description	Comments
02/28/2005	Initial Publication - This manual supersedes Document No. 002 issued April 24, 2003.	Commonization between Akebono Corporation North America, Akebono Subsidiaries, and Partnerships
05/02/2005	Reformatted document to PDF	none
4/4/2008	Added applicable form numbers to context of requirements. Redefined Quality Philosophy.	none
8/15/08	Deleted 1.67 Ppk requirement from page 13, Section 7.3.4.f.5 and added "should follow AIAG-PPAP Manual".....; Changed the minimum capability study qty from 100 pieces to 125, see 7.3.4.f.6; Changed 7.4.B.2 from ten consecutive shipments to five, see page 18.	To align requirements with AIAG-PPAP and SPC Manuals and Customer-Specific-Requirements
7-14-09	Revised Pg 16 (5) to reflect PPAP status sheet ABC-F033 certified pallet. Revised Pg 14, 7.3 (m) to Mini-Tab preferred. For suppliers without Mini-Tab use form SPC 3x10 Gage Study ANOVA (#ABC-F093	none

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Scope and Application

This manual is intended to provide our valued Suppliers with the basis for understanding the quality requirements of AKEBONO. It establishes the minimum quality requirements for all Suppliers of material and processing services purchased by AKEBONO.

This manual applies to all companies that have a contractual purchase agreement with AKEBONO. It is a supplement to all terms and conditions covered by purchase documents, specified warranty agreements and requirements of engineering drawings/specifications and process instructions. The requirements set forth in this document are based on the ISO/ TS 16949:2002 International Automotive Standard.

Suppliers are expected to have a quality system that is conforming to the ISO / TS 16949:2002 Technical Specification. Conformity with ISO 9001:2000 is the first step in achieving this goal.

AKEBONO and its' customers reserve the right to visit Suppliers with the expressed purpose of reviewing all processes that pertain to the production of contracted products to confirm compliance to stated requirements.

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APS/ Quality Philosophy

AKEBONO's Production System (APS) guarantees minimal process variation in all phases of production by utilizing lean manufacturing techniques.

AKEBONO's Quality Policy; "Quality 100" is ABC

Akebono

Achieve 100%:
Safety & Quality
Delivery
Customer Delight

Brake

Brake Experts Dedicated 100% to:
Ownership of Own Work Quality
Designs with Quality-Built-In
Processes with Quality-Built-In

Corporation

Committed 100% to Continual Improvement:
Of People/Processes
Of Designs/Technology
Compliance with Requirements

Quality Built-In starts with quality designed in and a quality system committed to early prevention and detection. Poka Yoke (Error Proofing) devices are utilized within the process to prevent mistakes from occurring as well as for detection of nonconformance. These devices provide early warnings of abnormality and assist with the goal of zero defects delivered to the customer. Further, it reduces the chance of nonconformities passing through the production process and helps to eliminate waste such as: sorts, complaints, missed deliveries, or overbuild of inventories to mask quality deficiencies - thus being the catalyst for continual improvement.

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4.0 Quality Management System

4.1 General Requirements

AKEBONO requires Suppliers to establish, document, implement, and maintain a quality management system, and continually improve its effectiveness in accordance with the requirements of ISO 9001:2000/ TS 16949:2002.

4.2 Documentation Requirements

A. ISO 9001:2000/ TS 16949:2002 Requirements.

B. In addition, Suppliers must establish and implement a procedure for the control of all documents (electronic or otherwise) necessary for effective functioning - including documents of external origin (AKEBONO's).

1) When a Supplier receives a prototype, pre-production or production drawing from AKEBONO, a **Drawing Notification and Acknowledgement (#ABC-F048)** form shall be included. This form must be signed by the person receiving the drawing and returned to the ABC Purchasing Department. The Supplier is responsible for ensuring all copies of old revisions are obsolete.

2) AKEBONO's drawings are identified by the following prefixes:

a. **PROTOTYPE**

- OB = Disc Brake
- OC = Drum Brake
- PX = Friction Pad Assemblies
- 9X = Common Component Parts

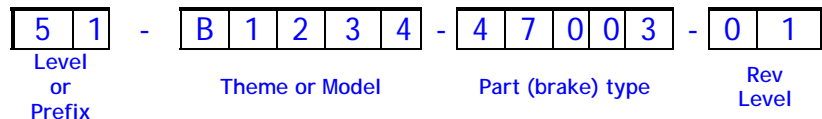
b. **PRE-PRODUCTION**

- AB = Disc Brake
- AC = Drum Brake
- PZ = Friction Pad Assemblies
- 9Z = Common Component Parts

c. **PRODUCTION**

- 51 = Disc Brake
- 52 = Drum Brake
- P1 = Friction Pad Assemblies
- 90 = Common Component Parts

3) AKEBONO's drawing numbers generally have the following nomenclature:



4) AKEBONO may authorize a different prefix from that on the drawing for labeling requirements.

a. Suppliers shall be notified of alternate part numbers via the *Purchase Order Change Notice (#ABC-F049)* referencing the current drawing and revision number.

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4.2 Documentation Requirements (con't)

- 5) Engineering Specifications shall have a review process to assure the timeliness of implementation.
 - a. The change (s) in specifications shall be appropriately updated.
 - b. Some changes may require a PPAP submission. Contact the ABC Supplier Quality Representative.
- C. Records shall be controlled and maintained in accordance with ISO 9001:2000/ TS 16949:2002. This includes statutory and regulatory record retention requirements.
- 1) Due to the safety liability factor of automobile brake components, quality records shall be maintained for a minimum of ten years. This applies to PPAP, performance evaluations (material and reliability), purchase orders, and lot control.

5.0 MANAGEMENT COMMITMENT

5.1 Management Commitment

Based on the requirements of ISO 9001:2000/ TS 16949:2002, Suppliers to AKEBONO shall provide evidence, upon request, of commitment to the development and implementation of their quality management system and continually improve its effectiveness by communicating to the organization the importance of meeting AKEBONO and other related requirements.

5.2 Customer Focus

- A. Suppliers shall develop and document processes having direct interface with AKEBONO with the aim of enhancing customer satisfaction. These customer-oriented processes shall be measured, monitored, and reviewed by the Supplier's management staff.
- B. A disciplined process shall be implemented to measure AKEBONO's satisfaction. (ISO 9001:2000/ TS 16949:2002 Requirements).

5.3 Quality Policy

ISO 9001:2000/ TS 16949:2002 Requirements.

5.4 Quality Planning

ISO 9001:2000/ TS 16949:2002 Requirements.

5.5 Responsibility, Authority and Communication

ISO 9001:2000/ TS 16949:2002 Requirements.

5.6 Management Review

ISO 9001:2000/ TS 16949:2002 Requirements.

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6.0 RESOURCE MANAGEMENT

6.1 Provision of Resources

Suppliers to AKEBONO are responsible for identifying resources e.g. manpower, machine (s), materials (s), etc., necessary to ensure compliance with internal requirements and AKEBONO's requirements with emphasis on enhancing customer satisfaction. Additionally, resource needs include but are not limited to training, empowerment, and infrastructure.

6.2 Human Resources

In addition to ISO 9001:2000/ TS 16949:2002 requirements, personnel shall be aware of the consequences to AKEBONO for nonconformity to quality requirements.

6.3 Infrastructure

- A. Suppliers shall use a systematic approach to facilities, equipment, and process planning to optimize performance.
- B. As often as possible, utilize one-piece material flow and maximize value-added use of floor space.
- C. A *Contingency plan* (e.g. utility interruptions, labor shortages, key equipment failure, etc) shall be documented to reasonably protect AKEBONO's supply of product - excluding natural disasters and acts of God. Plans shall be made available to AKEBONO for review.

6.4 Work Environment

- A. Provide a suitable work environment in a state of order, cleanliness, and repair to ensure achievement of product conformity.
- B. Potential safety risks should be considered in the planning of manufacturing processes.

7.0 PRODUCT REALIZATION

7.1 Planning of Product Realization

In addition to the requirements of ISO 9001:2000/ TS 16949:2002, Suppliers shall ensure the effective and efficient operation of product realization and support processes and the associated process network, so that the capability of satisfying AKEBONO and its customers is established, documented and implemented. Relevant activities, actions, and resources shall be defined in order to achieve customer satisfaction from the concept by which the product is realized to the delivery of the product. The results from both verification and validation of these processes shall be used as inputs for continual improvement.

- A. Determine acceptance criteria, and where required, approval from AKEBONO. A *Technical meeting (#ABC-F050)* with the appropriate AKEBONO Buyer and Supplier Quality Representative may be necessary for the purpose of Advance Quality Planning.
 - 1) Quality Planning is in accordance with the AIAG Advanced Product Quality Planning and Control Plan Manual.
- B. Suppliers are required to ensure the confidentiality of AKEBONO's -contracted products and/ or projects related to product information.
- C. A process shall be documented and implemented to control and react to internal changes that affect product realization including changes caused by sub-Suppliers.

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7.2 Customer-Related Processes

- A. Requirements received from AKEBONO shall be fully understood by the Supplier, and current capability must exist to meet these requirements prior to the acceptance of a contract.
 - 1) Ensure all contracts are reviewed prior to acceptance through a documented process.
 - a. The review verifies that the requirements are adequately defined and documented including subsequent amendments to original contract.
 - b. Further review verifies that the Supplier is capable of achieving AKEBONO specific requirements by conducting a manufacturing feasibility and risk analysis.
 - 2) The ABC Purchasing and ABC Supplier Quality Representative will coordinate a *Technical Meeting (#ABC-F050)* with Suppliers as appropriate which may include but not limited to the following:
 - a. Supplier Contact Profile
 - b. Critical characteristics
 - c. Capability studies
 - d. Special characteristics
 - e. Tolerances
 - f. Material
 - g. Test fixtures
 - h. Gages and Tooling
 - i. Testing
 - j. PPAP
 - k. Design and Engineering Specification changes
 - l. Packaging and labeling specifications
 - m. Inspection Standard requirements
 - n. Nonconforming Product Control
- B. Requirements related to the product extend to agreements as stated in the contract and *Purchase Order Terms and Conditions*.
- C. Any requirements differing from the quotation shall be resolved.
 - 1) ABC Purchasing is the approving authority for authorization of changes to a *Purchase Order (PO)* that revises the terms and conditions, packaging specification requirements, quantity, delivery, and/or cost requirements from the original contract agreement.
- D. Effective arrangements must be implemented to facilitate communications with AKEBONO regarding product information, enquiries, production orders, and feedback; including quality, delivery, and cost concerns.
 - 1) This includes the use of electronic communication media.

7.3 Design and Development

This requirement includes product and manufacturing process design and development and focus on error prevention rather than detection.

- A. Suppliers that are product design responsible shall meet the requirements as listed in the ISO 9001:2000/ TS 16949:2002 Standard.
- B. Both product and process design and development planning shall include preparations of descriptive plans for design and development activities including implementation responsibility.
- C. The organization shall manage the interfaces between the different groups to ensure effective communication and clear assignment of responsibility.
- D. The manufacturing process design includes the use of error-proofing methods comparable to the risks associated with that process.
- E. Consideration shall be given to "Special/ Critical" characteristics identified internally and by AKEBONO.

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7.3 Design and Development (con't)

- F. Outputs from the resulting design and development of product and process shall be monitored, measured, analyzed, and reported to management for review.
- G. Product/ Process designs shall be verified by line trials etc., validated by the Run @ Rate and initial lot containment activities in accordance with planned arrangements.
 - 1) Records shall be maintained and available for review as required by AKEBONO.

H. Prototype (Design Validation) Program

In addition to the requirements of ISO 9001:2000/ TS 16949:2002, AKEBONO further expects prototype activity to provide assemblies for testing and fit/functionality check for new designs. Prototypes help insure that potential assembly problems and/or deficiencies in new designs are identified and corrected prior to the release of production intent drawings.

1) Prototype (Design) Drawings:

- a. To improve lead-time with the Request for Quote (RFQ) process, preliminary drawings may be released by ABC Purchasing. However, it does not give the Supplier permission to build or buy tooling or components.
- b. Upon acceptance and approval of the RFQ, an official Drawing will be released to the Supplier.

2) *Supplier Prototype Warrant (#ABC-F047)* shall be completed and submitted for each part number shipped to AKEBONO.

- a. Prototype Samples that do not meet design requirements may or may not be acceptable.
Contact the ABC Supplier Quality Representative if there are questions concerning the Prototype or its documentation.

3) Documentation:

Suppliers are responsible for providing supporting documentation and results. Listed below are the usual documentation requirements.

- a. *Dimensional Results (#ABC-F031)* or the AIAG format to report dimensional data including listing the inspection method for each item. Suppliers shall use recognized industry methods and procedures to obtain inspection results. Measurement devices should have unit discretion at least 10 times that of the tolerance unit, e.g. a dimension having a ± 0.1 mm tolerance requires a method to discern to a 0.01 mm or smaller. The dimensional inspection requires data on a minimum of six pieces (where cavities or molds exist the minimum is three pieces per cavity). Results shall indicate acceptable (pass) or unacceptable (failed).
- b. *Ballooned Drawing*. Mark the AKEBONO issued Drawing accordingly to the items on the *Dimensional Results (#ABC-F031)*.
- c. *Material Reports* are reports that confirm (validate) that material related aspects on the drawing are met. The Supplier is required to provide a *Material / Physical Property Lab Results (#ABE-F032)* report that validate parts conforming to the appropriate standards for chemistry, hardness, microstructure, mechanical properties, plating, corrosion resistance, etc. Results shall indicate acceptable (pass) or unacceptable (failed).

- (1) If Supplier utilizes an outside laboratory service to provide validation results, that facility must be accredited to ISO /IEC 17025 or A2LA and provide test results using the laboratory letterhead with accreditation documented. AKEBONO Supplier Quality Assurance may NOT accept non-accredited laboratory test results

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7.3 Design and Development (con't)

- d. Suppliers are also required to provide certification of compliance or work such as
 - (1) *Heat Treat Assessment (#ABC-F013)*
 - (2) *Plating Assessment (#ABC-F014)*
 - (3) *Coatings Assessment (#ABC-F015)*
 - (4) *Hydrogen Embrittlement Relief (#ABC-F035)*
 - (5) *Hexavalent Chromium (#ABC-F053)*.
- e. **Control Plan.** Usually needed if a significant quantity of parts is ordered. The AIAG format should be used. Contact the ABC Supplier Quality Representative.
- 5) Prototype Labeling:
 - a. Minimum of 1 (one) **Stop Do Not Use for Production (#ABC-F046) label**, printed or copied on "**ORANGE PAPER**" for each shipping container.
 - b. The label will be in addition to any other labels required by the shipper or carrier.
 - c. If Prototype Samples are shipped on a skid, they must not be combined with any other parts or material and the **Stop Do Not Use for Production (#ABC-F046)** label must be facing outward.
 - d. Contact ABC Purchasing if there are questions concerning Prototype Samples labeling requirements.
- 6) Prototype (Design Validation) Approvals:
 - a. Tooling cost will be paid when Prototype submission is approved.
- I. **Production Part Approval Process (PPAP)**
 - 1) Part specific requirements for production intent parts will be discussed during the Technical Meeting and recorded on the *Technical Meeting Minutes (#ABC-F050)* which provide a basic guideline to assist Suppliers in submitting PPAP. Unless otherwise specified, Supplier must meet the requirements of the AIAG PPAP manual and the following AKEBONO specific requirements.
 - a. This includes but is not limited to the contents of this manual, Marked Drawing, engineering specifications, packaging, and labeling requirements, and specified PPAP requirements on the *PPAP Request and Cover sheet (#ABC-F030)*. Unless otherwise specified a Level 3 PPAP is required.
 - 2) Drawing requirements shall be the same as those listed for Prototype.
 - 3) Suppliers must have AKEBONO approval to produce parts with production intent processes and materials prior to the delivery of mass production lots to AKEBONO. Contact the Supplier Quality Representative if there are questions concerning the need for PPAP. Situations normally encountered that require PPAP submission are:
 - a. New Part
 - b. Correction of a discrepancy
 - c. Change in design record (drawing)
 - d. Change in material
 - e. New/ modified tooling. This includes additional, replacement, repaired, refurbish, and rearrangement of tooling. Note, generally perishable tooling is excluded
 - f. New/ modified equipment, including restoration and movement
 - g. Tooling/ equipment transferred to a different location
 - h. Change in process or method of manufacture
 - i. Change of subcontracted parts, materials and service

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7.3 Design and Development (con't)

4) Documentation Requirements

AKEBONO may require additional documents or allow others to be omitted from the PPAP submission. Listed below are those forms and documentation usually associated with PPAP submission.

- a. *Supplier PPAP Request and Cover Sheet (#ABC-F030)*
- b. *PSW (Part Submission Warrant) (#ABC-F029)*
- c. *Supplier Profile Contact Sheet (#ABC-F034)*
- d. The AKEBONO issued *Marked Drawings* shall be "Ballooned" and numbered to correspond to the items listed on the dimensional results sheet.
- e. *Dimension Results sheet (#ABC-F031)* or similar AIAG compliant form.
 - (1) Minimum 1 piece complete per each cavity in multi-cavity patterns
 - (2) Minimum 6 piece complete from machining, stamping, forming process
 - (3) Supplier must use industry accepted measurement practices appropriate for the item being checked. Supplier MUST seek ABC Supplier Quality Assurance approval for non-standard practices. The measurement methods shall be listed for each item.
- f. *Capability Studies* are required on critical and key characteristics as designated by the Marked Drawing. Suppliers may use their own analytical technique, however mini-tab is preferred. In order to control part functionality critical to the AKEBONO production process, the following symbols indicate those characteristics that require capability, control, and/or monitoring.
 - (1) **E** This dimension requires 100% inspection or Error Proofing as a method of detection.
 - (2) **P** Dimension Requires Capability Study at PPAP then Controlled through SPC for Production.
 - (3) **A** Capability Study at PPAP then controlled through documented checks per Control Plan
 - (4) **K** Documented Process Controls required to assure Drawing Conformance.
 - (5) For items marked with "P" or "A", initial capability index acceptance criteria should follow AIAG PPAP manual guidelines unless otherwise specified by ABC Quality representative.
 - (6) A 125 piece minimum should be used unless otherwise specified by the ABC Quality Representative. Follow the AIAG PAPP and SPC manual format. For example, 25 subgroups x 5 pcs/subgroup.
- g. *Material Reports* and Supporting Documentation. *Material Reports* are reports that confirm (validate) that material related aspects on the drawing are met. Suppliers are required to provide reports that validate part conformance to the appropriate standards for chemistry, hardness, microstructure, mechanical properties, plating, corrosion resistance, etc. as noted on the drawing. Reports MUST list requirements and results must indicate acceptable (pass) or unacceptable (fail). Use the AIAG format or similar in reporting material/performance test results. A *Material /Physical Property Lab Result Summary (#ABC-F032)* shall be used as a cover page for all detailed test reports.

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7.3 Design and Development (con't)

- h. Suppliers are required to provide certification of compliance to the following as applicable:
 - (1) *Heat Treatment Assessment (#ABC-F013)*
 - (2) *Plating Assessment (#ABC-F014)*
 - (3) *Coating Assessment (#ABC-F015)*
 - (4) *Hydrogen Embrittlement relief Certification (ABC-F035)*
 - (5) *Certificate of Raw Material sheets*
 - (6) *Copy of the ISO 9001:2000/ TS 16949:2002 certificate*
- i. If Supplier utilizes an outside laboratory service to provide validation results, that facility must be accredited to ISO /IEC 17025 or A2LA and provide test results using the laboratory letterhead with accreditation documented. Non-accredited laboratory test results may not be accepted.
- j. *Process Flow Diagram (#ABC-F061)*. A schematic representation of product flow from receipt of raw material thru and including shipping. The Process Flow Diagram can be incorporated into the QCP or a separate document.
- k. *Quality Control Plan* submitted in the AIAG or AKEBONO approved format.
- l. *Process Failure Mode Effect & Analysis (PFMEA)* Use the AIAG format and ranking scale.
- m. *Gage Study*. This includes a GR&R, Accuracy, Linearity, and Stability. Attribute studies for Go/ No-Go gages are to be included. Mini-tab is preferred. For Suppliers without Mini-Tab, use form SPC 3x10 Gage Study (#ABC-F093).
- n. As an output of the Technical Meeting, when required, an *Inspection Standard (#ABC-F060)* shall be submitted to AKEBONO indicating the items agreed upon for inspection at AKEBONO and the Supplier. Measuring methods, techniques, quantity, and frequency shall be indicated on the Inspection Standard.
- o. *Tool Acceptance Report (#ABC-F036)*. A general description of AKEBONO purchased tooling, including cost for each as defined in the ABC Purchase Order.
- p. *Packaging Data Sheet (#ABC-F045)*.
 - (6) Specify weight, size, type of containers, etc.
 - (7) Consideration shall be given to the prevention of damage and degradation during transport to AKEBONO.
 - (8) Include a copy of each bar code label you intend to supply to AKEBONO to ensure proper scanning by AKEBONO receiving department.
 - (9) A preliminary sheet may be submitted with the PPAP if Standard Number per Package (SNP) has not yet been determined. A final sheet MUST be submitted to the Buyer before you begin shipping mass production in that packaging.
 - (10) If the parts you intend to ship are symmetrical in shape, then right and left hand of the same, part may be treated as one part for Packaging Data Sheet - but NOT for bar code labels.
 - (11) When requested by AKEBONO, a sample of the proposed packaging is sent to AKEBONO via normal planned shipping methods.
- q. Declaration of Conformance for Restricted and Reportable Substances. Suppliers of components for use in AKEBONO assemblies shall complete an *Environmental Compliance Report (#ABC-F062)*. Contact ABC Purchasing if there are questions concerning compliance requirements.
- r. Production rate readiness based upon quoted tool and equipment capacities will be reported on *Run@Rate Study (#ABC-F052)*. Suppliers may be requested to use other run @ rate documentation as required by AKEBONO's customers.

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7.3 Design and Development (con't)

- (6) If initial PPAP run@rate studies are unacceptable, Suppliers are required to provide a written corrective action plan for improvement. This plan shall include a detailed scrap analysis identifying quality concerns. Subsequent run@rate studies may be required and verified on site by ABC.
 - s. *Material Safety Data Sheet (MSDS)* for component and/or other items such as rust preventatives, oils, adhesives, etc. shall be submitted.
- 5) **Sub-Supplier Documentation** includes PPAP approval by your organization and a copy of the Sub-Supplier's ISO 9001:2000/ TS 16949:2002 certificate.
- 6) PPAP Samples
 - a. Identify PPAP samples to correspond to the *Dimensional Results (#ABC-F031)*.
 - b. Suppliers are required to maintain original PPAP samples for a minimum of 5 years.
- 7) Labeling Requirements
 - a. PPAP samples shall be identified with the **"Orange label" Stop Do Not Use for Production (#ABC-F046)** to the attention of the appropriate AKEBONO Supplier Quality Representative.
 - b. Label shall be placed on each skid or individual containers.
 - c. If there is more than 1 (one) skid per part number, the skid number will be noted on the Stop Do Not Use for Production label. *Example: 1 of 2.*
 - d. One (1) master label for each part number in the shipment will be included in an envelope with the packing list.
 - e. Contact ABC Purchasing Representative if there are questions concerning labeling requirements.
- 8) Delivery and Identification
 - a. PPAP parts must be identified, shipped, and delivered in accordance with the Purchase Order requirements.
 - b. Suppliers may be required to provide advanced shipment notification via fax, phone or electronically.
- 9) PPAP Approval
 - a. New Parts:
 - (1) AKEBONO has established a staged approval process for new parts that is incorporated with the payment of tooling. See Section 7.5 of this manual.
 - (2) A *PPAP Status Sheet (#ABC-F033)* may be issued in lieu of a signed PSW at the discretion of ABC Supplier Quality Representative. The use of this form is primarily intended as a communication method when limited PPAP approval is given or rejection of a PPAP. Rejection could be due to parts not meeting drawing requirements or the documentation is insufficient. In either case, the Supplier must provide a corrective action plan acceptable to AKEBONO.
 - (3) **Limited Approval** as indicated by the *PPAP Status Sheet (#ABC-F033)* is given for PPAPs that are acceptable but further production intent shipments are required. Minor corrective actions or documentations may be necessary. The ABC Supplier Quality Representative authorizes the Supplier to produce two (2) additional production lots per the schedule provided by ABC Purchasing.

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7.3 Design and Development (con't)

- (4) **Full PPAP Approval.** Prior to AKEBONO's start of production, ABC Purchasing will initiate a release of production shipments. Contingent upon the acceptance of these 2 production shipments and acceptable PPAP documentation, the ABC Supplier Quality Representative will grant FULL PPAP approval via the signed *Part Submission Warrant (PSW) (#ABC-F029)*. ABC Purchasing will then direct Supplier as to production shipments, releases and other requirements.
- (5) **Certified Part** as indicated by the *PPAP Status Sheet (#ABC-F033)* is a communication tool to the supplier to indicate a part has passed all receiving inspections and allows a supplier to discontinue the "Orange label" *Stop Do Not Use for Production (#ABC-F046)*.
- b. **PPAP Changes to Existing Parts:** When changes are made to current production parts, the ABC Supplier Quality Representative determines submission requirements upon the receipt and review of the *Supplier Process Change Request (PCR) (#ABC-F057)*.
 - (1) The Supplier may be requested to provide appropriate "Line Break" documentation to facilitate managing the change within AKEBONO.
 - (2) Changes to existing parts must follow the submission and approval process of the *Supplier Process Change Request*.
- 10) The supplier shall submit an annual PPAP Recertification one (1) year after Start of Production. Documentation includes but not limited to the following:
 - a. *Part Submission Warrant (#ABC-F029)*
 - b. *Material Certifications*, including lab test results relative to material specification shown on the Marked Drawing
 - (1) *Heat Treatment Assessment (#ABC-F013)*
 - (2) *Plating Assessment (#ABC-F014)*
 - (3) *Coating Assessment (#ABC-F015)*
 - (4) *Hydrogen Embrittlement relief Certification (ABC-F035)*
 - (5) *Certificate of Raw Material sheets*
 - (6) *Copy of the ISO 9001:2000/ TS 16949:2002 certificate*
 - c. *Dimensional Results (#ABC-F031)* with Ballooned Drawing (Note: can be recent dimensional data from ongoing checks). For Molded or Cast products, submit the key dimensional data from each cavity/tool.
 - d. *Capability data* on all "A" and "P" designated dimensions on Marked Drawing. SPC charts are acceptable for "P" characteristics.
 - e. *Quality Control Plan* and *PFMEA* shall be submitted if there has been a revision since last submission.
 - f. The annual recertification is NOT a means to introduce a change point ...example new material supplier or other sub-supplier. Use the *Process Change Request PCR (#ABC-F057)* process for introducing a change point.

J. Pre-Launch (Pre-Production) Control Containment

- 1) Suppliers are required to implement a process to stabilize the manufacturing process as early as possible to ensure nonconformance to quality requirements is eliminated.
- 2) Supplier shall perform an elevated short term Quality Inspection process by initiating containment of five (5) consecutive production lots of product for complete evaluation and analysis. If non-conformances are detected, the containment must remain in place until five (5) consecutive production lots are within acceptable limits.
- 3) Records of the pre-launch containment shall be maintained by the Supplier and made available upon request.

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7.3 Design and Development (con't)

K. Receiving Inspection Process

- 1) All new parts after PPAP submission, samples, and parts on containment are required to go through receiving inspection at AKEBONO.
- 2) Rejection of production lots by AKEBONO may extend or reinstate the receiving inspection activity.

L. Supplier Process Change Request

- 1) Suppliers are required to submit advanced written notification to AKEBONO of planned changes to a production process or material. Advance notification of process/ material changes is necessary to insure appropriate resources within AKEBONO are scheduled so that ultimately the Supplier's PPAP submission can be approved as quickly as possible.
- 2) Suppliers are required to use AKEBONO's *Supplier Process Change Request (PCR) (#ABC-F057) form*. Suppliers must complete top portion and provide any necessary supporting documentation.
- 3) A Process Change Request (PCR) approval is **NOT** an approval for process change implementation. It is a communication tool to plan and schedule changes initiated by a Supplier that requires PPAP to AKEBONO.
- 4) Changes requiring submissions of a PCR are the same as those requiring PPAP submission.
- 5) There are 4 stages to the PCR process:
 - a. Supplier submits a PCR to ABC Purchasing.
 - b. AKEBONO reviews PCR for Concept Approval at which time additional requirements may be requested.
 - c. Supplier will complete testing and all requirements listed and resubmit the PCR with all documentation required.
 - d. Akebono will review and return the approved or rejected PCR back to Supplier.
- 6) Upon concept approval, the Supplier will be directed by the ABC Supplier Quality regarding particular or special requirements to be included with the PPAP submission.
- 7) It is expected that the Supplier will adhere to the schedule as presented within the PCR to facilitate timeliness to meet the specified PPAP approval date. Failure by Supplier to maintain proposed schedule could delay the PPAP approval.

7.4 Purchasing

In addition to the ISO 9001:2000/ TS 16949:2002 requirements, AKEBONO have the following specific requirements.

A. Supplier Selection

- 1) Formal requests are completed via a *Request for Quote (RFQ) (#ABC-F055) form* and should contain all available information necessary for an accurate quote. The RFQ may contain specifications or other critical information not found on the drawing. Suppliers must provide quotation details that include tooling quotation breakdown for quoting piece price and tooling cost respectively.
 - a. Include program name if known, tooling/production capacity in units per hour, hours per day and days per week
 - b. Include any new equipment or plant expansion if needed or planned
 - c. Include any exceptions to quality assurance specifications

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7.4 Purchasing (con't)

- 2) Prospective/ new Suppliers are required to complete and submit a *Supplier Pre-assessment Survey (#ABC-F051)* issued by ABC Purchasing. In addition, an on-site audit may be conducted by designated AKEBONO associates as appropriate.
 - a. On-site audits may be suspended if the Supplier is a customer designated source or as deemed appropriate by the ABC Supplier Quality and Purchasing Managers.
- B. Supplier Evaluation
 - 1) Suppliers are evaluated on their ability to meet AKEBONO's expectations with regard to Quality, On-time Delivery, Competitive pricing, and their ability to provide service.
 - 2) A Supplier is certified upon five (5) consecutive shipments with zero defects.
- C. Regulatory Conformity:

ISO 9001:2000/ TS 16949:2002 Requirements
- D. ISO 9001:2000/ TS 16949:2002 Conformity
 - 1) Suppliers are expected to have a quality system that is conforming to Technical Specification ISO / TS 16949:2002.
 - 2) Conformity with ISO 9001:2000 is the first step in achieving this goal.
- E. Customer designated sources

ISO 9001:2000/ TS 16949:2002 Requirements
- F. Purchasing information
 - 1) *Production Blanket Orders* will normally run until respective customer program is completed and may be renewed for additional time as business dictates. AKEBONO expects that prices will not rise for the term of the contract; however, the Supplier is encouraged to make every effort to reduce the price by continual improvement, VA/VE and other industry acceptable methods.
 - 2) Release due dates are the specified dates for arrival of shipments at the designated AKEBONO facility. Shipments implemented on a milk- run pick-up system will have a specified window.
 - a. Any shipment not ready for pick up within these windows will be charged as a late delivery or incomplete and the Supplier may be responsible for freight cost to ship by common carrier or other means as necessary to meet AKEBONO'S requirements.
 - b. Unless agreed to in writing by AKEBONO Production Control or Purchasing, quantities specified on the Production Control Releases must be exact. All containers must contain the standard quantity set up for that part. Releases will be in multiples of that standard quantity.
 - (1) Under-shipments and over- shipments may be charged as a missed delivery.
 - (2) Excessive over-shipments (above 10%) and excessively early shipments (more than two days early) are subject to return at Supplier cost.
 - 3) If ABC Purchasing deems necessary, the Purchase Order Terms and Conditions may be renegotiated.
- G. Verification of purchased product

ISO 9001:2000/ TS 16949:2002 Requirements
- H. Incoming product quality

ISO 9001:2000/ TS 16949:2002 Requirements

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7.4 Purchasing (con't)

I. Supplier Monitoring

- 1) AKEBONO requires 100% on-time delivery performance. Corrective action shall be taken when delivery requirements are not met. Suppliers shall monitor and improve their quality operating indicators including but not limited to quality performance, PPM, scrap, on-time PPAP submissions, etc.
 - a. Failure to meet acceptable delivery and quality levels can result in the loss of future business with AKEBONO.
- 2) A Supplier must notify the AKEBONO Production Control Scheduler or Buyer as soon as it appears that a shipment may be late or short of the quantity due. The Supplier may be responsible for expedited shipping costs as well as other costs when a shipment is late or short. The Supplier must maintain records of Supplier responsible premium freight cost to be available upon request.
- 3) **Quality Awards.** Suppliers are rated by commodity group and are evaluated for receipt of a quality award using the following criteria:
 - a. No Level I QCR's/ must have achieved designated quality performance targets
 - b. ISO 9001:2000/ TS 16949:2002 certified
 - c. Performed annual re-qualification of product
 - d. Achieved annual PPM target
 - e. Achieved scrap target
 - f. Achieved annual PPAP target
- 4) **Delivery Awards** criteria for selection:
 - a. Minimum of 24 shipments
 - b. Achieved 100% delivery
 - c. Obtained less than 100 points for labeling
- 5) **Supplier of the Year.** The Supplier of the Year is presented to only one outstanding Supplier each year as determined by the following criteria:
 - a. Supplier has met and/or exceeded quality and delivery requirements
 - b. Supplier has met and/or exceeded Cost Expectations
 - c. Supplier has effective communications
 - d. Supplier has excellent problem solving
 - e. Supplier has Pro-Active Planning and exceptional cooperation

7.5 Production and Service Provision

With the exception of the following, all other ISO 9001:2000/ TS 16949:2002 Requirements for this section shall be adhered to by the Supplier.

- A. Control Plan
ISO 9001:2000/ TS 16949:2002 Requirements
- B. Work Instructions
ISO 9001:2000/ TS 16949:2002 Requirements
- C. Verification of Job Set-ups
ISO 9001:2000/ TS 16949:2002 Requirements
- D. Preventive and Predictive Maintenance
ISO 9001:2000/ TS 16949:2002 Requirements

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7.5 Production and Service Provision (Con't)

E. Production Tooling

- 1) A Purchase Order for tooling will normally be accompanied by a purchase order for a specific quantity of parts manufactured or processed by the tooling.
- 2) Upon receipt of the *Tooling Requisition Order (#ABC-F054)* the Supplier will prepare a critical path schedule showing the main elements of the schedule including both START and COMPLETION dates.
- 3) The schedule must include the following elements:
 - a. Tool design
 - b. Tool build
 - c. Sample run
 - d. Data acquisition (layout, testing, etc.)
 - e. PPAP submission
- 4) The Supplier will supply AKEBONO with an updated schedule as specified during the Technical Meeting. Updates are required every other week at start-up except for the last month prior to PPAP due date. In that case, weekly updates shall be submitted.
- 5) A copy of the *Tool Acceptance Report (#ABC-F036)* will be sent to the Supplier upon final approval of PPAP.
- 6) AKEBONO tooling payment terms:
 - a. 25% on receipt of PPAP.
 - b. 50% on limited PPAP approval.
 - c. 25% on final PPAP approval after 2 production runs.
- 7) Unless otherwise negotiated, Supplier shall ensure lifetime maintenance of tooling which is included in the quote.

F. Production Scheduling

- 1) Suppliers are encouraged to have a Kanban system that supports just-in-time manufacturing
- 2) Supplier agrees to have an information system capable of providing production information at key process stages. A Supplier must notify the AKEBONO Production Control Scheduler or Buyer as soon as it appears that a shipment may be late or short of the quantity due.
- 3) Akebono expects 100% compliance to purchase orders, released quantities, and due dates.

G. Service Agreement, unless otherwise stated, Suppliers as a condition of accepting new business from AKEBONO for contracted parts or commodities shall cover service requirements for up to 15 years after the end of mass production.

H. Identification and Traceability

- 1) ISO 9001:2000/ TS 16949:2002 Requirements
- 2) Records of lot control shall be retained for a minimum of 10 years.

I. AKEBONO-Owned Property

- 1) In addition to the requirements of ISO 9001:2000/ TS 16949:2002, property owned by AKEBONO shall be identified by theme number (*reference section 4.2, Documentation Requirements*). Property includes but is not limited to tooling, gages, test equipment, inspection jigs, and dunnage.
- 2) Specific instructions will be discussed during the technical meeting.

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7.5 Production and Service Provision (Con't)

J. Preservation of Product and Packaging Requirements

Supplemental to the ISO 9001:2000/ TS 16949:2002 requirements, the following packaging specifications are required of direct material Suppliers to ensure packaging and labeling requirements are met.

1) Definitions:

- a. **Individual containers:** Any small shipping box, bag, tote, etc. containing only one part number and lot number.
- b. **Bulk Container:** A large shipping container requiring mechanical means to move them and containing only one part number.
- c. **Skid:** A collection of individual containers bound together on a pallet or other master container.
- d. **Production Materials:** Inventory controlled materials with AKEBONO part numbers used by AKEBONO to produce the products we sell to our customers.
- e. **Preproduction Materials:** Production materials ordered by Purchasing to prove-out tooling and production capability prior to start of mass production used to produce saleable product.
- f. **Prototypes:** Non-inventory controlled materials identified on an AKEBONO purchase order as "Prototype"

2) General Packaging Requirements:

- a. A Standard Number per Package (SNP) will be established for each component or raw material. Thereafter, packages containing non-standard quantities **WILL NOT** be acceptable unless specifically requested by AKEBONO Production Control or Purchasing. When approved, non-SNP containers must be clearly labeled as "partial quantity" on bar code labels. Release quantities will normally be issued in multiples of SNP.
- b. The labels, packing list, and invoice must accurately portray the quantities of each item in the shipment and in each container as well as the correct part number and purchase order information.
- c. Maximum weight per individual container is 35 lbs. unless approved in advance in writing by AKEBONO. An individual container for this purpose is one meant to be lifted by an AKEBONO associate such as cardboard box or returnable tote. This weight limit excludes bulk containers.
- d. Supplier will be responsible for loss or damage due to inadequate packaging. Packaging, including individual containers, skids or bulk containers must be sturdy enough to support the load in transit using normal transportation industry standards. If changes to packaging methods, materials, or SNP are needed to meet the above, then a revised *Packaging Data Sheet (#ABC-F045)* shall be submitted to AKEBONO.
- e. Skids should be loaded to take up the minimum amount of trailer space consistent with good shipping practices and the guidelines in this Specification.
- f. Refer to AKEBONO Facility Specific requirements for Loaded Skid Overall Size and Gross Weight.
- g. The *Packaging Data Sheet (#ABC-F045)* shall be submitted for the approval of New or Revised Packaging

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7.5 Production and Service Provision (Con't)

- h. Suppliers will submit with their PPAP, a bar code label sample for each part or raw material they supply to AKEBONO. A PRELIMINARY sheet may be submitted with the PPAP if SNP is not yet determined, but a FINAL sheet must be submitted to the Buyer before they begin shipping mass production in that packaging. If symmetrical, right and left hands of the same part may be treated as one part, but not for bar code labels. Preliminary submissions may be made at any time to the Buyer's attention, but must be followed by a Final submission or a letter stating there are no changes from the Preliminary submission. Changes may be submitted at any time to the Buyer's attention by checking the CHANGE box and changing the appropriate box on the sheet. If explanation of the change is necessary, a letter explaining the change may accompany the form. All applicable blocks will be completed.
 - (1) Upon approval, ABC Purchasing will submit a copy to the Supplier and maintain the original. If rejected, Supplier shall resubmit with the required corrections and/or modifications.
 - (2) A sample container will be supplied when practical. Refer to SECTION 7.3, PPAP.
 - (3) Returnable packaging should be used whenever practical. Returnable packaging may be provided by the Supplier or AKEBONO. Supplier will be responsible for loss or damage over and above normal wear and tear to AKEBONO supplied packaging while in their possession.
 - (4) If AKEBONO furnished returnable containers are in need of repair, return container to the AKEBONO labeled to the attention of "Material Control" and state nature of problem.
- i. Any previous identification on returnable containers must be removed or hidden prior to shipment to AKEBONO.

3) Labeling And Bar-Code Requirements

- a. For Prototype Samples labeling refer to SECTION 7.3 Prototype Program.
- b. For PPAP labeling, refer to SECTION 7.3 PPAP Submission. This also includes parts requiring receiving inspection.
- c. Pre-production materials, as designated by the purchase order will be identified with an "*Orange label*" *Stop Do Not Use for Production (#ABC-F046)* and placed on each skid or loose container. If there is more than one skid per part number the skid number will be noted on the "*Orange label*" *Stop Do Not Use for Production (#ABC-F046)* (1 of __, etc.). Pre-production materials will be shipped to the attention of the AKEBONO Supplier Quality Representative and the Buyer as stated on the purchase order for that material.
- d. For mass production parts, each shipment must include a master bar code label for each part number in the shipment included in an envelope with the packing list. A separate sheet with the required bar coded data may be substituted for the master labels if approved in advanced. (*See Facility Specifics*)
 - (1) Master labels must NOT be attached to individual containers with individual bar code labels.
 - (2) If the material is shipped on skids or pallets, a skid label for each part number on the skid is required. A skid label contains the same information as the master label but with only the quantity of the material on the skid. This label shall be placed at a minimum on two sides.
 - (3) Bar Codes must be produced using AIAG B-10 compliant, CODE 39 BAR CODES.
 - (4) Bar-coded fields must contain correct information and scan correctly. Hand written information is unacceptable. Any additional routing tags, lot traceability information, or packing tape from the Supplier must NOT obstruct the viewing of the bar code label.

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7.5 Production and Service Provision (Con't)

- (5) A bar coded skid label will be attached to the outside of each skid load indicating the quantity of materials on that skid. If the skid is a mixed load, a skid label for each part number will be attached.
 - (6) Individual and bulk containers for all production material must have bar coded labels. Bar code labels for individual non-returnable containers are to be applied to at least two adjacent sides of the container, one of which must face outward on the skid. Individual returnable totes must have at least one label facing outward on the skid.
 - (7) Refer to AKEBONO Facility Specific Requirements for additional Skid label instructions.
 - (8) Do not mix containers designated for different departments on the same skid.
- e. AKEBONO reserves the right to designate a special color for bar codes to distinguish between one or more similar parts. Individual skid label and master label designs must comply with AIAG Standard B-10 and. (*See Facility Specific*)
 - f. Service part labeling (*See Facility Specific*)
 - g. Contact the ABC Purchasing Representative if there are questions concerning labeling requirements.

K. Storage & Inventory

ISO 9001:2000/ TS 16949:2002 Requirements

7.6 Control of Monitoring and Measuring Devices

ISO 9001:2000/ TS 16949:2002 Requirements

8.0 Measurement Analysis and Improvement

8.1 General

ISO 9001:2000/ TS 16949:2002 Requirements

8.2 Monitoring and Measurement

ISO 9001:2000/ TS 16949:2002 Requirements

- A. Internal audits shall be conducted annually
- B. Layout and functional testing shall be done annually (Refer to section 7.3 PPAP Annual Recertification).

8.3 Control of Nonconforming Product

ISO 9001:2000/ TS 16949:2002 Requirements

- A. AKEBONO manufactures safety related automotive parts. Suppliers may become part of a product liability claim or suit either in whole or in part due to nonconforming product supplied to AKEBONO.
- B. Supplier should make every effort to contain and prevent nonconforming material from shipment to AKEBONO.
- C. Suppliers will be charged for sorting and/ or reworking of their product. Charges shall include but not limited to the following:
 - 1) Administrative Cost for any discrepant material received at AKEBONO.
 - 2) Any sorting/rework activity at an hourly rate including travel and shipping cost.
- D. When applicable, AKEBONO may require third-party containment at the supplier's expense.

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8.0 Measurement Analysis and Improvement (con't)

- E. At AKEBONO discretion, a *Supplier Concern Report* will be issued upon the receipt of nonconforming material.
- 1) The Supplier who is issued a Concern must take immediate containment and corrective action. A containment plan MUST be submitted no later than the date specified by the AKEBONO Supplier Quality Representative. Immediate containment is usually required by close of business or within 24 hours.
 - a. Supplier shall respond with corrective action using AKEBONO's Supplier Concern Report form or similar formats as long as all requested information and concern cross reference requirements are documented. *If a timely response is not received for the Concern, then third-party containment may be implemented.*
 - 2) Each Concern from the manufacturing facility is rated by Quality Control Rank
 - a. Safety (S-RANK) are characteristics that may affect the compliance with Federal Motor Safety Standards i.e. FMVSS 135. These characteristics may have a fatal affect on brake function and could endanger human life.
 - b. Critical (A-RANK) are characteristics designated by AKEBONO as having particular quality, reliability and durability significance.
 - c. Major (B-RANK) are characteristics that is not critical to function, but could dramatically reduce the expected performance of a product; unfavorably affect customer satisfaction or reduce production efficiency.
 - d. Minor (C-RANK) characteristics that are not classified as **S**, **A**, or **B** but reflect a deterioration from established standards.
 - 3) Each Concern is rated by Level:
 - a. Level I: When supplied nonconforming product has the ability to pass through AKEBONO's process and possibly reach the customer, these concerns require a visit to the Suppliers' facility to confirm corrective action implementation by AKEBONO Supplier Quality Representative and ABC Management as appropriate.
 - b. Level II: When supplied nonconforming product has the ability to shut down a line and not pass through AKEBONO's process, the AKEBONO Supplier Quality Representative may visit the Supplier's facility to confirm corrective action implementation.
 - c. Level III: When supplied nonconforming product is minor in nature but is considered a recurring nuisance, can be upgraded to a Level II concerns if appropriate actions are not taken.
 - 4) Supplier Containment
 - a. Identification of product shall include the Supplier using the "*Orange*" *Do Not Use for Production (#ABC-F046) label*. Supplier shall continue to identify product for a minimum of three (3) consecutive shipments unless otherwise approved by the AKEBONO Supplier Quality Representative. These parts are continually identified until permanent action has been implemented. Contact your AKEBONO Supplier Quality Representative if there are questions concerning labeling requirements.

8.4 Analysis of Data

ISO 9001:2000/ TS 16949:2002 Requirements

8.5 Improvement

ISO 9001:2000/ TS 16949:2002 Requirements



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9.0 Facility Specific Requirements

Documents listed below detail specific requirements for the following facilities of AKEBONO:

AKEBONO Brake -Glasgow 1765 Cleveland Avenue Glasgow, Kentucky 42141 Ph. (270) 678-1765	Packaging and Labeling Specification- <i>Document #ABC-F088</i> Supplier Quality Concern Notice(SQCN)- <i>Document #QAF110-1-8-07</i>
AKEBONO Brake-Elizabethtown 300 Ring Road Elizabethtown, Kentucky 42701 Ph. (270) 737-4906 Fax: (270) 737-3044	Product Preservation and Packaging Requirements- <i>Document #ABC-F087</i> Supplier Concern Report (SCR)- <i>Document #ABE-021-F1</i>