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1. Supplier Award: The supplier business award process includes a Supplier Kick-Off Meeting where PPAP (Production Part Approval Process) submission requirements are established and communicated during the business award process.

1.1 Initial PPAP conditions will be specified on ABC-F050 - Supplier Kick-Off Meeting Minutes and will include details specific to the required PPAP submission contents, the need for Sample parts, Submission date, and other unique requirements.

1.2 Additional requirements may be found in the following documents:

1.2.1 Akebono Brake Corporation Purchase Order Terms and Conditions (T&Cs)

1.2.2 Reference ABC-F139 - New Part Letter of Intent or ABC-F144 - Carry over Part Letter of Intent.

1.2.3 Akebono Supplier Quality Assurance Manual (SQAM), ABC-M002

2. Supplier APQP: Advanced Product Quality Planning shall be conducted in accordance with AIAG APQP guidelines.

2.1 Supplier will establish a cross functional APQP Team with Project Leader assigned.

2.2 Supplier shall designate a contact person who will provide detailed progress reports on project status according to timing documented on the Supplier Kick-Off Meeting Minutes.

2.3 Akebono shall be allowed on site at supplier location(s) to review and verify key milestones of the APQP process. To include but not limited to:

2.3.1 Tooling development progress,

2.3.2 Sub-supplier assessments (Sub-supplier locations)

2.3.3 Initial PFMEA and Control Plans

2.3.4 Measurement methods / Dimensional confirmations

2.3.5 Trial production runs, PPAP production runs and Run @ Rate verifications(s)

2.3.6 Readiness review for PPAP submission

2.3.7 Verification of Supplier Safe Launch procedure and conditions.

2.3.8 Scrap amount, scrap handling, rework process, other non- conforming conditions

2.3.9 Other purposes as deemed necessary

3. PPAP Documentation/Submission Requirements: Supplier is expected to provide accurate PPAP documentation with defect free sample parts produced at capacity rate, off tool / off process, and meeting all Akebono drawing requirements. Default language of documents is English. Listed below are those forms and documentation usually associated with PPAP submission:

3.1 Part Submission Warrant (ABC-F029): Customer Name, Akebono Brake Corporation.

3.2 Supplier Kick-Off Meeting Minutes and PPAP Request and Cover Sheet (ABC-F050)



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- 3.3** Supplier Profile Contact Sheet (ABC-F034). In addition to submission with PPAP, this form is to be submitted yearly each January to: abcqualityadmin@akebono-brake.com. Include active parts list at time of submission.
- 3.4** The **Akebono** issued Part Drawing shall be “Ballooned” and numbered to correspond to the items listed on the dimensional results sheet. Number drawing starting at the top left and go clockwise around each view. All dimensions and notes (including weight) on print must be included.
- 3.5** Dimensional results provided on ABC-F031 - Dimensional Results Form or AIAG compliant format. Upon request and approval, alternative reporting with VDA PPA documentation will be accepted.
- 3.5.1 Minimum 100% layout of 6 parts or 1 piece per cavity on a multi-cavity tool.
- 3.5.1.1 Note dimensional layout report must include weight of 6 parts or 1 part per cavity in case of multi cavity tooling. Weight is to be the first item reported. Reference calculated weight is listed in title block as nominal value. Reported weight results are to be carried out one decimal place for items less than 1000g while nearest whole value above 1000g can be reported. For bulk material items, report weight of 6 containers. Above can be waived with consent of Akebono SQA
- 3.5.2 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. In case of dispute, Akebono method is deciding method to be used
- 3.6** Initial Capability Studies are required on Key characteristics (such as: Δ \diamond ∇) as designated on part drawing, On-going capability studies are designated on the drawing or by ABC Supplier Quality. Supplier shall monitor SPC results to achieve appropriate short term / long term indices requirements. Contact ABC Supplier Quality for non-dimensional (e.g., destructive test) items that need special consideration.
- 3.6.1 Additional characteristics (Including Customer Specified) may be identified for Capability studies and/or ongoing quality control requirements and will be documented on Safe Launch/Post Launch Plan and/or noted on Supplier Kick-Off Minutes.
- 3.7** Suppliers may use their own analytical technique, however Mini-tab® is preferred.
- 3.7.1 A 125 piece minimum is required, unless otherwise specified.
- 3.7.2 Follow the AIAG PAPP and SPC manual format. For example; 25 subgroups x 5 pcs. / sub-group. Sampling must be rational and items pulled from entire production run. Recommend part identification be relative to sequential order of production and traceability being considered in case abnormal results are obtained and corrective action is needed.
- 3.8** Material Reports and Supporting Documentation:
- 3.8.1 Material Reports are required to:

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- Confirm (validate) that material related aspects on the drawing are met.
- Validate part conformance to the appropriate standards for chemistry, hardness, microstructure, mechanical properties, plating, corrosion resistance, etc. as noted on the drawing.
- List requirements and results; must indicate acceptable (pass) or unacceptable (fail).
- Use the AIAG format, ABC-F032, or similar in reporting material/performance test results.

3.8.2 Supporting documentation is required for:

- Material Certifications from raw material supplier
- Heat Treatment Certification
- Plating/ Coating Certifications including actual thickness results and Photos of parts at beginning and each milestone relative to white/red rust requirements etc.
- All applicable AIAG CQI assessments including those from sub-suppliers.

3.9 Gage R&R Studies.

- 3.9.1 Unless otherwise agree upon Gage R&R studies shall be conducted using Anova (Analysis of Variance) method. Usually the number of distinct categories is 5 min. unless Process Ppk is greater than 2.5. Report to % study and % tolerance. Contact Akebono SQA if % study variation is greater than 10%.
- 3.9.2 Gage studies shall be provided on all (family) gaging/inspection equipment used for variable data for dimensions identified as “Key” and on Safe Launch Plan as well as studies on all applicable attribute gages.
- 3.9.3 Where concurrent PPAPs are being submitted of similar parts using same inspection equipment, surrogate data may be used for Gage R&R.

3.10 Safe Launch Plan:

- 3.10.1 A Safe Launch Plan will be developed by and agreed upon as a cooperative effort between Akebono and Supplier.
- 3.10.2 Safe Launch requirements are in addition to the requirements of Pre-Launch Control Plan and all checks are to be performed is “off line”, In a designated controlled area
- 3.10.3 Supplier may be required to provide copies of each I-Chart as each of the required Safe Launch lots are shipped.
- 3.10.4 Responsible SQA will determine, based on results accumulated during Safe Launch period, when Supplier may exit Safe Launch Mode and follow the Production Control Plan exclusively.
- 3.10.5 Safe Launch plan also dictates requirements for Post Launch (Requirements for ongoing Quality Control) of Production parts.



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3.10.6 Each Safe Launch lot (as well as each Receiving inspection lot) shipped to Akebono are expected to individual production runs (new set-up)

3.11 Declaration of Conformance for Restricted and Reportable Substances.

- A “screen shot” of IMDS Submissions are to be included with all PPAP submissions (**see section 7.4.1.1 of SQAM Manual**)

3.12 Capacity Planning will be performed and supplied to Akebono on all new parts as well as current parts where additional volume has been awarded:

- Supplier will provide an “estimated Run @ Rate Study (ABC-F052) based on current comparable parts, known cycle times or other assumptions” for the Quoted capacity. Sections 1 and 2 must be completed at a minimum. This study will be submitted to Launch SQA by timing indicated on Supplier Kick-Off Minutes.
- Production Rate Readiness will be confirmed with Run @ Rate on actual part conducted by supplier with Initial PPAP or as agreed upon timing. Run @ Rate 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.
- 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.
- Run @ Rate studies may be verified on site by ABC.

3.13 Sub-Supplier Documentation includes PPAP approval by your organization and a copy of the Sub-Supplier’s ISO 9001/ IATF 16949 certificate including copies of all applicable AIAG CQI assessments including those from sub-suppliers

3.14 Lay-out sample parts from PPAP run may be required by Akebono to verify and /or correlate measurements. Identify PPAP samples to correspond to the dimensional results provided with PPAP.

3.15 Other documentation and requirements specified on Supplier Kick-Off minutes.

3.16 Supplier may be required to provide additional documents as the product realization process advances.

3.17 Labeling & Packaging Requirements

3.17.1 PPAP submission parts shall be identified with the “Special Handling Required (ABC-F046) label, printed or copied on “ORANGE PAPER” to the attention of the appropriate AKEBONO Supplier Quality Representative.

3.17.2 “Special Handling Required” label is not a substitute for but an addition to the standard Bar Code Labels.

3.17.3 Labels shall be placed on each skid or individual containers on adjoining sides at a minimum.

3.17.4 PPAP Samples must be shipped on a separate skid; they must not be combined with any production approved materials.



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- 3.17.5 If there is more than 1 (one) skid per part number, the skid number will be noted on the “Special Handling Required” label. (Example: 1 of 2)
- 3.17.6 One (1) master label for each part number in the shipment will be included in an envelope with the packing list.
- 3.17.7 Questions relative to labeling requirements should be directed to Plant Site SQA or Launch SQA
 - o Special Labeling will be required until notified by receiving Akebono Plant SQA to discontinue use and use standard bar code labels only.
- 3.17.8 Refer to ABC W094 for additional information

3.18 Delivery and Identification

- 3.18.1 PPAP parts must be identified, shipped, and delivered in accordance with the Purchase Order requirements and special labeling as specified above.
- 3.18.2 Suppliers are required to provide advanced shipment notification via fax, phone or electronically. It is supplier responsibility to insure Akebono receiving plant has acknowledged notification prior to shipment.

3.19 Forms and Documents

- 3.19.1 Akebono APQP / PPAP submission forms as well as specific Akebono Specifications will be provided to Supplier on request.

3.20 PPAP Approval:

- 3.20.1 **PPAP submissions** are normally approved in a 2 stage process. Interim Approval followed later in confirmation process with Full Approval
- 3.20.2 **Interim Approval** is granted via PSW (Part Submission Warrant) when any and or all of the following have been satisfied:
 - o Acceptable PPAP Documentation package submission.
 - o Required PPAP parts are delivered to using Akebono Plant site.
 - o Dimensional and Material conformance may be required
 - o Any other requirements specified at supplier kick-off meeting (ABC-F050)
 - o Quantity or duration for interim approval should be stated on PSW. If not, please contact authorizing person on PSW to clarify. Additional shipments above or beyond that stated on PSW, required re issuance of the interim PSW by Akebono SQA.
- 3.20.3 **Full Approval** is granted via PSW when any and/or all of the following have been satisfied:
 - o Plant site dimensional and/or Material verification



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- Required numbers of lots have passed Akebono Receiving Inspection process.
- All conditions as specified on Interim Approval PSW have been satisfied.
- All Akebono functional / PV testing has been completed successfully.
- Receiving Inspection may be required for an additional number of lots as specified by Akebono Quality, albeit full approval has been granted, to meet Akebono requirements.
- Additional Safe Launch containment and inspection activities may be required after Full Approval is granted to meet Safe Launch Submission requirements.

3.20.4 PPAP Rejections: Rejection may occur due to any, but not limited to, the following:

- Non-conforming dimensional or material conditions, including functional test failures.
- Incomplete or inaccurate PPAP documentation.
- Failure to comply with requirements per Akebono Brake Corporation Purchase Order Terms and Conditions, Akebono SQAM and requirements listed on Supplier Kick-Off minutes.

4. Annual PPAP Recertification:

- 4.1.1 Akebono Suppliers are required to maintain, at supplier location, a complete and updated Level III PPAP at all times which includes a Dimensional Layout Report less than 13 months old.
- 4.1.2 Supplier, shall be prepared to submit Level III PPAP (or other level as specified) to Akebono at any time deemed necessary.

5. Change Management: Changes after initial PPAP approval shall follow the steps of section 3 under the following conditions.

5.1 The need for a PPAP submission will be triggered by one or more of the following:

- 5.1.1 Additional business awarded for a current production supplied part to be incorporated on a new platform.
- 5.1.2 Drawing Changes (Revision level changes, Pre-Production to Production level drawing releases, drawing number changes.)
- 5.1.3 Material changes, Process changes, Sub-Supplier changes and other changes as specified by current A.I.A.G PPAP Manual.

5.2 Change control and communication methods include the following controls:

- 5.2.1 New Part Drawings and Changes to Drawings are communicated to Supplier via ABC-F048 - Akebono Drawing Notification & Acknowledgement Form. This document ***must*** be signed returned to Akebono ***within 3 business work days***.
 - New IMDS submission for drawing changes will normally be required.



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- Note: AES G0002 has additional information for IMDS submissions to Akebono. IMDS entry must not preliminary (draft) otherwise IMDS will be NOT processed to Akebono.

5.2.2 PPAP Submission level requirements for changes are captured using the quality Submission requirements section found on page three (3) of ABC-F050 - Supplier Kick-Off Meeting Minutes form. In case of authorized changes, requirements for submission can be found on ABC-F183 - Change Point Kick-off Meeting form.

6. Reference

- 6.1** MiniTab is licensed product of Minitab; <http://www.minitab.com/>
- 6.2** VDA: German Association of the Automotive Industry (Verband der Automobilindustrie) <https://www.vda.de/en/>
- 6.3** IMDS is International Material Data System; <http://www.mdssystem.com/>
- 6.4** ISO is International Organization for Standardization; <http://www.iso.org/>
- 6.5** AIAG: American Industry Action Group; <http://www.aiag.org/>
- 6.6** IATF: <http://www.iatfglobaloversight.org/oem-requirements/customer-specific-requirements/>
- 6.7** AES G0002 – Akebono Engineering Standard - IMDS Instructions for Akebono Suppliers
- 6.8** ABC-W094 - Regional Packaging and Labeling Requirements
- 6.9** ABC-M002 SQAM Supplier Quality Assurance Manual
- 6.10** *Akebono USA Website* : <http://akebonobrakes.com/>

7. Records and Documents

- 7.1** ABC-F029 - Part Submission Warrant
- 7.2** ABC-F031 - Dimensional Results Form
- 7.3** ABC-F032 - Material/Physical Properties Lab Summary
- 7.4** ABC-F034 - Supplier Contact Profile
- 7.5** ABC-F046 - Special Handling Required label
- 7.6** ABC-F048 - Akebono Drawing Notification & Acknowledgement Form



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7.7 ABC-F050 - Supplier Kick-Off Meeting Minute Form

7.8 ABC-F052 - Run @ Rate Study

7.9 ABC-F062 - Environmental Compliance Report

7.10 ABC-F139 - Reference new Part Letter of Intent

7.11 ABC-F144 - Carry over Part Letter of Intent

7.12 ABC-F183 - Change Point Kick-off Meeting form