Supplier Quality Manual

Revision 0

2016

We shall contribute to the future of mankind by the continuous creation of new value.

- ***We shall challenge ourselves to any matter with ambition and vitality***
- ***We shall give importance to theory, ideas and time.***
- ***We shall respect sincere conduct and endeavors.***

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Table of Contents

1.0 INTRODUCTION 3
1.1 Purpose 3
1.2 Scope 3
1.3 Acronyms 3
2.0 GENERAL REQUIRMENTS 4
2.1 Contact Information 4
2.2 Registration 4
2.3 Continuous Improvement 4
2.4 Record Retention 4
2.5 Sub-Supplier Control 4
3.0 QUALITY SYSTEM 4
4.0 ADVANCED QUALITY PLANNING 5
5.0 QUALITY PROCESS DOCUMENTATION 5
5.1 Past Problem History 5
5.2 Process Failure Mode & Effect Analysis 5
5.3 Process Quality Control Table 5
5.4 Operation Standards 6
5.5 Process & Equipment Check Sheets 6
5.6 Training 6
5.7 Trial Maturation Results 6
5.8 Minimum Process Requirements 7
6.0 QUALITY PROCESS CONTROL 7
6.1 First Piece Confirmation and Retain 7
6.2 Poka-Yoke & Inspection Devices 7
6.3 EP100 7
TABLE A - Basic Development Flow 10
7.0 PACKAGING AND LOT CONTROL & TRACEABILITY 11
7.1 Packaging and Lot Control Sheet 11
8.0 PROCESS CAPABILITY DATA COLLECTION / SUBMISSION 11
9.0 MEASURING AND TEST EQUIPMENT 12
9.1 Calibration 12
9.2 Measurement System Analysis 12
10.0 QUALITY ASSURANCE VISIT 12
10.1 Initial Evaluation 12
10.2 QAV1 – Development Evaluation 13
10.3 QAV2 - Trail Readiness Evaluation 13
10.4 QAV3 – Approval Evaluation 13
10.5 Quality Approval Notification 13
10.6 Special Audit – Continual Improvement Evaluation 13
11.0 NONCONFORMING MATERIAL 14
11.1 Nonconforming Material at the Customer 14
11.2 Advanced Notice 14
11.3 Disposition / Sort / Rework 14
11.4 Corrective Action 15
11.5 Corrective Action System 15
11.6 Costs of Nonconforming Material 15
12.0 QUALITY WAIVER/DEVIASION 16
13.0 CHANGEPOINT CONTROL SYSTEM 16
13.1 Initial Production Parts Advance Approval Request (IPPAAR) Procedure 17
13.2 IPPAAR Planning 17
13.3 IPPAAR Supporting Documents and Approval 17
IPPAAR Change Point Approval Flow 19
13.4 Identify the First Lot for IPP Tag 19
13.5 New Model IPP Shipment 19
14.0 MARKET / WARRANTY QUALITY 20
15.0 SUPPLIER QUALITY RANKING 20
15.1 Determine Supplier Class Ranking 20
15.2 Quality Improvement Program (QIP) 20
16.0 REQUIRED DOCUMENTATION FOR ANNUAL SUBMISSION 20
17.0 QUALITY REGULATION REVISIONS 21
18.0 ACKNOWLEDGMENT 21

1.0 INTRODUCTION

1.1 Purpose

This Keihin Supplier Quality Manual (the “Manual”) defines the basic quality requirements/standards for companies supplying material to Keihin North America, Inc. ("KNA") as agent for its subsidiaries Keihin IPT Mfg., LLC ("KIM"), Keihin Carolina System Technology, LLC ("KCST"), Keihin Aircon North America, Inc. ("KAC") and Keihin Michigan Manufacturing, LLC ("KMM"); hereafter KNA, KIM, KCST, KAC, KMM collectively sometimes may be referred to the "Keihin Companies", “Customer”, or “the Customer”. All sales by the Supplier to each of the Keihin Companies shall be covered by this Manual.

Assuming the Supplier and KNA have executed the KNA Supply Agreement, if there is any inconsistency between the Supply Agreement and this Manual, the Supply Agreement shall control.

As a condition of sales to the Keihin Companies, the Supplier acknowledges and agrees to achieve or implement a system to achieve: (1) 100% on time delivery; (2) zero defects in all products sold to Keihin Companies; (3) immediate and complete failure analysis and countermeasures; (4) an aggressive cost containment policy; (5) a continuous improvement system; (6) products/services that are environmentally conscious in accordance with KNA policies.

1.2 Scope

Where KIM, KCST, KAC, KMM is the Customer, KNA has authority to act on its behalf.

Through the remainder of this Manual, the Supplier shall be referred to as "Organization" or “the Organization”.

Through the remainder of this Manual, any entity receiving products from Keihin Companies will be referred to as “Subsequent Customer” or “the Subsequent Customer”.

This Manual shall apply to all parts, components, raw materials, etc. that are intended for use in the Keihin Companies’ or the Subsequent Customers’ manufacturing processes.

The requirements contained herein are part of the purchase agreement and supplemental to any other purchase terms, conditions or specifications. No action taken by the Customer or the Organization shall relieve the Organization of the responsibility to supply useable product that conforms to all purchase orders, agreements, quality agreements, prints, and requirements.

Organizations are encouraged to use the Customer-supplied forms, however, alternative forms maybe be used providing they contain all required information and are approved by the Customer prior to use.

http://www.keihin-na.com/suppliers

1.3 Acronyms

GR&R - Gage Repeatability & Reproducibility
IPP - Initial Production Parts
IPPAAR - Initial Production Parts Advanced Approval Request
KCM - Keihin Change Management
LNDD - Lot Number Display Detail
MCS - Machine Check Sheet
MPR - Minimum Process Requirements
MSA - Measurement System Analysis
OEE - Overall Equipment Effectiveness
PFMEA - Process Failure Mode & Effects Analysis
PLCS - Packaging & Lot Control Sheet
PPH - Past Problem History
PPLH - Parts Per Labor Hour
PQCT - Process Quality Control Table
QAN - Quality Approval Notification
QAS - Quality Assurance System
QAV - Quality Assurance Visit
QCS - Quality Check Sheet
QCSS - Quality Characteristic Summary Sheet
QIP - Quality Improvement Process
QLVS - Quality Level Verification Sheet
QMP - Quality Maturation Plan
QSD - Quality System Database
SPQ - Supplier Part Quality
TMR - Trial Maturation Results

KAC - Keihin Aircon North America, Inc.
KCST - Keihin Carolina System Technology, Inc.
KIM - Keihin IPT Mfg, LLC.
KMM - Keihin Michigan Manufacturing, LLC.
KNA - Keihin North America, Inc.

2.0 GENERAL REQUIRMENTS

2.1 Contact Information

All Organizations must submit contact information in its entirety and return it to their respective Supplier Part Quality representative. The Organization's primary quality contact information shall be the contact who will respond to any quality inquiries. Additionally, the Organization shall provide an organizational chart including senior management with phone numbers.

2.2 Registration

The completed contact information will allow registration of the Organization to have access to review supplier quality rating and non-conformances. For further information and assistance in the registration process refer to SPQ representative.

2.3 Continuous Improvement

The Organization shall continually improve quality, cost, delivery and other services provided. Continuous improvement efforts shall include error-proofing methods in an effort to further reduce defects, part variability, and processing cost.

2.4 Record Retention

The Organization shall establish a documented procedure to define the controls needed for the identification, storage, protection, retrieval, retention and disposition of records. Records shall remain legible, readily identifiable and retrievable. The control of records shall satisfy statutory, regulatory and customer requirements.
Key Record Retention Schedule:

Record Type	Retention Time
Development (SAP, Project Planning)	15yrs
Training	15yrs
Manufacturing / Traceability	20yrs
Change Point Control (IPPAAR, IPP)	15yrs
Nonconforming / Corrective Action	10yrs
Quality Documentation (PQCT, MCS, QCS)	20yrs

This is a list of key record and their retention schedule. For a complete list of record types and current retention schedule consult the Customer SPQ representative.

2.5 Sub-Supplier Control

The Organization shall be responsible for Sub-Supplier Control and the quality of components supplied by sub-suppliers and shall enter into similar agreements.
The Customer and Subsequent Customer reserves the right to request and perform on site visits at sub-supplier to confirm manufacturing conditions, manufacturing changes or as a result of nonconforming product reaching the Customer.
The Organization is responsible for all sub-suppliers' lot control / traceability. Sub-suppliers' lot control / traceability is periodically audited by and clearly understood by the Organization. The Organization must ensure that the sub-suppliers' procedures are established in a method that enables lot control / traceability information to be easily obtained.

3.0 QUALITY SYSTEM

The Quality System requirements are based on the latest edition of IATF16949/ISO9001 and Customer-specific requirements. Environmental Systems Requirements are based on the latest edition of ISO14001.
The Organization shall be responsible for planning, implementing and maintaining a Quality System that conforms to these standards.
The Customer and Subsequent Customer reserve the right to audit and assess the Organization's conformance to the standard regardless of the Organization's registration status.
The latest revision of this Manual and its referenced forms will be available on the Customer's website. It is the Organization's responsibility to maintain and comply with the latest version of this Manual. This Manual is subject to change by the Customer.

4.0 ADVANCED QUALITY PLANNING

The Organization shall be responsible for planning, generating, implementing, and maintaining a Quality Assurance System (QAS).

The QAS shall assure the production of parts that conform to all specified requirements. These requirements shall include the following:

- Verification of compliance to all standards, procedures, and quality requirements
- Systems to prevent the production of nonconforming parts
- Defining and recording of quality problems
- Implementation of timely and effective corrective actions

The Organization shall establish a Quality Maturation Plan, (QMP), which shall be a system of tracking the development of Supplier's Quality System status. The QMP shall be developed and maintained by Supplier for each new part or model development. Consult the supplier quality representative for the minimum tooling maturation level requirements for each new model trial build.

The QMP shall show development / testing schedules for the following items:

- Trial and / or production schedules, including EP100 (Section 6.4)
- Tooling / machine / equipment, purchasing and development schedules
- Part testing / qualification plans
- Quality document / systems implementation schedules

The Organization shall reference the **09.01.01.07.01 QMP** on the KNA Quality Portal under “Forms” for the Quality Maturation Plan document, and also below Table A for the documentation timing and basic development flow.

5.0 QUALITY PROCESS DOCUMENTATION

The Organization must have a documented process that describes how quality system documents (i.e. QMP, PFMEA, PQCT, QA Matrix, OPSTD’s, etc.) are created, controlled, approved and revised. This system shall be linked to the Change Point Control and Corrective Action procedures.

The Organization is required to inform the Customer of any changes made to the quality documentation after mass production start via IPPAAR approval (Section 13).

The Organization shall develop and maintain the following Quality documents for each new part / model to aid in the development of the part and associated Quality systems.

These documents shall be:

- subject to Customer review during QAVs,
- submitted to the Customer for approval prior to mass production of the related part(s), and
- available for review upon Customer request.

5.1 Past Problem History

The Organization shall identify, summarize and periodically review past problems related to the product / process in the Past Problem History (PPH) form. Issues to be confirmed include customer and market trouble reports and in-house rejects for all global operations of similar products / processes. All history of high severity issues (A rank) and recent history (3yrs) for lower severity items (B and C rank) must be included.

PPH must be incorporated into the quality system documents (PFMEA, PQCT, OpStd, etc.) and countermeasure effectiveness confirmed at each trial build event.

The Organization shall reference **09.03.01.01.06 PPH** on the KNA Quality Portal under “Forms” for the Past Problem History document.

5.2 Process Failure Mode & Effect Analysis

The Process Failure Mode & Effect Analysis (PFMEA) shall identify all potential failure modes, severity and detection of defects in the manufacturing process. The results of the PFMEA shall be reflected in the Organization's quality planning, such as, but not limited to, the PQCT, OpStd and the QMP.

The Organization shall reference **09.03.01.07.02 PFMEA** on the KNA Quality Portal under “Forms” for actual Process Failure Mode Effects Analysis documents and instruction sheets.

5.3 Process Quality Control Table

The Process Quality Control Table (PQCT) shall identify all part controls (material, dimensional, functional, etc.) and all process controls (temperatures, feed rates, pressures, etc.) in the manufacturing process. The PQCT must be based on the PFMEA and used as the basis for operation standards.

The Organization shall reference the **09.03.01.01.07 PQCT** on the KNA Quality Portal under “Forms” for actual Process Quality Control Table documents and instruction sheets.

5.4 Operation Standards

The Organization shall create an operation standard for each distinct job process. The OpStd shall be linked back to the PQCT.

Operation standards shall be controlled documents and on hand near the work covered by the standard. Operation standards do not have to be on display at all times, but they shall be accessible by operators in seconds, not minutes. The Organization must have a documented procedure for the creation, control, approval & revision of operation standards.

Operation standards shall include:

- list of materials and components;
- description of process steps and sequence;
- list of tools/measuring equipment to be used in the process
- description of process settings;
- part specifications;
- lot control, first in-first out, or labeling requirements;
- critical points in the process, including failure modes if operation standard is not followed;
- limit samples, master samples or poka-yoke samples;
- abnormal handling procedures;
- control points from past problem history (PPH);

5.5 Process & Equipment Check Sheets

Detailed check sheets shall be created and implemented for recording (in writing or electronically) quality checks, equipment parameters and verification of process controls including alarms, preset wrenches, poka-yokes, etc. Check sheets shall be completed at the beginning of each shift and after any process change including maintenance, or as described in the PQCT.

All operator checks shall be recorded. Where possible, entries to the records should be quantifiable (e.g. actual numbers) rather than 'OK' or a checkmark.

Any time data is found to be outside specified requirements, there shall be evidence the condition was recognized and a clear record of who, when, and what action(s) was (were) taken.

5.6 Training

The Organization must have a documented procedure for training, qualification and re-qualification of associates using predetermined objective criteria. Training records shall be maintained, including a training matrix of associates and which stations they are trained on.

Training shall include start up (including quality checks, machine checks, poka-yoke checks, etc.), normal processing, change point control, handling suspect/non-conforming material, abnormal handling, repair/rework, recovery and shutdown.

The Organization must have a documented procedure for when it is necessary to use an associate that is less than fully qualified. This procedure must include required safeguards, data collection and approval requirements.

5.7 Trial Maturation Results

The Trial Maturation Results sheet, (TMR), will be used in conjunction with the QMP to track the development and results of the Organization's trials, including any concerns, causes and resultant countermeasures.

Organization shall reference the **09.03.01.01.08 TMR** on the KNA Quality Portal under "Forms" for the Trial Maturation Results documents and instruction sheets.

5.8 Minimum Process Requirements

The Customer requires the Organization and its sub-supplier's to meet minimum process requirements (MPR). These requirements present the controls and methods that are required for manufacturing parts to prevent future process related defects. The MPR's shall be reflected in the PQCT and the PFMEA. The MPR's will be evaluated during QAV1and QAV2 (Section 10). If a supplier cannot meet the requirements, they shall submit a concern in writing to SPQ. The concern will be reviewed by SPQ and an agreement will be reached. If an agreement cannot be reached; the issue will be escalated to the Customer's management.

This procedure applies to the following processes:

- Casting
- Stamping
- Injection Molding
- Wire Harness
- Heat Treatment
- Fluid Fill
- Label
- Leak Test
- Torque
- Machining
- Electronics (Printed Circuit Boards)
- Welding (Projection, Mig, Resistance)
- Wire Harness
- Error Proofing
- Hot Plate Welding
- Painting
- Part Marking

Organization shall reference the **09.01.01.07.## MPR** on the KNA Quality Portal under "Minimum Process Requirements" for the Minimum Process Requirements documents.

6.0 QUALITY PROCESS CONTROL

6.1 First Piece Confirmation and Retain

The Organization shall have a documented system whereby the first production part after any equipment changeover, tooling or fixture change, shift or other personnel change, etc. is reviewed and approved.

For Plastic or Rubber Molding (including injection and extrusion), Machining, and Casting, the first approved part from each discrete production run shall be identified and retained. At a minimum, the part shall be retained until an approved part is produced on the next subsequent production run.

For Stamping, the last piece from each discrete production-run shall be identified and retained. At a minimum, the part shall be retained until and approved part is produced on the next subsequent production run.

6.2 Poka-Yoke & Inspection Devices

The function of each poka-yoke shall be confirmed periodically, based on the relative importance of the condition the device checks. The frequency and method shall be documented on the PFMEA (if applicable), the PQCT, and the operation standard and/or equipment check sheet.

Each device shall be confirmed independently of other devices for both positive (device detects abnormality intended) and negative (does not alarm for non-abnormality) results.

Master parts used for confirming poka-yoke devices shall be approved by appropriate authority, uniquely identified and labeled for intended use, issued and stored in designated locations, and inspected periodically. A log shall be maintained of all such master parts.

Completion of a poka-yoke confirmation shall be recorded. An attempt that is unsuccessful shall trigger a response to be defined by the supplier's policies regarding Suspect and Nonconforming Parts.

An attempt that fails initially, but is successful in multiple attempts thereafter, shall still be considered a failure unless and until the situation is reviewed by appropriate authority.

6.3 EP100

EP100 is a production simulation event to provide early verification of process maturation and capability of meeting mass production targets to help ensure a smooth startup. The EP100 verification process applies to new model projects and significant mass production change points. Keihin's SPQ representative will determine if EP100 is required.

EP100 Planning

Establish the timing for EP100 verification and enter it on the QMP and project SAP during project development. EP100 should occur at least two months prior to the first MP-level customer trial for NM (E2 for MP change points).

The Organization will utilize the Capacity Planning / Confirmation form to estimate targets for CT/DT/SR/OEE prior to Die-Go / Maker Layout. These targets will be verified at each trial build and finally at EP100. By EP100 the Organization's process must meet or exceed the targets set. If the Organization's process does not meet the set targets explanation must be submitted to the Customer's purchasing representative.

Set the EP100 verification quantity. Reference the commodity matrix (Appendix A) for minimum quantities. Any deviation from minimum quantity must be approved by the SPQ representative.
The team should have a minimum of two training builds prior to EP100, one for equipment verification and one (or more) for associate training maturation.
Communicate EP100 quantities and requirements to sub-suppliers to ensure an adequate number of MP level supplied parts are available at EP100. Monitor sub-supplier progress and report any concerns to SPQ as soon as possible.

Expectations for EP100 Event and Reporting:

- **Tooling and Equipment:** MP level with preventative maintenance plan and spare parts list established, safety confirmation complete, MP cycle time achieved and quality requirements met.
- **Supplied Parts:** tooling and part quality at MP level.
- **Associates:** Associates fully trained using MP level documents and processes (no temporary processes)
- **Documents:** MP level, controlled and available on line (PFMEA, PQCT, OPSTD's, MCS/QCS, Visual Aids, etc.)
- **Measurement:** MP level QA equipment, with MSA complete, masters developed and calibration plan established. Data collection plan for Key Performance Indexes established with correlating targets.

  * If maturation levels are not met, schedule additional EP100 verifications as necessary to ensure proper maturation.

Do

Assign roles and responsibilities for the EP100 Team. Suggested Roles and Responsibilities for verification are:

- ENG – Die and Equipment Condition (MP level)
- MFG – Associate Condition (Head count & MP level)
- MFG – Performance Verification (Cycle Time / Down Time / Straight Rate / OEE)
- QA – Quality Verification (Cpk)
- S.Mgr – Overall Evaluation

Establish a data collection plan for EP100 performance verification. Identify resources to ensure proper data collection is achieved during EP100. Establish a plan for collecting sample pieces for quality verification. Quality data (n=30 minimum) should be collected from the last 100pcs of the build. Performance data shall be taken for each process. Summarize findings on the Trial Maturation Results.

Action

Develop an action plan for concern items identified during EP100 verification audit and record countermeasures on the Trial Maturation Results. Review root cause analysis and proposed countermeasures with SPQ representative for approval. Review the status of countermeasures during regularly scheduled team meetings. Follow up on the EP100 verification action plan. EP100 Verification is not complete until all action items have been implemented and judged effective by SPQ.
Prepare EP100 Summary Report per Appendix B.

Appendix A: Commodity Matrix MIN Quantities		
Process	**Category**	**Guideline**
Molding	Die cast	500 pcs / 1 shift
	Molding	500 pcs / 1 shift
Machining	Precision	Cutting Tooling Change Frequency
	General	500 pcs / 1 shift
Assembly	Light Assembly / Electronics	200 pcs / 2hrs

Appendix B: EP100 Report Content Requirements			
No	**Verification item**	**Report material**	**Viewpoint**
1	Overall SAP	·SAP ·Production Preparation Plan ·Quality Maturation Plan	Is the project progressing as planned?
2	1. Tooling & Equipment 2. Process Flow	·Casting, Machining and Assembly flow ·Tool & Equipment verification result ·Production capacity (Cycle Time, Down Time)	Is MP flow established with no temporary processes/equipment? Does equipment meet requirements?
3	Quality Assurance Control	·Quality Assurance System ·Past Problem History Reflection	Are all planned Quality Systems in place with no temporary processes? - It is possible to report as process flow
4	Sub-Supplied Parts	·Sub-Supplier approval status	Is there any issue with supplied parts?
5	1. MFG Control Documents 2. Associate Training	·PFMEA, PQCT, QA Matrix ·Documentation creation status ·Associate Training Status	Are Manufacturing Control documents and Associates at MP level?
6	1. Process Performance 2. Capability	·Straight Rate, Pass/Fail Ratio ·OEE, Parts / Labor Hr (PPLH) ·Process Capability	Was there any trouble at the EP100 Event?
7	Concerns and Open Items	·Concerns / CM's ·Production Concern Items & Trouble	Are all concern items identified with clear, timely countermeasures?

TABLE A - Basic Development Flow

Basic Development Flow

RASIC
Responsible
Acccountable
Support
Inform
Consult

RASIC	CONFIRMATION ITEM (See quality manual for complete descrition of requirements)	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
		Year 1					Year 2												Year 3										
		-105	-101	-97	-92	-88	-83	-79	-75	-70	-66	-62	-57	-53	-48	-44	-40	-36	-31	-27	-22	-18	-14	-9	-5	-1	4	7	10
[redacted]	Keihin Dev. Schedule -					DO				TS			IA								DF					MPG			PR
	QAV Schedule -				Initial			QAV1						QAV2						QAV3					QAN				
	Tooling Level Required -									PT				T2			T3		MP										
	Project Build Schedule -										P0			P1			P2		P3	EP100	L1	L2		L3	L4			MP	
R S	**QUOTING AND MAKER LAYOUT** Quaoting and maker layout process					RFQ							Maker Layout																
R S	**QUALITY MATURATION PLAN** Quality based action plan to align with customer requirements for audits, critical controls, problem prevention and training.							Supplier QMP																					
R R S	**INSPECTION STANDARD** Use Keihin issued bubble dwgs and QCSS. Determine CCP measurement method and the inspection frequency to guarantee in spec parts ship to the customer.							QCSS		CCP 5pcs	CCP 30pcs			Trial Data			Trial Data		Trial Data		Trial Data	Trial Data		Trial Data				MP Data Handling	
R R S	**QUALITY ASSURANCE VISIT** Keihin visits to the supplier to judge current process readiness. QAV1 judge supplier capability to meet Keihin requirements. QAV2, judge process is MP level and ready for trials. QAV3, judge process ready for MP.				Initial Eval			QAV1						QAV2						QAV3					QAN				
R I	**DESIGN FMEA** Analysis for critical control points to be used to develop PFMEA, Equipment specs, and Quality controls.												Draft Documents							Updated Documents				Final Documents					
R I	**PROCESS CONTROL PFMEA / PQCT** Develop process failure modes and process controls to prevent in-house failures reach the customer. All process controls reflected to on-line quality documents, Work Instrcutions, Machine Check Sheets, Quality Check												Draft Documents							Updated Documents				Final Documents					
R I	**MINIMUM PROCESS REQUIRMENTS** Keihin minimum requirements for specfic types of manufacturing. These requirements capture the controls and methods that are needed for manufacturing to prevent process related defects.				Review								Draft Documents							Updated Documents				Final Documents					
R I	**PAST PROBLEM HISTORY** Review previous problems (Market and Line Claims) and develop methods to prevent these issues from reoccuring.												Draft Documents							Updated Documents				Final Documents					
R I	**TRACEABILITY / LNDD** Confirm traceability of units produced and components used.												Draft Documents							Updated Documents				Final Documents					
R I	**GAGE DEVELOPMENT** Gage concept approval and Gage MSA												Draft Documents							Updated Documents				Final Documents					
R I	**TRAINING** Develop and implement a technical training plan for QA associates to assure complete understanding of QA equipment, proper usage, and QA methods for smooth trial and start up quality and customer claim												Draft Documents							Updated Documents				Final Documents					
R I I S	**PACKAGING SPECS** Confirm proper packaging spec. PLCS												Draft Documents							Updated Documents				Final Documents					
R S S	**EP100** Confirm MP process by evaluating that Cycle time, Direct Ship Rate, Defect Rate, Product Confirmation, etc. meet project targets as a result of MP quality maturation.																			EP100									

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7.0 PACKAGING AND LOT CONTROL & TRACEABILITY

The Organization shall establish a comprehensive system that ensures traceability from end product supplied to the Customer continuing back through supplied product to the Organization. All product supplied to the Customer must be clearly identified on a bar coded label with the following information unless otherwise specified by the Customer:

- Part Number and Part Name
- Quantity
- Organization Name, City and State
- Serial Number

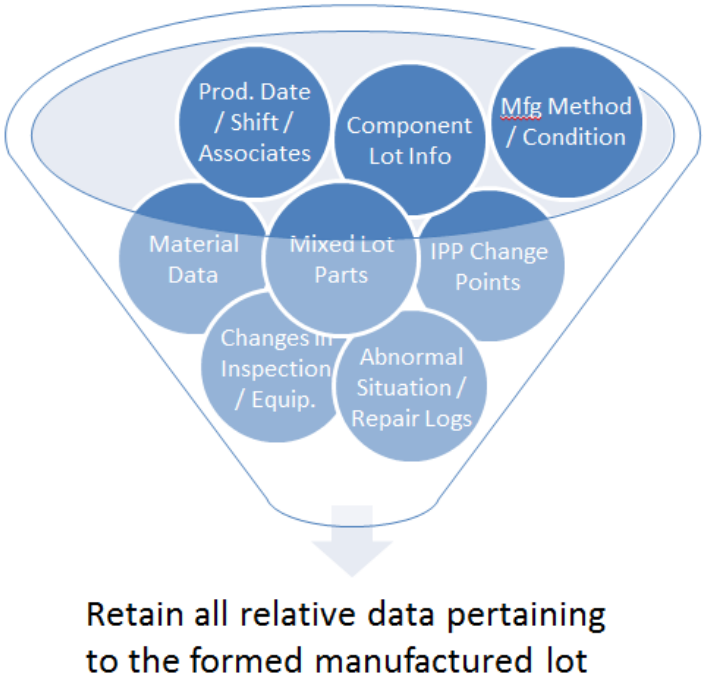
All information must be submitted to the Customer as a readable bar code entry. The Serial Number, which will be a sequential number for each container of a lot, must be traceable back to the Organization's lot number.

7.1 Packaging and Lot Control Sheet

The Organization shall develop and maintain an accurate Packaging and Lot Control Sheet, (PLCS) that shall list and explain the meaning of all fields on the bar code label. This includes initials, dates, and any coded information. The PLCS shall be submitted to the Customer for approval prior to mass production.

The Organization shall reference the **09.01.01.07.04 PLCS** on the KNA Quality Portal under "Forms" for the Packaging and Lot Control Sheet document and instruction sheet.

Traceability and Lot Control Contents:



8.0 PROCESS CAPABILITY DATA COLLECTION / SUBMISSION

The Organization shall verify the repeatability of each manufacturing process by collecting and analyzing data. The Customer will issue the Organization a Quality Characteristic Summary Sheet (QCSS), specifying the data requirements for each part submission before and after mass production approval. Items to be analyzed shall include critical features, items specified by the Customer based on past problem history and items suggested the Organization based on manufacturing expertise.

All capabilities studies shall be documented on a Quality Level Verification Sheet (QLVS) and reflected by the Cpk and the CP. These are defined as the followed:

Cpk = Minimum of Cpk Upper and Cpk Lower
Cpk Upper = (Upper Specification - Sample data average) / (3 x Sample Standard Deviation)
Cpk Lower = (Sample data average – Lower Specification) / (3 x Sample Standard Deviation)
CP = (Upper Specification – Lower Specification) / (6 x Sample Standard Deviation)

All critical features shall have a Cpk of at least 1.33 to be considered acceptable. Any critical feature with a Cpk below 1.33 but higher than 1.0 must have increased inspection, lot acceptance testing and countermeasure plan by the Organization. Any critical feature with a Cpk below 1.0 must be 100% inspected by the Organization.
The Organization shall supply a complete QLVS with each trial shipment. The data must be identified with the lot number and correlate to the actual parts in the shipment. Failure to supply the necessary data, as determined by the Customer, may result in the rejection of the affected shipment.
In addition, the Organization shall provide 100% dimensional layout of at least one part per cavity, tool, machine, etc. This data must be accompanied by a ballooned (numbered) print.
The Organization shall reference the **09.03.01.01.04 QCSS** on the KNA Quality Portal under "Forms" for the Quality Characteristics Summary Sheet document.
The Organization shall reference the **09.03.01.01.09 QLVS** on the KNA Quality Portal under "Forms" for the Quality Level Verification Sheet document.

9.0 MEASURING AND TEST EQUIPMENT

The Organization shall provide adequate means of performing all measuring and inspections required for each part. Each tool shall have the required accuracy, repeatability, and resolution per the specified tolerances. Organization shall implement and maintain a calibration procedure (6.3 Calibration), which shall be adequate to recall measuring and test equipment in a timely manner; track all measuring and test equipment; and provide clear historical records of each piece of equipment. All tools used by the Organization shall be clearly identified as to their current calibration status.

9.1 Calibration

Where applicable, the Organization shall periodically assure the continuing acceptability of master samples, inspection and error-proof device test samples, and process jigs and fixtures. The Organization shall maintain a list of such samples and process items requiring confirmation and a schedule for confirmation. Responsibility for confirmation shall be documented and a report of confirmation results issued to management on periodic basis.

9.2 Measurement System Analysis

The Organization shall have a documented gauge Measurement System Analysis (MSA) program for all tools, inspection devices, and check fixtures used for applicable measurements (e.g. critical measurements or those designated by the Customer).
Organization shall reference the **09.03.01.10.01 MSA Grid** on the KNA Quality Portal under "Forms" for the Measurement System Analysis Grid document.

10.0 QUALITY ASSURANCE VISIT

The Quality Assurance Visit (QAV) is a quality audit conducted at the Organization's or sub Organization facility. QAV's are conducted to judge if minimum requirements for quality assurance are being met and to promote continuous improvement in the Organization's processes and/or systems.
QAV's are defined as follows:

- Initial Evaluation for a potential new organization to evaluate quality system and manufacturing capability
- Development Evaluation for new the new Organization or Organization making large process changes
- Approval Evaluation for new model and expansion development
- Continual Improvement Evaluation for process/systems review, problem solving or C/M follow-up

Organization shall reference the **09.03.01.01.10 QAV** on the KNA Quality Portal under "Forms" for the Quality Assurance Visit documents.

10.1 Initial Evaluation

An Initial Evaluation QAV audits the Organization's quality assurance system to evaluate their manufacturing capability. Important check items include but are not limited to:

- Companywide quality strategy
- Quality plan
- Process design
- Cp documentation for equipment
- Lot control system / Traceability
- Training
- Information feedback/feed forward system
- Preventative maintenance
- Calibration systems
- Quality documentation
- MP process control
- C/M follow-up and parallel analysis
- Change control (IPP system)
- Sub-supplier control
- Plant wide organization
- Quality Control Manual / regulations

10.2 QAV1 – Development Evaluation

After initial product development, the Customer shall meet with the Organization at the Organization's facility to conduct a Development Evaluation. The following are pre-requisites for the QAV:

- Customer may witness actual production of a similar part(s).
- Organization shall provide documentation per the similar part(s).
- Organization shall provide process capability data per the QLVS.

All of the above items shall be as close to mass production levels as possible. When one of the above is not at mass production level, the Organization shall provide a detailed schedule for the completion date of mass production readiness.

10.3 QAV2 - Trail Readiness Evaluation

After the initial product development, members of the Customer's SPQ department and or New Model Parts Development department shall meet with the Organization at the Organization's premises to conduct QAV2. The following are pre-requisites for QAV2:

- Customer may witness actual production of the related part or parts.
- Organization shall provide initial drafts of documentation according to TABLE A
- Organization shall provide process capability data per the QLVS.

The Customer shall judge the Organization readiness based on, but not limited to the above items. If the Organization is judged not acceptable, then the Organization shall develop and implement a corrective action plan as to their readiness. This plan must be consistent with the Customer's schedules and acceptable to the Customer.

10.4 QAV3 – Approval Evaluation

After the Organization is ready for mass production, and before the production of significant inventories, the Customer shall meet with the Organization at the Organization's facility to conduct an Approval Evaluation. The purpose of this QAV is to judge the Organization's mass production readiness. The following items must be at final mass production level as planned by the Customer and the Organization:

- All quality documentation.
- All manufacturing equipment.
- All measuring and testing equipment.
- All handling and packaging procedures and materials.
- Associate / Manpower training records
- Customer shall witness the production of related part(s) continuously for 200pcs / 2hrs.
- Confirm MPR(s)

If the Organization is judged not acceptable for mass production, then the Organization shall develop and implement a corrective action plan to address any concerns. This plan must be consistent with the Customer's schedules and approved by the Customer. The Customer may request a follow up QAV based on the results of the Approval Evaluation.

10.5 Quality Approval Notification

If the Organization is judged acceptable for mass production after the Approval Evaluation, the Customer will initiate the approval procedure. The Organization must submit a Quality Approval Notification (QAN) package to the Customer. This must include, but is not limited to, the following information:

- QAN Cover Page
- PFMEA
- PQCT
- QA Matrix
- PLCS and LNDD
- QAV reports/results
- Process capability data or certifications
- Trial Maturation Results
- Material Certification
- Coating/Plating Certification
- Sub-Supplier approval status
- Additional information as required

The Customer will notify Organization as to their approval by signing and issuing the QAN.
Organization shall reference the **09.03.02.04.01 QAN** on the KNA Quality Portal under "Forms" for the Quality Approval Notification document.

10.6 Special Audit – Continual Improvement Evaluation

During the course of development or mass production, it may be necessary to perform Special Audits at the Organization's facility to address existing or potential problems, concerns or opportunities based on severity and/or occurrence. When this occurs, the Customer may visit the Organization's facility to conduct the following audits:

CM Audit - In the incidence of the Organization delivering one or more unacceptable parts to the Customer, or an unacceptable part reaches the market; the Customer may visit the Organization's facility to verify the following:

- Accurate identification of root cause, possibly including a re-creation of suspected cause.
- Verification of implemented countermeasures.
- Judgment of the effectiveness of implemented countermeasure.
- Parallel analysis of cause and countermeasures to similar product or processes

A-rank Audit - To verify that the proper testing and manufacturing methods are being used to prevent a defect that might cause a fire or a fatality to the end user of the part.

QIP Audit - To verify the implementation of corrective actions specified in The Organization's Quality Improvement Plan (QIP).

Customer Attach Point Audit - To verify the prevention and/or 100% detection of defects that might occur in an area in which the Customer or the Subsequent Customer(s) attach a mating part.

Special Process Audit - To verify a process that is additional to and different from the main forming of the part. This includes, but is not limited to, the following:

- Welding
- Surface Treatment
- De-burring
- Assembly
- Torque verification
- Leak testing
- Heat Treating

The Customer reserves the right, based on the discretion of management, to perform any additional audits not mentioned above or outside the normal audit scope.

11.0 NONCONFORMING MATERIAL

All parts delivered to the Customer shall conform to all quality specifications made by the Customer, including parameters called out on the drawing/spec, any agreements made with the Organization, and any specifications of the purchasing agreement and orders (the "Specifications").

The Organization shall establish sufficient controls so that nonconforming parts are not tendered to the Customer. This system must include a process to clearly identify and segregate any suspect or nonconforming materials.

All parts received by the Customer are subject to the Customer's inspection. Payment by the Customer for parts shall not constitute acceptance of the parts and neither payment nor inspection shall relieve the Organization of its obligation to deliver conforming parts.

11.1 Nonconforming Material at the Customer

It is the sole responsibility of the Organization to guarantee the product to the Customer's line. In the event that the Organization fails to prevent delivery of nonconforming material to the Customer or creates a delivery / market issue for the Customer, a Quality Systems Database Occurrence (QSD) will be generated and issued to the Organization. The contents of the report will include a brief description of the defect and a request for corrective action from the Organization. It is the Organization's responsibility to review updates and any change in status that may occur while a QSD is open or unresolved.

In the event that the Customer detects nonconforming material, the Organization shall be immediately notified as to the details of the Customer's observations. The Organization may be notified initially by phone, however the Organization shall also be given written notification of the problem by use of a "Corrective Action Request" form, (a "CAR"), to be provided to the Organization by the Customer in the event of the Organization 's delivery of nonconforming parts.

The Organization may be required to respond using the "5 Principles for Problem Solving" form. When determined by the Customer, an on-site audit may be required, (see section 10.6 Special Audit - C/M QAV).

11.2 Advanced Notice

The Organization shall give notice as soon as possible to the Customer of any nonconforming material shipped to the Customer. Due to the nature of our product, these parts could result in bodily harm or injury to Keihin Companies' final customers. This communication must be in written form.

11.3 Disposition / Sort / Rework

The Customer may make one of the following judgments on suspected or nonconforming parts:

- Scrap/return to the Organization
- Use after waiver
- Use after repair or rework
- Use after 100% inspection

It is the sole responsibility of the Organization to guarantee the product to the Customer's line. In the event that the Organization's QAS has failed to prevent delivery of nonconforming parts to the Customer, the Customer, at its sole discretion, may require the Organization to do one of the following:

- The Organization personnel arrive at the Customer in order to inspect or repair suspect parts.
- The Organization representative and Customer approved temporary personnel arrive at the Customer in order to inspect or repair suspect parts. (Contact Quality for approved source.)
- Replacement parts are immediately shipped to the Customer. These parts must be guaranteed to be free from the defect. To guarantee these parts, the Organization must 100% inspects these parts prior to shipment, or have already isolated root cause and proved to the Customer why the replacement parts are not affected. An identification method must be in place for easy part identification at the Customer.
- The Organization to provide additional data showing critical control points and customer attach points are conforming to specification and capability for up to 3 lots after occurrence

11.4 Corrective Action

In addition to containment activity, temporary and permanent corrective action will be requested to ensure quality problems are addressed. The Organization shall provide a schedule detailing actions to be taken to resolve the issue. The Organization may be required to respond using the "5 Principles for Problem Solving" (5P) form. The Customer will use the table below as a guideline for counter measure activity:

Rank	Initial Response	IPP Tag	Temp C/M	Cause & Perm C/M	Report
A	Same Day	Next Shipment	2nd day	≤5 days	5P
B/C	Same Day	Next Shipment	2nd day	≤10 days	Customer Discretion
R	N/A	N/A	Customer Discretion	Customer Discretion	Customer Discretion

The Organization may be required to present the countermeasure report at the Customer.
If countermeasure activities are deemed inadequate, the Organization shall re-evaluate and submit countermeasures until judged acceptable by the Customer.
When determined by the Customer, an on-site Continual Improvement QAV at the Organization's facility (10.6 Special Audit)
Organization shall reference the **09.01.01.06.03 5P** for the 5 Principles for Problem Solving.

11.5 Corrective Action System

The Corrective Action System shall apply to both internal and external problems. This system shall be documented and linked to the Organization's Change Point Control System where appropriate. A log is to be maintained for corrective action management. The status of these issues shall be reviewed periodically (monthly minimum) by top management.

11.6 Costs of Nonconforming Material

Actions taken to address nonconforming material must be taken without delay. Any cost incurred by the Customer after the receipt of nonconforming material, and before the actions of the Organization, are the responsibility of Organization. These costs may include, but are not limited to:

- Part Cost
- Inspection
- Rework Repair
- Material
- Shipping
- Labor; direct and indirect
- Warranty – cost of parts and analysis

The Customer may hold the Organization liable for any costs, claims, or damages arising from the Organization's delivery of nonconforming parts. Upon notification the Organization will have ten business days to acknowledge and discuss charge incurred for such activities. If no response is received, the Customer will automatically debit the Organization's account for these costs.

12.0 QUALITY WAIVER/DEVIASION

It is the Customer's policy to not use any part that does not meet the Specifications. However, due to extenuating circumstances, the Customer may agree to use a waiver for a specific period of time or quantity of parts assuming the below criteria has been met:

The Organization may request for nonconforming parts to be used.

- The Organization has isolated and documented the scope of the problem (i.e. suspect lot #'s).
- The Organization has documented the severity of the problem (i.e. measured actual parts).
- The Organization has found root cause and has already determined C/M. Note: the problem must have a C/M before the Customer can give waiver approval.
- The Customer has had sufficient time to do testing that guarantees functional and durability performance.
- Quality Waiver shall not violate end users' requirements.

Organization shall reference the **09.01.01.07.05 Quality Waiver** on the KNA Quality Portal under "Forms" for the Quality Waiver document.

13.0 CHANGEPOINT CONTROL SYSTEM

Over the life of a part or product, changes in design, specification or process will occur. The Initial Production Parts (IPP) system is used to approve and/or track changes to parts or processes. When the IPP system is used correctly the Customer and Organizations have documented approval and accurate records of any change that occurs to parts or products. The IPP system helps to ensure final product quality by providing a way to identify, approve and control change points. This control is necessary to safeguard the quality of finished products.

The IPP system applies to all parts, components and materials that are shipped to the Customer that are part of a finished product. The Organization's quality department is responsible for understanding the contents of any change and ensuring the change has no negative effect of the overall product quality.

In the case of a design change, the Organization will receive an email notification from the Keihin Change Management (KCM) system. This system is used to inform the Organization of a design change and for the Organization to feedback important information (i.e. 1st delivery date, production start date, and cost).

There are three levels of control in the IPP Process. These are defined in the chart below. If unsure consult your Quality Representative.

	RANK	PROCEDURE	CONTROL METHOD
A	IPPAAR	• The Organization initiating the IPP must obtain the Customer approval prior to use in MP (use the IPPAAR form) • An IPP tag must accompany the first IPP parts for MP and the parts must be properly labeled. Note – if the first shipment of changed parts is for cage stock (in-process parts), additional IPP tag needs to be placed on the first shipment that will go directly to the Customer production.	• Delivery of IPP parts must be done according to FIFO • The Organization must keep the following information o Content of the IPP tag o Date of IPP'd parts production o Date of delivery o Quality confirmation data such as inspection or testing data
B	IPP	• The Organization must document, verify and approve the change internally. (This documentation must be made available upon Customer request.) • An IPP tag must accompany the first IPP parts for MP and the parts must be properly labeled Note – if the first shipment of changed parts is for cage stock (in-process parts), additional IPP tag needs to be placed on the first shipment that will go directly to the Customer production.	Same steps as level A
C	Organization	Internal at the Organization	The Organization tracks these changes. Information is made available to the Customer upon request.

13.1 Initial Production Parts Advance Approval Request (IPPAAR) Procedure

It is necessary to issue an IPPAAR when there are A Level changes to parts or processes that make those parts.
The IPPAAR form is used when a change requires advance approval form the Customer prior to the Organization shipping the part for MP.
The table below explains each change type; list some examples changes (change type not limited to examples), and how to determine the level of control (A, B, or C).

13.2 IPPAAR Planning

The Organization is responsible to create a quality confirmation plan and schedule to verify the change. This plan will outline all activities needed to implement the change. For example – when test parts will be available, when the dimensional confirmation will take place, when any outside testing will be performed and completed, etc.
When establishing a quality confirmation plan and schedule:

- The Organization is responsible to contact the Customer to reach agreement on the target ship date.
- The Organization is responsible to review the plan with the Customer prior to implementation, so that Customer input can be integrated into the plan.
- The Organization is responsible to submit the completed IPPAAR form and confirmation plan/schedule prior to implementation.
- The Organization is required to maintain stable production and consistent quality for current MP parts while implementing the change, keeping in mind that the period of confirmation could be up to several months depending on the confirmation requirements.
- The Organization is responsible to contact the Customer if the target ship date will not be met to receive additional instructions and requirements.

13.3 IPPAAR Supporting Documents and Approval

IPPAAR submission may include any or all of the following:

- Capability study (number determined by the Customer)
- Sample parts (number determined by the Customer)
- Material testing results, if applicable
- Characteristics testing, if applicable
- Documentation updated as a result of the change
- Information from the Organization showing that the changed part meets all quality requirements and is fit for use, including a summary of confirmation activities and results
- Other information as requested by the Customer (e.g. layout or complete dimensional data)

When the Organization submits the IPPAAR and related materials for approval:

- The Customer will review the IPPAAR documents to determine if other confirmation items are needed, such as a QAV or additional testing.
- The Customer evaluates the IPPAAR results and sample parts. The Customer's judgment is noted in the Pass/Fail block on the form. Approved IPPAAR is given a reference number, which must be listed on IPP tag for first shipment.
- Once all requirements have been met, and approval given, the Organization is permitted to ship the initial production parts (MP). Be sure to follow IPP tag procedure.

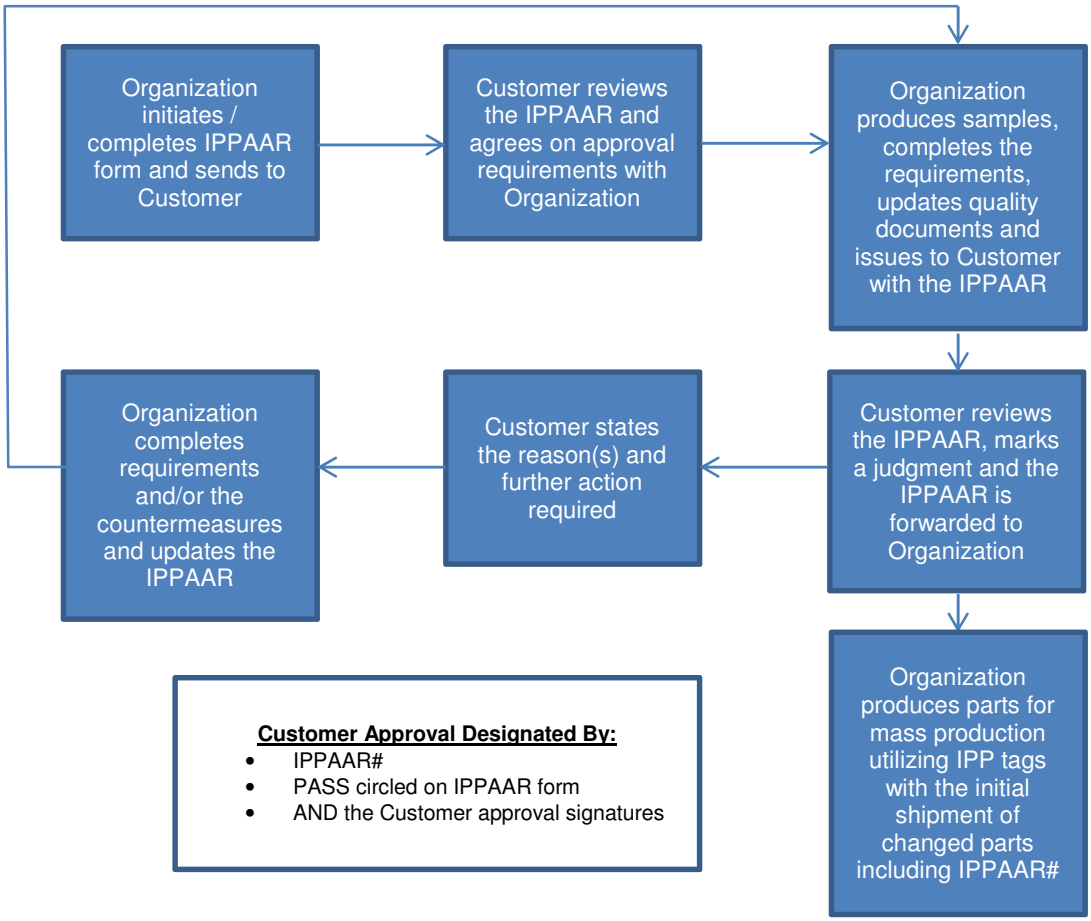
Important ideas to keep in mind:

- If changed parts which require advance approval are shipped without that approval, those parts may be rejected and/or counted against the Organization's index rating. Rejecting or indexing may occur whether or not an IPP tag was sent.
- MP parts are not to be shipped until the Organization receives the approved IPPAAR or other formal part approval (e.g. QAN used at NM timing). If the Organization has not received approval and MP shipment delay is possible, the Organization is responsible to contact the Customer immediately.
- An approved IPPAAR has IPPAAR #, Pass circled and the Customer approval signatures.
- The IPPAAR is sent with appropriate lead-time prior to delivery of the first lot. If the Customer requires a check or testing of the part, the Organization needs to submit the IPPAAR early enough to allow sufficient time for processing.
- A majority of IPPAARs submitted to the Customer must be sent out for approval, which requires a minimum of two weeks for approval.

Item	Explanation / Examples	A	B	C
Design Change	A design change is done when a new part drawing or a manufacturing instruction has been issued. • New part design • Design change that affects the part	X		
	• Design change with no effect to the part,(name/number, etc.).		X	
New Sub-Supplier	A sub-supplier, who has never produced the part or component, begins manufacturing this part for the Organization. • Addition or change of a sub-supplier • Addition or change in delivery/manufacturing location • Change from in-house to external production (or vice-versa)	X		
Material Change	The material(s) used to manufacture the part is changed. • Change of material type • Change of supply from outside to self-supplied (or vice-versa) • Change of composition (including anti-rust or lubrication oil)	X		
Manufacturing Change	A process method, setting or condition used in manufacturing the part is changed or modified. This includes any change which effects the way the parts are produced as reflected in the PQCT. This applies when the normal control range changes, not for routine adjustments. • Process method • Process standards or setting method • Process order • Jig/Fixture (New, Revised, Repaired, etc.) • Die/Mold (New, Revised, Repaired, etc.) • Inspection Method Note: If the IPPAAR process cannot be completed before parts are to be shipped (e.g. a welding robot breaks down and the process is done by hand), contact the Customer immediately. The Customer will provide instructions and requirements to Organizations in this situation. **Note: Example changes above could be A, B or C level changes. For clarification contact the Customer quality representative.**	See Note		
	• Associate change on a critical process			X
Machine Change	When the machine initially used to produce the parts during the approval process has been changed or replaced by another machine. • Initial use of a new machine • Modification or major repair of a machine • Equipment relocation within the same plant	X	X	X
Transportation / Packaging Change	The method of transporting the part to the Customer, or the packaging of the part deviates from the initially approved method. • Change in delivery method, packaging material or containers		X	
Sort	To be used at the direction of the Customer for the parts that are sorted or re-inspected outside the PQCT.		X	
Other	Only to be used as directed by the Customer quality department. **Note: If used, an explanation must be written on or provided with the IPP Tag.**		X	

Organization shall reference the **09.01.01.07.02 IPPAAR** on the KNA Quality Portal under “Forms” for Initial Production Parts Advanced Approval Request submission document and instructions.
Organization shall reference the **09.01.01.07.03 IPP Tag** on the KNA Quality Portal under “Forms” for Initial Production Parts tag document, instructions and order information.

IPPAAR Change Point Approval Flow



13.4 Identify the First Lot for IPP Tag

The Organization confirms the first lot conforms to all quality requirements before shipping. Confirmation data is retained by the Organization and may be required to be included with the first lot.

The Organization identifies the first lot shipment with properly completed IPP tags attached in a conspicuous location. Organizations must control or track IPP tags sent to the Customer:

- Wrap labels around opposite corners so they can be seen from all sides
- Label containers on the outside to show an IPP tag is enclosed.
- Do not cover any other labels when attaching the IPP tag (e.g. part number or bar codes)
- Use the area on the tag reserved for attachment, and do not tape over areas of the tag with a bar code or IPP number.
- When a shipment contains both the first lot and older parts, label all containers in the shipment to indicate whether they contain old or new parts. (Material must be shipped in FIFO order.)

13.5 New Model IPP Shipment

The Organization shall issue an IPP tag, or under the Customer directions issue some other type of label, for every new model parts.

IPP tags must be attached to each trial part shipment and the first three MP lots of new model year parts. The first 3 MP lots are to be accompanied by data and certifications that show the parts conform to specifications and capability for all critical control points and customer attach points.

Note: A completed, approved IPPAAR form is required for all "A" level changes prior to shipment of the changed part. All "A" level changes also require an IPP tag on the first production shipment to the Customer.

14.0 MARKET / WARRANTY QUALITY

The Customer receives warranty parts and information weekly from Subsequent Customers. The Customer analyzes the parts and data and maintains records of the results. When a potential defect has been identified related to the Organization's product, the Customer will forward those parts and information to that Organization for analysis.

The Organization has responsibility for the quality of its products sold to Customer and is financially responsible for any and all product that is returned to the Customer under the Customer's current warranty system. A 5 principle of problem solving report may be required for any defects that are determined to be the responsibility of the Organization or Organization's sub-supplier. In addition, the Organization may be financially responsible for any costs related to the warranty claim including but not limited to the costs of parts, labor, shipping, etc.

This quality requirement and reimbursement applies to product determined to be defective within the vehicles basic warranty period as determined by the Subsequent Customer.

15.0 SUPPLIER QUALITY RANKING

At the end of each fiscal year, KNA QA will review the Organization's quality and warranty data using 12 months rolling data to determine supplier class ranking. This information will be shared with Plant Supplier Quality and KNA Purchasing as input to the supplier scorecard.

15.1 Determine Supplier Class Ranking

Class ranking will be set based on average supplier performance. Suppliers less than half the average tend to be Class 1. Suppliers greater than twice the average tend to be Class 3. Remaining suppliers tend to be Class 2. A class ranking will be established for each of the following metrics: quality index per million (QIPM), quality occurrence per million (QOPM), WRPM & WPM. The worst of these will be used as the supplier's overall class ranking. Management may change a supplier's class ranking based on actual performance or extenuating circumstances. These types of changes must be documented in writing and approved by KNA QA and plant management. KNA Purchasing will share class ranking with suppliers, via the supplier scorecard, on an annual basis. This information will also be used for maker layout decisions.

Supplier Index points = Index Value (based on rank) + Nuisance Points

Rank	Index Value	Standard
A	100	Defect that may lead to fire hazard, loss of function of safety related systems and or parts.
B	20	Defect other than A Rank that may impair the function of the product and has a high potential for affecting the customer.
C	4	Defect other than A or B Rank, not a functional problem.

Note: A nuisance point is assessed to a failure for every hour of work the Customer spends working on the issue with a minimum of 1 point and a maximum of 50 points assigned to one failure.

15.2 Quality Improvement Program (QIP)

QIP is a process by which the Customer partners with the Organization to improve their quality performance and strengthen their quality constitution. Some Organizations may be required to participate in the Keihin Global QIP. All other Organizations will be considered for QIP based on the following criteria:

- An overall class ranking of 3
- Impact to customer
- A-Rank issues or index greater than 150 in two consecutive months
- Customer recommendation based on performance issues

The Organization will conduct a situation analysis and develop a Specific Action Plan (SAP) to address concern items and recommended themes. Past Problem History focusing on customer and market issues, will be reviewed and related countermeasures verified as part of the QIP.

16.0 REQUIRED DOCUMENTATION FOR ANNUAL SUBMISSION

The Organization is responsible and required to submit the following documentation on an annual basis:

- Up-to-date PQCT
- Up-to-date PFMEA
- Current part data for critical control points and customer attach points

17.0 QUALITY REGULATION REVISIONS

Any changes or modifications to this agreement must be mutually agreed to and memorialized in writing executed by Customer and Organization.

18.0 ACKNOWLEDGMENT (09.01.01.07 KNA Supplier Quality Manual Rev 0)

The Organization acknowledges receipt of this quality agreement. Any exceptions and/or deviations must be agreed upon by the Customer and Organization in writing prior to Die-Go.

Witness	Organization _____
Signature / Date _____	Signature / Date _____
Print _____	Print _____
	Title _____
Witness	Organization _____
Signature / Date _____	Signature / Date _____
Print _____	Print _____
	Title _____
Witness	Organization _____
Signature / Date _____	Signature / Date _____
Print _____	Print _____
	Title _____