IKL

CERTIFICATION ISO9001:2008

UKAS MANAGEMENT SYSTEMS

70 YEARS 1948-2018 of experience in bearing design

www.iklbearings.com

SUPPLIER QUALITY ASSURANCE MANUAL SUPPLEMENTARY

to IKL Q001 and Q002

Revision 2

SUPPLIER QUALITY ASSURANCE MANUAL SUPPLEMENTARY to IKL Q001 and Q002

IKL – Vision

We strive for customer satisfaction, continual improvement and for being No.1 in total quality. Our approved supplier partnerships are an inherent element of achieving and maintaining success.

IKL adheres to very strict policies of corporate responsibility, care for the environment and customer quality requirements. IKL expects that its suppliers observe the same ethos and ethical approaches.

Quality Policy Statement

Operating within a culture of continual improvement, IKL is committed to the development of its Management system in order to satisfy the needs of our customers and those of the business. The IKL Quality Management system is based on the requirements of ISO 9001, IATF 16949, VDA, references ISO 14001, OHSAS 18001 standards and Customer Specific requirements.

References

This supplier manual provides the framework for satisfying IKL's quality requirements and references: IKL Q001, IKL Q002, IKL Green Procurement Standard and IKL format documents and engineering standards, including purchase specifications.

Guidance for APQP, SPC, MSA, FMEA and PPAP can be found in the latest versions of the AIAG (Automotive Industry Action Group) manuals; also, VDA (Verband Der Automobilindustry) is referenced.

Supplier Quality Management System Requirements

IKL mandates that approved suppliers maintain such quality management system that meets minimum ISO 9001 and encourages IATF 16949 certification, ISO 14001 and IKL specific requirements referenced in this manual. IKL strives to ensure that it provides quality products according to the specifications maintaining quality and cost, as well as provides the highest level of delivery performance.

The supplier quality management system shall include recognition of and supporting records of new product introductions, APQP activity, project management systems and records.

Supplier Manufacturing Feasibility

The Supplier shall investigate, confirm and document the manufacturing feasibility of the proposed products in the contract review process, including risk analysis and assessment of capacity (Run at Rate and manufacturing capacity studies).

Work Instructions

The Supplier shall prepare documented work instructions for all employees that have responsibility for the operations that impact quality and these should be available at the point of use.

Verification of Job Set-ups

Job set-ups shall be verified whenever performed, for example, at the initial run of job, material changeover or job change. Work instructions shall be available for set-up personnel.

The Supplier shall use statistical methods of verification when applicable.

Production Scheduling

The Supplier shall have the capability to accept orders via EDI, email or Purchase order unless otherwise approved by IKL Procurement. Production shall be scheduled in order to meet IKL requirements. IKL will work with Suppliers on shipping methods and on carriers.

Supplier Approval

Suppliers to IKL are selected and approved by the IKL supplier approval process.

Supplier approval is typically based on proven technical ability to supply products and services of the agreed quality and cost and meeting delivery requirements. The following steps define the approval process.

Steps to Obtain Approval:

- Sign and agree on a Confidentiality (Non-Disclosure) agreement.
- Complete and review Supplier assessment and initial quality questionnaire (self-assessment).
- Conduct an Audit of the quality management system observing the requirements of ISO 9001, IATF 16949 and VDA 6.3 as appropriate.
    - Complete NES Q6102 assessment and/or
    - Complete potential analysis VDA 6.3 (P1) standard and/or
    - Complete a process audit VDA 6.3 (P5~P7) standard.
- Review the results and define improvement actions.
- The supplier is added to the IKL approved supplier list and is informed on its status and the scope of approval, subject to product approval.

SUPPLIER QUALITY ASSURANCE MANUAL SUPPLEMENTARY to IKL Q001 and Q002

Special, Safety and Critical Characteristics

Customer specific and IKL safety critical and critical/special characteristics will be managed by the Suppliers. Process capability shall be assured or a 100% inspection shall be made by effective measurement systems. The associated records shall be retained.

The Supplier is responsible for developing the necessary controls to ensure process capability for all key features and special characteristics to be manufactured and measured.

Submitted SPC data and gauge R&R studies demonstrate the full capability of process development, controls and measurements systems to meet IKL and customer specific requirements.

Please note that IKL and customer characteristics should be displayed on drawings and must link to control plans; SPC data must be of suitable sample size to meet plant and/or customer specific requirements.

Process Capability

Capability studies are required on those dimensions identified as special characteristics with a minimum sample size of 125 or as otherwise stated by IKL.

The proposed production methods and route should be used for parts verified as part of an ISIR (Initial Sample Inspection Report) submission. Material certification for bearing rings and rolling elements should also be submitted.

Process Capability Study	Capability Indices
Machine capability index › Short term study	Cmk > 1.67
Process capability index › Long term study, stable process › For SC and CC	Cpk> 1.33 Cpk > 1.67
Process performance index › Long term study of non-stable process	Ppk > 1.33

All dimensions identified on the drawing should be verified with a minimum sample size of 10 pieces.

IKL – Supplier Documentation Requirements Process FMEA

A Process FMEA shall be completed on the process route for all bearing components and this must be made available to IKL upon request.

Control Plan

Quality assurance process flow chart and control plan. Process control plans shall be developed and defined for each product and state as a minimum the following details: prototype, pre-production andproduction (mass production) phase. These process flow and control plan documentation is an output from APQP activities, project management and new product development.

The process design should be established by a cross functional team as an output of quality planning, APQP and new project/product introductions.

General Control Plan Elements

- Control plan number, issue date and revision number, company name and site, process step numbers, process/operation description.
- Product control: product related special characteristics and safety critical characteristics; specification/tolerance shall be clearly identified and controls defined on the plan.
- Process control: process parameters, process related special characteristics and defined machines, jigs fixtures and tools for manufacturing.

Measurement Systems Analysis

Evidence of measurement systems capability for all agreed significant characteristics listed on the design drawing and control plan and the associated records shall be maintained.

Initial Sample Inspection Report (ISIR)

Where processes are used for the first time to produce any particular IKL product/component or bearing size, then an ISIR is required at the pre-production stage.

When a bearing size is produced for the first time for IKL using existing processes, then an ISIR is required at the production stage.

Part Submission Warrant (PSW) and PPAP requirements

PPAP documentation and part submission warrants may be requested by IKL for some products for OEM customers. This will be requested by IKL at the time of ordering and a default level 3 PPAP applies and must include IMDS submission on the PSW (Ref: AIAG PPAP manual, latest revision).

SUPPLIER QUALITY ASSURANCE MANUAL SUPPLEMENTARY to IKL Q001 and Q002

Process Change Documents

A Process Change Request (PCR) shall be submitted by the Supplier for any proposed changes to the agreed process flow, control plans, material source changes and manufacturing location changes:

Types of Process Change	Level of Application
1.Major changes of material (such as changes in material manufacturer or raw material procurement).	IKL Approval
2.Changes in critical control processes such as casting, forging, heat treatment, welding, plating, rubber vulcanizing, surface treatment, etc. (including renewal of seal dies and plastics).	IKL Approval
3.Changes in production place or subcontractor 2nd tier supplier.	IKL Approval
4.Major changes in equipment, control items, control standards, etc. as specified on the Production Process Control List (machining, assembling, etc.).	IKL Approval
5.Changes in inspection methods for finished products.	IKL Approval

Traceability

Traceability of components/products back to raw material (lot, cast/heat number) is required. Relevant documentation and records should be maintained as evidence. IKL reserves the right to request, review and audit these records at any time.

Supply of Initial Production Samples (Safe Launch Process)

Initial samples are used to verify the production process; they shall be produced at the intended production site using the production control plan, tooling, processes, materials, operators, feeds/speed, cycle times and other parameters that affect product quality.

The submitted samples must be clearly identified and labelled as "Samples". Any of the following criteria would result in the need for samples to be submitted:

- New product (an ISIR must be submitted with samples provided for all prototype, pre-production builds and at the start of the main production).
- Following a drawing, specification or material change, including a change of material or sub-contractor source.
- New tools (e.g. dies, moulds). Single cavity tools must be re-evaluated when combined with additional cavities.
- Following a major tooling or equipment refurbishment or re-arrangement.
- Change in manufacturing location utilizing either new or relocated tooling or equipment.
- Following a Stop shipment order.

It is mandatory for capability information to be provided with the first three shipments on significant characteristics.

Non-Conforming Product

Containment & Segregation

If, following shipment, the supplier discovers that a non-conforming product may have been sent, the supplier will notify the receiving plant's Quality Representative immediately. Corrective and preventive actions will be required.

Note: Cost of Poor Quality (COPQ)

IKL will endeavor to recover any consequential costs of poor quality products supplied to IKL by their suppliers.

Root Cause & Corrective Actions

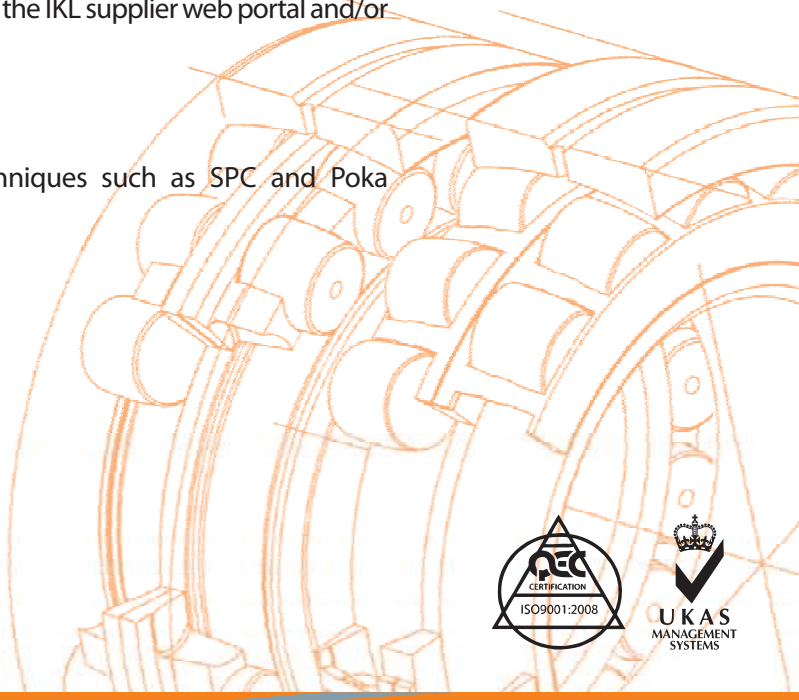
The Supplier shall undertake suitable investigations to identify the root cause. The Quality Representative of the receiving plant will send a corrective action workflow to the supplier for completion. Other appropriate documentation contained within the supplier's quality system may be used if agreed.

IKL requires suppliers to have a disciplined approach to Quality/Delivery concern management. The use of 'Quality Tools' such as fish-bone diagrams (Ishikawa), Capability Studies, Designs of Experiments and PFMEA/DFMEA review is encouraged. Countermeasure corrective actions should be reviewed across similar products/processes to prevent similar concerns arising.

Suppliers are required to use **IKL standard «8 disciplines»** approach and document format. This document and supporting guidelines are available at the IKL supplier web portal and/or your IKL quality representative.

Preventive Action/Mistake Proofing

IKL encourages suppliers to employ preventive techniques such as SPC and Poka Yoke/Mistake Proofing in their processes.



SUPPLIER QUALITY ASSURANCE MANUAL SUPPLEMENTARY to IKL Q001 and Q002

Concessions

In principle, IKL does not accept products that do not meet the specified quality levels. Where there is a possibility that the non-conformance does not preclude the product's use in production and the feature does not affect our customer's expectations of quality, the supplier shall contact the relevant Quality Representative and declare the deviation prior to shipment.

The non-conformance shall be evaluated and, where suitable, a numbered concession permit shall be raised. If sanctioned, the concession reference number must be cited on all documentation and packaging used in the shipment to the IKL receiving location.

A corrective action report (CAR) describing cause and countermeasure for the circumstance is required with all requests for concession.

The Supplier shall also be responsible for informing the relevant IKL Quality Representative whenever there is a reason to suspect that parts previously supplied may not be in accordance with the order/contract.

IKL concession cards are available on request from IKL Quality Representatives (IKL IMS ID number is 44069).

IKL will not provide a concession for SC or CC features.

Supplier Quality Representative

IKL requires the suppliers to nominate a Quality Representative and its deputy. Any subsequent changes made should be reported to the Quality Representative of the IKL receiving plant.

Green Procurement Standard

IKL adheres to the highest standards of corporate responsibility and environmental care. IKL expects that their suppliers make every effort to manage their business in line with all legal and regulatory requirements and adopt the ethos of IKL.

IKL publishes and maintains a Green Procurement Standard; this is normally highlighted in purchase specifications and will be made available to the Suppliers and second tier suppliers as necessary. The content of the IKL Green Procurement Standard should be recognised by the Suppliers and any responses and declarations requested from the Supplier as defined in purchase specifications and on drawings should be provided to IKL in timely fashion.

IKL complies with legal and regulatory requirements including REACH, ROHS and environmental legislation and supports the IMDS database.

Revision 2

Statutory and Regulatory Requirements

IKL undertakes to pass down all statutory and regulatory requirements and special product and process characteristics to the Suppliers.

IKL requires the Suppliers to cascade and communicate all applicable requirements down the supply chain to the point of manufacture.

Note: IKL Plant Specific Requirements may be additional to this supplement and will be communicated separately.

i.e. Typical identifiers for special characteristics:

HO(!) Safety Critical Characteristic (!) Important Special Characteristic

Revision Dates	Revision Number	Details of change	Who
March 2016	1	Initial release	EQA
March 2017	2	Updated to reflect IATF 16949 standards from ISO TS 16949 and additional text reference IATF Clause 8.4.3.1 Statutory and Regulatory Requirements	EQA