This Quality Assurance Agreement defines the technical and organisational framework and processes between HJS and the Supplier. It regulates the basic rights and duties relating to quality assurance of the products to be supplied. Product-specific requirements are regulated in the orders, drawings, specifications, etc.

1. General Agreements

1.1 Quality Management System (QM System)

The Supplier shall install an effective QM system in its company and by doing so to provide proof of its quality capability.

The system shall comply at least with the requirements laid down in ISO 9001:2015.

The Supplier is to produce a valid certificate issued by an accredited certification agency (third party audit) as proof of this. Exceptions to this rule are only possible in consultation with HJS's Purchasing Department.

The following additional requirements of the automotive industry must be known to the Supplier and be fulfilled in respect of the products supplied to HJS.

These additional requirements are defined in:
- VDA 6 Part 1
- QS 9000 series of standards

or summarised in
- IATF 16949

HJS recommends third party certification in accordance with the standards/publications cited. DIN EN ISO 14001 Environment management systems is to be taken into account.

The Supplier shall ensure that its subcontractors likewise comply with the above requirements. The Supplier shall able to produce a valid certificate issued by an accredited certification agency (third party audit) as proof of this.

1.2 Additional underlying quality factors

In addition to the standards cited, all HJS ordering documents are binding, e.g.:
- Order drawings, including the provisions specified therein, such as DIN standards, HJS standards, technical specifications for delivery, data sheets, etc.
- Agreed inspection and test instructions, inspection, measuring and test equipment
- Additional ordering data, e.g. packaging regulations
- All relevant legal requirements
- All relevant environment protection and recycling regulations

1.3 Delivery quality and receipt of goods

The products shall not suffer from any design faults or defects in material or workmanship, and they shall comply with the contractually agreed specifications, features and properties. The Supplier shall provide documentary evidence of the composition of the materials used and their constituent components and of all associated environmental aspects. All materials are to be verified as being registered in the IMDS (International Material Data System).

HJS shall notify the Supplier in a quality defect report of all deliveries which have been released despite non-conformities. The costs incurred by HJS in this context shall be borne by the Supplier. The costs incurred due to defective goods and reworking shall be compiled by HJS and charged to the Supplier (see also General Conditions of Purchase).

The QM system installed by the Supplier and the level of quality assurance achieved by it shall form the basis on which the Supplier shall be able to ensure all the products and services the Supplier or its subcontractors supply are free of defects ("zero defect quality").

Owing to the quality standard achieved in this manner, non-conformance in deliveries shall practically no longer be able to be detected in goods-inwards sampling inspections. For this reason, goods-inwards inspections performed by HJS on many purchased parts are restricted to externally visible transport and packaging damage

and verification of compliance with the quantity and identity of the ordered goods as detailed in the delivery documents.
The change status/index according to HJS drawings is to be specified on the delivery note and on the packaging.

To safeguard the quality of its own products, HJS likewise operates a QM system that complies with the requirements cited in Section 1.1 above. In this context, HJS shall perform in-process equipment inspections in conformance with the requirements of the QM system in order to ensure defects in its products – including the range of products and services provided by the Supplier and integrated in these products – are detected at as early a stage as possible.

HJS shall notify the Supplier of all defects in deliveries immediately upon their discovery, either in writing, by telefax or by electronic data communication (e.g. e-mail). As far as HJS meets the obligations imposed by the above, the Supplier shall waive the objection of delayed notification of defects.

1.4 Processing complaints, 8D report

The Supplier shall respond to every complaint within a period of 10 working days in the form of a meaningful 8D report. **This period may be shortened if deemed necessary.** Interim reports are to be made available upon request. HJS is to be notified of missed deadlines in advance and in writing.

The Supplier shall examine carefully and meticulously the products complained about (root cause analysis). It is to compile without delay the results and planned corrective actions, including scheduling for their implementation, in the 8D report sent by HJS and send this report to HJS. A comparable document compiled by the Supplier with the same content may also be submitted. Evidence of effective implementation of the corrective actions shall be furnished to HJS.

In the event of problems caused by the Supplier and unacceptable response times on the part of the Supplier, HJS reserves the right to carry out an audit at any time and to charge all costs it incurs in the process to the Supplier.

1.5 Quality documentation

The results of the quality inspections and tests carried our by the Supplier and of audits shall be documented together with the planned and effective corrective measures implemented and be made available in their entirety to HJS or HJS's customer upon request and at any time. Any deviations from this procedure are to be agreed between the partners at the time of actually concluding the contract.

If HJS asks the Supplier to supply works test certificates, copies of said certificates are to be included with the respective delivery. Non-supply of works test certificates inhibits correct receipt of goods at HJS and leads to holding of the delivery and submission of a complaint to the Supplier.

In the case of parts to which more stringent requirements with regard to documentation apply (refer also to VDA Volume 1 in this respect), quality records are to be kept by the Supplier and its subcontractors for a period of at least 15 years following production phase-out.

1.6 Quality agreements and ppm management

In order to implement the strategic goal of "zero defect quality", HJS and the Supplier shall agree measurable targets for delivery quality (ppm target agreements). The target value shall be defined in ppm (ppm = **p**arts **p**er **m**illion / maximum number of defective parts per millions parts delivered).

$$ppm = \frac{\text{Defective parts}}{\text{No. of parts delivered}} \times 10^6$$

In order to simplify communications – if technically prudent and feasible – only one target value, as a rule, is to be agreed for each product family supplied by the Supplier or, if possible, for all products supplied.

The ppm results shall be recorded by HJS, passed on to the Supplier and be factored into the supplier rating. At the same time, they shall serve as the basis for targeted actions aimed at continuous improvement in quality.

The fact that ppm values are agreed upon shall not mean that HJS accepts them as a fixed quality standard. All parts detected as non-conforming will not be accepted as a matter of principle and the costs shall be borne by the Supplier.

1.7 Principles of ppm calculation and evaluation of logistical complaints

The number of non-conformities shall be calculated on the basis of the following parameters:

The figures shall record those parts complained about by Goods-inwards, Production and customers. The number of defective parts detected among the subset of parts tested will not be used to extrapolate or estimate the

number of defective parts in relation to the entire supply quantity. All non-conforming parts detected will be added to the ppm statistics.

If the Supplier should request HJS return goods before they are used in production (due to non-conformities detected by the Supplier), such non-conformities will not be added to the ppm statistics.

Non-conforming parts screened by the Supplier or HJS will be added to the ppm statistics.

The term "screening" in this context may refer to the following:

- Screening at HJS by HJS, by suppliers or by external companies that perform subsequent work
- Processing in the Production Department at HJS, with detection of non-conforming parts
- Screening at the Supplier and reporting of those parts actually defective. In this case, the HJS employee responsible for buying in parts has the discretionary powers to record in the system
  - the quantity of non-conforming parts reported by the Supplier or
  - the entire quantity of parts returned.

Those non-conforming parts reported in the context of logistical complaints will not be added to the ppm statistics.

Logistical non-conformities are non-conformities that for the most part relate to the delivery quality with respect to quantity, delivery date, packaging and processing. Logistical complaints shall be evaluated using the following equation:

$$\text{Logistical complaints [\%]} = \frac{100 \times \text{no. of complaints}}{\text{no. of delivery lots}}$$

1.8 Change management / Quality problems

The Supplier shall undertake to notify HJS, without delay and in writing, of all quality problems that arise and all holding of products or processes, as a rule prior to delivery of the products, and to agree requisite corrective action with HJS.

The Supplier shall notify HJS of every technical change its plans to the delivery of released contract goods as early as possible but no later than 1 (one) month before introduction of said change.

The Supplier shall notify HJS prior to execution of all planned changes to products and processes – both prior to and after SOP (start of production) – that concern, for example,

- Changes to design, specifications or materials
- The use of new, modified or substitute tools
- Production methods or processes
- The relocation of production within a production site or to other sites
- Changes made by subcontractors to products, components, materials, services or software
- Start-up of production facilities following a shutdown lasting longer than 12 months.

This duty to provide information also applies if one of the above points relates to a subcontractor.

The Supplier shall coordinate and agree with HJS the scope of the release inspections (initial sample inspections) that need to be conducted again. It shall ensure that production deliveries to HJS are only made once the initial (type) samples to be submitted have been released by HJS (refer to Section 3.6). The changes made shall be documented in a parts history record.

If there are still parts that have been manufactured in accordance with the old specifications available at the time of change, the quantities of these parts for which HJS has obligations to take delivery must be made known to enable HJS to arrive at a decision.

After such changes, the delivery note, package units and, if necessary, also the parts of the initial deliveries are to be labelled accordingly. Details in this regard shall be agreed in writing between the Supplier and HJS prior to delivery.

If the Supplier does not comply with this procedure, HJS reserves the right to invoice the Supplier for all costs HJS may incur as a result.

1.9 Continuous improvement process (CIP)

These requirements apply only to suppliers of specific parts according to drawing or specification, not for service providers, retailers or suppliers for Raw materials and consumables.

The Supplier shall introduce in its company a structured process of continuous improvement for all products, processes, operating procedures and services and shall apply it verifiably to the products it supplies to HJS and to all activities connected with the business relationship. The Supplier shall furnish evidence of the effectiveness of this structured process in the form of continuous improvements in quality, prices, delivery performance, flexibility

and co-operation. The corresponding programmes and actions for promoting continuous improvement are to be presented to HJS upon request.

2. Methods of Quality Assurance at the Supplier

2.1 Escalation process for the suppliers

If quality or logistics problems occur repeatedly at suppliers, they shall be included in HJS's escalation process. The aim of this process is to implement suitable actions at the suppliers to ensure that the products and materials supplied once again meet the requirements and standards of HJS. Depending on the duration and severity of the problems, they are classified in one of three escalation levels.

Each of these levels follows the procedure outlined below:

- **Analysis** of the cause of escalation and of the problem
- **Agreement on an action plan** to eliminate the escalation causes in order to bring the quality back in line with the targets
- **Implementation** of the action plan
- **Monitoring/following-up** of the action plan
- Depending on the effectiveness of the actions, the process is either **escalated or de-escalated** to the next level.

Escalation Level 1: If the Supplier is at fault with respect to problems, the Supplier will be confronted with these problems on the basis of details relating to quality problems, deviations from targets, repeated complaints and delays in deliveries. In the course of the complaints process, the Supplier shall initiate an effective solution to the problem and document this in the form of a 8D report.

Escalation Level 2: Escalation Level 2 consists of checking the corrective actions on-site on the Supplier's premises to ensure that they are appropriate and effective. This can also be performed within the context of quality and/or logistics audits. The results of the on-site analysis are documented in an action plan. The Supplier is responsible for implementing the actions and has to submit regular reports on the respective status to the positions responsible.

Escalation Level 3: In the event of non-compliance with the quality requirements in Escalation Level 2, the Supplier will be escalated to Escalation Level 3. This automatically means the Supplier is barred from receiving new invitations to bid and being awarded new contracts.

Escalation Level 3 incorporates the additional option of sending in a HJS team to analyse the problems that exist on site ('supplier support'). The Supplier must be prepared to support all activities undertaken by the HJS employees. The Supplier's general management must ensure the agreed actions are carried out.

In order to guarantee implementation and the effectiveness of the planned actions, progress is monitored and documented by conducting regular reviews.

Escalation Level 3 will conclude with de-escalation once the Supplier has provided necessary proof that the actions agreed with HJS have been implemented. In the event of a supplier support project not being successfully concluded due to the fault of the Supplier, the Supplier concerned will be reclassified in the portfolio of HJS Purchasing as a "non-approved supplier".

2.2 Additional Control Level

These requirements apply only to suppliers of specific parts according to drawing or specification, not for service providers, retailers or suppliers for Raw materials and consumables.

The "additional control level" is an additional inspection of purchased parts. The purpose of this process is to implement an additional inspection step that prevents purchased parts that are defective due to inadequate quality performance on the part of the Supplier from reaching the HJS production line.

ACL 1 (Additional Control Level 1): ACL 1 requires an additional one hundred (100%) inspection by the Supplier of the material to be provided. The testing station used must be positioned away from the production line (minimum distance 10 m). The test results must be documented every day at the testing station. The mode of marking the purchased parts inspected by the Supplier must be agreed between HJS and the Supplier.

The Supplier must report the test results regularly to HJS in the form of a report agreed upon with HJS.

ACL 2 (Additional Control Level 2): In the case of ACL 2, this additional monitoring of the purchased parts is carried out by an independent service provider representing the interests of HJS. The costs incurred for these inspections shall be borne by the Supplier. The choice of service provider must be agreed with HJS, since customer requirements (OEM) must be taken into account. A weekly report of the test results must be sent to HJS by the service provider.

The following conditions must all be met before ACL 1/ACL 2 can be waived:

- Corrective actions must be implemented and their effectiveness proven
- At least four weeks of defect-free additional 100% inspection testing
- Or at least as many defect-free parts during additional 100% testing as would make up 5 delivery lots.
- Written permission from HJS

3. Further Quality Assurance Requirements

In addition to the specified general requirements and obligations of HJS suppliers, the following must be proven and presented in detail.

3.1 Producibility review

In submitting the quotation, the Supplier confirms product producibility in accordance with the specifications and properties defined in HJS's invitation to bid. **The obligation to "zero defect quality", as a major part of the contract, shall apply without exception.**

3.2 Advanced quality plan

These requirements apply only to suppliers of specific parts according to drawing or specification, not for service providers, retailers or suppliers for Raw materials and consumables.

In order to secure "zero defect quality" in all phases of the co-operation, the Supplier shall undertake to prepare a binding advanced quality plan for prototypes, pilot series samples and production deliveries, to document this in inspection and test plans (control plan) and to agree details with HJS. It must be agreed in advance whether the advanced quality plan should be carried out in compliance with the requirements of VDA Volume 4, Part 3 or the QS 9000 publications.

3.3 Product and process FMEA

These requirements apply only to suppliers of specific parts according to drawing or specification, not for service providers, retailers or suppliers for Raw materials and consumables.

Taking the application of its products at HJS and HJS's customers into account, the Supplier shall carry out preventive risk analyses (FMEA) for all products supplied to HJS and the processes linked to these products, and update the FMEA whenever deviations of product and/or process quality occur as well as when changes are made as described in Section 1.8. All those parameters that affect product safety must be integrated in this analysis.

Points assessed as critical must be improved without delay by means of suitable corrective and preventive action to enable specifications, properties and product safety as well as capable manufacturing to be guaranteed. Details are specified in VDA Volume 4, Part 2 and in the QS 9000 publications. Refer to Section 1.5 for details of the results.

3.4 Inspection, measuring, testing, machinery and process capability

The Supplier shall use suitable statistical methods to make sure that the machines, tools, inspection, measuring and test equipment used, as well as processes these are used in, are suitable and capable for manufacturing the products supplied to HJS.

The properties for which evidence of process capability (capability certificates) is to be furnished shall be agreed between HJS and the Supplier (see Internet / purchase / work instructions, C2-AA-09 "Description of the kinds of Characteristics").
The minimum requirements are as follows:

Method 1
Test equipment capability index: **Cgk ≥ 1.33**

As a rule, this involves 50 repeat measurements taken at short intervals on the measurement standard, carried out by the same tester.

Condition: the resolution of the measuring instrument must be less than 10% of the tolerance bandwidth.

Method 2 (with operator influence)
Repeatability and reproducibility (%R&R): ≤ 20% for new test equipment
≤ 30% for test equipment already in use

At least 2 testers and 10 parts with 2 sets of measurements per tester are to be carried out.

Method 3 (without operator influence)
Repeatability (R): ≤ 20% for new test equipment
≤ 30% for test equipment already in use

As a rule, two measurements with 25 parts each are to be carried out.

Machinery capability index: **Cmk ≥ 1.67**

A large number of samples are taken and evaluated over a short period (during a single shift) (as a rule, 50 parts). This also known as the short-term capability index.

Temporary process capability index: **Ppk ≥ 1.67**
Process capability index: **Cpk ≥ 1.33**

Smaller numbers of parts are removed and evaluated over a longer period (during several shifts) (as a rule, 100 parts = 5 parts during 20 shifts). This also known as the long-term capability index. Details of the procedure are specified in VDA Volume 4, Part 1 and in the QS 9000 publications.

If the minimum requirements are temporarily not met, 100% inspection tests must be carried out as long as necessary until capability is achieved through corrective action.

Definitions:
- Machine = Individual component within the production sequence
- Process = Regulated and repeatable sequence, including interaction of staff, machines, material, methods, equipment and working environment

3.5 Process and product audits

The Supplier shall carry out planned internal audits (e.g. VDA Volume 6, Parts 3 and 5) for all the products supplied to HJS and all the processes associated with their development and production at regular intervals. This is based on contractually defined product specifications and properties and on other agreements concerned with the deliveries, e.g. logistics and packaging. In the event of deviations, the Supplier shall initiate without delay all corrective actions necessary and ensure their effective and long-term implementation.

Furthermore, HJS shall be entitled to carry out process, product or system audits at any time but with advance notice in order to check whether the Supplier's quality assurance measures guarantee HJS's requirements.

If quality problems arise that are caused by services and/or deliveries by one or more subcontractors of the Supplier, the Supplier must carry out an audit at the subcontractor(s) if requested to do so by HJS, with participation by HJS if appropriate, and present the results openly to HJS. Refer to Section 1.5 for details on the subject of audit records.

3.6 Product and process release

In order to achieve product release and prior to production delivery, the Supplier shall present HJS with initial samples that comply with all contractually agreed specifications and properties in respect of:
- Dimensions
- Materials
- Function

This enables any deviations to be corrected in good time and therefore systematic defects to be avoided in series production.

Production deliveries are not permitted under any circumstance without initial sample release having taken place.

The initial samples and all the individual component parts and materials used to manufacture them have to be produced using standard operating equipment and under series production conditions.

The content and scope of the required documentation must be agreed with HJS Quality Management specific to the project.

It must be agreed in advance whether the initial sampling should be carried out in compliance with the requirements of VDA Volume 2 or the QS 9000 publications. The respective presentation level must be defined.

The tolerances/measurement points/alignment points given on the drawing must always be observed. If the HJS drawing does not contain any or all of this information, the Supplier must add the tolerances/measurement points/alignment points determined during measurement to the release documentation as a suggestion. Final specification in this regard will be made in coordination with HJS Quality Management.

HJS can check or request the results of the process release if it requests to do so.

For standard parts, the releases can be agreed on the basis of "supplier data sheets" upon request and requirement by HJS Quality Management.

HJS reserves the right to charge the Supplier with any costs incurred if initial sample inspection reports are repeatedly rejected.

3.7 Traceability

The Supplier shall undertake to guarantee the traceability of the products the Supplier supplies.

The products must be marked or some other suitable method chosen to ensure that in the event of a defect being discovered, all other products which could be defective can be identified and barred until follow-up action has been agreed between the Supplier and HJS.

3.8 Requalification test

These requirements apply only to suppliers of specific parts according to drawing or specification, not for service providers, retailers or suppliers for Raw materials and consumables.

Unless otherwise agreed, the Supplier shall undertake a complete dimensional and functional test of all products according to the production control plans and in compliance with IATF 16949 or QS 9000, at suitable intervals, usually once a year, taking the respective customer requirements for material and function into consideration. The scope of the requalification tests can be reduced on a product-specific basis in coordination with HJS Quality Management. This must be documented in the specific production control plans.

3.9 Quality management representative

The Supplier shall nominate a quality management representative who shall be responsible for coordinating the implementation of this Quality Assurance Guideline and taking or instigating any decisions relating to this guideline Name and contact data of this person shall be supplied to HJS QM in written form. The Supplier shall notify HJS immediately in written form if the quality management representative changes.

3.10 Non-disclosure

Both contracting parties shall treat any information obtained or exchanged in the framework of this Agreement with strict secrecy and shall not disclose such information to third parties in any form. The duty to maintain secrecy shall not apply to publicly available knowledge or to information which was already verifiably known to the other party.

4. Changes to previous edition, Replacement

- Change of the Norm ISO 9001:2008 to current version ISO 9001: 2015
- Change of the Norm ISO TS 16949 to IATF 16949
- Change of the Norm from RoHS 2002/95/EC to 2011/65/EU
- Change of the norm ISO9001:2000 to current version ISO9001:2008
- Replacement for previous edition 16-07-2009

Appendix

A. Related Documents and Further Literature

For details relating to the standards and methods of quality management cited in these guidelines, please refer to the respective latest editions of the following documents. Should you require assistance in interpreting methods or the requirements of standards or in their introduction, please do not hesitate to contact HJS QM. We are glad to help.

- DIN EN ISO 9001:2015 Quality management systems – Requirements
- VDA Volume 1 – Guidelines for the Documentation and Archiving of Quality Requirements and Quality Records
- VDA Volume 2 – Quality Assurance of Supplies
- VDA Volume 4 Parts 1–3 – Quality Assurance prior to Serial Application
- VDA 6, VDA 6 Parts 1–3 and 5 – Quality Management in the Automotive Industry
- QS 9000 Manuals
- IATF 16949 Quality Management Systems
- DIN EN ISO 14001 Environmental Management Systems
- Directive 2011/65/EU on the Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

B. Terms and Definitions

- **CAQ** Computer Aided Quality System
- **FiFo** First in First out
- **FMEA** Failure Modes and Effects Analysis Quality planning tool for preventive assurance of quality (risk analysis)
- **IMDS** International Material Data System
- **Pareto analysis** Method of investigation by which all factors influencing a situation under examination are arranged according to their relative degree of influence with the aim of being able to limit a detailed investigation to the key factors.
- **QFD** Quality Function Deployment
- **SPC** Statistical Process Control