

# Elaphe Supplier Quality Manual

## Supplier quality – Elaphe propulsion technologies



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## 1 Introduction

Our customers expect us to meet and exceed their expectations. In order to do so, we need competitive, reliable and innovative suppliers, committed to our common goals. The Suppliers' manual defines expectations and requirements of the Elaphe Propulsion Technologies Ltd. (termed "EPT" hereafter) towards its suppliers and practical instructions for their implementation. This document is controlled and maintained on our website [www.in-wheel.com](http://www.in-wheel.com). Any deviation with compliance with this document must be agreed with EPT prior purchase order is made. EPT undertakes to respect all provisions of this manual and to maintain a long-term partnership with the supplier.

## 2 Quality management objectives

The suppliers' commitment to supply products in compliance with the quality requirements has to be ensured by a modern and efficient quality management system, which includes the principle "zero nonconformity" in the development, production and all other processes. The emphasis has to be on preventive methods and not on methods of detection of nonconformities. EPT requires suppliers to establish, implement and certify the quality management system that meets the requirements of ISO 9001 or the recommended standard IATF 16949. If the supplier does not have the correct certificate, he must obtain the consent of EPT. When a EPT customer requires quality management system evaluation at the supplier, the supplier has to enable it. The same applies for sub-supplier evaluation

## 3 Supplier Qualification

### 3.1 Supplier selection and approval

The process of selection and approval of a new supplier is shown in the following diagram:



Note: EPT can, if necessary, implement its own evaluation of the quality management system at the potential supplier by if previously announced. The evaluation shall be performed according to VDA 6.3. principles. After the evaluation, EPT determines any further measures, which may be necessary to eliminate detected nonconformities. EPT sends the supplier a common evaluation in which the recognised nonconformities are listed. The supplier shall make a Plan of corrective measures and return it to the

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auditor by the set time limit. EPT has the right to check efficiency of the implemented corrective measures any time on first demand.

### 3.2 Supplier self-assessment

Self-assessment is the first step to the process of approval of a new supplier. In this way EPT wishes to acquire new data on the producer. For this purpose, EPT sends the supplier a Self-assessment questionnaire, which must be completed and returned to EPT

## 4 Part qualification

### 4.1 Feasibility study

Technical documents (e.g., drawings, specifications, legal/environment requirements, packaging regulations, requirement specification etc.) prepared by EPT or legally mandatory, must be analysed and evaluated by the supplier. This check provides the supplier with the possibility of submitting his experience and suggestions to the advantage of both sides. A feasibility study must be presented to Purchasing, together with the quotation, and is a prerequisite for order placement. Feasibility study must be reassessed by supplier for each new/changed drawing.

Please note: The analysis of legal requirements is not limited to pre-defined EPT specifications. Each supplier is responsible on its own to identify, analyse and comply with all necessary legal requirements.

### 4.2 Quality planning

#### APQP

The supplier must design and develop new products and services in line with the requirements of the APQP methodology, or other requirements defined by Elaphe, if so agreed. The supplier must appoint a professional who is qualified for preparing the documentation and performing activities according to the requirements of the automotive industry (APQP, PPAP, MSA, SPC, FMEA or equivalent according to VDA). All related costs must be calculated in the price of products and services.

#### PPAP

Prior to starting serial production, the supplier must deliver to EPT a PPAP composed of the following elements. EPT may allow some elements to be omitted, depending on the change / reason for resampling:

1. Coordinated document "Product requirements", signed-off by the supplier.
2. Last valid drawing.
3. Design FMEA (DFMEA).
4. Process FMEA (PFMEA).

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5. Manufacturing process flow diagram.
6. Control plan.
7. Measurement report for geometrical dimensions.
8. SPC analysis / CPK report for special characteristics.
9. Analysis results (material certificates, testing reports).
10. Measurement system analysis (MSA).
11. Documentation pertaining to laboratory qualifications (ISO 9001, IATF 16949, ISO 17025).
12. List of control aids.
13. R@R report.
14. Packing requirements.
15. Confirmation of visual appearance.
16. RoHS, Reach conformance.
17. Sample products (PPAP samples).
18. Part submission warrant (PSW)

### Initial samples

After documentation and first sample review, EPT takes one of the following decisions and communicates it to the supplier:

- approved: the supplier fully meets EPT 's requirements and can start with regular production and order deliveries,
- temporarily approved: a supplier does not fully meet all EPT's requirements, EPT therefore approves only limited amounts of products and requires the following from the supplier:
  - to find out the causes of nonconformities,
  - to prepare and submit a plan of corrective measures,
  - to prepare a new submission of samples or documents to gain a total approval
- rejected: a supplier does not meet EPT 's requirements.

### SPC

Different statistical methods (**Statistical Process Control**) are used to monitor and control processes, such as sampling, control charts, calculation of process performance Ppk, Cpk, measuring and test equipment capability etc. Sample size must be determined prior to using a specific method according to the VDA standard or PPAP.

Unless required otherwise, the process capability is proven and yields appropriate quality in the following cases:

Characteristic	Sampling	Serial production
Safety	Ppk $\geq$ 2.00	Cpk $\geq$ 1.67
Functional (significant)	Ppk $\geq$ 1.67	Cpk $\geq$ 1.33
FMEA		

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FMEA - Failure Mode and Effect Analysis is an analytical preventive method, which prevents potential failures before they even occur. The method enables early identification of failure points, lowers the costs of failure identification and mitigates the risks due to failures. The supplier is obligated to conduct a risk assessment according to the above method or a suitable alternative method in the following cases: new product development, changed processes, deviations from the planned quality, and continuous quality improvements.

## Control plan

The last valid version of instructions AIAG, i.e., APQP with instructions for the control plan, must be used as a basis for development and maintenance of the control plan (e.g., prototype, pre-series & production).

EPT reserves the right to approve the supplier's control plans.

The supplier must make control plans for all products or families of products. The plans for individual families can be used for products with common or similar processes.

In products and process controls, it is necessary to focus on prevention rather than detection of faults and subsequent correction. Special attention has to be paid to finding the correct input control parameters. The suggested corrections or product reworking defined in the control plan must be submitted for approval by EPT part of the initial PPAP or through a later request for change or submission of PPAP from the supplier.

A corrected or reworked product must be checked again according to the requirements set in the control plan and suitably documented.

The control plan must contain at least the following:

- consecutive number and operation name
- quality characteristics of a product or a process, which need to be checked
- sample size
- measurement frequency
- inspection or measurement method
- specification designation and/or the measure manner in case of nonconformities

## MSA

MSA (Measurement Systems Analysis) is quality assessment for an existing measurement system, which is decisive for controlling the process parameters and product and service characteristics. The supplier must conduct the assessments to analyse the following measurement system types:

Variable measurement systems (variable characteristics are those whose value can be expressed numerically): we measure e.g., using vernier callipers, micrometres, dial indicators, height gauges.

Attribute measurement systems (attributes/descriptive characteristics): we measure e.g., using limit gauges, Go-No Go gauges.

Complex measurement systems (measurement systems which do not allow measuring the same piece several times - destructive or non-repeatable measurement systems).

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### Characteristics

To remain compliant with the high legal and regulatory requirements as well as to satisfy the ever-increasing demands of EPT customers, both EPT and the supplier are obligated to pay extra attention to the specification, execution and validation of special characteristics. Failing to comply with the defined and agreed requirements may lead to significant consequences, such as recall from the market, service campaigns, replacement of non-conforming products and services, and prohibition to sell, possibly compromising reputation and leading to loss of business.

These characteristics are defined in the tender specification and/or in the attached technical documentation, and are also clearly labelled. The supplier is obligated to control and monitor special characteristics in accordance with the approved control plan. Records on special characteristics must be kept for no less than 15 years after the end of production (EOP).

The supplier is obligated to label special characteristics in its documentation using the Elaphe's labelling method:

A distinguishing feature, dimension or property of a process or its output (product) on which variable or attribute data can be collected. A characteristic can be placed not only on dimensions, tolerances etc., but also on notes, definitions and processes.

### Critical characteristic

Those product requirements (Dimensions, Specifications, Tests) or process parameters which can affect compliance with government regulations or safe Vehicle/Product Function and which require specific producer, assembly, shipping or monitoring actions and inclusion on the Control Plan.

Symbol used:



Number outlined by a hexagon:

Critical characteristics must be checked 100% on all delivered parts. Parts with critical characteristics out of tolerance shall be automatically rejected.

### Special characteristic

*Specifications of a component, material, assembly or vehicle assembly operation which are designated by Elaphe as being critical to function and having particular quality, reliability and durability significance.*

Symbol used



Number outlined by a diamond:

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Special characteristics must be checked 100% on all delivered parts, if the number of ordered parts is less than 10.

If the order contains more than 10 pieces, the supplier is obliged to provide or suggest control plan which has to be aligned and approved by Elaphe, which specifies the characteristics to be checked on the pre-defined sample of pieces and frequency. If supplier does not suggest or provide a control plan than special characteristics shall be measured 100% on all delivered parts. If any piece is out of tolerance, it must be automatically rejected.

Measurements of special characteristics shall be in statistical control, for which Elaphe will provide specific requirements based on the ordered part.

### Tooling characteristics

Critical tooling symbol used to identify special characteristics of fixtures, gages, developmental parts, and initial product parts.

Symbol used:

Number outlined by a delta (triangle):






### Design change characteristics

Change symbol used on drawings to identify changes from previous versions of drawings.

Symbol used:

Number outlined by an octagon (red colour on coloured drawings):



Symbol	Characteristic
	Critical characteristic
	Special characteristic
	Tooling characteristics

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123	Design change characteristics
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### 4.3 Directed Materials / Suppliers

When specified by EPT, supplier shall purchase products, materials, or services from EPT-directed sources. All requirements from ISO 9001, chapter 8.4, must be respected. The supplier integrating the directed part or material is responsible for the quality of the directed part.

### 4.4 Environmental requirements (Rohs, Reach, Declaration on the supplied materials)

Materials and components built in the products of EPT must be manufactured in compliance with the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and its amendments and on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) and its amendments. The Supplier proves the compliance with a Written Supplier Declaration on the Conformity of Products.

The supplier is obliged to deliver with the supplied materials the following:

- Safety data sheets
- Material certificates of conformity
- Requested declarations

## 5 Serial production

### 5.1 Non-conformance procedure

After receiving a delivery of products and services, EPT shall perform incoming inspection of material in a reasonable timeframe, consisting of the identification of products and services, any visible damages to packaging, certificates and measurements if required.

In case EPT detects any defect in the delivered product or service during the incoming inspection, the supplier shall be immediately notified via an official complaint.

The supplier shall be notified later of any faults that have been missed during the incoming inspection and are detected later in production.

A complaint is any determined deviation from the defined requirements in terms of logistics and/or quality. After receiving a complaint, the supplier is obligated to deploy corrective actions to prevent repetition, mitigate the consequences and ensure uninterrupted supply. Immediate actions must be delivered in 24 hours after receiving a complaint. Further actions (8D) must be presented in 7 days, unless agreed

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otherwise. The complaint shall be closed in 30 business days. Supplier shall commit to finding the root cause of the issue. The supplier shall undertake a teamwork approach to problem solving. In specific cases, the supplier may request in writing a release of products and services under special conditions.

A release under special conditions is then agreed with EPT departments and must be confirmed in writing. The supplier assumes full responsibility for all costs incurred by any non-conformance, which was detected by EPT as the buyer or by the buyer's customers, and caused by the supplier.

If EPT cannot reasonably be expected to allow supplier to remedy the defect or to replace the defective goods due to operational reasons or if supplier is not able to remedy or replace the defective goods, then EPT shall have the right either to:

- a) remedy the defect itself at supplier's expense;
- b) have it remedied by a third party at supplier's cost;
- c) return or scrap the defective goods at supplier's cost in accordance with the following. Supplier shall communicate whether EPT should return the affected goods to supplier or scrap them. If supplier does not communicate its decision to EPT within ultimately 10 (ten) Business Days, then EPT will scrap them at supplier's cost. In this event supplier shall have no further claims.

## 5.2 Audits

The supplier has to carry out internal planned audits (e.g., VDA Volume 6, Part 3) for all the products delivered to EPT and all the processes linked with their development and production at regular intervals, planned annually in advance. In the event of deviations, the supplier initiates all the corrective actions necessary and ensures their effective and long-term implementation. In addition, EPT and its customers are authorized to carry out process, product or system audits with advance notice in order to check whether the supplier's quality assurance and environmental requirements meet the EPT requirements. After receiving the audit report, the supplier is obligated to deploy the necessary actions for detected non-conformances within the agreed deadline.

## 5.3 Suppliers Monitoring

On yearly basis EPT analyses and issues suppliers' achievement. EPT sends to supplier a report of evaluation and possible actions needed to improve targets together with help of EPT.

EPT scoring of Supplier's includes, but not limited to, following areas:

- Quality performance (% and NCRs)
- Delivery performance (On-time delivery)
- Service Performance (Responsiveness, Flexibility)
- Price development trends

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The level of suppliers' performance is closely tied to promoting and demoting of supplier status within EPT supplier system:

- A – Preferred supplier
- B – Approved supplier
- C – Supplier In development

Supplier's failure to fulfil EPT's performance requirements can result in, but not limited to, new business hold and/ or supplier phase-out.

### 5.4 Supplier escalation

The Escalation Model provides a classification of the severity of supplier issues and suggests a standard approach for each Escalation Level with respect to the overall approach, communication level and issue management.

Definition of escalation levels:

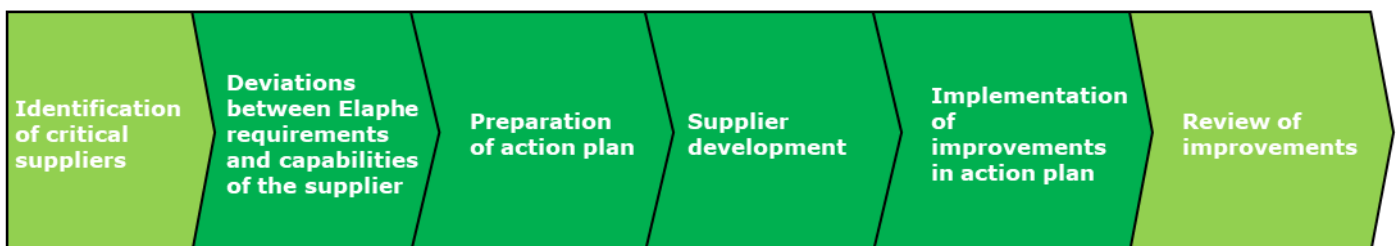
- Escalation Level 1

Definition: Minor Issue = no issue for Elaphe Customer or Relevant Financial Impact on Elaphe, one-time issue, not repeating. Clear communication to the supplier raises awareness of a shortfall at an early stage to eliminate root causes quickly.

- Escalation Level 2

Definition: Major shortcoming with impact on Elaphe and/or Elaphe Customers or with the risk of repetition or financial impact on Elaphe. During a meeting with the supplier, possible solutions to eliminate root causes for deficiencies are jointly agreed.

### 5.5 Supplier development process



An important approach to suppliers' training includes:

- workshops, the purpose of which are improvements, searching for and realization of additional savings in the supply chain; workshops can be organized on the initiative of EPT or the supplier

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- conferences with suppliers, the purpose of which is to inform suppliers regarding the business or development trends of EPT, expectations of EPT towards suppliers and presentations of new techniques in operations with suppliers
- other ways of training and education

## 5.6 Change management

No modifications to the supplier's processes and/or products and services, or to its supply chain are allowed without prior notice given to EPT and without an approval from EPT. The supplier must provide an adequate scope of information in time, so that all necessary activities can be performed.

The SUPPLIER informs EPT Purchasing before carrying out all the planned changes in products and processes, both before and after SOP (Start of Production), e.g., in case of:

- Changes in design, specification and material
- Use of new, modified or replacement tools
- Changes in manufacturing methods or production processes
- Relocation of production within a manufacturing location or to other locations
- Changes in supplier of products, components, materials, services or software
- Restart of production equipment after closure of more than 12 months. The supplier is also obliged to inform EPT if one of the above points is applicable to a sub-supplier.

After changes, the first deliveries must be specially marked on the delivery note, containers and parts themselves, if appropriate. Details of this must be agreed in writing between EPT and the supplier before the parts are delivered.

## 5.7 Traceability

The supplier is obliged to guarantee the traceability of the products he 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 blocked until subsequent measures have been agreed between the supplier and Elaphe. These requirements must be cascaded down to the complete supply chain. Product specific traceability requirements will be detailed out in additional documents.

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## 5.8 Documentation management

The supplier is obligated to keep detailed records on the execution of its quality control actions, including the documentation pertaining to the initial samples, training, requalification, as well as physical initial samples and the complete documentation related to the special characteristics.

Furthermore, the supplier is obligated to store the documentation for no less than 15 years after the end of production (EOP). The documentation management processes must be in line with the latest valid VDA standard and with EPT specific requirements.

If necessary, the supplier shall provide access and support to EPT with the analysis of documentation and samples, as well as submit the samples and documentation upon request. The supplier is obligated to present the requested documentation and samples within 24 hours of the request. This shall apply in particular to those characteristics of products and services that require proof of statistical process capability.

The supplier is obligated to attend to and coordinate with Elaphe functional project management in the design and development phase of products and services, processes and other extensive tasks, in accordance with the latest valid VDA standard or an appropriate alternative.

## 5.9 Logistics

### Packaging cartons

Elaphe and the supplier make an arrangement about the type of packaging, carton and manner of labelling of packaging units before the agreement is signed. The arrangement applies to an individual product and is a component part of the supply agreement. In this, general principles and obligations apply:

- packaging must comply with Elaphe requirements and the valid international environmental standard,
- The packaging must protect products against general impacts of storage and transportation; it has to make sure that the products reach the final spot, where they are put into use, undamaged.
- The packaging has to enable removal of samples, storage and further transportation, and it has to be adjusted to delivery at the point of supply.
- every packaging unit has to be marked with transportation labels,
- all transport units must enable machine operation,
- the packaging shall not constitute a hazard for the workers,
- delivery of full packaging units is recommended,
- every packaging unit must keep its initial form until the place of use,
- packaging unit dimensions must be consistent with the way of storage,

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- a packaging unit has to contain the goods:
  - of the same manufacturer,
  - of the same part number or code,
  - of the same date of manufacture (in principle)
  - of the same batch (in principle).

### Package labelling

Every packaging unit of a supplier has to be labelled in compliance with Elaphe requirements. The supplier is liable for additional costs or material loss, which results from deficient labelling, packaging or transportation. Every unit of packaging and transportation has to have a label. If not otherwise agreed by Elaphe and the supplier, labelling by VDA standard is used. The label has to indicate the following data:

- manufacturer's name,
- goods name,
- order number,
- identification number of a product of Elaphe,
- quantity in units,
- batch number,
- date of manufacture (of packaging),
- a stamp of the supplier's outgoing inspection,
- bar code If a packaging unit consists of smaller packaging units, there should be a label with the same data placed to each of them.

All chemicals shall have on every packaging unit data that are required by the Chemicals Act and the Safety Data Sheet. The contents of the waste label shall be in compliance with the applicable waste legislation.

### Transport

The supplier has to come to an arrangement with EPT, regarding product transportation. The arrangement shall be an integral part of the supply agreement. In this, transportation requirements and product specific characteristics must be considered.

## 6 Related documents

- NDA (Non-Disclosure Agreement)
- GTC (General Terms and Condition of Purchase)

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