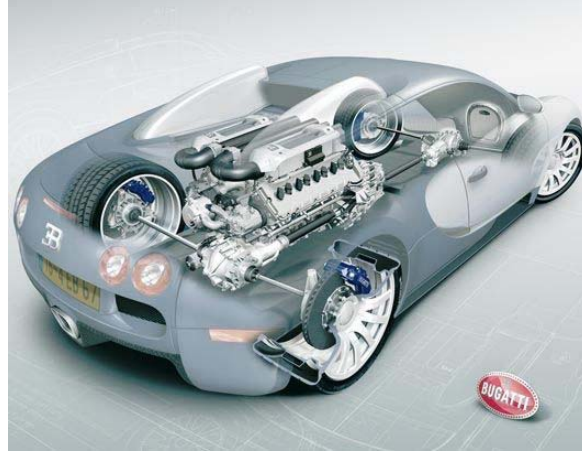




# Supplier Quality Manual





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## Foreword

In the past, each entity within the Haldex Group had its own requirements regarding purchased material and suppliers. Each entity presented its requirements individually to the suppliers with different terms and emphasis, but the concepts were the same. This manual compiles the requirements into one format.



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## **Introduction**

### ***1.1 General***

The supplier quality manual describes the requirements for selected suppliers regarding quality control. The basis of Haldex ability to compete is the high quality of the product and services. Guaranteeing a high and uniform quality level assures customer satisfaction and it is also a prerequisite for mutual survival.

This document is a supplement to and does not replace or alter conditions covered by the purchase agreement. It shall not be considered to be the desired level, but more as a description of the lowest level of quality assurance that Haldex expects from its suppliers.

### ***1.2 Quality requirements***

Haldex quality requirements stated in this document are general in nature. Quality requirements for specific parts are specified in product specifications and order documents.

ISO 9001/2 certification by an authorized 3<sup>rd</sup> party is a minimum requirement. When required by Haldex and its customers ISO TS 16949 certification by an authorized 3<sup>rd</sup> party is also required.

APQP as tool for quality assurance must be used when required by Haldex. Refer to latest Edition of AIAG APQP Manual or specific Haldex instruction.

### ***1.3 Product Safety***

Haldex manufactures products for performance and safety in vehicles. It is of outermost importance that our products are reliable in their applications.

Product safety must therefore be the highest priority throughout the complete supply chain. Haldex will include suppliers focus on Safety Management in our evaluation of suppliers, depending on the criticality of supplied parts.

### ***1.4 Applicable statutory and regulatory requirements***

Haldex demands the supplier to be in compliance with all applicable statutory and regulatory requirements.

### ***1.5 Environmental management system***

The guidelines of our environmental position are described in our environmental policy (Available on Haldex website [www.haldex.com](http://www.haldex.com)).

Haldex expects its suppliers to focus on environmental issues by implementing an environmental management system according to ISO 14001 or equivalent standard.



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Any exception must be separately negotiated and agreed between Haldex and supplier concerned.

Supplier must fulfill requirements according to REACH legislation and if requested IMDS as well. See references

### ***1.6 Communication***

Attaining the appropriate level of quality in terms of communication requires teamwork between the Haldex Group and its suppliers. Open communication is essential to achieve the necessary teamwork. Communication shall be channeled through and supported by the Haldex purchasing organization.

Changes in the organization or position of the contact person(s) at the supplier shall be communicated to the relevant contact person at the Haldex purchasing organization.

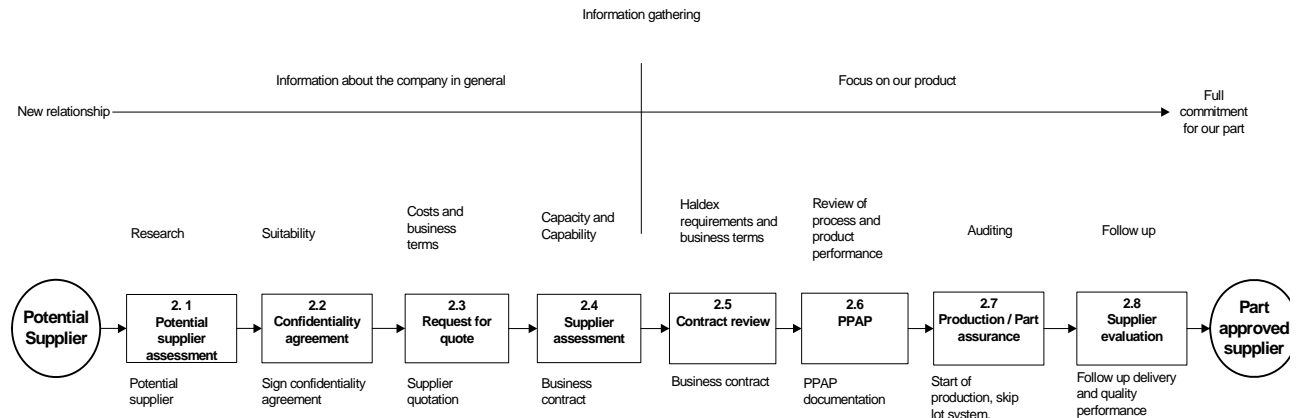
Haldex Group uses English as its preferred language when communicating both externally and internally. Our suppliers should ensure that they have the adequate language and communication skills for their business to meet our needs.

The supplier shall keep himself informed of and comply with the Haldex Social Responsibility Policy (Available on Haldex website [www.haldex.com](http://www.haldex.com).)



## 2 Haldex sourcing process (Principle)

The sourcing process below describes how Haldex in principle decides how and where the specific part will be purchased.



### 2.1 Potential supplier assessment

Haldex performs regular searches to find potential applicants for future business collaboration.

### 2.2 Confidentiality agreement

A potential supplier must sign a confidentiality agreement to regulate the protection of business information before engaging in detailed discussions

### 2.3 Request For Quotation

Haldex's request for quote constitutes a basis for business negotiation

### 2.4 Supplier assessment

A supplier assessment is performed in order to grade the potential supplier's capability of delivering the requested parts and/or services. Depending on the type of business, Haldex can do this assessment during a visit at the supplier's site, through a supplier self-assessment or using a 3<sup>rd</sup> party registrar (see Supplier Assessment and Product and Process Audit in the Supplier Handbook).

Also a Financial assessment may be performed if Haldex decides so. (D&B rating or other).



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## **2.5 Contract review**

Contract reviews are carried out between Haldex and the supplier in order to communicate requirements and agree upon business terms, including the following:

### **2.5.1 Commercial agreement**

Commercial agreements between the supplier and Haldex are specified in a contract following a standard Haldex format. The agreement regulates business between the supplier and Haldex. The supplier undertakes to manufacture and supply listed parts and/or services to Haldex in accordance with clauses in this agreement

### **2.5.2 Design requirements**

Haldex product requirements are specified in drawings and in technical specifications. All specified properties are essential and must be complied with. The nature of some of the properties is such that if the specification is not met, the reliability and performance of the product may be adversely affected. These properties shall be specified as classified requirements. During manufacturing, the supplier must secure statistical control of these properties and documentation must be available to show that the specified requirements have been met (see 2.7). The supplier can be requested to enclose data in shipments to Haldex.

Haldex's responsible purchaser shall inform the supplier when there is a new issue of the drawing. The supplier shall always have up-to-date Haldex drawings and other technical specifications, and ensure that all affected personnel have the correct drawing and revision of it and correct specifications.

Incomplete, ambiguous or conflicting requirements reflected on drawings and/or specification documents shall be resolved with the responsible Haldex purchaser.

Where the supplier has design responsibility of purchased parts and/or services, it is responsible for ensuring that parts and/or services do not contain substances that are listed on the Haldex "black" list.

See also 2.5.4

### **2.5.3 Quality requirements**

The general quality requirements Haldex imposes on its suppliers are stated in this document. Quality requirements for specific parts and/or services are specified in product specifications and in order documents.

### **2.5.4 Environment requirements**

All suppliers must follow Haldex "black" and "grey" lists regulating requirements on chemicals or materials used in parts and/or services. Any presence of listed chemicals must be accounted for and have phase-out plans (see Black and Grey lists in the Supplier Handbook).



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All chemicals included in products delivered to Haldex and destined for the European market and

All chemicals used in the supplier's manufacturing processes at European sites shall be registered, by the supplier, according to the European Commission REACH regulation. See References.

Prohibited and restricted substances according to IMDS must not be used. If IMDS declaration is required by Haldex or its customer, all components and all contained substances must be declared in the IMDS system. See References

Specific requirements concerning environment management shall be regulated in the Business contract.

### **2.5.5 Purchasing data**

Haldex's purchase order documents issued to suppliers contain descriptions of ordered products, including part number, description, drawing number, released quantity, delivery date(s) scheduled and other pertinent data.

The supplier shall review and approve purchasing documents for accuracy and adequacy of the specified requirements prior to release for production. Incomplete or conflicting requirements shall be resolved with the issuer prior to release. Upon review and acceptance of the purchase order documents, the supplier, where requested, shall confirm receipt and acceptance of the order to the issuer. The supplier is responsible for outgoing product quality and must verify and document that the product conforms to all Haldex standards and engineering specifications as stated on the purchase order with the engineering drawing.

### **2.5.6 Equipment supplied by Haldex**

Tools, gauges, patterns, fixtures, package material and machines (named equipment below) supplied and/or paid for by Haldex are the property of Haldex. After receiving the equipment, the supplier shall in return hand over a notice of delivery to Haldex showing that deposition of the equipment to Haldex was completed. The equipment remains Haldex property and is to be marked according to Haldex specification.

Equipment not used in production must be kept in a fireproof location and stored separately from production. The supplier undertakes not to use the equipment for manufacturing on a third party's behalf. The supplier is responsible for maintenance of all equipment paid for or supplied by Haldex. Measuring equipment supplied by Haldex must be included in the suppliers own calibration system.



When the agreement and the manufacturing expire, if nothing else agreed, the equipment must be returned to Haldex. The supplier does not have the right to scrap equipment without Haldex's permission. If required by Haldex, the equipment shall be available for inspection.

## ***2.6 Production Part Approval Process***

The Production Part Approval Process (PPAP) is intended to verify that products made from production materials, tools, and processes meet Haldex's engineering requirements and that the production process has the potential to produce products meeting these requirements during an actual production run.

PPAP must be carried out:

- On new parts, unless previously approved by another Haldex site.
- On changed parts, controlled by an engineering change order.
- When a new supplier is introduced.
- When the previous PPAP has been rejected.
- When required by Haldex.

The supplier must inform Haldex and secure approval from Haldex if changes affecting process or product are considered. Haldex decides if proposed change can be implemented and conditions regarding quality assurance and initial sampling.

Such changes can be:

- When significant changes to the manufacturing process are planned, which may affect the properties and quality of the part.
- When a change of materials supplier is planned (applies to parts which require traceability).
- When a change of subcontractor is planned (for example heat treatment, surface treatment).
- When their own production equipment has broken down and manufacturing has to be transferred to another company.
- When equipment is transferred within your own facility.

PPAP must be performed in accordance with PPAP level 3 requirement table below unless otherwise noted on Haldex instructions and/or order documents. If submission of a sample product is required, the supplier shall send marked sample(s) to Haldex with inspection and test records. The sample(s) shall be sent as a separate shipment and with a separate delivery note. The package and documents must always be marked "PPAP", and addressed to the attention of the person at Haldex who ordered the PPAP. Regular production part deliveries are not permitted before approval has been granted by Haldex. This approval is sent to the supplier via a returned and signed Warrant stating if the PPAP is approved or rejected.



**PPAP requirement table.**

Requirement		Submission level				
		1	2	3	4	5
1	Design Record (drawing)	R	S	S	R	R
2	Engineering Change Documents, if any	R	S	S	R	R
3	Customer Engineering Approval, if required	R	R	S	R	R
4	Design FMEA	R#	R#	S#	R#	R#
5	Process Flow Diagram	R	R	S	R	R
6	Process FMEA	R	R	S	R	R
7	Control Plan	R	R	S	R	R
8	Measurement System Analysis Studies (MSA)	R	R	S	R	R
9	Dimensional Results	R	S	S	R	R
10	Material, Performance Test Results	R	S	S	R	R
11	Initial Process Study (Capability Study, Cpk)	R	R	S	R	R
12	Qualified Laboratory Documentation *	R	S	S	R	R
13	Appearance Approval Report (AAR), if applicable	S	S	S	R	R
14	Sample Product	R	S	S	R	R
15	Master Sample	R	R	R	R	R
16	Checking Aids	R	R	R	R	R
17	Records of Compliance With Customer-Specific Requirements *	R	R	S	R	R
18	Traceability tree *	R	S	S	S	S
19	IMDS report *	S	S	S	S	S
20	Part Submission Warrant (PSW)	S	S	S	S	R

- S = Submit to Haldex. Retain copy at manufacturing location.
- R = Retain at manufacturing location; readily available for Haldex representatives upon request.
- # = Applicable if the supplier has design responsibility.
- \* = If requested



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**PPAP requirements, brief explanation:**

**1. Design Records**

A copy of Haldex's drawing for the submitted part must be included with submission when requested.

**2. Engineering change documents**

In case of design and/or drawing changes the Engineering Change Order (ECO) shall be submitted

In case of change in process at supplier (not affecting design or drawing) and PPAP required by Haldex the Engineering Change Order (ECO) shall be submitted.

**3. Customer engineering approval, if required**

In cases when design change or drawing change have been made pertaining to the supplier's proposed change, Engineering Change Order from Haldex will be enclosed.

**4. Design FMEA**

Design FMEA is required if the supplier is responsible for design. Refer to latest Edition of AIAG Potential Failure Mode and Effects Analyses reference manual..

**5. Process flow diagrams**

Flow chart describing the production process for the part.

**6. Process FMEA**

Refer to latest Edition of AIAG Potential Failure Mode and Effect Analyses reference manual.

**7. Control Plan**

The Control plan should minimum describe operations steps, classified requirements, tolerances, measurement technique, sample size and frequency, records and reaction plan when nonconformity occurs.

**8. Measurement System Analysis (MSA)**

A measurement system analysis must be performed to understand how measurement error is affecting the measured values. To be done for the measuring, gauging or test equipment, used to produce the Process Capability Studies. Refer to latest Edition of AIAG Measurement System Analysis Manual.

**9. Dimensional Results**



Dimensional inspection must be done for all parts and product materials (see “sample products” below) with dimensional requirements to determine conformance with all design record specifications. It is the supplier’s responsibility to provide dimensional measurement results. If a third party inspection service has been used, this must be stated on the result sheet. Any compensation for costs using external services will not be accepted by Haldex if this was not included in the quote.

### **10. Material, Performance Test Result**

All performance, durability and material tests specified on drawings or technical requirements must be performed and recorded by the supplier if not otherwise agreed upon with Haldex. This clause includes results from material analysis documented in a *Material certificate*.

### **11. Initial Process study (capability study, Cpk)**

Process capability studies must be carried out on the classified requirements specified in Haldex’s drawings as well as on the critical process parameters identified by the suppliers’ Process FMEA.

For critical measures marked as [2] or [3] on the drawing or properties obtained in the process FMEA evidence is required that the selected process and equipment is capable of fulfilling these. It is the supplier’s responsibility to state a scope, which guarantees the selected process capability.

Special processes, which cannot be verified by means of control and testing afterwards, should be tested, documented and controlled in order to guarantee that the specifications are being fulfilled.

Haldex requires a minimum of 1.67 Cp and 1.33 Cpk for the initial process study approval of process. If the obtained Cpk is less than 1.33, a 100% inspection of parts is required.

If nothing else stated, capability study shall be performed from minimum 300 pcs. Refer to latest Edition of AIAG SPC Manual.

### **12. Qualified Laboratory Documentation**

Laboratory scope is a quality record containing:

- the specific tests, evaluations and calibrations a supplier laboratory has the ability and competency to perform
- a list of the equipment which it uses to perform the above
- a list of the methods and standards to which it performs the above

### **13. Appearance approval report**

Applies only to parts with appearance requirements stated in the drawing.

### **14. Sample products**



The supplier is to provide production level parts as requested on the order. Parts must be manufactured according to the methods and with the equipment intended for future serial production. PPAP samples shall be submitted free of charge.

Unless otherwise agreed upon, the supplier must perform inspection and testing on 5 different parts, marked 1, 2, 3, 4, 5. If there are unique molds/cavities, the submission should include three samples per each unique mold/cavity. Parts must be from a production run unless otherwise agreed upon with Haldex.

Master Sample is the sample that is going to be retained at the supplier for referral.

### **15. Master sample**

The supplier should save parts as reference samples from the initial sample submission of injection molded or molded parts.

### **16. Checking aids**

Description and verifying documents covering the measuring devices or measuring units to be used for verifying purposes.

### **17. Records of compliance of customer specific requirements**

Documentation of compliance of customer specific requirements.

### **18. Traceability tree**

A traceability tree shall be established for all articles and describe the manufacturing chain of the article from delivery of raw materials up to and including the finished article.

### **19. IMDS report**

Unless otherwise stated by Haldex, the part (or substance) shall be registered in the International Material Data System (IMDS) before delivery of samples to Haldex. A signed document verifying this shall be included in the delivery of the samples.

### **20. Part Submission Warrant**

The Part Submission Warrant (PSW) form shall correspond with AIAG PPAP-manual model or Haldex template and be signed by Haldex before production and deliveries to Haldex take place. The Haldex PSW form will be submitted together with the PPAP order.

#### **2.6.1 Production Test Run (Run At Rate)**

Haldex reserves the right to request and attend a full production test run prior to serial release of the production. The Production Test Run is conducted to assure the capability and capacity of the specific production line. The scope and extent of the Production Test Run is decided for each specific case.



## **2.7 Production / Part assurance**

General conditions and terms for production of Haldex parts and final supplier approval (Part assurance):

### **2.7.1 Process control**

The supplier must establish and maintain manufacturing documentation adapted to their manufacturing process. The supplier must document the inspection and test results, which show that the classified requirements meet the set requirements. This may be in the form of minutes and reports from process control, quality inspection, tool inspection, etc.

Manufacturing must take place under controlled conditions. Capability studies must be performed for machinery and processes using statistical methods, such as SPC. Processes must show capability,  $Cpk > 1.67$  during the life of product. If capability is between 1.33-1.67, corrective actions must be planned and implemented.  $Cpk < 1.33$  may be accepted in exceptional cases and approved by Haldex on the condition that all parts are inspected and sorted.

The use of statistical control measures by the supplier shall be performed on classified requirements as per Haldex's drawings (see 2.5.2), and on requirements identified by suppliers' Process FMEA. Documentation must be traceable to the actual products shipped.

The supplier shall, unless otherwise agreed, perform and document at least once a year a layout inspection and a functional verification, including inspection of packaging and labeling according to Haldex requirements. Results shall be available for Haldex review.

### **2.7.2 Supplier final quality inspection**

The supplier shall maintain procedures to ensure that the purchased product conforms to and is certified to the specified requirements, if necessary by conducting a final quality inspection. It is the supplier's responsibility to ensure that all parts shipped to Haldex meet specified requirements. Acceptance of a product by a sampling plan (either by the supplier or by Haldex) does not relieve the supplier of the responsibility to meet specified requirements for all parts. Haldex reserves the right to verify the purchased product at the supplier's premises. In such an instance, the supplier will be notified and given sufficient preparation time.

### **2.7.3 Part assurance**

Regular production deliveries can only begin after PPAP/PSW is signed/approved and Haldex has ordered parts.



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#### **2.7.4 Handling of nonconformities**

In this context, nonconformities do not only refer to products that do not conform to specification, but also to alternative supplier process or nonconformities in supplier processes or breached agreements with respect to delivery dates and size of delivery as well as packaging instructions that have not been followed.

When nonconformance in product or process is detected at the supplier's facility, the supplier must determine immediately the extent of the problem and take prompt corrective action to prevent shipment of any nonconforming material. All suspect material shall be handled and contained as nonconforming material. The supplier must immediately notify Haldex of any suspected quality problems in shipped products and the corrective action being taken to eliminate the condition for future shipments. If the problem cannot be corrected immediately, shipments must be held pending specific instructions from Haldex.

Supplier communications notifying Haldex of nonconforming conditions or requesting deviation approval shall be directed in writing to the appropriate Haldex contact. After internal investigation, Haldex can, in exceptional cases, approve a deviation of product or process. This approval is valid for a limited number of parts or a limited time, and a reduced price. Approval of Deviation with specific instructions is sent in writing to the supplier. The material involved must be retained by the supplier pending receipt of specific instructions from Haldex. Deliveries with deviation approval are identified in accordance with instructions in the remitted deviation approval.

The supplier confirms restored quality by returning a signed deviation approval to Haldex.

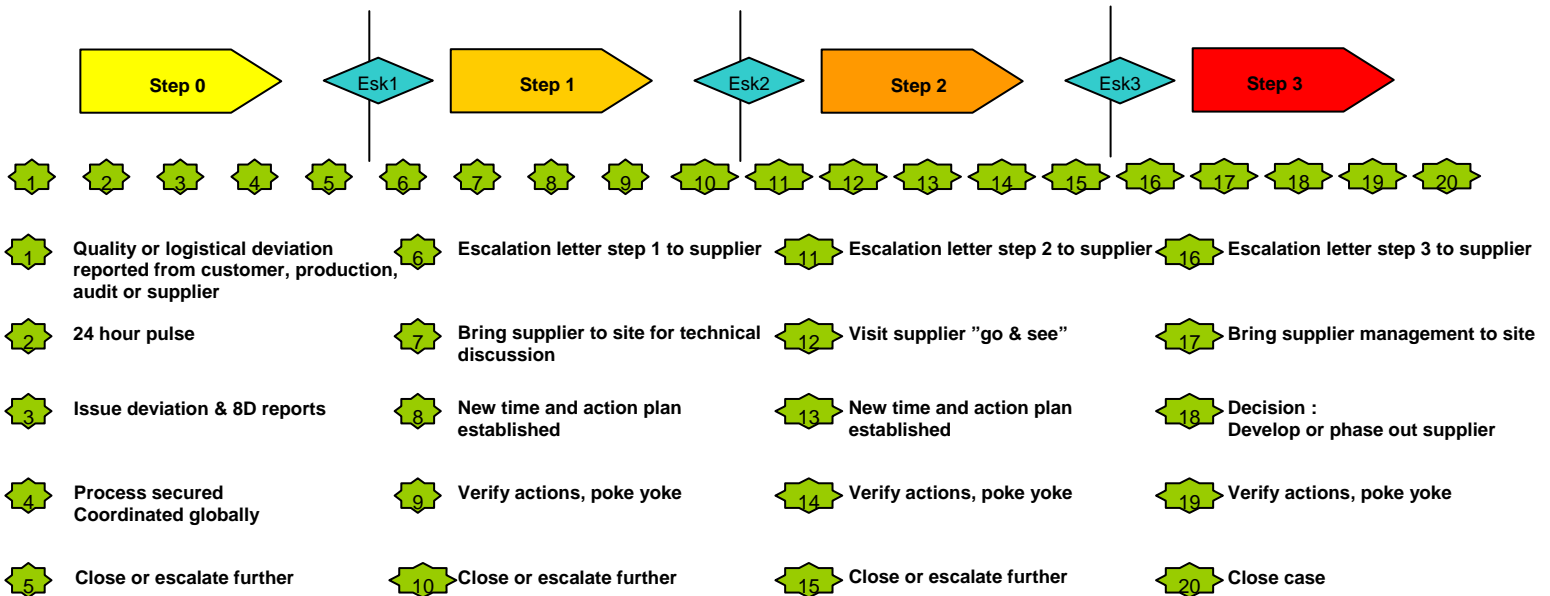
#### **2.7.5 Handling of claims**

If Haldex receives a delivery with nonconformities, the supplier will be informed of this through a nonconformity report. The supplier must implement immediate short-term actions and describe these in writing to Haldex within 24 hours. The supplier can be required to do sorting and remedy the nonconformity at Haldex. If the supplier is not able to do sorting, without delay after notification from Haldex, Haldex may do the sorting and invoice the cost to the supplier.

A corrective action plan (e.g. 8-D) listing the root cause and corrective and preventive actions must be sent to Haldex no later than ten (10) calendar days after receipt of the nonconformance report.



Suppliers delivering material with recurrent deviations will be handled according to Haldex's escalation model for nonconforming material. The model consists of four steps and three escalation levels. The steps are described below.



### 2.7.5.1 Non conformance costs

If a non conformance occurs, Haldex may debit the supplier costs associated with the following:

Administrative cost	Up to 180€per report
Administration, field claim	Actual cost
Sorting cost	Actual cost
Freight cost	Actual cost
Component cost	Actual cost
Documentation error or omission	Actual cost
Packaging/labeling error or omission	Actual cost
Line down	Actual cost
Handling of Approval of Deviation initiated by supplier 'for affected volume	min 5% of parts price*

### 2.7.6 Documents

PPAP documents and Product audit reports must be stored for 15 years at the supplier site. Other documents such as Capability studies reports, Inspection and traceability records and certificates shall be stored for 5 years. All documentation must be available for Haldex and its customers on request.



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## ***2.8 Supplier evaluation***

Evaluations shall be performed regularly on all suppliers.

Haldex shall:

- a) Evaluate and select suppliers by their price, quality and service, based on the classification of product/service.
- b) Determine product specific requirements for the supplier. This shall be dependent on the type of product, the impact of suppliers product on the quality of final product and, where applicable, on the quality audit reports and/or quality records of the previously demonstrated capability and performance of suppliers.
- c) Establish and maintain quality records of approved suppliers.
- d) Part assurance approval is invalidated when a supplier evaluation is not approved; this requires that corrective actions must be taken immediately.
- e) Target for the suppliers delivery performance is 100 % and target for PPM rate for nonconformities (rejects) is set yearly by each Haldex division (see 7.4). If these targets are not met, an ongoing action plan for reaching these targets shall be in place.
- f) Haldex reserves the right to request a corrective action report when there is a deviation of any kind.

## ***2.9 Sub suppliers***

Each supplier to Haldex is responsible for the control and continuous improvement effort of its sub suppliers. Suppliers to Haldex must require and issue corresponding requirements to sub suppliers.

# **3 Supply Chain Improvement Program**

## ***3.1 General***

Haldex Supply Chain Improvement Program (SCIP) fully indorses the themes of zero defects by demonstrating continuous improvement.

## ***3.2 Definition***

- Strive for zero defects
- Identify, quantify and eliminate waste
- Improve the product
- Improve the process
- Optimize total procurement cost



### **3.3 Objective**

To create a mindset at Haldex and in the supply chain that results in continuous improvement in all value added aspects of our business relationship.

### **3.4 Lean Production**

In order to secure a long term, successful and profitable teamwork between Haldex and the supplier, the supplier is requested to dedicate resources for Lean Production. The supplier shall have an implementation plan for Lean Production that is supported and regularly reviewed by senior management.

## **4 Supplier categories**

### **4.1 General**

Each supplier in the Haldex supplier community is ranked according to one of the four following categories:

AA	=	Group Preferred Supplier
A	=	High Performance Supplier
B	=	Performance Supplier
C	=	Low Performance/Conditional Supplier

### **4.2 AA = Group Preferred Supplier**

A Group Preferred Supplier is a supplier that is a good fit with Haldex's sourcing policy and supplies parts to more than one Haldex division or more than 10% of the total direct material purchases of one division. It shall adhere to or have own policies inline with the social and environmental policy of Haldex. The supplier is certified by a recognized auditor from a third party according to ISO 9001/2 or, when required by Haldex customer, TS 16949. It is focusing on environmental issues by implementing an environmental management system in accordance with ISO14001 or equivalent. The supplier has a history of outstanding performance and fulfills or exceeds the Haldex targets for quality, delivery precision, environment and year on year cost reductions. The ownership is stable and the company has geographic presence that matches Haldex needs.

A supplier can remain Group Preferred indefinitely, given outstanding performance.

### **4.3 A = High Performance Supplier**

A High Performance Supplier is a supplier that is a good fit with Haldex's sourcing policy. It shall adhere to or have own policies inline with the social and environmental policy of Haldex. The supplier is certified by a recognized auditor from a third party according to ISO 9001/2 or, when required by Haldex customer, TS 16949. It is focusing on environmental issues by implementing an environmental management system in



accordance with ISO14001 or equivalent. The supplier performs according to the Haldex targets for quality, delivery precision, environment and year on year cost reductions.

A supplier can remain High Performance Supplier indefinitely, given outstanding performance.

#### ***4.4 B = Performance Supplier***

A Performance Supplier is a potential High Performance Supplier. The supplier has not been supplying long enough to have a history of good performance, or doesn't score higher in the Supply Chain Improvement Program.

#### ***4.5 C = Low Performance Supplier / Conditional Supplier***

A Low Performance Supplier / Conditional Supplier is a supplier that is currently used but does not adhere to, fulfill or cannot show plans for rectification within a reasonable time for a maximum of one of the following:

- The Haldex sourcing policy
- The Haldex social policy
- The Haldex environmental policy
- The Haldex targets for quality, delivery precision and year on year cost reductions
- Certification by a recognized auditor from a third party according to ISO 9001/2 or, when required by Haldex customer, TS 16949
- Implementation of environmental management system according to ISO 14001 or equivalent

An Improvement Action Plan is requested

A Low Performance Supplier / Conditional Supplier may not be awarded new business

## **5 Change Management Process**

### ***5.1 General***

It is important to control the change process in order to avoid faults and misunderstandings during the change. A cross functional change management team coordinates all changes of an article's properties. In this context, the word *property* means change of dimension, process, raw material and sub-supplier. Changes are not allowed without a formal change order from Haldex.

### ***5.2 Change process***

The change process at Haldex takes place in three steps:

1. Change Request (E.g. SCR, Supplier Change Request)
2. Change Proposal (ECP, Engineering Change Proposal)
3. Change Order (ECO, Engineering Change Order)



The purchasing department coordinates requests, proposals and orders for change of product or process.

Changes initiated by Haldex or customer shall be sent to supplier for review.

Changes requested by supplier shall be sent to Haldex purchasing department for internal investigation.

When a change is investigated and planned Haldex issues an ECO (Engineering Change Order) specifying all necessary data for a correct implementation of actual change. The supplier is responsible of acting according to specified ECO.

### ***5.3 Changes proposed by the supplier (SCR)***

All requests for changes of product or manufacturing process from the supplier shall be specified on the *Supplier Change Request* form and sent to the Haldex purchasing department.

The request is then investigated internally within Haldex.

The supplier is informed about Haldex decision in any case, request approved or not.

## **6 Prototype material**

### ***6.1 General***

Prototype material is used for development work in order to evaluate and verify that a design meets the requirements made. It is therefore important to deliver parts, which meet the requirements of the technical documentation. Should the requirements according to the Haldex technical documentation prove to be difficult or expensive to meet, the supplier should contact Haldex's purchasing department and inform them of the difficulties and, preferably, offer a proposed alternative.

### ***6.2 Manufacture***

Parts shall be manufactured under controlled conditions. Controls shall be planned and implemented to the extent that all supplied parts meet the requirements made. It is desirable that the prototype is made at the series production site or close to it so that all experiences can easily be transferred.

### ***6.3 Documentation***

Unless otherwise agreed, the measuring results from three (3) (first, middle and last of the production batch) parts shall accompany the delivery. Prototype material, which has been sent to Haldex without documented measuring results, will not be formally approved by Haldex and may therefore be returned to the supplier at the expense of the supplier.



The supplier is requested to deliver according to ordered level, A, B or C, and/or else specified.

<b>Level</b>	<b>A</b>	<b>B</b>	<b>C</b>
Warrant (PSW)	X	X	X
Dim. report		X	X
Drawing	X	X	X
Test results		X	X
Checking aids			X
Deviation report	X	X	X
Numbered parts	X	X	X

### **6.3.1 Dimensional report**

The minimum requirement is a report of measured critical dimensions according to the drawing of all delivered parts. Subject to agreement with the supplier, other requirements can also be included. A minimum of three (3) (first, middle and last part manufactured in the batch) complete measurement reports shall be included in each delivery. Parts shall be clearly marked, for reference to the reports, to avoid confusion.

For every dimension measured, the measuring method must be specified in the dimensional report.

### **6.3.2 Drawing**

A copy of the used drawing shall be enclosed for verification of correct status.

### **6.3.3 Test results**

If required, specific tests shall be carried out. Test results shall be enclosed in the delivery. The Haldex engineering department and Haldex purchasing department define the specific tests.

### **6.3.4 Specific checking aids**

If specific checking aids exist, these shall be included in the delivery if they are needed to verify components before assembly.

### **6.3.5 Deviations**

It is not allowed to deliver parts with deviations to Haldex without having first been granted a written approval of deviation from the purchasing department. The supplier shall submit any deviations for approval. (The supplier shall present a plan describing the extent of the deviation, its root cause and what actions are being taken to eliminate the deviation before the next delivery. The purchasing and engineering department will together decide if the deviation can be accepted. The warrant will be signed and returned to the supplier).



### **6.3.6 Numbered parts**

Parts shall be numbered with reference to existing dimensional and test reports.

## **6.4 Delivery**

Prototype material shall be delivered separately from other deliveries with a separate delivery note. Address labels and delivery notes shall be marked "Prototype material". The packing shall be marked with a goods label "PROTOTYPE MATERIAL". If the parts are delivered in an envelope or small package, the goods label shall be placed inside the envelope or inside the package. The associated documents shall always accompany the goods in a plastic pocket or envelope and are not to be sent separately.

# **7 Series deliveries**

## **7.1 General**

Haldex demands a 100% delivery performance from its suppliers. In order to minimize the risk of production interruptions, it is very important that the supplier delivers the right quantity at the right time and with the agreed quality. If a deviation occurs, the supplier is to make 100 % control if nothing else is agreed.

Suppliers shall have clear and well-documented routines for FIFO (First-In-First-Out) and the follow-up of delivery precision. In case of deviations, documented corrective actions must be presented. Suppliers will be debited for additional expenses for late or early deliveries and quality defects caused by the supplier. In specific cases logistic agreements are established, which would complement or override these requirements.

## **7.2 Delivery plans**

In order to obtain a 100% delivery performance, Haldex prepares delivery plans containing fixed and prognosis orders. Haldex undertakes to purchase all parts during the fixed period. The parts outside the fixed period are only a prognosis. The supplier undertakes to deliver all parts in the fixed period and maintain capacity to deliver the parts listed in the prognosis. The delivery plans are sent to the supplier on a regular basis. Haldex shall be notified of any deviations to the delivery plan no later than two (2) days after the receipt of the delivery plan.

## **7.3 Deliveries**

The material shall arrive at Haldex on the date stated in the delivery plan. The transport company in question will be informed about pick-up of goods for delivery at the latest 48 hours prior to pick-up. If the delivery will not be ready for pick-up on the planned delivery date, the Haldex delivery control and the transport company shall be informed as early as possible but at the latest 48 hours prior to the planned pick-up date.



## **7.4 Quality of delivery**

The quality of delivery is measured in parts per million (PPM). It measures the ratio of nonconforming parts received per one million parts supplied.

$$\text{PPM} = \frac{\text{(Amount of nonconforming parts delivered during the time period)}}{\text{(Total amount of parts delivered during the time period)}} \times 1,000,000$$

## **7.5 Marking**

The part shall be marked as per the instructions from Haldex.

## **7.6 Packing**

The goods shall be packed as per the packing instructions from Haldex.  
Routines shall be available to guarantee correct unit and total quantity of the delivery.

## **7.7 Delivery documents**

Delivery documents must include all documentation according to Haldex Packing instruction.

## **7.8 EDI**

Electronic Data Interchange (EDI) is an electronic transmission of structured information between computer systems according to agreed standards.

The advantages of complete EDI (Delivery schedules, supply notes, self billing) are:

- Reduced costs – time, paper, postage, etc.
- Improved quality – less manual influence
- Competitive edge
- More detailed information
- Time-saving – reduced lead-times
- Improved payment – simpler, quicker, safer
- More frequent updates

The supplier shall be equipped with relevant system (including software) for the EDI required by Haldex at each time.

## **8 References**

IMDS: <http://www.mdsystem.com/>

REACH: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006R1907:EN:NOT>