

Inspection instruction: Binding specification for inspections in goods receipt and production

The inspection instruction is a documented working document that specifies how, with what and to what extent a product or process is inspected. It is a central control instrument of quality management and links technical requirements from drawings, standards and customer specifications with a reproducible inspection execution. It is relevant to buyers because it translates inspection-relevant requirements to suppliers and forms the basis for goods acceptance, supplier verification and subsequent evidence obligations.

Key facts

- The inspection instruction bindingly describes inspection characteristics, inspection scope, inspection methods, inspection equipment and documentation.
- In standards-compliant QM systems such as ISO 9001 or IATF 16949, it is a mandatory element of process control as a controlled document.
- It differs from the inspection scheduling and inspection plan through its focus on concrete execution at the workplace.
- Inspection scope and inspection stage (e.g. sample, 100% inspection) are usually determined on a risk basis via classification of the characteristics.
- For procurement, the inspection instruction is the basis for goods acceptance, incoming inspections at suppliers and release decisions including blocked stock management.
- Changes to inspection instructions are subject to a controlled change process with approval and version history.

Definition: inspection instruction

An inspection instruction is a binding, documented procedure that specifies how an inspection is to be carried out: which characteristics are to be inspected, with which inspection equipment, according to which method and with which documentation. It is addressed to the person carrying out the inspection and ensures that inspection results are reproducible and comparable. In many industries it is part of the certifiable documentation and is used as evidence in audits.

Distinction from inspection sequence, inspection plan and inspection process description

The inspection plan (also inspection sequence plan, PFP) defines which inspection takes place at what time in the process. The inspection instruction, by contrast, describes the execution of a single inspection: tolerances, measurement procedure, inspection equipment and assessment. The inspection process description covers the entire inspection process including responsibilities and interfaces. In practice, the terms are sometimes used synonymously; what matters is a consistent internal definition

and documentation.

Legal and normative classification

Standards such as ISO 9001 require control of documented information; industry-specific standards such as IATF 16949 or VDA volumes require detailed inspection documentation. For safety-relevant parts (e.g. under the Machinery Directive or in aviation), inspection instructions may form part of the traceability and evidence documentation. The specific requirements depend on the customer/supplier contract; the legal assessment in individual cases should be reviewed by qualified experts.

Structure and content of an inspection instruction

A practical inspection instruction follows a uniform template so that inspectors can expect the same approach regardless of the author. Core elements are identification of the inspection object, the inspection characteristics with limit values, the inspection equipment used including inspection equipment monitoring, and the definition of the inspection quantity.

Typical content in detail

Usual fields are: part and document number, revision/status, inspection scope (100%, sample according to specification), inspection characteristics with nominal dimension and tolerance, inspection methods (measuring instruments, gauge, vision, destructive/non-destructive), inspection equipment number with reference to inspection equipment monitoring, assessment rules (conforming/non-conforming), documentation requirements and escalation route in the event of defects. Frequently supplemented by safety markings and photographs for illustration.

- Part/document number and revision status
- Inspection characteristics with tolerance and classification (important/safety-relevant)
- Inspection equipment incl. reference to monitoring and calibration
- Inspection scope and sampling
- Documentation, retention and escalation in the event of non-conformance

Characteristic classification and inspection scope

Characteristics are frequently divided into classes (e.g. critical, major, minor), because this controls the inspection effort: safety characteristics are typically inspected 100% or with interlocking inspection, minor characteristics by sampling. In practice, sample sizes are often based on standards such as ISO 2859 (AQL concept). The inspection scope is regularly adjusted in the event of repeat defects, complaints or changes (e.g. after a change of supplier).

Methods and approach: creating and changing inspection instructions

Inspection instructions are ideally created during production preparation, i.e. during the suitability assessment of new parts and suppliers, and are subsequently updated in ongoing operations. Responsibilities, approvals and the change process must be clearly regulated so that no outdated versions circulate at the inspection station.

Creation as part of supplier qualification and initial sample approval

When qualifying new parts or suppliers, requirements from drawings, requirement specifications and

customer specifications are translated into inspection characteristics. Procurement provides the interface: it ensures that supplier-side inspection concepts and internal incoming inspection criteria are consistent and that customer requirements (e.g. from sample approval or co-creation with suppliers) are taken into account. The result is often a coordinated inspection concept with inspection instructions for goods receipt and production.

Change management and document control

Every change – such as a changed tolerance, new inspection equipment or a tightened inspection stage after a defect – goes through a controlled change process: request, impact assessment, new version, approval, distribution and withdrawal of old versions. Typical sources of error in practice are parallel valid versions at multiple sites and unclear validity for free-text orders or individual part releases.

Defect analysis as a driver for adjustments

In the event of repeat defects or line stops due to non-conforming goods, the inspection instruction is often tightened as part of a structured defect analysis (e.g. 5 Why or 8D): additional characteristics, increased inspection stage or interlocking inspection equipment. The aim is to detect the defect at goods receipt in future before it occurs in production or at the customer.

Key KPIs relating to the inspection instruction

The benefit of inspection instructions is reflected in metrics from quality assurance and procurement. They show whether inspection concepts actually intercept defects and whether the inspection effort remains economical.

Effectiveness and defect coverage

Key metrics are the proportion of defects intercepted by incoming inspection (filtration rate or audit effectiveness), the number of defects per million parts at the supplier and the rate of complaints that passed through the inspection undetected. Quality-focused businesses typically strive for filtration rates well above 90%; the specific target value depends on the industry and risk profile.

Effort and process speed

On the efficiency side, relevant metrics are inspection costs per part family, inspection duration in goods receipt (influencing lead time and procurement logistics) and the currency of documents, measured for example as the proportion of inspection-relevant parts with a valid, revision-consistent inspection instruction. Anyone who reduces inspection effort without jeopardising the filtration rate demonstrably lowers quality costs.

Risks, controls and procurement interfaces

Faulty or missing inspection instructions lead to unacceptable failure risks, unnecessary inspection costs and evidence gaps towards customers and authorities. Through clear agreements in the procurement process, procurement can help ensure that inspection concepts are binding and up to date.

Typical risks

Common weak points: inspection instructions do not correspond to the current drawing status; the inspection scope is unclear, so that inspections are sometimes not carried out at all and sometimes

duplicated; inspection equipment is unsuitable or overdue for calibration; results are incompletely documented and cannot be traced in the event of complaints or audits. This is particularly critical for safety-relevant characteristics and when inspection services are outsourced to third parties.

- Outdated revisions at the inspection station
- Missing characteristic classification and incorrect inspection scope
- Unmonitored inspection equipment
- Documentation and evidence gaps

Controls and audits

Effective controls are revision-consistent document checks, inspection equipment monitoring, spot checks of inspection execution (e.g. blind samples, audit inspection parts) and supplier-side audits. For new business or a change of supplier, procurement should explicitly make inspection capability – inspection equipment, competence, documentation – part of the supplier evaluation and regularly evaluate complaint rates.

Interface with procurement

Procurement influences the inspection instruction in several ways: through technical approvals and requirements in the procurement process, through contracts on inspection and evidence obligations (including questions on the handling of intellectual property rights (IPR) for inspection-specific documents) and through operational goods acceptance. With blocked stock from non-conforming inspections, the quality of the inspection instruction determines how quickly and robustly release or scrap decisions can be made.

Current developments: digitalisation and risk-based inspection effort

Inspection instructions are increasingly migrating into digital QM and MES systems. This changes their creation, distribution and evaluation – and creates new opportunities for collaboration with suppliers.

Digital inspection instructions and measurement data capture

Electronic inspection instructions at the measuring station or on handheld devices guide inspectors interactively through the inspection, capture results automatically and synchronise revisions centrally. This reduces paper lists, transcription errors and archiving effort, and enables real-time evaluations, such as the automatic derivation of supplier evaluations from incoming inspection results.

Risk-based and automated inspection scope

Many companies reduce incoming inspections on a risk basis: for qualified, statistically monitored suppliers, inspection is based on trust; for new or conspicuous sources it is tightened. Approaches such as data-based sample control, image-based automotive inspection and AI-supported pattern recognition supplement manual inspections. Even here, the basis remains a current, precise inspection instruction.

Cross-supplier inspection standards

Customer-mandated uniform inspection specifications and joint inspection concepts in early project phases – for example as part of co-creation with suppliers – shorten sample approval cycles and reduce friction losses at the interface. What matters here is a clear contractual agreement on who is responsible for which inspection with which evidence.

Typical metrics

Incoming inspection filtration rate: > 90%

Proportion of supplier defects intercepted before use in production

Proportion of revision-consistent inspection instructions: > 98%

Proportion of inspection-relevant parts with a current document status

Inspection duration in goods receipt: < 24 h

typical guideline value, depending on inspection scope and logistics concept

Degree of inspection equipment monitoring: 100%

all inspection equipment named in inspection instructions must be calibrated and monitored

Practical example

A medium-sized mechanical engineering company faced increased rework costs after several line stop events caused by defective cast components from a supplier. The analysis showed that the incoming inspection instruction was based on an outdated drawing status and did not inspect a safety-critical core characteristic at all. The company subsequently systematically revised the inspection instructions for critical bought-in parts.

- Classification of all drawing characteristics jointly with quality and engineering
- Tightened incoming inspection with 100% inspection of the critical characteristic until trend confirmation
- Replacement of inspection equipment and inclusion in the monitored inspection equipment management
- Inclusion of inspection capability in supplier evaluation and regular revision reconciliations with the supplier

Conclusion

The inspection instruction is a small document with a big impact: it translates technical requirements into a reproducible inspection execution and protects production and the customer from defective parts. Its value depends crucially on currency, clarity and consistent change control. Buyers benefit twice over: from robust release decisions in goods receipt and from a clean evidence base towards customers and auditors. Those who manage inspection instructions digitally and dovetail them with supplier qualification on a risk basis reduce quality costs without blindly increasing the inspection scope. The inspection instruction is thus an indispensable link between procurement and quality assurance.

Frequently asked questions

What is an inspection instruction?

An inspection instruction is a documented procedure that specifies how an inspection is to be carried out: inspection characteristics with tolerances, inspection methods, inspection equipment, inspection scope and documentation. It ensures that inspection results are reproducible and can be evidenced during audits.

What is the difference between an inspection plan and an inspection instruction?

The inspection plan defines which inspection takes place at which point in the process. The inspection

instruction describes the execution of a single inspection in detail, e.g. measurement procedure, inspection equipment and assessment rules. In practice, the terms are used differently from company to company.

Is an inspection instruction mandatory under ISO 9001?

ISO 9001 does not require an inspection instruction by name, but does require control of documented information and effective control of processes. In many businesses, the inspection instruction is the appropriate means of meeting these requirements at the inspection point. Industry standards such as IATF 16949 impose considerably more extensive requirements.

Who creates an inspection instruction?

Typically quality assurance or the design engineer in consultation with production and metrology, often with support from the supplier for bought-in parts. What matters is a defined responsibility, formal approval and a controlled change process with a version history.

How extensive is the inspection scope in incoming inspection?

The inspection scope is determined on a risk basis: critical characteristics are typically inspected 100%, secondary characteristics by sampling, often in accordance with standards such as ISO 2859. For proven suppliers the scope can be reduced; it is tightened in the event of anomalies or a change of supplier.

What belongs in an inspection instruction?

Core elements are part and document number with revision status, inspection characteristics with nominal dimension and tolerance, inspection methods and inspection equipment including monitoring status, inspection scope and sampling, assessment rules, and requirements for documentation and escalation in the event of non-conforming results.