

OFFICIAL MANUAL GUIDE

ISO 9001 Internal Auditor Manual

A 15-Day Practical Production
& Internal Auditor Programme

CASE STUDY

Generator and Base-Frame Manufacturing Shop Floor

SCOPE

Foundations of ISO 9001, auditing the production process, and findings, root cause & corrective action

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ROLE

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VERSION

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From shop-floor quality thinking to full internal audit competence — evidence-based auditing applied to a working generator base-frame order.

OVERVIEW

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INTRODUCTION

Introduction & Case Study

This manual guides ISO 9001 and internal auditing the practical way — through one real production order, followed from customer order to dispatch, across 15 structured days.

WHAT YOU WILL BE ABLE TO DO BY DAY 15

- Map the production process against ISO 9001 requirements
- Plan and prepare a real internal audit
- Interview operators professionally — auditing the process, not the person
- Collect objective evidence and tell it apart from opinion
- Identify conformities and nonconformities and classify them correctly
- Write clear, defensible audit findings
- Investigate root cause and evaluate corrective action
- Conduct a complete production-process audit, opening to closing

THE CASE STUDY — USED THROUGHOUT ALL 15 DAYS

Customer	Power-equipment OEM
Product	10 Generator Base Frames
Drawing	GF-2045 Rev. C
Material	5 mm mild steel
Critical tolerance	±1 mm
Delivery requirement	10 working days

Customer Order

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Planning

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Drawing Control

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Material Receipt

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Cutting

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Bending

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Welding

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Grinding

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Painting

How to use this manual: each day follows the same cycle — learn the concept simply, see a real factory example, apply it to the generator-frame case, practise with an exercise, and do the homework in your own department.

W1

WEEK ONE • DAYS 1-7

Foundations of ISO 9001

- 1 What Is ISO 9001?
- 2 Understanding the QMS
- 3 Clauses 4-10
- 4 The Process Approach
- 5 Risk-Based Thinking
- 6 Audit Principles
- 7 Audit Evidence

DAY 1

What Is ISO 9001?

ISO 9001 asks: do you have a controlled way of doing the job, are people following it, and can you prove it? The auditor's response is always "Show me."

A Quality Management System (QMS) is the organized way a company consistently does quality work — your daily work (planning, setup, in-process checks, rework, handover to QC) is part of it, not separate from it.

WEAK — OPINION

"Operators are careless." · "We always check the dimensions."

STRONG — EVIDENCE

"3 of 5 sampled job cards had no first-off inspection record."

FIRST-, SECOND- & THIRD-PARTY AUDITS

- **First-party** — your own internal audits
- **Second-party** — customer audits of your factory
- **Third-party** — certification-body audits (e.g. BSI, SGS, LRQA) against ISO 9001

DAY 1 GOLDEN RULES

Quality is built into the process, not only inspected at the end · an auditor checks evidence, not assumptions · experience alone does not prove a controlled process is followed · findings must be factual, specific and traceable to a requirement. Always ask: what should happen? what actually happened? what evidence proves it?

SUPERVISOR ROLE

You already hold the evidence an auditor will ask for — job cards, setup sheets, first-off checks, tool logs. Know what each one proves.

DAY 2

Understanding the QMS

Think of a QMS as a football team's game plan: rules, positions and score-tracking — it tells everyone how to do the job correctly, every time, without guessing.

QMS item	Real example
Drawing	GF-2045 Rev C — what the customer wants
Job Card	The product's travel passport: cutting → bending → welding
Material Certificate	Proof the 5 mm mild steel is correct
Work Instruction	Welding WI-07 — how to do the job
Inspection Record	First-off, in-process, final — proof you checked
Calibration Record	Proof your gauges are accurate
Competence Record	Proof the operator is competent

THE CHAIN: DOCUMENT → PROCESS → PERSON → EVIDENCE

Welding a generator frame: Document WP-11 → Process welding the 5 mm frame → Person the qualified welder → Evidence weld inspection record + qualification. If any link is missing, the QMS is broken.

REAL CASE — WHAT GOES WRONG

A welder uses WP-10 instead of the required WP-11 → wrong weld strength → customer rejects the frame → rework cost rises → delivery is late → the auditor writes an NCR. Root causes: wrong procedure at the workstation, no document control, no supervisor verification, no guidance on revision changes.

DAY 3

Understanding ISO 9001 Clauses 4–10

Think of a company like a human body: Clause 4 the environment, 5 the brain, 6 planning, 7 the muscles and tools, 8 the actual work, 9 checking health, 10 fixing and improving.

Clause	Simple question	Factory example
4 — Context	What affects our ability to make good products?	Customer tightens tolerance from ± 2 mm to ± 1 mm
5 — Leadership	Is management directing quality?	Manager makes first-off inspection mandatory
6 — Planning	What could go wrong, and what will we do?	Risk: wrong CNC program → control: first-off inspection
7 — Support	Do people, machines and documents support quality?	A measuring instrument's calibration has expired
8 — Operation	Are we controlling production?	Job card controls the cutting → welding → painting route
9 — Performance Evaluation	How do we know the system works?	Scrap reports, complaints, KPI tracking, internal audits
10 — Improvement	What do we do when things go wrong?	Wrong dimensions → NCR raised → corrective action

CASE STUDY — CLAUSES APPLIED TO THE GENERATOR FRAME

C4: ± 1 mm tolerance affects production · C5: supervisor instructs "use Rev C only" · C6: risk of wrong bending angle → control first-off · C7: operator competent, angle gauge calibrated · C8: job card routes cutting → bending → welding → painting, inspector signs each stage · C9: scrap report shows 2 reworked frames last week · C10: corrective action — update bending WI and add a visual angle chart.

DAY 4

The Process Approach

A process is simply something you do, that changes something, into something else. Raw rice → cooking → cooked rice. A factory works the same way.

INPUTS

Customer order, Drawing GF-2045 Rev C, 5 mm mild steel, CNC program, tools & machines

OUTPUTS

Finished frame, inspection records, scrap/rework information

Cutting

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Bending

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Welding

›

Grinding

›

Painting**CONTROLS (PREVENT MISTAKES)**

First-off inspection, correct drawing revision, approved welding procedure, machine setup sheet

RESOURCES (TO DO THE JOB)

CNC machine, competent operator, calibrated measuring tools, welding machine

SUPERVISOR ROLE

Ask "show me how this order moves through your process" instead of "is production good?" — mapping the process reveals unclear instructions, wrong tools and missing first-off checks early.

DAY 5

Risk-Based Thinking

Risk = what could go wrong, times what will happen if it does. If a cutting dimension is wrong, all 500 brackets could be defective — so a first-piece inspection becomes the control.

Stage	Key risk	Control
Cutting	Wrong CNC program / drawing revision	Program verification + revision check
Bending	Uncalibrated angle gauge	Calibration record + first-off bend check
Welding	Wrong parameters, unqualified welder	WP-11 verification + welder qualification
Painting	Wrong thickness, poor surface prep	Thickness gauge + surface-prep instruction
Final Inspection	Rushing due to deadline	Mandatory inspection checklist

WORKED EXAMPLE

A new CNC program is introduced → risk: wrong program → incorrect dimensions → rejected parts → rework/scrap → customer delay. Controls: program verification, drawing revision check, first-off inspection, supervisor approval.

DAY 6

Audit Principles

Audit the process, not the person. An auditor is not a policeman, not someone to blame, not a production critic, not catching people out.

THE AUDITOR'S MINDSET

- What drawing were they using? Was it current?
- Were they competent?
- Was the machine correctly set?
- Was the measuring instrument calibrated?
- Was first-off inspection performed — and recorded?

WRONG

"Three operators produced wrong dimensions — operators are careless."

CORRECT

Ask about the process: drawing revision, program verification, setup sheet, calibration, first-off inspection, supervisor approval.

SAMPLE INTERVIEW SCRIPT

"Can you show me the drawing you're using?" → operator shows it → "Is this the latest revision?" → "Yes." → "Great, can you show me the first-off inspection record?" No blaming, no shouting — just checking the process.

DAY 7

Audit Evidence

If it is not recorded, it did not happen. Evidence comes as documents, records, physical evidence and interviews.

WEAK — OPINION

"Operator said he checked the first piece." · "Supervisor said the machine was calibrated."

STRONG — PROOF

Signed first-off inspection record · calibration sticker + certificate on the tool

OBSERVE

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ASK

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VERIFY RECORDS

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COMPARE

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DOCUMENT

REAL EXAMPLE

Finding: operator used Drawing Rev B. Strong evidence: Rev B found at the workstation → document control shows Rev C is latest → job card references Rev C → the competence record has no revision-control topic. Objective, verifiable, factual — not opinion.

SUPERVISOR ROLE

Test every claim with "can another auditor verify this?" If yes, it's evidence. If no, it's an opinion.

W2

WEEK TWO • DAYS 8-11

Becoming the Auditor

- 8 Audit Planning & Preparation
- 9 Conducting the Audit
- 10 Auditing the Production Process
- 11 Sampling & Following Evidence

DAY 8

Audit Planning & Preparation

Before walking onto the factory floor, a real auditor builds a Production Audit Plan.

AUDIT OBJECTIVE (EXAMPLE)

"Determine whether generator-frame production is controlled according to established requirements." **Scope:** cutting → final inspection. **Criteria:** procedures, work instructions, drawings, inspection requirements, applicable ISO 9001 requirements.

PREPARATION CHECKLIST

- ✓ Know the process
- ✓ Know the requirements
- ✓ Identify important risks
- ✓ Review previous problems
- ✓ Prepare questions
- ✓ Identify records to sample
- ✓ Decide what evidence you need

SUPERVISOR ROLE

Prepare an audit plan for your own area before any audit — internal, customer or certification — ever reaches it.

DAY 9

Conducting the Audit

OPEN › OBSERVE › INTERVIEW › CHECK DOCS › CHECK RECORDS › INSPECT PRODUCT › COMPARE › RECORD

THE THREE MAGIC QUESTIONS

1 · What should happen? 2 · What is actually happening? 3 · Can you prove it?

OPENING MEETING — EXAMPLE

"Today I will audit the generator-frame production from cutting to final inspection. I will check drawings, job cards, inspection records and machine setups. This audit is about evaluating the process, not blaming individuals."

Sample interview: operator — "we always follow the welding procedure." Auditor — "please show me the approved welding procedure you're using." That is auditing. Keep the opening meeting short, calm and professional; it sets the tone for the entire audit.

DAY 10

Auditing the Production Process

The most practical day — audit the generator frame through every stage using the three magic questions.

Stage	What should happen	Common NCRs
Cutting	Correct drawing + CNC program + first-off inspection	Wrong revision, no first-off, wrong program
Bending	Setup sheet + calibrated angle gauge + first-off bend	Wrong angle, uncalibrated gauge
Welding	WP-11 + qualified welder + in-process inspection	Wrong procedure, unqualified welder
Grinding	Work instruction + acceptable surface finish	Poor surface finish, WI not followed
Painting	Surface prep + correct thickness & colour	Wrong thickness, dust contamination
Final Inspection	Dimensional + visual check + release signature	Missing record, no release signature

SUPERVISOR ROLE

Follow one real job physically through your own line, stage by stage — this single walkthrough teaches more than any classroom session.

DAY 11

Sampling & Following the Evidence

You don't need to eat all 100 donuts to know if the batch tastes good — you taste 5. Auditors sample records the same way: out of 100 job cards, select 10.

Job card	First-off inspection
JC-101	Yes
JC-102	Yes
JC-103	No
JC-104	No
JC-105	No

Finding: 3 of 5 sampled job cards had no first-off inspection — strong, meaningful evidence, not opinion or guessing.

FOLLOWING THE EVIDENCE TRAIL

One finding (wrong drawing revision at cutting) should trigger a wider check: document control, the job card, other workstations, competence records, NCR history. If the issue reappears elsewhere, you have found a system problem, not an isolated mistake.

SUPERVISOR ROLE

Always state the actual number of records reviewed ("3 of 5") — never a vague "operators don't follow procedures."

W3

WEEK THREE • DAYS 12-14

Findings & Improvement

- 12 Writing Audit Findings
- 13 Root Cause & Corrective Action
- 14 Verifying Corrective Action

DAY 12

Writing Audit Findings

A finding is a clear statement showing where the process failed, based on evidence — never blame, opinion or emotion.

REQUIREMENT

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EVIDENCE

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GAP

›

IMPACT

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CLASSIFICATION

EXAMPLE — WRONG DRAWING REVISION

Requirement: Drawing GF-2045 Rev C must be used for production. **Evidence:** operator at cutting was using Rev B; document control shows Rev C is current. **Gap:** operator used an outdated drawing. **Impact:** risk of incorrect dimensions and customer rejection. **Classification:** Major Nonconformity.

WRITING RULE

Write facts, not emotions. Not "operator was careless." Instead: "No first-off inspection signature on JC-104."

DAY 13

Root Cause & Corrective Action

Correction fixes the problem now. Corrective action fixes the reason it happened, so it never comes back.

THE 5 WHYS — WORKED EXAMPLE

Problem: weld defects repeated for three weeks.

1 · Why defective? Parameters were incorrect. 2 · Why incorrect? Operator used WP-10 instead of WP-11. 3 · Why WP-10? WP-11 was not available at the workstation. 4 · Why not available? Document control did not update the workstation copy. 5 · Why not updated? No system for revision distribution to welding stations.

Root cause: a weak document-control process for distributing updated welding procedures — a system failure, not a person failure.

CORRECTIVE ACTION MUST INCLUDE

Root cause	Action	Responsible	Due date	Evidence	Verification
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SUPERVISOR ROLE

Never stop at "be more careful." Ask Why five times until you reach a system-level cause you can actually fix.

DAY 14

Verifying Corrective Action

Corrective action is not finished until effectiveness is verified. A company says "we fixed it" — the auditor asks "show me."

Stage	Meaning	Example
Correction	Fix the defect now	Rework the part
Corrective Action	Fix the reason it happened	Improve document control
Verification	Check it actually prevented recurrence	Audit 10 jobs — all using correct revision

EFFECTIVE

Sample 10 jobs after the fix — all using Rev C, operators briefed, logs complete.

NOT EFFECTIVE

Sample 8 job cards — 6 have first-off, 2 still missing. System still weak.

REVIEW PLAN ›

CHECK IMPLEMENTATION ›

SAMPLE ›

OBSERVE ›

INTERVIEW ›

DECIDE EFFECTIVENESS

15

FINAL EXAMINATION • DAY 15

Full Internal Audit Simulation

- Preparation & opening
- Shop-floor walkthrough
- Findings, closing & report
- Corrective-action review

DAY 15 · PHASES 1-2

Preparation & Opening Meeting

Final day — you are now the internal auditor for the generator base-frame order. Everything from Days 1–14 comes together: you prepare, open, conduct and report a complete internal audit.

PHASE 1 — AUDIT PREPARATION

Objective: determine whether generator-frame production is controlled according to procedures, customer requirements and ISO 9001. **Scope:** planning, document & drawing control, material, cutting, bending, welding, grinding, painting, inspection & release, dispatch.

SAMPLING PLAN

- | | |
|-----------------------|-----------------------------|
| ✓ 5 job cards | ✓ 3 competence records |
| ✓ 5 first-off records | ✓ 3 weld inspection records |
| ✓ 5 finished frames | ✓ 2 material certificates |
| ✓ 3 instruments | ✓ 3 NCRs |

PHASE 2 — OPENING MEETING (EXAMPLE)

"Today I will conduct an internal audit of the generator-frame production process, from planning through dispatch. This audit is about evaluating the process, not blaming individuals. Findings will be supported by objective evidence."

DAY 15 · PHASE 3

Shop-Floor Audit Walkthrough

Every stage, using the three magic questions: what should happen? what actually happened? what evidence proves it?

Area	Simulation result	Conclusion
A • Planning	Customer requires 10-day delivery; production plan shows 14 days, no recovery plan recorded	Risk of late delivery
B • Drawing Control	Cutting has Rev C; bending still has Rev B, no distribution record	Document-control failure
C • Material	Certificate confirms 5 mm mild steel, identification matches job card	Conformity
D • Cutting	3 of 5 job cards (JC-103/104/105) show no first-off inspection	Repeated process-control problem
E • Bending	Angle gauge validly calibrated, but operator using obsolete Rev B drawing	Equipment controlled; documents not
F • Welding	Welder qualified, WP-11 in use, parameters correct — 1 of 3 inspection records incomplete	Generally controlled; record gap
G • Grinding	No sharp edges, spatter or surface damage found	Conformity
H • Painting	5 thickness readings (95, 101, 98, 87, 104 µm) all within the 80–120 µm spec	Conformity
I • Final Inspection	1 of 5 inspection reports has no authorised release signature	Release not demonstrated

AUDITOR ROLE

Record what you actually find, even when most areas are conforming — a balanced report is a credible report.

DAY 15 · PHASES 4-7

Findings, Closing, Report & Corrective Action

Nonconformity	Requirement, evidence & risk
NCR 1 — Obsolete Drawing (Major)	Only current approved documents at point of use. Rev B found at bending; master list shows Rev C current. Risk: parts built to wrong dimensions.
NCR 2 — Missing First-off Inspections (Major)	SOP Q-07 requires first-off approval before batch. 3 of 5 sampled job cards (JC-103/104/105) show no approval. Risk: setup/program error could affect the full batch.
NCR 3 — Incomplete Welding Record (Minor)	WP-11 requires weld inspection results to be retained. 1 of 3 sampled records has no acceptance result.
NCR 4 — Missing Final-Release Approval (Minor/Major)	Products must be formally approved before dispatch. 1 of 5 final inspection reports has no release signature.

PHASE 5 — CLOSING MEETING (EXAMPLE)

"Positive controls were observed in material identification, welder qualification, calibration, painting and finishing. Four nonconformities were identified. These findings are based on the samples reviewed, and corrective-action plans should address root causes, responsibilities, dates and effectiveness verification."

Phase 6 — Report structure: Objective · Scope · Criteria · Evidence Reviewed · Findings · Nonconformities · Conclusion.

PHASE 7 — CORRECTIVE ACTION REVIEW (DRAWING NCR)

Correction: remove Rev B, replace with Rev C. **Root cause:** drawings emailed to supervisors with no controlled distribution/ acknowledgement system. **Corrective action:** controlled distribution list, QA document-controller ownership, workstation verification, revision-control guidance. **Verification after 30 days:** inspect every workstation, sample 10 job cards, confirm no obsolete drawing remains.

DAY 15 — FINAL RULE

Don't assume. Don't blame. Follow the process, verify the evidence, report the facts, and confirm that the solution worked.

A classification is never based on the issue's name alone — weigh scale, recurrence, risk, and whether it reveals a wider QMS breakdown.

SUMMARY

15-Day Mastery Summary

Across 15 days, this guide built a complete internal auditor — from quality thinker to independent audit practitioner.

Stage	Covered
Week 1 (Days 1–7)	ISO 9001 basics, QMS, Clauses 4–10, process approach, risk-based thinking, audit principles, audit evidence
Week 2 (Days 8–11)	Audit planning, conducting the audit, auditing the production process, sampling & following the evidence
Week 3 (Days 12–14)	Writing audit findings, root cause & corrective action, verifying corrective action
Day 15	Full internal audit simulation — preparation through closing meeting, report and corrective-action verification

YOU ARE NOW EQUIPPED TO

Independently plan and conduct a production-process internal audit · distinguish objective evidence from opinion and sample records credibly · write clear, defensible findings using Requirement → Evidence → Gap → Impact → Classification · investigate root cause with the 5 Whys and verify that corrective action actually worked.

APPENDIX

Audit Forms, Checklists & Templates

A · AUDIT PLAN TEMPLATE

Audit Objective · Scope · Criteria · Audit Date · Auditor ·
Sampling Plan · Expected Completion Time.

B · AUDIT FINDING / NCR TEMPLATE

Requirement · Evidence · Gap · Impact · Classification (Major/
Minor) · Auditor / Date.

C · 5 WHYS & CORRECTIVE ACTION WORKSHEET

Step	Entry
Problem	
Why #1 → #5 / Root Cause	
Corrective Action	
Responsible / Due Date	

D · CORRECTIVE ACTION VERIFICATION LOG

Sample # · Before (issue found?) · After (issue found?) ·
Effective?

E · SAMPLING RECORD

Record Type · # Reviewed · # Conforming · # Nonconforming —
job cards, first-off inspections, calibration records, competence
records, NCRs.

F · AUDIT REPORT SUMMARY

Section	Entry
Objective · Scope · Criteria	
Evidence Reviewed · Findings Summary	
Nonconformities (count) · Conclusion	

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From shop-floor quality thinking to full internal audit competence.