

NSK Q 001

SUPPLIER QUALITY ASSURANCE MANUAL

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December 13, 2001

NSK Ltd.

NSK Q 001

SUPPLIER
QUALITY ASSURANCE MANUAL

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SUPPLIER QUALITY ASSURANCE MANUAL
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SUPPLIER QUALITY ASSURANCE MANUAL

[I] Basic Requirements for Quality Assurance

1. Scope

This quality assurance manual specifies the basic requirements for the quality assurance with each supplier (hereinafter called supplier) who supplies goods to NSK Ltd. (hereinafter called NSK).

This quality assurance manual is intended to assure 100% non-defective products by establishing a companywide quality assurance structure to ensure quality, cost, and timely deliveries in accordance with NSK's basic policies. In this manual, "quality assurance" shall be regarded as the objective, and "quality control" as the means to achieve it.

2. Basic Requirements for Quality Assurance

2.1 Responsibility for Quality Assurance

Each supplier shall bear full responsibility for quality assurance in the production of products and parts to be supplied to NSK. To help assure the quality of all products, the supplier shall assign a person to be in charge of quality assurance and report the details to NSK.

2.2 Establishing Quality Assurance Systems (Organization and Function)

Each supplier shall establish a quality assurance system with which they are able to ensure quality that conforms to NSK's drawings and purchasing specifications (PS) throughout the entire production process, and strive to maintain and improve it.

2.3 Quality Control Procedures

Suppliers shall establish procedures to ensure quality control for each of the following items and closely follow them.

(1) Control of Specifications, Drawings, etc.

For NSK's drawings and purchasing specifications and the supplier's standards, drawings, etc. for production and inspection, the latest ones shall be filed and maintained in appropriate places and regularly revised or discarded.

(2) Control of Equipment and Measuring Instruments

For production and inspection, the equipment and measuring instruments necessary to secure the desired quality shall be provided, and maintained in good condition at all times. Especially for testing, calibration or inspection, adequate controls and time limits shall be determined and observed.

(3) Technical Capabilities of Operators and Inspectors

Operators and inspectors who have sufficient technical capability for production and inspection shall be utilized. Also, the necessary education and training shall be systematically provided.

(4) Control of Subcontractors

In order to ensure the capability of subcontractors, the necessary controls shall be established and enforced for the selection of suitable suppliers, quality checks, etc.

(5) Control of materials, parts and products

materials, parts and products are kept

(6) Control of Production Processes

In order to secure the desired quality, inspections and tests shall be made at the specified control points during production in accordance with the Quality Assurance Process Design Diagram or Inspection Standard on the basis of the Purchasing Specifications. For critical control processes, great importance shall be attached to it and special controls shall be observed.

(7) Process Change Control

The process change shall be checked with not only the competent department but also the relative departments for the influence due to change by establishing a certain rule in advance. The data of old/new process shall be compared and checked, and shall confirm for difference between old and new products but not for compliance with the standard. Prior to process change, the process change application shall be submitted to NSK for approval according to the Procedure IV.

(8) Initial Product Control

When starting mass production of a new designed products and when changing processes or design during mass production, sufficient study and preparations of

process controls shall precede production in order to secure the proper quality and to stabilize production early.

(9) Lot Control (Charge Control)

Lot controls are generally maintained for major processes such as material, heat treatment and machining etc. in order to stabilize quality and detect defective materials early. Adequate quality records shall be kept.

(10) Control of Defective Products

Defective products shall be clearly distinguished, and the storage area shall be suitably located to prevent outflow. Reworked parts and floor parts also shall be clearly distinguished.

(11) Handling of Abnormalities

- 1) The procedure for handling abnormalities when they occur during production shall be clarified.
- 2) When the defective products have been supplied to NSK or when there is such a possibility, the supplier shall notify NSK of the details immediately.
- 3) The method of disposal of abnormal products shall be recorded and stored. The instant that an abnormality is detected, stop production and take the necessary countermeasures, then segregate the abnormal lot from the rest. These two rules shall be understood by all the operators.

(12) Controls to Prevent Different Materials, mixed products (similar products) and unprocessed parts from Becoming Mixed

When two or more types of materials are used in production processes, the materials shall be clearly distinguished, and every possible means shall be used to prevent different materials from becoming mixing. The mixed products and unprocessed parts from becoming mixed also shall be considered. similarly.

(13) Control of Designated Critical Products

For designated critical products (products required safety critical, products designated for laws or regulations, specifically designated products, and products requiring additional controls), special controls shall be established in accordance

with the standards designated by NSK.

3. Quality Control Procedures

Suppliers shall follow each of the following procedures. Procedures 3-4 and 3-6 should be done immediately every time it is called for. For other items, follow NSK's instructions.

- 3-1. Registration of persons in charge of quality assurance
- 3-2. Preparations of Inspection Standards
- 3-3. Preparation of Quality Assurance Process Design Diagram
- 3-4. Process change procedure
- 3-5. Initial product control procedure
- 3-6. Disposition when defects occur
- 3-7. Subcontractor Utilization Report
- 3-8. Quality Control Status Report for Critical Control Processes

For the forms needed for these procedures, copy the forms in this report.

4. Submitting Inspection Reports

Each supplier shall submit an Inspection Report for each lot delivered to NSK. If a special form is specified in the Purchasing Specifications, etc., follow the form.

5. Plant Audit and Attendance During Inspections

NSK shall periodically or whenever NSK believes it is necessary, perform suppliers' plants audit or attend inspections.

5th Version Revised on December 13, 2001

4th Version Revised on May 24, 1994

3rd Version Revised on July 1, 1986

2nd Version Revised on December 26, 1985

1st Version Established on April 21, 1980

NSK Ltd.

Quality Assurance Division

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SUPPLIER QUALITY ASSURANCE MANUAL

[2] Procedures for Quality Control

Procedure 1. Registration of Persons in Charge of Quality Assurance

1. Scope

This quality assurance manual specifies the procedure whereby suppliers inform NSK of the persons in charge of quality assurance.

2. Purpose

Suppliers shall inform NSK of the persons in charge of quality assurance to facilitate smooth cooperation concerning the various matters for quality assurance for the supplied materials.

3. Responsibility and Selection of Persons in Charge of Quality Assurance

The manager of quality assurance shall be fully responsible for all quality assurance operations by the supplier. For the selected person, a leader in the quality assurance department is preferable.

4. Selection of Assistant manager of Quality Assurance

(1) The person in charge of operations (Chief of the Quality Assurance Division) who is in a position to take effective action shall be assigned to be the Assistant manager of Quality Assurance.

(2) In the case of a trading firm, the person in charge of quality assurance at the manufacturer's mill shall be assigned to be Assistant manager of Quality Assurance.

5. Reporting Procedure

Suppliers shall enter the name of the company, company seal, office, name, stamp, phone number for contact, and date of selection of the Manager and Assistant Manager of Quality Assurance in the "Selection or Alternation or Quality Assurance Manager Report" shown in Form 1, and submit it to NSK's quality Assurance Division.

For the Assistant Manager of Quality Assurance, enter the name of the plant under his supervision or the manufacturer.

6. Alteration Report Procedure

When there is an alteration in the Manager or Assistant Manager of Quality Assurance due to a change in the supplier's organization or for other reasons, encircle "Alteration" on the Selection or Alteration of Quality Assurance Manager Report as shown on Form 1 and submit it to NSK's Quality Assurance Division using the same procedure as in item 5.

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NSK Ltd.

To: _____ Plant
Manager, Quality Assurance Division

Issue No.	
Issuing date	
Name of company	
Office	
Issuers	

Selection or Alteration of Quality Assurance Manager Report

We inform you that we selected/changed the manager of Quality Assurance as follows:

Manager of quality assurance	Name of office	
	Name	
	Phone No. for contact	
	Selection/Change date	
Assistant manager of quality assurance	Name of office	
	Name	
	Phone No. for contact	
	Selection/change date	
	Plant under his supervision or manufacturer's	
	Location	
Assistant manager of Quality assurance	Name of office	
	Name	
	Phone No. for contact	
	Selection/change date	
	Plant under his supervision or manufacturer's	
	Location	

NSK Q 001 Form 1

SUPPLIER QUALITY ASSURANCE MANUAL

Procedure II Preparation of Inspection Standards

1. Scope

This quality assurance manual specifies the methods to prepare and submit Inspection Standards for products and parts to be supplied to NSK by suppliers.

2. Purpose

The purpose is to clarify the inspection procedures used by suppliers to ensure the final quality of the products and the parts.

3. Preparation Procedures

The Inspection Standards should generally be prepared using one sheet for each product No. For common types of products, however, these may be prepared using a single sheet.

4. Format

Form 2 is a reference form for Inspection Standards. However, the format normally used by the supplier may be used if it satisfies the contents of the reference form.

5. Submission and Approval

5.1 Submission

If the supplier is requested by NSK in the Purchasing Specifications, etc. to submit Inspection Standards, the supplier shall submit them in duplicate to the Quality Assurance Division of NSK before the products are delivered.

5.2 Approval

The Chief of the Quality Assurance Division of NSK shall sign them to indicate approval after checking the details and return one copy to the supplier. For the submitted Inspection Standards, NSK shall handle them with care.

6. Re-submission due to Alteration

When there is an alteration in the Inspection Standards, re-submit the new Inspection Standards immediately. For handling alterations in processes, refer to Procedure VI, "Process Alteration Procedure".

INSPECITON STANDARDS

Product No.		Parts		Material		Date		
Drawing No.								
NSK Purchasing Specification No.		Remarks		Approved by:	Checked by:	Prepared by:		
Sketch								
Inspection No.	Inspection Item	Judgment	Inspection method	Inspection level	Recording system	Remarks		
Revisions	Symbol	Date	Revisions					NSK Confirmation
	△ ₁	. .						
	△ ₂	. .						
	△ ₃	. .						

SUPPLIER QUALITY ASSURANCE MANUAL

Procedure III Preparation of Quality Assurance Process Design Diagram

1. Scope

This quality assurance manual specifies the methods to prepare and submit Quality Assurance Process Design Diagram for products and parts to be supplied to NSK by suppliers.

2. Purpose

Each supplier should prepare quality assurance process design diagram clearly showing the quality assurance methods used in each products and parts production process by the Inspection and Production Divisions in order to have an overall understanding of the quality assurance activities in all production processes.

3. Preparation Procedure

The quality assurance process design diagram should generally be prepared using one sheet for product No. For common types of products, however, these may be prepared using a single sheet.

4. Format

Forms 3 , 4 and 4A are reference forms for quality assurance process design diagram. However, the format used by the supplier may be used if it satisfies the contents of the reference forms. In the Process column on the list, the supplier may enter the process diagram symbols of JIS Z 8206 and define them.

5. Submission and Confirmation

5.1 Submission

If the supplier is requested by NSK in the purchasing Specifications, etc. to submit Quality Assurance Process Design Diagram, the supplier shall submit them in duplicate to the Quality Assurance Division of NSK before any products are delivered.

5.2 Confirmation

The Chief of the Quality Assurance Division of NSK shall sign them to indicate approval after checking the details and return one copy to the supplier. For the

submitted Quality Assurance Process Design Diagram, NSK shall handle them with care.

6. Re-submission due to Alteration

When there is an alteration in the quality assurance process design diagram, re-submit new quality assurance process design diagram immediately. For handling alterations in processes, refer to Procedure IV, "Process Alteration Procedure".

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SUPPLIER QUALITY ASSURANCE MANUAL

Procedure IV Process Change Procedure

1. Scope

This quality assurance manual specifies the procedure which NSK suppliers should follow in order to change production processes.

2. Purpose

The purpose is to prevent deterioration of quality from occurring when changing processes, operating conditions, etc. in the production and inspection processes in order to simplify production reduce costs, or improve quality.

3. Types of Process Change Requiring Approval or Report

The types of process changes that require application to NSK for approval or report and the levels of application are shown below.

Types of process changes	Level of application
(1) Major changes of material (such as changes in material manufacturer on raw material procurement).	Approval
(2) Changes in critical control processes such as casting, forging, heat treatment, welding, plating, rubber vulcanizing, surface treatment, etc.(including renewal of seal dies and plastics)	Approval
(3) Changes in production place or subcontractor.	Approval
(4) Major changes in equipment, control items, control standards, etc. as specified on the Production Process Control List(machining, assembling, etc.).	Report
(5) Changes in inspection methods for finished products	Report

In the case of parts designated by NSK as critical, approval should be obtained also for Items (4) and (5).

4. Process Change Procedure

When suppliers change any processes, encircle the words “Application for approval” or “Report” in the “Level” space on the process change application (Form 5), according to the level of application and submit the original to the quality assurance division of NSK through the division of NSK which placed the order. The application for approval should be submitted about 45 days before.

5. Enforcement of Process Change

- (1) NSK shall approve or reject the process change with the Process Change Reply shown at the bottom of Form 4. The supplier will make the change if approved after their receipt of the Process Change Reply.
- (2) In the case of reports, suppliers shall make the change after submitting the application for the change in process to NSK. However, if additional data, revision of the process-change, etc. are requested by NSK, they shall inform them in the process change reply.

6. Delivery of Parts After Process Change

When suppliers deliver parts to NSK, made after process change, the supplier shall use special controls such as recording the production conditions and inspection results within the process and perform initial product control in accordance with procedure V, "Initial Product Control Procedure".

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PROCESS CHANGE PLAN

NSK Ltd.

To: Plant

Quality Assurance Dep't.

Issue No.			
Issuing date			
Name of Company			
Office			
Issuers			

Product No.:	Parts:	Reason for Change:
Description of Change:		
Old process	New process	Quality characteristics which will be affected:
Production capacity:		

Process Change Planning

Mass production with process before change					
Mass production with process after change					
Trial mass production					
Mass production					
Items and method of trial measurement:					
Possible problems after change:					

With reference to the above process change plan, we confirm as follows:

Change Condition:	NSK Cordinating Plant Dep't.				

Recipients

NSK Q 001 Form 5

APPLICATION FOR PROCESS CHANGE APPROVAL

NSK Ltd.

To:

Approval
Report

Issue No.			
Issuing date			
Name of Company			
Office			
Issuers			

We hereby apply for your approval since we would like to change the process as follows:

Product No.:	Parts:	Reason for Change:
Description of Change:		
Old process	New process	Quality characteristics which will be affected:
Process change schedule Month day	Supply schedule for material with process change Month day	Attached data

Process Change Reply

To:

With reference to the above process change Application, we reply as follows:

No.			
Issuance date			
NSK Office	Receipt		

Approval or rejection of change:	Approved · Rejected
Conditions for Change:	

Recipients

NSK Q 001 Form 6

SUPPLIER QUALITY ASSRUANCE MANUAL
Procedure V Initial Product Control Procedure

1. Scope

This quality assurance manual specifies the procedure which NSK suppliers should use in order to specially control initial products.

2. Purpose

The purpose is to make quality assurance more certain by specially controlling initial products.

3. Definition of Initial Products

“Initial products” means materials that are produced during a specified period of time after production starts or changes and generally includes the following items:

(1) Products designed newly :

Producta which is produced in accordance with a trial manufacturing specification, etc.

(2) Products from new supplier:

Material which has been produced by a new supplier.

(3) Products following process change:

Products produced after a production process alteration approved by the Process Alteration Procedure.

(4) Products following trial manufacturing :

Products for which a countermeasure has been taken to correct defective products.

4. Control of Initial Products

The “control of initial products” means special controls to secure the desired quality, stabilize production early, and eliminate factors that increase cost. The control period for initial products is shown below.

Type of products	Examples	Symbol	Initial product Control period
Designated critical products	Products required safety critical Products designated for laws or regulations Specifically designated products Products required additional control	/HO/ /HOU/ /SHA/ /AJ/etc /+/	For more than three months after initial continuous production or more than three lots
Standard products			For more than one month after initial production or more than one lot

The control of initial products shall be performed for the above period from the start of production of newly developed material, trial manufactured material, material from new supplier, and material following countermeasure, or after receipt of the Process Alteration Reply.

5. Initial Product Supply Procedure

When supplying initial products, the actual products, invoice and Inspection Report shall indicate that they are initial products (newly developed products, trial manufactured products, products from new supplier, or products following countermeasure).

SUPPLIER QUALITY ASSURANCE MANUAL

Procedure VI Disposition When Defects Occur

1. Scope

This quality assurance manual specifies how NSK's suppliers should respond when defective products or parts for NSK are discovered.

2. Purpose

The purpose is to prevent defective products from being supplied to customers and to prevent recurrences.

3. Report and Disposition When Abnormality Occurs

When a supplier detects an abnormality in production and the defective lot has already been supplied to NSK, or when there is such a possibility, the supplier's person in charge of quality assurance shall notify NSK orally or by telephone immediately. Then, he shall enter the following information in the Abnormality Occurrence Report shown in Form 7 and send it to the Quality Assurance Division of NSK and the Quality Assurance Division in the plant concerned immediately and then receive instructions for disposition from them.

(1) Circumstances surrounding defect and presumed cause

(2) Date of supply, supplied quantity, type of lot No.

(3) Supplier's tentative disposition and final disposition of the supplied products.

4. Report on Countermeasures for Defect

The supplier shall prepare a report concerning the cause of the abnormality and countermeasures within 10 days (if, however, another time limit is specified by NSK, the specified date) after the abnormality occurs and receive approval from the Quality Assurance Division of NSK.

5. Supply of Products after Countermeasures

Before supplying products after taking countermeasures, follow Procedure V, "Initial Product Control Procedure".

To:		FAILURE OCCURRENCE INFORMATION		Issue No.	
				Issue Date	
Item				Name of Company	
Parts No./Production No.				Issued by	
Product No.		Lot No.			
Date Supplied			Quantity Supplied		
Description of Failure:	Uncontrolled Copy				
Assumed Cause:					
Tentative Measures: Disposal of Already -Supplied Parts:					
※ Space to be Completed by NSK:				Date Confirmed	
				Section	
				Confirmed	
				Confirmed by	
Supplier should submit Recurrence Prevention Measure Sheet to NSK by ()					
Distribution					

NSK Q 001 Form 7

Defective Purchased Part Recurrence-Prevention Countermeasure Sheet

Process		Subject
Product No		
Delivered to.		

1. How was defect found?	2. Scope of defect
--------------------------	--------------------

3. Result of investigation of defective product	4. Process investigation
---	--------------------------

7. Temporary measures Disposal of semi-finished and supplied parts	5. Maintenance of standards						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">Inspection standards</td><td style="width: 50%;"></td></tr> <tr><td>Quality Assurance Process Sheet</td><td></td></tr> <tr><td>Working Instruments</td><td></td></tr> </table>	Inspection standards		Quality Assurance Process Sheet		Working Instruments	
Inspection standards							
Quality Assurance Process Sheet							
Working Instruments							

7. Investigation of contributing factors Contributing factors	8. Production simulation tests and results
Evidence based on investigation results	

Procedure for form

- (1) This form should be completed by the section for the defects. Checked by the subcontractor's quality assurance section, and the
- (2) If available space is not sufficient, attach additional sheets.
- (3) In 5, indicate whether the inspection standards and quality assurance process chart are available. If available, indicate whether or not they are adequate.
- (4) In 7, present a characteristic diagram.
- (5) In 9 and 10, show the planned schedule for each item. For the "confirmation follow-up (2)", indicate $\Delta 1 \Delta 2, \dots$ corresponding to those shown in the table directly below
- (6) The countermeasure in 9 and 10 should be

	Confirming sections	Confirming schedule	Confirmation follow-up
$\Delta 1$			
$\Delta 2$			
$\Delta 3$			
$\Delta 4$			

No.	
Subcontractor	
Date confirmed	Date prepared
Responsible sec.	Sec. Prepared

9. Causes of occurrence and countermeasures Causes of occurrence	Preventive measures and standardization	Person In charge	Schedule	Confirmation follow-up(2)

10. Reasons for being unable to detect faults and countermeasures Reasons for being unable to detect faults	Preventive measures and standardization	Person In charge	Schedule	Confirmation follow-up(2)

11. Extension to other lines and processes	12. Related data								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">Document No.</td><td style="width: 50%;">Type of data</td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>	Document No.	Type of data						
Document No.	Type of data								
	Note(1) Attach detailed information (2) Attach copies of revised portions of quality assurance process chart, working instructions, instruction book, etc.								

Distributed to: [supplier]--NSK production--NSK QA Sec.
Planning

SUPPLIER QUALITY ASSURANCE MANUAL

Procedure VII Subcontractor Utilization Report

1. Scope

This quality assurance manual specifies the method of reporting that NSK's suppliers should follow to utilize subcontractors for outside services (hereinafter called subcontractors) for materials, products and parts to be supplied to NSK.

2. Purpose

When a supplier entrusts a portion or all of the processing to a subcontractor, the supplier shall report it to NSK beforehand, and NSK shall advise the supplier on the utilization of the subcontractor, if necessary, in order to help the supplier with its quality assurance system.

3. Reporting Procedure

When a supplier is requested by NSK in the Purchasing Specifications, etc. to submit a Subcontractor Utilization Report, the supplier shall enter the necessary data in the Subcontractor Utilization Report shown in Form 9 and submit it to the Quality Assurance Division of NSK.

4. Re-submission due to Alteration

For alteration of a subcontractor, the supplier shall follow Procedure IV, "Process Alteration Procedure", and if the subcontractor Utilization Report has been submitted, re-submit it.

SUPPLIER QUALITY ASSURANCE MANUAL

Procedure VIII Quality Control Status Report for Critical Control Processes

1. Scope

This quality assurance manual specifies the procedure which the supplier should follow in order to submit the Quality Control Status Report for Critical Control Processes to NSK.

2. Purpose

Each supplier shall report to NSK on the equipment, test instruments, operators, inspectors, etc. in production processes such as welding, heat treatment, plating that are controlled by the supplier, in which the internal quality of materials should be assured, and in specific inspection processes (hereinafter called Critical Control Processes) which confirms the effectiveness of magnetic particle inspection, ultrasonic inspection, eddy current inspection, etc. NSK shall advise the supplier concerning the control of the critical control processes, if necessary, in order to help the supplier with its quality assurance system.

3. Reporting Procedure

When a supplier is requested by NSK in the Purchasing Specifications, etc. to submit a Quality Control Status Report for "Special Process", the supplier shall enter the necessary data in the Quality Control Status Report for Critical Control Processes as shown in Form 9 and submit it to the Quality Assurance Division of NSK.

4. Re-submission due to Alteration

For alterations in the control of critical control processes, the supplier shall follow Procedure IV, "Process Alteration Procedure", and re-submit the Quality Control Status Report for Critical Control Processed.

Remarks: A "Special Process" is one of the "Critical Control Processes" and it is necessary to place emphasis on this as a critical process and to perform the special control. In addition to the special process, the "Process Condition Control Process" such as acid pickling and coating, in which it is difficult to detect a defect by inspection requires also the special control for the same reason.

NSK Ltd.

To: _____ Plant

Chief, Quality

Assurance Division

**QUALITY CONTROL STATUS
REPORT FOR CRITICAL
CONTROL PROCESS**

Issue No.	
Issuing date	
Name of company	
Office	
Issuers	

Product No. or Type of products:	Parts:	NSK Purchasing Specification No.	* NSK Confirmation		
Name of Process	Names of equipment, or names of operators, inspectors	Applicable Standards	Validity	Acceptance certificate No., Qualification Division, agent, etc.	Remarks

Spaces marked*: to be filled in by NSK

NSK Q 001 Form