LYC QUALITY MANUAL

0.1 Issued Order

The manual states the corporation quality policy and objective. It is a comprehensive description of the corporation quality system and the programmatic document of the corporation quality work, and is the basic rules and regulations of all quality activities. It is the basis to provide customers with quality assurance and the third party certification.

According to GB/T19001-1994 idt ISO9001: 1994, GJB/Z9001- 96 and Second Edition Quality Manual revised by the corporation, the quality manual is changed into Third Edition after three months operation and two internal audits. Now it is issued. Staffs of the corporation shall obey and execute it strictly.

Wu Weiguo
President
Luoyang Bearing Corporation (Group)
Nov. 15, 1998

0.2 Quality Policy

To provide customers with "Trust-Worthy" product and service is LYC eternal pursuit.

Quality Objective:

1. 100% first-grade leading products.

2. Use the effective operation of the quality assurance system for improving continuously the quality of products.

3. Take market as guiding, make progress by scientific technology and develop new products which can meet the needs and expectations of customers to achieve "producing one generation, storing one generation and pre-developing one generation."

4. Maintain LYC brand in leading position at home, try to catch up with and surpass the world famous brand as quickly as possible.

Quality Commitment:

1. To provide best service and be responsible for product quality to the end.

2. Implement three guarantees (for repair, replacement or compensation of faulty products) in the assured period, if quality problem indeed belongs to the corporation.

3. The quality problem which is fed back from customer shall be replied in 24 hours, and technical staffs shall be sent to the spot to deal with it in 48 hours.

0.3 Enterprise Outline

Luoyang Bearing Corporation (Group) --- LYC is the largest comprehensive bearing manufacturer in china, developed and reorganized on the basis of previous Luoyang Bearing Factory. With an area covering 1730000 square meters, 21265 employees and annual output of 65 million bearings. LYC possesses first-rate machines and instruments over 3583 sets, and its products include more than 5000 designations. LYC can produce various types of bearings in different tolerance classes and dimensions from an inside diameter of 10mm and a weight of 29.5g to an outside diameter of 5.08m and a weight of 14.3t. According to customers' requirements, various high precision, high performance and long life military and civil up-to-date bearing with special structures, special performance, special materials and for special use can be designed

and developed by LYC itself.

The corporation always regards product quality as life of the enterprise, adheres to the policy of "Quality First, Customer Supreme", "Stable and Reliable, Perfectly Safe". According to GB/T19000 -1994 idt ISO 9000:94 and GJB/Z9000-96 quality management and quality assurance standard, the Corporation sets up effective quality system. It takes market as guiding, tries its best to adopt up-to-date technology, and widely uses computer in bearing optimum design and aided management. Now Luoyang Bearing Corporation (Group) has a strong technical force, advanced manufacturing equipment, complete measuring instruments and scientific organization and management. LYC products are manufactured according to National Standard idt International Standard and try to meet all the demands of customers.

LYC products are widely used in automobiles, motorcycles, agricultural machinery, machine tools, and mining, metrological, petrol, chemical machinery as well as electric motors, railway vehicles, armored vehicles, ships, instruments, radar, aviation and etc. military and civil fields.

LYC products are selling well in China as well as more than 70countries and regions in North America, South America, Europe, Oceania, Asia and Africa. LYC has established good trade relation with customers both at home and abroad and set up over 20 sale organizations in China and overseas, thus has formed a complete sales and service network. LYC bearings are highly praised by customers with "trust-worthy" quality and service.

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1.0 Scope

The manual has established the corporation quality system to ensure that the quality of products and service can meet customers requirements, the markets at home and abroad can be continuously developed and economic benefits can be raised .

The manual is suitable for the whole process of bearing products design, development, manufacture and service of the corporation.

The clause with * in the manual and procedure documentation is suitable for design, development, manufacture and service of military bearings, as for other bearing products , it can be available for reference.

2.0 Normative Reference

GB/T6583 -- 1994 idt ISO8402:1994 Quality management and quality assurance vocabulary.

GB/T19001 -- 1994 idt ISO 9001:1994 Mode for quality assurance of design, development, production, installation and servicing.

GJB/Z9001--96 Quality System Mode for quality assurance of design, development, production, installation and servicing.

3.0 Vocabulary

3.1 The term in the manual adopts the definition in GB/T6583 -- 1994idt ISO8402:1994.quality management and quality assurance vocabulary, where: "product" adopts the definition in GB/T19001 --1994 idt ISO9001:1994.

3.2 The term: "sub-contractor" in GB/T19001--1994 idt ISO9001 1994 and the term "sub-manufacturer" in GJB/Z9001-96 are referred to as "sub-supplier" in the manual.

3.3 The term "user" in GJB/Z9002-96 is referred to as "customer" in the manual.

4.0 Quality System Requirements

The corporation adopts 20 quality system requirements specified inGB/T19001-1994 idt ISO9001:1994 and GJB/Z9001-96.

The corporation has specified each quality system requirements which is suitable to the corporation quality assurance.

Cross-reference of chapter numbers related to quality system requirements in the manual and clause numbers in GB/T19001 andGJB/Z9001 are as follows:

Quality system requirement	Chapter number in the manual	Clause in GB/T19001	Clause in GJB/Z9001
Management responsibility	4.1;0.2;0.3	4.1	4.1
Quality system	4.0;4.2	4.2	4.2
Contract review	4.3	4.3	4.3
Design control	4.4	4.4	4.4
Document and data control	4.5; 5.0	4.5	4.5
Purchasing	4.6	4.6	4.6
Control of customer-supplied product	4.7	4.7	4.7
Product identification and traceability	4.8	4.8	4.8
Process control	4.9	4.9	4.9
Inspection and testing	4.10	4.10	4.10
Control of inspection, measuring and test equipment	4.11	4.11	4.11
Inspection and test status	4.12	4.12	4.12
Control of nonconforming products	4.13	4.13	4.13
Corrective and preventive action	4.14	4.14	4.14
Handling, storage, packing, Preservation and delivery	4.15	4.15	4.15
Control of quality records	4.16	4.16	4.16
Internal quality audits	4.17	4.17	4.17
Training	4.18	4.18	4.18
Servicing	4.19	4.19	4.19
Statistical techniques	4.20	4.20	4.20

4.1 Management Responsibility

4.1.1 Purpose

Determine management responsibility and ensure quality system is effective operation, to realize the corporation quality policy and objective.

4.1.2 Scope

Suitable for the corporation management levels, functional departments and related personnel.

4.1.3 Responsibility

General manager is responsible for determining quality responsibility, issuing quality policy, quality objective and

quality commitment. All departments shall implement them according to their responsibilities.

4.1.4 Requirements

4.1.4.1 Quality Policy

a. The quality policy prepared by the corporation shall be relevant to the corporation's goal and expectations of its customers and quality commitment to customers. The quality objective should be concrete, be inspected and be realized. The corporation prepares annual objective and all departments shall deploy and implement it.

b. The corporation shall communicate the quality policy to every employee by adopting measures such as training, medium propaganda, etc., and assure it be implemented by ways of work check, internal audit, etc.. The corporation regards the implementation of quality policy and objective as one of main management review contents.

c. The corporation quality policy is approved and issued by the general manager. When revised, it should be approved and issued again by general manager.

d. The corporation quality policy: To provide customers with "trust-worthy" products and service is LYC eternal pursuit.

e. The corporation objective:

1. 100% first-grade leading products.

2. Use the effective operation of quality assurance system for improving continuously quality of products.

3.Take market as guiding, make progress by scientific technology and develop new products which can meet the needs and expectance of customers to achieve "producing one generation, storing one generation and pre-developing one generation."

4. Maintain LYC brand in leading position at home, try to catch up with and surpass the world famous brand as quickly as possible.

f. The corporation quality commitment:

1) To provide best service and be responsible for product quality to the end.

2) Implement three guarantees (for repair, replacement and compensation of faulty products) in the assured period, if quality problem indeed belongs to the corporation.

3) The quality problem which is fed back from customer shall be replied in 24 hours and technical staffs shall be sent to the spot to deal with it in 48 hours.

4.1.4.2 Organization

4.1.4.2.1 Responsibility and authority (Table 1)

The determination and alteration of organizational structure and responsibility shall be approved and issued by general manager. The corporation shall establish organizational structure (see Fig 1 and Fig 2) according to the requirements of management, implementation and verification of quality work to determine the functions of each organization, responsibilities, authorities and mutual relations of related personnel.

1) General Manager

- Be responsible for final product quality and quality management.
- Prepare and issue quality policy and objective.
- Establish organizational structure, provide adequate resources, make clear subordinate relation.

- Appoint management representative, approve quality manual.

- Organize and chair management review, approve <<Management Review Report>>.

- Authorize quality management department to exercise authority on its own responsibility and prevent it from interfering by any other departments and personnel.

-Authorize military product managing department exercise authority on management of military product quality independently.

2) Management Representative

- According to the requirements of GB/T19001-1994 idt ISO9001:1994 and GJB/Z9001-96, the quality system is established, implemented and maintained.

- Report on the performance of the quality system to general manager.

- Take charge of liaison with external parties on matters relating to the corporation quality system.

3) Personnel and Education Vice-General Manager

- Be responsible for that personnel training can meet the needs of country and the corporation.

-Be responsible for the human resources needed to ensure effective operation of quality system.

-Has the right to dispatch the resources within his responsibility.

4) Technical and Quality Vice-General Manager

- Assisting general manager, be responsible for the product quality and quality management.

- Be responsible for technical planning and transformation, spreading and applying new techniques, new technologies, new equipment and new materials.

- Be responsible for control of inspection, measuring and test equipment and non-conforming product.

- Be responsible for product design and technology design.

- Be responsible for new product development.

-Has the right to dispatch the resources within his responsibility.

5) Production Vice-General Manager

- Be responsible for establishing and maintaining production management system and order which can manufacture conforming products and high quality products steadily.

- Be responsible for materials purchasing in the production.

- Be responsible for that equipment, tools, dies and fixtures can meet the requirements in production.

- Be responsible for ensuring that production can meet the contract's requirements.

-Has the right to dispatch the resources within his responsibility.

6) Sales Vice-General Manager

- Be responsible for determining market demands.

- Be responsible for product sales and services.

-Has the right to dispatch the resources within his responsibility.

7) Quality Management Department

- Execute and implement the corporation quality policy and objective in his own work.

- Assist the management representative in establishing, implementing and maintaining the quality system.

- Organize, coordinate, supervise and inspect the development and implementation of the enterprise quality management, quality control and quality assurance activities.

- Be responsible for the preparation and management of the quality system documentation.
- Be responsible for the quality of receiving inspection of goods and for the quality of final inspection of military product.

- Be responsible for organizing evaluation of sub-supplier.

- Be responsible for the management of nonconforming products.

- Be responsible for the management of corrective and preventive actions.

- Be responsible for the management of application of statistical techniques.

- Has the right to investigate the quality incident and propose the disposal suggestions.

- Organize the internal quality audits.

8) Military Product Managing Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for contacting with the higher level military product department and military representative in the corporation; Communicate quality management of military product system and organize corresponding quality activities in the corporation.

- Organize, coordinate, supervise and inspect the development and implementation of quality management, quality control, quality assurance activities of the corporation military product system.

- Be responsible for organizing military product contract review.

- Be responsible for the management of customers-supplied military products.

-Be responsible for organizing the delivery activities of military product.

9) Sales Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for market research, determination of market requirements, collection and feedback of market information.

- Be responsible for product sales, and implementation of contract.

- Be responsible for management quality of finished products in stock rooms.

- Be responsible for quality of sales service.

- Be responsible for quality of purchasing the packaging materials.

- Be responsible for organizing contact review.

- Has the right to propose the regulation of production plan to plan department and production managing department.

- Has the right to carry out internal check for quality problem complained by customer.

10) Design Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for organizing preparation of the quality plan.

- Be responsible for control of product design.

- Be responsible for correctness, unity and integrity of product design technical document and data.

- Be responsible for providing technical service for customers.

- Be responsible for the contract review of new product.

- Has the right to attend the evaluation of sub-supplier.

- Has the right to review the nonconforming product.

11) Technical Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for correctness, unity and integrity of technological documents.

- Be responsible for technological control of process.

- cooperate with sales department to provide technical service for customers.

- Has the right to review the nonconforming product.

- Has the right to examine and check the implementation of technology.

12) Materials Supplying Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for quality of purchasing materials required by production.

-Be responsible for quality problem caused by poor materials management.

- Be responsible for cooperating with quality managing department to evaluate sub-supplier.

- Has the right to examine and check the use of materials.

13) Production Managing Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for balanced production.

- Be responsible for that the production can meet the requirements of contract.

- Be responsible for quality of purchasing parts purchased or cooperated outside.

- Has the right to dispatch production and regulate production plan.

- Has the right to examine and check the production completion condition and field production management.

14) Metrological Managing Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for the corporation metrological work to ensure the accuracy of metrology transfer.

- Be responsible for that the inspection, measuring and test equipment can conform with the specified requirements.

- Has the right to examine and check the corporation metrological management.

15) Equipment Managing Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for that the equipment can meet the needs of production.

- Has the right to examine and check the equipment management.

16) Tools Managing Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for that the tools, dies and fixtures can meet the needs of production.

- Has the right to examine and check the tools management.

17) Training Managing Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for determining the corporation training needs of all kinds of personnel performing activities affecting quality.

- Be responsible for the training quality.

- Has the right to examine and check the training.

- Has the right to suggest the personnel managing department that who failed in the training examination will not permit to go to his post.

18) Plan and Financial Department

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for that the production plan can satisfy the requirement of the contract.

- Be responsible for the management of quality-related cost control.

- Has the right to examine and check the completion condition of quality-related cost.

19) Safety Technique Managing Department

- Execute and implement the corporation quality policy and objective in his own work.
- Be responsible for the safety of production environment.
- Has the right to examine and check the safety.

20) Transportation Department

- Execute and implement the corporation quality policy and objective in his own work.
- Be responsible for the quality of product transportation.
- Has the right to dispatch transportation.

21) Archives Managing Department

- Execute and implement the corporation quality policy and objective in his own work.
- Be responsible for management quality of technical documents and data.
- Has the right to guide and check the management of technical documents and data.

22) Production Department

- Execute and implement the corporation quality policy and objective in his own work.
- Be responsible for the product quality of its own department.

-Effectively implement the corporation quality system documentation, be responsible for the quality of field management of its own department.

-Analyzing the causes of non-conforming products and be responsible for effect of corrective/preventive action.

- Military product production department shall be responsible for control of military product design.
- Has the right to reject non-conforming product.
- Has the right to stop the further process and delivery of non-conforming product.
- Has the right to examine and check the quality management of its own department.

23) Internal Quality Auditors

- Execute and implement the corporation quality policy and objective in his own work.
- Conduct internal quality audits fairly and independently.
- Be familiar with the corporation's quality system and the quality system documentation.
- Confirm and record the non-conforming product found in the internal audit and verify the effectiveness of corrective action.
- Assist quality management department in supervising the operation of the corporation quality system.
- Has the right to report on the performance of quality system to management representative.

24) Inspectors

- Execute and implement the corporation quality policy and objective in his own work.
- According to the specified requirements of the corporation, inspect and identify the product.
- Record the identification condition of product correctly and has the right to stop non-conforming product which is un-reviewed turning to further process.
- Has the right to report on the non-conforming products to the higher level.
- Has the right to supervise the product quality and process quality.

25) Design and Technological Personnel

- Execute and implement the corporation quality policy and objective in his own work.
- According to the requirements of related documents, carry out product design and prepare technological documents, to ensure that the design meets the needs of customers and technology meets the requirements of design.

- Be responsible for quality of design or technology output of his own.

- Has the right to request providing the complete and clear design input requirements.

26) Production Operators

- Execute and implement the corporation quality policy and objective in his own work.

- Operate according to the regulations of the technology and relevant documents and be responsible for the quality of product which is processed by himself.

- Has the right to refuse further processing before the corresponding disposal for the non-conforming product of upper process step without taking appropriate resolved and report it to related personnel.

27) Purchasing Personnel

- Execute and implement the corporation quality policy and objective in his own work.

- Purchase according to the regulations of related documents, be responsible for quality of product purchased by himself.

- Has the right to request providing the clear purchasing requirements.

28) Plan Personnel and Dispatcher

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for the quality of planning or dispatch work undertaken by himself.

- Has the right to assign operative plan according to the regulations of related documents and carry out job scheduling.

29) Warehouse men

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for the quality of materials and products kept, preserved, received and dispatched by himself.

- Has the right to keep, preserve, receive and dispatch the material and products according to the regulations.

30) Packing and Handling Personnel

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for the quality of products packed and handled by himself.

- Has the right to pack and handle products according to the regulations.

31) Metrological Personnel

- Execute and implement the corporation quality policy and objective in his own work.

- Be responsible for the quality of metrological work in his own post according to the related rules and regulations of metrology.

- Has the right to supervise the use of metrological appliance and put a stop to use invalid metrological appliance.

4.1.4.2.2 Resources

The corporation shall especially show clearly responsibilities and authorities of those personnel engaged in quality management, technical planning, quality assurance planning, material, product, quality system verification, as well as release of the product and deviation waiver. All these personnel must have necessary qualification.

The corporation shall determine the needs of necessary resources that ensure production ability, product quality, servicing quality and effectiveness of various verification works, by means of technological review to check resources appropriateness of production capability, by work of management review, to evaluate appropriateness of inspection and test capability, personnel quality design ability and quality system etc.. The general manager is responsible for coordination when the resources are not appropriate.

4.1.4.2.3. General manager appoints technical vice-general manager as management representative in the corporation management level. Management representative shall have defined authority for, irrespective of other responsibilities.

- Ensuring the corporation quality system is established, implemented and maintained in accordance with the selected standard.

- Reporting on the performance of quality system to general manager for review and as a basis for improvement of the quality system.

- Taking charge of liaison with external parties on matters relating to the corporation quality system.

All staffs should operate (work) according to the requirements of documents and have right and obligation to report problems and put forward suggestions of solving quality problems to higher level, by passing the immediate lead ship.

4.1.4.3 Management Review

The corporation shall prepare <<Management Review Procedures>>, the general manager takes charge of implementing management review. Management Review shall be carried out at least one time every year, if necessary it can be carried out at proper time, to satisfyGB/T19001-1994, GJB/Z9001-96 and the quality policy and objective specified by the corporation. In order to ensure quality system continuing effectiveness, management representative shall prepare adequate data and information before management review. Action shall be established and taken in management review and the effect of implementation shall be verified.

Records of management review shall be maintained.

4.1.5 Documentation of Procedures

4.1.5.1 Procedures for Management Review

4.2 Quality System

4.2.1 Purpose

The quality system shall be established and documented to ensure it is effective operation.

4.2.2 Scope

Suitable for the whole process of bearing design, development, manufacture and service of the corporation. .

4.2.3 Responsibility

4.2.3.1 Management representative is entrusted by general manager to be responsible for establishing, implementing and maintaining the quality system.

4.2.3.2 Quality Management Department assists the management representative in organizing concretely establishment, implementation and maintenance of the quality system.

4.2.3.3 All departments and personnel are responsible for implementing all regulations of quality system documentation and shall meet its needs.

4.2.4 Requirements

4.2.4.1 The corporation shall establish document and maintains quality system as a means of ensuring that product conforms to the specified requirements.

4.2.4.2 Quality system documentation

a. Quality system documentation is classified into three levels: quality manual, procedure documentation and other quality documents.

b. The corporation prepares the quality manual. It is used to describe the implemented quality system and takes it as the basis of conformance to GB/T1 9001-1994 idt ISO 9001:1994 and GJB/I 9001-1996 standard requirements. The quality manual is approved and issued by general manager.

c. According to the specified quality policy, objective and selected ISO 9000 family standard, procedure documentation describes the activities of all functional departments related to the implementation of quality system elements, generally including the purpose and scope of activities, what shall be done and by whom, when, where and how it should be done; what materials, equipment and documents shall be used, how it shall be controlled and recorded.

d. Other quality documents are detailed working document, tables, reports, etc.

4.2.4.3 Quality Planning

Management representative shall define and document how the requirements for quality will be met. Quality planning shall be consistent with all other requirements of the corporation quality system and prepare annual quality work plan.

The following activities shall be considered in meeting the specified requirements for products, projects and contracts:

---- Design department shall prepare quality plans for each specially designated product, project or contract. Quality plans shall include: achieved quality objective, responsibility of related personnel who takes action to the product or project, adopted specified quality control procedures, time order of activities, necessary test, inspection and audit document and adopted other measures assigned to quality objective. Concrete implementation shall be performed according to " Procedures for control of quality plan";

---- The identification and acquisition of any controls, processes, equipment, fixtures, resources and skills.

---- Ensuring the compatibility of the design, the production process, installation, servicing, inspection and test procedures and the applicable documentation.

---- The updating, as necessary of quality control, inspection and testing techniques.

---- The identification of any measurement requirement involving capability that exceeds the known state of the art, in sufficient time for the needed capability to be developed.

---- The identification of suitable verification at appropriate stage in the realization of product.

---- The clarification of standards of acceptability for all features and requirements.

---- The identification and preparation of quality records.

* b. The quality plan (quality assurance program) shall be submitted to customer or customer's representative for approval when contract is specified.

4.2.4.4 When contract demands configuration management for product, the military product managing department shall prepare and implement " Procedure for configuration management" according to relevant standards.

4.2.4.5 The corporation shall maintain and use financial data related to quality management and take them as the managerial elements of quality system. Financial department prepares " Procedures for control of quality-related cost". Top management shall go over financial report related to quality regularly to evaluate the effectiveness of the quality system operation. Financial data related to quality shall be provided for customer or customer's representative when contract required.

4.2.5 Documentation of procedures

4.2.5.1 Procedures for control of quality plan

4.2.5.2 Procedures for configuration management

4.2.5.3 Procedures for control of quality-related cost

4.3 Contract Review

4.3.1 Purpose

Standardize contract review procedure to ensure that the specified contract requirements are clear and reasonable and the corporation has the ability to implement the contract

4.3.2 Scope

Suitable for reviewing the corporation sales contract/order, technical agreement or developing assignment.

4.3.3 Responsibility

4.3.3.1 The review of domestic trade contract is managed by General Sales Company.

4.3.3.2 The review of foreign trade contract is managed by Export and Import Corporation.

4.3.3.3 The review of new product contract is managed by design department.

4.3.3.4 The review of military product is managed by military product managing department.

4.3.4 Requirements

Before each contract or order is signed, it must be reviewed by the signatory department with proper way and record of the review shall be maintained to ensure that:

a. The requirements are adequately defined and document where no written statement of requirement is available for an order received by verbal means, requirements are agreed before their accepted.

b. Any difference between the contract or order requirement and those in the tender are resolved.

c. The corporation has the capability to meet the contract or order requirements.

4.3.4.2 Amendment to a contract

a. The amendment to a contract shall be discussed by both sides. The alteration proposed by customer shall be satisfied as possible unless it disobeys the corporation's interests. The alteration proposed by the corporation shall be approved by customer.

b. Before the amendment to a contract is affirmed, review shall be performed.

c. After a contract modification is made, it shall be transferred to the functions concerned.

d. All amendments to the contract shall be recorded and maintained carefully.

4.3.5 General Sales Company shall prepare " Procedures for control of contract review ".

4.3.6 Documentation of procedures

4.3.6.1 Procedures for control of contract review

4.4 Design control

4.4.1 Purpose

The whole process of product design and development shall be controlled to ensure that design can satisfy the specified requirements.

4.4.2 Scope

Suitable for the whole process of product design and development.

4.4.3 Responsibility

4.4.3.1 Design department is responsible for the management of design control.

4.4.3.2 Military product production department is responsible for the design control of military product.

4.4.4 Requirements

4.4.4.1 Design and development planning

Design department shall be prepare product developing plan for each design and development activity. The plan shall describe or reference these activities, and define responsibility and time for their implementation, and be assigned to qualified personnel equipped with adequate resources. The plan shall be updated as the design evolves.

- The prepared plan shall satisfy the requirements specified by development procedures. When the upper stage activities shall not be reached, it shall not be turned to the nest stage.
- Planning design activities shall ensure:

a. According to the relevant specifications of design and test, design and test shall be carried out, and take it as the criteria to control and evaluate design and test work.

b. The performance, reliability, safety and guarantee of product are systematically analyzed and comprehensively balanced with optimum design and reliability of techniques to achieve the best cost-efficiency.

c. New techniques and equipment used by design shall be demonstrated, tested and verified. Unverified conforming pieces, parts (assemblies) shall not be filled on the machine; Conformity which is untested or unadequately tested shall not be used in actual service test.

d. Establish three levels examination and signature system (check, examine and approval) of drawings documents and technical countersign system of technology and quality and standardization check system.

4.4.4.2 Organizational and technical interfaces

Design department is responsible for organizational and technical interfaces between different groups which input into the design process, the preparation of document relating to control procedure and the necessary information documented, transmitted and regularly reviewed.

4.4.4.3 Design input

a. Design input requirements relating to product, including applicable statutory and regulatory requirements, shall be identified, documented and their selection reviewed by the design department for adequacy incomplete, ambiguous or conflicting requirements, design department shall solve with those responsible for imposing these requirements.

b. For new product which is asked to develop by customer, design department shall sign product technical assignment/technical agreement with the customer.

c. Designer shall study product technical assignment/technical agreement and contract review results, make clear the service and technical requirements , and form design input.

4.4.4.4 Design output

Design output shall be documented and expressed in terms that can be verified and validated against design input requirements.

Design output shall

a. meet design input requirements

b. contain or make reference to acceptance criteria

c. identify the design characteristics that are crucial to the safe and proper functioning of the product (e.g. requirements of operating, storage, handling, maintenance and disposal).

d. design output document shall include:
calculating document, drawings, technical specification, list of parts purchased or cooperated outside, computer software, etc

e. design output documents shall be reviewed before released.

4.4.4.5 Design review

a. At appropriate stages of design, the design results shall be planned and conducted. According to different requirements and complexity of the product, different means shall be adopted. Design review shall be recorded and maintained.

b. Participants at each design review shall include representatives of all functions concerned with the deign stage being reviewed, as well as other specialist personnel, as required.

*c. Design review, technological review and product quality review shall be conducted at different level and stage respectively and documented by the corporation according to the level of function and management of the product.

*d. The military side or representative of military side shall be invited to review when the contract is required.

4.4.4.5 Design verification

At appropriate stages of design, design verification shall be performed to ensure that the design stage output can meet the design state input shall be recorded.

Design verification may include following activities:

a. performing alternative calculation

b. comparing the new design with a similar proven design

c. undertaking test and demonstrations, and

d. reviewing the design stage document before releasing.

4.4.4.7 Design validation

After accomplishing validation, design validation of final product shall be performed by design department organizing relevant departments to ensure that product conforms to defined user needs and/or requirements.

- For product to be finalized (qualified), the corporation shall make preparation for finalization (qualification) according to related rules of product finalization and requirements of Product Qualification Committee.

4.4.4.8 Design changes

All design changes shall be performed according to " Procedures for control of design change ". Make clear the changing causes and contents. Go through the procedure for examination and approval. If bearing performance and fitting dimensions shall be changed, it shall be asked for the approval of customer in advance,.

- For important design changes, systematical analysis, demonstration or test shall be performed, and examination and approval procedure shall be performed strictly.
- The changes of finalized product shall be handled according to relevant regulations of finalization.

4.4.5 According to the above requirements, design department shall prepare " Procedures for control of product design ", " Procedures for control of product qualification " and " Procedures for control of design change ".

4.4.6 Documentation of procedures

4.4.6.1 Procedures for control of product design

4.4.6.2 Procedures for product qualification

4.4.6.3 Procedures for control of design change

*4.4.6.4 Procedures for control of military product design

*4.4.6.5 Procedures for military product design control

*4.4.6.6 Procedures for control of military product design change

4.5 Documents and Data Control

4.5.1 Purpose

Document and data relating to the quality system shall be controlled to ensure appropriate documents to be valid at all locations.

4.5.2 Scope

Suitable for documents and data control relating to the quality system, including documents of external origin.

4.5.3 Responsibility

4.5.3.1 Files management department is responsible for management of all kinds of technical documents and data.

4.5.3.2 Quality management department is responsible for management of documents and data relating to the quality system.

4.5.4 Requirements

4.5.4.1 Documents and Data Approval

The documents and data shall be reviewed and approved for adequacy by authorized personnel prior to issue. A master list for identifying the current revision status of documents or equivalent documents control procedure shall be established and be readily available to preclude the use of invalid and/or obsolete documents.

This control shall ensure that:

a) The pertinent issues of appropriate documents are available at all locations where operations essential to the effective functioning of the quality system are performed.

b) Invalid and/or obsolete documents are promptly removed from all points of issue or use, or otherwise assured against unintended use.

c) Any invalid or obsolete documents retained for data-preservation should be identified by the stamp "For reference only".

4.5.4.2 Documents and Data Release

When the document is released, the managing department in charge shall record and ask the receiver sign for traceability and charge.

4.5.4.3 Documents and Data Changes

Changes to documents and data shall be filled in <<Notice of the document changes>> by the original prepared function and state there as on of changes by the same functions that prepared the original prepared functions. For important changes shall be demonstrated adequately. Changes to document and data shall be reviewed and approved by the same function that performed the original review and approval.

*4.5.4.4 Documents and Data files

The corporation shall establish documents and data files and identify, index and file timely the documents and data formed in the process of product quality. Several times or more contents changes to document shall be changed into new edition.

4.5.5 Procedures Documentation

4.5.5.1 Procedures for control of documents and data

4.6 Purchasing

4.6.1 Purpose

The purchasing process shall be controlled to ensure that the purchasing product conforms to the specified requirements.

4.6.2 Scope

Suitable for materials purchase relating to quality of bearing product.

4.6.3 Responsibility

4.6.3.1 Materials supplying department is responsible for preparing and implementing purchase plan for associated supplies and raw materials as well as incoming parts (seals). Establish supplying and buying relationship with acceptable sub-supplies, be responsible for purchased product quality.

4.6.3.2 Design/technical department is responsible for preparing technical specifications and test regulations of purchasing product.

4.6.3.3 Production management department is responsible for incoming materials and parts .

4.6.3.4 Sales department is responsible for purchasing of packaging materials.

4.6.3.5 Quality management department is responsible for reviewing sub-suppliers.

4.6.4 Requirements

4.6.4.1 In general, purchasing should be supplied within the acceptance sub-suppliers, urgent purchasing should be approved by the leader of the corporation.

4.6.4.2 Quality management department organize purchasing department and design/technical department to determine acceptable sub-supplier list according to <<Rules of Evaluation of Sub-supplier>>.

*4.6.4.3 Acceptable sub-supplier list of acceptance equipment supplier shall be prepared as the basis of selection and purchase, and bring it into the management of whole technical data. Where necessary, the confirmation of acceptable sub-supplier shall notice customer and customers' representative or acquire the approval of customer or customers' representative.

4.6.4.4 When severe product quality problems occur, sub-supplier should be evaluated again.

For unacceptable sub-supplier, qualification of acceptable sub-supplier shall be cancelled.

4.6.4.5 Acceptable sub-supplier list shall be revised in time according to real quality assurance capacity of sub-supplier.

4.6.4.6 Evaluating data of acceptable sub-supplier shall be maintained by quality management department.

4.6.4.7 Purchasing Data

Purchasing documents shall contain data clearly describing the requirements of the product ordered, including where applicable:

a. Purchasing plan.

b. Specifications, drawings

c. Inspection instructions and acceptable rules

d. The quality system standard to be applied.

4.6.4.8 The leader in-charge of the department shall review and approve the purchasing document prior to release, the leader in-charge of the corporation shall review and approve purchasing document of important product (eg: the new developing product).

4.6.4.9 Verification of purchased product at sub-supplier's premises

Where the corporation proposes to verify purchased product at the sub-supplier's premises, it shall specify verification arrangements and the method of product release in purchasing documents.

4.6.4.10 Where specified in the contract, the customer or the customer's representative shall be afforded the right to verify at the sub-supplier's premises and the corporation premises that supplied product conforms to specified requirements. Such verification shall not be used by the sub-supplier as evidence of effective control of quality.

Verification by the customer shall not absolve the supplier of the responsibility to provide acceptable product, nor shall

it preclude subsequent rejection by the customer.

*4.6.4.11 For key purchasing product, the corporation shall sent resident or mobile representative of quality acceptance to the sub-supplier.

*4.6.4.12 Control of new developed purchasing product.

The corporation shall prepare and implement procedure documents of new-developed purchasing product quality.

When new developed purchasing product is used, review and approval procedures shall be carried out after adequate demonstration.

In the process of development, test and trial of new-developed purchasing product, the corporation shall coordinate with sub-supplier on technology according to technical agreements or contract. After verification it shall be used when technical requirements are met.

*4.6.4.13 Storage of purchasing product

The corporation shall prepare and implement procedure document of storage of purchasing product. Effectively control each link of storage, maintenance and dispatch to ensure the quality of purchasing product.

4.6.5 Documentation of procedures

4.6.5.1 Procedures for control of evaluation of sub-supplier

4.6.5.2 Procedures for control of purchasing

*4.6.5.3 Procedures for control of new-developed purchasing product

*4.6.5.4 procedures for storage of purchasing product

4.7 Control of Customer-Supplied Product

4.7.1 Purpose

The customer-supplied product shall be controlled to preclude products from losing, damaging and misusing.

4.7.2 Scope

Suitable for control of customer-supplied products.

4.7.3 Responsibility

4.7.3.1 Sales department is responsible for the management of customer-supplied product.

4.7.3.3 Military product department is responsible for the management of customer-supplied military product.

4.7.4 Requirements

4.7.4.1 When sales department sign contract or agreement on providing product for customers, if the customer provide software service, processing outside, transportation, etc., it shall be specified in the contract or agreement.

4.7.4.2 Sales department shall verify customer-supplied product and shall be identified, stored and maintained, according to regulations to prevent from damaging or losing.

4.7.4.3 Production department shall process according to the specification to prevent the customer-supplied product from misusing or mixing.

*4.7.4.4 Controlling requirements of customer-supplied product shall be specified in the contract.

4.7.4.5 Customer-supplied product that is lost, damaged or is unsuitable for use shall be recorded and reported to the customer in time.

4.7.4.6 Verification by the corporation does not absolve the customer of the responsibility to provide acceptable product.

4.7.5 Documentation of procedures

4.7.5.1 Procedures for control of customer-supplied product

4.8 Product Identification and Traceability

4.8.1 Purpose

The product shall be identified necessarily to prevent the different kinds of products from confusing, where appropriate, the product traceability shall be realized.

4.8.2 Scope

Suitable for the corporation receiving manufacturing and delivery identification of product.

4.8.3 Responsibility

4.8.3.1 Design department is responsible for preparing the specifications of product identification.

4.8.3.2 Technical department shall define the methods and requirements of product identification specified in technological document.

4.8.3.3 Production department and sales department are responsible for implementation of product identification and record.

4.8.3.4 Purchasing department is responsible for identifying and recording purchasing materials.

4.8.4 Requirements

4.8.4.1 Identify the using spare parts, raw materials and processed semi-finished and finished product, where and the extent that traceability is a specified requirements, the procedure shall be established for unique identification of individual product or batches.

4.8.4.2 The marking and labeling of materials should be legible, durable and in accordance with specifications. Product identification should be maintained in integrality, and be transplanted during manufacturing or further process.

4.8.4.3 All related departments shall record the identification in accordance with the specified process and maintain these records, so they can trace product manufacturing, inspection and test process, and the related history of main raw materials by the related records and identification if necessary.

4.8.4.4 Design department shall prepare <<procedures for Control of Production Identification and Traceability>> according to the above specified requirements.

*4.8.4.5 Military product managing department shall prepare and perform <<Procedures for Control of Batches>> and make the detail records of each batch quantity of input and output status of quality and operators, inspectors in the process of feed, process, assembly and trial. The batch identification of product should be corresponding to the original record.

4.8.5 Documentation of procedures

4.8.5.1 Procedures for control of product identification and traceability

4.8.5.2 Procedures for control of batches

4.9 Process Control

4.9.1 Purpose

Production process shall be controlled to ensure product can meet the requirements of quality.

4.9.2 Scope

Suitable for controlling of bearing manufacturing process.

4.9.3 Responsibility

4.9.3.1 Technical department is responsible for the management of process technology.

4.9.3.2 Production managing department is responsible for preparation, supervision and implementation of production plan, and responsible for civilized product and fixed-position management.

4.9.3.3 Equipment managing department is responsible for the management of equipment.

4.9.3.4 Tools managing department is responsible for providing fixtures.

4.9.3.5 Production department is responsible for implementing process control and ensure process quality.

4.9.3.6 Safety technique managing department is responsible for the safety of production environment.

4.9.3.7 Military product managing department is responsible for organizing, coordinating, supervising, inspecting process control of military product system.

4.9.4 Requirements

4.9.4.1 Production process shall be controlled. The controlled conditions shall include the following:

a. All documents used in the work site shall be identical, complete, legible and valid. Documents used in the work site shall not be altered;

b. Technical managing department prepares guiding technological documents and procedures, production department prepares production technological documents and procedure and shall be approved by technical department;

c. Use of suitable production equipment and a suitable working environment;

d. Compliance with reference standards, specifications and documents;

e. Monitoring and control of suitable process parameters and product characteristics according to related rules;

f. The approval of processes and equipment for key quality characteristics;

g. Criteria for workmanship, which shall be stipulated in the clearest practical manner (eg. written standards, representative samples or illustrations);

h. Suitable maintenance of equipment to ensure continuing process capability;

i. Operators shall perform with qualified certificate;

*j. Purchasing products must be rechecked by the corporation and shall be used with rechecked and qualified certificate of inspection or identification. Product in process shall be machined and assembled continuously with the upper process qualified certificate. The use of substitute materials shall be approved;

*k. Check three items of the first piece of product and make identification. For the first piece of key process, records of real test data shall be filled in;

*l. Control superfluity and clearness;

*m. Test equipment, technological equipment and inspection and measuring equipment shall be examined periodically according to the regulations and make qualified identification.

4.9.4.2 Special process control

a. Where the results of processes cannot be fully verified by subsequent inspection and testing of the product, such processes requiring pre-qualification of their process capability are referred to as special processes. The special processes of the corporation shall include: heat-treatment, forging, founding, surface treatment and welding, etc.

b. Operators and inspectors shall have corresponding qualification. Technological parameters (eg. temperature, time, medium, etc.) and all factors effecting parameter fluctuation shall be continuously monitored and controlled to ensure the specified requirements are met besides special processes shall meet the requirements of 4.9.4.1 .

c. Special processes (include the related equipment and personnel)shall be qualified, records shall be maintained as appropriate;

d. For key processes formed by key product characteristics, special-purpose key processes control procedures shall be prepared and implemented to ensure product quality can meet the specified requirements.

4.9.4.3 Control of new developed product

*a. Military product managing department shall implement technological review of different levels and stages,

inspection of preparing status before trials, qualification of first piece and product quality review. Process control shall be carried out and control procedures shall be prepared.

*b. The corporation shall finish the preparation for finalization(qualification)of production according to related stipulations.

4.9.4.4 All functions shall prepare control procedures respectively according to the above requirements.

4.9.5 Documentation of procedures

4.9.5.1 Procedures for control of cold working processes

4.9.5.2 Procedures for control of hot working processes

4.9.5.3 Procedures for control of special processes

4.9.5.4 Procedures for control of production plan

4.9.5.5 Procedures for control of fixed position management

4.9.5.6 Procedures for control of production environment

4.9.5.7 Procedures for control of equipment management and maintenance

4.9.5.8 Procedures for control of tools, dies and fixtures

4.9.5.9 Procedures for control of key processes

*4.9.5.10 Procedures for trial of new product

4.10 Inspection and Test

4.10.1 Purpose

The product shall be verified to ensure that product can meet the specified requirements.

4.10.2 Scope

Suitable for control of receiving process, final inspection and testing related to bearing quality.

4.10.3 Responsibility

4.10.3.1 Quality management department is responsible for the management of inspection and testing and preparing relevant documentation of procedures, and for final inspection of military product.

4.10.3.2 Design/technical department is responsible for preparing technical standards and inspecting rules.

4.10.3.3 Inspector of production department is responsible for the implementation of process and final inspection.

4.10.4 Requirements

The required inspection and testing, and the records to be established, shall be detailed in technical documents, quality plan or documented procedures.

4.10.4.1 Receiving inspection and testing

a. Quality management department shall inspect and test according to receiving inspection and testing procedures and rules of technical documents, and determine that the incoming product is qualified or unqualified to ensure that incoming product is not be used or processed until it has been inspected or otherwise verified as conforming to the specified requirements.

b. In determining the amount and nature of receiving inspection, consideration shall be given to the amount of control exercised at the sub-supplier's permises and the recorded evidence of conformance provided.

c. Urgent release shall not be allowed by the corporation.

4.10.4.2 In-process inspection and testing

a. Inspector of production department shall inspect and test the product as required by rules and standards.

b. Non-conforming product after inspection and test shall not be further processed.

c. Exceptional release of the product shall not be allowed by the corporation.

4.10.4.3 Final inspection and testing

a. Inspector of production department shall inspect and test the final product as required by rules and standards.

b. Final inspection shall be carried out after receiving inspection and in-process inspection have been completed.

c. Conformity shall be delivered until all specified inspection and testing have been completed and the associated data is authorized, product is qualified.

d. Quality management department shall supervise and spot check the final product in accordance with inspecting rules to ensure that non-conforming product has not been left the factory.

4.10.4 Inspection and test records

a. Quality inspectors are responsible for collection, index, filing and storage of inspection and test records. These records shall show clearly whether the product has passed or failed the inspections and tests according to defined acceptance criteria. When the product fails to pass any inspection tests, <<Procedures for control of nonconforming product>> shall be applied.

b. Records shall show the sign of the inspection authority responsible for the release of conforming product.

c. Records shall show the nature and number of inspection and test, items and amount of nonconforming.

4.10.4.5 Quality management department shall prepare <<Procedures for control of inspector's qualification and seals>>, and implement earnestly that inspecting seal is only private use and ascertain there responsibility of inspectors.

4.10.5 Documentation of procedures

4.10.5.1 Procedures for control of process, final inspection and test.

4.10.5.2 Procedures for control of receiving inspection and test

4.10.5.3 Procedures for management of inspector's qualification and seals.

4.11 Control of Inspection, Measuring and Test Equipment

4.11.1 Purpose

Inspection, measuring and test equipment shall be controlled to ensure that they have the required measurement capability of expected use.

4.11.2 Scope

Suitable for control of all inspection, measuring and test equipment to demonstrate the conformance of product quality to the specified requirements.

4.11.3.1 Metrological managing department and metrological branch authorized by metrological managing department are responsible for inspecting, calibrating and contrasting of inspection, measuring and test equipment. Metrological managing department is responsible for the management of inspection, measuring and test equipment.

4.11.3.2 All using departments are responsible for using and maintaining, inspection, measuring and test equipment according to the specification.

4.11.3.3 Adjustment or maintenance of inspection, measuring and test equipment shall be authorized or entrusted by metrological managing department.

4.11.4 Requirements

4.11.4.1 Inspection, measuring and test equipment shall be used in a manner which ensures that the measurement uncertainty level is known and is consistent with the required measurement capability.

4.11.4.2 Where test software, comparative reference or product technological equipment are used as suitable forms of inspection, they shall be checked and recheck at prescribed intervals before using.

4.11.4.3 Metrological managing department and the branch authorized by metrological managing department shall establish the extent and valid frequency of such checks and shall maintain records as evidence of control.

4.11.4.4 Where required in the contract, the availability of technical data pertaining to the inspection, measuring and test equipment is a specified requirements, such data shall be made available, when the corporation shall provide such data for the customer or customer's representative, for verification that the inspection, measuring and test equipment is functionally adequate.

4.11.4.5 The control of use, calibration and maintenance of inspection, measuring and test equipment shall be managed, organized and implemented by metrological managing department, and shall be conformed to the following specified requirements:

a. Select the appropriate inspection, measuring and test equipment that is capable of the necessary accuracy;

b. All inspection, measuring and test equipment should be adjusted, calibrated and qualified at prescribed intervals or prior to use;

c. Calibrate and adjust the inspection, measuring and test equipment against certified equipment having a known valid relationship to internationally or nationalily recognized standards. Where no such standards exist, the specifications used for calibration shall be prepared by authorized technology department;

d. Define the process employed for the calibration of inspection, measuring and test equipment, including details of equipment type, identification, location, frequency of checks, check method, acceptance criteria and the action to be taken when results are unsatisfactory;

e. Identify inspection, measuring and test equipment with a suitable indicator or approved identification record to show the calibration status;

f. Assess and document the validity of previous inspection and test results when inspection, measuring or test equipment is found to be out of calibration.

g. Ensure that the environmental conditions are suitable for the calibrations, inspections, measurements and test being carried out;

h. Ensure that the handling, preservation and storage of inspection, measuring and test equipment is such that the accuracy and fitness for use are maintained;

i. Safeguard, inspection, measuring and test facilities from adjustments which would invalidate the calibration setting;

j. Calibration records shall be maintained and conformed to 4.16specified requirements.

4.11.5 Metrological managing department shall prepare <<Procedures for control of inspection, measuring and test equipment>> according to the above requirements.

4.11.6 Documentation of procedures

4.11.6.1 Procedures control of inspection, measuring and test equipment

4.12 Inspection and test status

4.12.1 Purpose

To prevent the similar product from being confused and left the factory at different status.

4.12.2 Scope

Suitable for control of whole process inspection and test status from raw materials' entering to product's leaving the factory.

4.12.3 Responsibility

4.12.3.1 Quality management department is responsible for the management of inspection and test status.

4.12.3.2 Production department is responsible for classification and identification of inspection and test status according to related rules.

4.12.4 Requirements

4.12.4.1 All inspection and test status shall be identified clearly. Inspection and test status are divided into the following four status: To be inspected, qualified after inspection, unqualified after inspection, to be handled.

4.12.4.2 Production department shall identify and maintain the product of production process according to related rules.

4.12.4.3 When the identification is misused or no identification is showed , the material, semi-finished product or finished product shall be reinspected and reidentified.

4.12.4.4 The identification of inspection and test status shall be maintained by all concerned departments to ensure that only product which has passed the required inspection and tests can be further processed or delivered.

4.12.4.5 Quality management department shall establish << Procedures for control of inspection and test status>>.

4.12.5 Documentation of procedures

4.12.5.1 Procedures for control of inspection and test status

4.13 Control of Non-conforming Product

4.13.1 Purpose

Non-conforming product shall be controlled to prevent the non-conforming product from unintended use and being left the factory.

4.13.2 Scope

Suitable for control of non-conformity of semi-finished and finished products being used in production process.

4.13.3 Responsibility

4.13.3.1 Quality management department is responsible for the management of non-conforming product.

*4.13.3.2 The Try Committee of Unqualified Military Product is responsible for reviewing and disposition of non-conforming military product, and tracing the results of disposition.

4.13.3.3 Design, technical and quality managing department shall respectively perform responsibility of reviewing non-conforming product.

4.13.3.4 All production departments are responsible for identification, documentation, segregation and report of non-conforming product, and for implementation of disposition on the basis of review conclusion.

4.13.4 Requirements

4.13.4.1 Non-conforming product shall be classified into A.B.C three levels according to procedures of unconformably specified requirements, and be reviewed considering different levels.

4.13.4.2 Reviewing personnel shall have relevant professional knowledge and rich of experiences, and shall be confirmed by their leader of the department in charge.

*4.13.4.3 The Try Committee of Non-conforming product shall be established to exercise its authority independently. Where the conclusion of disposition is necessary to change, the top management must sign the decision in written. Personnel who take part in the review and disposition of non-conforming product shall be confirmed with the qualification and acquired approval of customer or customer's representative and be authorized by top management.

4.13.4.4 Inspectors and operators of production department shall provide for identification, segregation and documentation of non-conforming product, and for notification to the functions concerned to dispose.

4.13.4.5 Disposition of non-conforming product shall be reviewed in accordance with documented procedures, it may

be:

a. Rework to meet the specified requirements

b. Accepted with or without repair by concession

c. Remade for alternative applications

d. Degrade for applications

e. Rejected or scrapped

Repaired and/or reworked non-conforming product shall be re inspected and tested in accordance with the specifications.

When repaired and un-repaired non-conforming product shall be accepted with concession, it is necessary to review and approve; Where required by the contract, the proposed use or repair of product which does not conform to specified requirements shall be reported for concession to the customer. The description of the non-conformity that has been accepted, and repairs shall be recorded to denote the actual condition.

4.13.4.6 Disposition of non-conforming product and relevant record shall be maintained carefully.

4.13.4.7 Quality management department shall prepare <<Procedures for Control of Non-conforming Product>>.

4.13.5 Documentation of procedures

4.13.5.1 Procedures for control of non-conforming product

4.14 Corrective and Preventive Action

4.14.1 Purpose

To eliminate the causes of actual or potential non-conformities, effective corrective or preventive action shall be taken to avoid the recurrence or occurrence of non-conformities.

4.14.2 Scope

Suitable for the establishment and implementation of corrective and preventive action.

4.14.3 Responsibility

4.14.3.1 Quality management department is responsible for the coordination, follow-up and verification of corrective and preventive action.

4.14.3.2 The functions concerned is responsible for the establishment and implementation of corrective and preventive action.

4.14.4 Requirements

Any corrective or preventive action taken to eliminate the causes of actual or potential non-conformities shall be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered.

4.14.4.1 The procedures for corrective action shall include:

a. Effective handling of customer's complaints and reports of product non-conformities.

b. The function concerned is responsible for the investigation of the cause of non-conformities relating to product, process and quality system, and recording the results of the investigation, establishing corrective action and implementing it after approval according to the specified procedures.

c. Quality management department is responsible for the supervision and check to ensure that corrective action is taken and that it is effective.

4.14.4.2 The procedures for preventive action shall include:

a. The use of appropriate sources of information such as processes, work operations which affect product quality, concessions, audit results, quality records, service report and customer complaints to detect, analyze and eliminate

potential causes of non-conformities.

b. Determination of the steps needed to deal with any problems requiring preventive action, and initiation of controls to ensure that it is effective.

c. relevant information on action taken is submitted for management review.

*4.14.4.3 Military product managing department shall establish failure report, analysis and corrective action system. The settlement of problem, corrective action and implementation status which is related to the use and maintenance shall provide for notification to the customer and customer's representative.

4.14.4.4 Any changes to the documented procedures resulting from corrective and preventive action shall be recorded and implemented.

4.14.4.5 Quality management department shall establish <<Procedures for Control of Corrective Action>> and <<Procedures for Control of Preventive Action>>.

4.14.5 Documentation of procedures

4.14.5.1 Procedures for control of corrective action

4.14.5.2 Procedures for control of preventive action

4.15 Handling, Storage, Packaging, Preservation and Delivery

4.15.1 Purpose

Ensure product quality of handling, storage, packing, preservation and delivery.

4.15.2 Scope

Suitable for control process of handling, storage, packing and delivery of incoming materials, parts and finished product.

4.15.3 Responsibility

4.15.3.1 Production managing department is responsible for management of handling, storage, preservation of product.

4.15.3.2 Purchasing department is responsible for storage and dispatch of incoming materials.

4.15.3.3 Production department is responsible for using of materials, further processed of product in process and storage in stockrooms, packaging and preservation of finished product.

4.15.3.4 Sales department is responsible for management of verification and receipt, storage, packaging, preservation and delivery of final product.

4.15.3.5 Transportation department is responsible for materials incoming and transportation of products.

4.15.4 Requirements

4.15.4.1 Handling

a. Deterioration and damage of product quality shall be avoided, caused by collision, loss, rust or other reasons.

b. Appropriate handling tools shall be equipped.

4.15.4.2 Storage

a. The departments of materials and products shall use designed storage areas or stock rooms and maintain original quality state of stored materials;

b. Storekeepers shall check storage materials at appropriate intervals and dispose rust and deteriorated materials being found according to related specifications;

c. For the storage materials, he principle of "first receiving, first leaving" shall be insisted.

d. All functions shall stipulate appropriate methods for authorizing receipt to and dispatch, considering actual

condition.

4.15.4.3 Packaging

Production and sales department shall control packing and identification of product according to the specifications, to ensure packaging quality.

4.15.4.4 Preservation

The departments of materials and products shall provide for preservation and segregation of materials.

For bearing products, the rustproof treatment shall be taken according to the specifications.

4.15.4.5 Delivery

a. Sales department is responsible for control of delivery of finished product, shall perform contract strictly to ensure product quality;

b. Where necessary, military product management shall provide the implementation status of technique configuration charges related to finished product to the customer;

c. The products submitted to customers shall be consistent with the contract specification and possessing signed product quality certificate. Package shall conform to the specifications or contract requirements;

*d. Delivery product shall be checked and accepted as conformity by customer or customer's representative;

*e. Customer or customer's representative shall have right to reject the product that does not conform to delivery requirements;

Functions concerned shall adopt measures for the protection of the quality of product after inspection and test. Where contract specified, this protection shall be extended to include delivery destination.

4.15.4.6 According to the above requirements, production managing department shall prepare <<Procedures for Control of Handling, Storage, Package, Preservation and delivery>>; Military product managing department shall prepare <<Procedures for Control of Military Product Delivery>>.

4.15.5 Documentation of procedures

4.15.5.1 Procedures for control of handling, storage, package, preservation and delivery

4.15.5.2 Procedures for control of military product delivery

4.16 Control of Quality Records

4.16.1 Purpose

Quality records shall be controlled to demonstrate conformance to specified requirement and the effective operation of the quality system. 4.16.2 Scope

Suitable for the records of the operation of quality system.

4.16.3 Responsibility

4.16.3.1 Quality management department is responsible for the management of quality records.

4.16.3.2 Each function is responsible for its own quality records.

4.16.4 Requirements

4.16.4.1 Quality management department shall prepare a detailed list of quality records and establish specifications for using, maintaining department and retention times of quality records.

4.16.4.2 Each pertinent department shall prepare samples of quality records and stamp SAMPLES by quality management department, then index and file.

4.16.4.3 The filling of all quality records shall be true, correct, legible, complete and timely. Falsification and distortion shall not be allowed, where necessary, it shall be traceable.

4.16.4.4 All quality records shall be stored and retained in such away that they are readily retrievable in facilities that provide a suitable environment to prevent damage, deterioration and loss.

4.16.4.5 Disposition of quality records over retention times shall be approved.

4.16.4.6 Where agreed contractually, related quality records of the corporation shall be made available for evaluation by the customer or the customer's representative for an agreed period.

4.16.4.7 Quality management department shall establish and implement to the storage, maintenance and disposition of quality records.

4.16.4.8 Records may be in the form of any type of media, such as hard copy or electronic media.

4.16.4.9 Quality management department shall prepare <<Procedures for Control of Quality Records>> according to the above requirements.

4.16.5 Documentation of procedures

4.16.5.1 Procedures for control of quality records

4.17 Internal Quality Audits

4.17.1 Purpose

Implement internal quality audits to verify whether quality activities comply with the requirements and to ensure the effective operation of the quality system continually.

4.17.2 Scope

Suitable for internal quality audits activities of the corporation.

4.17.3 Responsibility

4.17.3.1 Management representative is responsible for the planning and coordination of internal quality audits.

4.17.3.2 Quality management department is responsible for the organization and implementation of the internal quality audits.

4.17.4 Requirements

4.17.4.1 Quality management department shall prepare the plan of annual internal quality audits at the beginning of the year. Internal quality audits shall cover all elements and functions. Internal quality audits shall be performed at least one time each year, where necessary, audits shall be at any time.

4.17.4.2 Internal quality audits shall be carried out by qualified internal quality auditor and staff not having direct responsibility in the areas.

4.17.4.3 Internal quality audits shall be arranged according to the plan. The results of internal quality audits shall form a report.

4.17.4.4 The functions shall establish and implement corrective action on non-conformities being found during the audit according to the rules of <<Procedures for control of corrective action>>.

4.17.4.5 Audit group shall follow and evaluate the implementation and effectiveness of the corrective action taken.

4.17.4.6 Quality management department shall prepare internal quality audit report after internal quality audits are collected and analyzed. Internal quality audit report or annual summaries shall be reported to general manager for check and review or submitted for management review after management representative checks and approves them.

4.17.4.7 Quality management department is responsible for storing the data and records of internal quality audits.

4.17.4.8 Quality management department shall establish <<Procedures of Internal Quality Audits>>.

4.17.5 Documentation of procedures

4.17.5.1 Procedures of internal quality audits

4.18 Training

4.18.1 Purpose

Implement a planned training to ensure all staffs performing activities affecting quality that have required working capability.

4.18.2 Scope

Suitable for training all staffs related to quality activities.

4.18.3 Responsibility

Training department is responsible for training management of the corporation. All departments shall cooperate and implement.

4.18.4 Requirements

4.18.4.1 Training department shall study and analyze training needs on the basis of the quality policy and objective, prepare annual training program and plan of the corporation.

4.18.4.2 Annual training program and plan shall be reviewed and approved by the leader in-charge of the corporation.

4.18.4.3 Personnel performing specific assigned tasks shall be examined for qualification on the basis of appropriate education, training or experience as required and issued certificate.

4.18.4.4 Training department shall organize and implement training plan, maintain the records of training and manage training files of all personnel.

4.18.4.5 Training department shall prepare <<Procedures for Control of Personnel Training>>

4.18.5 Documentation of procedures

4.18.5.1 Procedures for control of personnel training

4.19 Servicing

4.19.1 Purpose

Sales and servicing of product shall be controlled to satisfy customer's requirements.

4.19.2 Scope

Suitable for the process of product sales and servicing

4.19.3 Responsibility

4.19.3.1 General sales company is responsible for management of domestic trade sales and servicing.

4.19.3.2 Import and export company is responsible for management of foreign trade sales and servicing.

4.19.3.3 Quality management department is responsible for military product sales and servicing.

4.19.4 Requirements

4.19.4.1 Sales department and quality management department shall plan servicing, and prepare an annual plan for servicing, annual working program of sales and servicing.

4.19.4.2 Provide "three guarantees" (for repair, replacement, compensation of faulty products) service for customers.

4.19.4.3 Information of quality problem in servicing shall be fed back in time and be analyzed at appropriate intervals, as necessary, corrective and preventive action shall be taken.

4.19.4.4 Answer customer's consultation, establish servicing files, visit customer regularly or irregularly.

4.19.4.5 Servicing and servicing effectiveness shall be verified, where servicing is a specified requirements.

4.19.4.6 General sales company shall prepare <<Procedures for Control of Service>>.

4.19.5 Documentation of procedures

4.19.5.1 Procedures for control of servicing

4.20 Statistical techniques

4.20.1 Purpose

Appropriate statistical techniques shall be used to effectively control process and product quality.

4.20.2 Scope

Suitable for the whole process of product quality formed.

4.20.3 Responsibility

4.20.3.1 Quality management department is responsible for the management of statistical techniques.

4.20.3.2 Implement them in cooperation with the relevant department.

4.20.4 Requirements

4.20.4.1 Quality management department shall establish <<Procedures for Use of Statistical Techniques>>, organize, guide and supervise the effectiveness of use of statistical techniques.

4.20.4.2 Training department is responsible for the training of statistical techniques.

4.20.4.3 Each department shall select appropriate statistical techniques and apply it effectively.

4.20.4.4 The corporation shall apply statistical techniques to:

a. Market research and market analysis

b. Product optimum design

c. Process analysis and process control

d. Quality analysis and quality improvement

e. Quality management activities of the masses

f. Other field needed to apply statistical techniques

4.20.4.5 According to different process and activity, appropriate statistical techniques for selecting include, but are not limited to the following:

a. Analysis of variance and regression analysis

b. Control charts, high-low graph

c. Design of experiments and factorial analysis

d. Tests of significance

e. Statistical sampling

f. Chart for range, histogram, casual analysis diagram and pie graph

4.20.4.6 Quality management department shall evaluate the effectiveness of use of statistical techniques.

4.20.5 Documentation of procedures

4.20.5.1 Procedures for control of use of statistical techniques

5.0 Quality manual management

5.1 Quality manual shall be organized by management representative, prepared by quality management department, examined and verified by management representative. Quality manual shall be implemented after general manager's approval.

5.2 The manual is divided into "controlled" and "uncontrolled". controlled quality manual shall be stamped with "controlled number" one by one by quality management department and distributed to the corporation leader, relevant functions, production department or other specified departments. Uncontrolled quality manual shall be distributed by

quality management department and stamped with "complimentary copy" after approval of management representative.

5.3 When the manual need to be altered, the method of changing pages are used. Quality management department shall fill <<Notice of the Document Changes>>, examined and verified by manager's representative, reported to general manager for approval. Each related function shall change pages according to the requirements. Quality management department shall supervise the implementation of changes.

5.4 When quality system of the corporation is greatly changed, the manual shall be changed into another edition. Changing edition shall be carried out according to the original procedures.

5.5 Uncontrolled quality manual shall not be followed and changed.

Annex A Contrast list of function and current departments

No.	Functions	Name of the current department
1	Quality management department	Quality Management Department
2	Design department	Bearing Research Institute 031 Bearing Division
3	Technical department	Technical department
4	Files managing department	Information Research Institute
5	Purchasing departments	General Company of Material Supplying and Selling Divisions that have purchasing right and manufacturers Production Department
6	Sales departments	General Sales Company, Import and Export Company, divisions that have purchasing right and manufacturers
7	Equipment managing department	Equipment Department
8	Tools managing department	Tools department
9	Metrological managing Department	Metrological Department
10	Production managing department	Production Department
11	Training department	Training Centre
12	Plan department	Plan and Financial Department
13	Financial department	Plan and Financial Department
14	Safety technical managing department	Safety Technical Department
15	Transportation department	General Transportation Company
16	Military production managing department	Military product management office
17	Production departments	All divisions manufacturers 031 Bearing Division (civil product)
18	Military product production	031 Bearing Division
19	Materials supplying	General Company of Materials Supplying and Selling

Annex B List of documentation of procedures

No.	Document serial number	Procedures names
1	Q/LZG3102.01 - 1998	Procedures for management review
2	Q/LZG3102.02 - 1998	Procedures for control of quality plan
3	Q/LZG3102.03 - 1998	Procedures for configuration management
4	Q/LZG3102.04 - 1998	Procedures for control of quality-related cost
5	Q/LZG3102.05 - 1998	Procedures for contract review
6	Q/LZG3102.06 - 1998	Procedures for control of product design
7	Q/LZG3102.07 - 1998	Procedures for control of military product design
8	Q/LZG3102.08 - 1998	Procedures for qualification of product
9	Q/LZG3102.09 - 1998	Procedures for qualification of military product
10	Q/LZG3102.10 - 1998	Procedures for control of design changes
11	Q/LZG3102.11 - 1998	Procedures for control or military product design changes
12	Q/LZG3102.12 - 1998	Procedures for control of documents and data
13	Q/LZG3102.13 - 1998	Procedures for control of purchasing
14	Q/LZG3102.14 - 1998	Procedures for control of new developed purchasing product
15	Q/LZG3102.15 - 1998	Procedures for maintenance of purchasing product
16	Q/LZG3102.16 - 1998	Procedures for control of evaluation of sub-supplier
17	Q/LZG3102.17 - 1998	Procedures for control of customer- supplied product
18	Q/LZG3102.18 - 1998	Procedures for control of product identification and traceability
19	Q/LZG3102.19 - 1998	Procedures for control of product batches
20	Q/LZG3102.20 - 1998	Procedures for control of cold-working machining process
21	Q/LZG3102.21 - 1998	Procedures for control of hot-working machining process
22	Q/LZG3102.22 - 1998	Procedures for control of production plan
23	Q/LZG3102.23 - 1998	Procedures for control of fixed-position management
24	Q/LZG3102.24 - 1998	Procedures for control of special process
25	Q/LZG3102.25 - 1998	Procedures for equipment management and maintenance
26	Q/LZG3102.26 - 1998	Procedures for control of tools, dies and fixtures
27	Q/LZG3102.27 - 1998	Procedures for control of production environment
28	Q/LZG3102.28 - 1998	Procedures for control of key process
29	Q/LZG3102.29 - 1998	Procedures for trial of new product
30	Q/LZG3102.30 - 1998	Procedures for management of inspector qualification and seals
31	Q/LZG3102.31 - 1998	Procedures for control of receiving inspection and test
32	Q/LZG3102.32 - 1998	Procedures for control of process, final inspection and test
33	Q/LZG3102.33 - 1998	Procedures for control of inspection, measuring and test equipment
34	Q/LZG3102.34 - 1998	Procedures for control of inspection and test status
35	Q/LZG3102.35 - 1998	Procedures for control of non-conforming product
36	Q/LZG3102.36 - 1998	Procedures for control of corrective action
37	Q/LZG3102.37 - 1998	Procedures for control of preventive action
38	Q/LZG3102.38 - 1998	Procedures for control of handling, storage, packaging, preservation and

		delivery
39	Q/LZG3102.39 - 1998	Procedures for control of military product delivery
40	Q/LZG3102.40 - 1998	Procedures for control of quality records
41	Q/LZG3102.41 - 1998	Procedures for control of internal quality audits
42	Q/LZG3102.42 - 1998	Procedures for control of personnel training
43	Q/LZG3102.43 - 1998	Procedures for control of servicing
44	Q/LZG3102.44 - 1998	Procedures for use of statistical techniques