

Centrifugal Pumps for Petroleum, Petrochemical and Natural Gas Industries

ANSI/API Standard 610
Tenth Edition, October 2004

**ISO 13709: 2003, (Identical) Centrifugal pumps for
petroleum, petrochemical and natural gas industries**



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Contents

	Page
API Foreword	ii
Foreword	v
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	4
4 Classification and designation	9
4.1 General	9
4.2 Pump designations	10
4.3 Units and governing requirements	16
5 Basic design	16
5.1 General	16
5.2 Pump types	20
5.3 Pressure casings	21
5.4 Nozzles and pressure casing connections	23
5.5 External nozzle forces and moments	25
5.6 Rotors	31
5.7 Wear rings and running clearances	33
5.8 Mechanical shaft seals	34
5.9 Dynamics	37
5.10 Bearings and bearing housings	46
5.11 Lubrication	49
5.12 Materials	50
5.13 Nameplates and rotation arrows	55
6 Accessories	55
6.1 Drivers	55
6.2 Couplings and guards	58
6.3 Baseplates	59
6.4 Instrumentation	62
6.5 Piping and appurtenances	62
6.6 Special tools	63
7 Inspection, testing, and preparation for shipment	64
7.1 General	64
7.2 Inspection	64
7.3 Testing	66
7.4 Preparation for shipment	70
8 Specific pump types	71
8.1 Single-stage overhung pumps	71
8.2 Reverse-rotor pumps (types BB1 through BB5)	73
8.3 Vertically suspended pumps (types VS1 through VS7)	78
9 Vendor's data	84
9.1 General	84
9.2 Proposals	85
9.3 Contract data	88
Annex A (informative) Specific speed and suction-specific speed	90
Annex B (normative) Cooling water and lubrication system schematics	91
Annex C (normative) Hydraulic power recovery turbines	102

Annex D (normative) Standard baseplates	106
Annex E (informative) Inspector's checklist	108
Annex F (normative) Criteria for piping design	110
Annex G (informative) Materials class selection guidance	124
Annex H (normative) Materials and material specifications for pump parts	126
Annex I (normative) Lateral analysis	136
Annex J (normative) Determination of residual unbalance	142
Annex K (normative) Seal chamber runout illustrations	148
Annex L (informative) Vendor drawing and data requirements	149
Annex M (informative) Test data summary	153
Annex N (informative) Pump datasheets	162
Bibliography	181

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directive – Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13709 was prepared by Technical Committee ISO/TC 115, *Pumps*, Subcommittee SC 3, *Installation and special application*, in collaboration with Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 6, *Processing equipment and systems*.

Introduction

This edition of API Standard 610 is the identical national adoption of ISO 13709:2003, with the exception of editorial changes made since the release of ISO 13709:2003. API Standard 610, 10th edition, is technically equivalent to ISO 13709:2003.

Users of this International Standard should be aware that further or differing requirements may be needed for individual applications. This International Standard is not intended to inhibit a vendor from offering, or the purchaser from accepting alternative equipment or engineering solutions for the individual application. This may be particularly appropriate where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this International Standard and provide details.

Annex A specifies calculations for specific speed and suction-specific speed.

Annex B contains schematic drawings of cooling water and lubrication systems.

Annex C specifies requirements for hydraulic power recovery turbines.

Annex D specifies requirements for standard baseplates.

Annex E contains an inspector's checklist.

Annex F specifies criteria for piping design.

Annex G give guidance on material class selection.

Annex H specifies requirements and gives guidance on material selection.

Annex I specifies requirements for lateral analysis.

Annex J specifies requirements for determining residual unbalance.

Annex K contains seal chamber runout illustration.

Annex L contains forms which may be used to indicate vendor drawing and data requirements.

Annex M contains forms which may be used to record test data.

Annex N contains data sheets which purchasers are encouraged to use.

A bullet (●) at the beginning of a clause or subclause indicates that either a decision is required or further information is to be provided by the purchaser. This information should be indicated on data sheets or stated in the enquiry or purchase order (see examples in Annex N).

In this International Standard, where practical, US Customary units are included in brackets for information.

Centrifugal pumps for petroleum, petrochemical and natural gas industries

1 Scope

This International Standard specifies requirements for centrifugal pumps, including pumps running in reverse as hydraulic power recovery turbines, for use in petroleum, petrochemical and gas industry process services.

This International Standard is applicable to overhung pumps, between-bearings pumps and vertically-suspended pumps (see Table 1). Clause 8 provides requirements applicable to specific types of pump. All other clauses of this International Standard are applicable to all pump types. Illustrations are provided of the various specific pump types and the designations assigned to each specific type.

This International Standard is not applicable to sealless pumps.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 261, *ISO general-purpose metric screw threads — General plan*

ISO 262, *ISO general-purpose metric screw threads — Selected sizes for screws, bolts and nuts*

ISO 281, *Rolling bearings — Dynamic load ratings and rating life*

ISO 286 (all parts), *ISO system of limits and fits*

ISO 724, *ISO general-purpose metric screw threads — Basic dimensions*

ISO 965 (all parts), *ISO general-purpose metric screw threads — Tolerances*

ISO 940-1, *Mechanical vibration — Balance quality requirements of rigid rotors — Part 1: Specification and verification of balance tolerances*

ISO 4200, *Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length*

ISO 5753, *Rolling bearings — Radial internal clearance*

ISO 7005-1, *Metallic flanges — Part 1: Steel flanges*

ISO 7005-2, *Metallic flanges — Part 2: Cast iron flanges*