



Document No.	GIS 34-202
Applicability	Group
Date	9 June 2006

Guidance on Industry Standard for ASME B73.1 Horizontal Centrifugal Pumps

GIS 34-202

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GIS 34-202. This ETP is based on parts of heritage documents from the merged BP companies as follows:

Amoco (ACES)

A RE-PUMP-73H-P Rotating Equipment—Pumps—ASME B73.1 Horizontal Centrifugal—
Procurement Specification.

PTA

PTA RE-PUMP-73H-P Rotating Equipment—Pumps—ASME B73.1 Horizontal Centrifugal—
Procurement Specification.

Uncontrolled Copy

Copyright © 2006, BP Group. All rights reserved. The information contained in this document is subject to the terms and conditions of the agreement or contract under which the document was supplied to the recipient's organization. None of the information contained in this document shall be disclosed outside the recipient's own organization without the prior written permission of Director of Engineering, BP Group, unless the terms of such agreement or contract expressly allow.



Downloaded Date: 6/17/2008 10:30:44 AM

The latest update of this document is located in the BP ETP and Projects Library

Documents
Document Sharing Hub
Page 2 of 14

Table of Contents

	Page
Foreword	2
Introduction	4
4. Design and construction features.....	4
4.1 Pressure and temperature limits.....	4
4.2 Flanges.....	4
4.3 Casing	4
4.4 Impeller.....	5
4.5 Shaft	5
4.6 Shaft sealing.....	6
4.7 Bearings	6
4.8 Materials of construction	7
4.12 Miscellaneous design features.....	7
5. General information	9
5.1 Application.....	9
5.2 Test.....	10
5.3 Nameplates	11
5.4 Preparation for shipment.....	11
5.5 Unit responsibility	13
5.6 Conflicting requirements	13
6. References	14
7. Documentation.....	14
7.2 Requirements	14
8. Bibliography	14



Introduction

- a. Guidance for horizontal centrifugal pumps is based on American Society of Mechanical Engineers (ASME) B73.1-2001, Specification for Horizontal End Suction Centrifugal Pumps for Chemical Process.
- b. Guidance statements of this GIS are modifications to ASME B73.1.
- c. Modifications to ASME B73.1 are identified as Add, Modify to Read, or Delete.
- d. Paragraph numbers in this GIS correspond to ASME B73.1.
- e. Paragraphs of ASME B73.1 that are not revised remain applicable.

4. Design and construction features

4.1 Pressure and temperature limits

4.1.1 Pressure limits

Add

Stated pressure-temperature limitations of casing shall not be exceeded by maximum discharge pressure with maximum impeller, maximum suction pressure, and maximum pumped fluid density.

4.1.1.1 Modify to Read

Maximum allowable working pressure (MAWP) for design pressure of casing, including stuffing box and gland, shall be at least as great as pressure-temperature rating of ASME B16.5 Class 150 flanges for material used. MAWP shall be equal to or greater than maximum discharge pressure.

4.2 Flanges

Add

Flanges, except cast iron and ductile cast iron, shall be raised face.

4.3 Casing

4.3.1 Drain connection boss(es)

Add

Drain connections shall comply with the following:

- a. Casing drains shall be routed to edge of baseplate with DN 15 (NPS 1/2) or larger Schedule 80 pipe that terminates in gate valve.
- b. For slurry services, casing drain and piping shall be DN 20 (NPS 3/4) minimum, valve shall be ball type, valve shall be as close to casing as practical, drain pipe shall be straight.
- c. Casing drain and valve shall be supported and protected to prevent damage from vibration during shipment or from operation and maintenance.
- d. Casing drains shall comply with the piping clauses of this GIS.



4.3.2 Auxiliary connection boss(es)Add

Nozzle gage connection bosses shall not be drilled and tapped.

4.3.5 Jackets**4.3.5.1 Modify Second Sentence to Read**

- a. Jacket inlet and outlet connections shall be DN 15 (NPS 1/2) and identified immediately adjacent to connections by cast, stamped, or securely attached metal tag designations: "CI" for cooling inlet, "CO" for cooling outlet, "HI" for heating inlet, or "HO" for heating outlet.
- b. Jacket inlet and outlet connections other than DN 15 (NPS 1/2) shall be subject to BP approval.
- c. If connection to pumps is DN 10 (NPS 3/8), a 10 by 15 (3/8 by 1/2) bushing shall be provided.

Add

- a. Heating or cooling jackets, if required by pump design to meet process parameters, shall be provided, subject to BP approval. If jackets are provided, information detailing flow rates, pressure and temperature characteristics of jackets shall be provided.
- b. Jacket systems shall be designed to prevent process stream from leaking into coolant or heating fluid. Coolant or heating passages shall not open into casing joints.

4.4 Impeller**4.4.3 Balance**Modify to Read

- a. Impellers shall be dynamically balanced to grade G2.5 of ISO 1940-1 (4W/N) after final machining.
- b. Weight of armour used for balancing shall not exceed weight of component being balanced.

Add**4.4.5 Size**

Impeller size for pumps with constant speed drivers shall not exceed 95% of maximum published impeller size that can be installed in pump casing.

4.5 ShaftAdd**4.5.8 Shaft and shaft sleeve**

- a. A removable single piece shaft sleeve shall be supplied. If cartridge seals are specified shaft sleeves shall be supplied as part of cartridge seal.
- b. Sleeve shall be sealed to prevent leakage between sleeve and pump shaft at process end of sleeve. Wedge type sealing shall not be used.

4.5.9 Shaft construction

- a. Shafts shall be machined from single piece of barstock.
- b. Welded, bimetallic shafts shall not be used.

