ASME B15.1 Interpretations

Replies to Technical Inquiries
February 1993—September 1999

FOREWORD

This publication includes all of the written replies issued between the indicated dates by the Secretary, speaking for the ASME B15 Committee, Safety Standard for Mechanical Power Transmission Apparatus, to inquiries concerning interpretations of technical aspects of ASME B15.1, Safety Standard for Mechanical Power Transmission Apparatus.

These replies are taken verbatim from the original letters except for a few typographical corrections and some minor editorial corrections made for the purpose of improved clarity. In some few instances, a review of the interpretation revealed a need for corrections of a technical nature. In these cases, a corrected interpretation follows immediately after the original reply.

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Interpretation: 15–5

Subject: ASME B15.1b–1995, Safety Standard for Mechanical Power Transmission Apparatus

Date Issued: January 2, 1996

Question (1): Would sections of smooth (without keyways, collars or other mechanical snags) rotating shafts, indirectly exposed to operating personnel and intended for maintenance access, such as stuffing box access on centrifugal pump adaptor frames, be required to have covering guards under ASME B15.1?

Question (2): Would sections of smooth (without keyways, collars or other mechanical snags) rotating shafts, directly exposed to operating personnel, such as those sections of shaft between seals and end bearings on double suction pumps, be required to have covering guards under ASME B15.1?

Replies (1) and (2): In response to both questions; the B15 Standard is written in performance language to provide requirements for use in developing effective safeguarding methods to protect people from injury due to inadvertent contact with mechanical power transmission apparatus. Therefore it cannot tell you the severity of the hazard of a smooth rotating shaft located in the relatively confined area which your request describes.

All safeguarding decisions should be based on the probability and possibility of injury (hazard and risk assessment).This analysis then dictates what type of safeguarding methods should be employed—eliminate by design of the equipment, or protection by physical guard, safeguarding device, safe distance, safe location, safety markings and/or warning signs.

Be advised, when safeguards must be bypassed for servicing/maintenance, only personnel who are trained and aware of the hazards shall be allowed access to an unprotected area.

Interpretation: 15–6

Subject: ASME B15.1–1992, Safety Standard for Mechanical Power Transmission Apparatus

Date Issued: September 20, 1996

Question (1): Paragraph 3.2.4(a) states that safeguarding by location can be accomplished by location in a room, vault or similar enclosure. E3.2.4 describes access control to the enclosure via lock & key or other similar means and restricts access to trained personnel who are aware of the hazards. Is it the intent of the B15 Committee to exclude any equipment meeting this room or vault criteria from any or all of the safeguarding requirements as long as access to the enclosure is controlled and restricted to trained personnel aware of the hazards?

Reply (1): Although the use of "safe location" meets the requirements of a type of safeguard, the Standard does not prevent the use of additional safety measures as described in Section 3.2, Types of Safeguards.

Question (2): Is it the intent of the B15 Committee to exclude maintenance personnel, aware of the hazards from protection by "methods to protect people from injury due to inadvertent contact" (emphasis added by author) as described in paragraph 1.2?

Reply (2): The Standard applies to all personnel. This includes maintenance people. However, as stated in Section 1.3.2, Exceptions—Servicing/Maintenance, "When safeguards are bypassed...only personnel who are trained and aware of the hazards shall be allowed access to an unprotected area."

Question (3): Are not trained personnel, aware of the hazards, also subjected to slipping, tripping, or otherwise inadvertently contacting exposed power transmission equipment even though they are aware of the hazards?

Reply (3): Everyone is prone to slipping, tripping, or otherwise inadvertent contact with exposed hazards. To reduce the chance of injury maintenance personnel must use safe work practices, reference is made to E1.3.2, Exceptions—Serving/Maintenance.

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Interpretation: 15–7

Subject: B15.1a–1997, Safety Standard for Mechanical Power Transmission Apparatus

Date Issued: November 5, 1998

Question (1): What is the minimum horizontal distance for one to meet the requirement of Section 3.2.3(b)?

Reply (1): The B15.1 Standard is written in performance language, and therefore, no distance is specified. The horizontal distances you seek are dependent upon the facts of the situation.

Question (2): Does this distance only apply if there is a physical barrier as shown in Table E1?

Reply (2): See reply to Question (1).

Question (3): If there is no physical barrier what is the minimum horizontal safe distance?

Reply (3): See reply to Question (1).

Interpretation: 15–8

Subject: ASME B15.1–1992, Safety Standard for Mechanical Power Transmission Apparatus

Date Issued: September 23, 1999

Question: Please categorize the following applications as mechanical power transmission apparatus, point of operation, or neither:

(a) The portion of a fluted drill bit between the chuck and the tip which does the cutting.

(b) The smooth shaft portion of a paint mixer drill bit between the chuck and the tip which does the mixing.

(c) The smooth shaft of a portable clamp-on propeller mixer between the motor and the propeller. Note that this mixer can clamp onto a 55 gallon drum for mixing the contents of the drum. The shaft provides structural support to maintain the angle and geometry of the propeller relative to the drum. If an application is not categorized as either mechanical power transmission apparatus or point of operation, is the application covered under the scope of ASME B15.1?

Reply: The following are responses to the three examples cited in your question:

(a) A drill bit or any portion thereof does not constitute a mechanical power transmission apparatus in the generally accepted definition of this term, i.e., gears, pulley, chains, belts, etc. The ASME B15.1 Standard does not specifically identify or apply to this component.

(b) A paint mixer with smooth shaft between the chuck and the tip also does not constitute a mechanical apparatus. The reasons given in (a) above apply here.

(c) The ASME B15.1 Standard does not apply to portable equipment (mobile equipment). See the Scope E1.1 section of the Standard. Nor does the Standard apply specifically to "propeller mixers". The reasons given in (a) apply here.

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