



DATE: October 28, 2009

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TO: Telecommunications & Software Support

RE: Design and Construction Standards Update

DIVISION(S): 23

SECTION(S): 23 21 23

REC'D OCT 29 2009

Completed

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Minor change to correct format problem or typographical errors  
No entry in the revision log required

Revision Log Entry Required

Description of Change: Update requirements of flexible pump couplings for Base Mounted End Suction Pumps and Base Mounted Double Suction Pumps.

Copy of changes sent via email also  
elh291  
cal9

**Modify Section 23 21 23 HVAC Pumps per the following (deletions are shown struck through and additions are double underlined). Remainder of section is unchanged.**

**.02 Equipment Requirements**

- A. Base Mounted, Flexible Coupled, End Suction Pumps
1. Base mounted end suction circulating pumps shall be of the centrifugal, single stage type, with back pull-out design.
  2. Pump and motor shall be connected through a flexible drive coupling (per requirements below), with safety guard.
  3. Pumps shall be bronze fitted, with bronze impeller, statically and hydraulically balanced.
  4. A replaceable bronze shaft sleeve shall completely cover the wetted area under the seal.
  5. Volute shall have gauge tapings at the suction and discharge nozzles and vent and drain tapings at the top and bottom.
  6. Pump bearing housing shall have heavy duty regreasable ball bearings.
  7. Pump and motor shall be properly mounted and aligned on a common, welded, rigid structural steel or cast iron base, with an enclosed perimeter with opening for grouting in place. Base shall be grouted in place.
- B. Base Mounted, Flexible Coupled, Double Suction Circulating Pumps
1. Base mounted double suction circulating pumps, shall be centrifugal, single-stage type with horizontal split case design for servicing the impeller without disruption of the piping.
  2. Pump and motor shall be connected through a flexible drive coupling (per requirements below), with safety guard.
  - ~~2.3.~~ Pumps shall be bronze fitted, with bronze impeller, statically and hydraulically balanced.
  - ~~3.4.~~ A replaceable bronze shaft sleeve shall completely cover the wetted area under the seal.
  - ~~4.5.~~ Volute shall have gauge tapings at the suction and discharge nozzles and vent and drain tapings at the top and bottom.
  - ~~5.6.~~ Pump bearing housing shall have heavy duty regreasable ball bearings.
  - ~~6.7.~~ Vertical split case design is also acceptable, where floor space is at a premium.
  - ~~7.8.~~ Provide rigid steel grout base and grout as described for End Suction Pumps section above.

**Articles C and D remain unchanged. Add Article E. below for defining requirements of flexible pump couplings.**

E. Pump Flexible Couplings

1. Pump flexible couplings shall be the elastomer-in-shear toothed or donut element type. Coupling assembly shall have 4-way flexing action that can absorb torsional, angular parallel and axial shock, vibration and misalignment.
  - a. Toothed element type shall be comprised of three parts, two metal flanges with internal teeth that engage an elastomeric flexible element (sleeve)

with external teeth. Each flange is attached to the respective shaft of the driver and driven and torque is transmitted across the flanges through the sleeve. As manufactured by TB Woods “Sure-Flex” or equivalent.

b. Donut elastomer element type shall be comprised of three components, two shaft hubs and a lightweight, splin-in-half elastomer donut element with bonded attachment collars that are bolted to the hubs for easy replacement without removing the hubs.. Each hub is attached to the respective shaft of the driver and driven and torque is transmitted across the shafts through the element. As manufactured by TB Woods “Dura-Flex” or equivalent.

2. Couplings shall be center drop-out, spacer type to allow disassembly and removal without removing pump shaft or motor.

3. Select suitable sleeve material for each application depending on maximum load, constant or variable speed/torque, and operating conditions for most trouble-free and longest service life.

4. “Jaw” type couplings shall not be permitted.

## **END of revision**

### **Update Commentary:**

Section was updated primarily for the following reasons:

- 1) To update the Equipment Requirements for the technical details of pump construction
  - a. Goal – to define specific type of flexible couplings required and to disallow unacceptable type to achieve better flexibility performance and service life on couplings.