

SECTION
15540

PUMPS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Base Mounted Pumps.
2. Horizontal Split Case Pumps.
3. In-line Pumps.
4. Steam Condensate Return Pumps.

B. Related Sections:

1. Section 15010 - Basic Mechanical Requirements.
2. Section 15050 - Basic Mechanical Materials and Methods.
3. Section 15240 - Mechanical Sound and Vibration Control.
4. Section 15250 - Mechanical Insulation.
5. Section 15511 - Hydronic Piping and Specialties.
6. Section 15521 - Steam and Condensate Piping and Specialties.
7. Section 15548 - HVAC Water Treatment.
8. Section 15990 - Testing, Adjusting and Balancing.

1.02 REFERENCES

- A. Hydraulic Institute Standards.

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. Pumping System Design:

- a. A primary-secondary pumping system is preferred, where practical.
- b. Design pumping systems so that the available positive head at the pump intake will be larger than the required net positive suction head at the highest possible water temperature at the pump intake.

- c. The pump curve representing flow-head relationship shall intersect the system curve at design operating point.
- d. Select pumps to operate at optimum efficiency as the primary selection criteria.

LEED EAp2: Minimum Energy performance and EAc1:
Optimize Energy Performance

- e. Base friction head calculations on Hydraulic Institute Standards for:
 - 1). Chilled water systems: New Pipe.
 - 2). Hot water systems: 15 year old pipe.
 - 3). Steam condensate: 15 year old pipe.
- f. When pump redundancy is necessary, provide parallel pumping (with check valves) instead of two pumps with automatic change-over.
- g. Select pump motor as non-overloading over the entire pump curve shown by the manufacturer. Consider option of pump operation reset based on reference temperature.
- h. Specify pumps with separate pump and motor shafts and replaceable couplings for all but cartridge pumps.
- i. Mechanical shaft seals shall be specified. Gland seals are not acceptable.

j . LEED EAp2: Minimum Energy Performance and EAc1: Optimize Energy Performance
Pump motors with nominal horsepower in excess of ½ HP shall be premium efficiency.

2. Base-Mounted Water Pumps:

- a. For primary pumping applications, split case centrifugal pumps are preferred over end-suction pumps.
 - b. Mechanical seals are required. Gland seals are not acceptable.
 - c. Specify complete flushing arrangement for mechanical seals and packing.
 - d. Specify double row outboard ball bearings on horizontal split case pumps.
 - e. Specify vent and drain plugs and pressure gage tappings on pump casings.

f. Specify guard on coupling.

3. Steam-Condensate Return Pumps (electric):

- a. Specify compressed air-powered condensate pump. Refer to Section 15521 for details.

4. Steam-Condensate Return Pumps (steam or air):

- a. In addition to standard specifications, specify ductile-iron body and stainless-steel float mechanism.

1.04 SUBMITTALS

- A. Specify performance curves submitted with shop drawings.

PART 2 - PRODUCTS

NOTE: Only motors from the UCB approved list shall be used.

2.01 BASE-MOUNTED PUMPS

A. Manufacturers:

Armstrong
Aurora
Bell and Gossett
ITT-AC
Paco
Peerless
Taco
n

2.02 HORIZONTAL SPLIT-CASE PUMPS

A. Manufacturers:

Aurora
Bell & Gossett
ITT-AC
Peerless
n

2.03 IN-LINE PUMPS

A. Manufacturers:

Armstrong
Bell and Gossett
Grundfos
Taco

2.04 STEAM CONDENSATE RETURN PUMPS/RECEIVERS (AIR-POWERED)

A. Manufacturers:

Johnson LiquiMover

PART 3 - EXECUTION

3.01 INSTALLATION

A. In general, for project specifications, remove "Design Requirements" sub-paragraph A in Part 1, paragraph 1.03 "System Description" of this Design Guide and use list to expand on specific requirements of installation in addition to the following items for each product specified.

B. Coupling Alignment:

1. After pump is permanently installed:

a. Align coupling flanges for concentricity to assure that the face and curved edge are concentric within the manufacturer's recommendations.

b. Align coupling for angular alignment to tolerances recommended by the manufacturer.

C. Piping Connections:

1. Install pump to be completely removed for maintenance without dismantling or removal of any piping.

2. All pumps installed with line size isolation valves on both sides. The valve at the discharge side shall be of balancing type with "Memory Stop".

3. Flexible connections mounted horizontally on base mounted pumps.

4. Provide valved gages at pump suction and discharge.

D. In-Line Pumps:

1. Connect directly to piping.

2. Motor shall not be separately supported except for large pumps specifically recommended by the manufacturer.

3. Pumps shall not be mounted with motor shaft vertical unless special thrust bearings are provided in pump design for vertical installation.

END OF SECTION