



**Wilo SCP**  
**Base-Mounted Split Case Pumps**

**Engineering Specification**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Horizontally, axially split pump housing, separately coupled, base-mounted (double-suction) centrifugal pump shall be an SCP as manufactured by Wilo USA LLC.
- B. Furnish and install a horizontal, single or double stage centrifugal pump, with a capacity as indicated in the plans.

1.2 RELATED SECTIONS

- A. 22 21 23.16 – Base-mounted, Centrifugal Hydronic Pumps.
- B. 23 65 13 – Forced-Draft Cooling Towers.
- C. 23 22 23.13 – Electric-Driven Steam Condensate Pumps.
- D. 23 53 13 – Boiler Feedwater Pumps.

1.3 REFERENCES

- A. ANSI/HI – American National Standards Institute/Hydraulic Institute.
- B. ESIA 2007 – Energy Independence and Security Act of 2007.
- C. NEMA – National Electrical Manufacturers Association.
- D. ISO – International Standards Organization.

1.4 SUBMITTALS

- A. Submittal data sheet(s).
- B. Dimensional print(s).
- C. Three-dimensional CAD Models.
- D. Wiring diagram(s).
- E. Installation, operation, and maintenance manual [IOM].

1.5 QUALITY ASSURANCE

- A. The pump manufacturer shall be fully certified by the International Standards Organization per ISO 9001:2008.
- B. Each pump shall be tested to performance standards set by the International Standards Organization per ISO 9906.
- C. Pumps using EPDM seals operating with flowrates 88 to 15,400 US GPM and head of 65 to 770 ft, shall be rated for 18°F to 250°F fluid temperatures.
- D. The pump shall either have a maximum operating pressure rating of 232 PSI (16 bar) or 363 PSI (25 bar).
- E. The pump shall have an ambient air temperature range of -4°F – 104°F.

1.6 WARRANTY

- A. Provide manufacturer's standard warranty against defects in materials and workmanship
  - 1. Warranty Period: Wilo SCP shall be free of defects in materials and workmanship for a period of two (2) years from the date of purchase.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

A. Subject to compliance with these specifications, the following manufacturers shall be acceptable:

1. SCP series pump(s) as manufactured by Wilo USA LLC.
2. Pre-approved equal.

### 2.2 COMPONENTS

A. Pump Housing

1. Shall either be constructed of either:
  - a. ASTM A48, Class 40 Cast Iron
  - b. (A48 Class 40+Ni 2%)
  - c. (A743 AISI316L stainless steel)
  - d. A 536 65-45-12 Ductile Cast Iron
2. Shall be assembled with ASME B16.1, Class 125 flanged connections.
3. Shall be furnished with a B 584 C93 700 [Bronze] or an A743 AISI316L (Stainless Steel) wear ring.
4. Shall be equipped with a drain plug.
5. Casing supports shall allow removal and replacement of impeller without disconnecting piping or requiring the realignment of pump and motor shaft.
6. Rotation shall be specified as clockwise or counter-clockwise as viewed from the coupling end.

B. Pump Shaft

1. Shall be AISI 410 Stainless Steel.
2. AISI 316 Stainless Steel shall also be available.

C. Shaft Sleeve

1. Shall be AISI 410 Stainless Steel.
2. AISI 316 Stainless Steel shall also be available.

D. Impeller

1. Shall be cast impellers to be constructed of either:
  - a. ASTM B584 Cast Bronze
  - b. ASTM A48 Cast Iron
  - c. A743 AISI316L Stainless Steel
2. Shall be double-suction type, statically and/or dynamically balanced and keyed to shaft.
3. The allowable residual unbalance in the impeller rotating assembly shall conform to ANSI Grade G6.3. Trim diameter to match specified performance

E. Pump Seal

1. Shall be an externally flushed mechanical seal with ceramic seat of 99.5% pure alumina oxide and hardness of 68 Rockwell C, or a tensile strength of 300,000 PSI (20,685 bar).
2. Replaceable sleeve under mechanical seal shall be AISI 410 Stainless Steel and completely cover the wetted area of the shaft under the seal.
3. Shall be suitable for continuous operation at 250°F (121°C).

4. A stuffing box mechanical seal design with longer span between the impeller centerline and first bearing will not be allowed.

F. Bearings

1. Shall be permanently lubricated heavy-duty SKF 2Z ball bearings.
2. A drive-end (inboard) single row bearing will absorb thermal expansive forces while a non-drive-end (outboard) single row bearing shall be clamped in place to absorb both radial and thrust loads and keep the rotating element in proper axial alignment.
3. Under continuous operation bearings shall have a minimum L10 life of 20,000 hours.
4. The bearings will be contained in cast iron housings with grease fittings/ports.

G. Shaft Coupling

1. A flexible molded insert and interlocking (jawed) 'spider' capable of absorbing torsional vibration shall be employed between the pump and motor.
2. Coupler shall be drop-out type to allow for disassembly and removal without removing the pump shaft or motor.

H. Coupling Guard

1. A dual-rated ANSI B15.1, Section 8 & OSHA 1910.219 compliant coupling guard which contains viewing windows for inspection of the coupling mounted to the pump end.

I. Mounting/Base-Frame

1. Shall be of structural steel or fabricated steel channel with fully enclosed sides and ends, and securely welded cross members.
2. Grouting area shall be fully open. The combined pump and motor baseplate shall be sufficiently stiff as to limit the susceptibility of vibration.

J. Motor

1. Single Speed, Premium Efficient, Inverter-Ready (Compliant with NEMA MG-1 Table 12-12), with permanently lubricated ball bearings, unless otherwise indicated; secured mounting to base frame, with adjustable alignment.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install equipment in accordance with manufacturer's instructions.
- B. Powerwiring, as required, shall be the responsibility of the electrical contractor. All wiring shall be performed per manufacturer's instructions and applicable state, federal and local codes.
- C. All factory wiring shall be numbered for easy identification and the numbers shall coincide with those shown on the wiring diagram.
- D. Unit shall be an SCP as manufactured by Wilo USA LLC.
- E. Comply with Hydraulic Institute 1.4.
- F. The pump and motor shall be mounted on a common base plate of heavy structural steel design and securely welded cross members and open grouting area.

### 3.2 ALIGNMENT

- A. Align pump and motor shafts and piping connections after setting on foundation, grout has been set and, foundation bolts have been tightened, and piping connections have been made.
- B. Comply with pump and coupling manufacturers' written instructions.
- C. Adjust pump and motor shafts for angular and offset alignment by methods specified in installation and operation manual.
- D. After alignment is correct, tighten foundation bolts evenly but not too firmly. Completely fill baseplate with non-shrink, non-metallic grout while metal blocks and shims or wedges are in place. After grout has cured, fully tighten foundation bolts.
- E. Grout pump mounting base full after piping is connected but before pump drive is aligned. After grouting, align pump drive shaft to 5 mils, even if pump is factory aligned, and conduct vibration test.
- F. Realignment after installation prior to start up will be performed by owner.

### 3.3 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
- B. Complete installation and startup checks according to manufacturer's written instructions.
- C. Check piping connections for tightness.
- D. Clean strainers on suction piping.
- E. Perform the following startup checks for each pump before starting:
  - 1. Verify bearing lubrication.
  - 2. Verify that pump is free to rotate by hand.
  - 3. Verify that pump is rotating in the correct direction.
  - 4. Prime pump by opening suction valves and closing drains, and prepare pump for operation.
- F. Start motor
- G. Open discharge valve slowly.