

SNM AXIALLY SPLIT MULTISTAGE PUMPS

Model HTB (HTBD)

API 610 11th Edition Process Pump



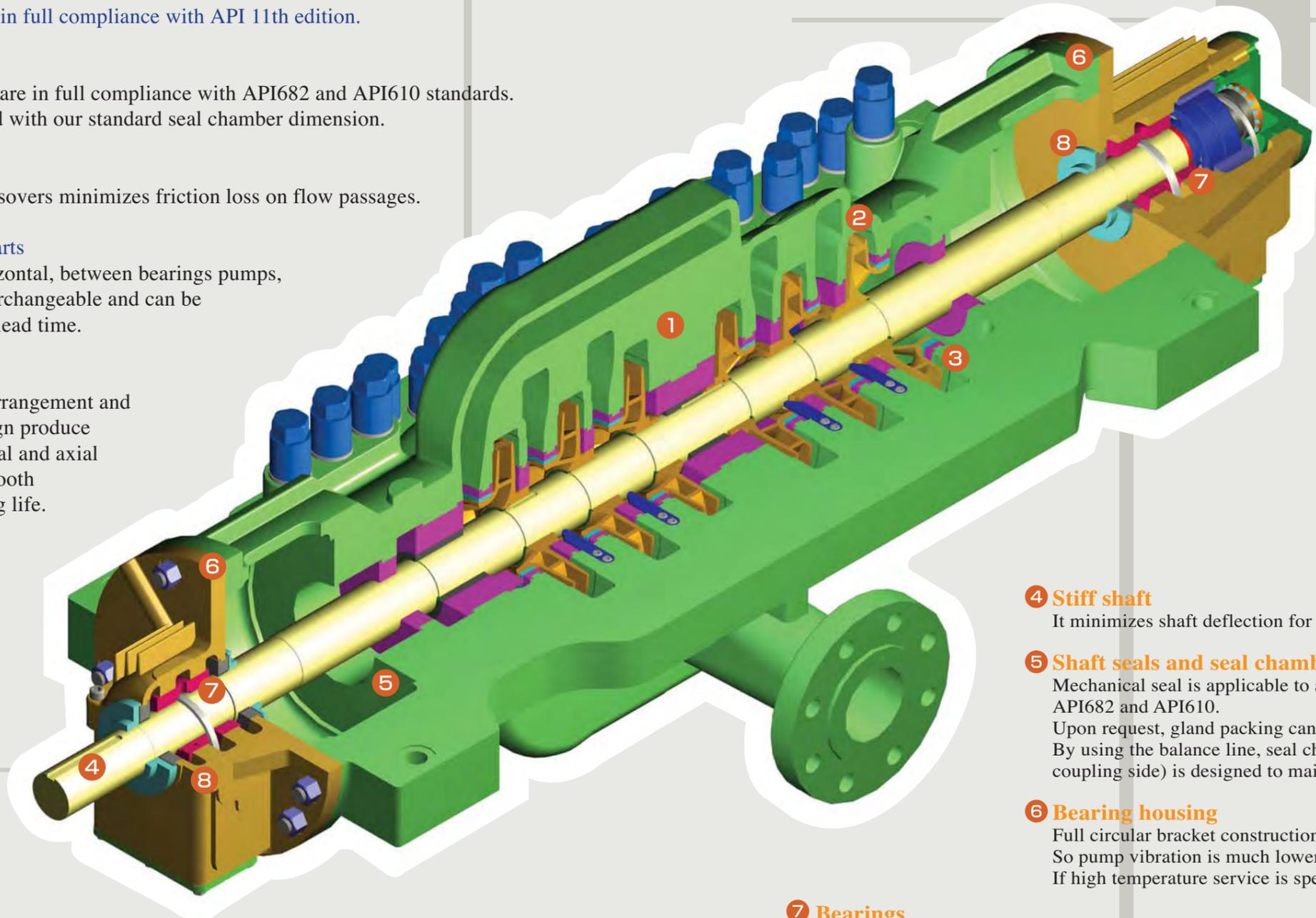
MODEL HTB(HTBD) Axially Split Multistage Between Bearings Pumps (API Class BB3)

■ Design Feature

- The model HTB is horizontal, axially split, multistage, single suction(HTBD : double suction at 1st stage), double volute, centerline support, between bearings pump.
- The HTB(HTBD) is suitable for high pressure, large capacity and a wide range of process and industrial applications.
- Heavy duty construction is in full compliance with API 11th edition.
- Seal chamber
Seal chamber dimensions are in full compliance with API682 and API610 standards.
Dual seals can be installed with our standard seal chamber dimension.
- Compact design
Casing with compact crossovers minimizes friction loss on flow passages.
- Minimal variety of spare parts
By standardizing our horizontal, between bearings pumps, replacement parts are interchangeable and can be provided with little or no lead time.
- Long bearing life
Opposite impeller stage arrangement and double volute casing design produce pumps with optimum radial and axial forces balance, ensure smooth operation and long bearing life.
- Low vibration
Full circular construction of bearing housing and optimum clearance design minimizes vibration of pump.
- Easy maintenance
Overhaul can be carried out without disrupting main pipings and driver. Jack bolt is furnished at rabbetted fit area in order to prevent obstruction of disassembly by sticking.

■ Specification

- Max. flow rate up to 750 m³/h
- Max. diff. Head up to 2200 m
- Max. operation temperature up to 200°C



1 Casing

The casing is designed in full compliance with API610(design pressure, nozzle force and moment, etc.). Casing gasket is appropriately selected to meet the specific liquid and specific operating condition, ensures satisfactory seal performance. Centerline support design prevents misalignment caused by thermal expansion. Side suction and side discharge nozzles are integrally cast with lower half casing, therefore allowing removal of the rotor without disrupting driver and piping connections. Double volute construction evenly distributes radial forces.

2 Impeller

Closed single suction(HTBD : double suction at 1st stage) multistage impeller is designed to meet the wide range of specific operating condition with the maximum efficiency and low NPSH-required (NPSH3). The impeller is positively secured along the shaft against axial thrust force by interference fit and sprit ring. The impeller and rotor is dynamically balanced to meet the API610 requirement. Opposed impeller stage arrangement reduces thrust loads and prolongs bearing life.

3 Renewable wear rings

Renewable wear rings are furnished.

4 Stiff shaft

It minimizes shaft deflection for longer bearing and seal life.

5 Shaft seals and seal chamber

Mechanical seal is applicable to all seal types and plans in accordance with API682 and API610. Upon request, gland packing can be installed. By using the balance line, seal chamber pressure of both side (coupling and anti-coupling side) is designed to maintain the suction pressure for the mechanical seal.

6 Bearing housing

Full circular bracket construction minimizes vibration of bearing housing. So pump vibration is much lower than the limit of API610. If high temperature service is specified, suitable cooling system is furnished.

7 Bearings

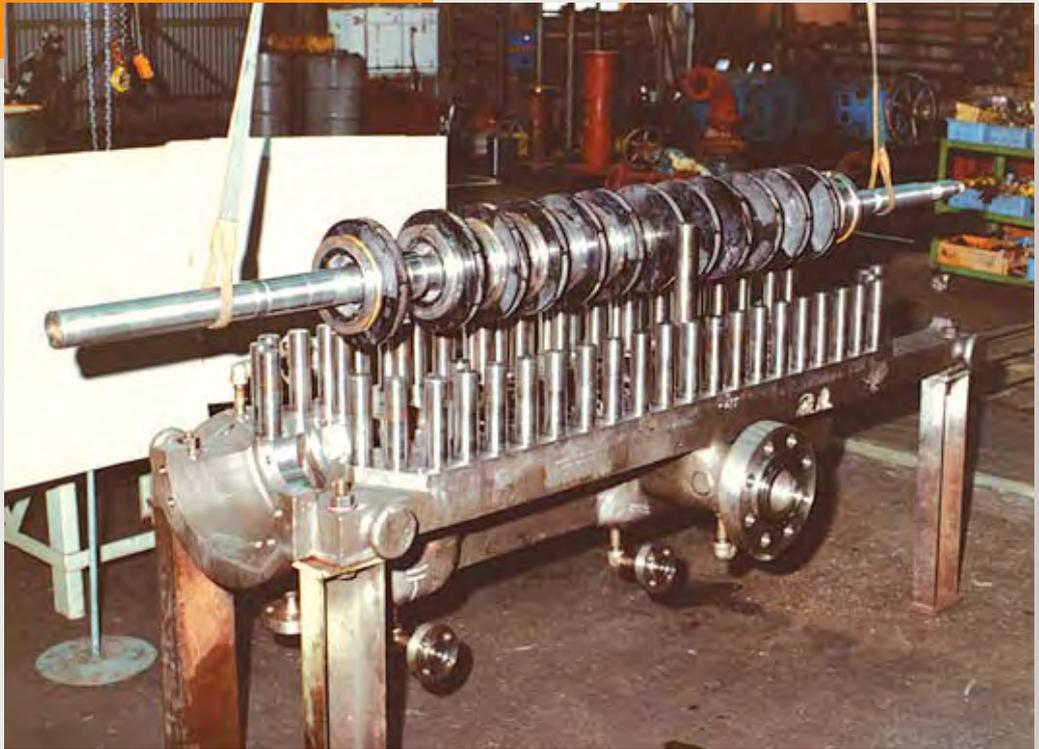
Bearings and lubrication systems are available in three configurations to meet service conditions and the requirements of API610.

1. ball radial and angular contact ball thrust / flooded lubrication
2. sleeve radial and angular contact ball thrust / oil ring lubrication
3. sleeve radial and tilting pad thrust / pressurized lubrication

8 Replaceable labyrinth end seals and deflectors

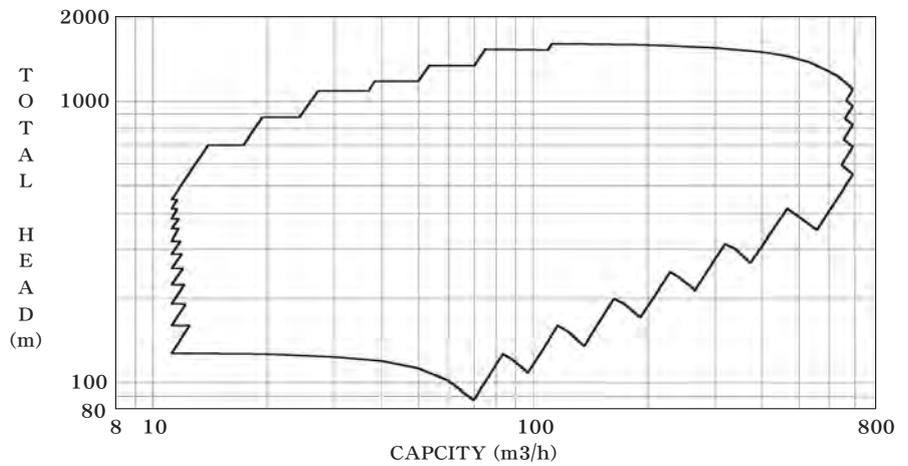
Labyrinth end seals and deflectors effectively retain oil in the housing and prevent entry of foreign material into the housing.

**HTB
assembly works**

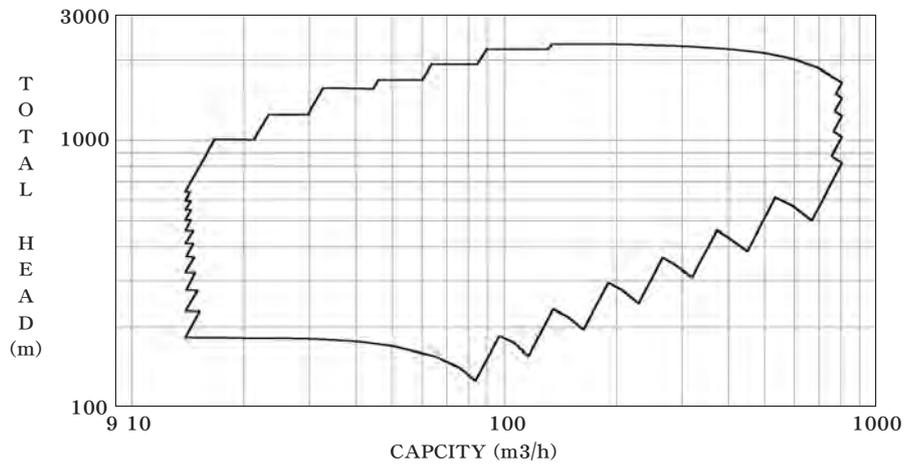


Model HTB(HTBD) performance chart

Coverage-50Hz



Coverage-60Hz



(※) In addition to above-mentioned chart, we will provide the best design for your application.

Optional Feature

■ Design for optimum operating condition

- **3D machined impeller**
3D machined impellers(※) can be designed and produced to meet specific operating condition by using advanced flow analysis method.

(※)Machining processes for fabricated impellers offer capabilities for more exact profiles and higher efficiency.



3D machined impeller

■ For higher efficiency requirement

- **Non-metallic material wear rings**
Use of non-metallic material wear rings ensures improvement of pump efficiency. Running clearance can be reduced with improved operating reliability as well as termination of seizure under specified conditions

■ Special protector

- Special labyrinth seal and deflector
- Special gas breather
- Bearing protector

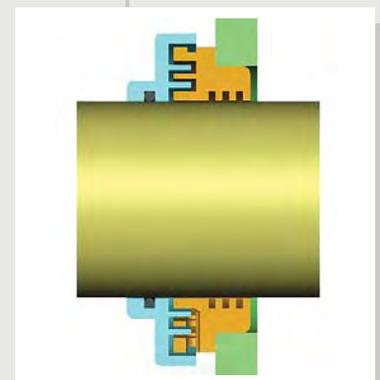
The above-mentioned parts will prevent lubricant contamination caused by cloudburst, sandstorm, entry of steam and other heavy condition.



Bearing protector



Special gas breather



**Special labyrinth seal
And deflector**

■ Optional lubrication

- **Oil mist lubrication**
Oil mist lubrication can be provided.

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