CENTFOS

API 610 SERIES

Model : CHV

OH3 OVERHUNG PUMP

1. Product Overview

CENTFOS API 610 OH3 pumps are vertical, high-performance pumps designed for continuous service in refinery, petrochemical, power, and water industries. They are manufactured to API 610 (12th Edition) standards with engineered options to meet specific project requirements, ATEX, CE, and NACE MR0175/0103 compliance.

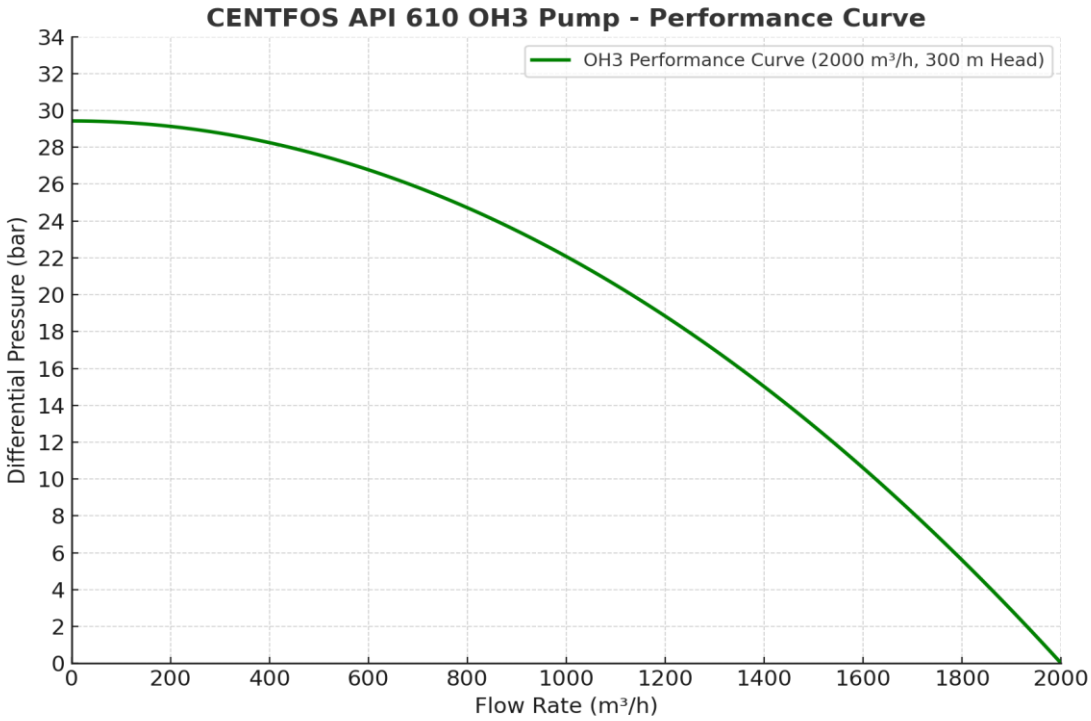
2. Key Advantages

- API 610 (12th Ed.) compliant OH3 configuration.
- High-efficiency hydraulics with interchangeable wear rings and diffuser vanes.
- Heavy-duty thrust bearing housing for reliable performance.
- Cartridge-type mechanical seals per API 682 (Plan 11, 21, 23, 52, 53A/B/C, 62, 65 as applicable).
- Optimised NPSHr for low suction heads and challenging intake conditions.
- Materials from carbon steel to Super Duplex and Nickel-based alloys for corrosive services.
- Condition monitoring provisions: vibration, temperature, pressure, mechanical seal leakage detection.
- Finite Element Analysis (FEA) validated top-works and structural rigidity.
- CFD-optimised impellers and diffuser passages to minimise recirculation losses.

3. Hydraulic Performance Envelope

Capacity (Q)	Up to 3,000 m³/h (13,200 US gpm)
Differential Head (H)	Up to 300 m (984 ft)
Discharge Pressure Rating	Up to 60 bar (870 psi)
Speed	1,480 / 1,760 / 2,980 / 3,560 rpm (others on request)
Temperature Range	-50 °C to +250 °C
Number of Stages	Single-stage overhung with footless design
NPSHr	Low NPSHr designs available

➢ Performance Curve



4. Construction & Design Details

- Vertical column or barrel assembly with line shaft or can designs.
- Discharge through column pipe to surface-mounted discharge head.
- API 610 compliant bearing spans with product-lubricated or water-flushed bearings.
- Replaceable wear rings on casing and impeller to restore efficiency.
- Suction strainer designed to project specifications.
- Axial thrust taken by heavy-duty oil-lubricated bearings.
- Coupling: spacer type to allow seal/bearing maintenance without driver removal.
- Top-mounted thrust bearing housing with temperature and vibration probe provisions.
- Keyed impellers with dynamic balancing per ISO 21940 (G 2.5 or better).

5. Materials of Construction (Typical)

Casing / Column / Discharge Head	ASTM A216 WCB / A352 LCB / A351 CF8M / Duplex
Bowls	ASTM A352 LCB / A351 CF8M / Duplex
Impellers	ASTM A743 CA6NM / A351 CF8M / Duplex / Super Duplex
Shaft	AISI 410 / Duplex
Wear Rings / Throat Bush	410SS / 316SS / Alloy 625 / PEEK / Composite
Line Bearings	Carbon, Bronze, Composite (Graphite Filled PEEK, VESPEL®)
Mechanical Seal	API 682 compliant, materials per service
Fasteners	A193 B7 / B8M, A194 2H / 8M, or per material class

6. Sealing System (API 682)

- Single, dual (tandem or back-to-back) cartridge seals.
- Flushing plans: Plan 11, 21, 23, 32, 52, 53A/B/C, 62, 65 as per service needs.
- Bearing isolators / labyrinth seals for top bearing housing.
- Provision for seal leakage detection and API Plan 75/76 for vapour handling.

7. Bearings & Lubrication

- Product lubricated / external flush lubricated bearings.
- Top thrust bearing: tilting pad or angular contact rolling element bearings.
- Temperature probes (RTDs) and vibration probes (X/Y) as standard or optional.
- Shaft sleeves at bearing locations for wear protection.

8. Instrumentation & Monitoring

- Bearing temperature sensors (RTD/PT100).
- Casing/discharge pressure gauges and transmitters.
- Vibration probes and monitoring to ISO 10816 / API 610.
- Mechanical seal leakage detection and level switches for seal pots.
- Speed, flow, and temperature transmitters as per project specification.

9. Testing

- Hydrostatic test per API 610 (1.5 x MAWP).
- Performance test per API 610 (duty + verification points).
- NPSH test (when specified).
- Mechanical run test (4 hours minimum or as per project spec).
- Optional string test with driver and seal system.
- Non-destructive tests (PT/MT/UT/RG) as specified.
- Material certificates per EN 10204 3.1 / 3.2.

10. Documentation & QA/QC

- API 610 compliant datasheets and GA drawings (3D/2D).
- Welding procedures (WPS/PQR), ITP, QAP, FAT protocols.
- Bill of Materials (BoM) and traceability records.
- Spare parts list (commissioning + 2-year operation).
- O&M manual with recommended lubrication schedules and troubleshooting guide.
- Vendor prints and MDR (Manufacturing Data Record).

11. Options & Accessories

- Canned (wet pit) or barrel executions as required.
- Baseplates: fabricated steel or cast, with grout holes and jacking screws.
- Split lantern for easy maintenance of seals and bearings.
- Motor types: TEFC, TEWAC, Ex-d, Ex-e, VFD-ready; API 541/546 motors.
- Coatings for seawater/brine service (epoxy phenolic, ceramic filled, glass flake).
- Cathodic protection for seawater intakes.

12. Ordering Code / How to Specify

Model	OH3
Configuration	Bowl stages, line shaft length, discharge size
Flow / Head	Rated capacity (Q), differential head (H)
Fluid / SG / Viscosity	Process data including gas content, solids
Temperature / Pressure	Operating, design, test values
Materials Class	API 610 S-1 to S-6 / project-specific
Seal Type & Plan	API 682 seal category, arrangement, plan
Instrumentation	Vibration, temperature, pressure, seal leakage
Testing	Performance, NPSH, string, NDT
Compliance	API 610 / 682, ATEX, CE, NACE, ISO, etc.

13. Typical Dimensional Data (Indicative)

Nozzle Discharge Size	DN 80 to DN 400 (3" to 16")
Column Diameter	As per hydraulic selection
Shaft Diameter (at impeller)	Per power and torque; consult factory
Setting Length	Up to 30 m or more (segmented)
Baseplate / Discharge Head	To project / API 610 requirements

14. Allowable Nozzle Loads (per API 610)

Allowable nozzle loads comply with API 610 criteria for vertical pumps. Specific values will be provided on the certified general arrangement drawing following detailed selection.

15. Standards & Compliance

- API 610 (12th Edition) – Centrifugal Pumps for Petroleum, Petrochemical and Natural Gas Industries.
- API 682 – Pumps – Shaft Sealing Systems for Centrifugal and Rotary Pumps.
- ISO 13709 / ISO 5199 as applicable.
- NACE MR0175/0103 for sour service.
- ATEX 2014/34/EU for explosive atmospheres (optional).
- CE Marking (Machinery, PED).
- IEC / NEC for electrical classification.

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