



**CNSDp**  
**DOUBLE-CASING,**  
**RADIALLY SPLIT, MULTISTAGE,**  
**BETWEEN-BEARINGS PUMP**  
**BB5 TYPE**  
**ANSI/API STANDARD 610**  
**(ISO 13709:2009)**



**APPLICATION**

The pump is designed for water injection into reservoirs to maintain formation pressure and stimulate production of oil, gas and condensate.

The pump can be also used in the high-pressure oil refining processes and petrochemical industry applications.

**PUMPED MEDIA**

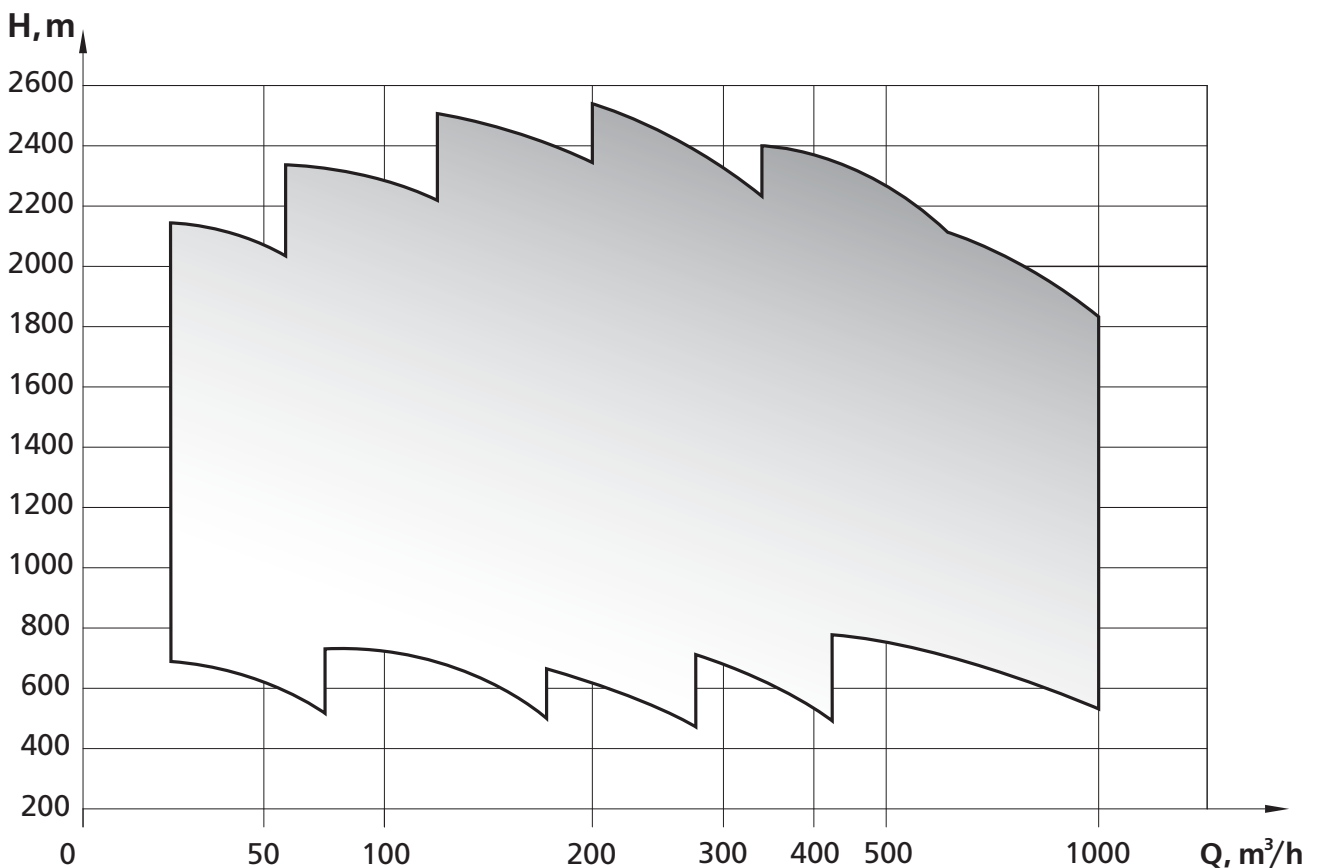
Highly-corrosive seawater, stratal water and waste water (including the fluids containing hydrogen sulfide):

Temperature, °C .....	0 ... +90
Density, kg/m <sup>3</sup> .....	up to 1180
Max size of solid particles, mm .....	0.2
pH value .....	4 ... 9
Oil content, mg/L .....	up to 200
H <sub>2</sub> S content, mg/L .....	up to 400

**OPERATIONAL INTERVALS AND LIFETIME**

Depending on the pumped media the average operational lifetime amounts to:

- Mean time between overhauls (MTBO): over 40000 hours
- Casing parts service life: over 30 years



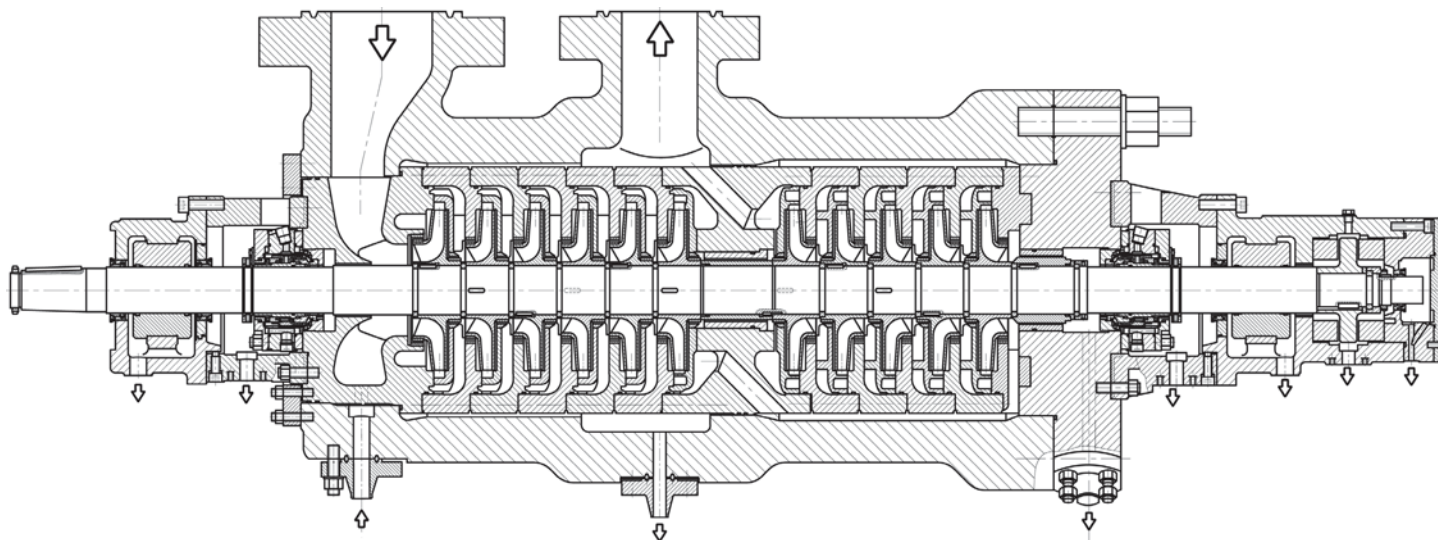
## MATERIALS

### Duplex steel (D-1 class according to API 610 11-th Ed.)

- Pressure casing: duplex steel GX2CrNiMoCuN-25-6-3-3
- Inner case parts: duplex steel GX2CrNiMoCuN-25-6-3-3
- Shaft: duplex steel X2CrNiMoN-22-5-3
- Wear rings parts: hard-faced duplex steel

### Super Duplex steel (D-2 class according to API 610 11-th Ed.)

- Pressure casing: super duplex steel GX2CrNiMoN-26-7-4
- Inner case parts: super duplex steel GX2CrNiMoN-26-7-4
- Shaft: super duplex steel X2CrNiMoCuWN-25-7-4
- Wear rings parts: hard-faced super duplex steel



## DESIGN FEATURES

CNSDp pump is a horizontal, double-casing, radially split, multistage, between-bearings pump of a BB5 type (barrel pump), in full compliance with ANSI/API standard 610 (ISO 13709:2009).

The pump rotor is hydraulically unloaded by the oppositely arranged impellers fixed on the shaft by their press fit, embedded rings and shaft keys.

The outer casing is engineered and rated for the maximum allowable working pressure (MAWP).

Suction and discharge nozzles are directed vertically upwards. The pump supports are located on a centerline.

The inner casing of a cartridge type consists of radially split sections with metal-to-metal sealing and additional rubber rings completely eliminating internal circulation of the liquid. Due to a cartridge design the inner casing can be replaced at site conditions without dismantling the outer casing.

The pump rotor is supported by segmented bearings with forced lubrication system.

The residual axial force arising as a result of uneven wear of impellers' seals during operation is accepted by the Mitchell type thrust bearing with self-aligning pads and leveling system.

An oil pump of the lubrication system can be optionally installed on the main pump shaft.

The rotor sealing can be either single or double mechanical type in accordance with API 682. Pressure in the sealing system is kept by a hydraulic accumulator. The impeller of a mechanical sealing provides circulation of the barrier fluid that is cooled in a heat exchanger.

The pump is connected with a drive through the elastic diaphragm coupling.

The equipment is supplied by **HYDROMASHSERVICE** – an integrated commercial and engineering company of HMS Group. Scope of supply, options, and any customized solutions are the subjects of prior confirmation by the manufacturer before order placement.

## HYDROMASHSERVICE

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