

# **INRI** OPTIMEX

CANNED MOTOR PUMPS



Technical documentation  
**Vertical Inline Pump  
with a Canned Motor**  
**INRI**

## INRI

### Application range :

All industrial process : chemical, oil & gas, nuclear  
Heating installation, Cold installation like cryogeny.

Some example of pumping liquid:

**Liquified gas** (Ammoniac, Butane, Propane, Ethane, Ethylène), **Thermal oils**  
(Therminol, Syltherm), **Dangerous liquid** (H2S)

Everywhere where the reliability and security are the first exigence.

**Temperature range**            -150 °C to +500°C

### Dimension:

In-Line pump can be proposed in both option:

- Directly **mounting on the pipe**
- With a baseplate to support the machine, with **sole plate** or **baseplate**.

Optimex is able to propose **customized arrangement** to revamping or retrofiting existing pump.

### Construction:

Mono-cellular pump in **PN16\***. Suction and discharge flanges are on the same axe.  
Two slide bearings lubrificated by the pumping liquid are used to support mobile parts.  
In standard bearings are proposed in 316L/Graphit.

*\* Other design are possible on demand*

### ATEX:

Product in compliance with ATEX directive 2014/34/UE.

Motor certified to Ex II 2 G Ex de II C T1 to T6

### Motor:

Speed:                    1450 rpm or 2900 rpm at 50Hz  
                              1750 rpm or 3600 rpm at 60Hz

Voltage:                220 to 660V

Frequency:            Working with VFD is always possible

Motor protection:    PTC or PT100 in windings

### Material:

Stainless steel is the standard construction.

All materials of construction are possible.

### Documentation :

- Vendor databook
- Pump datasheet
- Dimensional drawing
- Sectional drawing
- Parts list
- Spare parts list
- Test curve of the machine
- CE declaration

### Workshop control:

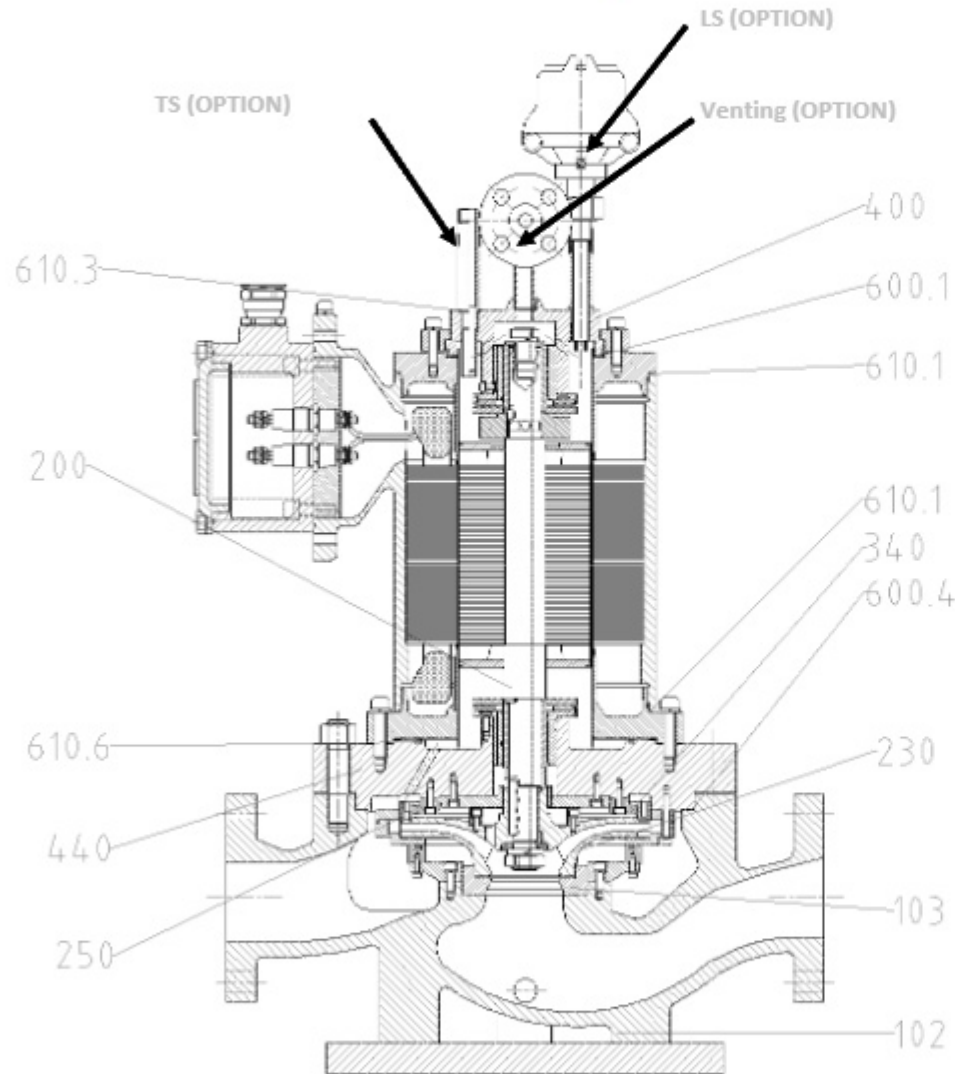
Standard control:

- Balancing test of mobile in G6.3 according to ISO 1940
- Hydrostatic test of the first containment system
- Secondary containment system air test
- Performance test according to ISO9906 level 2
- Axial displacement & forces measurement
- Material certificate 2.2 according to EN 10204 (parts under pressure)

*Complementary control can be made on demand*



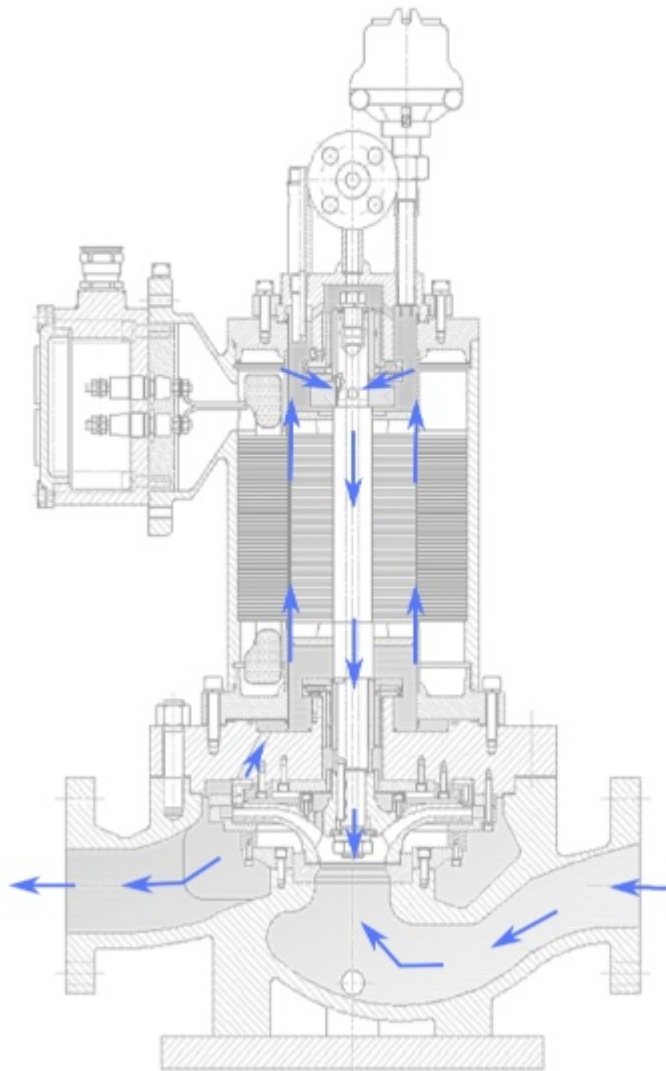
# Vertical Inline Pump with Canned Motor



#	Designation
102	Casing
103	Casing wear ring
200	Shaft
230	Impeller
250	Mobile thrust
340	Fixe thrust
400	Rear support bearing
440	Front support bearing
600.1	Gasket
600.4	Gasket
610.1	Gasket
610.3	Gasket (OPTION for TS)
610.6	Gasket

*Material on demand*

## Working Circulation



### Description:

#### Plan API 1-S

Injection of pumped liquid in the motor from pump casing (impeller periphery), passing through the stator/rotor gap, returning to suction through the hollow shaft.

Other circulations can be proposed on demand and in function of process criteria.

#### S: Overpressured circulation

High vapor liquid

#### R: Cooled circulation

Hot application 160°C to 500°C

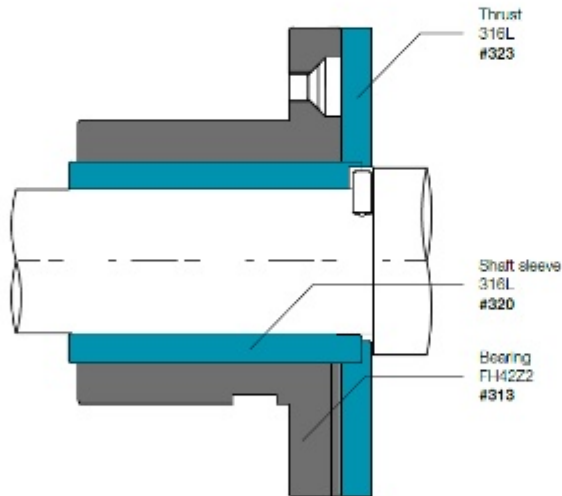
#### F: Filtered circulation

Dirty and slurry liquid

# Slide bearings

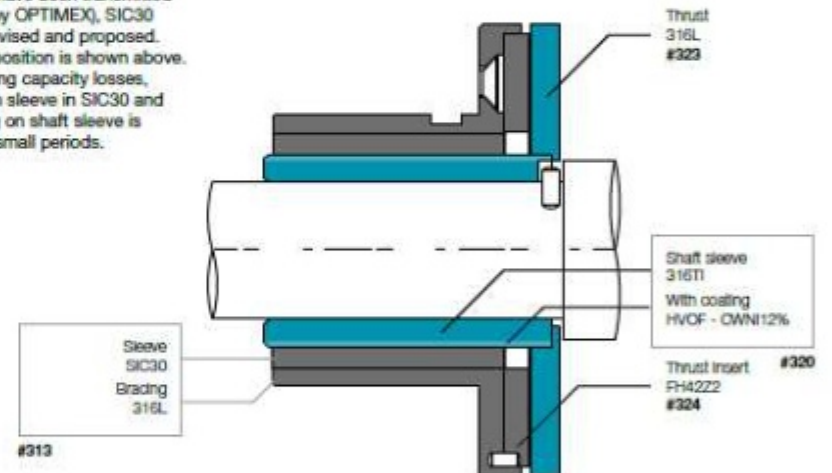
## 316L/GRAPHITE

Slide bearings are one of the major parts that confer such a good reliability to seal-less pumps. For single stage canned motor pumps, the monobloc shaft composed of all the rotating elements of the machine is supported with 2 slide bearings that are totally submersed in the pumped liquid. Once the pump's filling is guaranteed (and controlled with appropriate instrumentation) and pump is started, the mobile rotates free from any friction and wearing thanks to a thin film



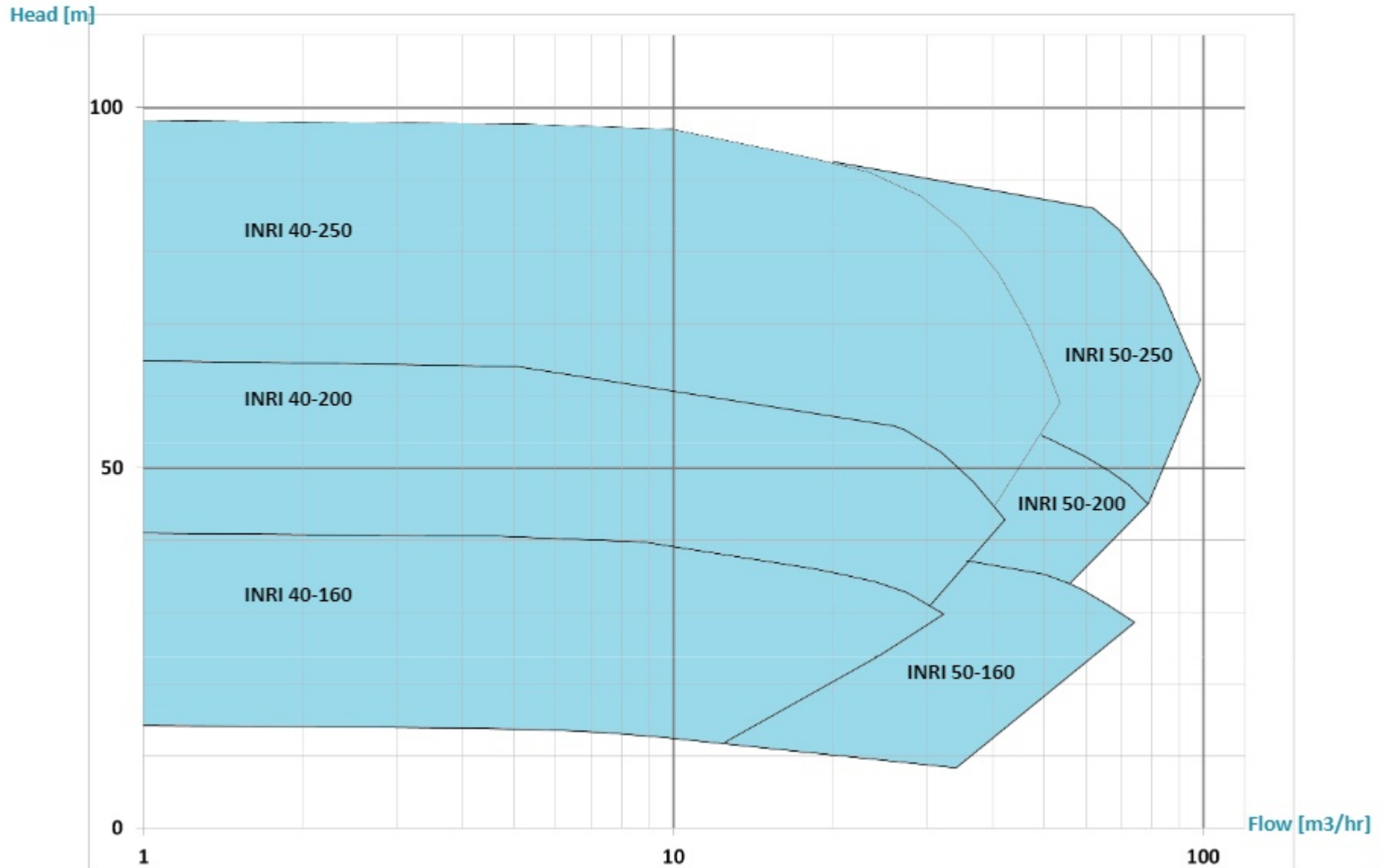
## 316Ti/TUNGSTEN CARBIDE COATING/SIC30

For critical application with risk of dry running (frequent and delicate start-up or critical liquids for which full characteristics have been transmitted and approved by OPTIMEX), SIC30 bearings are advised and proposed. Parts and composition is shown above. In case of bearing capacity losses, friction between sleeve in SIC30 and specific coating on shaft sleeve is acceptable for small periods.



■ Moving parts

## Curve range - 2900 rpm







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