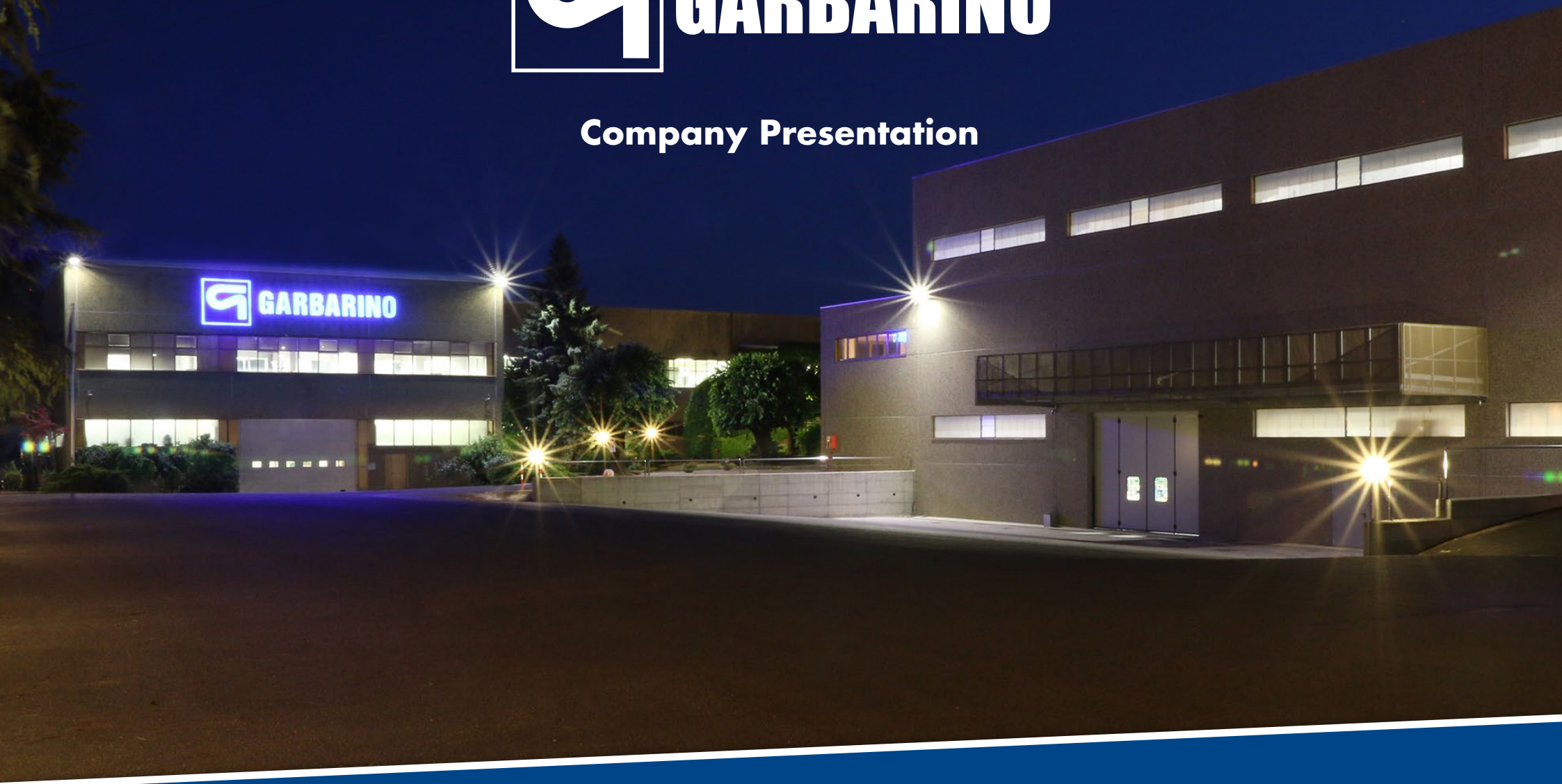


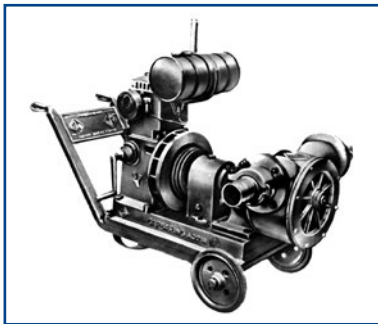


## Company Presentation



## Company History

*Founded in 1932 by Paolo Garbarino*



**1932**  
Wine Industry field



**60's**  
Marine field



**50's**  
Italian Navy Supplier



**80's**  
Industrial field

## Location in Italy



Acqui Terme (AL), Piedmont

 HEADQUARTERS

 2 WORKSHOPS

## **Company Features**

Tailor Made products

High quality standards

Long experience

High flexibility

Technical consultancy

After sales

Warehouse - Spare parts

Materials

# Quality Standards

**ISO 9001:2015**

by RINA

**ISO 14001:2015**

by RINA

**AQAP 2110**

by the Italian Ministry of Defence since 1987

**Classification societies:**

RINA, ABS, BV, LR, DNV GL, NKK, RS, RRR



# **Markets: marine&offshore, navy and industry**

## **Marine&Offshore**

supplier of major shipyards in Europe and Asia, ship owners worldwide, world market leader in cruise shipbuilding

## **Navy**

official supplier of the Italian Navy since 1950,  
supplier of several foreign navies

## **Industry**

pumps specifically manufactured for industrial applications and different type of plants



# Marine&Offshore



# Shipyards References

FINCANTIERI

MEYER TURKU  
SHIPYARD 1737



DAMEN

stx  
Offshore & Shipbuilding



REMONTOWA



Keppel Offshore  
& Marine



CHANTIERS  
DE L'ATLANTIQUE



NAVAL  
GROUP





## Vessels Type

- CRUISE VESSELS
- MEGA YACHTS
- WORK BOATS:
  - Tug boats,
  - Supply vessels,
  - AHTS,
  - Oceanographic/ research vessels.
- GENERAL CARGO SHIPS
- CONTAINER CARRIERS
- BULK CARRIERS
- OIL TANKERS/OBO's
- FERRIES, RO-RO / PAX
- OFFSHORE:
  - Semi-Sub platforms,
  - Drilling platforms,
  - Drilling ships,
  - FPSO's
- LPG / LNG
- CHEMICAL/PRODUCT CARRIERS
- OTHERS:
  - Floating Docks,
  - Floating Power Stations,
  - Heavy Bulk Cargo Barges,
  - Pipe laying vessels

# Cruise References



## Marine and Naval Applications

- Main and auxiliaries cooling
- Ballast service
- Bilge service
- Deck water sealing
- Sludge
- Sewage transfer
- Main engine lub oil system
- Lub oil, fuel oil, waste oil transfer
- Boiler feed
- Economizer circulation
- Fire fighting & general services
- Fresh water system
- AC chilled water circulation
- HT/LT circulation
- Grey / Black water handling
- Water chilling
- Scrubber system
- Ballast water treatment





# Navy



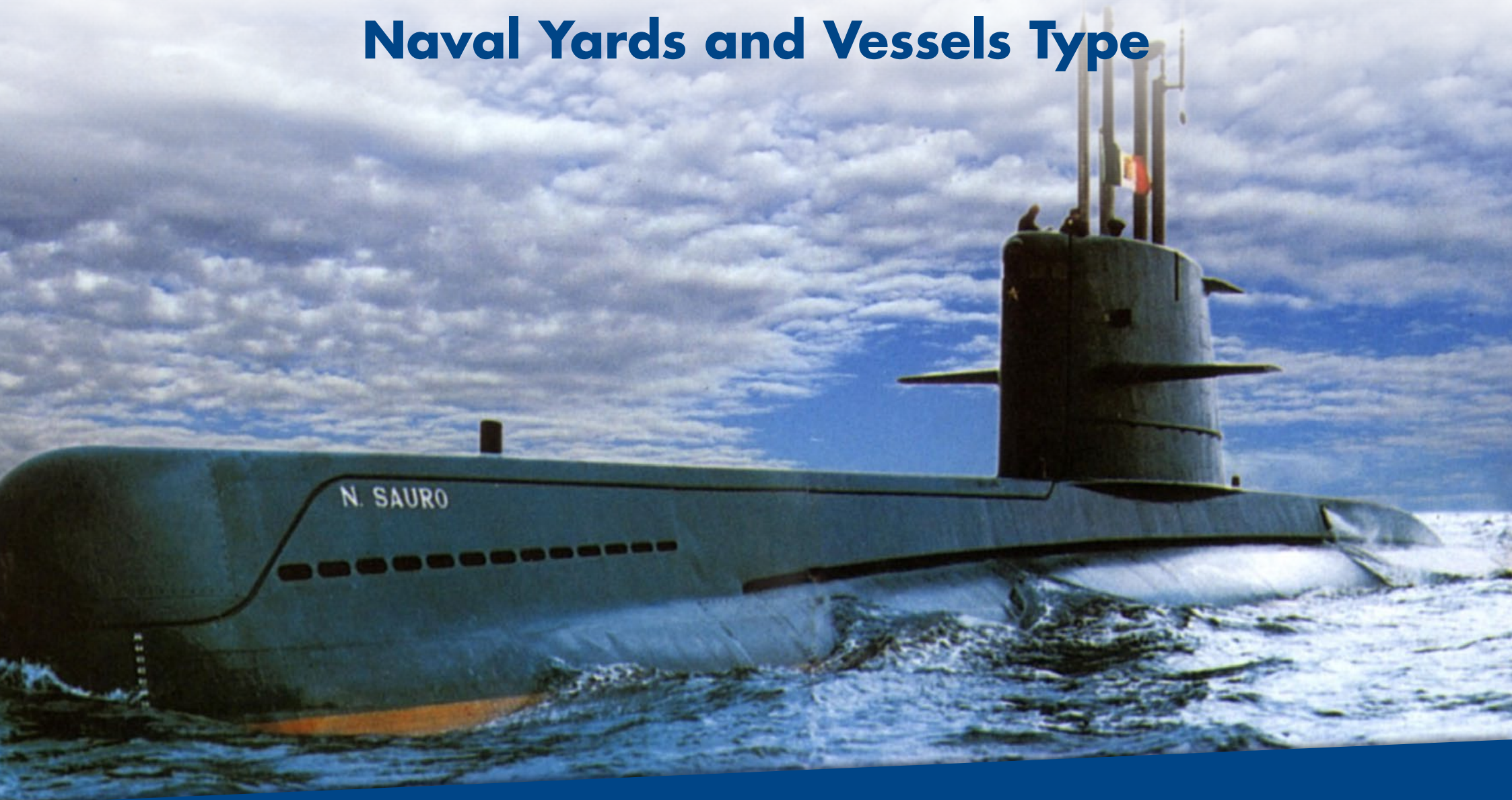
# Naval Quality Standards



- NATO AQAP-2110
- Military Standards MIL STD:
- Mechanical Vibrations MIL STD 167-1
- Airborne Sound MIL STD 740 1
- Structure borne vibrations MIL STD 740 2
- Shock Test MIL S 901 D
- Non magnetic executions



## Naval Yards and Vessels Type



## Naval Yards

- Fincantieri - Italy
- Intermarine - Italy
- NAVAL Group - France
- Chantiers de l'Atlantique - France
- Chantiers Piriou - France
- CMN – France
- Navantia - Spain
- Umoe Mandal Shipyard - Norway
- Schelde Naval Shipbuilding - Holland
- Elefsis Shipyard - Greece
- Remontowa Shipbuilding - Poland
- Boustead Naval Shipyard - Malaysia
- Hyundai Heavy Industries - Korea
- ST Marine - Singapore
- PT Pal - Indonesia
- Arsenal de Marinha do Rio de Janeiro - Brazil

## Vessels Type

- Aircraft Carriers
- Submarines
- Frigates
- Mine Hunters
- Corvettes
- Destroyers
- Patrol Boats
- Oceanographic vessels
- Training vessels

# Naval References

## Europe:

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-  • Italian Navy
-  • French Navy
-  • Spanish Navy
-  • Finnish Navy
-  • Royal Norwegian Navy
-  • Royal Netherlands Navy
-  • Belgium Navy
-  • Russian Navy
-  • Hellenic Navy
-  • Polish Navy
-  • Bulgarian Navy

## Asia:

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-  • Iraqi Navy
-  • Qatari Navy
-  • U.A.E. Navy
-  • Royal Navy of Oman
-  • Bangladesh Navy
-  • Republic of China Navy
-  • Philippine Navy
-  • Royal Thai Navy
-  • Royal Malaysian Navy
-  • Singapore Navy
-  • Indonesian Navy

# Naval References

## Africa:

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- Algerian Navy



- Royal Moroccan Navy



- Libyan Navy



- Nigerian Navy



- Angolan Navy



- South African Navy

## America:

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- Mexican Navy



- Venezuelan Navy



- Ecuadorian Navy



- Peruvian Navy



- Brazilian Navy



# Industry





## Industrial Plants

- Desalination plants
- Power plants
- Sewage, water treatments
- Paper industries
- Sugar industries
- Processing plants:  
up-stream applications
- Chemical and petrochemical plants
- Pharmaceutical industries
- Steelworks
- Refineries
- Painting plants
- Acrylic fibers production plants



# Industrial Applications

- Cooling service
- Sea water service
- Acid and alkaline liquids with suspended solids transfer
- Hydrocarbons transfer
- Condensate and gaseous fluids transfer
- Drain service
- Reverse osmosis
- Boiler feed
- Chemical services
- Air conditioning, air cooling, chilled water services
- Oil&gas upstream various services
- Screen wash system service



# Industrial References



ALSTOM



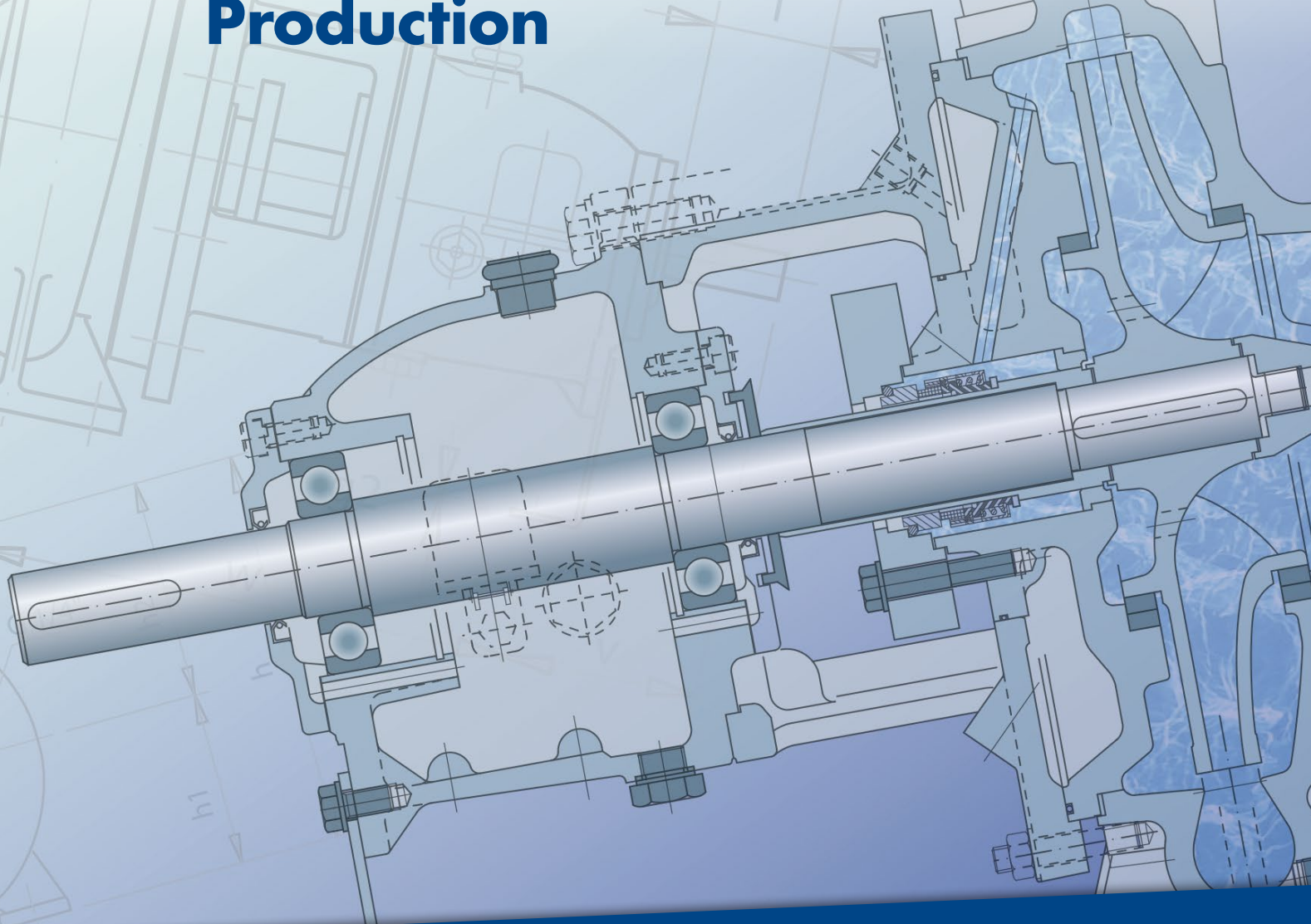
# Production

DNs

DNd

$i1$

$h1$



## Products

### CENTRIFUGAL PUMPS

<b>MU</b>	pumps according to EN 733
<b>MU-L</b>	vertical in line pumps
<b>MU-LDS</b>	vertical in line double suction pumps
<b>VS</b>	vertically suspended line-shaft pumps
<b>MCA</b>	recessed impeller torque flow pumps
<b>CN</b>	chemical pumps according to ISO 2858-5199
<b>ZN</b>	diathermic oil circulation pumps
<b>BT</b>	side channel pumps
<b>G</b>	multistage pumps

<b>GH</b>	multistage high pressure pumps
<b>MM</b>	fire fighting naval pumps
<b>MPF</b>	portable diesel engine fire pumps
<b>VL</b>	main engine lubrication pumps
<b>AD</b>	self-priming pumps with open impeller

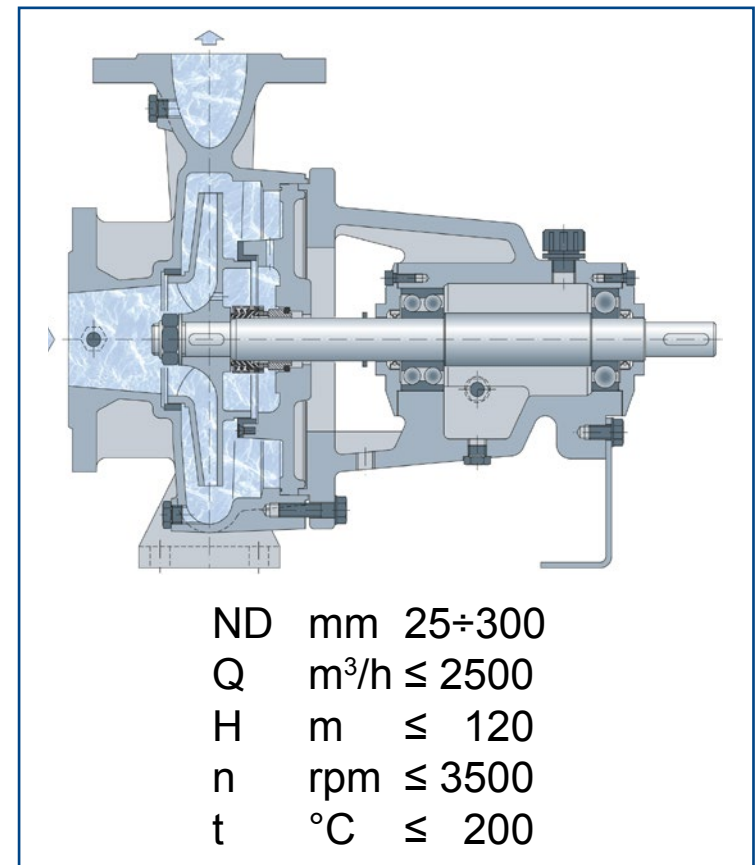
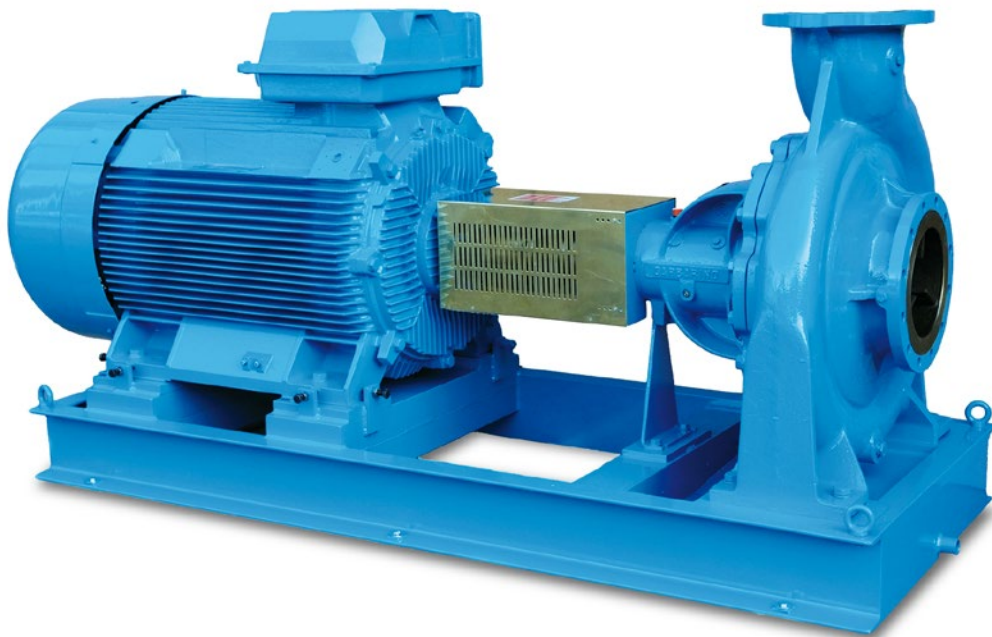
### POSITIVE DISPLACEMENT PUMPS

<b>P</b>	hollow oscillating disk pumps
<b>IN</b>	gears pumps
<b>SWL</b>	piston pumps



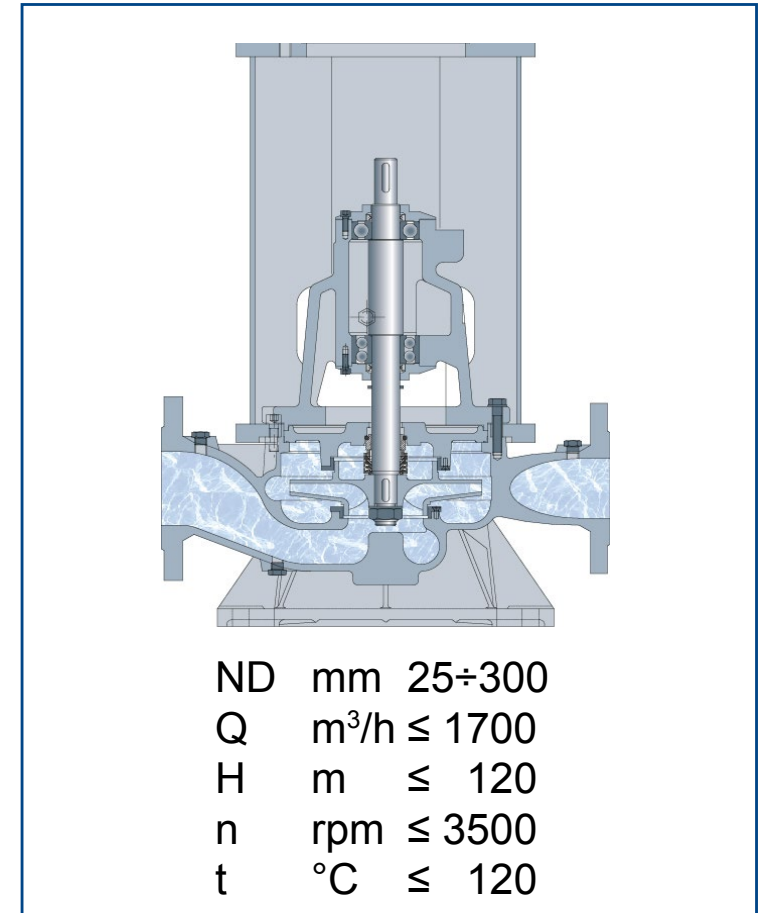
## Horizontal pump (according to EN 733)

- Self-priming by liquid ring or air ejector
- Disassembly back pull out system
- Oil Lubrication
- Bare shaft and close-coupled executions
- Exchangeable components
- Easy-replaceable wear rings



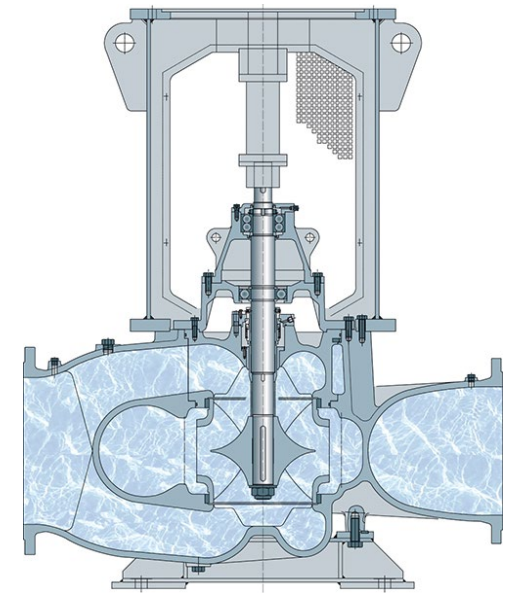
## Vertical in line pump

- Space saving configuration
- Higher structural stiffness:  
baseplate casted with casing
- Self-priming by liquid ring or air ejector
- Disassembly back pull out system flexible  
coupling with spacer
- Grease Lubrication
- Bare shaft and close-coupled executions
- Exchangeable components



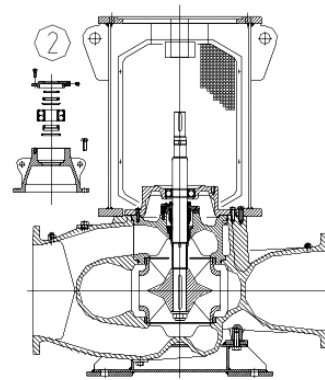
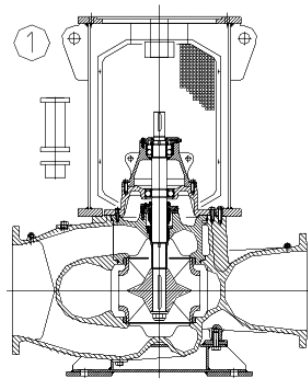
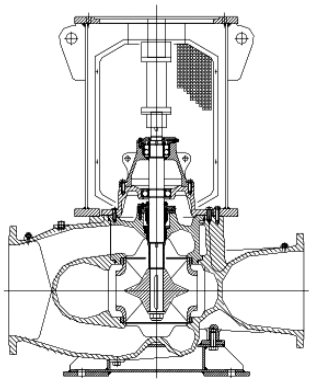
## In line double suction pump

- Low NPSH and no axial thrust
- Double volute casing and double suction impeller
- Double volute for minimum radial load on impeller
- Back pull out for internal part without motors and pipes removing

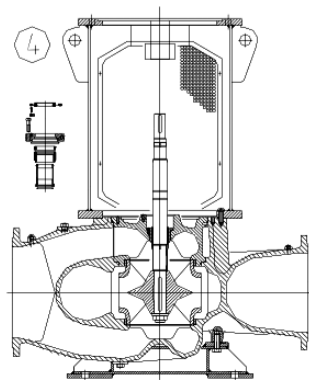
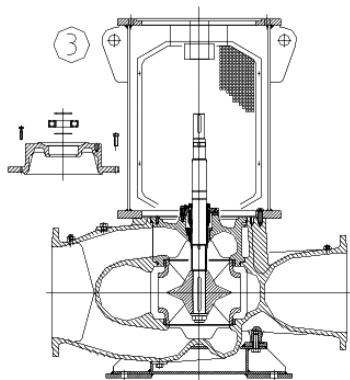


ND	mm	250÷450
Q	m <sup>3</sup> /h	≤ 3500
H	m	≤ 50
n	rpm	≤ 1780
t	°C	≤ 60

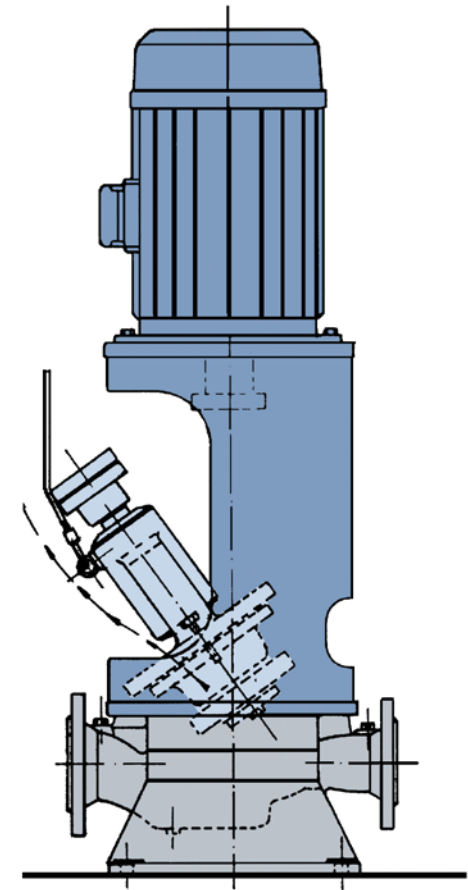
# Back pull-out system



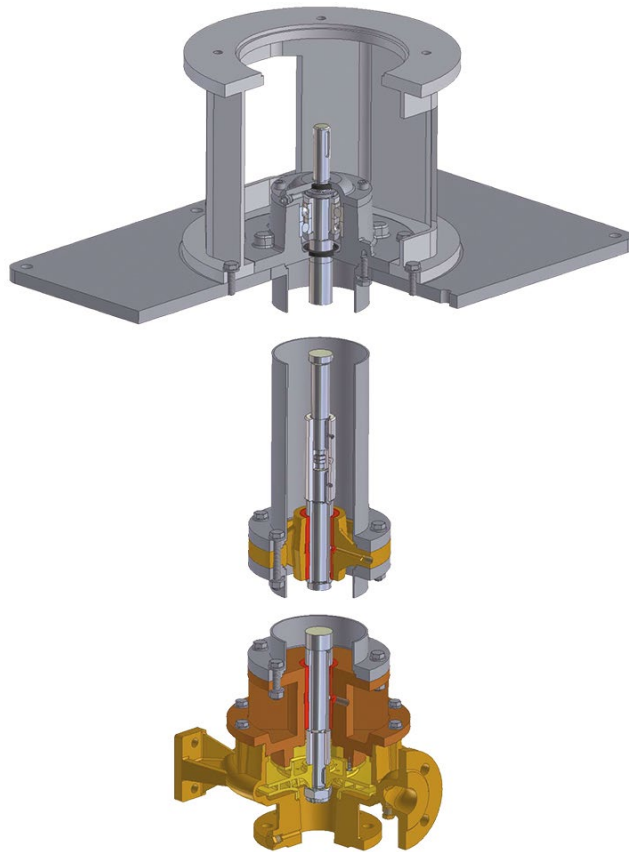
MU-LDS sequence



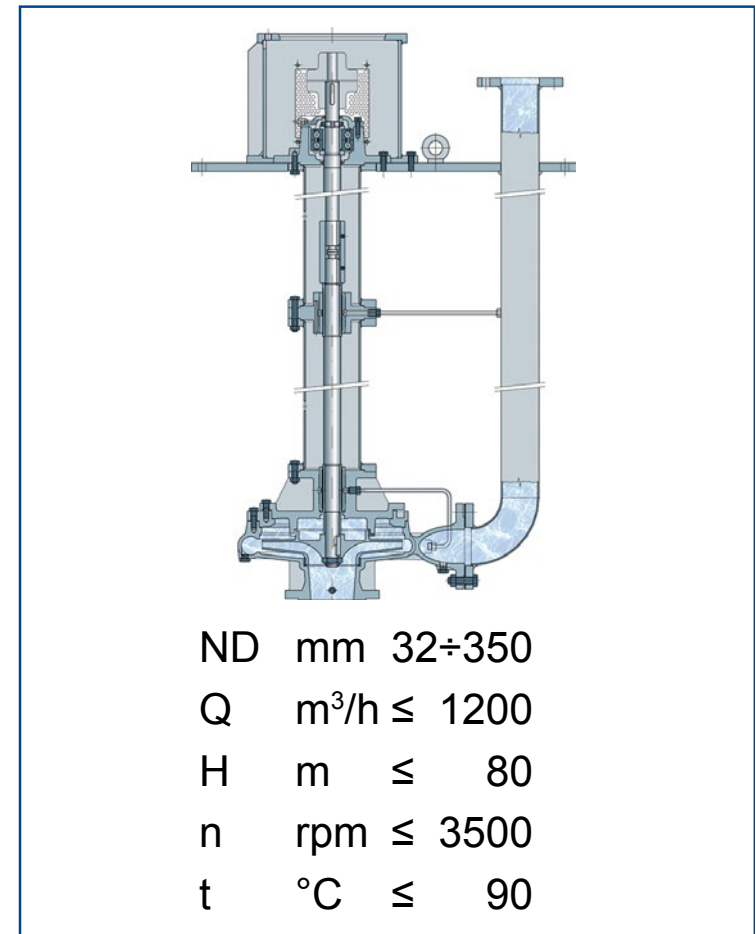
MU-L



## Vertically suspended line-shaft pump

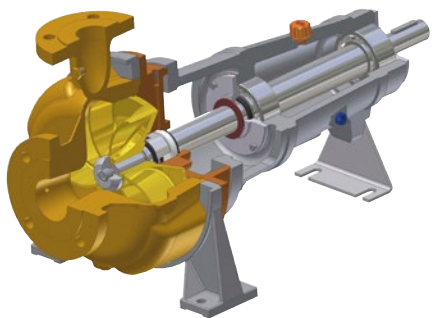


bare shaft version

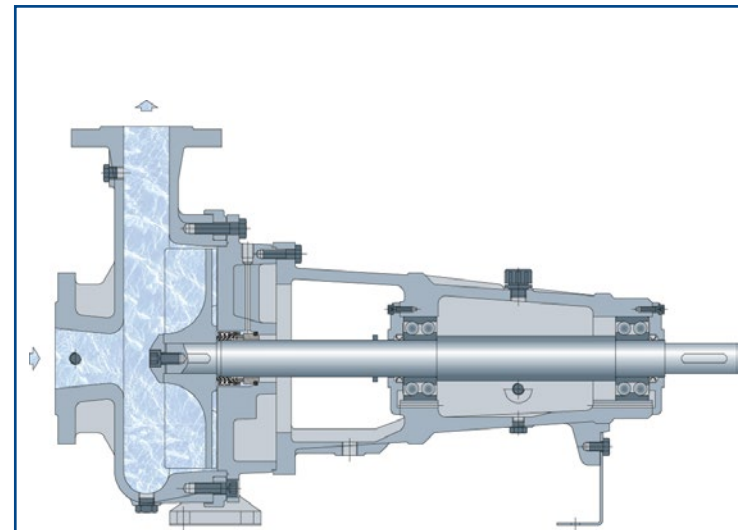




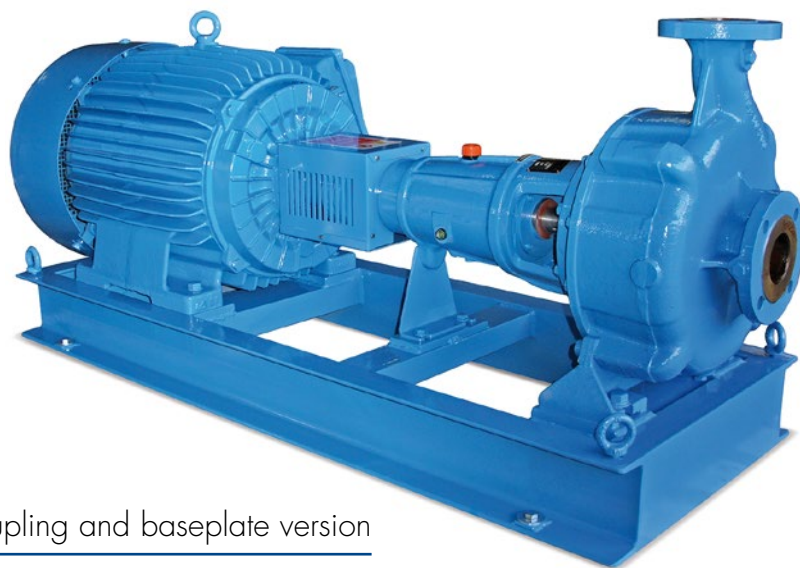
## Recessed impeller torque flow pump



bare shaft version



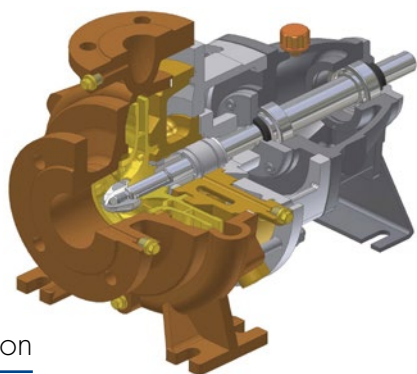
ND	mm	32÷150
Q	m <sup>3</sup> /h	≤ 500
H	m	≤ 80
n	rpm	≤ 3500
t	°C	≤ 150



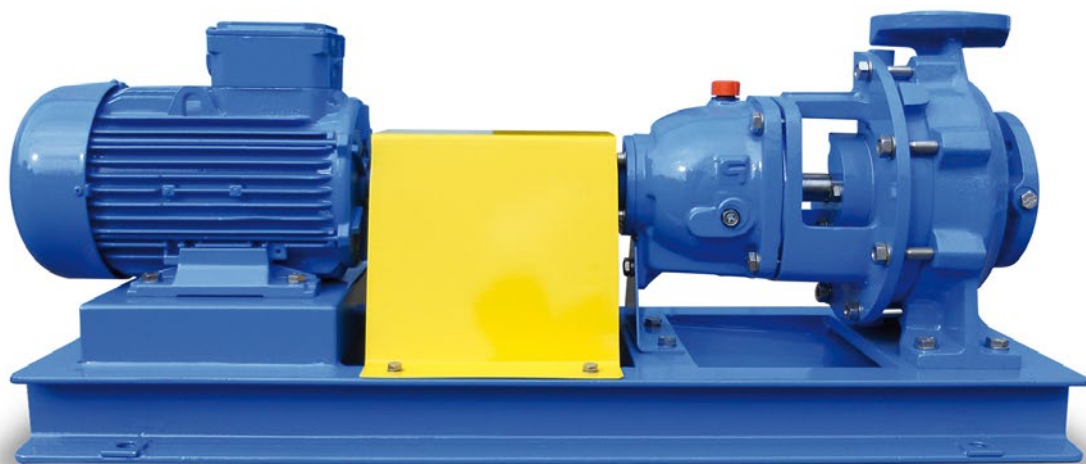
coupling and baseplate version

# Chemical pump

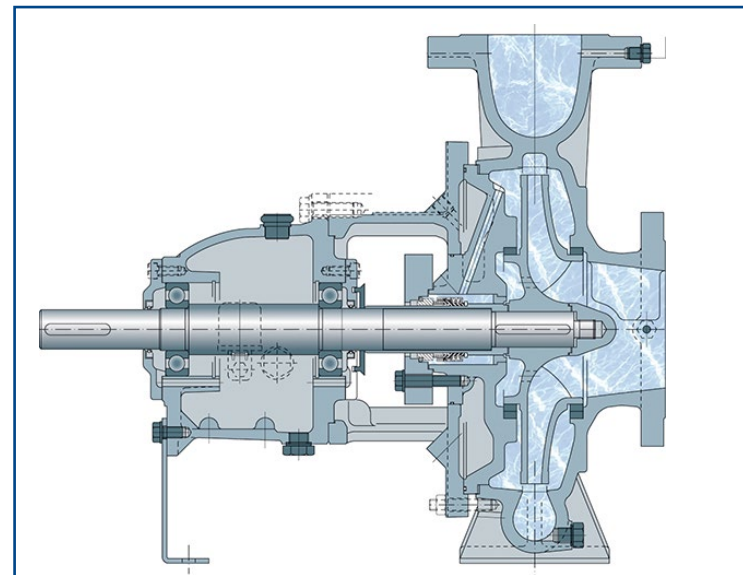
according to ISO 2858-5199



bare shaft version

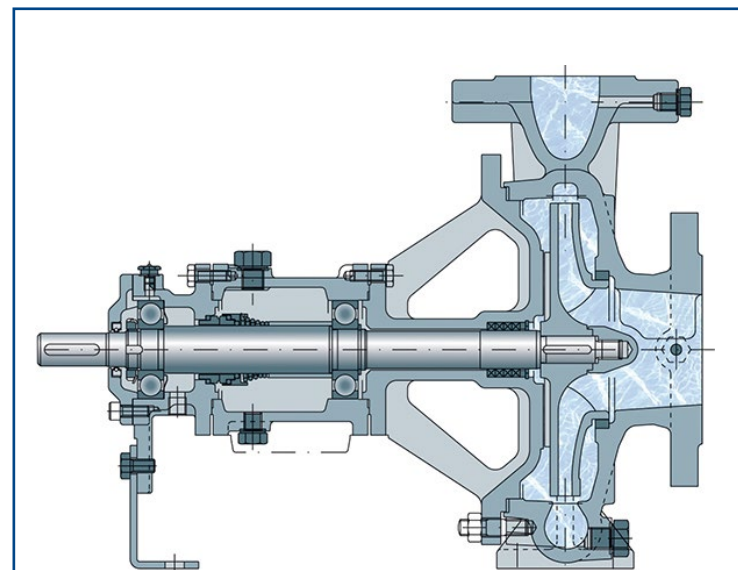
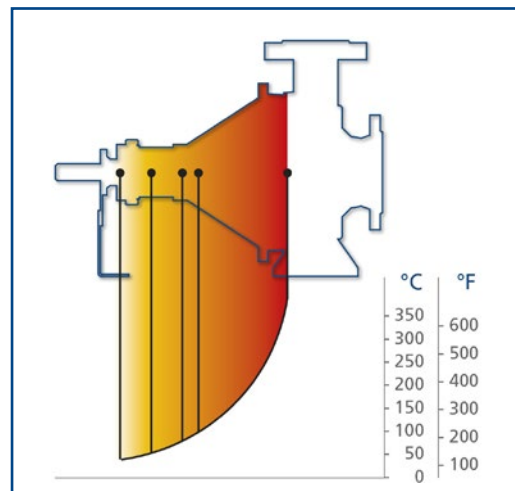


coupling and baseplate version



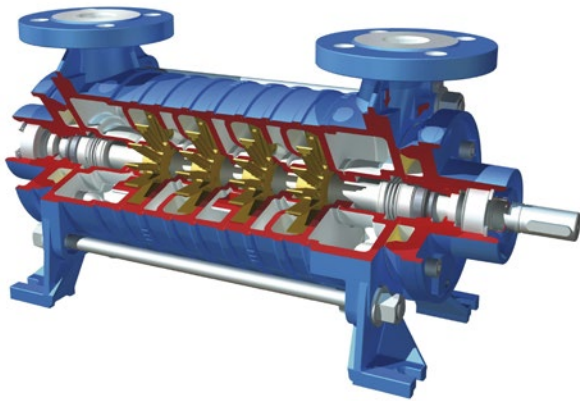
ND	mm	25÷150
Q	m <sup>3</sup> /h	≤ 400
H	m	≤ 150
n	rpm	≤ 3500
t	°C	≤ 350

# Diathermic oil circulation pump

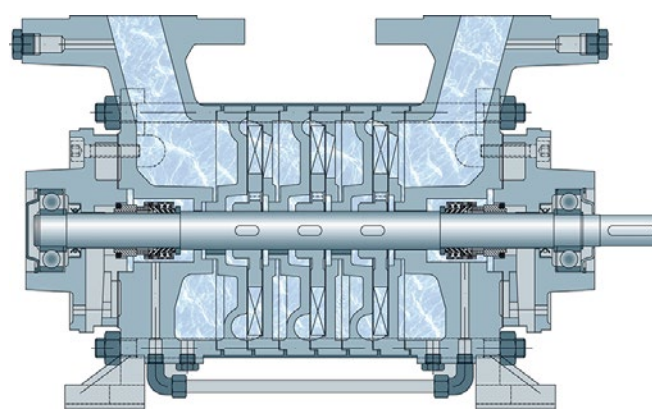


ND	mm	32÷100
Q	m <sup>3</sup> /h	≤ 350
H	m	≤ 100
n	rpm	≤ 3000
t	°C	≤ 350

# Side channel pump



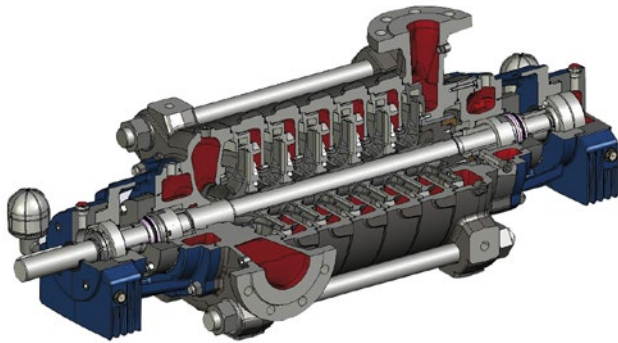
bare shaft version

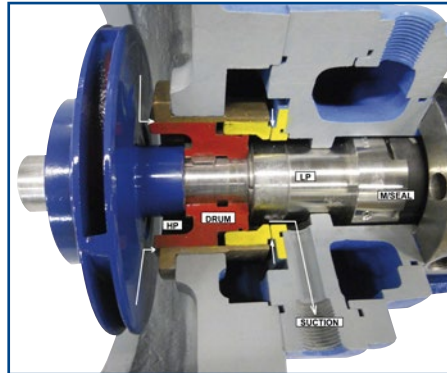
ND	mm	20÷65
Q	m <sup>3</sup> /h	≤ 40
H	m	≤ 300
n	rpm	≤ 1750
t	°C	≤ 160



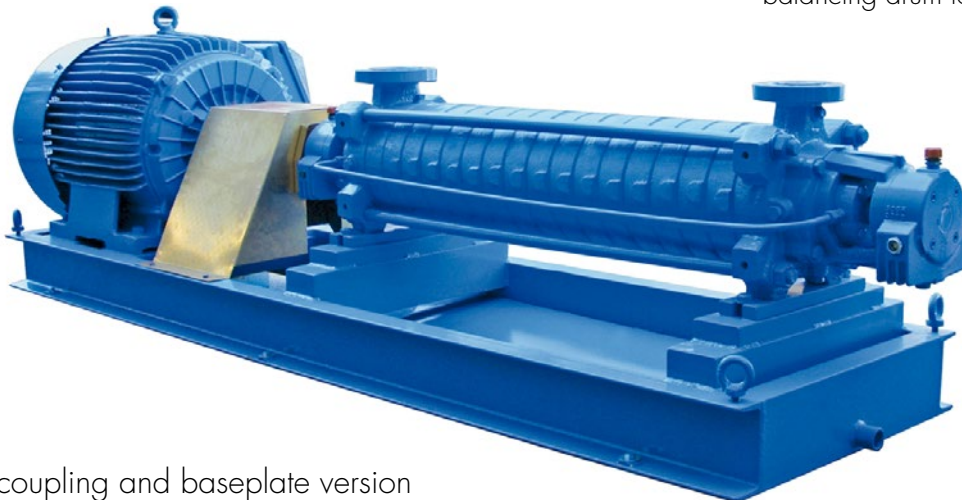
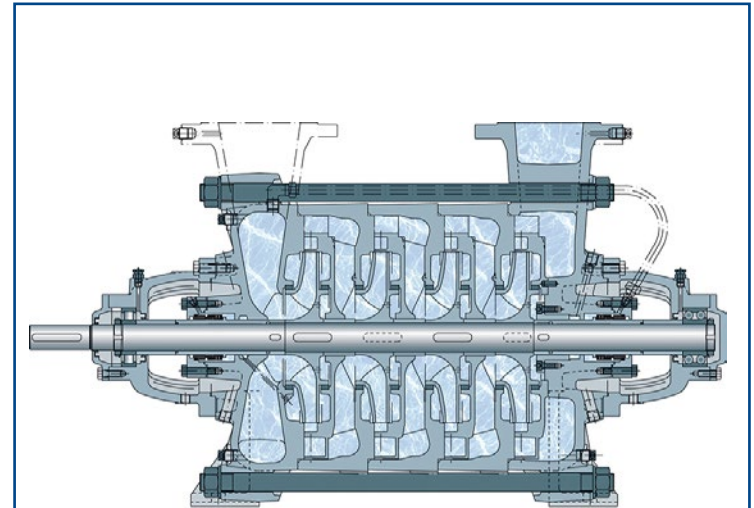
# Multistage high pressure pump



bare shaft version (GH)



patented throttling device in order to reduce the recirculation flow from balancing drum to suction

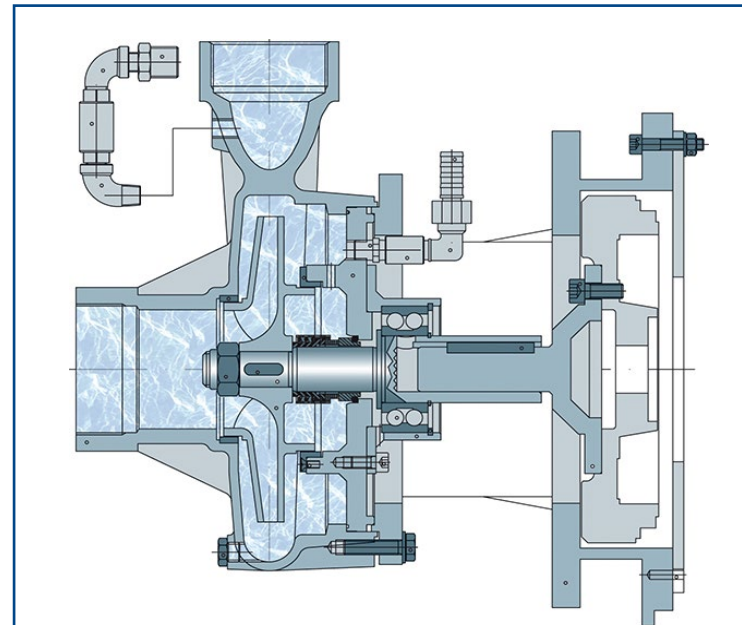


coupling and baseplate version

ND	mm	32÷200
Q	m <sup>3</sup> /h	≤ 600
H	m	≤ 850
n	rpm	≤ 3500
t	°C	≤ 200

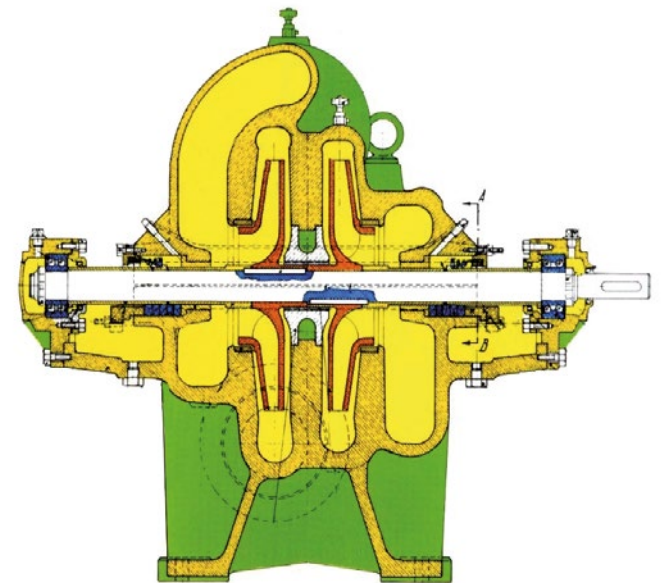
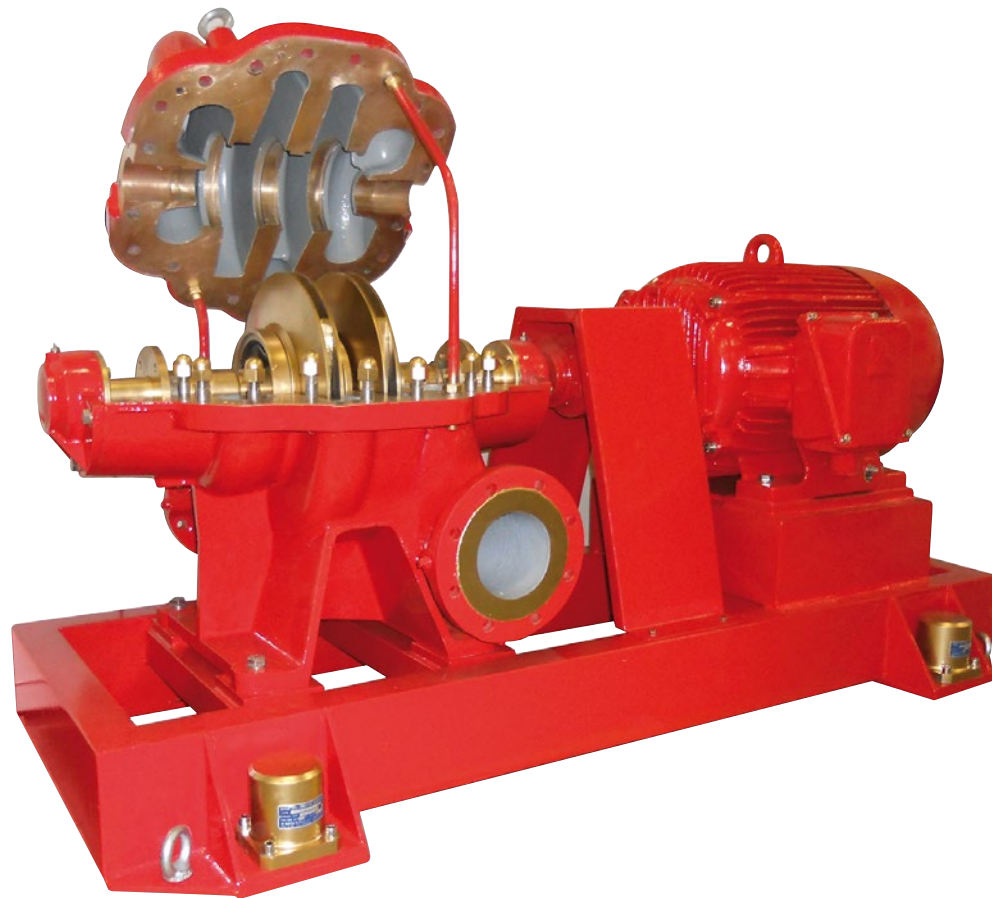


## Portable fire pump



ND	mm	70/UNI 810
Q	m <sup>3</sup> /h	≤ 45-100
H	m	≤ 80-30
n	rpm	3600
t	°C	≤ //

## Fire fighting naval pump

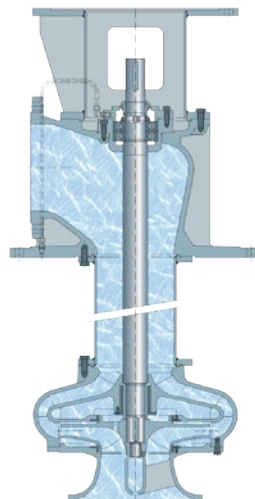


ND	mm	100÷125
Q	m <sup>3</sup> /h	≤ 65+130
H	m	≤ 100
n	rpm	≤ 1750
t	°C	≤ 160

## Main engine lubrication pump

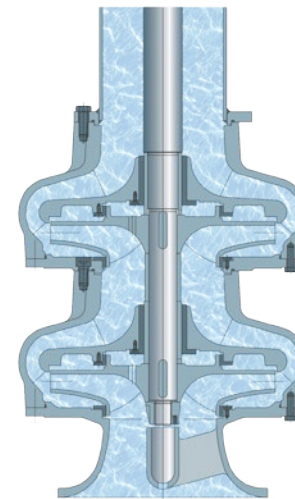


Single stage



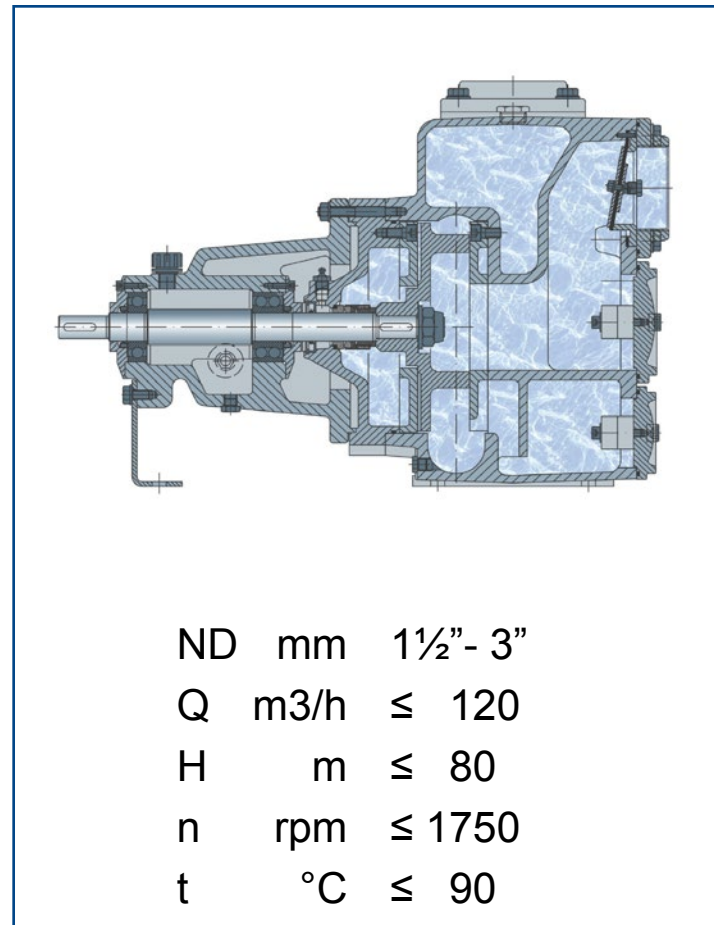
ND	mm		250
Q	m <sup>3</sup> /h	≤	550
H	m	≤	75
n	rpm	≤	1750
t	°C	≤	100

Double stage



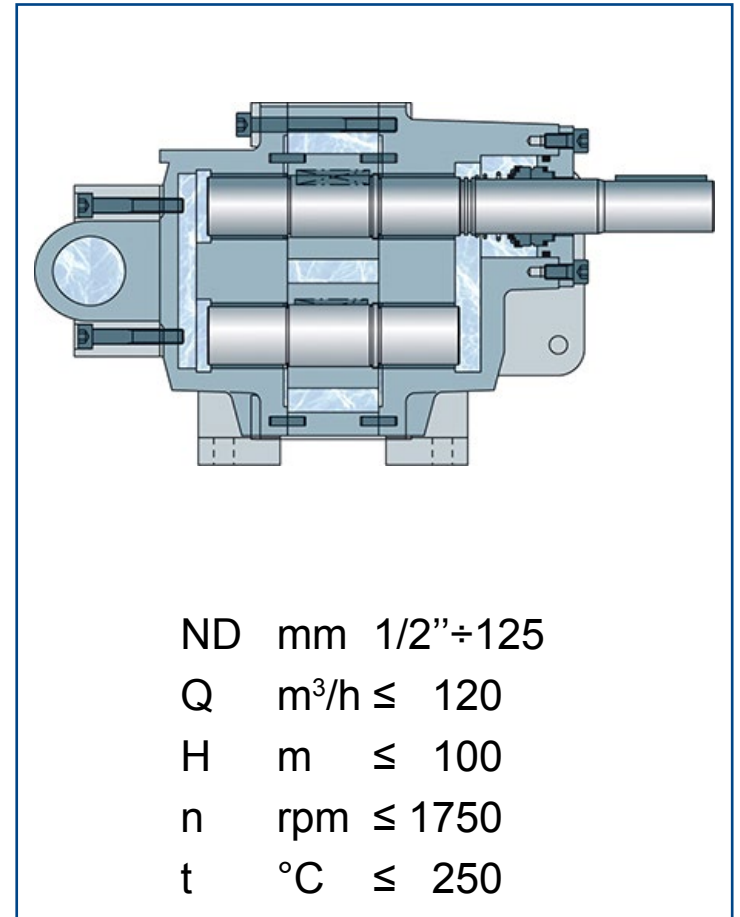
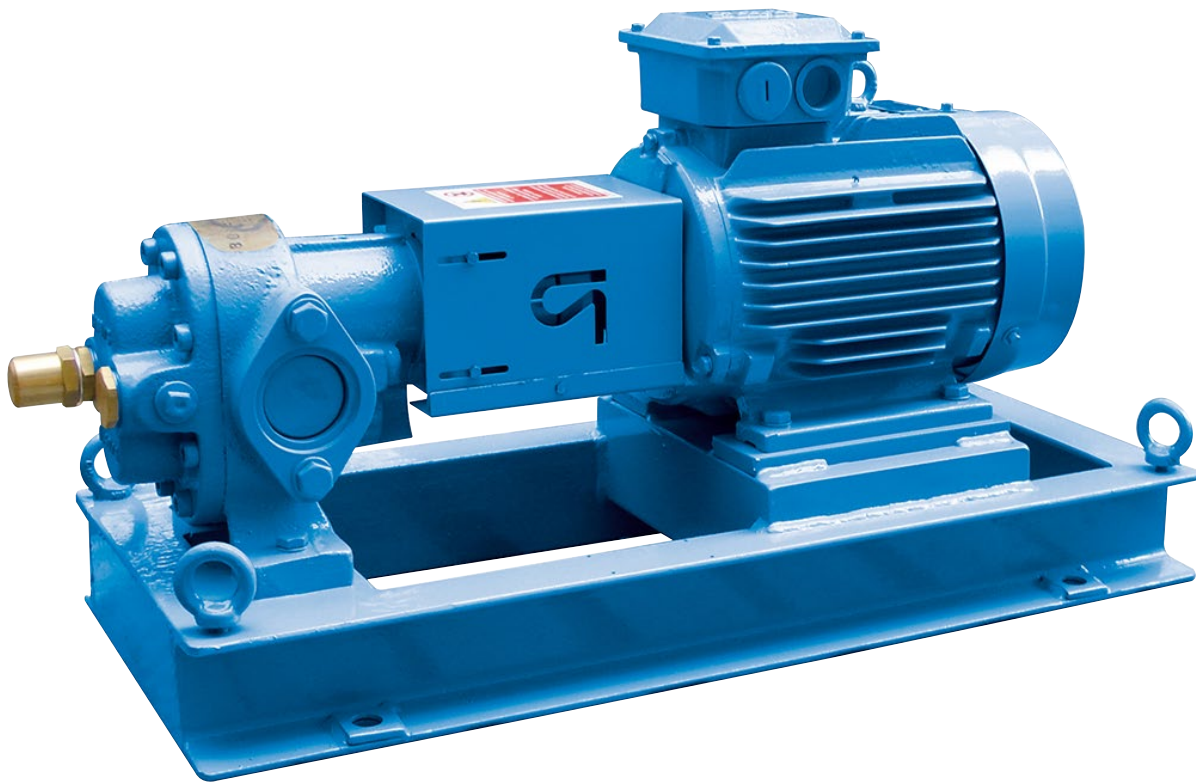
ND	mm		250
Q	m <sup>3</sup> /h	≤	550
H	m	≤	75
n	rpm	≤	1750
t	°C	≤	100

## Self-priming pumps with open impeller





## Gears pump



ND mm 1/2"÷125

Q m<sup>3</sup>/h ≤ 120

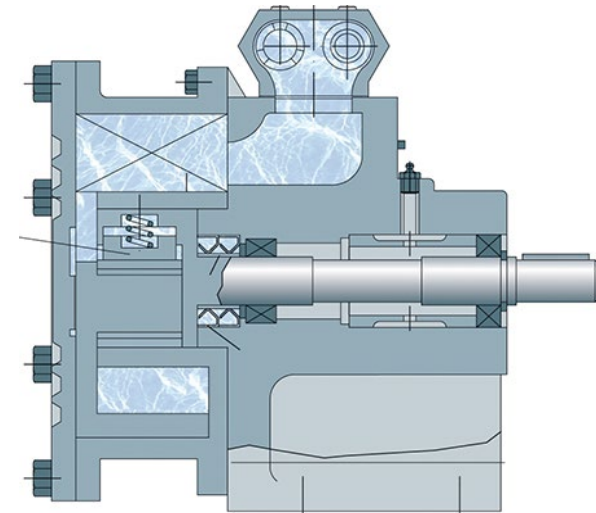
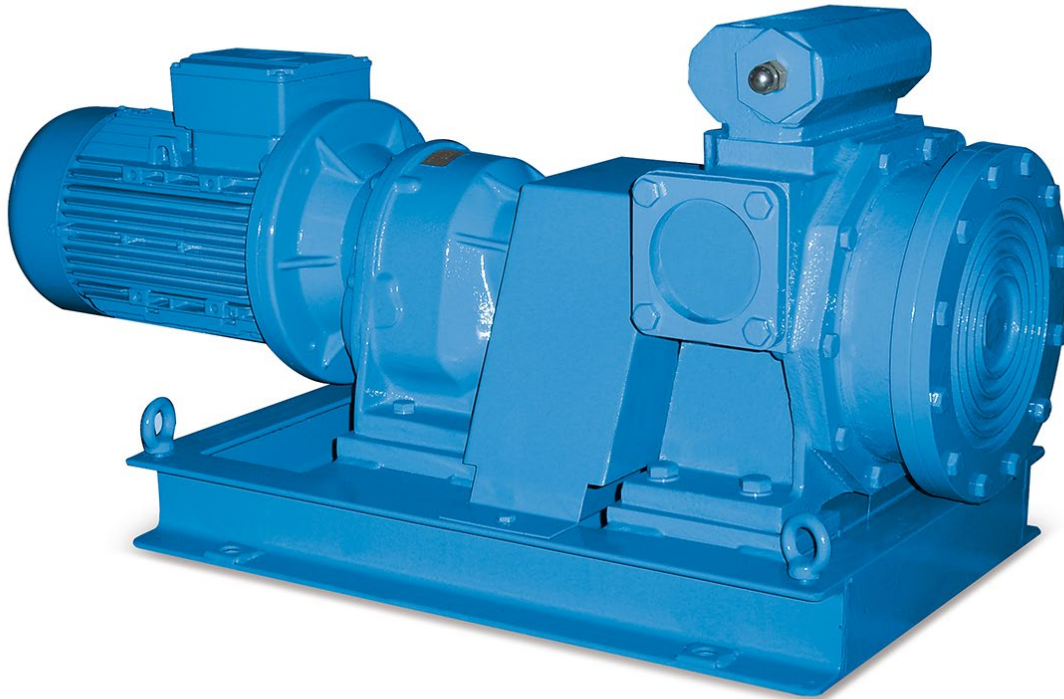
H m ≤ 100

n rpm ≤ 1750

t °C ≤ 250

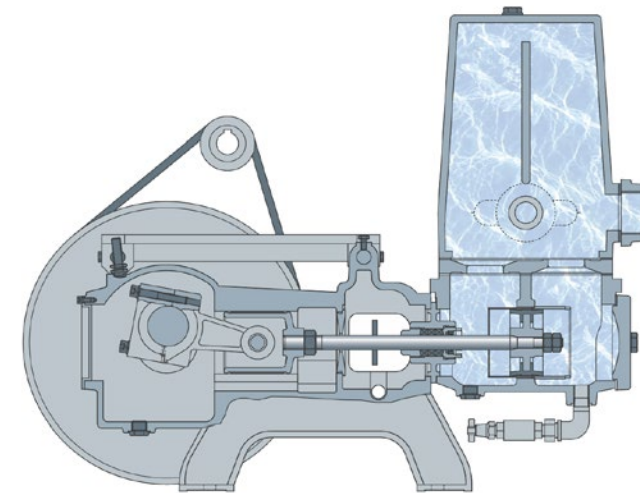
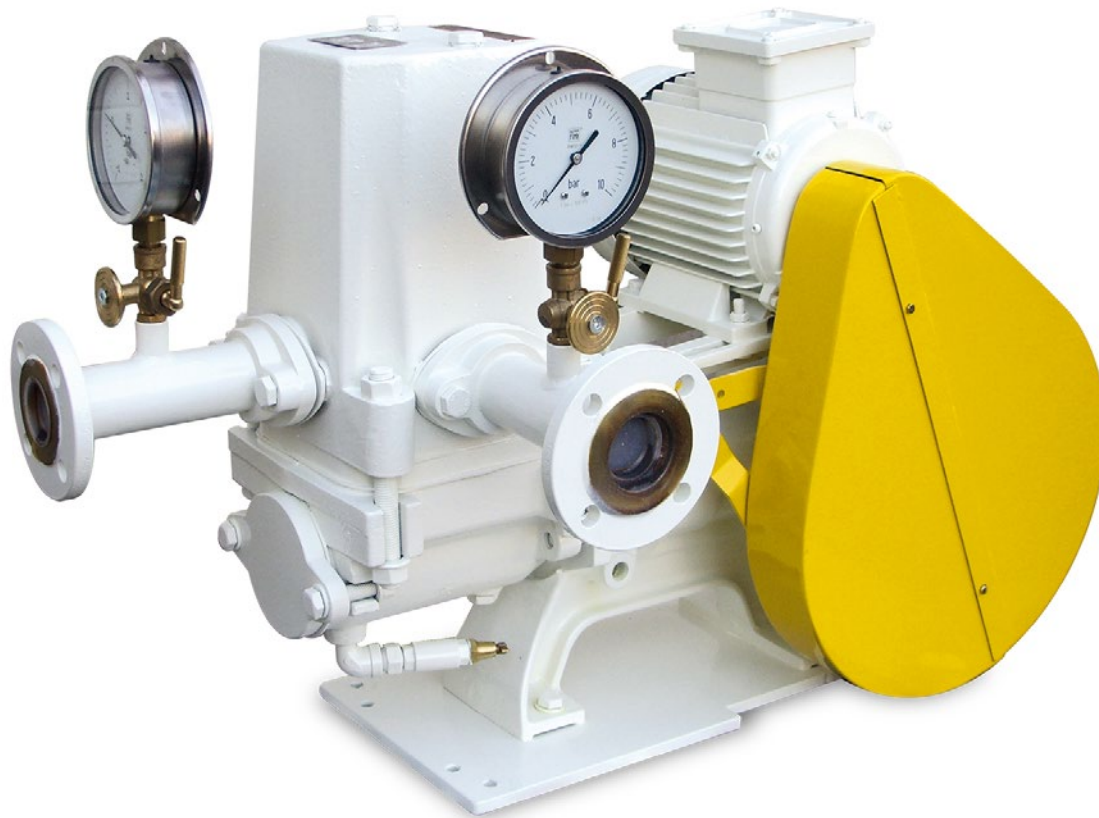


## Hollow oscillating disk pump



ND	mm		25÷100
Q	m <sup>3</sup> /h	≤	80
H	m	≤	80
n	rpm	≤	350
t	°C	≤	160

## Piston pump

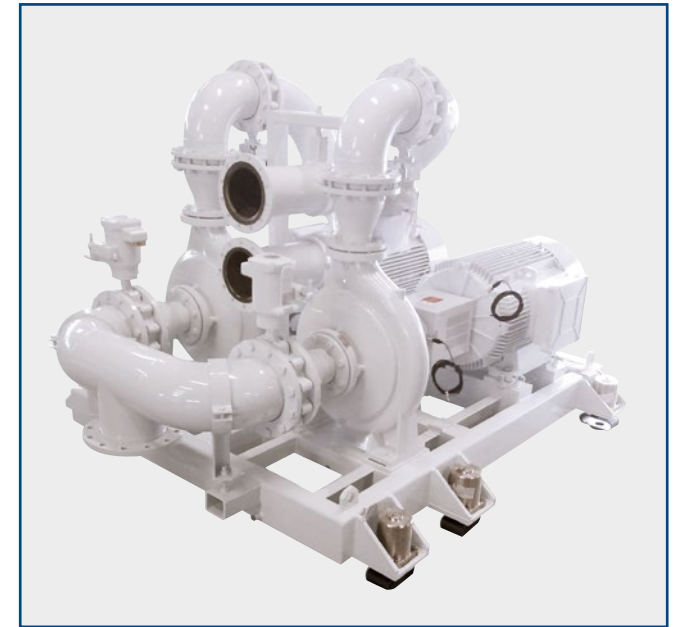
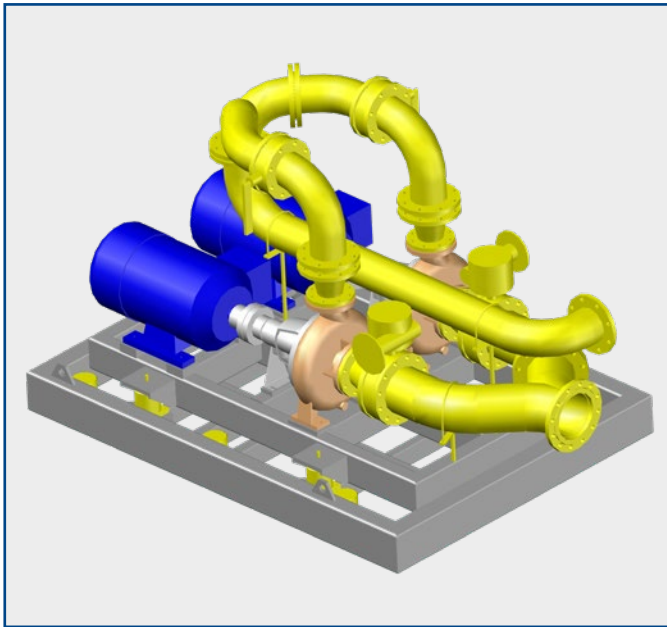


ND	=	G 1" 1/2
Q	m <sup>3</sup> /h ≤	5
H	m ≤	45
n	rpm ≤	1450/1750
t	°C ≤	60

## Quality Tests and Procedures

- Hydrostatic pressure testing to avoid leakage (1,5 nominal pressure - 30 mins minimum)
- Performance test at 3 working points:
  - *contractual working point*
  - *50% contractual working point*
  - *120% contractual working point*
- Bearings temperature control
- Vibration test (according to ISO 10816-1)
- Structural noise
- Wear components hardness test
- Chemical analysis/mechanical properties for casing, impeller and shaft
- Impeller balancing
- Shaft ultrasonic examination
- Magnetic particle examination
- Penetrant dye examination
- RX examination on welding piping
- Strip down test
- Motor test certificate
- Painting/Packing check
- Final documentation review

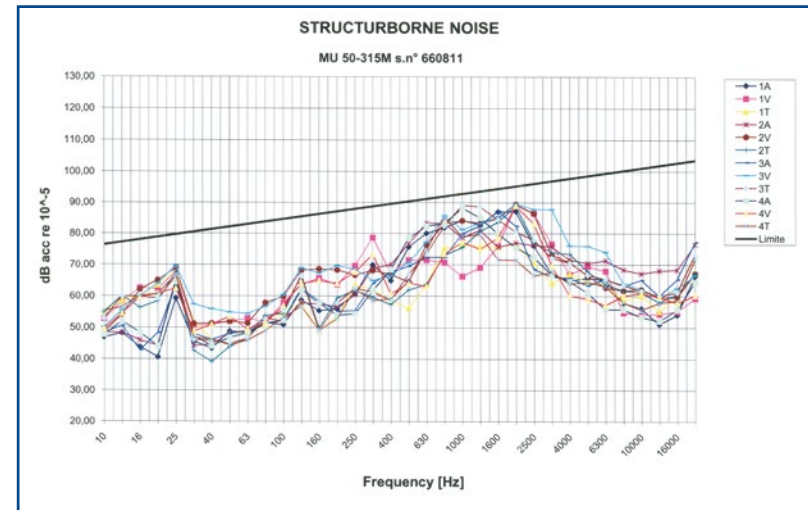
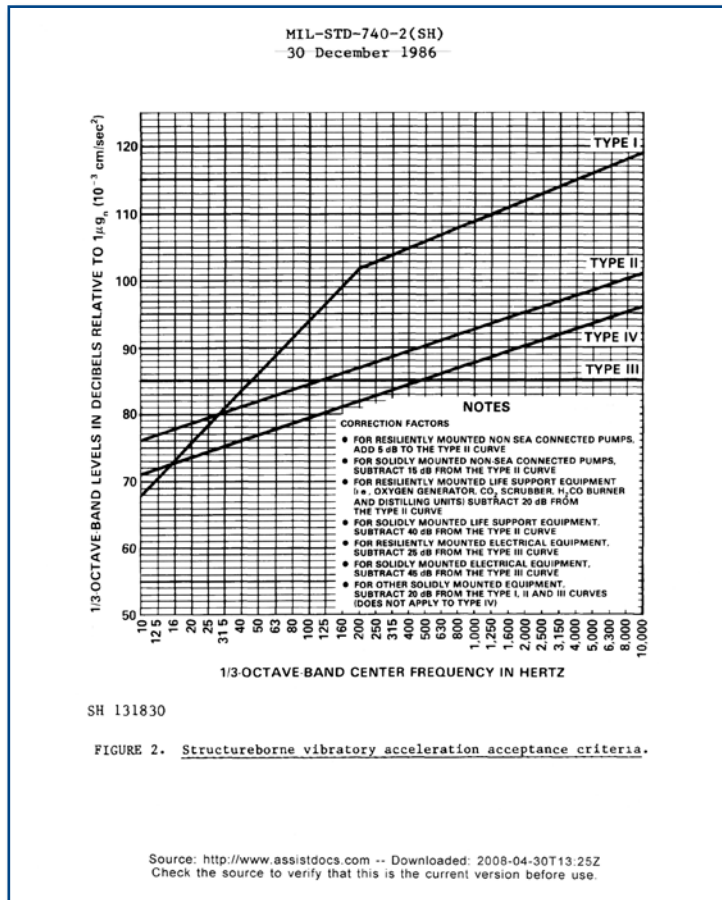
## Modules



*Air Conditioning Chilled - Water Module - Pump type MU 100-315*



# Vibration, Airborne, Strukturborne Noise Testing



# Materials





## Materials

- Cast Iron (Grey Cast Iron G25, Nodular Cast Iron GS400 and GS600, Ni-Resist Cast Iron)
- Bronze (Tin Bronze B10 And BZN4, Nickel-Aluminium Bronze ASTM B148-C95800)
- Martensitic Stainless Steel (AISI 410 – 420), Austenitic Stainless
- Steel (AISI 304, AISI 304 L, AISI 316 L, AISI 317 L)
- Duplex and Superduplex (ASTM A890 GR. 4a, 5a, CD4MCU)
- Special Alloys (Monel, Hastelloy, Alloy 20, Incoloy 825)

*Any other material combination can be supplied.*

# **Pompe Garbarino S.p.A.**

**90 years of experience**

**High quality standards**

**Easy maintenance**

**Customer oriented**

thanks for your attention

**[www.pompegarbarino.com](http://www.pompegarbarino.com)**