

APPLICATIONS

Crude oil transfert and boosting, hydrocarbons.
 Process liquids for refineries and petrochemical applications.
 Gas treatment, hot water and liquefied gas handling.

PUMP DESIGN

Vertical ring section multistage pumps, with radial flow impellers, with or without barrel. Inducer in option.
 Pump designed according to the latest edition API 610 standard and, on request, according to german TÜV regulation.

High pressure applications up to 120 bars.
 Modular concept allowing adaptation to any application.
 Pump length adaptable to available NPSH.
 Special suction impeller design with low required NPSH.
 Easy installation and dismantling due to independant mounting plate from pump head.

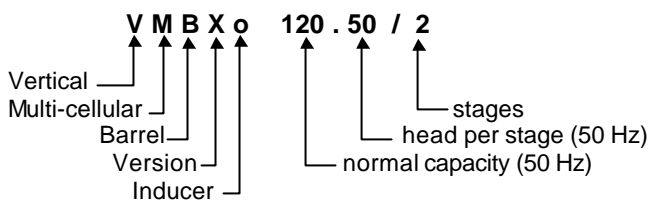
OPERATING DATA (50 Hz)

DN (discharge)	mm	50 to 200
	inches	2 to 8
Capacity	m ³ /h	up to 290
	USgpm	" 1280
TDH (head)	m	up to 1200
	ft	" 39400
Discharge pressure	bar	up to 120
	Psi	" 1700
Temperature (standard)	°C	-100 to +200
	°F	-150 to +390

Also designed for 60 Hz. On request, design adaptation for temperature up to 300°C (570°F).

DESIGNATION

VMX : without barrel
 VMBX : with barrel



MATERIAL

- According to API 610 last edition : S1, S4, S5, S6, C6, LCB, A8
- Specific construction for cryogenic applications

SHAFT SEAL

Mechanical seals or packed glands

BEARINGS

Radial : sleeves liquid lubricated
 Thrust : ball bearing, oil lubricated

DRIVE

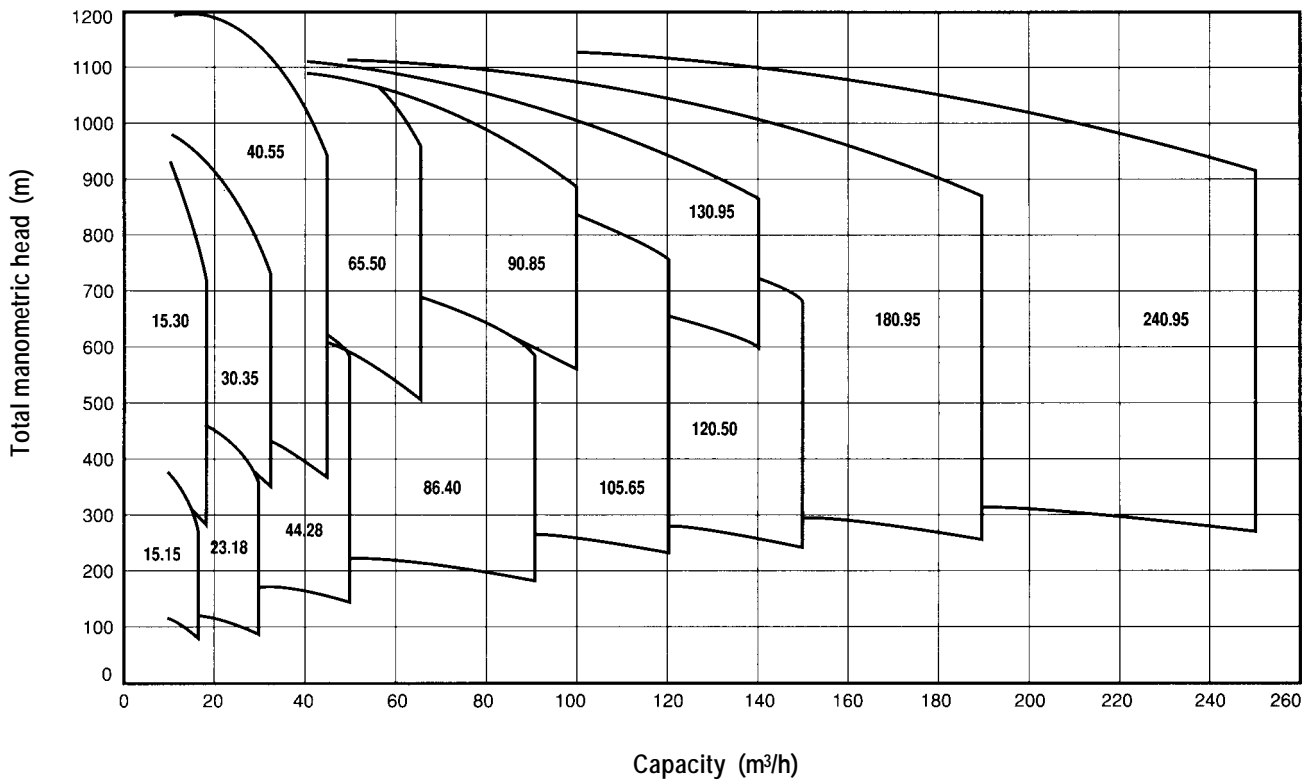
By standard electrical motors.

Multistage vertical pump

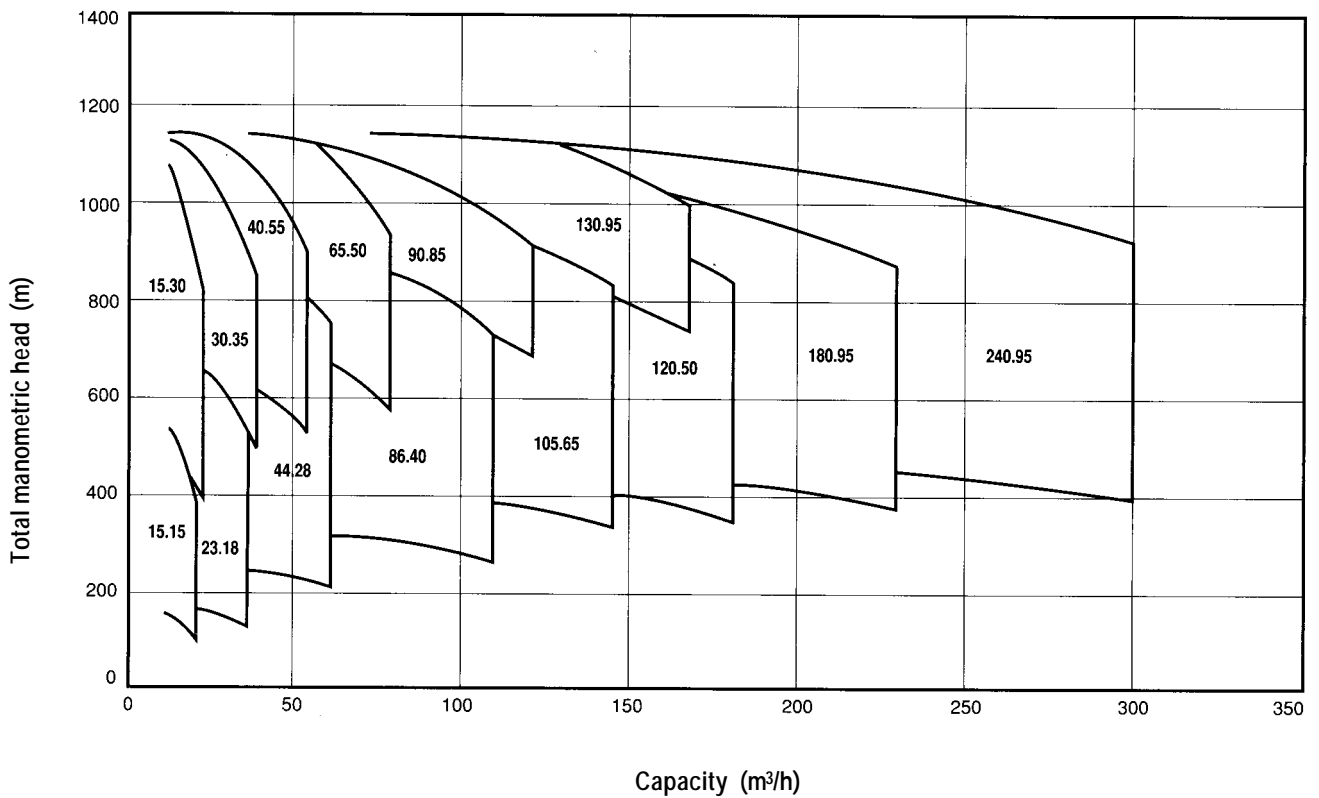
API 610
TÜV



HYDRAULIC CHARACTERISTICS - 50 Hz - 3000 rpm



HYDRAULIC CHARACTERISTICS - 60 Hz - 3600 rpm



A FULL RANGE OF PUMPS

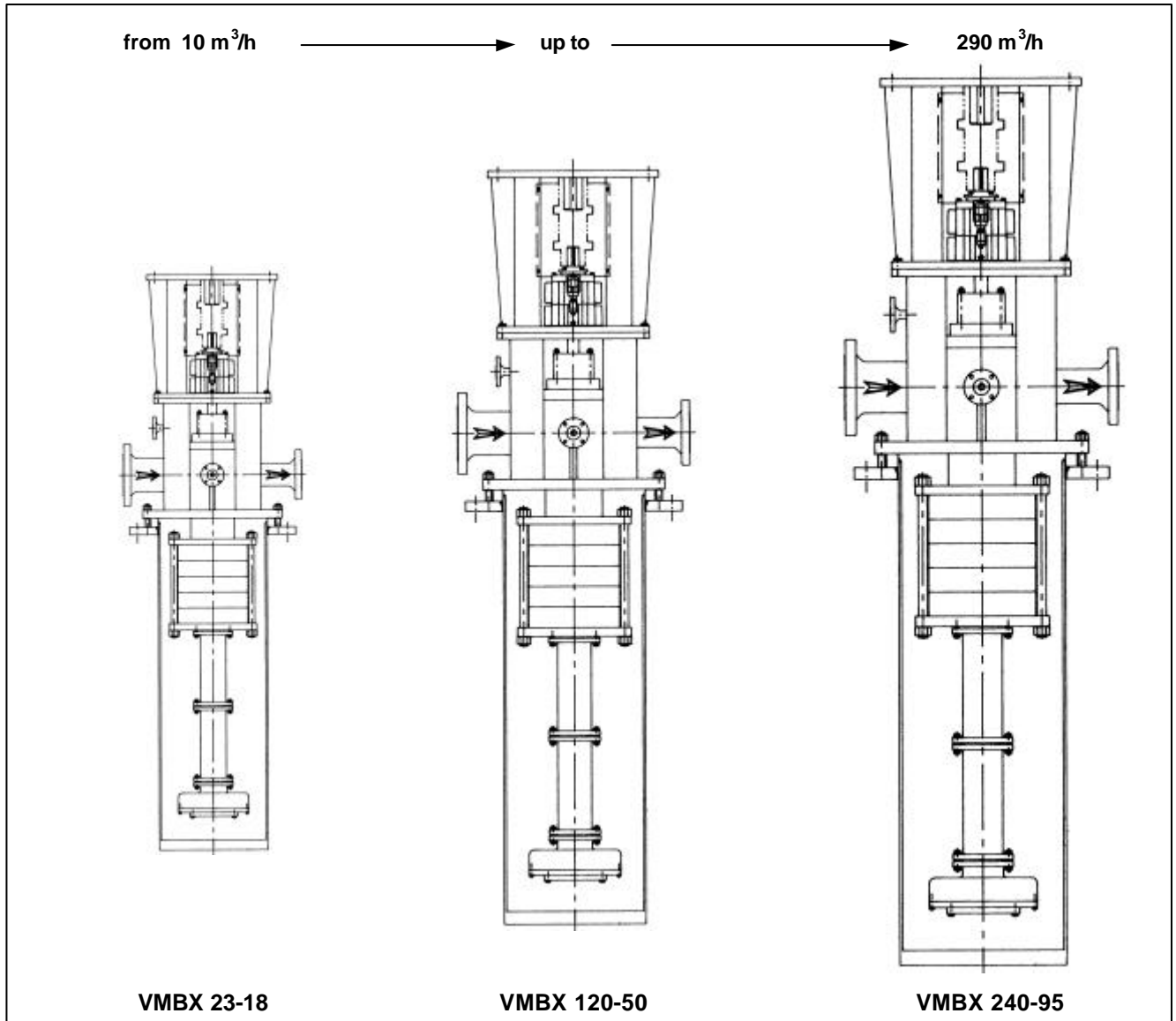
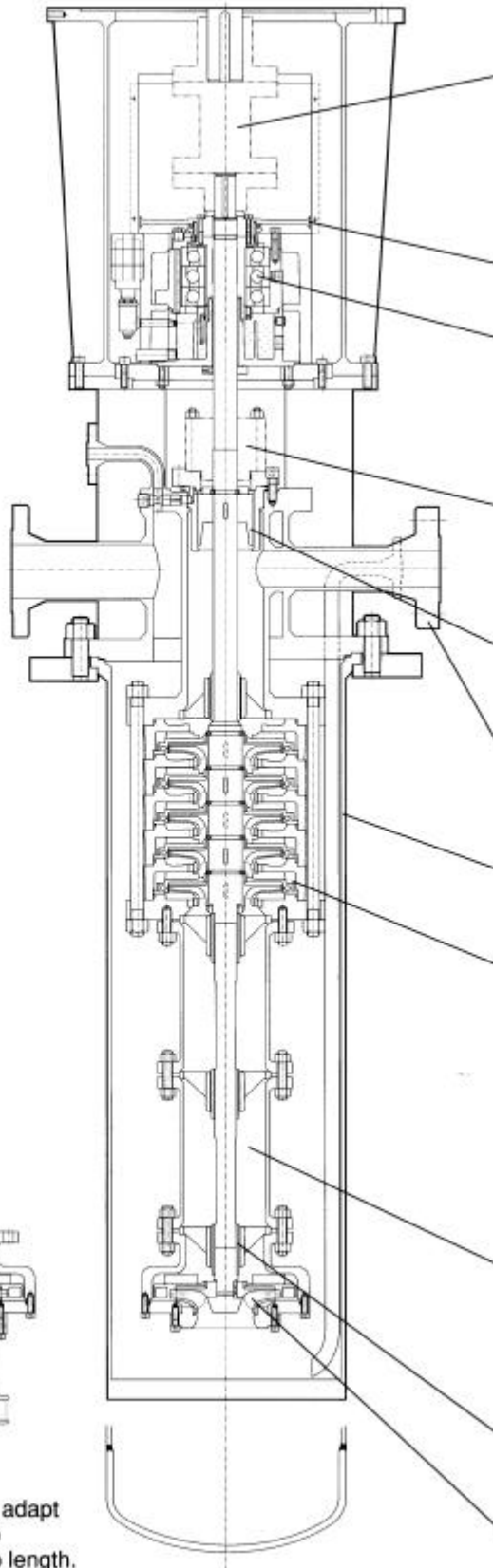


TABLE OF MATERIAL*

Pump Components	API Class	S1	S4	S5	S6 C6	LCB	A8		
							Stanal	Stellite	Cryogenics
Pump head casing		A 516 Gr. 60				A 662 Gr. A	A 276 Gr. 316L		
Barrel		A 516 Gr. 60				A 662 Gr. A	A 276 Gr. 316L		
HYDRAULIC PART	Stage casing	A 48 Cl. 45		A 352 LCB			A 351 CF8M		
	Diffuser	A 48 Cl. 35		A 352 LCB	A 743 CA6NM	A 352 LCB	A 743 CF8M		
	Stage impeller	A 48 Cl. 35		A 352 LCB	A 743 CA6NM	A 352 LCB	A 743 CF8M		
	Tie-bolt	A 193 Gr. B7 (screw) + A 194 Gr. 2H (nut)					A 193 Gr. B8M (screw) + A 194 Gr. 8M (nut)		
Main bolting	A 193 Gr. B7 (screw) + A 194 Gr. 2H (nut)								
Pump shaft		A 276 Gr. 420					A 276 S31803		A 638 Gr. 660
Intermediate shaft		A 322 Gr. 4142					A 276 Gr. 316		
SUCTION PART	Suction casing	A 48 Cl. 35					A 351 CF8M		
	Diffuser	A 48 Cl. 35		A 352 LCB	A 743 CA6NM	A 352 LCB	A 743 CF8M		
	Suction impeller	A 48 Cl. 35		A 352 LCB	A 743 CA6NM	A 352 LCB	A 743 CF8M		
	Inducer	A 182 Gr. F316L							
Impeller wear ring		A 276 Gr. 420					A 276 Gr. 316		B 584/C 90500
Casing wear ring		A 276 Gr. 420					A 276 Gr. 316		B 584/C 90500
Column pipe		A 106 Gr. B					A 276 Gr. 316L		

* ASTM codes

**DESIGN ADVANTAGES
OPERATIONAL BENEFITS**



COUPLING
Metallic diaphragm coupling allows accurate alignment with minimum maintenance
A spacer allows the removal of coupling, bearing and seal without disturbing the driver, nor the suction and discharge piping

PROPELLER FAN

HEAD BEARING
Steel casted oil lubricated thrust bearing housing with a triple range of angular contact ball bearings
Self-cooled and protected against dust
An easy access to the rotor positioning device

SHAFT SEAL
The sealing chamber is designed in accordance with the latest API 610 issue. Packing or mechanical seals are available to suit operating conditions

BALANCING DRUM
Used to balance the hydraulic axial force when required

DISCHARGE HEAD
Discharge head with in-line nozzle position
Flange and flange facing to suit pipework specifications

BARREL
Equipped with drain piping

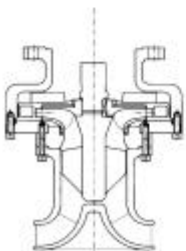
HYDRAULIC PACKAGE

- Supported by largely sized radial bearings
- Directly fixed to the pump head to increase the stiffness of the whole pump assembly
- Only the first impeller is located at the necessary suction level
- Each impeller is secured on the single pump shaft against circumferential and axial displacement
- Impellers with low Ns value ensure a reduced number of stages

TRANSMISSION
Modular transmission parts are provided with a standard length of 500 or 1000 mm
The spacing between shaft guide bearings meets API 610 requirements

INTERMEDIATE BEARING
Guide-bearing flushed by pumped liquid under 2nd stage pressure

SUCTION IMPELLER
Special hydraulic design to reduce required NPSH



INDUCER
Possibility to adapt an inducer to reduce pump length.