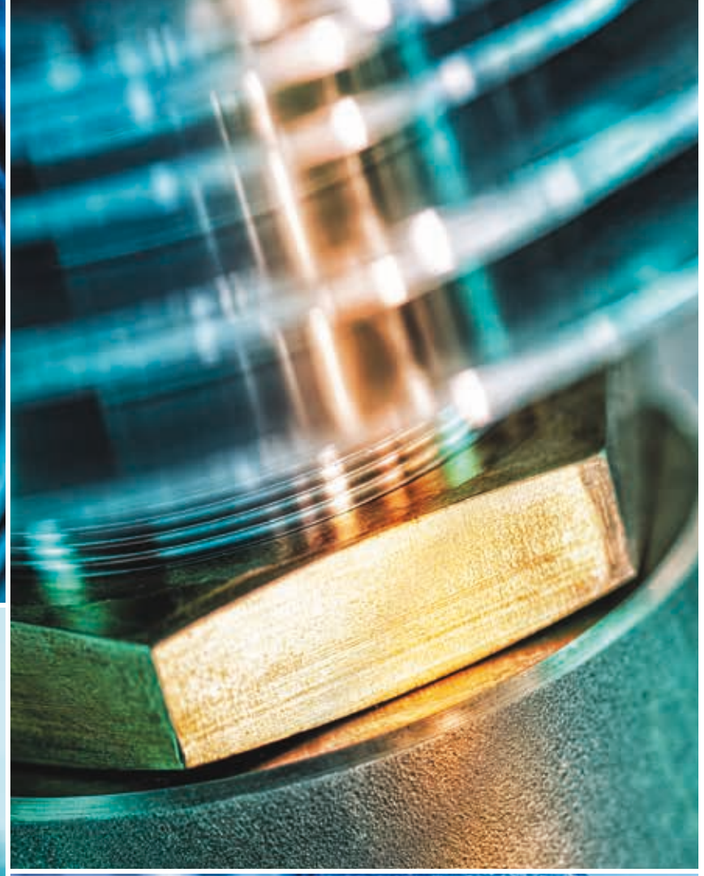
VANZETTI CRYOGENIC TECHNOLOGY

VANZETTI CRYOGENIC TECHNOLOGY

Via dei Mestieri, 3 – Località Pedaggera
CAP 12030 Cavallerleone (CN) – ITALY
Tel. (+39) 0172 915811 – Fax (+39) 0172 915822
info@vanzettiengineering.com
www.vanzettiengineering.com



"Be a bush if you can't be a tree.
If you can't be a highway, just be a trail.
If you can't be a sun, be a star.
For it isn't by size that you win or fail.
Be the best of whatever you are."

Martin Luther King Jr.

OVER 30 YEARS OF HISTORY

Established in 1984, Vanzetti Engineering is active in the design and construction of cryogenic equipment for LNG and air gases.

Thanks to constant growth and practical experience, to the continued updating of the skills and resources, and to the evolution of production systems, Vanzetti Engineering has reached important milestones on its road towards continuous improvement and global success.

Opened in 2015, its new plant houses its cryogenic pump and skid production processing departments, and allows for a considerable increase in the company's production capacity. Today, Vanzetti Engineering is a recognised cryogenic pumps and systems supplier for many major LNG and air gases based projects, and is among the key contributors to the development and success of these industries.

Currently Vanzetti Engineering can offer a complete range of cryogenic pumps and components for the following applications:

- Fuel systems for low/high pressure marine engines, bunkering, stripping and spray
- LNG/L-CNG refuelling stations
- LNG loading/unloading from road trailers and stationary storage tanks
- Industrial satellites, back-up and peak-shaving plants, pipeline feeding, power generation
- High pressure inert gases and oxygen cylinders filling for different industrial purposes

Modularity, flexibility and simple installation are the main successful features of Vanzetti Engineering cryogenic components.

HIGH PERFORMANCE GUARANTEED

With innovation always in mind, our time, resources and energy are totally devoted to seek better solutions in order to guarantee the superior quality and performance of our products.

CERTIFIED QUALITY

CERTIFIED QUALITY IN COMPLIANCE WITH INTERNATIONAL STANDARDS

Technical efficiency combined with the core values of the company

The entire Vanzetti Engineering production process is characterised by high level of quality, measured starting from customer satisfaction. Over the years, the company has achieved a number of awards and certifications to ensure the reliability of cryogenic pumps an components manufactured in compliance with mandatory and voluntary standards.

Rigours applications of the Quality Management System enables full traceability of every implementation phase: from design to construction, from verification to testing of every single item produced in our plants.

We operate in full conformity to the following standards in force at national, European and international level:

- UNI ISO 9001 Quality Management System
- European PED
- European Machinery Directive
- European ATEX Directive
- Technical Rules of the Customs Union (EAC)
- EIGA/IGC/CGA guidelines
- Marine Class Certifications: BV, DNV, ABS, RINA, LR, CCS, NK, KR, RMRS

RIDE THE WAVE

Of the LNG marine expansion

INNOVATION RULES THE WAVES

Submerged and reciprocating cryogenic pumps for the Marine field

Conducting research and development and boasting expert knowledge in cryogenic applications, Vanzetti Engineering has been working on Liquefied Natural Gas for the marine field since 2006.
Today the company is one of the most successful players in low-pressure LNG Fuel Gas Systems for Marine applications.
In recent years, the company has also approached high-pressure LNG Fuel Gas Systems applications, aiming to become one of the market leaders in this domain as well.
Innovative technologies and continuous research are the main pillars that distinguish our submerged pumps ARTIKA Series and reciprocating pumps VT-3 Series.

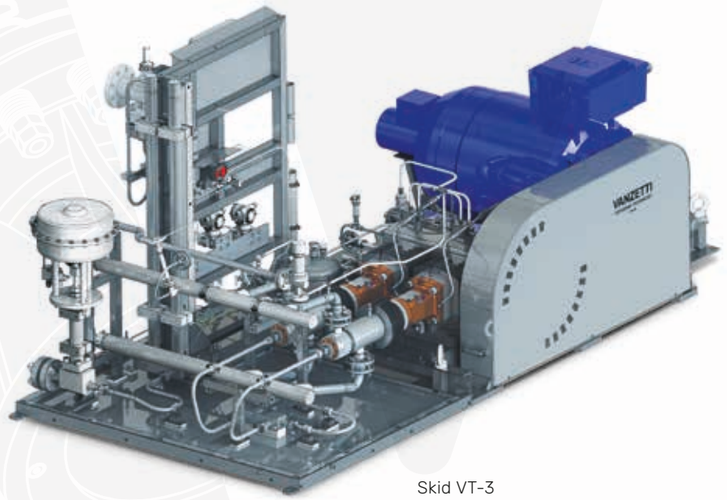
The company has reliable solutions in its portfolio to meet any applications requirement in the Marine field:

- Low pressure (10/20 bar) Fuel Gas Systems pumps (ARTIKA Series)
- High pressure (up to 420 bar) Fuel Gas Systems pumps (VT-3 Series)
- Stripping and Spray pumps
- Booster pumps (up to 55 bar)
- Ship to Ship Bunkering pumps
- Cargo pumps
- Floating Storage Regasification Units (FSRU) pumps

Submerged pumps ARTIKA Series can be installed at the bottom of the tank or inside the vacuum insulated sumps installed at the foot of the LNG tanks, depending on customer requirements. In both cases, the seal-less concept, with bearings permanently lubricated by LNG, allows a permanent cold condition for:

- Quick and efficient start and stop operations
- Extremely low maintenance need

Reciprocating pumps VT-3 Series can be supplied in simplex, duplex or triplex versions depending on the required flow rate, with a maximum pressure of 420 bar. These pumps can be assembled on skids class approved, with all the accessories such as sensors, instruments and valves for a safe and reliable pump control.

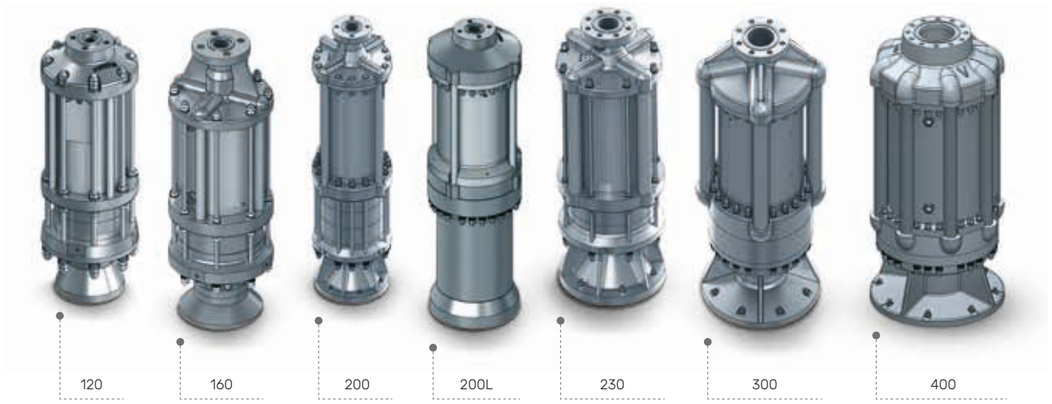


Skid VT-3

CRYOGENIC SUBMERGED PUMPS

ARTIKA SERIES

FOR LIQUEFIED NATURAL GAS (LNG)



TECHNICAL FEATURES

- Available in 1 stage or multistages configurations (2, 3, 4 or 6)
- Helical inducer to minimize NPSH requested
- Designed to work submerged in a cryostat/sump or in cryogenic tank
- Integrated motor to be used with inverter/VFD
- Low maintenance due to the absence of elements subject to wear and the continuous LNG lubrication
- Reduced noise (<80 dB)
- Suitable for both continuous and discontinuous use

APPLICATIONS

- Low pressure (10/20 bar) marine engine fuel gas systems
- Stripping and spray applications
- Booster
- Ship to ship bunkering
- Cargo, FSRU, FSU

OPTIONAL ACCESSORIES

- Cryostat/sump equipped with safety valves, liquid and gas drain valves and other accessories
- Double feed through electrical connector barrier
- Mounting bracket for in-tank installations
- Internal cryogenic power cables
- External power cables
- Leakage detection on feed through accessories
- Junction box

TEST AND CHECKS

- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

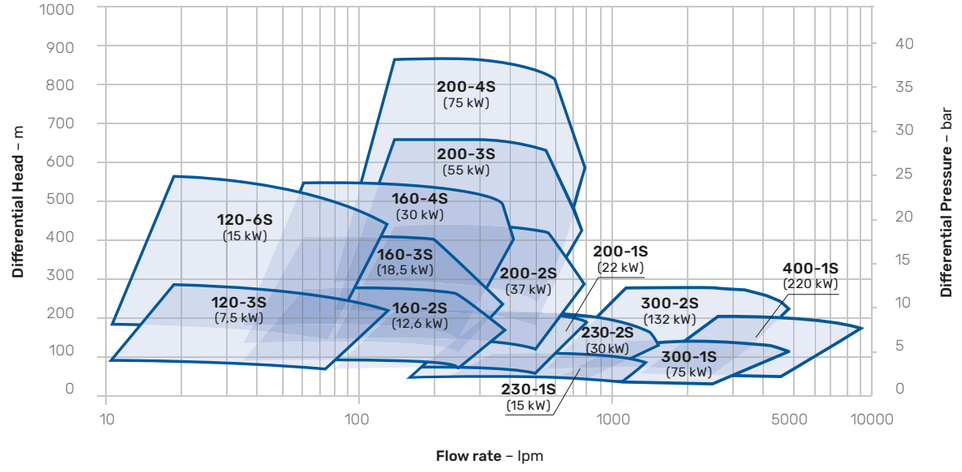
- European Directive Machinery
- European Directive ATEX
- Marine Class Certifications: BV, DNV, ABS, RINA, LR, CCS, NK, KR, RMRS

ARTIKA SERIES PERFORMANCES

Model	N° of stages	Power installed Pm [kW]	Max operating speed rpm	Max frequency F [Hz]	Flow rate min-max (*) Q [lpm]	Max differential Head DH [m]	Maximum allowable working pressure MAWP [bar]	Weight W [kg]
ARTIKA 120	**3S**	7,5	6900	122	10 – 120	285	30	45
	6S	15	6900	122	10 – 120	570	30	55
ARTIKA 160	**2S**	12,6	5835	104	40 – 420	270	15	60
	3S	18,5	5820	104	40 – 420	405	22	75
	4S	22 – 30	5845 – 5790	104	40 – 420	540	30	80 – 100
ARTIKA 200	**1S**	22	6015	104	80 – 880	215	30	135
	2S	30 – 37	6015	104	80 – 880	430	30	135 – 160
	3S	55	6035	104	80 – 880	645	35	180
	4S	60 – 75	5985 – 5990	104	80 – 880	860	40	190 – 235
ARTIKA 230	**1S**	15	3665	63	130 – 1450	105	15	140
	2S	30	3650	63	130 – 1450	210	15	175
ARTIKA 300	**1S**	75	3000	51	550 – 5000	135	15	590
	2S	132	3000	51	550 – 5000	270	15	785
ARTIKA 400	**1S**	220	3000	51	1250 – 9100	200	12	1500

(*) Hydraulic performances

Data can be subjected to change



SUMP CHARACTERISTICS

Model	Volume [litres]	Weight [kg]	Design Pressure [bar]
ARTIKA 120	80/100	160/180	20
ARTIKA 160	80/100	160/180	20
ARTIKA 200	170/275	480/630	20
ARTIKA 230	200	530	20
ARTIKA 300	860	2000	12

Data can be subjected to change

CRYOGENIC SUBMERGED PUMPS

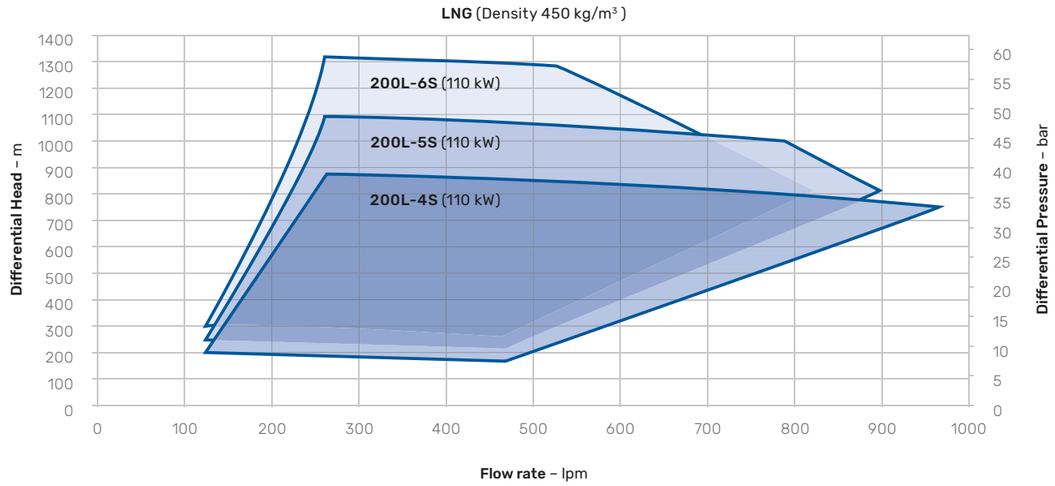
ARTIKA 200L

FOR LIQUEFIED NATURAL GAS (LNG)

ARTIKA 200L PERFORMANCES

Model	N° of stages	Power installed Pm [kW]	Max operating speed rpm	Max frequency F [Hz]	Flow rate min-max (*) Q [lpm]	Max differential Head DH [m]	Maximum allowable working pressure MAWP [bar]	Weight W [kg]
ARTIKA 200L	**4S**	110	6000	104	130 – 970	880	60	410
	5S	110	6000	104	130 – 970	1100	60	430
	6S	110	6000	104	130 – 970	1300	60	450

(*) Hydraulic performances



SUMP CHARACTERISTICS

Model	Volume [litres]	Weight [kg]	Design Pressure [bar]
ARTIKA 200L	450	1500	16

Data can be subjected to change

IN-TANK RETRACTABLE CRYOGENIC SUBMERGED PUMPS

ESK-IMO SERIES

FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES

- Available in 1 or multi-stages configurations
- Integrated submerged motor to be used with Variable Frequency Drive
- One-piece solid shaft to ensure reliability standard
- Self-balancing system which provides an extremely stable system with zero thrust loads on the bearings for all operating conditions
- Designed to be installed inside a low-pressure storage tank in a vertical pump column with a suction foot valve located at the bottom

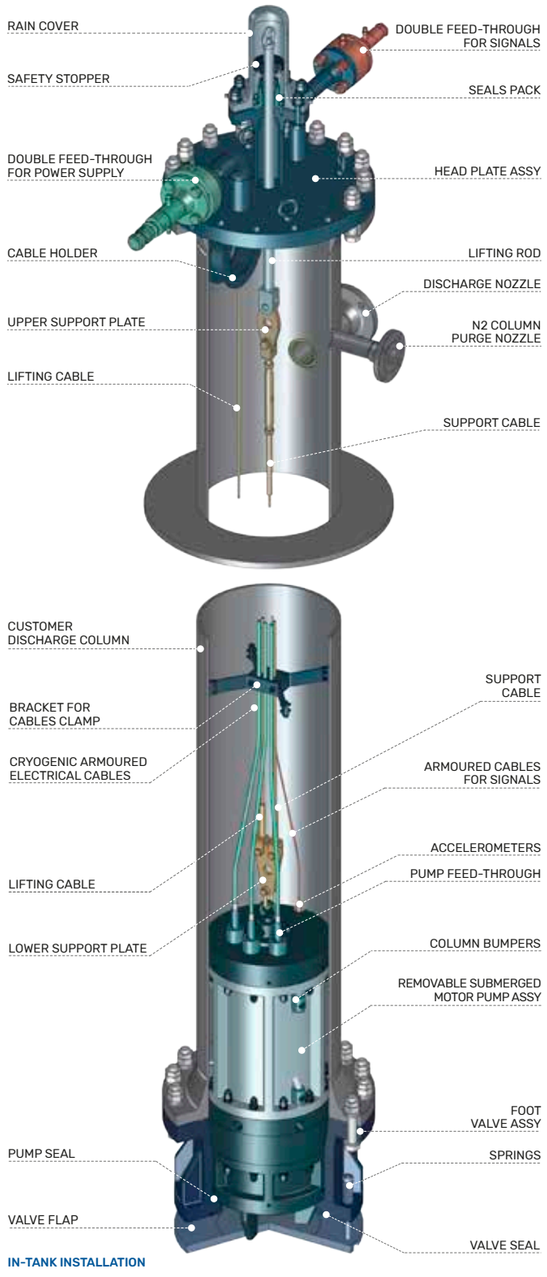
STANDARD SUPPLY

- Removable submerged motor pump
- Head plate assy equipped with lifting rod, seals pack, safety stopper, cable holder and rain cover
- Foot valve assy
- Brackets for cables clamp
- Support and lifting cables
- Armoured cryogenic flexible cables
- Double feed-through for power supply
- External shielded and armoured cable
- Power junction box
- Special tools for pump support
- Dummy pump

OPTIONAL ACCESSORY

- Vibration monitoring system
- Accelerometers and armoured cable for signals
- Double feed-through for signals
- External shielded and armoured cable for signals

OUTSIDE INSTALLATION



IN-TANK INSTALLATION

TEST AND CHECKS

- Materials test
- Hydrostatic pressure test on pump housing and foot valve body
- Leaks and load test on foot valve
- Seals pack airtightness test
- Insulation resistance measurements
- LIN running test (performances and vibrations)

APPLICATIONS

- Emergency pumps

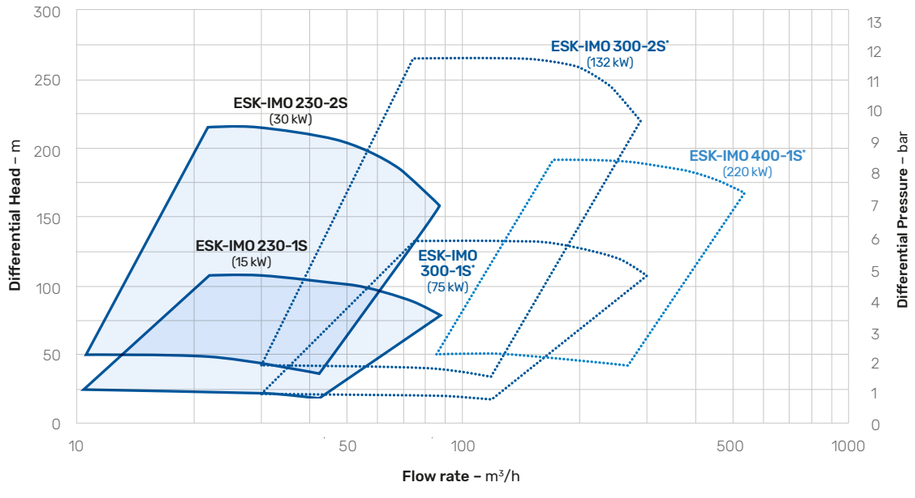
ESK-IMO SERIES PERFORMANCES

Model	N° of stages	Power installed Pm [kW]	Max operating speed n [rpm]	Max frequency F [Hz]	Flow rate min-max (*) Q [m³/h]	Max differential Head DH [m]	Maximum allowable working pressure MAWP [bar]	Weight W [kg]
ESK-IMO 230	1 S	15	3665	63	8 - 85	105	15	140
	2 S	30	3650	63	8 - 85	210	15	175
ESK-IMO 300	1 S	75	3000	51	35 - 300	135	15	590
	2 S	132	3000	51	35 - 300	270	15	785
ESK-IMO 400	1 S	220	3000	51	75 - 550	200	12	1480

(*) Hydraulic performances

Data can be subjected to change

Theoretical envelopes for LNG (Density 450 kg/m³)



*In development

CRYOGENIC RECIPROCATING PUMPS

VT-3 SERIES

FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES

- Available with gearbox or belt-pulley configuration
- Modular assembly (from Simplex to Triplex)
- High efficiency
- Low operating noise
- Quick maintenance thanks to the integrated cartridge seal system
- Motor suitable for inverter/VFD use

APPLICATIONS

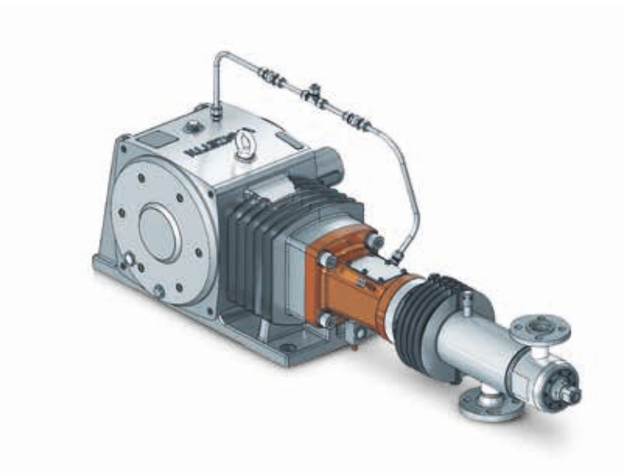
- High pressure marine engines Fuel Gas Systems

CRANKDRIVE SYSTEM

- TW 10 – Oil Lubrication

TRANSFERRED FLUIDS

- LNG



STANDARD SUPPLY

- Painted steel frame
- Cryogenic pump
- Electric motor suitable for VFD
- Transmission by belt and pulleys or gearbox and couplings
- Double pulsation damper

STANDARD ACCESSORIES

- Suction flexible hose
- Return flexible hose
- Low pressure safety valve
- High pressure safety valve
- Check valve
- Pressure gauge
- Pressure switch
- Temperature sensor for cool down
- Temperature sensor for cavitation
- Temperature sensor for leaks detection
- Junction box

OPTIONAL

- Flushing system with nitrogen gas
- Forced oil lubrication system
- High pressure pneumatic valve for venting

TEST AND CHECKS

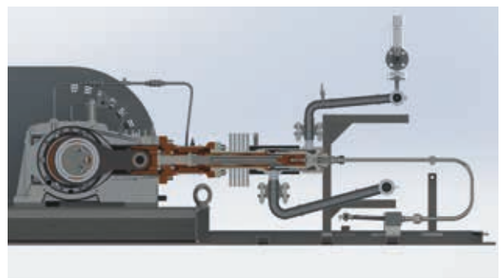
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

- European Directive Machinery
- European Directive Atex
- European Directive PED
- EIGA/IGC/CGA guidelines
- Marine Certifications available on request

Ex II 2G Ex h IIB/IIC T4 Gb



Pump skid section

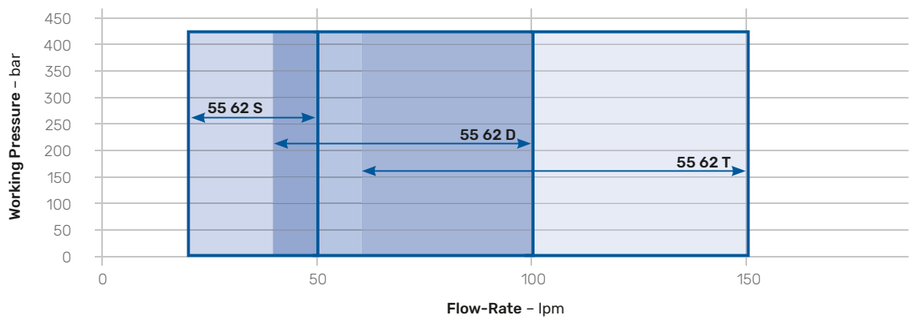
VT-3 TW 10 PERFORMANCES

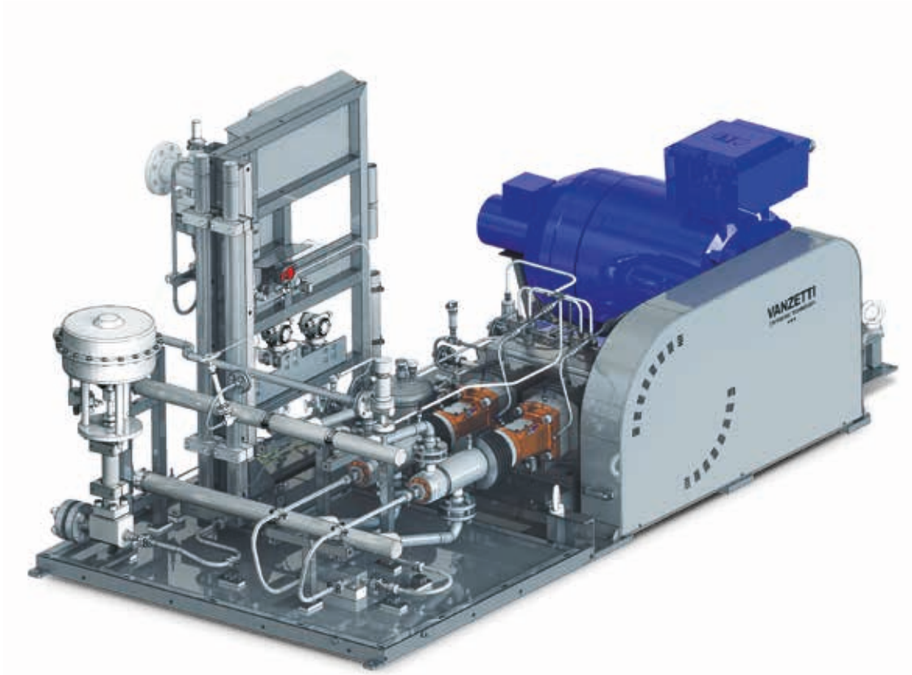
Model	Piston		Flow-rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power installed
	Bore	Stroke	Min 150 rpm*		Max 380 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
VT-3 55 62 S	55	62	20	5,3	50	13,2	20	290	420	6092	37 – 90
VT-3 55 62 D	55	62	40	10,6	100	26,4	20	290	420	6092	45 – 110
VT-3 55 62 T	55	62	60	15,9	150	39,6	20	290	420	6092	75 – 160

NPSH required: 1,5 – 1,7 m

*Flow-rate can be reduced by forced oil lubrication system

Data can be subjected to change





THE MOST NATURAL WAY

To refuel LNG transport

ON THE ROAD TO SUSTAINABILITY

Cryogenic components for the Automotive field

Vanzetti Engineering offers customized solutions for public stations and private fleets, providing modular design to allow tailored solutions and future expansions possibilities. The offer includes LNG based fuelling stations:

- L-CNG solo
- LNG solo
- L-CNG/LNG combined systems

The use of LNG as a road transport fuel is growing at an incredible rate, because it is cost effective, sustainable and safe.

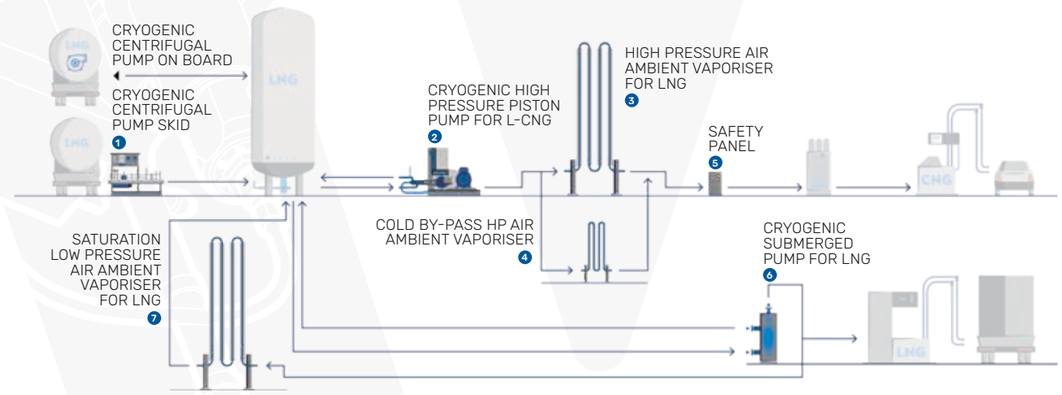
Vanzetti Engineering Natural Gas fuelling station is the best choice to fuel either Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG) vehicles.

Thanks to the experience and the knowledge acquired throughout the years in LNG and L-CNG stations processes, the company has quickly become one of the mayor players on the market.

Vanzetti Engineering catalogue also includes:

- Pumps on-board for LNG semi-trailers
- Pumps and pump skid for LNG transfer
- High pressure ambient vaporizers

1. Unloading Skid equipped with Cryogenic Centrifugal Pump SGM 185
2. Reciprocating Pump
   Option A: VT-1 Basic Skid
   Option B: VT-1 Integrated Skid
3. High Pressure Air / Ambient Vaporizer
4. Cold By-pass HP Air / Ambient Vaporizer
5. Safety Panel to monitor lowest temperature
6. Submerged pump
   Option A: ARTIKA with Sump
   Option B: ARTIKA Integrated Skid
7. Saturation Low Pressure Air / Ambient Vaporiser



LNG application field

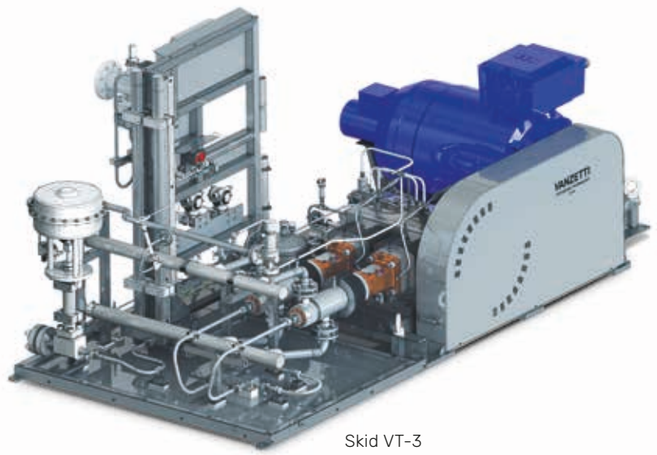
BRINGING NATURAL GAS EVERYWHERE

LNG and BIO-LNG transfer technologies for the Industrial Field

The use of Liquid Natural Gas in Industry requires constant technologies upgrading for LNG and BIO-LNG equipment where cryogenic centrifugal, reciprocating and submerged pumps are needed.

Experience acquired by supplying complete systems for different tasks, boosted the company to new pumps and components development dedicated to a wide range of applications:

- Regasification
- Satellite plant
- Power generation
- Peak shaving
- Industrial purposes
- Combined Heat and Power (CHP)
- LBM (Liquid Bio Methane)
- LNG Powered MicroBulk system
- Oil & Gas exploration
- Mining
- LNG vessel bunkering



Skid VT-3

Vanzetti Engineering product portfolio consists of:

Reciprocating pumps VT-1, VT-3 and VT-100 Series, guarantee an extensive flow rate and high pressure range, providing also easy maintenance and low operation costs.

Centrifugal pumps DSM, SGM and HGM Series ensure quick and effective performance in LNG transfer operations. HGM Series are powered by an hydraulic motor and it can be installed on board of semitrailers and trucks for unloading. Differently, DSM and SGM Series are powered by an electric motor and they are generally used for liquid transfers between tanks.

Submerged pumps ARTIKA Series are characterised by the absence of gaskets and seals subjected to wear, ensuring extremely high reliability and extended lifetime. The pump remains constantly submerged in the cryogenic liquid so it results always ready to start, avoiding cooling-down downtimes.

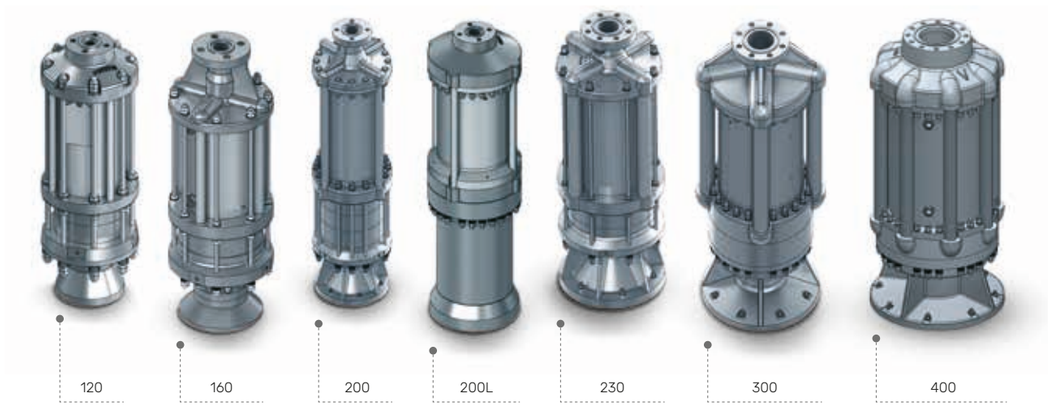
Vanzetti Engineering industrial LNG and BIO-LNG technologies are focused not only on cryogenic pumps but also on the following equipment:

- Integrated transferring and compression systems equipped either with piston pumps or centrifugal pumps
- Continuous operation equipment for industrial purposes
- Severe operating conditions equipment
- Full automatic stations with back-up functions
- LNG ambient vaporizers

CRYOGENIC SUBMERGED PUMPS

ARTIKA SERIES

FOR LIQUEFIED NATURAL GAS (LNG)



TECHNICAL FEATURES

- Available in 1 stage or multistages configurations (2, 3, 4 or 6)
- Helical inducer to minimize NPSH requested
- Designed to work submerged in a cryostat/sump or in cryogenic tank
- Integrated motor to be used with inverter/VFD
- Low maintenance due to the absence of elements subject to wear and the continuous LNG lubrication
- Reduced noise (<80 dB)
- Suitable for both continuous and discontinuous use

APPLICATIONS

- LNG refuelling station for heavy duty truck/buses/trains
- LNG bunkering station
- LNG power plant
- LNG peak shaving plant
- LNG small scale terminal plant

OPTIONAL ACCESSORIES

- Sump equipped with safety valves, manual valves for gas and liquid venting and pressure gauge
- Feed through electrical connector
- Suction line filter for cryostat
- Flexible hose for suction, return and discharge line
- Leakage detection on feed through accessories
- Integrated skid solutions available on request

TEST AND CHECKS

- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

- European Directive Machinery
- European Directive ATEX

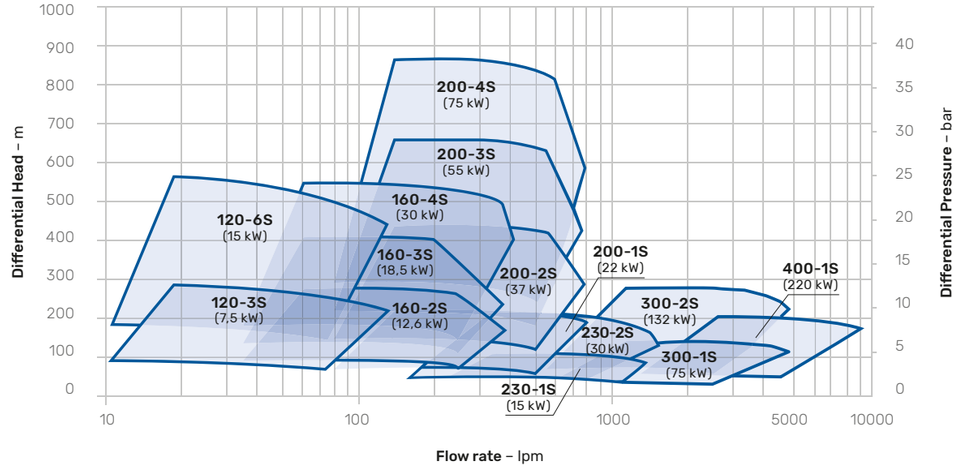
ARTIKA SERIES PERFORMANCES

Model	N° of stages	Power installed Pm [kW]	Max operating speed rpm	Max frequency F [Hz]	Flow rate min-max (*) Q [lpm]	Max differential Head DH [m]	Maximum allowable working pressure MAWP [bar]	Weight W [kg]
ARTIKA 120	**3S**	7,5	6900	122	10 – 120	285	30	45
	6S	15	6900	122	10 – 120	570	30	55
ARTIKA 160	**2S**	12,6	5835	104	40 – 420	270	15	60
	3S	18,5	5820	104	40 – 420	405	22	75
	4S	22 – 30	5845 – 5790	104	40 – 420	540	30	80 – 100
ARTIKA 200	**1S**	22	6015	104	80 – 880	215	30	135
	2S	30 – 37	6015	104	80 – 880	430	30	135 – 160
	3S	55	6035	104	80 – 880	645	35	180
	4S	60 – 75	5985 – 5990	104	80 – 880	860	40	190 – 235
ARTIKA 230	**1S**	15	3665	63	130 – 1450	105	15	140
	2S	30	3650	63	130 – 1450	210	15	175
ARTIKA 300	**1S**	75	3000	51	550 – 5000	135	15	590
	2S	132	3000	51	550 – 5000	270	15	785
ARTIKA 400	**1S**	220	3000	51	1250 – 9100	200	12	1500

(*) Hydraulic performances

Data can be subjected to change

LNG (Density 450 kg/m³)



SUMP CHARACTERISTICS

Model	Volume [litres]	Weight [kg]	Design Pressure [bar]
ARTIKA 120	80/100	160/180	20
ARTIKA 160	80/100	160/180	20
ARTIKA 200	170/275	480/630	20
ARTIKA 230	200	530	20
ARTIKA 300	860	2000	12

Data can be subjected to change

CRYOGENIC SUBMERGED PUMPS

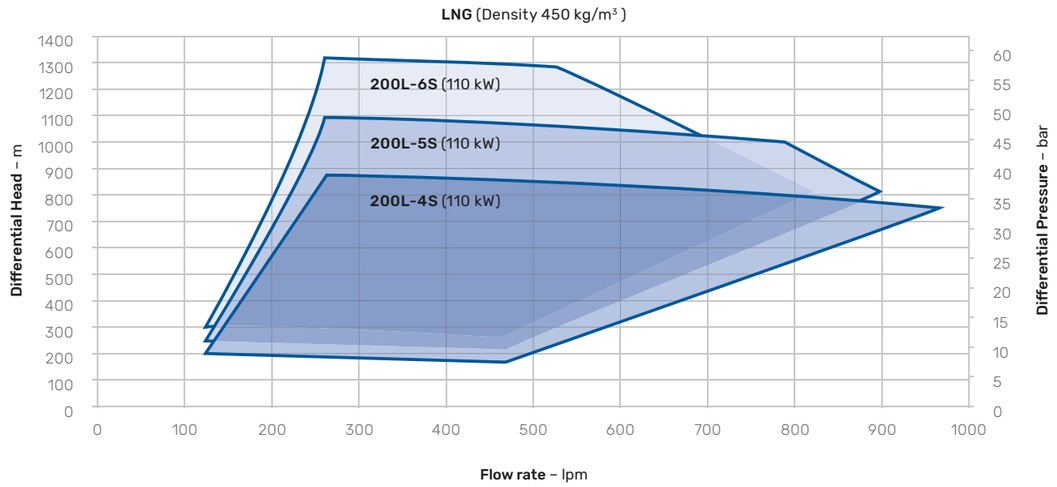
ARTIKA 200L

FOR LIQUEFIED NATURAL GAS (LNG)

ARTIKA 200L PERFORMANCES

Model	N° of stages	Power installed Pm [kW]	Max operating speed rpm	Max frequency F [Hz]	Flow rate min-max (*) Q [lpm]	Max differential Head DH [m]	Maximum allowable working pressure MAWP [bar]	Weight W [kg]
ARTIKA 200L	**4S**	110	6000	104	130 – 970	880	60	410
	5S	110	6000	104	130 – 970	1100	60	430
	6S	110	6000	104	130 – 970	1300	60	450

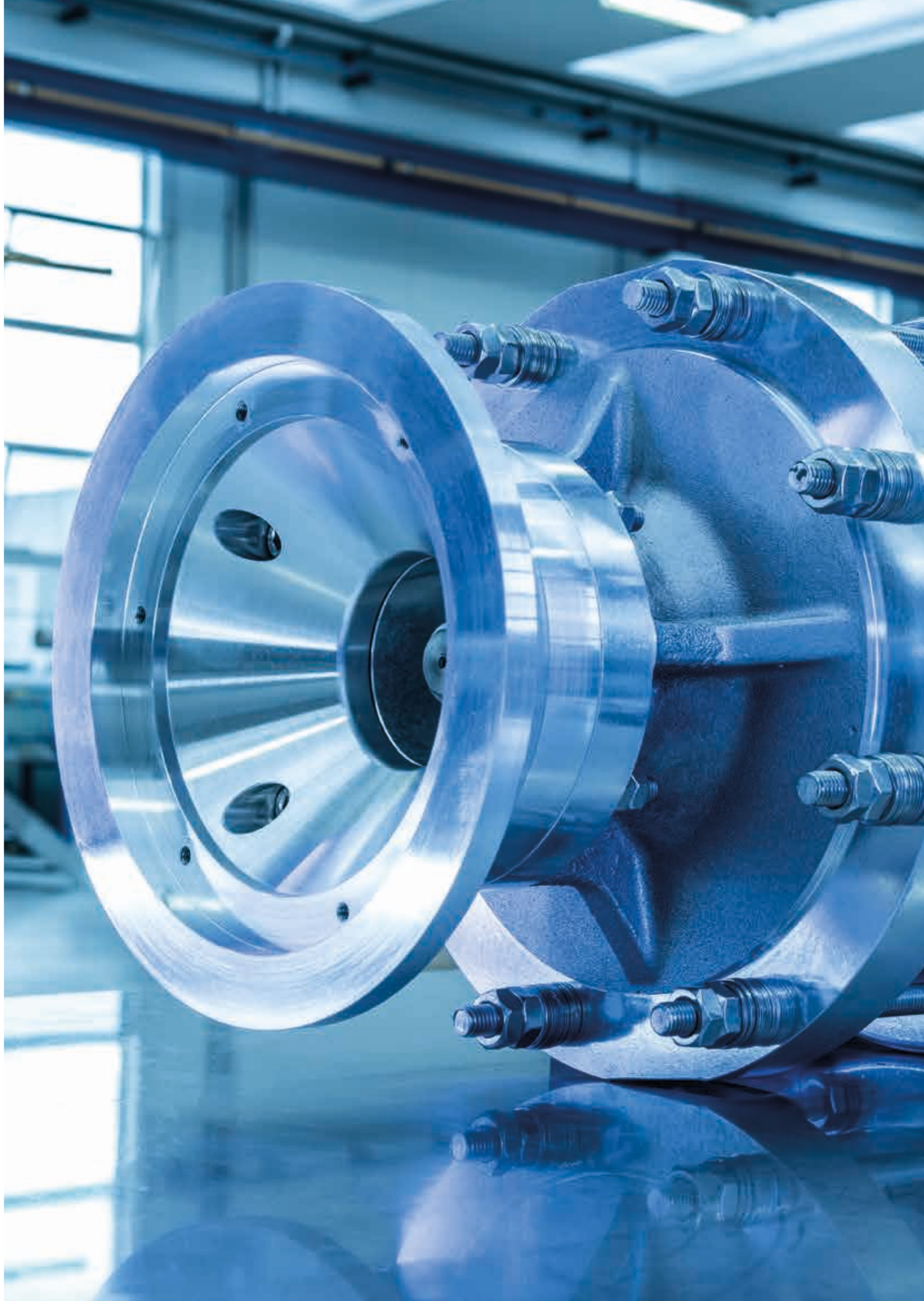
(*) Hydraulic performances



SUMP CHARACTERISTICS

Model	Volume [litres]	Weight [kg]	Design Pressure [bar]
ARTIKA 200L	450	1500	16

Data can be subjected to change



IN-TANK RETRACTABLE CRYOGENIC SUBMERGED PUMPS

ESK-IMO SERIES

FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES

- Available in 1 or multi-stages configurations
- Integrated submerged motor to be used with Variable Frequency Drive
- One-piece solid shaft to ensure reliability standard
- Self-balancing system which provides an extremely stable system with zero thrust loads on the bearings for all operating conditions
- Designed to be installed inside a low-pressure storage tank in a vertical pump column with a suction foot valve located at the bottom

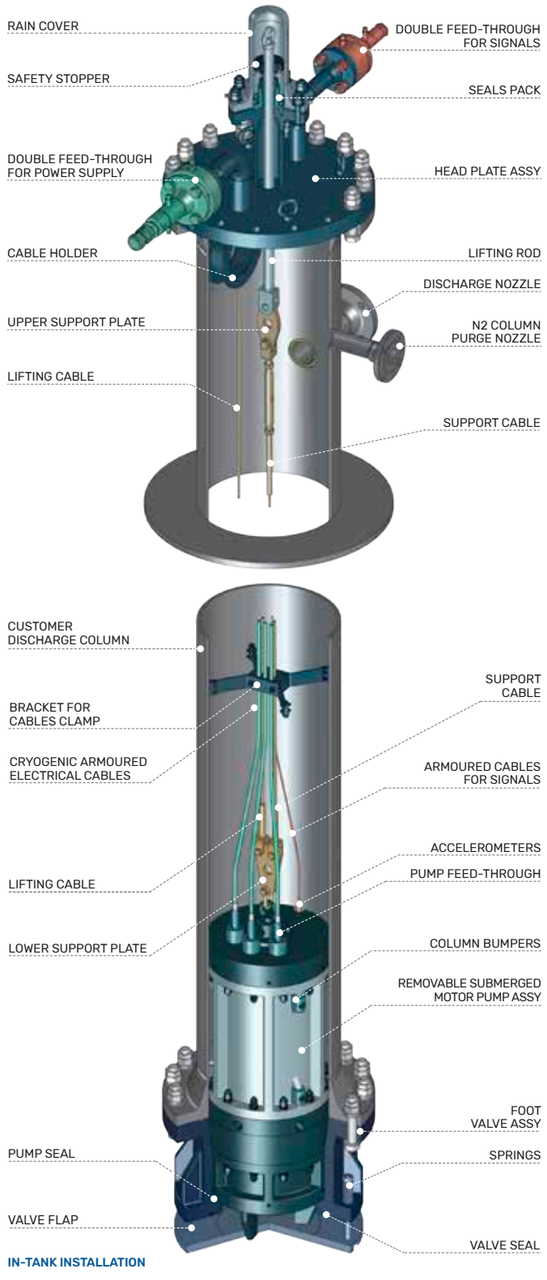
STANDARD SUPPLY

- Removable submerged motor pump
- Head plate assy equipped with lifting rod, seals pack, safety stopper, cable holder and rain cover
- Foot valve assy
- Brackets for cables clamp
- Support and lifting cables
- Armoured cryogenic flexible cables
- Double feed-through for power supply
- External shielded and armoured cable
- Power junction box
- Special tools for pump support
- Dummy pump

OPTIONAL ACCESSORY

- Vibration monitoring system
- Accelerometers and armoured cable for signals
- Double feed-through for signals
- External shielded and armoured cable for signals

OUTSIDE INSTALLATION



IN-TANK INSTALLATION

TEST AND CHECKS

- Materials test
- Hydrostatic pressure test on pump housing and foot valve body
- Leaks and load test on foot valve
- Seals pack airtightness test
- Insulation resistance measurements
- LIN running test (performances and vibrations)

APPLICATIONS

- LNG regasification terminals

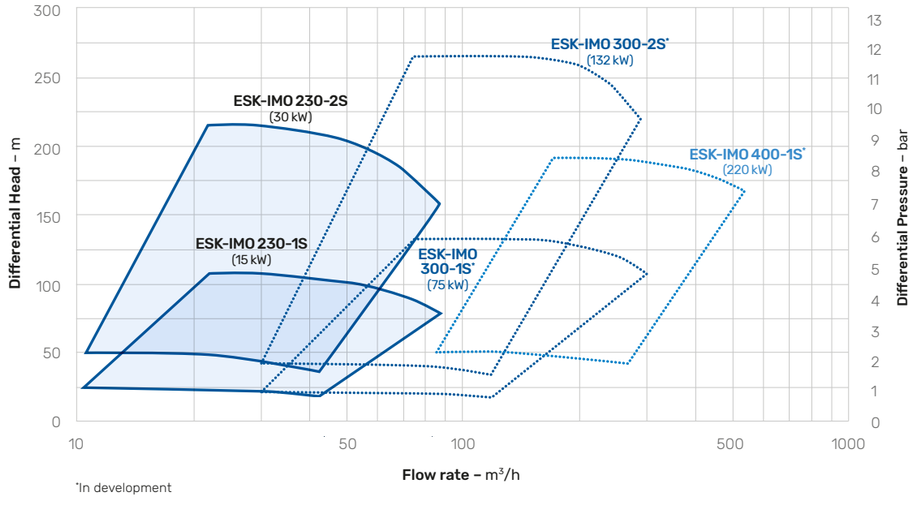
ESK-IMO SERIES PERFORMANCES

Model	N° of stages	Power installed Pm [kW]	Max operating speed n [rpm]	Max frequency F [Hz]	Flow rate min-max (*) Q [m³/h]	Max differential Head DH [m]	Maximum allowable working pressure MAWP [bar]	Weight W [kg]
ESK-IMO 230	1 S	15	3665	63	8 - 85	105	15	140
	2 S	30	3650	63	8 - 85	210	15	175
ESK-IMO 300	1 S	75	3000	51	35 - 300	135	15	590
	2 S	132	3000	51	35 - 300	270	15	785
ESK-IMO 400	1 S	220	3000	51	75 - 550	200	12	1480

(*) Hydraulic performances

Data can be subjected to change

Theoretical envelopes for LNG (Density 450 kg/m³)



*In development

CRYOGENIC CENTRIFUGAL PUMPS

DSM SERIES

FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES

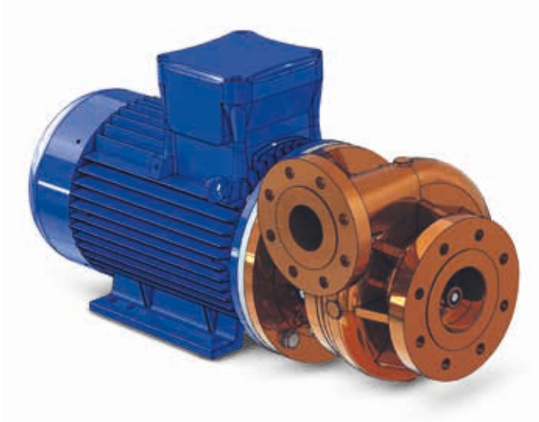
- Electric motor and direct transmission
- Mechanical seal in rulon
- Inducer to minimize required NPSH

APPLICATIONS

- Road trailers unloading, storage/iso-containers loading/unloading
- Bunkering
- Process and back-up operations, petrochemical industry applications

TRANSFERRED FLUIDS

- LNG



OPTIONAL ACCESSORIES

- Counter flanges
- Filter
- Flexible hoses for suction and discharge lines
- Leakage detection by temperature sensor
- Flushing system with nitrogen gas
- Temperature sensor for cooling down
- Electrical control panel
- Motor suitable for VFD
- Completely automated systems available on demand
- Mobile skid available on demand

TEST AND CHECKS

- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

- European Directive Machinery
- European Directive ATEX
- EIGA/IGC/CGA guidelines

Ex II 2G Ex h IIB T4 Gb

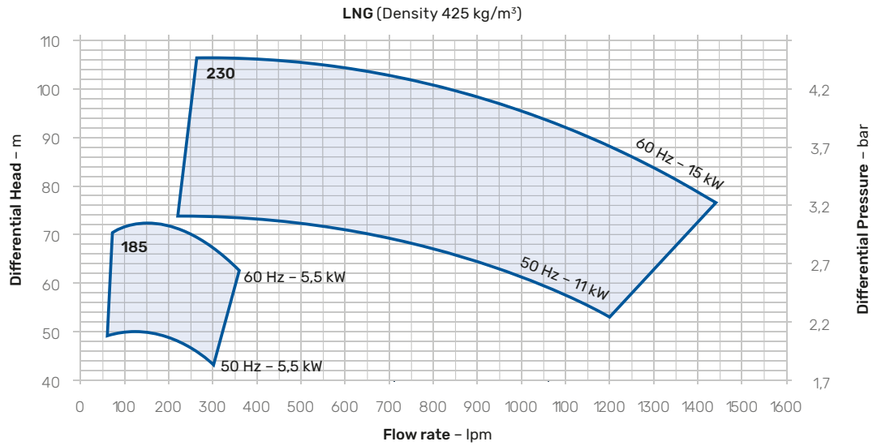
DSM SERIES** PERFORMANCES

Model		DSM 185	DSM 230
Power installed (Motor frame)	Pm [kW]	5,5 – 7,5 (132)	11 – 15 – 18,5 (160)
Max operating speed (50 Hz/60 Hz)	rpm	2950/3540	2950/3540
Max suction pressure	P [bar]	6	6
Max allowable working pressure	MAWP [bar]	23/33*	26
Max Head (50 Hz/60 Hz)	DH [m]	50/72	73/105
Max flow rate (50 Hz/60 Hz)	Q [lpm]	300/360	1250/1500

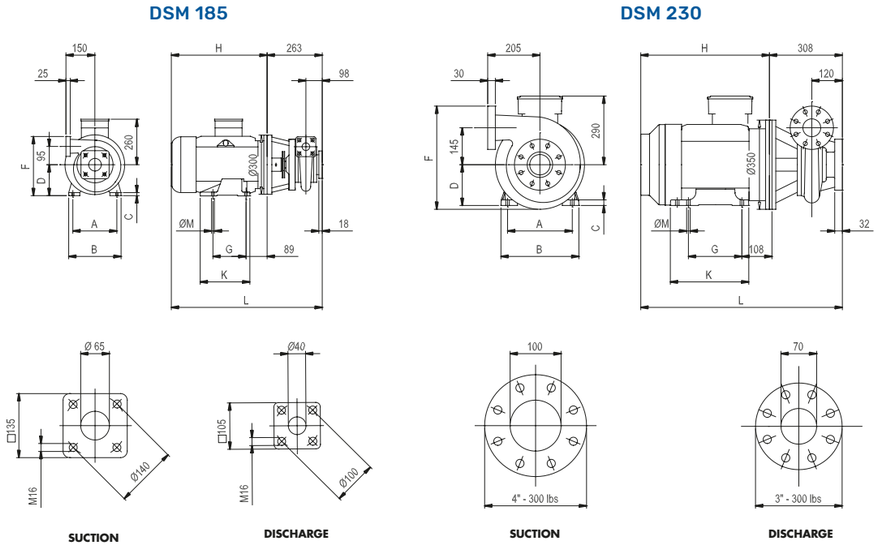
*Aluminium pump casing (23 bar) and bronze pump casing (33 bar)

**Special versions with high frequency VFD controlled motors are available

Data can be subjected to change



GENERAL DIMENSIONS



DSM 185

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	Weight [kg]
5,5 / 7,5	132	216	272	13	132	280	140	425	222	688	12	120

DSM 230

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	Weight [kg]
11 / 15 / 18,5	160	254	318	15	160	425	210	583	305	891	14	220

Data can be subjected to change

CRYOGENIC CENTRIFUGAL PUMPS

SGM SERIES

FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES

- Electric motor and gearbox transmission
- Mechanical seal in rulon
- Inducer to minimize required NPSH

APPLICATIONS

- Road trailers unloading, storage/iso-containers loading/unloading
- Process and back-up operations, petrochemical industry applications
- Special applications with differential head and flow rates upon customer demand

TRANSFERRED FLUIDS

- LNG

OPTIONAL ACCESSORIES

- Counter flanges
- Filter
- Flexible hoses for suction and discharge lines
- Leakage detection by temperature sensor
- Flushing system with nitrogen gas
- Temperature sensor for cooling down
- Electrical control panel
- Motor suitable for VFD
- Completely automated systems available on demand
- Mobile skid available on demand
- Temperature sensor of bearing casing

TEST AND CHECKS

- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

- European Directive Machinery
- European Directive ATEX
- EIGA/IGC/CGA guidelines

Ex II 2G Ex h IIB T4 Gb

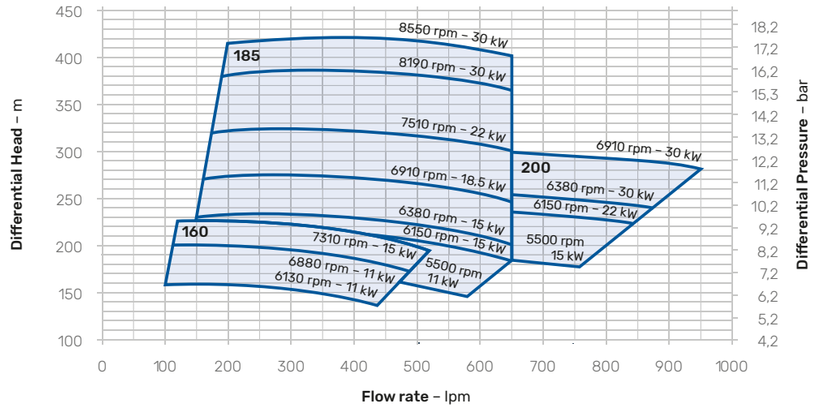
SGM SERIES PERFORMANCES

Model		SGM 160	SGM 185	SGM 200
Power installed (Motor frame)	Pm [kW]	11 – 15 – 18,5 (160)	11 – 15 – 18,5 (160)/ 22 (180) – 30 – 37 (200)	22 (180)/30 – 37 (200)
Max operating speed (50 Hz)	rpm	7310	8550	6910
Max suction pressure	P [bar]	6	6	6
Max allowable working pressure	MAWP [bar]	30	23/33*	23
Max head (50 Hz)	DH [m]	225	420	300
Max flow rate (50 Hz)	Q [lpm]	520	650	950

*Aluminium pump casing (23 bar) and bronze pump casing (33 bar)

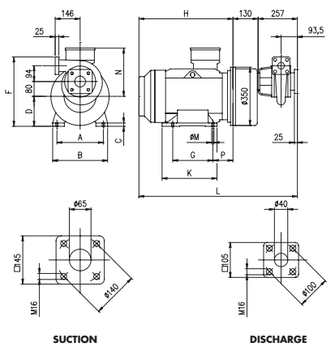
Data can be subjected to change

Performances map for LNG (Density 425 kg/m³) **and 50 Hz**

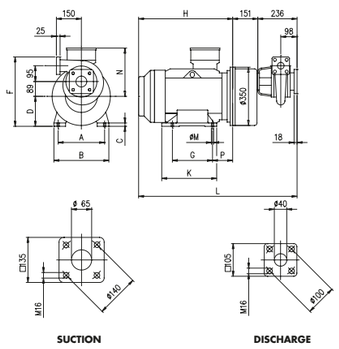


GENERAL DIMENSIONS

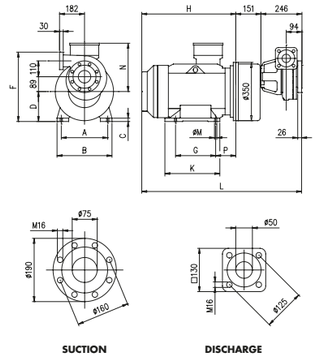
SGM 160



SGM 185



SGM 200



SGM 160

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	N	P	Weight [kg]
11/15/18,5	160	254	318	15	160	387	210	583	305	970	14	290	108	145

SGM 185

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	N	P	Weight [kg]
11/15/18,5	160	254	318	15	160	397	210	583	305	970	14	290	108	145
22	180	279	350	17	180	417	241	704	340	1091	14	326	121	220
30/37	200	318	393	18	200	437	305	790	360	1176	18	346	151	270

SGM 200

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	N	P	Weight [kg]
22	180	279	350	17	180	397	210	704	340	1101	14	326	121	340
30/37	200	318	393	18	200	464	305	790	360	1187	18	346	166	395

Data can be subjected to change

CRYOGENIC CENTRIFUGAL PUMPS

HGM SERIES

FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES

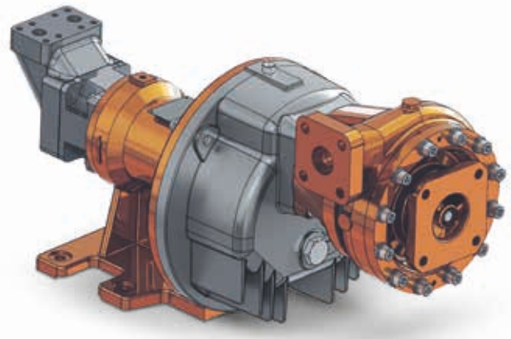
- Hydraulic motor and gearbox transmission
- Mechanical seal in rulon
- Inducer to minimize required NPSH

APPLICATIONS

- Road trailers unloading, storage/iso-containers loading/unloading
- Process and back-up operations, petrochemical industry applications
- Special applications with differential head and flow rates upon customer demand

TRANSFERRED FLUIDS

- LNG

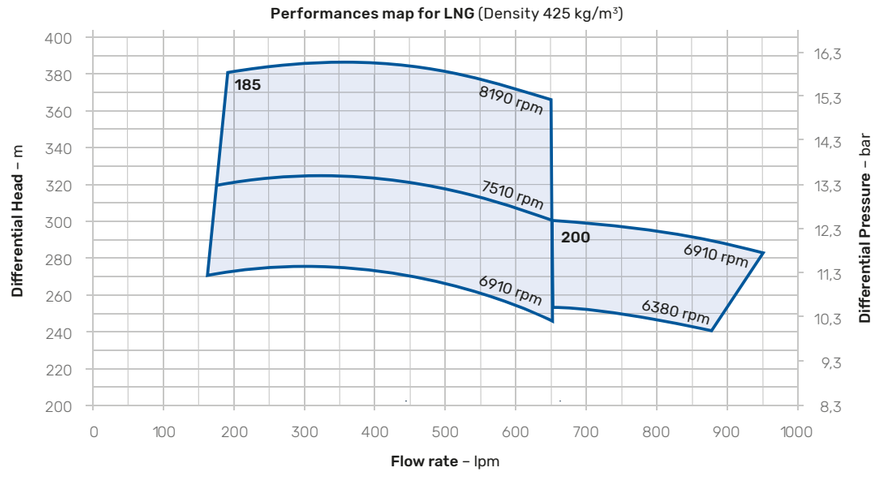


HGM SERIES PERFORMANCES

Model		HGM 185	HGM 200
Hydraulic Motor		F12 – 30	F12 – 30
Max operating speed	rpm	8190	6910
Max suction pressure	P [bar]	6	6
Max allowable working pressure	MAWP [bar]	23/33*	23
Max head	DH [m]	385	300
Max flow rate	Q [lpm]	650	950

*Aluminium pump casing (23 bar) and bronze pump casing (33 bar)

Data can be subjected to change



OPTIONAL ACCESSORIES

- Counter flanges
- Filter
- Flexible hoses for suction and discharge lines
- Leakage detection by temperature sensor
- Flushing system with nitrogen gas
- Temperature sensor for cooling down
- Temperature sensor of bearing casing

TEST AND CHECKS

- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

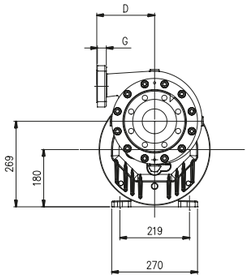
STANDARDS

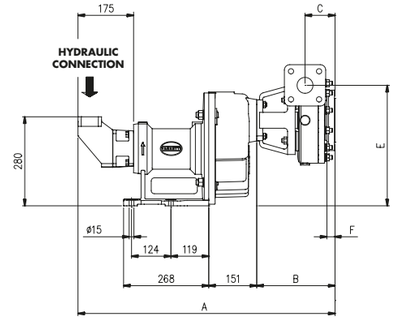
Designed according to:

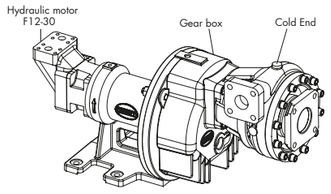
- European Directive Machinery
- European Directive ATEX
- EIGA/IGC/CGA guidelines

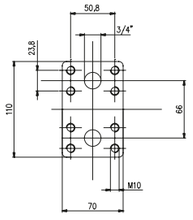
Ex II 2G Ex h IIB T4 Gb

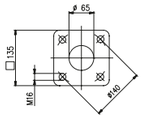
GENERAL DIMENSIONS

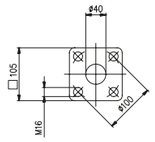


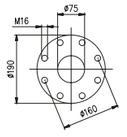


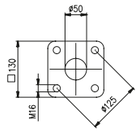












HGM 185

A	B	C	D	E	F	G	Weight [kg]
798	235	98	150	364	18	25	130

HGM 200

A	B	C	D	E	F	G	Weight [kg]
809	246	95	182	379	25	30	135

Data can be subjected to change

CRYOGENIC CENTRIFUGAL PUMPS

HDM SERIES

FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES

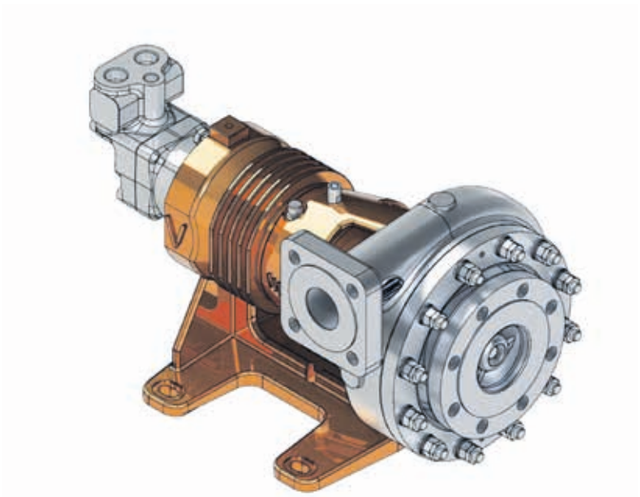
- Hydraulic motor with direct transmission
- Oil lubricated transmission
- Reduced working temperature by flushing the motor case with the hydraulic fluid
- Mechanical seal in rulon
- Inducer to minimize the NPSH requested

APPLICATIONS

- Road trailers unloading, storage/iso-containers loading/unloading
- Special applications with differential head and flow rates upon customer demand

TRANSFERRED FLUIDS

- LNG



OPTIONAL ACCESSORIES

- Counter flanges
- Filter
- Flexible hoses for suction and discharge lines
- Leakage detection by temperature sensor
- Flushing system with nitrogen gas
- Temperature sensor for cooling down
- Temperature sensor of bearing casing

TEST AND CHECKS

- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

- European Directive Machinery
- European Directive ATEX
- EIGA/IGC/CGA guidelines

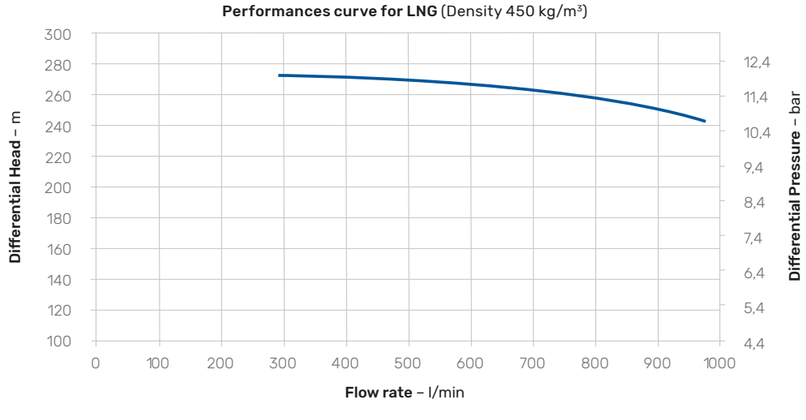
Ex II 2G Ex h IIB T4 Gb

HDM SERIES (Hydraulic motor and direct transmission) PERFORMANCES

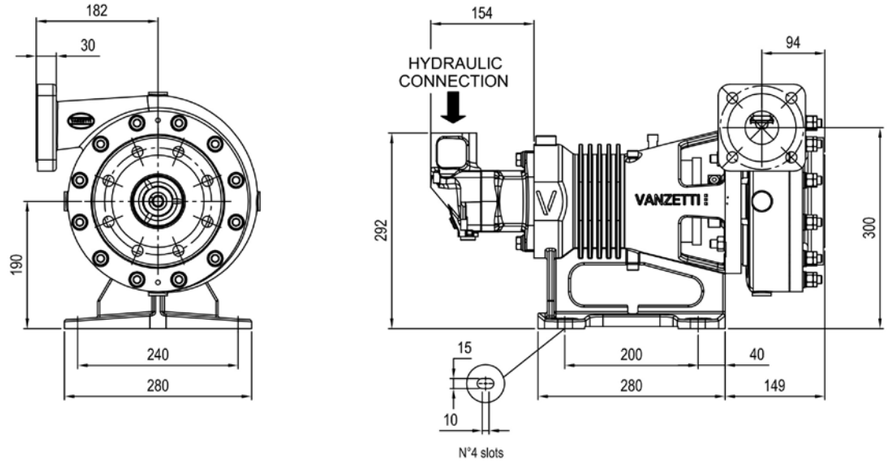
Model		HDM 200
Motor		F11 – 14
Max operating speed	rpm	6500
Maximum suction pressure	P [bar]	6
Maximum allowable working pressure	MAWP [bar]	23/33*
Max Head	DH [m]	270
Flow range	Q [lpm]	300 – 950
Weight	W [kg]	135

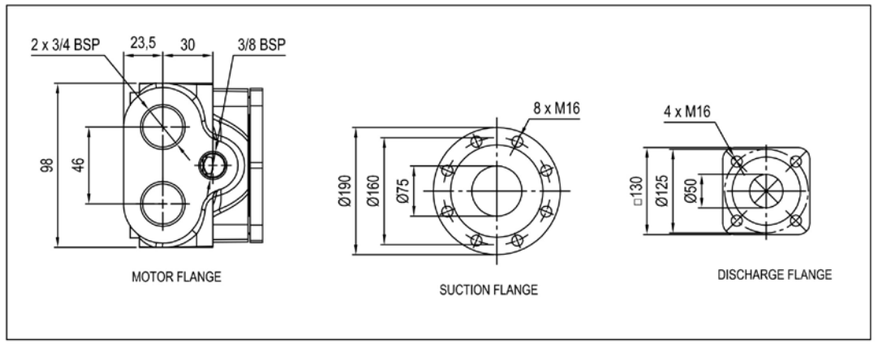
*Aluminium pump casing (23 bar) and bronze pump casing (33 bar)

Data can be subjected to change



GENERAL DIMENSIONS





CRYOGENIC RECIPROCATING PUMPS

VT-1 SERIES

FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES

- Compatible with Cold Converter and Thermosyphon storage tanks
- Easy installation thanks to 360° rotating inlet and outlet connections
- High efficiency
- Low operating noise
- Quick maintenance thanks to the integrated cartridge seal system

APPLICATIONS

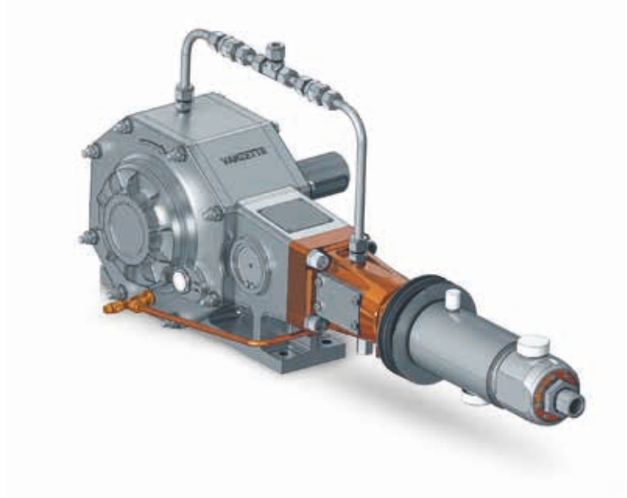
- L-CNG refuelling stations for cars/trucks/buses, cylinders and buffer filling

CRANKDRIVE LUBRICATION

- TW 6,5 – Oil lubrication

TRANSFERRED FLUIDS

- LNG



STANDARD SUPPLY

- Painted steel frame
- Cryogenic pump
- Electric motor
- Transmission with belts and pulleys
- Double Pulsation damper

STANDARD ACCESSORIES

- Suction flexible hose
- Return flexible hose
- Low pressure safety valve
- High pressure safety valve
- High pressure pneumatic valve for venting
- Check valve
- Pressure gauge
- Pressure switch
- Temperature sensor for cool down
- Temperature sensor for cavitation
- Temperature sensor for leaks detection

OPTIONAL ACCESSORIES

- Flushing system with nitrogen gas
- Electrical control panel
- 2 speed electric motor
- Motor suitable for VFD
- Complete automatic system available on demand

Average SKID weight: **690 kg**

Package overall dimensions: **195 x 95 x 130 cm**

TEST AND CHECKS

- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

- European Directive Machinery
- European Directive PED
- European Directive ATEX
- EIGA/IGC/CGA guidelines

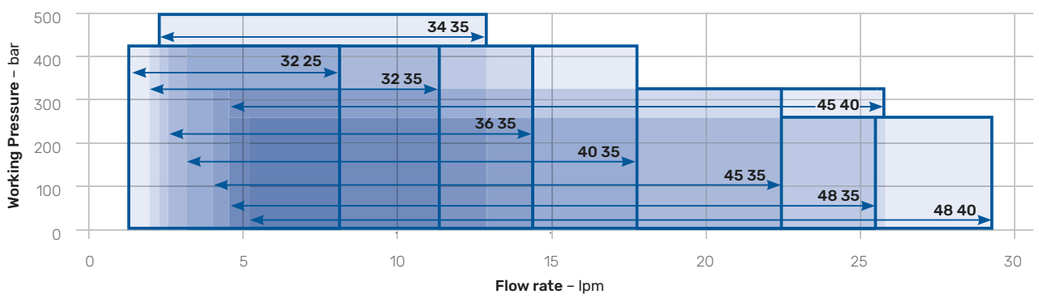
Ex II 2G Ex h IIB/IIC T4 Gb

VT-1 TW 6,5 PERFORMANCES

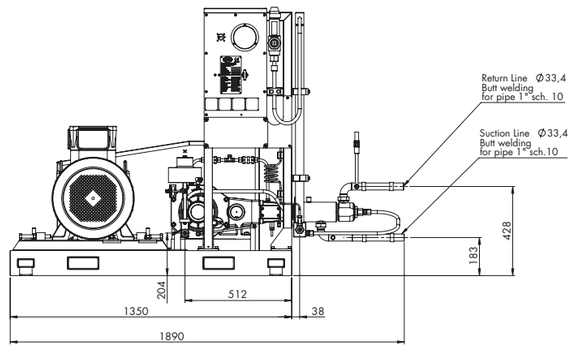
Model	Piston		Flow rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power installed
	Bore	Stroke	Min 80 rpm		Max 450 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
VT-1 32 25	32	25	1,4	0,4	8,1	2,1	20	290	420	6092	3 – 15
VT-1 32 35	32	35	2,0	0,5	11,4	3,0	20	290	420	6092	4 – 22
VT-1 34 35	34	35	2,3	0,6	12,9	3,4	20	290	500	7252	5,5 – 30
VT-1 36 35	36	35	2,6	0,7	14,4	3,8	20	290	420	6092	5,5 – 30
VT-1 40 35	40	35	3,2	0,8	17,8	4,7	20	290	420	6092	5,5 – 30
VT-1 45 35	45	35	4,0	1,1	22,5	5,9	20	290	320	4641	5,5 – 30
VT-1 48 35	48	35	4,6	1,2	25,6	6,8	20	290	260	3771	5,5 – 30
VT-1 45 40	45	40	4,6	1,2	25,8	6,8	20	290	320	4641	7,5 – 37
VT-1 48 40	48	40	5,2	1,4	29,3	7,7	20	290	260	3771	5,5 – 37

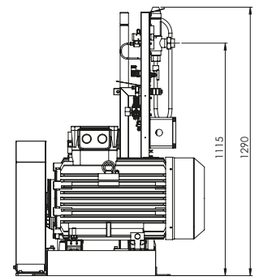
NPSH required: 1,5 – 1,7 m

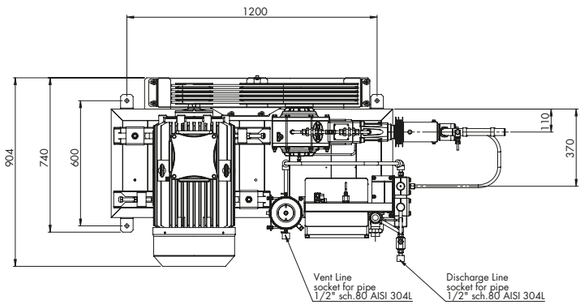
Data can be subjected to change



GENERAL DIMENSIONS







COLD END DETAIL

The innovative seal cartridge allows a very easy maintenance

CRYOGENIC RECIPROCATING PUMPS

VT-3 SERIES

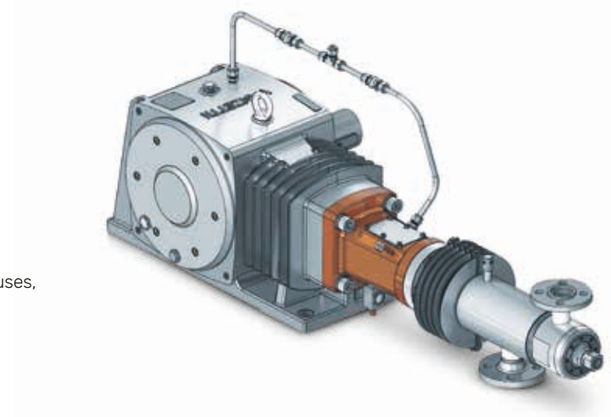
FOR LIQUEFIED NATURAL GAS (LNG)

TECHNICAL FEATURES
- Compatible with Cold Converter and Thermosyphon storage tanks
- Modular assembly (from Simplex to Triplex)
- High efficiency
- Low operating noise
- Quick maintenance thanks to the integrated cartridge seal system

APPLICATIONS
- Big sized L-CNG refueling stations for cars/trucks/buses, mother stations, tube trailer filling

CRANKDRIVE SYSTEM
- TW 10 – Oil Lubrication

TRANSFERRED FLUIDS
- LNG



STANDARD SUPPLY
- Painted steel frame
- Cryogenic pump
- Electric motor
- Transmission by belt and pulleys or gearbox and couplings
- Double pulsation damper

STANDARD ACCESSORIES
- Suction flexible hose
- Return flexible hose
- Low pressure safety valve
- High pressure safety valve
- Check valve
- Pressure gauge
- Pressure switch
- Temperature sensor for cool down
- Temperature sensor for cavitation
- Temperature sensor for leaks detection
- Junction box

OPTIONAL ACCESSORIES
- Flushing system with nitrogen gas
- Forced oil lubrication system
- High pressure pneumatic valve for venting
- Motor suitable for VFD
- Complete automatic system available on demand

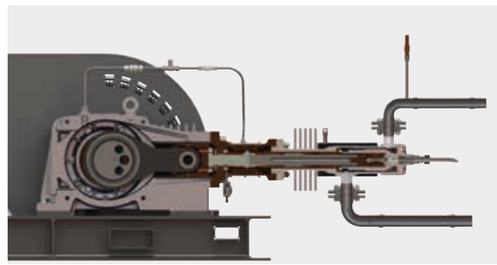
Average SKID weight: **1600 kg**

Package overall dimensions: **295 x 118 x 154 cm**

TEST AND CHECKS
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS
Designed according to:
- European Directive Machinery
- European Directive ATEX
- European Directive PED
- EIGA/IGC/CGA guidelines

Ex II 2G Ex h IIB/IIC T4 Gb



Pump skid section

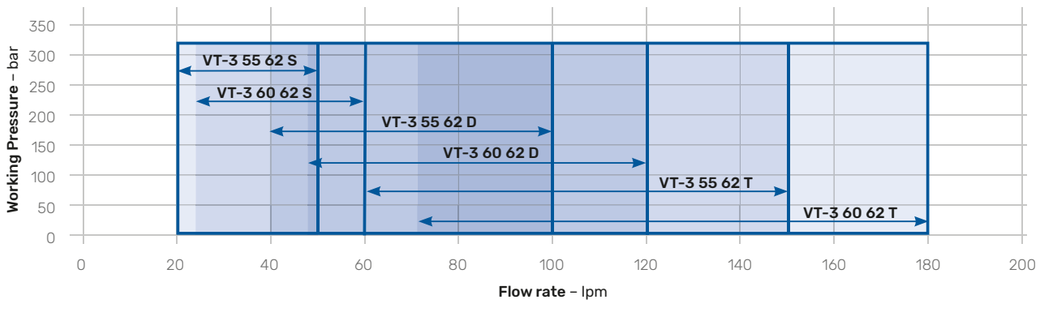
VT-3 TW 10 PERFORMANCES

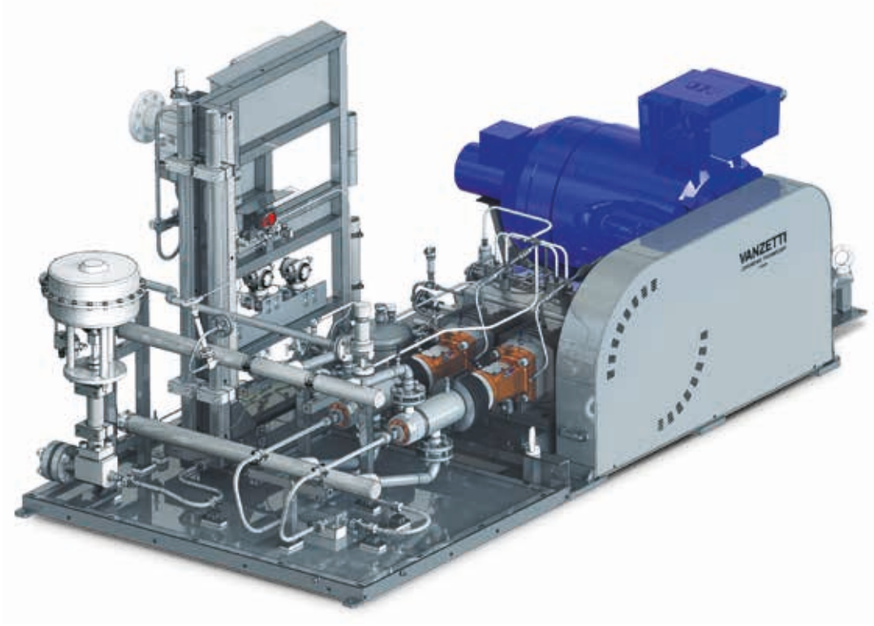
Model	Piston		Flow-rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power installed
	Bore	Stroke	Min 150 rpm*		Max 380 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
VT-3 55 62 S	55	62	20	5,3	50	13,2	20	290	320	4641	30 – 75
VT-3 55 62 D	55	62	40	10,6	100	26,4	20	290	320	4641	37 – 90
VT-3 55 62 T	55	62	60	15,9	150	39,6	20	290	320	4641	45 – 110
VT-3 60 62 S	60	62	23,7	6,3	60	15,9	20	290	320	4641	30 – 75
VT-3 60 62 D	60	62	47,3	12,5	120	31,7	20	290	320	4641	45 – 110
VT-3 60 62 T	60	62	71,0	18,8	180	47,6	20	290	320	4641	55 – 132

*Flow-rate can be reduced by forced oil lubrication system

NPSH required: 1,5 – 1,7 m

Data can be subjected to change

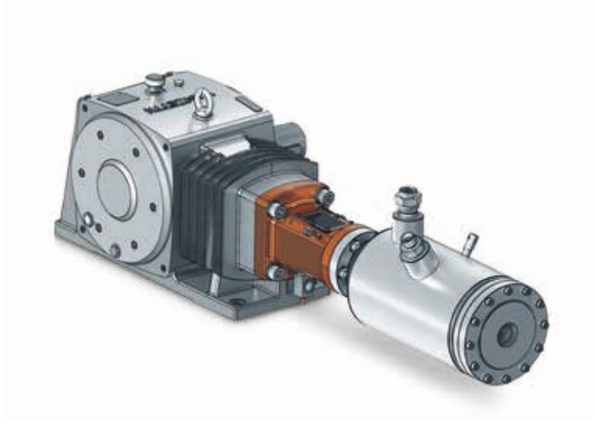




CRYOGENIC RECIPROCATING PUMPS

VT-100 SERIES

FOR LIQUEFIED NATURAL GAS (LNG)



TECHNICAL FEATURES

- Compatible with Cold Converter and Thermosyphon storage tanks
- Modular assembly (from Simplex to Triplex)
- High efficiency
- Low operating noise
- Quick maintenance thanks to the integrated cartridge seal system

APPLICATIONS

- Peak shaving applications
- Pipeline back-up
- Power generation

CRANKDRIVE SYSTEM

- TW 10 – Oil lubrication

TRANSFERRED FLUIDS

- LNG

STANDARD SUPPLY

- Painted steel frame
- Cryogenic pump
- Electric motor
- Transmission by belt and pulley, available also with gearbox
- Double pulsation damper

STANDARD ACCESSORIES

- Suction flexible hose
- Return flexible hose
- Low pressure safety valve
- High pressure safety valve
- High pressure pneumatic valve for venting
- Check valve
- Pressure gauge
- Pressure switch
- Temperature sensor for cool down
- Temperature sensor for cavitation
- Temperature sensor for leaks detection

OPTIONAL ACCESSORIES

- Flushing system with nitrogen gas
- Electrical control panel
- 2 speed electric motor
- Motor suitable for VFD
- Complete automatic system available on demand

Average SKID weight: **1600 kg**

Package overall dimensions: **302 x 119 x 115 cm**

TEST AND CHECKS

- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

- European Directive Machinery
- European Directive PED
- European Directive ATEX
- EIGA/IGC/CGA guidelines

Ex II 2G Ex h IIB/IIC T4 Gb

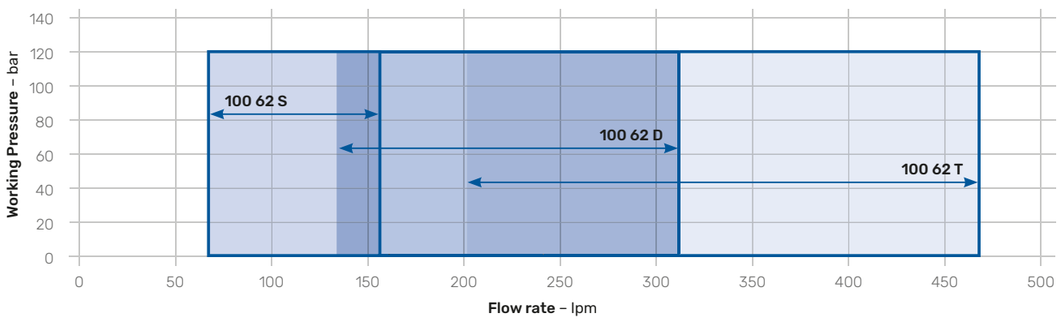
VT-100 TW 10 PERFORMANCES

Model	Piston		Flow rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power installed
	Bore	Stroke	Min 150 rpm*		Max 350 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
VT-100 62 S	100	62	67	17,7	156	41,2	20	290	120	1740	37 – 75
VT-100 62 D	100	62	134	35,4	312	82,4	20	290	120	1740	45 – 110
VT-100 62 T	100	62	201	53,1	468	123,6	20	290	120	1740	55 – 132

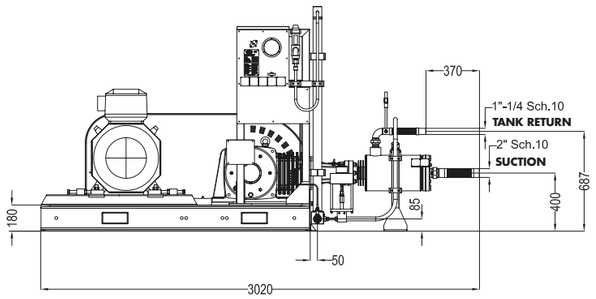
*Flow rate can be reduced by forced oil lubrication system

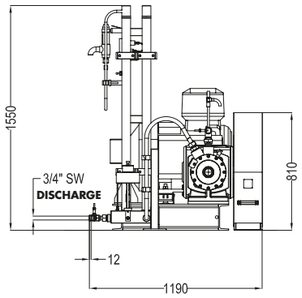
NPSH required: 1 – 1,2 m

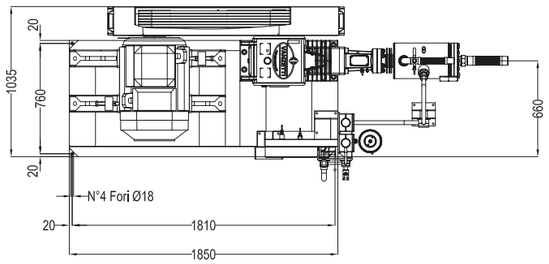
Data can be subjected to change



GENERAL DIMENSIONS







COLD END DETAIL

The innovative seal cartridge allows a very easy maintenance

For industrial gases transfer & storage

LEADING THE INDUSTRIAL GASES WAY

Cryogenic pumps at the service of customer request in the Industrial field

The atmospheric air we breathe is composed of various gases, each one with its own unique physical characteristics necessary for different industrial or medical purposes.

Vanzetti Engineering produces pumps and pumping systems to transfer cryogenic liquids, obtained from atmospheric air distillation processes at very low temperatures. The most common gases are: Nitrogen, Oxygen, Argon, Carbon Dioxide and Nitrous Oxide.

According to the flow rate and pressure amounts, pumps can be divided in two main classes: reciprocating and centrifugal.

Vanzetti Engineering is specialized in piston pumps designing and manufacturing, including single and multiple stages versions. VT-1, VT-3, VT-100, HPH and HP Series pumps are part of this category.

Vanzetti Engineering stands out for single and multi-stage centrifugal, external and submerged pumps manufacturing.

Centrifugal pumps DSM Series (with horizontal axis) are characterized by direct connection between the motor and the pump cold-end.

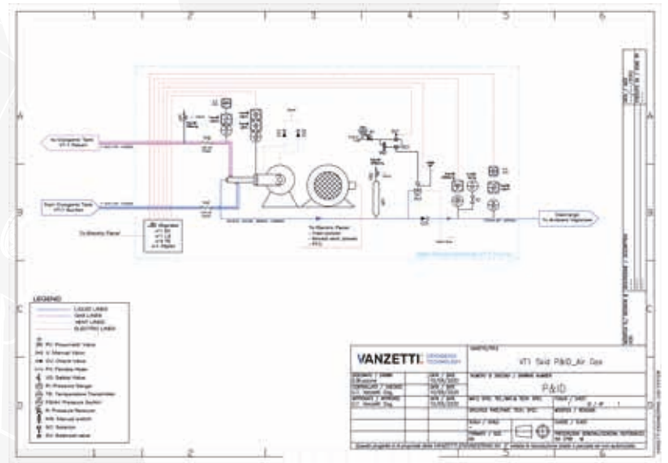
Centrifugal pumps SGM Series are characterized by the gearbox interposition between the motor and the pump cold-end to gain higher capacity and pressure.

Submerged pumps ARTIKA Series are designed to be completely submerged in the cryogenic liquid. Considering their own constructive characteristics these pumps can only be used with inert gases.

Vanzetti Engineering reciprocating and centrifugal pumps can be integrated into complex skid systems, which can be customized according to specific needs.

Vanzetti Engineering proposal covers the following applications:

- High pressure inert gases and oxygen cylinders filling and various gaseous storages for different industrial purposes (Series VT, HP, HPH)
- Cryogenic liquids transfer between mobile tanks and fixed tanks or as back-up pumps in several industrial processes, even under very different flow and pressure conditions or for continuous processes (Series DSM, SGM, ARTIKA)



CRYOGENIC CENTRIFUGAL PUMPS

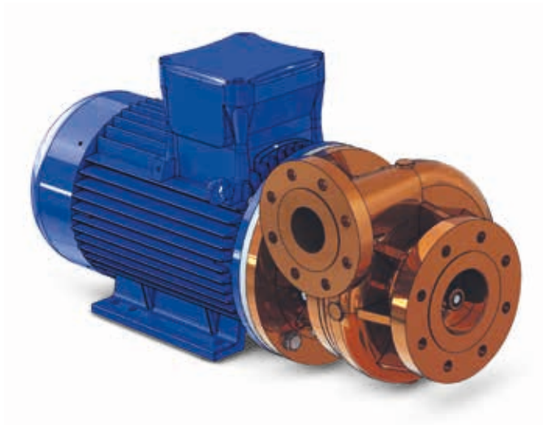
DSM SERIES

FOR INDUSTRIAL GASES

TECHNICAL FEATURES
- Electric motor and direct transmission
- Mechanical seal in rulon
- Inducer to minimize required NPSH

APPLICATIONS
- Liquid transfer between storage tanks
- Process and backup pumps operations

TRANSFERRED FLUIDS
- LIN, LOX, LAR, LCO_2, LN_2O



OPTIONAL ACCESSORIES
- Counter flanges
- Filter
- Flexible hose for suction and discharge lines
- Leakage detection by temperature sensor
- Flushing system with nitrogen gas
- Temperature sensor for cooling down
- Electrical control panel
- Motor suitable for VFD
- Complete automatic system available on demand
- Mobile skid available on demand
- Temperature sensor of bearing casing

TEST AND CHECKS
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

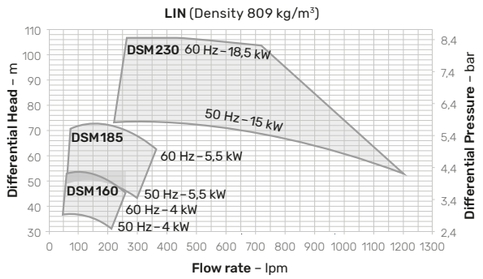
STANDARDS
Designed according to:
- European Directive
- EIGA/IGC/CGA guidelines

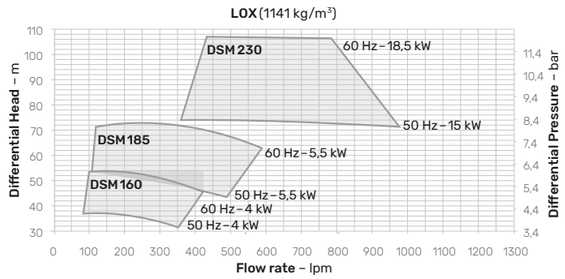
DSM SERIES* PERFORMANCES

Model		DSM 160	DSM 185	DSM 230
Power installed (Motor frame)	Pm [kW]	4 (112)	5,5 – 7,5 (132)	11 – 15 – 18,5 (160)
Max operating speed (50 Hz/60 Hz)	rpm	2950/3540	2950/3540	2950/3540
Max suction pressure	P [bar]	6 – (25 LCO_2 & LN_2O)	6 – (25 LCO_2 & LN_2O)	6 – (25 LCO_2 & LN_2O)
Max allowable working pressure	MAWP [bar]	30	33	26
Max Head (50 Hz/60 Hz)	DH [m]	37/53	50/72	73/105
Max flow rate (50 Hz/60 Hz)	Q [lpm]	210/250	300/360	800/1200

*Special versions with high frequency VFD controlled motors are available

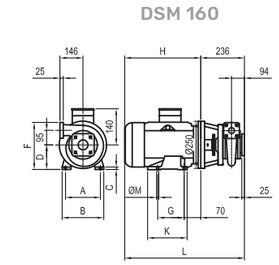
Data can be subjected to change



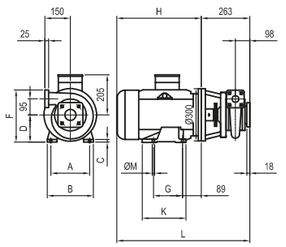


GENERAL DIMENSIONS

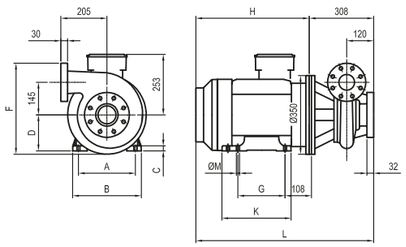
DSM 160

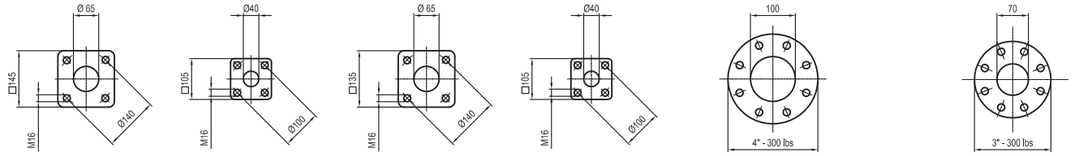


DSM 185



DSM 230





DSM 160

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	Weight [kg]
4	112	190	228	13	112	258	140	350	222	586	12	70

DSM 185

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	Weight [kg]
5,5	132	216	272	13	132	280	140	425	222	688	12	120
7,5												

DSM 230

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	Weight [kg]
11								529		839		220
15	160	254	310	23	160	425	210		295		14	
18,5								586		894		230

Data can be subjected to change

CRYOGENIC CENTRIFUGAL PUMPS

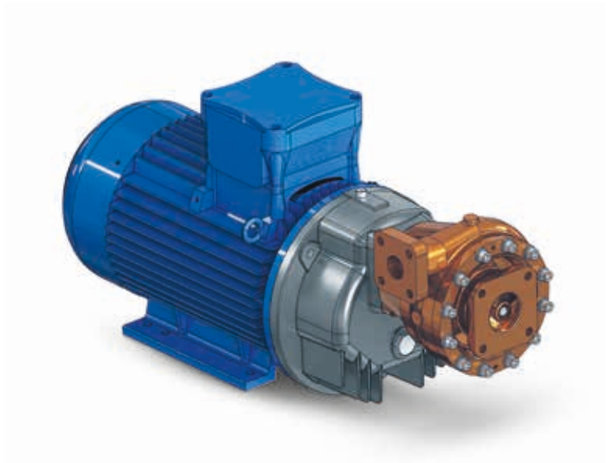
SGM SERIES

FOR INDUSTRIAL GASES

TECHNICAL FEATURES
- Electric motor and gearbox transmission
- Mechanical seal in rulon
- Inducer to minimize required NPSH

APPLICATIONS
- Liquid transfer between storage tanks
- Industrial Processes

TRANSFERRED FLUIDS
- LIN, LOX, LAR, LCO_2, LN_2O



OPTIONAL ACCESSORIES
- Counter flanges
- Filter
- Flexible hose for suction and discharge line
- Leakage detection by temperature sensor
- Flushing system with nitrogen gas
- Temperature sensor for cooling down
- Electrical control panel
- Motor suitable for VFD
- Complete automatic system available on demand
- Mobile skid available on demand
- Temperature sensor of bearing casing

TEST AND CHECKS
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

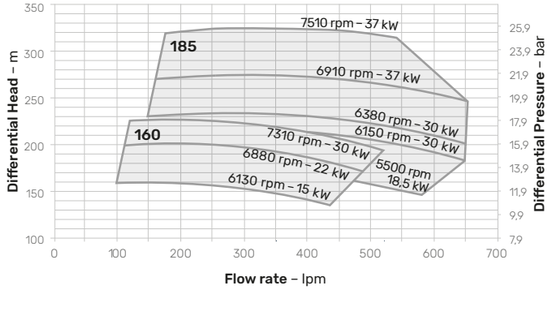
STANDARDS
Designed according to:
- European Directive
- EIGA/IGC/CGA guidelines

SGM SERIES PERFORMANCES

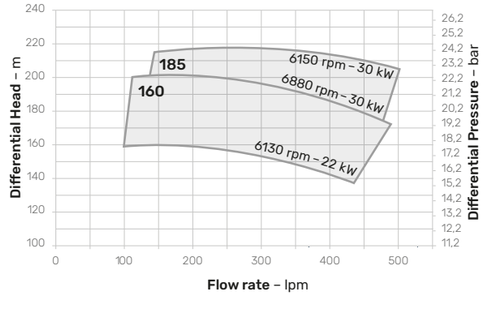
Model		SGM 160	SGM 185
Power installed (Motor frame)	Pm [kW]	11 – 15 – 18,5 (160)/22 (180) – 30 (200)	11 – 15 – 18,5 (160)/22 (180) – 30 – 37 (200)
Max operating speed (50 Hz)	rpm	7310	7510
Max suction pressure	P [bar]	6	6
Max allowable working pressure	MAWP [bar]	30	33
Max Head (50 Hz)	DH [m]	225	325
Max flow rate (50 Hz)	Q [lpm]	520	650

Data can be subjected to change

LIN (Density 809 kg/m³)

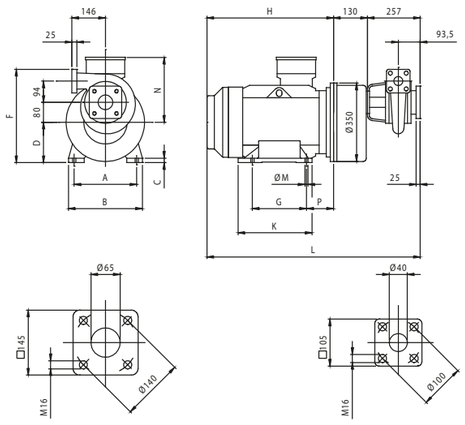


LOX (Density 1141 kg/m³)

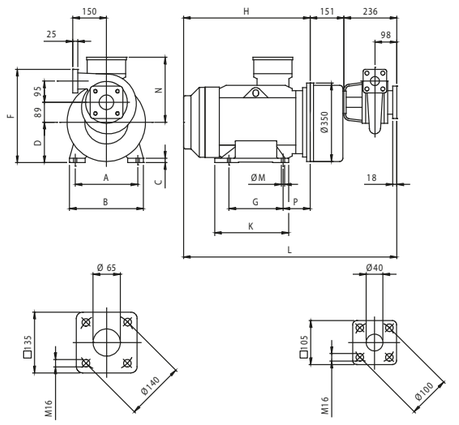


GENERAL DIMENSIONS

SGM 160



SGM 185



SGM 160

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	N	P	Weight [kg]
11														
15	160	254	318	15	160	387	210	529	305	916	15	254	108	145
18,5								586		973				
22	180	279	350	20	180	407	241	618	340	1005	15	274	121	200
30	200	318	393	22	200	427	267	699	360	1086	19	315	133	270

SGM 185

Available motor power [kW]	Motor size	A	B	C	D	F	G	H	K	L	M	N	P	Weight [kg]
11														
15	160	254	318	15	160	397	210	529	305	916	15	254	108	145
18,5								586		973				160
22	180	279	350	20	180	417	241	618	340	1005	15	274	121	220
30	200	318	393	22	200	437	267	699	360	1086	19	315	133	270
37														

Data can be subjected to change

VERTICAL CRYOGENIC PROCESS PUMPS

DVM SERIES

FOR INDUSTRIAL GASES

TECHNICAL FEATURES

- Available in single stage or multistage configuration
- Electric motor with direct transmission
- Piloted by variable frequency drive for different speeds and operating points
- Cartridge labyrinth gas seal (single or double type)
- Low sealing gas consumption required
- Purged bearing grease retaining chamber
- Purged warm box
- Composite insulating flange
- Inducer to minimize required NPSH

APPLICATIONS

- Continuous processes with industrial gases
- Air separation units (ASU)
- Recycling
- Liquid transfer between storage tanks
- Process and backup operations

TRANSFERRED FLUIDS

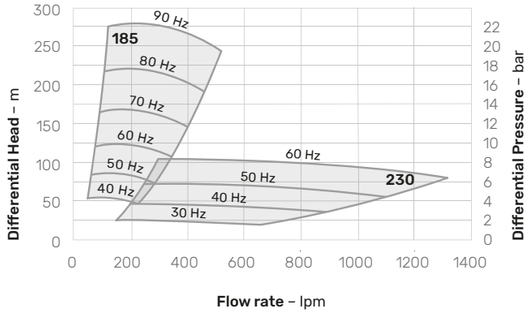
- LIN, LOX, LAR

DVM SERIES PERFORMANCES

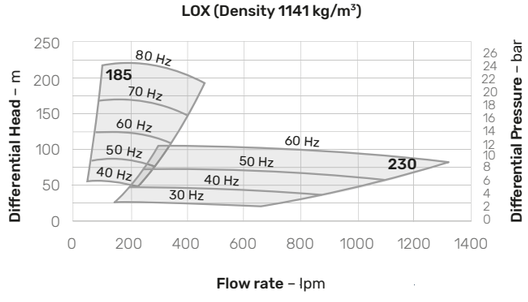
Model		DVM 185-2S	DVM 230-1S
Max power installed (Motor frame)	Pm [kW]	37	30
Max operating speed (Frequency)	rpm	5200 (90 Hz)	3520 (60 Hz)
Max suction pressure	P [bar]	5	5
Max allowable working pressure	MAWP [bar]	35	20
Max Head	DH [m]	280	110
Max flow rate	Q [lpm]	520	1320

Data can be subjected to change

LIN (Density 809 kg/m³)



LOX (Density 1141 kg/m³)



STANDARD ACCESSORIES

- Labyrinth gas seal control panel
  - Differential pressure transmitters for monitoring the seal gas efficiency
  - Flow meters for monitoring the gas flow through the pump lantern and seal
  - Differential pressure regulator for an accurate gas flow adjustment
- PT100 for monitoring the seal gas leakage and pump cool-down
- Motor front bearing grease retaining chamber
- Expansion line to minimize the required seal gas reference pressure

OPTIONAL ACCESSORIES

- PT100 for monitoring the motor front bearing temperature
- Front motor bearing heating belt
- Suction filter
- Suction and discharge flexible hoses

TEST AND CHECKS

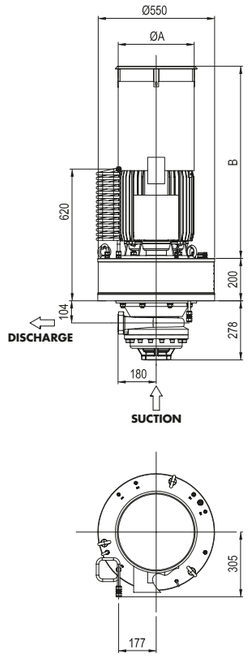
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

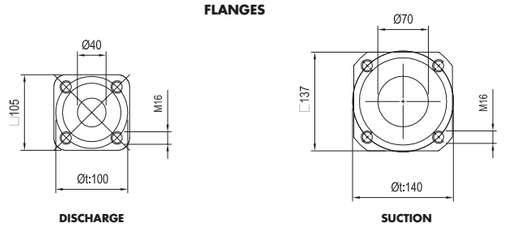
Designed according to:

- European Directive
- EIGA/IGC/CGA guidelines

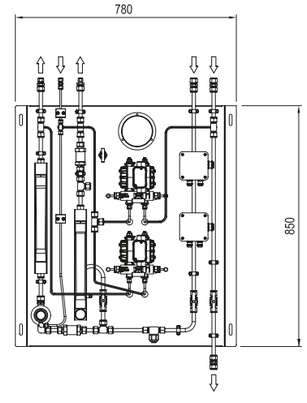
GENERAL DIMENSIONS



FLANGES



LABYRINTH GAS SEAL CONTROL PANEL



DVM 185-2S

Motor size	A	B	Weight [kg]
160 L	315	831	325
180 L	358	905	440

Data can be subjected to change

CRYOGENIC RECIPROCATING PUMPS

VT-1 SERIES

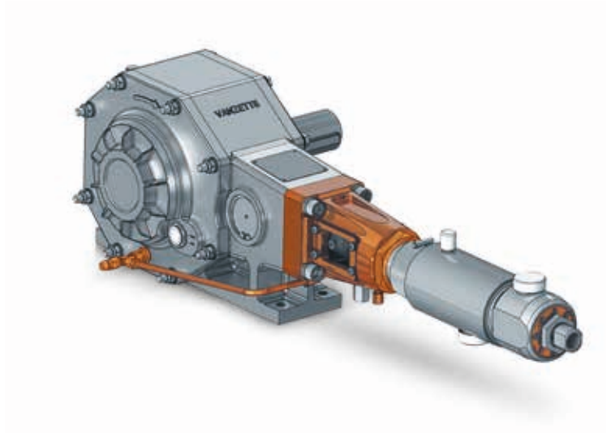
FOR INDUSTRIAL GASES

TECHNICAL FEATURES
- Compatible with Cold Converter and Thermosyphon storage tanks
- Easy installation due to the 360° rotating inlet and outlet connections
- High efficiency
- Low operating noise
- Quick maintenance thanks to the integrated cartridge seal system

APPLICATIONS
- Cylinders filling and high pressure accumulation capacities

CRANKDRIVE SYSTEM
- TW 6,5 – Oil lubrication

TRANSFERRED FLUIDS
- LIN, LOX, LAR, LCO_2, LN_2O



STANDARD SUPPLY
- Painted steel frame
- Cryogenic pump
- Electric motor
- Transmission by belts and pulleys
- Double pulsation damper

STANDARD ACCESSORIES
- Suction flexible hose
- Return flexible hose
- Low pressure safety valve
- High pressure safety valve
- High pressure manual valve for venting
- Check valve
- Pressure gauge
- Pressure switch
- Temperature sensor for cool down
- Temperature sensor for cavitation
- Temperature sensor for leaks detection

OPTIONAL ACCESSORIES
- High pressure pneumatic vent valve
- Configurable for breathable LOX
- Flushing system with nitrogen gas
- Electrical control panel
- 2 speed electric motor
- Motor suitable for VFD
- Complete automatic system available on demand

Average SKID weight: **690 kg**

Package overall dimensions: **195 x 95 x 130 cm**

TEST AND CHECKS
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

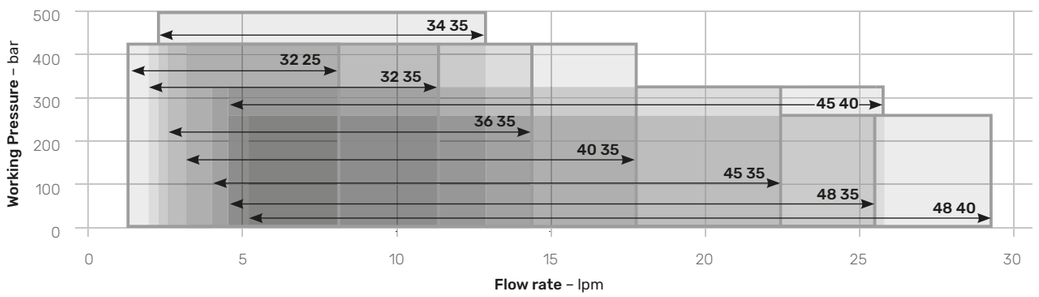
STANDARDS
Designed according to:
- European Directive Machinery
- European Directive PED
- EIGA/IGC/CGA guidelines

VT-1 TW 6,5 PERFORMANCES

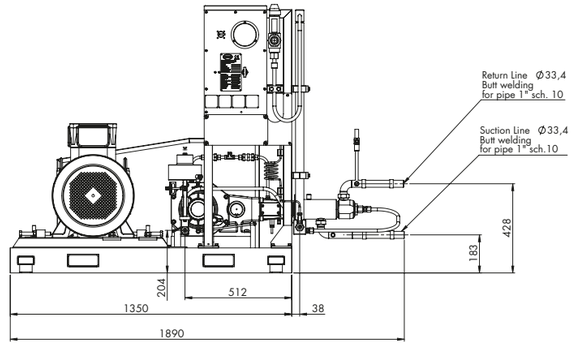
Model	Piston		Flow rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power Installed
	Bore	Stroke	Min 80 rpm		Max 450 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
VT-1 32 25	32	25	1,4	0,4	8,1	2,1	20	290	420	6092	3 – 15
VT-1 32 35	32	35	2,0	0,5	11,4	3,0	20	290	420	6092	4 – 22
VT-1 34 35	34	35	2,3	0,6	12,9	3,4	20	290	500	7252	5,5 – 30
VT-1 36 35	36	35	2,6	0,7	14,4	3,8	20	290	420	6092	5,5 – 30
VT-1 40 35	40	35	3,2	0,8	17,8	4,7	20	290	420	6092	5,5 – 30
VT-1 45 35	45	35	4,0	1,1	22,5	5,9	20	290	320	4641	5,5 – 30
VT-1 48 35	48	35	4,6	1,2	25,6	6,8	20	290	260	3771	5,5 – 30
VT-1 45 40	45	40	4,6	1,2	25,8	6,8	20	290	320	4641	7,5 – 37
VT-1 48 40	48	40	5,2	1,4	29,3	7,7	20	290	260	3771	5,5 – 37

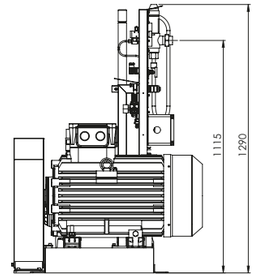
NPSH required: 1,5 – 1,7 m

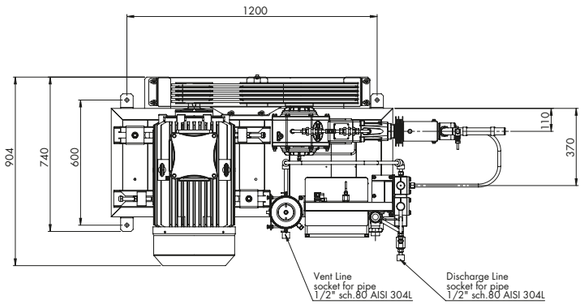
Data can be subjected to change



GENERAL DIMENSIONS







COLD END DETAIL
The innovative seal cartridge allows a very easy maintenance

CRYOGENIC RECIPROCATING PUMPS

VT-3 SERIES

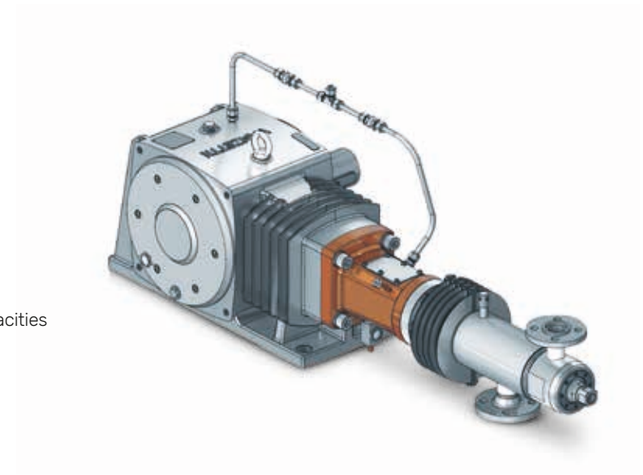
FOR INDUSTRIAL GASES

TECHNICAL FEATURES
- Compatible with Cold Converter and Thermosyphon storage tanks
- Modular assembly (from Simplex to Triplex)
- High efficiency
- Low operating noise
- Quick maintenance thanks to the integrated cartridge seal system

APPLICATIONS
- Cylinders filling and high pressure accumulation capacities
- Other industrial applications

CRANKDRIVE SYSTEM
- TW 10 – Oil Lubrication

TRANSFERRED FLUIDS
- LIN, LOX, LAR, LCO_2, LN_2O



STANDARD SUPPLY
- Painted steel frame
- Cryogenic pump
- Electric motor
- Transmission by belt and pulleys or gearbox and couplings
- Double pulsation damper

STANDARD ACCESSORIES
- Suction flexible hose
- Return flexible hose
- Low pressure safety valve
- High pressure safety valve
- Check valve
- Pressure gauge
- Pressure switch
- Temperature sensor for cool down
- Temperature sensor for cavitation
- Temperature sensor for leaks detection
- Junction box

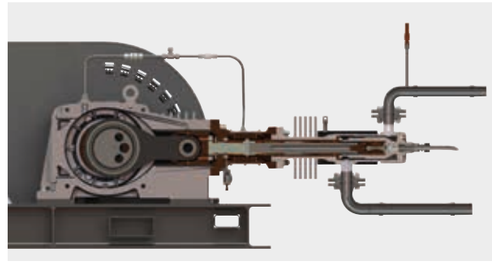
OPTIONAL ACCESSORIES
- Flushing system with nitrogen gas
- Forced oil lubrication system
- High pressure pneumatic valve for venting
- Motor suitable for VFD
- Complete automatic system available on demand

Average SKID weight: **1600 kg**

Package overall dimensions: **295 x 118 x 154 cm**

TEST AND CHECKS
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS
Designed according to:
- European Directive Machinery
- European Directive PED
- EIGA/IGC/CGA guidelines



Pump skid section

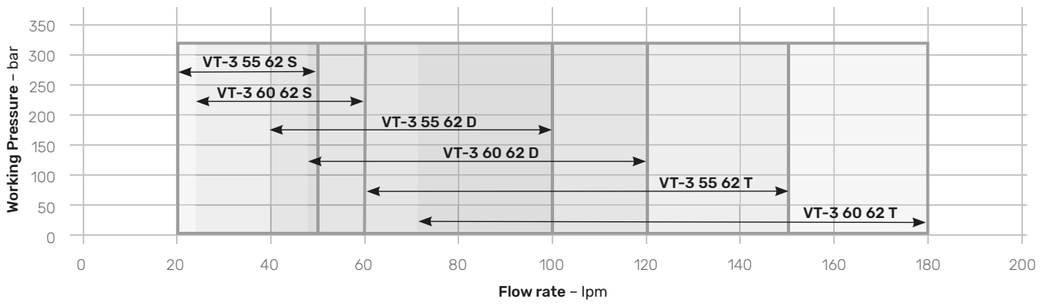
VT-3 TW 10 PERFORMANCES

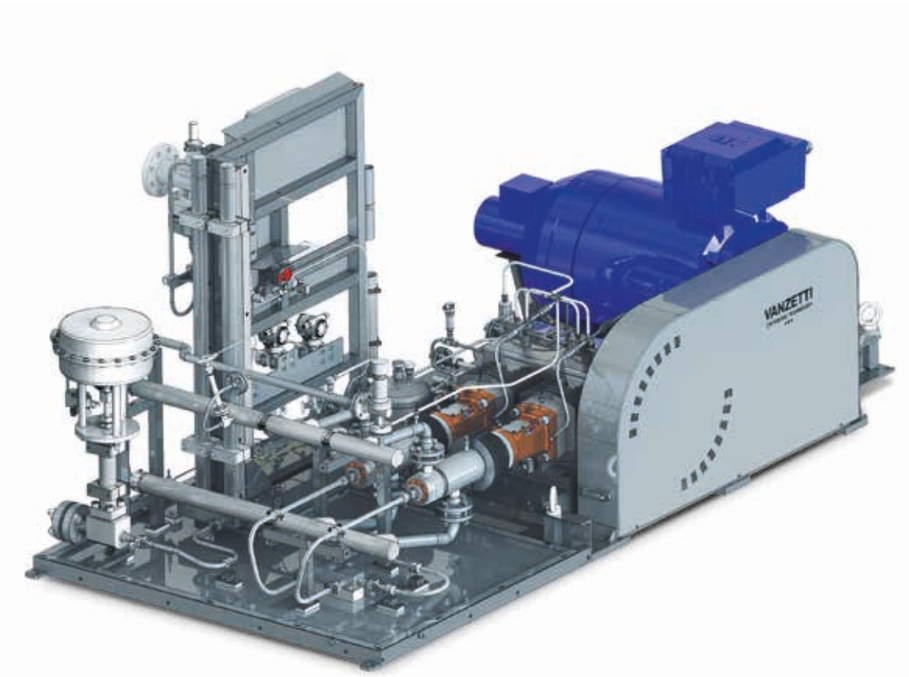
Model	Piston		Flow-rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power installed
	Bore	Stroke	Min 150 rpm*		Max 380 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
VT-3 55 62 S	55	62	20	5,3	50	13,2	20	290	320	4641	30 – 75
VT-3 55 62 D	55	62	40	10,6	100	26,4	20	290	320	4641	37 – 90
VT-3 55 62 T	55	62	60	15,9	150	39,6	20	290	320	4641	45 – 110
VT-3 60 62 S	60	62	23,7	6,3	60	15,9	20	290	320	4641	30 – 75
VT-3 60 62 D	60	62	47,3	12,5	120	31,7	20	290	320	4641	45 – 110
VT-3 60 62 T	60	62	71,0	18,8	180	47,6	20	290	320	4641	55 – 132

*Flow-rate can be reduced by forced oil lubrication system

NPSH required: 1,5 – 1,7 m

Data can be subjected to change

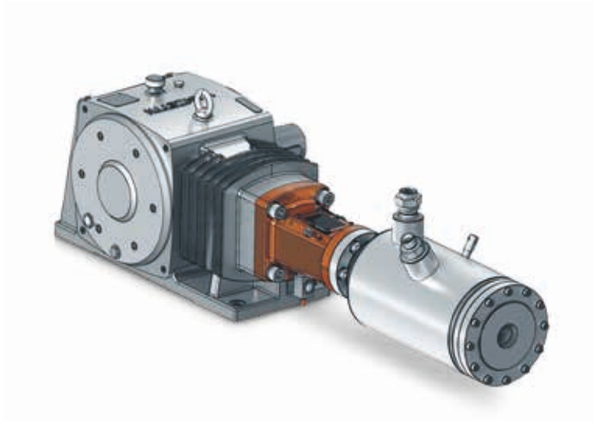




CRYOGENIC RECIPROCATING PUMPS

VT-100 SERIES

FOR INDUSTRIAL GASES



TECHNICAL FEATURES

- Compatible with Cold Converter and Thermosyphon storage tanks
- Modular assembly (from Simplex to Triplex)
- High efficiency
- Low operating noise
- Quick maintenance thanks to the cartridge seal system

APPLICATIONS

- Process applications and medium pressure capacities filling

CRANKDRIVE SYSTEM

- TW 10 – Oil lubrication

TRANSFERRED FLUIDS

- LIN, LOX, LAR, LCO_2, LN_2O

STANDARD SUPPLY

- Painted steel frame
- Cryogenic pump
- Electric motor
- Transmission by belts and pulleys, available also with gearbox
- Double pulsation damper

STANDARD ACCESSORIES

- Suction flexible hose
- Return flexible hose
- Low pressure safety valve
- High pressure safety valve
- High pressure manual valve for venting
- Check valve
- Pressure gauge
- Pressure switch
- Temperature sensor for cool down
- Temperature sensor for cavitation
- Temperature sensor for leaks detection

OPTIONAL ACCESSORIES

- High pressure pneumatic vent valve
- Flushing system with nitrogen gas
- Electrical control panel
- 2 speed electric motor
- Motor suitable for VFD
- Complete automatic system available on demand

Average SKID weight: **1600 kg**

Package overall dimensions: **302 x 119 x 115 cm**

TEST AND CHECKS

- Dimensional checks of each mechanical component before assembly
- Performance test with LIN available for class and customer

STANDARDS

Designed according to:

- European Directive Machinery
- European Directive PED
- EIGA/IGC/CGA guidelines

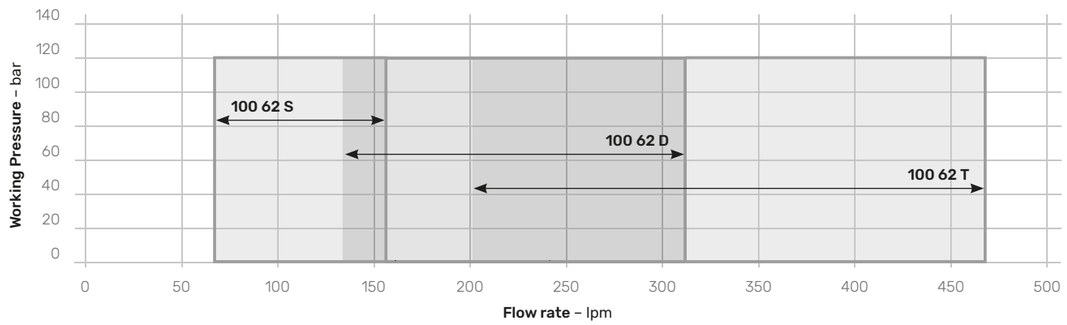
VT-100 TW 10 PERFORMANCES

Model	Piston		Flow rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power Installed
	Bore	Stroke	Min 150 rpm*		Max 350 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
VT 100 62 S	100	62	67	17,7	156	41,2	20	290	120	1740	37 – 75
VT 100 62 D	100	62	134	35,4	312	82,4	20	290	120	1740	45 – 110
VT 100 62 T	100	62	201	53,1	468	123,6	20	290	120	1740	55 – 132

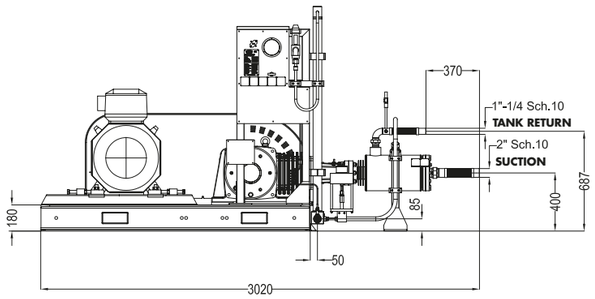
NPSH required: 1 – 1,2 m

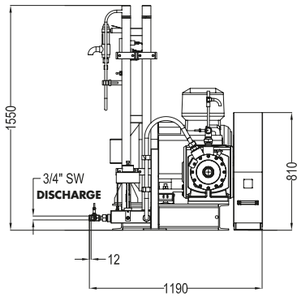
*Flow rate can be reduced by forced oil lubrication system

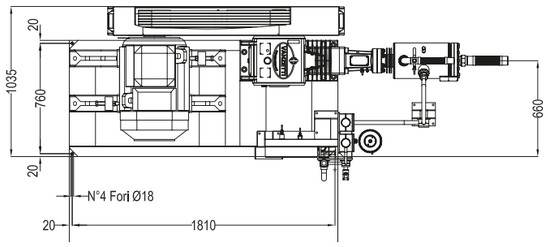
Data can be subjected to change



GENERAL DIMENSIONS







COLD END DETAIL

The innovative seal cartridge allows a very easy maintenance

CRYOGENIC RECIPROCATING PUMPS

HP SERIES

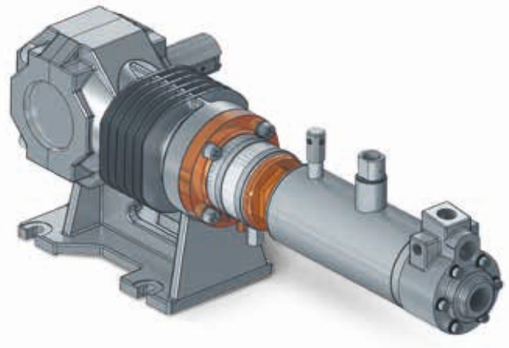
FOR INDUSTRIAL GASES

TECHNICAL FEATURES
- Compatible with Cold Converter and Thermosyphon storage tanks
- Low operating noise
- High reliability

APPLICATIONS
- Cylinders filling and high pressure accumulation capacities

CRANKDRIVE SYSTEM
- TW 3 – Grease Lubrication

TRANSFERRED FLUIDS
- LIN, LOX, LAR



STANDARD SUPPLY
- Painted steel frame
- Cryogenic pump
- Electric motor
- Transmission by belts and pulleys
- Pulsation damper

STANDARD ACCESSORIES
- Suction flexible hose
- Return flexible hose
- Low pressure safety valve
- High pressure safety valve
- High pressure manual valve for venting
- Check valve
- Pressure gauge
- Pressure switch
- Temperature sensor for cool down
- Temperature sensor for cavitation
- Temperature sensor for leaks detection
- Phase separator (for Cold converter installations)
- By-pass valve (for Cold converter installations)

OPTIONAL ACCESSORIES
- High pressure pneumatic vent valve
- Configurable for breathable LOX
- Flushing system with nitrogen gas
- Electrical control panel
- 2 speed electric motor
- Motor suitable for VFD
- Complete automatic system available on demand

Average SKID weight: **420 kg**

Package overall dimensions: **200 x 85 x 139 cm**

TEST AND CHECKS
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

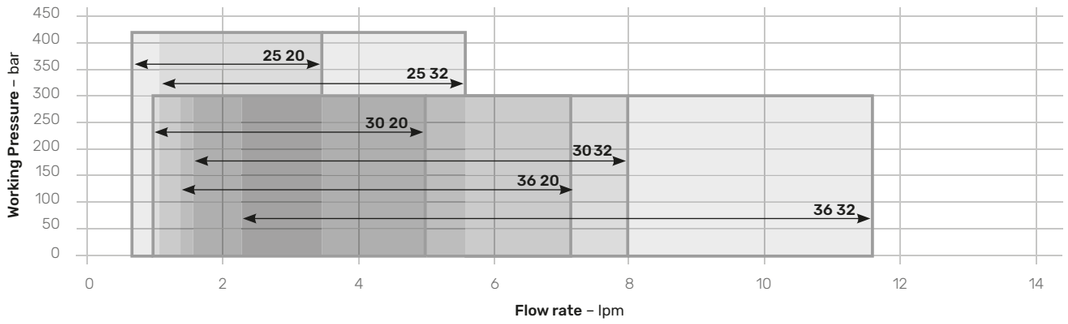
STANDARDS
Designed according to:
- European Directive Machinery
- European Directive PED
- EIGA/IGC/CGA guidelines

HP TW 3 PERFORMANCES

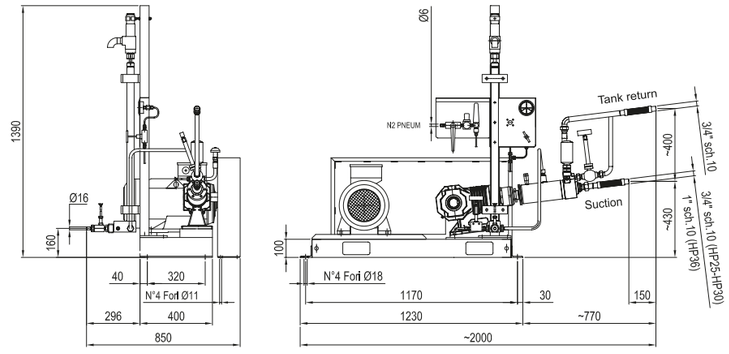
Model	Piston		Flow rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power Installed
	Bore	Stroke	Min 80 rpm		Max 420 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
HP 25 20	25	20	0,7	0,2	3,5	0,9	16	232	420	6092	2,2 – 7,5
HP 25 32	25	32	1,1	0,3	5,6	1,5	16	232	420	6092	2,2 – 11
HP 30 20	30	20	1,0	0,3	5,0	1,3	20	290	300	4351	2,2 – 7,5
HP 30 32	30	32	1,6	0,4	8,0	2,1	20	290	300	4351	2,2 – 11
HP 36 20	36	20	1,4	0,4	7,2	1,9	20	290	300	4351	2,2 – 11
HP 36 32	36	32	2,3	0,6	11,6	3,1	20	290	300	4351	3 – 15

NPSH required: 1,5 – 1,7 m

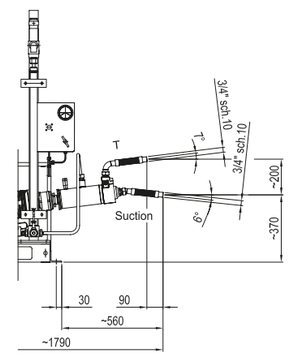
Data can be subjected to change



GENERAL DIMENSIONS



COLD CONVERTER CONFIGURATION



TERMOSYPHON CONFIGURATION

CRYOGENIC RECIPROCATING PUMPS

HPH SERIES

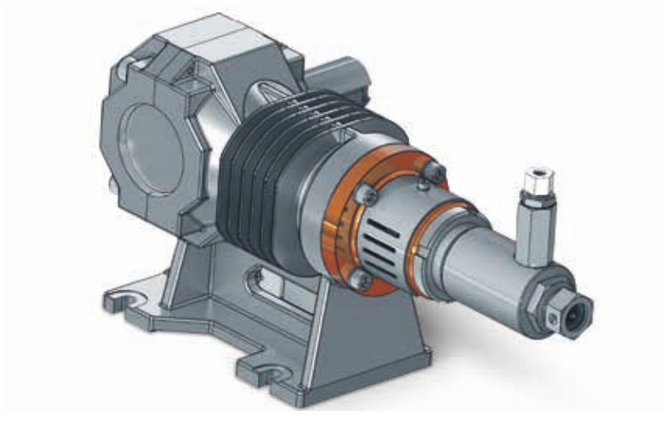
FOR INDUSTRIAL GASES

TECHNICAL FEATURES
- Low operating noise
- High reliability
- Easy maintenance

APPLICATIONS
- Cylinders filling and high pressure accumulation capacities

CRANKDRIVE SYSTEM
- TW 3A – Grease Lubrication

TRANSFERRED FLUIDS
- LCO_2, LN_2O



STANDARD SUPPLY
- Painted steel frame
- Pneumatic accumulator
- Cryogenic pump
- Electric motor
- Transmission system with belts and pulleys

STANDARD ACCESSORIES
- Low pressure safety valve
- Inox Filter
- Suction flexible hose

OPTIONAL ACCESSORIES
- Electrical control panel
- 2 speed electric motor
- Motor suitable for VFD
- Distribution Panel
- Complete automatic system available on demand

Average SKID weight: **280 kg**

Package overall dimensions: **196 x 63 x 55 cm**

TEST AND CHECKS
- Dimensional control of each mechanical component before assembly
- Performance test with LIN available for class and customer

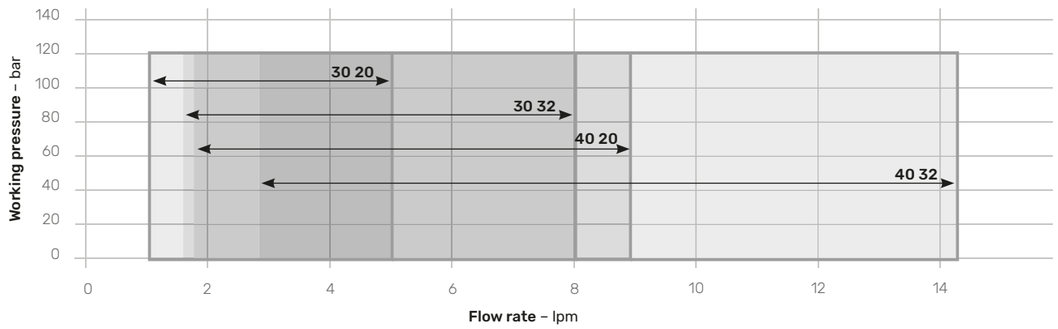
STANDARDS
Designed according to:
- European Directive Machinery
- EIGA/IGC/CGA guidelines

HPH TW 3A PERFORMANCES

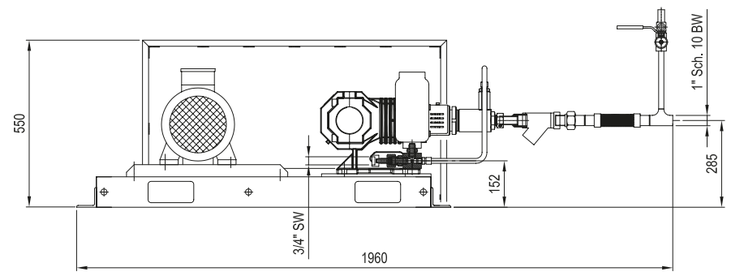
Model	Piston		Flow rate				Maximum allowable suction pressure (MASP)		Maximum allowable working pressure (MAWP)		Power Installed
	Bore	Stroke	Min 80 rpm		Max 420 rpm						Referred to MAWP
Series pump	mm	mm	lpm	gpm	lpm	gpm	bar	psi	bar	psi	kW
HPH 30 20	30	20	1,0	0,3	5,0	1,3	30	435	120	1740	2,2 – 3
HPH 30 32	30	32	1,6	0,4	8,0	2,1	30	435	120	1740	2,2 – 5,5
HPH 40 20	40	20	1,7	0,4	8,9	2,4	30	435	120	1740	2,2 – 5,5
HPH 40 32	40	32	2,8	0,7	14,3	3,8	30	435	120	1740	2,2 – 7,5

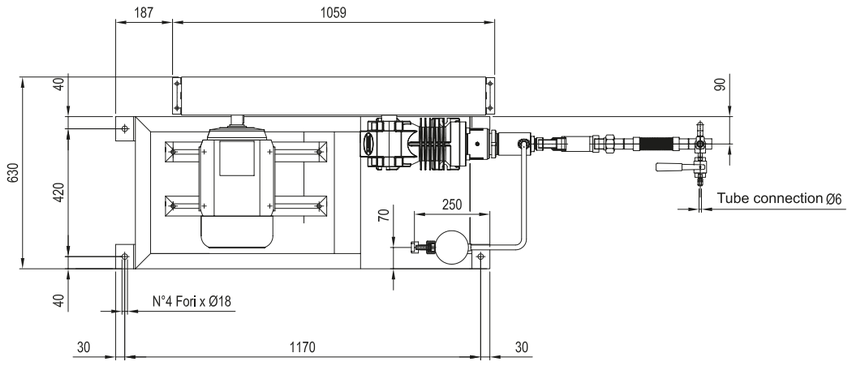
NPSH required: 1 – 1,5 m

Data can be subjected to change



GENERAL DIMENSIONS





AFTER SALES

COMMISSIONING AND START-UP SERVICES

Our commissioning and start-up services leverage on our in-house cryogenic experts team, featuring decades of hands-on practical knowledge, to provide full support during the systems start-up phase. Our versatile, skilled and responsive staff guarantees the proper operation of any Vanzetti Engineering equipment and system from the moment the customer is “ready to run”.

IN HOUSE OR ON SITE MAINTENANCE

Vanzetti Engineering highly experienced and skilled technicians provide equipment maintenance and repair services to keep your systems and equipment in top working conditions.

Scheduled maintenance are performed at Vanzetti Engineering facility, following a consolidated and precise procedure.

Our engineering team:

- Assesses the equipment
- Determines the source of the failure
- Recommends the proper maintenance actions

Our technicians:

- Disassemble and clean the equipment
- Make weld repairs
- Replace all wear components

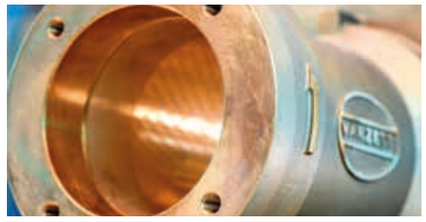
High standards of precision and strict quality controls ensure that the equipment will perform at top efficiency, reliability and productivity levels when back in operation. Emergency on site repairs can be performed and can be agreed on with commercial and technical departments.

SPARE PARTS SUPPORT

In order to keep our systems running and our customers always fully operational, Vanzetti Engineering provides:

- OEM guaranteed high-quality parts
- Fully comprehensive parts kits
- Availability and management of spare and wear parts

Customers can order parts, consult pricing and receive their delivery confirmation for any spare part.



OUR CLIENTS