



ARYA SEPEHR KAYHAN

VS 4 Series

Technical Catalogue

2012

Our Vision

ASK's vision is to be a recognized leader in innovative, sustainable, engineered, and customer-focused solutions for performance critical applications in the oil and gas, hydrocarbon processing, power generation, pulp and paper, and other selected industries.

Our Mission

ASK aims to be a multi-industry company with a strong brand, which provides solutions that combine products, services, engineering, and customer - application expertise.

The corporation is close to the customer by being primarily direct-sales driven.

Engineering, innovation, and technology are cornerstones.

ASK strives to be an attractive employer and to create an environment where employees can excel. The company focuses on creating value for its customers.

ASK Innotec

The research and development unit of ASK supports the divisions of the company and industrial companies in their development projects by providing contract research and special technical services like diagnostics and certified testing as well as one-off production and engineering. ASK Innotec has expertise in materials and surface engineering, fluid technology, as well as in mechanics. Its core competencies in contract research also lie in these classical disciplines.

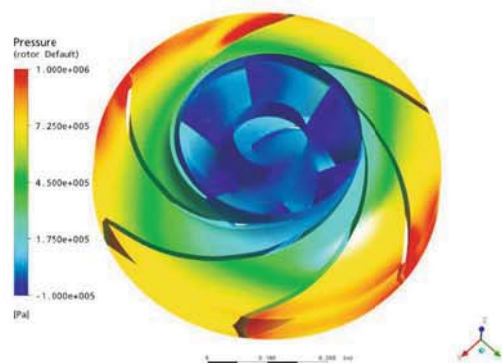


Product description

Using modern computer aided design software the pumps are specifically designed as a heavy duty, minimal wear, long life pump which has been designed in a modular way, with a number of options available, to ensure full compliance to the customer's exact requirements and specifications. A fully compliant API 610 heavy duty baseplate helps achieve low vibration and noise levels which in turn extends the pump's life and ensures maximum running time. A 'space saving' reduced footprint baseplate is also available for use where space is at a premium.

The pumps can be fitted with a variety of proprietary components (i.e. seals, motors & couplings) from all the major manufacturers to cater for customer site preferences. Double mechanical seal arrangements can be fitted with a seal support system attached. This can be supplied by Protect System, which is designed and manufactured by famous manufacturer's seal support system can be fitted.

To complete the package a full range of standard material options from SG iron and stainless steel, to duplex are available to match your process fluid. NACE compliant materials are also available. Standard documentation packs including manufacturing data books, material certification, and installation & operating manuals are available to suit the application. Performance testing to API 610 / ISO 13709 and various NDE (non destructive examination) & NDT (non destructive testing) options are offered to ensure full compliance to our customer's specifications. Alternative bespoke packages can be tailored to fit your exact requirements.



Fields of Application

ASK pumps provide a broad range of API centrifugal pumps for the demanding applications of the hydrocarbon processing industry. The pumps are designed for the delivery of most fluids found in refinery processes.

- Petroleum refining, production, and distribution
- Petrochemical and demanding chemical processing
- General industrial requiring high temperature
- Chemical plants

VS4 series have been specifically designed to service the following markets:

Biocide / rain, Condensate return, Flare knock out drum, MEG 75% with H₂O, Oily water separator, Sour water sump, Storm water, Utilities Wash down sumps



Key features

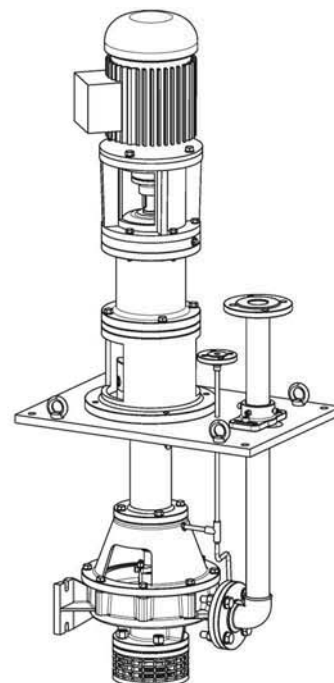
- VS4 single stage vertically suspended centrifugal pumps.
- 20 bar pumps to API 610 (11th edition) & ATEX Compliant
- -15°C to 150°C temperature applications
- Shrouded or Semi-Open Impellers
- A range of alloys available on request including NACE compliant materials
- Tested to API 610 / ISO 13709 procedures – Head, Flow, NPSH, Noise & Vibration
- A range of API 682 Seals & systems (PED compliant)
- ANSI mount flange or rectangular plate

Product Overview

General description

A range of vertical long shaft single stage centrifugal sump pumps manufactured in a variety of alloys designed to match exact customer requirements with lengths available up to 6m sump depth as standard.

Construction	Heavy duty modular design maximizing flexibility to suit customer's application.
Design methodology	Advanced computer techniques including 3D modeling, FEA & CFD
Design standards	API 610 11th : 2010 / ISO 13709 : 2009 ATEX EC-Directive 94/9/EC
Design pressure rating	Up to 20 bar g @ 20°C
Operating temperature	-15°C to 150°C (pressure containing parts)
Design temperature	85 °C (standard construction)
Flow rate	Up to 1100 m³/h
Differential head	Up to 95 m
Speed	Up to 3000 rpm
Support plate	ANSI mount circular flange: 18" to 74" ; 150 # , FF
Configurations & sizes	Circular plate: 18" to 74" Rectangular plate: 635 mm to 2000 mm ; Rectangle Plate
Pump sump depth	Min standard pump length: 0.60 m Max standard pump length: 6.0 m
Design life	20 years (3 years uninterrupted operation)



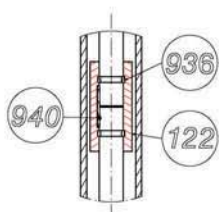
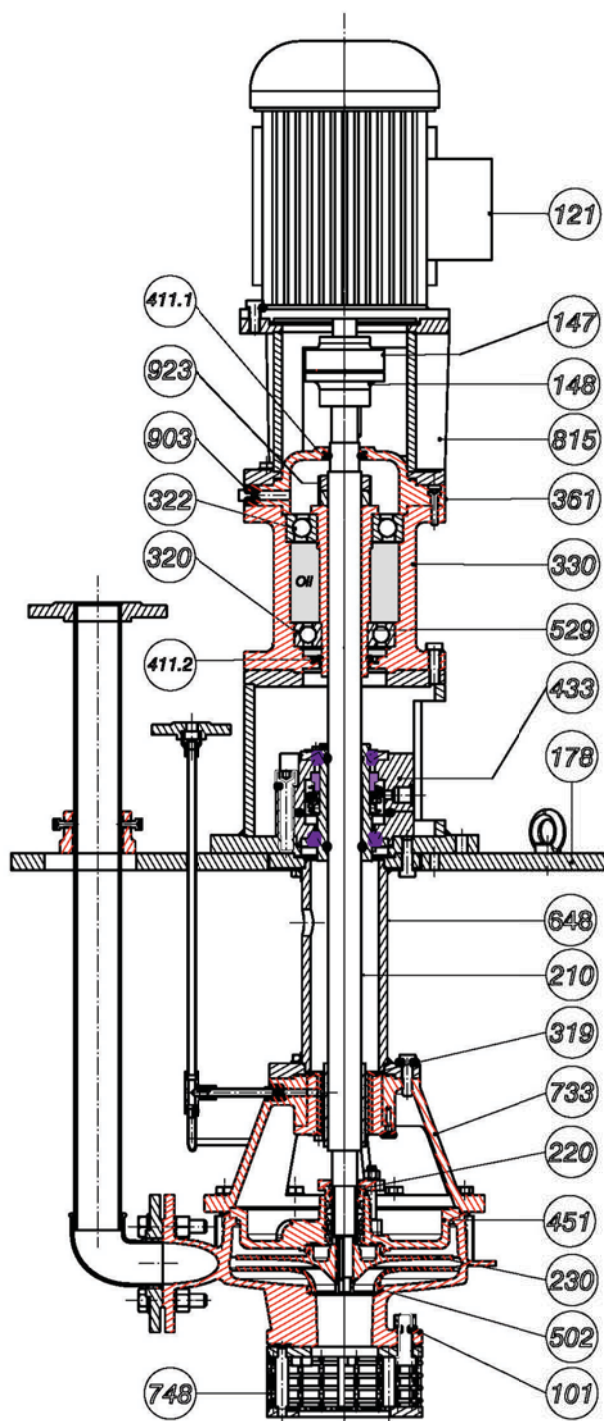
Material Options

Materials	Casing	Impeller
I1 – Cast Iron / Cast Iron	ASTMA 48 Class 40B	ASTM A 48 Class 40B
I2 – Cast Iron / Bronze	ASTMA 48 Class 40B	C92200
S1 – Carbon Steel / Cast Iron	ASTMA 216 WCB	ASTM A 48 Class 40B
S3 – Carbon Steel / Ni-resist	ASTMA 216 WCB	ASTM A 436 Type 1,2,3
S4 – Carbon Steel / Cast Iron	ASTMA 216 WCB	ASTM A 48 Class 40B
S5 – Carbon Steel / Carbon Steel	ASTMA 216 WCB	ASTM A 216 WCB
S6 – Carbon Steel / 12% Cr SS	ASTMA 216 WCB	CA6NM
S8 – Carbon Steel / SS 316	ASTMA 216 WCB	ASTM A744 CF-3M
C6 – SS 304 / SS 304	CA6NM	CA6NM
A8 - SS 316 / SS 316	ASTMA744 CF-3M	ASTM A744 CF-3M
D1 – Duplex SS / Duplex SS	ASTMA 240-S31803	ASTM A 240-S31803

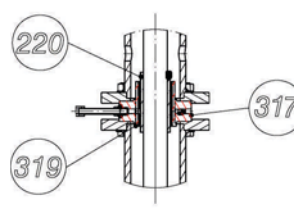
- Other alloys, including NACE compliant materials are available on request.
- We offer specific NDT and component documentation to ensure compliance to your exact requirements.

General Sectional Drawing

Part Name	Part No.
Volute casing	101
Electromotor	121
Intermediate coupling	122
Coupling hub (motor)	147
Coupling hub (pump)	148
Sole plate (Skid)	178
Shaft	210
Shaft sleeve	220
Impeller	230
Spider	317
Rubber bearing	319
Ball bearing	320
Angular ball bearing	322
Bearing housing	330
Bearing cover	361
Upper oil seal	411.1
Lower oil seal	411.2
Mechanical seal	433
Stuffing box	451
Wear ring	502
Bearing sleeve	529
Column pipe-assembly	648
Connector piece	733
Basket strainer	748
Motor support	815
Oil plug	903
Lock nut	923
Intermediate ring	936
Parallel key	940



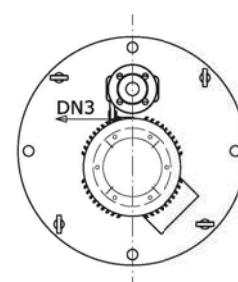
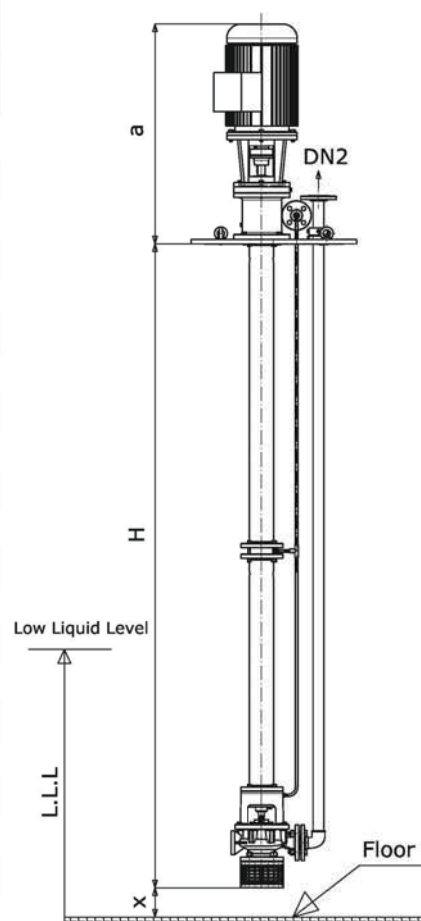
Intermediate Coupling



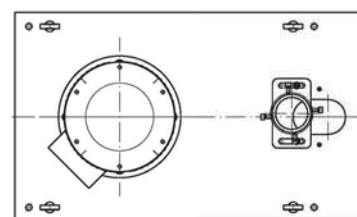
Intermediate Column

Dimensions and General Assembly Drawing

Model	DN ₂	DN ₃	H		L.L.L	x (min)	Skid Size
			Max	Min			F Inst.
25-160 L	25	12	6000	600	400	50	18"
25-200 L	25	12	6000	600	400	50	18"
25-160 XL	25	12	6000	600	400	50	18"
25-200 XL	25	12	6000	600	400	50	18"
50-160 S	50	12	6000	600	400	50	18"
50-200 S	50	12	6000	600	400	50	18"
50-250 S	50	12	6000	600	400	50	22"
50-160 L	50	12	5750	600	450	65	18"
50-200 L	50	12	5750	600	450	65	20"
50-250 L	50	12	5750	600	450	65	22"
50-315 L	50	12	5750	600	450	65	24"
50-160 XL	50	12	5750	600	450	65	20"
50-200 XL	50	12	5750	600	450	65	22"
50-250 XL	50	12	5750	600	450	65	24"
50-315 XL	50	12	5750	700	450	65	28"
80-160 L	80	12	5500	700	450	80	24"
80-200 L	80	12	5500	600	450	80	24"
80-250 L	80	12	5500	700	450	80	26"
80-315 L	80	12	5500	600	450	80	28"
80-160 XL	80	12	5500	700	500	100	26"
80-200 XL	80	12	5500	700	500	100	28"
80-250 XL	80	12	5500	700	500	100	30"
80-315 XL	80	12	5500	600	500	100	32"
80-400 XL	80	12	5500	650	500	100	36"
100-200	100	12	5250	600	500	125	32"
100-250	100	12	5250	600	500	125	34"
100-315	100	12	5250	900	500	125	36"
100-400	100	12	5250	1000	500	125	38"
150-250 L	150	12	5000	800	550	150	40"
150-315 L	150	12	5000	900	550	150	42"
150-400 L	150	12	5000	1000	550	150	44"
150-250 XL	150	12	5000	800	600	200	46"
150-315 XL	150	12	5000	900	600	200	46"
150-400 XL	150	12	5000	1000	600	200	50"
150-500 XL	150	12	5000	1100	600	200	56"
200-250	200	12	4500	900	700	250	50"
200-315	200	12	4500	1000	700	250	60"
200-400	200	12	4500	1100	700	250	62"
200-500	200	12	4500	1200	700	250	64"
250-315	250	12	4000	1500	800	300	68"
250-400	250	12	4000	1600	800	300	70"
250-500	250	12	4000	1700	800	300	74"



F installation
- ANSI Flange
150 # , FF



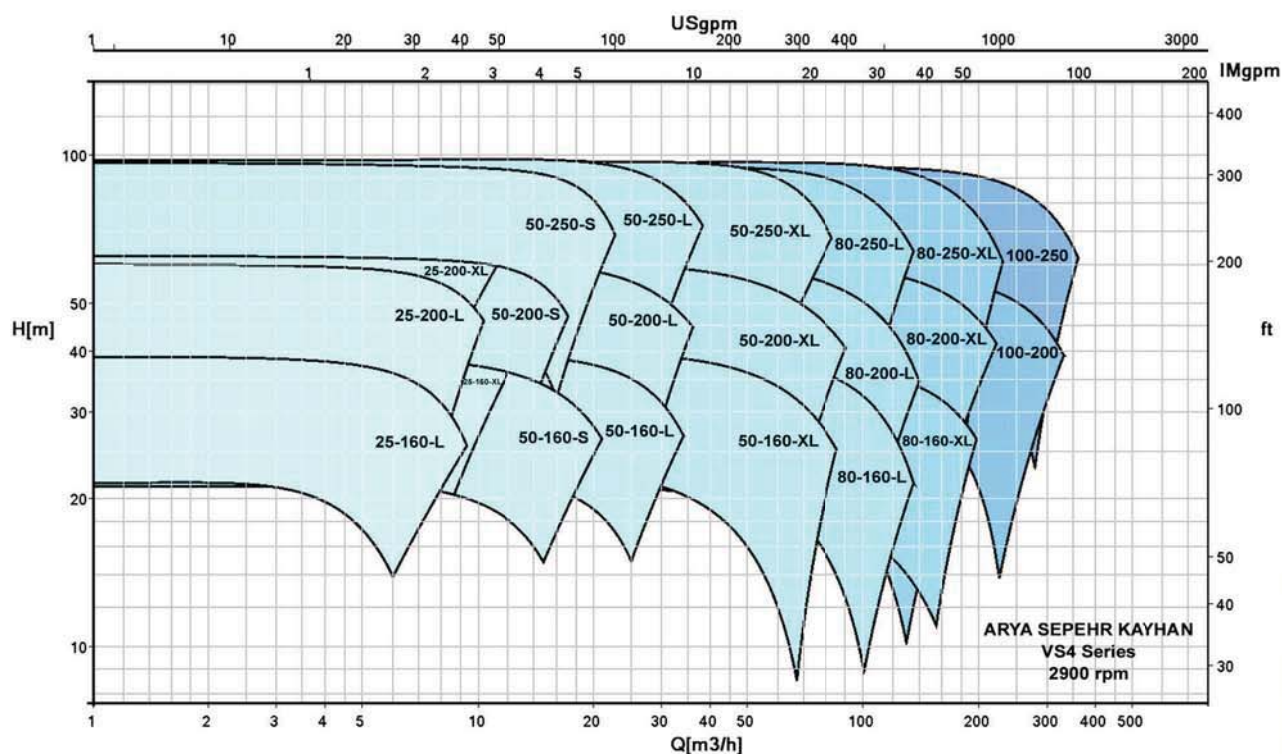
P installation
- Rectangle plate

● All dimensions in mm

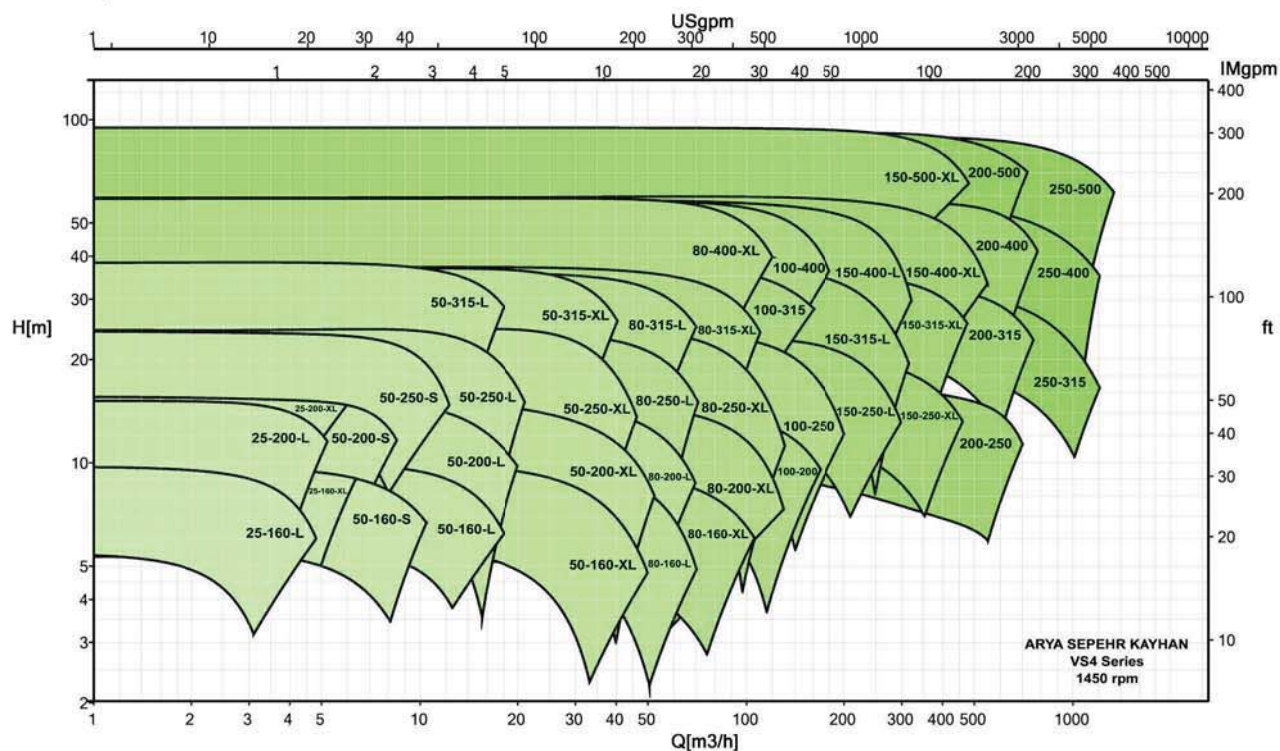
● Not to be used for construction

Hydraulic Coverage

2900 rpm



1450 rpm



Designation

Example: VS4 80 – 250 L/7.5 4 S6 (S1.08) 325/EXT4

VS4	80	250	L	7.5	4	S6	S1.08	325	EXT4
Type Series	Discharge nominal diameter in millimeters	Impeller nominal diameter in millimeters	Impeller code	Nominal motor power in kW	No. of poles	Material class acc. with table H.1 API 610	Shaft seal code See individual designation	Pump height (H) in cm	Area classification
VS4:	25	160	S: Small	1.1 kW up to	2: 3000 rpm	I-1	S1: Single	H: 3250 mm	SA: Safe area
Vertically	50	200	L: Large	315 kW	4: 1500 rpm	I-2	Mechanical seal		EX: Explosion proof
suspended,	80	250	XL: Very large		6: 1000 rpm	S-1			T1-T6: Temperature class
single stage	100	315				S-3	D1: Double		
centrifugal	150	400				S-4	Mechanical seal		
pump	200	500				S-5	Q3: Quench		
acc. with API	250					S-6			
610						S-8			
						C-6	08: Basic arrangement		
						A-8			
						D-1			

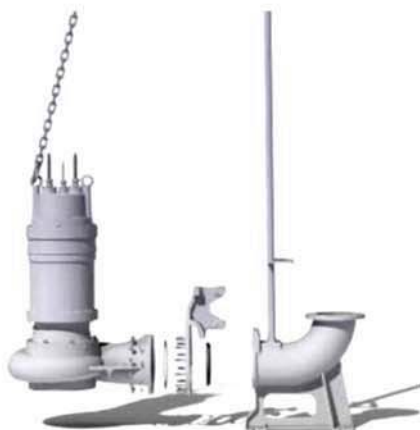
Shaft Seal code and API Plan

Row	Designation code	Description	API Plan	Explanation
1	P1.00	No piping, internal circulation	Plan 01	Soft packing – P1
2	P1.08	Fluid from an external source	Plan 32	Soft packing – P1
3	S1.00	No piping, internal circulation	Plan 01	Single mechanical seal – S1
4	S1.02	Circulated fluid from pump outlet to seal cavity (with internal return)	Plan 11	Single mechanical seal – S1
5	S1.02-21.11.41	Circulated fluid from pump outlet to seal cavity (with internal return)	Plan 11	Single mechanical seal – S1 Basic arrangement – 02, Orifice – 21 Shut off valve – 11, Pressure indicator – 41
6	S1.02-21Q3	Circulated fluid from pump outlet to seal cavity (with internal return) and quenching fluid supplied from external source	11+61	Single mechanical seal – S1 Basic arrangement – 02, Orifice – 21 Quench – Q3
7	S1.04-61	Circulation fluid via cyclone (with internal return); dirty line to pump inlet	31	Single mechanical seal – S1 Basic arrangement – 04, Cyclone – 61
8	S1.07	Internal circulation fluid to seal and return to pump inlet	13	Single mechanical seal – S1 Basic arrangement – 07
9	S1.08	Fluid from an external source	32	Single mechanical seal – S1 Basic arrangement – 08
10	S1.08-12.32.11.41	Fluid from an external source	32	Single mechanical seal, S1 Basic arrangement, 08 Hand control valve – 12, Filter – 32 Shut off valve – 11, Pressure indicator – 41
11	D1.10-21.64(63.41.42)Q3	Circulated fluid from pump outlet to seal cavity (with internal return) Buffer fluid supplied by tank	11+52+61	Double mechanical seal – D1 Basic arrangement – 10, Orifice – 21 Tank – 64, Heat exchanger (internal) – 63 Pressure indicator (internal) – 41 Temperature indicator (internal) – 42, Quench – Q3
12	D1.11-21.64(63.41.42)Q3	Circulated fluid from pump outlet to seal cavity (with internal return) Barrier fluid supplied by tank	11+53+61	Double mechanical seal – D1 Basic arrangement – 11, Orifice – 21 Tank – 64, Heat exchanger (internal) – 63 Pressure indicator (internal) – 41 Temperature indicator (internal) – 42, Quench – Q3

 **Note:** Other seal arrangements are available on request.

A Leader in Engineered Pump Package Solutions

ASK Family of Pumps



Submersible Sewage Pump
SEW Series



Single Stage Vertical In-Line
Centrifugal Pump
OH3 Series



Vertically Suspended, Single Stage
Centrifugal Pump
VS4 Series



End Suction Horizontal Centrifugal Pump
Centerline Mounted
OH2 Series



Rubber Lined Horizontal
Centrifugal Pump
OH1/SL series



End Suction Horizontal
Centrifugal Pump
Foot Mounted
OH1 Series

ASK Series	Market Sector	Capacity m ³ /hr	TDH m	Temperature °C	Pressure barg
OH1	General Industries	1100	95	120	16
OH2	Oil	550	260	400	40
OH3	Gas	550	175	350	40
VS4	Petrochemical	1100	95	150	20
OH1/SL	Mining	800	130	85	20
SEW	Water and Waste water	1800	95	70	16

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