HYOSUNG EBARA

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VERTICAL MULTISTAGE CANNED PUMP

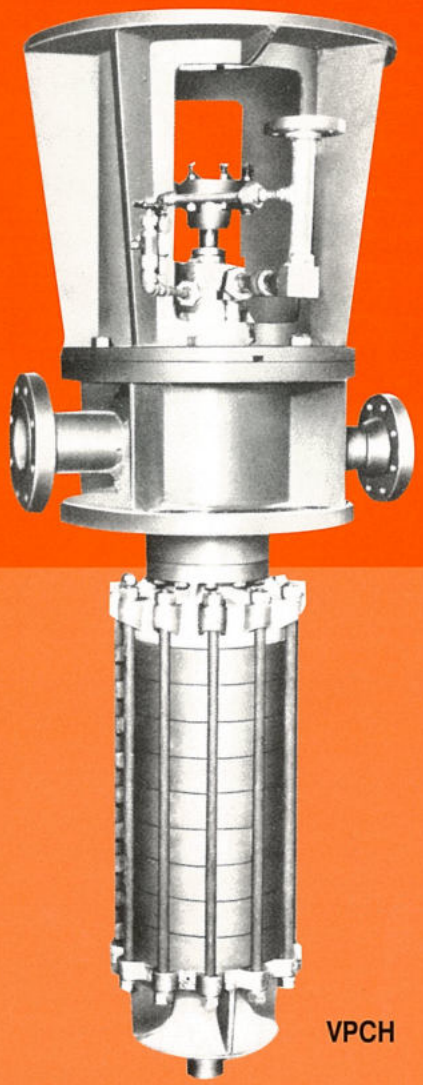
Low NPSH Application For Process, Condensate and General Industrial Services

Models

VPCS/VPCH

API 610

VPCS



VPCH

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HYOSUNG EBARA CO., LTD.

VERTICAL MULTISTAGE CAN PUMP

Low NPSH Application For Process, Condensate and General Industrial Services

Models

VPCS/VPCH

API 610 **API 682**

EBARA MODEL VPCS and VPCH VERTICAL MULTI-STAGE CAN PUMPS have been widely used in petroleum refineries, for the petrochemical industry, condensate and general industrial services. Many improvements have been recently made on this pump to enhance its performance. Model VPCS is classified as a low and medium pressure type and model VPCH as a high pressure type pump. Unique design of this high performance pump provides for superior and extended low cost operation.
Our modern tape controlled machines in conjunction with advanced quality control procedures insure that these pumps meet our high manufacturing standards.

Applications

- Petroleum Refineries
- Petrochemical Industries
- Condensate and General Industrial Services

Ratings

Capacities	To 5500m³/h (24200 USGPM)
Heads	To 1600 m (5250 ft)
Max. working pressure	To gauge pressure 14.7MPa{150kgf/cm²}(2130PSI)
Rotation	Clockwise viewed from inboard side
Impeller type	Enclosed
Temperatures	−105°C to 340°C (−157°F to 644°F)
Flanges	ANSI class 300 as standard, other standard also available
Nozzles	Side-Side
Stuffing box	Suitable for mechanical seal & conventional packing

Features

- Low NPSH
- High reliability
- Minimum installation space
- Minimum labor required for installation and piping
- Full compliance with API 610 and API 682 specifications.

Selection of Types

Total Pressure of Pump	14.7 {150}	**VPCH** High Pressure Type (Inner casing working pressure up to gauge pressure 8.83MPa){90kgf/cm²}
	4.9 {50}	**VPCS** Med. Pressure Type (Inner casing working pressure up to gauge pressure 3.24MPa){33kgf/cm²}

gauge pressure
MPa
{kgf/cm²}

Designation

VPCS

300 × 200 VPCS 7 M 4015 I

- I: OPTIONAL FEATURES, when provided (*1)
  - B: THRUST BEARING INTEGRAL WITH PUMP
  - D: DOUBLE SUCTION 1st STAGE IMPELLER
  - I: INDUCER
- 4015: IMPELLER AND BOWL CLASSIFICATION CODE
- M: DRIVER
  - M: MOTOR
  - T: STEAM TURBINE
  - E: ENGINE
- 7: NUMBER OF STAGES
- VPCS: MODEL
- 200: DISCHARGE NOZZLE, NOMINAL SIZE IN MILLIMETERS (*2)
- 300: SUCTION NOZZLE, NOMINAL SIZE IN MILLIMETERS (*2)

VPCH

150 × 100 VPCH 10 M 210H I

- I: OPTIONAL FEATURES, when provided (*1)
  - B: THRUST BEARING INTEGRAL WITH PUMP
  - I: INDUCER
- 210H: IMPELLER CLASSIFICATION CODE
- M: DRIVER
  - M: MOTOR
  - T: STEAM TURBINE
  - E: ENGINE
- 10: NUMBER OF STAGES
- VPCH: MODEL
- 100: DISCHARGE NOZZLE, NOMINAL SIZE IN MILLIMETERS (*2)
- 150: SUCTION NOZZLE, NOMINAL SIZE IN MILLIMETERS (*2)

Notes: (*1) When two features are involved, the codes are in alphabetical order.
(*2) For use in customer's vessels or pits, VPCS pumps can be furnished without a suction can. In this case, only discharge nozzle size is indicated, i.e. 200 VPCS7M 4015 means a pump without a suction can.

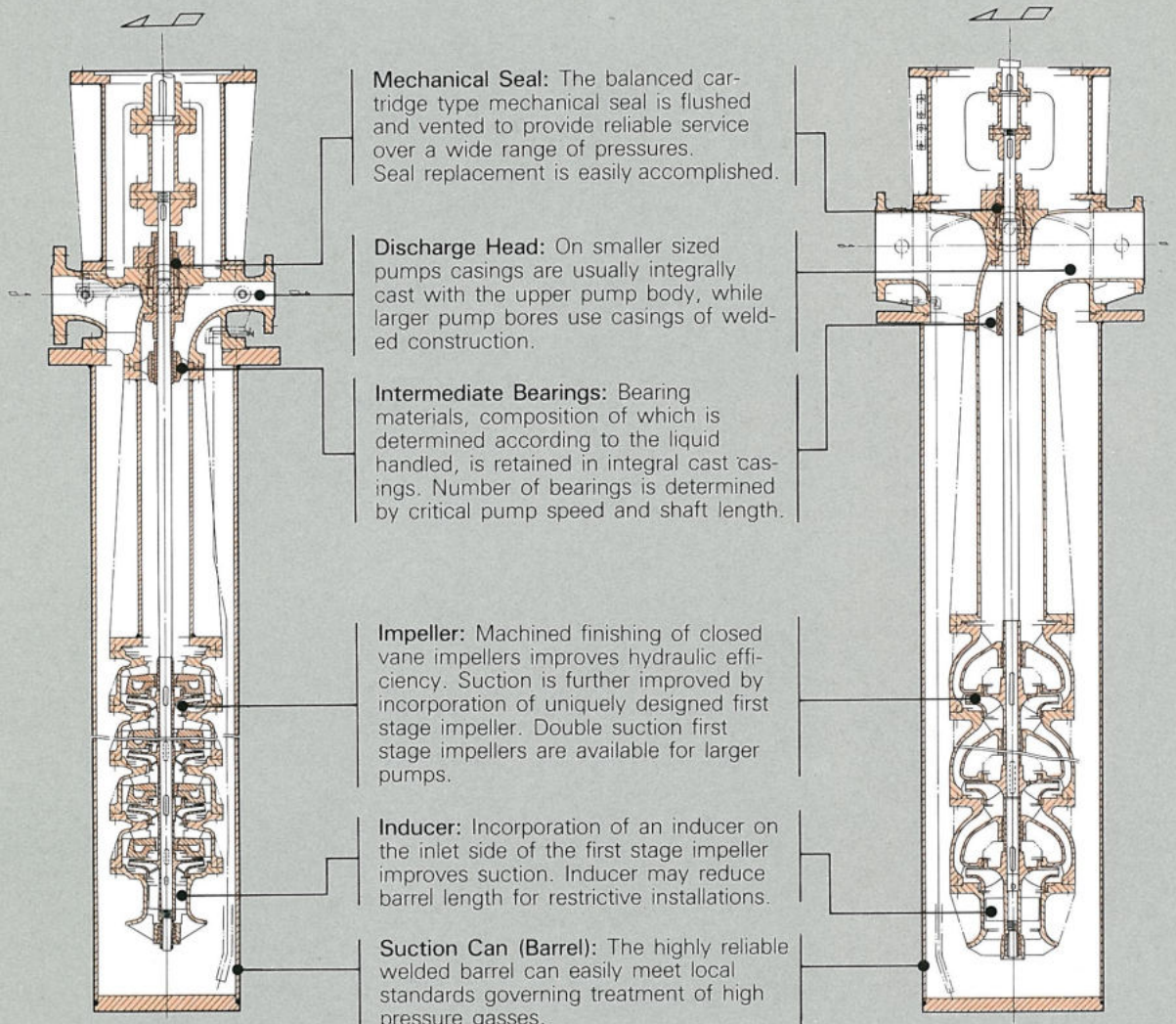
Construction

For Process

Model VPCS

2000 SERIES

4000 AND 6000 SERIES



Mechanical Seal: The balanced cartridge type mechanical seal is flushed and vented to provide reliable service over a wide range of pressures. Seal replacement is easily accomplished.

Discharge Head: On smaller sized pumps casings are usually integrally cast with the upper pump body, while larger pump bores use casings of welded construction.

Intermediate Bearings: Bearing materials, composition of which is determined according to the liquid handled, is retained in integral cast casings. Number of bearings is determined by critical pump speed and shaft length.

Impeller: Machined finishing of closed vane impellers improves hydraulic efficiency. Suction is further improved by incorporation of uniquely designed first stage impeller. Double suction first stage impellers are available for larger pumps.

Inducer: Incorporation of an inducer on the inlet side of the first stage impeller improves suction. Inducer may reduce barrel length for restrictive installations.

Suction Can (Barrel): The highly reliable welded barrel can easily meet local standards governing treatment of high pressure gasses.

Metallurgy

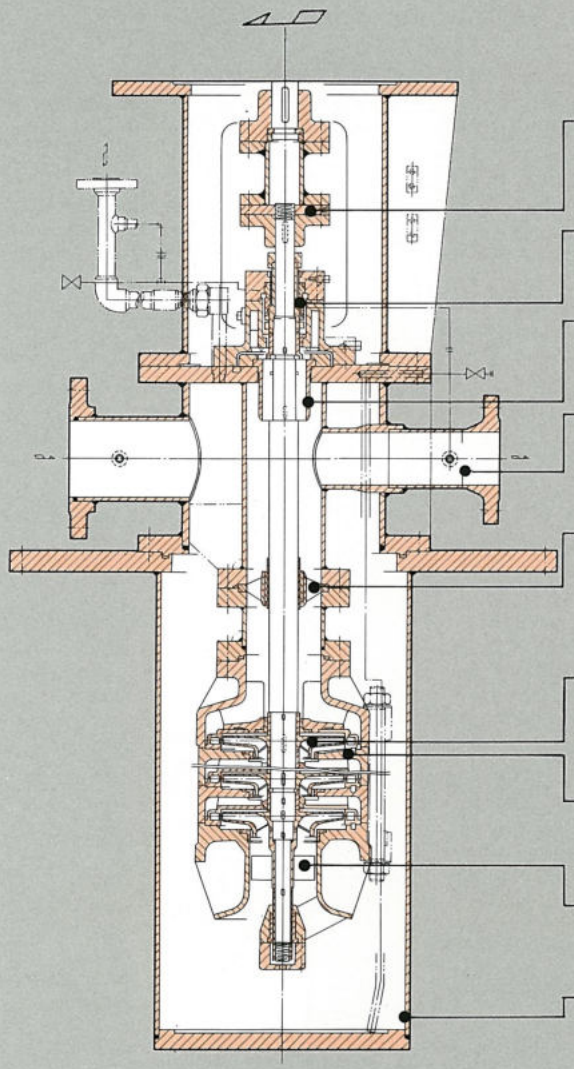
	Materials JIS/ASTM-AISI				
Name of Parts	C. Steel	C. Steel	12% Cr. Steel	304 S. Steel	316 S. Steel
Discharge Head	SCPH2/A216WCB	SCPL1/A352LCB	SCS1/A743CA15	SCS13A/A743CF8	SCS14A/A743CF8M
Inner Casing	FC250/A48CL.35	SCPL1/A352LCB	SCS1/A743CA15	SCS13A/A743CF8	SCS14A/A743CF8M
Barrel	STPG370, SM400B/ A53A, A131 Gr.B	STPL380, SLA235B/ A333, A662Gr.A	STPG370, SM400B/ A53A, A131 Gr.B	SU304TP, SUS304/ A312 TP304, A240 Type304	SUS316TP, SUS316/ A312 TP316, A240 Type316
Impeller	FC200/A48 CL.30	SCS13A/A743 CF8	SCS1/A743 CA15	SCS13A/A743 CF8	SCS14A/A743CF8M
Shaft	SUS420J1/AISI 420	SNC815/A322	SUS420J1/AISI 420	SUS304/AISI 304	SUS316/AISI 316
Case Wear Ring	FCD400/A536	FCD400/A536	SUS420J1/AISI 420	SUS304/AISI 304	SUS316/AISI 316
Sleeve for Mechanical Seal	SUS420J2/AISI 420	SUS304/AISI 304	SUS420J2/AISI 420	SUS304/AISI 304	SUS316/AISI 316

Notes: Other materials supplied on request.
Standard Materials
Optional Materials

Construction

For Process

Model VPCH



Shaft Coupling: Unique construction of the rigid shaft coupling facilitates axial adjustment of rotating elements. Use of a spacer facilitates mechanical seal replacement without driver removal.

Mechanical Seal: A balanced cartridge type mechanical seal is utilized. It is flushed and vented to provide reliable service over a wide range of pressures with ease of replacement.

Balancing Piston: To balance shaft thrust and reduce thrust imposed on motor-bearing, a balancing piston is incorporated.

Discharge Head: The high pressure types utilize welded construction. The casing possess adequate strength against inner pressure and sufficient rigidity against outer stress.

Intermediate Bearings: Bearing materials, are selected according to the liquid to be pumped. In addition, the number of bearings is determined in relation of critical speed and shaft length.

Impeller: The impeller at each stage is enclosed type with all surfaces machine finished so that the highest hydraulic efficiency may be obtained. In addition, the first stage impeller is incorporates a unique design for enhancing the suction performance, and minimizing the NPSH requirement.

Intermediate Casing: Hydraulically efficient casing design, based on many years experience, minimizes pump friction losses.

Inducer: Incorporation of an inducer on the inlet side of the first stage impeller improves suction. Inducer may reduce barrel length for restrictive installations.

Suction Can (Barrel): The welded barrel ensures high reliability.

Metallurgy

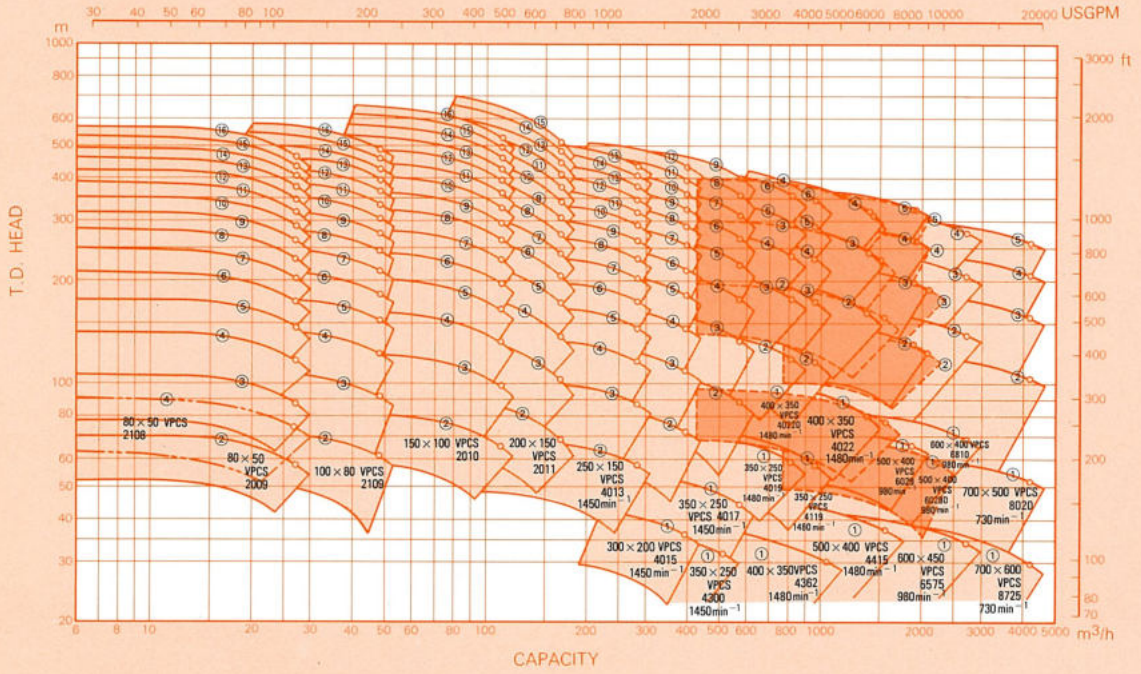
	Materials JIS/ASTM-AISI			
Name of Parts	C. Steel	C. Steel	12% Cr. Steel	316 S. Steel
Discharge Head	STPG370, SM400B/ A53A, A131 Gr.B	STPL380, SLA235B/ A333, A662 Gr.A	SUS420J1/AISI 420	SUS316/AISI 316
Inner Casing	S35C/A105	SFL2/A350 Gr.LF2	SUS420J1/AISI 420	SUSF316/A182 F316
Barrel	STPG370, SM400B/ A53A, A131 Gr.B	STPL380, SLA235B/ A333, A662 Gr.A	STPT370, SB410/ A106A, A285C	SUS316TP, SUS316/ A312TP316, A240 Type316
Impeller	SCS1/A743 CA15	SCS13A/A743 CF8	SCS1/A743 CA15	SCS14A/A743 CF8M
Shaft	SUS420J1/AISI 420	SNC815/A322	SUS420J1/AISI 420	SUS316/AISI 316
Case Wear Ring	SUS420J1/AISI 420	FCD400/A536	SUS420J1/AISI 420	SUS316/AISI 316
Sleeve for Mechanical Seal	SUS420J2/AISI 420	SUS304/AISI 304	SUS420J2/AISI 420	SUS316/AISI 316

Notes: Other materials supplied on request.
Standard Materials
Optional Materials

Model VPCS

50Hz

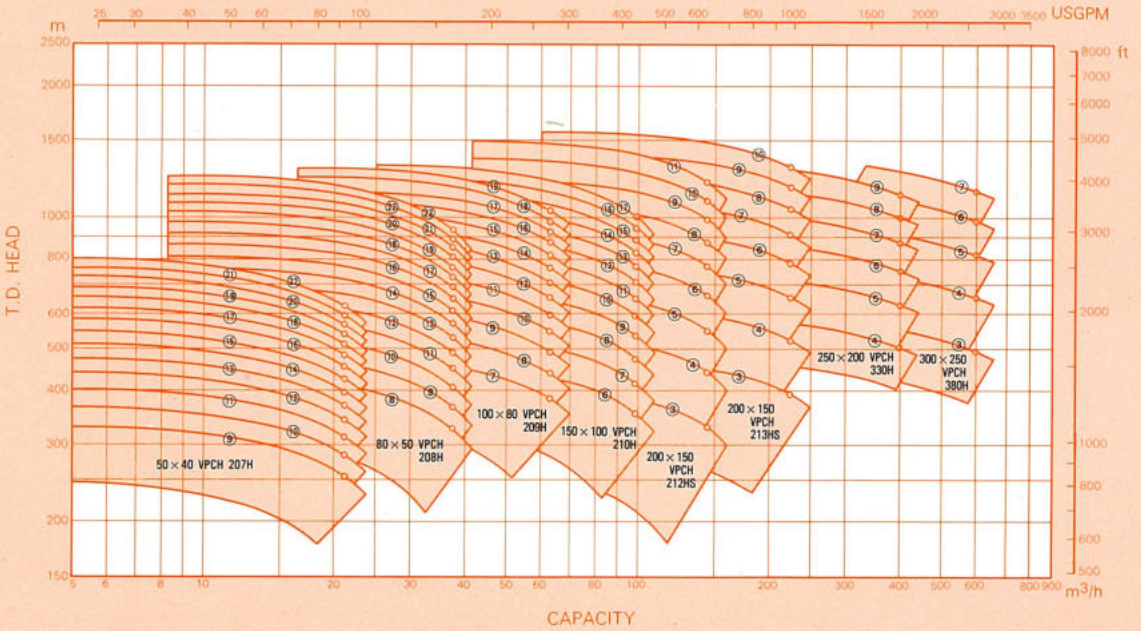
2950min⁻¹ unless otherwise designated



Model VPCH

50Hz

2950min⁻¹

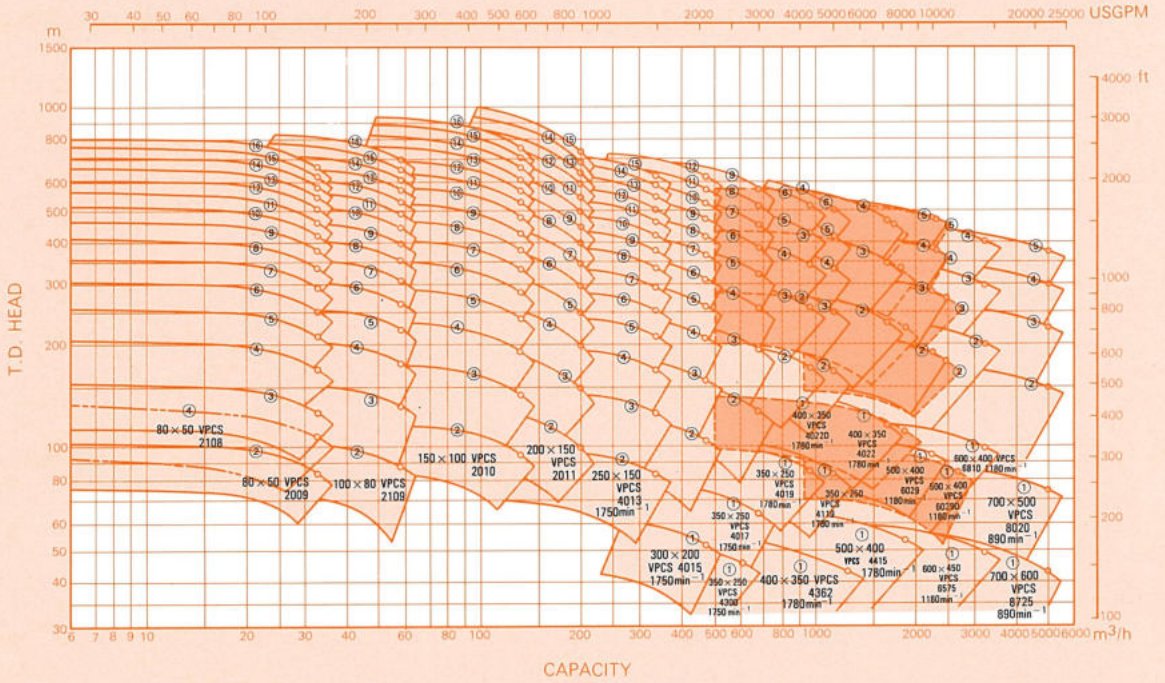


These selection charts are prepared for preliminary selection. Refer to individual performance curves for final selection.
○ denotes B.E.P. of the performance with an impeller of maximum diameter.
The number of stages is indicated in the circle.

Model VPCS

60Hz

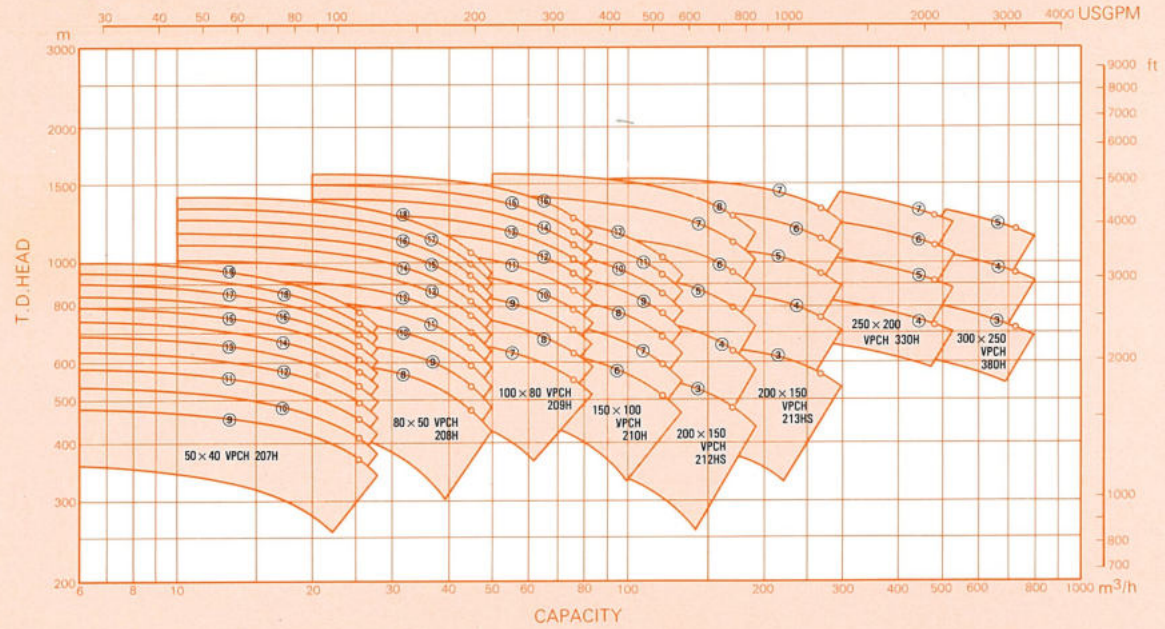
3550min⁻¹ unless otherwise designated



Model VPCH

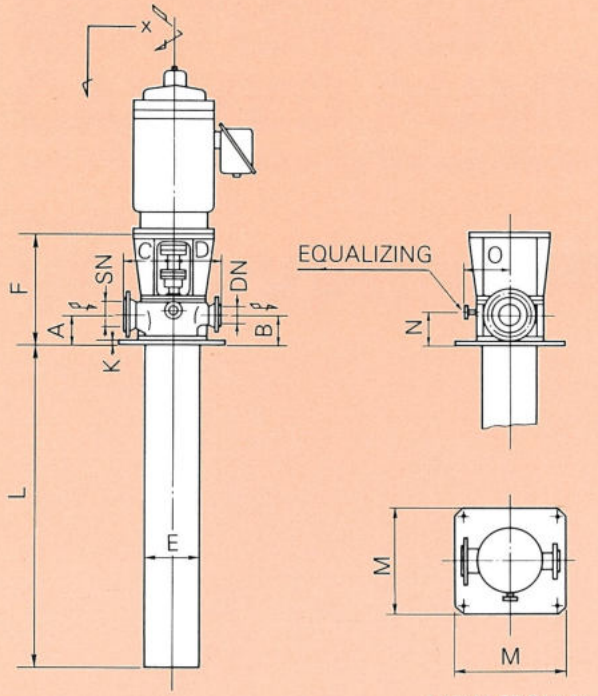
60Hz

3550 min⁻¹

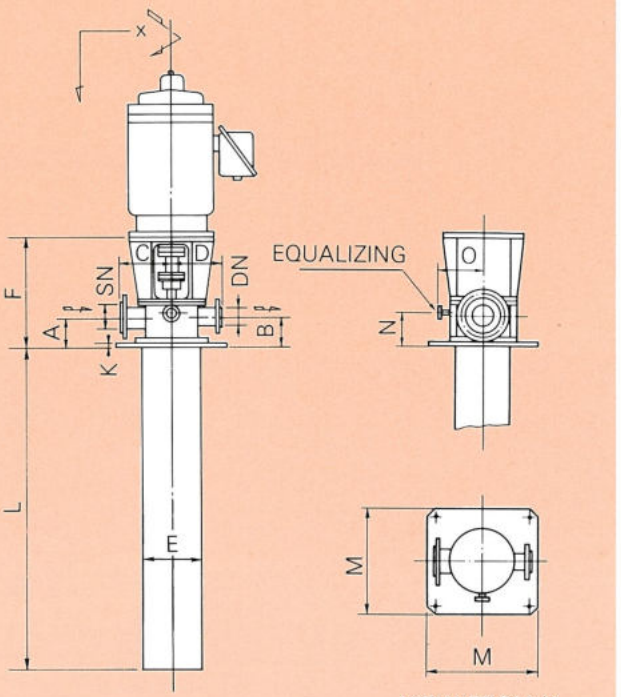


These selection charts are prepared for preliminary selection. Refer to individual performance curves for final selection.
o denotes B.E.P of the performance with an impeller of maximum diameter.
The number of stages is indicated in the circle.

Model VPCS



Model VPCH



VPCS

Dimensions: mm

PUMP SIZE		SN	DN	A	B	C	D	E	F	K	M	N	O
80×50	2009	80	50	213.5	213.5	320	300	318.5	739	50	600	210.5	380
100×80	2109	100	80	233	233	320	300	318.5	790	50	600	248	380
150×100	2010	150	100	243.5	243.5	350	300	355.6	846	50	600	273.5	400
200×150	2011	200	150	304.5	304.5	400	400	406.4	941	50	750	352.5	400
250×150	4013	250	150	360	360	550	550	624	1,147	60	1,100	417	600
300×200	4015	300	200	440	440	650	650	724	1,300	70	1,300	500	700
350×250	4300	350	250	460	460	650	600	674	1,200	70	1,300	530	750
350×250	4017	350	250	460	460	650	600	824	1,350	70	1,400	530	750
350×250	4019	350	250	468	468	780	780	924	1,400	70	1,400	568	850
350×250	4119	350	250	468	468	780	780	924	1,400	70	1,400	568	850
400×350	4362	400	350	463	463	800	800	874	1,400	70	1,400	568	900
400×350	4022	400	350	470	470	800	800	1,082	1,450	70	1,600	590	900
400×350	4022D	400	350	510	510	900	880	1,232	1,500	70	1,700	547	1,000
500×400	4415	500	400	550	550	900	900	1,082	1,500	80	1,600	590	900
500×400	6029	500	400	584	584	1,000	1,000	1,332	1,900	90	1,800	739	1,100
500×400	6029D	500	400	584	584	1,100	1,100	1,382	1,900	90	1,900	739	1,150
600×450	6575	600	450	650	650	1.200	1,200	1,382	1,600	—	—	680	1,100
600×400	6810	600	400	650	650	1,400	1,400	1,588	1,600	—	—	700	1,150
700×600	8725	700	600	675	675	1,500	1,500	1,738	1,800	—	—	700	1,250
700×500	8020	700	500	675	675	1,700	1,700	1,994	1,800	—	—	700	1,350

VPCH

Dimensions: mm

PUMP SIZE		SN	DN	A	B	C	D	E	F	K	M	N	O
50×40	207H	50	40	198.5	198.5	400	400	406.4	900	50	800	198.5	480
80×50	208H	80	50	228.5	228.5	450	450	474	1,000	50	900	228.5	480
100×80	209H	100	80	275.5	273.5	450	450	508	1,000	50	900	276.5	500
150×100	210H	150	100	276.5	276.5	540	540	574	1,200	50	1,000	314.5	500
200×150	212HS	200	150	338	338	600	600	674	1,300	70	1,150	393	550
200×150	213HS	200	150	338	338	600	600	724	1,300	70	1.200	393	600
250×200	330H	250	200	350	350	570	630	774	1,300	70	1,300	390	600
300×250	380H	300	250	375	375	620	680	874	1,400	70	1,500	400	650

Notes: Dimensions are in mm and for guidance only.
Certified drawings will be provided in all cases of actual construction.

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