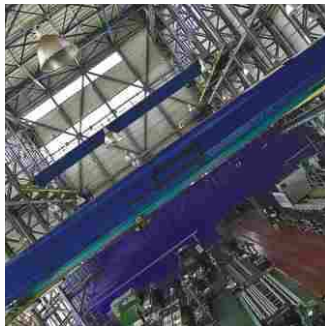
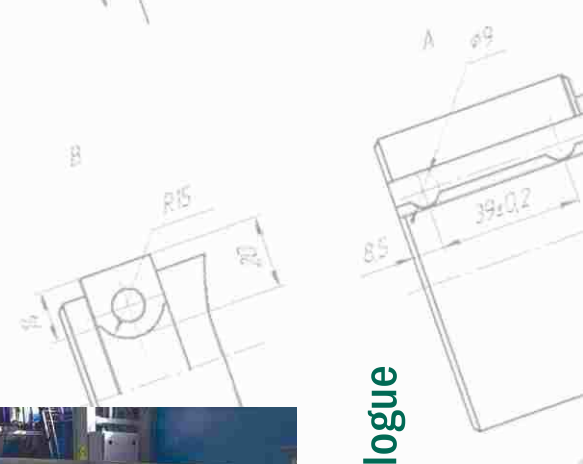




RIMERA
ALNAS



Technical catalogue

Submersible equipment for oil production



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about company

RIMERA is a group of companies striving for market leadership in the sector of packaged proposals of equipment and service for the fuel-energy complex companies.

Rimera strategy involves development of four strategic directions:

Production of Oil & Gas Equipment

Alnas, Izhneftemash



Artificial lift well service and pipeline service

Rimera-Service, NPSC



Production of pipeline equipment

SOT, MSA



Geophysics

Uganskneftegazgeophysica



Rimera is able to offer a unique integrated product solution at the fuel-energy complex market: from “entry” to an oilfield to surface and subsurface facilities construction and access to the main pipeline system.

Directions of the

Oil & Gas Equipment production and Artificial lift well service and pipeline service

integrate industry leaders:

- OAO “ALNAS” (Almetyevsk) - a provider of complete electrical submersible centrifugal pumping systems for oil production.
- OAO “Izhneftemash” (Izhevsk) - a manufacturer of oilfield equipment for drilling and oil recovery, oil field facility construction and repair.
- ZAO “RIMERA-Service” - full oil service package for artificial lift in the centre locations across major oil-producing regions of Russia - Nizhnevartovsk, Surgut, Nyagan, Singapai, Talinka, Perm, Usinsk, Buguruslan
- OOO “Noyabrsk Pipe Service Centre” - renders preparation and repair servicing for tubular goods (tubings and casings), sucker rods, casing treatment, manufacturing components of the oilfield production accessories



About company

Established in 1978 ALNAS is included to Rimera group of companies being the largest manufacturer of electric submersible pumping systems (ESPs) for oil production in Russia.

ALNAS provides a broad variety of equipment: more than 100 pump modifications, 50 motor modifications and over 3000 complete sets of equipment. ALNAS was repeatedly recognized the best machine building company in Russia.

One third of all oil produced in Russia runs through ALNAS pumps. ALNAS pumping systems are exported to Kazakhstan, Azerbaijan, Ukraine, Byelorussia, Uzbekistan, Uzbekistan, Venezuela, Oman, Syria and India. ALNAS offers solutions based on advanced technologies applying state-of-the-art equipment. The company's products confirmed by certificates and permits to use, meet requirements of the Russian quality standards. We are ready to determine the most efficient individual oilfield solutions and deliver any type of complete equipment, tailored to the needs of each client.

ALNAS:

- innovative R&D products;
- a group of manufacturing companies providing complete electric submersible pumping systems (submersible pump, gas separator, hydroprotector, electric motor, surface control system);
- professional advice from our experts and help in sizing of equipment for different service conditions;
- repair, service and supply of submersible equipment on rental basis.

Equipment

ALNAS offers solutions based on advanced technologies applying state-of-the-art equipment:

- automatic flaskless molding and pouring lines, DISA, Denmark;
- induction melting systems, ABP, Germany;
- core machines, PETERLE, Italy;
- high speed dieing machines, AIDA, Japan;
- turning machines Super NTX NAKAMURA-TOME, Japan;
- CNC turning centers HAAS and HARDRINGE, USA;
- twin-spindle vertical CNC lathes VSC 200 DUO, EMAG, Germany;
- robot-based turning machines HEINEMANN and HESSAPP, Germany.

Quality Assurance

The company operates under the Quality Management and Environmental Management Systems:

- Quality management system (QMS) meeting the requirements of GOST R ISO 9001 “Quality management systems – Requirements”
- Quality management system in automotive production (QMS-A) meeting the requirements of technical specification, ISO/TS 16949 “Quality management systems -- Particular requirements for the application of ISO 9001:2008 for automotive production and relevant service part organizations”
- Environmental management system (EMS) in accordance with GOST R ISO 14001 “Environmental management systems - Requirements with guidance for use”

The company's products confirmed by certificates and permits to use, meet requirements of the normative documents.

Product name	Permit for use №	Expiration date	Certificate of conformity №	Expiration date
ESP submersible centrifugal pumps for oil recovery. TS 3631-025-21945400-97. RCP code 36 3141	RRS 00-35699 dd. 02.09.2009	02.09.2014	C-RU.H003.B.00214 dd. 25.08.2011	22.08.2016
Submersible induction type motors of unified SEM-series M-modification.TS 3381-026-21945400-97. RCP code 33 8118	RRS 00-35699 dd. 02.09.2009	02.09.2014	ROSS RU.H003.H.04188 dd. 22.08.2011	22.08.2016
Submersible motors for PCP pump drive. TS 3381-029-21945400-97. RCP code 33 8118	RRS 00-35699 dd. 02.09.2009	02.09.2014	-	-
Submersible induction type motors of unified SEM-series in 96 mm and 103 mm size. TS 3381-032-21945400-98. RCP code 33 8118	RRS 00-35699 dd. 02.09.2009	02.09.2014	ROSS RU.H003.H.04188 dd. 22.08.2011	22.08.2014
Submersible induction type motors of unified SEM-series M-modification with pressure transducer and temperature converter. TS 3381-030-21945400-98. RCP code 33 8118	RRS 00-35699 dd. 02.09.2009	02.09.2014	-	-
Submersible induction type motors of unified SEM-series M, M1-modification in 130 mm and 180 mm size. TS 3381-033-21945400-2001. RCP code 33 8118	RRS 00-35699 dd. 02.09.2009	02.09.2014	-	-
Hydroprotectors (1)MH54. TS 3381-037-00219454-2000. RCP code 33 8118	RRS 00-35699 dd. 02.09.2009	02.09.2014	-	-
Monoblock hydroprotector. TS 3381-055-00219454-2003. RCP code 33 8118	RRS 00-35699 dd. 02.09.2009	02.09.2014	-	-
Water injection centrifugal pump TS 3665-101-00219454-2011	RRS 00-046157 dd.07.12.2011	07.12.2016	C-RU.H003.B.00094 dd. 29.03.2011	29.03.2016
Double housing hydroprotector TS 3381-100-00219454-2010	RRS 00-046157 dd.07.12.2011	07.12.2016		

Science and engineering

ALNAS R&D centre is a unified science & technology centre providing high level of developments in the sphere of oil machine engineering.

ALNAS R&D developments in the last years:

- 63 new pumps;
- 38 new submersible electric motors, 6 modified SEM;
- 15 hydroprotectors, 2 new dispersing intake modules;
- 30 new patented technical solutions.

Support and services

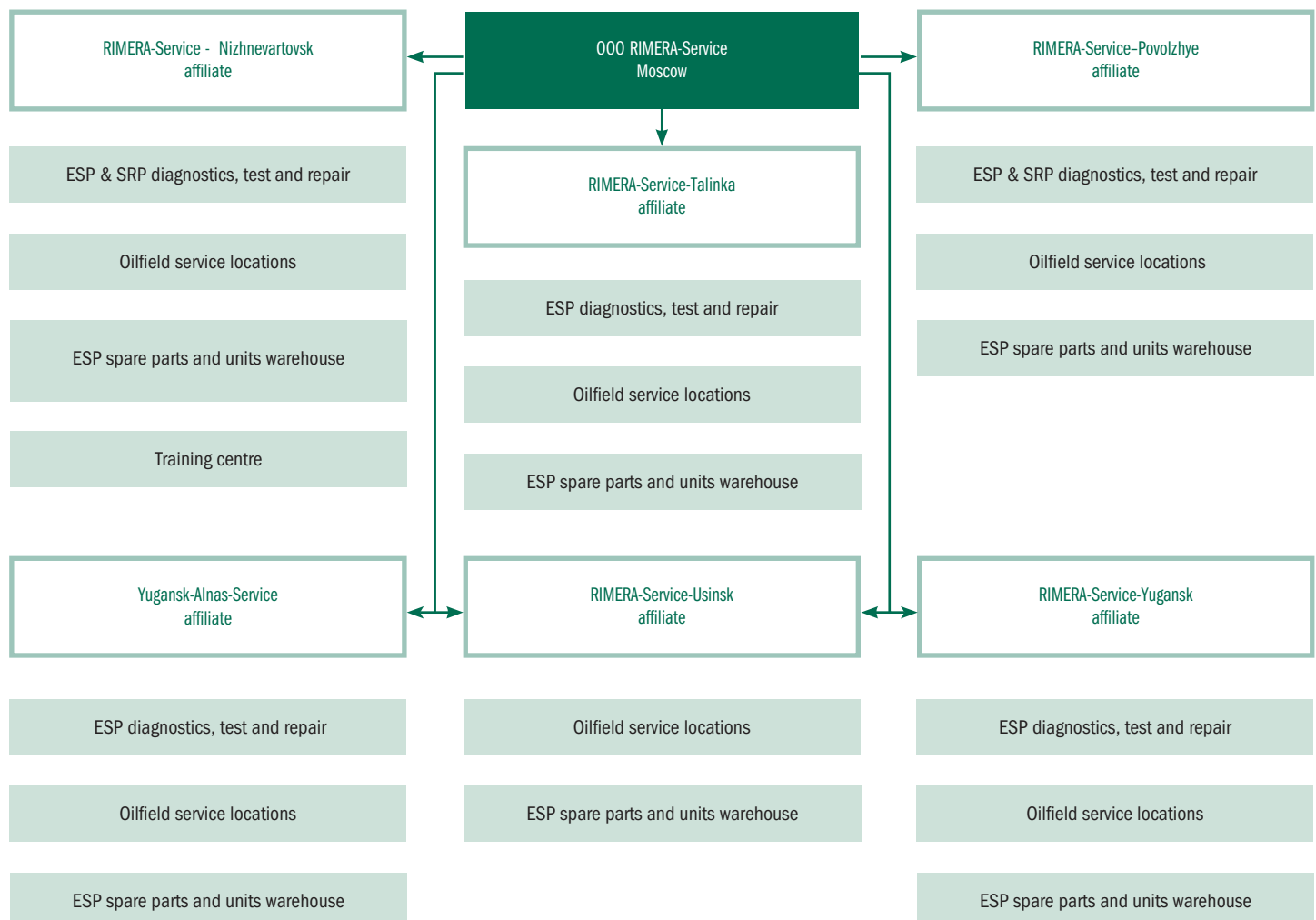
ALNAS provides customized integrated oilfield service solutions. In addition to our products we also offer artificial lift services. This integrated approach improves reliability, extends system run life, maximizes your production, and allows operating equipment at maximum efficiency insuring to drive the cost per barrel down.

The service company OOO RIMERA-Service, a network of service centres in the largest oil-producing regions of Russia: KhMAO –Yugra (Nizhnevartovsk, Surgut, Singapai, Talinka), YaNAO (Gubkinsky), Orenburg region (Buguruslan), Komi Republic (Usinsk) is included to RIMERA Group of Companies.

We offer a full line of artificial lift services, including:

- sizing of equipment under your specific service conditions;
- start-up & bringing a well on to stable production;
- assembly and disassembly of surface production equipment (SPE) and ESP;
- current & overhaul repair of SPE and ESP;
- ESP & equipment transportation;
- preventive maintenance of SPE;
- incoming inspection of SPE & ESP;
- delivery of equipment on rental base;
- customer staff training;
- well stock operation control & analysis;
- overhaul repair of ESP;
- complex service and tubing repair.

Oilfield service



ALNAS complete electrical submersible pumping systems (A-ESPs)

ALNAS designs and manufactures complete electric centrifugal pumping systems for oil recovery (A-ESPs), including:

- submersible centrifugal pump (including check and bleed valve, pump modules, intake module and bottom module (as requested));
- slurry trap (as requested);
- gas separator (as requested; no intake module if the ESPs is completed with a gas separator with intake screen);
- slotted filter - SF intake module (as requested; no intake module if the ESPs is completed with the slotted filter);
- hydroprotector;
- submersible electric motor;
- cable line;
- surface electric equipment (control system, transformer and other);
- telemetry systems;
- tools and accessories;
- spare parts.

The state-of-the-art A-ESP systems have been developed by the leading Russian and CIS institutes. A-ESP design is based on the world-level technology and the materials are specifically developed for submersible equipment, which are also used in the military and space engineering.



10 to 1375 m³/day of fluid can be lifted by ALNAS pumping systems from depth of up to 3600 m.
The pumping systems are available in a variety of configurations and adaptable to any well.

The longer run life of our pumps is ensured when operated under the following conditions of formation fluid (mixed oil, associated water and oil gas):

- water cut, max, % - 99
- pH value- 5,0-8,5
- specific gravity, max, kg/m³ - 1400
- single-phase fluid kinematic viscosity to ensure stable pump operation free of the head and efficiency changes, max., mm²/c - 1
- mechanical impurities concentration for pumps, g/l (%), max:
 - of standard design - 0,1 (0,01%)
 - corrosion-resistant design - 0,2 (0,02)
 - wear-resistant and corrosion-and-wear-resistant design - 0,5 (0,05)
 - improved corrosion-and-wear-resistant design - 1,0 (0,10)
 - ESPs completed with a fine filter - 3,0 (0,30)
- hardness on the Moh's scale for pumps
 - of standard, corrosion-resistant design - 5;
 - of improved corrosion-and-wear-resistant, wear-resistant, corrosion-and-wear-resistant design - 7;
- free gas at pump intake per volume, max - 25%;
 - gas separator included in the ESPs - 55%;
 - gas separator-dispenser included in the ESPs- 65%;
 - intake dispenser module included in the ESPs - 30%;
- H₂S content for pumps, g/l (%), max:
 - standard and wear-resistant design - 0,01(0,001%)
 - corrosion-resistant, corrosion-and-wear-resistant, improved corrosion-and-wear-resistant design - 1,25 (0,125);
- pumped-out fluid temperature, max, 150 °C;
- hydrostatic pressure at pump setting depth, max, MPa - 40;
- corrosive components, no more than: CO₂-0,15 g/l, HCO₃⁻-1 g/l, Cl⁻-20 g/l, Ca²⁺-2 g/l (applying pumps of improved corrosion-and-wear-resistant, corrosion-and-wear-resistant, corrosion-resistant design).

To get the maximum efficiency, the ESP equipped well shall meet the following requirements:

The rate of hole deviation change shall not exceed 2° per 10 m, and in the pump setting depth it is determined by the following formula:

$$\alpha_{10} = 2 \arcsin \frac{40 S}{4S^2 + L^2} \text{ degrees per 10 m}$$

S - clearance between the casing string ID and max ESP OD;

L - the ESP length from the bottom face to the fishing head upper face, m.

Electric submersible pumps (A-ESP)

ALNAS Electric Centrifugal Submersible Pumps (A-ESP) are suitable for applications in oil production and water injection systems. ALNAS produces and delivers electric centrifugal submersible pumps of D, S, M, L series with rated capacity ranging from 10 up to 1375 m³/day and head of up to 3600 m. Due to a wide range of pumps you can select equipment suitable for any kind of operational conditions.

ALNAS pumps are designed on a modular principle and consist of intake module (with fishing head for tubing joining), middle pump sections, gas separator, check and bleeder valves. Check valves ensure leakproofness allowing a Customer carry out the tubing pressure testing. The check valves can be made plate or ball type as requested. The intake module can be made jointly with the pump section to reduce number of joints; in this case the bottom section with holes for fluid intake is included to pump.

The slotted filter – SF intake module is suitable for applications with submersible pumps for intake of formation fluid and separation of solids, the particles cross-section of which is more than 0,1 or 0,2 mm. You can see the filter specification on page 23.

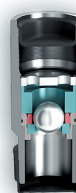
At high content of free gas in formation fluid, the pump is completed with a gas separator. A gas separator shall be made with no intake holes if the SF intake module is included to pump.



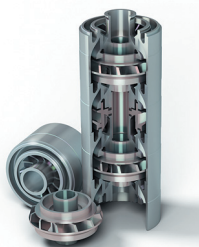
bleeder valve



double-bearing impeller



ball check valve



pump section stage



pump section

The impeller and diffuser materials have been developed by the leading specialized engineering institutes:

- inoculated cast iron (standard ESP);
- inoculated cast iron of improved wear-resistance (wear-resistant ESP);
- Ni-resist iron (corrosion-resistant ESP C, corrosion-and-wear-resistant ESP CW);
- Ni-resist cold pig iron, hardness up to 240 HB (improved corrosion-resistant ESP);
- polymer materials with special extenders (23...ESP C, CW); impellers made of polymer, diffusers - composite (with polymer channels) or wholly metallic.

High-strength and high-precision pump shafts of stainless steel or K-Monel alloy are made-to-order.

Different material application and design allows supplying pumps of high heat -, corrosion- and wear- resistance.

Double-bearing pumps

Application of ESPs with a double-bearing stage allows operating a pump under hard service conditions, connected with high concentration of solids. You will achieve increasing of ESP mean-time-between failures. Increased run life of the double-bearing pumps is provided by reduction of load on the impeller washers friction surface.

The stages are extended on both sides, that allows:

- reducing vibration (improved impeller fastness due to increased impeller seat-on-shaft length);
- covering a shaft to protect against fluid abrasive effect;
- suppressing the key cut and stage slipping on the shaft (the total impeller key slot length is multiply extended to decrease the key load).

Special materials are applied for operation under hydroabrasive conditions: stages made of Ni-resist or inoculated cast iron of the improved wear-resistance.

Each pumping system is supplied with all necessary mounting parts, accessories and spare parts for installation.

Pumps with no axial thrust bearing unit

Features of the pumps with no axial bearing unit:

- axial load transferred by the pump shaft, is taken up by the strengthened hydroprotector thrust bearing unit;
- simplified assembling as compared with the foreign analogs;
- increased section head due to the increased number of the pump stages;
- reduction of the shaft cantilevers;
- increased section head due to transfer of axial bearing from the pump section to the hydroprotector chamber.

Advantages:

- impellers and diffusers are made of "ni-resist" or austenitic "ni-resist" iron (hardness 190...240 HB);
- radial bearings made of hard alloys;
- decreased level of the pump vibration and radial bearing load due to reduction of the shaft cantilevers.

Example of the pump designation:

022A-ESP CW S-80cpi*-2450 TS3631-025-21945400-97 - corrosion-("C")-and wear("W")-resistant pump in S-size, 60 m³/day, head of 2450 m, no thrust bearing unit in sections ("0"), double-bearing stages ("2"), intake module in the pump, flange-to-housing connection ("2").

cpi* - cold pig iron

Packet assembly pumps

Packet assembly pumps of improved corrosion-and-wear-resistance are suitable for application in formation fluid lifting under hard operating conditions.

Features:

- no thrust bearing units in the pump sections (axial load transferred by the pump shaft, is taken up by the strengthened hydroprotector bearing unit);
- the pump stages assembled as packets, each has its own axial and radial bearing unit;
- single-bearing operating elements with elongated hub;
- impeller hubs touch each other and transfer axial load to the thrust bearing unit installed in the bottom part of a packet;
- reduction of the shaft cantilevers relative to radial bearings;
- due to decreasing of the foot size, protection ribs for the motor lead extension are shifted into the fishing head.

Advantages:

- improved corrosion-and-wear-resistant impellers and diffusers are made of austenitic “ni-resist” iron (hardness 190...240 HB);
- radial bearings made of hard alloy;
- improved endurance capability of the pump shafts;
- decreased level of vibration due to reduction of the shaft cantilevers;
- arrangement of ribs in the fishing head allows cable protecting in the top part of the pump system.

Example of the pump designation:

052A-ESP CW S-60cpi-2500 TS TS3631-025-21945400-97 -improved corrosion-("C")-and wear("W")-resistant pump, packet assembly; in S-size, 60 m³/day, pump stages are made of “ni-resist” iron (hardness 190...240 HB), head of 2500 m, no thrust bearing unit in sections ("0"), packet-assembled single-bearing stages ("5"), intake module in the pump, flange-to-housing connection ("2").

Pumps with the threaded connection sections

Application of pumps with the threaded connection sections allows:

- reducing the assembly/disassembly time for the pump unit;
- application of the same tools and accessories during coupling works as for tubing;
- avoiding the unsafe cross-section (journal) at the section foot and the flow sections overlap;
- improving endurance capability as compared with the flange bolt connection.

Example of designation:

20T-A-ESP-S-60-1200 TS3631-025-21945400-97 - pump with the threaded connection section in S-size, 60 m³/day, head of 1200 m, bearing unit with washers made of ceramics ("2"), short hub impellers, a separate shaft protection sleeve ("o"), intake module in the pump, threaded connection sections ("T").

ALNAS manufactures pumps with corrosion-resistant coating for ESP application in the wells of high corrosivity. The coating has high hardness and is applied to the pump housing by means of the thermal spray coating. The coating thickness is no less than 150 mcm. Mixture of coating: composite powder, containing chrome, molybdenum, silicon, iron, nickel. Low porosity coating provides reliable corrosion prevention of the pump housing.

Corrosion-and-wear-resistant pumps 0215, 0615, 2215-series

ALNAS has released a new line of high efficiency corrosion-and-wear-resistant ESPs of 0215, 0615, 2215-series. The new stages applied in pumps provide increasing ESP lifetime and dropping cost per barrel down at rated capacity, maximum efficiency and minimum input power.

Design features	0215-series	2215-series	0615-series
no axial shaft thrust bearing in the pump sections	•		•
top bearings are removed from the section housings and built-in the base	•	•	•
bottom bearings are removed from the section housings and built-in the base	•	•	•
intermediate radial bearings are set at optimum distance along the section	•	•	•
evolvent shaft spline joint	•	•	•
coupling is removed from the base to the section head	•	•	•
double-bearing two-component stages, one-piece metallic impellers	•	•	•
the pump shaft is stretched and straightened			•
impellers are rigidly fixed on the shaft			•
protection ribs are removed from the base to the head	•	•	•
radial bearings of unified design	•	•	•
original scheme of the shaft deepening adjustment	•		•
mechanical impurities concentration, g/l, max	0,5	0,5	1,0
work stages are made from niresist cast iron	•	•	•



Advantages:

- the pump run life is increased due to absence of the shaft axial thrust bearing in sections; load is taken up by the hydroprotector thrust bearing unit, that is protected against abrasive formation fluid;
- availability of radial bearings in the heads and bases provide reduction of the shaft cantilevers, increasing the shaft end radial stiffness;
- optimum positioning of the radial intermediate bearings along the pump sections provides improvement of the shaft radial stiffness, resulting in the decreased level of vibration and increased life time of ESPs that can be applied in highly abrasive mediums;
- arrangement of ribs in the fishing head provides cable protecting from the top part of the section;
- the stretched pump shaft provides decreasing radial loads on bearings;
- no wear of washers due to impellers rigidly fixed on the shaft;
- fixing of the adjusting bolt on the shaft face from the head side allows simplification of assembly;
- availability of the intake module of unified design in a pump allows assembly with any type of hydroprotector made by ALNAS.

A-ESP specifications

Depending on the cross-section dimension, pumps are made in 5 sizes: D, S, M, L and X. The series conditionally define the minimum inner diameter of the casing string and outside diameter of the pump housing:

Size	D	S	M	L	X
Casing ID, min, mm	112	123,7	130	148,3	205,7
Pump housing OD, mm	86	92	103	114	193

Placing an order or making inquiry in the correspondence or other documents please kindly use a reference table of the Alnas pumps.

XXXX(T) A-ESP CW XX- XXX (M, I, cpi) - XXXX (E) TS 3631-025-21945400-97

1 2 3 4 5 6

- 1 - design (T-threaded intersection connection)
- 2 - A-ESP: ALNAS Electric Submersible Pump
- 3 - "C" - corrosion-resistant design and "W" - wear-resistant design
- 4 - size group (D, S, M, L or X)
- 5 - rated capacity, m³/day (M-pump modification and number of modification; I - impeller; cpi - pump operating elements made of cold pig iron, hardness up to 240 HB)
- 6 - rated head, m, (E - evolvent intersection connection of shafts)

Pump design table

001	011	021	051	201	211	221	231	241	-
-002	012	022	052	202	212	222	232	242	-
003	013	023	053	203	213	223	233	243	-
004	014	024	054	204	214	224	234	244	-
005	015	025	055	205	215	225	235	245	-
006	016	026	056	206	216	226	236	246	-
007	017	027	057	207	217	227	237	247	-
008	018	028	058	208	218	228	238	248	-
009	019	029	059	209	219	229	239	249	-
0010	0110	0210	0510	210	2110	2210	2310	2410	-
0011	0111	0211	0511	211	2111	2211	2311	2411	-
0012	0112	0212	0512	212	2112	2212	2312	2412	-
0013	0113	0213	0513	213	2113	2213	2313	2413	-
0014	0114	0214	0514	214	2114	2214	2314	2414	-
-	-	0215	-	-	-	2215	-	-	0615

The first figure denotes:

- 0 - no axial thrust bearing unit in sections;
- 2 - washers made of wear-resistant material in the thrust bearing unit;

The second figure denotes:

- 0 - short hub impellers made of grey iron with a separate shaft protection sleeve;
- 1 - elongated hub impellers made of the "Ni-resist" cast iron;
- 2 - double-bearing stages made of the "Ni-resist" cast iron;
- 3 - impellers made of polymeric material;
- 4 - stages made of "ferrographite"-type powder materials;
- 5 - double-bearing stages and packet-type stage assembling;
- 6 - double-bearing stages and compression-type stage assembling;

The third and the fourth figures denote:

- 1 - pump includes intake module, flange-to-flange connection;
- 2 - pump includes intake module, flange-to-housing connection (by 6 screws M12X1,25);
- 3 - pump includes bottom section, flange-to-flange connection;
- 4 - pump includes bottom section, flange-to-housing connection;
- 5 - pump includes intake module, flange-to-housing connection, an additional bearing for coupling centering is inserted in the section heads, made as requested);
- 6 - pump includes bottom section, flange-to-housing connection, an additional bearing for coupling centering is inserted the section heads, made as requested;
- 7 - pump includes intake module, flange-to-housing connection by 8 screws M12X1,25 or by pins with nuts M12X1,25; made as requested;
- 8 - pump includes bottom section, flange-to-housing connection by 8 screws M12X1,25 or by pins with nuts M12X1,25; made as requested;
- 9 - pump includes intake module, flange-to-housing connection by 8 screws M10X1;
- 10 - pump includes bottom section, flange-to-housing connection by 8 screws M10X1;
- 11 - pump includes intake module, flange-to-housing connection by 8 screws M12X1,25 or by pins with nuts M12X1,25; an additional bearing for coupling centering is inserted the section heads; made as requested;
- 12 - pump includes bottom section, flange-to-housing connection by 8 screws M12X1,25 or by pins with nuts M12X1,25; an additional bearing for coupling centering is inserted the section heads; made as requested;
- 13 - pump includes intake module, flange-to-housing connection by 8 screws M10X1; an additional bearing for coupling centering is inserted the section heads; made as requested;
- 14 - pump includes bottom section, flange-to-housing connection by 8 screws M10X1; an additional bearing for coupling centering is inserted the section heads; made as requested;
- 15- pump includes intake module, flange-to-housing connection, heads and section feet with built-in radial bearings.

T-threaded intersection connection, intake module included to pump.

All the pumps include intermediate bearings and top section with fishing head.

Pump	Rated capacity in the operating range, m ³ /day	Head, min-max, m	Motor load break, min-max, KW
A-ESP CW D-100	75-130	326-3969	6,85-83,58
A-ESP CW D-20I	12-27	139-3500	1,05-26,49
A-ESP CW S-15I	10-22,5	163-3552	1,03-22,42
A-ESP C S-18	12-30	510-3984	4,01-31,30
A-ESP CW S-20I	12-25	156-3588	1,18-27,14
A-ESP CW S-25I	18-38	546-2968	4,44-24,14
A-ESP C S-30	20-40	461-3923	4,48-38,07
A-ESP CW S-30I	18-38	484-3967	4,72-38,66
A-ESP CW S-35I	25-45	518-2938	5,57-31,58
A-ESP CW S-40I	25-60	150-3480	1,48-34,38
A-ESP C S-45M1	35-65	615-3969	6,96-45,01
A-ESP CW S-45	15-70	480-3929	6,63-54,29
A-ESP C S-50	35-65	583-3964	7,21-48,99
A-ESP CW S-50	35-65	583-3964	7,21-48,99
A-ESP CW S-50I	25-70	546-3848	6,74-47,36
A-ESP C S-60	35-80	502-3929	7,77-60,76
A-ESP CW S-60	35-80	405-3994	6,26-61,76
A-ESP CW S-60I	40-75	154-3520	2,02-46,16
A-ESP C S-80	60-115	506-3956	8,93-69,83
A-ESP CW S-80	60-115	400-3933	7,06-69,43
A-ESP CW S-80I	60-100	162-3521	2,59-56,15
A-ESP CW S-100I	80-125	572-3457	11,64-70,32
A-ESP C S-125	102-165	414-3668	10,89-96,50
A-ESP CW S-125	102-165	320-3744	8,41-98,51
A-ESP C S-200	150-265	281-2984	12,74-135,41
A-ESP CW S-200	150-265	238-3058	10,80-138,77
A-ESP CW M-25	10-50	483-3911	4,98-40,37
A-ESP CW M-35I	25-50	706-3931	8,38-46,68
A-ESP C M-50	25-80	610-3935	8,78-56,60
A-ESP CW M-50	25-80	507-3935	7,29-56,60
A-ESP C M-80	35-110	562-3959	10,64-74,96
A-ESP CW M-80	35-110	536-3993	11,59-86,44
A-ESP CW M-80I	60-100	191-3590	3,48-65,28
A-ESP CW M-100I	70-130	752-3526	16,14-75,63
A-ESP C M-125	75-190	603-3456	16,79-96,27
A-ESP CW M-125	75-175	440-3982	14,88-134,66
A-ESP CW M-125I	75-175	209-3695	5,2-91,8
A-ESP C M-160	125-205	490-3988	14,57-118,68
A-ESP CW M-160	125-205	413-3999	12,28-119,01
A-ESP CW M-160M1	125-195	580-3660	17,28-109,11
A-ESP C M-200	110-260	437-3883	18,39-163,21
A-ESP CW M-200	150-250	405-4000	18,39-181,60
A-ESP CW M-200M1	125-250	543-3428	19,87-125,5
A-ESP C M-250	190-340	272-3922	12,57-181,19
A-ESP CW M-250	195-320	275-3949	13,72-196,82
A-ESP C M-280	210-430	307-3941	16,83-216,23
A-ESP CW M-320	240-380	255-3926	16,25-250,43
A-ESP C M-400	300-440	195-3436	14,89-262,36
A-ESP CW M-400	300-440	189-3251	15,36-263,84

Pump	Rated capacity in the operating range, m ³ /day	Head, min-max, m	Motor load break, min-max, KW
A-ESP C M-500	430-570	185-2476	19,40-260,32
A-ESP CW M-500	430-570	168-2493	17,67-262,05
A-ESP CW M-700M1	600-850	167-2100	22,54-283,55
A-ESP CW M-800M1	700-920	148-2059	23,94-332,64
A-ESP CW M-700M2	580-850	191-2122	22,69-251,92
A-ESP CW M-800M2	650-920	174-2123	23,90-292,35
A-ESP C L-800	550-920	191-2141	28,87-324,01
A-ESP CW L-800	550-920	184-1979	29,81-321,26
A-ESP CW L-1000	850-1200	163-2025	30,97-383,87
A-ESP CW L-1250	1100-1550	147-1872	37,44-478,40

Corrosion-and-wear-resistant pumps can be made with operating elements of cold pig iron (240 HB).

Examples of pump model designation

001A-ESP C S-80cpi-1200 TS 3631-025-21945400-97 – corrosion-resistant (“C”) pump in S-size, 80 m³/day, head of 1200 m, no thrust bearing unit in sections (“0”), single-bearing stages: short hub impellers, single shaft protection sleeve (“0”), diffusers made of “Ni-resist” cast iron, hardness 190-240 HB (“cpi”), pump includes intake module, flange-to-flange section connection (“1”).

014A-ESP C M-160-1000 TS 3631-025-21945400-97 –corrosion-resistant (“C”) pump in M-size, 160 m³/day, head of 1000 m, no thrust bearing unit in sections (“0”), single-bearing stages: elongated hub impellers (“1”), diffusers made of “Ni-resist” cast iron, pump includes bottom section, flange-to-housing connection (“4”).

201A-ESP S-80-1200 TS3631-025-21945400-97 - pump in S-size, 80 m³/day, head of 1200 m, washer made of wear-resistant material (“2”) in the thrust bearing unit, single-bearing stages design: short hub impellers, single shaft protection sleeve (“0”), diffusers made of grey inoculated cast iron, pump includes intake module, flange-to-flange connection (“1”).

206A-ESP S-60-1700 TS3631-025-21945400-97 – pump in S-size, 60 m³/day, head of 1700 m, washers made of wear-resistant material (“2”) in the thrust bearing unit, single-bearing stages: short hub impellers, single shaft protection sleeve (“0”), operating stages made of grey inoculated cast iron, pump includes bottom section, flange-to-housing connection, an additional bearing is inserted in the section heads to center a coupling (“6”).

2014A-ESP S-60-1700 TS3631-025-21945400-97 – pump in S-size, 60 m³/day, head of 1700 m, washers made of wear-resistant material (“2”) in the thrust bearing unit, single-bearing stages: short hub impellers, single shaft protection sleeve (“0”), operating stages made of grey inoculated cast iron, pump includes bottom section, flange-to-housing connection by 8 screws M10x1 (“14”), an additional bearing is inserted in the section heads to center a coupling (“6”).

213A-ESP C S-18-2000 TS3631-025-21945400-907 - corrosion-resistant (“C”) pump in S-size, 18 m³/day, head of 2000 m, washers made of wear-resistant material (“2”) in the thrust bearing unit, single-bearing stages: elongated hub impellers (“1”), operating stages made of “Ni-resist” cast iron, pump includes bottom section, flange-to-flange connection (“3”).

226A-ESP CW S-60cpi -1250 TS3631-025-21945400-97 - corrosion-(“C”)-and wear(“W”)-resistant pump in S-size, 60 m³/day, head of 1250 m, washers made of wear-resistant material (“2”) in the thrust bearing unit, double-bearing stages (2) made of “Ni-resist” cast iron, hardness 190-240 HB (“cpi”), pump includes bottom section, flange-to-housing connection, an additional bearing is inserted in the section heads to center a coupling (“6”).

226A-ESP CW S-60-1050 TS3631-025-21945400-97 – corrosion-(“C”)-and wear (“W”)-resistant pump in S-size, 60 m³/day, head of 1050 m, washers made of wear-resistant material (“2”) in the thrust bearing unit, double-bearing stages (2) made of “Ni-resist” cast iron, pump includes bottom section, flange-to-housing connection, an additional bearing is inserted in the section heads to center a coupling (“6”).

2314A-ESP C S-80-1550 TS3631-025-21945400-97 -corrosion-resistant (“C”) pump in S-size, 80 m³/day, head of 1550 m, washers made of wear-resistant material (“2”) in the thrust bearing unit, impellers made of polymeric material (“3”), pump includes bottom section, flange-to-housing connection by 8 screws M10x1 (“14”), an additional bearing is inserted in the section heads to center a coupling.

2311A-ESP C S-80-1550 TS3631-025-21945400-97 - corrosion-resistant (“C”) pump in S-size, 80 m³/day, head of 1550 m, washers made of wear-resistant material (“2”) in the thrust bearing unit, impellers made of polymeric material (“3”), pump includes intake module, flange-to-housing connection by 8 screws M12x1,25 or by pins with nuts M12x1,25.

242A-ESP C S-60-1450 TS3631-025-21945400-97 - corrosion-resistant ("C") pump in S-size, 60 m³/day, head of 1450 m, washers made of wear-resistant material ("2") in the thrust bearing unit, impellers made of "ferrographite" powder material ("4"), pump includes intake module, flange-to-housing connection ("2").

022A-ESP CW S-60cpi-2450 TS3631-025-21945400-97 - corrosion-("C")-and wear("W")-resistant pump in S-size, 60 m³/day, head of 2450 m, no thrust bearing unit in sections ("0"), double-bearing stages ("2") made of "Ni-resist" cast iron, hardness 190-240 HB ("cpi"), pump includes intake module, flange-to-housing connection ("2").

0215A-ESP CW S-50I-900E TS3631-025-21945400-97 - corrosion-("C")-and wear("W")-resistant pump in S-size, 50 m³/day, head of 900 m, no thrust bearing unit in sections ("0"), double-bearing stages ("2"), pump includes intake module, flange-to-housing connection ("2"), radial bearings inserted in heads and section bases ("15"), impellers ("I"), evolvent intersectional shaft joint ("E").

Pump top, middle and bottom sections are made in 3m-, 4m-, 5m-, 3,5m-, 4,5m-, 5,5m- size.

Types of the pump inter-section connections

Anti-fly coupling

Application of anti-fly couplings allows reducing the number of complicated failures - disconnection of the pump sections (fig.1). It is possible at flange-to-flange connection (fig.2).

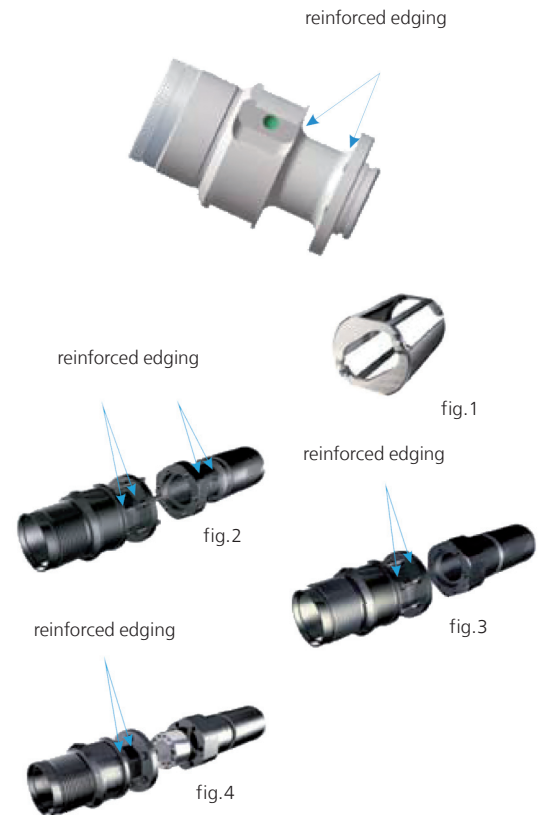
Flange-to-housing connection

Flange-to-housing connection by 6 screws M12x1,25 provide a fail-safe intersection connection compared to flange-to-flange connections. Stress reduction and expanded thickness of the head side increase ESP meantime-between-failures (fig.3). Flange-to-housing connection with an additional bearing in the section head enables centering of a coupling (fig.4).

6-bolt-on intersectional connection

The flange pump-foot (reinforced edging) with the standard gripping of bolts passed through the fatigue test. No destruction occurred at $P_{max}=200$ kN and number of the stress cycles no less than $N_{aver.}=1\ 767\ 850$, that verifies a high level of safety of this type of intersectional connection.

Application of the 6-bolt-on junction improves reliability of the system module joint.



Slotted filter – SF intake module

The purpose and principle of operation

The Slotted Filter – SF intake module is applied in the submersible pumps for intake of formation fluid and separation of solid impurities with particles' cross-section more than 0,1 or 0,2 mm.

Solid particles are separated at the slotted filter inlet, which consists of smooth grids made of high-strength stainless steel, where slots determine filter fineness. The slotted filter – SF intake module consists of a single or more sections according to capacity; it is installed between hydroprotector and the pump bottom section or between hydroprotector and gas separator. It transmits axial load from the pump to the protector thrust bearing unit.

Major advantages:

- filter fineness - 0,2 mm;
- high endurance capability;
- nonclogging filtering elements providing steady operation of equipment;
- application of radial bearing made of hard alloy;
- serviceability;
- ESP MTBF increasing.

Designation of the Slotted Filter – SF intake module

While ordering or making inquiry in the correspondence or other documents please kindly use a reference table of the Alnas filters:

SF-XX-X(X)-XXX-XX/XX TS 3631-025-21945400-97

—	SF - Slotted Filter – SF intake module
—	Series (5, 5A)
—	Filter conventional whole length, m (3, 4, 5, 6, 7, 8, 9, 10, 11, 12)
—	Filter fineness, mm
—	Shaft diameter (20 or 22 mm)
—	Design (0 - wear resistant)
—	Connection type (0 - 6-bolt-on M12x1,25; 1 - 8-bolt-on M10x1; 2 - 8-bolt-on M12x1,25)

Example of designation:

SF-5-6-020-20-20/00 TS 3631-025-21945400-97:

Slotted Filter – SF intake module, 5-series, whole length - 6m, filter fineness -0.20mm, shaft diameter – 20mm, wear-resistant, connection type - 6-bolt-on M12x1.25.



slotted filter

Flow capacity

Slotted filter	Filter fineness, mm	Capacity, m ³ /day
SF-5-3	0,2	115
SF-5-4	0,2	150
SF-5-5	0,2	180
SF-5-6	0,2	220
SF-5-7	0,2	260
SF-5-8	0,2	290
SF-5-9	0,2	330
SF-5-10	0,2	360
SF-5-11	0,2	400
SF-5-12	0,2	440
SF-5-3	0,1	75
SF-5-4	0,1	100
SF-5-5	0,1	120
SF-5-6	0,1	145
SF-5-7	0,1	170
SF-5-8	0,1	190
SF-5-9	0,1	220
SF-5-10	0,1	240
SF-5-11	0,1	265
SF-5-12	0,1	290
SF-5A-3	0,2	120
SF-5A-4	0,2	160
SF-5A-5	0,2	200
SF-5A-6	0,2	240
SF-5A-7	0,2	280
SF-5A-8	0,2	310
SF-5A-9	0,2	340
SF-5A-10	0,2	380
SF-5A-11	0,2	420
SF-5A-12	0,2	460
SF-5A-3	0,1	80
SF-5A-4	0,1	105
SF-5A-5	0,1	130
SF-5A-6	0,1	160
SF-5A-7	0,1	185
SF-5A-8	0,1	210
SF-5A-9	0,1	235
SF-5A-10	0,1	260
SF-5A-11	0,1	290
SF-5A-12	0,1	320

Pump 2215A-ESP CW D-20I

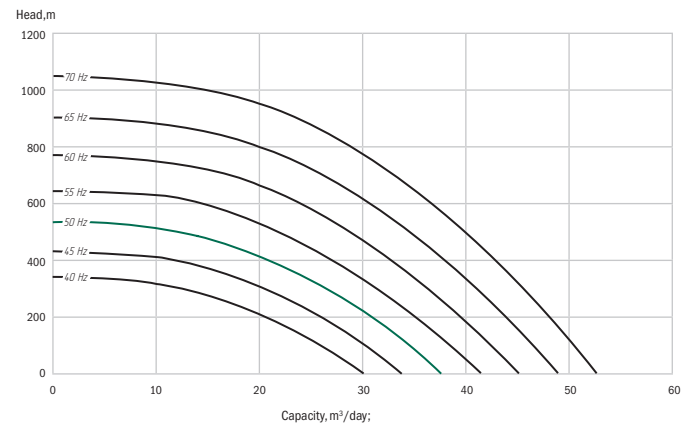
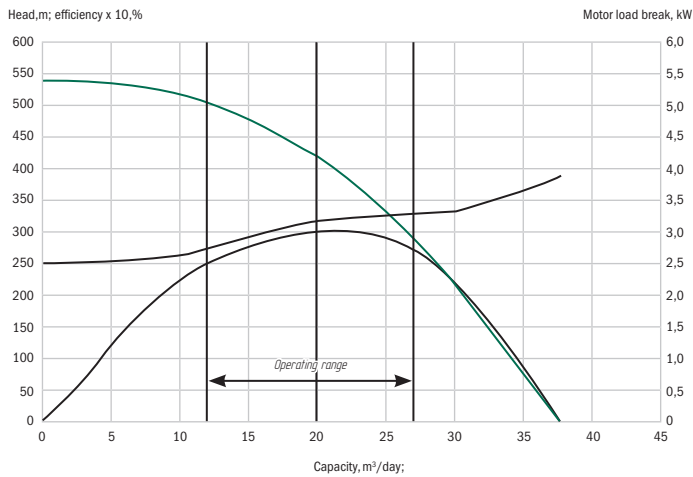
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Number of stages, pcs.	112	151	190	224	263	302	341	380	414	453	492	531	570	604	643	682	721	760	794	833
Head at 50 Hz, m	450	650	800	950	1100	1250	1450	1600	1750	1900	2050	2200	2400	2550	2700	2850	3000	3200	3350	3500
Motor load brake at 50 Hz, kW	3,56	4,80	6,04	7,12	8,36	9,60	10,84	12,08	13,17	14,41	15,65	16,89	18,13	19,21	20,45	21,69	22,93	24,17	25,25	26,49
Weight, kg	109	141	173	207	239	271	303	335	369	401	433	465	497	531	563	595	627	659	693	725

Pump sections number and length



Pump specification 2215A-ESP CW D-20I
 double-bearing design; capacity $Q = 20 \text{ m}^3/\text{day}$;
 water density $\eta=1000 \text{ kg}/\text{m}^3$; number of stages =100;
 $Q=20 \text{ m}^3/\text{day}$; $H=420 \text{ m}$; $N=3,18 \text{ kW}$; $\eta=30\%$

2215A-ESP CW D-20I head rating at various rpm;
 number of stages =100

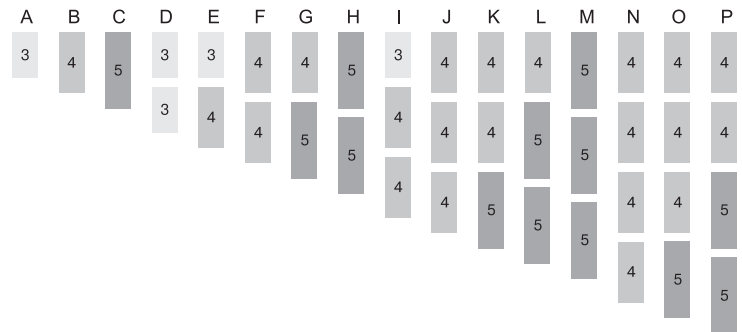


Pump 0215A-ESP CW D-20I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	115	154	193	230	269	308	347	386	423	462	501	540	579	616	655	694
Head at 50 Hz, m	500	650	800	950	1150	1300	1450	1600	1750	1950	2100	2250	2450	2600	2750	2900
Motor load brake at 50 Hz, kW	3,66	4,90	6,14	7,31	8,55	9,79	11,03	12,27	13,45	14,69	15,93	17,17	18,41	19,59	20,83	22,07
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	*	736	784	833	883
Weight, kg	109	141	173	207	239	271	303	335	369	401	433	465	497	531	563	595

* ESP completed by hydroprotector (see "Hydroprotectors")

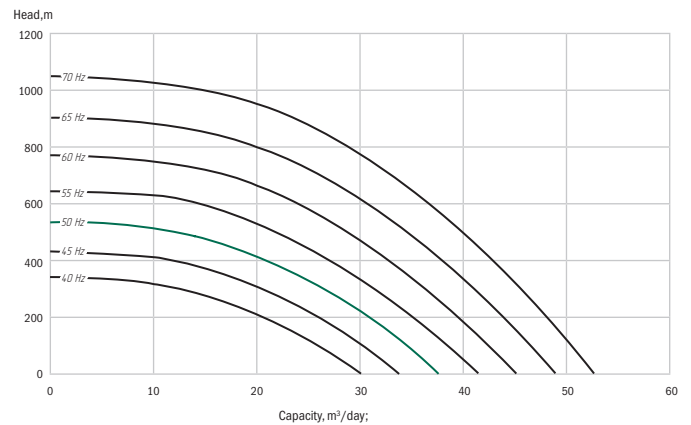
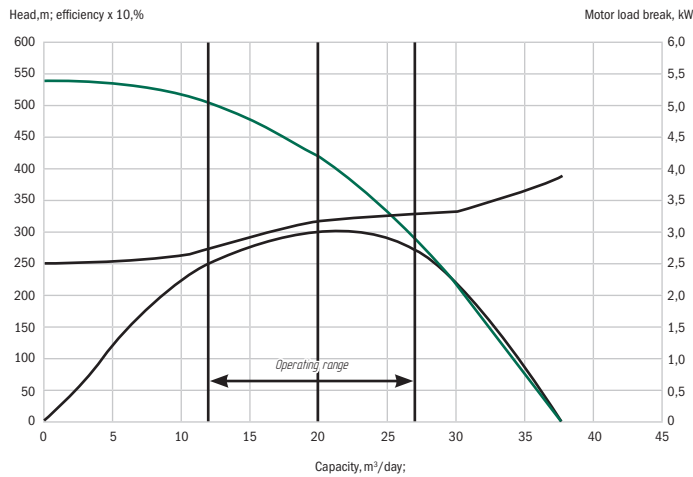
Pump sections number and length



Pump specification 0215A-ESP CW D-20I

double-bearing design; capacity $Q = 20 \text{ m}^3/\text{day}$;
 water density $\eta=1000 \text{ kg/m}^3$; number of stages =100;
 $Q=20 \text{ m}^3/\text{day}$; $H=420 \text{ m}$; $N=3,18 \text{ kW}$; $\eta=30\%$

0215A-ESP CW D-20I head rating at various rpm; number of stages =100

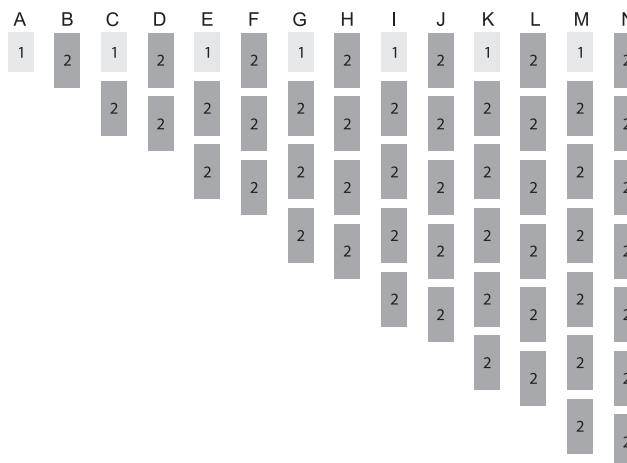


Pump 0615A-ESP CW D-20I(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	33	72	105	144	177	216	249	288	321	360	393	432	465	504
Head at 50 Hz, m	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100
Motor load brake at 50 Hz, kW	1,05	2,29	3,34	4,58	5,63	6,87	7,92	9,16	10,21	11,45	12,50	13,74	14,79	16,03
Load on the hydro-protector reinforced bearing, kgf	*	*	*	825	1014	1237	1427	1650	1839	2062	2252	2475	2664	2887
Weight, kg	53	91	133	171	213	251	293	331	373	411	453	491	533	571

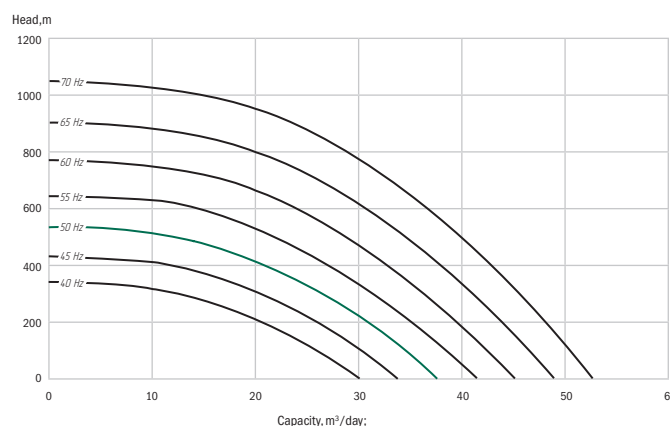
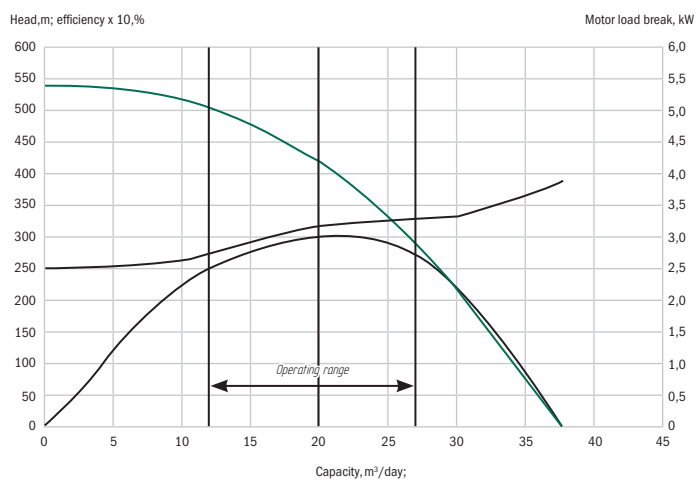
* ESP completed by hydroprotector (see "Hydroprotectors")

Pump sections number and length



Pump specification 0615A-ESP CW D-20I(cpi)
double-bearing design; capacity Q = 20 m³/day;
water density $\eta=1000$ kg/m³; number of stages =100;
Q=20 m³/day; H=420 m; N=3,18 kW; $\eta=30\%$

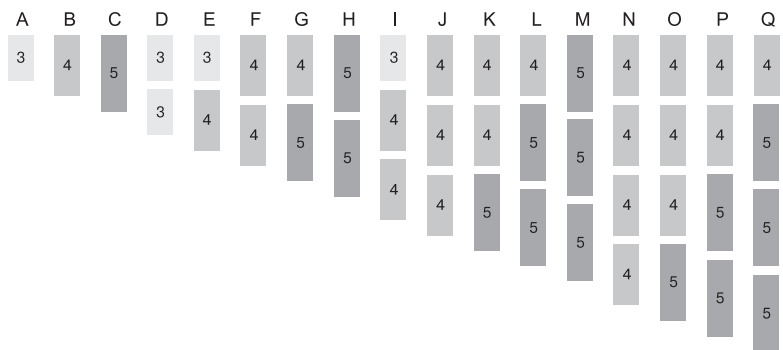
0615A-ESP CW D-20I(cpi) head rating at various rpm;
number of stages =100



Pump 2215A-ESP CW S-15I

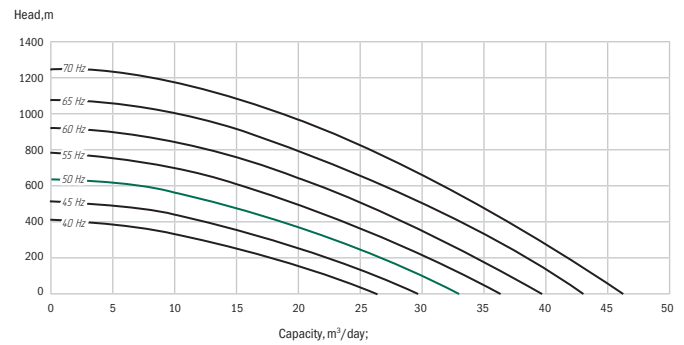
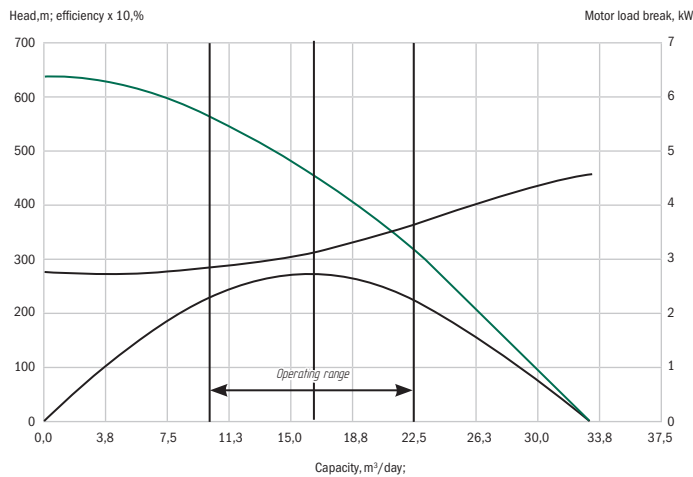
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	115	155	195	230	270	310	350	390	425	465	505	545	585	620	660	700	740
Head at 50 Hz, m	550	750	950	1100	1300	1500	1700	1850	2050	2250	2400	2600	2800	2950	3150	3350	3550
Motor load brake at 50 Hz, kW	3,48	4,70	5,91	6,97	8,18	9,39	10,61	11,82	12,88	14,09	15,30	16,51	17,73	18,79	20,00	21,21	22,42
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565	597	629	661

Pump sections number and length



Pump specification 2215A-ESP CW S-15I
 capacity $Q = 15 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg}/\text{m}^3$;
 number of stages =100; $Q=15 \text{ m}^3/\text{day}$;
H=480 m; N=3,03 kW; $\eta=27\%$

2215A-ESP CW S-15I head rating at various rpm;
 number of stages =100

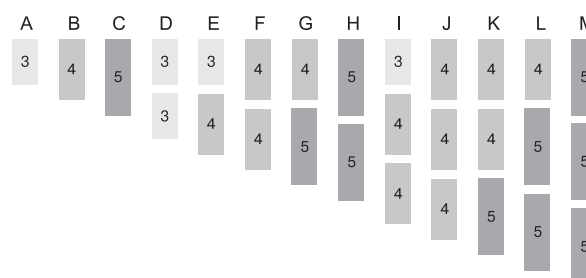


Pump 0215A-ESP CW S-15I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	118	158	198	236	276	316	356	396	434	474	514	554	594
Head at 50 Hz, m	550	750	950	1150	1300	1500	1700	1900	2100	2300	2450	2650	2850
Motor load brake at 50 Hz, kW	3,58	4,79	6,00	7,15	8,36	9,57	10,79	12,00	13,15	14,36	15,57	16,79	18,00
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	734	793	850
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523

* ESP completed by hydroprotector (see "Hydroprotectors")

Pump sections number and length

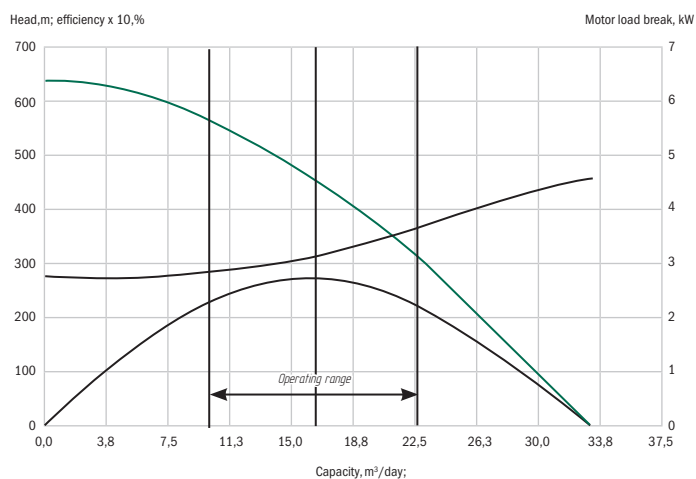


Pump specification 0215A-ESP CW S-15I

capacity $Q = 15 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$;

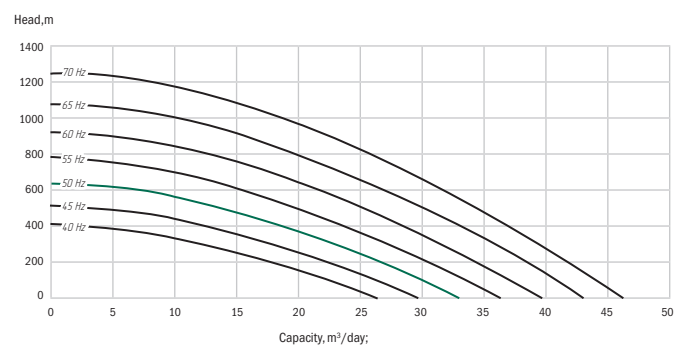
number of stages = 100; $Q = 15 \text{ m}^3/\text{day}$;

$H = 480 \text{ m}$; $N = 3,03 \text{ kW}$; $\eta = 27\%$



0215A-ESP CW S-15I head rating at various rpm;

number of stages = 100

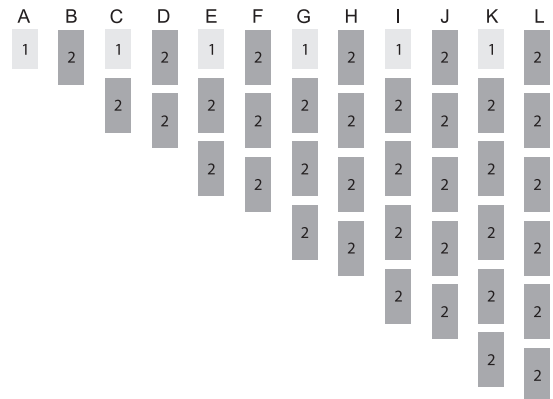


Pump 0615A-ESP CW S-15I(cpi)

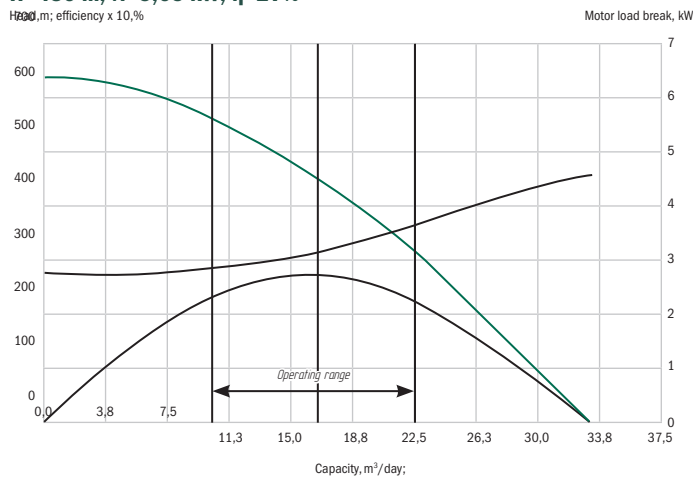
Assembly	A	B	C	D	E	F	G	H	I	J	K	L
Number of stages, pcs.	34	74	108	148	182	222	256	296	330	370	404	444
Head at 50 Hz, m	150	350	500	700	850	1050	1250	1400	1600	1750	1950	2150
Motor load brake at 50 Hz, kW	1,03	2,24	3,27	4,48	5,51	6,73	7,76	8,97	10,00	11,21	12,24	13,45
Load on the hydro-protector reinforced bearing, kgf	*	*	*	974	1197	1460	1684	1947	2171	2434	2658	2921
Weight, kg	60	97	144	181	228	265	312	349	396	433	480	517

* ESP completed by hydroprotector (see "Hydroprotectors")

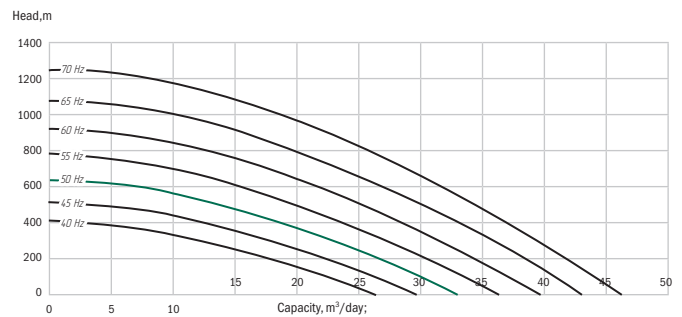
Pump sections number and length



Pump specification 0615A-ESP CW S-15I(cpi)
 capacity $Q = 15 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg/m}^3$;
 number of stages =100; $Q=15 \text{ m}^3/\text{day}$;
H=480 m; N=3,03 kW; $\eta=27\%$



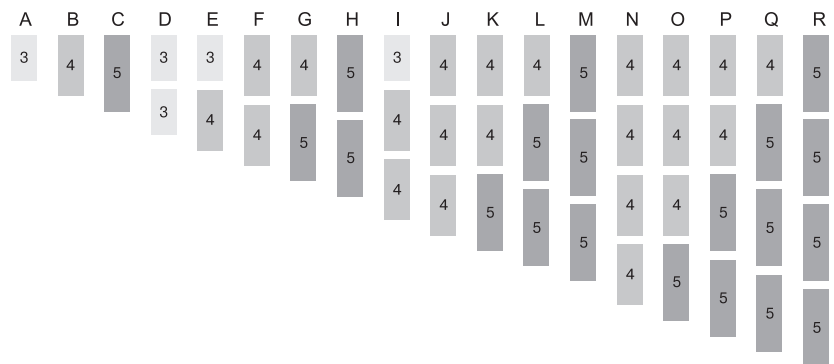
0615A-ESP CW S-15I(cpi) head rating at various rpm;
 number of stages =100



Pump 2215A-ESP CW S-20I

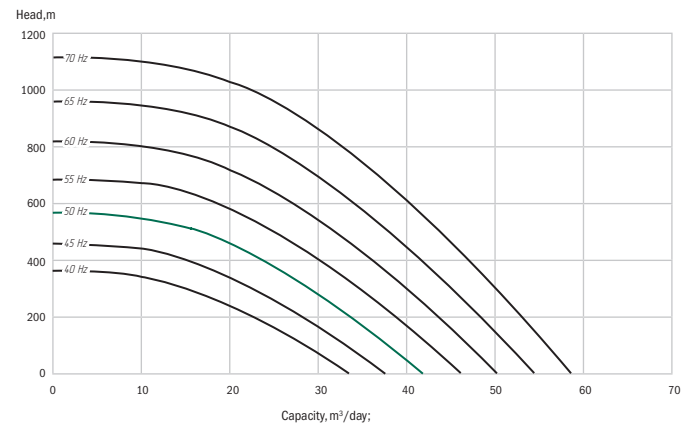
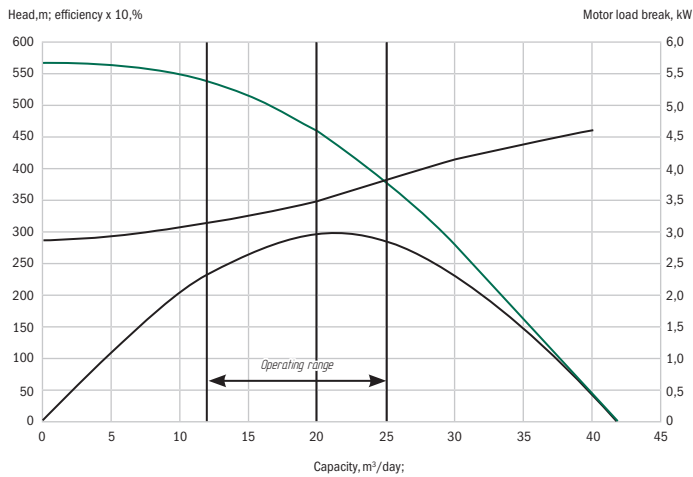
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	115	155	195	230	270	310	350	390	425	465	505	545	585	620	660	700	740	780
Head at 50 Hz, m	500	700	900	1050	1250	1400	1600	1800	1950	2150	2300	2500	2700	2850	3050	3200	3400	3600
Motor load brake at 50 Hz, kW	4,00	5,39	6,79	8,00	9,40	10,79	12,18	13,57	14,79	16,18	17,57	18,97	20,36	21,58	22,97	24,36	25,75	27,14
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565	597	629	661	693

Pump sections number and length



Pump specification 2215A-ESP CW S-20I
double-bearing design; capacity Q = 20 m³/day;
water density $\eta=1000$ kg/m³; number of stages =100;
Q=20 m³/day; H=460 m; N=3,48 kW; $\eta=30\%$

2215A-ESP CW S-20I head rating at various rpm;
number of stages =100

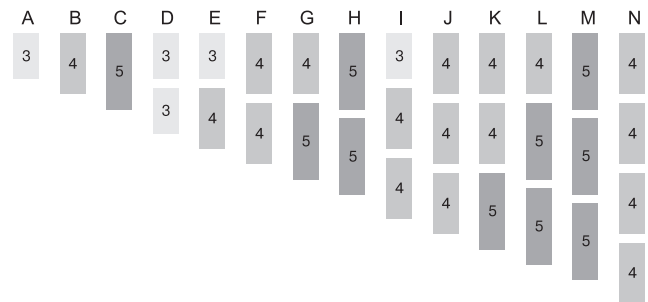


Pump 0215A-ESP CW S-20I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	118	158	198	236	276	316	356	396	434	474	514	554	594	632
Head at 50 Hz, m	550	700	900	1100	1250	1450	1650	1800	2000	2200	2350	2550	2750	2900
Motor load brake at 50 Hz, kW	4,11	5,50	6,89	8,21	9,60	11,00	12,39	13,78	15,10	16,50	17,89	19,28	20,67	21,99
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	737	790	842
Weight, kg	117	149	181	223	255	287	319	351	393	425	457	489	521	563

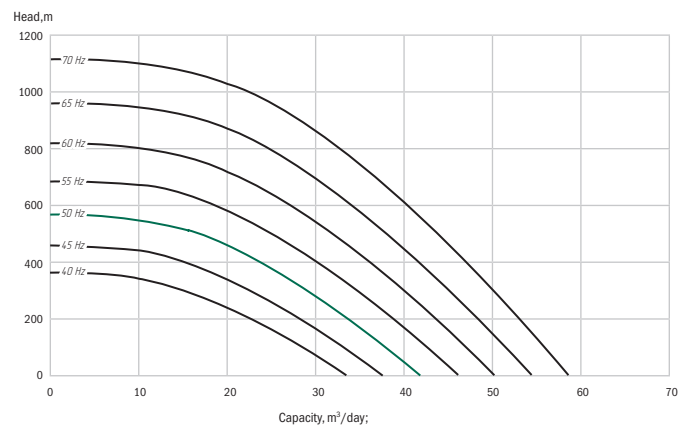
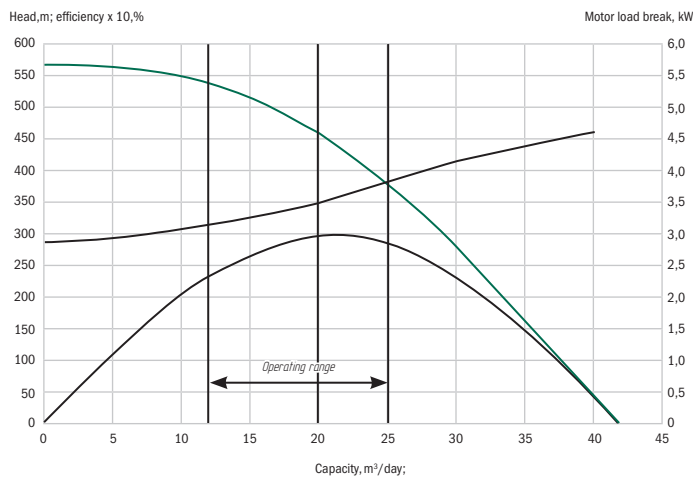
* ESP completed by hydroprotector (see “Hydroprotectors”)

Pump sections number and length



Pump specification 0215A-ESP CW S-20I
 double-bearing design; capacity $Q = 20 \text{ m}^3/\text{day}$;
 water density $\eta = 1000 \text{ kg}/\text{m}^3$; number of stages = 100;
 $Q = 20 \text{ m}^3/\text{day}$; $H = 460 \text{ m}$; $N = 3,48 \text{ kW}$; $\eta = 30\%$

0215A-ESP CW S-20I head rating at various rpm;
 number of stages = 100

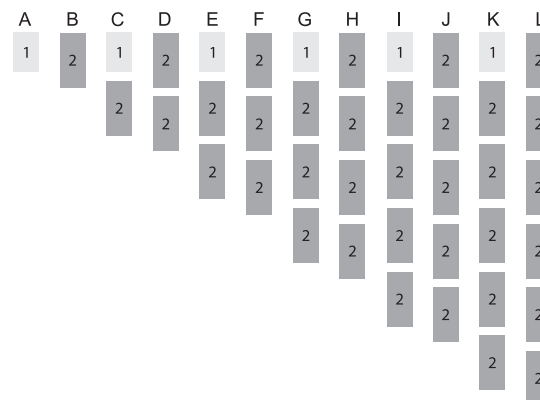


Pump 0615A-ESP CW S-20I(cpi)

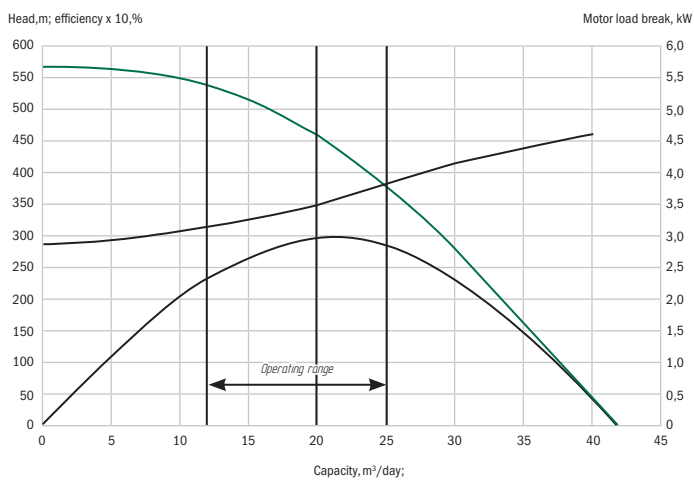
Assembly	A	B	C	D	E	F	G	H	I	J	K	L
Number of stages, pcs.	34	74	108	148	182	222	256	296	330	370	404	444
Head at 50 Hz, m	150	350	500	700	850	1000	1150	1350	1500	1700	1850	2050
Motor load brake at 50 Hz, kW	1,18	2,58	3,76	5,15	6,33	7,73	8,91	10,30	11,48	12,88	14,06	15,45
Load on the hydro-protector reinforced bearing, kgf	*	*	*	953	1179	1438	1659	1917	2138	2397	2617	2876
Weight, kg	58	95	105	142	152	189	199	236	246	283	293	330

* ESP completed by hydroprotector (see "Hydroprotectors")

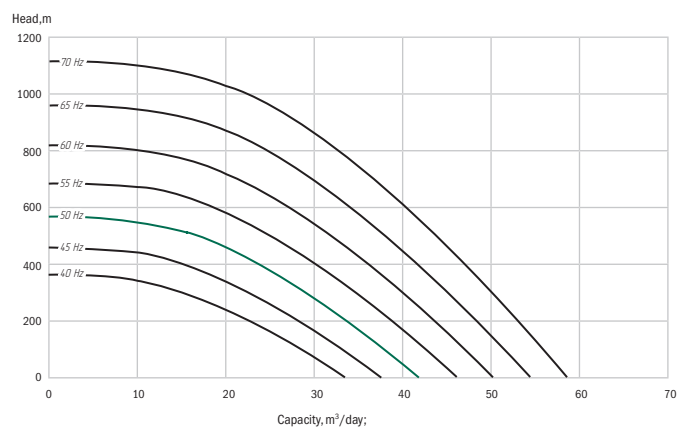
Pump sections number and length



Pump specification 0615A-ESP CW S-20I(cpi)
double-bearing design; capacity Q = 20 m³/day;
water density $\eta=1000$ kg/m³; number of stages =100;
Q=20 m³/day; H=460 m; N=3,48 kW; $\eta=30\%$



0615A-ESP CW S-20I(cpi) head rating at various rpm;
number of stages =100

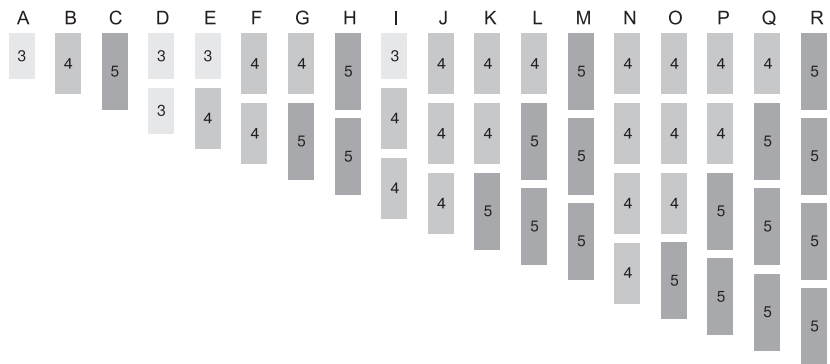


Pump 0215A-ESP CW S-35I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	108	144	180	216	252	288	324	360	396	432	468	504	540	576	612	648	684	720
Head at 50 Hz, m	500	700	850	1050	1200	1400	1550	1700	1900	2050	2250	2400	2600	2750	2950	3100	3300	3450
Motor load brake at 50 Hz, kW	5,57	7,43	9,29	11,15	13,00	14,86	16,72	18,58	20,43	22,29	24,15	26,01	27,86	29,72	31,58	33,44	35,29	37,15
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	*	739	788	837	887	935	985
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565	597	629	661	693

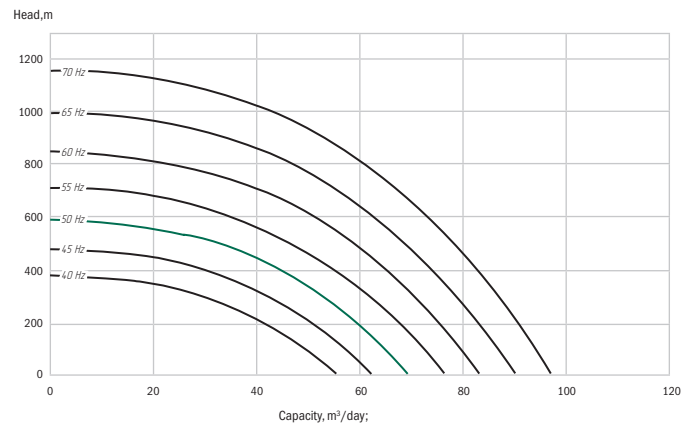
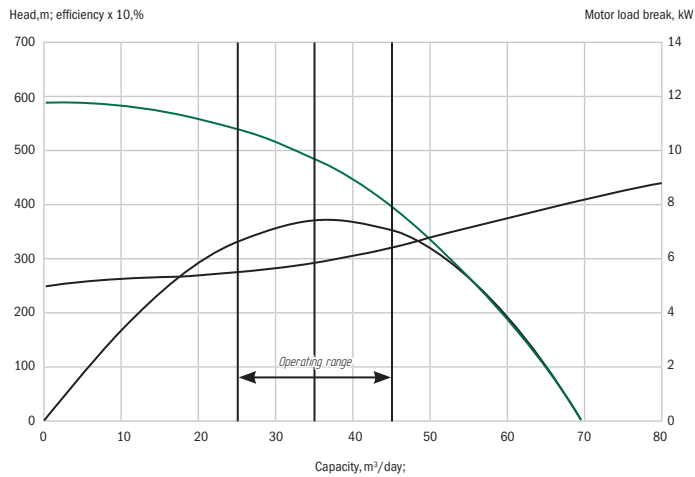
* ESP completed by hydroprotector (see “Hydroprotectors”)

Pump sections number and length



Pump specification 0215A-ESP CW S-35I
 double-bearing design; capacity $Q = 35 \text{ m}^3/\text{day}$;
 water density $\eta = 1000 \text{ kg}/\text{m}^3$; number of stages = 100;
 $Q = 35 \text{ m}^3/\text{day}$; $H = 480 \text{ m}$; $N = 5,16 \text{ kW}$; $\eta = 37\%$

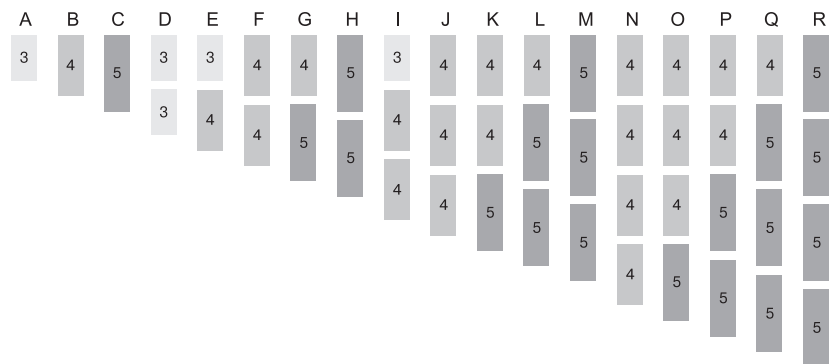
0215A-ESP CW S-35I head rating at various rpm;
 number of stages = 100



Pump 2215A-ESP CW S-40I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	103	138	174	206	241	276	312	348	379	414	450	486	522	552	588	624	660	696
Head at 50 Hz, m	500	700	850	1050	1200	1400	1550	1750	1900	2050	2250	2450	2600	2750	3000	3100	3300	3500
Motor load brake at 50 Hz, kW	5,09	6,82	8,60	10,18	11,91	13,63	15,41	17,19	18,72	20,45	22,23	24,01	25,79	27,27	29,05	30,83	32,60	34,38
Weight, kg	116	151	187	219	254	289	325	361	392	427	463	499	535	565	601	637	673	709

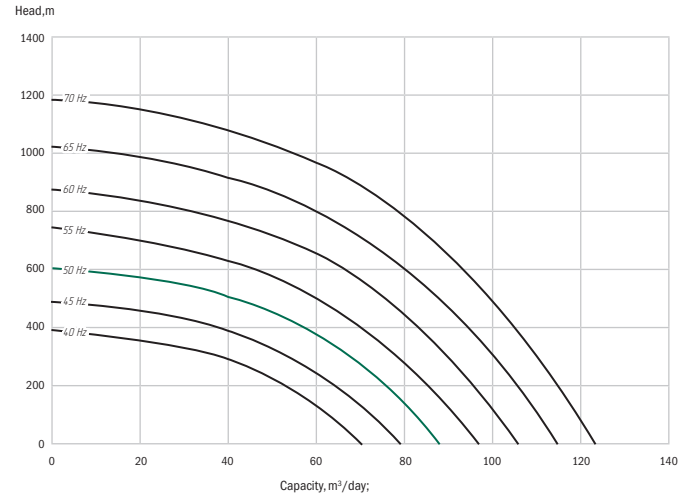
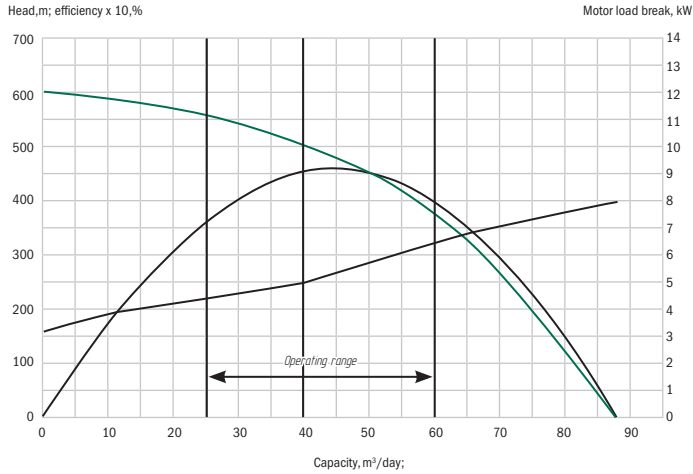
Pump sections number and length



Pump specification 2215A-ESP CW S-40I capacity

Q = 40 m³/day; water density $\eta=1000$ kg/m³;
number of stages =100; Q=40 m³/day;
H=500 m; N=4,94 kW; $\eta=46\%$

2215A-ESP CW S-40I head rating at various rpm; number of stages =100



Pump 0215A-ESP CW S-40I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	105	141	176	210	246	282	317	352	387	423	458	493	528	564
Head at 50 Hz, m	500	700	900	1050	1250	1400	1600	1750	1950	2100	2300	2450	2650	2800
Motor load brake at 50 Hz, kW	5,19	6,97	8,69	10,37	12,15	13,93	15,66	17,39	19,12	20,90	22,63	24,35	26,08	27,86
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	703	753	805
Weight, kg	118	154	189	223	259	295	330	365	400	436	471	506	541	577

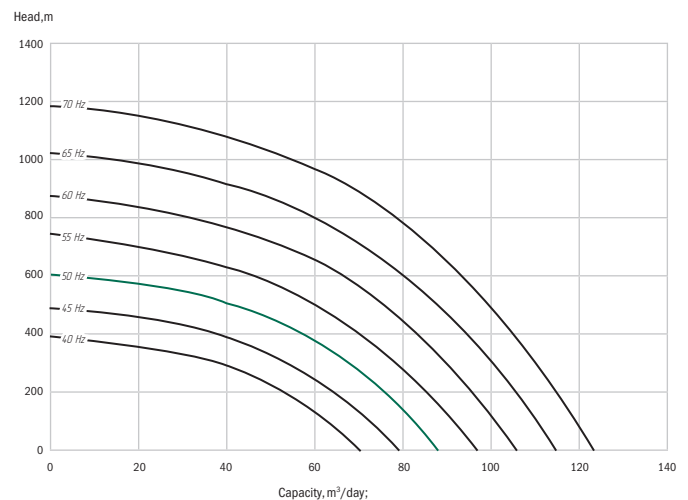
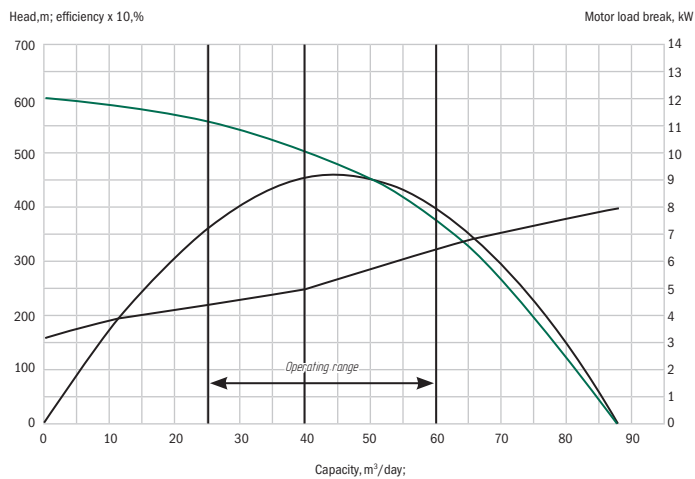
* ESP completed by hydroprotector (see "Hydroprotectors")

Pump sections number and length



Pump specification 0215A-ESP CW S-40I
 capacity $Q = 40 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$;
 number of stages = 100; $Q = 40 \text{ m}^3/\text{day}$;
H = 500 m; N = 4,94 kW; $\eta = 46\%$

0215A-ESP CW S-40I head rating at various rpm;
 number of stages = 100

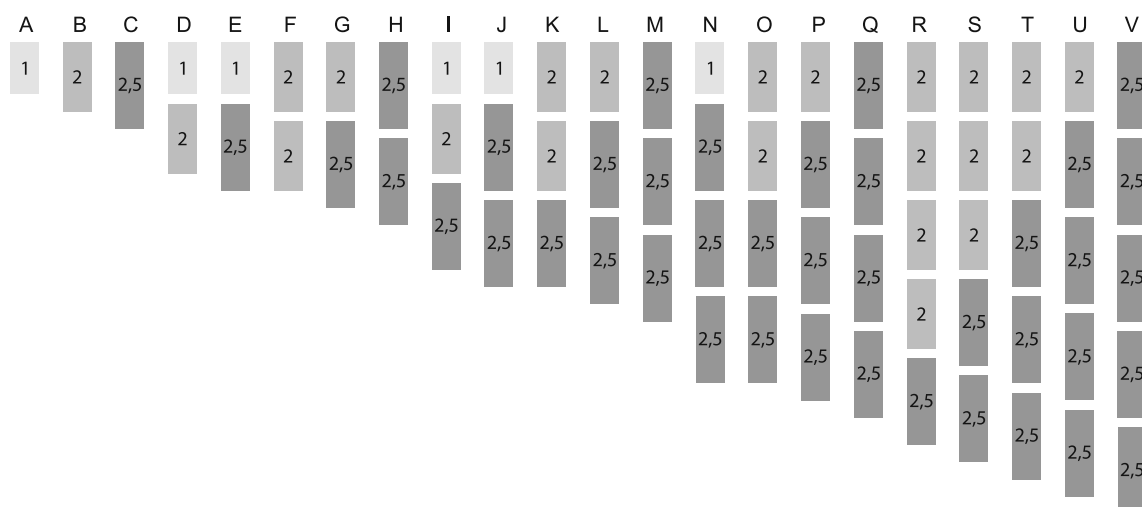


Pump 0615A-ESP CW S-40I(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Number of stages, pcs.	30	66	86	96	116	132	152	172	182	202	218	238	258	288	304	324	344	350	370	390	410	430
Head at 50 Hz, m	150	350	450	500	600	650	750	850	900	1000	1100	1200	1300	1450	1500	1600	1700	1750	1850	1950	2050	2150
Motor load brake at 50 Hz, kW	1,48	3,26	4,25	4,74	5,73	6,52	7,51	8,50	8,99	9,98	10,77	11,76	12,75	14,23	15,02	16,01	16,99	17,29	18,28	19,27	20,25	21,24
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	765	870	1002	1134	1200	1332	1332	1437	1701	1899	2004	2136	2268	2307	2439	2574	2703	2835
Weight, kg	43	79	99	109	129	145	165	185	195	215	231	251	271	301	317	337	357	363	383	403	423	443

* ESP completed by hydroprotector (see "Hydroprotectors")

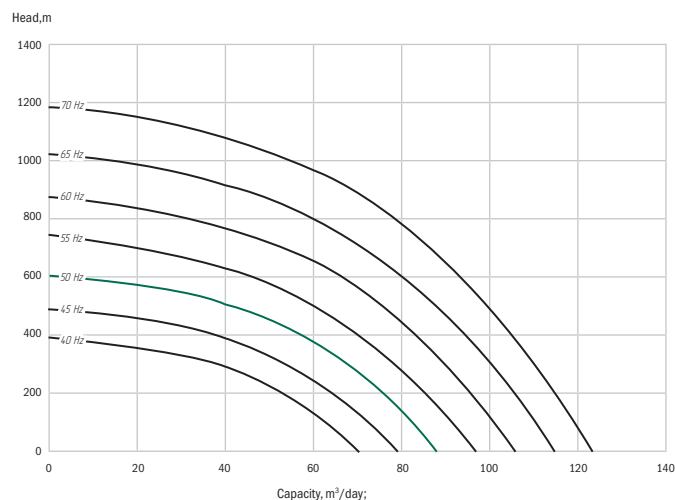
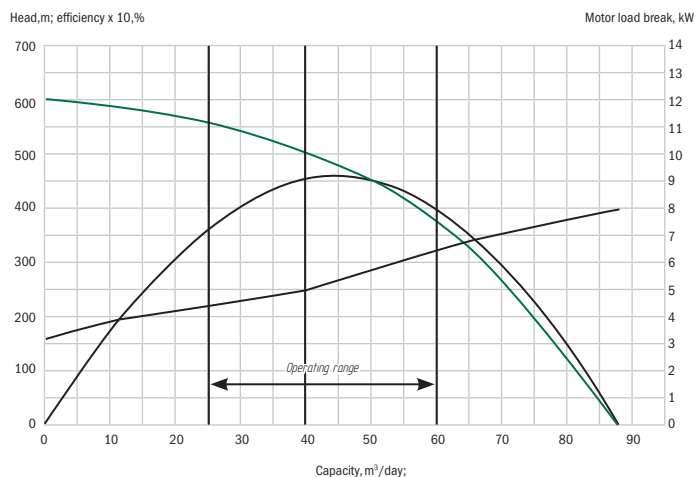
Pump sections number and length



Pump specification 0615A-ESP CW S-40I(cpi)

capacity $Q = 40 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg/m}^3$;
 number of stages =100; $Q=40 \text{ m}^3/\text{day}$;
 $H=500 \text{ m}$; $N=4,94 \text{ kW}$; $\eta=46\%$

0615A-ESP CW S-40I(cpi) head rating at various rpm; number of stages =100



Pump 0215A-ESP CW S-50I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	105	141	176	210	246	282	317	352	387	423	458	493	528	564
Head at 50 Hz, m	550	750	900	1100	1300	1450	1650	1850	2000	2200	2400	2550	2750	2950
Motor load brake at 50 Hz, kW	6,74	9,05	11,30	13,48	15,79	18,10	20,35	22,60	24,85	27,16	29,40	31,65	33,90	36,21
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565

* ESP completed by hydroprotector (see "Hydroprotectors")

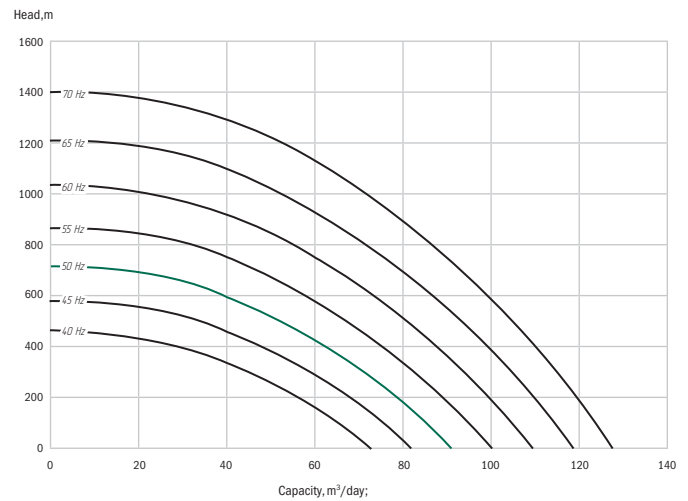
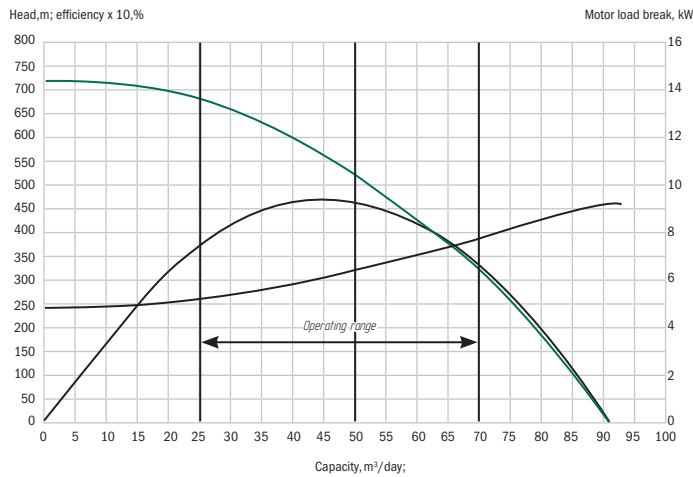
Pump sections number and length



Pump specification 0215A-ESP CW S-50I

capacity $Q = 50 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$;
 number of stages = 100; $Q = 50 \text{ m}^3/\text{day}$;
 $H = 520 \text{ m}$; $N = 6,4 \text{ kW}$; $\eta = 46\%$

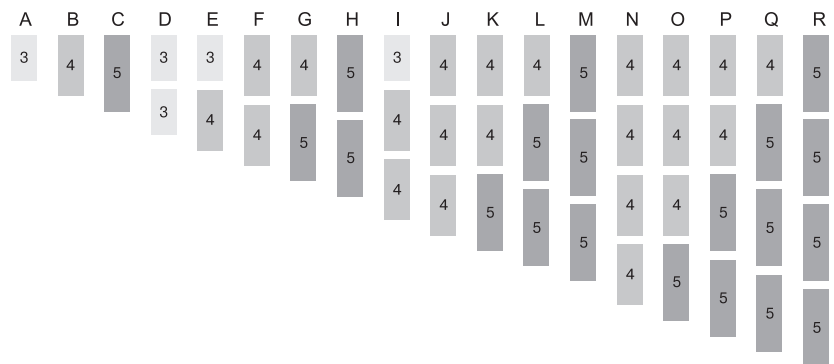
0215A-ESP CW S-50I head rating at various rpm; number of stages = 100



Pump 2215A-ESP CW S-60I

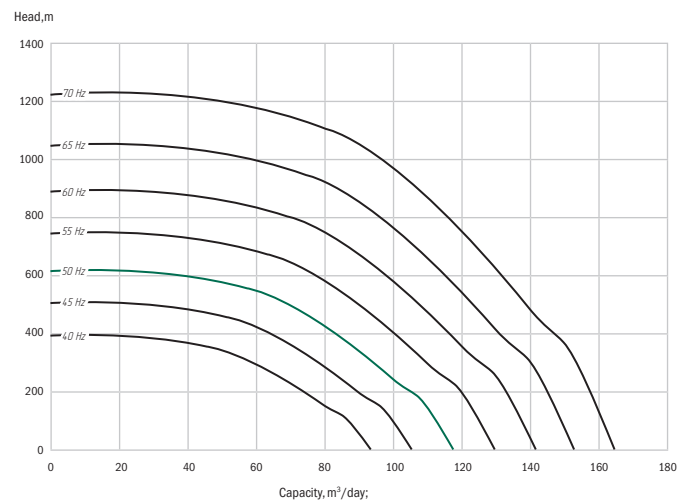
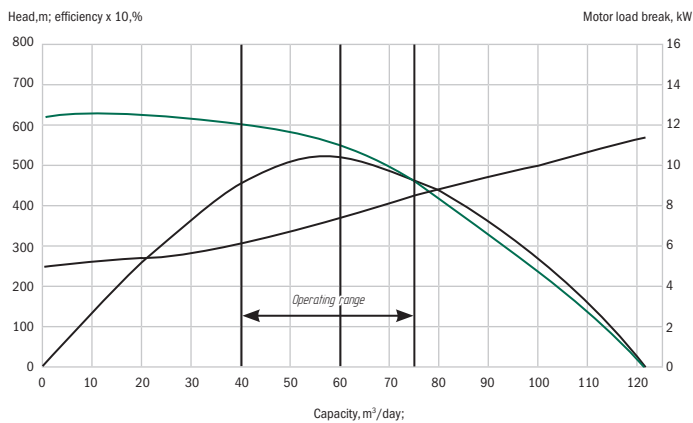
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	95	127	160	190	222	254	287	320	349	381	414	447	480	508	541	574	607	640
Head at 50 Hz, m	500	700	900	1050	1200	1400	1600	1750	1900	2100	2300	2450	2650	2800	2950	3150	3350	3500
Motor load brake at 50 Hz, kW	6,85	9,16	11,54	13,70	16,01	18,31	20,69	23,07	25,16	27,47	29,85	32,23	34,61	36,63	39,01	41,39	43,76	46,14
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565	597	629	661	693

Pump sections number and length



Pump specification 2215A-ESP CW S-60I
double-bearing design; capacity Q = 60 m³/day;
water density $\eta=1000 \text{ kg/m}^3$; number of stages =100;
Q=60 m³/day; H=550 m; N=7,21 kW; $\eta=52\%$

2215A-ESP CW S-60I head rating at various rpm;
number of stages =100



Pump 0215A-ESP CW S-60I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	97	130	163	194	227	260	293	326	357	390	423	456	489	520
Head at 50 Hz, m	550	700	900	1050	1250	1450	1600	1800	1950	2150	2350	2500	2700	2850
Motor load brake at 50 Hz, kW	6,99	9,37	11,75	13,99	16,37	18,75	21,13	23,50	25,74	28,12	30,50	32,88	35,26	37,49
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	*	716	762
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565

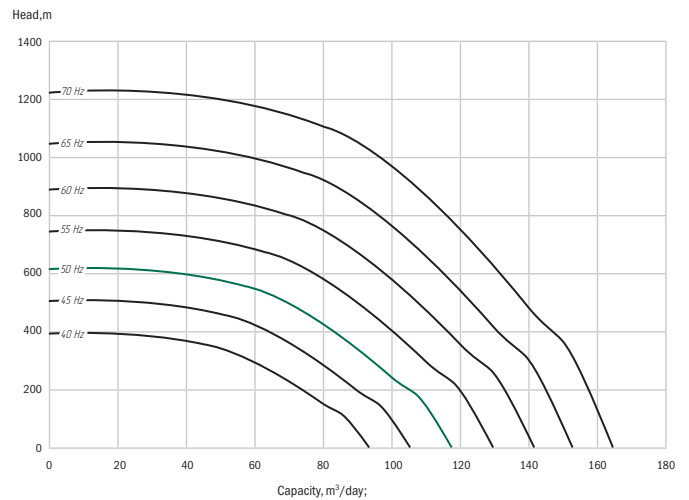
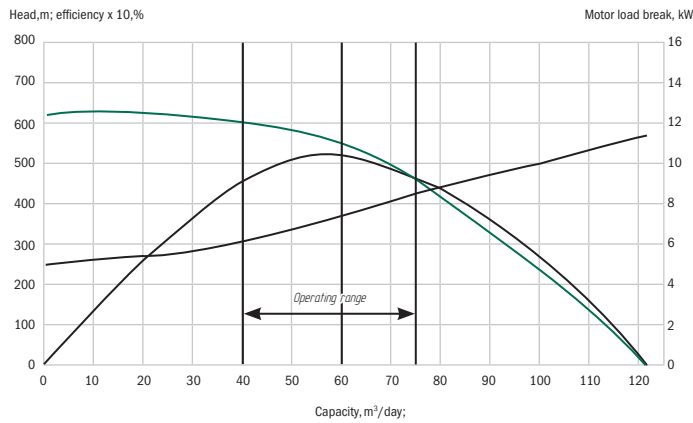
* ESP completed by hydroprotector (see “Hydroprotectors”)

Pump sections number and length



Pump specification 0215A-ESP CW S-60I
 capacity $Q = 60 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$;
 number of stages = 100; $Q = 60 \text{ m}^3/\text{day}$;
H=550 m; N=7,21 kW; $\eta = 52\%$

0215A-ESP CW S-60I head rating at various rpm;
 number of stages = 100

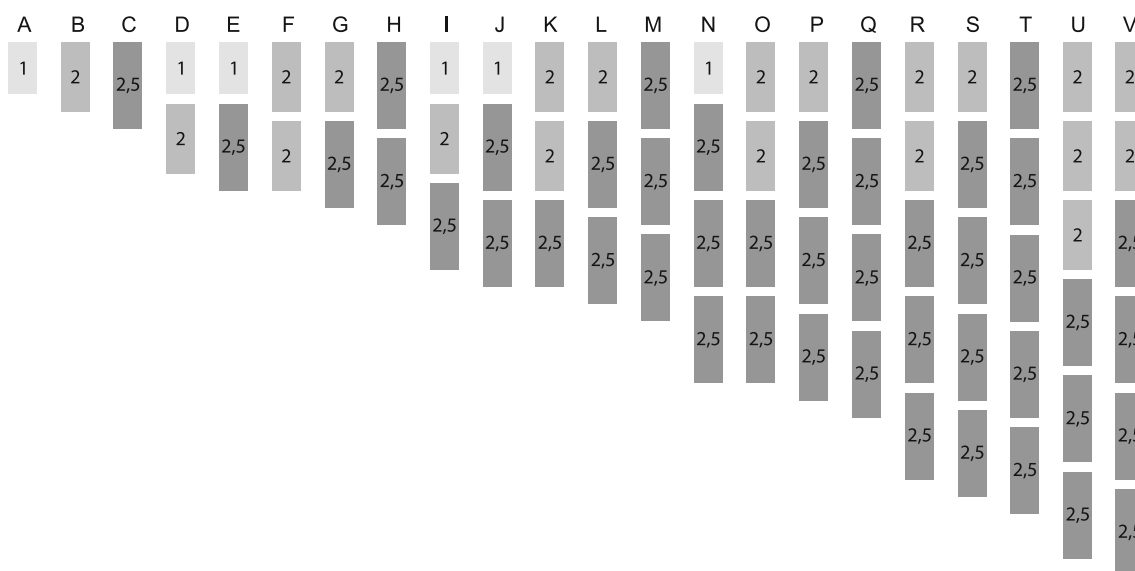


Pump 0615A-ESP CW S-60I(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Number of stages, pcs.	28	60	79	88	107	120	139	158	167	186	199	218	237	265	278	297	316	357	376	395	417	436
Head at 50 Hz, m	150	350	450	500	600	650	750	850	900	1000	1100	1200	1300	1450	1550	1650	1750	1950	2050	2150	2300	2400
Motor load brake at 50 Hz, kW	2,02	4,33	5,70	6,34	7,71	8,65	10,02	11,39	12,04	13,41	14,35	15,72	17,09	19,11	20,04	21,41	22,78	25,74	27,11	28,48	30,07	31,44
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	796	922	1048	1108	1234	1320	1446	1572	1758	1844	1970	2096	2368	2494	2620	2766	2892
Weight, kg	60	97	118	144	165	181	202	223	249	270	286	307	328	375	391	412	433	496	517	538	580	601

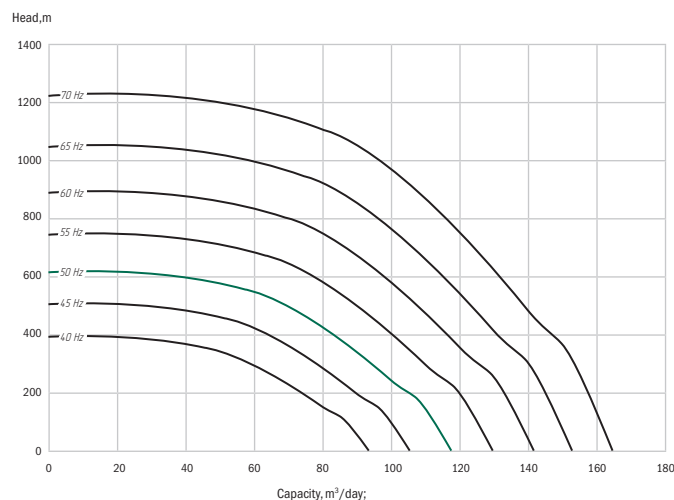
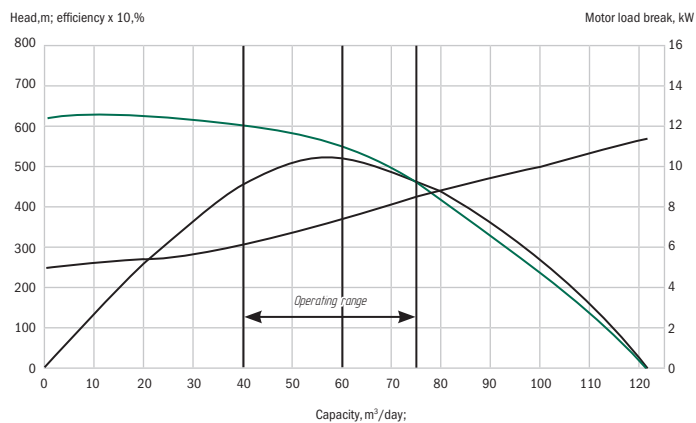
* ESP completed by hydroprotector (see "Hydroprotectors")

Pump sections number and length



Pump specification 0615A-ESP CW S-60I(cpi)
double-bearing design; capacity Q = 60 m³/day;
water density $\eta=1000$ kg/m³; number of stages =100;
Q=60 m³/day; H=550 m; N=7,21 kW; $\eta=52%$

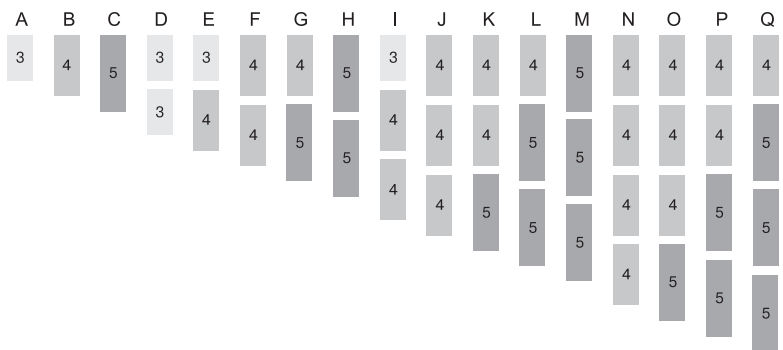
0615A-ESP CW S-60I(cpi) head rating at various rpm;
number of stages =100



Pump 2215A-ESP CW S-80I

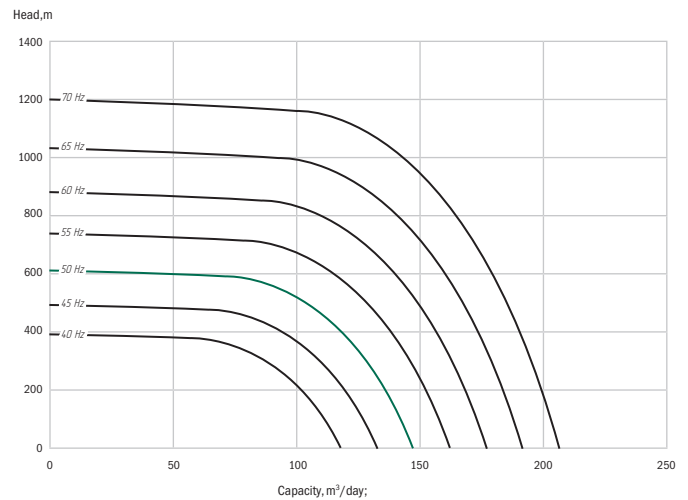
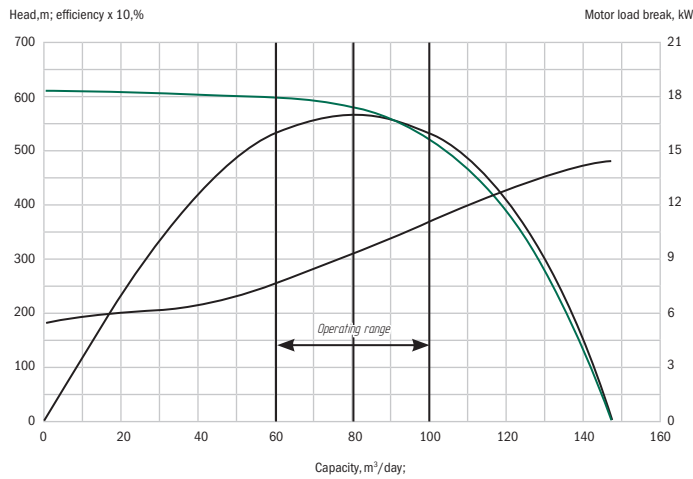
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	95	127	160	190	222	254	287	320	349	381	414	447	480	508	541	574	607
Head at 50 Hz, m	550	750	900	1100	1300	1450	1650	1850	2000	2200	2400	2600	2800	2950	3150	3300	3500
Motor load brake at 50 Hz, kW	8,79	11,75	14,80	17,58	20,54	23,50	26,55	29,60	32,28	35,24	38,30	41,35	44,40	46,99	50,04	53,10	56,15
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565	597	629	661

Pump sections number and length



Pump specification 2215A-ESP CW S-80I
 capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$;
 number of stages = 100; $Q = 80 \text{ m}^3/\text{day}$;
H=580 m; N=9,25 kW; $\eta = 57\%$

2215A-ESP CW S-80I head rating at various rpm;
 number of stages = 100

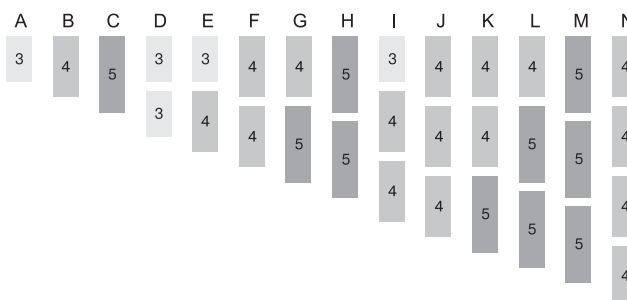


Pump 0215A-ESP CW S-80I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	97	130	163	194	227	260	293	326	357	390	423	456	489	520
Head at 50 Hz, m	550	750	950	1100	1300	1500	1700	1900	2050	2250	2450	2650	2850	3000
Motor load brake at 50 Hz, kW	8,97	12,03	15,08	17,95	21,00	24,05	27,10	30,16	33,02	36,08	39,13	42,18	45,23	48,10
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	*	708	751
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565

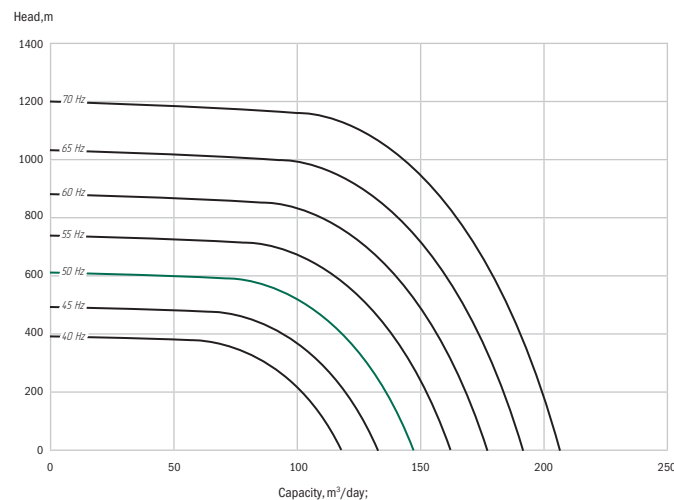
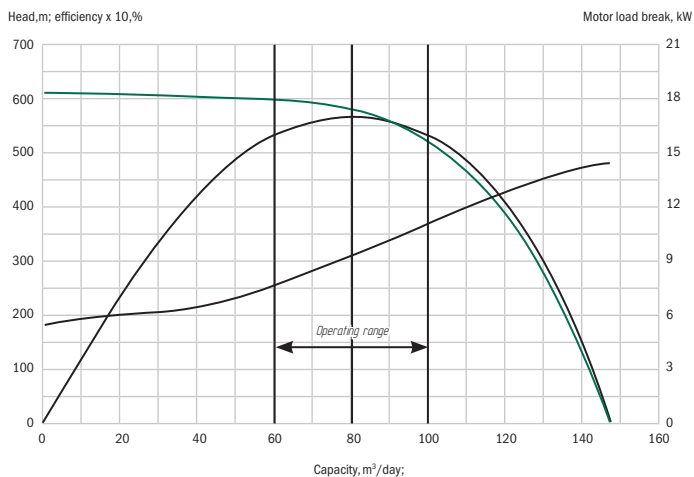
* ESP completed by hydroprotector (see "Hydroprotectors")

Pump sections number and length



Pump specification 0215A-ESP CW S-80I
capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\rho = 1000 \text{ kg}/\text{m}^3$;
number of stages = 100; $Q = 80 \text{ m}^3/\text{day}$;
 $H = 580 \text{ m}$; $N = 9,25 \text{ kW}$; $\eta = 57\%$

0215A-ESP CW S-80I head rating at various rpm;
number of stages = 100

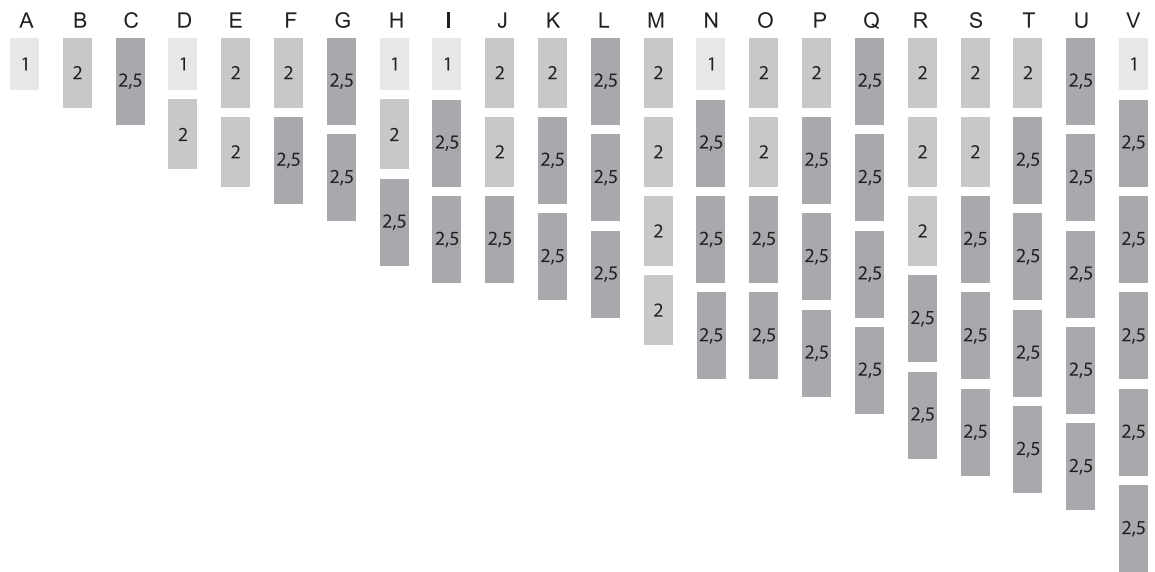


Pump 0615A-ESP CW S-80I(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Number of stages, pcs.	28	60	79	88	120	139	158	167	186	199	218	237	240	265	278	297	316	338	357	376	395	423
Head at 50 Hz, m	150	350	450	500	700	800	916	950	1050	1150	1250	1350	1400	1550	1600	1700	1850	1950	2050	2200	2300	2450
Motor load brake at 50 Hz, kW	2,59	5,55	7,31	8,14	11,10	12,86	14,62	15,45	17,21	18,41	20,17	21,92	22,20	24,51	25,72	27,47	29,23	31,27	33,02	34,78	36,54	39,13
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	794	919	1044	1104	1229	1316	1441	1566	1588	1751	1838	1963	2088	2235	2360	2485	2610	2795
Weight, kg	60	97	118	144	181	202	223	249	270	286	307	328	349	375	391	412	433	475	496	517	538	585

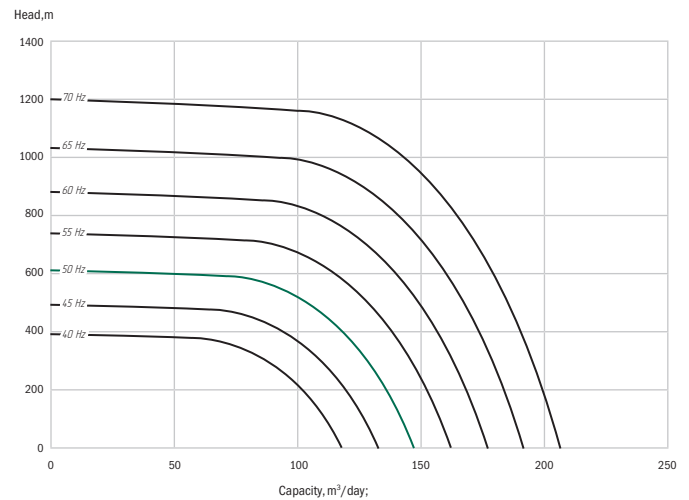
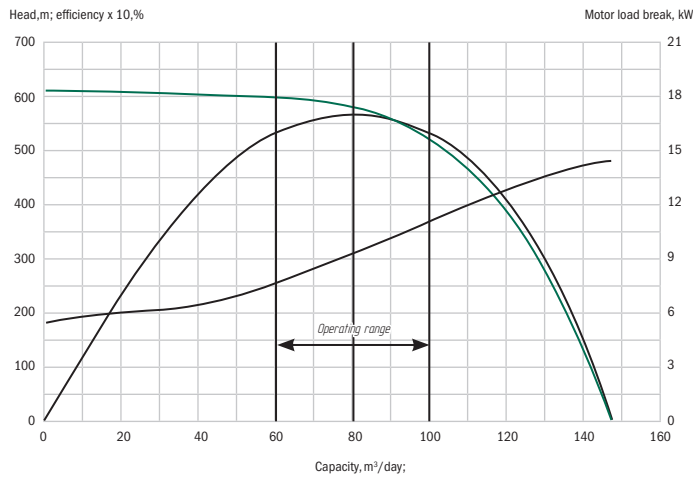
* ESP completed by hydroprotector (see "Hydroprotectors")

Pump sections number and length



Pump specification 0615A-ESP CW S-80I(cpi)
 capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg}/\text{m}^3$;
 number of stages =100; $Q=80 \text{ m}^3/\text{day}$;
H=580 m; N=9,25 kW; $\eta=57\%$

0615A-ESP CW S-80I(cpi) head rating at various rpm;
number of stages =100



Pump 2215A-ESP CW M-80I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	101	136	171	202	237	272	307	342	373	408	443	478	513	544
Head at 50 Hz, m	650	900	1150	1350	1550	1800	2050	2250	2450	2700	2900	3150	3400	3600
Motor load brake at 50 Hz, kW	12,12	16,32	20,52	24,24	28,44	32,64	36,84	41,04	44,76	48,96	53,16	57,36	61,56	65,28
Weight, kg	153	195	236	292	334	376	417	458	515	557	598	639	680	738

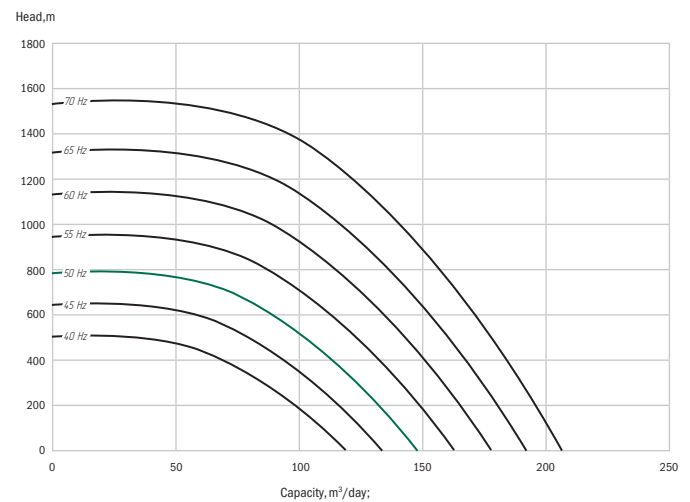
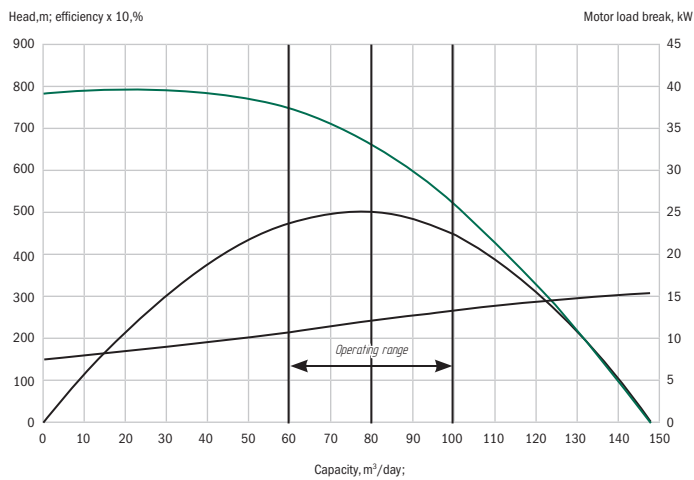
Pump sections number and length



Pump specification 2215A-ESP CW M-80I

double-bearing design; capacity $Q = 80 \text{ m}^3/\text{day}$;
 water density $\eta = 1000 \text{ kg}/\text{m}^3$; number of stages = 100;
 $Q = 80 \text{ m}^3/\text{day}$; $H = 660 \text{ m}$; $N = 12 \text{ kW}$; $\eta = 50\%$

2215A-ESP CW M-80I head rating at various rpm; number of stages = 100

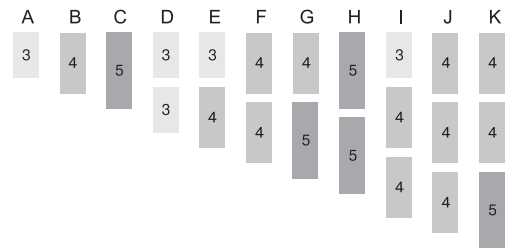


Pump 0215A-ESP CW M-80I

Assembly	A	B	C	D	E	F	G	H	I	J	K
Number of stages, pcs.	103	138	173	206	241	276	311	346	379	414	449
Head at 50 Hz, m	700	900	1150	1350	1600	1800	2050	2300	2500	2750	2950
Motor load brake at 50 Hz, kW	12,36	16,56	20,76	24,72	28,92	33,12	37,32	41,52	45,48	49,68	53,88
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	760	824
Weight, kg	153	195	236	292	334	376	417	458	515	557	598

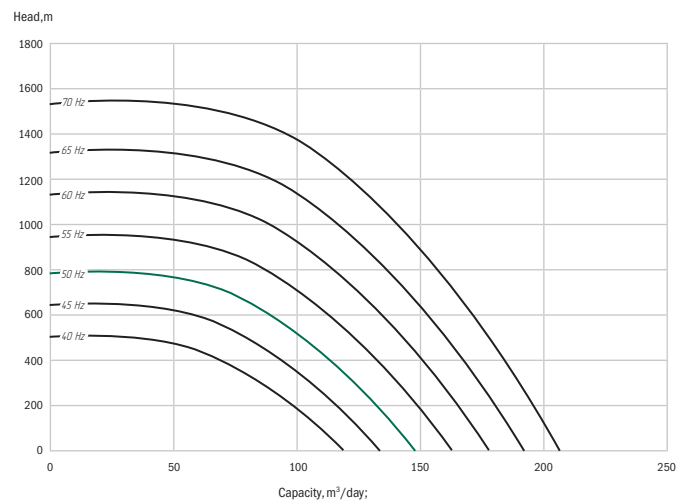
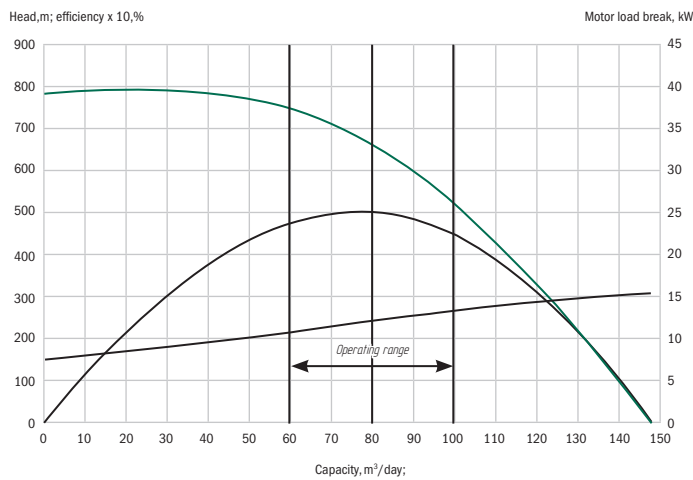
* ESP completed by hydroprotector (see "Hydroprotectors")

Pump sections number and length



Pump specification 0215A-ESP CW M-80I
 capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$;
 number of stages = 100; $Q = 80 \text{ m}^3/\text{day}$;
H = 660 m; N = 12 kW; $\eta = 50\%$

0215A-ESP CW M-80I head rating at various rpm;
 number of stages = 100

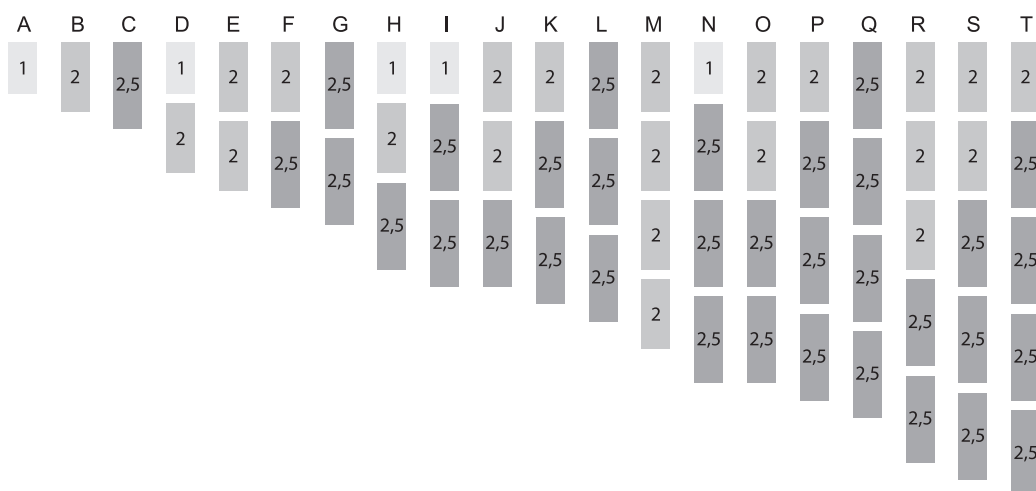


Pump 0615A-ESP CW M-80I(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Number of stages, pcs.	29	64	84	93	113	128	148	168	177	197	212	232	252	256	281	296	316	336	340	345
Head at 50 Hz, m	200	400	550	600	750	850	1000	1100	1150	1300	1400	1550	1650	1700	1850	1950	2100	2200	2250	2300
Motor load brake at 50 Hz, kW	3,48	7,68	10,08	11,16	13,56	15,36	17,76	20,16	21,24	23,64	25,44	27,84	30,24	30,72	33,72	35,52	37,92	40,32	40,80	41,40
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	968	1096	1267	1439	1516	1687	1815	1987	2158	2192	2406	2535	2706	2877	2911	2955
Weight, kg	65	106	126	157	177	198	218	238	269	289	310	330	350	382	401	422	442	462	494	493

* ESP completed by hydroprotector (see "Hydroprotectors")

Pump sections number and length

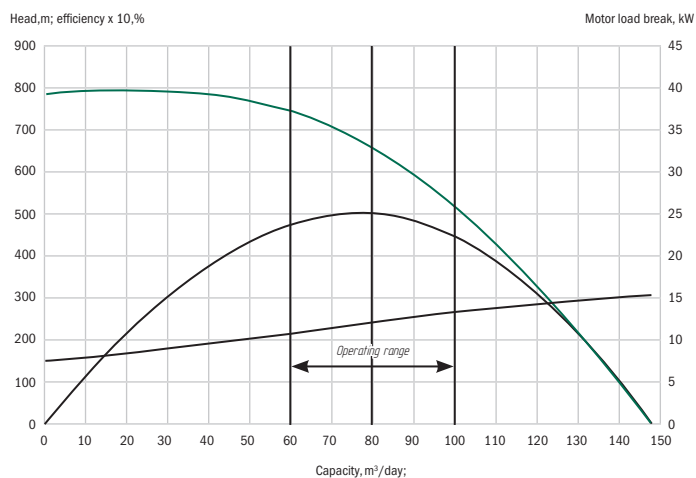


Pump specification 0615A-ESP CW M-80I(cpi)

capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$;

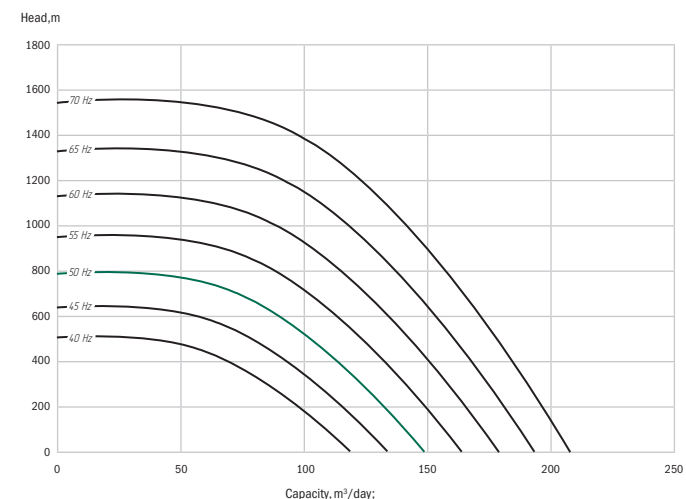
number of stages = 100; $Q = 80 \text{ m}^3/\text{day}$;

$H = 660 \text{ m}$; $N = 12 \text{ kW}$; $\eta = 50\%$



0615A-ESP CW M-80I(cpi) head rating at various rpm;

number of stages = 100

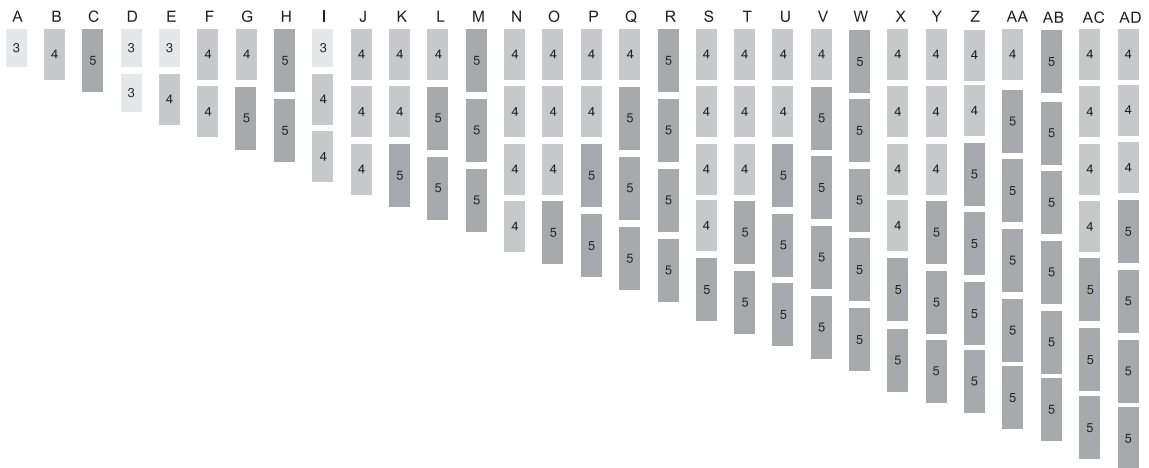


Pump 012A-ESP CW D-100(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	106	142	177	212	248	284	319	354	390	426	461	496	531	568	603
Head at 50 Hz, m	350	500	600	750	850	1000	1100	1250	1350	1500	1600	1750	1850	2000	2100
Motor load brake at 50 Hz, kW	7,81	10,47	13,04	15,62	18,28	20,93	23,51	26,09	28,74	31,40	33,98	36,56	39,13	41,86	44,44
Weight, kg	121	152	182	226	257	288	318	348	393	424	454	484	514	560	590

Assembly	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
Number of stages, pcs.	638	673	708	745	780	815	850	885	922	957	992	1027	1062	1099	1134
Head at 50 Hz, m	2200	2350	2450	2600	2700	2850	2950	3100	3200	3350	3450	3600	3700	3850	3950
Motor load brake at 50 Hz, kW	47,02	49,60	52,18	54,91	57,49	60,07	62,65	65,22	67,95	70,53	73,11	75,69	78,27	81,00	83,58
Weight, kg	620	650	680	726	756	786	816	846	892	922	952	982	1012	1058	1088

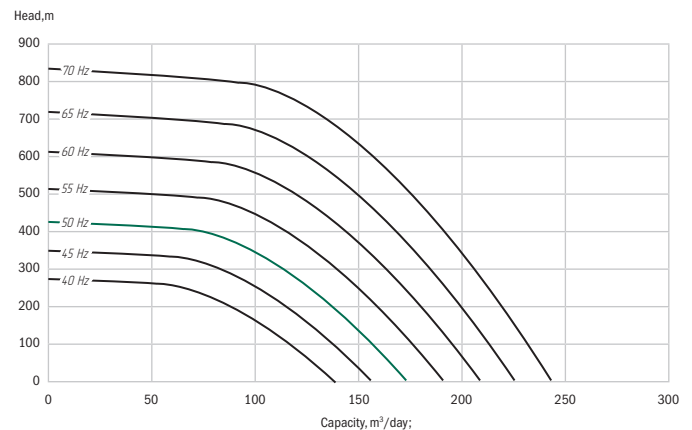
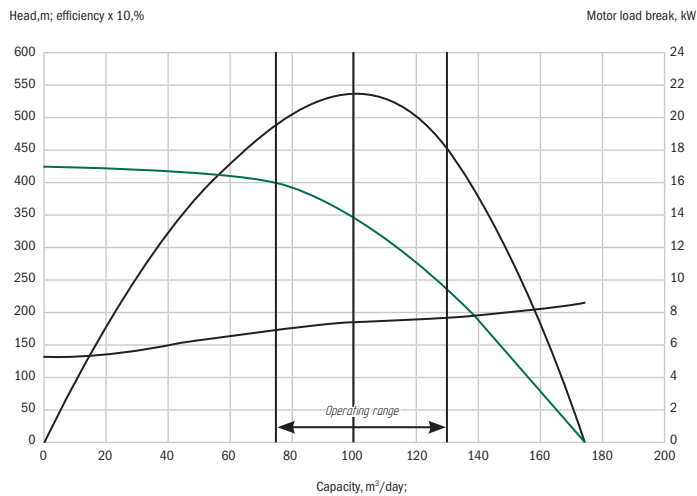
Pump sections number and length



Pump specification 012A-ESP CW D-100(cpi)

water density $\rho=1000 \text{ kg/m}^3$; rotation frequency 2910 rpm (50 Hz);
 number of stages =100, $Q=100 \text{ m}^3/\text{cyr}$;
H=350 m; N=7,37 kW; $\eta=54\%$

**012A-ESP CW D-100(cpi) head rating at various rpm;
 number of stages =100**

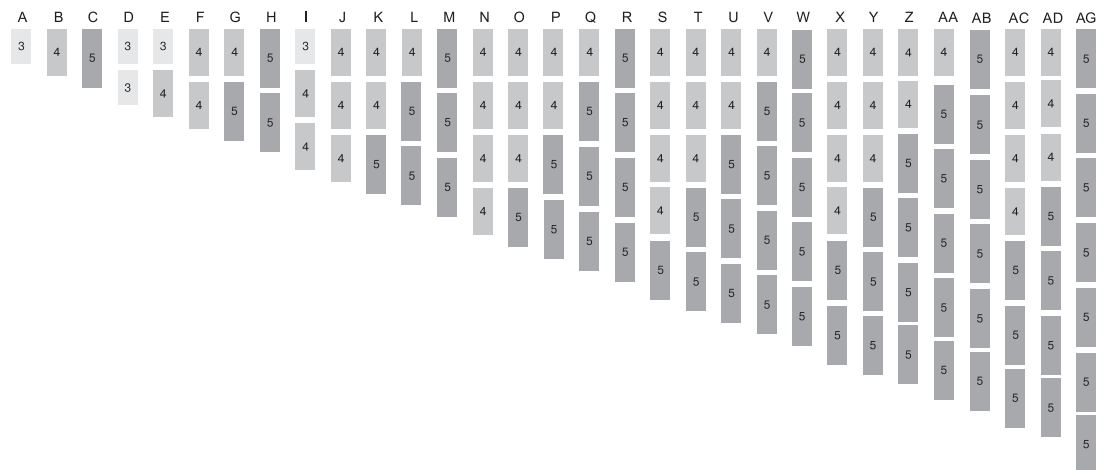


Pump 052A-ESP CW D-100(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	93	124	154	186	217	248	278	308	341	372	402	432	462	496	526	556	586	616
Head at 50 Hz, m	300	450	550	650	750	850	950	1050	1200	1300	1400	1500	1600	1750	1850	1950	2050	2150
Motor load brake at 50 Hz, kW	6,85	9,14	11,35	13,71	15,99	18,28	20,49	22,70	25,13	27,42	29,63	31,84	34,05	36,56	38,77	40,98	43,19	45,40
Weight, kg	121	152	182	226	257	288	318	348	393	424	454	484	514	560	590	620	650	680

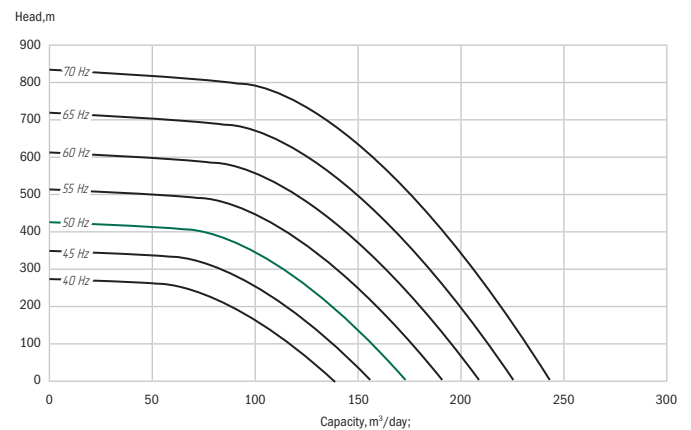
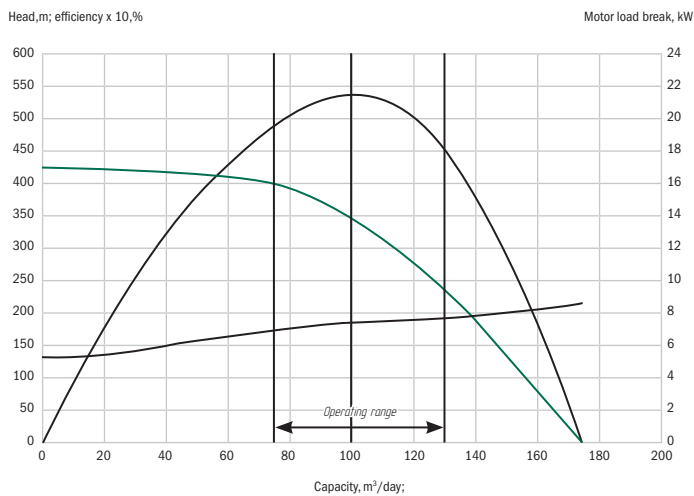
Assembly	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
Number of stages, pcs.	650	680	710	740	770	804	834	864	894	924	958	988	1018	1048	1078
Head at 50 Hz, m	2250	2350	2500	2600	2700	2800	2900	3000	3100	3250	3350	3450	3550	3650	3750
Motor load brake at 50 Hz, kW	47,91	50,12	52,33	54,54	56,75	59,25	61,47	63,68	65,89	68,10	70,60	72,82	75,03	77,24	79,45
Weight, kg	726	756	786	816	846	892	922	952	982	1012	1058	1088	1118	1148	1178

Pump sections number and length



Pump specification 052A-ESP CW D-100(cpi)
 water density $\eta=1000 \text{ kg/m}^3$; rotation frequency 2910 rpm (50 Hz);
 number of stages =100, $Q=100 \text{ m}^3/\text{cyr}$;
 $H=350 \text{ m}$; $N=7,37 \text{ kW}$; $\eta=54\%$

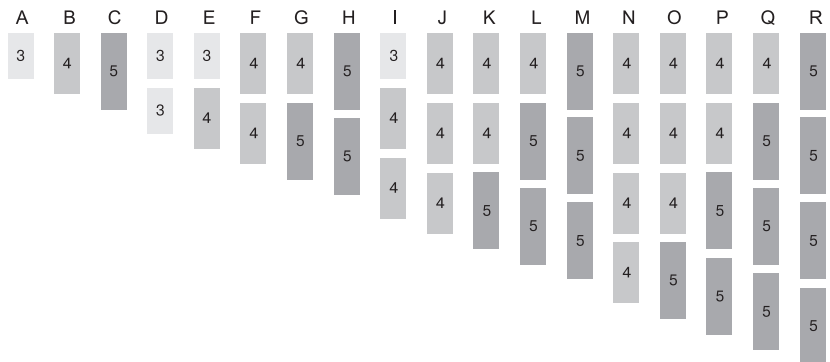
052A-ESP CW D-100(cpi) head rating at various rpm;
number of stages =100



Pump A-ESP CS-18(cpi)

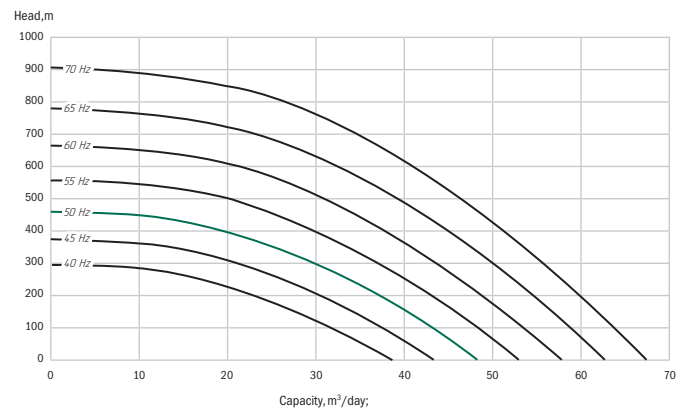
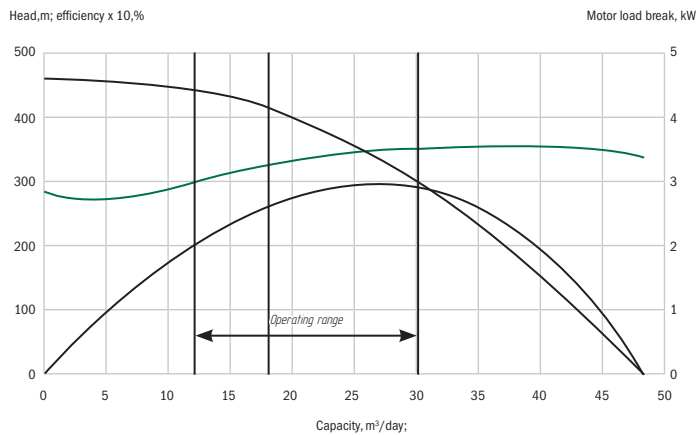
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	123	166	209	246	289	332	375	419	455	498	541	584	627	664	707	750	793	836
Head at 50 Hz, m	500	700	850	1000	1200	1400	1550	1750	1900	2050	2250	2400	2600	2750	2950	3100	3300	3450
Motor load brake at 50 Hz, kW	4,01	5,41	6,81	8,02	9,42	10,82	12,23	13,66	14,83	16,23	17,64	19,04	20,44	23,05	25,81	24,45	25,85	27,25
Weight, kg	114	145	176	218	249	280	311	342	384	415	446	477	508	550	581	612	643	674

Pump sections number and length



Pump specification A-ESP CS-18(cpi),
capacity Q = 18 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=18 m³/day; H=415 m; N=3,26 kW; $\eta=26\%$

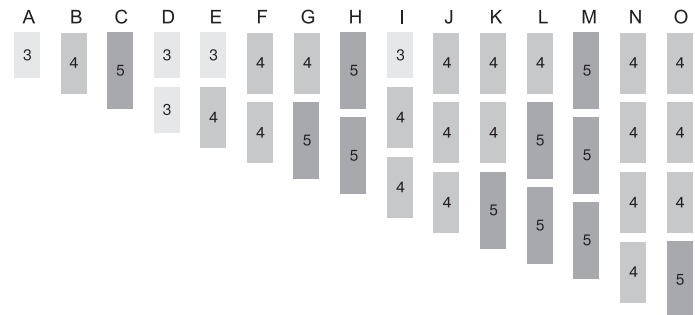
A-ESP CS-18(cpi) head rating at various rpm;
number of stages =100



Pump 222(224)A-ESP CW S-25I(cpi)

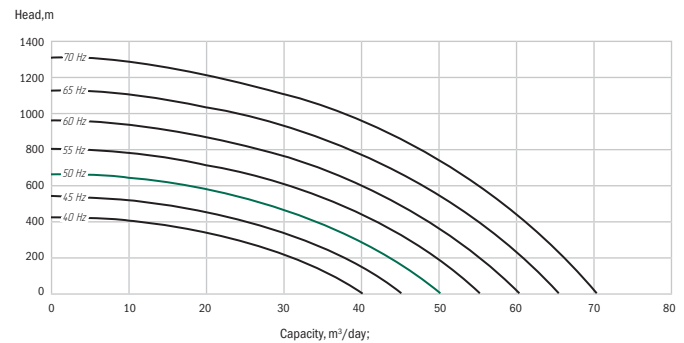
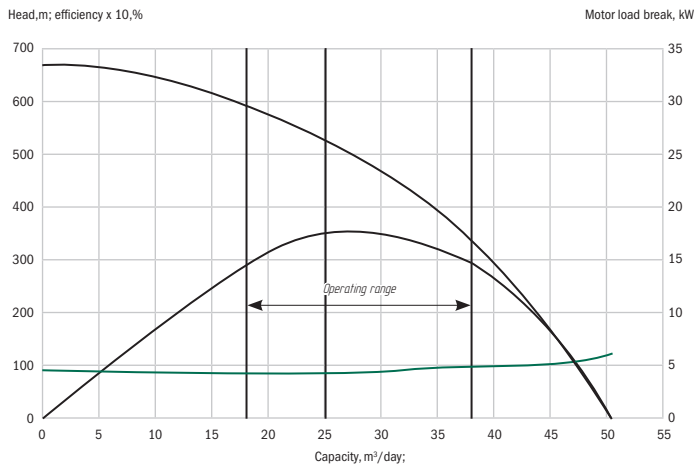
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	124	167	211	248	291	334	378	422	458	501	545	589	633	668	712
Head at 50 Hz, m	650	900	1100	1300	1550	1750	2000	2250	2450	2650	2900	3100	3350	3550	3750
Motor load brake at 50 Hz, kW	5,34	7,20	9,09	10,69	12,54	14,40	16,29	18,19	19,74	21,59	23,49	25,39	27,28	28,79	30,69
Weight, kg	132	167	203	254	289	324	360	396	446	481	517	553	589	638	674

Pump sections number and length



Pump specification 222(224)A-ESP CW S-25I(cpi),
capacity Q = 25 m³/day; water density $\eta=1000$ kg/m³;
number of stages =100; Q=25 m³/day;
H=530 m; N=4,31 kW; $\eta=35\%$

222(224)A-ESP CW S-25I(cpi) head rating at various rpm.
Number of stages =100



Pump 022A-ESP CW S-25I(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	130	172	216	260	302	344	388	432	474	516	560	604	648	688	732
Head at 50 Hz, m	700	900	1150	1400	1600	1800	2050	2300	2500	2750	2950	3200	3450	3650	3900
Motor load brake at 50 Hz, kW	5,60	7,41	9,31	11,21	13,02	14,83	16,72	18,62	20,43	22,24	24,14	26,03	27,93	29,65	31,55
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	807	875	944	1012	1075	1144
Weight, kg	133	165	200	256	288	320	355	390	443	475	510	545	580	630	665

Pump 022A-ESP CW S-25I(cpi) (0,5 m - clearance between bearings)

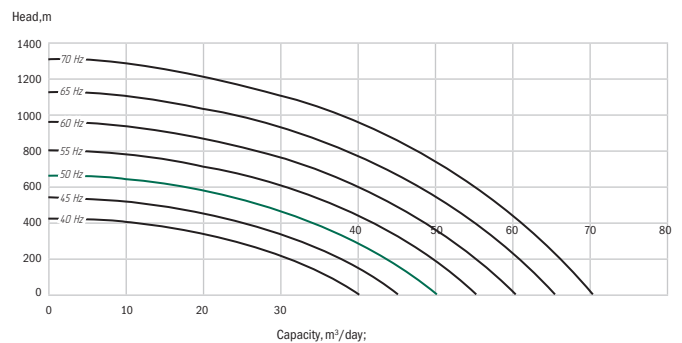
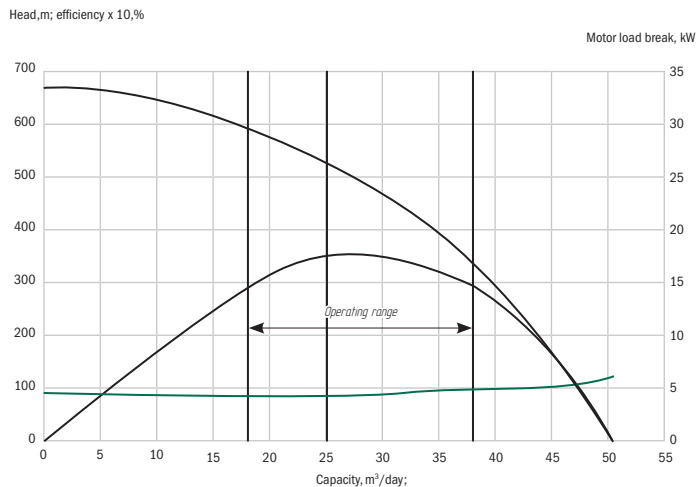
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	122	163	204	244	285	326	367	408	448	489	530	571	612	652	693	734
Head at 50 Hz, m	650	850	1100	1300	1500	1750	1950	2150	2350	2600	2800	3050	3250	3450	3650	3900
Motor load brake at 50 Hz, kW	5,26	7,03	8,79	10,52	12,28	14,05	15,82	17,58	19,31	21,08	22,84	24,61	26,38	28,10	29,87	31,64
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	766	830	894	958	1021	1085	1149
Weight, kg	133	165	200	256	288	320	355	390	443	475	510	545	580	630	665	700

Pump sections number and length



Pump specification 022A-ESP CW S-25I(cpi),
capacity Q = 25 m³/day; water density η=1000 kg/m³,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=25 m³/day; H=530 m; N=4,31 kW; η=35%

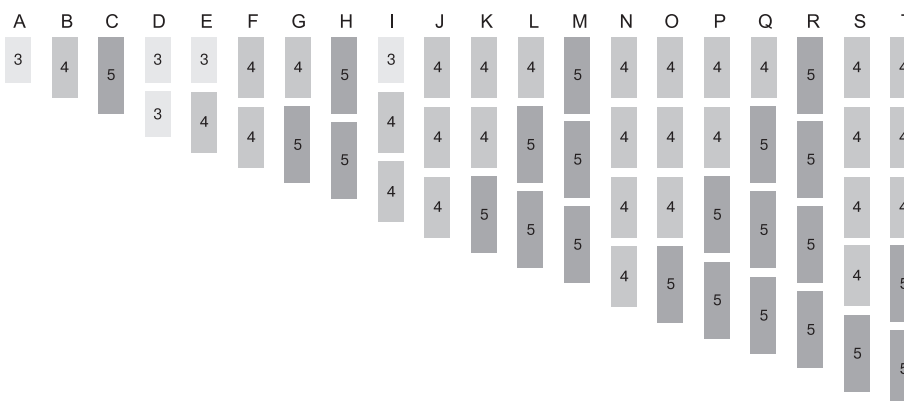
022A-ESP CW S-25I(cpi) head rating at various rpm;
number of stages =100



Pump A-ESP C S-30(cpi)

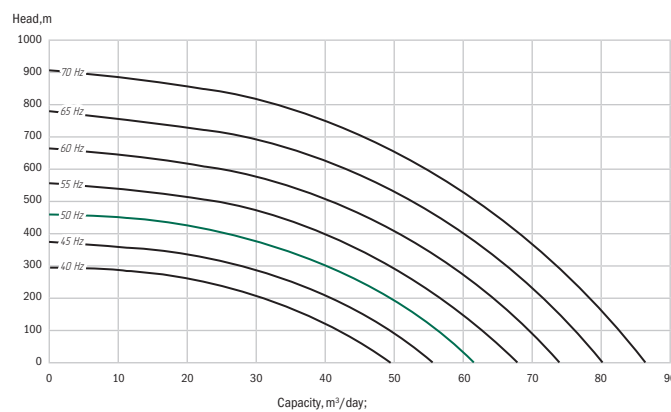
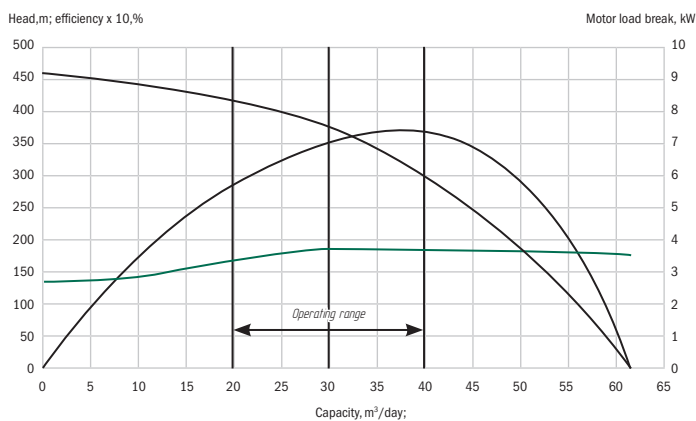
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Number of stages, pcs.	123	166	209	246	289	332	375	418	455	498	541	584	627	664	707	750	793	836	873	916
Head at 50 Hz, m	450	600	800	900	1100	1250	1400	1550	1700	1850	2050	2200	2350	2500	2650	2800	2950	3150	3250	3500
Motor load brake at 50 Hz, kW	4,48	6,04	7,61	8,95	10,52	12,08	13,65	15,22	16,56	18,13	19,69	21,26	22,82	24,17	25,73	27,30	28,87	30,43	31,78	33,34
Weight, kg	114	145	176	218	249	280	311	342	384	415	446	477	508	550	581	612	643	684	716	747

Pump sections number and length



Pump specification A-ESP C S-30(cpi),
capacity $Q = 30 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages =100;
 $Q=30 \text{ m}^3/\text{day}$; $H=375 \text{ m}$; $N=3,64\text{kW}$; $\eta=35\%$

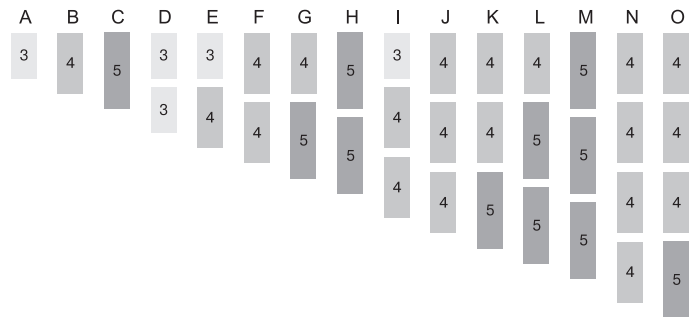
A-ESP C S-30(cpi) head rating at various rpm;
number of stages =100



Pump 222(224)A-ESP CW S-30I(cpi)

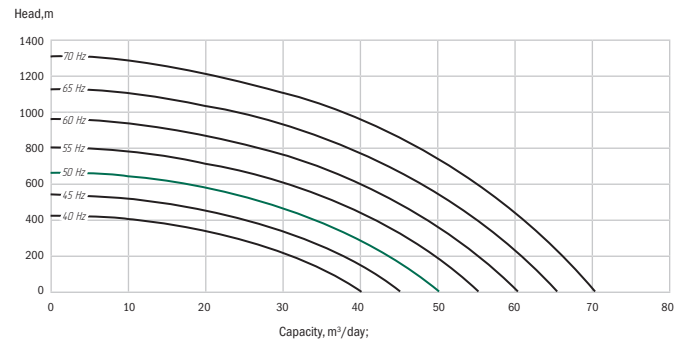
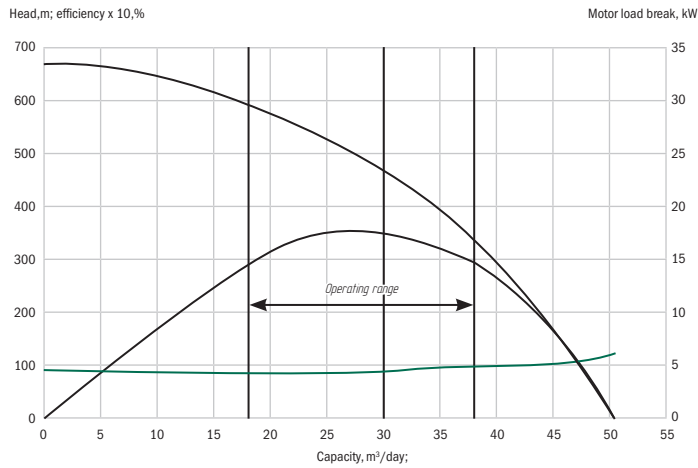
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	124	167	211	248	291	334	378	422	458	501	545	589	633	668	712
Head at 50 Hz, m	600	800	1000	1150	1350	1550	1800	2000	2150	2350	2550	2750	3000	3150	3350
Motor load brake at 50 Hz, kW	5,68	7,65	9,66	11,36	13,33	15,30	17,31	19,33	20,98	22,95	24,96	26,98	28,99	30,59	32,61
Weight, kg	132	167	203	254	289	324	360	396	446	481	517	553	589	638	674

Pump sections number and length



**Pump specification 222(224)A-ESP CW S-30I(cpi),
capacity Q = 30 m³/day; water density η =1000 kg/m³,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=30 m³/day; H=470 m; N=4,58 kW; η =35%**

**222(224)A-ESP CW S-30I(cpi) head rating at various rpm;
number of stages =100**



Pump 022A-ESP CW S-30I(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	130	172	216	260	302	344	388	432	474	516	560	604	648	688	732	776	820
Head at 50 Hz, m	600	800	1000	1200	1400	1600	1800	2050	2250	2400	2650	2850	3050	3250	3450	3650	3850
Motor load brake at 50 Hz, kW	5,95	7,88	9,89	11,91	13,83	15,76	17,77	19,79	21,71	23,63	25,65	27,66	29,68	31,51	33,53	35,54	37,56
Weight, kg	133	165	200	256	288	320	355	390	443	475	510	545	580	630	665	700	735

Pump 022A-ESP CW S-30I(cpi) (0,5 m - clearance between bearings)

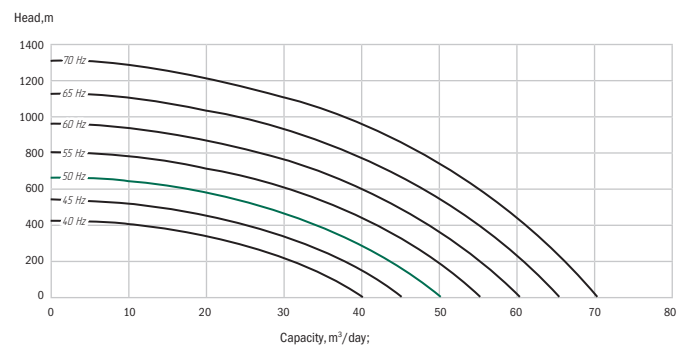
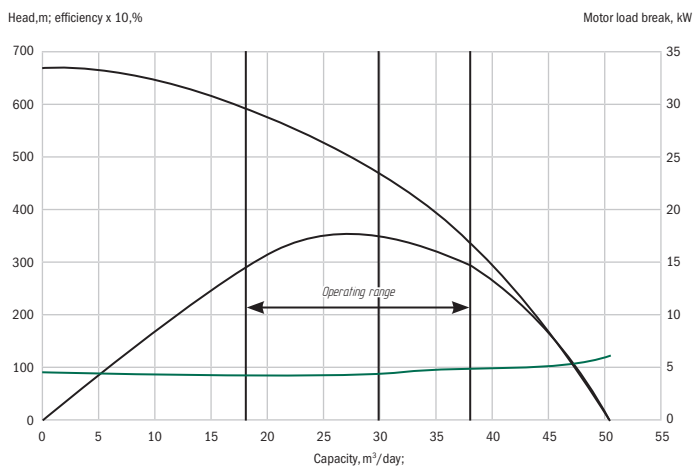
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	122	163	204	244	285	326	367	408	448	489	530	571	612	652	693	734	775	816
Head at 50 Hz, m	550	750	950	1150	1350	1550	1700	1900	2100	2300	2500	2700	2900	3050	3250	3450	3650	3850
Motor load brake at 50 Hz, kW	5,59	7,47	9,34	11,18	13,05	14,93	16,81	18,69	20,52	22,40	24,27	26,15	28,03	29,86	31,74	33,62	35,50	37,37
Weight, kg	133	165	200	256	288	320	355	390	443	475	510	545	580	630	665	700	735	770

Pump sections number and length



Pump specification 022A-ESP CW S-30I(cpi),
capacity Q = 30 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=30 m³/day; H=470 m; N=4,58 kW; $\eta=35\%$

022A-ESP CW S-30I(cpi) head rating at various rpm;
number of stages =100



Pump 052A-ESP CW S-30I(cpi)

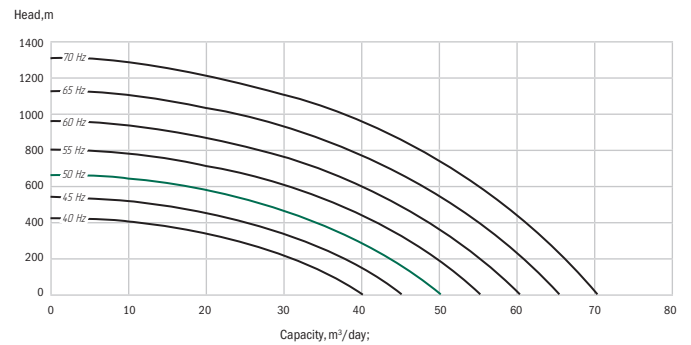
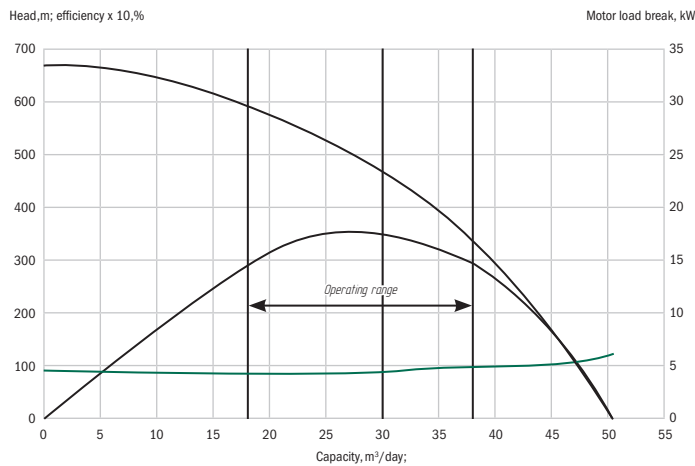
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	103	141	179	206	244	282	320	358	385	423	461	499	537	564	602	640
Head at 50 Hz, m	500	650	850	950	1150	1300	1500	1700	1800	2000	2150	2350	2500	2650	2850	3000
Motor load brake at 50 Hz, kW	4,72	6,46	8,20	9,43	11,18	12,92	14,66	16,40	17,63	19,37	21,11	22,85	24,59	25,83	27,57	29,31
Weight, kg	135	170	205	252	287	322	357	392	439	474	509	544	579	626	661	696

Pump sections number and length



Pump specification 052A-ESP CW S-30I(cpi),
capacity Q = 30 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=30 m³/day; H=470 m; N=4,58 kW; $\eta=35\%$

052A-ESP CW S-30I(cpi) head rating at various rpm;
number of stages =100



Pump 202A-ESP C S-50

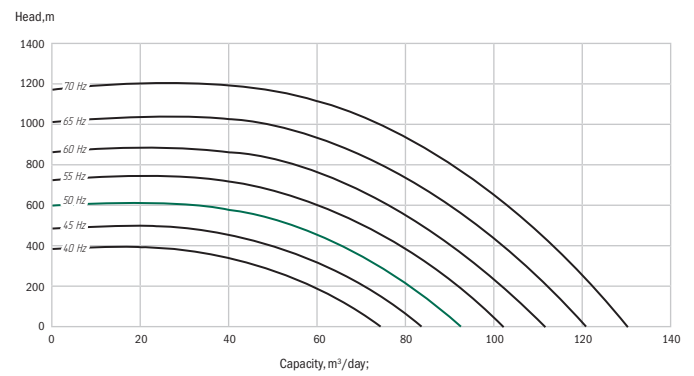
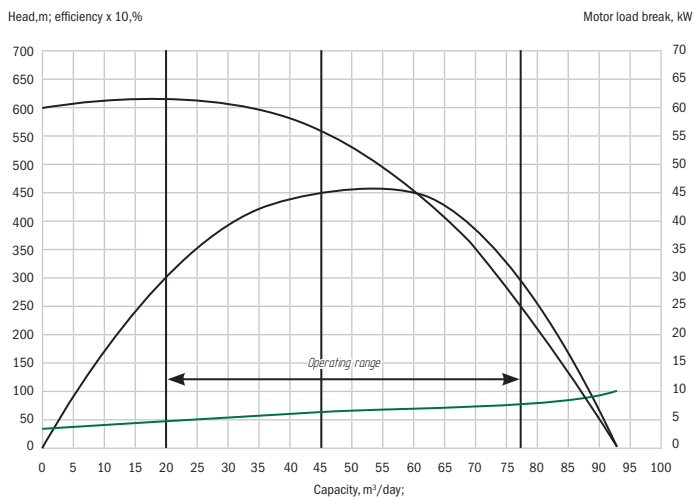
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	110	149	187	220	259	298	336	374	408	447	485	523	561	596	634	672	710
Head at 50 Hz, m	600	800	1000	1150	1350	1600	1800	2000	2150	2350	2550	2750	2950	3150	3350	3550	3750
Motor load brake at 50 Hz, kW	7,21	9,76	12,25	14,41	16,96	19,52	22,01	24,50	26,72	29,28	31,77	34,26	36,75	39,04	41,53	44,02	46,51
Weight, kg	120	158	186	230	268	306	334	362	416	454	482	510	538	602	630	658	686

Pump sections number and length



Pump specification 202A-ESP C S-50,
capacity Q = 50 m³/day; water density $\rho=1000$ kg/m³,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=50 m³/day; H=530 m; N=6,55 kW; $\eta=46\%$

202A-ESP C S-50 head rating at various rpm;
number of stages =100



Pump A-ESP C S-45M1

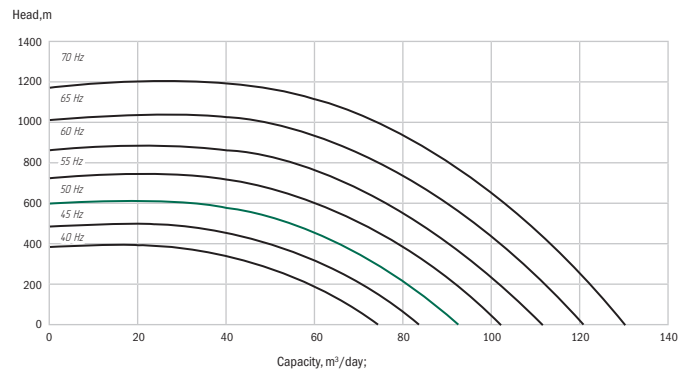
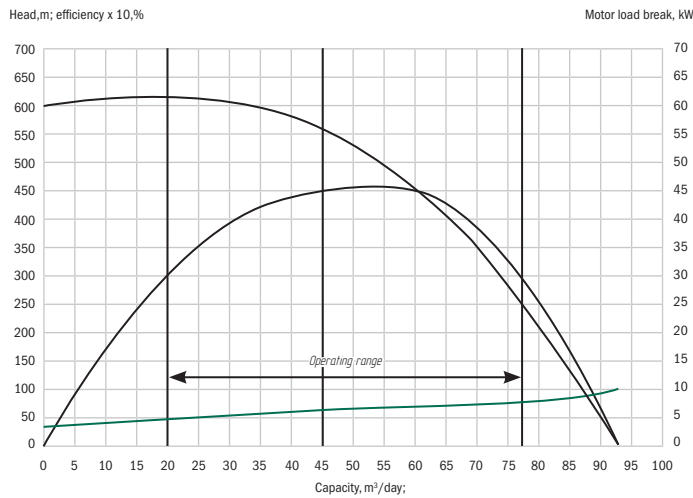
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	110	149	187	220	259	298	336	374	408	447	485	523	561	596	634	672	710
Head at 50 Hz, m	600	850	1050	1250	1450	1650	1900	2100	2300	2500	2700	2900	3150	3350	3550	3750	3950
Motor load brake at 50 Hz, kW	6,96	9,43	11,84	13,93	16,39	18,86	21,27	23,67	25,83	28,30	30,70	33,11	35,51	37,73	40,13	42,54	44,94
Weight, kg	120	158	186	230	268	306	334	362	416	454	482	510	538	602	630	658	686

Pump sections number and length



Pump specification A-ESP C S-45M1,
capacity Q = 45 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=45 m³/day; H=559 m; N=6,33 kW; $\eta=45,2\%$

A-ESP C S-45M1 head rating at various rpm;
number of stages =100



Pump 222(224)A-ESP CW S-45(cpi)

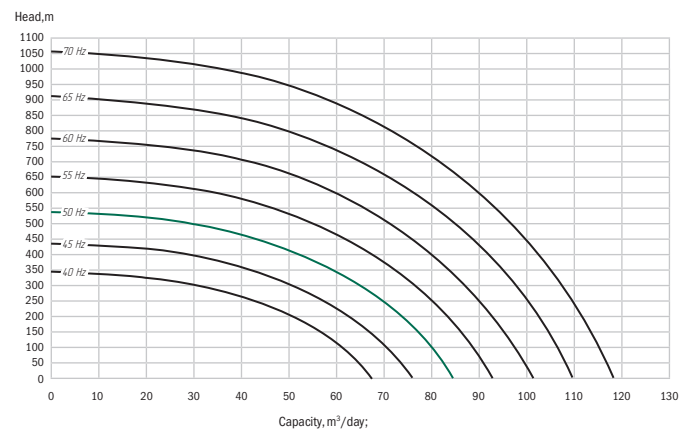
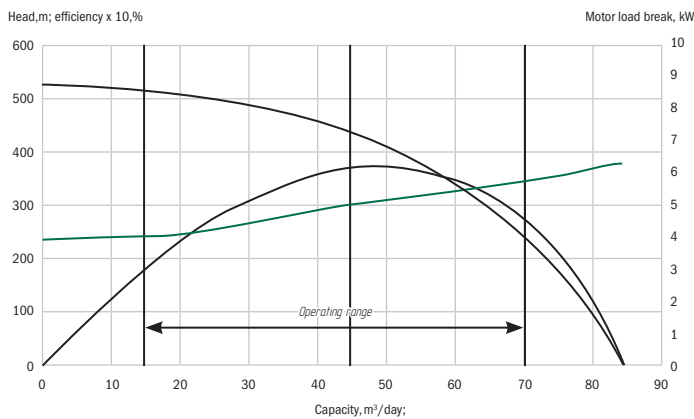
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Number of stages, pcs.	109	148	186	218	257	296	334	372	405	444	482	520	558	592	630	668	706	744	778	816
Head at 50 Hz, m	500	650	800	950	1150	1300	1450	1650	1800	1950	2100	2300	2450	2600	2750	2950	3100	3250	3400	3600
Motor load brake at 50 Hz, kW	6,63	9,00	11,31	13,25	15,63	18,00	20,31	22,62	24,62	27,00	29,31	31,62	33,93	35,99	38,30	40,61	42,92	45,24	47,30	49,61
Weight, kg	133	165	200	256	288	320	355	390	443	475	510	545	580	630	665	700	735	770	820	855

Pump sections number and length



Pump specification 222(224)A-ESP CW S-45(cpi),
capacity Q = 30 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50Hz); number of stages = 100;
Q=45 m³/day; H=440 m; N=6,08 kW $\eta=37\%$

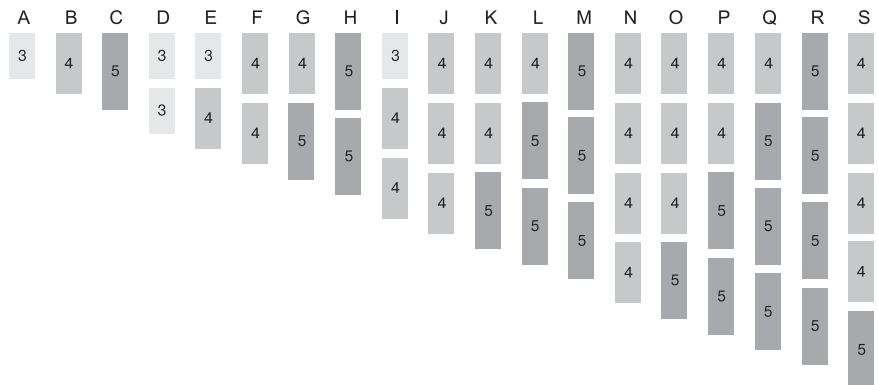
222(224)A-ESP CW S-45(cpi) head rating at various rpm;
number of stages = 100



Pump 022A-ESP CW S-45(cpi)

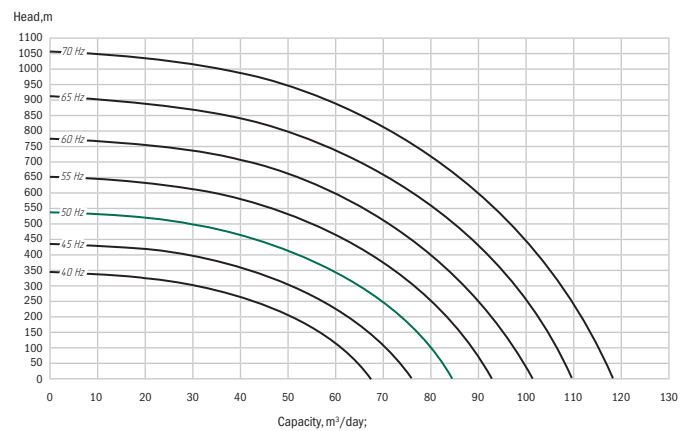
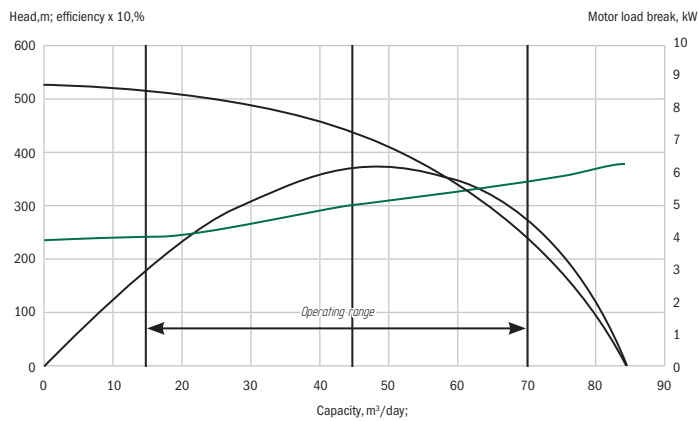
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	114	153	191	228	267	306	344	382	420	459	497	535	573	612	650	688	726	764	803
Head at 50 Hz, m	500	650	850	1000	1150	1350	1500	1700	1850	2000	2200	2350	2500	2700	2850	3050	3200	3350	3550
Motor load brake at 50 Hz, kW	6,93	9,30	11,61	13,86	16,23	18,60	20,92	23,23	25,54	27,91	30,22	32,53	34,84	37,21	39,52	41,83	44,14	46,45	48,82
Weight, kg	133	165	200	256	288	320	355	390	443	475	510	545	580	630	665	700	735	770	820

Pump sections number and length



Pump specification 022A-ESP CW S-45(cpi),
capacity Q = 45 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=45 m³/day; H=440 m; N=6,08 kW; $\eta=37\%$

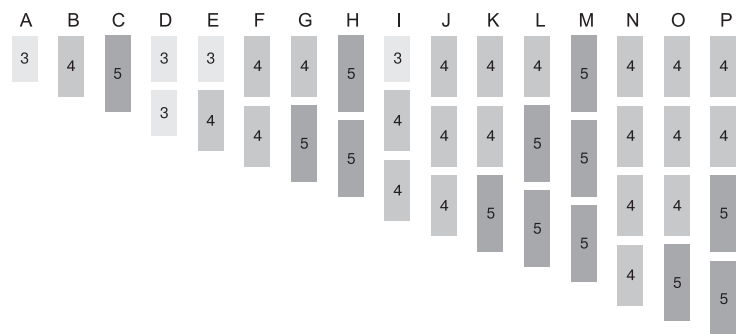
022A-ESP CW S-45(cpi) head rating at various rpm;
number of stages =100



Pump 212A-ESP CW S-50(cpi)

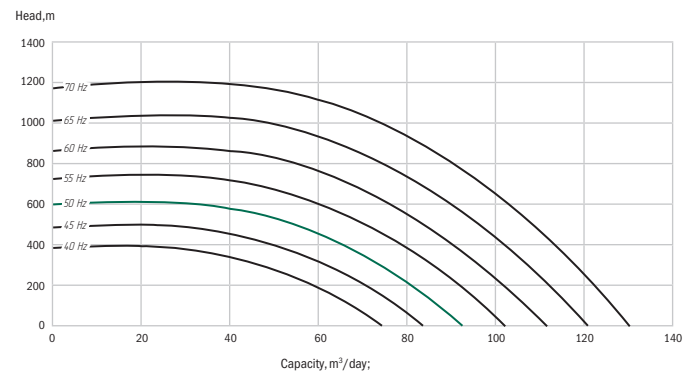
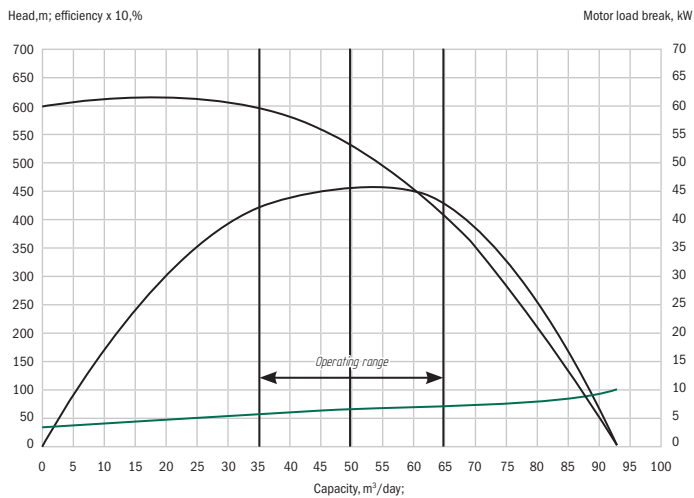
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	109	148	186	218	257	296	334	372	405	444	482	520	558	592	630	668
Head at 50 Hz, m	600	800	1000	1150	1350	1550	1750	1950	2150	2350	2550	2750	2950	3150	3350	3550
Motor load brake at 50 Hz, kW	7,14	9,69	12,18	14,28	16,83	19,39	21,88	24,37	26,53	29,08	31,57	34,06	36,55	38,78	41,27	43,75
Weight, kg	120	158	186	230	268	306	334	362	416	454	482	510	538	602	630	668

Pump sections number and length



Pump specification 212A-ESP CW S-50(cpi),
capacity $Q = 50 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages = 100;
 $Q = 50 \text{ m}^3/\text{day}$; $H = 530 \text{ m}$; $N = 6,55 \text{ kW}$; $\eta = 46\%$

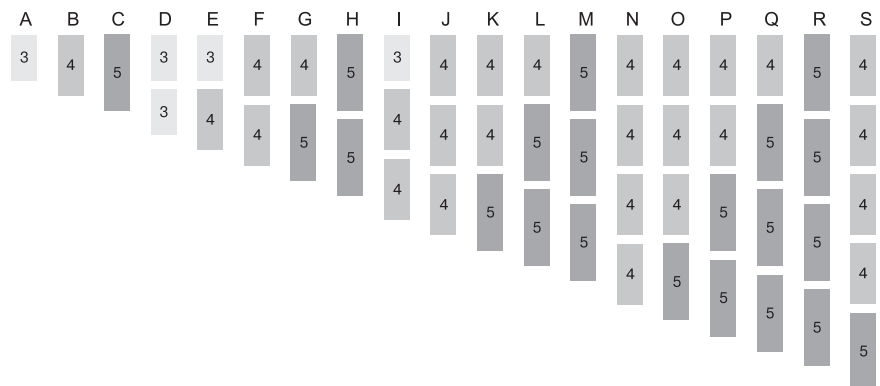
212A-ESP CW S-50(cpi) head rating at various rpm;
number of stages = 100



Pump A-ESP C S-60(cpi)

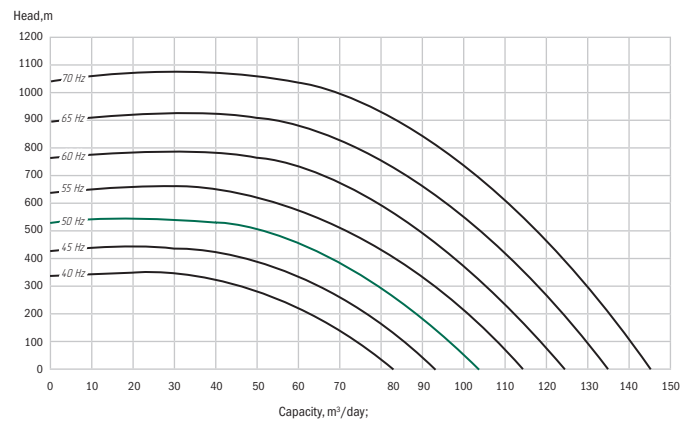
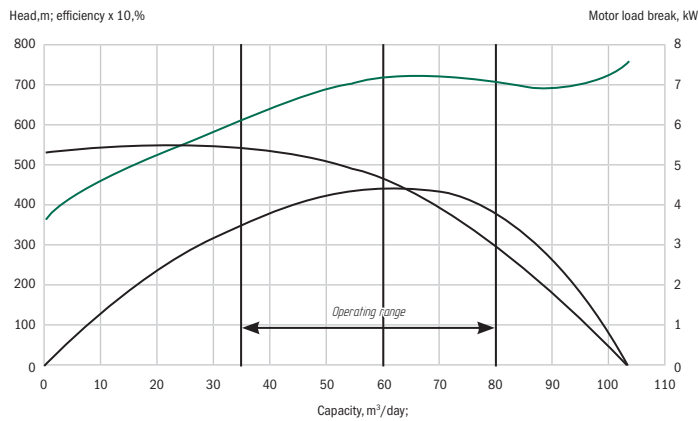
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	108	146	184	216	254	292	330	368	400	438	476	514	552	584	622	660	698	736	768
Head at 50 Hz, m	500	700	850	1000	1200	1350	1550	1700	1850	2050	2200	2400	2550	2700	2900	3050	3250	3400	3550
Motor load brake at 50 Hz, kW	7,77	10,50	13,23	15,53	18,26	20,99	23,73	26,46	28,76	31,49	34,22	36,96	39,69	41,99	44,72	47,45	50,19	52,92	55,22
Weight, kg	117	147	188	224	254	284	325	366	391	421	473	503	544	558	599	640	681	722	736

Pump sections number and length



Pump specification A-ESP C S-60(cpi),
capacity Q = 60 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=60 m³/day; H=465 m; N=7,19kW; $\eta=44\%$

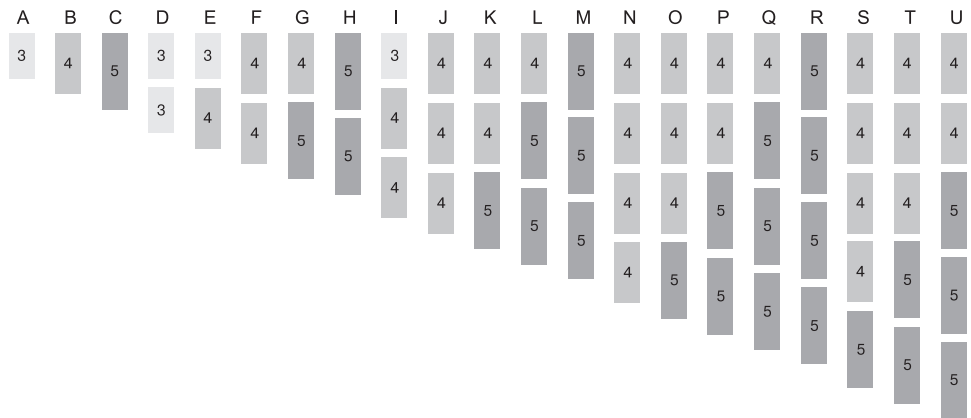
A-ESP C S-60(cpi) head rating at various rpm;
number of stages =100



Pump 222(224)A-ESP CW S-60(cpi)

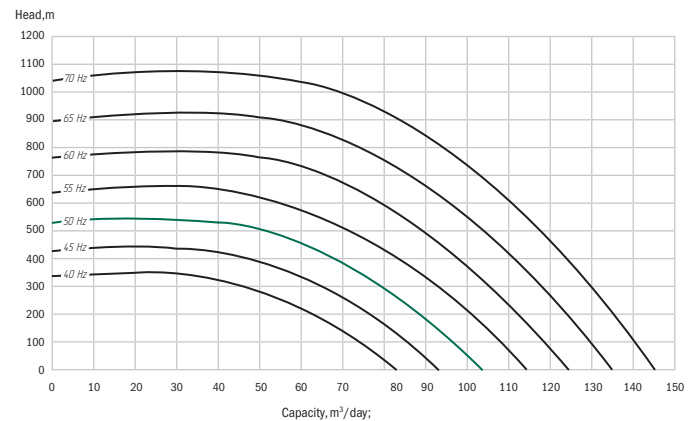
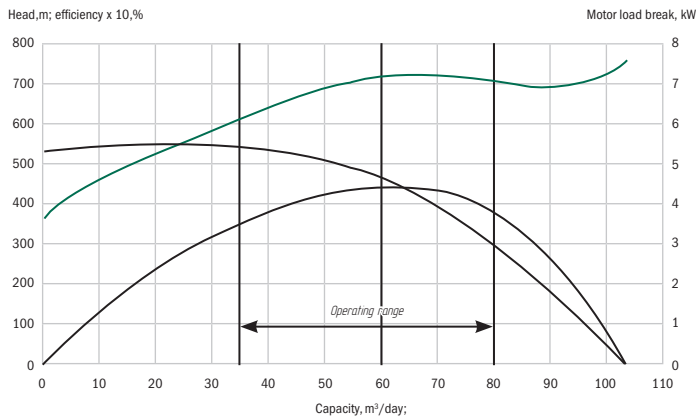
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Number of stages, pcs.	105	142	179	210	247	284	321	358	389	426	463	500	537	568	605	642	679	716	747	784	821
Head at 50 Hz, m	500	650	850	1000	1150	1300	1500	1650	1800	2000	2150	2300	2500	2650	2800	3000	3150	3350	3450	3650	3800
Motor load brake at 50 Hz, kW	7,55	10,21	12,87	15,10	17,76	20,42	23,08	25,74	27,97	30,63	33,29	35,95	38,61	40,84	43,50	46,16	48,82	51,48	53,71	56,37	59,03
Weight, kg	126	161	196	242	277	312	347	382	428	463	498	533	568	614	649	684	719	754	800	835	870

Pump sections number and length



Pump specification 222(224)A-ESP CW S-60(cpi)
 capacity $Q = 60 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg/m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=60 \text{ m}^3/\text{day}$; $H=465 \text{ m}$; $N=7,19\text{kW}$; $\eta=44\%$

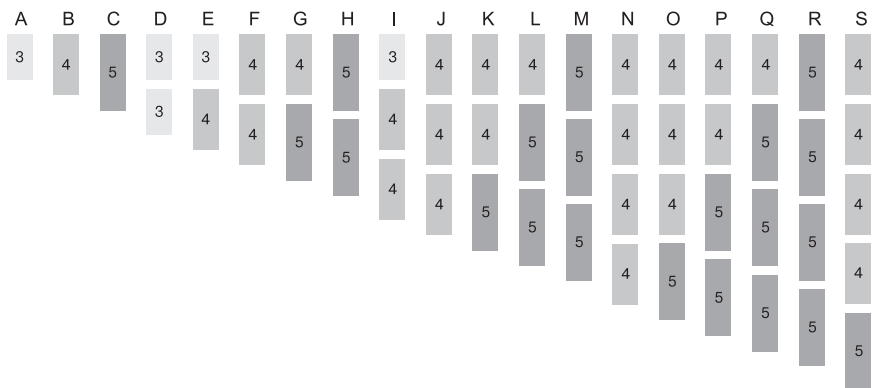
222(224)A-ESP CW S-60(cpi) head rating at various rpm;
 number of stages =100



Pump 022A-ESP CW S-60(cpi)

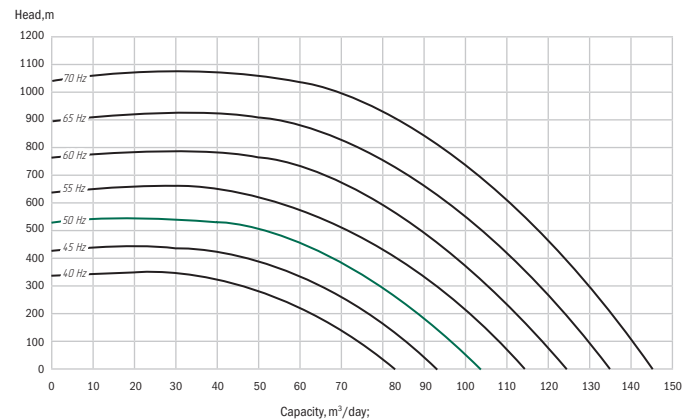
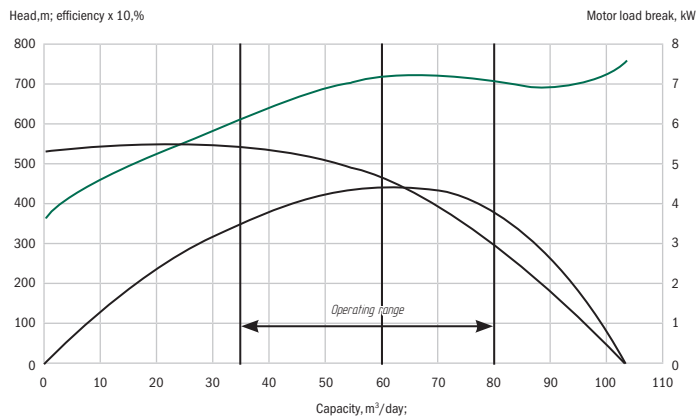
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	112	150	187	224	262	300	337	374	412	450	487	524	561	600	637	674	711	748	787
Head at 50 Hz, m	500	700	850	1050	1200	1400	1550	1750	1900	2100	2250	2450	2600	2800	2950	3150	3300	3500	3700
Motor load brake at 50 Hz, kW	8,05	10,79	13,45	16,11	18,84	21,57	24,23	26,89	29,62	32,36	35,02	37,68	40,34	43,14	45,80	48,46	51,12	53,78	56,59
Weight, kg	126	161	196	242	277	312	347	382	428	463	498	533	568	614	649	684	719	754	800

Pump sections number and length



Pump specification 022A-ESP CW S-60(cpi)
capacity Q = 60 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=60 m³/day; H=465 m; N=7,19kW; $\eta=44\%$

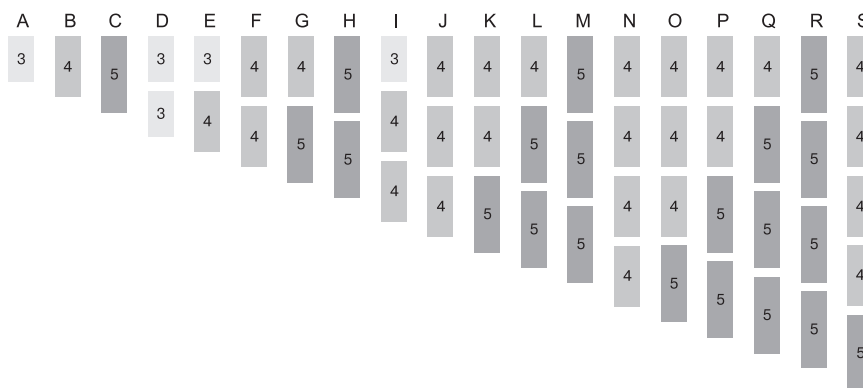
022A-ESP CW S-60(cpi) head rating at various rpm;
number of stages =100



Pump 052A-ESP CW S-60(cpi)

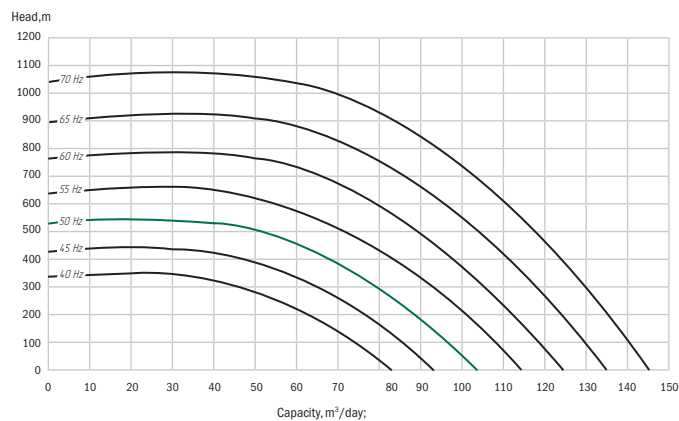
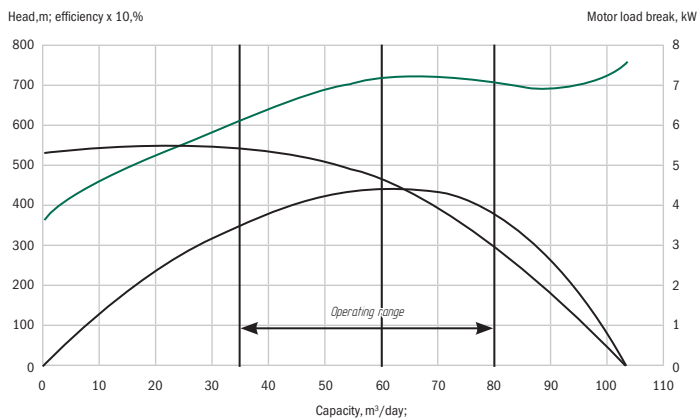
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	87	117	150	174	204	234	267	300	321	351	384	417	450	468	501	534	567	600	618
Head at 50 Hz, m	400	550	700	800	950	1100	1250	1400	1500	1650	1800	1950	2100	2200	2350	2500	2650	2800	2850
Motor load brake at 50 Hz, kW	6,26	8,41	10,79	12,51	14,67	16,82	19,20	21,57	23,08	25,24	27,61	29,98	32,36	33,65	36,02	38,39	40,77	43,14	44,43
Weight, kg	126	158	190	234	266	298	330	362	406	438	470	502	534	578	610	642	674	706	750

Pump sections number and length



Pump specification 052A-ESP CW S-60(cpi)
 capacity $Q = 60 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=60 \text{ m}^3/\text{day}$; $H=465 \text{ m}$; $N=7,19\text{kW}$; $\eta=44\%$

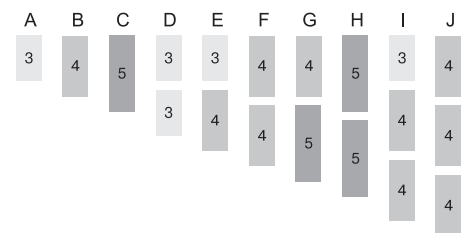
052A-ESP CW S-60(cpi) head rating at various rpm;
 number of stages =100



Pump 20T A-ESP S-60

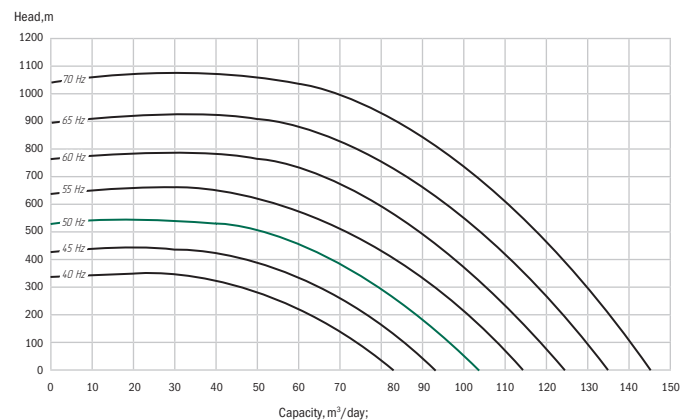
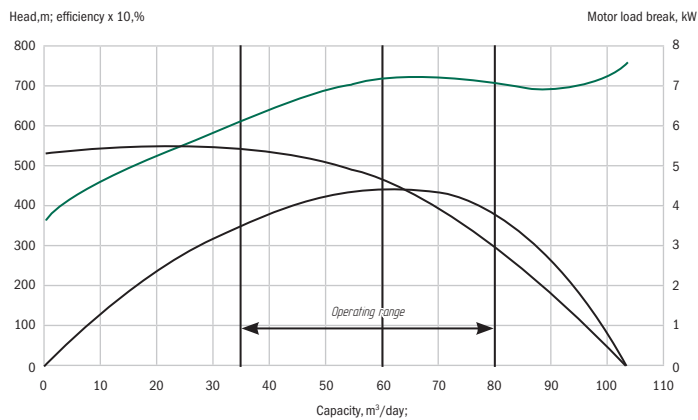
Assembly	A	B	C	D	E	F	G	H	I	J
Number of stages, pcs.	216	254	292	330	368	400	438	476	514	552
Head at 50 Hz, m	1000	1200	1350	1550	1700	1850	2050	2200	2400	2550
Motor load brake at 50 Hz, kW	15,53	18,26	20,99	23,73	26,46	28,90	31,49	34,22	36,96	39,69
Weight, kg	233	263	293	334	375	400	430	482	512	553

Pump sections number and length



Pump specification 20T A-ESP S-60,
capacity Q = 60 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=60 m³/day; H=465 m; N=7,19 kW; $\eta=44\%$

20T A-ESP S-60 head rating at various rpm;
number of stages =100



Pump A-ESP C S-80(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	110	149	187	220	259	298	336	374	408	447	484	525	564	596	634	672	710	748
Head at 50 Hz, m	500	700	850	1000	1200	1350	1550	1700	1900	2050	2250	2400	2600	2750	2900	3100	3250	3450
Motor load brake at 50 Hz, kW	8,93	12,10	15,18	17,86	21,03	24,20	27,28	30,37	29,62	32,36	39,30	42,63	45,55	48,40	51,48	54,57	57,65	60,74
Weight, kg	110	148	176	210	248	286	314	342	386	424	442	480	508	562	590	618	646	674

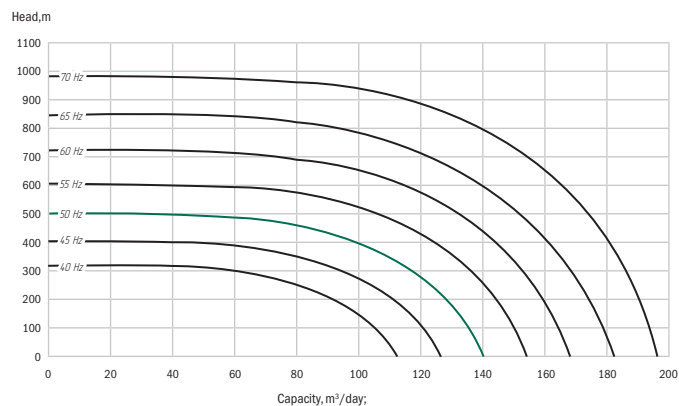
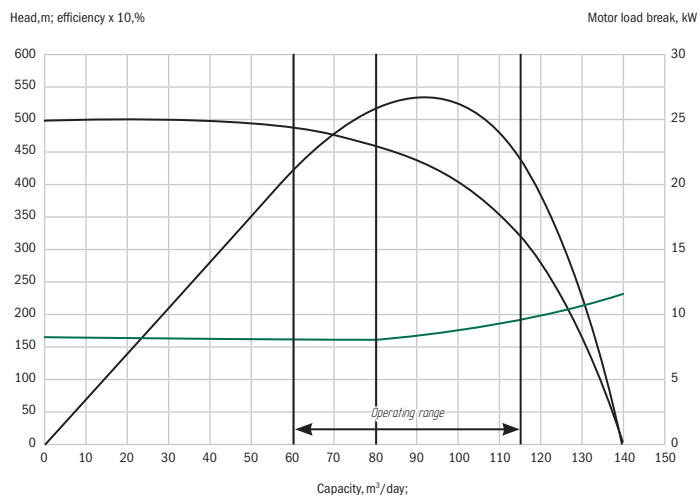
Pump sections number and length



Pump specification A-ESP C S-80(cpi)

capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 80 \text{ m}^3/\text{day}$; $H = 460 \text{ m}$; $N = 8,12 \text{ kW}$; $\eta = 51,5\%$

A-ESP C S-80(cpi) head rating at various rpm; number of stages = 100



Pump 222(224)A-ESP CW S-80(cpi)

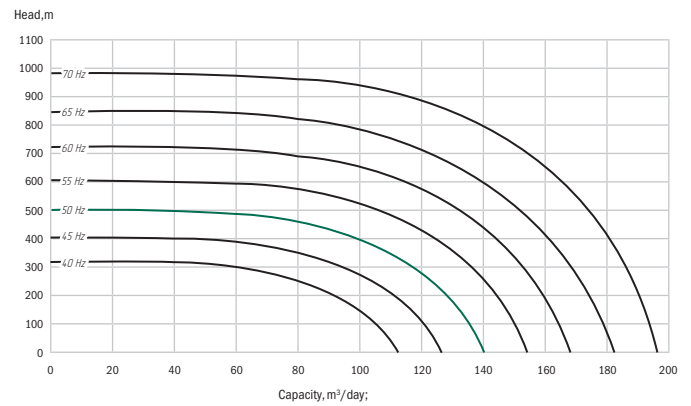
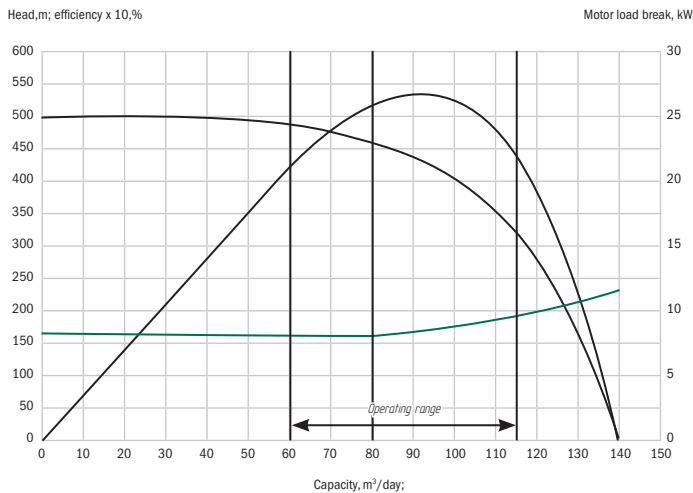
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Number of stages, pcs.	109	148	186	218	257	296	334	372	405	444	482	520	558	592	630	668	706	744	778	816
Head at 50 Hz, m	500	700	850	1000	1200	1350	1550	1700	1850	2050	2200	2400	2550	2700	2900	3050	3250	3400	3550	3750
Motor load brake at 50 Hz, kW	8,85	12,02	15,10	17,70	20,87	24,04	27,12	30,21	32,89	36,05	39,14	42,22	45,31	48,07	51,16	54,24	57,33	60,41	63,17	66,26
Weight, kg	115	154	182	220	259	298	326	354	403	442	470	498	526	586	604	642	670	698	758	786

Pump sections number and length



Pump specification 222(224)A-ESP CW S-80(cpi),
capacity Q = 80 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=80 m³/day; H=460 m; N=8,12 kW $\eta=51,5\%$

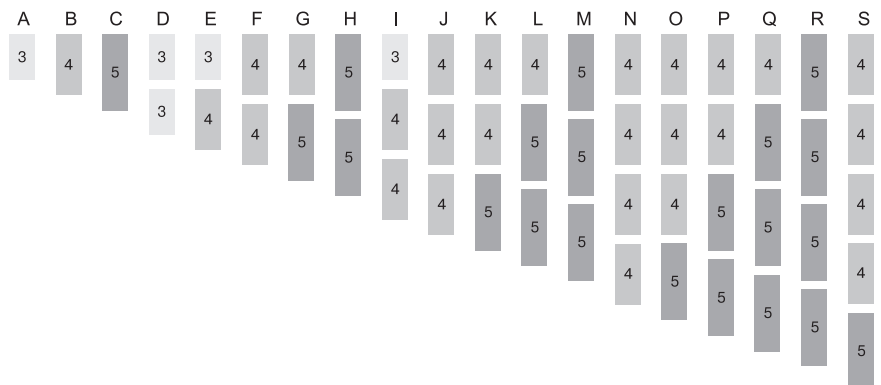
222(224)A-ESP CW S-80(cpi) head rating at various rpm;
number of stages =100



Pump 022 A-ESP CW S-80

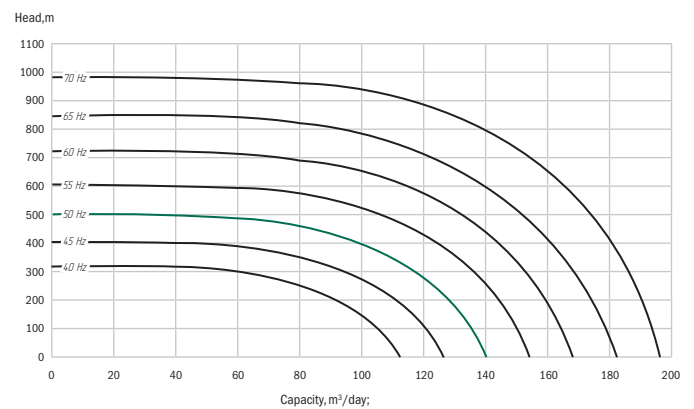
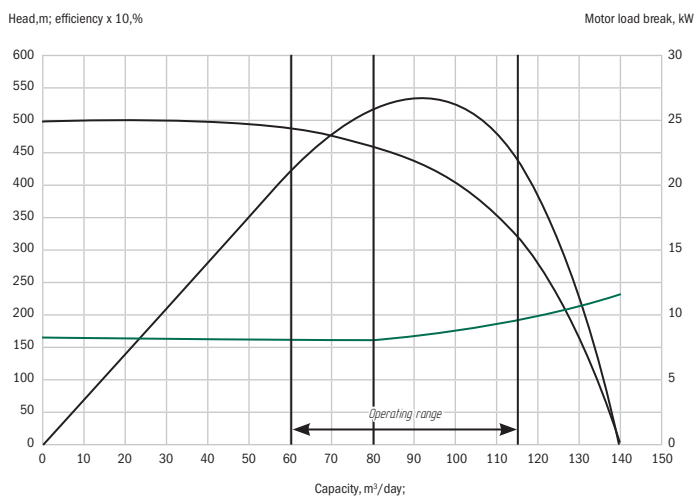
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	114	153	191	228	267	306	344	382	420	459	496	535	573	612	650	688	726	764	803
Head at 50 Hz, m	500	700	900	1050	1250	1400	1600	1750	1950	2100	2300	2450	2650	2800	3000	3150	3350	3500	3700
Motor load brake at 50 Hz, kW	9,26	12,42	15,51	18,51	21,68	24,85	27,93	31,02	34,10	37,27	40,28	43,44	46,53	49,69	52,78	55,87	58,95	62,04	65,20
Weight, kg	115	154	182	220	259	298	326	354	403	442	459	498	526	586	614	642	670	698	758

Pump sections number and length



Pump specification 022 A-ESP CW S-80,
capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages =100;
 $Q=80 \text{ m}^3/\text{day}$; $H=460 \text{ m}$; $N=8,12 \text{ kW}$ $\eta=51,5\%$

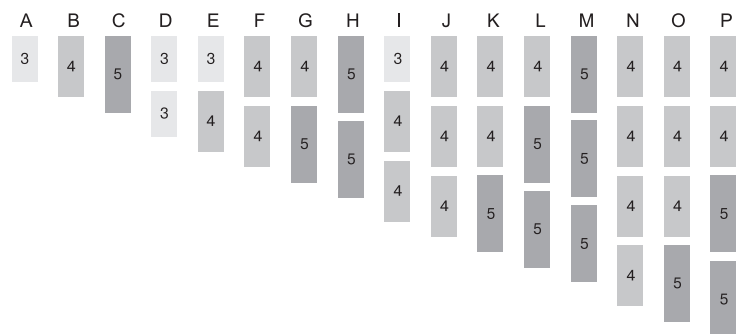
022 A-ESP CW S-80 head rating at various rpm;
number of stages =100



Pump 052A-ESP CW S-80(cpi)

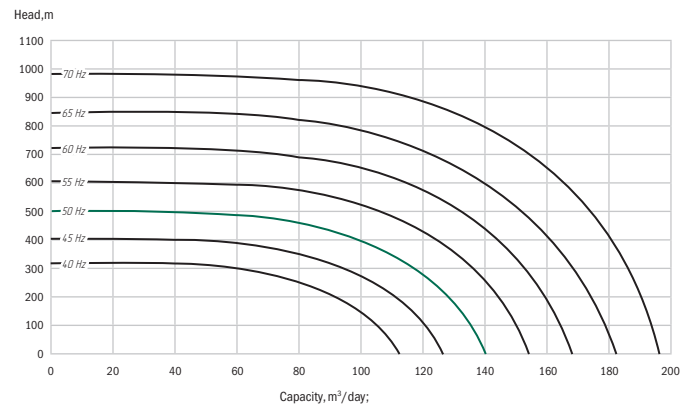
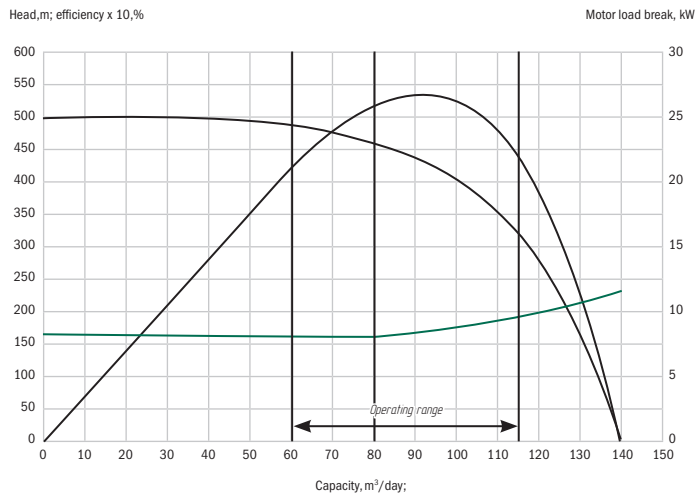
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	87	117	150	174	204	234	267	300	321	351	384	417	450	468	501	534
Head at 50 Hz, m	400	500	700	800	900	1050	1200	1350	1450	1600	1750	1900	2050	2150	2300	2450
Motor load brake at 50 Hz, kW	7,06	9,50	12,18	14,13	16,56	19,00	21,68	24,36	26,07	28,50	31,18	33,86	36,54	38,00	40,68	43,36
Weight, kg	126	158	190	234	266	298	330	362	406	438	470	502	534	578	610	642

Pump sections number and length



Pump specification 052A-ESP CW S-80(cpi) capacity
Q = 80 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=80 m³/day; H=460 m; N=8,1 kW; $\eta=44\%$

052A-ESP CW S-80(cpi) head rating at various rpm;
number of stages =100



Pump 0215A-ESP CW S-100I

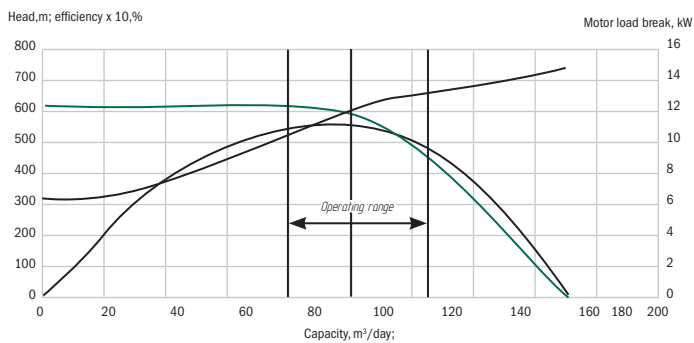
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	97	130	163	194	227	260	293	326	357	390	423	456	489	520	553	586
Head at 50 Hz, m	550	750	950	1150	1350	1550	1750	1900	2100	2300	2500	2700	2900	3050	3250	3450
Motor load brake at 50 Hz, kW	11,64	15,60	19,56	23,28	27,24	31,20	35,16	39,12	42,84	46,80	50,76	54,72	58,68	62,40	66,36	70,32
Load on the hydro-protector reinforced bearing, kgf	143	192	241	287	335	384	432	481	527	576	624	673	722	768	816	865
Weight, kg	119	151	183	225	257	289	321	353	395	427	459	491	523	565	597	629

Pump sections number and length

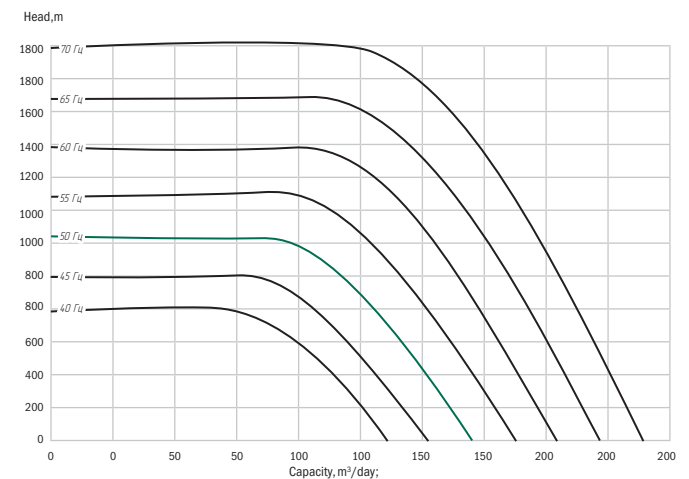


Pump specification 0215A-ESP CW S-100I

capacity $Q = 100 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 100 \text{ m}^3/\text{day}$; $H = 590 \text{ m}$; $N = 12 \text{ kW}$; $\eta = 56\%$



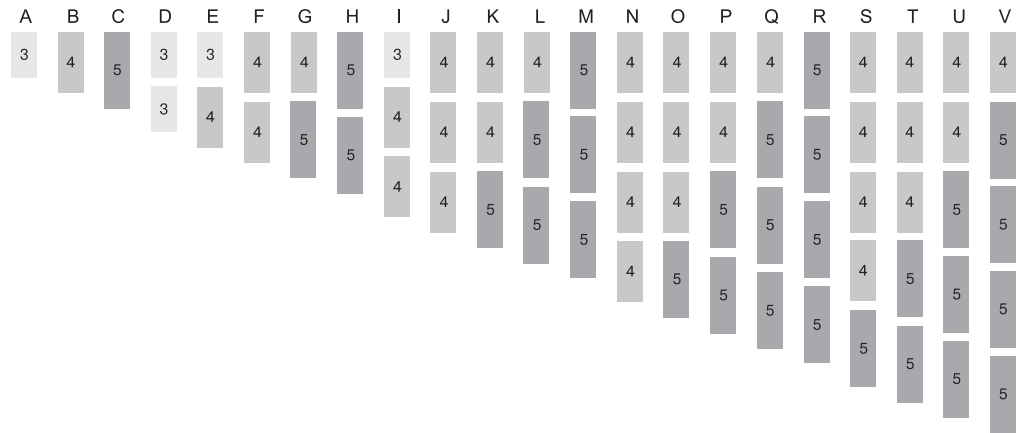
0215A-ESP CW S-100I head rating at various rpm; number of stages = 100



Pump A-ESP C S-125(cpi)

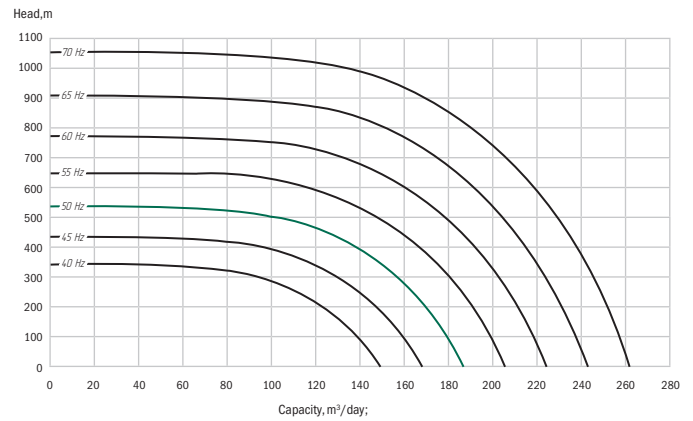
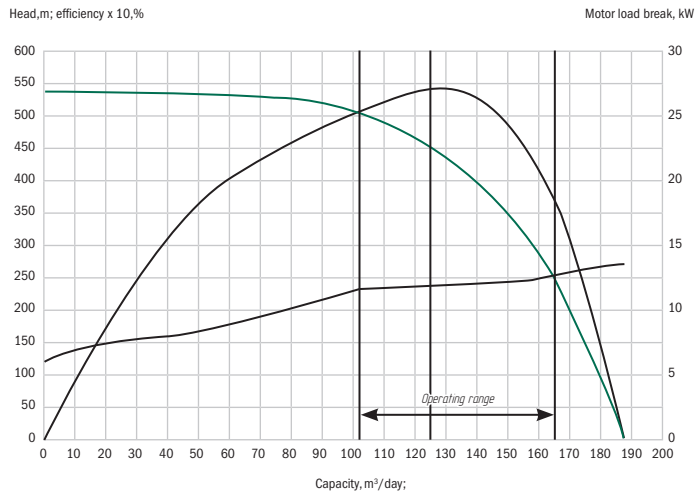
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Number of stages, pcs.	92	125	157	184	217	250	282	314	342	375	407	439	471	500	532	564	596	628	657	689	721	753
Head at 50 Hz, m	400	550	700	850	1000	1100	1300	1400	1550	1700	1850	2000	2100	2250	2400	2550	2700	2850	2950	3100	3250	3400
Motor load brake at 50 Hz, kW	10,89	14,80	18,59	21,79	25,69	29,60	33,39	37,18	40,49	44,40	48,19	51,98	55,77	59,20	62,99	66,78	70,57	74,36	77,79	81,58	85,37	89,16
Weight, kg	122	157	190	234	269	304	337	370	416	451	484	517	550	594	629	664	697	730	778	811	844	877

Pump sections number and length



Pump specification A-ESP C S-125(cpi)
 capacity $Q = 125 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 125 \text{ m}^3/\text{day}$; $H = 450 \text{ m}$; $N = 11,84 \text{ kW}$; $\eta = 54\%$

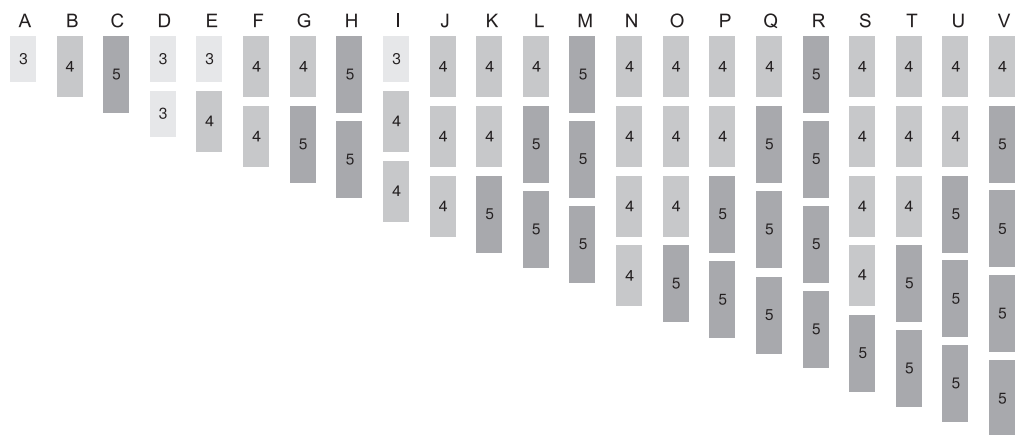
A-ESP C S-125(cpi) head rating at various rpm;
 number of stages = 100



Pump 222(224)A-ESP CW S-125(cpi)

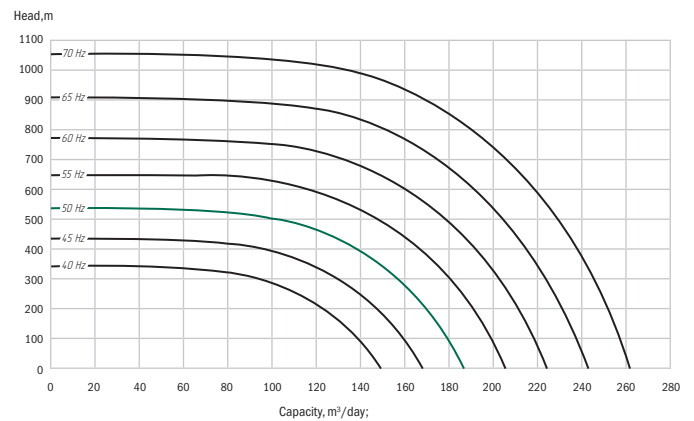
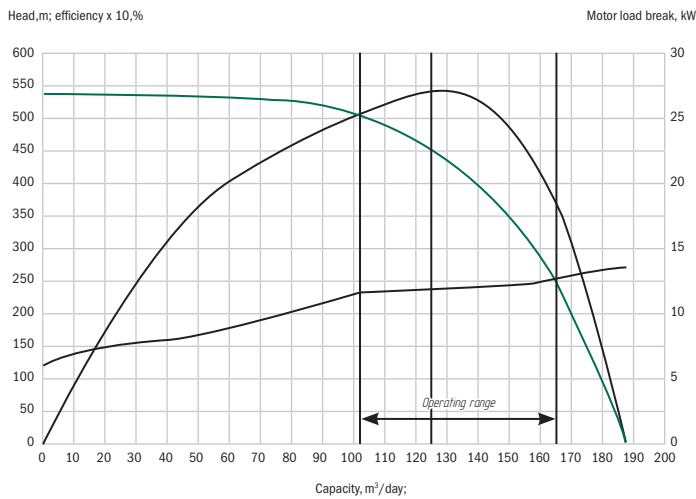
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Number of stages, pcs.	92	124	156	184	216	248	280	312	340	372	404	436	468	496	528	560	592	624	652	684	716	748
Head at 50 Hz, m	400	550	700	800	1000	1100	1250	1400	1550	1650	1800	1950	2100	2250	2350	2500	2650	2800	2950	3100	3200	3350
Motor load brake at 50 Hz, kW	10,89	14,68	18,47	21,79	25,57	29,36	33,15	36,94	40,26	44,04	47,83	51,62	55,41	62,52	66,30	66,30	70,09	73,88	77,2	80,99	84,77	88,56
Weight, kg	126	164	198	242	280	318	352	386	434	472	506	540	574	626	660	694	728	762	814	848	882	916

Pump sections number and length



Pump specification 222(224)A-ESP CW S-125(cpi)
 capacity $Q = 125 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 125 \text{ m}^3/\text{day}$; $H = 450 \text{ m}$; $N = 11,84 \text{ kW}$; $\eta = 54\%$

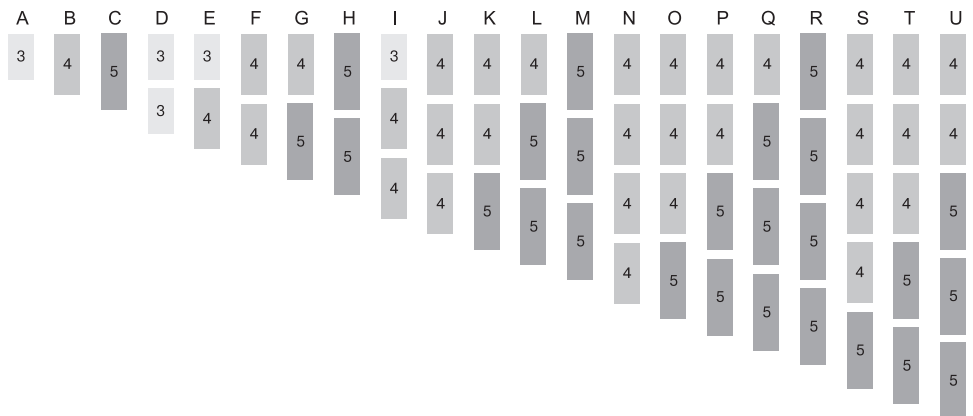
222(224)A-ESP CW S-125(cpi) head rating at various rpm;
 number of stages = 100



Pump 022A-ESP CW S-125(cpi)

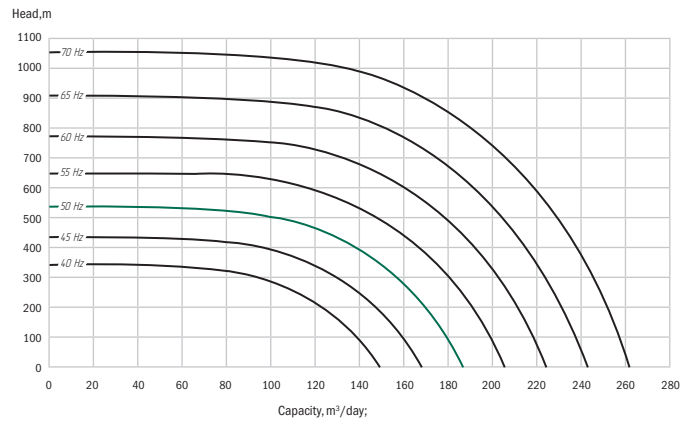
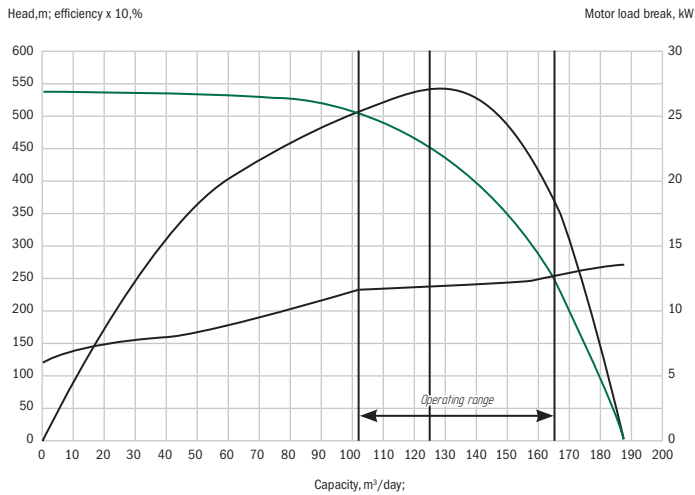
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Number of stages, pcs.	96	128	160	192	224	256	288	320	352	384	416	448	480	512	544	576	608	640	672	704	736
Head at 50 Hz, m	450	550	700	850	1000	1150	1300	1450	1600	1750	1850	2000	2150	2300	2450	2600	2750	2850	3000	3150	3300
Motor load brake at 50 Hz, kW	11,37	15,16	18,94	22,73	26,52	30,31	34,10	37,89	41,68	45,47	49,25	53,04	56,83	60,62	64,41	68,20	71,99	75,78	79,56	83,35	87,14
Weight, kg	126	164	198	242	280	318	352	386	434	472	506	540	574	626	660	694	728	762	814	848	882

Pump sections number and length



Pump specification 022A-ESP CW S-125(cpi)
 capacity $Q = 125 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 125 \text{ m}^3/\text{day}$; $H = 450 \text{ m}$; $N = 11,84 \text{ kW}$; $\eta = 54\%$

022A-ESP CW S-125(cpi) head rating at various rpm;
 number of stages = 100

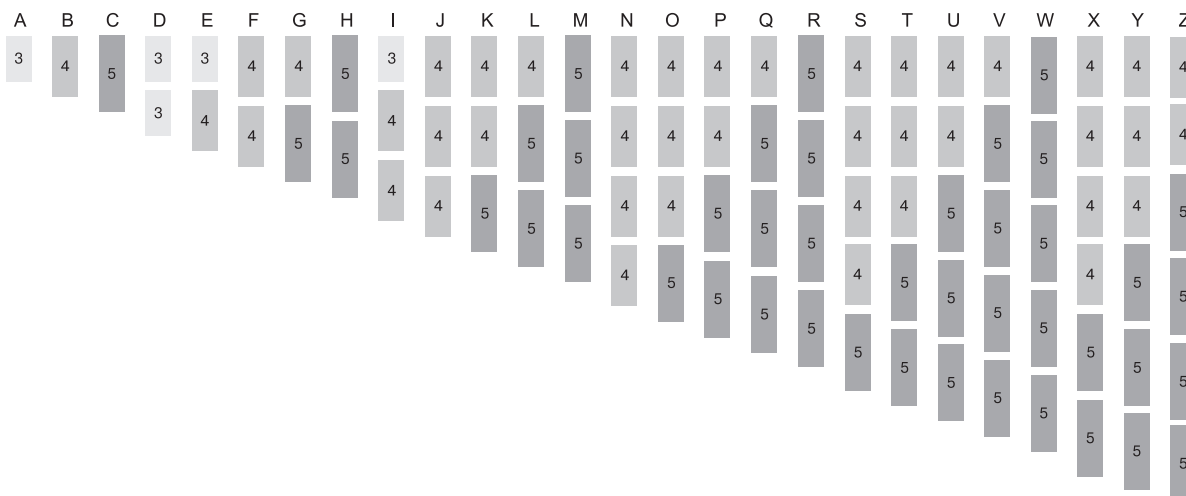


Pump 052A-ESP CW S-125(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	71	98	123	142	169	196	221	246	267	294	319	344	369
Head at 50 Hz, m	300	450	550	650	750	900	1000	1100	1200	1300	1450	1550	1650
Motor load brake at 50 Hz, kW	8,41	11,60	14,56	16,81	20,01	23,21	26,17	29,13	31,61	34,81	37,77	40,73	43,69
Weight, kg	125	159	191	232	266	300	332	364	407	441	473	505	537

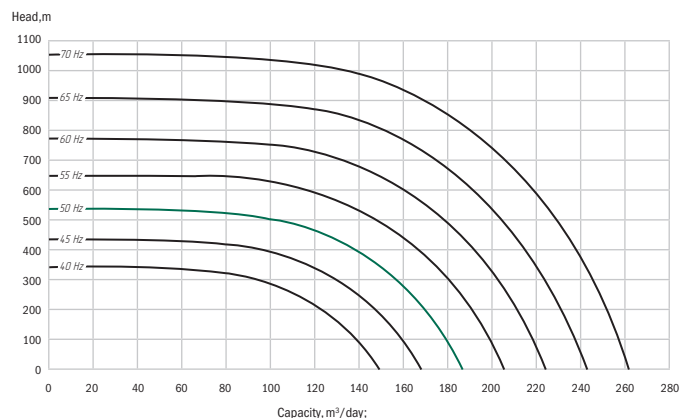
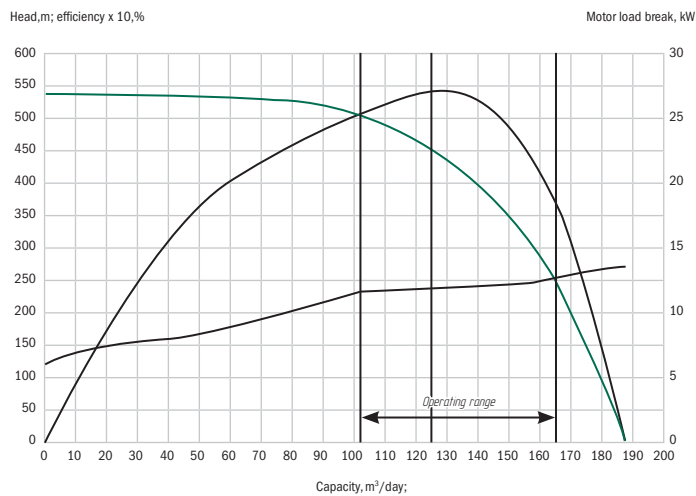
Assembly	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Number of stages, pcs.	392	417	440	467	492	515	540	565	590	615	638	663	688
Head at 50 Hz, m	1750	1850	2000	2100	2200	2300	2450	2550	2650	2750	2850	3000	3100
Motor load brake at 50 Hz, kW	46,41	49,37	52,10	55,29	58,25	60,98	63,94	66,90	69,86	72,82	75,54	78,50	81,46
Weight, kg	582	614	644	678	710	755	787	819	851	883	928	960	992

Pump sections number and length



Pump specification 052A-ESP CW S-125(cpi)
capacity Q = 125 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=125 m³/day; H=450 m; N=11,84 kW; $\eta=54\%$

052A-ESP CW S-125(cpi) head rating at various rpm;
number of stages =100

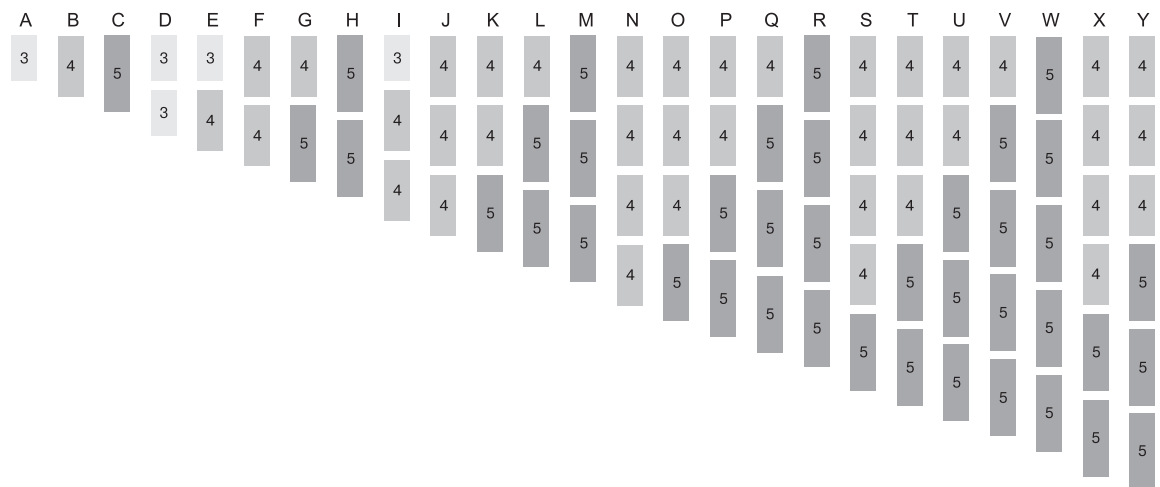


Pump A-ESP C S-200(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	72	98	124	144	170	196	222	248	268	294	320	346	372
Head at 50 Hz, m	300	400	500	550	650	750	850	950	1050	1150	1250	1350	1450
Motor load brake at 50 Hz, kW	12,74	17,35	21,95	25,49	30,09	34,69	39,29	43,90	47,44	52,04	56,64	61,24	65,84
Weight, kg	113	143	177	215	245	275	309	343	377	407	441	475	509

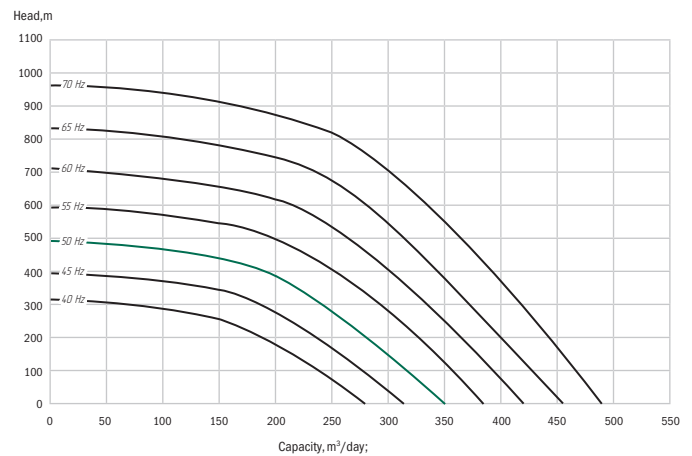
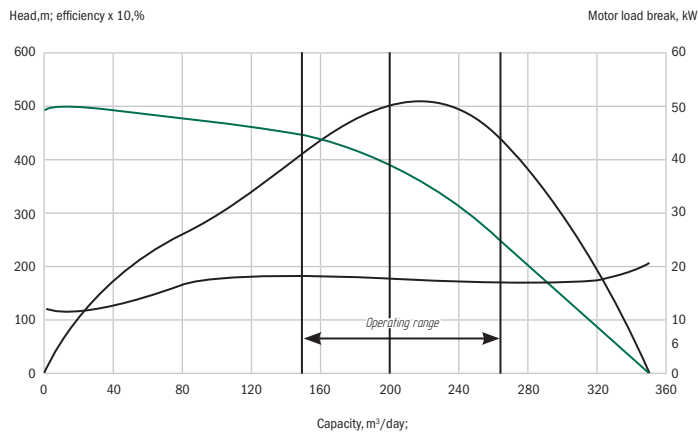
Assembly	N	O	P	Q	R	S	T	U	V	W	X	Y
Number of stages, pcs.	392	418	444	470	496	516	542	568	594	620	640	666
Head at 50 Hz, m	1550	1650	1750	1850	1950	2000	2100	2200	2300	2400	2500	2600
Motor load brake at 50 Hz, kW	69,38	73,99	78,59	83,19	87,79	91,33	95,93	100,54	105,14	109,74	113,28	117,88
Weight, kg	539	573	607	641	675	709	739	773	829	828	846	899

Pump sections number and length



Pump specification A-ESP C S-200(cpi)
 capacity $Q = 200 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=200 \text{ m}^3/\text{day}$; $H=390 \text{ m}$; $N=17,7 \text{ kW}$; $\eta=50\%$

A-ESP C S-200(cpi) head rating at various rpm;
 number of stages =100

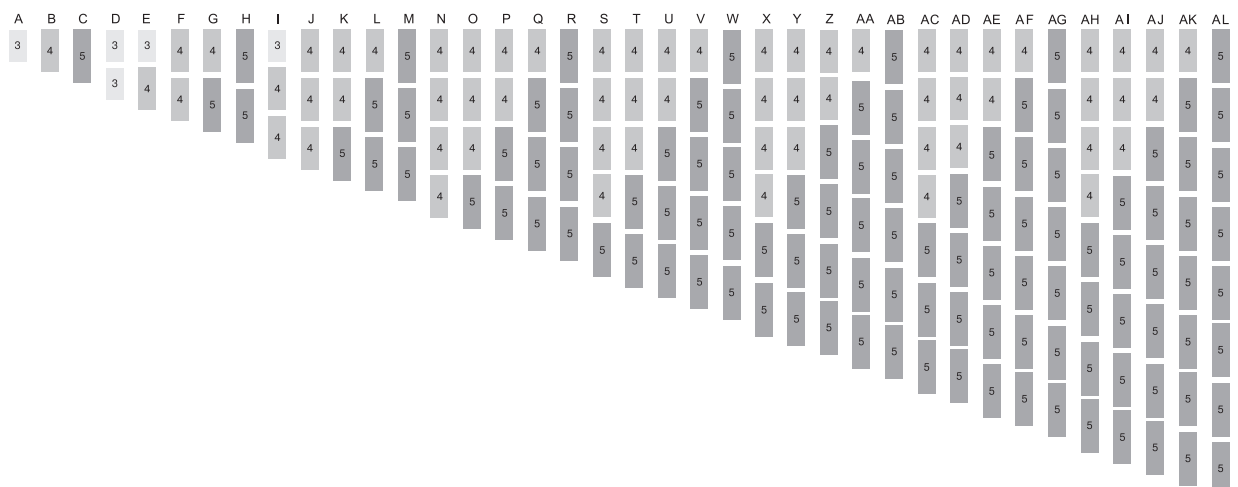


Pump 222(224)A-ESP CW S-200(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	57	77	97	114	134	154	174	194	211	231	251	271	291	308	328	348	368	388	405
Head at 50 Hz, m	200	300	400	450	500	600	700	750	800	900	1000	1050	1150	1200	1300	1350	1450	1500	1600
Motor load brake at 50 Hz, kW	10,11	13,65	17,20	20,21	23,76	27,30	30,85	34,40	37,41	40,96	44,50	48,05	51,59	54,61	58,15	61,70	65,25	68,79	71,81
Weight, kg	122	154	189	225	257	289	324	359	392	424	459	494	529	559	594	629	664	699	729

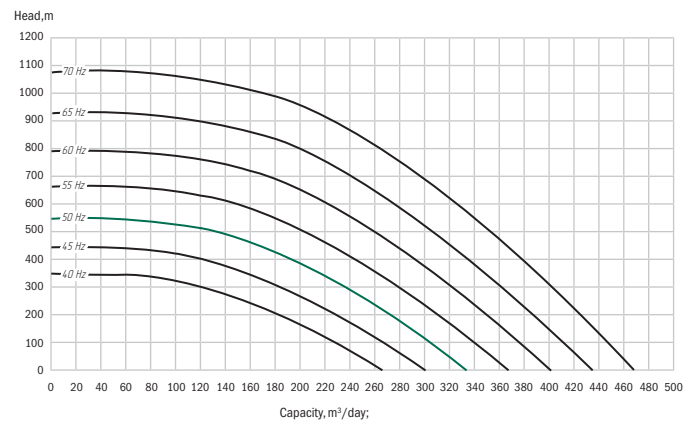
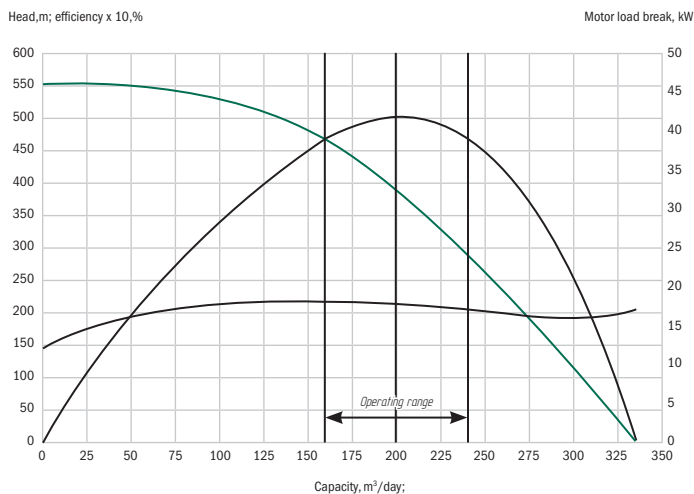
Assembly	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
Number of stages, pcs.	425	445	465	485	502	522	542	562	582	599	619	639	659	679	696	716	736	756	776
Head at 50 Hz, m	1650	1750	1800	1900	1950	2050	2100	2200	2250	2350	2400	2500	2550	2650	2700	2800	2850	2950	3050
Motor load brake at 50 Hz, kW	75,35	78,90	82,44	85,95	89,00	92,55	96,10	99,64	103,19	106,20	109,75	113,29	116,84	120,39	123,40	126,95	130,49	134,04	137,58
Weight, kg	764	799	834	869	899	934	969	1004	1039	1069	1104	1139	1174	1209	1239	1274	1309	1344	1379

Pump sections number and length



Pump specification 222(224)A-ESP CW S-200(cpi)
 capacity $Q = 200 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 200 \text{ m}^3/\text{day}$; $H = 390 \text{ m}$; $N = 17,73 \text{ kW}$; $\eta = 50\%$

222(224)A-ESP CW S-200(cpi) head rating at various rpm;
 number of stages = 100

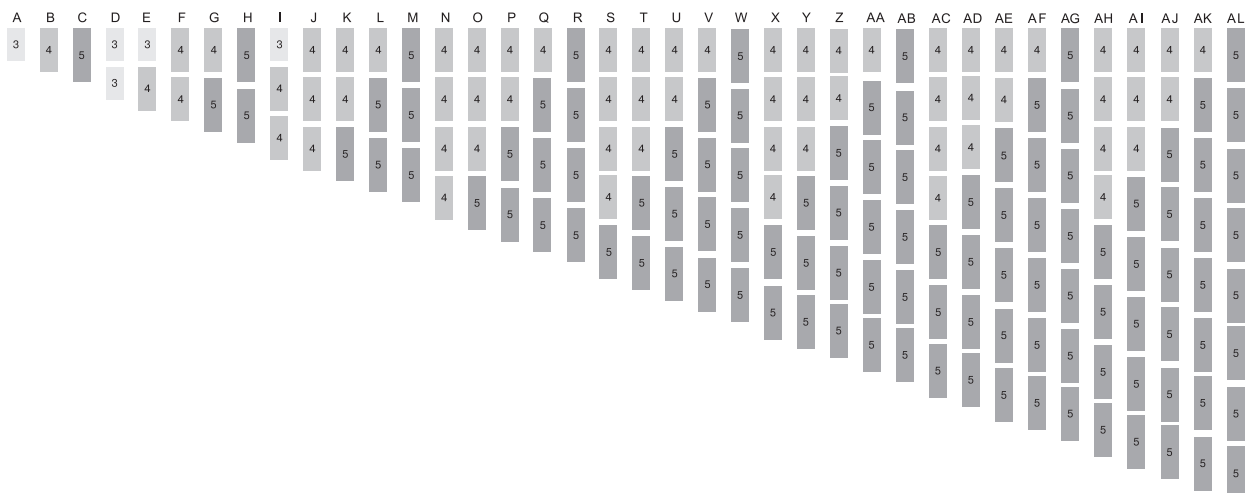


Pump 022A-ESP CW S-200(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Number of stages, pcs.	57	77	96	114	134	154	173	192	211	231	250	269	288	308	327	345	365	384	404	423
Head at 50 Hz, m	200	300	350	450	500	600	650	750	800	900	950	1050	1100	1200	1250	1350	1400	1500	1550	1650
Motor load brake at 50 Hz, kW	10,09	13,63	16,99	20,18	23,72	27,26	30,62	33,98	37,41	40,96	44,33	47,69	51,06	54,61	57,98	61,17	64,71	68,08	71,63	75,00
Weight, kg	124	156	188	248	280	312	344	376	436	468	500	532	564	624	656	688	720	752	812	844

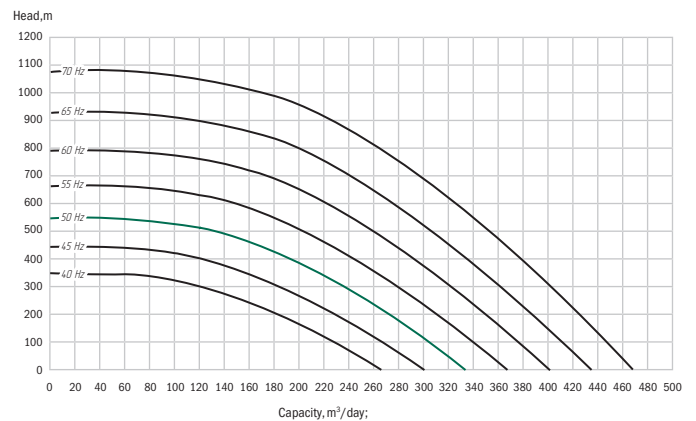
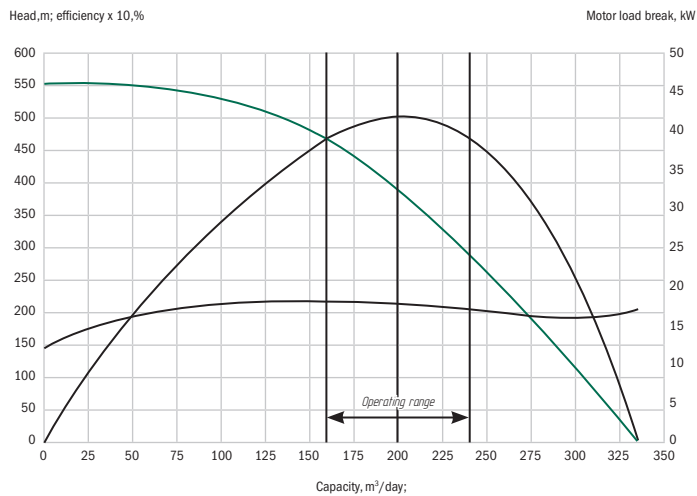
Assembly	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
Number of stages, pcs.	442	461	480	500	519	538	557	576	596	615	634	653	672	692	711	730	749	768
Head at 50 Hz, m	1700	1800	1850	1950	2000	2100	2150	2250	2300	2400	2450	2550	2600	2700	2750	2850	2900	3000
Motor load brake at 50 Hz, kW	78,37	81,74	85,10	88,65	92,02	95,39	98,76	102,12	105,67	109,04	112,41	115,78	119,15	122,69	126,06	129,43	132,80	136,17
Weight, kg	876	908	940	1000	1032	1064	1096	1128	1188	1220	1252	1284	1316	1376	1408	1440	1472	1504

Pump sections number and length



Pump specification 022A-ESP CW S-200(cpi),
capacity Q = 200 m³/day; water density η=1000 kg/m³;
number of stages =100; Q=200 m³/day; H=390 m;
N=17,73 kW; =50%; double-bearing design

022A-ESP CW S-200(cpi) head rating at various rpm;
number of stages =100

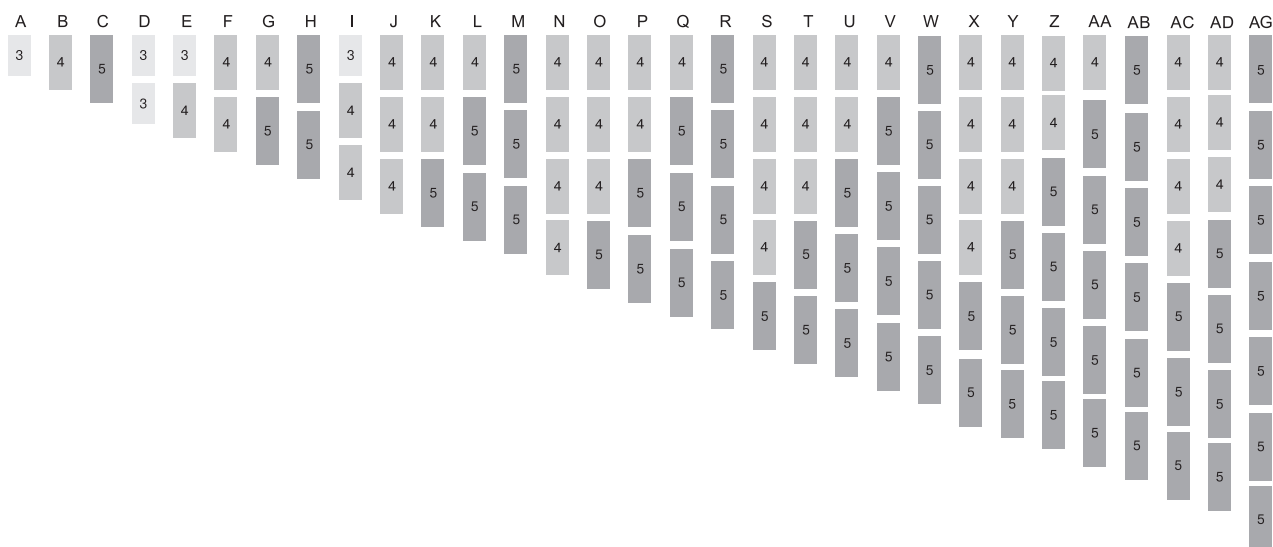


Pump 052A-ESP CW S-200(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	61	83	105	122	144	166	188	210	227	249	271	293	315	332	354	376
Head at 50 Hz, m	250	300	400	500	550	650	750	800	900	950	1050	1150	1250	1300	1400	1450
Motor load brake at 50 Hz, kW	10,80	14,69	18,59	21,59	25,49	29,38	33,28	37,17	40,18	44,07	47,97	51,86	55,76	58,76	62,66	66,55
Weight, kg	124	155	186	229	260	291	322	353	396	427	458	489	520	563	594	625

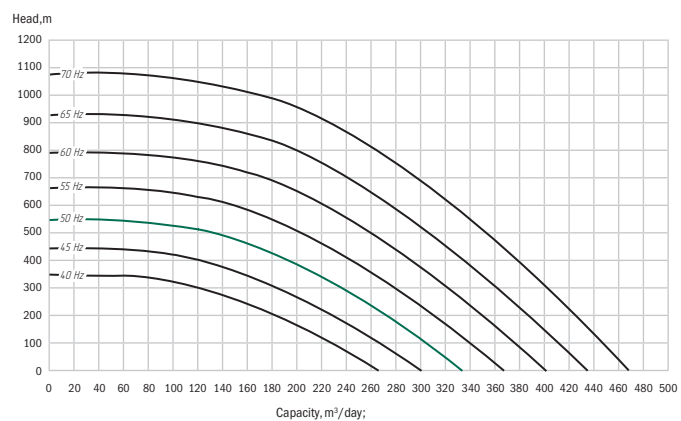
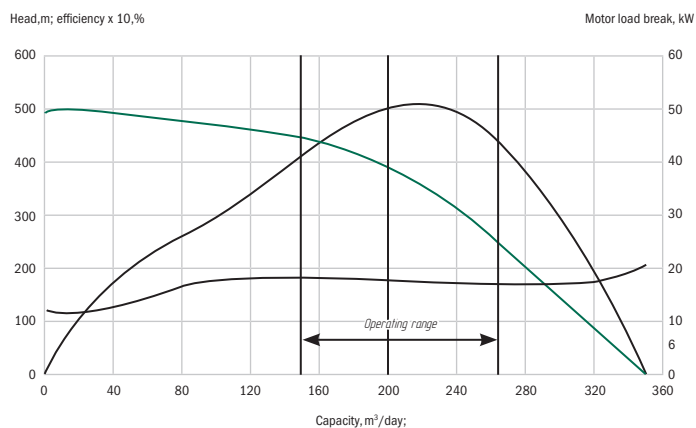
Assembly	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
Number of stages, pcs.	398	420	437	459	481	503	525	542	564	586	608	630	647	669	691	713	735
Head at 50 Hz, m	1550	1650	1700	1800	1900	1950	2050	2100	2200	2300	2350	2450	2500	2600	2700	2800	2850
Motor load brake at 50 Hz, kW	70,45	74,34	77,35	81,24	85,14	89,03	92,93	95,93	99,83	103,72	107,62	111,51	114,52	118,41	122,31	126,20	130,10
Weight, kg	656	687	730	761	792	823	854	897	928	959	990	1021	1064	1095	1126	1157	1188

Pump sections number and length



Pump specification 052A-ESP CW S-200(cpi),
capacity Q = 200 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=200 m³/day; H=390 m; N=17,7 kW; $\eta=50\%$

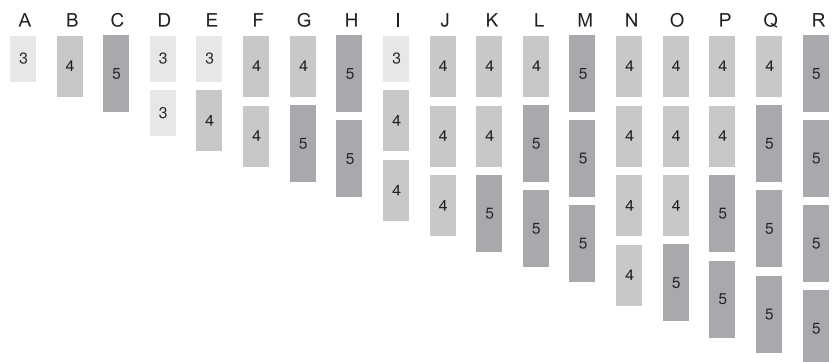
052A-ESP CW S-200(cpi) head rating at various rpm;
number of stages =100



Pump 222(224)A-ESP CW M-25(cpi)

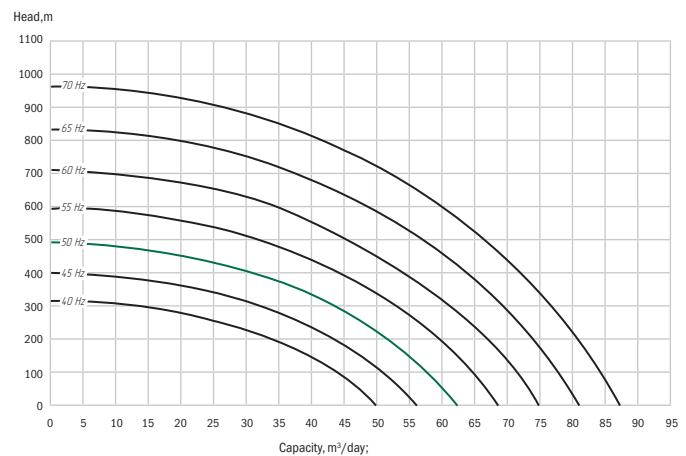
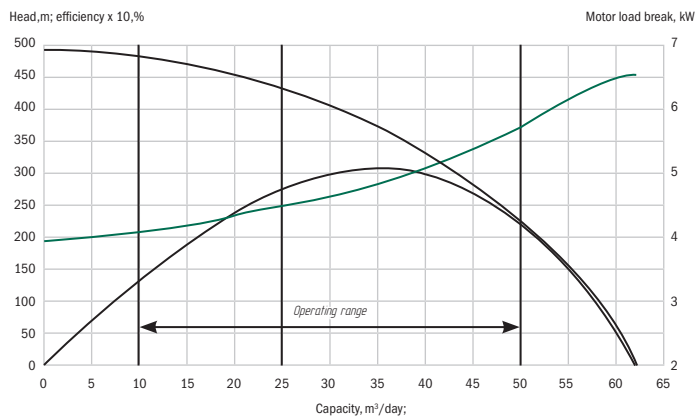
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	111	149	188	222	260	298	337	376	409	447	486	525	564	596	635	675	713	752
Head at 50 Hz, m	500	650	800	950	1150	1300	1450	1600	1800	1900	2100	2300	2450	2600	2750	2950	3100	3250
Motor load brake at 50 Hz, kW	4,98	6,69	8,44	9,97	11,67	13,38	15,13	16,88	18,36	20,07	21,82	23,57	25,32	26,76	28,51	30,31	32,01	33,76
Weight, kg	147	187	230	282	322	362	405	448	497	537	580	623	666	712	755	801	841	884

Pump sections number and length



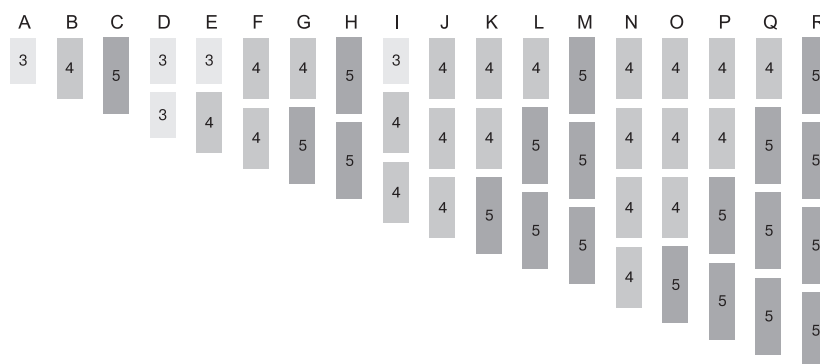
Pump specification 222(224)A-ESP CW M-25(cpi),
capacity Q = 25 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=25 m³/day; H=435 m; N=4,49 kW; $\eta=27,5\%$

222(224)A-ESP CW M-25(cpi) head rating at various rpm;
number of stages =100



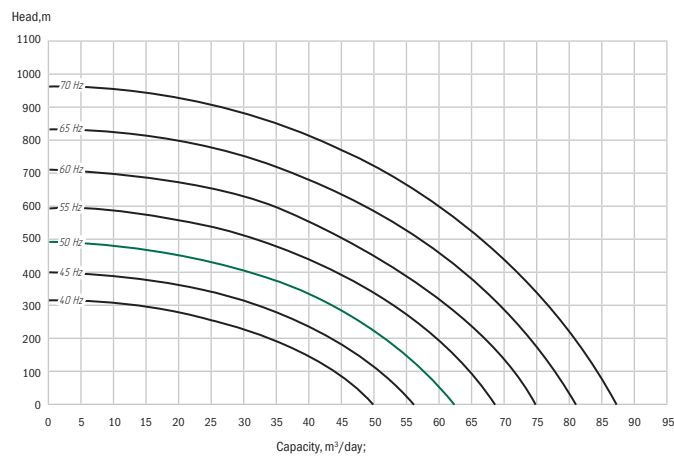
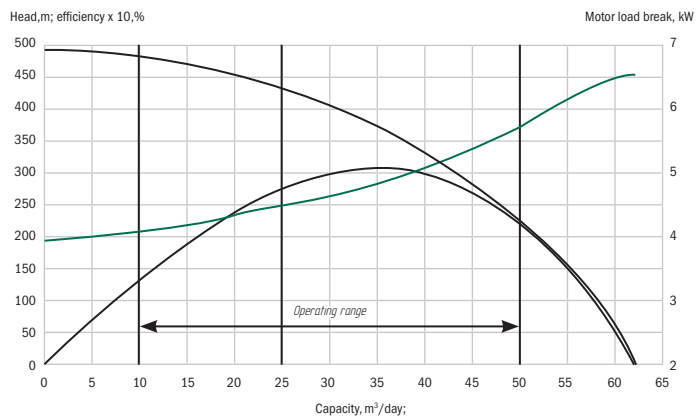
Pump 022A-ESP CW M-25(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	117	157	195	234	274	314	352	390	431	471	509	547	585	628	666	704	742	780
Head at 50 Hz, m	500	700	850	1000	1200	1350	1550	1700	1850	2050	2200	2400	2550	2750	2900	3050	3250	3400
Motor load brake at 50 Hz, kW	5,25	7,05	8,76	10,51	12,30	14,10	15,80	17,51	19,35	21,15	22,85	24,56	26,27	28,20	29,90	31,61	33,32	35,02
Weight, kg	144	184	227	279	319	359	402	445	494	534	577	620	663	709	752	795	838	881



Pump specification 022A-ESP CW M-25(cpi),
capacity Q = 25 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=25 m³/day; H=435 m; N=4,49 kW; $\eta=27,5\%$

022A-ESP CW M-25(cpi) head rating at various rpm;
number of stages =100



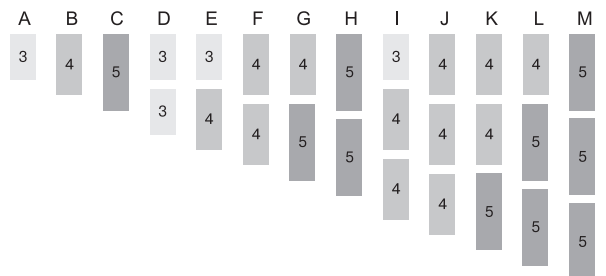
Pump 022A-ESP CW M-35I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	109	146	183	218	255	292	329	366	401	438	475	512	549
Head at 50 Hz, m	700	900	1150	1350	1600	1850	2050	2300	2550	2750	3000	3250	3450
Motor load brake at 50 Hz, kW	8,15	10,92	13,69	16,31	19,07	21,84	24,61	27,38	29,99	32,76	35,53	38,30	41,07
Weight, kg	141	199	217	270	328	386	404	422	515	573	591	609	627
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	*	*

Pump 022A-ESP CW S-35I (0,5 m - clearance between bearings)

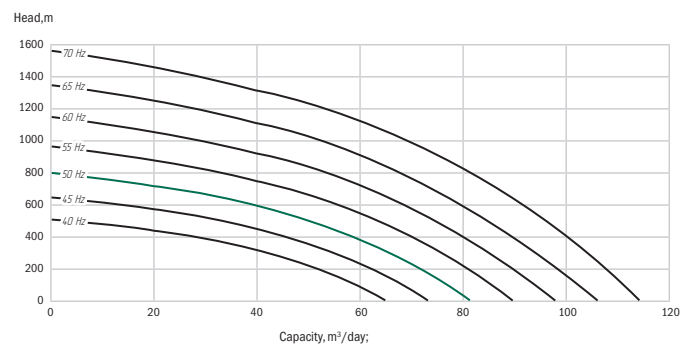
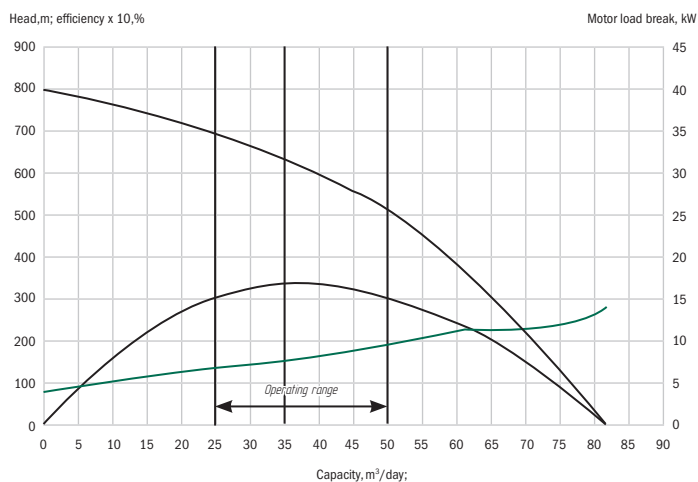
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	117	156	195	234	273	312	351	390	429	468	507	546	585
Head at 50 Hz, m	750	1000	1200	1450	1700	1950	2200	2450	2700	2950	3200	3450	3700
Motor load brake at 50 Hz, kW	8,75	11,67	14,59	17,50	20,42	23,34	26,25	29,17	32,09	35,01	37,92	40,84	43,76
Weight, kg	141	199	217	270	328	386	404	422	515	573	591	609	627
Load on the hydro-protector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	*	*

Pump sections number and length



Pump specification 022A-ESP CW M-35I,
capacity Q = 35 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=35 m³/day; H=630 m; N=7,48 kW; $\eta=33,5\%$

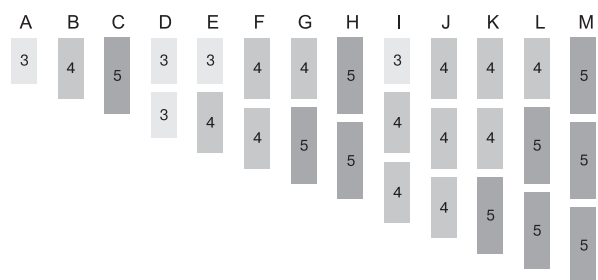
022A-ESP CW M-35I head rating at various rpm;
number of stages =100



Pump 222(224)A-ESP CW M-35I(cpi)

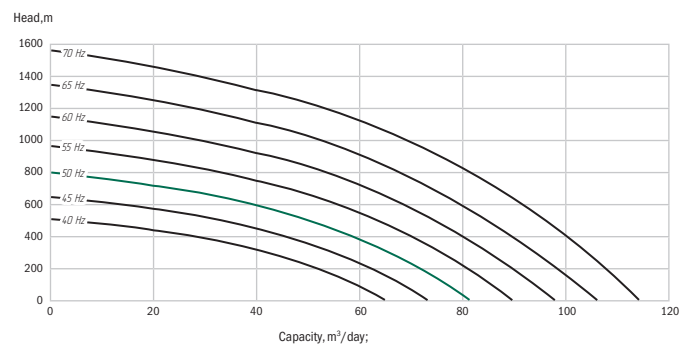
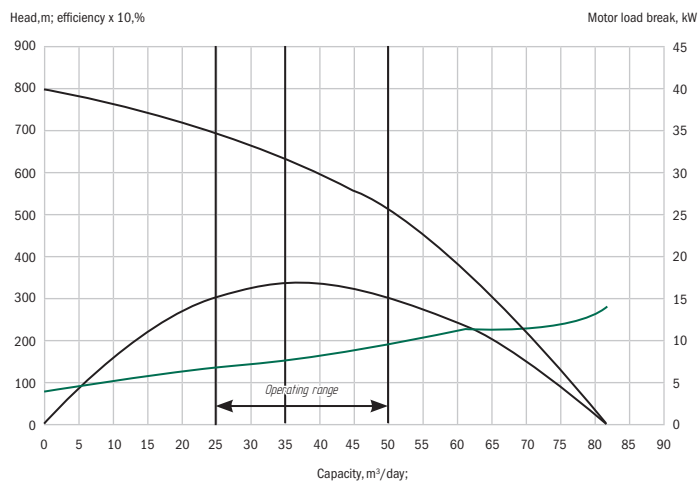
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	112	151	190	224	263	302	341	380	414	453	492	531	570
Head at 50 Hz, m	700	950	1200	1400	1650	1900	2150	2400	2600	2850	3100	3350	3600
Motor load brake at 50 Hz, kW	8,38	11,29	14,21	16,76	19,67	22,59	25,51	28,42	30,97	33,88	36,80	39,72	42,64
Weight, kg	153	192	231	285	324	363	402	441	495	534	573	612	651

Pump sections number and length



Pump specification 222(224)A-ESP CW M-35I(cpi),
capacity Q = 35 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=35 m³/day; H=630 m; N=7,48 kW; $\eta=33,5\%$

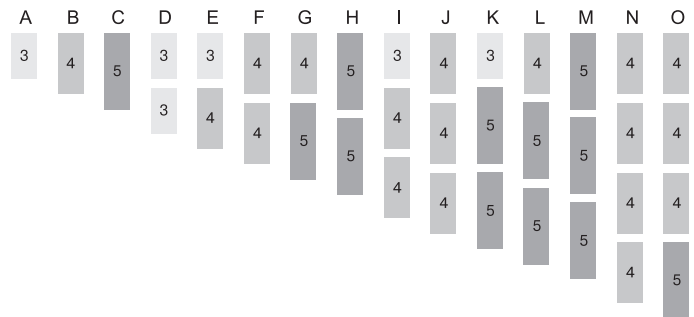
222(224)A-ESP CW M-35I(cpi) head rating at various rpm;
number of stages =100



Pump A-ESP C M-50(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	112	151	190	224	263	302	341	380	414	453	492	531	570	604	643
Head at 50 Hz, m	600	800	1000	1200	1450	1650	1850	2100	2250	2450	2700	2900	3100	3300	3500
Motor load brake at 50 Hz, kW	8,78	11,84	14,90	17,56	20,62	23,68	26,73	29,79	32,46	35,52	38,57	41,63	44,69	47,35	50,41
Weight, kg	166	205	247	320	359	398	440	482	552	591	636	675	717	784	826

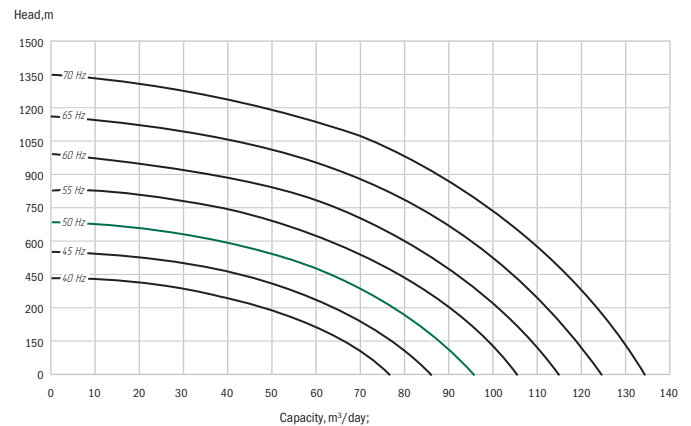
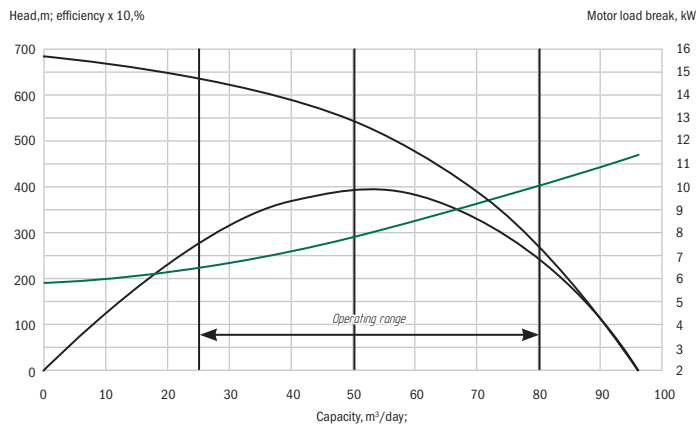
Pump sections number and length



Pump specification A-ESP C M-50(cpi)

capacity $Q = 50 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 50 \text{ m}^3/\text{day}$; $H = 545 \text{ m}$; $N = 7,84 \text{ kW}$; $\eta = 39,5\%$

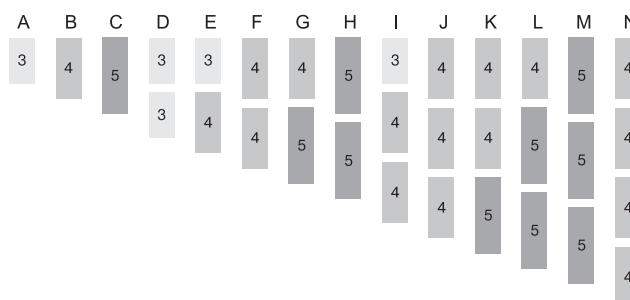
A-ESP C M-50(cpi) head rating at various rpm; number of stages = 100



Pump 222(224)A-ESP CW M-50(cpi)

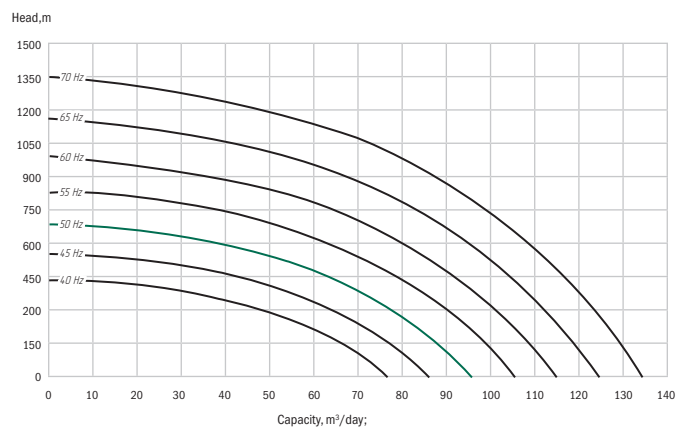
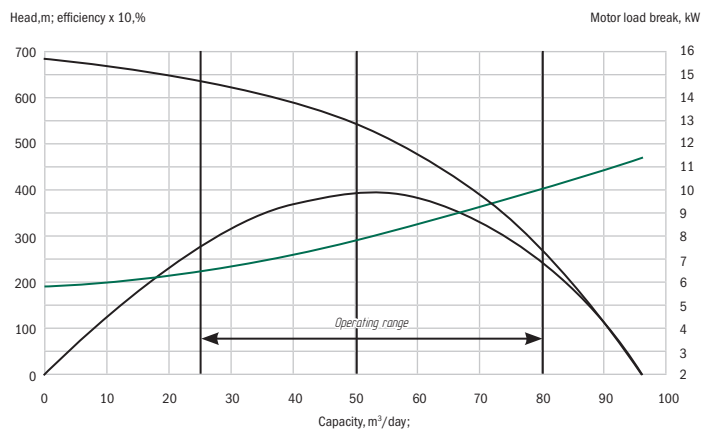
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	112	151	190	224	263	302	341	380	414	453	492	531	570	604
Head at 50 Hz, m	600	800	1050	1200	1450	1650	1850	2050	2250	2450	2700	2900	3100	3300
Motor load brake at 50 Hz, kW	8,78	11,84	14,90	17,56	20,62	23,68	26,73	29,79	32,46	35,52	38,57	41,63	44,69	47,35
Weight, kg	157	197	237	295	335	375	415	455	513	553	593	633	673	731

Pump sections number and length



Pump specification 222(224)A-ESP CW M-50(cpi)
 capacity $Q = 50 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg/m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=50 \text{ m}^3/\text{day}$; $H=545 \text{ m}$; $N=7,84 \text{ kW}$; $\eta=39,5\%$

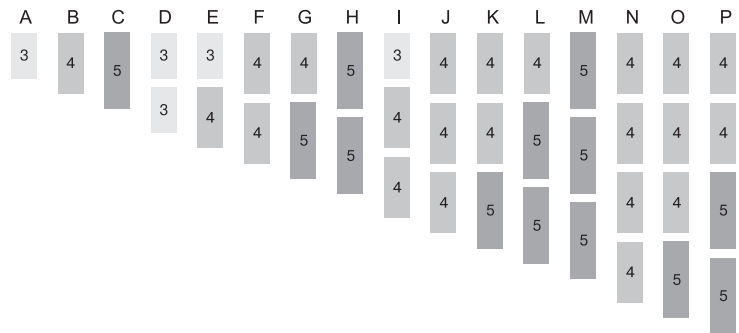
222(224)A-ESP CW M-50(cpi) head rating at various rpm;
 number of stages =100



Pump 002A-ESP C M-50(cpi)

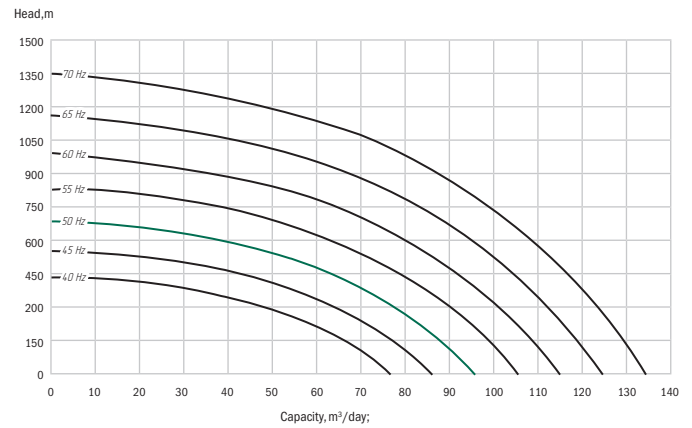
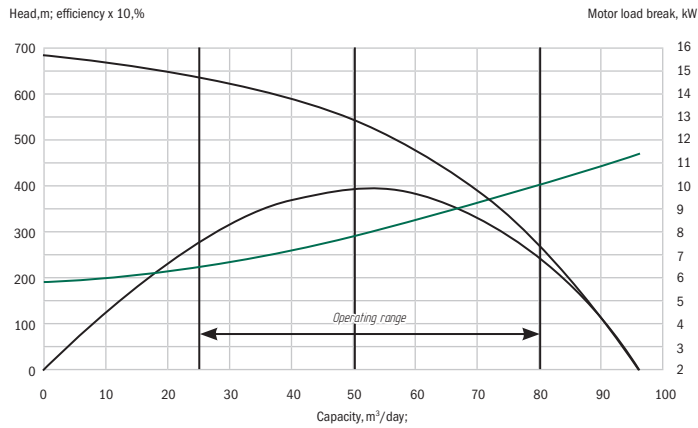
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	118	158	197	236	276	316	355	394	434	474	513	552	591	632	671	710
Head at 50 Hz, m	650	850	1050	1300	1500	1700	1950	2150	2350	2600	2800	3000	3200	3450	3650	3850
Motor load brake at 50 Hz, kW	9,25	12,39	15,44	18,50	21,64	24,77	27,83	30,89	34,03	37,16	40,22	43,28	46,33	49,55	52,61	55,66
Weight, kg	141	180	219	270	309	348	387	426	477	516	555	594	633	684	723	762

Pump sections number and length



Pump specification 002A-ESP C M-50(cpi)
 capacity $Q = 50 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=50 \text{ m}^3/\text{day}$; $H=545 \text{ m}$; $N=7,84 \text{ kW}$; $\eta=39,5\%$

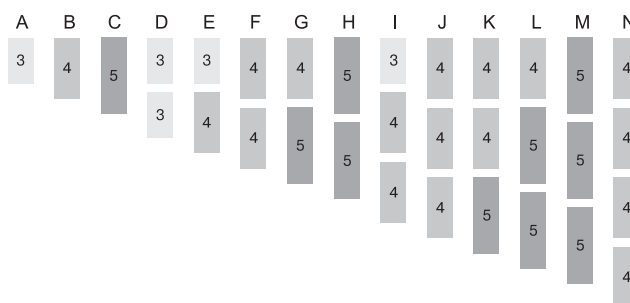
002A-ESP C M-50(cpi) head rating at various rpm;
 number of stages =100



Pump 022A-ESP CW M-50(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	112	151	191	224	263	302	342	382	414	453	493	533	573	604
Head at 50 Hz, m	600	800	1050	1200	1450	1650	1850	2050	2250	2450	2700	2900	3100	3300
Motor load brake at 50 Hz, kW	8,78	11,84	14,97	17,56	20,62	23,68	26,81	29,95	32,46	35,52	38,65	41,79	44,92	47,35
Weight, kg	152	192	232	257	288	328	358	398	424	464	494	524	564	600

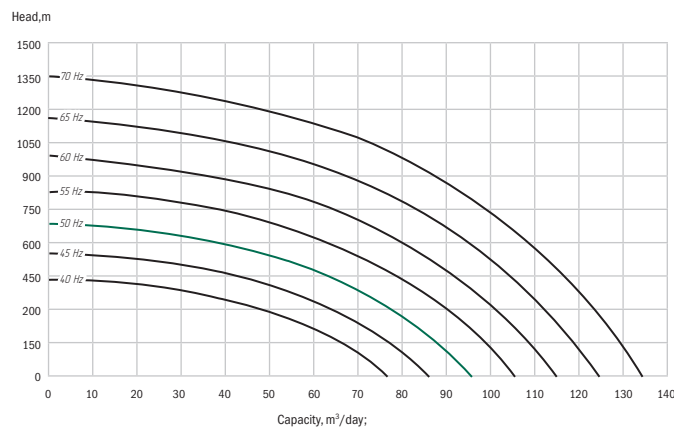
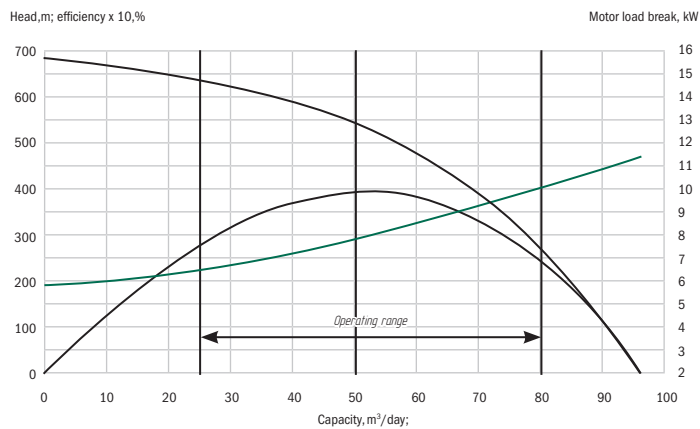
Pump sections number and length



Pump specification 022A-ESP CW M-50(cpi)

capacity $Q = 50 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 50 \text{ m}^3/\text{day}$; $H = 545 \text{ m}$; $N = 7,84 \text{ kW}$; $\eta = 39,5\%$

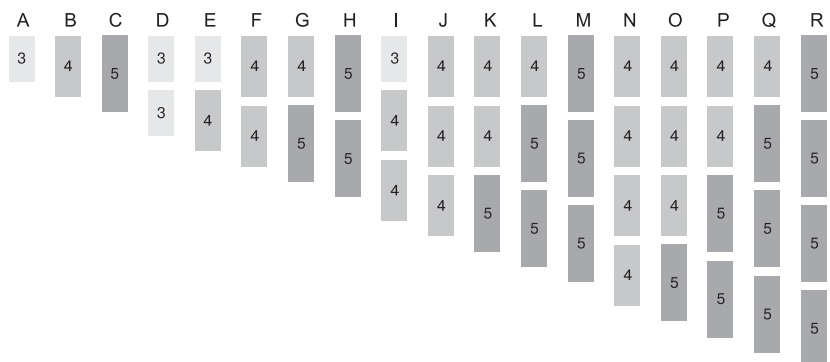
022A-ESP CW M-50(cpi) head rating at various rpm; number of stages = 100



Pump 052A-ESP CW M-50(cpi)

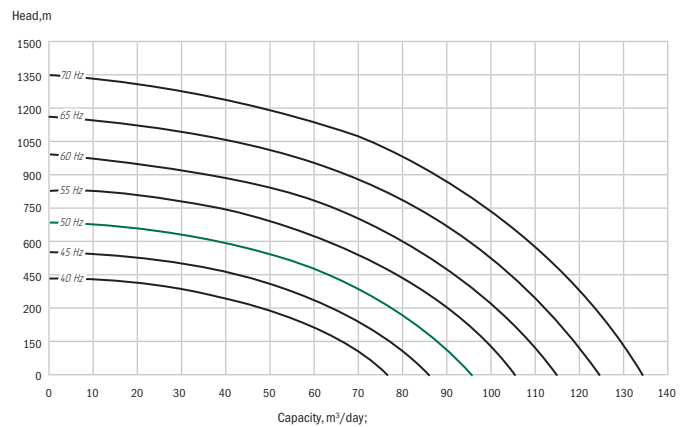
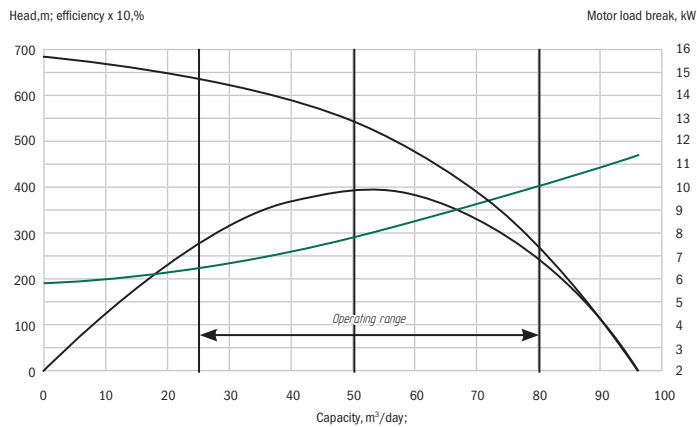
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	93	126	159	186	219	252	285	318	345	378	411	444	477	504	537	570	603	636
Head at 50 Hz, m	500	650	850	1000	1200	1350	1550	1700	1850	2050	2250	2400	2600	2750	2900	3100	3250	3450
Motor load brake at 50 Hz, kW	7,29	9,88	12,47	14,58	17,17	19,76	22,34	24,93	27,05	29,64	32,22	34,81	37,40	39,51	42,10	44,69	47,28	49,86
Weight, kg	178	219	261	337	378	419	461	503	578	619	661	703	745	819	861	903	945	987

Pump sections number and length



Pump specification 052A-ESP CW M-50(cpi)
 capacity $Q = 50 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=50 \text{ m}^3/\text{day}$; $H=545 \text{ m}$; $N=7,84 \text{ kW}$; $\eta=39,5\%$

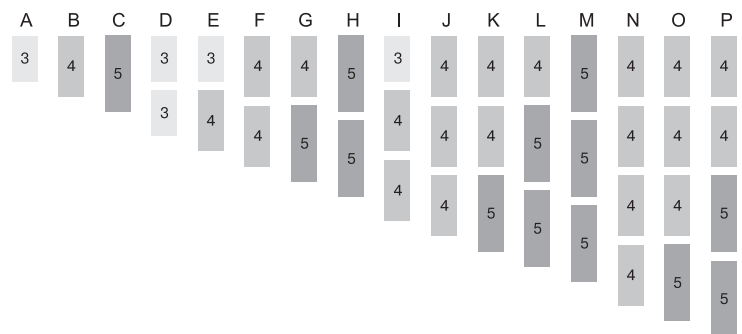
052A-ESP CW M-50(cpi) head rating at various rpm;
 number of stages =100



Pump A-ESP C M-80(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	105	142	179	210	247	284	321	358	389	426	463	500	537	568	605	642
Head at 50 Hz, m	550	750	950	1100	1300	1500	1700	1900	2050	2250	2450	2650	2850	3000	3200	3400
Motor load brake at 50 Hz, kW	10,64	14,38	18,13	21,27	25,02	28,77	32,52	36,27	39,41	43,15	46,90	50,65	54,40	57,54	61,29	65,03
Weight, kg	166	205	247	320	359	398	440	482	552	591	633	675	717	784	826	868

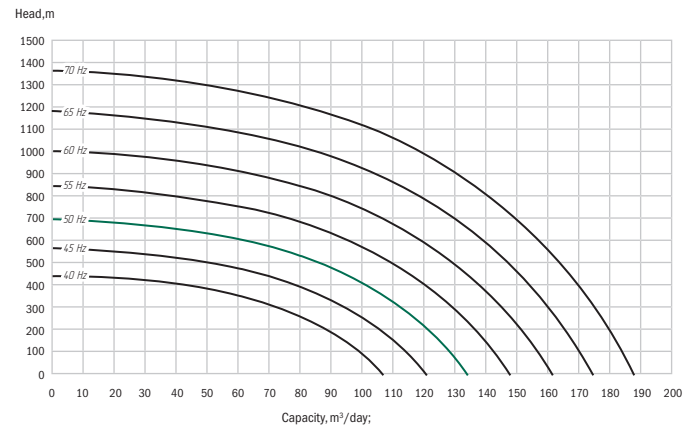
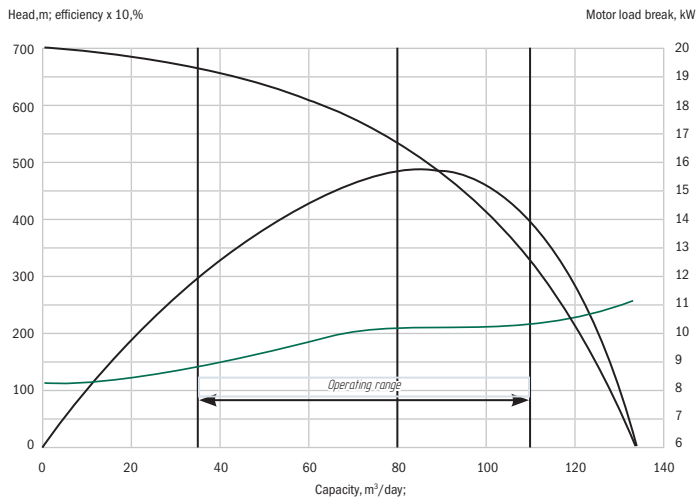
Pump sections number and length



Pump specification A-ESP C M-80(cpi)

capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 80 \text{ m}^3/\text{day}$; $H = 535 \text{ m}$; $N = 10,13 \text{ kW}$; $\eta = 48\%$

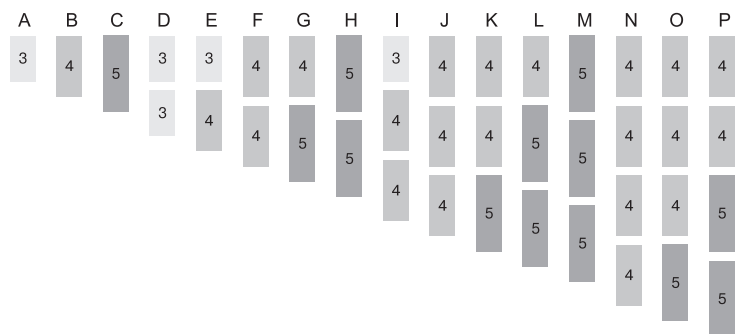
A-ESP C M-80(cpi) head rating at various rpm; number of stages = 100



Pump 002A-ESP C M-80(cpi)

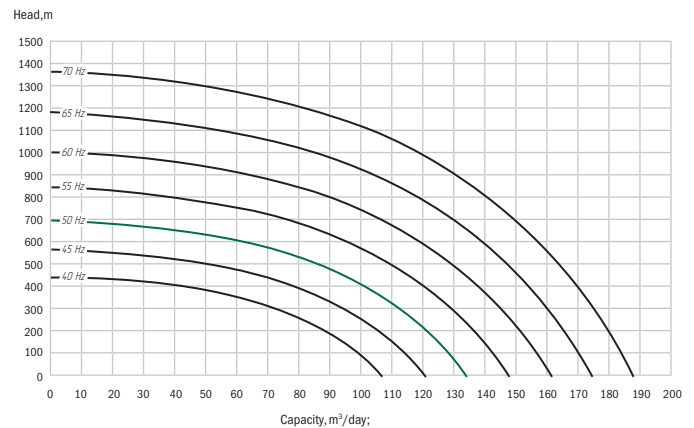
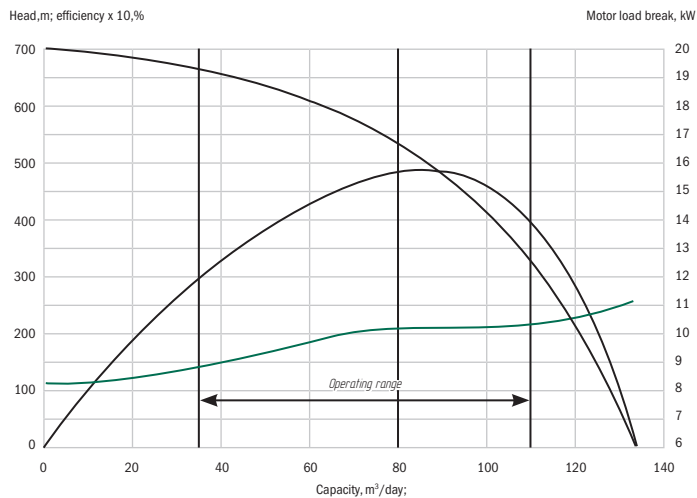
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	111	148	185	222	259	296	333	370	407	444	481	518	555	592	629	666
Head at 50 Hz, m	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2550	2750	2950	3150	3350	3550
Motor load brake at 50 Hz, kW	11,24	14,99	18,74	22,49	26,24	29,98	33,73	37,48	41,23	44,98	48,73	52,47	56,22	59,97	63,72	67,47
Weight, kg	136	173	204	260	297	334	365	396	458	495	526	557	588	656	687	718

Pump sections number and length



Pump specification 002A-ESP C M-80(cpi)
 capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 80 \text{ m}^3/\text{day}$; $H = 535 \text{ m}$; $N = 10, 13 \text{ kW}$; $\eta = 48\%$

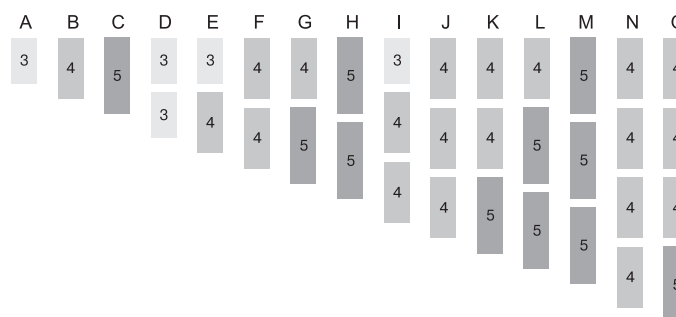
002A-ESP C M-80(cpi) head rating at various rpm;
 number of stages = 100



Pump 222(224)A-ESP CW M-80(cpi)

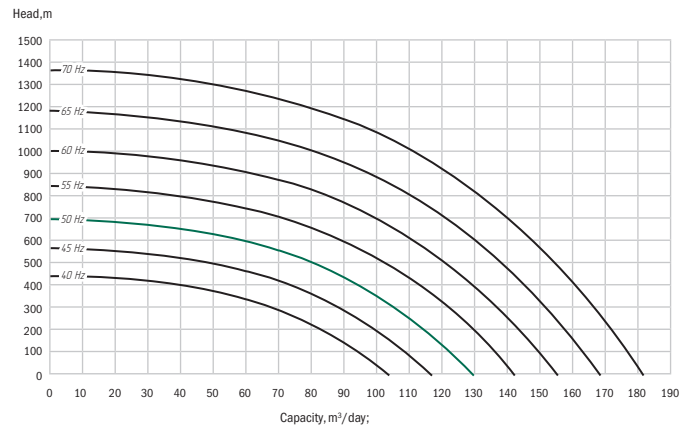
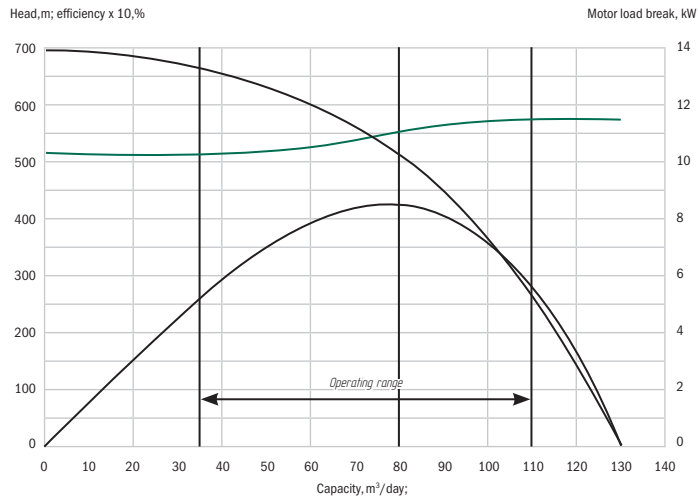
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	105	142	178	210	247	284	320	356	389	426	462	498	534	568	604
Head at 50 Hz, m	550	700	900	1050	1250	1450	1650	1800	2000	2200	2350	2550	2700	2900	3100
Motor load brake at 50 Hz, kW	11,59	15,68	19,65	23,18	27,27	31,35	35,33	39,30	42,95	47,03	51,00	54,98	58,95	62,71	66,68
Weight, kg	157	197	237	295	335	375	415	455	513	553	593	633	673	731	771

Pump sections number and length



Pump specification 222(224)A-ESP CW M-80(cpi)
 capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=80 \text{ m}^3/\text{day}$; $H=510 \text{ m}$; $N=11 \text{ kW}$; $\eta=42\%$

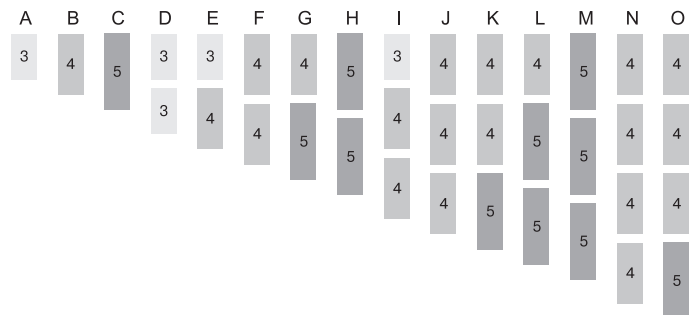
222(224)A-ESP CW M-80(cpi) head rating at various rpm;
 number of stages =100



Pump 022A-ESP CW M-80(cpi)

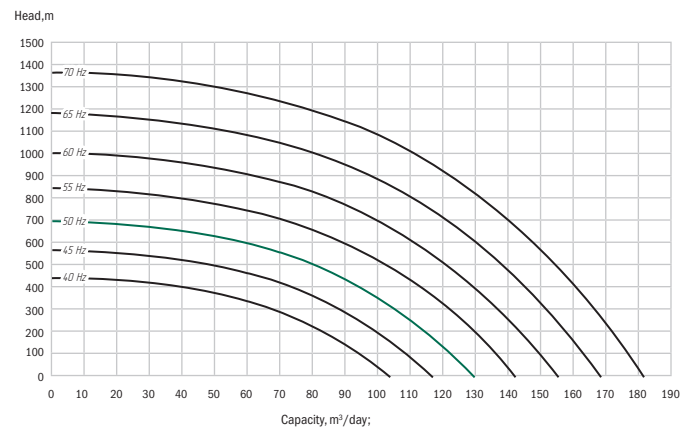
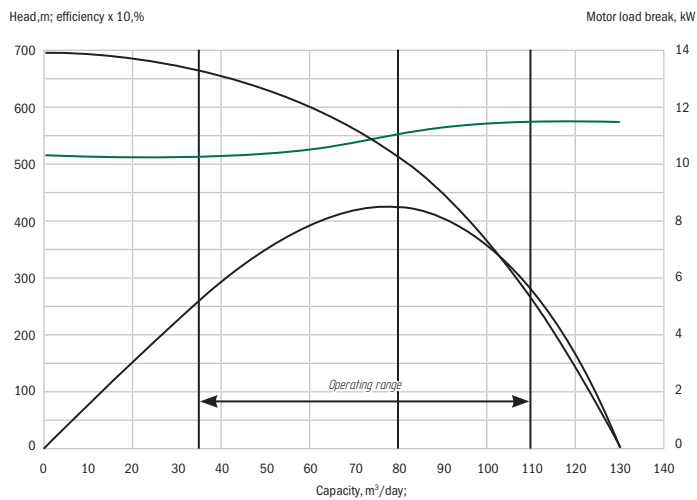
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	105	142	179	210	247	284	321	358	389	426	463	500	537	568	605
Head at 50 Hz, m	500	700	900	1050	1250	1450	1600	1800	2000	2150	2350	2550	2700	2900	3050
Motor load brake at 50 Hz, kW	11,59	15,68	19,76	23,18	27,27	31,35	35,44	39,52	42,95	47,03	51,12	55,20	59,28	62,71	66,79
Weight, kg	152	192	232	257	288	328	358	398	424	464	494	524	564	600	630

Pump sections number and length



Pump specification 022A-ESP CW M-80(cpi)
 capacity $Q = 80 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=80 \text{ m}^3/\text{day}$; $H=510 \text{ m}$; $N=11 \text{ kW}$; $\eta=42\%$

022A-ESP CW M-80(cpi) head rating at various rpm;
 number of stages =100

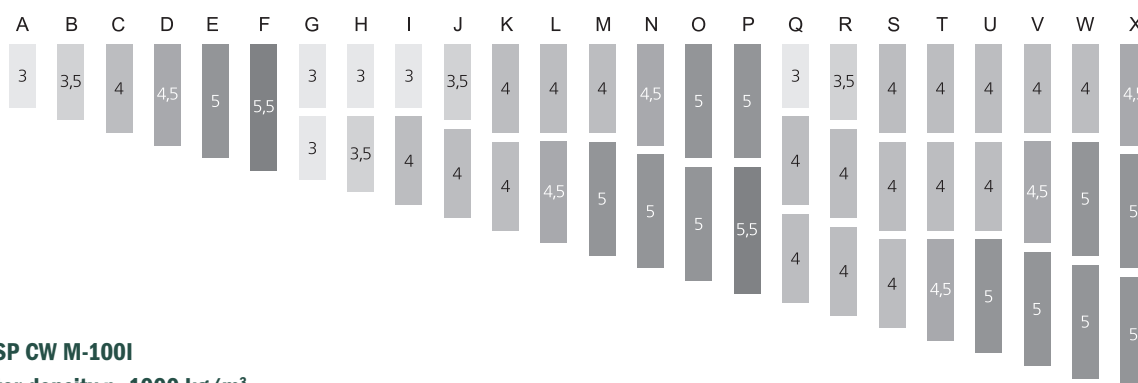


Pump 0215 A-ESP CW M-100I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L
Number of stages, pcs.	99	116	132	149	166	183	198	215	231	248	264	281
Head at 50 Hz, m	752	882	1003	1132	1262	1391	1505	1634	1756	1885	2006	2136
Motor load brake at 50 Hz, kW	16,14	18,91	21,52	24,29	27,06	29,83	32,27	35,05	37,65	40,42	43,03	45,80
Load on the hydro-protector reinforced bearing, kgf	199	233	265	300	334	368	398	432	465	499	531	565
Weight, kg	153	172	195	214	236	255	292	311	334	353	376	395

Assembly	M	N	O	P	Q	R	S	T	U	V	W	X
Number of stages, pcs.	298	315	332	349	363	380	396	413	430	447	464	481
Head at 50 Hz, m	2265	2394	2523	2652	2759	2888	3010	3139	3268	3397	3526	3656
Motor load brake at 50 Hz, kW	48,57	51,35	54,12	56,89	59,17	61,94	64,55	67,32	70,09	72,86	75,63	78,40
Load on the hydro-protector reinforced bearing, kgf	599	633	667	701	737	764	804	830	865	899	943	967
Weight, kg	417	436	458	477	515	534	557	576	598	617	639	658

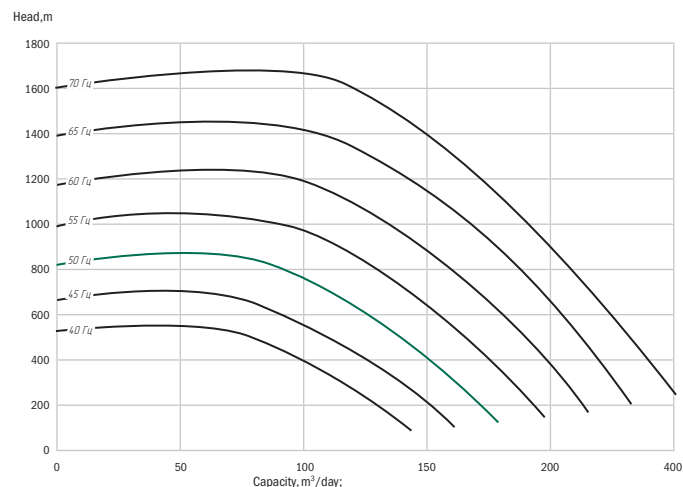
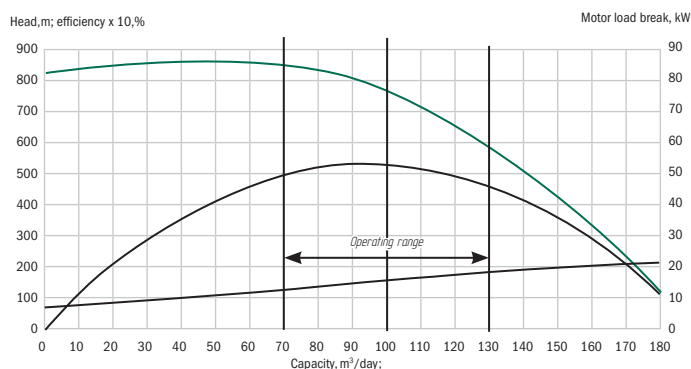
Pump sections number and length



Pump specification 0215 A-ESP CW M-100I

capacity $Q = 100 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 100 \text{ m}^3/\text{day}$; $H = 750 \text{ m}$; $N = 16,3 \text{ kW}$; $\eta = 53\%$

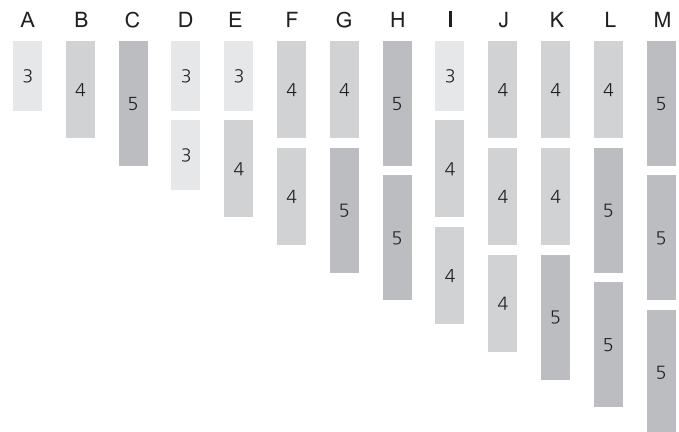
0215 A-ESP CW M-100I head rating at various rpm; number of stages = 100



Pump 0215 A-ESP CW M-125I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	92	122	153	184	214	244	275	306	336	366	397	428	459
Head at 50 Hz, m	750	1000	1250	1500	1700	1950	2200	2450	2700	2950	3200	3450	3700
Motor load brake at 50 Hz, kW	18,40	24,40	30,60	36,80	42,80	48,80	55,00	61,20	67,20	73,20	79,40	85,60	91,80
Load on the hydroprotector reinforced bearing, kgf	*	*	*	*	*	633	714	794	872	950	1030	1111	1191
Weight, kg	153	195	236	292	334	376	417	458	515	557	598	639	680

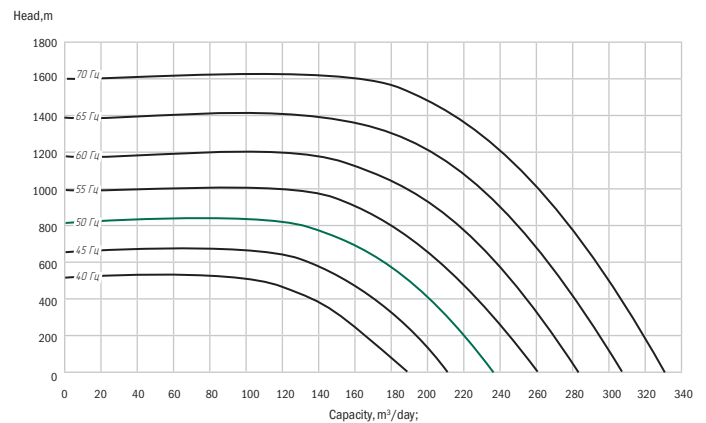
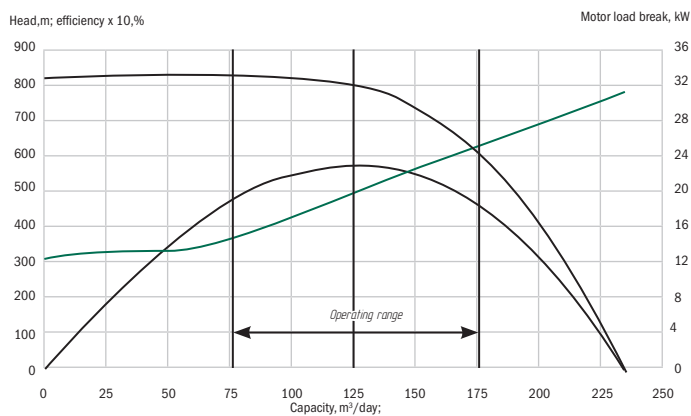
Pump sections number and length



Pump specification 0215 A-ESP CW M-125I

capacity $Q = 125 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 125 \text{ m}^3/\text{day}$; $H = 805 \text{ m}$; $N = 20 \text{ kW}$; $\eta = 57\%$

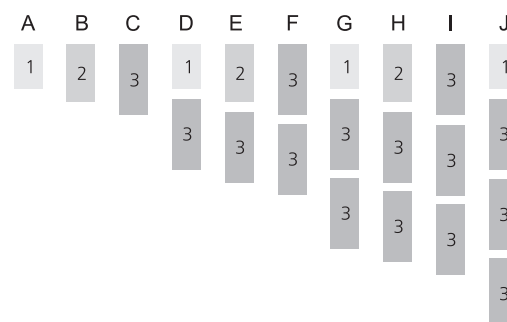
0215 A-ESP CW M-125I head rating at various rpm; number of stages = 100



Pump 0615 A-ESP CW M-125I(cpi)

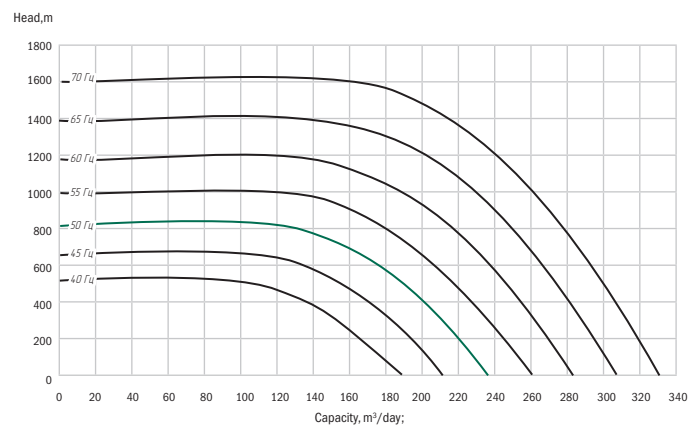
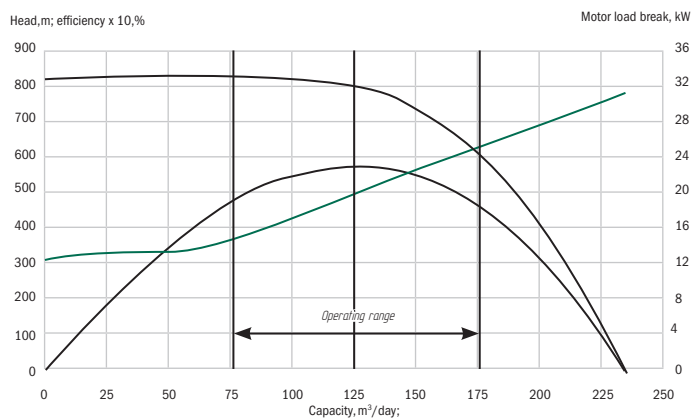
Assembly	A	B	C	D	E	F	G	H	I	J
Number of stages, pcs.	26	57	90	116	147	180	206	237	270	296
Head at 50 Hz, m	200	450	700	950	1200	1450	1650	1900	2150	2400
Motor load brake at 50 Hz, kW	5,20	11,40	18,00	23,20	29,40	36,00	41,20	47,40	54,00	59,20
Load on the hydroprotector reinforced bearing, kgf	*	532	840	1085	1373	1680	1924	2213	2521	2764
Weight, kg	65	106	144	195	236	274	325	366	404	455

Pump sections number and length



Pump specification 0615 A-ESP CW M-125I(cpi)
capacity Q = 125 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=125 m³/day; H=805 m; N=20 kW; $\eta=57\%$

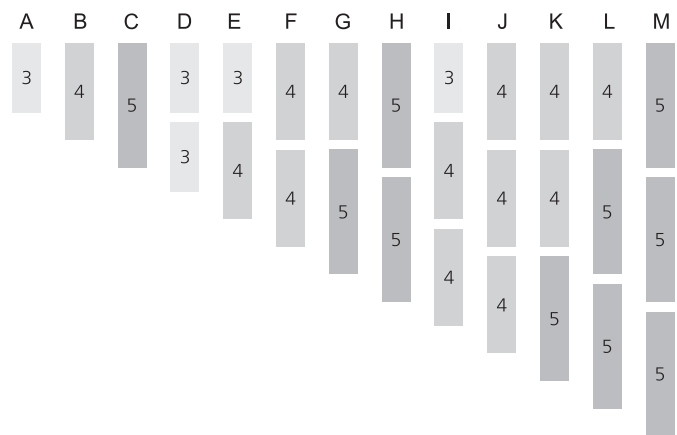
0615 A-ESP CW M-125I(cpi) head rating at various rpm;
number of stages =100



Pump 2215 A-ESP CW M-125I

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	90	121	152	180	211	242	273	304	332	363	394	425	456
Head at 50 Hz, m	700	950	1200	1450	1700	1950	2200	2450	2650	2900	3150	3400	3650
Motor load brake at 50 Hz, kW	18,00	24,20	30,40	36,00	42,20	48,40	54,60	60,80	66,40	72,60	78,80	85,00	91,20
Load on the hydroprotector reinforced bearing, kgf	*	*	*	*	*	*	*	*	*	*	*	*	*
Weight, kg	153	195	236	292	334	376	417	458	515	557	598	639	680

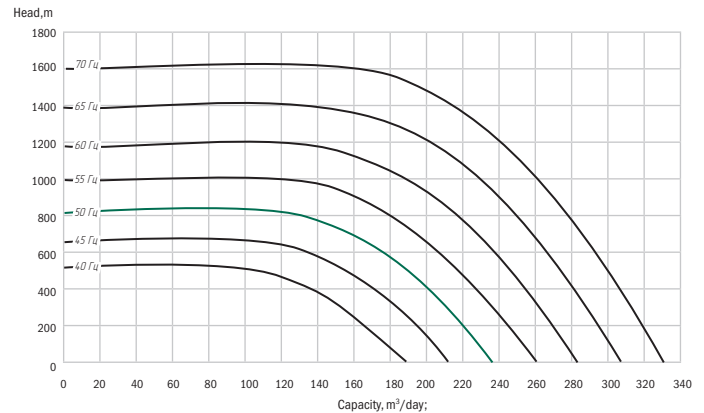
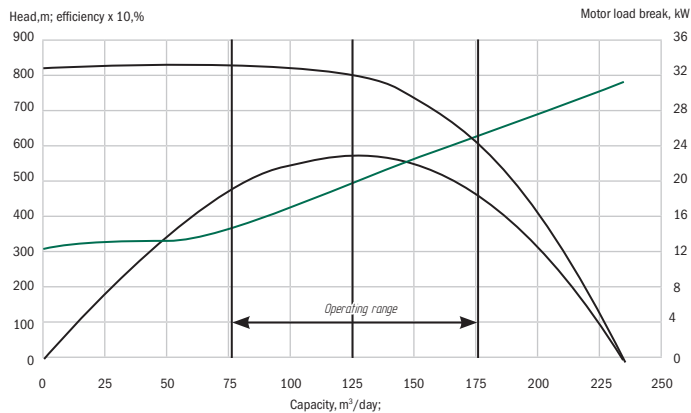
Pump sections number and length



Pump specification 2215 A-ESP CW M-125I

capacity $Q = 125 \text{ m}^3/\text{day}$; water density $\eta=1000 \text{ kg/m}^3$, rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q=125 \text{ m}^3/\text{day}$; $H=805 \text{ m}$; $N=20 \text{ kW}$; $\eta=57\%$

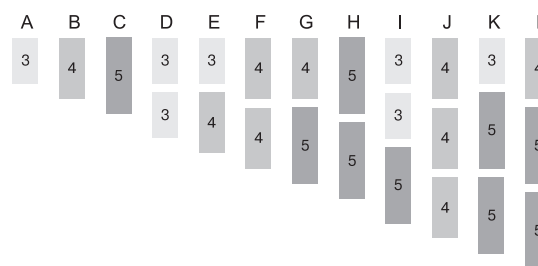
2215 A-ESP CW M-125I head rating at various rpm; number of stages =100



Pump A-ESP C M-125(cpi)

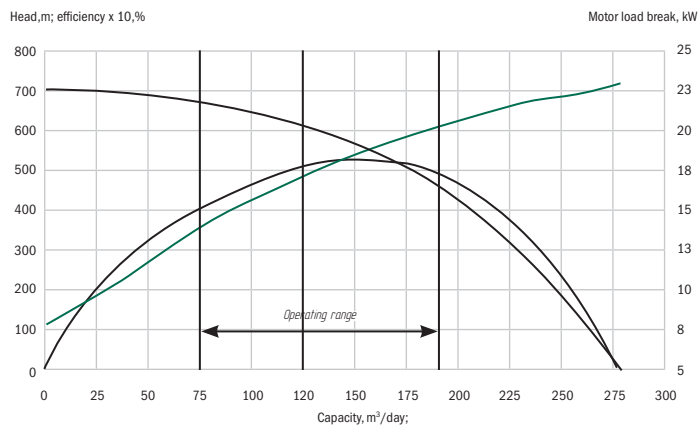
Assembly	A	B	C	D	E	F	G	H	I	J	K	L
Number of stages, pcs.	98	132	166	196	230	264	298	332	362	396	430	464
Head at 50 Hz, m	600	800	1050	1200	1400	1600	1850	2050	2250	2450	2650	2900
Motor load brake at 50 Hz, kW	16,79	22,61	28,44	33,57	39,40	45,22	51,05	56,87	62,01	67,83	73,66	79,48
Weight, kg	142	182	220	272	312	352	390	428	480	522	558	598

Pump sections number and length

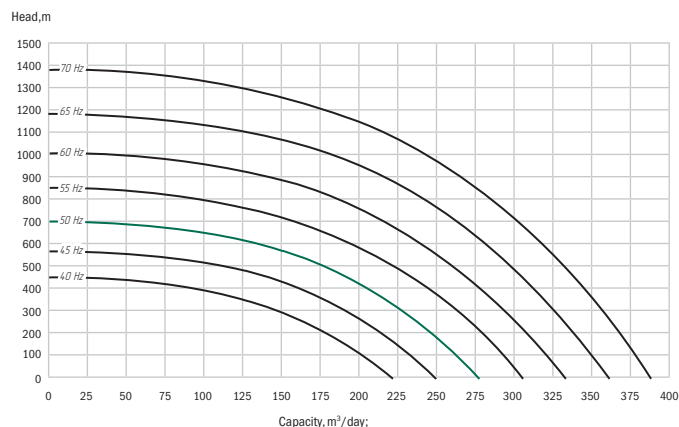


Pump specification A-ESP C M-125(cpi)

capacity $Q = 125 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
 $Q = 125 \text{ m}^3/\text{day}$; $H = 615 \text{ m}$; $N = 17,13 \text{ kW}$; $\eta = 51\%$



A-ESP C M-125(cpi) head rating at various rpm; number of stages =100



Pump 222(224)A-ESP CW M-125(cpi)

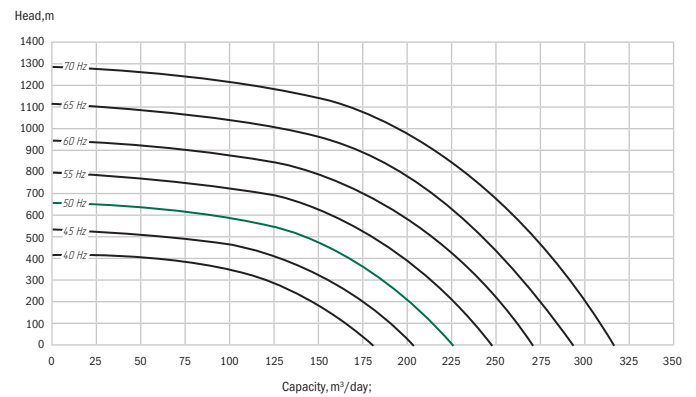
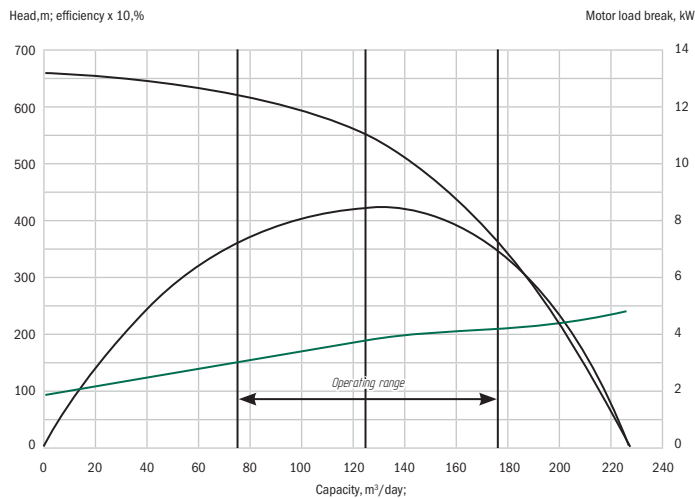
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	97	131	165	194	228	262	296	330	359	393	427	461	495	524	558	592	626
Head at 50 Hz, m	550	700	900	1050	1250	1450	1650	1800	1950	2150	2350	2550	2700	2900	3050	3250	3450
Motor load brake at 50 Hz, kW	18,04	24,37	30,69	36,08	42,41	48,73	55,06	61,38	66,77	73,10	79,42	85,75	92,07	97,46	103,79	110,11	116,62
Weight, kg	159	200	241	300	341	382	423	464	523	564	605	646	687	746	787	828	869

Pump sections number and length



Pump specification 222(224)A-ESP CW M-125(cpi)
capacity Q = 125 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=125 m³/day; H=550 m; N=18,6 kW; $\eta=42\%$

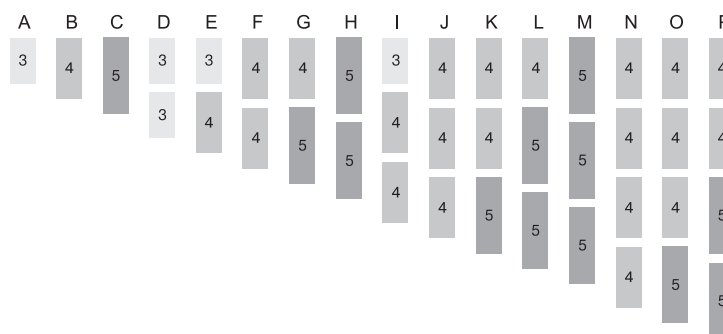
222(224)A-ESP CW M-125(cpi) head rating at various rpm;
number of stages =100



Pump 052A-ESP CW M-125(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	80	109	137	160	189	218	246	274	298	327	355	383	411	436	464	492
Head at 50 Hz, m	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700
Motor load brake at 50 Hz, kW	14,88	20,27	25,48	29,76	35,15	40,55	45,76	50,96	55,43	60,82	66,03	71,24	76,45	81,10	86,30	91,51
Weight, kg	153	193	233	288	328	368	408	448	503	543	583	623	663	718	758	798

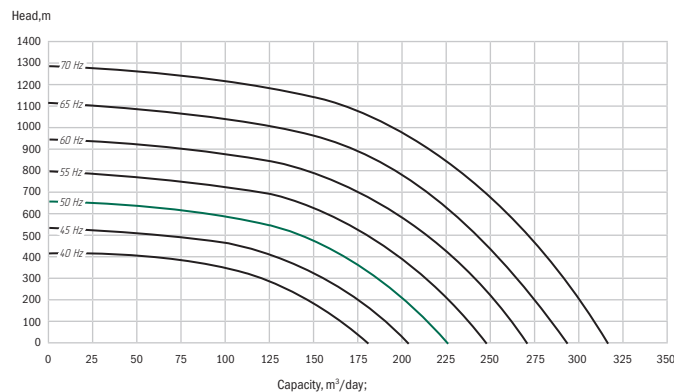
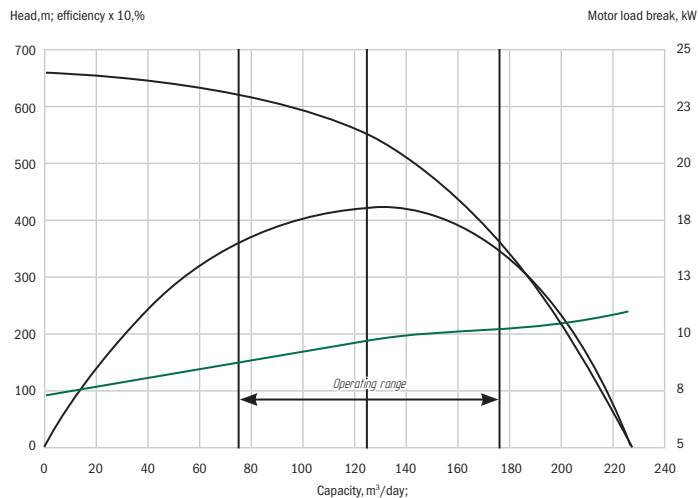
Pump sections number and length



Pump specification 052A-ESP CW M-125(cpi)

capacity $Q = 125 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 125 \text{ m}^3/\text{day}$; $H = 550 \text{ m}$; $N = 18,6 \text{ kW}$; $\eta = 42\%$

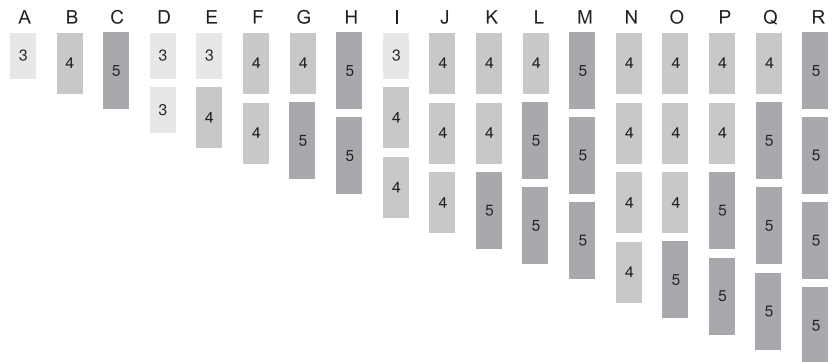
052A-ESP CW M-125(cpi) head rating at various rpm; number of stages = 100



Pump A-ESP CW M-160(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	89	121	153	178	210	242	274	306	331	363	395	427	459	484	516	548	580	612
Head at 50 Hz, m	500	650	850	1000	1150	1350	1500	1700	1800	2000	2150	2350	2550	2650	2850	3000	3200	3350
Motor load brake at 50 Hz, kW	14,57	19,81	25,05	29,14	34,38	39,62	44,85	50,09	54,18	59,42	64,66	69,90	75,14	79,23	84,47	89,71	94,95	100,18
Weight, kg	143	182	220	274	313	352	390	428	483	522	560	598	636	692	730	768	806	844

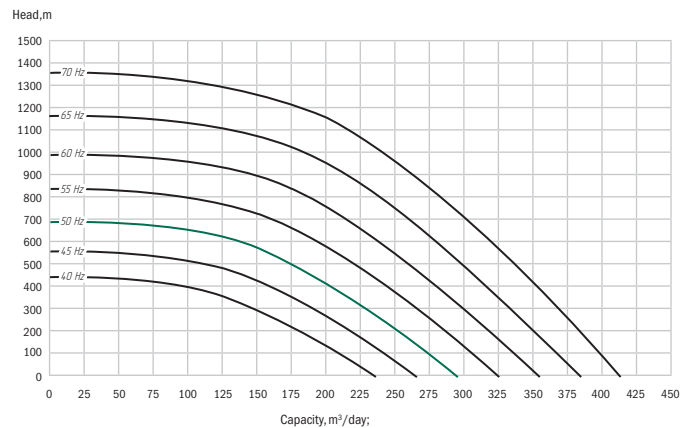
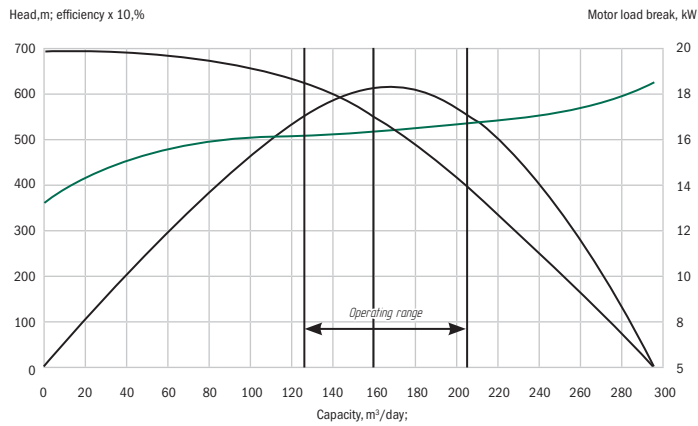
Pump sections number and length



Pump specification A-ESP CW M-160(cpi)

capacity $Q = 160 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 160 \text{ m}^3/\text{day}$; $H = 550 \text{ m}$; $N = 16,37 \text{ kW}$; $\eta = 61\%$

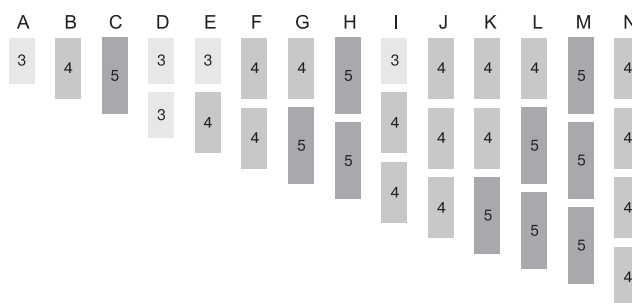
A-ESP CW M-160(cpi) head rating at various rpm; number of stages = 100



Pump 002A-ESPC M-160(cpi)

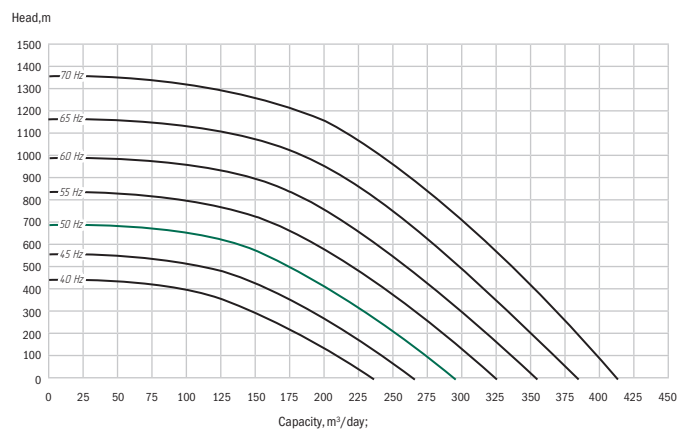
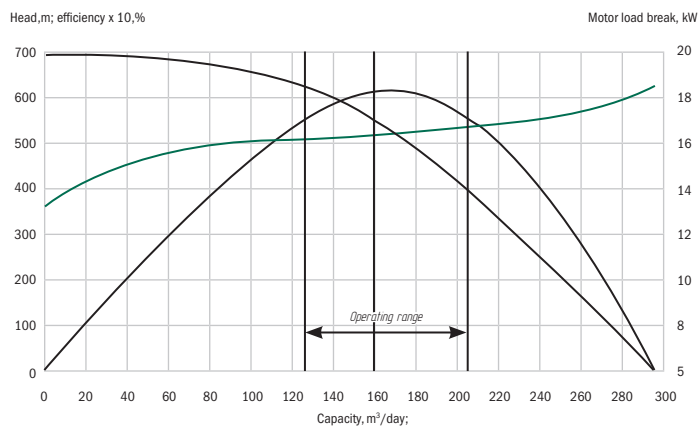
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	97	129	161	194	226	258	290	322	355	387	419	451	483	516
Head at 50 Hz, m	550	700	900	1050	1250	1400	1600	1750	1950	2150	2300	2500	2650	2850
Motor load brake at 50 Hz, kW	15,88	21,12	26,36	31,76	37,00	42,23	47,47	52,71	58,11	63,35	68,59	73,83	79,07	84,47
Weight, kg	121	153	187	230	262	294	328	362	403	435	469	503	537	576

Pump sections number and length



Pump specification 002A-ESPC M-160(cpi)
capacity Q = 160 m³/day; water density $\eta=1000 \text{ kg/m}^3$;
number of stages =100; Q=160 m³/day;
H=550 m; N=16,37 kW; $\eta=61\%$

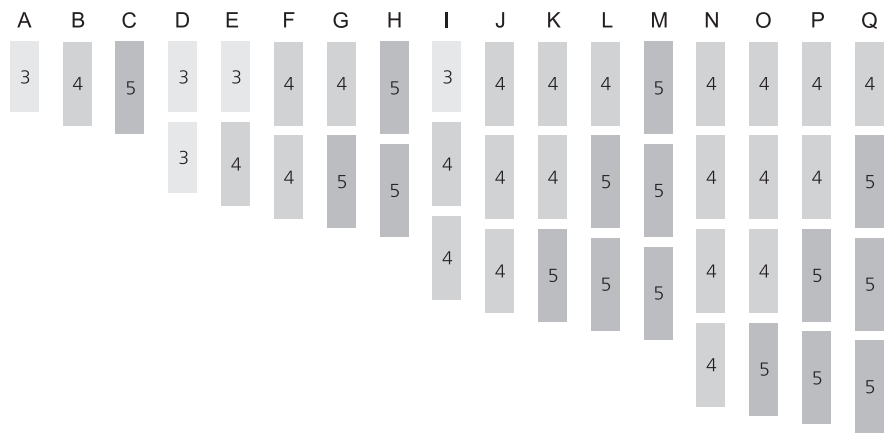
002A-ESPC M-160(cpi) head rating at various rpm;
number of stages =100



Pump 0215 A-ESP CW M-160M1

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	92	122	153	184	214	244	275	306	336	366	397	428	459	488	519	550	581
Head at 50 Hz, m	550	750	950	1150	1350	1550	1750	1900	2100	2300	2500	2700	2900	3050	3250	3450	3650
Motor load brake at 50 Hz, kW	17,28	22,91	28,73	34,56	40,19	45,82	51,65	57,47	63,10	68,73	74,56	80,38	86,19	91,65	97,47	103,29	109,11
Load on the hydro-protector reinforced bearing, kgf	1	1	1	1	1	1	1	1	1	840	910	980	1050	1120	1190	1260	1330
Weight, kg	152	194	235	291	333	375	416	457	514	556	597	638	679	737	778	819	860

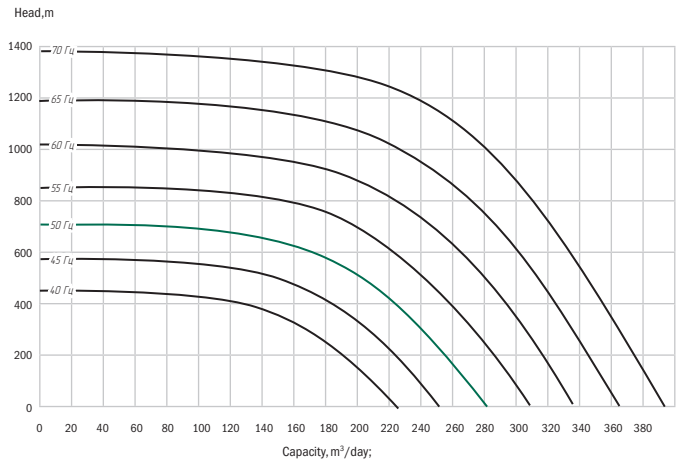
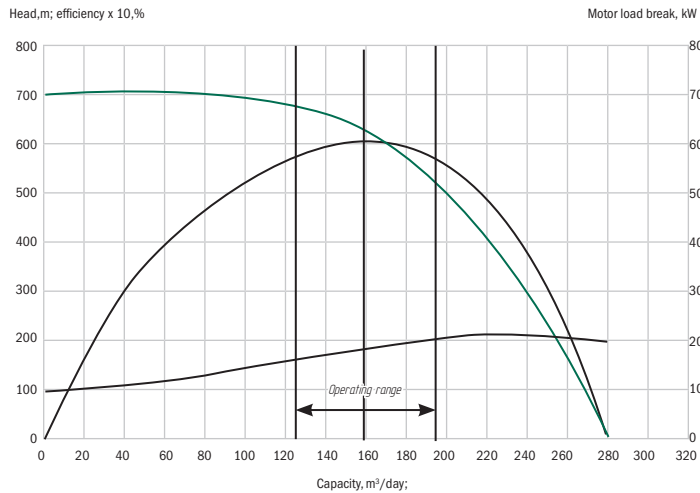
Pump sections number and length



Pump specification 0215 A-ESP CW M-160M1

capacity $Q = 160 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 160 \text{ m}^3/\text{day}$; $H = 630 \text{ m}$; $N = 18,78 \text{ kW}$; $\eta = 61\%$

0215 A-ESP CW M-160M1 head rating at various rpm; number of stages = 100



Pump 222(224)A-ESP CW M-160(cpi)

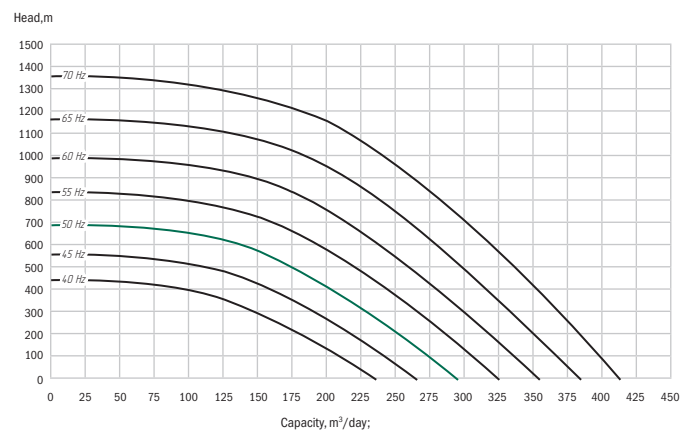
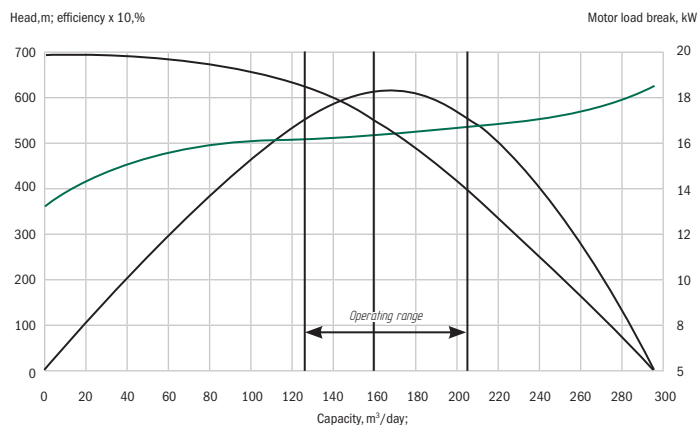
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	93	126	158	186	219	252	284	316	345	378	410	442	474	504	536	568	600	632
Head at 50 Hz, m	500	700	850	1000	1200	1400	1550	1750	1900	2100	2250	2450	2600	2750	2950	3100	3300	3500
Motor load brake at 50 Hz, kW	15,22	20,63	25,86	30,45	35,85	41,25	46,49	51,73	56,48	61,88	67,12	72,36	77,59	82,50	87,74	92,98	98,22	103,46
Weight, kg	147	187	230	282	322	362	405	448	497	537	580	623	666	712	755	798	841	884

Pump sections number and length



Pump specification 222(224)A-ESP CW M-160(cpi)
 capacity $Q = 160 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 160 \text{ m}^3/\text{day}$; $H = 550 \text{ m}$; $N = 16,37 \text{ kW}$; $\eta = 61\%$

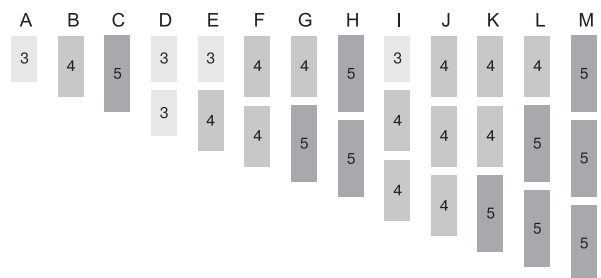
222(224)A-ESP CW M-160(cpi) head rating at various rpm;
 number of stages = 100



Pump 022A-ESP CW M-160(cpi)

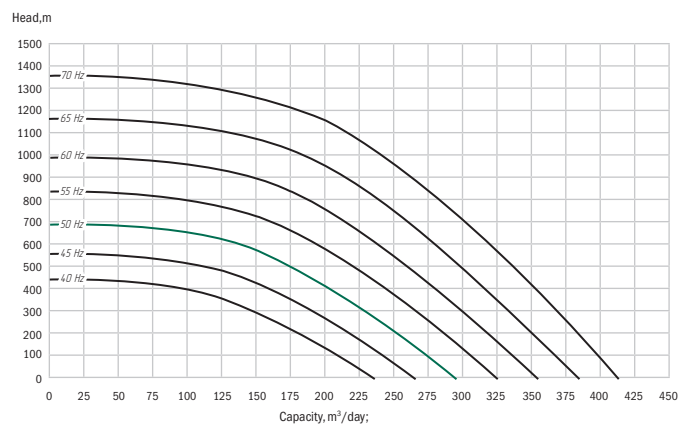
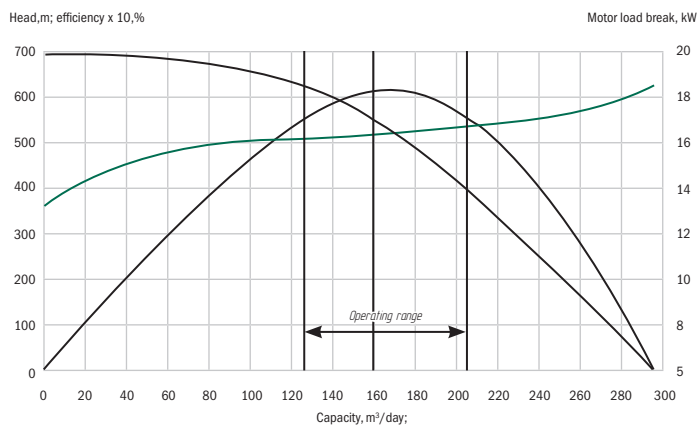
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of stages, pcs.	100	133	166	200	233	266	299	332	366	399	432	465	498
Head at 50 Hz, m	550	750	900	1100	1300	1450	1650	1850	2000	2200	2400	2550	2750
Motor load brake at 50 Hz, kW	16,37	21,77	27,17	32,74	38,14	43,54	48,95	54,35	59,91	65,32	70,72	76,12	81,52
Weight, kg	147	187	230	282	322	362	405	448	497	537	580	623	666

Pump sections number and length



Pump specification 022A-ESP CW M-160(cpi)
capacity Q = 160 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50Hz); number of stages =100;
Q=160 m³/day; H=550 m; N=16,37; $\eta=61\%$

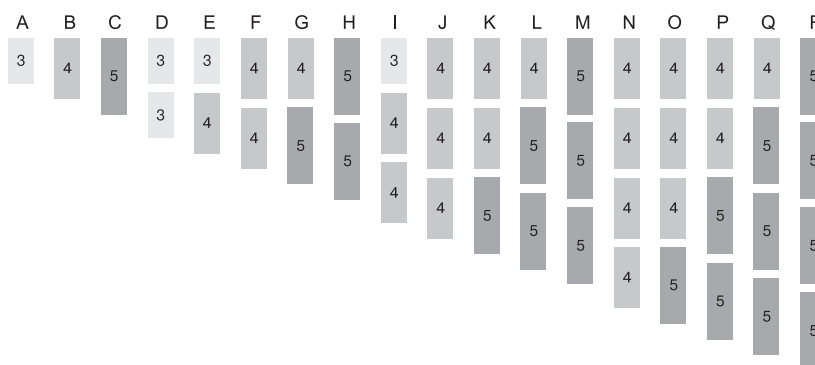
022A-ESP CW M-160(cpi) head rating at various rpm;
number of stages =100



Pump 052A-ESP CW M-160(cpi)

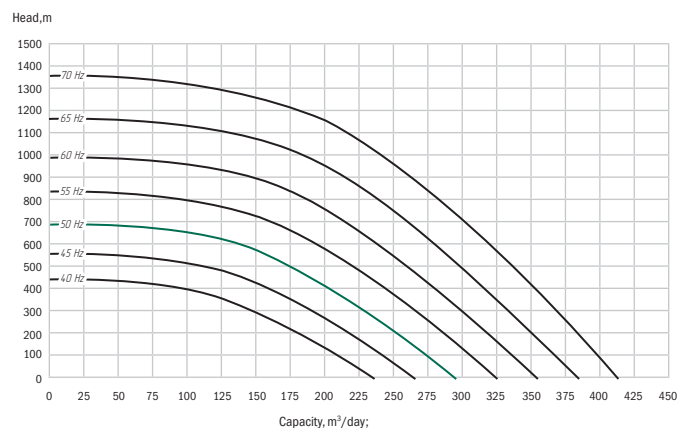
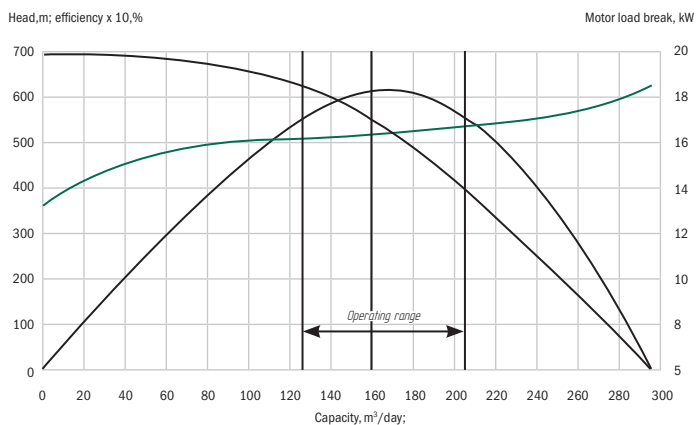
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	75	101	128	150	176	202	229	256	277	303	330	357	384	404	431	458	485	512
Head at 50 Hz, m	400	550	700	800	950	1100	1250	1400	1500	1650	1800	1950	2100	2200	2350	2500	2650	2800
Motor load brake at 50 Hz, kW	12,28	16,53	20,95	24,56	28,81	33,07	37,49	41,91	45,34	49,60	54,02	58,44	62,86	66,13	70,55	74,97	79,39	83,81
Weight, kg	151	191	229	281	321	361	399	437	491	531	569	607	645	701	739	777	815	853

Pump sections number and length



Pump specification 052A-ESP CW M-160(cpi)
capacity Q = 160 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=160 m³/day; H=550 m; N=16,37; $\eta=61\%$

052A-ESP CW M-160(cpi) head rating at various rpm;
number of stages =100

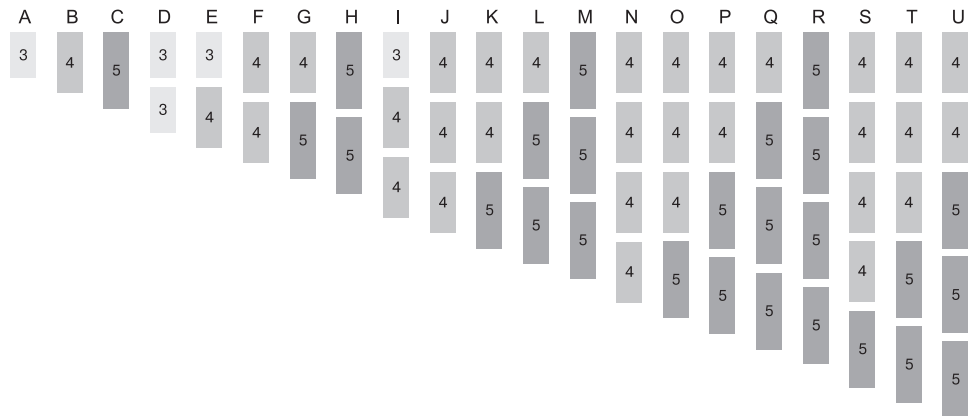


Pump A-ESP C M-200(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K
Number of stages, pcs.	81	110	139	162	191	220	249	278	301	330	359
Head at 50 Hz, m	450	600	750	850	1050	1200	1350	1500	1600	1800	1950
Motor load brake at 50 Hz, kW	18,39	24,97	31,55	36,77	43,36	49,94	56,52	63,11	68,33	74,91	81,49
Weight, kg	164	203	241	316	358	394	432	470	546	585	623

Assembly	L	M	N	O	P	Q	R	S	T	U
Number of stages, pcs.	388	417	440	469	498	527	556	579	608	637
Head at 50 Hz, m	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450
Motor load brake at 50 Hz, kW	88,08	94,66	99,88	106,46	113,05	119,63	126,21	131,43	138,02	144,6
Weight, kg	661	699	776	814	852	890	928	1005	1043	1081

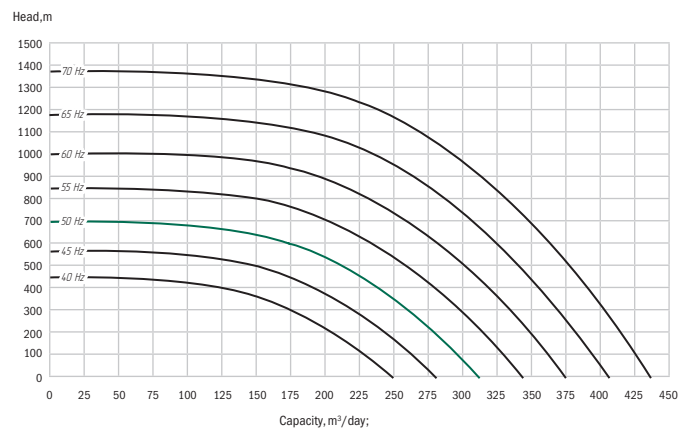
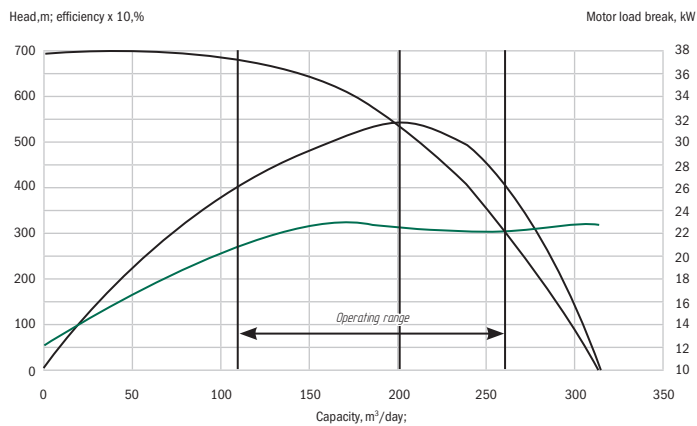
Pump sections number and length



Pump specification A-ESP C M-200(cpi)

capacity $Q = 200 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 200 \text{ m}^3/\text{day}$; $H = 540 \text{ m}$; $N = 22,70$; $\eta = 54\%$

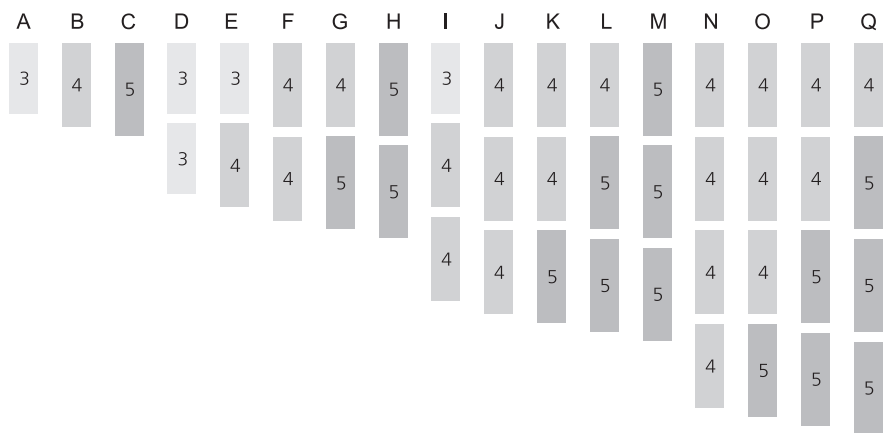
A-ESP C M-200(cpi) head rating at various rpm; number of stages = 100



Pump 0215 A-ESP CW M-200M1

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	92	122	153	184	214	244	275	306	336	366	397	428	459	488	519	550	581
Head at 50 Hz, m	550	700	900	1100	1250	1450	1600	1800	2000	2150	2350	2500	2700	2900	3050	3250	3450
Motor load brake at 50 Hz, kW	19,87	26,35	33,05	39,74	46,22	52,70	59,40	66,10	72,58	79,06	85,75	92,45	99,14	105,41	112,10	118,80	125,50
Load on the hydro-protector reinforced bearing, kgf	1	1	1	1	1	1	1	723	798	870	943	1017	1090	1160	1233	1307	1380
Weight, kg	153	195	236	292	334	376	417	458	515	557	598	639	680	738	779	820	861

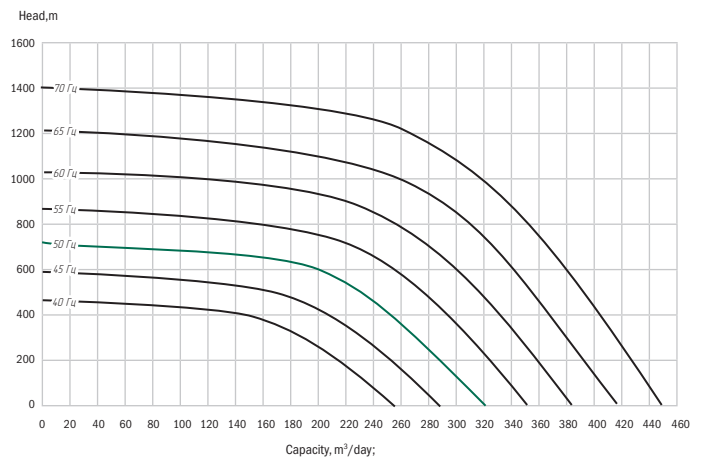
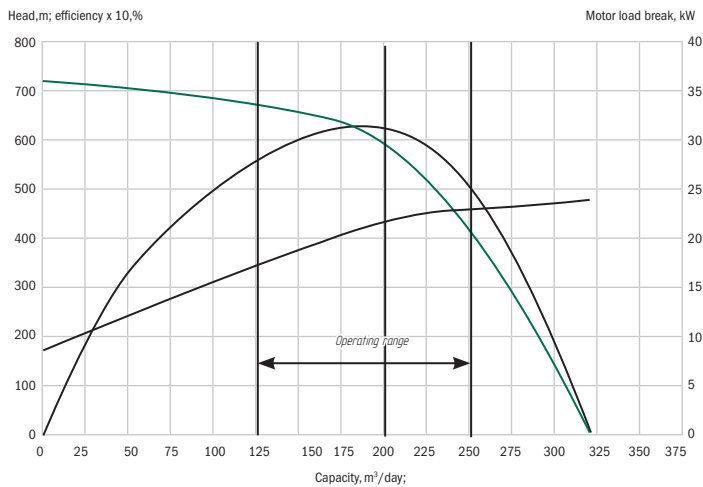
Pump sections number and length



Pump specification 0215 A-ESP CW M-200M1

capacity $Q = 200 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 200 \text{ m}^3/\text{day}$; $H = 590 \text{ m}$; $N = 21,6 \text{ kW}$; $\eta = 62\%$

0215 A-ESP CW M-200M1 head rating at various rpm; number of stages = 100

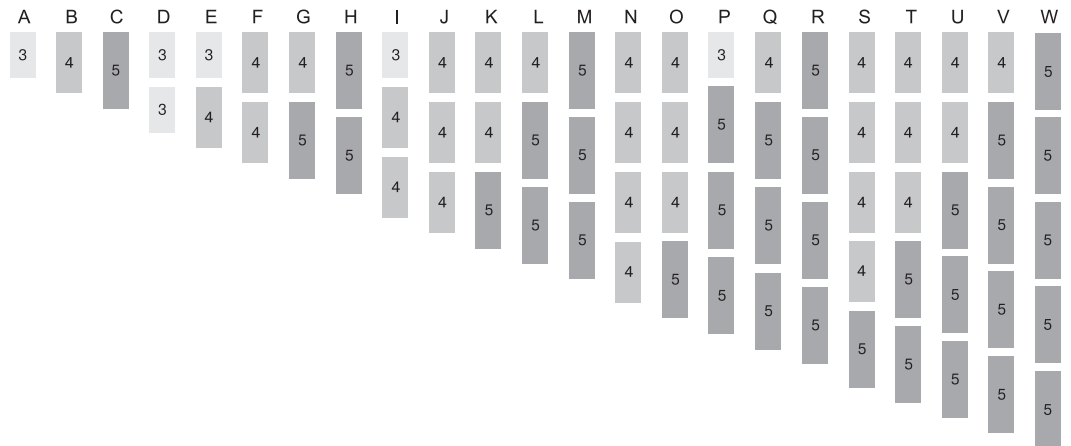


Pump 222(224)A-ESP CW M-200(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L
Number of stages, pcs.	81	110	139	162	191	220	249	278	301	330	359	388
Head at 50 Hz, m	400	550	700	800	950	1100	1250	1400	1500	1650	1800	1950
Motor load brake at 50 Hz, kW	18,39	24,97	31,55	36,77	43,36	49,94	56,52	63,11	68,33	74,91	81,49	88,08
Weight, kg	158	199	241	296	337	378	420	462	516	557	599	641

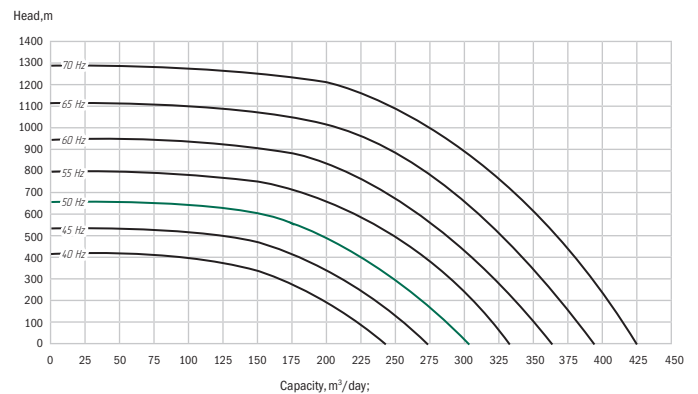
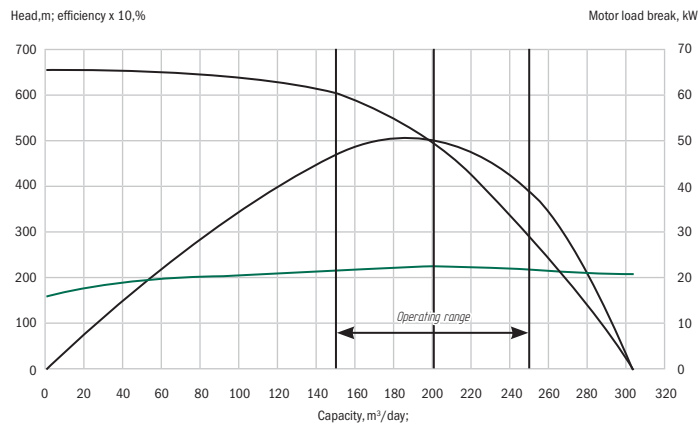
Assembly	M	N	O	P	Q	R	S	T	U	V	W
Number of stages, pcs.	417	440	469	498	527	556	579	608	637	666	695
Head at 50 Hz, m	2100	2200	2350	2500	2650	2800	2900	3050	3200	3350	3450
Motor load brake at 50 Hz, kW	94,66	99,88	106,46	113,05	119,63	126,21	131,43	138,02	144,6	151,18	157,77
Weight, kg	683	736	778	821	862	904	957	999	1041	1083	1105

Pump sections number and length



Pump specification 222(224)A-ESP CW M-200(cpi)
 capacity $Q = 200 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 200 \text{ m}^3/\text{day}$; $H = 500 \text{ m}$; $N = 22,7 \text{ kW}$; $\eta = 50\%$

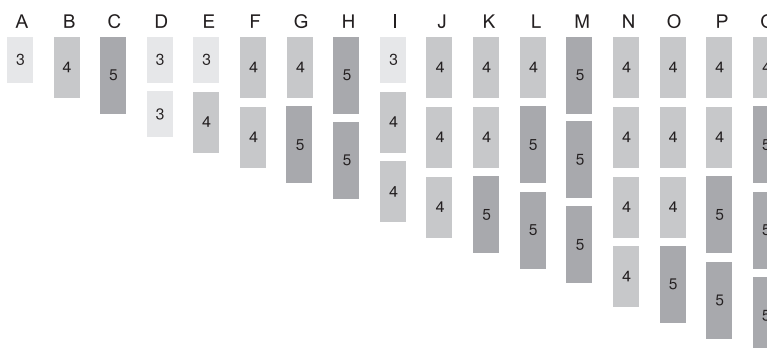
222(224)A-ESP CW M-200(cpi) head rating at various rpm;
 number of stages = 100



Pump 022A-ESP CW M-200(cpi)

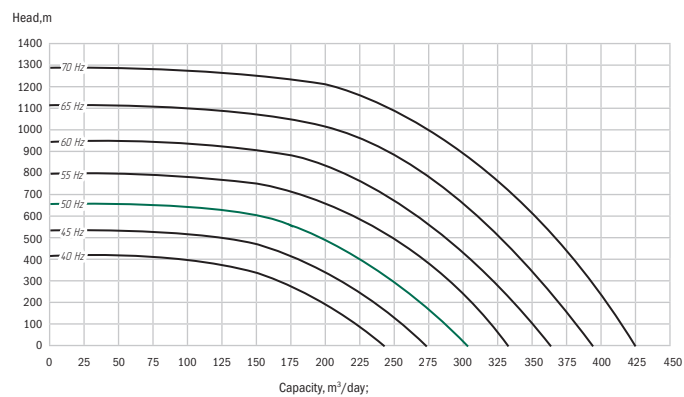
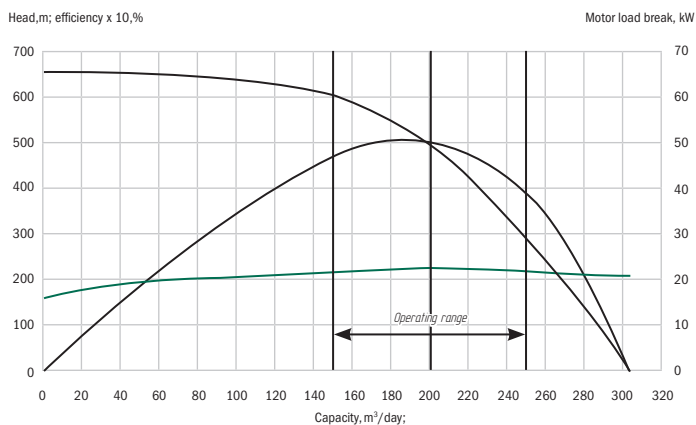
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	86	114	143	172	200	228	257	286	314	342	371	400	429	456	485	514	543
Head at 50 Hz, m	450	550	700	850	1000	1150	1300	1450	1550	1700	1850	2000	2150	2300	2400	2550	2700
Motor load brake at 50 Hz, kW	19,52	25,88	32,46	39,04	45,40	51,76	58,34	64,92	71,28	77,64	84,22	90,80	97,38	103,51	110,10	116,68	123,26
Weight, kg	147	188	230	285	326	367	409	451	505	537	588	630	672	725	767	809	851

Pump sections number and length



Pump specification 022A-ESP CW M-200(cpi)
 capacity $Q = 200 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 200 \text{ m}^3/\text{day}$; $H = 500 \text{ m}$; $N = 22,7 \text{ kW}$; $\eta = 50\%$

022A-ESP CW M-200(cpi) head rating at various rpm;
 number of stages = 100

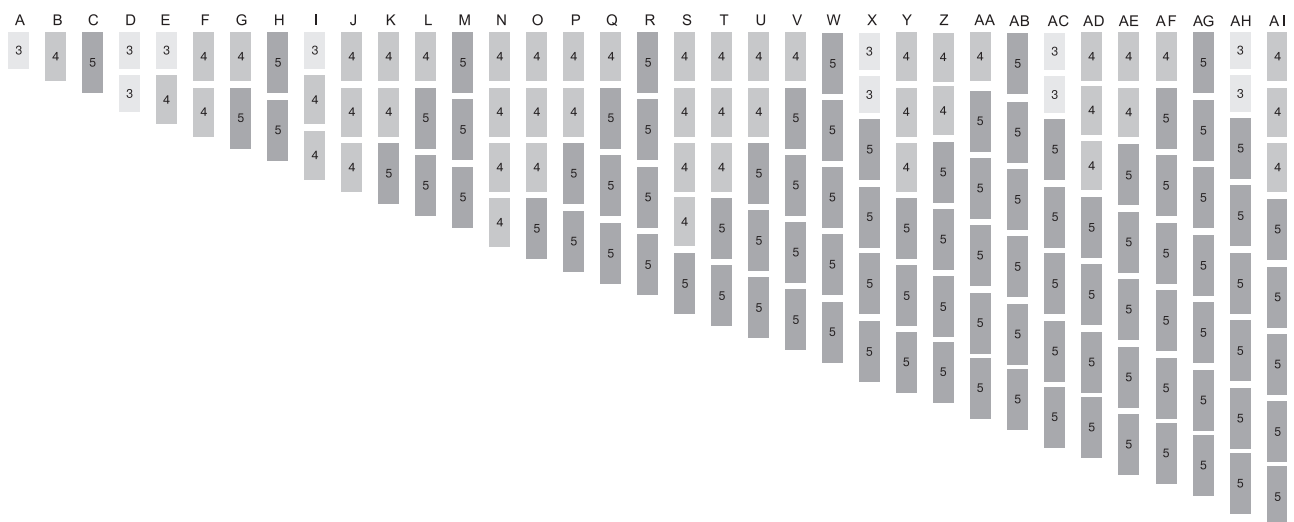


Pump A-ESP CW M-250(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	54	73	92	108	127	146	165	184	200	219	238	257	276	292	311	330	349	368	384
Head at 50 Hz, m	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100
Motor load brake at 50 Hz, kW	13,57	18,34	23,12	27,14	31,92	36,69	41,46	46,24	50,26	55,03	59,81	64,58	69,36	73,38	78,15	82,93	87,70	92,48	96,50
Weight, kg	141	179	217	270	308	346	384	422	475	513	551	589	627	680	718	684	794	832	885

Assembly	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Number of stages, pcs.	403	422	441	460	476	495	514	533	552	568	587	606	625	644	660	679
Head at 50 Hz, m	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700
Motor load brake at 50 Hz, kW	101,27	106,05	110,82	115,60	119,62	124,39	129,17	133,94	138,72	142,74	147,51	152,29	157,06	161,84	165,86	170,63
Weight, kg	923	961	999	1037	1090	1128	1166	1204	1242	1295	1333	1371	1409	1447	1500	1538

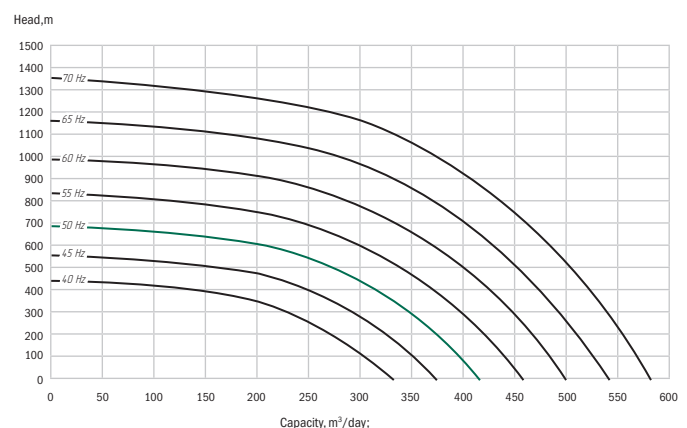
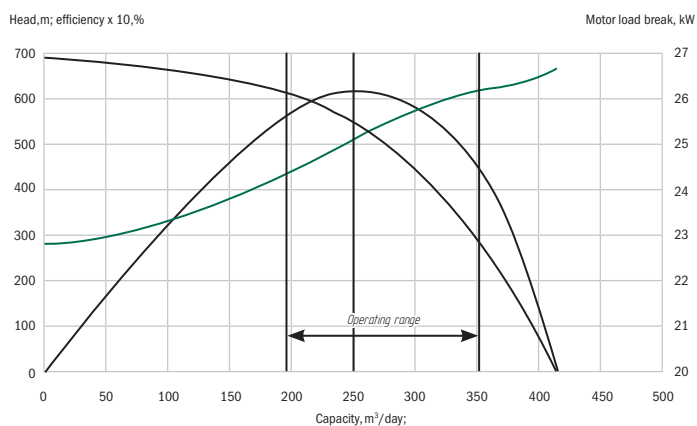
Pump sections number and length



Pump specification A-ESP CW M-250(cpi)

capacity $Q = 250 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 250 \text{ m}^3/\text{day}$; $H = 544 \text{ m}$; $N = 25,13 \text{ kW}$; $\eta = 61,5\%$

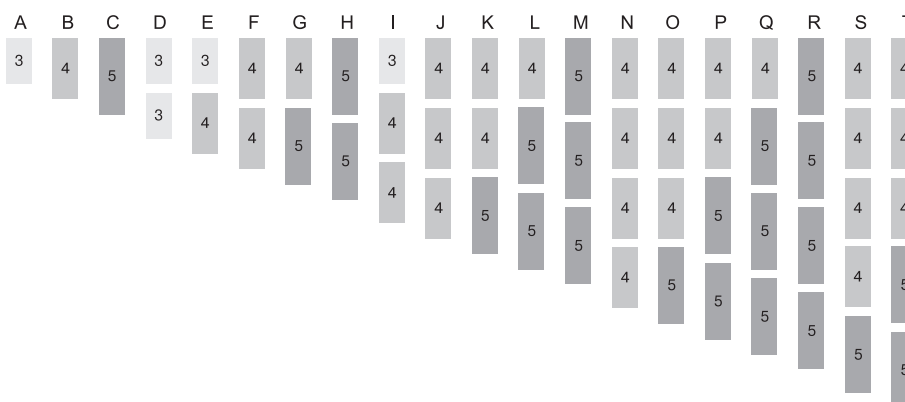
A-ESP CW M-250(cpi) head rating at various rpm; number of stages = 100



Pump 002A-ESP C M-250(cpi)

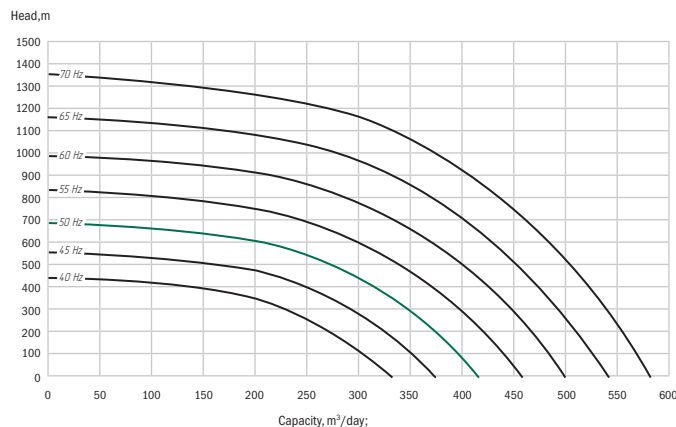
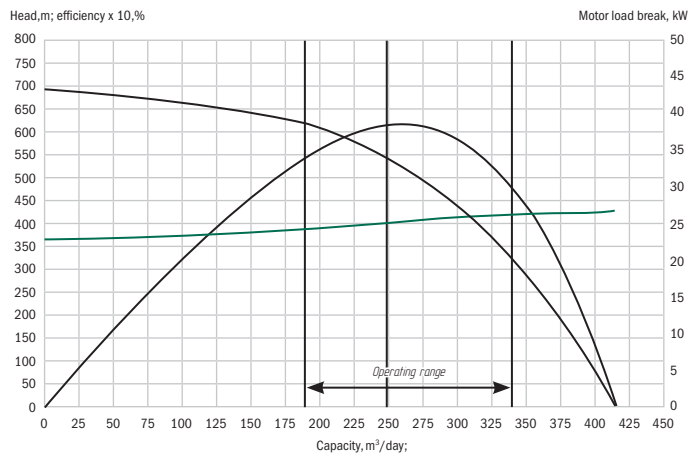
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Number of stages, pcs.	57	77	96	114	134	154	173	192	211	231	250	269	288	308	327	346	365	384	404	423
Head at 50 Hz, m	300	400	500	600	700	850	950	1050	1150	1250	1350	1450	1550	1700	1800	1900	2000	2100	2200	2300
Motor load brake at 50 Hz, kW	14,32	19,35	24,12	28,65	33,67	38,70	43,47	48,25	53,02	58,05	62,83	67,60	72,37	77,40	82,18	86,95	91,72	96,50	101,53	106,30
Weight, kg	147	187	228	282	322	362	403	444	497	537	578	619	660	712	753	794	835	876	928	969

Pump sections number and length



Pump specification 002A-ESP C M-250(cpi)
 capacity $Q = 250 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 250 \text{ m}^3/\text{day}$; $H = 544 \text{ m}$; $N = 25,13 \text{ kW}$; $\eta = 61,5\%$

002A-ESP C M-250(cpi) head rating at various rpm;
 number of stages = 100

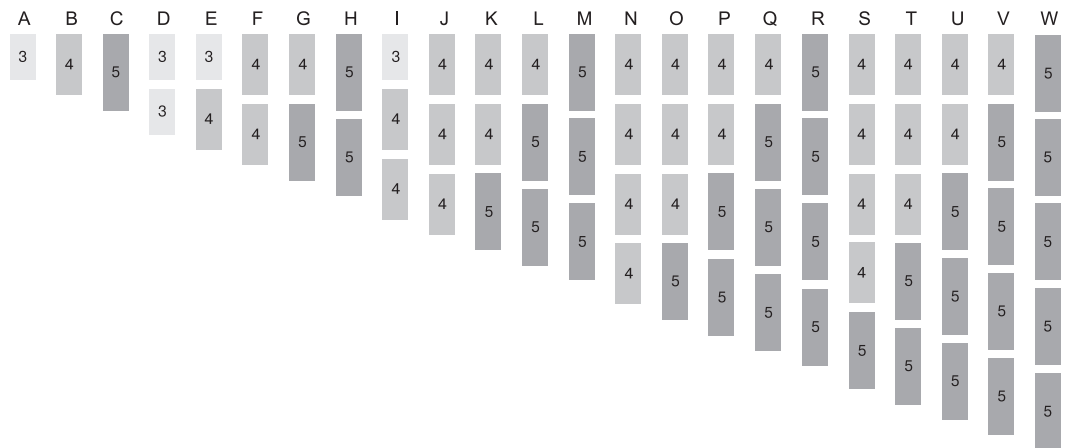


Pump 222(224)A-ESP CW M-250(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L
Number of stages, pcs.	51	68	86	102	119	136	154	172	187	204	222	240
Head at 50 Hz, m	300	450	550	650	750	850	1000	1100	1200	1300	1400	1550
Motor load brake at 50 Hz, kW	16,27	21,69	27,43	32,54	37,96	43,38	49,13	54,87	59,65	65,08	70,82	76,56
Weight, kg	162	204	246	306	348	390	432	474	534	576	618	660

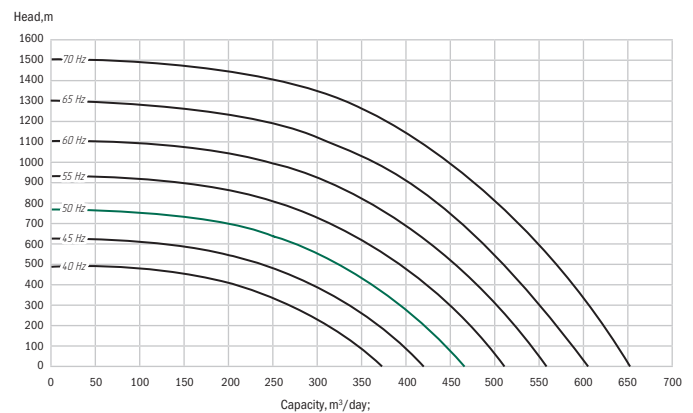
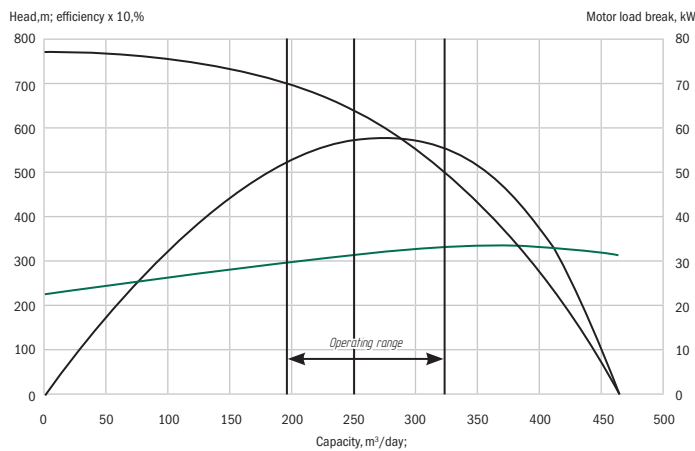
Assembly	M	N	O	P	Q	R	S	T	U	V	W
Number of stages, pcs.	258	272	290	308	326	344	358	376	394	412	430
Head at 50 Hz, m	1650	1750	1850	1950	2100	2200	2300	2400	2500	2650	2750
Motor load brake at 50 Hz, kW	82,30	86,77	92,51	98,25	103,99	109,74	114,20	119,94	125,69	131,43	137,17
Weight, kg	702	762	804	846	888	930	990	1032	1074	1116	1158

Pump sections number and length



Pump specification 222(224)A-ESP CW M-250(cpi)
 capacity $Q = 250 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 250 \text{ m}^3/\text{day}$; $H = 640 \text{ m}$; $N = 31,9 \text{ kW}$; $\eta = 57\%$

222(224)A-ESP CW M-250(cpi) head rating at various rpm;
 number of stages = 100

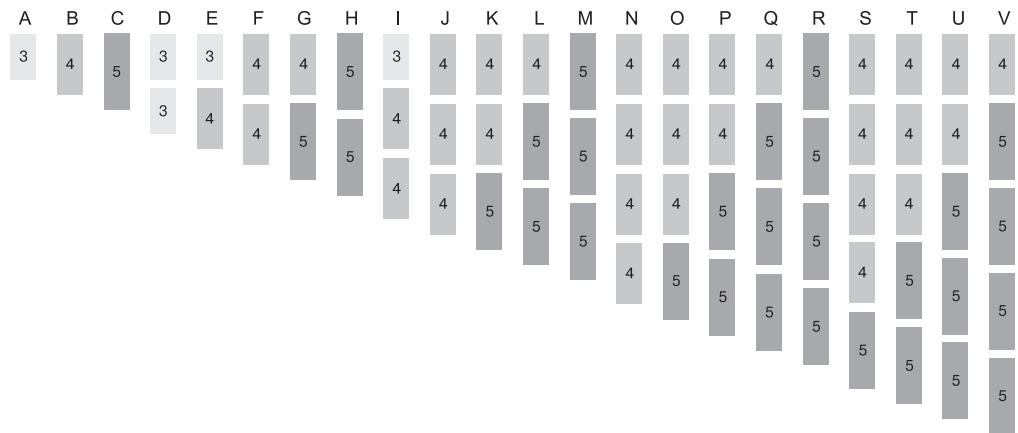


Pump 022A-ESP CW M-250(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K
Number of stages, pcs.	53	70	88	106	123	140	158	176	193	210	228
Head at 50 Hz, m	300	400	500	600	650	750	850	950	1050	1150	1250
Motor load brake at 50 Hz, kW	13,32	17,59	22,11	26,64	30,91	35,18	39,71	44,23	48,50	52,77	57,30
Weight, kg	150	191	233	288	329	370	412	454	508	549	591

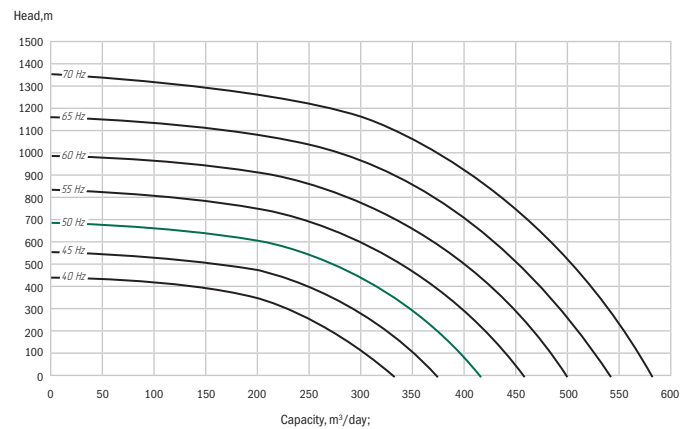
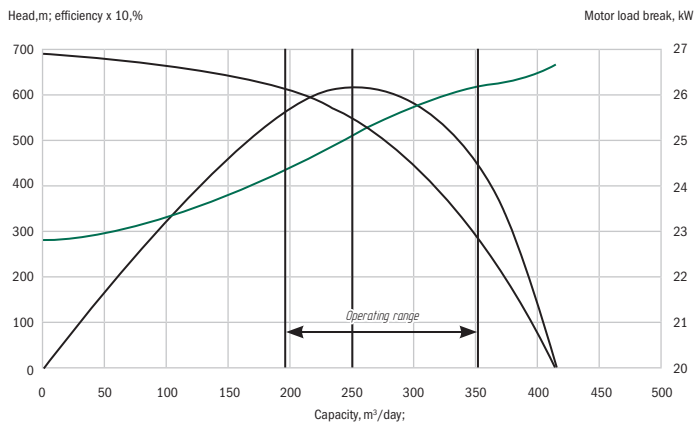
Assembly	L	M	N	O	P	Q	R	S	T	U	V
Number of stages, pcs.	246	264	280	298	316	334	352	368	386	404	422
Head at 50 Hz, m	1350	1450	1500	1600	1700	1800	1900	2000	2100	2200	2300
Motor load brake at 50 Hz, kW	61,82	66,34	70,36	74,89	79,41	83,93	88,46	92,48	97,00	101,53	106,05
Weight, kg	633	675	728	770	812	854	896	949	991	1033	1075

Pump sections number and length



Pump specification 022A-ESP CW M-250(cpi)
 capacity $Q = 250 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 250 \text{ m}^3/\text{day}$; $H = 544 \text{ m}$; $N = 25,13 \text{ kW}$; $\eta = 61,5\%$

022A-ESP CW M-250(cpi) head rating at various rpm;
 number of stages = 100

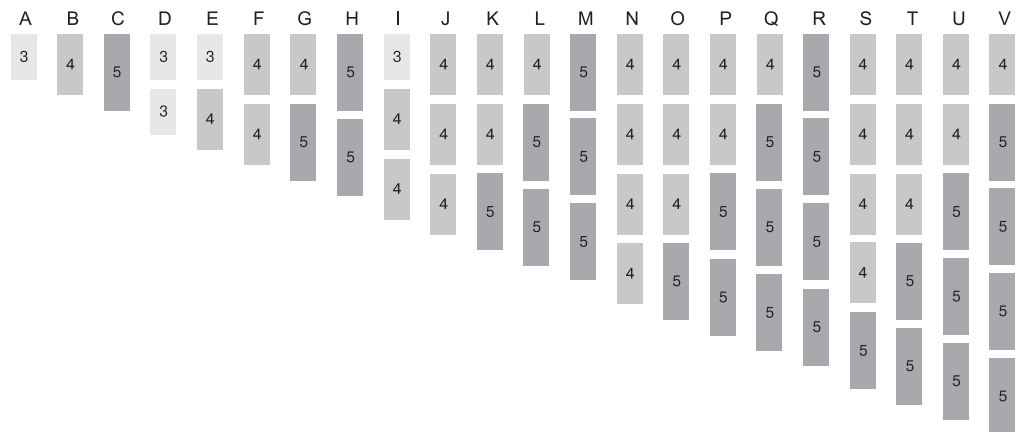


Pump 052A-ESP CW M -250(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K
Number of stages, pcs.	43	59	74	86	102	118	133	148	161	177	192
Head at 50 Hz, m	250	350	450	550	650	750	850	950	1050	1150	1250
Motor load brake at 50 Hz, kW	13,72	18,82	23,61	27,43	32,54	37,64	42,43	47,21	51,36	56,46	61,25
Weight, kg	156	198	239	291	333	375	416	457	510	552	593

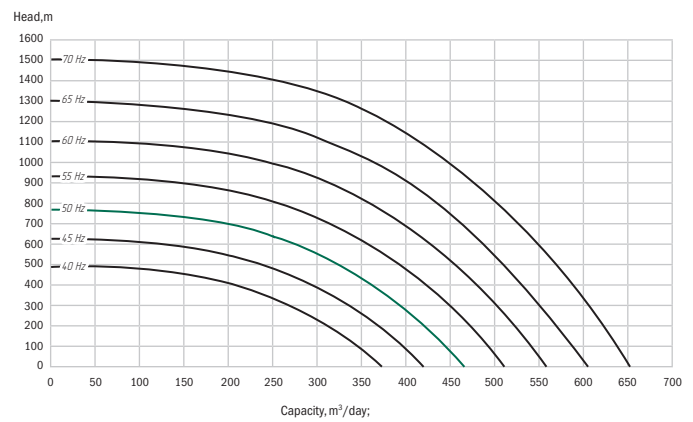
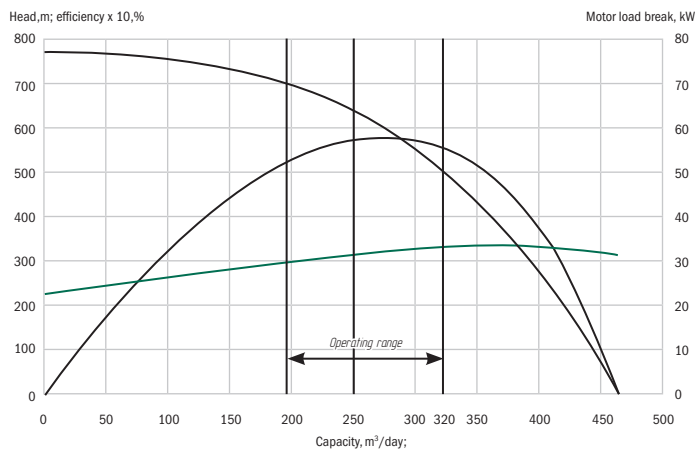
Assembly	L	M	N	O	P	Q	R	S	T	U	V
Number of stages, pcs.	207	222	236	251	266	281	296	310	325	340	355
Head at 50 Hz, m	1300	1400	1500	1600	1700	1800	1900	2000	2050	2200	2250
Motor load brake at 50 Hz, kW	66,03	70,82	75,28	80,07	84,85	89,64	94,42	98,89	103,68	108,46	113,25
Weight, kg	634	675	729	770	811	852	893	947	988	1029	1070

Pump sections number and length



Pump specification 052A-ESP CW M -250(cpi)
 capacity $Q = 250 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 250 \text{ m}^3/\text{day}$; $H = 640 \text{ m}$; $N = 31,9 \text{ kW}$; $\eta = 57\%$

052A-ESP CW M -250(cpi) head rating at various rpm;
 number of stages = 100

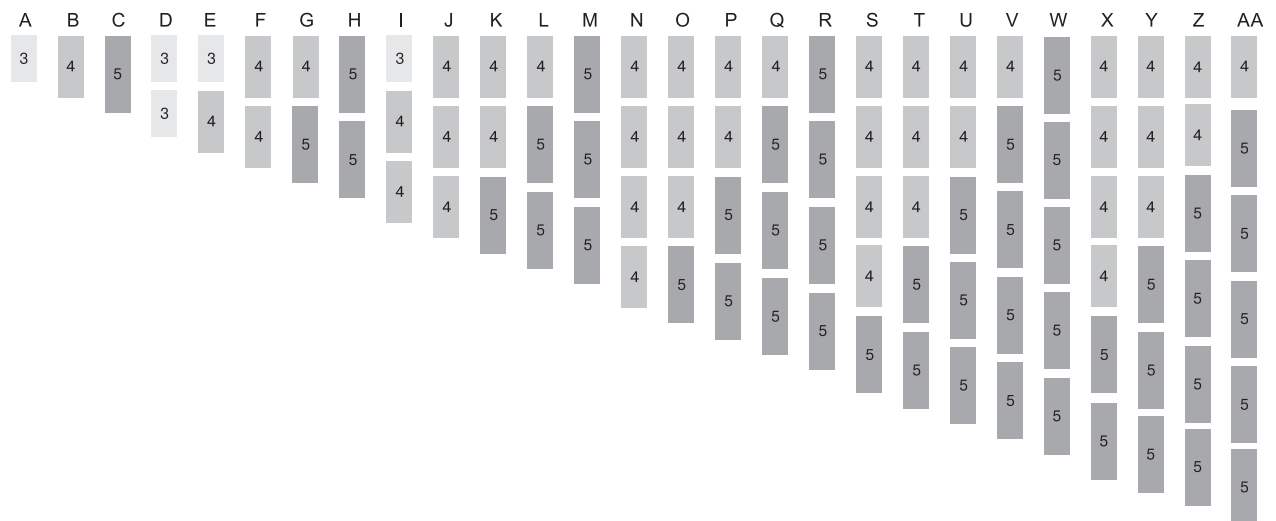


Pump 212A-ESP C M-280

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	52	70	88	104	122	140	158	176	192	210	228	246	264	280	298
Head at 50 Hz, m	300	400	500	600	700	800	900	1050	1150	1250	1350	1450	1550	1650	1750
Motor load brake at 50 Hz, kW	16,83	22,66	28,49	33,66	39,49	45,32	51,14	56,97	62,15	67,98	73,80	79,63	85,46	90,64	96,46
Weight, kg	158	199	241	297	338	379	421	463	518	559	601	643	685	739	781

Assembly	P	Q	R	S	T	U	V	W	X	Y	Z	AA
Number of stages, pcs.	316	334	352	368	386	404	422	440	456	474	492	510
Head at 50 Hz, m	1850	1950	2050	2150	2250	2400	2500	2600	2700	2800	2900	3000
Motor load brake at 50 Hz, kW	102,29	108,12	113,94	119,12	124,95	130,77	136,60	142,43	147,61	153,43	159,26	165,09
Weight, kg	823	865	907	961	1003	1045	1087	1129	1183	1225	1267	1309

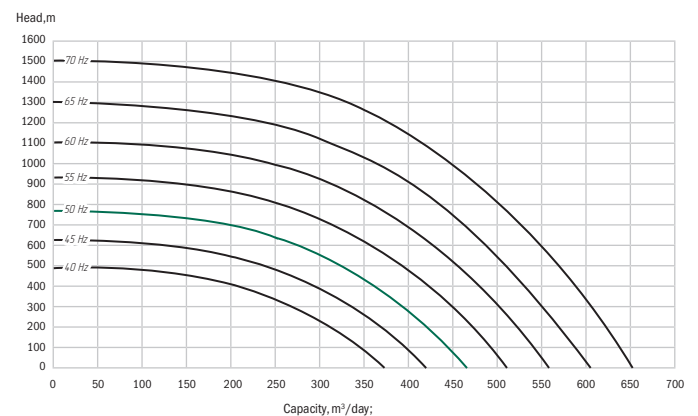
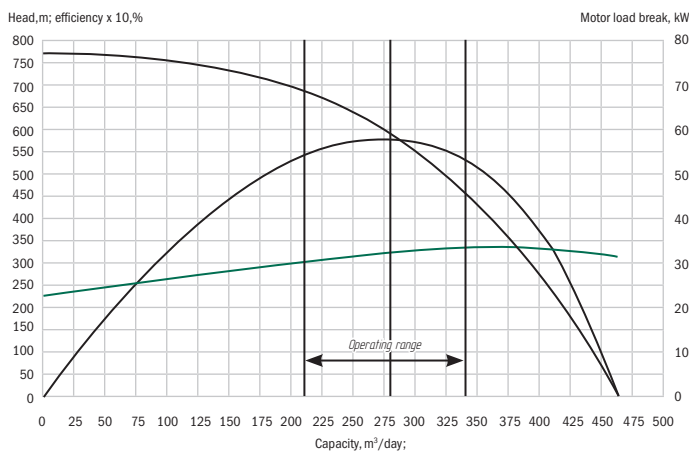
Pump sections number and length



Pump specification 212A-ESP C M-280

capacity $Q = 280 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 280 \text{ m}^3/\text{day}$; $H = 590 \text{ m}$; $N = 32,37 \text{ kW}$; $\eta = 58\%$

212A-ESP C M-280 head rating at various rpm; number of stages = 100

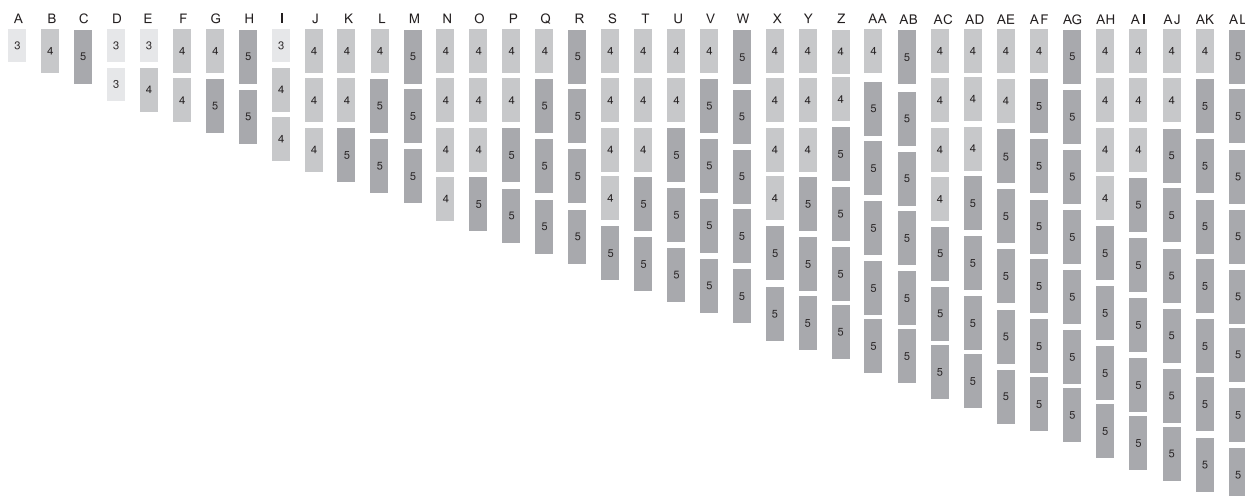


Pump 222(224)A-ESP CW M-320(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	49	67	84	98	116	134	151	168	183	201	218	235	252	268	285	301	319	336	352
Head at 50 Hz, m	250	350	450	500	600	700	800	850	950	1050	1150	1200	1300	1400	1500	1550	1650	1750	1850
Motor load brake at 50 Hz, kW	16,26	22,23	27,87	32,51	38,48	44,45	50,09	55,73	60,71	66,68	72,32	77,96	83,60	88,98	94,55	99,85	105,82	111,46	116,77
Weight, kg	159	200	242	297	338	379	421	463	517	558	600	642	684	737	779	821	863	905	958

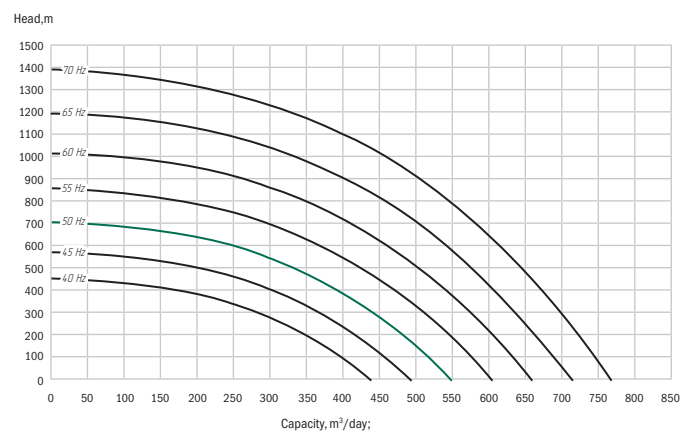
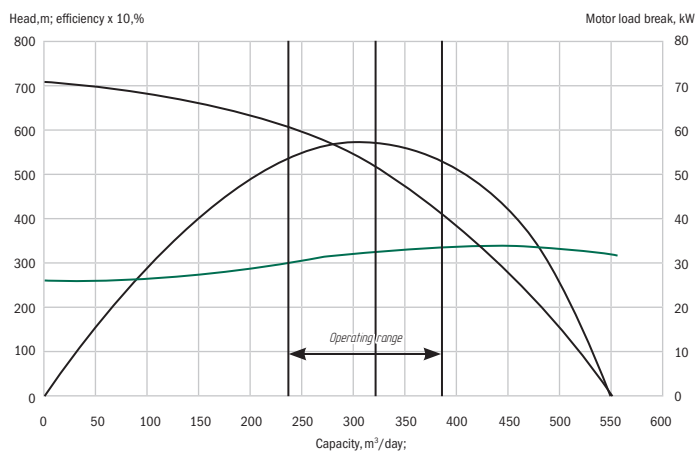
Assembly	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
Number of stages, pcs.	369	386	403	420	436	453	470	487	504	520	537	554	571	588	604	621	638	655	672
Head at 50 Hz, m	1900	2000	2100	2200	2250	2350	2450	2550	2600	2700	2800	2900	2950	3050	3150	3250	3300	3400	3500
Motor load brake at 50 Hz, kW	122,41	128,05	133,69	139,33	144,68	150,28	155,92	161,56	167,20	172,50	178,14	183,78	189,42	195,06	200,37	206,01	211,65	217,29	222,93
Weight, kg	1000	1042	1084	1126	1179	1221	1263	1305	1347	1400	1442	1484	1526	1568	1621	1663	1705	1747	1789

Pump sections number and length



Pump specification 222(224)A-ESP CW M-320(cpi)
 capacity $Q = 320 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 320 \text{ m}^3/\text{day}$; $H = 520 \text{ m}$; $N = 33,17 \text{ kW}$; $\eta = 57\%$

222(224)A-ESP CW M-320(cpi) head rating at various rpm;
 number of stages = 100

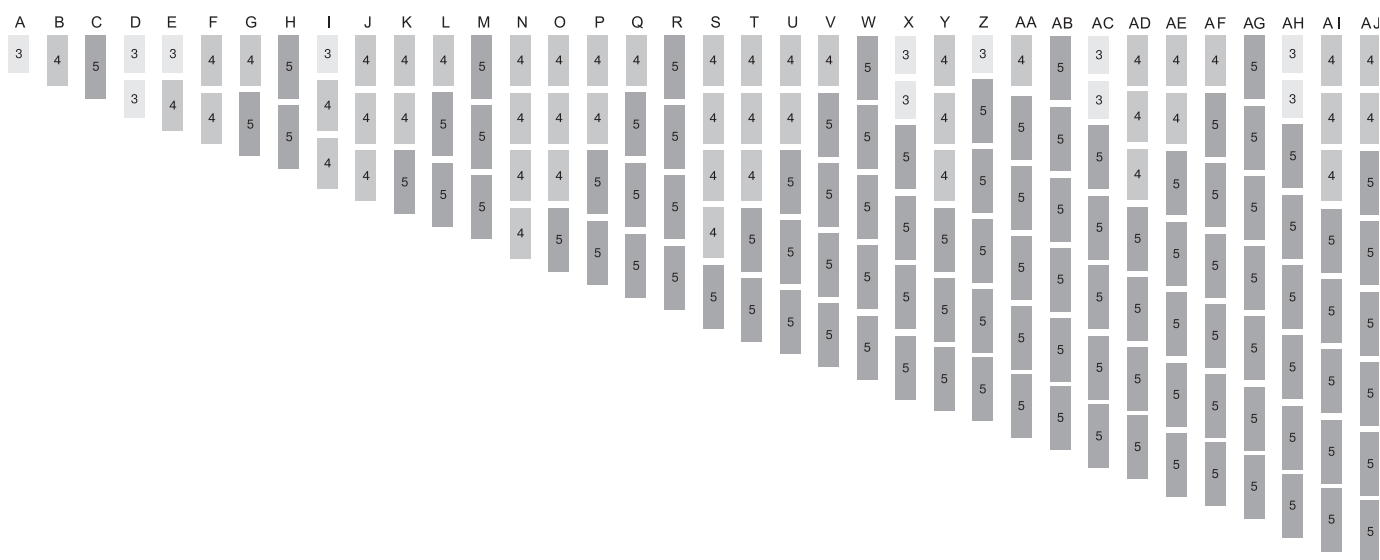


Pump A-ESP CW M-400(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	50	68	86	100	111	136	154	173	186	204	222	240	258	272	290	308	326	344
Head at 50 Hz, m	200	250	350	400	450	550	600	700	750	800	850	950	1000	1050	1150	1200	1250	1350
Motor load brake at 50 Hz, kW	14,89	20,25	25,61	29,78	33,06	40,50	45,86	51,52	55,39	60,75	66,11	71,47	76,83	81,00	86,36	91,72	97,08	102,44
Weight, kg	139	176	214	266	330	340	378	411	467	504	542	580	618	668	706	744	782	820

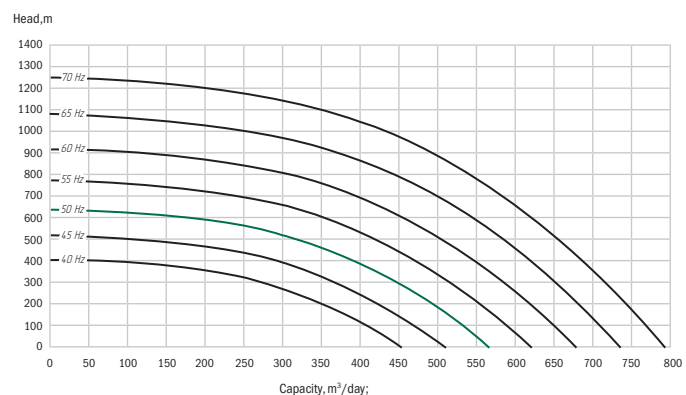
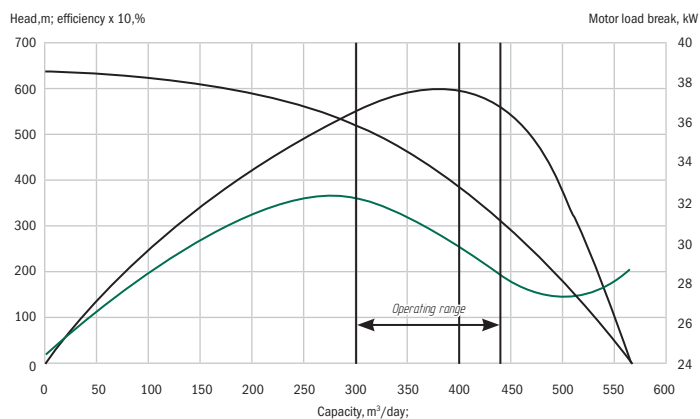
Assembly	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
Number of stages, pcs.	358	376	394	412	430	444	462	480	498	516	530	548	566	584	602	616	634	652
Head at 50 Hz, m	1400	1450	1550	1600	1700	1750	1800	1850	1950	2000	2050	2150	2200	2300	2350	2400	2450	2550
Motor load brake at 50 Hz, kW	106,61	111,97	117,33	122,69	128,05	132,22	137,58	142,94	148,30	153,66	157,83	163,19	168,55	173,92	179,28	183,44	188,81	194,17
Weight, kg	870	908	946	984	1022	1072	1110	1149	1186	1224	1276	1312	1350	1388	1426	1478	1514	1552

Pump sections number and length



Pump specification A-ESP CW M-400(cpi)
capacity Q = 400 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=400 m³/day; H=390 m; N=29,78 kW; $\eta=59,5\%$

A-ESP CW M-400(cpi) head rating at various rpm;
number of stages =100

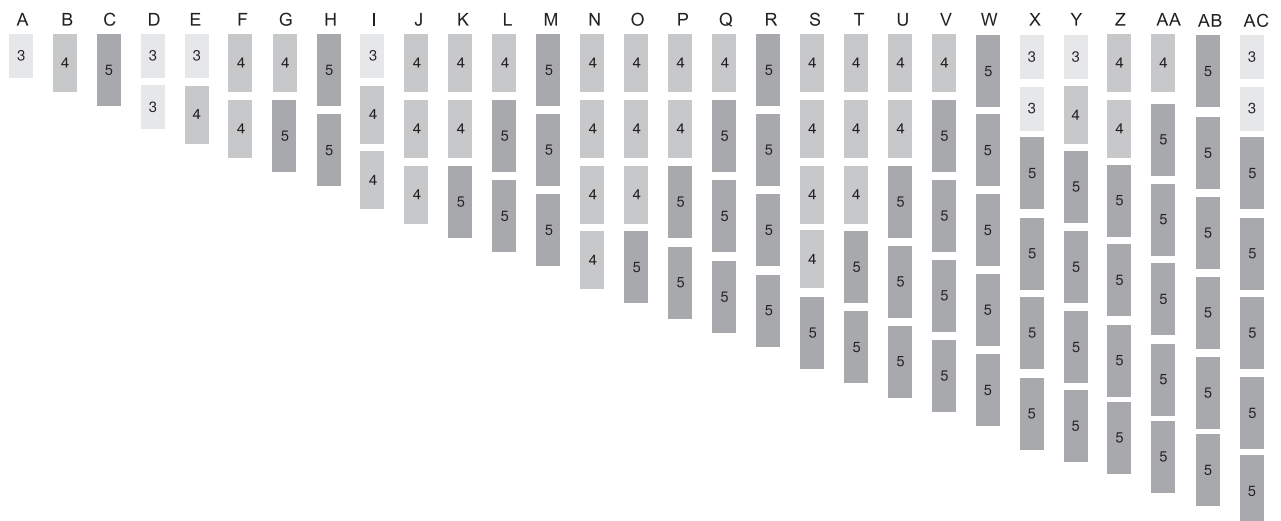


Pump 002A-ESP C M-400

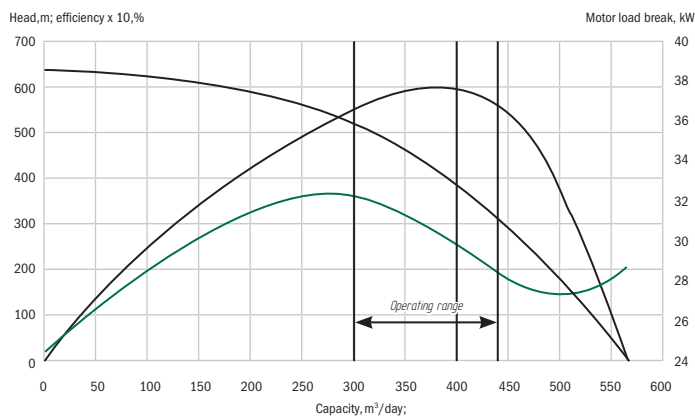
Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306
Head at 50 Hz, m	200	300	350	400	500	550	650	700	750	850	900	1000	1050	1100	1200
Motor load brake at 50 Hz, kW	16,08	21,44	26,80	32,16	37,52	42,88	48,24	53,60	58,96	64,32	69,69	75,05	80,41	85,77	91,13
Weight, kg	145	185	223	278	318	358	396	434	491	531	569	607	645	704	742

Assembly	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
Number of stages, pcs.	324	342	360	378	396	414	432	450	468	486	504	522	540	558
Head at 50 Hz, m	1250	1350	1400	1450	1550	1600	1700	1750	1850	1900	1950	2050	2100	2200
Motor load brake at 50 Hz, kW	96,49	101,85	107,21	112,57	117,93	123,29	128,65	134,01	139,37	144,73	150,09	155,45	160,81	166,17
Weight, kg	780	818	856	915	953	991	1029	1067	1122	1162	1202	1240	1278	1333

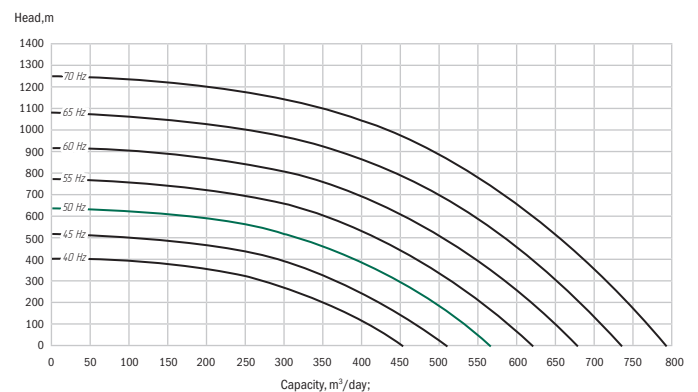
Pump sections number and length



Pump specification 002A-ESP C M-400(cpi)
 capacity $Q = 400 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$;
 number of stages = 100; $Q = 400 \text{ m}^3/\text{day}$;
 $H = 390 \text{ m}$; $N = 29,78 \text{ kW}$; $\eta = 59,5\%$



002A-ESP C M-400(Tв) head rating at various rpm;
 number of stages = 100

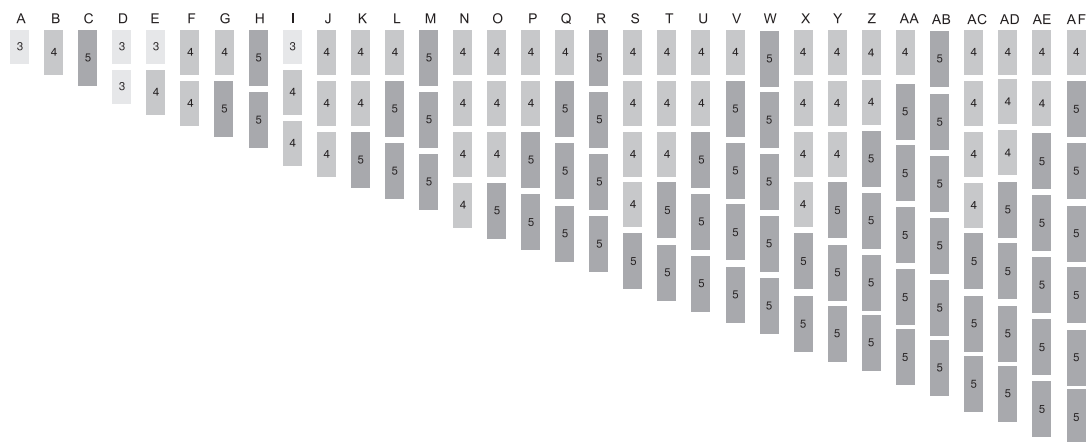


Pump 222(224)A-ESP CW M-400(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	49	66	84	98	115	132	150	168	181	198	216	234	252	264	282	300
Head at 50 Hz, m	200	250	350	400	500	550	650	700	800	850	950	1000	1100	1150	1200	1300
Motor load brake at 50 Hz, kW	17,10	23,03	29,32	34,20	40,14	46,07	52,35	58,63	63,17	69,10	75,38	81,67	87,95	92,14	98,42	104,70
Weight, kg	156	196	237	291	331	371	412	453	506	546	587	628	669	721	762	803

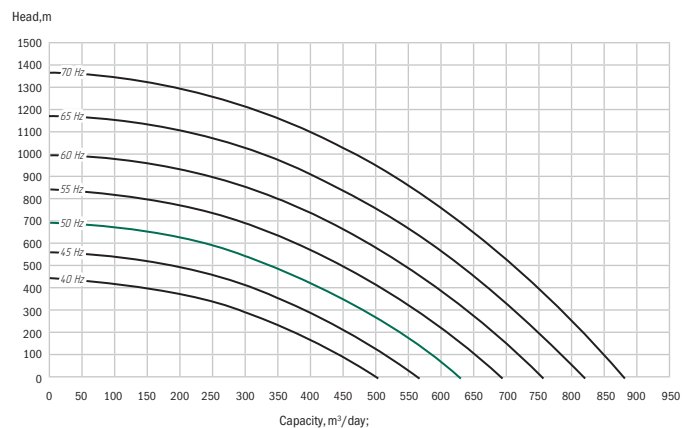
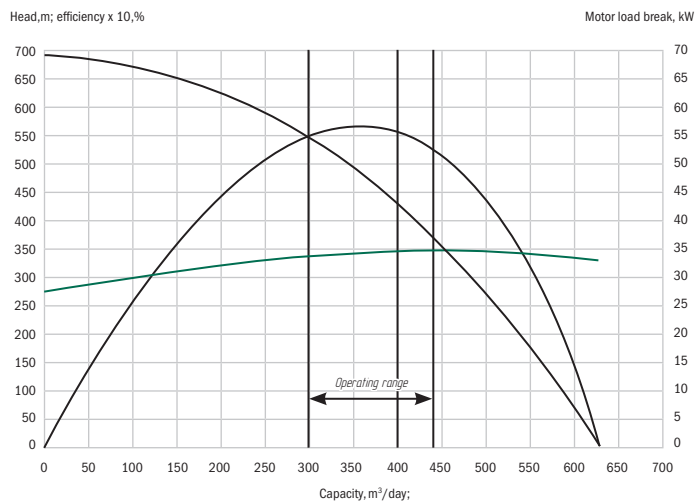
Assembly	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
Number of stages, pcs.	318	336	348	366	384	402	420	432	450	468	486	504	516	534	552	570
Head at 50 Hz, m	1350	1450	1500	1550	1650	1750	1800	1850	1950	2000	2100	2150	2200	2300	2350	2450
Motor load brake at 50 Hz, kW	110,98	117,26	121,45	127,73	134,02	140,30	146,58	150,77	157,05	163,33	169,61	175,90	180,08	186,37	192,65	198,93
Weight, kg	844	885	937	978	1019	1060	1101	1153	1194	1235	1276	1317	1369	1410	1451	1492

Pump sections number and length



Pump specification 222(224)A-ESP CW M-400(cpi)
 capacity $Q = 400 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 400 \text{ m}^3/\text{day}$; $H = 430 \text{ m}$; $N = 34,9 \text{ kW}$; $\eta = 56\%$

222(224)A-ESP CW M-400(cpi) head rating at various rpm;
 number of stages = 100

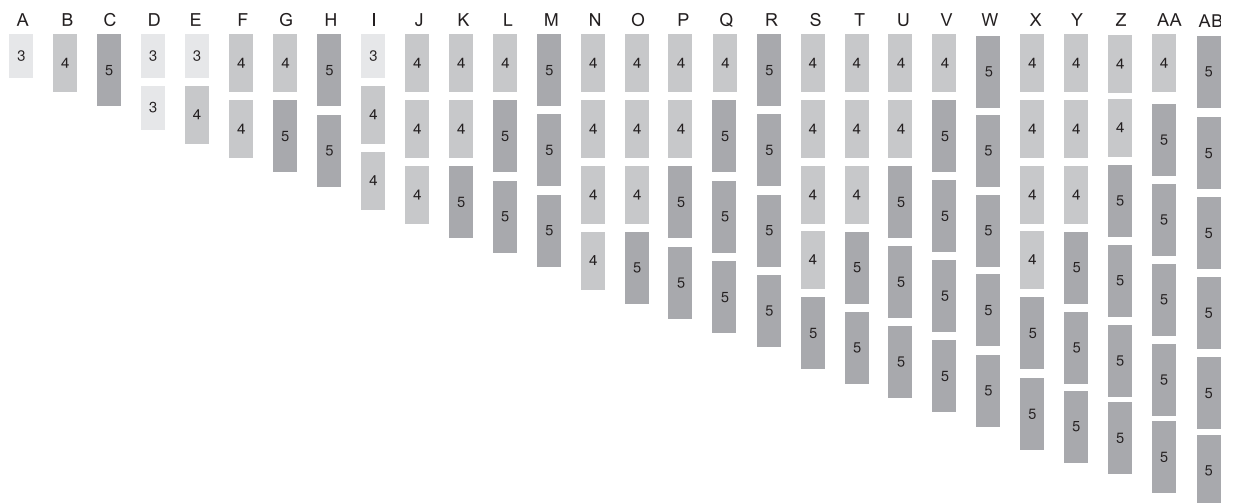


Pump 022A-ESP CW M-400(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	50	67	85	100	117	134	152	170	184	201	219	237	255	268
Head at 50 Hz, m	200	300	350	400	500	550	650	700	800	850	950	1000	1100	1150
Motor load brake at 50 Hz, kW	17,45	23,38	29,67	34,90	40,83	46,77	53,05	59,33	64,22	70,15	76,43	82,71	89,00	93,53
Weight, kg	156	196	237	291	331	371	412	453	506	546	587	628	669	721

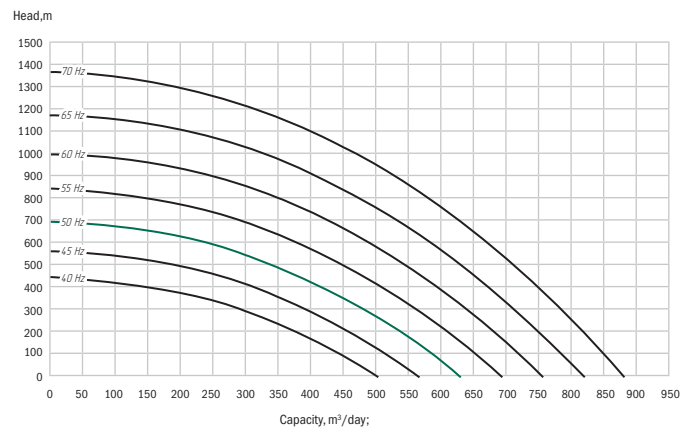
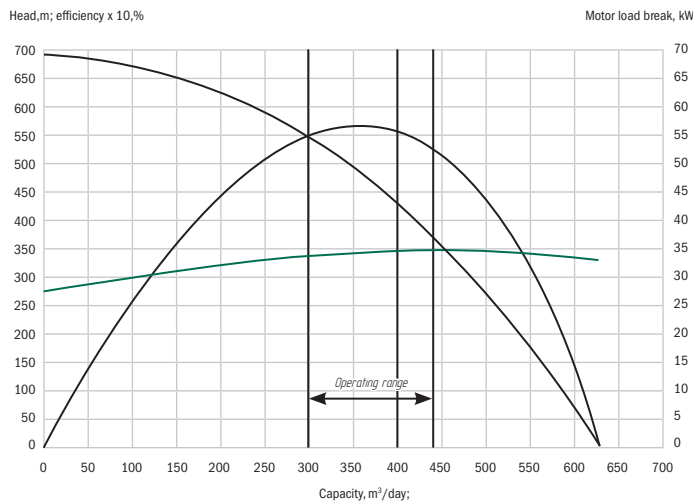
Assembly	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
Number of stages, pcs.	286	304	322	340	353	371	389	407	425	438	456	474	492	510
Head at 50 Hz, m	1200	1300	1400	1450	1500	1550	1650	1750	1800	1900	1950	2050	2100	2200
Motor load brake at 50 Hz, kW	99,81	106,10	112,38	118,66	123,20	129,48	135,76	142,04	148,33	152,86	159,14	165,43	171,71	177,99
Weight, kg	762	803	844	885	937	978	1019	1060	1101	1153	1194	1235	1276	1317

Pump sections number and length



Pump specification 022A-ESP CW M-400(cpi),
capacity Q = 400 m³/day; water density $\eta=1000 \text{ kg/m}^3$;
number of stages =100; Q=400 m³/day;
H=430 m; N=34,9 kW; $\eta=56\%$

022A-ESP CW M-400(cpi) head rating at various rpm;
number of stages =100

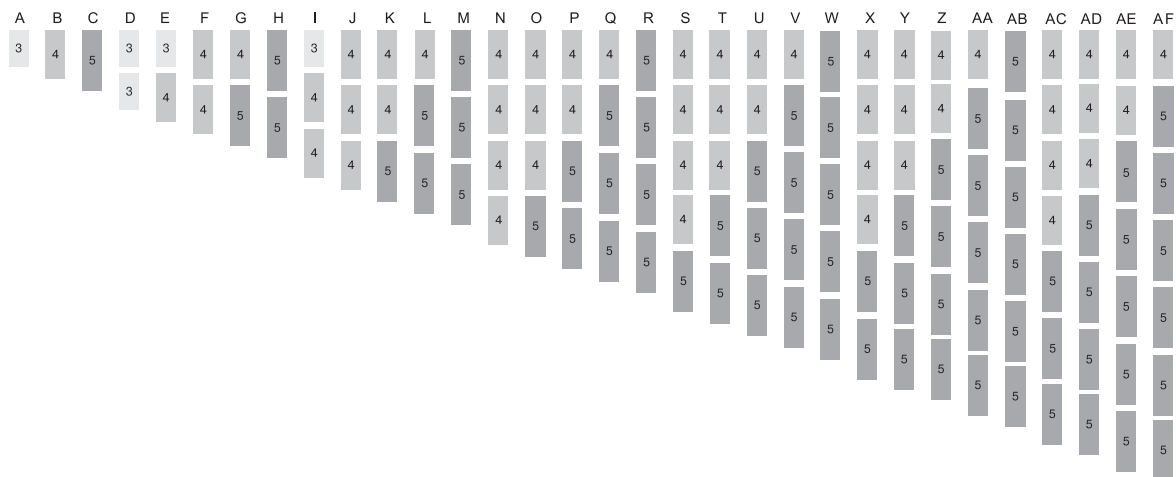


Pump 052A-ESP CW M-400(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	44	60	75	88	104	120	135	150	164	180	195	210	225	240	255	270
Head at 50 Hz, m	200	250	300	350	450	500	600	650	700	750	850	900	950	1050	1100	1150
Motor load brake at 50 Hz, kW	15,36	20,94	26,18	30,71	36,30	41,88	47,12	52,35	57,24	62,82	68,06	73,29	78,53	83,76	89,00	94,23
Weight, kg	151	191	229	281	321	361	399	437	491	531	569	607	645	701	739	777

Assembly	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
Number of stages, pcs.	285	300	315	330	345	360	375	390	405	420	435	450	465	480	495	510
Head at 50 Hz, m	1200	1300	1350	1400	1500	1550	1600	1650	1750	1800	1850	1950	2000	2050	2150	2200
Motor load brake at 50 Hz, kW	99,47	104,70	109,94	115,17	120,41	125,64	130,88	136,11	141,35	146,58	151,82	157,05	162,29	167,52	172,76	177,99
Weight, kg	815	853	909	947	985	1023	1061	1117	1155	1193	1231	1269	1325	1363	1401	1439

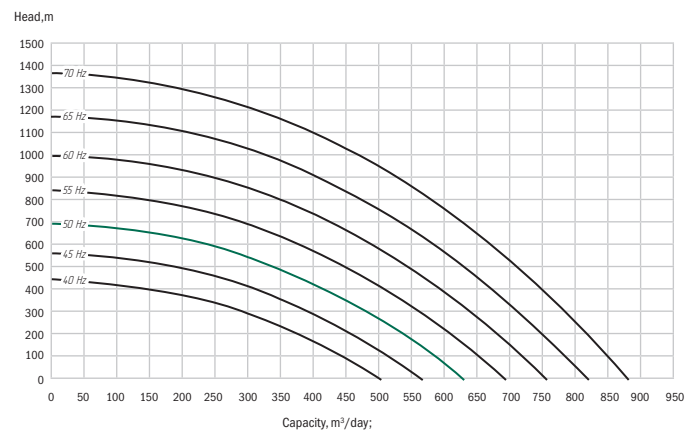
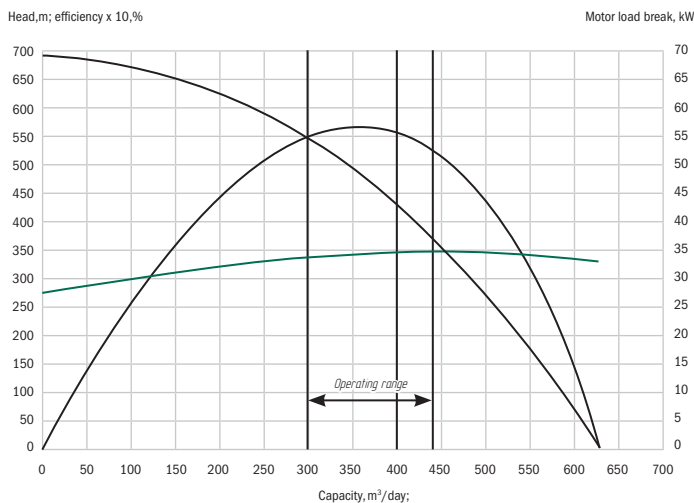
Pump sections number and length



Pump specification 052A-ESP CW M-400(cpi)

capacity $Q = 400 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 400 \text{ m}^3/\text{day}$; $H = 430 \text{ m}$; $N = 34,9 \text{ kW}$; $\eta = 56\%$

052A-ESP CW M-400(cpi) head rating at various rpm; number of stages = 100



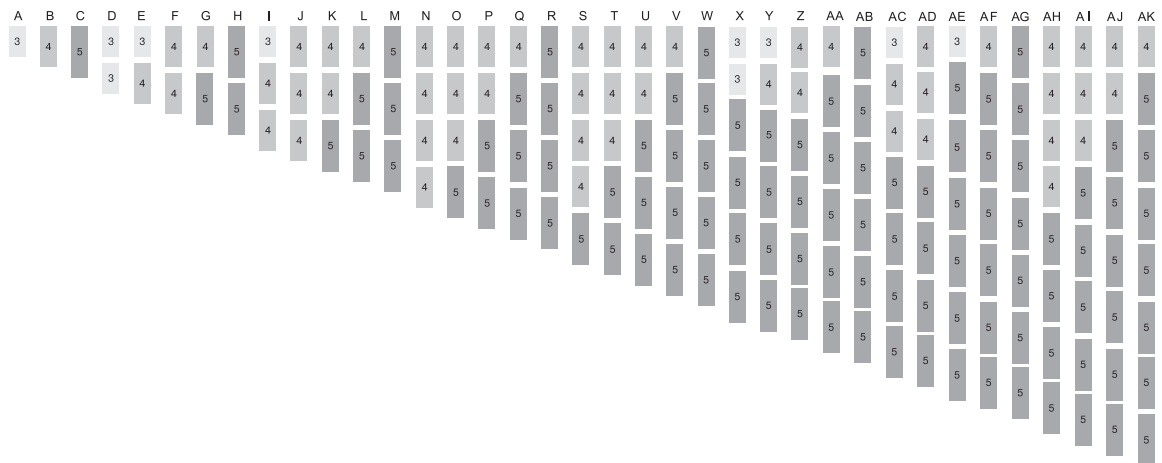
Pump A-ESP C, CW M-500(cpi)

Single-bearing operating elements with the impeller extended hub and hard-alloy bushings in radial section bearings are applied in corrosion-and-wear-resistant pumps

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	45	62	78	90	107	124	140	156	169	186	202	218	234	248	264	280	296	312
Head at 50 Hz, m	200	250	300	350	450	500	550	650	700	750	850	900	950	1000	1100	1150	1200	1300
Motor load brake at 50 Hz, kW	19,40	26,72	33,62	38,79	46,12	53,44	60,34	67,24	72,84	80,17	87,06	93,96	100,85	106,89	113,78	120,68	127,58	134,47
Weight, kg	160	203	248	308	351	394	439	484	542	585	634	675	720	776	821	866	911	956

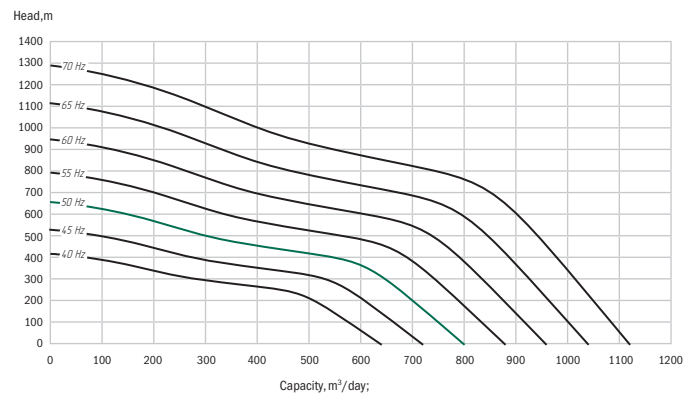
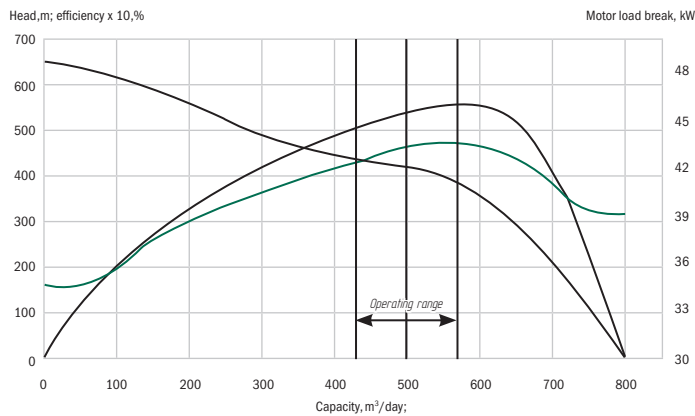
Assembly	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK
Number of stages, pcs.	326	342	358	374	390	402	419	436	452	468	481	498	513	530	546	560	576	592	608
Head at 50 Hz, m	1350	1400	1450	1550	1600	1650	1700	1800	1850	1900	1950	2050	2100	2150	2250	2300	2350	2450	2500
Motor load brake at 50 Hz, kW	140,51	147,40	154,30	161,19	168,09	173,26	180,59	187,92	194,81	201,71	207,31	214,64	221,10	228,43	235,33	241,36	248,26	255,15	262,05
Weight, kg	1012	1057	1102	1147	1152	1252	1295	1338	1383	1428	1486	1529	1576	1619	1676	1720	1765	1810	1855

Pump sections number and length



Pump specification A-ESP C, CW M-500(cpi),
capacity Q = 500 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=500 m³/day; H=415 m; N=43,1 kW; $\eta=54\%$

A-ESP C, CW M-500(cpi) head rating at various rpm;
number of stages =100

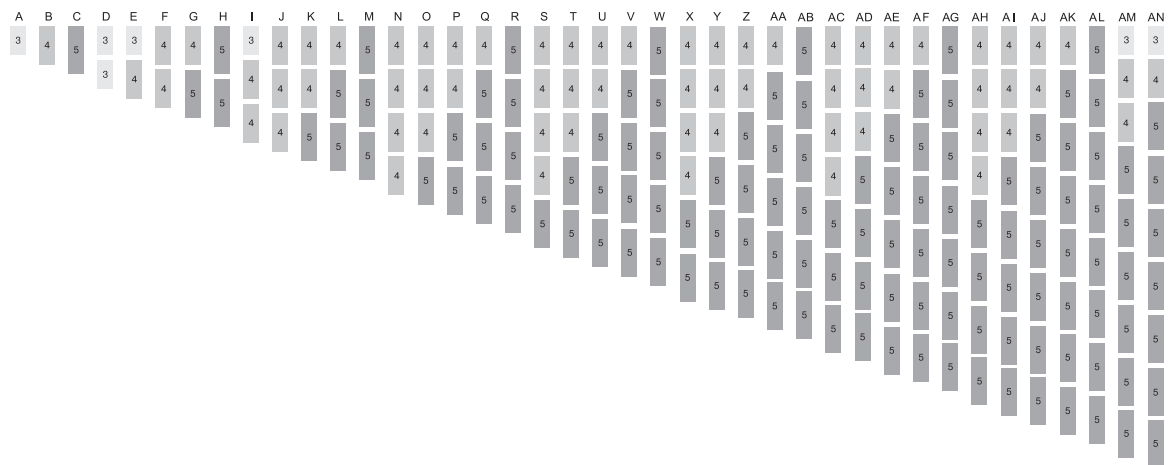


Pump 222(224)A-ESP CW M-500(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Number of stages, pcs.	42	57	72	84	99	114	129	144	156	171	186	201	216	228	243	258	273	288	300
Head at 50 Hz, m	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
Motor load brake at 50 Hz, kW	16,05	21,78	27,51	32,10	37,83	43,56	49,29	55,02	59,61	65,34	71,07	76,80	82,53	87,12	92,85	98,58	104,31	110,04	114,63
Weight, kg	153	192	231	285	324	363	402	441	495	534	573	612	651	705	744	783	822	861	915

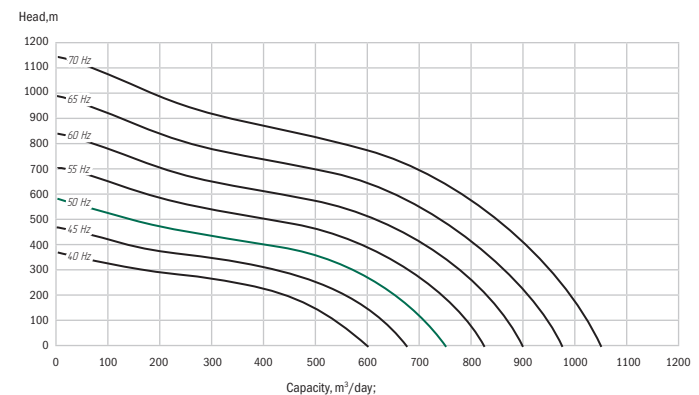
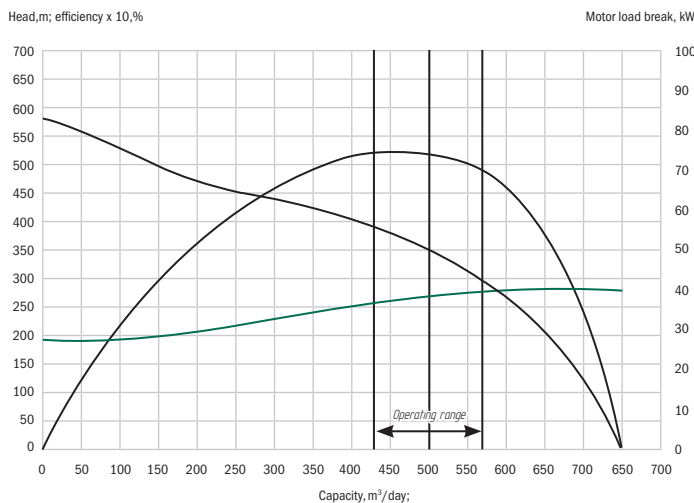
Assembly	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
Number of stages, pcs.	315	330	345	360	372	387	402	417	432	444	459	474	489	504	516	531	546	561	576	588	603
Head at 50 Hz, m	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100
Motor load brake at 50 Hz, kW	120,36	126,09	131,82	137,56	142,14	147,87	153,60	159,34	165,07	169,65	175,38	181,12	186,85	192,58	197,16	202,90	208,63	214,36	220,09	224,67	230,41
Weight, kg	954	993	1032	1071	1125	1164	1203	1242	1281	1320	1335	1374	1413	1452	1655	1694	1733	1772	1811	1886	1925

Pump sections number and length



Pump specification 222(224)A-ESP CW M-500(cpi),
capacity Q = 500 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=500 m³/day; H=350 m; N=38,21 kW; $\eta=52\%$

222(224)A-ESP CW M-500(cpi) head rating at various rpm;
number of stages =100



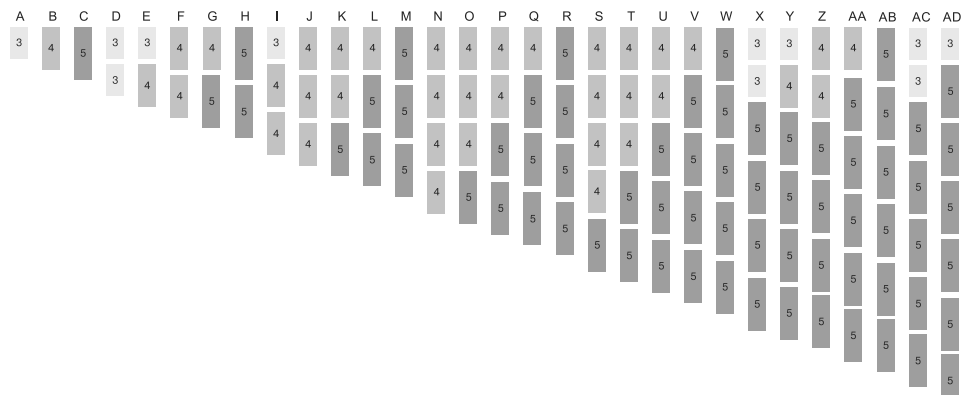
Pump 012A-ESP CW M-500(cpi)

Single-bearing operating elements with the impeller extended hub and hard-alloy bushings in radial section bearings are applied in the pumps

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of stages, pcs.	44	59	74	88	103	118	133	148	162	177	192	207	222	236	251
Head at 50 Hz, m	200	250	300	350	400	500	550	600	650	750	800	850	900	950	1050
Motor load brake at 50 Hz, kW	18,96	25,43	31,89	37,93	44,39	50,86	57,32	63,79	69,82	76,29	82,75	89,22	95,68	101,72	108,18
Weight, kg	182	227	285	352	397	442	500	558	612	657	715	773	831	872	930

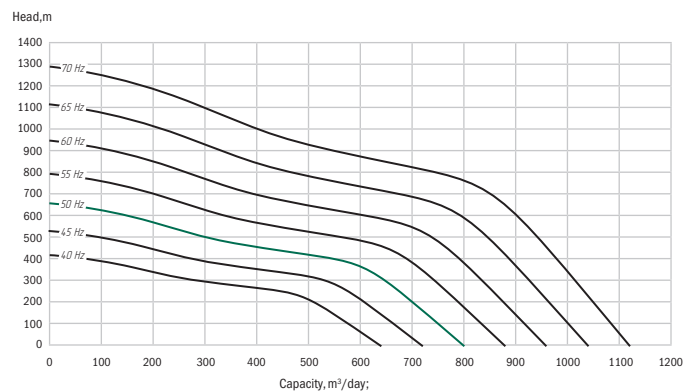
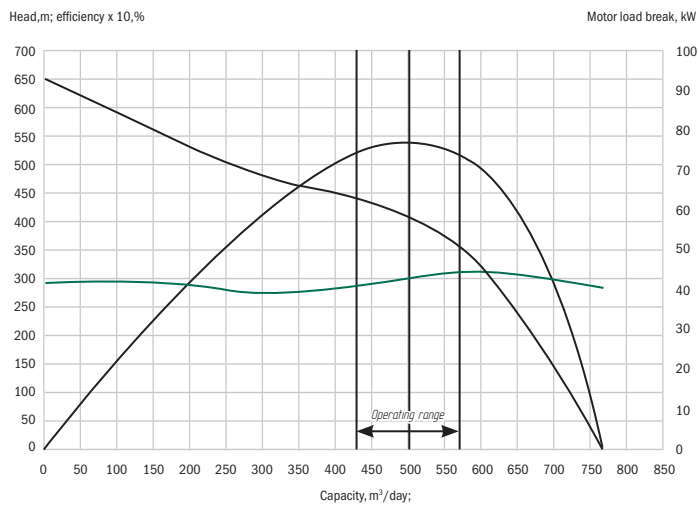
Assembly	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
Number of stages, pcs.	266	281	296	310	325	340	355	370	384	399	414	429	444	458	488
Head at 50 Hz, m	1100	1150	1200	1250	1350	1400	1450	1500	1550	1650	1700	1750	1800	1900	2000
Motor load brake at 50 Hz, kW	114,65	121,11	127,58	133,61	140,08	146,54	153,01	159,47	165,50	171,97	178,43	184,90	191,36	197,40	210,33
Weight, kg	988	1027	1072	1145	1203	1261	1319	1377	1412	1489	1534	1592	1650	1717	1820

Pump sections number and length



Pump specification 012A-ESP CW M-500(cpi),
capacity Q = 500 m³/day; water density $\eta=1000 \text{ kg/m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=500 m³/day; H=415 m; N=43,1 kW; $\eta=54\%$

012A-ESP CW M-500(cpi) head rating at various rpm;
number of stages =100

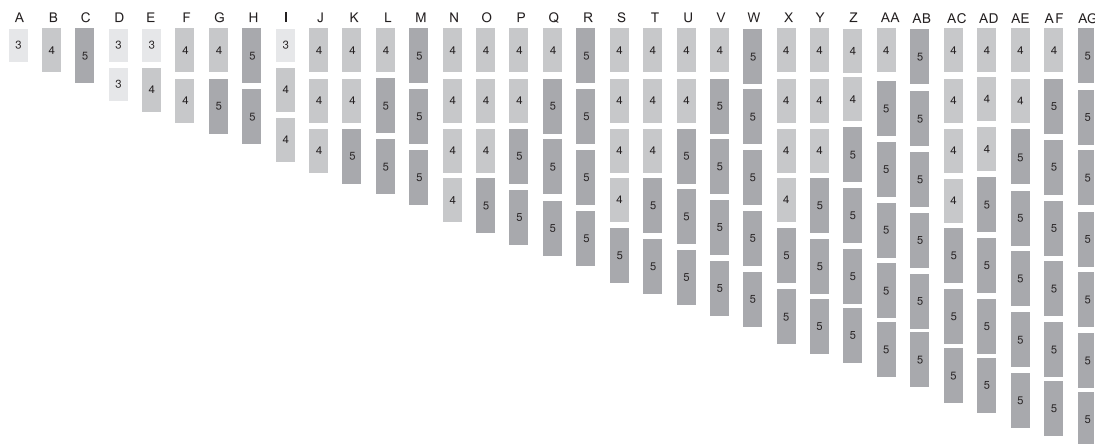


Pump 052A-ESP CW M-500(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	41	55	70	82	96	110	125	140	151	165	180	195	210	220	235	250
Head at 50 Hz, m	150	200	300	350	400	450	500	550	600	650	750	800	850	900	950	1000
Motor load brake at 50 Hz, kW	17,67	23,71	30,17	35,34	41,38	47,41	53,88	60,34	65,08	71,12	77,58	84,05	90,51	94,82	101,29	107,75
Weight, kg	156	198	239	291	333	375	416	457	510	552	593	634	675	729	770	811

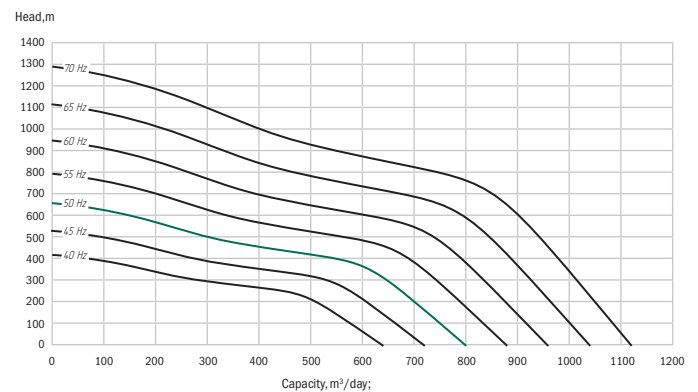
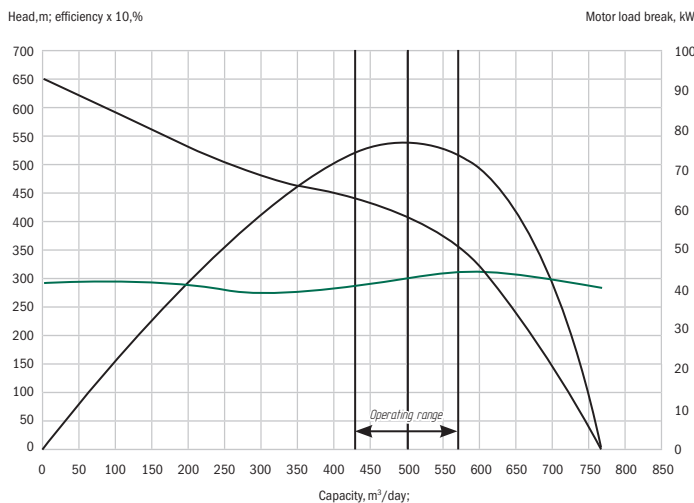
Assembly	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
Number of stages, pcs.	265	280	290	305	320	335	350	360	375	390	405	420	430	445	460	475	490
Head at 50 Hz, m	1050	1150	1200	1250	1300	1350	1400	1450	1550	1600	1650	1700	1750	1800	1900	1950	2000
Motor load brake at 50 Hz, kW	114,22	120,68	124,99	131,46	137,92	144,39	150,85	155,16	161,63	168,09	174,56	181,02	185,33	191,80	198,26	204,73	211,19
Weight, kg	852	893	947	988	1029	1070	1111	1165	1206	1247	1288	1329	1383	1424	1465	1506	1547

Pump sections number and length



Pump specification 052A-ESP CW M-500(cpi),
capacity Q = 500 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=500 m³/day; H=410 m; N=43,1 kW; $\eta=54\%$

052A-ESP CW M-500(cpi) head rating at various rpm;
number of stages =100

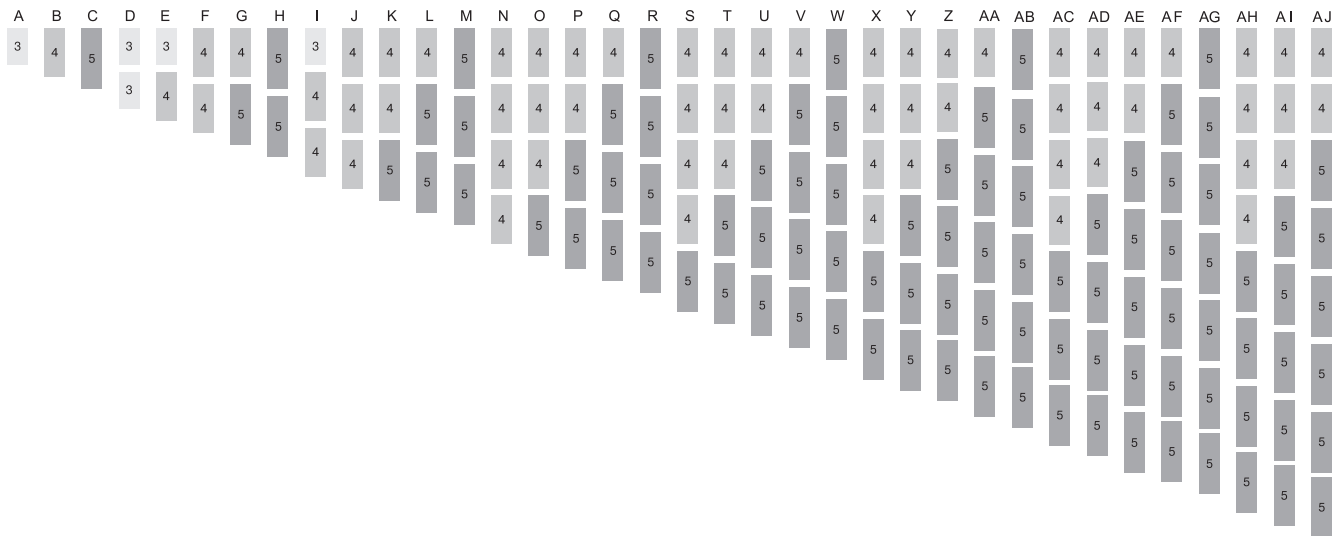


Pump 022A-ESP CW M-700(cpi)M1

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	38	50	63	76	88	100	113	126	138	150	163	176	189	200	213	226	239	252
Head at 50 Hz, m	150	200	250	350	400	450	500	550	600	650	700	750	850	900	950	1000	1050	1100
Motor load brake at 50 Hz, kW	22,54	29,66	37,37	45,08	52,20	59,32	67,03	74,74	81,86	88,98	96,69	104,40	112,11	118,64	126,35	134,06	141,77	149,49
Weight, kg	173	211	261	325	363	401	451	501	553	591	641	691	741	781	831	881	931	981

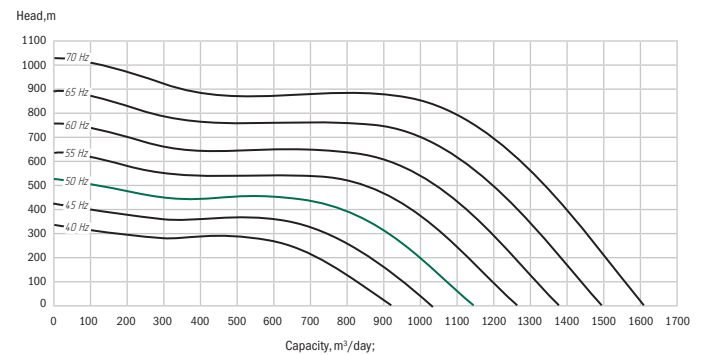
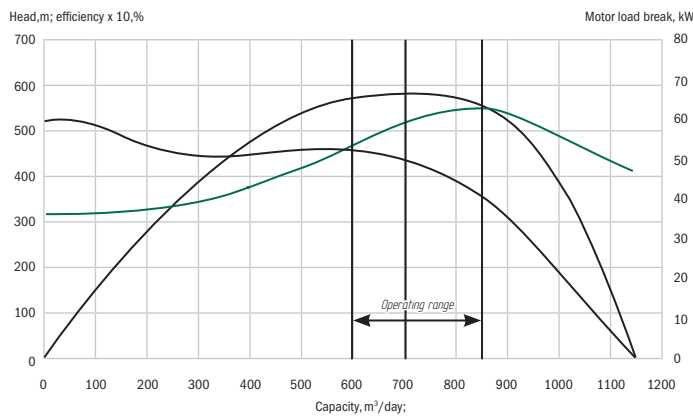
Assembly	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
Number of stages, pcs.	263	276	289	302	315	326	339	352	365	378	389	402	415	428	441	452	465	478
Head at 50 Hz, m	1150	1200	1250	1300	1400	1450	1500	1550	1600	1650	1700	1750	1800	1900	1950	2000	2050	2100
Motor load brake at 50 Hz, kW	156,01	163,72	171,43	179,15	186,86	193,38	201,09	208,81	216,52	224,23	230,75	238,47	246,18	253,89	261,60	268,13	275,84	283,55
Weight, kg	1021	1071	1121	1171	1221	1261	1311	1361	1411	1461	1501	1551	1601	1651	1701	1741	1791	1841

Pump sections number and length



Pump specification 022A-ESP CW M-700(cpi)M1
 capacity $Q = 700 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 700 \text{ m}^3/\text{day}$; $H = 440 \text{ m}$; $N = 59,32 \text{ kW}$; $\eta = 59\%$

022A-ESP CW M-700(cpi)M1 head rating at various rpm;
 number of stages = 100

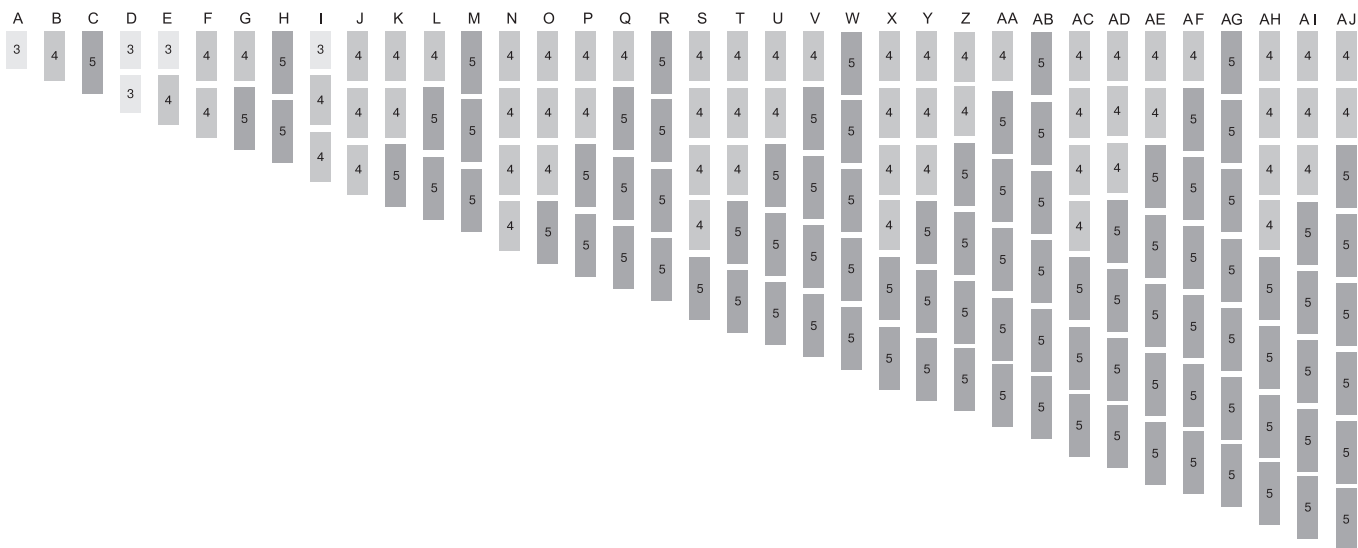


Pump 002A-ESP CW M-800(cpi)M1

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Number of stages, pcs.	38	50	63	76	88	100	113	126	138	150	163	176	189	200	213	226	239	252
Head at 50 Hz, m	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Motor load brake at 50 Hz, kW	23,94	31,50	39,69	47,88	55,44	63,00	71,19	79,38	86,94	94,50	102,69	110,88	119,07	126,00	134,19	142,38	150,57	158,76
Weight, kg	173	211	261	325	363	401	451	501	553	591	641	691	741	781	831	881	931	981

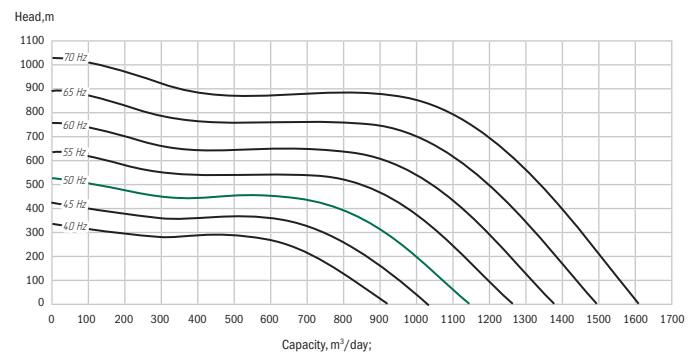
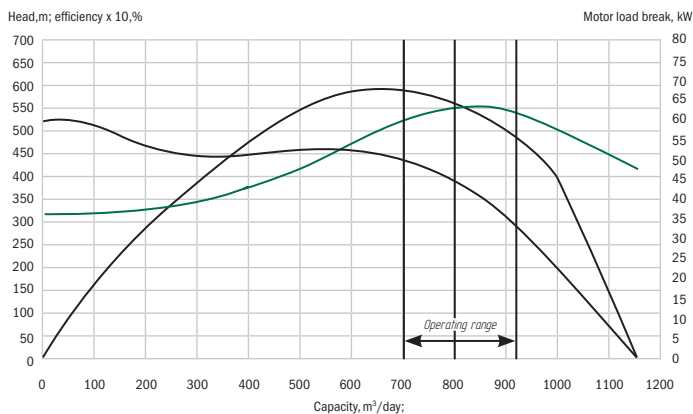
Assembly	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
Number of stages, pcs.	263	276	289	302	315	326	339	352	365	378	389	402	415	428	441	452	465	478
Head at 50 Hz, m	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900
Motor load brake at 50 Hz, kW	165,69	173,88	182,07	190,26	198,45	205,38	213,57	221,76	229,95	238,14	245,07	253,26	261,45	269,64	277,83	284,76	292,95	301,14
Weight, kg	1021	1071	1121	1171	1221	1261	1311	1361	1411	1461	1501	1551	1601	1651	1701	1741	1791	1841

Pump sections number and length



Pump specification 002A-ESP CW M-800(cpi)M1
 capacity $Q = 800 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 800 \text{ m}^3/\text{day}$; $H = 390 \text{ m}$; $N = 63 \text{ kW}$; $\eta = 56\%$

002A-ESP CW M-800(cpi)M1 head rating at various rpm;
 number of stages = 100



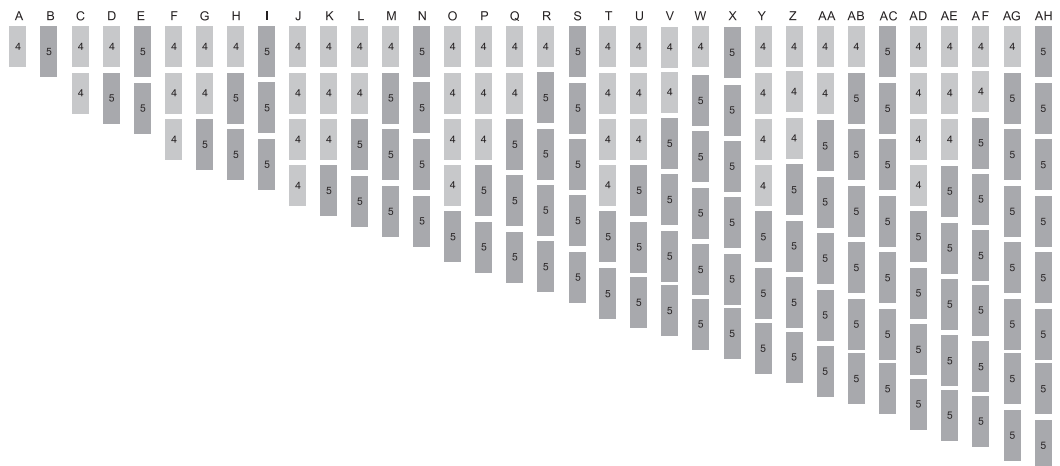
Pump 012A-ESP CW M-700M2

Radial bearings are built-in the pump operating stages

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	42	53	84	95	106	126	137	148	159	168	179	190	201	212	221	232	243
Head at 50 Hz, m	200	250	400	450	500	600	650	700	750	800	850	900	1000	1050	1100	1150	1200
Motor load brake at 50 Hz, kW	24,44	30,84	48,87	55,27	61,67	73,31	79,71	86,11	92,51	97,74	104,14	110,54	116,94	123,34	128,58	134,98	141,38
Weight, kg	208	258	403	453	503	598	648	698	748	793	843	893	943	993	1038	1088	1138

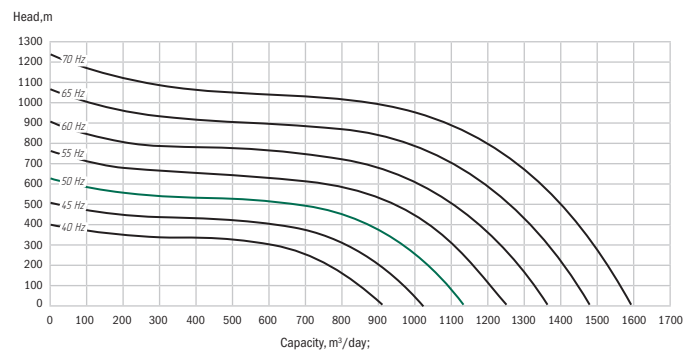
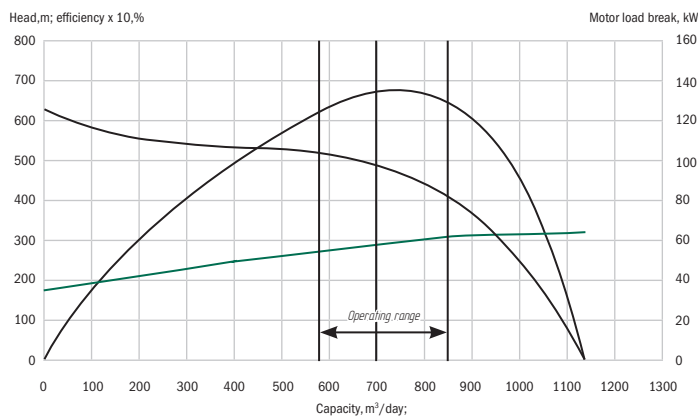
Assembly	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
Number of stages, pcs.	254	265	274	285	296	307	318	327	338	349	360	371	380	391	402	413	424
Head at 50 Hz, m	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050
Motor load brake at 50 Hz, kW	147,78	154,18	159,41	165,81	172,21	178,61	185,01	190,25	196,65	203,05	209,45	215,85	221,08	227,48	233,88	240,28	246,68
Weight, kg	1188	1238	1283	1333	1383	1433	1483	1528	1578	1628	1678	1728	1773	1823	1873	1923	1973

Pump sections number and length



Pump specification 012A-ESP CW M-700M2
 capacity $Q = 700 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 700 \text{ m}^3/\text{day}$; $H = 490 \text{ m}$; $N = 58,18 \text{ kW}$; $\eta = 67\%$

012A-ESP CW M-700M2 head rating at various rpm;
 number of stages = 100



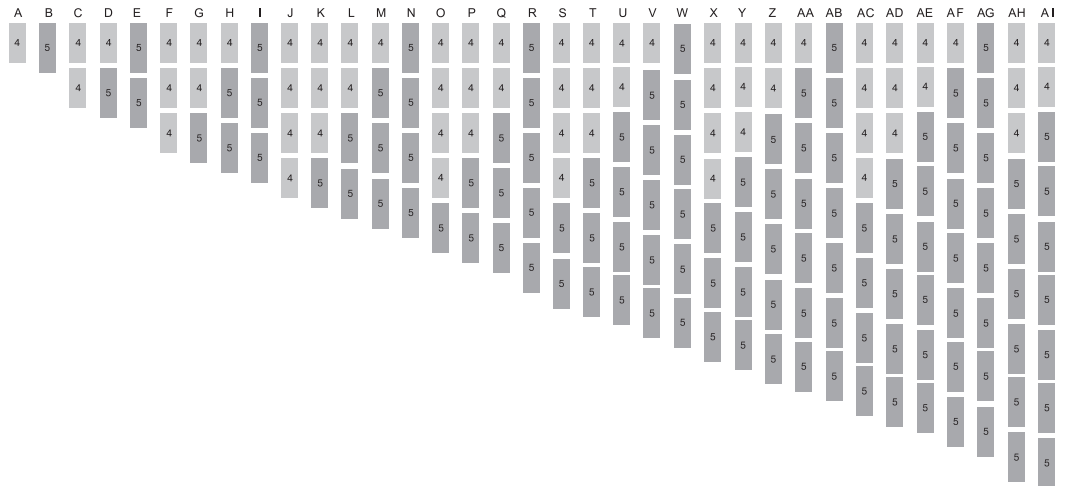
Pump 012A-ESP CW M-800M2

Radial bearings are built-in the pump operating stages

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	42	53	84	95	106	126	137	148	159	168	179	190	201	212	221	232	243
Head at 50 Hz, m	200	250	350	400	450	550	600	650	700	750	800	850	900	950	1000	1050	1100
Motor load brake at 50 Hz, kW	25,74	32,48	51,48	58,23	64,97	77,23	83,97	90,71	97,45	102,97	109,71	116,45	123,19	129,93	135,45	142,19	148,93
Weight, kg	208	258	403	453	503	598	648	698	748	793	843	893	943	993	1038	1088	1138

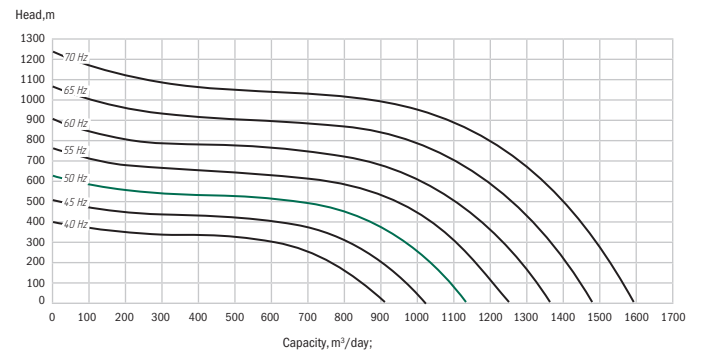
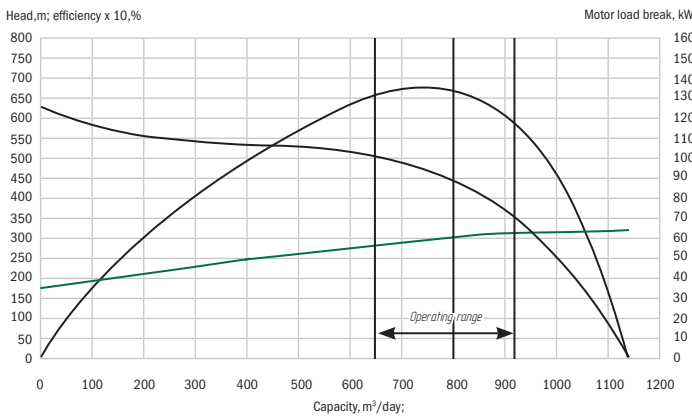
Assembly	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Number of stages, pcs.	265	274	285	296	307	318	327	338	349	360	371	380	391	402	413	424	444	455
Head at 50 Hz, m	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000
Motor load brake at 50 Hz, kW	162,42	167,93	174,68	181,42	188,16	194,90	200,42	207,16	213,90	220,64	227,39	232,90	239,64	246,39	253,13	259,87	272,13	278,87
Weight, kg	1188	1238	1283	1383	1433	1483	1528	1578	1628	1678	1728	1773	1823	1873	1923	1973	2068	2118

Pump sections number and length



Pump specification 012A-ESP CW M-800M2
 capacity $Q = 800 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 800 \text{ m}^3/\text{day}$; $H = 445 \text{ m}$; $N = 61,29 \text{ kW}$; $\eta = 66\%$

012A-ESP CW M-800M2 head rating at various rpm;
 number of stages = 100



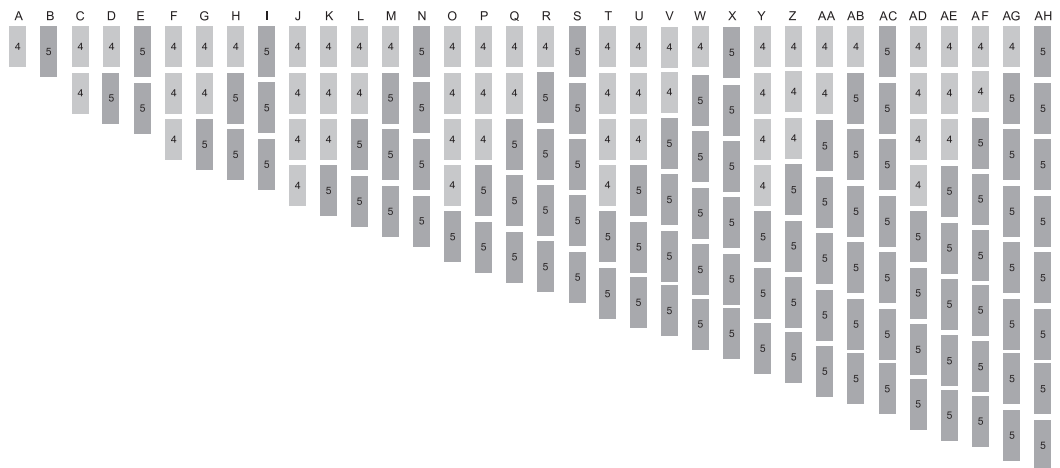
Pump 052A-ESP CW M-700M2

Radial bearings are built-in the pump operating stages

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	42	53	84	95	106	126	137	148	159	168	179	190	201	212	221	232	243
Head at 50 Hz, m	200	250	400	450	500	600	650	700	750	800	850	900	1000	1050	1100	1150	1200
Motor load brake at 50 Hz, kW	24,44	30,84	48,87	55,27	61,67	73,31	79,71	86,11	92,51	97,74	104,14	110,54	116,94	123,34	128,58	134,98	141,38
Weight, kg	208	258	403	453	503	598	648	698	748	793	843	893	943	993	1038	1088	1138

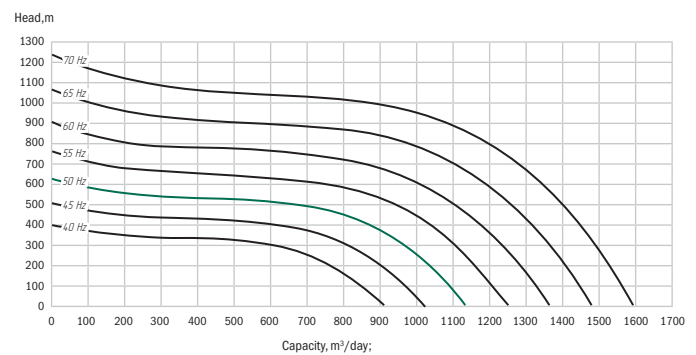
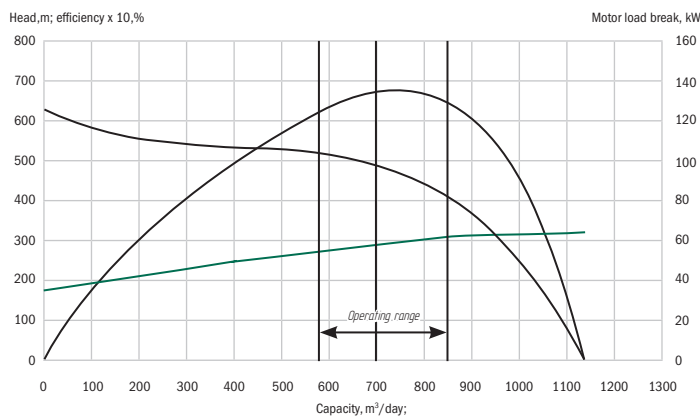
Assembly	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
Number of stages, pcs.	254	265	274	285	296	307	318	327	338	349	360	371	380	391	402	413	424
Head at 50 Hz, m	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050
Motor load brake at 50 Hz, kW	147,78	154,18	159,41	165,81	172,21	178,61	185,01	190,25	196,65	203,05	209,45	215,85	221,08	227,48	233,88	240,28	246,68
Weight, kg	1188	1238	1283	1333	1383	1433	1483	1528	1578	1628	1678	1728	1773	1823	1873	1923	1973

Pump sections number and length



Pump specification 052A-ESP CW M-700M2
 capacity $Q = 700 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 700 \text{ m}^3/\text{day}$; $H = 490 \text{ m}$; $N = 58,18 \text{ kW}$; $\eta = 67\%$

052A-ESP CW M-700M2 head rating at various rpm;
 number of stages = 100



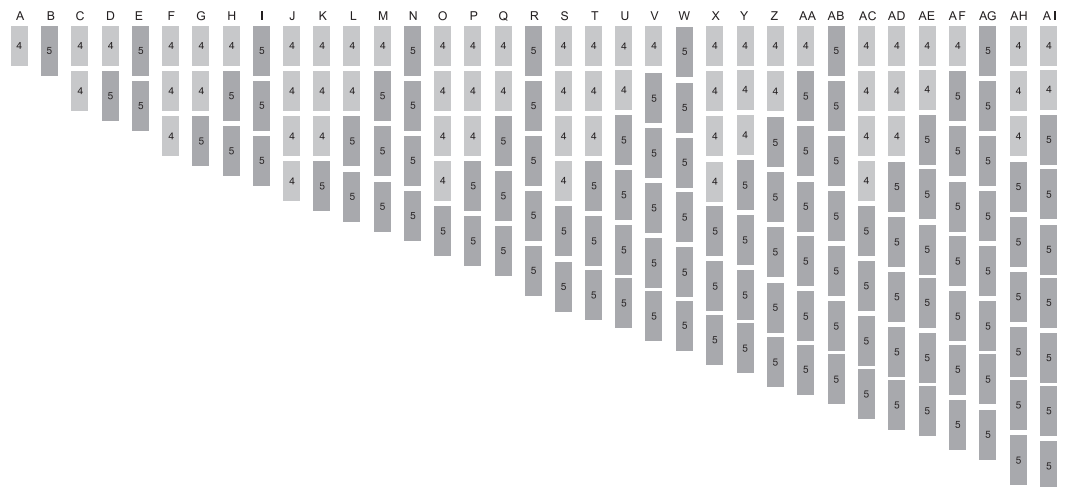
Pump 052A-ESP CW M-800M2

Radial bearings are built-in the pump operating stages

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	42	53	84	95	106	126	137	148	159	168	179	190	201	212	221	232	243
Head at 50 Hz, m	200	250	350	400	450	550	600	650	700	750	800	850	900	950	1000	1050	1100
Motor load brake at 50 Hz, kW	25,74	32,48	51,48	58,23	64,97	77,23	83,97	90,71	97,45	102,97	109,71	116,45	123,19	129,93	135,45	142,19	148,93
Weight, kg	208	258	403	453	503	598	648	698	748	793	843	893	943	993	1038	1088	1138

Assembly	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Number of stages, pcs.	265	274	285	296	307	318	327	338	349	360	371	380	391	402	413	424	444	455
Head at 50 Hz, m	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000
Motor load brake at 50 Hz, kW	162,42	167,93	174,68	181,42	188,16	194,90	200,42	207,16	213,90	220,64	227,39	232,90	239,64	246,39	253,13	259,87	272,13	278,87
Weight, kg	1238	1283	1333	1383	1433	1483	1528	1578	1628	1678	1728	1773	1823	1873	1923	1973	2068	2118

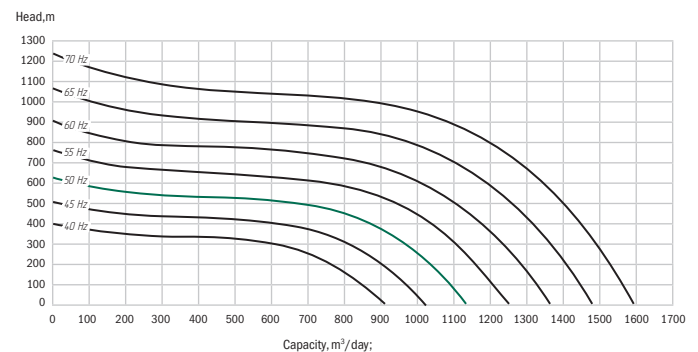
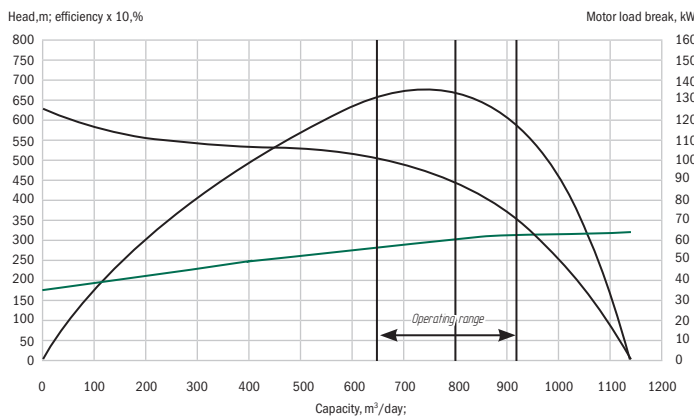
Pump sections number and length



Pump specification 052A-ESP CW M-800M2

capacity $Q = 800 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 800 \text{ m}^3/\text{day}$; $H = 445 \text{ m}$; $N = 61,29 \text{ kW}$; $\eta = 66\%$

052A-ESP CW M-800M2 head rating at various rpm; number of stages = 100

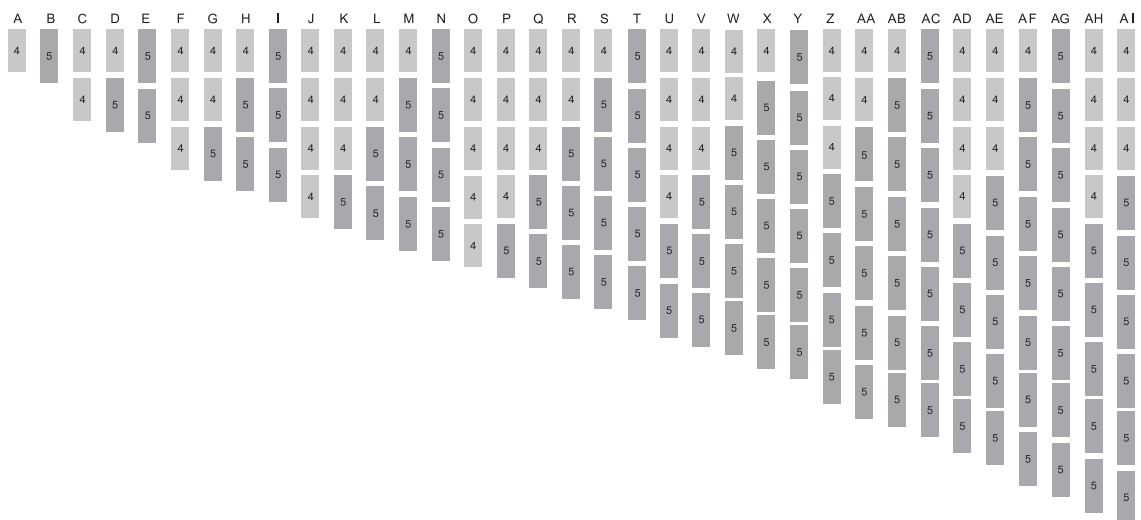


Pump 012A-ESP CW M-700M2

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	39	49	78	88	98	117	127	137	147	156	166	176	186	196	205	215	225
Head at 50 Hz, m	200	250	350	400	450	550	600	650	700	750	800	850	900	950	1000	1050	1100
Motor load brake at 50 Hz, kW	22,69	28,51	45,38	51,20	57,02	68,07	73,89	79,71	85,52	90,76	96,58	102,40	108,21	114,03	119,27	125,09	130,91
Weight, kg	204	253	395	444	493	586	635	684	733	777	826	875	924	973	1017	1066	1115

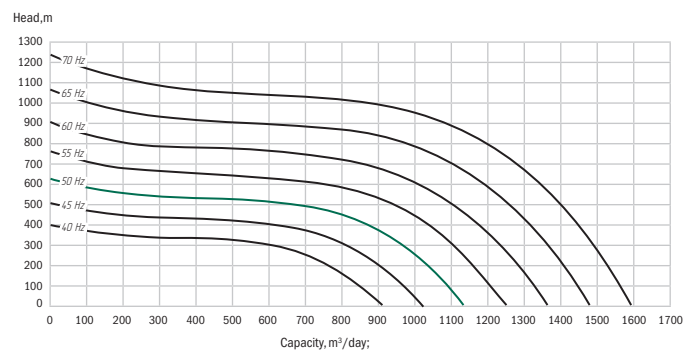
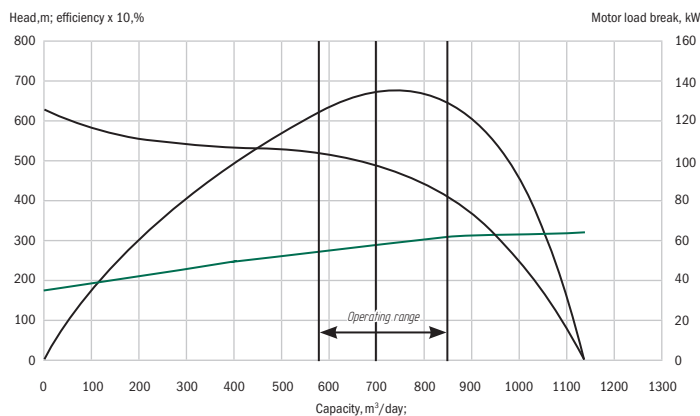
Assembly	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Number of stages, pcs.	235	245	254	264	274	284	294	313	323	333	343	352	362	372	382	392	401	411
Head at 50 Hz, m	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000
Motor load brake at 50 Hz, kW	136,72	142,54	147,78	153,60	159,41	165,23	171,05	182,10	187,92	193,74	199,56	204,79	210,61	216,43	222,25	228,07	233,30	239,12
Weight, kg	1164	1213	1257	1306	1355	1404	1453	1546	1595	1644	1693	1737	1786	1835	1884	1933	1977	2026

Pump sections number and length



Pump specification 012A-ESP CW M-700M2
 capacity $Q = 700 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 700 \text{ m}^3/\text{day}$; $H = 490 \text{ m}$; $N = 58,18 \text{ kW}$; $\eta = 67\%$

012A-ESP CW M-700M2 head rating at various rpm;
 number of stages = 100

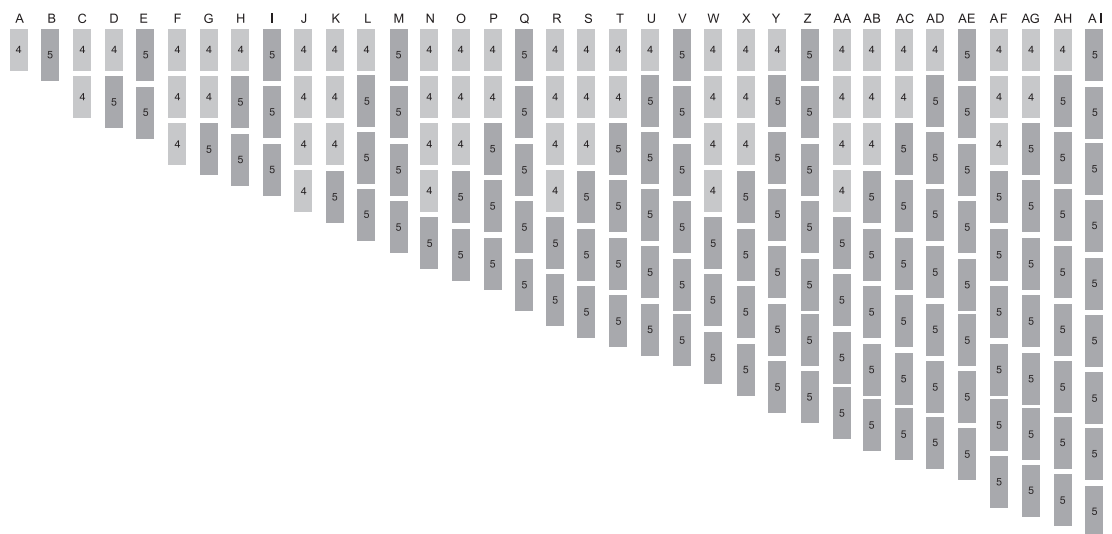


Pump 012A-ESP CW M-800M2

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	39	49	78	88	98	117	127	137	147	156	166	186	196	205	215	225	245
Head at 50 Hz, m	150	200	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
Motor load brake at 50 Hz, kW	23,90	30,03	47,81	53,94	60,06	71,71	77,84	83,97	90,10	95,61	101,74	114,00	120,13	125,64	131,77	137,90	150,16
Weight, kg	204	253	395	444	493	586	635	684	733	777	826	924	973	1017	1066	1115	1213

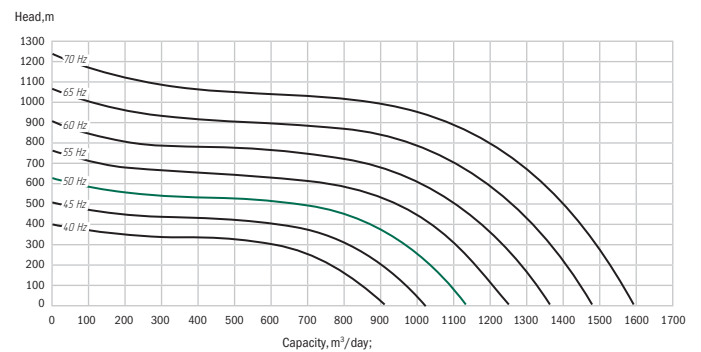
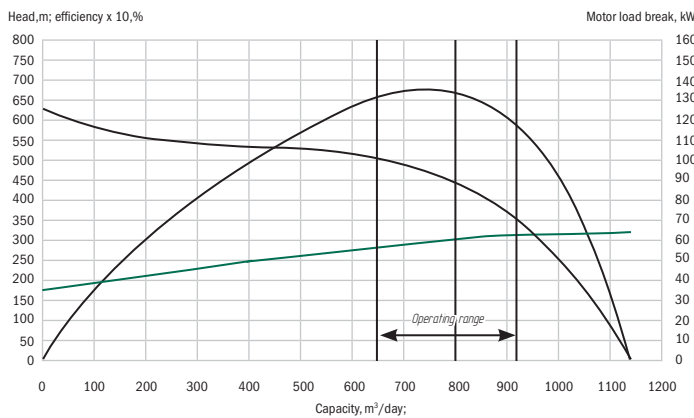
Assembly	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Number of stages, pcs.	254	264	274	284	294	303	313	333	343	352	362	372	382	392	411	421	431	441
Head at 50 Hz, m	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950
Motor load brake at 50 Hz, kW	155,68	161,81	167,93	174,06	180,19	185,71	191,84	204,10	210,22	215,74	221,87	228,00	234,13	240,26	251,90	258,03	264,16	270,29
Weight, kg	1257	1306	1355	1404	1453	1497	1546	1644	1693	1737	1786	1835	1884	1933	2026	2075	2124	2173

Pump sections number and length



Pump specification 012A-ESP CW M-800M2
 capacity $Q = 800 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 800 \text{ m}^3/\text{day}$; $H = 445 \text{ m}$; $N = 61,29 \text{ kW}$; $\eta = 66\%$

012A-ESP CW M-800M2 head rating at various rpm;
 number of stages = 100



Pump A-ESP C(CW)L-800(cpi)

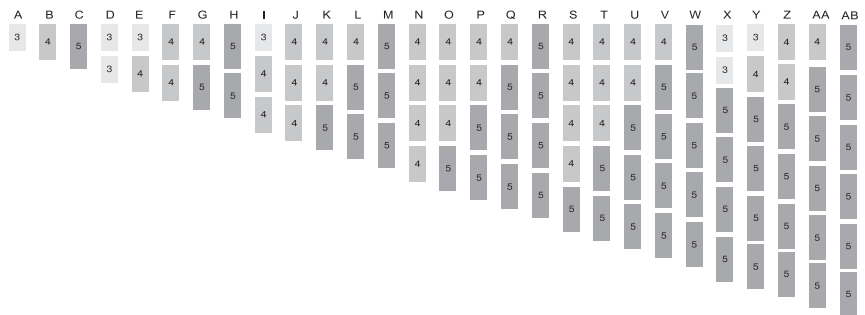
Single-bearing operating elements with the impeller extended hub and hard-alloy bushings in radial section bearings are applied in corrosion-and-wear-resistant pumps

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	38 (36)	51	65	76	89	102 (98)	116	130	140	153 (147)	167 (159)	181 (171)	195 (183)	204 (196)
Head at 50 Hz, m	200 (150)	250	300	350	400	500 (450)	550	600	650	750 (700)	800 (750)	850 (800)	950 (900)	1000 (950)
Motor load brake at 50 Hz, kW	29,60 (28,04)	39,73	50,64	59,20	69,33	79,46 (76,34)	90,36	101,27	109,06	119,19 (114,51)	130,09 (123,86)	141 (133,21)	151,91 (142,56)	158,92 (152,68)
Weight, kg	187 (189)	227	287	357	397	437 (463)	497	557	607	647 (686)	707 (738)	767 (790)	827 (842)	857 (909)

Assembly	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
Number of stages, pcs.	218 (208)	232 (220)	246 (232)	260 (244)	269 (257)	283 (269)	297 (281)	311 (293)	325 (305)	336 (316)	349 (329)	362 (342)	376 (354)	390 (366)
Head at 50 Hz, m	1050 (1000)	1100 (1050)	1200 (1100)	1250 (1150)	1300 (1250)	1350 (1300)	1450 (1350)	1500 (1400)	1550 (1450)	1600 (1500)	1700 (1600)	1750 (1650)	1800 (1700)	1850 (1750)
Motor load brake at 50 Hz, kW	169,82 (162,03)	171,38 (180,73)	191,63 (180,73)	202,54 (190,08)	209,55 (200,20)	220,46 (209,55)	231,36 (218,90)	242,27 (228,25)	253,18 (237,60)	261,74 (246,16)	271,87 (256,29)	282,0 (266,42)	292,90 (275,77)	303,81 (285,11)
Weight, kg	917 (961)	977 (1013)	1037 (1065)	1097 (1117)	1127 (1184)	1187 (1236)	1247 (1288)	1307 (1340)	1367 (1375)	1437 (1461)	1477 (1512)	1517 (1563)	1577 (1615)	1637 (1667)

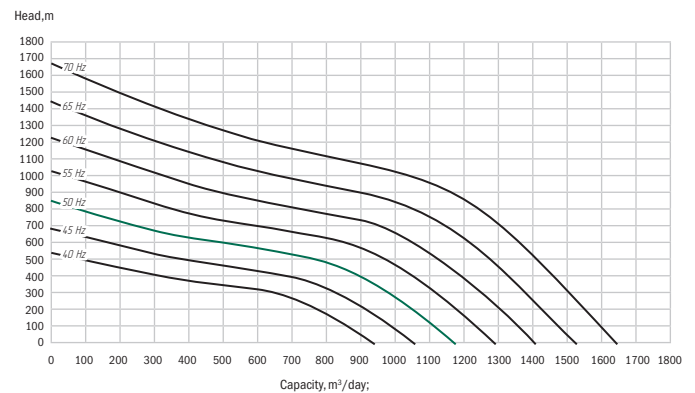
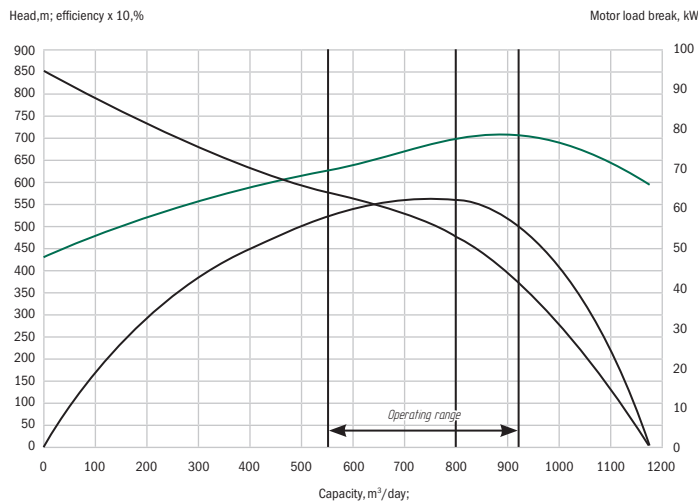
A-ESP C(CW)L-800(cpi) parameters - in brackets

Pump sections number and length



Pump specification A-ESP C(CW)L-800(cpi)
capacity Q = 800 m³/day; water density η=1000 kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=800 m³/day; H=480 m; N=77,9 kW; η=56%

A-ESP C(CW)L-800(cpi) head rating at various rpm;
number of stages =100

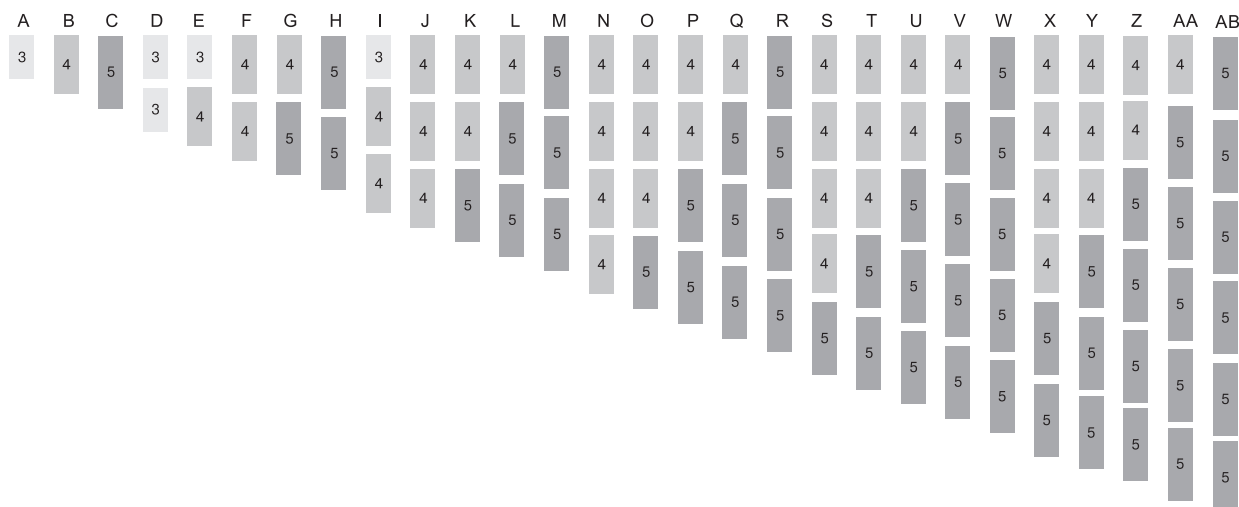


Pump 222(224)A-ESP CW L-800(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	36	48	61	72	84	96	110	122	132	144	157	170	183	192
Head at 50 Hz, m	200	250	300	350	400	500	550	600	650	750	800	850	950	1000
Motor load brake at 50 Hz, kW	29,81	39,74	50,51	59,62	69,55	79,49	90,25	101,02	109,30	119,23	130,0	140,76	151,52	158,98
Weight, kg	197	248	301	370	421	472	525	578	645	696	749	802	855	920

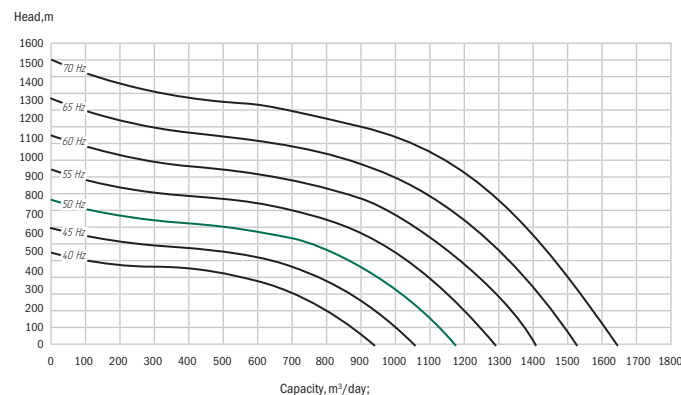
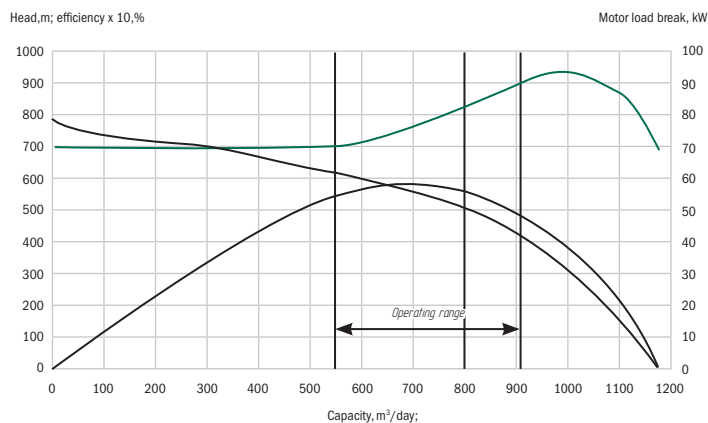
Assembly	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
Number of stages, pcs.	205	218	231	244	253	266	279	292	305	314	327	340	353	366
Head at 50 Hz, m	1050	1100	1200	1250	1300	1350	1400	1500	1550	1600	1650	1750	1800	1850
Motor load brake at 50 Hz, kW	169,74	180,50	191,27	202,03	209,48	220,25	231,01	241,78	252,54	259,99	270,76	281,52	292,28	303,05
Weight, kg	973	1026	1079	1132	1197	1250	1303	1356	1409	1474	1527	1580	1633	1686

Pump sections number and length



**Pump specification 222(224)A-ESP CW L-800(cpi),
capacity Q = 800 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=800 m³/day; H=510 m; N=82,8 kW; $\eta=56\%$**

**222(224)A-ESP CW L-800(cpi) head rating at various rpm;
number of stages =100**

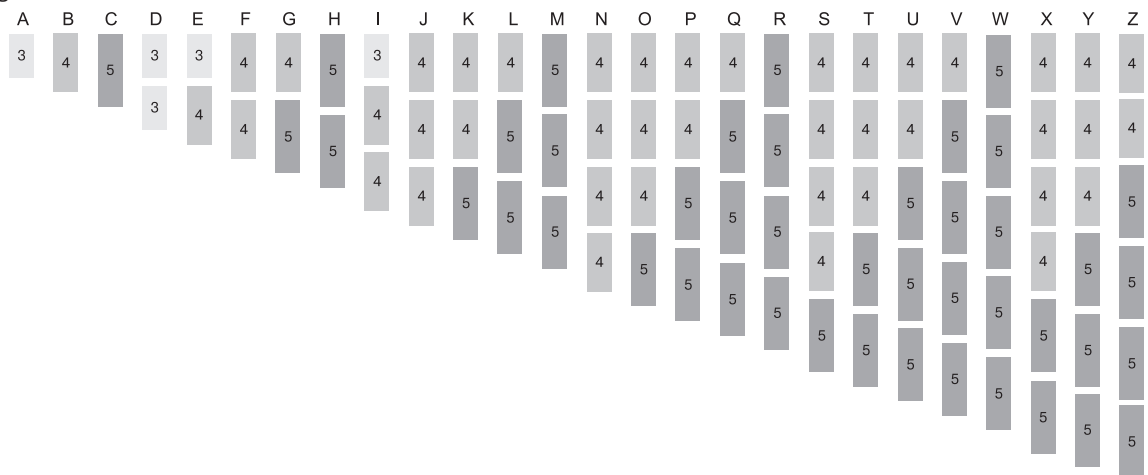


Pump 052A-ESP CW L-800

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of stages, pcs.	38	51	65	76	89	102	116	130	140	153	167	181	195	204
Head at 50 Hz, m	200	250	300	350	400	500	550	600	650	750	800	850	950	1000
Motor load brake at 50 Hz, kW	29,60	39,73	50,64	59,20	69,33	79,46	90,36	101,27	109,06	119,19	130,09	141,00	151,91	158,92
Weight, kg	182	233	285	354	405	456	508	560	628	679	731	783	835	902

Assembly	O	P	Q	R	S	T	U	V	W	X	Y	Z
Number of stages, pcs.	218	232	246	260	269	283	297	311	325	334	348	362
Head at 50 Hz, m	1050	1100	1200	1250	1300	1350	1400	1500	1550	1600	1650	1750
Motor load brake at 50 Hz, kW	169,82	180,73	191,63	202,54	209,55	220,46	231,36	242,27	253,18	260,19	271,09	282,00
Weight, kg	954	1006	1058	1110	1177	1229	1281	1333	1385	1452	1504	1556

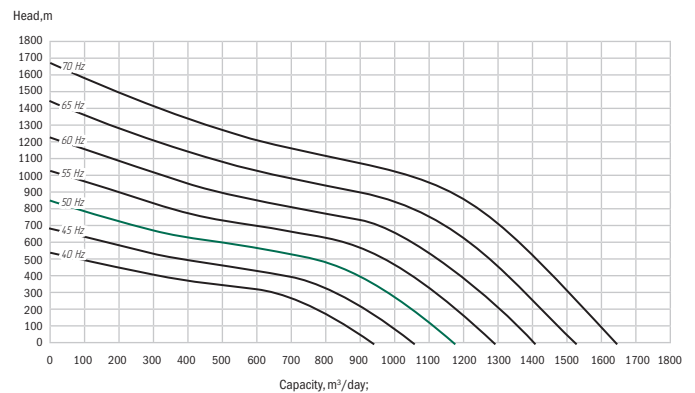
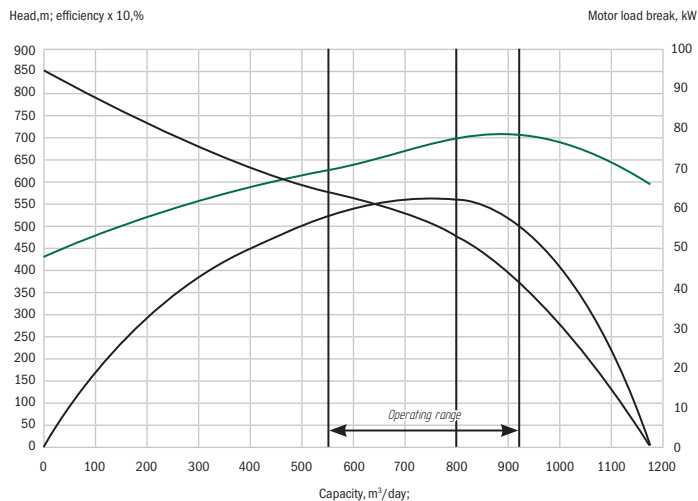
Pump sections number and length



Pump specification 052A-ESP CW L-800

capacity $Q = 800 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q=800 \text{ m}^3/\text{day}$; $H=480 \text{ m}$; $N=77,9 \text{ kW}$; $\eta=56\%$

052A-ESP CW L-800 head rating at various rpm; number of stages = 100

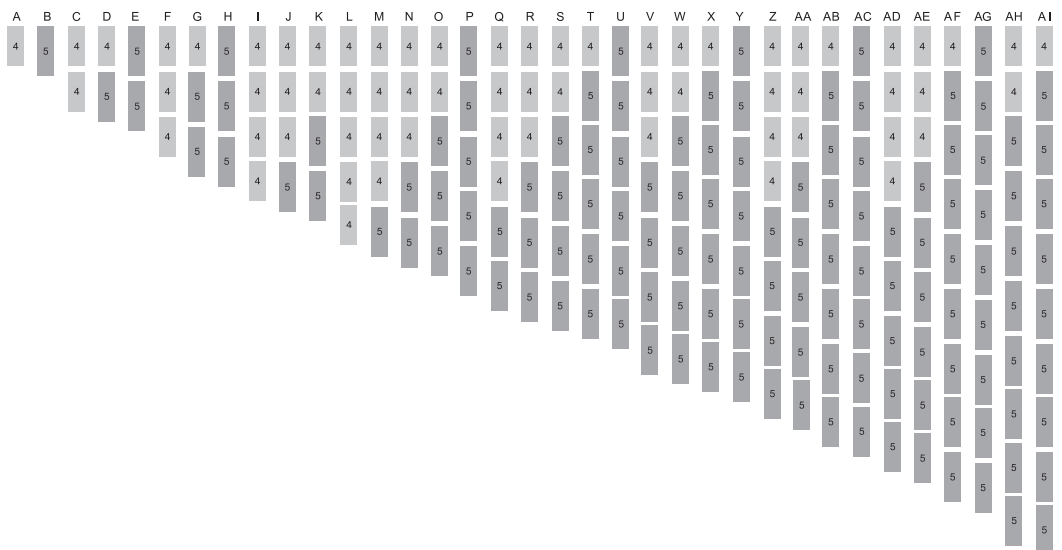


Pump 204A-ESP CW L-1000(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	38	48	77	87	97	115	135	145	153	163	173	191	201	211	221	241	249
Head at 50 Hz, m	150	200	300	350	400	500	550	600	650	700	750	800	850	900	950	1000	1050
Motor load brake at 50 Hz, kW	30,97	39,12	62,76	70,91	79,06	93,73	110,03	118,18	124,70	132,85	141,00	155,67	163,82	171,97	180,12	196,42	202,94
Weight, kg	204	255	399	450	500	597	698	748	795	846	896	993	1044	1094	1144	1244	1292

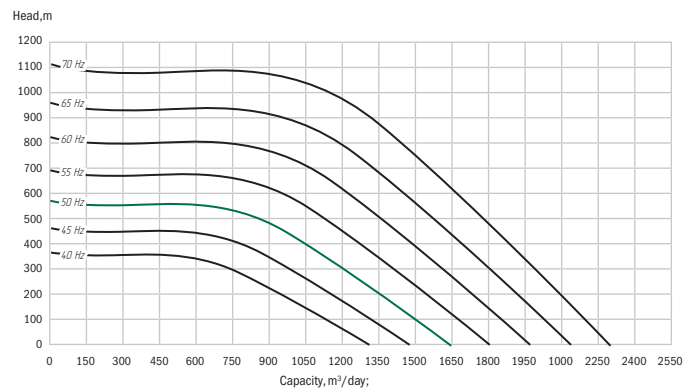
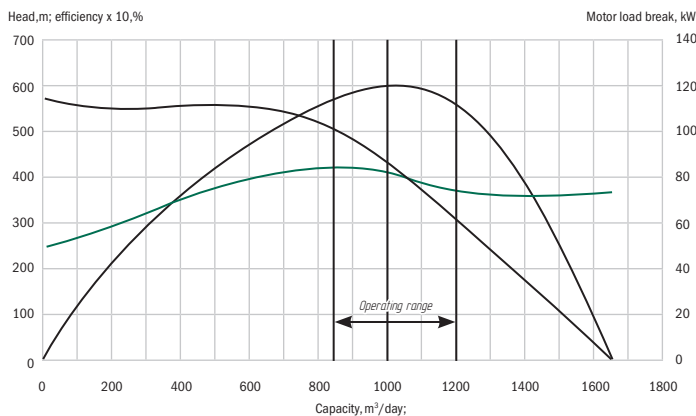
Assembly	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Number of stages, pcs.	259	269	279	289	307	317	327	337	345	355	375	385	393	403	423	433	461	471
Head at 50 Hz, m	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	2000	2050
Motor load brake at 50 Hz, kW	211,09	219,24	227,39	235,54	250,21	258,36	266,51	274,66	281,18	289,33	305,63	313,78	320,30	328,45	344,75	352,90	375,72	383,87
Weight, kg	1343	1392	1442	1492	1590	1640	1690	1740	1788	1838	1938	1988	2086	2136	2236	2334	2384	2434

Pump sections number and length



Pump specification 204A-ESP CW L-1000(cpi),
capacity Q = 1000 m³/day; water density $\eta=1000$ kg/m³,
rotation frequency 2910 rpm (50 Hz); number of stages =100;
Q=1000 m³/day; H=430 m; N=81,5 kW; $\eta=60\%$

204A-ESP CW L-1000(cpi) at various rpm;
number of stages =100

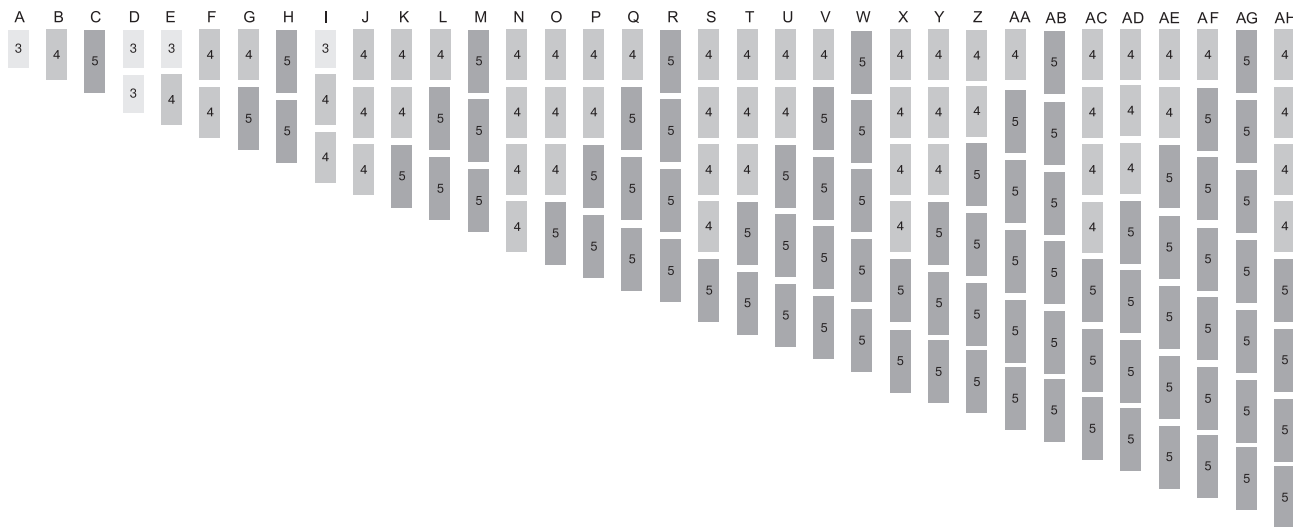


Pump 052A-ESP CW L-1000(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Number of stages, pcs.	34	42	68	76	84	102	110	118	126	144	152	168	178	187	202	210	228
Head at 50 Hz, m	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
Motor load brake at 50 Hz, kW	27,71	34,23	55,42	61,94	68,46	83,13	89,65	96,17	102,69	117,36	123,88	136,92	145,07	151,59	164,63	171,15	185,82
Weight, kg	190	240	436	486	574	624	674	762	812	862	962	1000	1100	1150	1200	1288	1338

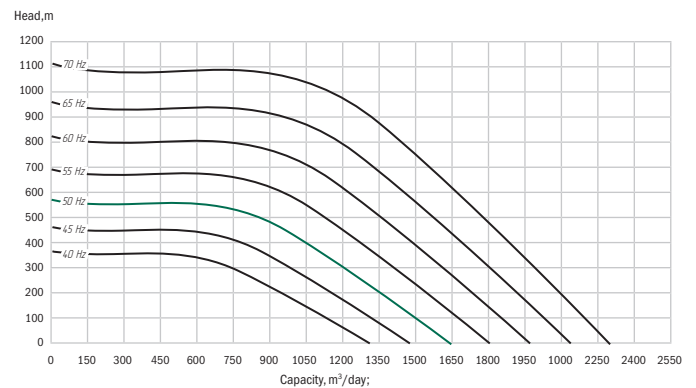
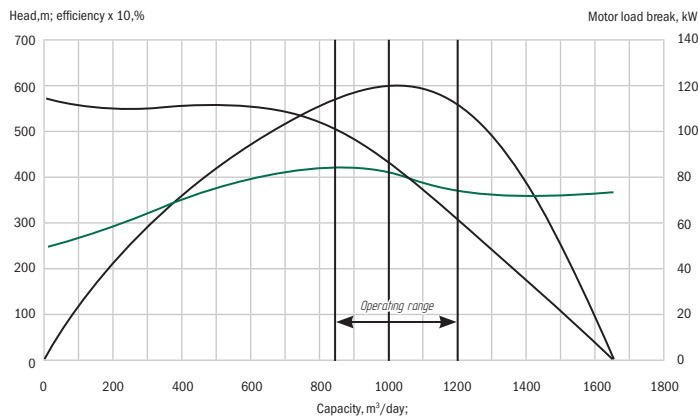
Assembly	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
Number of stages, pcs.	236	244	262	270	286	294	312	320	328	336	354	362	378	388	396	412	420
Head at 50 Hz, m	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800
Motor load brake at 50 Hz, kW	198,86	198,86	213,53	220,05	233,09	239,61	254,28	260,80	267,32	273,84	288,51	295,03	308,07	316,22	322,74	335,78	342,30
Weight, kg	1388	1438	1526	1626	1676	1714	1764	1814	1864	1914	2000	2052	2152	2190	2240	2340	2390

Pump sections number and length



Pump specification 052A-ESP CW L-1000(cpi)
 capacity $Q = 1000 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 1000 \text{ m}^3/\text{day}$; $H = 430 \text{ m}$; $N = 81,5 \text{ kW}$; $\eta = 60\%$

052A-ESP CW L-1000(cpi) head rating at various rpm;
 number of stages = 100



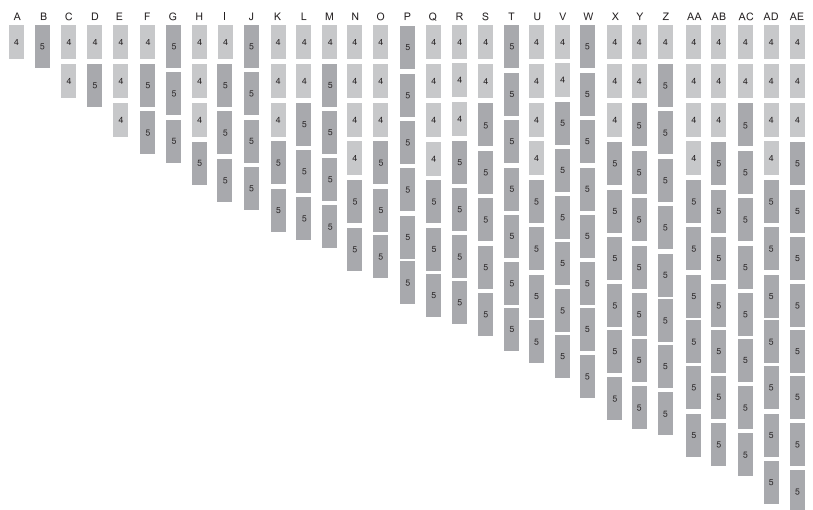
Pump 204A-ESP CW L-1250(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	37	46	73	82	109	128	138	154	174	184	200	210	220	236	246	276
Head at 50 Hz, m	130	160	250	300	400	450	500	550	600	650	700	750	800	850	900	950
Motor load brake at 50 Hz, kW	33,50	41,65	66,10	74,25	98,70	115,90	124,96	139,45	157,56	166,61	181,10	190,16	199,21	213,70	222,75	249,92
Weight, kg	204	255	399	450	597	699	750	846	948	999	1095	1146	1197	1293	1344	1446

Assembly	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
Number of stages, pcs.	282	292	302	322	328	348	368	384	394	404	420	430	440	466	476
Head at 50 Hz, m	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700
Motor load brake at 50 Hz, kW	255,35	264,41	273,46	291,57	297,0	315,11	333,22	347,71	356,77	365,82	380,31	389,37	398,42	421,96	431,02
Weight, kg	1542	1593	1644	1746	1791	1893	1995	2091	2142	2193	2289	2340	2391	2538	2589

Intermediate bearings in 204A-ESP CW L-1250 (cpi) pumps

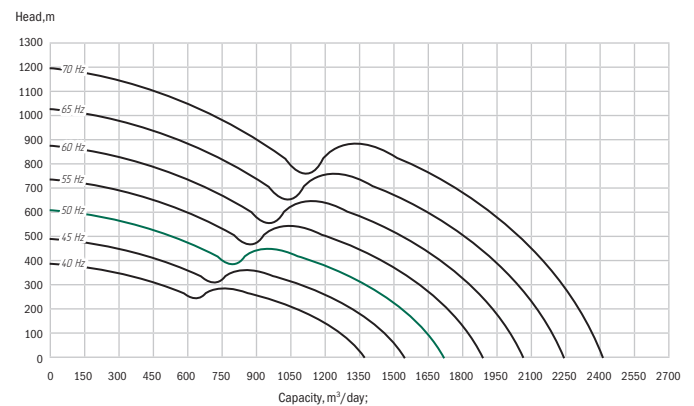
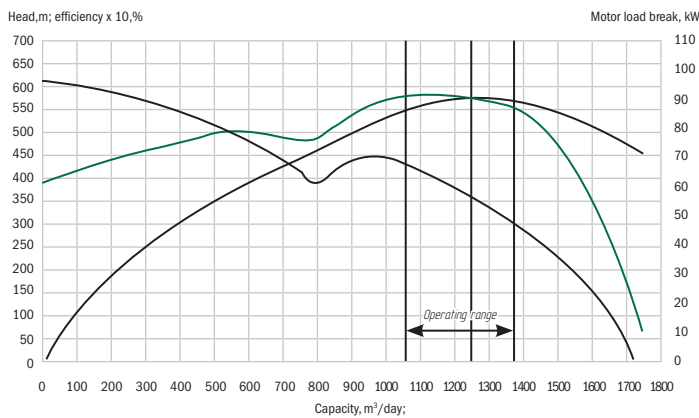
Pump sections number and length



Pump specification 204A-ESP CW L-1250(cpi)

capacity $Q = 1250 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 1250 \text{ m}^3/\text{day}$; $H = 357 \text{ m}$; $N = 90,55 \text{ kW}$; $\eta = 56\%$

204A-ESP CW L-1250(cpi) head rating at various rpm; number of stages = 100



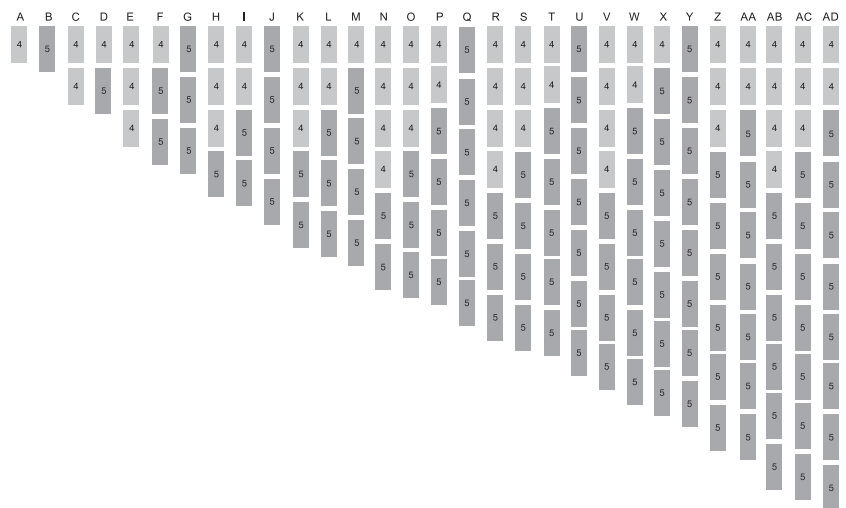
Pump 204A-ESP CW L-1250(cpi)

Assembly	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Number of stages, pcs.	39	50	78	89	117	139	150	167	178	200	217	228	239	256	267	278
Head at 50 Hz, m	140	180	250	300	400	500	550	600	650	700	750	800	850	900	950	1000
Motor load brake at 50 Hz, kW	35,31	45,28	70,63	80,59	105,94	125,86	135,83	151,22	161,18	181,10	196,49	206,45	216,41	231,81	241,77	251,73
Weight, kg	204	255	399	450	597	699	750	846	897	999	1095	1146	1197	1293	1344	1395

Assembly	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
Number of stages, pcs.	300	306	317	328	350	356	378	389	400	417	428	456	467	478
Head at 50 Hz, m	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700
Motor load brake at 50 Hz, kW	271,65	277,08	287,04	297,0	316,93	322,36	342,28	352,24	362,20	377,59	387,55	412,91	422,87	432,83
Weight, kg	1446	1542	1593	1644	1746	1791	1893	1944	1995	2091	2142	2289	2340	2391

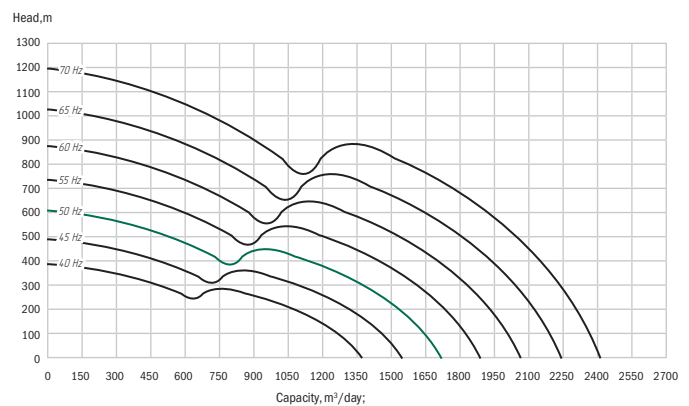
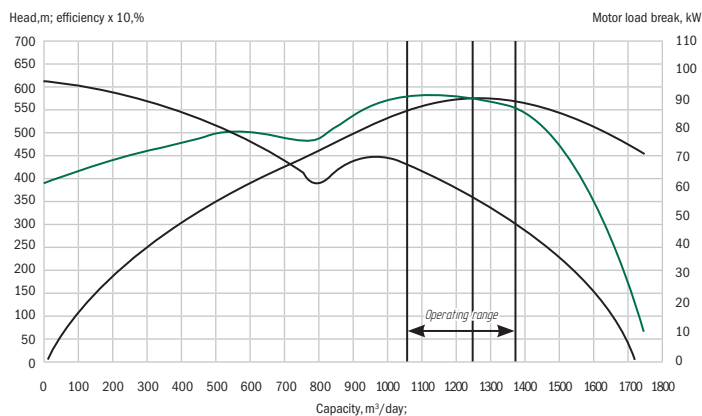
Pumps 204A-ESP CW L-1250(cpi); no intermediate bearings

Pump sections number and length



Pump specification 204A-ESP CW L-1250(cpi)
 capacity $Q = 1250 \text{ m}^3/\text{day}$; water density $\eta = 1000 \text{ kg}/\text{m}^3$,
 rotation frequency 2910 rpm (50 Hz); number of stages = 100;
 $Q = 1250 \text{ m}^3/\text{day}$; $H = 357 \text{ m}$; $N = 90,55 \text{ kW}$; $\eta = 56\%$

204A-ESP CW L-1250(cpi) head rating at various rpm;
 number of stages = 100



Gas separators, dispensers

Gas separators, dispensers, gas separators-dispensers are applied to separate liquid components of the well stream from gaseous elements resulting in stable operation of ESP.

Gas separator is installed instead of the intake module or after the intake module in case of the gas separator with no intake screen. ALNAS manufactures and delivers high-efficiency gas separators for any existing types of pumps operated under various conditions.

Operation principle of a separator is based on using centrifugal force for free gas removing. The separated gases are forced to migrate up the annulus. Gas separator prevents cavitations, provides ESPs steady operation and MTBF increasing.

Dispenser is applied to fracture gas bubbles in formation fluid, providing homogenous suspension and feeding it to the pump intake. While fluid flow passes through the dispenser, its homogeneity and gas bubbles dispensing factor are improved, thus steady operation of a pump is provided: pump vibration and flow pulsation in tubing are reduced, the target efficiency is maintained.

Gas separator-dispenser is installed in the pump intake instead of a gas separator or dispenser in wells with extremely high gas content, where neither separator nor dispenser is effective.

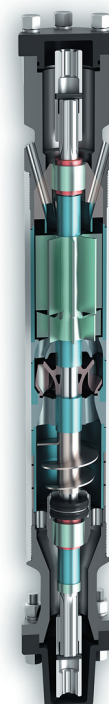
The longer run life of the gas separators, dispensers and gas separator-dispensers is ensured when operated under the following conditions of formation fluid:

Formation fluid parameters	
Free gas content at pump intake, max, %	
Gas separators	55
Dispensers	30-40
Gas separator-dispensers	65
Pumped fluid temperature, °C	120°
pH -value	5,0-8,5
Mass concentration of solid particles, max, g/l	1,0
Particles hardness on the Moh's scale, max	7
H ₂ S content, max	1,25
Associated water content, max, %	99
Fluid gravity, max, kg/m ³	1400
Single-phase fluid kinematic viscosity, at which gas separator (dispenser) operation is provided with no head and efficiency changes, max, mm ² /c	1
Shaft rotation frequency (synchronous), rpm	3000

*Up to 150 °C as requested

Design features

The friction pairs in radial and axial bearings are made of hard alloy. The axial bearing is made of ceramic. End parts and protection sleeves of the housings are made of stainless steel to protect against abrasive effect of the fluid. Gas separator components are made of corrosion-resistant steel and Ni-resist iron of improved corrosion and wear resistance up to 190-240 HB.



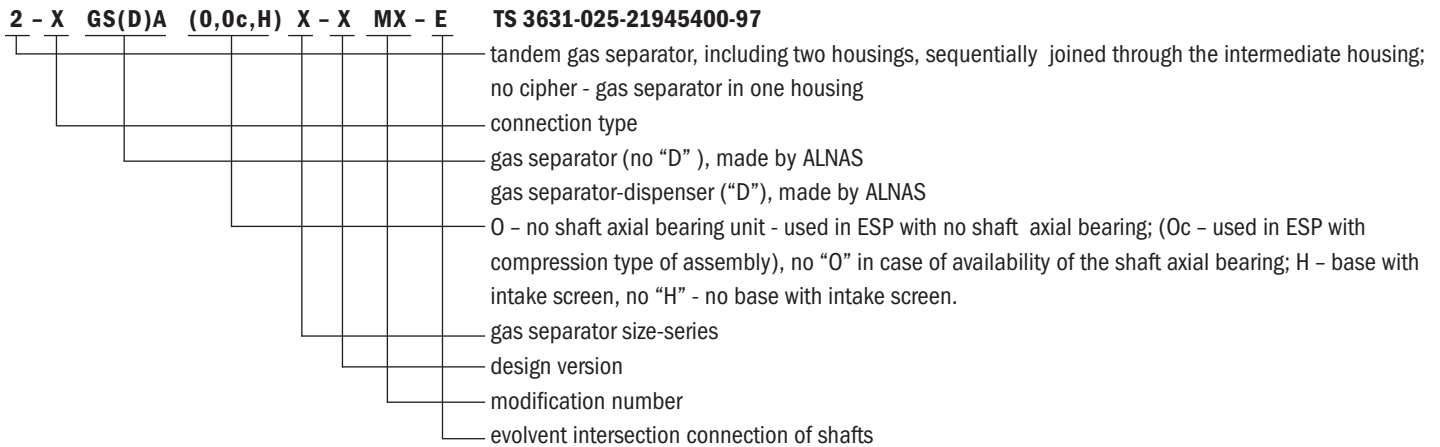
gas separator
GSAHS4M1



dispenser DAS

All the products are manufactured corrosion-and-wear resistant.

Placing an order or making an inquiry in the correspondence or other documents please kindly use a reference table of the Alnas gas separator and gas separator-dispenser:



Gas separator and gas-separator-dispenser connections:

0 (not indicated) – gas separator includes a head with 6 holes M12x1,25 for connection with a pump section by 6 screws M12x1,25 or pins with nuts M12x1,25.

1- gas separator includes a head with 8 holes M12x1,25 for connection with a pump section by 8 screws M12x1,25 or pins with nuts M12x1,25.

2- gas separator includes a head with 8 holes M10x1 for connection with a pump section by 8 screws M10x1

3- gas separator includes a head with 6 holes M12x1,25 for connection with the S-series pump section by 6 screws M12x1,25 or pins with nuts M12x1,25

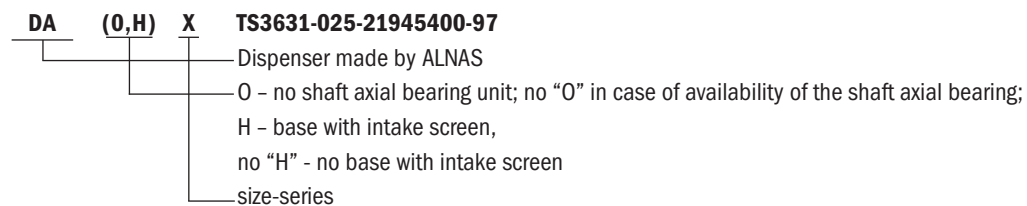
4- gas separator includes a head with 8 holes M10x1 for connection with the S-series pump section by 8 screws M10x1

Designation example:

Gas separator GSA including a head with 8 holes M10x1 for connection with the S-series pump section by 8 screws M10x1 («2»), the 4th design version, modification M1 in technical and other documentation:

2GSA S-4M1 TS3631-025-21945400-97

Placing an order or making an inquiry in the correspondence or other documents please kindly use a reference table of the Alnas dispenser:



Designation example:

Dispenser DAOS, no shaft axial bearing unit («0»), S-series in technical and other documentation:

DAOS TS3631- 025-21945400-97

Engineering information

Shaft synchronous speed - 3000 rpm.

In case of no axial bearing the gas separator shaft bears on the protector shaft.

The intake module shall be used in a pump in case of applying a system with a base with no intake screen.

Other parameters are given the following tables.

Gas separators

Gas separator	Separation coefficient	Capacity in the operating range, m ³ /day	Rated capacity, m ³ /day	Motor load brake max, kW	Connection type, mm		Shaft length, mm	Mount length, mm	Housing diameter, mm	Weight, kg
					Head («housing»)	Base («flange»)				
GSA(O)S-4(M1)	0,6	25-200	200	1,5	6 holes M12x1,25	6 holes Ø13	20	830	92	33 (34,5)
1GSA(O)S-4(M1)					8 holes M12x1,25	8 holes Ø13		940		
2GSA(O)S-4(M1)					8 holes M10x1	6 holes Ø13				
GSA(O)HS-4(M1)					6 holes M12x1,25			830		35 (36)
2GSA(O)HS-4(M1)					8 holes M10x1					
GSA(O,0c)S-5E					6 holes M12x1,25			940		34,5
2GSA(O,0c)S-5E					8 holes M10x1					
GSA(O,0c)S5-5E					6 holes M12x1,25			940		36
2GSA(O,0c)HS-5E					8 holes M10x1					
GSA(O)M	0,7	25-700	430	1,94	6 holes M12x1,25	6 holes Ø13	22	965	103	34,5 (35,5)
GSA(O)HM					8 holes M10x1			38,8 (39,4)		
2GSA(O)HM					6 holes M12x1,25			40,1 (41,5)		
3GSA(O)HM					8 holes M10x1			38,4 (39,4)		
4GSA(O)HM										

Gas separators-dispensers

Gas separator-dispenser	Separation coefficient	Capacity in the operating range, m ³ /day	Rated capacity, m ³ /day	Motor load brake max, kW	Connection type, mm		Shaft length, mm	Mount length, mm	Housing diameter, mm	Weight, kg					
					Head («housing»)	Base («flange»)									
GSDA S-4M1	0,6	25-200	200	1,8	6 holes M12x1,25	6 holes Ø13	20	1516	92	57					
GSDAH S-4M1							20	1646		59					
GDA S							17	1152		34,8					
GDA(O)H S							17	1276		39					
2GDA(O)H S							17	1276		38,8					
GSDA M	0,8	25-700	450	2,3	6 holes M12x1,25	6 holes Ø13	22	1478	103	45					
GSDA M							22	1380		44,1					
GSDAO M-25(E)							25	1500		48					
GSDA(O)L-(E)			28				600-1200	750		4,9	6 holes Ø13	28	1750	114	52,5
GSDA(O)L-(E)															

Dispensers

Dispenser	Capacity in the operating range, m ³ /day	Capacity in the operating range, m ³ /day	Motor load brake max, kW	Connection type, mm		Shaft length, mm	Mount length, mm	Housing diameter, mm	Weight, kg
				Head («housing»)	Base («flange»)				
DA(O) S	10-240	100	0,3	6 holes M12x1,25	6 holes Ø13	17	686	92	24
DA(O)H S							811		26
DA(O)H M	120-730	450	1,15			22	805	103	29,5

Hydroprotectors

Hydroprotector specifications

Hydroprotector	Motor load break, kW		Transferred load, kW	Housing diameter, mm	Fitting length, mm	Weight, kg	Oil volume, l	Axial load to bearing, max, kg
	no axial load	at axial load, max						
1H(C,T)57M	0,45	1,4	125	92	2617	75	5,8	700
1H(C)T ₁ 57M	0,60	1,4	125	92	2452	75	5,8	700
2H(C,T)57M	0,45	1,4	180	92	2631	75	5,9	700
2H(C)T ₁ 57M	0,60	1,4	180	92	2411	75	5,9	700
2H(C,T)5A7(E)	0,70	1,8	from 280 to 360	103	3146	115	8,5	800
2H(C)T ₁ 5A7(E)	0,70	1,8	from 280 to 360	103	3146	115	8,5	800
2H(C,T)67(E)	0,80	1,8	from 360 to 500	114	3169	140	9,0	900
2H(C)T ₁ 67(E)	0,80	1,8	from 360 to 500	114	3169	140	9,0	900
1H(T)87(E)	1,5	2,5	750	159	2622	200	20	2000
H(C)TMA4L2D(E)	0,4	1,3	70	86	2740	85	4,5	700
H(C)TMA5LB	0,35	1,4	125	92	2155	64	3,7	700
H(C)TMA5LBB(E)	0,45	1,4	125	92	3095	90	6,0	700
H(C)TMA5L2B(E)	0,45	1,4	180	92	3095	90	6,0	700
H(C)TMA5ALB	0,6	1,6	up to 160	103	2195	84	4,9	800
H(C)TMA5ALBB(E)	0,6	1,6	up to 160	103	3136	110	8,0	800
H(C)TMA5AL2B(E)	0,6	1,6	from 160 to 350	103	3136	110	8,0	800
H(C)TMA6LB	0,8	1,8	up to 360	114	2581	120	5,6	900
H(C)TMA6LBB(E)	0,8	1,6	up to 360	114	3551	160	9,0	900
H(C)TMA6L2B(E)	0,8	1,8	from 360 to 500	114	3551	160	9,0	900
H(C)T ₁ MA4L2B(E)RB	0,4	1,6	70	86	2740	85	4,5	2670
H(C)T ₁ MA5LBB(E)RB	0,45	1,8	125	92	3095	90	6,0	3500
H(C)T ₁ MA5L2B(E)RB	0,45	1,8	180	92	3095	90	6,0	3500
H(C)T ₁ MA5ALBB(E)RB	0,6	2,0	up to 160	103	3136	110	7,5	3500
H(C)T ₁ MA5AL2B(E)RB	0,6	2,0	from 160 to 280	103	3136	110	7,5	3500
H(C)T ₁ MA6LBB(E)RB	0,8	2,4	from 360 to 500	114	3551	160	9,0	8000

Hydroprotector design:

- monoblock-type design of all the hydroprotectors;
- compatibility of hydroprotectors with electric motors (clockwise rotation), manufactured by other producers;
- hydroprotector jointly installed with the intake module and screen;
- each type of hydroprotector can be made corrosion-resistant (C);
- each type of hydroprotector can be made heat-resistant to operate in fluid at temperature up to 150°C;
- application of face seals made by the leading domestic and foreign companies;
- check valves relieve free gas and excess pressure out of the SEM oil chamber in the process of ESPs operation;
- hydroprotectors shafts made of high-strength steel;
- a special cooling filter in the hydroprotector applied to remove mechanical impurities and cool oil in the bearing unit zone;
- availability of a reinforced thrust bearing unit to take up axial load.



hydroprotector HTMA

Hydroprotector H57

Please kindly use a reference table of the Alnas hydroprotectors:

X	H	C	X	X	7	M	E
1	2	3	4	5	6	7	8

№ позиции	Описание условного обозначения
1	Number of bladders
2	H - Hydroprotector
3	C - Corrosion-resistant (no "C" in standard design)
4	Heat-resistance design: no - at formation fluid temperature up to 90 °C; T - at formation fluid temperature up to 120 °C; T ₁ - at formation fluid temperature up to 150 °C;
5	Size series (4, 5, 5A, 6,8)
6	Design number
7	M - Advanced design
8	E- Evolvent shaft connection (the letter "E" is not indicated in case of straight-spline joint)

Example of the hydroprotector model designation at formation fluid temperature up to 120 °C, 5A-series, two bladders, design №7:
2HT5A7 TS 3381-055-00219454-2011

Example of the hydroprotector model designation at formation fluid temperature up to 120 °C, 6-series, two bladders, design №7:
2HT67 TS 3381-055-00219454-2011

Example of the hydroprotector model designation at formation fluid temperature up to 170 °C, 5-series, one bladder, design №7, advanced:
1HT₁ 57 M TS 3381-055-00219454-2011

Hydroprotector	Completed with electric motor, mm
1H(C,T,T ₁)57M	103, 117
2H(C,T,T ₁)57M	103, 117
2H(C,T,T ₁)5A7(E)	117
2H(C,T,T ₁)67(E)	130
1H(T)87(E)	180

Module hydroprotector

Please kindly use a reference table of the Alnas module hydroprotectors:

H	C	X	M	A	X	XXX	E	RB
1	2	3	4	5	6	7	8	9

№ позиции	Описание условного обозначения
1	H- Hydroprotector
2	C- Corrosion-resistant (no "C" in standard design)
3	Heat-resistant design; T - at temperature of formation fluid up to +120 °C; T ₁ - at temperature of formation fluid up to +150 °C
4	M-Module-type design
5	A - ALNAS manufacturing plant
6	X- Series (4, 5, 5A, 6)
7	Hydroprotector design (LB, LBB, L2B): LB - labyrinth and bladder chambers in hydroprotector; LBB - labyrinth and two bladder modules joint in turn (bladder chambers divided by the face seal and valves); L2B - labyrinth and two bladder modules joint in parallel
8	E - evolvent shaft connection (the letter "E" is not indicated in case of straight-spline joint)
9	Reinforced thrust bearing (no letters "RB" in case of the standard bearing)

Example of the hydroprotector model designation at formation fluid temperature up to +120 °C, module-type design, 5-series, ALNAS manufacturing plant, labyrinth and bladder chambers:
HTMA5LB TS 3381-055-00219454-2011

Example of the hydroprotector model designation at formation fluid temperature up to +120 °C, module-type design, 5A-series, ALNAS manufacturing plant, labyrinth and bladder chambers, auxiliary bladder chamber:
HTMA5ALBB TS 3381-055-00219454-2011

Example of the hydroprotector model designation at formation fluid temperature up to +120 °C, module-type design, 6-series, ALNAS manufacturing plant, labyrinth and double-bladder chambers, evolvent shaft connection:
HTMA6L2BE TS 3381-055-00219454-2011

Example of the hydroprotector model designation at formation fluid temperature up to +170 °C, module-type design, 5A-series, ALNAS manufacturing plant, labyrinth and bladder chambers, auxiliary bladder chamber:
HT₁MA5ALBB TS 3381-055-00219454-2011

Hydroprotector HTMA5(5A, 6)LB is a base model.

Hydroprotectors HTMA5(5A,6)LBB and HTMA5(5A,6)L2B(E) are made by one module of bladder chamber joining to hydroprotector HTMA5(5A,6)LB. In HTMA5(5A,6)LBB the bladder chambers are divided by a face seal, and in HTMA5(5A,6)L2B(E) the bladder chambers are interconnected directly. The required type of hydroprotector shall be selected depending on the electric motor load break and oil volume in it.

A shaft of the corresponding length is applied in case of reconfiguration.

Hydroprotector	Completed with electric motor, mm
H(C)TMA4L2B(E)	96
H(C)TMA5LB	103,117
H(C)TMA5LBB(E)	103,117
H(C)TMA5L2B(E)	103,117
H(C)TMA5ALB	117
H(C)TMA5ALBB(E)	117
H(C)TMA5AL2B(E)	117
H(C)TMA6LB	130
H(C)TMA6LBB(E)	130
H(C)TMA6L2B(E)	130
H(C)T1 MA4L2B(E)RV	96
H(C)T1 MA5LBB(E)RB	103, 117
H(C)T1 MA5L2B(E)RB	103, 117
H(C)T1MA5ALBB(E)RB	117
H(C)T1 MA5AL2B(E)RB	117
H(C)T1MA6LBB(E)RB	130

Submersible electric motors (SEM)

Submersible oil-filled electric motors (SEM), squirrel-cage, two(four)-pole, are suitable for application as ESP drives in wells deviated to no more than 60° in the zone of suspension.

ALNAS SEM series

Series, mm	Rated capacity, kW	Technical specification
96	16...70	TS 3381-032-21945400-98
103	16...180	
117	12...350	TS 3381-026-21945400-97
130	22...400	TS 3381-033-21945400-2001
180	125...750	

Alnas produces over 100 SEM modifications of various rated capacities and that allows sizing the most optimum motor-pump combinations to provide maximum efficiency of ESP operation.

High production technology provides high quality and reliability of the Alnas electric submersible motors.

The closed slot stator laminations allow improving cleanness of the inside hollow of the motor and applying tubular slot insulation.

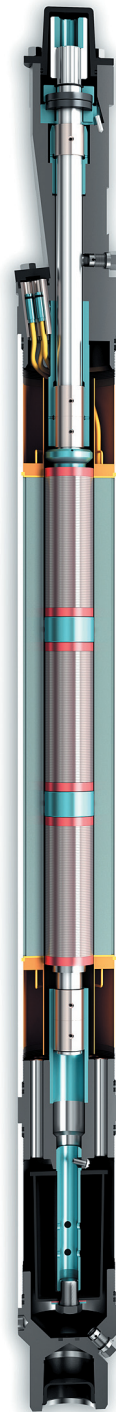
Application of special electrical materials allows SEM operation at the formation fluid temperature up to 120°C and heat-resistant SEM at temperature up to 150°C.

The assembled motor is tested at the testing station under conditions close to real field conditions with electrical and mechanical parameters monitoring. 100% of motors undergo testing and after the test run all the motors are disassembled and carefully examined. Insulation resistance is tested by the polarization index.

ALNAS R&D centre has developed new “M3” and “M4” electric motors that are successfully operated. Operation capability in the complicated wells is their major advantage. “M3” and “M4” electric motors length is less than of the “M” – modification at equal motor load brakes. Therefore assembly of those motors is notably simpler.

SEM in 96mm-size are the most effective for application after repair of casing strings and transfer to the casing strings of lesser diameter (up to 112 mm), jointly with the pumps of D-series. SEM are completed with a hydroprotector HTMA4L2B.

SEM in 180mm-size are new developments applied as drives for ESPs in wells deviated to no more than 40°, at operating temperature up to 90 °C, and for fluid injection in the reservoir pressure maintenance systems.



As required SEM are completed by telemetry systems of various types:

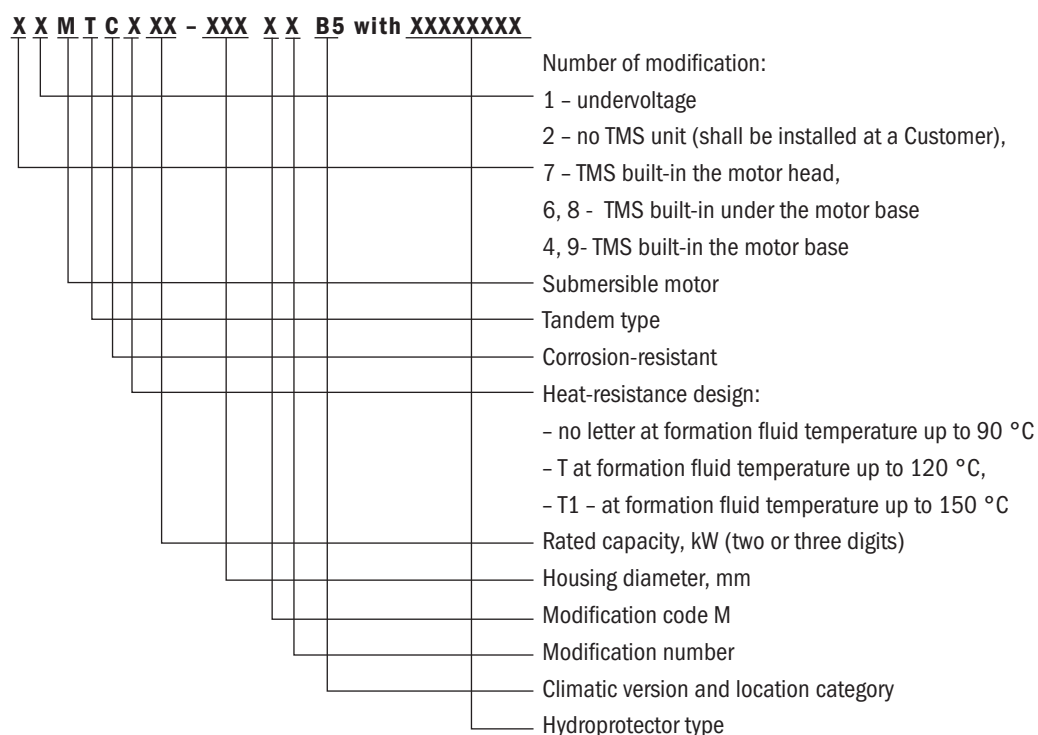
Modification number	SEM features
4	SEM with a telemetry system «SKAD-2002B-SKS» by OOO «Oil metering systems», Moscow. Downhole multi-channel sensor built-in the SEM base.
6	SEM with a telemetry system «TMS ZVIA» by OOO «IRZ TEK», Izhevsk. The submersible unit BP-103 built-in under SEM base.
7	SEM with a TMS «SALN» by OOO «ALNAS-Electronics», Obninsk. The submersible unit built-in the SEM head.
8	SEM with a telemetry system «ELECTON-TMS-3» by ZAO «ELECTON», Raduzhny. The submersible unit built-in under SEM base.
9	SEM with a telemetry system «ELECTON-TMS-3» by ZAO «ELECTON», Raduzhny. The submersible unit built-in the SEM base.
X2	SEM with no telemetry system, meant for installation of the telemetry system at a Customer.

Example of the SEM model designation:

A single-sectional submersible heat-resistant motor with a telemetry system «ELECTON TMS-3», rated capacity 70 kW, housing diameter 103 mm, modification M1, climatic version B, location category 5, при with hydroprotector HTMA5LBB:

92MT70 - 103M1B5 with HTMA5LDD TS 3381 - 032 - 21945400 - 98, TS 3381-055-00219454-2003

Placing an order or making an inquiry in the correspondence or other documents please kindly use a reference table of the Alnas motors.

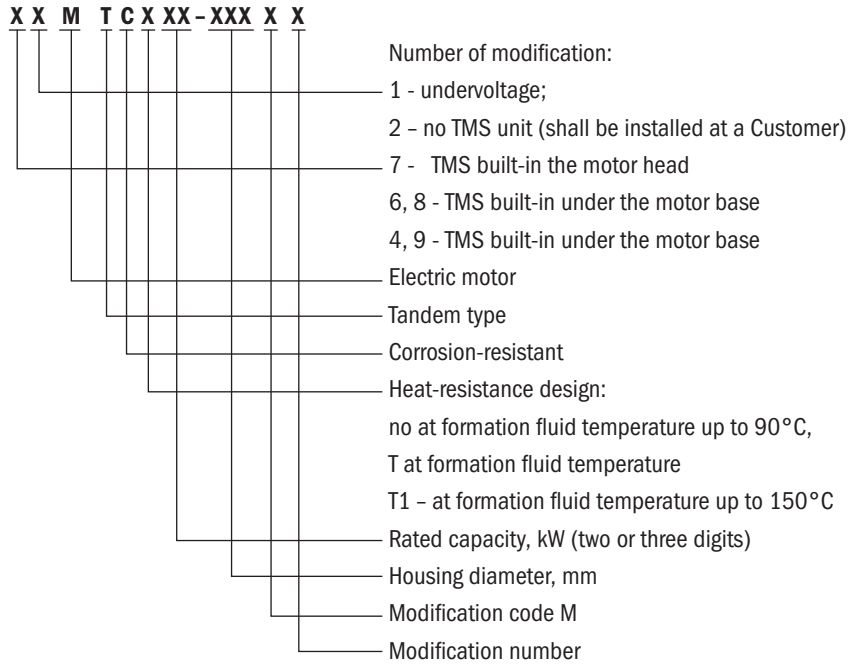


Example of the SEM model designation:

A three-sectional corrosion & heat resistant motor, rated capacity 300 kW, housing diameter 117 mm, modification M, climatic version B, location category 5, при with hydroprotector HTMA5L2BE:

TMCT 300 - 117MB5 with HTMA5L2BE TS 3381-026-21945400-97, TS3381-055-00219454-2003

submersible electric motors



Examples of the SEM model designation:

Two-section heat resistant motor, rated capacity 150 kW, housing diameter 103 mm, modification M3:

TMT150-103M3 TS 3381-032-21945400-97

Single-section heat resistant motor electric motor, rated capacity 200 kW, housing diameter 130 mm, modification M1 with telemetry system «ELECTON TMC-3-320»:

9TMT200 - 130M1 with TMS «ELECTON TMS-3- 320» TS 3381-033-21945400-2001.

SEM specifications

Electric motors TM16...40-96M TS 3381-032-2194500-98

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TM16-96M	16	500	30	79	0,8	6,0	112	0,09	1	3353	170	0,2
TM 22-96M	22	645	31,5	79	0,8	6,1	112	0,09	1	4035	206	0,3
TM 28-96M	28	790	32,6	79	0,8	6,2	112	0,09	1	4722	245	0,3
TM 32-96M	32	750	38	80	0,81	6	112	0,12	1	5062	268	0,35
TM 36-96M	36	1000	33	79	0,8	6,7	112	0,09	1	5745	301	0,4
TM 40-96M	40	1150	32,5	79	0,8	6,4	112	0,09	1	6427	335	0,45

Stator winding insulation resistance at t=20±10°C - 2000 Mohm, t=115±15°C-100 Mohm.

Shaft synchronous speed - 3000 rpm.

Electric motors TMT 56-96M TS 3381-032-2194500-98

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TM56-96M	56	1560	33,5	79,5	0,8	6,0	112	0,09	2	10620	563	0,52
TM63-96M	63	1500	37	80	0,8	6,0	112	0,12	2	10022	500	0,7
TM70-96M	70	1920	34	79,5	0,8	6,0	112	0,09	2	13337	671	0,9

Stator winding insulation resistance at t=20±10°C - 1000 Mohm, t=115±15°C - 50 Mohm.

Shaft synchronous speed - 3000 rpm.

Electric motors TM16...80-103M1 TS 3381-032-21945400-98

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TM16-103M1	16	530	25,6	81	0,84	5,8	121,7	0,07	1	3005	160	0,15
TM22-103M1	22	700	27,5	81	0,83	5,5	121,7	0,10	1	3685	200	0,25
TM28-103M1	28	900	27	81	0,82	5,8	121,7	0,10	1	4365	240	0,30
TM32-103M1	32	1000	27,5	81	0,83	5,9	121,7	0,10	1	4705	260	0,35
TM36-103M1	36	1100	28	82	0,83	5,8	121,7	0,15	1	5385	300	0,4
TM40-103M1	40	1200	30	81,5	0,84	5,8	121,7	0,15	1	5385	300	0,4
TM45-103M1	45	1400	28	81	0,83	5,4	121,7	0,15	1	6065	339	0,45
1TM45-103M1	45	1300	30	82	0,83	5,8	121,7	0,15	1	5725	318	0,45
TM50-103M1	50	1400	32	81	0,83	6	121,7	0,2	1	6065	339	0,5
TM56-103M1	56	1600	32	81	0,83	6	121,7	0,20	1	6405	358	0,5
TM63-103M1	63	1750	32	81	0,83	6	121,7	0,35	1	6745	377	0,55
TM70-103M1	70	1900	30,2	82	0,83	6,5	121,7	0,35	1	7085	398	0,55
TM80-103M1	80	2050	36	80	0,83	7,2	121,7	0,3	1	8205	405	0,75

Stator winding insulation resistance at t=20±10°C - 2000 Mohm, t=115±15°C-100 Mohm.

Shaft synchronous speed - 3000 rpm.

Electric motors TMT90...180-103M3 TS 3381-032-2194500-98

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TMT90-103M3	90	1980	40	82	0,84	5,6	121,7	0,2	2	11184	660	0,7
TMT100-103M3	100	2120	42	81	0,84	6	121,7	0,25	2	11864	680	0,75
TMT110-103M3	110	2060	49	81,5	0,83	6,4	121,7	0,3	2	13222	700	1,0
TMT125-103M3	125	2560	44	81	0,84	7	121,7	0,35	2	13904	700	0,9
TMT140-103M3	140	2500	51	81	0,83	6,5	121,7	0,3	2	15262	795	1,0
TMT150-103M3	150	3820	36	80	0,83	7	121,7	0,2	2	15262	795	1,0
TMT180-103M3	180	3150	52	80,5	0,83	6,5	121,7	0,2	3	19572	1060	1,2

Stator winding insulation resistance at t=20±10°C - 1000 Mohm, t=115±15°C - 50 Mohm. Shaft synchronous speed - 3000 rpm.

Electric motors M12...110-117M (4, 5) TS 3381-026-21945400-97

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TM12-117M	12	380	26	84,0	0,85	5,0	123,7	0,05	1	2120	132	0,20
TM16-117M	16	750	18	84,0	0,85	5,0	123,7	0,05	1	2500	162	0,20
TM22-117M	22	750	24	84,5	0,85	5,0	123,7	0,05	1	3260	228	0,35
TM28-117M	28	900	26	84,5	0,84	5,0	123,7	0,08	1	3640	246	0,4
TM32-117M	32	1000	26	85,0	0,86	5,0	123,7	0,08	1	4020	269	0,45
TM36-117M	36	1200	25	84,5	0,86	5,0	123,7	0,08	1	4390	302	0,5
TM40-117M	40	1200	27	84,5	0,85	5,0	123,7	0,08	1	4400	302	0,50
TM45-117M	45	1400	26	85,0	0,86	5,0	123,7	0,08	1	5160	358	0,60
1TM45-117M	45	1000	36,5	85,0	0,86	5,0	123,7	0,08	1	5160	359	0,60
TM50-117M	50	1400	28	84,5	0,86	5,2	123,7	0,12	1	5540	389	0,60
TM56-117M	56	1400	32	84,5	0,86	5,2	123,7	0,12	1	5920	418	0,70
TM63-117M	63	2000	25	85,0	0,85	5,2	123,7	0,30	1	6680	471	0,80
1TM63-117M	63	1000	51,5	85,0	0,85	5,2	123,7	0,30	1	6680	473	0,80
TM70-117M	70	2000	28	83,0	0,85	5,6	123,7	0,30	1	7060	498	0,90
1TM70-117M	70	1000	56	84,0	0,85	5,2	123,7	0,30	1	7060	507	0,9
TM80-117M6	80	2000	35	84,0	0,84	6	123,7	0,30	1	7100	508	0,6
TM90-117M6	90	2300	34	84,0	0,84	6	123,7	0,30	1	7480	538	0,6
TM100-117M6	100	2500	34	84,0	0,84	6	123,7	0,30	1	7860	552	0,8
TM110-117M6	110	2300	40	84,0	0,84	6	123,7	0,30	1	8240	571	0,9
M125-117M6	125	2400	44	83,5	0,84	6,2	123,7	0,30	1	8240	571	0,9

Stator winding insulation resistance at t=20±10°C - 2000 Mohm, t=115±15°C-100 Mohm.

Shaft synchronous speed - 3000 rpm.

Electric motors TMT80...350-117M (4) TS 3381-026-21945400-97

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TMT80-117M	80	2000	34	84,5	0,83	5,2	130	0,30	2	8476	575	1,0
TMT90-117M	90	2000	40	85,0	0,83	5,2	130	0,30	2	9236	631	1,2
TMT100-117M	100	2000	41	85,0	0,85	5,2	130	0,30	2	9996	689	1,3
TMT125-117M	125	2000	51,5	85,0	0,85	5,2	130	0,30	2	13036	911	1,6
TMT140-117M	140	2000	56,0	84,5	0,85	5,2	130	0,50	2	13796	971	1,8
TMT160-117M4	160	2100	65	84,0	0,85	5,8	130	0,50	2	12276	857	1,4
TMT160-117M	160	2300	58	84,0	0,85	5,2	130	0,5	2	14556	1043	1,8
TMT180-117M4	180	2400	63,0	84,0	0,85	5,2	130	0,50	2	15316	1097	1,8
TMT200-117M	200	2500	65	84,0	0,84	5,2	130	0,50	2	15316	1097	1,8
TMT220-117M	220	2700	67,5	84,0	0,84	5,5	130	0,50	2	16076	1151	1,8
TMT250-117M	250	3400	64	83,0	0,84	6,9	1300	0,80	2	16145	1135	1,8
TMT300-117M4	300	2880	90	83	0,83	5,8	130	1,1	3	19397	1373	2,4
TMT350-117M4	350	3750	79	82,5	0,85	6	130	1,1	3	22772	1608	2,4

Stator winding insulation resistance at $t=20\pm 10^{\circ}\text{C}$ - 1000 Mohm, $t=115\pm 15^{\circ}\text{C}$ - 50 Mohm.

Shaft synchronous speed - 3000 rpm.

Electric motors TM5,5...32-117/4M(1) and MT10-117M TS 3381-029-21948500-97

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
M5,5-117/4M1	5,5	400	14	78	0,78	5	123,7	0,05	1	1986	113	0,12
M11-117/4M1	11	800	14	78	0,77	5	123,7	0,05	1	2895	155	0,2
M22-117/4M	22	650	38	68	0,78	11	123,7	0,08	1	4823	330	0,5
M28-117/4M	28	900	38	70	0,7	10,5	123,7	0,08	1	6343	445	0,6
M32-117/4M	32	950	40	70	0,65	10	123,7	0,1	1	6343	445	0,5
TM10-117M	10	300	40	52,9	0,83	-	123,7	0,05	1	3603	217	0,25

Stator winding insulation resistance at $t=20\pm 10^{\circ}\text{C}$ - 2000 Mohm, $t=115\pm 15^{\circ}\text{C}$ - 100 Mohm. Shaft asynchronous speed - 1500 rpm.

Stator winding insulation resistance SM10-117M at $t=20\pm 10^{\circ}\text{C}$ - 1000 Mohm, $t=115\pm 15^{\circ}\text{C}$ - 25 Mohm.

Shaft synchronous speed - 300 rpm.

Electric motors TM22...200-130M(1) TS 3381-033-21945400-2001

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TM22-130M	22	800	23	85	0,84	5,5	144	0,3	1	2000	162	0,25
TM32-130M	32	1200	22	85	0,85	5,5	144	0,3	1	2495	191	0,4
TM40-130M	40	1300	26	84	0,85	5,5	144	0,3	1	2495	191	0,45
TM75-130M	75	1500	40	85	0,85	5,5	144	0,5	1	3980	378	0,6
TM90-130M	90	1600	46	85	0,84	5,0	144	0,6	1	4475	369	0,6
TM125-130M	125	1800	56	86	0,84	5,0	144	0,8	1	6455	621	0,8
TM150-130M	150	2700	45	85	0,85	5,8	144	1,1	1	7445	639	1,1
TM180-130M	180	2400	63	84	0,84	6,0	144	1,4	1	7940	696	1,4
TM200-130M1	200	1600	107	82,5	0,85	5,6	144	0,8	1	7940	696	1,4

Stator winding insulation resistance at $t=20\pm 10^{\circ}\text{C}$ - 2000 Mohm, $t=115\pm 15^{\circ}\text{C}$ -100 Mohm.

Shaft synchronous speed - 3000 rpm.

Electric motors TMT180...500-130M(1) TS 3381-033-21945400-2011

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TMT180-130M	180	2300	62	84	0,85	6	148,3	0,7	2	11663	1026	1,4
TMT230-130M	230	2400	78	85,0	0,85	5,8	148,3	0,9	2	10673	946	2,0
TMT250-130M	250	2700	76	85,0	0,85	5,8	148,3	1,0	2	11663	1026	2,2
TMT250-130M1	250	2800	77	83	0,85	5,5	148,3	0,9	2	10673	946	2,2
TMT300-130M1	300	2500	100	82,7	0,83	6,12	148,3	0,7	2	13644	1301	2,6
TMT320-130M	320	2800	95	84,0	0,84	5,8	148,3	1,1	2	14704	1310	2,2
TMT360-130M	360	3000	99	85	0,84	5,8	148,3	1,1	2	15623	1390	2,8
TMT400-130M1	400	3150	106	83	0,84	5,8	148,3	2,8	2	15920	1466	2,8
TMT400-130M	400	3000	105	83	0,84	5,8	148,3	2,8	2	16631	1470	2,8
TMT460-130M1	460	3200	115	85	0,88	5	148,3	1,1	3	21958	1931	4,2
TMT500-130M1	500	3600	120	85	0,87	5	148,3	1,1	3	23188	2056	4,2
TMT550-130M	550	4500	100	84,0	0,85	5,8	148,3	1,1	3	23406	1936	3,0

Stator winding insulation resistance at $t=20\pm 10^{\circ}\text{C}$ - 1000 Mohm, $t=115\pm 15^{\circ}\text{C}$ -50 Mohm.

Shaft synchronous speed - 3000 rpm.

Electric motors M125, 250-180M TS 3381-033-2194500-98

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
M125-180M	125	2300	41	91	0,88	2,5	205,7	0,3	1	3569	650	2,0
M250-180M	250	2300	80	89	0,87	2,0	205,7	0,6	1	6059	1090	6,0

Stator winding insulation resistance at $t=20\pm 10^{\circ}\text{C}$ - 2000 Mohm, $t=115\pm 15^{\circ}\text{C}$ -100 Mohm.

Shaft synchronous speed - 3000 rpm.

Electric motors TMT500...750-180M TS 3381-033-2194500-98

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency, %	cos, φ	Slip, %	Well diameter, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
TM500-180M	500	2500	145	90,1	0,89	2,84	205,7	1,5	2	12526	2160	8
TM750-180M	750	3200	171	91	0,86	3	205,7	1,5	2	13595	2350	10

Stator winding insulation resistance at $t=20\pm 10^{\circ}\text{C}$ - 1000 Mohm, $t=115\pm 15^{\circ}\text{C}$ -50 Mohm. Shaft synchronous speed - 3000 rpm.

Horizontal electric motors

H-M12...100-117M (4, 5) TS 3381-026-21945400-97

Electric motors suitable for application in horizontal wells (angle of deviation up to 90° in the ESP suspension zone)

Electric motor	Rated capacity, kW	Rated voltage, V	Rated current, A	Efficiency %	cos, φ	Slip, %	Well diameter, min, mm	Cooling fluid velocity, min, m/sec	Number of sections	Length, mm	Weight, kg	Shaft torque, kgf • m
H-M12-117M	12	380	26	84,0	0,85	5,0	123,7	0,05	1	2120	132	0,20
H-M16-117M	16	750	18	84,0	0,85	5,0	123,7	0,05	1	2500	162	0,20
H-M22-117M	22	750	24	84,5	0,85	5,0	123,7	0,05	1	3260	228	0,35
H-M28-117M	28	900	26	84,5	0,84	5,0	123,7	0,08	1	3640	246	0,4
H-M32-117M	32	1000	26	85,0	0,86	5,0	123,7	0,08	1	4020	269	0,45
H-1M32-117M	32	750	35,5	85,0	0,84	5,0	123,7	0,08	1	4020	274	0,45
H-M40-117M	40	1200	27	84,5	0,85	5,0	123,7	0,08	1	4400	302	0,50
H-M45-117M	45	1400	26	85,0	0,86	5,0	123,7	0,08	1	5160	358	0,60
H-1M45-117M	45	1000	36,5	85,0	0,86	5,0	123,7	0,08	1	5160	359	0,60
H-M50-117M	50	1400	28	84,5	0,86	5,2	123,7	0,12	1	5540	389	0,60
H-M56-117M	56	1400	32	84,5	0,86	5,2	123,7	0,12	1	5920	418	0,70
H-M63-117M	63	2000	25	85,0	0,85	5,2	123,7	0,30	1	6680	471	0,80
H-1M63-117M	63	1000	51,5	85,0	0,85	5,2	123,7	0,30	1	6680	473	0,80
H-M70-117M	70	2000	28	83,0	0,85	5,6	123,7	0,30	1	7060	498	0,90
H-1M70-117M	70	1000	56	84,0	0,85	5,2	123,7	0,30	1	7060	507	0,9
H-M80-117M4	80	2000	35	85,0	0,83	5,8	123,7	0,30	1	7060	507	0,8
H-M90-117M4	90	2000	37	84,0	0,83	5,8	123,7	0,30	1	7060	507	0,9
H-M100-117M4	100	2150	38,5	84	0,84	5,8	123,7	0,30	1	7440	537	0,9

Stator winding insulation resistance at $t=20\pm 10^{\circ}\text{C}$ - 2000 Mohm, $t=115\pm 15^{\circ}\text{C}$ -100 Mohm.

Shaft synchronous speed - 3000 rpm.

The thrust bearing unit providing minimum axial motion of the bearing due to the top and bottom foot bearings fixed in the head at a certain distance from each other, is a design feature of horizontal motors.

Electric motors HM12...90-117MB(4) can be applied as drives for the pumps in S-size:

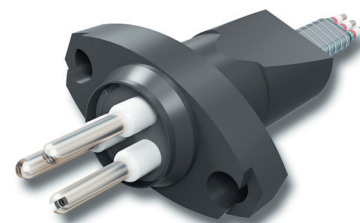
A-ESP S-18, A-ESP S-25, A-ESP S-30, A-ESP S-45, A-ESP S-60, A-ESP S-80, A-ESP S-125,

pumps in M-size: A-ESP M-25, A-ESP M-50, A-ESP M-80, A-ESP M-125, A-ESP M-160,

and pumps A-ESP S-200, A-ESP M-200, A-ESP M-250, A-ESP M-400, A-ESP M-500, power input up to 85 kW.

Cable lines and motor lead extensions (MLE)

ALNAS manufactures cable lines and motor-lead extensions using cable made by Russian and foreign companies:



- by Russian manufacturers, operating temperature +90°C:
KPBP TS 16-505.129-2002, TS 3542-009-10995863-2002, cross-section size 10; 16; 35; 50mm²;
- by Russian manufacturers, operating temperature +120 °C, including corrosion-resistant steel armor: KPsPB(k)P cross-section size 10; 13,3; 16; 21,15 mm² per TS16K13-012-2002; KPpBP cross-section 10; 13,3; 16; 21,15 mm² per TS16.K71-293-2002, KPpB(k)PT cross-section 10; 13,3; 16 mm² per TS16.K09-119-2002;
- by Russian manufacturers, operating temperature +130 °C, including corrosion-resistant steel armor: KPsPB(k)P cross-section size 10; 13,3; 16; 21,15 mm² per TS16K13-012-2002; KPpTBP cross-section 10; 13,3; 16 mm² per TS 3542-097-04724019-2005;
- heat-resistant cable made by Russian companies and Pirelli, REDA, CENTRILIFT, KABLOVI (SERBIA) cross-section 10; 13,3; 16; 21,15 mm², operating temperature up to +230°C.

Note: corrosion-resistant armour is indicated by the additional letter «k».

The motor lead extension is applied for splicing the power supply cable with submersible electric motor.

MLE consists of a pothead with a round current feedthrough and a flat cable, 20m up to 100m.

The MLE is made of submersible flat three-conductor armoured cable in 10; 13.3; 16; 21.1; 35; 50 mm² cross-section.

Depending on the applied cable material, MLE with a pothead can be used under the following conditions:

- operating voltage from 3300 V up to 4000 V;
- operating temperature up to 230° C.

The pothead housing is made of stainless steel.

Rubber rings provide leakproofness of the pothead joint with a motor head.

The following options are available upon request:

- plug pins can be electroplated or have any other coating, even silver plating;
- alternative pothead tipping.
-

Designation example of MLE made of the KPpBP-120 cable, 25 m long, 10 mm² cross-section, conic shoulder sealed:

MLE2-25/35 TS 3542-031-21945400-97

Designation example of MLE made of the KEPSBPT cable, 2300, 30 m, 16 mm² cross-section, circular groove and radial groove sealed:

2MLE15-30/16 TS 3542-031-21945400-97

Cable line reference table:

K X - XX - XXXX - XYX - XX / XX
 1 2 3 4 567 8 9

- 1 - cable line
- 2 - cable design: F - flat, R - round
- 3 - cable cross-section, mm²
- 4 - cable length, m
- 5 - seal type applied for motor joint
- 6 - MLE
- 7 - MLE cable grade reference designation
- 8 - MLE length, m
- 9 - MLE conductor cross-section, mm²

MLE reference designation:

$\frac{X}{1} - \frac{Y}{2} - \frac{X}{3} - \frac{XX}{4} / \frac{XX}{5}$

1 - seal type applied for the motor joint:

0-conic shoulder sealed («0» is not used before "MLE")

2-circular groove (neck) sealed

2 - MLE

3 - MLE cable reference designation

4 - MLE length, m

5 - cable conductor cross-section, mm²

The cable lines and MLE are designed for operation under the following conditions:

H ₂ S content, g/l, max	
steel galvanized armored cables	0,01
corrosion-resistant steel armored cables	1,25
Gas-oil ratio, m ² /kg, max	0,5
Hydrostatic pressure, MPa, max	35
Max voltage for cables:	
Russian manufacturers cross-section 10; 13,3; 16; 21,1; 35, 50 mm ² , V, up to	3300
foreign manufacturers 10; 13,3; 16; 21,1mm ² , V, up to	4000
Load current, max, for cables, A:	
Cross-section 10 mm ²	50
Cross-section 13,3 mm ²	66
Cross-section 16 mm ²	80
Cross-section 21,15 mm ² , A	105
Cross-section 35 mm ² , A	175
Cross-section 50 mm ² , A	250

MLE produced by ALNAS:

MLE	MLE operating temperature, °C	Applied cable	Cable insulation	Cable sheath
MLE2 *	from -40 up to +130	KPpB(κ)PT-120 KPpBP-120 KPsPB(k)P-120 KPpTBP-130 KPsPB(k)P-130	Polypropylene compositions Propylene block-copolymers	-
MLE3 *	-40 up to +90	KPBP-90	Polyethylene	-
MLE13 *	-40 up to +90	KPBP-90	Polyethylene	-
MLE19 *	-40 up to +90	KPBP-90	Polyethylene	-
MLE15 *	-40 up to +230	EPOP, Pirelli, Reda lead, Centrilift, KEPSBPT	EPDM	Lead

* connecting electric motor current lead through wire lug

** connecting electric motor current lead through bushing

Cable lines specification

Designation	Reference designation	Number and cross-section of the base cable cores, mm ²	MLE reference designation	Note
AAC.K.090.000	KP-10-XXXX-XYXX-L/10	3x10	XYXX-L/10	<p>XXXX - the base cable length is determined as requested, from 50 m up to 3500 m, tolerance for length $\pm 3\%$.</p> <p>In MLE designation: the first X - motor joint seal type, the second XX - MLE cable grade. Made as requested.</p> <p>L - MLE length as requested. Tolerance for length $\pm 0,5m$.</p>
-01	KP-13,3-XXXX-XYXX-L/10	3x13,3	XYXX-L/10	
-02	KP-13,3-XXXX-XYXX-L/13,3	3x13,3	XYXX-L/13,3	
-03	KP-16-XXXX-XYXX-L/10	3x16	XYXX-L/10	
-04	KP-16-XXXX-XYXX-L/13,3	3x16	XYXX-L/13,3	
-05	KP-16-XXXX-XYXX-L/16	3x16	XYXX-L/16	
-06	KP-21,15-XXXX-XYXX-L/16	3x21,15	XYXX-L/16	
-07	KP-21,15-XXXX-XYXX-L/21,15	3x21,15	XYXX-L/21,15	
-08	KP-25-XXXX-XYXX-L/16	3x25	XYXX-L/16	
-09	KP-25-XXXX-XYXX-L/21,15	3x25	XYXX-L/21,15	
-10	KP-50-XXXX-XYXX-L/35	3x50	XYXX-L/35	
-11	KP-50-XXXX-XYXX-L/50	3x50	XYXX-L/50	

ALSU control systems of new generation

ALSU control systems are intended for hand-operated, automatic and remote monitoring, control and protection of the ESP systems, equipped with asynchronous or ac motors, rated capacity up to 320 kW.

ALSU control system features:

- user-friendly interface;
- wide range of performances;
- high reliability;
- control software flexibility;
- smart control of well bore and reservoir flow.

Customer benefits:

- reduction of operating costs due to early detection of deviations in the equipment operation and procedures to avoid emergencies;
- reduction of electricity charges due to a function of the SEM required power optimization;
- reduction of costs for the control systems and oil-field equipment service;
- reduction of the equipment down-time;
- effective oil pools operation due to the on-line inspection of the well fluid characteristics and correction of the oil-field equipment operating mode;
- reduction of costs for additional telemetry equipment.

Due to modular design the control systems can be completed with any electric motor control systems:

- direct start with soft start option;
- VSD control systems to regulate the induction and permanent magnet motors speed;
- downhole and wellhead telemetry systems.

Smart control

The control system provides calculation of the main parameters of the «layer-well-pump» system, e.g., flow rate and dynamic head, diagnostics and ESP mode optimization if VSD-completed.

Information read-out

Remote accessing and information read-out by interface RS-485 or automatic read-out of the operation history record by USB Flash, 8Gbit.

Easy interface

A large monitor, comprehensible interface allow getting any information required, or setting up the control system.

Easy to monitor the control system status

LED indicators, e.g. «Power», «SEM», «Mode», «Failure», allow determining the control system current status.

Easy to maintain

Modular design provides fast serviceability in operation area.

Compatibility

The control systems are compatible with the downhole telemetry systems of ALNAS, Electon, Borets, IP3, WG.

Teleautomatics protocol support

The control systems are compatible with the teleautomatics systems «Region 2000» and «Telescope+».

Easy to update

Modular assembly allows updating and adding hardware and software tools.



ALSU-A and ALSU-AM control systems

ALSU-A and ALSU-AM are intended for hand-operated, automatic and remote monitoring, control and protection of ESPs driven by induction motors, rated capacity up to 320 kW (for ALSU-AM up to 160 kW).

Specification

Rated voltage	~380 V, 50Hz
Mains voltage fluctuation	-30%...+25%
ALSU-AM rated current	250, 400 A
ALSU-A rated current	630, 800, 1000A
Interface data transmission	RS-232, 2xRS-485, USB, CAN
Temperature range	-60 °C...+50 °C
Complementary modules	Downhole telemetry Soft start unit MPA-K2-0.4 USB flash Read-out device ALSU-P2
Overall dimensions	1800x750x600 mm
Weight	120-250 kg

Features:

- a large monitor, resolution: 320x240 and full-blown menu system;
- soft start installation possibility with no circuit and software improvements;
- automatic read-out of the operation history records by USB Flash.

ALSU-VSD control system

ALSU-A-VSD control systems are designed for control, protection and variable-speed regulation of asynchronous and ac submersible electric motors, rated capacity up to 160 kW.

Specification

Rated voltage	~380 V, 50Hz, -30%...+25%
Rated current	63, 250, 400, 630 A
Output voltage frequency	0-200 Hz
SEM types	asynchronous and ac
Output voltage generation process	PDM, 2.4-4.5 kHz, U/F, 20 points
SEM speed regulation range	0-6000 rpm
Complementary modules	TMS downhole telemetry USB flash Read-out device ALSU-P2
Interface data transmission	RS-232, 2xRS-485, USB, CAN
Temperature range	-60 °C...+50 °C
Overall dimensions	1950x800x650 mm
Weight	450-650kg

Features:

VSD featured control systems provide additional functions:

- soft start and gradual deceleration of submersible motor;
- change in ESP rotation direction;
- “jarring” mode;
- mode of torque limitation on the SEM shaft;
- mode of automatic U/F parameter forming for SEM;
- output voltage regulation mode;
- mode of the SEM maximum efficiency keeping;
- well parameter calculation;
- measurement of the pressure recovery curve;
- keeping of pressure at pump intake.

Output sine filter

As requested, VSD control systems are completed with output sine filters:

- A-VSD-250 - filter of modular design built in the control system;
- A-VSD-400 - filter of single design; connected between the control system and TMPN, filter type ALSU-F3-400;
- A-VSD-6300 - filter of single design, connected between the control system and TMPN, filter type ALSU-F3-630.

Controller KSU-GI

The control system controller is intended for installation to all ALSU control systems.

Specification

Processor	ARM, 32bit, 66MHz
Memory	RAM-2Mb ROM-2Mb
Indicator	graphical LCD, 320x240 points
Front-end interface	wired- USB, RS-232, 2xRS-485 Radio – Bluetooth, 100 m
System interface	CAN
Temperature range	-60 °C...+70 °C

The major features and advantages:

- high-performance 32bit microprocessor allows upgrading controller characteristics;
- graphic display - 320 x 240;
- handy keyboard and full-blown menu system;
- the control system status LED indicators;
- flexible algorithms of protection control;
- built-in smart functions.



Measurement controller

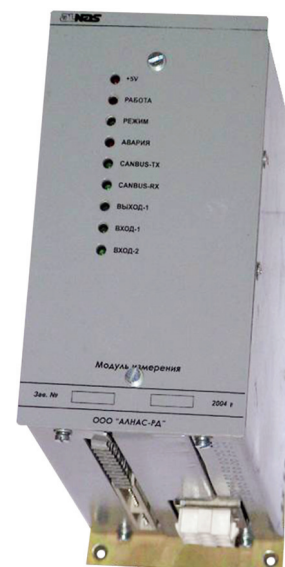
The control system controller is intended for measurement and control over power blocks in ALSU control systems.

Specification

Processor	DSP, 32bit, 150MHz
Measurements	voltage – 6 inputs, ±1% current – 3 inputs, ±1% R - 1 input, ±5%
Control	contactor – 16A PDM outputs, optical fibre – 6 outputs PDM frequency – 16kHz
Interface	CAN
Temperature range	-60 °C...+70 °C

The major features and advantages:

- high-performance signaling processor provides high speed and measurement accuracy;
- possibility to form current and voltage start curves.



Soft start unit MPA-K2-04

Soft start unit MPA-K2-04 is applied to limit starting currents and for secondary protection of asynchronous electric motors, rated capacity up to 320kW.

Specification

Rated voltage	~380 V
Mains voltage fluctuation	-30%...+25%
Operating current (A)	250, 400, 630, 800, 1000
Switching current (A)	800, 1300, 2000, 2500
Temperature range	-60 °C...+50 °C
Power circuit operation mode	short-time with the following contactor bridging
Service possibility	controlled by measurement controller, soft and impact start
Overall dimensions	300x250x150 mm
Weight	14 kg



High-voltage soft start unit MPA-P3

High-voltage soft start unit MPA-P3 is applied to limit starting currents in high-voltage control systems and transformer substations.

Specification

Rated voltage	4.2 kV
Mains voltage fluctuation	-30%...+25%
Operating current	180A
Starting current, max	500 A
Temperature range	-60 °C...+50 °C
Power circuit operation mode	constant
Service possibility	controlled by measurement controller, soft and impact start
Overall dimensions	800x900x700 mm
Weight	80 kg

Reading device ALSU-P-02

Small-size reading device ALSU-P-02 is applied to read archived files from ALSU control systems and saving them to PC for analysis.

Specification

Memory	Flash, 16 Mb
Interface	RS-232, USB
Temperature range	-60 °C...+50 °C
Service functions	information reading; information interchange with IBM PC
Overall dimensions	50x35x20 mm
Weight	50 g

Downhole telemetry unit TMS-3

TMS-3 downhole telemetry system is applied for measurement of the SEM temperature, pressure and vibration and consists of a downhole unit, installed in the SEM head and a controller installed in the control system.

Specification

Parameter	
Pressure measurement range	0-40 mPa \pm 2%
Motor temperature measurement range	10-150 °C \pm 2%
Measurement of motor vibration X, Y/Z	0-2g, \pm 10%
Measurement time interval	10 sec
Insulation	up to 7kV
Power supply and data transmission	SEM power cable
Service possibility	installed to SEM head
Overall dimensions of submersible unit (mm)	200x21mm
Weight	0.3 kg
Controller parameters	
External interface	RS-232/RS-485 (modbus RTU)
Rated voltage	110/220 V
Required power	100 W
Dimensions	254x200x160

Downhole telemetry unit TMS-4

Downhole telemetry unit TMS-4 provides measurement of a wide range of well data parameters and is applied in the hardware and software package to implement a “smart well” concept.

TMS-4 components:

- downhole telemetry unit controller (KPT-4);
- telemetry unit (BPT-4);
- wellhead telemetry system controller (KTM-5) – optional.

Specification

BPT-4 parameters	
Fluid pressure at pump intake	0,1-60 mPa ± 1%
SEM stator winding temperature measurement range	10-400 °C ± 2%
Measurement of fluid temperature at pump intake	10-150 °C ± 2%
Measurement of submersible system vibration in X/Y/Z	0-2g, ± 5%
Measurement time interval	10 sec
Downhole unit insulation	up to 10 kV
Power supply and data transmission	SEM winding middle point
KPT-4 unit parameters	
Measurement of the “ESP TO - submersible cable-SEM” system insulation resistance	0-9999 kOhm ± 5%
Number of analog inputs	4 (4-20 mA ± 5%)
Number of analog outputs	8 (0-10 V ± 5%)
Number of quantized inputs	2
Number of quantized outputs	2 (up to 50mA)
Communication interface	RS-232/RS-485 (Modbus RTU)
Rated voltage	110/220 V
Required power	150 mA max
KTM-5 unit parameters	
Number of analog inputs	4 (0-10V) 4 (4-20mA)
Number of quantized inputs	4
Communication interface	RS-232/RS-485 (Modbus RTU)
Rated voltage	16-42 V

The major features and advantages:

- measurement of a wide range of well data parameters allows realization of a “smart well” concept;
- reliable and fast information transmission channel;
- digital control;
- independent supply of the downhole unit;
- compatibility with control systems of other manufacturers.

Water injection pumping systems for reservoir pressure maintenance

Water injection centrifugal pumping systems are intended for injection of fresh water, stratal water and field waste water into oil formations in the reservoir pressure maintenance systems.

The pumping systems are designed based on the serial ESPs, hence:

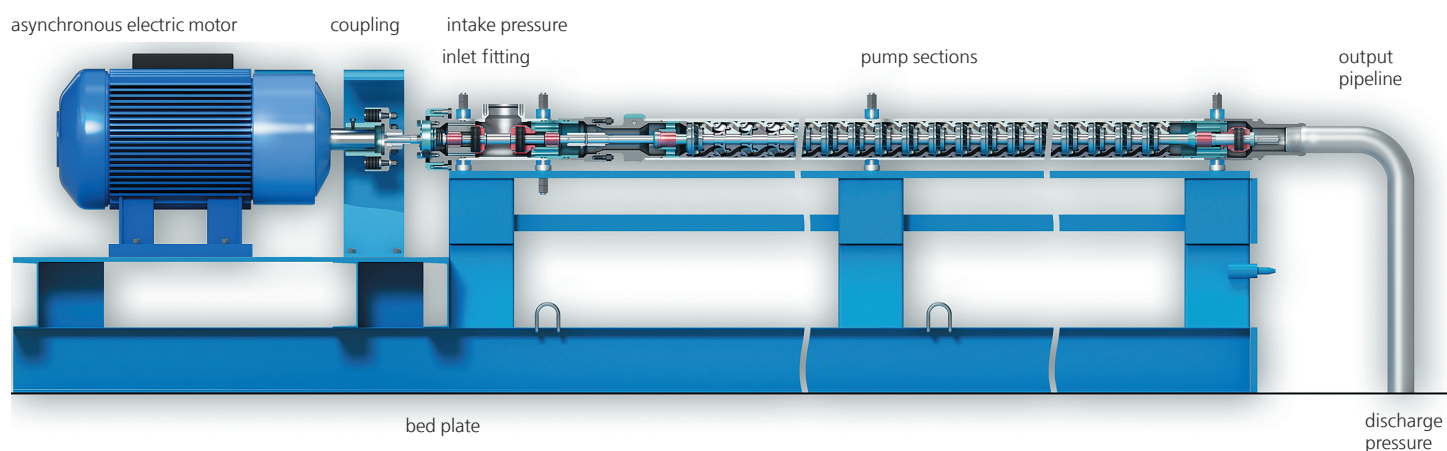
- production time is reduced;
- all the main components are de-bugged;
- design solutions improving equipment reliability and longevity are realized;
- assembly and disassembly procedures are simplified;
- service and maintenance are simplified.

A-ESP-H horizontal water injection pumping system

The pumping system of surface performance allows making its maintenance and repair easier, and applying standard asynchronous electric motors.

One pumping system can be used for several wells.

A-ESP-H capacity ranges from 45 m³/day to 1250 m³/day at head of up to 200 atm.



A-ESP-V water injection pumping system

We produce several types of water injection pumping systems.

A-ESP-V water injection pumping system is an individual submersible water injection system developed for water injection to any selected well.

Major advantages:

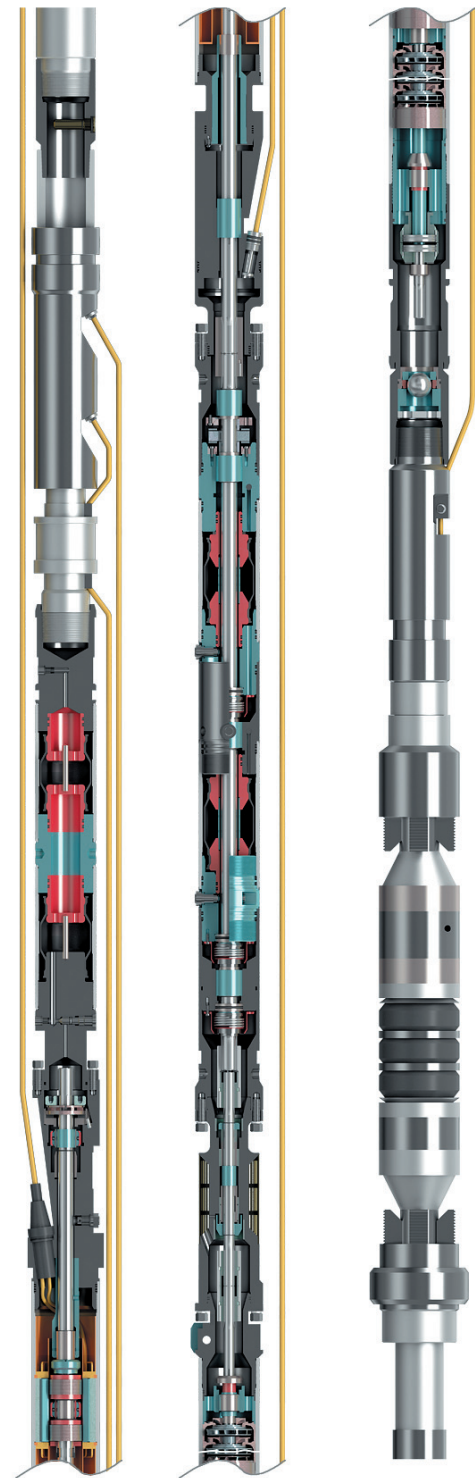
- longer run life;
- easy to operate - submersible design requires no special premises for assembly;
- head and capacity parameters are selected for a specific well;
- high maintainability.

The schematic diagram of the individual pumping system for water injection into a stratum is given on picture. The pumping system is a converse-designed serial ESP. Fluid flow is directed from top to bottom, thus providing water injection into a stratum. The pumping area is stacked to separate from water feed area. Fluid is supplied from the string top. Under conditions of the well remote layout from the main communications centre and other systems of reservoir pressure maintenance, application of the pumping systems is most optimal.

A-ESP-C-CW brine injection pumping system

A-ESP-C-CW pumping system is intended for deep-seated Cenomanian aggressive brine lifting and follow-up injection into oil stratum. The pump operating elements are made of Ni-resist. The pump materials allow successful pumping of brine of 15.9-20.3 g/l salinity and 1400 kg/m³ specific gravity at fluid temperature up to 90°C. The brine injection pumps design is analogous to A-ESPs.

All the pumping systems can be used for several wells, as well as for any specific well to cut down the costs of traverse line running and oilfield capital premises. The water injection pumps can also be completed with the soft start control systems to improve reliability and reduce starting moments in operation.



A-ESP-V water injection pumping system

Installation tools and spare parts

ALNAS offers a complete set of installation tools and accessories for ESP installation on-site.

Installation tools:

- special wrenches;
- torque wrenches;
- reinforced screw keys;
- megohmmeters;
- and other essential tools packed in a portable box.

Accessories:

- fuel pump;
- pressure cap;
- pedestal, clamp, suspender.

Alnas is ready to provide you with all necessary spare parts (system components) of any range and number for ESP repair and maintenance after warranty period.

Optional Equipment

The optional equipment production shop designs and manufactures special-purpose equipment for maintenance, assembling, repair and testing of ESP systems and cable lines.

It is a unique special-purpose enterprise, having a great experience of development, production, assembling and maintenance of hundred units of its products for the leading oil producing companies in CIS. The optional equipment production shop has got a successful experience in turn-key projects of modern full-scale repair and maintenance workshops for oil producing equipment.

OEP shop products:

1. Cabling repair and maintenance:

- cable repair line;
- cable spooler on a side loading slide;
- cable spooler on a wheeled rack.

2. ESP repair and maintenance equipment:

- SEM disassembling line;
- SEM assembling line;
- ESP section disassembling line;
- ESP section assembling line;
- washer for ESP end component;
- shot-blast machine;
- shot-blast line for pipes;
- stator internal washing bench;
- shaft washing bench;
- ESP sections internal washing bench;
- ESP and SEM external washing bench;
- SEM stator drying bench;
- press-fitting semiautomatic machine for washers (6 pcs. and 12 pcs.);
- hand press-fitting and pressing-out bench for washers;
- portable SEM and hydroprotector pressure testing bench;
- SEM stator reclaiming and unblading bench;
- key press-fitting bench;
- check valve testing bench;
- hydroprotector bladder bending bench;
- SEM, ESP and hydroprotector soldering bench;
- hydroprotector bladder leakproofness testing bench;
- shaft leveling bench (hand screw, pneumatic, hydraulic).

Units Conversion Chart

Value	Measurement unit		Conversion
	SI units	non-metric units	
Capacity	m ³ /day	barrels/day	1 oil barrel=0,1589 m ³ 1 m ³ = 6,289704 oil barrel
Head Length	meter	foot	1foot=0,3048 m 1m= 3,281 feet
Weight	kilogram	pound	1pound=0,4535 kg 1 kg=2,205 pound
Temperature degrees Celsius		°C	tc=(tf - 32) • 5/9
Temperature degrees Fahrenheit		°F	tf= tc • 9/5 +32



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