



IN-LINE- tsentrifugaal- pumbad

L-seeriast



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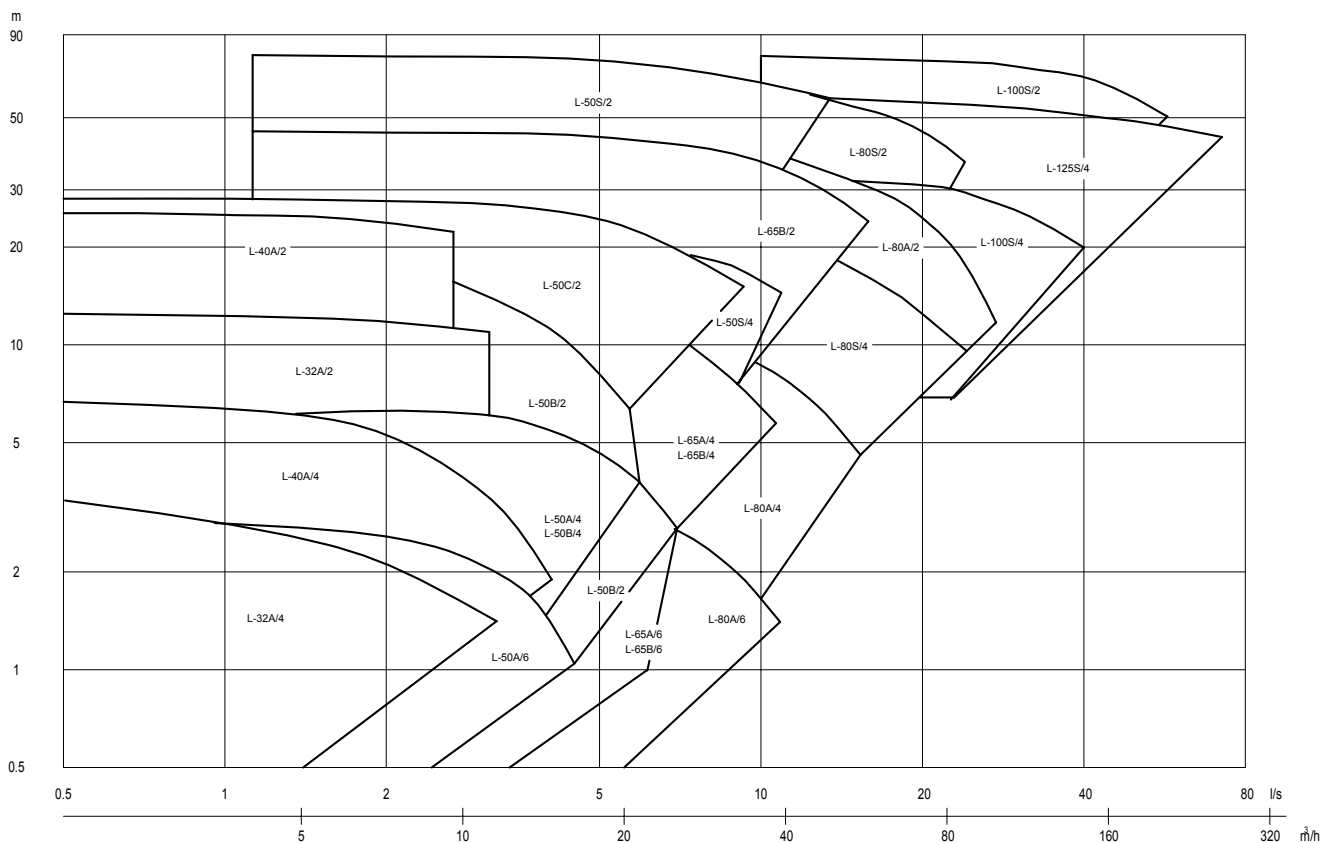
Üldised tehnilised andmed

L-seeria pumbad on vertikaalsed IN-LINE-tsentrifugaalpumbad.

Mõeldud kasutamiseks

L-seeria pumpasid võib kasutada puhaste vedelike ringluses, rõhutöstel ja siirdamisel. Pronksist pesaga LP-seeria pumpasid võib kasutada puhaste hapnikurikaste, mitte eriti agressiivsete vedelike pumpamisel nagu tarbevee, ringluse, rõhutöste ja siirdamise puhul. Happekindla pesaga LS-seeria pumpade otstarve on nii hapete kui aluste pumpamine.

Valikugraafik



Ehitus

Pump

L-seeria pumbad on oma ehituselt vertikaalsed monoblock-tüüpi tsentrifugaalpumbad, millised on varustatud kuivmootoriga. Pumba tööratas on paigaldatud otse elektrimootori võllile (ei mingeid sidureid).

Elektrimootor

L-seeria pumpade elektrimootor on Kolmeks-lühisvoolu mootor, milline on spetsiaalselt projekteeritud pumba tarbeks. Mootoril on kõrge kasutegur ja ta on madala müratasemega. Mootor sobib ka kasutamiseks sagedusmuundajaga.

Standartsed pinged: 400/230 V, 50 Hz < 4 kW
690/400 V, 50 Hz 4 kW ja üle

Korpuse kaitseklass: IP 54
IP55 4 kW ja üle (1000, 1500 p/min)
5.5 kW ja üle (3000 p/min)

Isolatsiooniklass: F

Kasutusviis: S1 (pidev töö)

Keskkonna temp.: max. +45°C

NB! Kolmeks-elektrimootoreid on saadaval eritellimusena ka teistsuguste väärtustega.

Äärikud

L-seeria pumpade äärikud sobivad kokku ISO 7005 kohaselt valmistatud vastasäärikutega.

Tihendid

L-seeria pumpade võllitihendiks on tavaliselt ühetoimeline mehaaniline liugrõngastihend. Soovi korral võimalik valida palju erinevaid tihenditüüpe (vt. Tihendlahendused). Pumba pesas kasutatakse ümartihendit.

Standartsed materjalid ja -kasutuskohad

L-seeria pumbad

TÜÜP	MOOTORID p/min	kW	PUMBA PESA	TIHENDI- PLAAT	TÖÖRATAS	VÖLLI TIHENDI Ø JA MATERJALID	PESA ÜMARTIH.
L-32A	1500/3000,	0,05-0,65	EN-GJL-200	EN-GJL-200	Noryl GFN2	12 mm, süsinik/SiC EPDM	NBR
L-40A	1500/3000	0,2-1,5	EN-GJL-200	EN-GJL-200	EN-GJL-200	12 mm, süsinik/SiC EPDM	NBR
L-50A	1000/1500	0,11-0,37	EN-GJL-200	EN-GJL-200	EN-GJL-200	12 mm, süsinik/SiC EPDM	NBR
L-50B	1500/3000	0,2-1,1	EN-GJL-200	EN-GJL-200	EN-GJL-200	12 mm, süsinik/SiC EPDM	NBR
L-50C	3000	1,5-2,2	EN-GJL-200	EN-GJL-200	EN-GJL-200	18 mm, süsinik/SiC EPDM	NBR
L-50S	1500/3000	1,1-15	EN-GJL-200	EN-GJL-200	EN-GJL-200	28 mm, süsinik/keram. EPDM	EPDM
L-65A	1000/1500	0,18-2,2	EN-GJL-200	EN-GJL-200	EN-GJL-200	18 mm, süsinik/SiC EPDM	EPDM
L-65B	1000/1500/3000	0,18-7,5	EN-GJL-200	EN-GJL-200	EN-GJL-200	18 mm, süsinik/SiC EPDM	EPDM
L-80A	1000/1500/3000	0,18-7,5	EN-GJL-200	EN-GJL-200	EN-GJL-200	18 mm, süsinik/SiC EPDM	EPDM
L-80S	1500/3000	1,1-15	EN-GJL-200	EN-GJL-200	EN-GJL-200	28 mm, süsinik/SiC EPDM	EPDM
L-100S	1500/3000	3,0-45	EN-GJL-200	EN-GJL-200	EN-GJL-200	32 mm, süsinik/SiC EPDM	EPDM
L-125S	1500	18,5-37	EN-GJL-200	EN-GJL-200	EN-GJL-200	40 mm, süsinik/keram. EPDM	EPDM
L-125S	1500	45	EN-GJL-200	EN-GJL-200	EN-GJL-200	50 mm, süsinik/keram. EPDM	EPDM

Max rõhk 10 bar

Temp. -15 ... +120°C

LH-seeria pumbad

TÜÜP	MOOTORID p/min	kW	PUMBA PESA	TIHENDI- PLAAT	TÖÖRATAS	VÖLLI TIHENDI Ø JA MATERJALID	PESA ÜMARTIH.
LH-50A	1000/1500	0,11-0,37	EN-GJS-400	EN-GJS-400	EN-GJL-200	12 mm, süsinik/SiC EPDM	NBR
LH-50B	1500/3000	0,2-1,1	EN-GJS-400	EN-GJS-400	EN-GJL-200	12 mm, süsinik/SiC EPDM	NBR
LH-50C	3000	1,5-2,2	EN-GJS-400	EN-GJS-400	EN-GJL-200	18 mm, süsinik/SiC EPDM	NBR
LH-65A	1000/1500	0,18-2,2	EN-GJS-400	EN-GJS-400	EN-GJL-200	18 mm, süsinik/SiC EPDM	EPDM
LH-65B	1000/1500/3000	0,18-7,5	EN-GJS-400	EN-GJS-400	EN-GJL-200	18 mm, süsinik/SiC EPDM	EPDM
LH-80A	1000/1500/3000	0,18-7,5	EN-GJS-400	EN-GJS-400	EN-GJL-200	18 mm, süsinik/SiC EPDM	EPDM
LH-80S	1500/3000	1,1-15	EN-GJS-400	EN-GJS-400	EN-GJL-200	28 mm, süsinik/SiC EPDM	EPDM
LH-100S	1500/3000	3,0-45	EN-GJL-200	EN-GJL-200	EN-GJL-200	32 mm, süsinik/SiC EPDM	EPDM
LH-125S	1500	18,5-37	EN-GJL-200	EN-GJL-200	EN-GJL-200	40 mm, süsinik/keram. EPDM	EPDM

Max rõhk 16 bar

Temp. -15 ... +135°C, LH-50A, -50B

-15 ... +150°C, LH-50C, -65A, -65B, -80A

LP-seeria pumbad

TÜÜP	MOOTORID p/min	kW	PUMBA PESA	TIHENDI- PLAAT	TÖÖRATAS	VÖLLI TIHENDI Ø JA MATERJALID	PESA ÜMARTIH.
LP-50A	1000/1500	0,11-0,37	CuPb5Sn5Zn5	CuPb5Sn5Zn5	CuPb5Sn5Zn5	12 mm, süsinik/SiC EPDM	NBR
LP-50B	1500/3000	0,2-1,1	CuPb5Sn5Zn5	CuPb5Sn5Zn5	CuPb5Sn5Zn5	12 mm, süsinik/SiC EPDM	NBR
LP-50C	3000	1,5-2,2	CuPb5Sn5Zn5	CuPb5Sn5Zn5	CuPb5Sn5Zn5	18 mm, süsinik/SiC EPDM	NBR

Max rõhk 10 bar

Temp. -15 ... +120°C

LS-Pumbad

TÜÜP	MOOTORID p/min	kW	PUMBA PESA	TIHENDI- PLAAT	TÖÖRATAS	VÖLLI TIHENDI Ø JA MATERJALID	PESA ÜMARTIH.
LS-50B	1500/3000	0,2-1,1	AISI 316	AISI 316	AISI 316	12 mm, süsinik/SiC EPDM	NBR
LS-50C	3000	1,5-2,2	AISI 316	AISI 316	AISI 316	18 mm, süsinik/SiC EPDM	NBR
L-125S	1500	45	EN-GJL-200	EN-GJL-200	EN-GJL-200	50 mm, süsinik/keram. EPDM	EPDM

Max rõhk 16 bar

Temp. -15 ... +120°C

Eritellimusena happekindlad pumbad ka teistest materjalidest nagu SS2324 (AISI 329) ja SS2378 (LM-seeria).

NB!

L-seeria pumpade tihendisarju on võimalik tellida erinvaist materjalidest, tulenevalt pumbatava vedeliku nõuetest.

EN-GJL-200 = hallmalm

EN-GJS-400 = kõrgtugev malm

CuPb5Sn5Zn5 = pronks

AISI 316 = happekindel teras

Noryl GFN2 = Plast

SiC = ränikarbiid keraamika

keram. = keraamika

EPDM = EPDM-kumm

NBR = nitrilikum

Võlli materjaliks on alati AISI 329.

Tüübitähised

Varustatus:
 X = Jalata
 P = 1-faasiline
 N = Tihendisari nr.7
 T = Väline Tihend
 H = Tihendipesu (loputus)
 KT = Kahetoimeline (padrun) Tihend
 Sn = Tavalisest erinev Tihend
 Kn = Erinev pinnakate
 Ln = Mootori termokaitsmed
 En = Mingi muu erinevus (Näit. EXE)
 Vn = Erinev pinge

Materjal:
 P = punametall
 H = kõrgtugev malm
 S = happekindel teras

L = pumba seeria
 DN mõõt
 Versioon
 Tööpunkt
 Mootori tüüp
 Nimipinge ja -voolud

Type	LH-50C/2 S21 K2 L3 V1-62006			
No.	12345/00	PN 16	Ø 150	PM
Tööpunkt	6 l/s	22 m	+150 °C	P1 2,7 kW
Mootori tüüp	Motor OKN-101 D1 F16	3~ 50 Hz	48,9 r/s	S1
Nimipinge ja -voolud	Y 400 V 4,7 A	P2N 2,2 kW	IP55	
	Δ 230 V 8,1 A	cos φ 0,88		
	OY KOLMEKS AB Finland		Isol.F.	CE

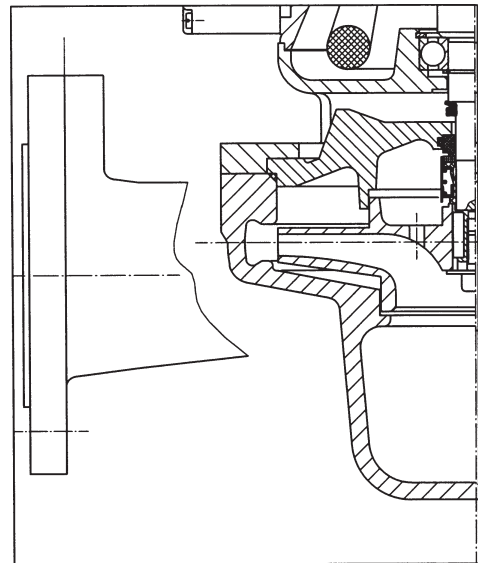
Max lubatud vedeliku temp.
 Rõhuklass
 Tööratta läbimõõt
 Mootori kood
 Erinev töörotta materjal:
 PM = punametall
 SS = happekindel teras
 Tarbimisvõimsus tööpunkti (vajadusel)
 Pidev kasutus Pöörlemiskiirus
 Korpuse kaitseklass
 Nimivõimsus
 Isolatsiooniklass

Tihendilahendused

Standartne

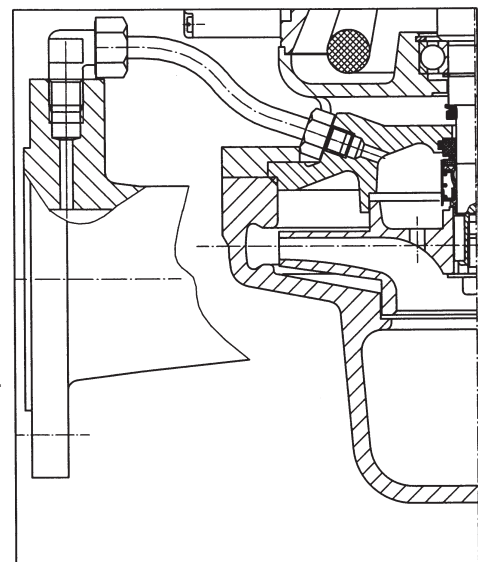
- ühetoimeline tihend
- temp. max + 120°C

Standartne völlitihendisari on kasutatav ka vee ja glükoolilahuste puhul ning sobib tavaliselt ka muude külma-vedelike puhul. Siiski, soovime enne kõige propüleenglükooli kasutamist. Ainete ei tohiks lahuses olla üle 50%, tavaliselt piisab 30 – 40%.



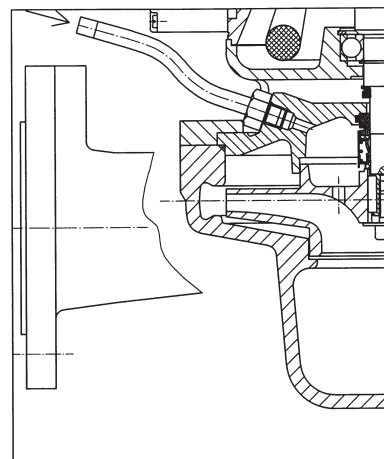
Sisene pesu

- ühetoimeline tihend
- pumba survepöõlelt viiakse pumbatavat vedelikku otse tihendile
- standartsena LH-seeria pumpade puhul
- temp. max + 135°C mudelite LH-50A ja -50B puhul
- temp. max + 150°C mudelite LH-50C, -65A, -65B, -80A, -80S, -100S ja -S125 puhul
- võimalik saada ka teistest materjalidest pumpadele. Sellisel juhul on nimikilbil täiendav märge „H“. Näit. LS-50/4H



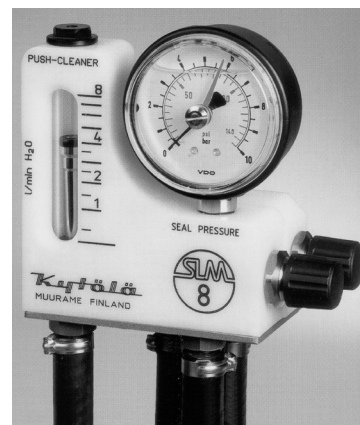
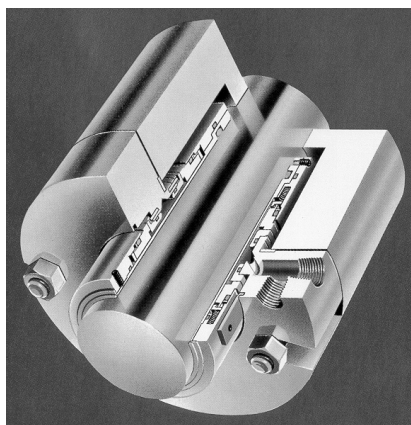
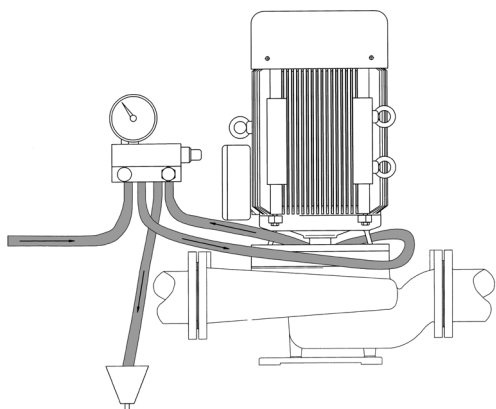
Väline pesu

- ühetoimeline tihend
- pumba tihendikambriga on ühendatud korgiga varustatud toru, mille kaudu on võimalik väljast viiakse viia otse tihendile survestatud pesu-jahutusvedelikku
- võimalik saada pumpadele mõõtmetega DN50, DN65, DN80, DN100 ja DN125
- soovitame kasutada kristalliseeruvate ja sadestuvate vedelike puhul.



Kahetoimeline tihend (padrun)

- kaks vastakuti asendatud tihendit, milliste vahele tuuakse väljast vedelik – väline ringlus. Viimase rõhk võib olla madalam või kõrgem pumbatavast.
- võimalik saada pumpadele mõõtmetega DN65 – DN125
- temp. max + 180°C
- vajab erilist jahutusvee valveseadet (KOLMEKS võib tarnida)
- nimikilbile lisandub täiendav märge „KT“. Näit. LH-65B/2KT
- soovitame kasutada kuumade, kristalliseeruvate ja sadestuvate vedelike puhul
- annab pumpale ka kuivkäiguvõimaluse

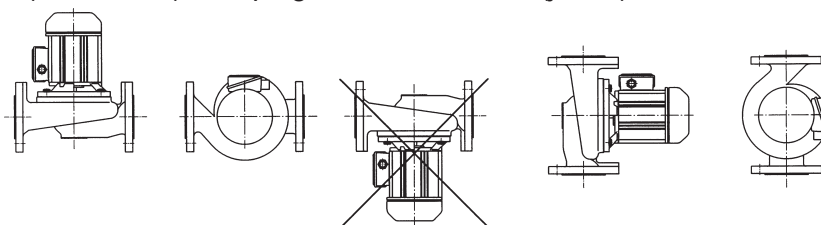


Paigaldamine

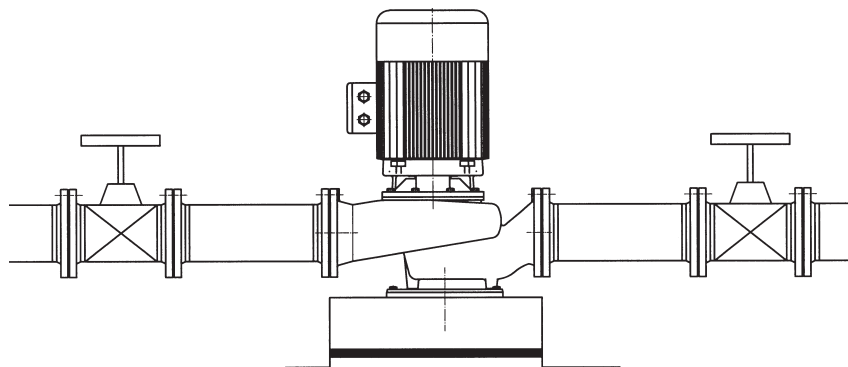
Pumba paigaldamisel tuleb arvestada, et:

- jäetakse piisavalt ruumi nii kontrolli kui hooldust silmas pidades;
- vajadusel oleks võimalik kasutada siirde- ja tõstesedmeid;
- paigaldataks nii pumba sisendi- kui ka väljundi poolele sulgventiilid.
- Mootorikooste ja sedakaudu ka toitekaabli liitmikukarbi asendit võib muuta, eraldades mootori pesast ja paigaldada soovitud asendisse. Seda ei saa teha LH-seeria puhul!

Väiksemad pumbad (alla 15 kW) võib paigaldada ilma toeta (jalata).

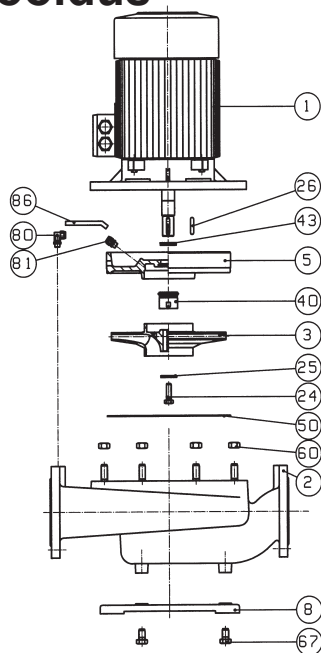


Suuremad pumbad kinnitatakse jala abil vabalt liikuvale betoonalusele, milline on põrandast isoleeritud umbes 20 mm paksuse korgist või kummist matiga. Betoonosa kaal peaks ületama pumba oma 1,5 kordselt.



Varuosad ja hooldus

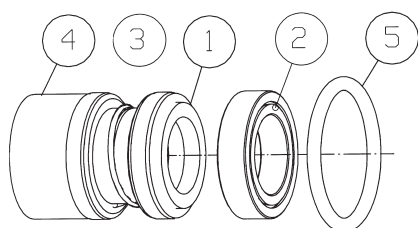
Osade nimistu



- 1 Elektrimootor
- 2 Pumba pesa
- 3 Tööratas
- 5 Tihendiplaat
- 8 Jalg (mitte alati)
- 24 Mutter
- 25 Alusplaat
- 26 Kiil
- 40 Võlli tihendisari
- 43 V-rõngas (mitte alati)
- 50 Pesa ümar- /lapiktihend
- 60 Mutter / Kruvi
- 67 Kruvi
- 80 Toruliitmik (LH-seeria)
- 81 Toruliitmik (LH-seeria)
- 86 Toru (LH-seeria)

Tihendisarjad

Pumba tüüp	Võllile Ø mm	Pesa ümartihend mm
L_-32A	12	100 x 2,5
L_-40A	12	145 x 2,5
L_-50A, -50B	12	150 x 3
L_-50C	18	150 x 3
L_-50S	28	265 x 4
L_-65A, -65B, -80A	18	179,3 x 5,7
L_-80S	28	265 x 4
L_-100S	32	315 x 6,3
L_-125S 18.5...37kW	40	405 x 7
L_-125S 45kW	50	405 x 7



- 1 Liugrõngas
- 2 Vastarõngas
- 3 Korpus/lõõts
- 4 Vedru
- 5 Ümartihend

Varusari- ja asendussari

Pumba varusari on tagavaraühik, milline koosneb mootorist, tihendiplaadist, töörottast ja tihenditest. Mootorivea või tihendilekke ilmnedes on lihtsaim viis kasutada asendussarja, tänu millele ei kulu palju aega katkestusele. Mingeid torutöid ei ole vaja teha kuna pumba pesa jääb paika.

Asendussari on oma ehituselt samasugune kui varusari. See on vaid kapitaalselt remonditud tervik, millises kasutatakse kasutatud osi. Kuluvad detailid nagu võlli tihendi-sari ja laagrid on uued. Klient tagastab vana kasutuses olnud terviku KOLMEKS'i poolt volitatud hooldajale, kes sooritatud töö järel kasseerib vaid remondi ja saatekulude eest.

Vastavustabel vanadele pumbatüüpidele

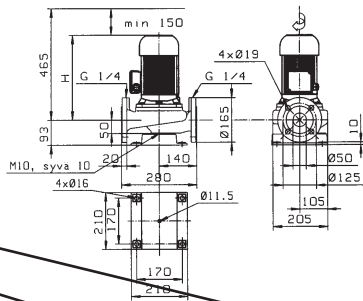
Uus tüüp / DN	Vastav vana / DN tüüp	Äärikute vahe mm		Paigalduskõrgus jalaga mm	
		Uus	Vana	Uus	Vana
L_-32A / 32	AL_-1040 / 40	220	240	116	103
L_-40A / 40	AL_-1032 / 32	250	280	116	116
L_-50A / 50	AL_-1054 / 50	280	280	93	93
L_-50B / 50	AL_-1053 / 50	280	280	93	93
L_-50C / 50	AL_-1055 / 50	280	280	93	93
L_-50S / 50	AL_-1057 / 50	450	450	135	155
L_-65A / 65	AL_-1066 / 65	340	360	125	125
L_-65B / 65	AL_-1065 / 65	340	360	125	125
L_-80A / 80	AL_-1081 / 80	360	450	140	140
L_-80S / 80	AL_-1082 / 80	490	450	165	165
L_-100S / 100	AL_-1106 / 100	660	600	170	170

VALIKU GRAAFIKUD

Graafikute lugemine

Graafikud kehtivad tavaliselt 50 Hz ja + 20°C vee puhul. Nad on saadaval ka 60 Hz voolu tarvis. Kui kasutusel on vedelikud, milliste viskositeet erineb vee omast, tuleb see pumpa dimensioneerides arvesse võtta. Vajadusel konsulteeri KOLMEKS'iga.

L_-50A/4 DN50 1500 p/min
Gabariidijoonis



Pumba kaal

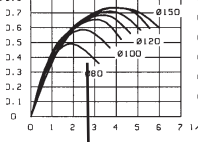
Elektrimootori tüüp

Elektrimootori poolt tarbitav nimivõimsus P_2

Elektrimootori nimivool (3 x 400V või 1 x 230V puhul)

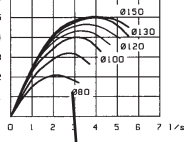
	kW	A	kg	H
OKN-862 D F15	0,37	1,15	30	315
OP-762 F15	0,25	0,76	24	250
OP-752 P F15	0,25	1,05	24	250
OP-752 F15	0,20	0,65	24	250
OP-752 P F15	0,20	1,45	24	250

Pumba kasutegur

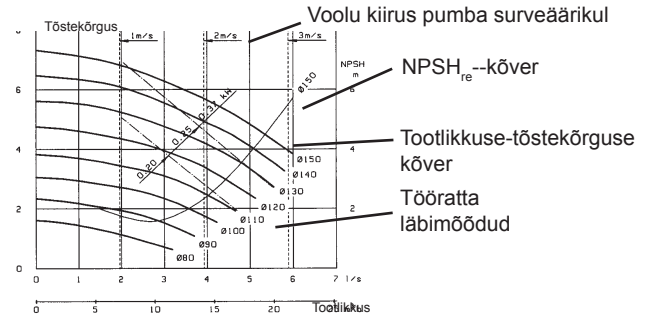


Pumba kasutegurite kõverad

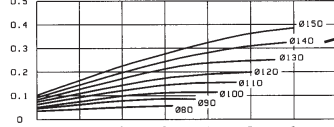
Seadme summaarne kasutegur



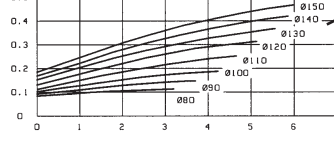
Seadme summaarse kasuteguri kõverad



Pumpa võimsus võllil P_2



Seadme poolt tarbitav võimsus P_1



NB! Vedeliku tihedus on otseses sõltuvuses võimsuse tarvet silmas pidades. Kui kasutate muud kui vett, kontrolli, kas mootori võimsus on piisav!

NPSH ja kavitatsioon

$$NPSH_{re} < NPSH_{av}$$

$$NPSH_{re} < p + h - h_{imu} - p_h$$

$$NPSH_{re} < p_{imu} - p_h$$

Süsteemi $NPSH_{av}$ -väärtus kuvab reaalse sisendirõhu (tuleval äärikul) ja pumbatava vedeliku aururõhu vahet. Pumbalt nõutava $NPSH_{re}$ -väärtus peab olema väiksem kui $NPSH_{av}$ -väärtus, et ei sünniks kavitatsiooni. Tagatise kordaja, 0,5m, tuleb alati lisada mõõdetud väärtusele.

$NPSH_{av}$ - väärtus, milline on sisendirõhu ja pumbatava vedeliku aurustumisrõhu vahe
 $NPSH_{re}$ - väärtus, millist nõutakse pumbalt

- p = absoluutne rõhk
- p_h = vedeliku aurustumisrõhk sel temperatuuril
- h = vedeliku pinna kõrgus pumpa imuäärikust
- h_{imu} = tuleva torustiku rõhulang
- p_{imu} = absoluutne sisendi rõhk

VALIKU GRAAFIKUD

Näide:

Avatud anum ($p = \text{õhu rõhk} = 10 \text{ m}$), millises on vesi temp. $+ 90^\circ\text{C}$ ($p_h = 7 \text{ m}$), tuleva toru rõhulang 1 m ja vedeliku pinna kõrgus imuäärikust 2 m . Pumba tööpunkti on valitud: tootlikus 4 l/s ja tõstekõrgus $5,7 \text{ m}$. Kas see pump sobib nimetatud olukorda?

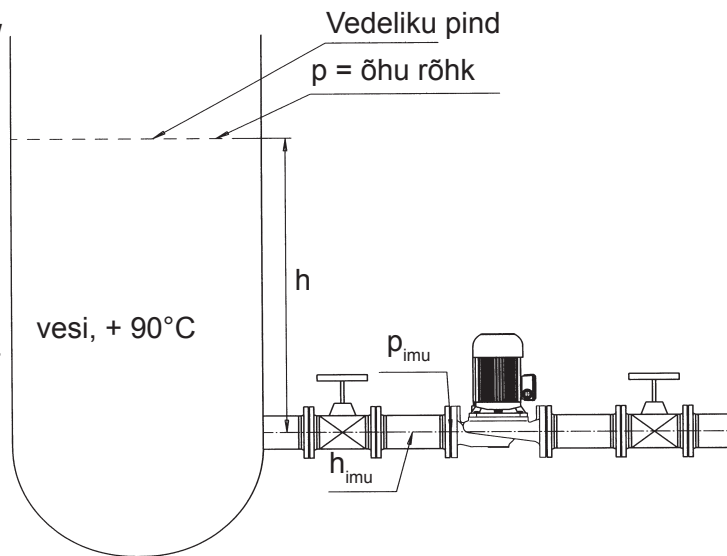
Pumba tüüp: L-50A/4/150 0,37kW

$$\text{NPSH}_{re} < p + h - h_{imu} - p_h$$

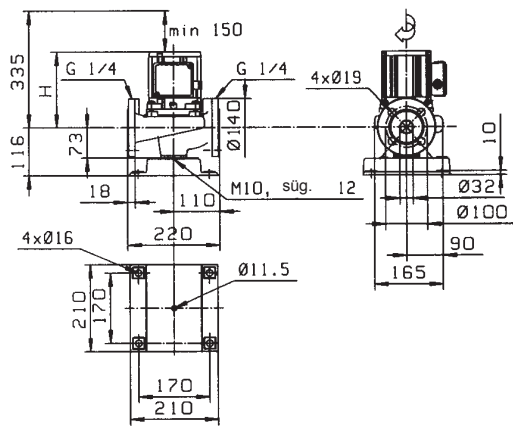
$$\text{NPSH}_{re} < 10 \text{ m} + 2 \text{ m} - 1 \text{ m} - 7 \text{ m}$$

$$\text{NPSH}_{re} < 4 \text{ m}$$

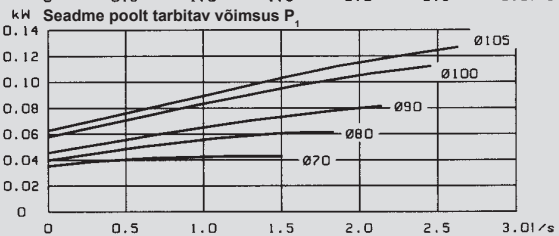
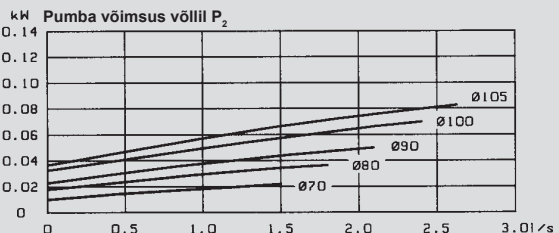
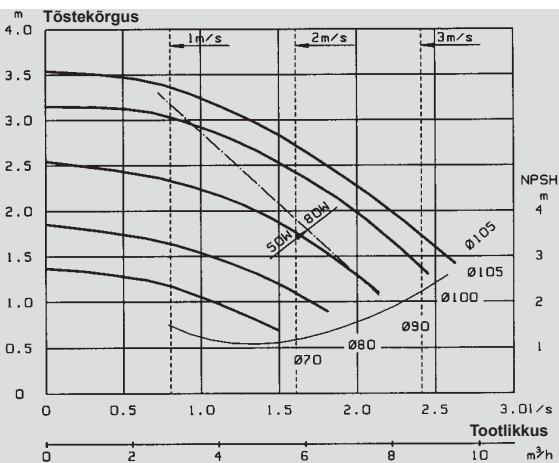
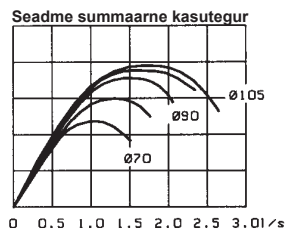
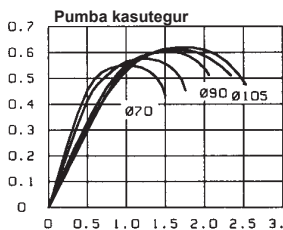
Võttes arvesse ka tagatise kordajat $0,5 \text{ m}$, on pumba NPSH_{re} -väärtus oldav madalam kui $3,5 \text{ m}$, et pump ei kaviteeriks. Meie valitud pumbal on see $2,4 \text{ m}$, seega kavitatsiooni ohtu pole ja valitud pump sobib.



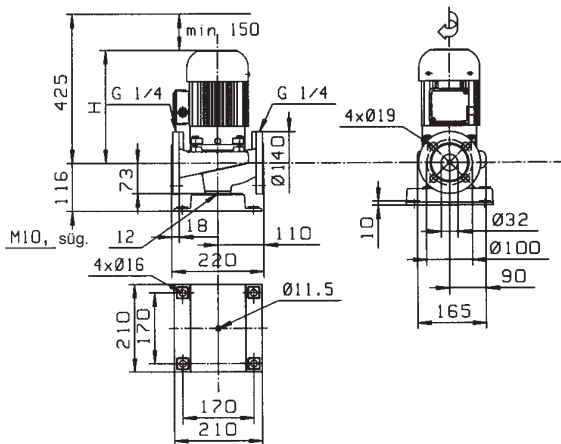
L_-32A/4 DN32 1500 p/min



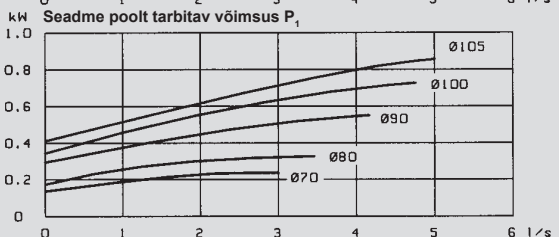
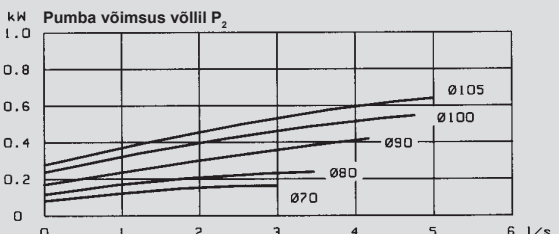
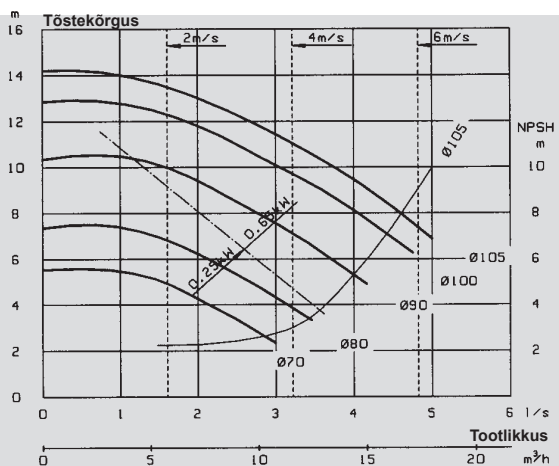
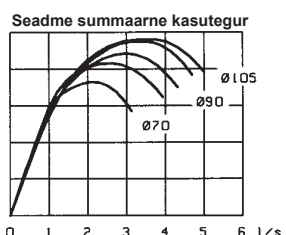
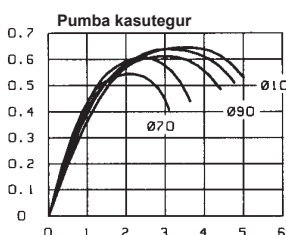
	kW	A	kg	H
OP-742 N12	0.08	0.28	17	185
OP-742 P N12 1~	0.08	0.62	17	185
OP-742 P N12 1~	0.05	0.47	17	185
OP-732 B N12	0.05	0.21	17	185



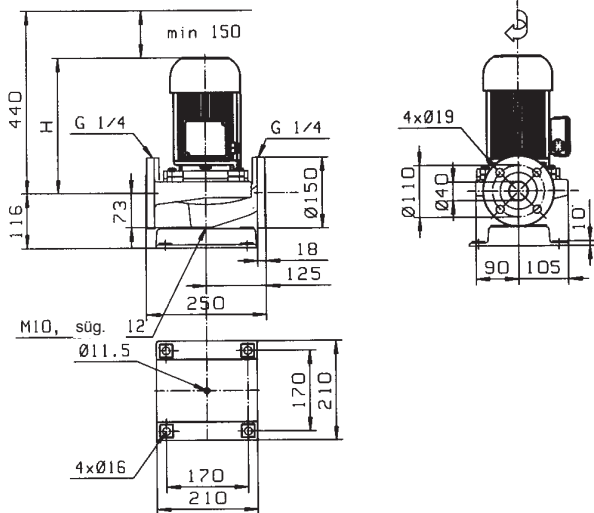
L_-32A/2 DN32 3000 p/min



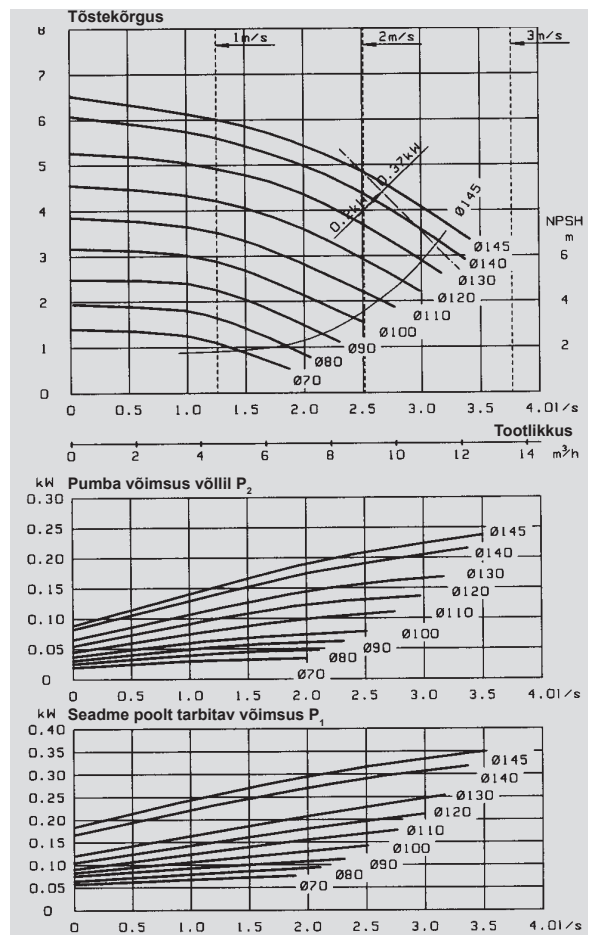
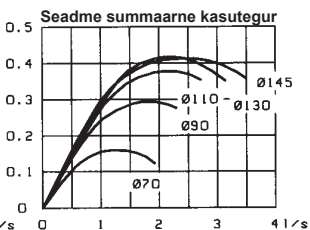
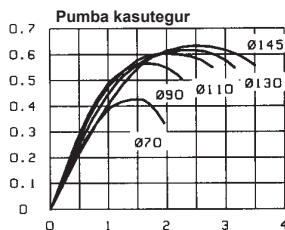
	kW	A	kg	H
OKN-841 D N12	0.65	1.8	21	275
OKN-841 D P N12 1~	0.65	4.5	21	275
OP-741 N12	0.25	0.7	18	225
OP-741 C P N12 1~	0.25	1.8	18	225



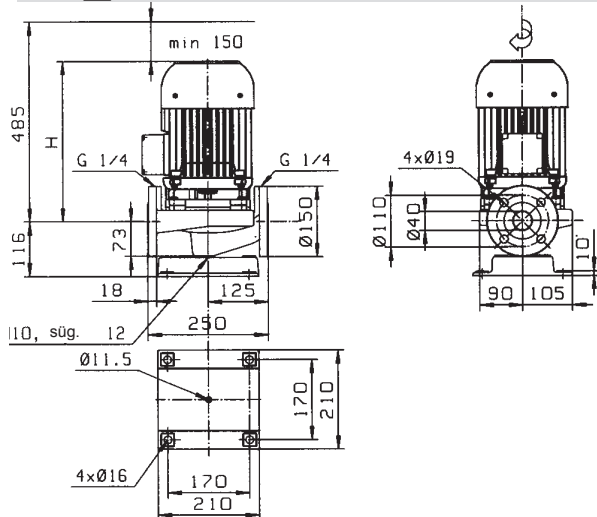
L₋40A/4 DN40 1500 p/min



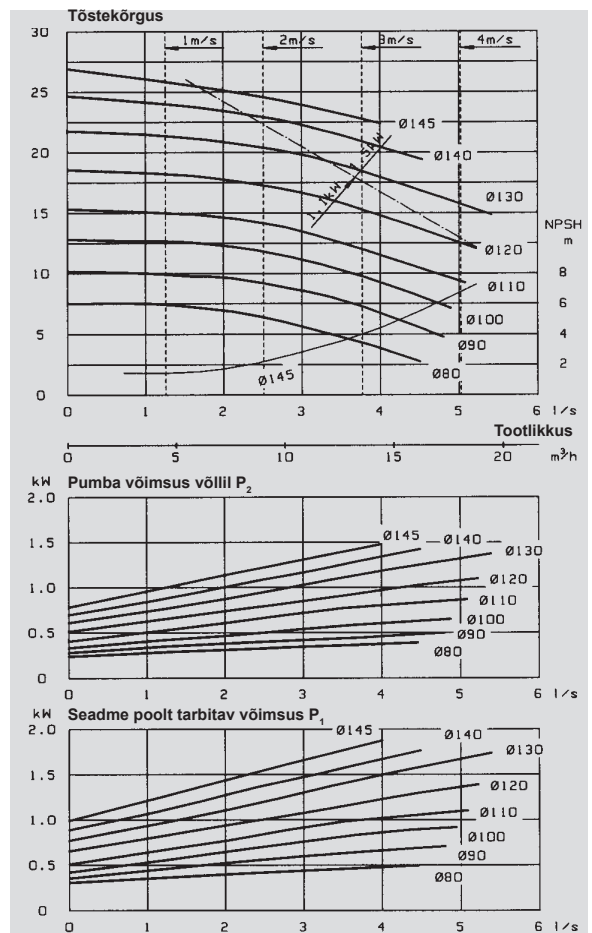
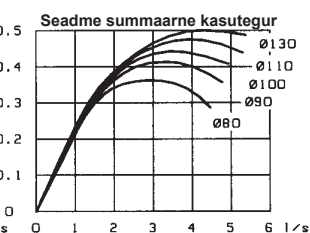
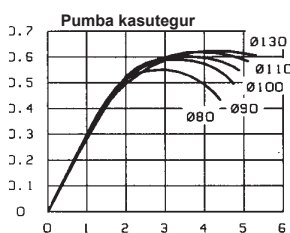
	kW	A	kg	H
OKN-Ø62L D N13	0.37	1.15	25	290
OP-752 N13	0.20	0.65	21	240
OP-752 P N13 1~	0.20	1.45	21	240



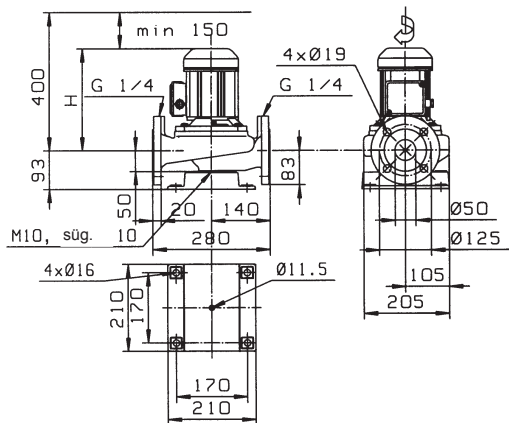
L₋40A/2 DN40 3000 p/min



	kW	A	kg	H
OKN-101 C1 N13	1.5	3.3	38	335
OKN-101 C1 P N13 1~	1.5	8.8	38	335
OKN-Ø71 D N13	1.1	2.8	25	290
OKN-Ø71 D P N13 1~	1.1	7.0	25	290

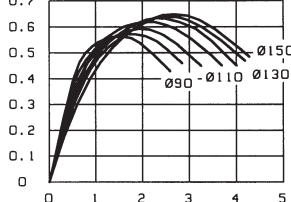


L_-50A/6 DN50 1000 p/min

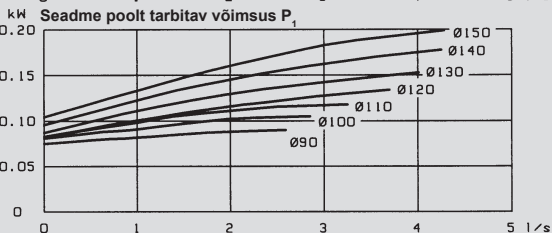
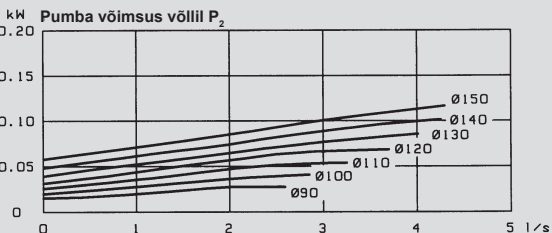
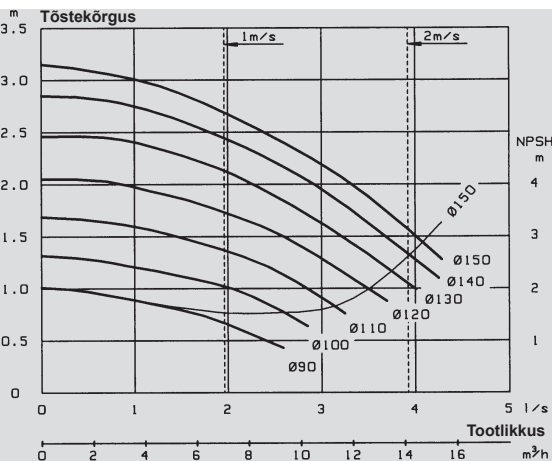


	kW	A	kg	H
OP-753 F15	0.11	0.5	24	250

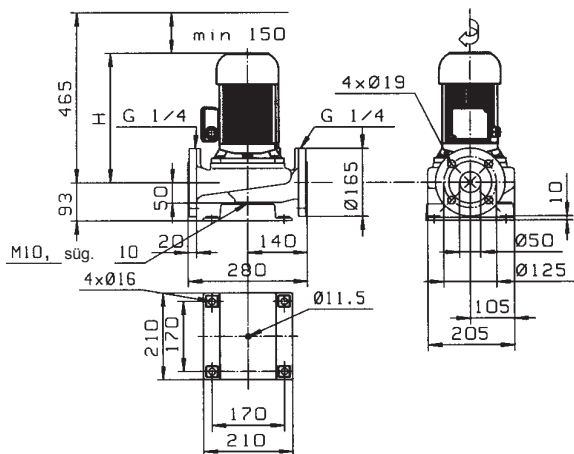
Pumba kasutegur



Seadme summaarne kasutegur

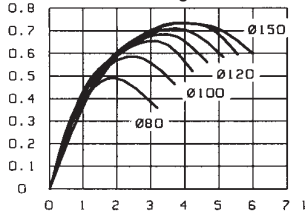


L_-50A/4 DN50 1500 p/min

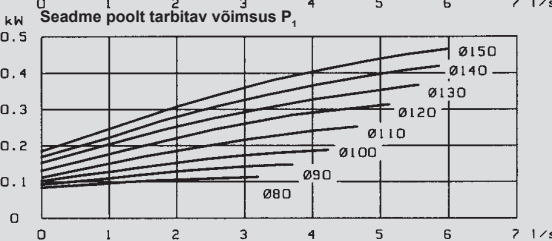
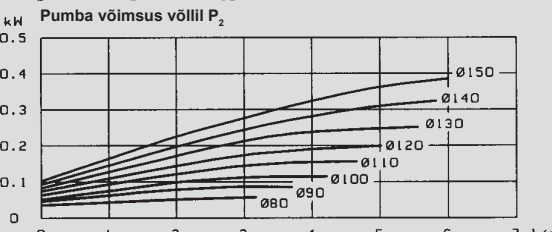
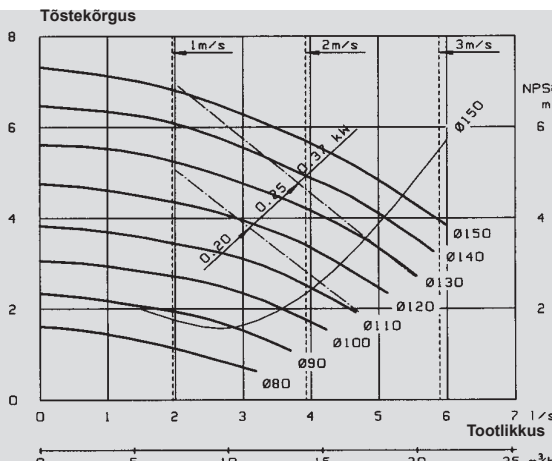
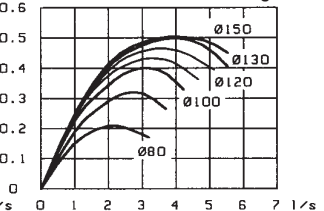


	kW	A	kg	H
OKN-862 D F15	0.37	1.15	30	315
OP-762 F15	0.25	0.82	24	250
OP-752 P F15 I~	0.25	1.85	24	250
OP-752 F15	0.20	0.65	24	250
OP-752 P F15 I~	0.20	1.45	24	250

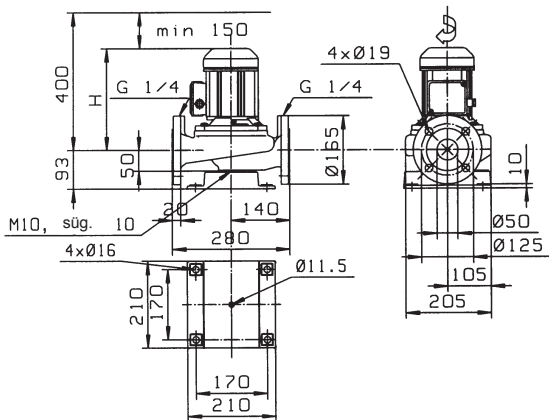
Pumba kasutegur



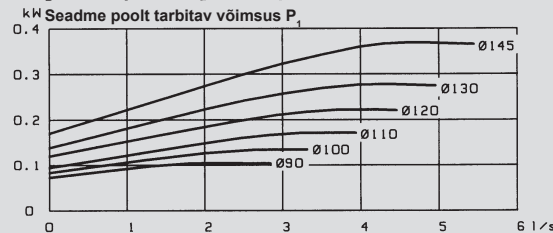
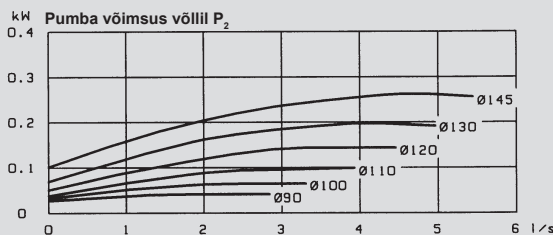
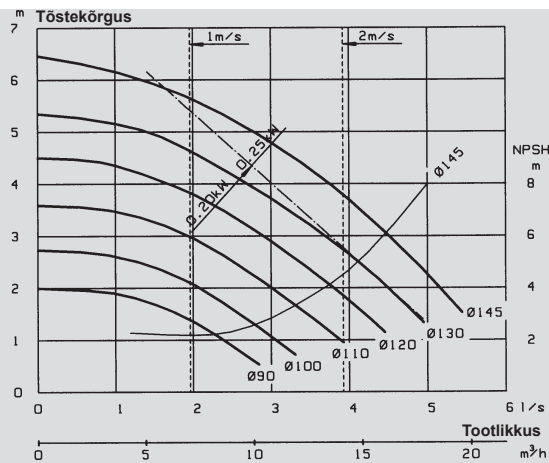
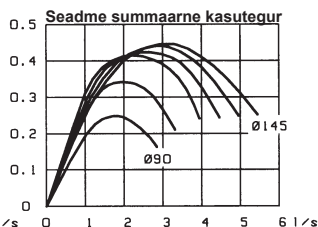
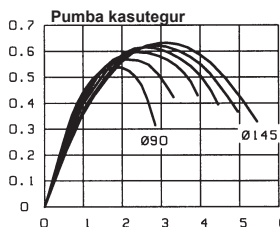
Seadme summaarne kasutegur



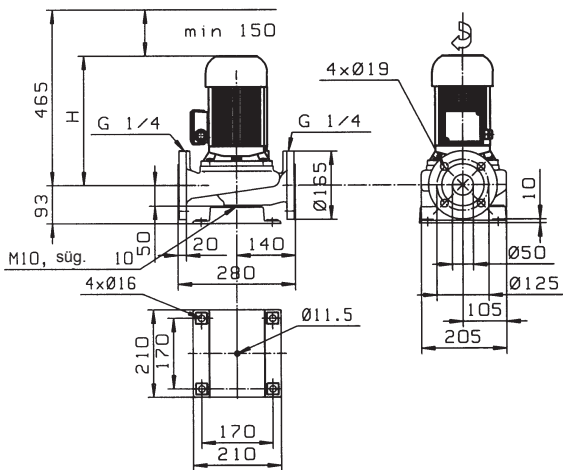
L_-50B/4 DN50 1500 p/min



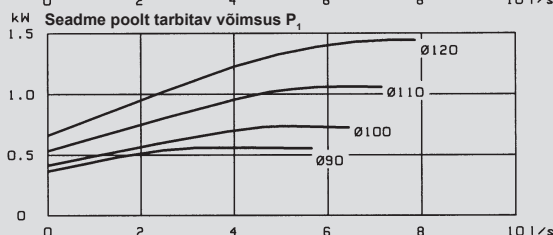
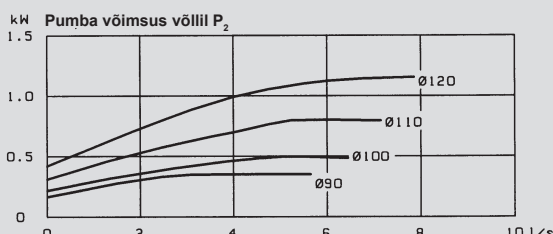
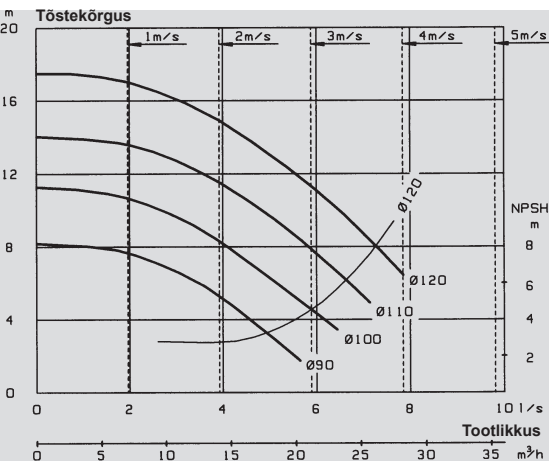
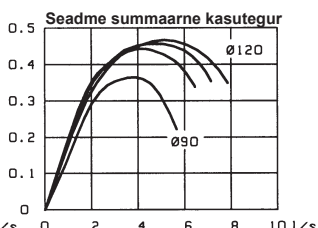
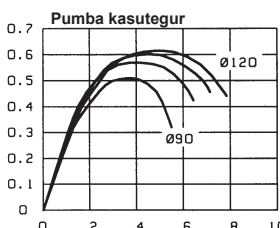
	kW	R	kg	H
OP-762 F15	0.25	0.82	25	250
OP-752 P F15 1~	0.25	1.85	25	250
OP-752 F15	0.20	0.65	25	250
OP-752 P F15 1~	0.20	1.45	25	250



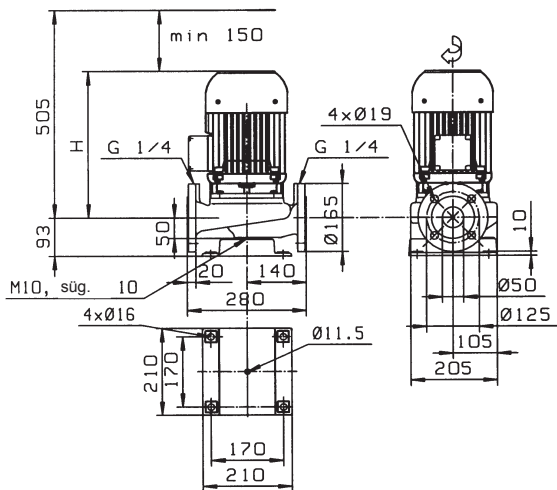
L_-50B/2 DN50 3000 p/min



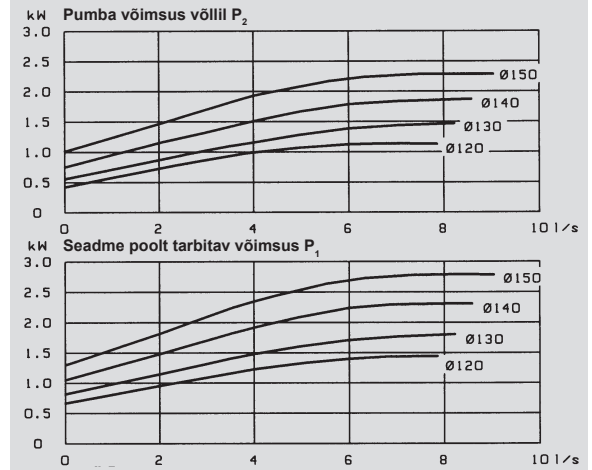
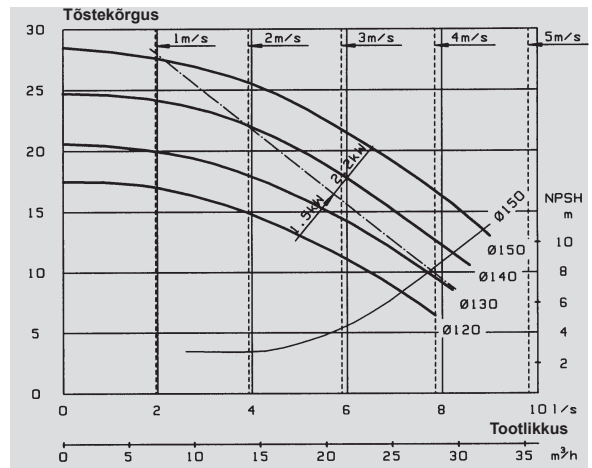
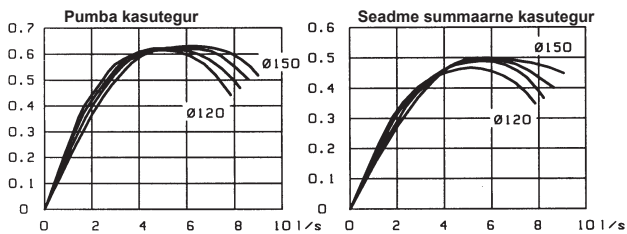
	kW	R	kg	H
OKN-871 D F15	1.1	2.8	30	315
OKN-871 D P F15 1~	1.1	7.0	30	315



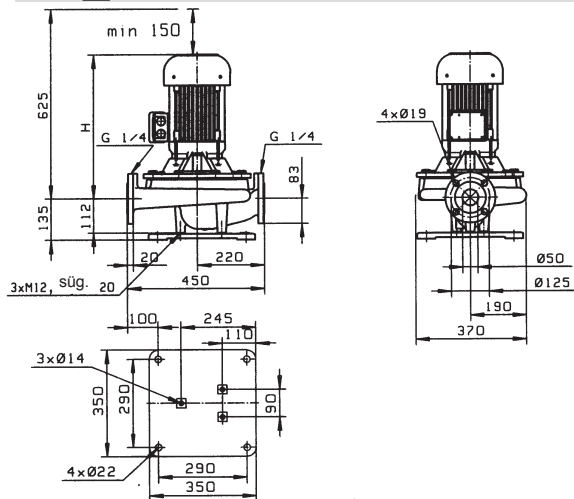
L_-50C/2 DN50 3000 p/min



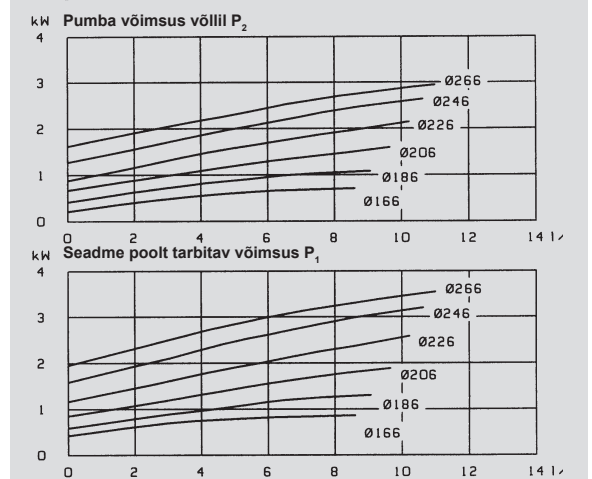
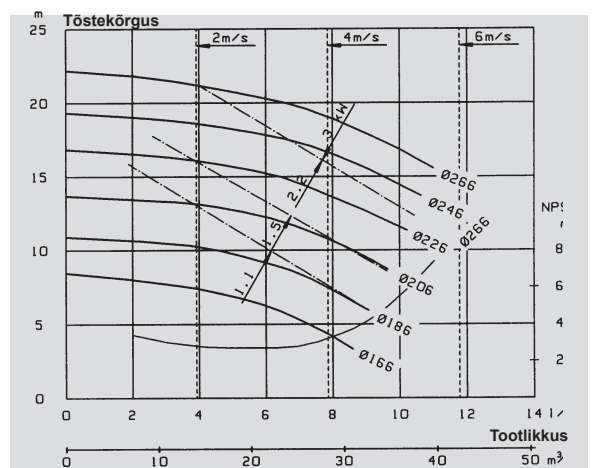
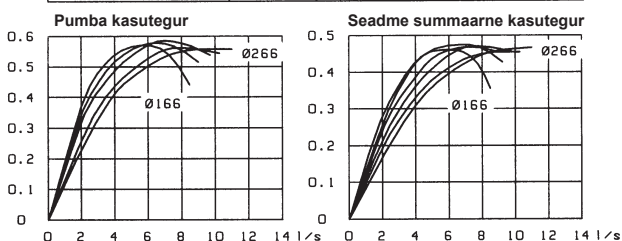
	kW	A	kg	H
OKN-101 D1 F16	2.2	4.7	43	355
OKN-101 C1 F16	1.5	3.3	37	355
OKN-101 C1 P F16 1~	1.5	8.8	37	355



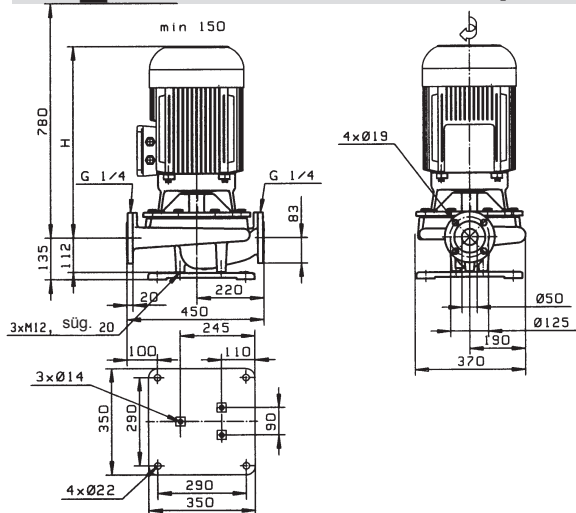
L_-50S/4 DN50 1500 p/min



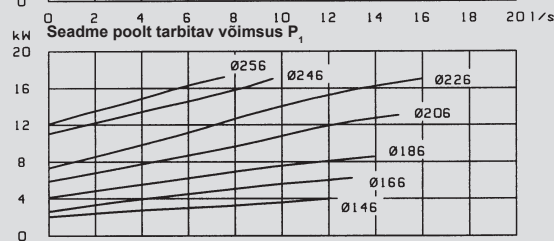
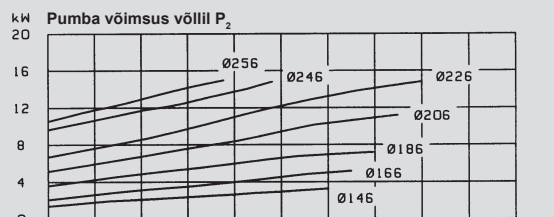
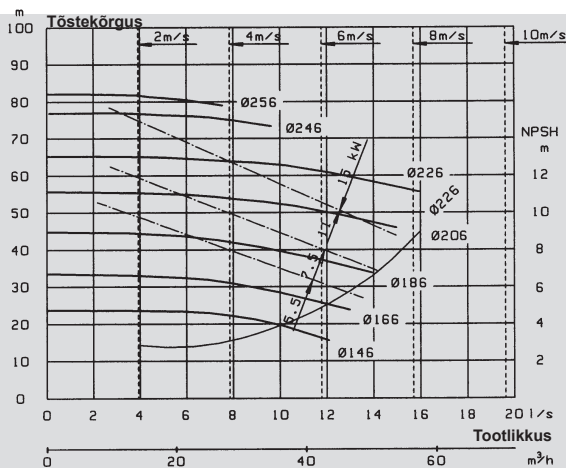
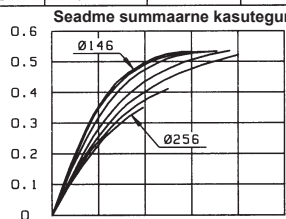
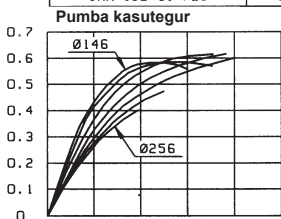
	kW	A	kg	H
OKN-112 E2 F29	3	6.6	108	475
OKN-112 C2 F29	2.2	5.1	102	475
OKN-101 D2 F29	1.5	3.5	96	430
OKN-101 C2 F29	1.1	2.6	92	430



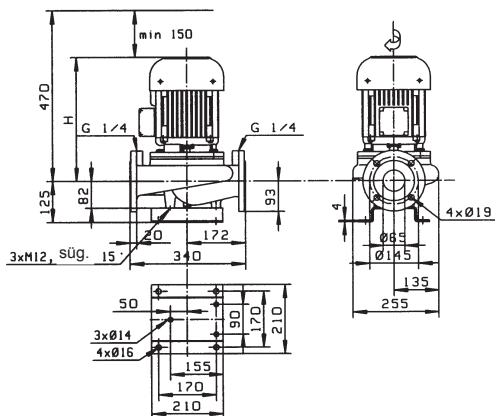
L_-50S/2 DN50 3000 p/min



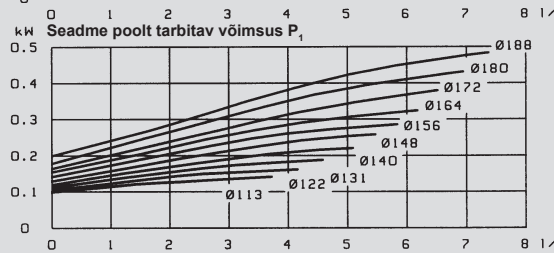
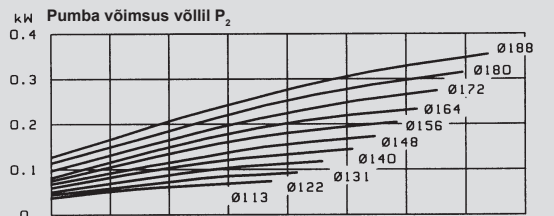
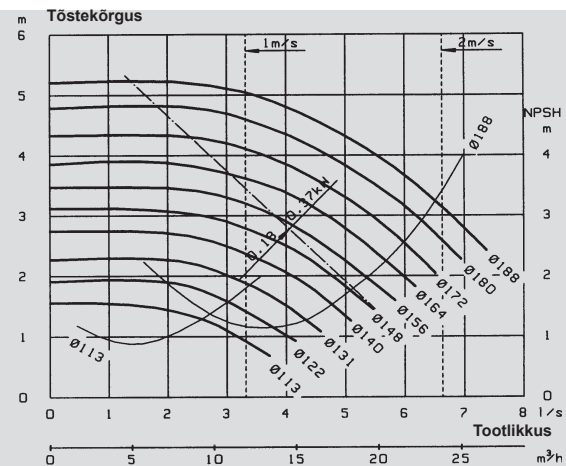
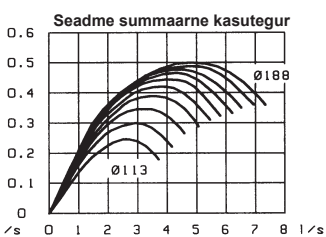
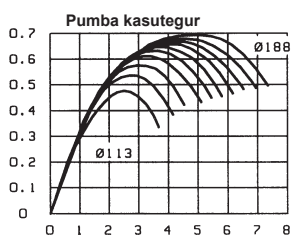
	kW	A	kg	H
OKN-164 G1 F29	15	30.5	189	630
OKN-164 F1 F29	11	22.0	184	630
OKN-132 E1 F29	7.5	15.0	138	500
OKN-132 C1 F29	5.5	11.0	130	500



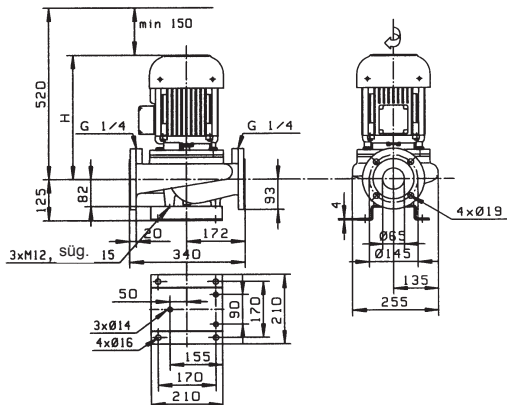
L_-65A/6 DN65 1000 p/min



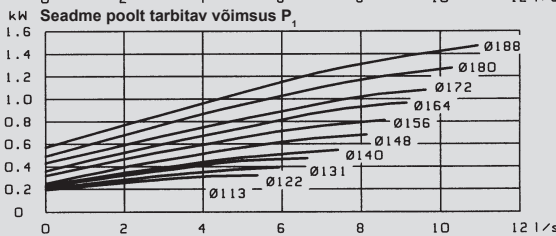
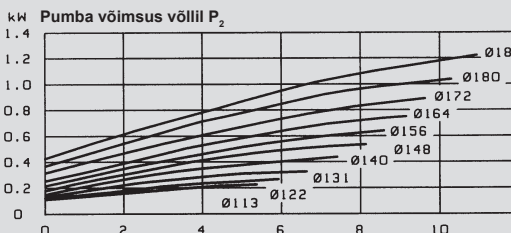
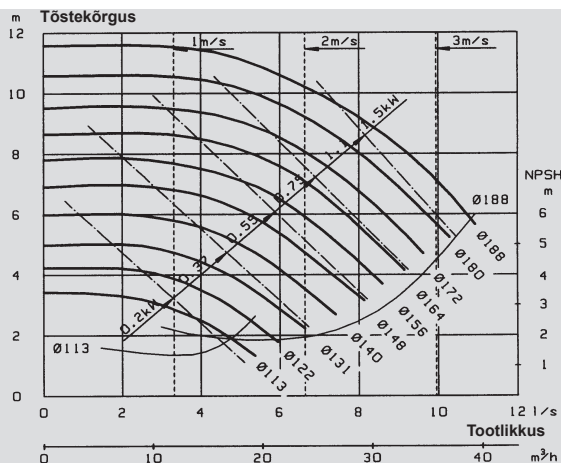
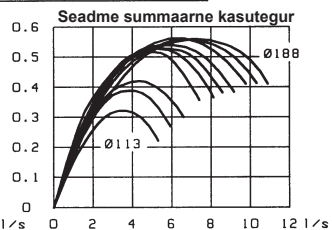
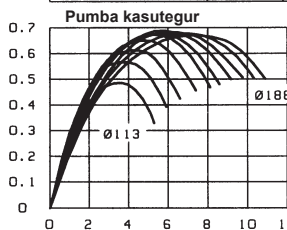
	kW	A	kg	H
OKN-100 B3 F19	0.37	1.20	44	320
OKN-100 B3 F19	0.18	0.95	44	320



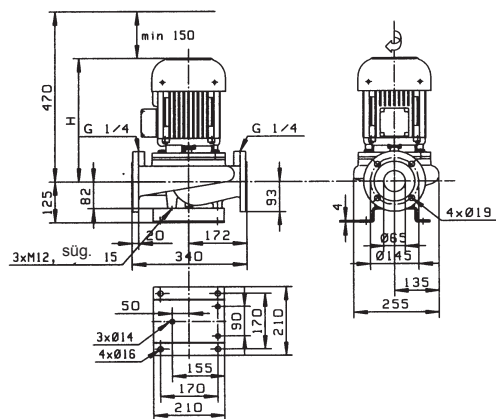
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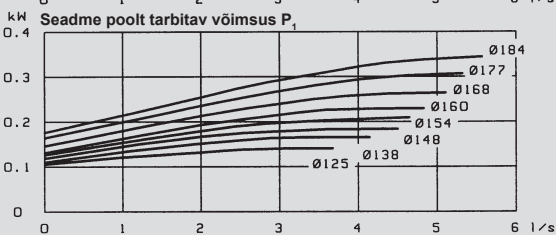
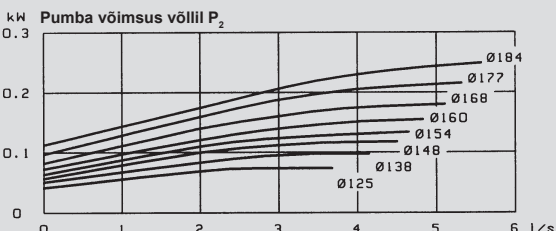
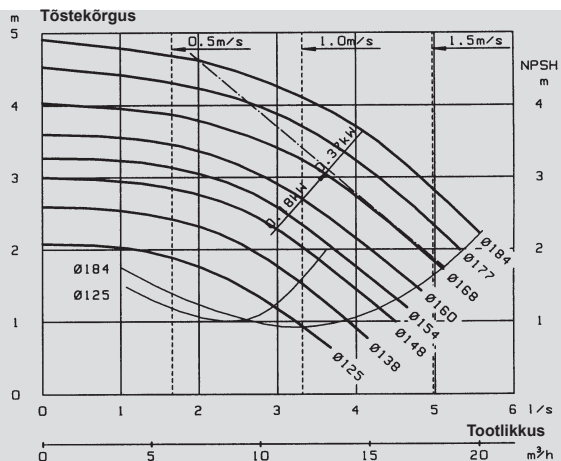
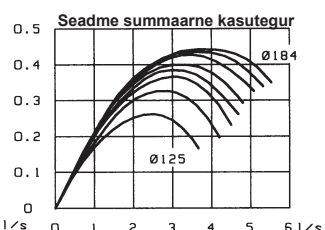
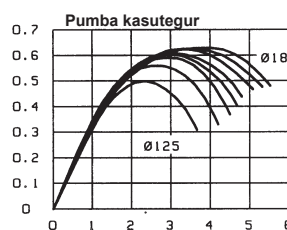
	kW	A	kg	H
OKN-101 D2 F19	1.5	3.5	52	370
OKN-101 D2 P F19 1~	1.5	9.0	52	370
OKN-101 C2 F19	1.1	2.6	48	370
OKN-101 C2 P F19 1~	1.1	6.9	48	370
OKN-100 B2 F19	0.75	2.0	44	320
OKN-100 B2 P F19 1~	0.75	4.7	44	320
OKN-100 B2 F19	0.55	1.4	44	320
OKN-100 B2 P F19 1~	0.55	3.4	44	320
OKN-852 D F19	0.37	1.0	37	310
OKN-852 D P F19 1~	0.37	2.5	37	310
OKN-852 D F19	0.2	0.75	37	310



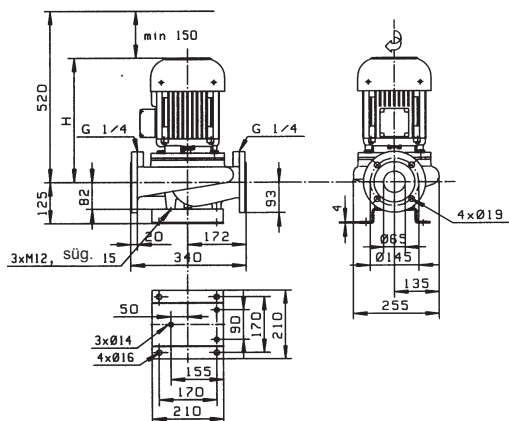
L_-65B/6 DN65 1000 p/min



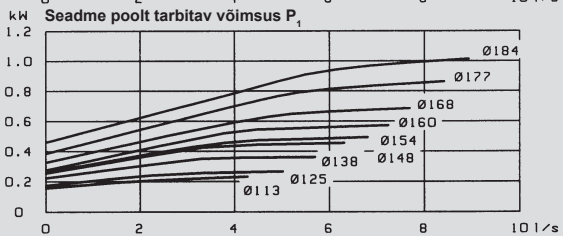
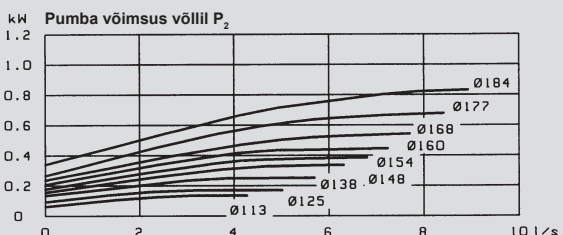
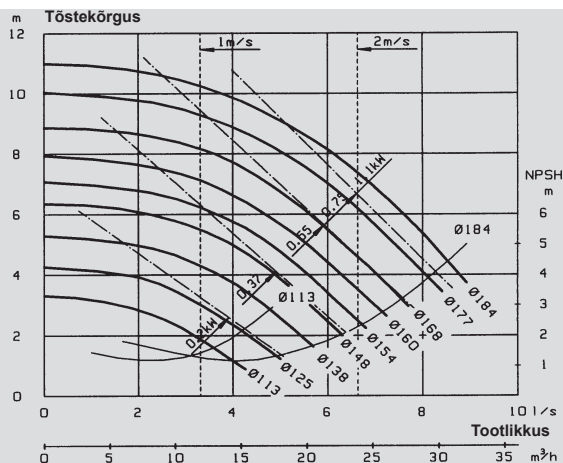
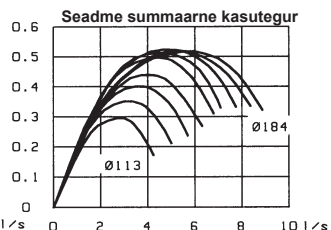
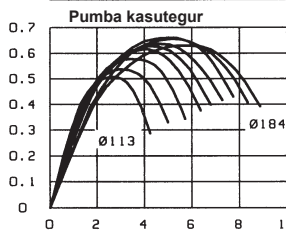
	kW	A	kg	H
OKN-100 B3 F19	0.37	1.20	44	320
OKN-100 B3 F19	0.18	0.95	44	320



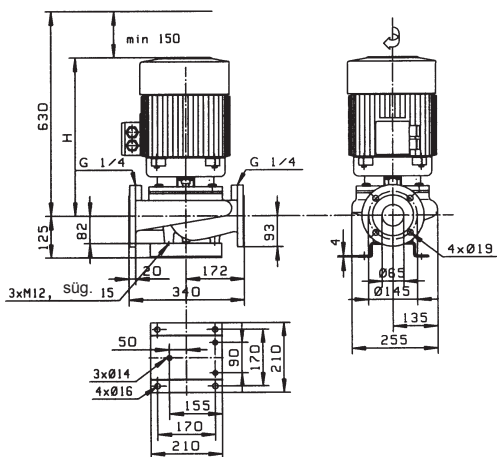
L_-65B/4 DN65 1500 p/min



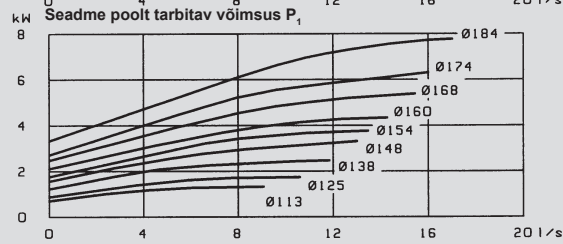
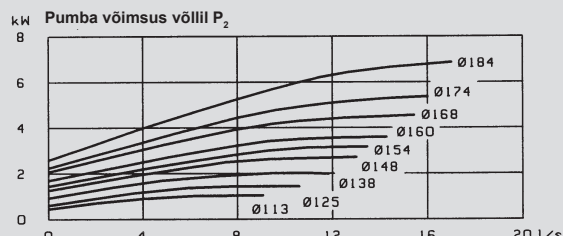
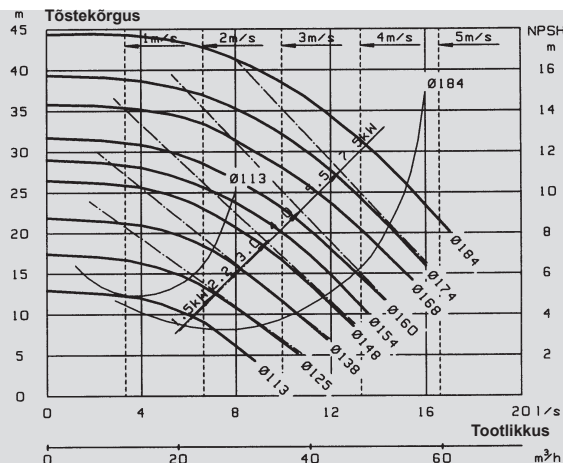
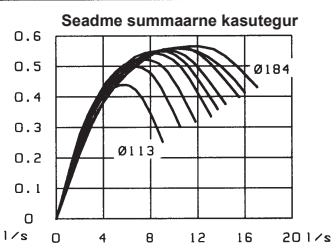
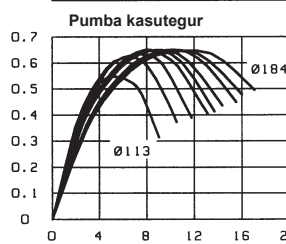
	kW	A	kg	H
OKN-101 C2 F19	1.1	2.6	48	370
OKN-101 C2 P F19 1~	1.1	6.9	48	370
OKN-100 B2 F19	0.75	2.0	44	320
OKN-100 B2 P F19 1~	0.75	4.7	44	320
OKN-100 B2 F19	0.55	1.4	44	320
OKN-100 B2 P F19 1~	0.55	3.4	44	320
OKN-852 D F19	0.37	1.0	37	310
OKN-852 D F19	0.2	0.75	37	310



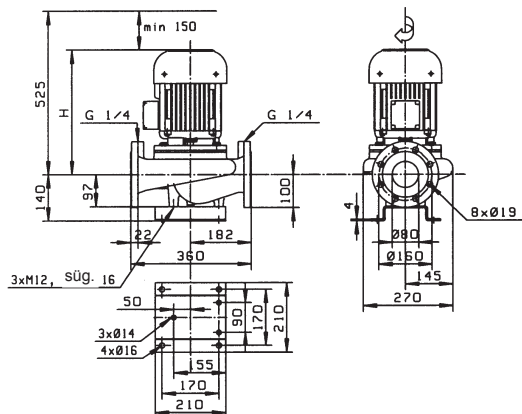
L_-65B/2 DN65 3000 p/min



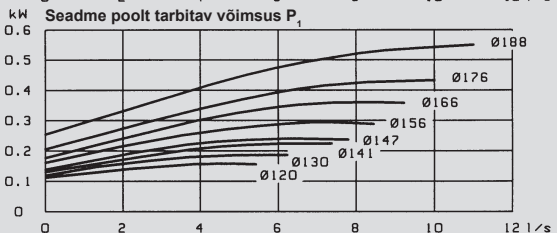
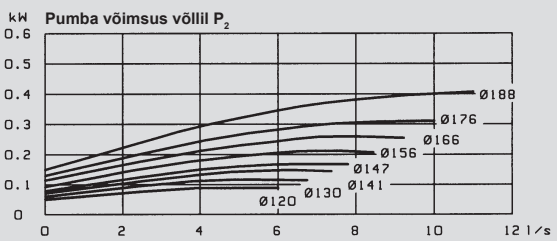
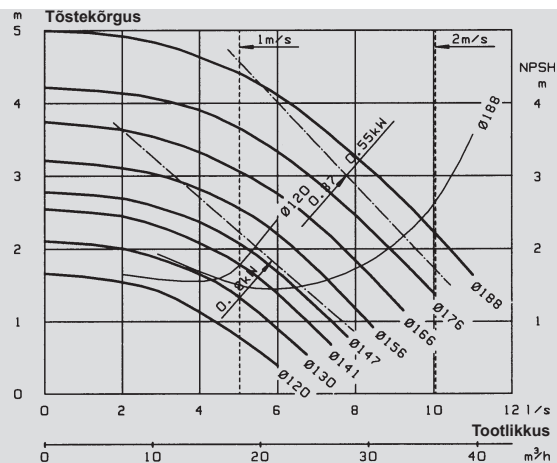
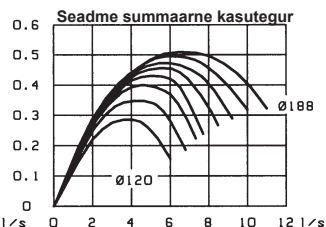
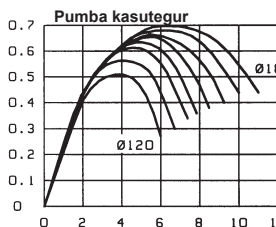
	kW	A	kg	H
OKN-132 E1 F19	7.5	15.0	94	480
OKN-132 C1 F19	5.5	11.0	86	480
OKN-112 E1 F19	4.0	8.2	62	415
OKN-112 C1 F19	3.0	6.4	58	415
OKN-101 D1 F19	2.2	4.7	52	370
OKN-101 C1 F19	1.5	3.3	51	370



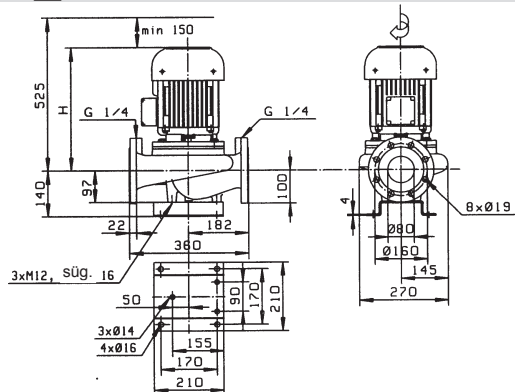
L_-80A/6 DN80 1000 p/min



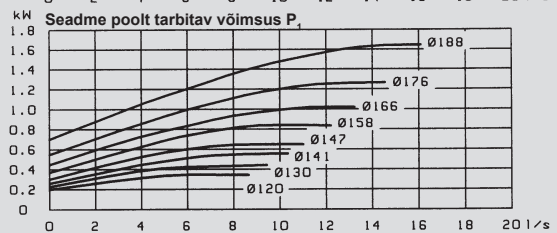
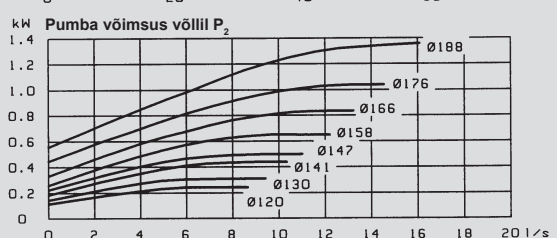
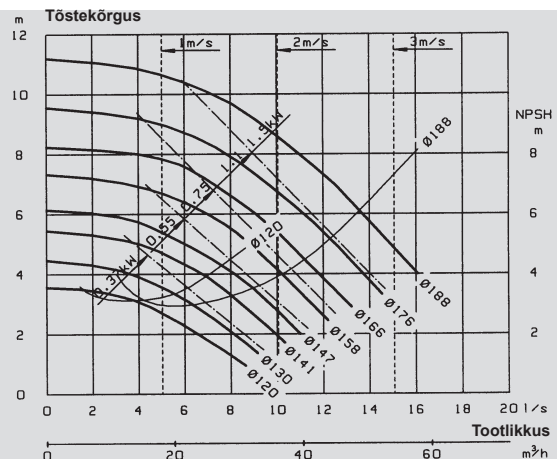
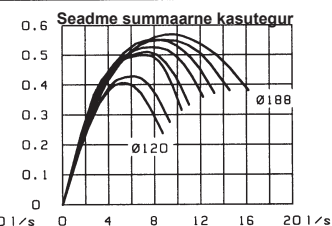
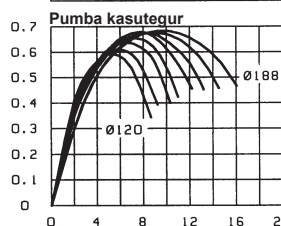
	kW	A	kg	H
OKN-101 C3 F19	0.55	1.75	52	375
OKN-100 B3 F19	0.37	1.2	48	325
OKN-100 B3 F19	0.18	0.95	48	325



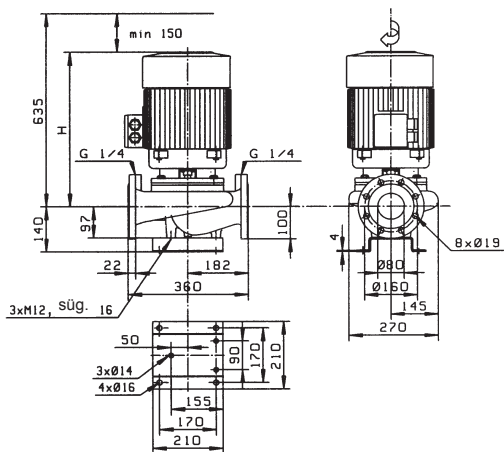
L_-80A/4 DN80 1500 p/min



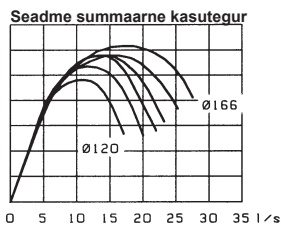
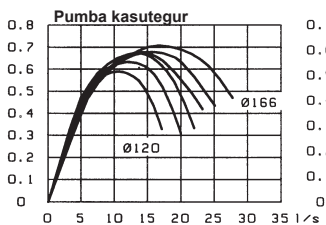
	kW	A	kg	H
OKN-101 D2 F19	1.5	3.5	56	375
OKN-101 D2 P F19 1~	1.5	9.0	56	375
OKN-101 C2 F19	1.1	2.6	52	375
OKN-101 C2 P F19 1~	1.1	6.9	52	375
OKN-100 B2 F19	0.75	2.0	48	325
OKN-100 B2 P F19 1~	0.75	4.7	48	325
OKN-100 B2 F19	0.55	1.4	48	325
OKN-100 B2 P F19 1~	0.55	3.4	48	325
OKN-852 D F19	0.37	1.0	41	315
OKN-852 D P F19 1~	0.37	2.5	41	315



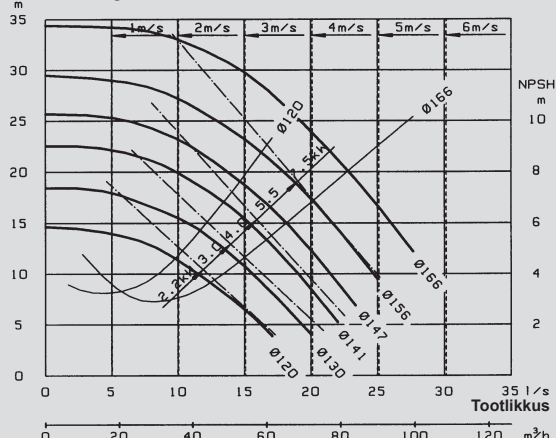
L_-80A/2 DN80 3000 p/min



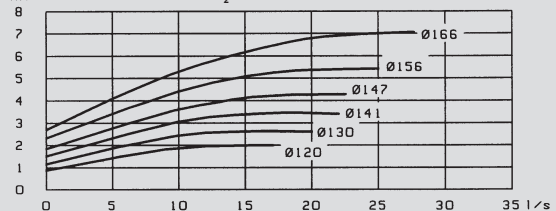
	kW	A	kg	H
OKN-132 E1 F19	7.5	15.0	98	485
OKN-132 C1 F19	5.5	11.0	90	485
OKN-112 E1 F19	4.0	8.2	66	420
OKN-112 C1 F19	3.0	6.4	62	420
OKN-101 D1 F19	2.2	4.7	56	375



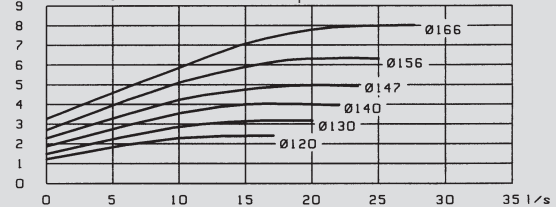
Tõstekõrgus



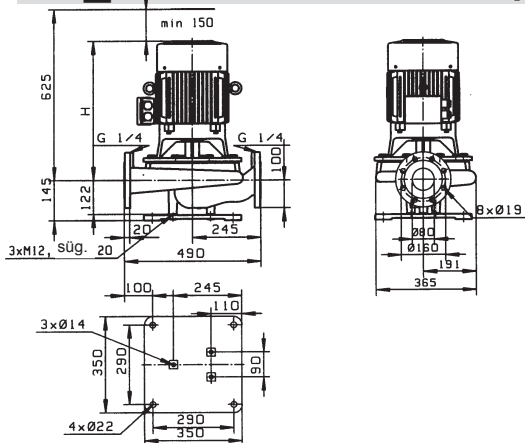
Pumba võimsus võllil P₂



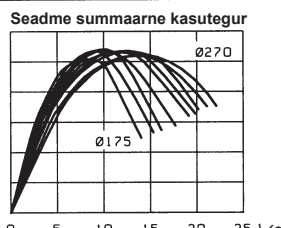
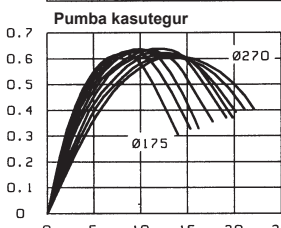
Seadme poolt tarbitav võimsus P₁



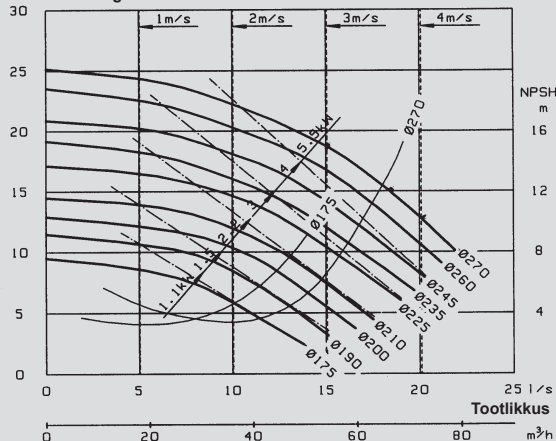
L_-80S/4 DN80 1500 p/min



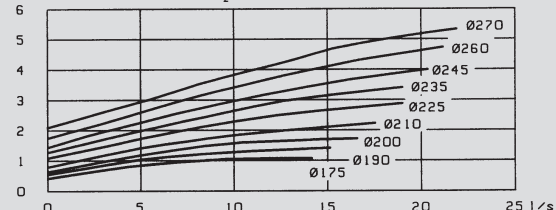
	kW	A	kg	H
OKN-132 E2 F29	5.5	11.9	138	510
OKN-132 C2 F29	4	8.7	128	510
OKN-112 E2 F29	3	6.6	108	445
OKN-112 C2 F29	2.2	5.1	102	445
OKN-101 D2 F29	1.5	3.5	96	385
OKN-101 C2 F29	1.1	2.6	92	385



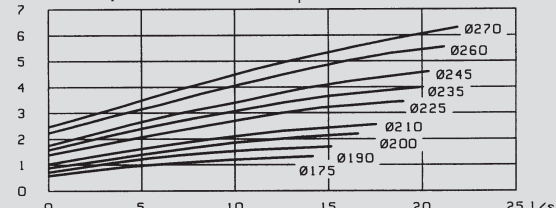
Tõstekõrgus



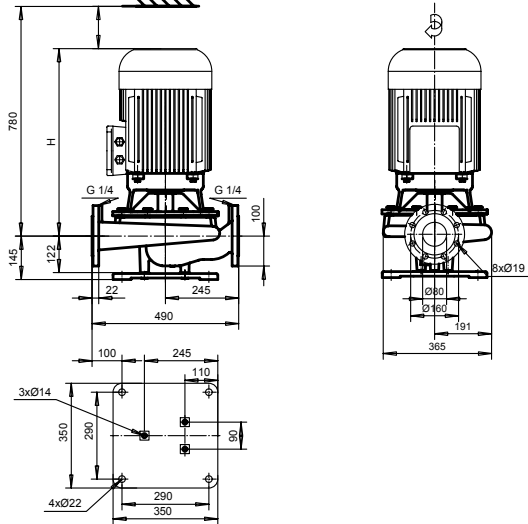
Pumba võimsus võllil P₂



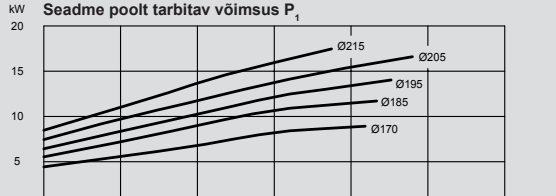
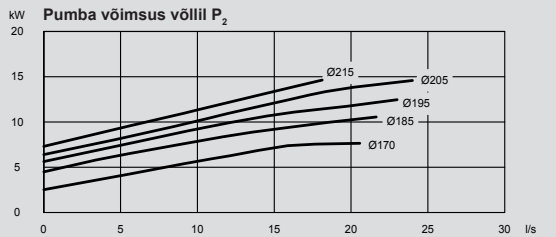
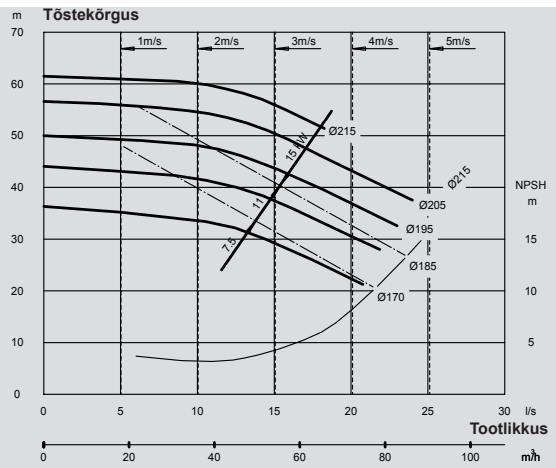
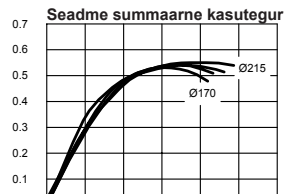
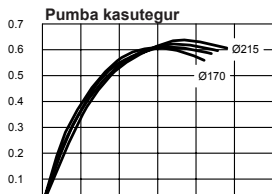
Seadme poolt tarbitav võimsus P₁



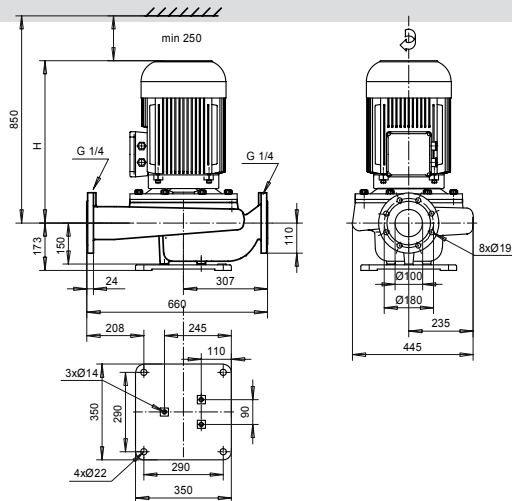
L_-80S/2 DN80 3000 p/min



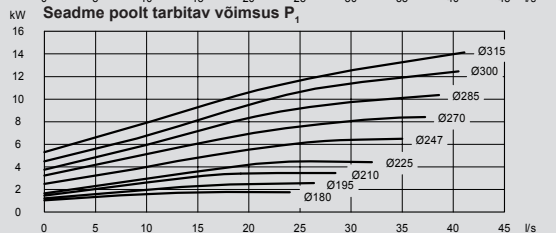
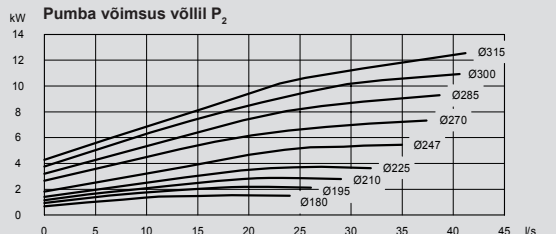
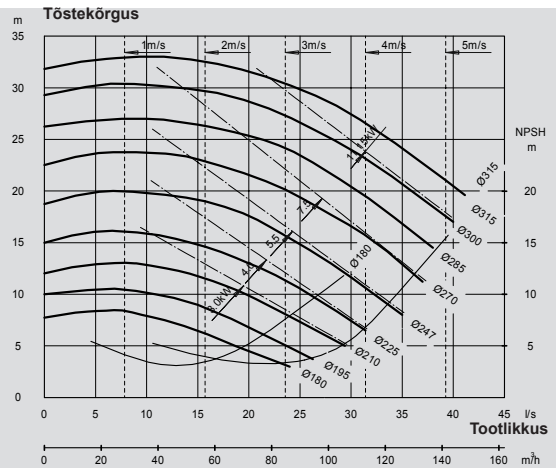
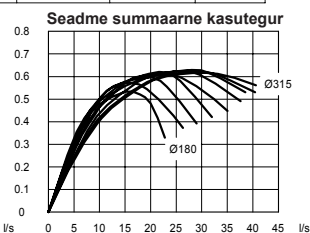
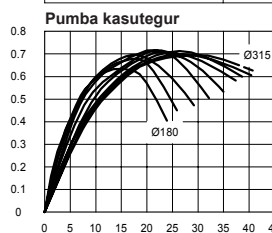
	kW	A	kg	H
OKN-164 G1 F29	15	30.5	189	630
OKN-164 F1 F29	11	22.0	184	630
OKN-132 E1 F29	7.5	15.0	138	500



L_-100S/4 DN100 1500 r/min

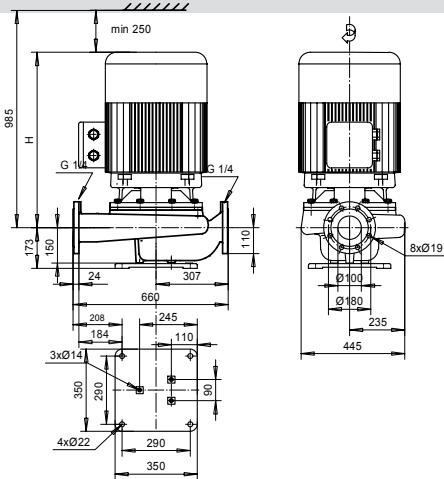


	kW	A	kg	H
OKN-164B J2 F31	15.0	31.0	230	600
OKN-164B G2 F31	11.0	22.6	215	600
OKN-133 G2 BF31	7.5	15.7	195	555
OKN-132 E2 BF31	5.5	11.9	180	505
OKN-132 C2 BF31	4.0	8.7	170	505
OKN-112 E2 F31	3.0	6.6	150	440



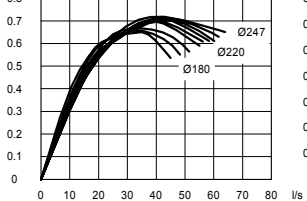
VALIKU GRAAFIKUD

L_-100S/2 DN100 3000 r/min

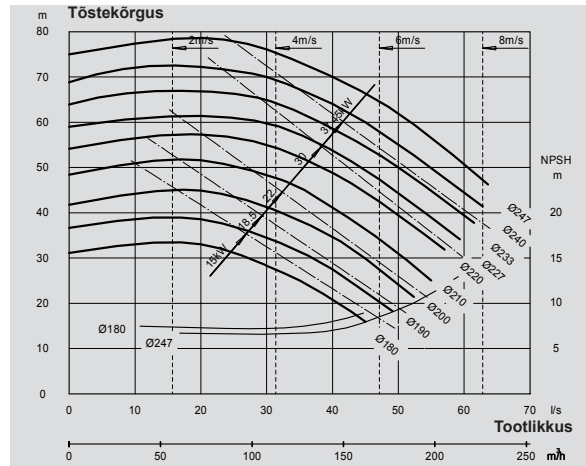
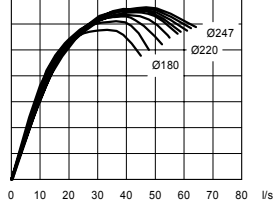


	kW	A	kg	H
OKM-227 K1 F32	45	77.5	405	735
OKM-207 J1 F31	37	64	365	735
OKM-206 K1 F31	30	53	345	645
OKM-187 G1 F31	22	38	275	645
OKM-165 H1 F31	18.5	34	245	630
OKM-164 G1 F31	15	30.5	200	590

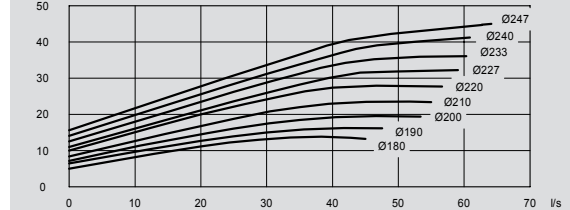
Pumba kasutegur



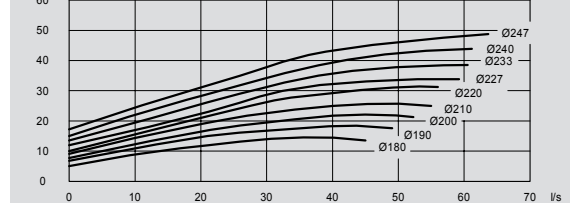
Seadme summaarne kasutegur



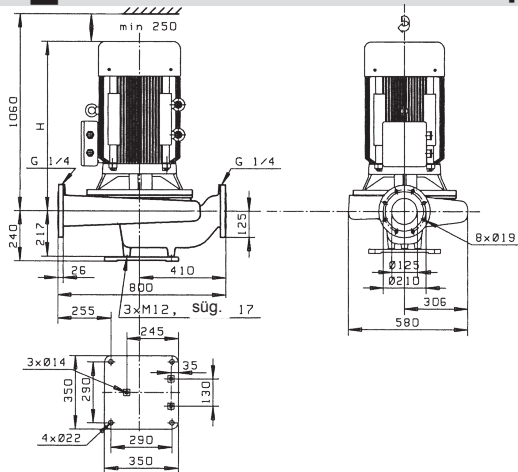
Pumba võimsus võllil P₂



Seadme poolt tarbitav võimsus P₁

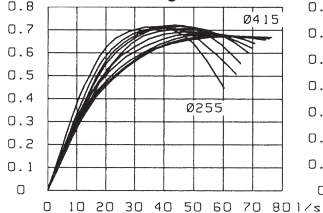


L_-125S/4 DN125 1500 p/min

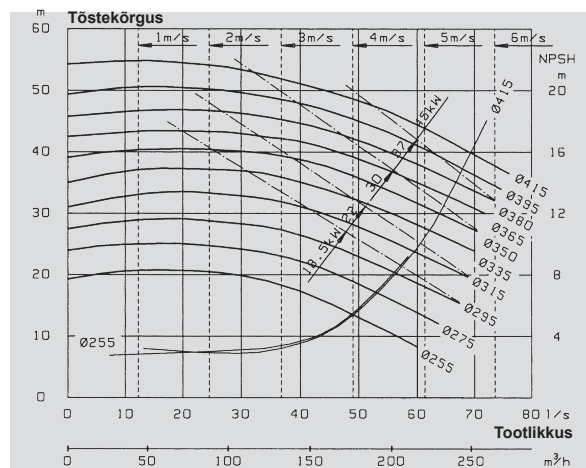
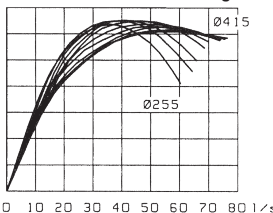


	kW	A	kg	H
OKM-227 K2 F42	45	81	550	810
OKM-207 K2 F41	37	69.5	510	810
OKM-206 K2 F41	30	55	450	720
OKM-186 J2 F41	22	42	390	720
OKM-186 J2 F41	18.5	36	390	720

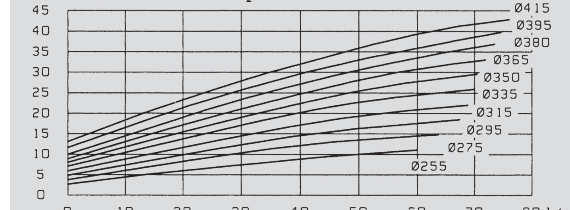
Pumba kasutegur



Seadme summaarne kasutegur



Pumba võimsus võllil P₂



Seadme poolt tarbitav võimsus P₁

