

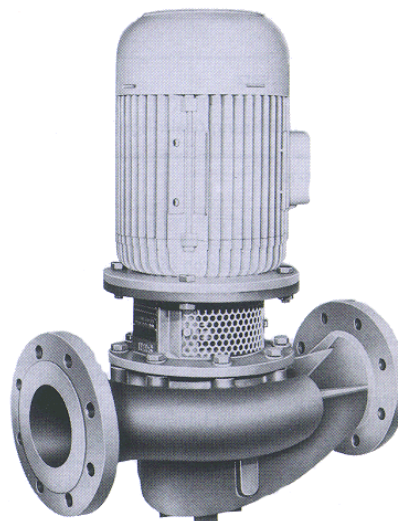
Volute pumps for hot water

ZLI 25-125 . . . 80-200



TECHNICAL DATA

output:	max. 140 m³/h
delivery head:	max. 60 m
speed:	max. 3600 1/min
material:	spheroidal graphite iron
temperature:	max. 150 °C
casing pressure:	PN 25
shaft seal:	standard mechanical seal
flange connection:	DIN 2501 PN 25
sense of rotation:	clockwise when seen from drive on the pump



APPLICATION

Volute pumps of the series ZLI belong to the program of heat carrier circulation pumps. These pumps in inline design have been constructed as space saving and easy to install pumping units with standard motor.

They will be mainly used for circulating hot water in closed pipe systems and vessel systems.

The field of applications are

- production of energy
- heat transfer
- and other industries

DESIGN

Single-stage resp. two-stage pumping units in compact design with nominal performances according to DIN 24255 / EN 733 as well as additional size DN 25, where suction and discharge branch are arranged opposite to each other for direct installation into the pipe work.

There is no common shaft for motor and pump. The motors used are standard motors.

Due to the process design it is possible to withdraw the whole insert unit without detaching the pump casing from the pipe work.

By means of the unit construction system of the additional size DN 25 the single-stage and the two-stage design have the same dimensions. The performance of the pump is optimally adapted to the service point by mounting or dismounting a stage.

The individual shafts of the unit connected by a plug-in coupling facilitate the dismantling or the replacement of the motor without affecting the pump.

At present the program comprises 10 construction sizes.

BAUAUSFÜHRUNG

Casing pressure:

Material design max. 24 bar from 140 °C up to 150 °C.

Please note:

Technical rules and safety regulations.

Casing pressure = inlet pressure + delivery head with zero flow

Position of branches:

Suction and discharge branch radially arranged opposite to each other.

Flanges:

The flanges correspond to DIN 2534/PN 25. Flange design drilled as per ANSI 300 is possible.

Hydraulic:

First hydraulic.

Code of this construction: R■

Second hydraulic.

Code of this construction: S■

Bearing:

Two grease-lubricated antifriction bearings to DIN 625 in the motor, one antifriction bearing grease-lubricated for service-life according to DIN 625 in the bearing bracket.

Code of this construction: ■V

Sense of rotation:

Clockwise when seen from drive on the pump.

Shaft sealing:

The shaft sealing is a single mechanical seal, flushed from internal source, uncooled and balanced.

Code AAE:

sliding material SiC/carbon for hot water without abrasive admixtures.
Temperature range up to 150 °C

Material design

ITEM	PARTS	MATERIAL DESIGN	
		1B	1B*
10.10	volute casing	spheroidal graphite iron	spheroidal graphite iron
16.10	casing cover		G-X 6 Cr Ni Mo 18 10
23.00	impeller	GG 25	X 6 Cr Ni Mo 18 10
10.91 17.11	intermediate plate	-	deep drawn stainless steel plates X 10 Cr Ni Mo Ti 18 10
21.00	shaft	X 20 Cr 13	
34.00	bearing bracket	GG 25	
43.30	shaft sealing mechanical seal	SiC / carbon, EP-caoutchouc	

*) only for ZLI 25-125 and 25-160

Casing seal:

The casing sealing will be made by a special paper. Denomination of this construction: 2

Drive / Speed:

By commercial electric motors, types IM B 35 resp. IM V 15 for $n = 2900$ rpm, $n = 1450$ rpm from size 180 M
IM B 5 resp. IM V 1 for $n = 1450$ rpm up to size 160 L.

For the determination of drive power we recommend the following additional power:

up to 4 kW: 25 % 4 to 7,5 kW: 20 % 7,5 to 37 kW: 15 %

Please note: the max. admissible motor power of some construction sizes are shown in the individual characteristic curves.

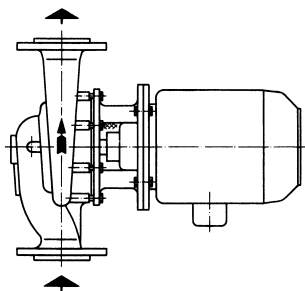
The following speeds are to be observed:

size	max. speed rpm
25-125	3600
25-160	
40-160 40-200	
50-160 50-200	
80-160 85-200 ²⁾	

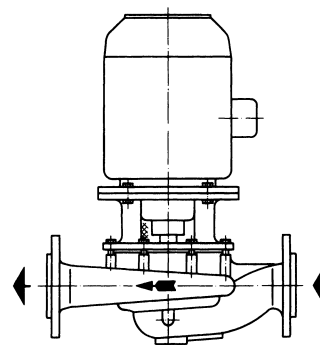
The max. speeds results from the admissible shaft load and from the admissible peripheral speed of the impellers.

Positioning

ZLI-pumps can be mounted either horizontally or vertically into the pip system with sufficient carrying as follows, taking the drive power into consideration::



Horizontal installation up to 7,5 kW



Vertical installation up to 7,5 kW possible, from 11 kW on necessary. The pump unit can be additionally supported for this purpose. A threaded bore hole is provided for that in the pump casing (cf. Dimension table)

Please note

The installation of the motor below the pump is not allowed due to operating safety reasons.

The installation of compensators is not necessary.

General comments

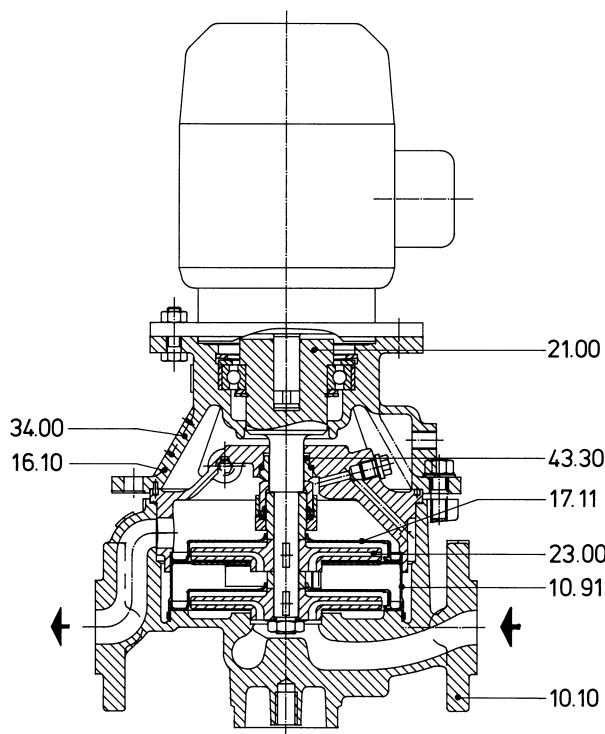
For the equipment of heat transfer plants, which are running with hot water, a program for the range up to 1200 m³/h is available, e.g. volute pumps:

series **ZEN** as per DIN 24256 / EN 22858 with uncooled mechanical seal up to 230 °C

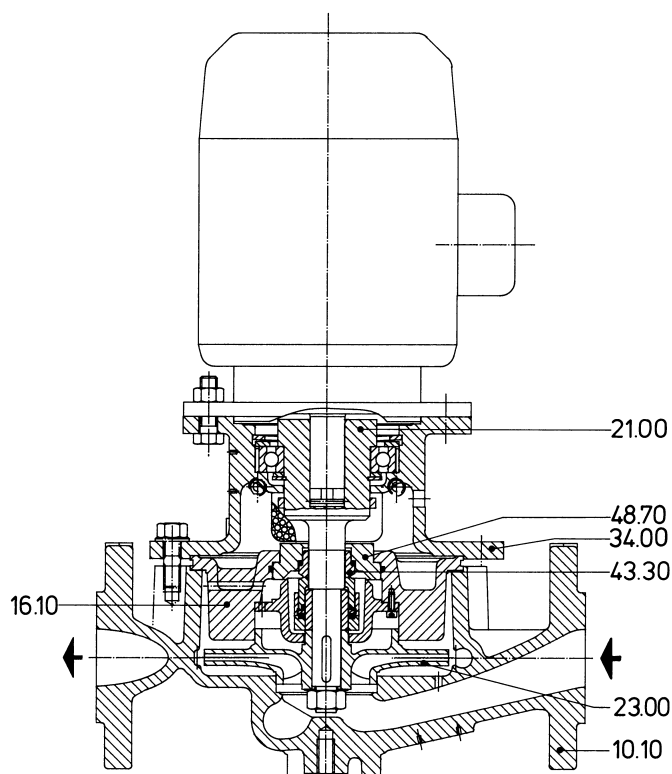
series **ZDN/ZHN** as per DIN 24256 / EN 25828 or DIN 24255 / EN 733 with uncooled mechanical seal up to 180 °C or 185 °C

Sectional drawing and nomenclature

ZLI 25-125
ZLI 25-160



ZLI 40-160 ...
ZLI 80-200

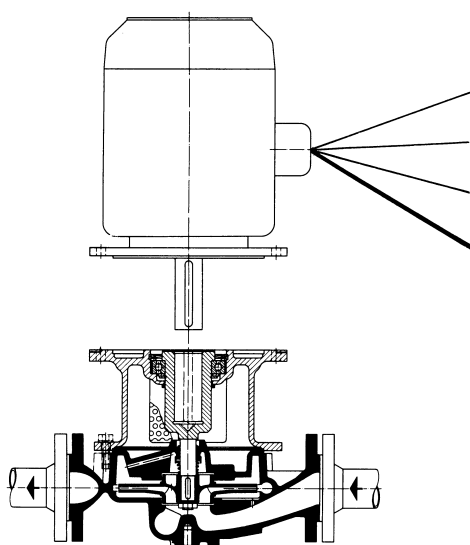


10.10 volute casing
16.10 casing cover
10.91 + 17.11 intermediate plate
23.00 impeller

21.00 shaft
34.00 bearing bracket
43.30 mechanical seal
48.70 stationary seal ring support

Standard set of components / bearing bracket - plug-in coupling / standard motor* / space requirements

by adding a special bearing bracket (DBP) of the standard set of components which consists of pump casing, casing cover, impeller and mechanical seal an inline pump has been created which is easy to combine. The bearing removes the standard motor from the load of hydraulic forces and allows suitable motor combinations at the complete mounted pumping unit.



Motor combination

- + type IM B 5 or IM V 1
- + type of protection IP 54 up to eII (Ex)
- + speed at 50 and 60 cycles
- = motor at your choice
- + shaft sealing pump unit
- = readiness for operation

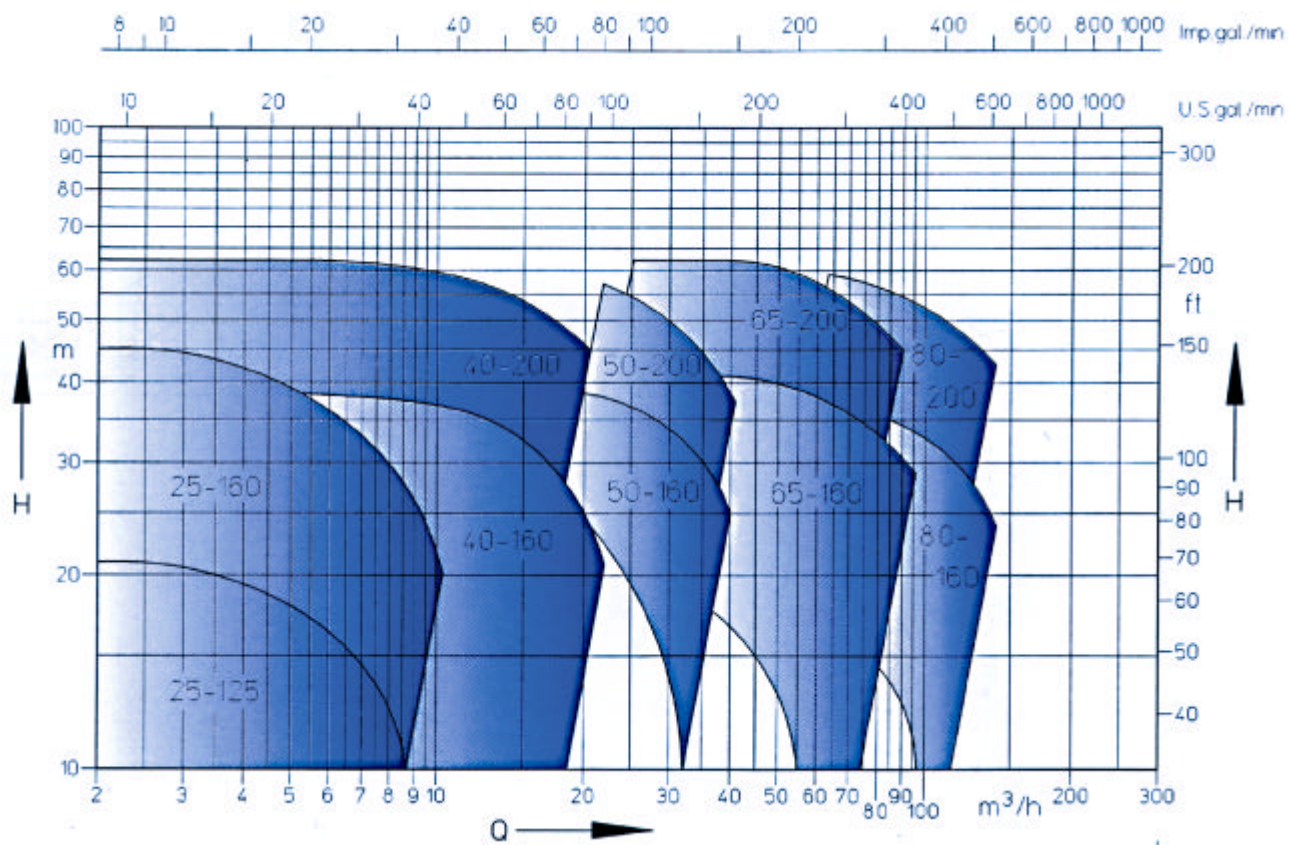
* shaft end
key

according to DIN 748 T 3
according to DIN 6885 T 1

If necessary the motor can also be changed in the unit without draining, the pipe work. The pump unit remains as „**shaft tight armature**“ in the pipe work and so the readiness for operation is increased.

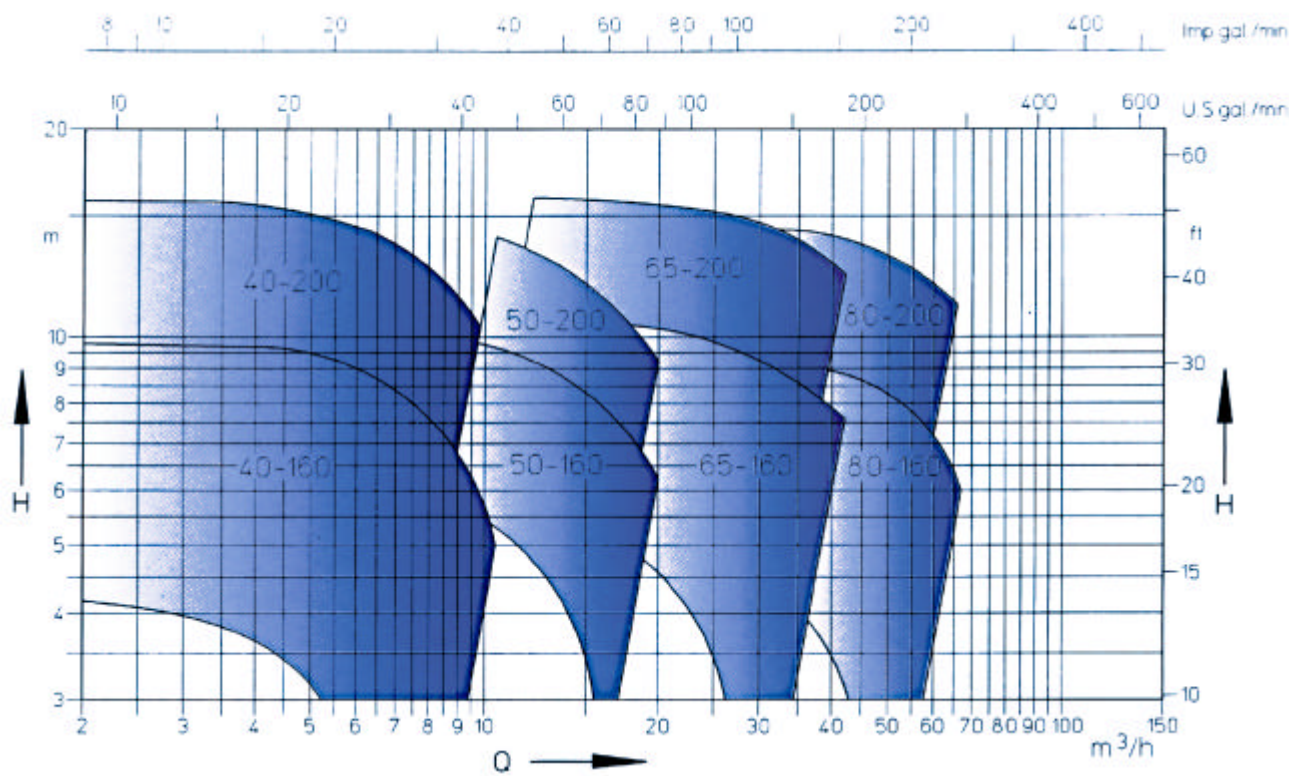
Performance graph

n = 2900 rpm



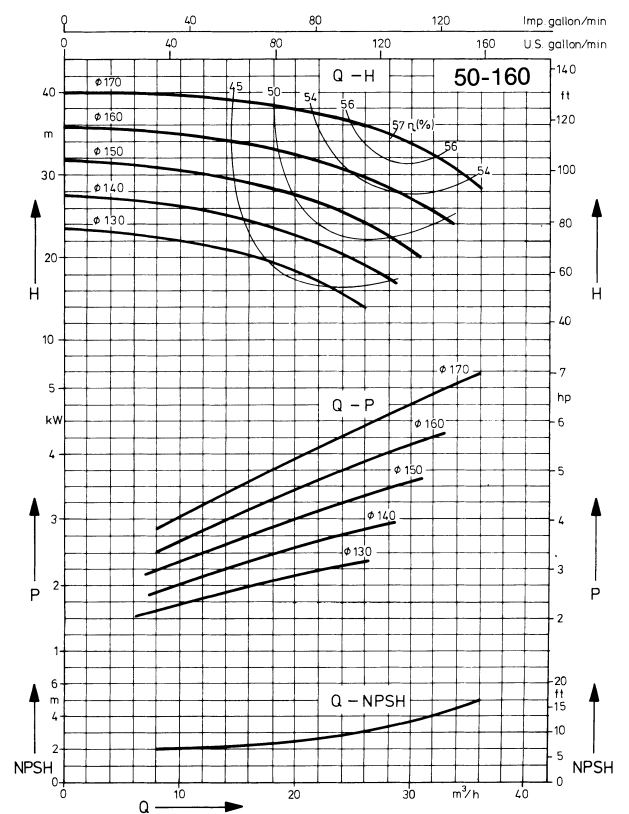
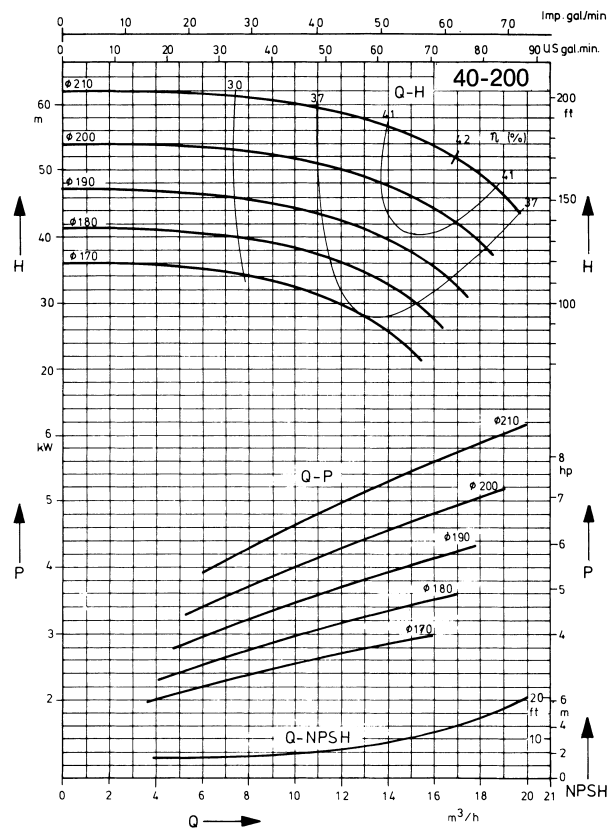
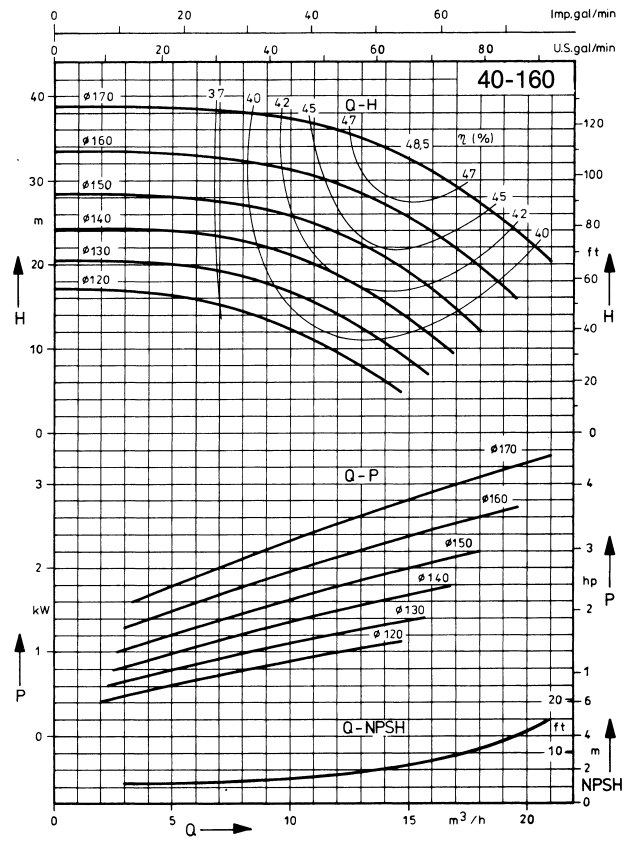
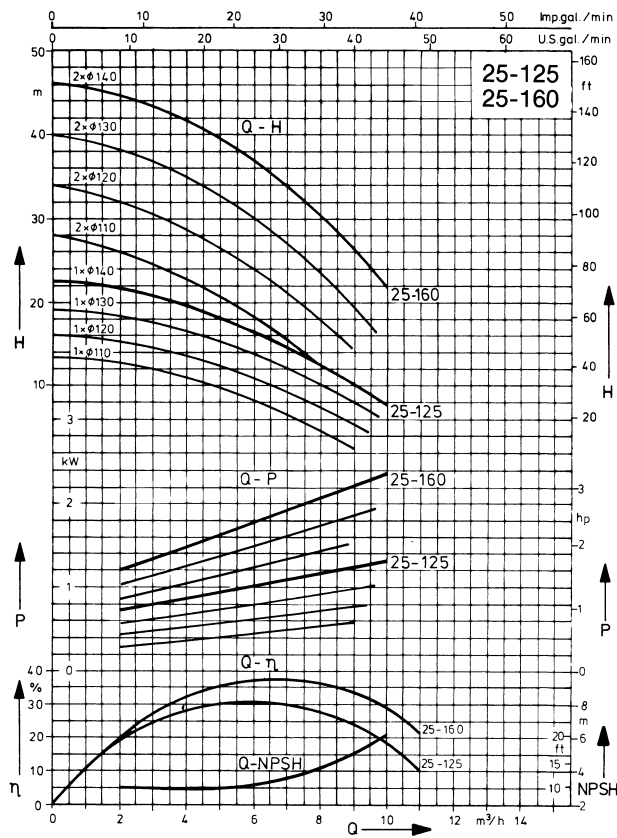
Performance graph

n = 1450 rpm



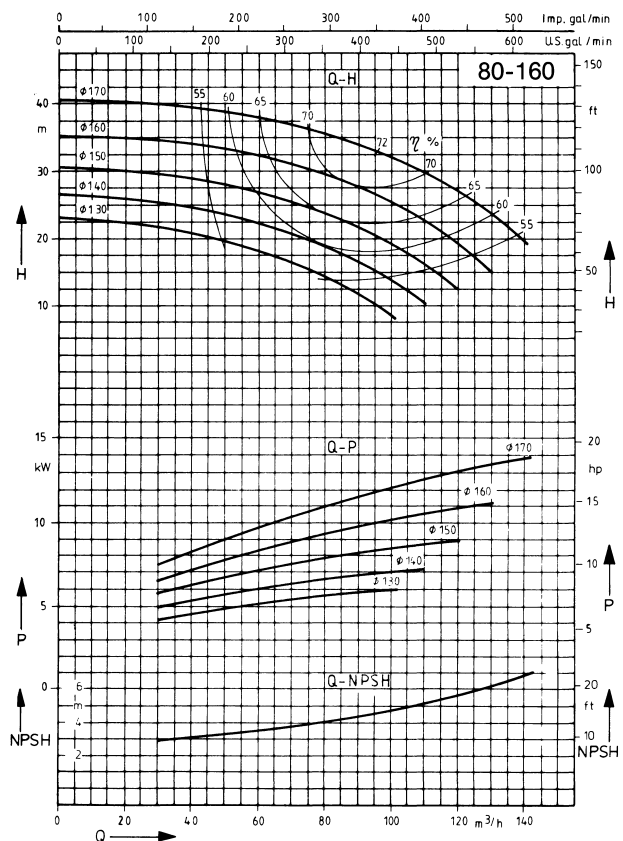
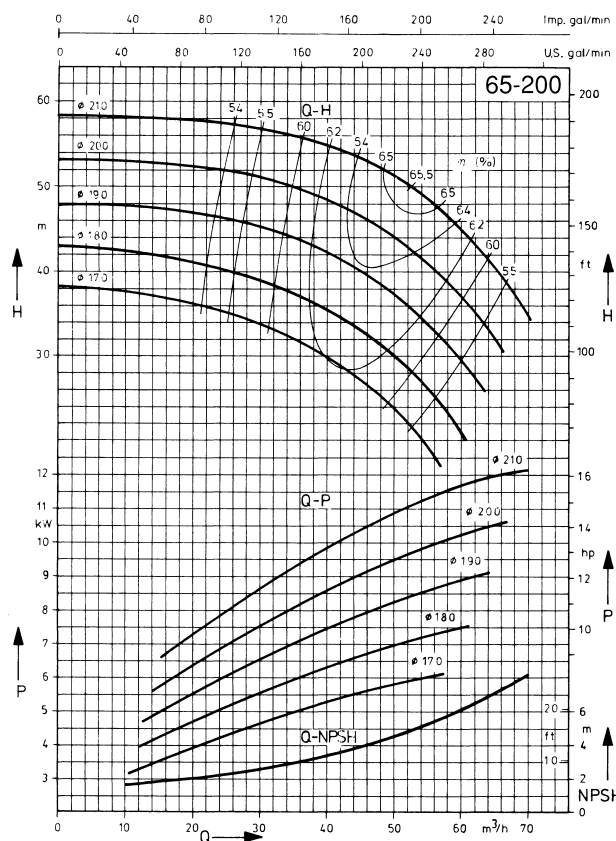
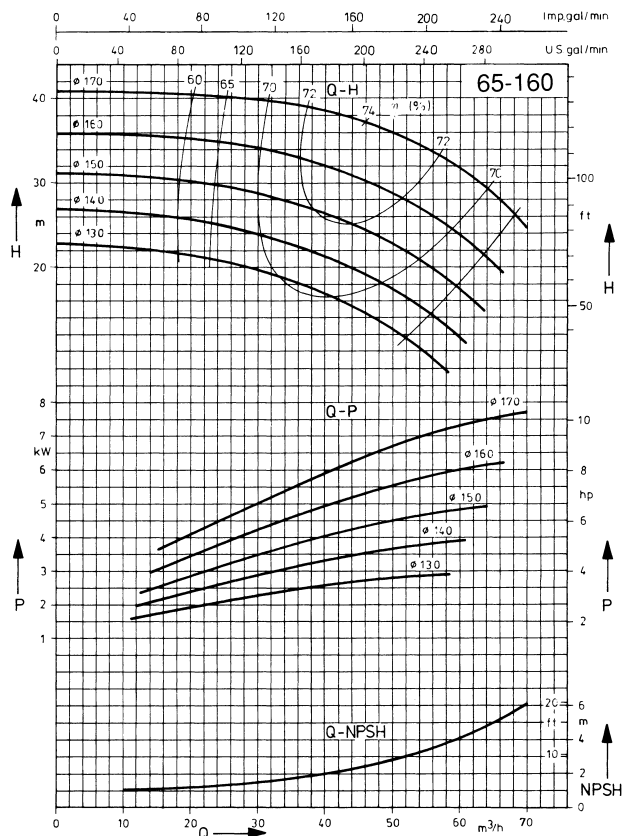
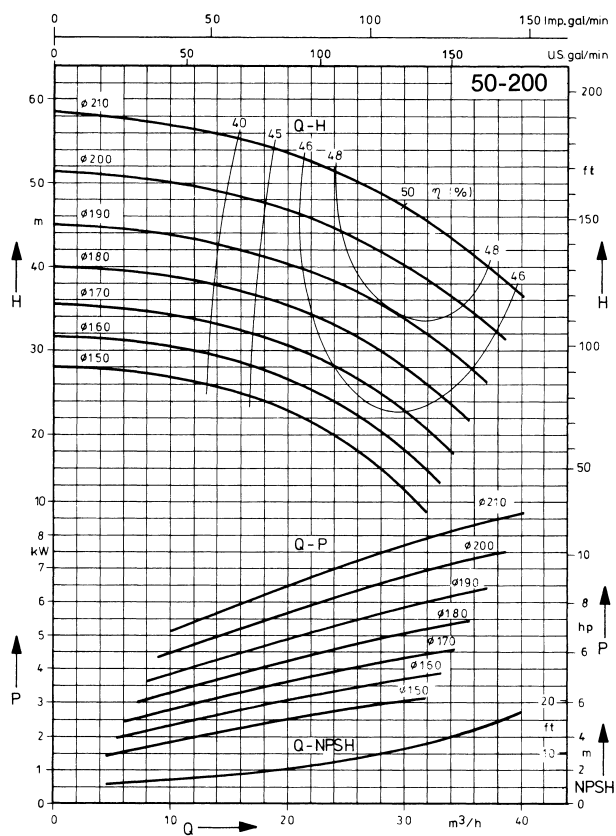
Characteristic curves

n = 2900 rpm



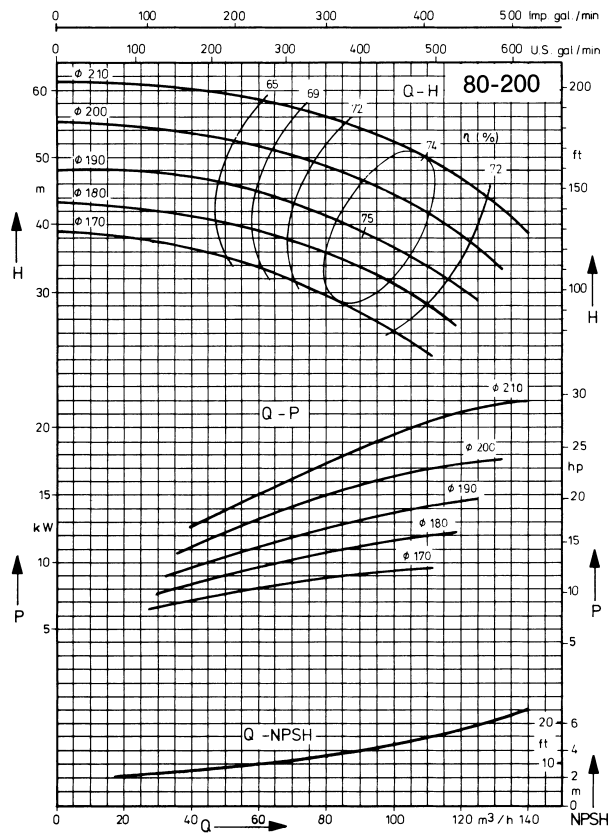
Characteristic curves

n = 2900 rpm



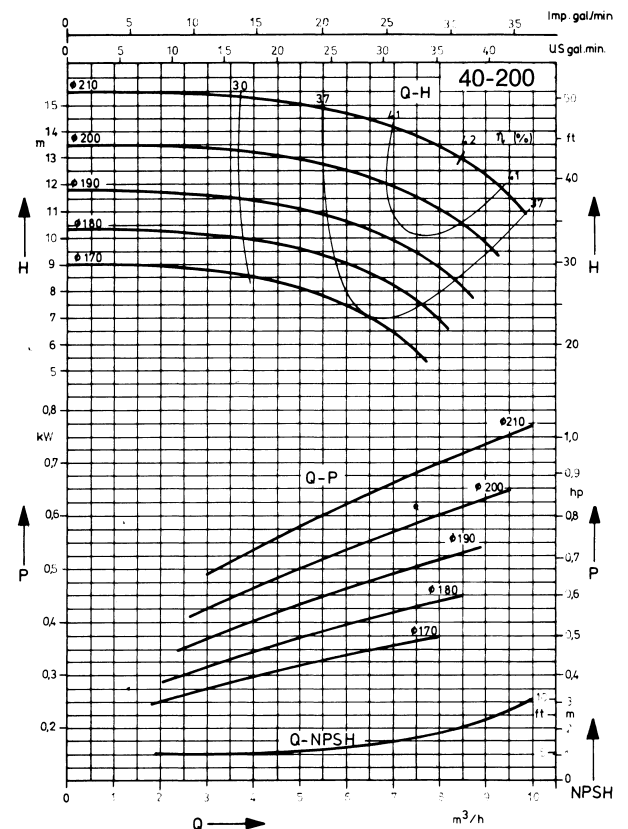
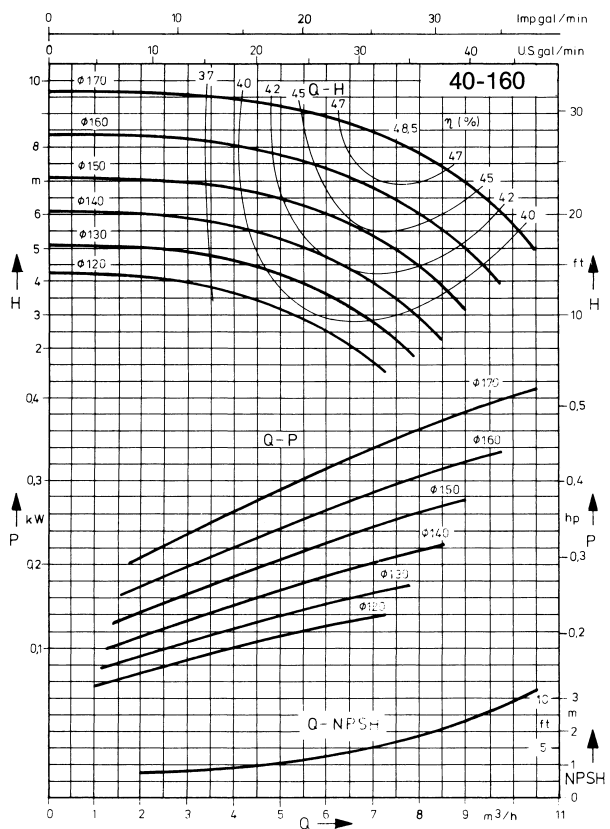
Characteristic curves

$n = 2900 \text{ rpm}$



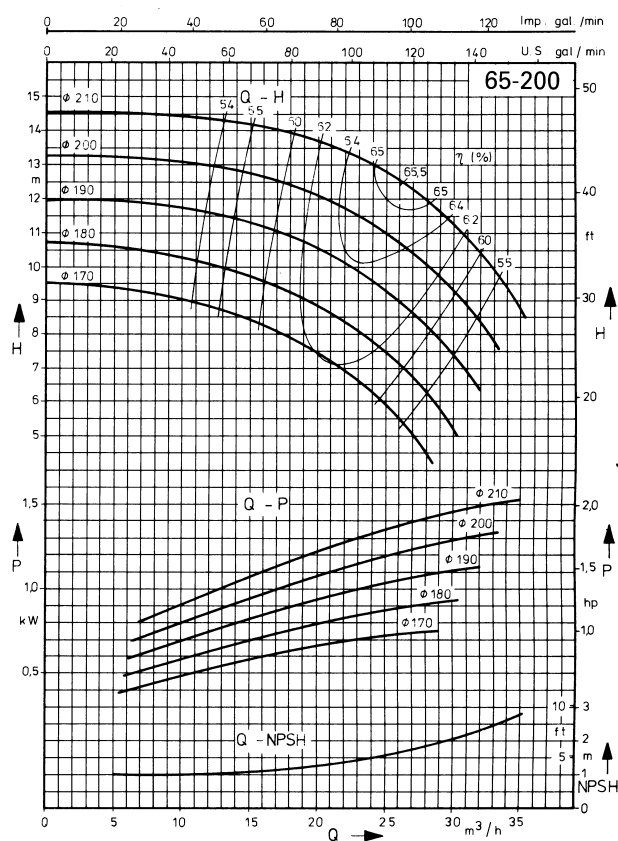
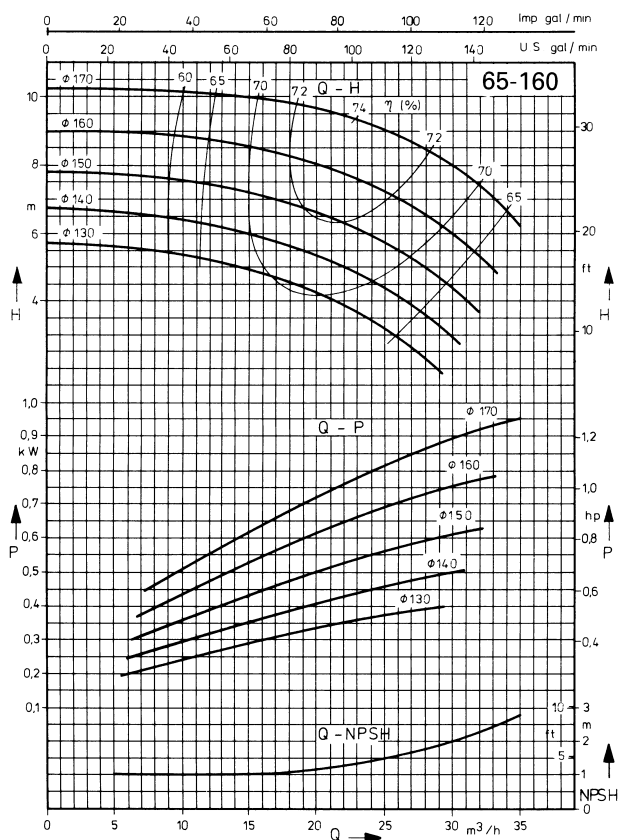
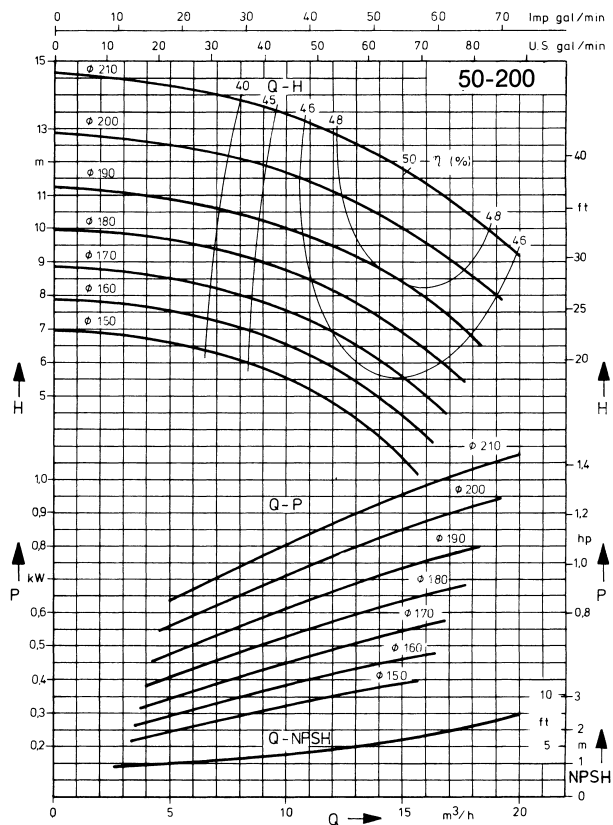
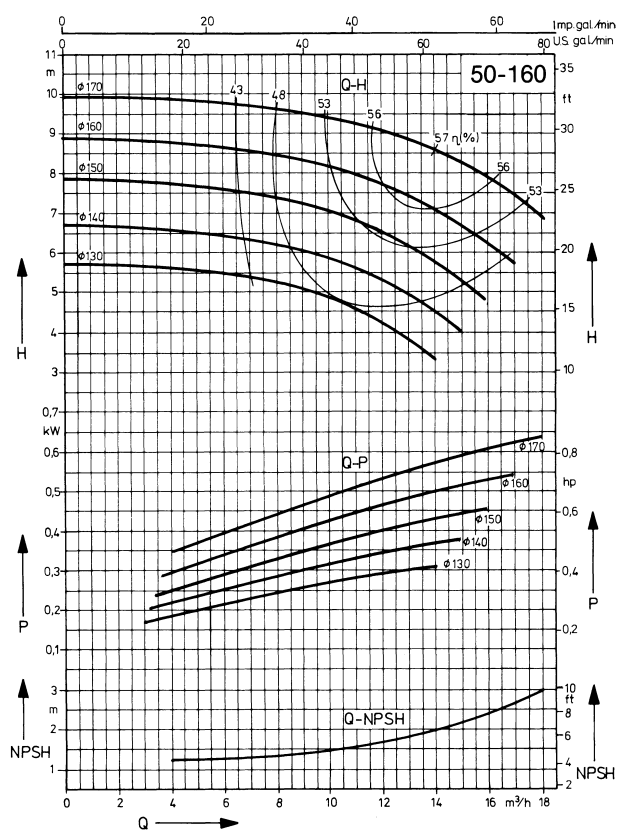
Characteristic curves

$n = 1450 \text{ rpm}$



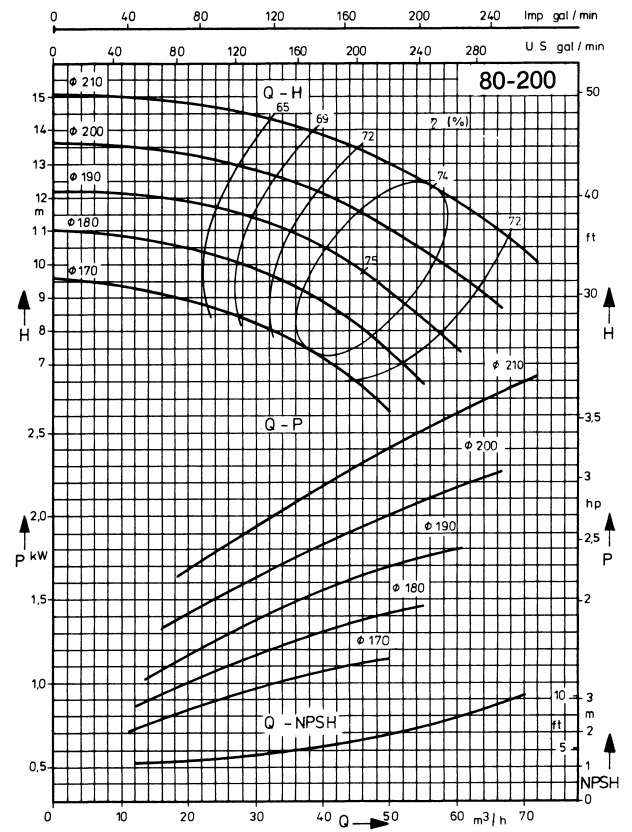
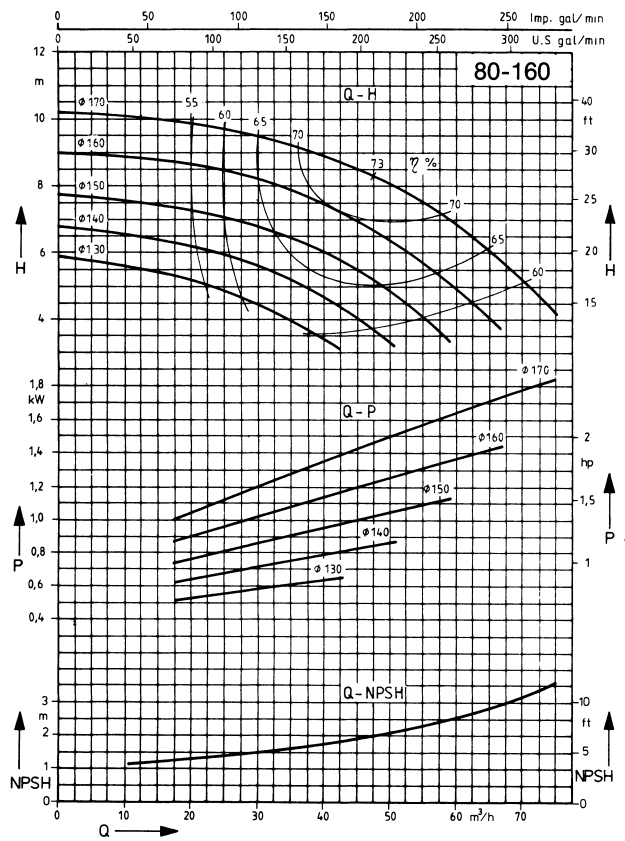
Characteristic curves

$n = 1450 \text{ rpm}$



Characteristic curves

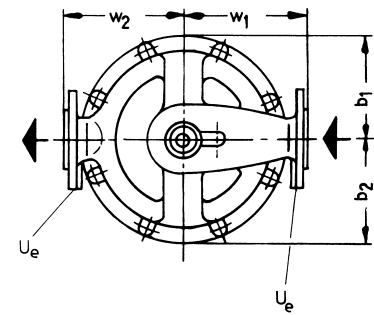
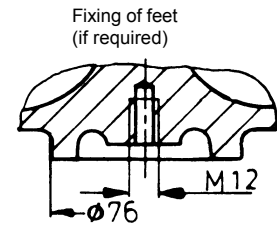
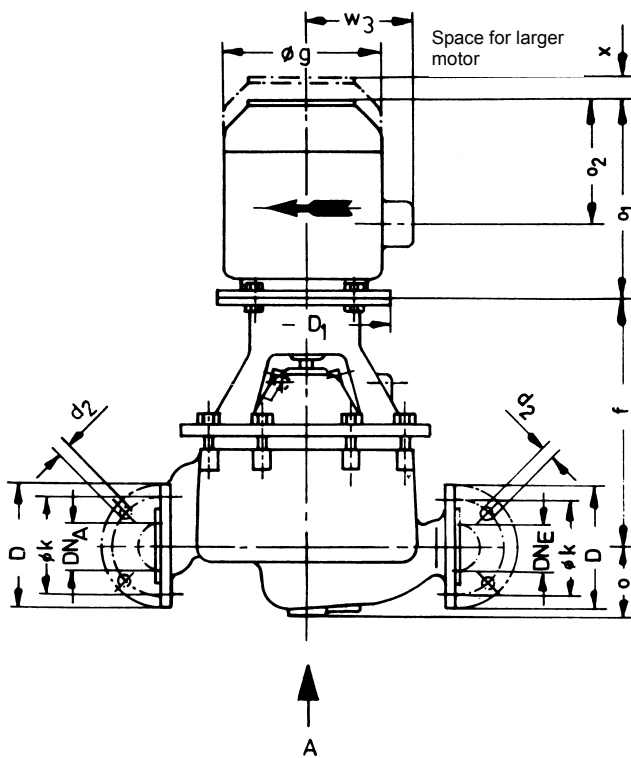
$n = 1450 \text{ rpm}$



The NPSH-value has been determined in close circuit. As safety addition for the pressure corresponding to NPSH are to be considered 0.5 m for the plant.

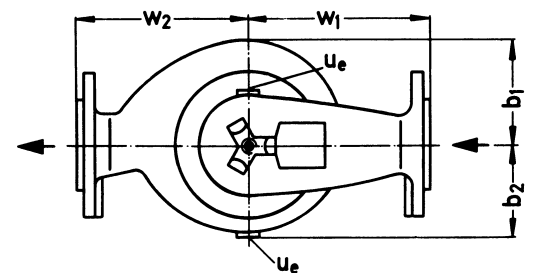
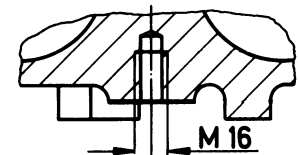
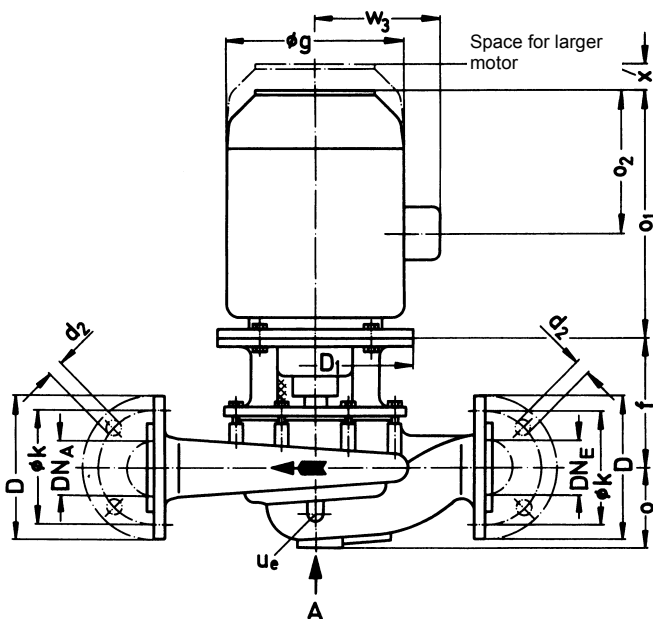
Values are valid for water $\rho = 1 \text{ kg/l}$

ZLI 25-125 / 25-160



u_e = connection for drainage G 1/4

ZLI 40-165 ... 80-200



u_e = connection for drainage G 1/4

Dimension table
n = 2900 rpm

size	motor		DN _{AE}	b ₁	b ₂	D ₁	f	g*	o	o ₁ *	o ₂ *	w ₃ *	w ₁	w ₂	x	weight app. kg	
	size	kW														pump	motor
25-125	80 b	1,1	25	128	128	200	212	157	73	228	128	123	140	140	120	27	10
	90 S	1,5						186		249	143	125					14
	100 L	3,0						206		274	147	125					18
25-160	100 L	3,0	40	115	115	200	167	186	83	274	185	125	180	160	80	31	18
	112 M	4,0						220		323	234	133					24
	132 S1	5,5						260		386	227	213					41
40-160	100 L	3,0	50	120	120	250	162	206	90	323	234	133	190	160	80	42	18
	112 M	4,0						220		386	227	213					24
	132 S2	7,5						260		521	308	245					41
40-200	132 S1	5,5	65	140	127	250	162	206	106	323	183	186	215	200	100	43	18
	132 S2	7,5						220		386	227	213					24
	160 M1	11,0						260		521	308	245					41
50-160	132 S1	5,5	80	148	135	300	167	186	120	274	185	125	240	200	80	44	18
	132 S2	7,5						220		323	234	133					24
	160 M2	15,0						260		386	227	213					41
65-160	132 S2	7,5	80	148	135	300	167	186	120	274	185	125	240	200	80	44	18
	160 M1	11,0						220		323	234	133					24
	160 M2	15,0						260		386	227	213					41
65-200	132 S2	7,5	80	148	135	300	167	186	120	274	185	125	240	200	80	44	18
	160 M1	11,0						220		323	234	133					24
	160 M2	15,0						260		386	227	213					41
80-160	132 S2	7,5	80	148	135	300	167	186	120	274	185	125	240	200	80	44	18
	160 M1	11,0						220		323	234	133					24
	160 M2	15,0						260		386	227	213					41
80-200	160 M2	15,5	80	165	155	400	167	186	120	274	185	125	255	225	100	51	112
	160 L	18,5						206		323	234	133					135
	180 M	22,0						260		386	227	213					155
80-200	200 L1	30,0	80	165	155	400	167	186	120	274	185	125	255	225	100	51	250
	200 L1	30,0						206		323	234	133					250
	200 L1	30,0						260		386	227	213					250

Dimension table
n = 1450 1/min

size	motor		DN _{AE}	b ₁	b ₂	D ₁	f	g*	o	o ₁ *	o ₂ *	w ₃ *	w ₁	w ₂	x	weight app. kg	
	size	kW														pump	motor
40-160	80 a	0,55	40	115	115	200	167	157	82	204	108	126	180	160	80	31	9
40-200	80a	0,55	40	138	138	200	167	186	90	249	143	125	200	180	80	42	9
	80 b	0,75						206		274	147	125					10
	90 S	1,1						220		323	234	133					14
50-160	80 a	0,55	50	120	120	200	167	157	90	249	143	125	190	160	80	36	9
	80 b	0,75						206		274	147	125					10
	90 S	1,1						220		323	234	133					14
50-200	80 b	0,75	50	138	138	200	167	186	90	249	143	125	200	180	80	44	10
	90 S	1,1						220		274	147	125					14
	90 L	1,5						260		323	234	133					18
65-160	80 b	0,75	80	138	125	200	167	157	150	219	115	139	240	200	80	43	10
	90 S	1,1						206		274	147	125					14
	90 L	1,5						220		323	234	133					18
65-200	90 S	1,1	80	150	143	250	167	186	120	249	161	125	255	225	100	51	14
	90 L	1,5						206		274	147	125					18
	100 L1	2,2						260		323	234	133					24
80-160	90 S	1,1	80	148	135	200	167	186	120	249	161	125	240	200	80	50	14
	90 L	1,5						206		274	147	125					18
	100 L1	2,2						260		323	234	133					24
80-200	90 L	1,5	80	165	155	200	167	186	120	274	185	125	255	225	100	51	18
	100 L1	2,2						206		323	234	133					24
	100 L2	3,0						260		386	227	213					25

Flange connection to DIN 2501 PN 25				
DN _{AE}	25	40	50	80
k	85	110	125	160
D	115	150	165	200
d ₂ x number	14 x 4	18 x 4	18 x 4	18 x 8

Standard motors to DIN 42677.
Truth of rotation, centricity and right angle of shaft ends and mounting flanges as per DIN 42955, normal precision.

* motor protection IP 54
dimension depend on the motor make.

Angaben zur Baugröße - Bestellhinweise

series + size	hydraulic + bearing	shaft sealing	material design	casing seal
	R ■ hydraulic A S ■ hydraulic B ■ K two grease-lubricated antifriction bearings in the motor, one grease-lubricated antifriction bearing in the bearing bracket	BH3 standrad mechanical seal SiC/carbon, EP-caoutchouc	1B main parts of sph. graphite iron 1B** main parts of sph. graphite iron casing cover and impeller of stainless steel	2 flat seal
ZLI 25-125 25-160 40-160 40-200 50-160 50-200 65-160 65-200 80-160 80-200 100-160* 100-200* 150-200*	RK SK RK	BG3	1 B	2

Applicable motors please take from the dimension table on page 10 and 11.

*) in preparation

**) only ZLI 25-125 and 25-160

motor selection table					
n = 2900 rpm			n = 1450 rpm		
kW	size	code	kW	size	code
0,75	80 a	FA	0,55	80 a	FB
1,1	80 b	GA	0,75	80 b	GB
1,5	90 S	HA	1,1	90 S	HB
2,2	90 L	JA	1,5	90 L	JB
3,0	100 L1	KA	2,2	100 L1	KB
4,0	112 M	MA	3,0	100 L2	LB
5,5	132 S1	NA	4,0	112 M	MB
7,5	132 S2	OA	5,5	132 S	NB
11,0	160 M1	SA	7,5	132 M	PB
15,0	160 M2	TA			
18,5	160 L	UA			
22,0	180 M	VA			
30,0	200 L1	XA			
37,0	200 L1	YA			

Example of ordering:

The size ZLI 50-200 RK BG3 1B 2 with 3-phase-AC-motor of 7.5 kW (50 Hz, 380 V Δ) 2900 rpm has got the complete no. :

ZLI ■ 50-200 RK BG3 1B 2 OA

If you need the type od construction IM V 1 (vertical installation), please inform us accordinglybesonderer Hinweis.

On delivery the point (■) in the fourth place of the type designation will be replaced by a letter in the factory.

Any changes in the interest of the technical development are reserved.

Sterling SIHI GmbH

Lindenstraße 170, D-25524 Itzehoe, Germany, Telephone +49 (0)48 21 / 7 71 - 01, Telefax +49 (0) 48 21 / 7 71-274