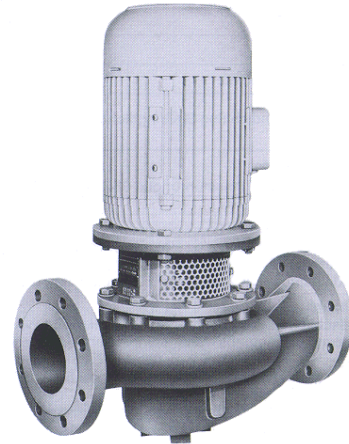


ZLI 25-125 . . . 150-200

TECHNICAL DATA

Output:	max. 280 m³/h
Head:	max. 60 m
Speed:	max. 3600 1/min
Material:	grey cast iron: 0B, 0C, 0F stainless steel: 4B, 4F
Temperature:	material design 0B, 0C, 0F max. 120 °C 0F, 4F max. 80 °C
Casing pressure:	PN 16
Shaft seal:	standard mechanical seal
Flange connections:	DIN 2501 PN 16
Sense of rotation:	clockwise when seen from drive on the pump



APPLICATION

Volute pumps of the series ZLI in inline design have been constructed as space saving and easy to install pumping units with standard motor. The pumps are used when clear resp. turbid liquids without any solid particles have to be pumped without problem.

The combination of:

- performance and connection size according to DIN 24255 /EN 733 and additional size DN 25
- construction type: INLINE design with standard motor
- material: grey cast iron, stainless steel
- casing: inline or volute casing (see list ZLK)

was leading to widely spread application fields like

- steel, machine and automobile construction
- food and semi-luxuries industry
- chemical and petrochemical industry
- pharmaceutical industry
- lacquer industry
- plastics and rubber industry
- iron and non-ferrous industry
- paper and pulp-industry
- textile industry

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 direct installment into the pipework.

There is no common shaft for motor and pump. The motors used are of the standard type listed.

Thanks to the process design it is possible to withdraw the whole insert unit without removing the casing of the pump from pipework.

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 and dismounting of 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.

The programme comprises. 13 pump sizes at present.

CONSTRUCTION

Casing pressure:

Material design

4B, 4F	max. 16 bar from -40 °C to 120 °C
0B, 0C, 0F	max. 16/10 ¹ bar from -30 °C to 120 °C

Please note:

Technical rules and safety regulations.

Casing pressure = inlet pressure plus delivery head + zero flow

Position of branches:

Suction and discharge branch radially arranged opposite to each other.

Flanges:

The flanges correspond to DIN 2533/PN 16. Flange design drilled as per ANSI 300 is possible.

Hydraulic:

First hydraulic. Designation of this construction type: A-

Second hydraulic. Designation of this construction type: B-

Bearing:

Two grease-lubricated antifriction bearings according to DIN 625 in the motor, one antifriction bearing grease-lubricated for service-life according to DIN 625 arranged in the bearing bracket. Designation of this construction type: -K, -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 unbalanced.

Designation AAE: cast chrome / carbon, O-rings Perbunan
temperature range: -40 °C to 120 °C

Designation BH3: SiC / carbon, elastomer EP
temperature range: -20 °C to 120 °C

Designation BHS: SiC / SiC, elastomer Viton
temperature range: -20 °C to 120 °C

Material design

Item	COMPONENT	MATERIAL DESIGN				
		0B	0C	0F	4B	4F
10.10 16.10	volute casing casing cover	GG 25			G-X 6 Cr Ni Mo 18 10 PPO, glass fiber reinforced synthetic	
23.00	impeller	GG 25	G-Cu Sn 10	PPO, glass fiber reinforced synthetic		
10.91 17.11	stage casing	see 0F, 4B, 4F	-	deep-drawn stainless steel sheet X 10 Cr Ni Mo Ti 18 10		
21.00	shaft	X 20 Cr 13			X 5 Cr Ni Mo 18 10	
34.00	bearing bracket	GG 25				
43.30	shaft sealing mechanical seal ¹⁾	X 22 Cr Ni 17 / carbon, Perbunan or SiC / SiC, Viton or SiC / carbon, EP			SiC / SiC, Viton or SiC / carbon, EP	

¹⁾ O-rings of PTFE upon request

The component parts of the mentioned material design 0B, 0C and 4B are interchangeable.

Casing seal:

Material design 0B, 0C, 0F:

The casing seal consist of special paper flat gasket. Designation of this construction type: 2

Material design 4B, 4F:

The casing seal consist of PTFE. Designation of this construction type: 4

Drive / speed:

By customary electric motors, type IM B 5 resp. IM V

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

up to 4 kW: 25 %

4 up to 7,5 kW: 20 %

7,5 up to 37 kW: 15 %

Please note: the max. motor power allowed for some construction sizes as shown in the individual characteristic curves.

The following speeds are to be observed:

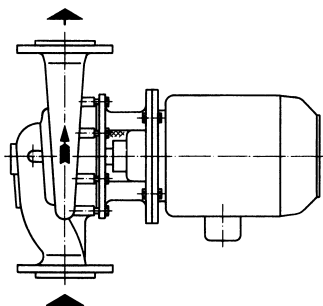
size	max. speed rpm	size	max. speed rpm
25-125	3600	100-200 150-200	3000
25-160			
40-160 40-200			
50-160 50-200			
80-160 85-200 ²⁾			
100-160 ²⁾			

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

²⁾ in material design 4B max. speed 3000 rpm

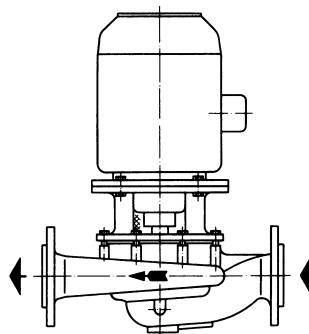
Positioning

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



Horizontal installation up to 7,5 kW

For this particular



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

Please note

The installation of the motor below the pump is not allowed because of operation safety reasons.

The installation of compensators is not necessary. **Saving of costs!**

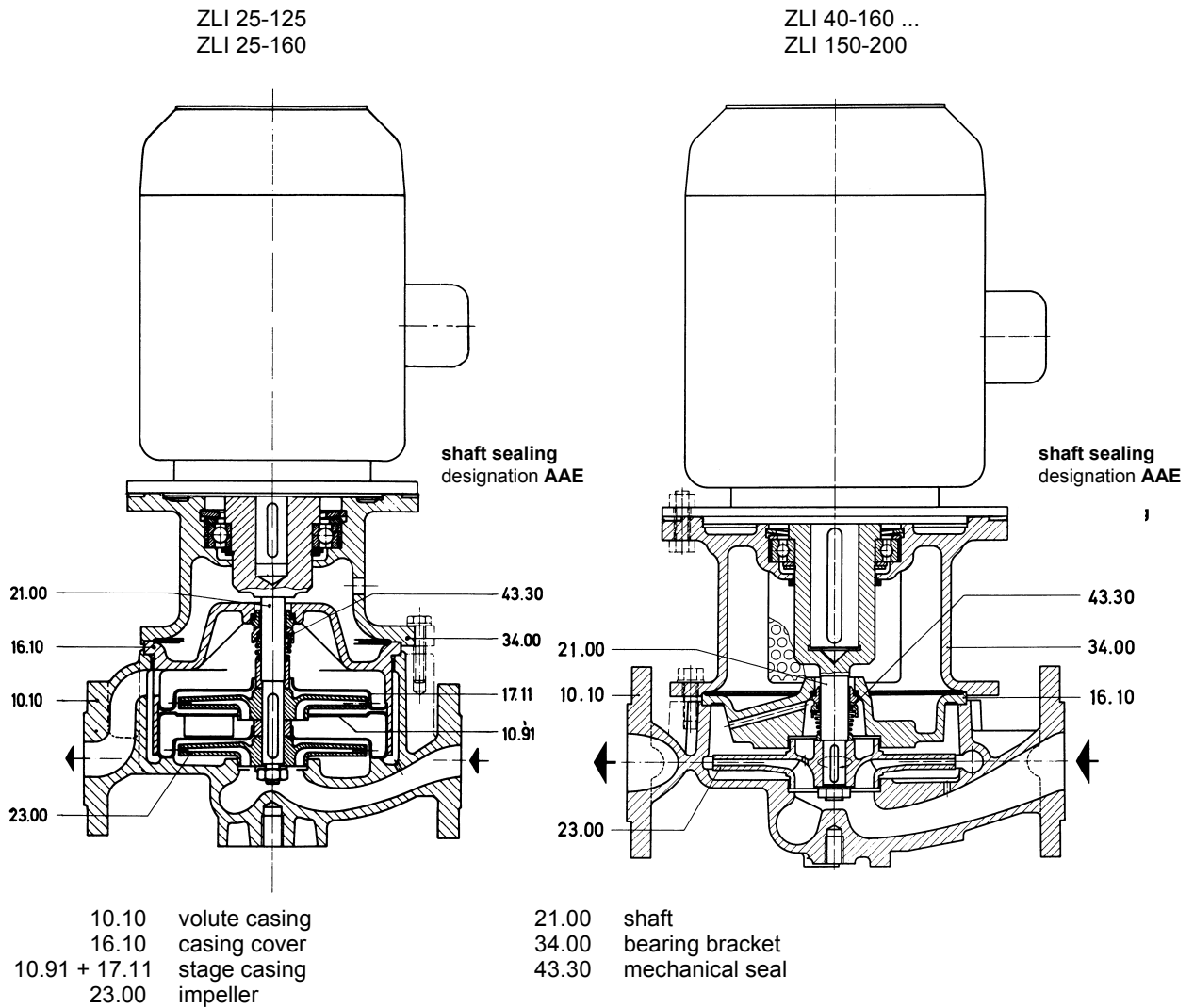
General comments

For units in compact design with the same installation set consisting of bearing bracket with bearing, stub shaft and mechanical seal, casing cover, impeller and impeller fastener, please refer to our

series **ZLK**

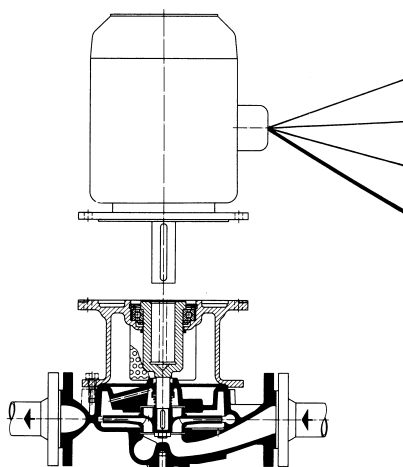
Technical documentation about these programmes will be readily supplied on request.

Sectional drawing and nomenclature



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

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

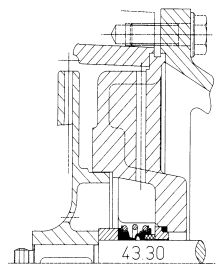


motor combinations

- + type IM B 5 or IM V 1
- + type of enclosure IP 54 to eII (Ex)
- + speed 50 and 60 Hz
- = motor at your choice

- + shaft sealed pumping unit
- = readiness for operation

shaft sealing
designation **BH3**
BHS

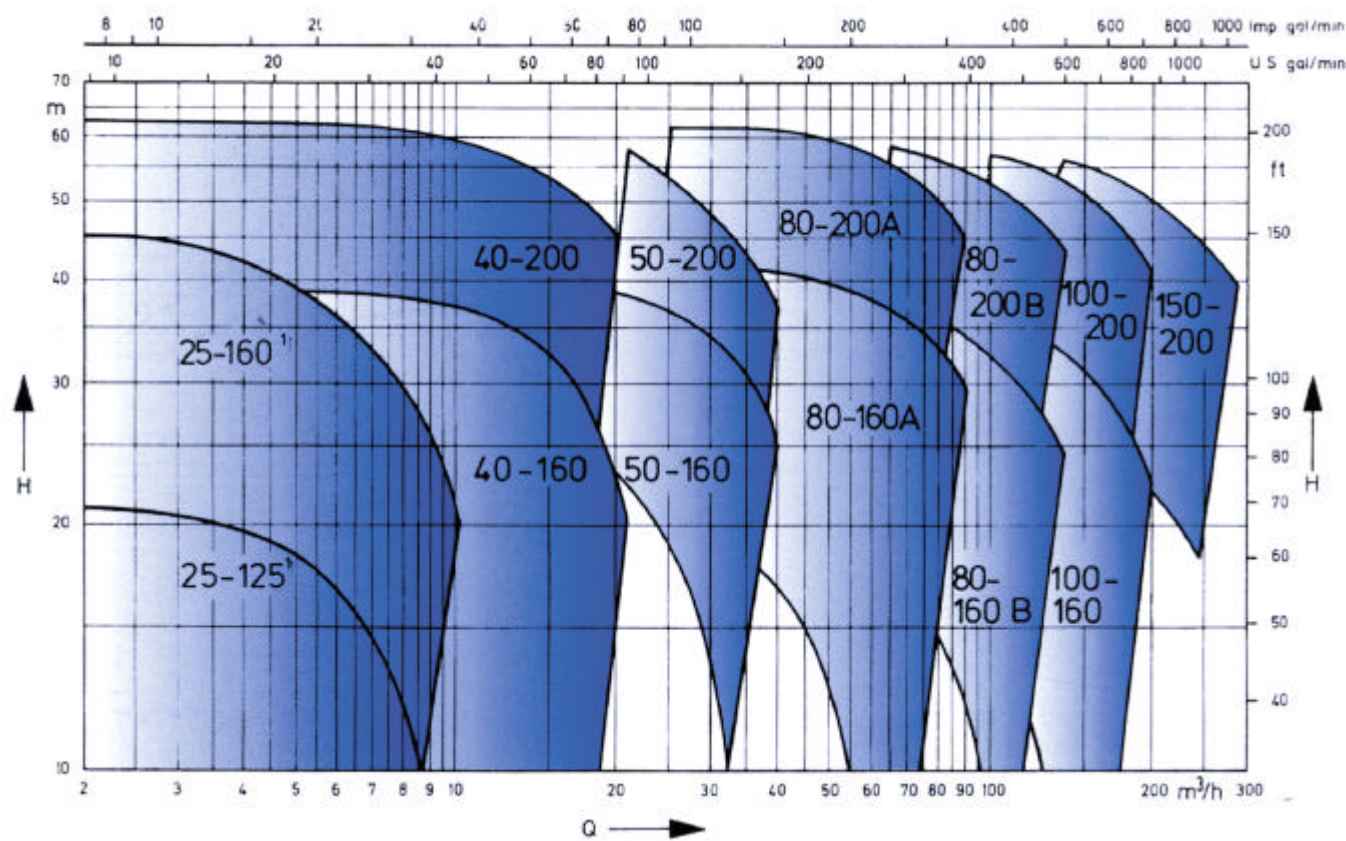


* shaft end key to DIN 748 T 3
to DIN 6885 T 1

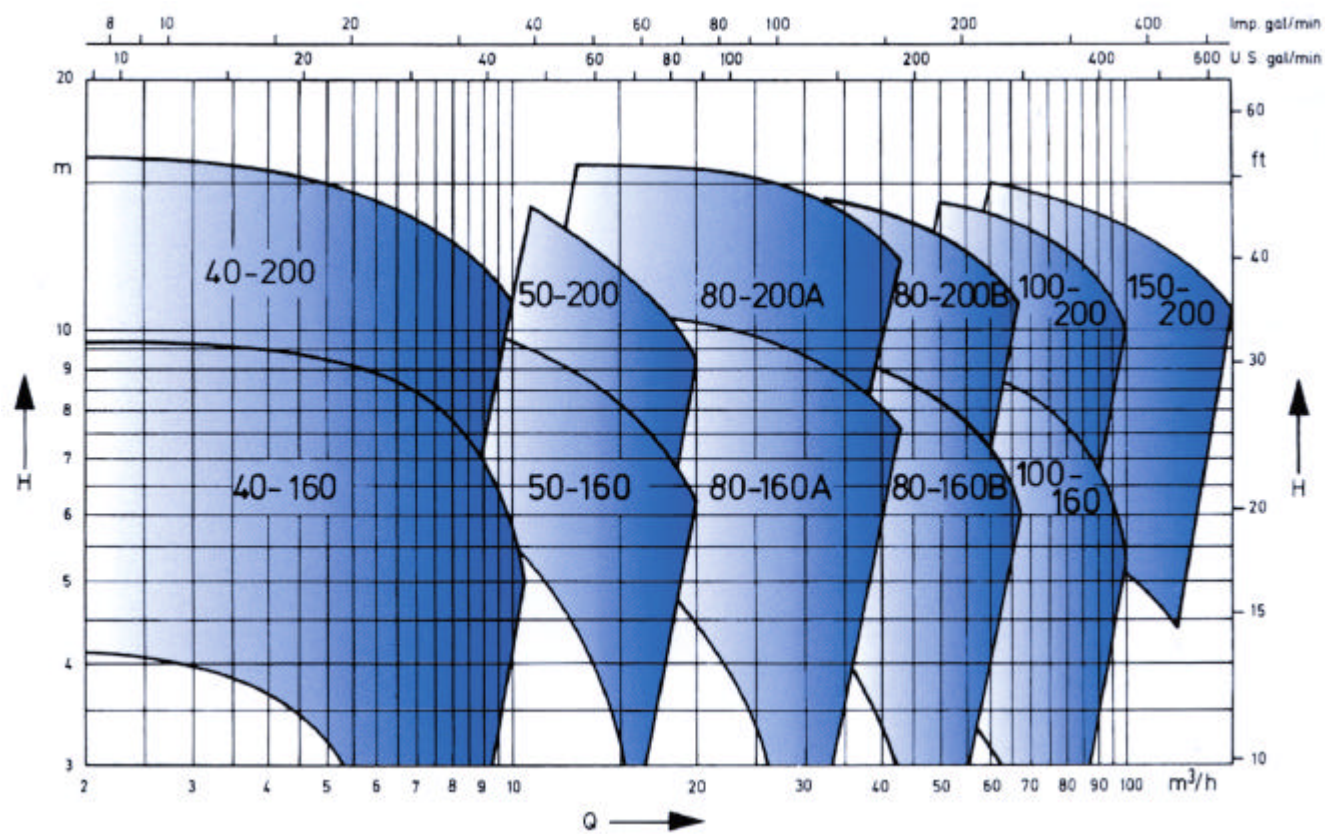
If necessary the motor can be changed in the unit without draining, the pipework. The pump unit remains as „**shaft tight armature**“ in the pipe work and so the readiness for operation is increased.

Performance graph

n = 2900 rpm

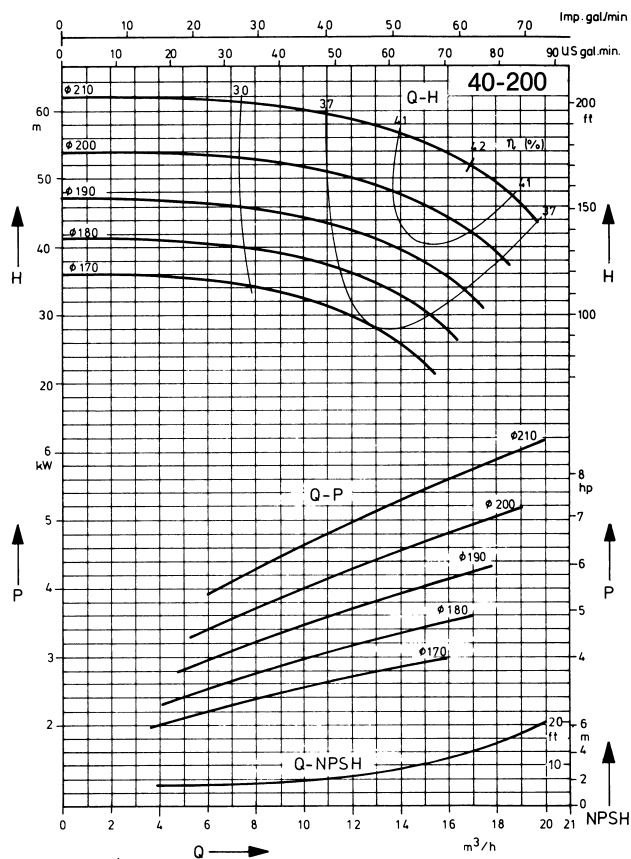
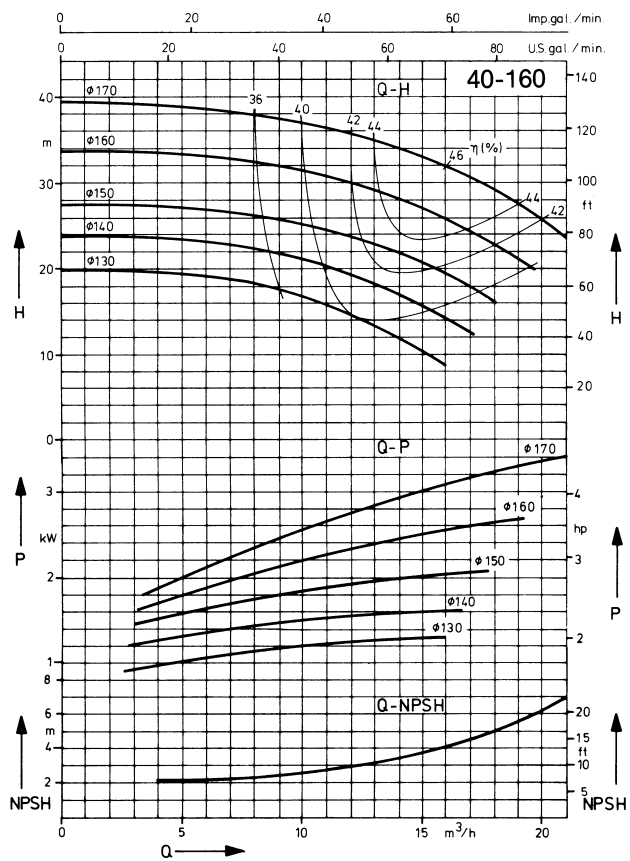
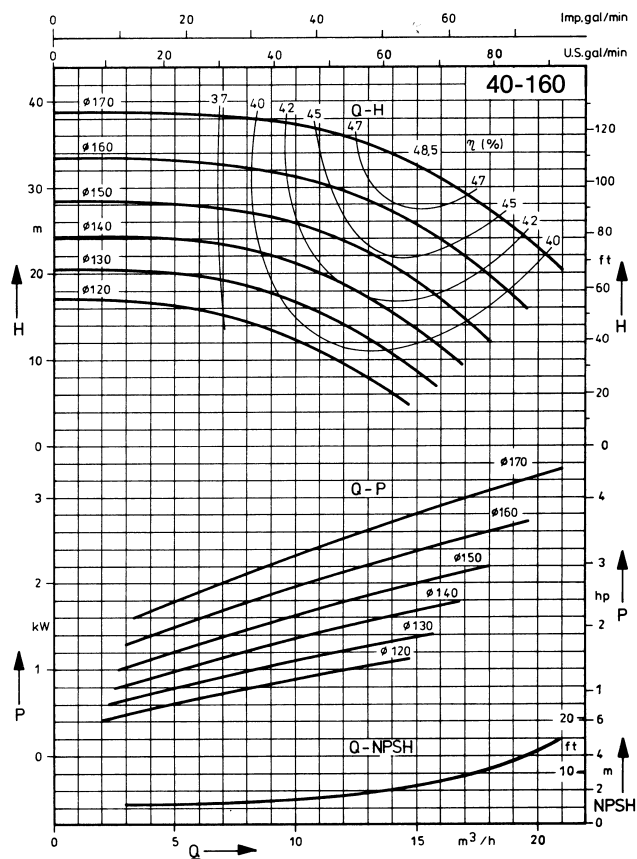
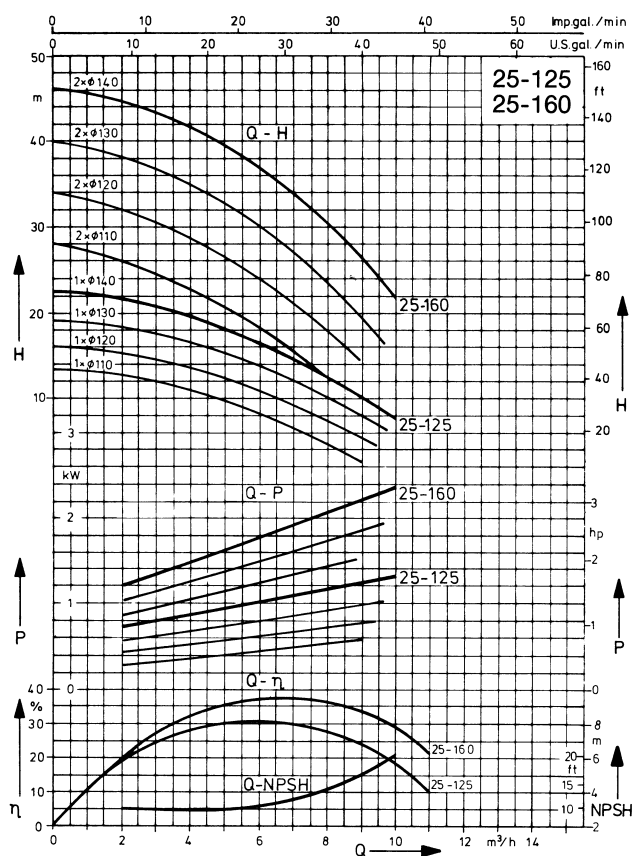


n = 1450 rpm



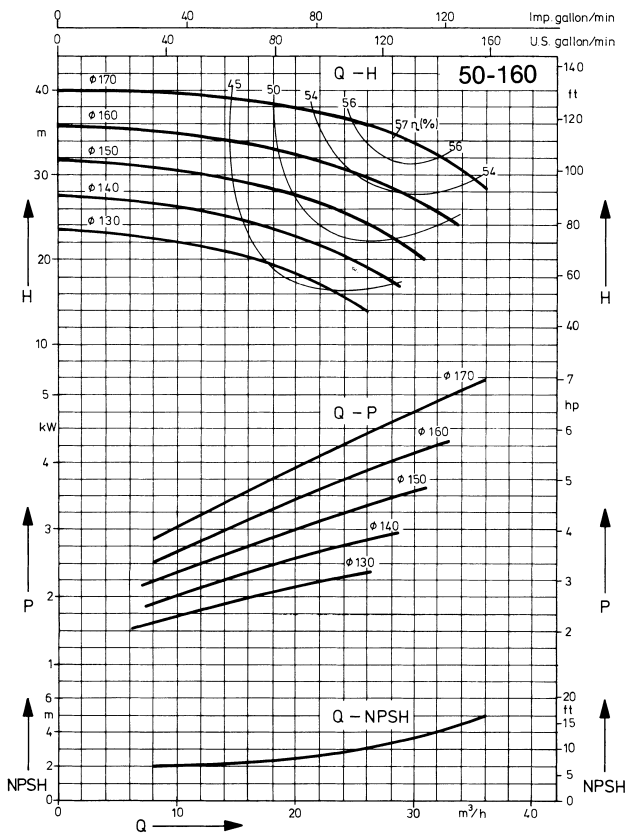
Characteristic curves

$n = 2900 \text{ rpm}$

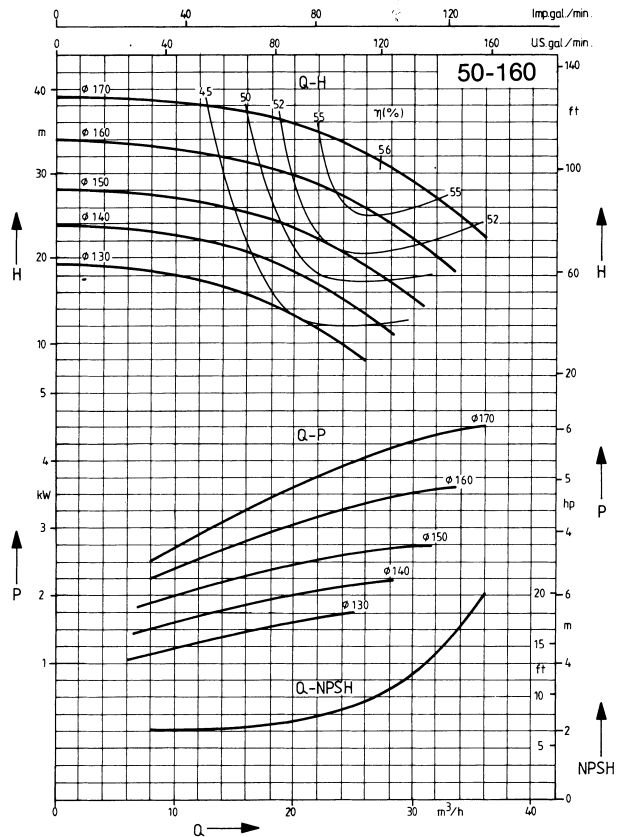


Characteristic curves

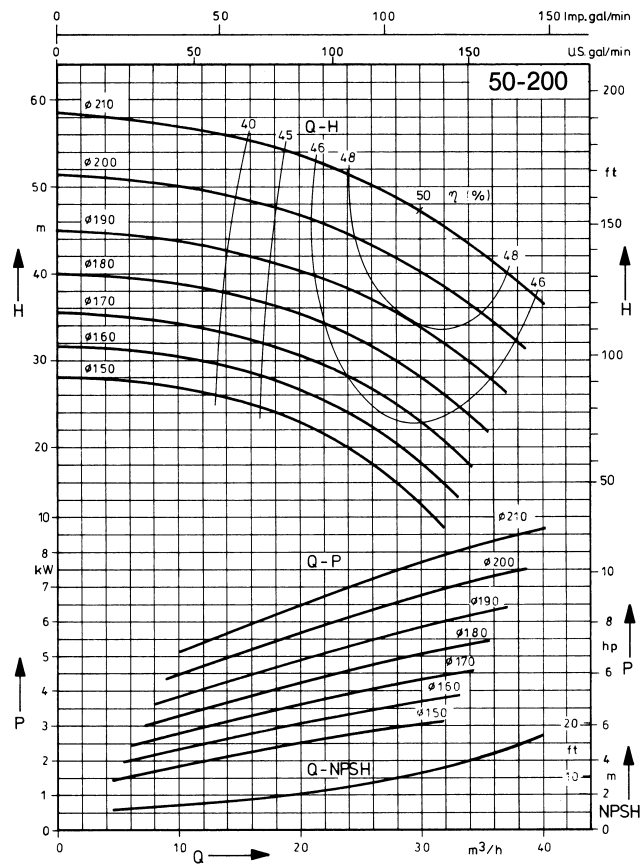
n = 2900 rpm



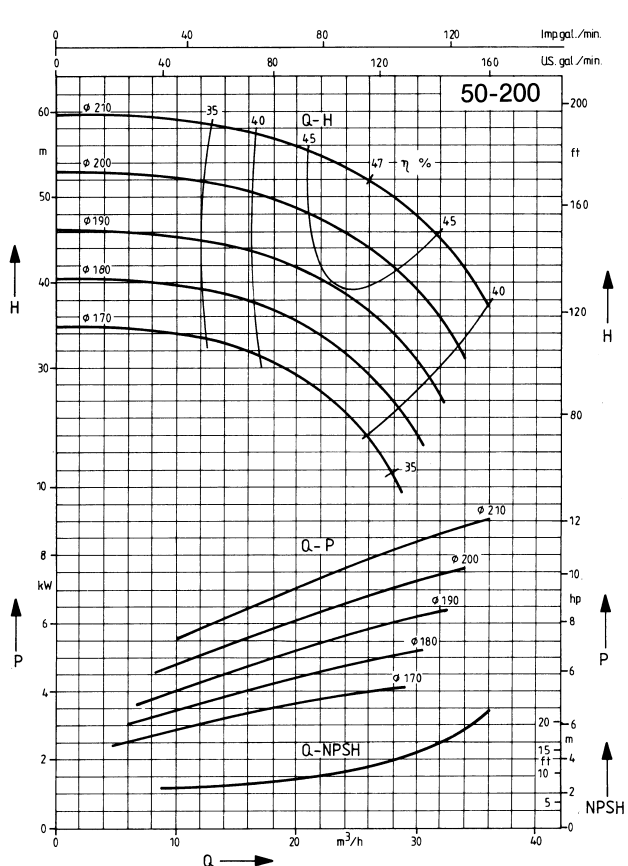
material design 0B, OC



material design 4B



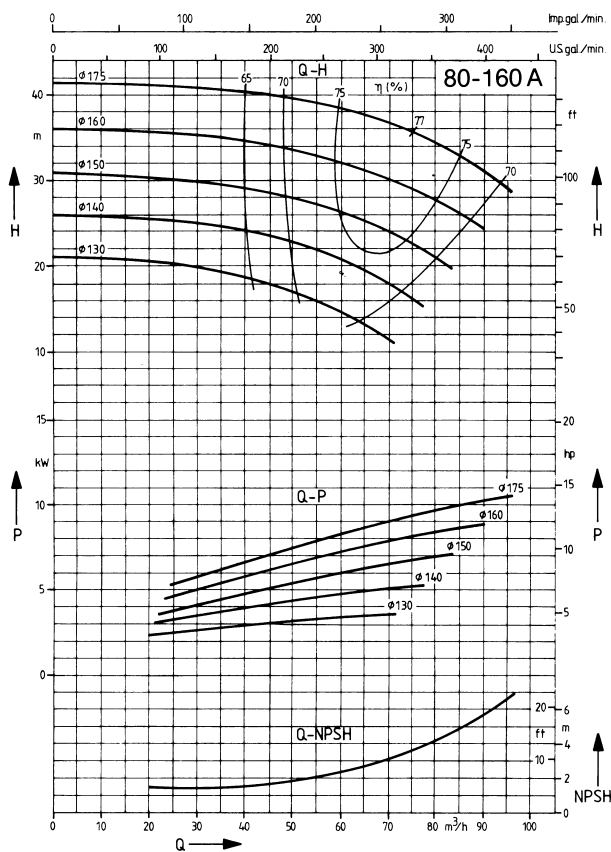
material design 0B, OC



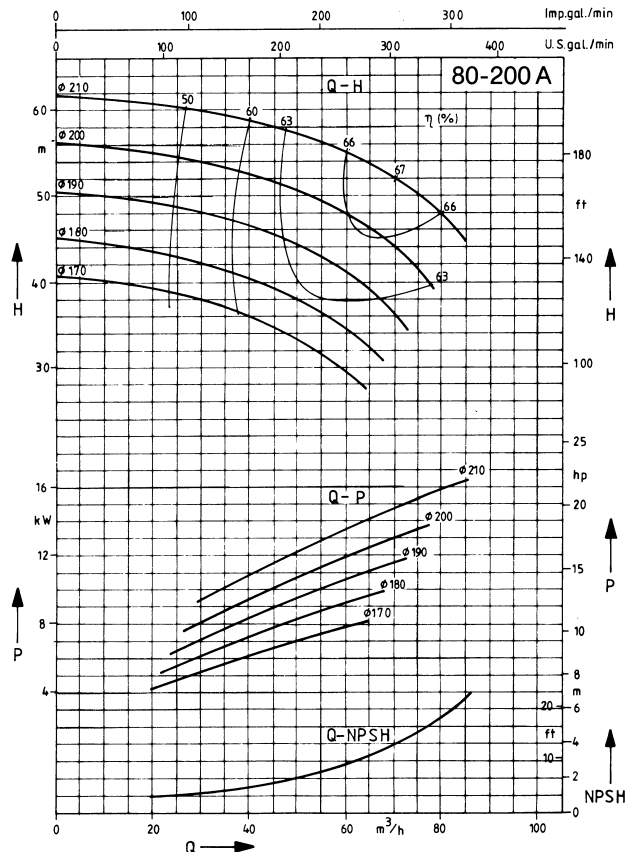
material design 4B

Characteristic curves

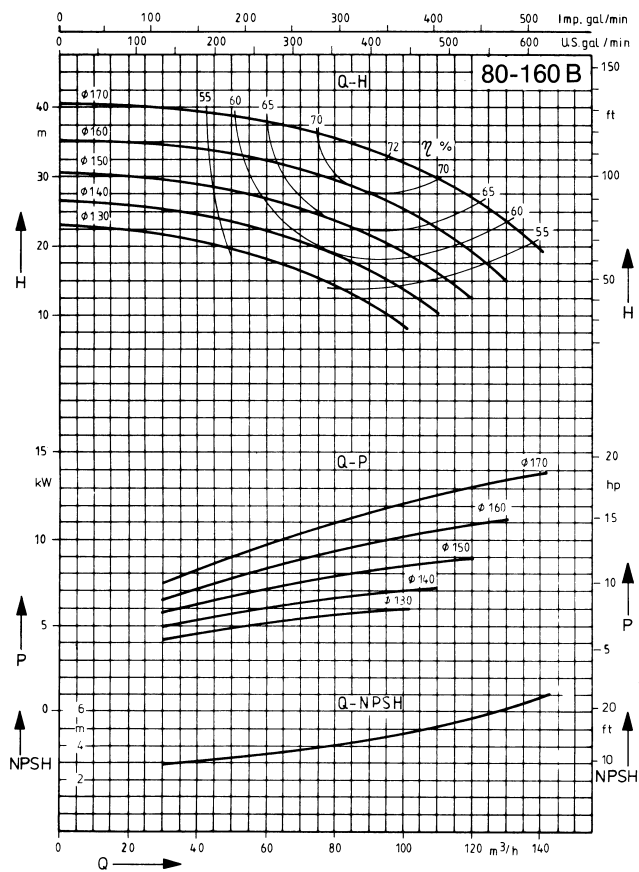
$n = 2900 \text{ rpm}$



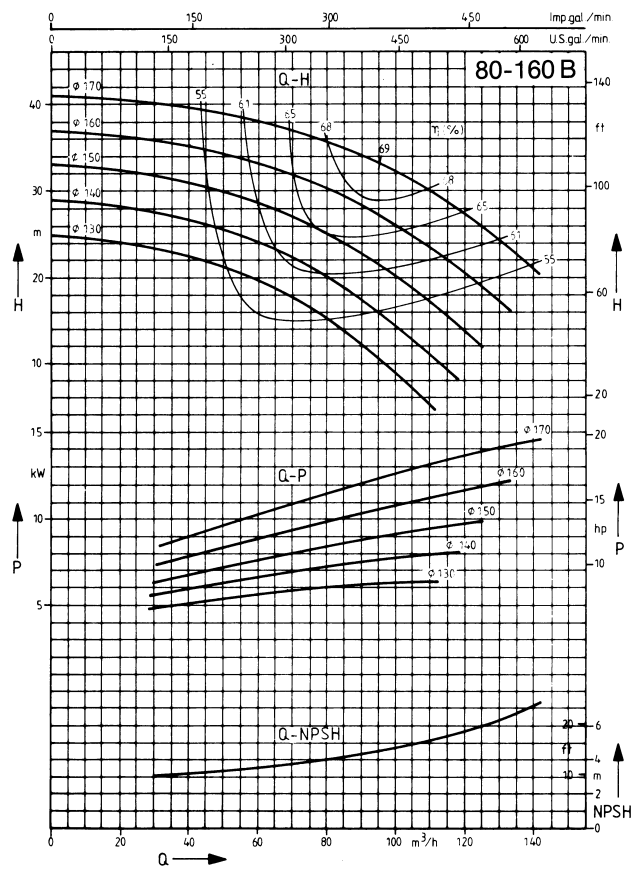
correction factor 3 % at material design 4B



correction factor 3 % at material design 4B



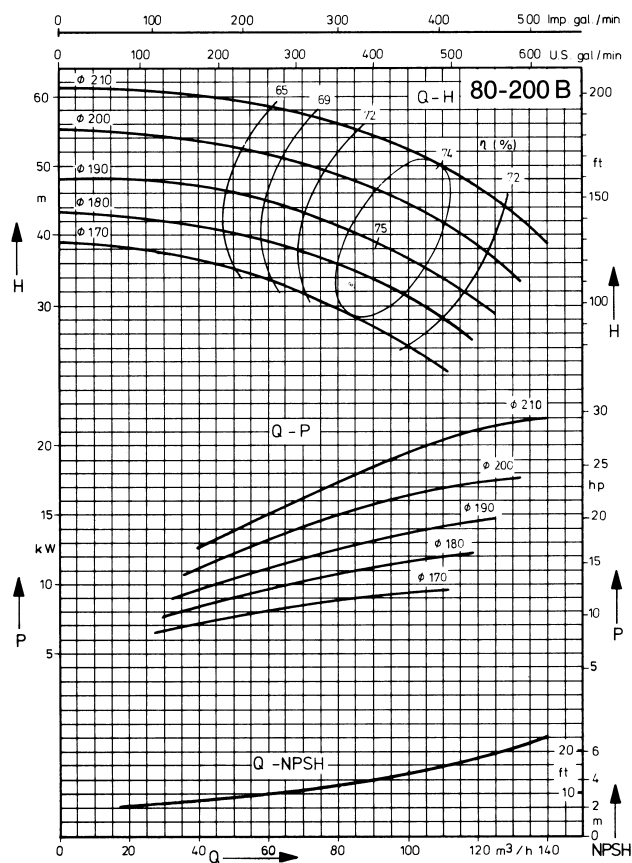
material design 0B, 0C



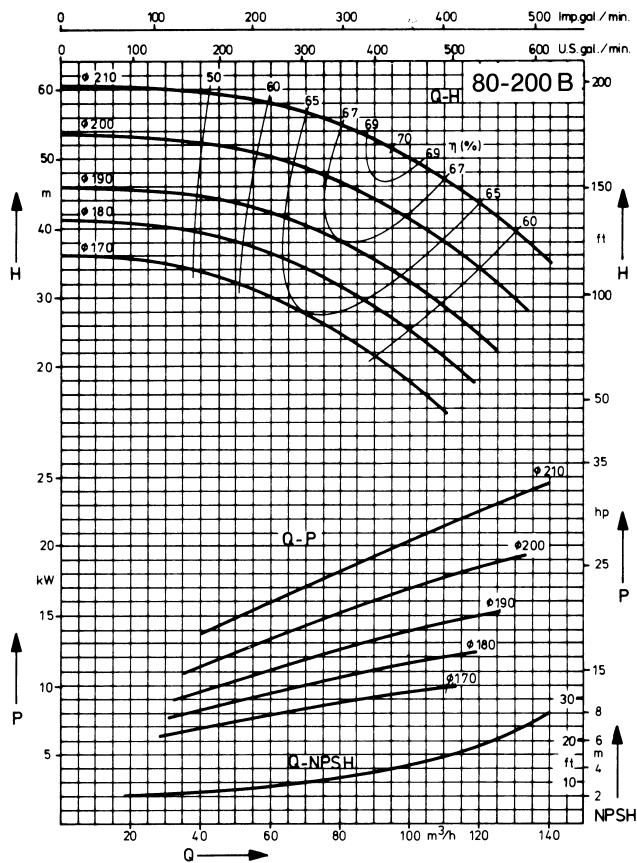
material design 4B

Characteristic curves

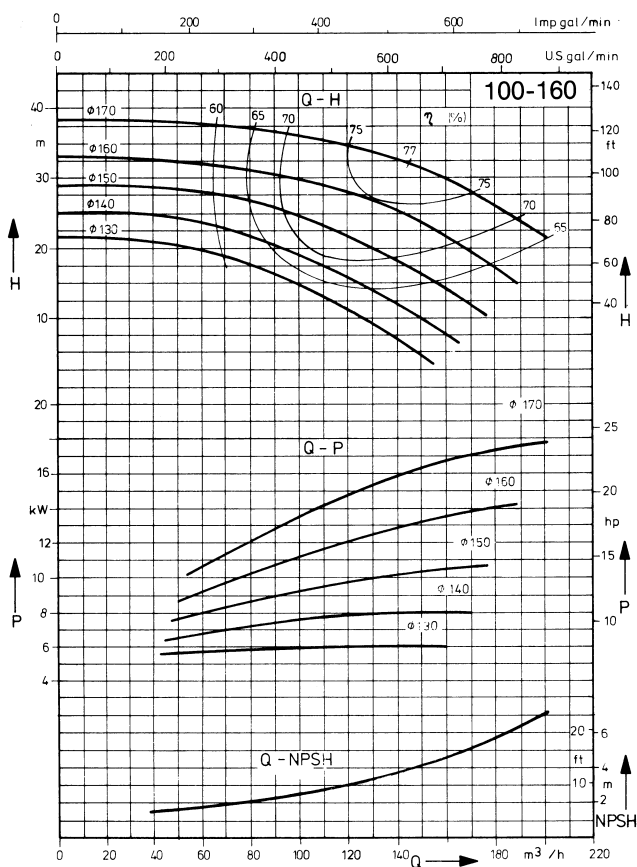
$n = 2900 \text{ rpm}$



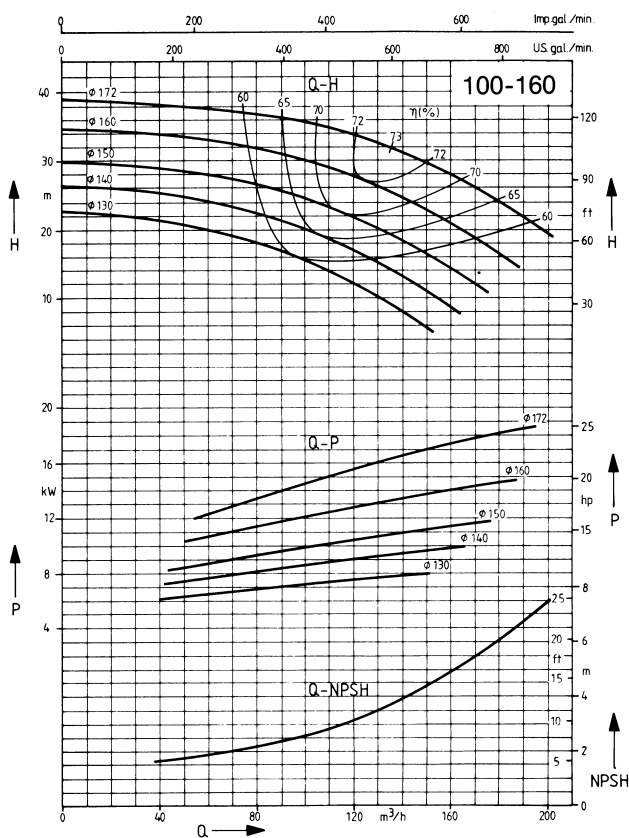
material design 0B, 0C



material design 4B



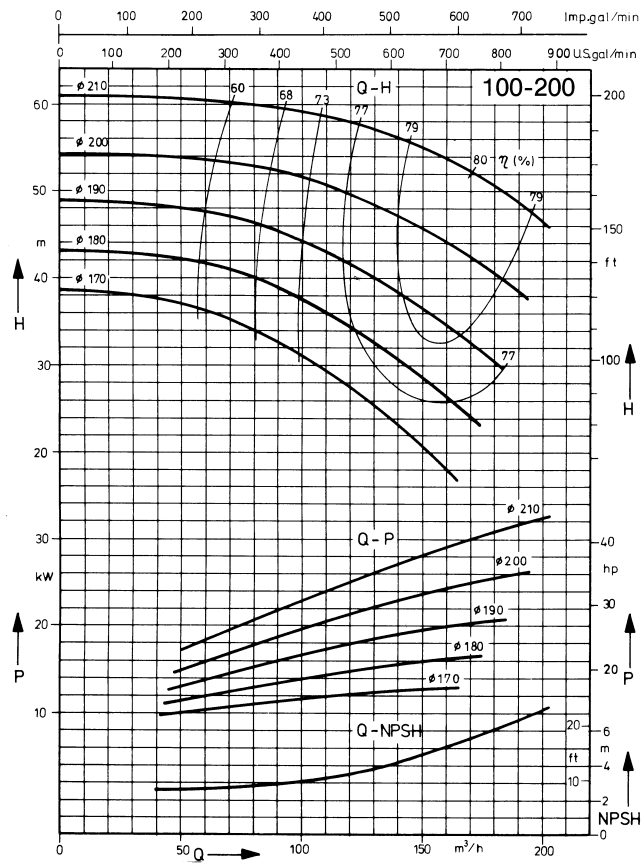
material design 0B, 0C



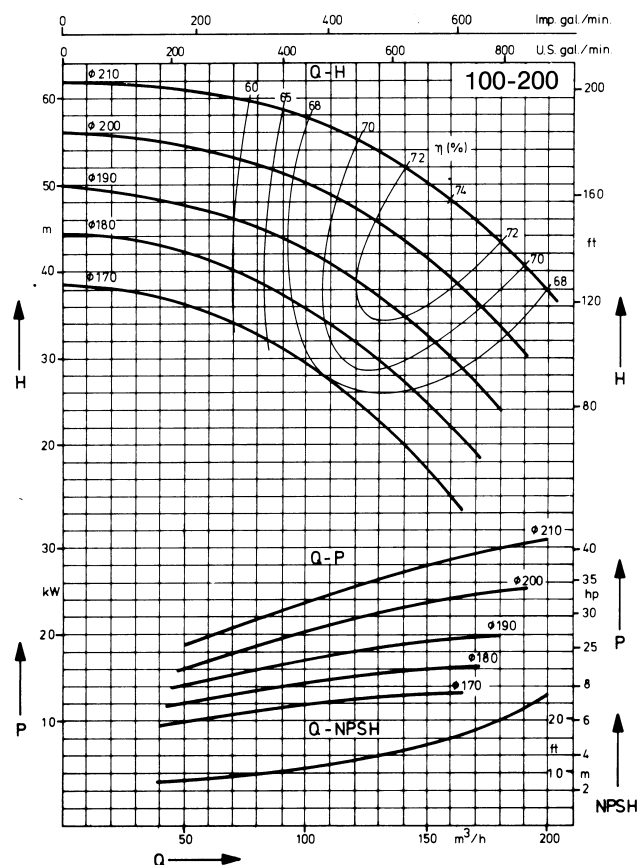
material design 4B

Characteristic curves

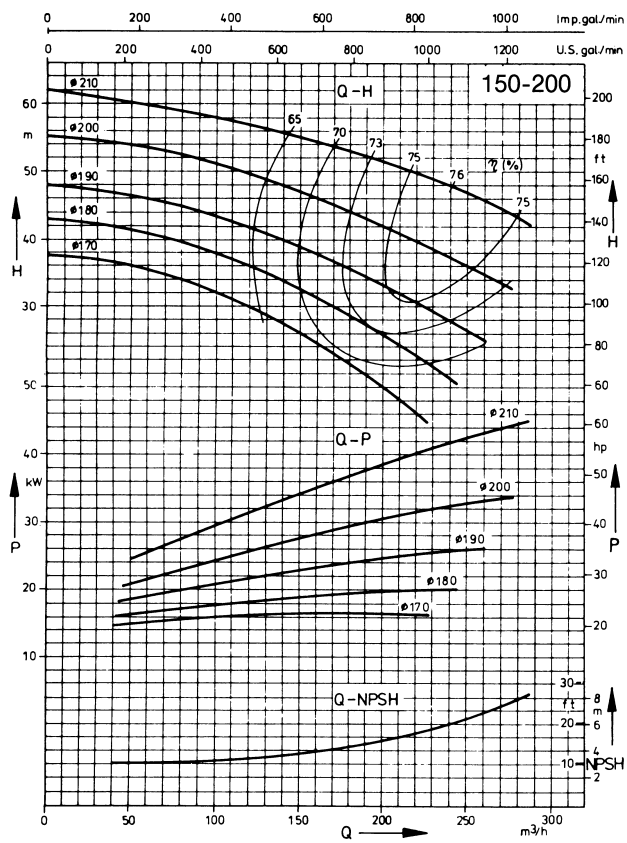
n = 2900 rpm



material design 0B, 0C



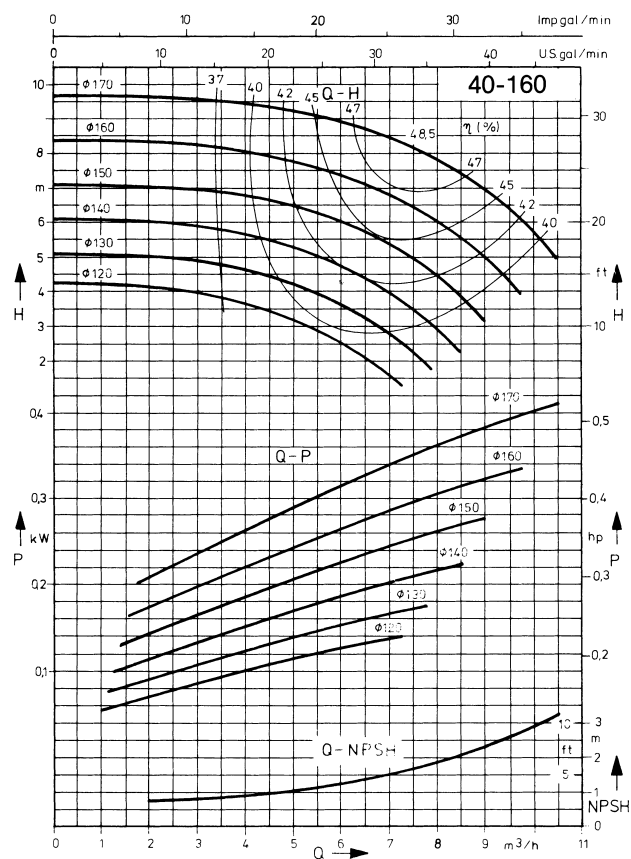
material design 4B



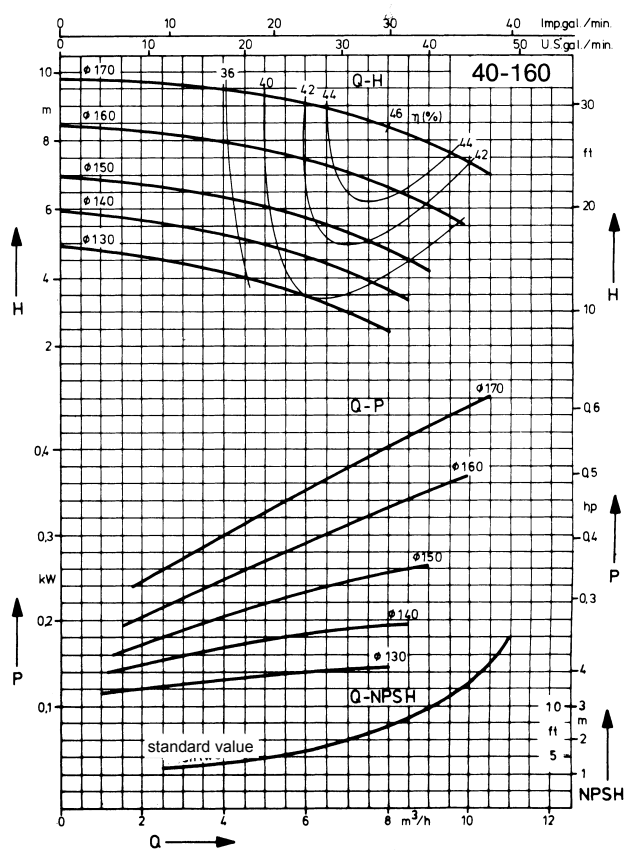
correction factor 3 % at material design 4B

Characteristic curves

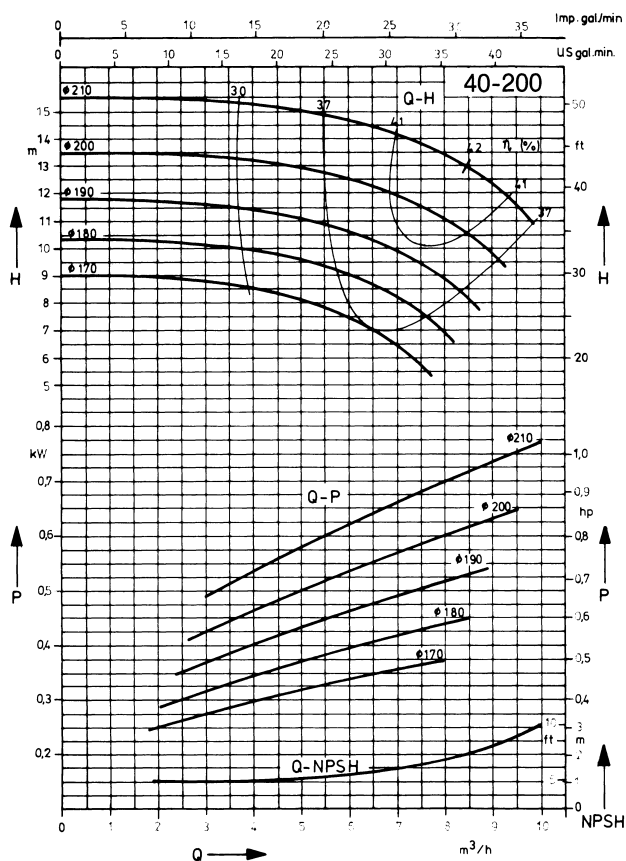
$n = 1450 \text{ rpm}$



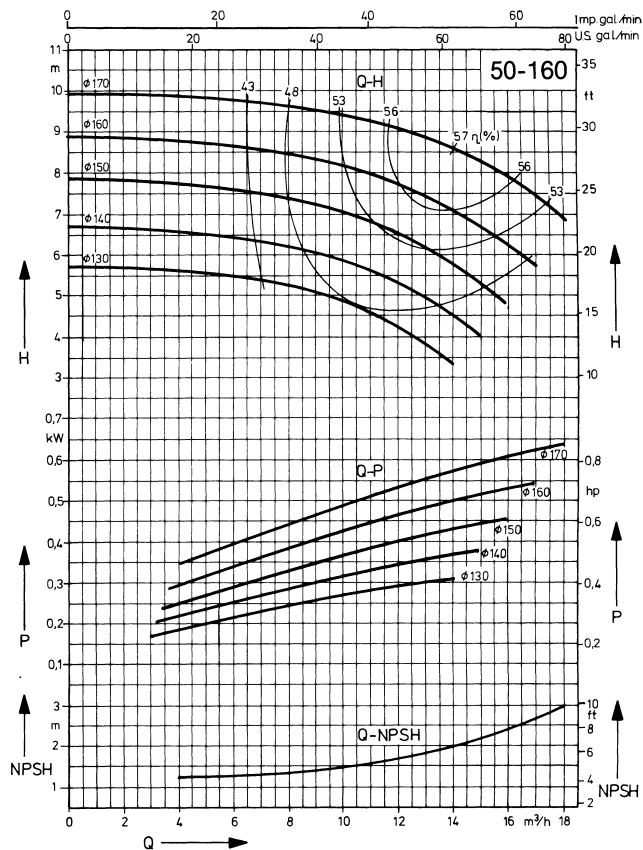
material design 0B, 0C



material design 4B



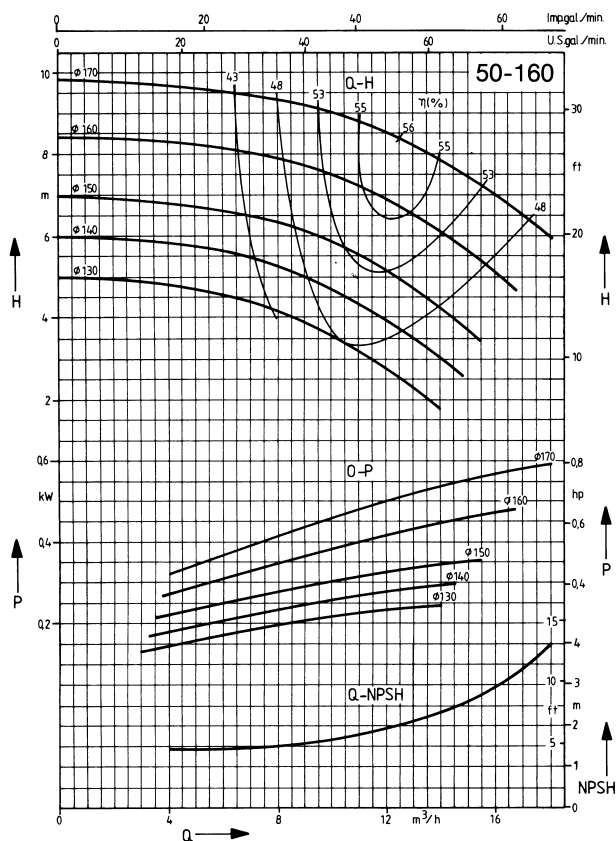
correction factor 3 % at material design 4B



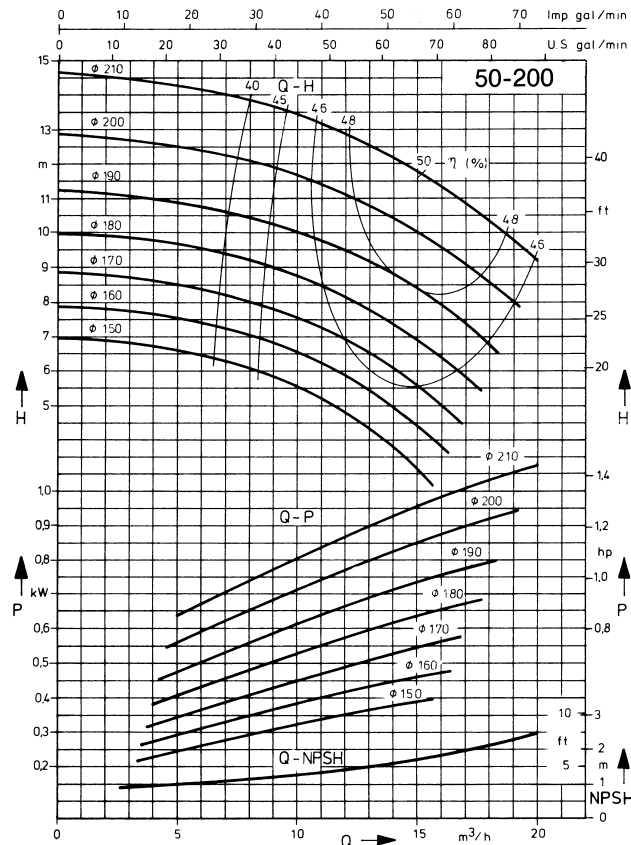
material design 0B, 0C

Characteristic curves

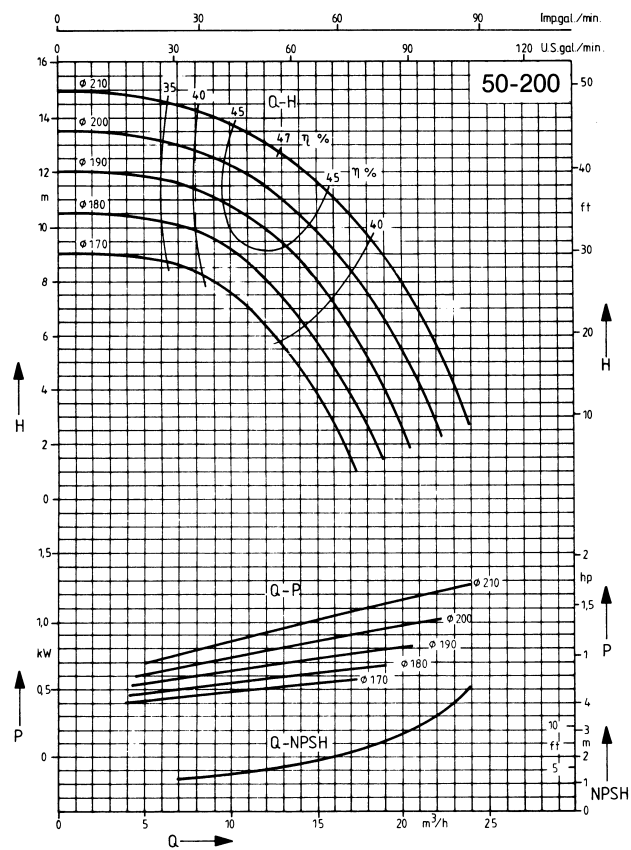
n = 1450 rpm



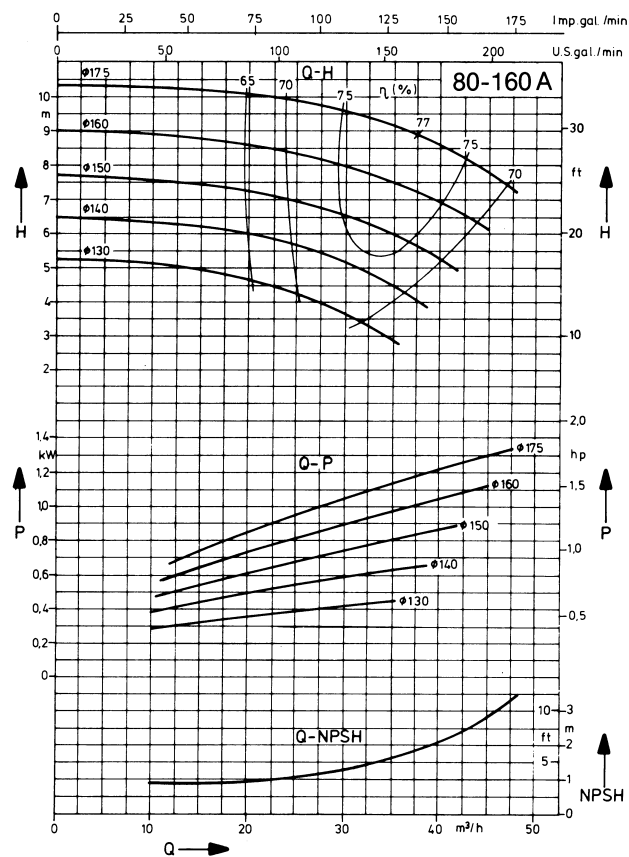
material design 0B, 0C



material design 4B



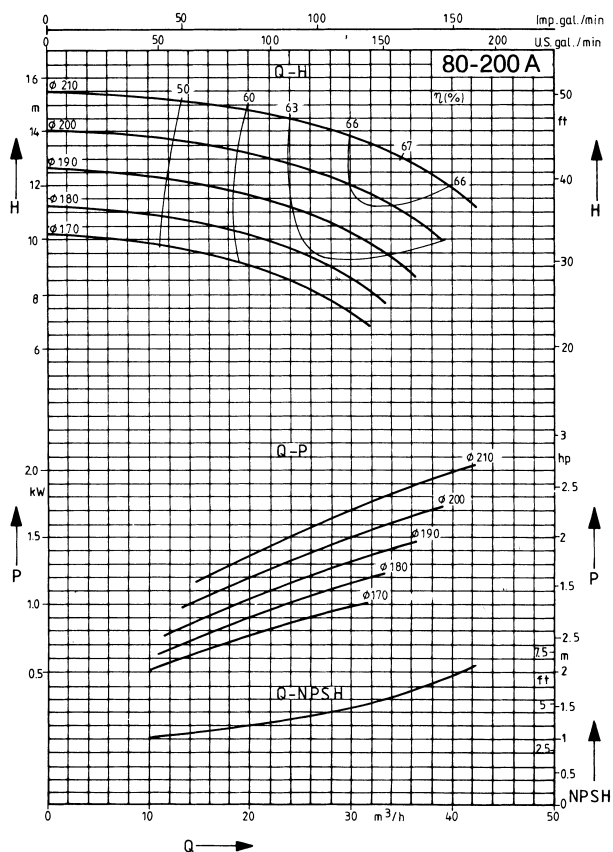
material design 4B



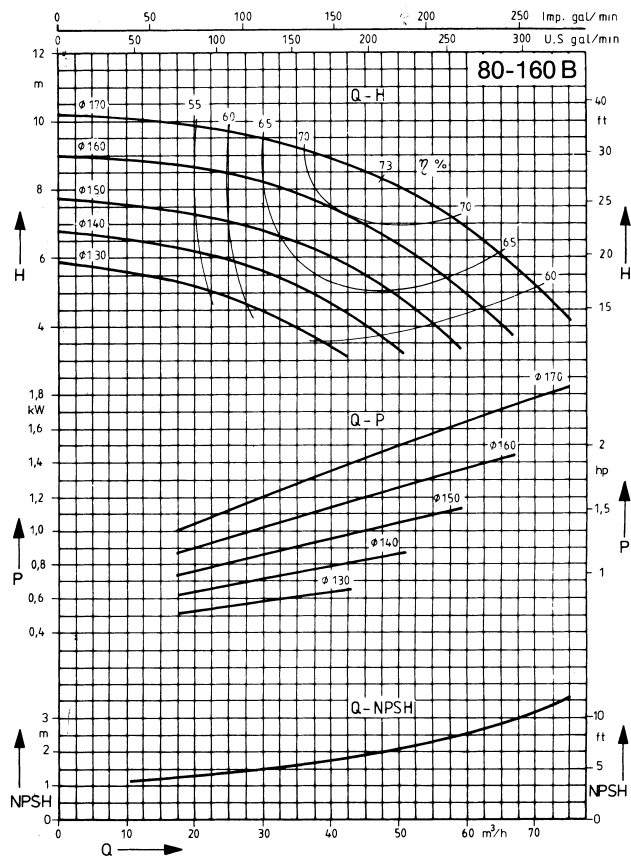
correction factor 3 % at material design 4B

Characteristic curves

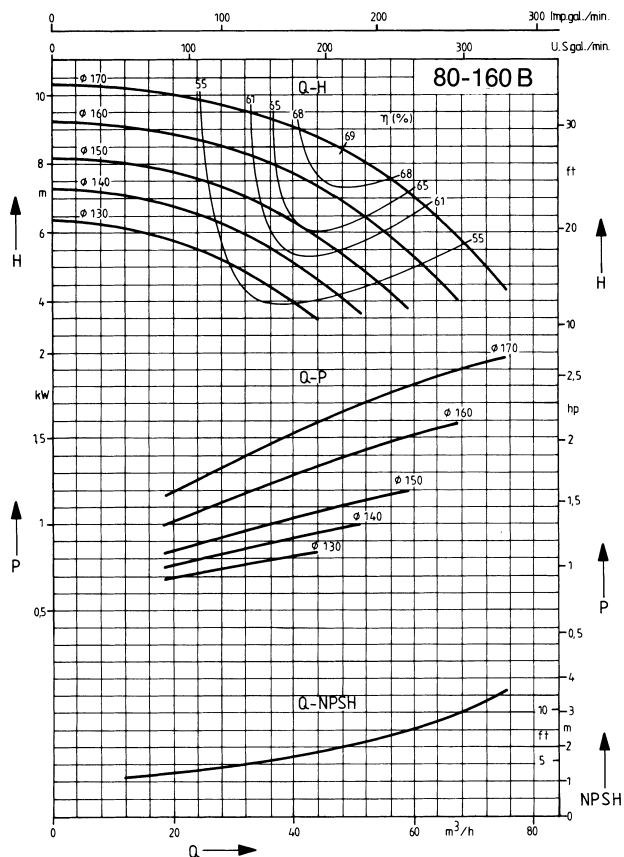
n = 1450 rpm



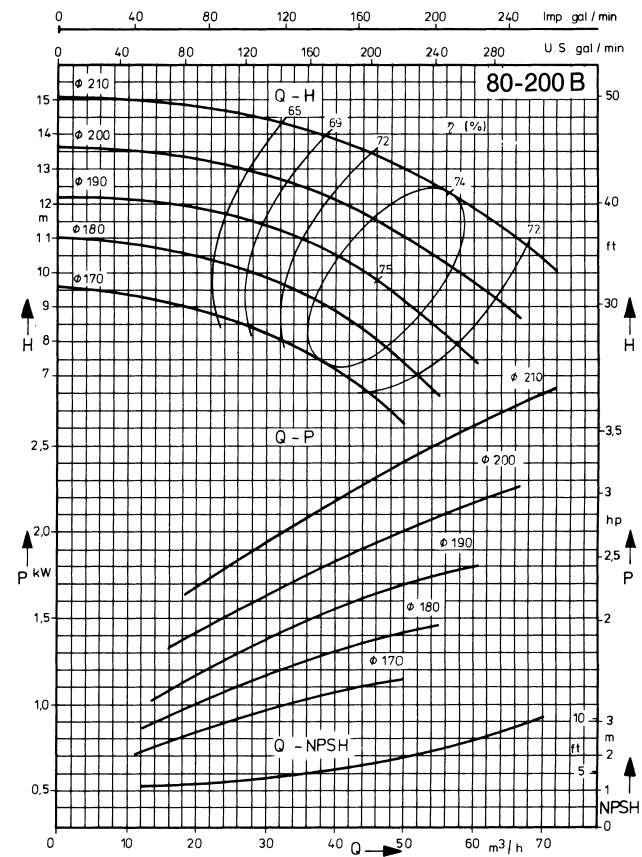
correction factor 3% at material design 4B



material design 0B, 0C



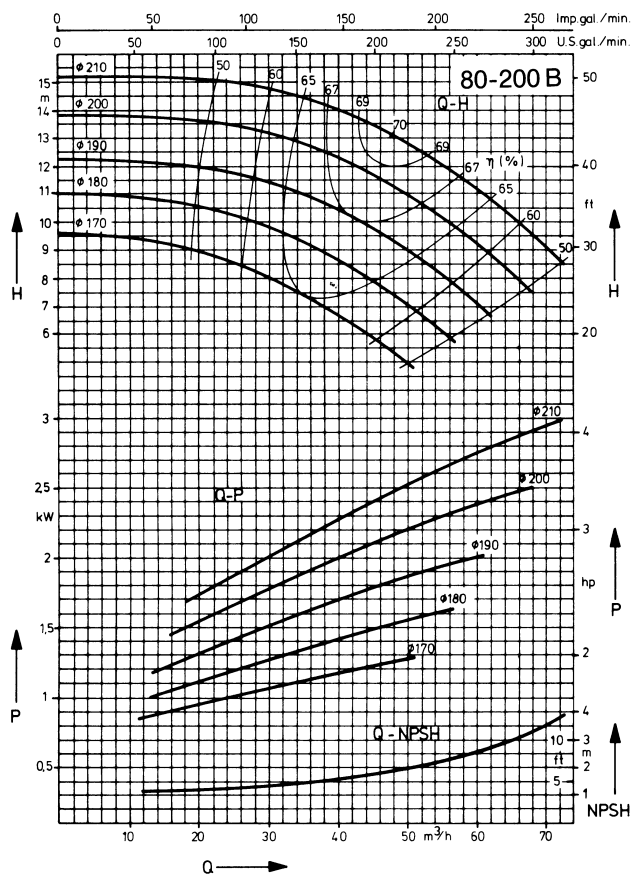
material design 4B



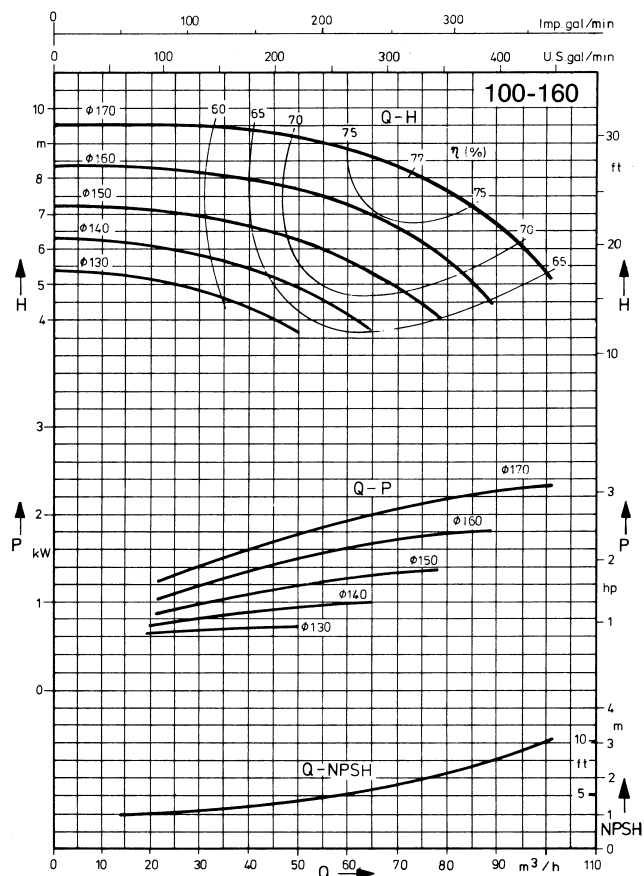
material design 0B, 0C

Characteristic curves

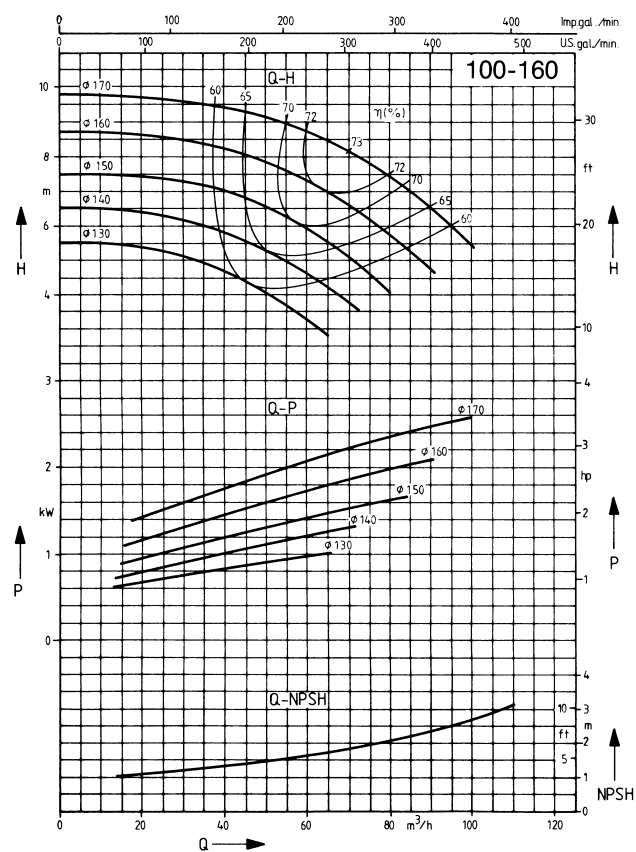
$n = 1450 \text{ rpm}$



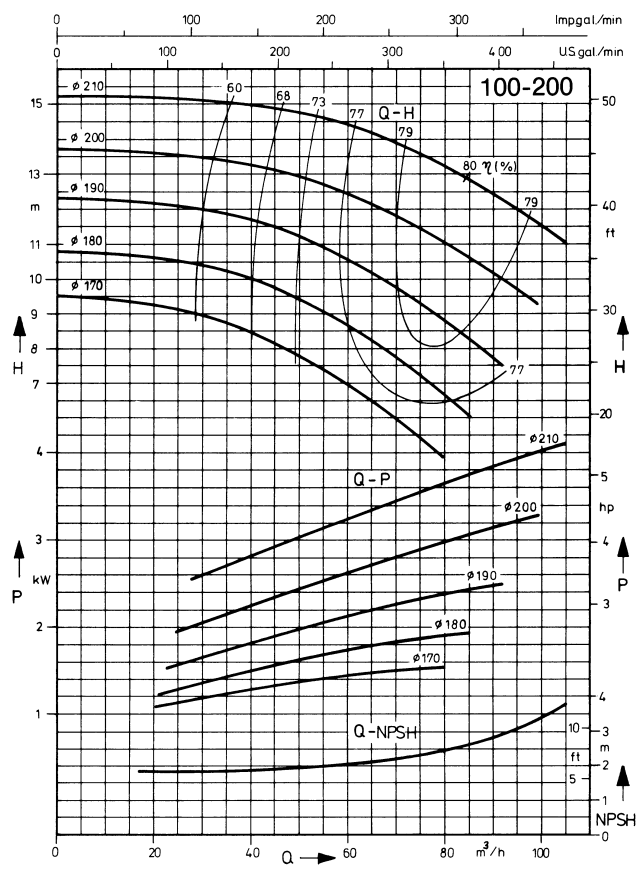
material design 4B



material design 0B, 0C



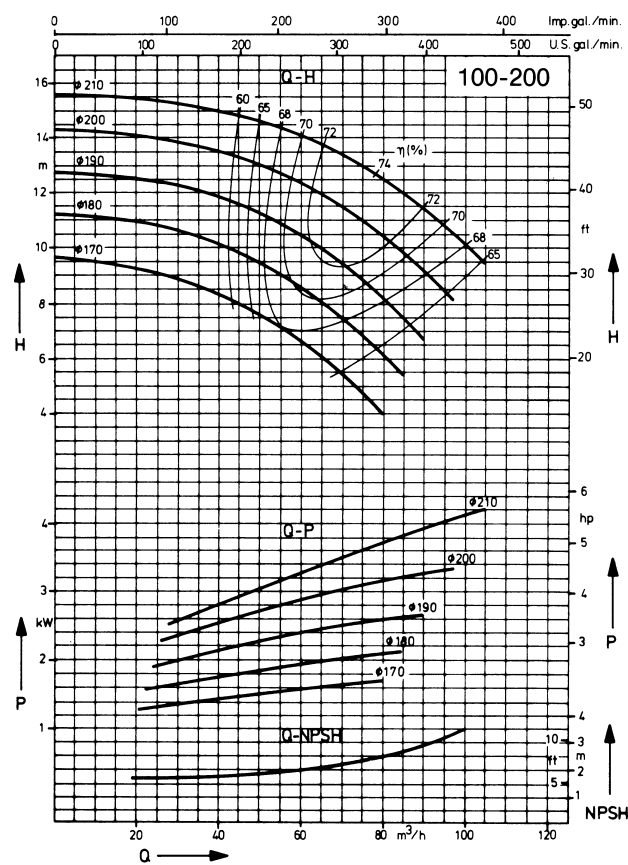
material design 4B



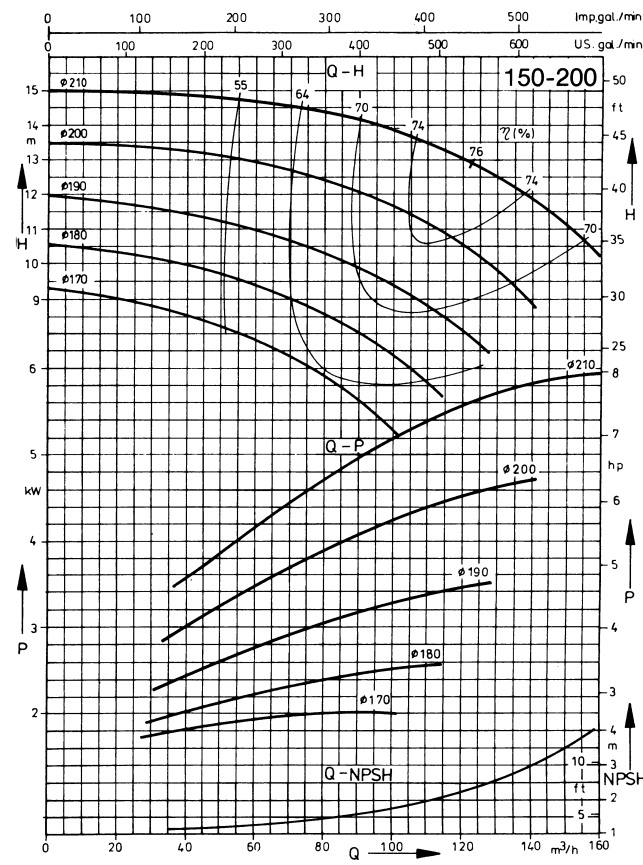
material design 0B, 0C

Characteristic curves

n = 1450 rpm



material design 4B



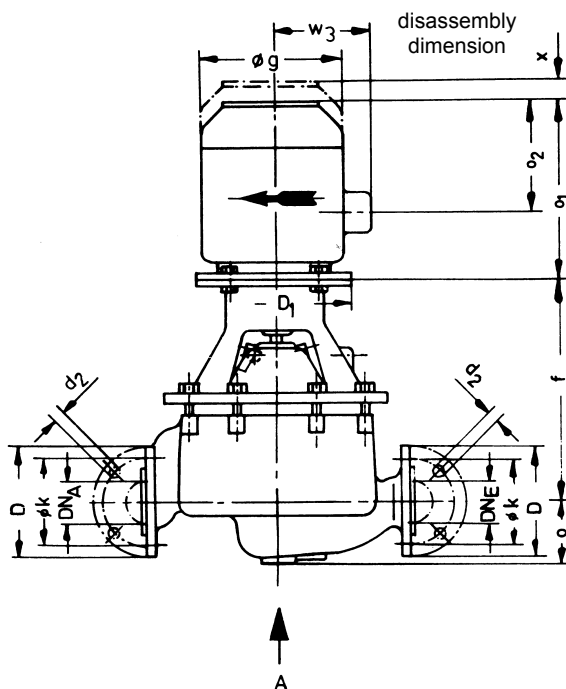
correction factor 3 % at material design 4B

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

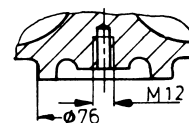
Dimension table

n = 2900 rpm

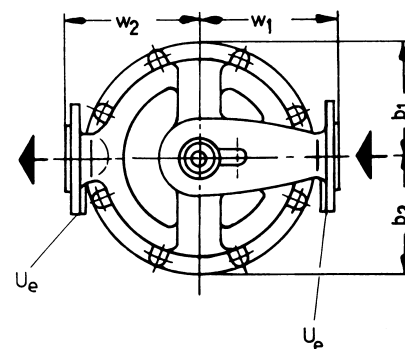
ZLI 25-125 / 25-160



possible foot mounting

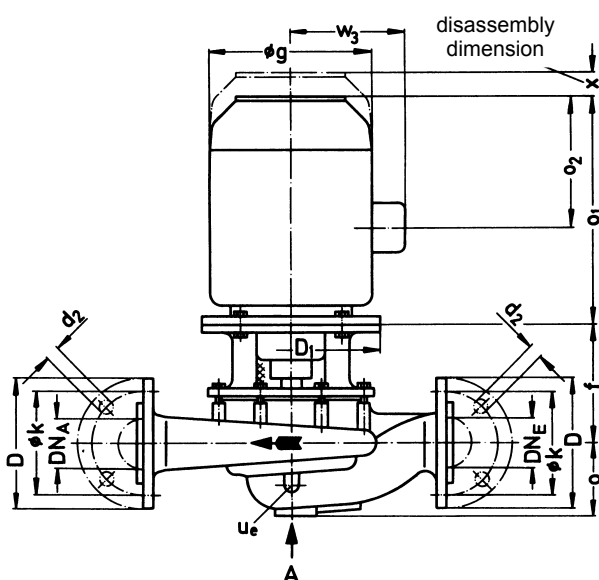


view A



u_e = connection for drainage G 1/4

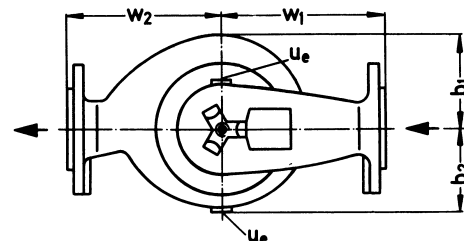
ZLI 40-160 ... 150-200



possible foot mounting



view A



u_e = connection for drainage G 3/8

Dimension table

n = 2900 rpm

size	motor		DN _{A,E}	b ₁	b ₂	D ₁	f	g*	o	o ₁ *	o ₂ *	w ₃ *	w ₁	w ₂	x	weight abt. kg		
	size	kW														pump 0B,0C,0F	pump 4B,4F	motor
25-125	80 b	1,1	25	128	128	200	212	157	73	228	128	123	140	140	120	27	29	10
	90 S	1,5						186										14
25-160	90 L	2,2	25	128	128	200	212	186	73	249	143	125	140	140	120	27	29	18
	100 L	3,0																24
40-160	90 L	2,0	40	115	115	200	167	186	82	274	185	125	180	160	80	31	37	18
	100 L	3,0				250	162	206		323	234	133						24
40-200	112 M	4,0	40	138	138	300	210	220	90	386	227	213	200	180	80	42	46	41
	132 S1	5,5						260										56
50-160	132 S2	7,5	50	120	120	250	162	206	82	323	234	133	190	160	80	36	41	41
	112 M	4,0						220										56
50-200	132 S1	5,5	50	138	138	300	210	260	90	386	227	213	200	180	80	44	47	56
	132 S2	7,5						260										59
80-160 A	160 M1	11,0	80	138	125	300	210	310	150	521	308	245	240	200	80	50	53	110
	132 S1	5,5						260										56
80-200 A	132 S2	7,5	80	150	143	300	210	310	150	521	308	245	255	225	80	51	54	59
	160 M2	15,0						310										112
80-160 B	132 S2	7,5	80	148	135	300	210	260	120	386	227	213	240	200	80	49	53	59
	160 M1	11,0						350										110
80-200 B	160 M2	15,0	80	165	155	400	226	341	150	565	330	280	255	225	100	51	54	112
	160 L	18,5						392										135
100-160	180 M	22,0	100	165	145	350	226	392	150	592	350	280	275	250	100	52	71	155
	200 L1	30,0						392										250
100-200	160 M1	11,0	100	180	165	400	226	310	150	521	308	245	275	250	100	63	68	110
	160 M2	15,0						341										112
150-200	180 L	18,5	150	203	173	350	226	392	188	592	350	280	350	280	120	78	84	135
	200 L1	30,0						392										155
150-200	200 L2	37,0	150	203	173	400	226	392	188	592	350	280	350	280	120	78	84	250
	200 L2	37,0						392										260

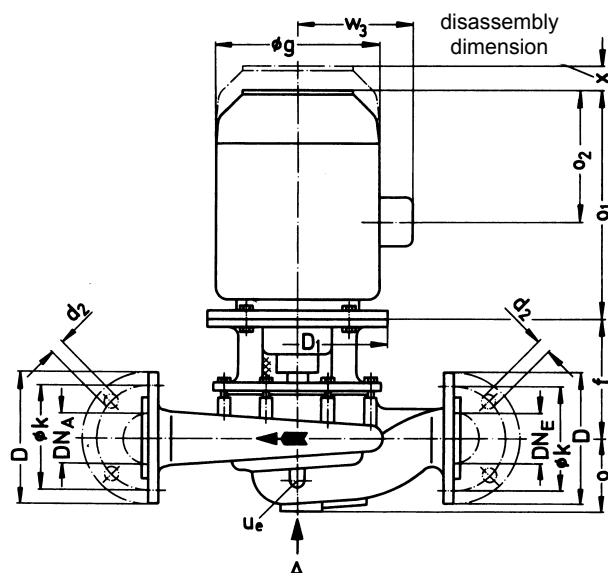
flange connections as per DIN 2501 PN 16						
DN _{A,E}	25	40	50	80	100	150
k	85	110	125	160	180	240
D	115	150	165	200	220	285
d ₂ x number	14 x 4	18 x 4	18 x 4	18 x 8	18 x 8	23 x 8

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

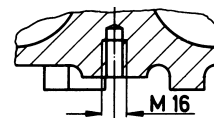
* motors protection type IP 54
dimensions depend on the motor make

Dimension table

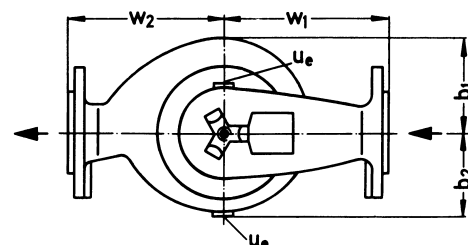
n = 1450 rpm



possible foot mounting



view A



u_e = connection for drainage G 3/8

size	motor size	kW	DN _{A,E}	b ₁	b ₂	D ₁	f	g*	o	o ₁ *	o ₂ *	w ₃ *	w ₁	w ₂	x	weight abt. kg		
																pump 0B,0C	pump 4B	motor
40-160	80 a	0,55	40	115	115	200	167	157	82	204	108	126	180	160	80	31	37	9
40-200	80a	0,55	40	138	138			186	90				200	180		42	46	9
	80 b	0,75								219	115							10
	90 S	1,1								249	161	125						14
50-160	80 a	0,55	50	120	120			157		204	108	126	190	160		36	41	9
	80 b	0,75									115							10
50-200	80 b	0,75	50	138	138					219			200	180		44	47	10
	90 S	1,1						186		249	161	125						14
	90 L	1,5								274	185							18
80-160 A	80 b	0,75	80	138	125			157	150	219	115	139	240	200		50	53	10
	90 S	1,1						186		249	161	159						14
	90 L	1,5								274	185	125						18
80-200 A	90 S	1,1	80	150	143			186		249	161		255	225		51	54	14
	90 L	1,5								274	185							18
	100 L1	2,2				250		206		323	234	133						24
80-160 B	90 S	1,1	80	148	135	200		186	120	249	161	125	240	200		50	53	14
	90 L	1,5								274	185							18
	100 L1	2,2				250	162	206		323	234	133						24
80-200 B	90 L	1,5	80	165	155	200	167	186		274	185	125	255	225	100	51	54	18
	100 L1	2,2				250		206		323	234	133						24
	100 L2	3,0											275					25
100-160	90 L	1,5	100	165	145	200		186	150	274	185	125				52	71	18
	100 L1	2,2				250	162	206		323	234	133						24
	100 L2	3,0																25
100-200	100 L2	3,0	100	180	165		183						250			63	68	25
	112 M	4,0						220			183	186						41
	132 S	5,5				300	226	260		386	227	213						62
150-200	112 M	4,0	150	203	173	250	183	220	188	323	183	186	350	280	120	78	84	41
	132 S	5,5				300	226	260		386	227	213						62
	132 M	7,5								424	246							72

flange connections as per DIN 2501 PN 16

DN _{A,E}	25	40	50	80	100	150
k	85	110	125	160	180	240
D	115	150	165	200	220	285
d ₂ x number	14 x 4	18 x 4	18 x 4	18 x 8	18 x 8	23 x 8

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

* motors protection type IP 54
dimensions depend on the motor make

Data regarding size - order notes

Series + size	Hydraulic + bearing	Shaft sealing	Material design			casing seal
	A ■ hydraulic A B ■ hydraulic B ■ K two grease-lubricated antifriction bearings in the motor ■ V one grease-lubricated antifriction bearing in the bearing bracket	AAE standard mechanical seal O-rings Perbunan BH3 bellows mechanical seal SiC-carbon, EP BHS bellows mechanical seal SiC/SiC, Viton	0B main parts of GG without nonferrous metal 0C as 0B, but impellers of G-Cu Sn 10 0F main parts of GG, impeller PPO 4B main parts of Cr Ni Mo cast steel 4F main parts of Cr Ni Mo cast steel, impeller PPO			2 flat seal 4 PTFE
		AAE, BH3, BHS	0B 2	0C 2		0F 2
		BH3, BHS			4B 4	4F 4
ZLI	25-125	AK	●		●	●
	25-160		●		●	●
	40-160		●	●	●	
	40-200		●	●	●	
	50-160		●	●	●	
	50-200		●	●	●	
	80-160		●	●	●	
	80-200		●	●	●	
	80-160		●	●	●	
	80-200		●	●	●	
	100-160		●	●	●	
	100-200		●	●	●	
	150-200		●	●	●	

Applicable motors please take from the dimension table on page 15 - 17.

Motor selection table					
n = 2900 rpm			n = 1450 rpm		
kW	size	designation	kW	size	designation
0,75	80 a	FA	80 a	0,55	FB
1,1	80 b	GA	80 b	0,75	GB
1,5	90 S	HA	90 S	1,1	HB
2,2	90 L	JA	90 L	1,5	JB
3,0	100 L1	KA	100 L1	2,2	KB
4,0	112 M	MA	100 L2	3,0	LB
5,5	132 S1	NA	112 M	4,0	MB
7,5	132 S2	OA	132 S	5,5	NB
11,0	160 M1	SA	132 M	7,5	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 AV AAE 0C 2 with three-phase AC motor (50 Hz, 380 V Δ) 2900 rpm has the complete order No:

ZLI ■ 50-200 AV AAE 0C 2 OA

In case of construction IM V 1 (vertical installation) special hint.

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

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

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